ARGO OPERATOR MANUAL

V1.4



Digital Broadcast IP Production Console

calrec.com

CALREC

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ARGO
INFORMATION

CALREC

IMPORTANT INFORMATION

After Sales Modifications
Please be aware that any modifications other than those made or approved by Calrec Audio Limited or their agents may invalidate the console's warranty. This includes changes to cabling provided by Calrec and variations to the recommended installation as detailed in Calrec documentation.

Modifications to this equipment by any party other than Calrec Audio limited may invalidate EMC and safety features designed into this equipment. Calrec Audio Limited can not be liable for any legal proceedings or problems that may arise relating to such modifications.

If in doubt, please contact Calrec Audio Limited for guidance prior to commencing any modification work.

Installation
In many installations, the AC power connectors will not be readily accessible, effectively making the equipment permanently connected. The installation should be carried out in accordance with all applicable installation rules and regulations.

Service Personnel
The AC power disconnect devices are the 2 x IEC (IEC60320-1 C13/C14) couplers located at the rear of each unit. WARNING: The apparatus has a dual power system. It is essential that BOTH AC power IEC couplers are disconnected to prevent exposure to hazardous voltage within the unit.

Third Party Equipment
Integrating third party equipment into a Calrec system may compromise the product's ability to comply with the radiated emission limits set in the latest EMC (Electro Magnetic Capability) standard.

Calrec Audio Limited can not be responsible for any non-conformance due to use of third party equipment. If in doubt, please contact Calrec Audio Limited for guidance prior to integrating any third party equipment

ESD (Status) Handling Procedures
In its completed form, this equipment has been designed to have a high level of immunity to static discharges. However, when handling individual boards and modules, many highly static sensitive parts are exposed. In order to protect these devices from damage and to protect your warranty, please observe static handling procedures. For example, use an appropriately grounded anti-static wrist band. Calrec will supply an electrostatic cord and wrist strap with all its digital products.

All modules and cards should be returned to Calrec Audio Limited in anti-static wrapping. Calrec Audio Limited can supply these items upon request, should you require assistance.

This applies particularly to digital products due to the types of devices and very small geometries used in their fabrication. However, analogue parts can still be affected.

FIG. 1 - LEAD FREE

Pb
Pb-Free
Lead Free

RoHS Legislation
In order to comply with European RoHS (Reduction of Hazardous Substances) legislation, Calrec PCB and cable assemblies are produced with lead-free (tin/copper/silver) solder instead of tin/lead solder, see Fig. 1.

In the unlikely event of a customer having to carry out any re-soldering on Calrec hardware, it is imperative that lead-free solder is used. Contaminating lead-free solder with leaded solder is likely to have an adverse effect on the long-term reliability of the product.

FIG. 2 - LEAD FREE LOGO

e1

Circuit boards assembled with lead-free solder can be identified (in accordance with IPC/JEDEC standards) by a small oval logo (see Fig. 2) on the top-side of the circuit board near the PCB reference number (8xx-xxx). The same logo is used on the connector hoods of soldered cable assemblies.

If in doubt, please check with a Calrec customer support engineer before carrying out any form of re-soldering.

ISO 9001 and RAB Registered
Calrec Audio Ltd has been issues the ISO9001: 2008 standard by the Governing Board of ISOQAR.

The award, for both UKAS (Fig. 3) and RAB (Fig. 4) registration is the most comprehensive of the ISO9000 international standards. Granted in recognition of excellence across design, development, manufacture and after-dales support, the certification follows a rigorous and thorough review of Calrec's internal and external communication and business procedures.

FIG. 3 - UKAS REGISTRATION

ISOQAR
QUALITY ASSURED
ISO 9001
UKAS
QUALITY MANAGEMENT
026
Certificate number 3205/02

FIG. 4 - RAB REGISTRATION

ISOQAR
QUALITY ASSURED
ISO 9001
ANAB
ACCREDITED
Certificate number 3205/02

HEALTH AND SAFETY

For safety information, see Safety Information (926-186) sheet.

Important Safety Instructions:

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Do not block any ventilation openings.
- Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Protect the power cord from being walked on or pinched, particularly at the plugs, convenience receptacles, and the exit point from the apparatus.
- Use only with the cart, stand, tripod, bracket or table specified by the manufacturer, or sold with the apparatus. When a cart is used, exercise caution when moving the cart/ apparatus combination to avoid injury from tip-over.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way. This includes power-supply cord or plug damage, liquid being spilled/objects having fallen into the apparatus, the apparatus being exposed to rain or moisture, abnormal operation, dropping the apparatus, etc.
- Warning: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
- Not intended for outdoor use.
- This equipment must be EARTHED.
- Caution - Shock Hazard
- Disconnect all power sources before starting any servicing operation. Equipment must be isolated from the AC power supply. The disconnect devices are the 2 x IEC connectors (IEC 60320-1 C13/C14 couplers).
- An appropriate disconnect device shall be provided as part of the installation. If the plug is to be used as the disconnection device, then the socket outlet shall be easily accessible.
- Do not allow ventilation to be blocked.
- Do not leave the equipment powered up with the dust cover fitted.

Cleaning

For cleaning the front panels of the equipment, a soft anti-static cloth, lightly dampened with water, is recommended.

Explanation of Warning Symbols

Triangular warning symbols contain a black symbol on a yellow background, surrounded by a black border.

The lightning flash with arrow head symbol within an equilateral triangle, as shown on this page, is intended to alert the user to the presence of dangerous voltages and energy levels, within the product's enclosure, that may be of sufficient magnitude to constitute a risk of electric shock or injury.

The exclamation mark within an equilateral triangle, as shown on this page, is intended to prompt the user to refer to important operating or maintenance instructions in the documentation supplied with the product.

The altitude warning symbol indicates that the equipment is to be used at an altitude not exceeding 2000m. The multiple power sources symbol indicates that more than 1 power source is connected and that all power sources should be disconnected before servicing.

The final symbol indicates that equipment is evaluated only for temperate climate conditions and that potential safety hazards may exist if the equipment is operated in tropical climates.

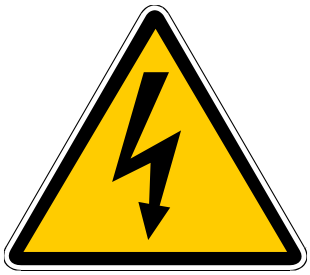
Earthing

This is a Class I product. An Earth connection MUST be provided in each AC power cord. For users who wish to have a separate ground/earth connection, use an Earth cable at least 6mm^2 in cross-section (10 AWG). This connection is optional and is NOT a requirement to comply with safety standards.

Lithium Battery Replacement

Caution: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type. Batteries must not be exposed to excessive heat.

DANGEROUS VOLTAGES



IMPORTANT INSTRUCTIONS



ALTITUDE WARNING SYMBOL



MULTIPLE POWER SOURCES SYMBOL



This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

TECHNICAL SUPPORT

Should you require any technical assistance with you Calrec product, please contact your regional Calrec distributor. Customers within the UK or Ireland should contact Calrec directly.

For a complete list of worldwide distributors by region, navigate to www.calrec.com or contact us for more information.
For pre-delivery technical enquiries, UK and Ireland customers should contact the Calrec project manager assigned to their order. Post delivery, the Calrec Customer Support team will take care of your technical enquiries.

Our UK customer support team work closely with our global distributor network to provide the highest level of after salves support. Your distributor should be your first point of contact and will often be able to provide an instant solution. This includes technical advice, spares or a site visit by an engineer.

Calrec UK customer support and our global technical team provide free of charge technical support and advice by phone or e-mail to all customers.

Once your console is installed, we can provide an engineer on site to carry out system commissioning.

Commissioning ensures the equipment is correctly installed and fully functioning before it goes into use. During commissioning, our engineers can also advise regarding configuration and setup.

Telephone: (9:00am-5.30pm)	+44 (0) 1422 842159
Email - Technical:	support@calrec.com
Email - General:	enquiries@calrec.com
Postal Address:	Calrec Audio Ltd. Nutclough Mill, Hebden Bridge, West Yorkshire, HX7 8EZ, UK
Fax:	+44 (0) 1422 842159
Website:	www.calrec.com

Whenever you contact Calrec Customer Support, please have the following information to hand:

- Name
- Company
- Email Address
- Full details of enquires (e.g., Fault report)
- Serial number of faulty hardware (if applicable)

Once this information has been provided, a service ticket will be created to log your enquiry. The service ticket reference number will be provided by email.

Calrec after sales support includes:
- Free of charge and comprehensive technical advice and support by phone and email.
- Software and hardware upgrades.
- Repairs.
- Quick supply of replacement or load hardware in the event of a failure.
- Providing export documentation for the return of faulty parts.
- On site commissioning visits.
- On site service and health check visits.
- Emergency engineer visits.
- On site on-air support to provide operational guidance and technical engineering support for new installation or high profile events.
- Operational training.
- Maintenance/technical training.
- Supply of replacement components.
- Supply of documentation.

Serial Numbers
All units produced by Calrec are given a serial number and are booked in a central record system at the time of manufacture. These records are updated whenever a piece of hardware is dispatched to or received from a customer.

Repairs
If you need to return goods to Calrec for whatever reason, please contact your regional distributor or Calrec customer support beforehand for guidance, as well as to log the details of the problem and to receive a reference number

Service Contracts
We offer a range of service contracts to out UK and Ireland customers, offering 24/7 telephone support, regular health checks and extended warranty amongst other benefits. Please contact our customer support team for more information on service contracts.

Product Warranty
A full list of our conditions & warranties relating to Goods & Services is contained in the Company's standard Terms and Conditions. A copy of this is available on request.

Standard of Service
Ensuring the highest standards is a priority, if you have any comments on the level of service, product quality or documentation offered to you by Calrec, please contact the Calrec Customer Support team in the UK, who will endeavour to address the issues. Calrec welcomes all customer feedback.

For feedback specific to this document, please contact enquiries@calrec.com.

ARGO
INTRODUCTION

CALREC

INTRODUCTION

Argo is a hugely flexible and scalable large format digital audio console designed to withstand the most critical broadcast production and live environments.

Built upon many years of experience, the all new software and hardware surface architectures, Argo Q and its sibling Argo S offer a new range of IP-based consoles to provide a powerful control, DSP and audio routing package with comprehensive redundancy, offering the feature set required for modern broadcasting in an IP world.

The Argo Q and Argo S control surfaces are primarily made up of a number of identical panels, the mode of which can be changed ad hoc, allowing for all controls to be easily accessible, irrespective of the operator's position, as well as allowing for different operators to configure their own preferences of layout. User splits and independent monitoring allow for multiple operators without affecting each other.

Bluefin3

Calrec's award winning Bluefin DSP was first launched in 2006, allowing the design of consoles with very high channel counts contained on a single card, providing efficient, reliable and powerful systems that can meet the ever increasing demands of modern broadcasting.

This third generation of Bluefin is even more powerful. As well as high channel counts, amongst other benefits it provides comprehensive EQ, filters and dynamics on all paths, delay processing, multiple simultaneous track/IFB sends per path, immersive paths up to 7.1.4 wide and comprehensive immersive monitoring and metering.

AoIP/AES67 Audio Streams

Argo S and Argo Q utilise I/O options from the comprehensive AoIP range. Fixed format units and Modular I/O card-frames are offered in a wide selection of formats to suit all needs.

Commitment

Calrec has a world-wide customer base which includes many of the world's most prestigious broadcasters covering high-profile events. By consistently focusing upon purely broadcast products, Calrec offers consoles with the most comprehensive combination of performance and features. The high level of reliability of all Calrec products, many of which are still in daily use after 20 year's service, reflects a clear awareness of the critical nature of the operating environment. This understanding of the real issues of broadcast operations is one of the many reasons why operators and management alike prefer Calrec. Argo is designed to ensure this level of confidence will continue into the future.

Control Surface

- Up to 240 faders using a combination of standard and short throw physical motorised path faders.
- 12 dual layers of faders for flexibility in organizing path layout.
- Flexible control layout to suit each user's preference.
- Very comprehensive and configurable monitoring and metering.
- User splits allowing for multiple operators to work independently.

Signal Processing

- 6 full bands of parametric EQ/filters on each channel, group and main path.
- 2 x compressors/limiters, 1 x expander/gate/ducker with sidechain source selection per Channel, Group and Main Note: (No ducker on Main).
- 2-band sidechain EQ per Channel.
- 1-band sidechain EQ per Group & Main
- 2 x compressors/limiters per Aux/ Track
- 4 independent simultaneous post-fader, pre-fader or pre-EQ track/IFB sends per Channel/Group path.
- Up to 4 direct output/mix-minus sends per Channel/Group path.
- Up to 5.4 seconds of Path delay per path, with an additional 5.4 seconds of Input delay and 5.4 seconds of Output delay, as appropriate for the path type.

Resilience

- Independent DSP, routing and control processing.
- Comprehensive hardware and data path redundancy.
- Self initializing components.
- Independent of system PC interface.

Power

- Distributed PSU system – no heavy duty external power cables.
- Low power consumption and heat generation.

Impulse

One of three ways to serve the Argo Q/S console uses Calrec's Impulse Core, an audio processing and routing engine with AES67 and SMPTE 2120 connectivity, and support from NMOS discovery and connection management. With Bluefin3 built-in, Impulse provides a powerful DSP engine, with the core also able to serve four consoles at once. For details regarding the setting up and installation of Calrec's Impulse Core, see **Impulse Installation Manual (926-288)**.

Impulse1

Similarly, Calrec's smaller Impulse1 Core is designed for smaller, single mixer applications, but benefits from the same DSP features available to the large Impulse Core. For details regarding the installation of Calrec's Impulse1 Core, see **Impulse1 Installation Manual (926-329).**

ImpulseV

Alternatively, the Calrec ImpulseV Virtualised Cloud Audio Mixer is designed to provide a cloud processing audio mixing solution for adopters of cloud production. Therefore, ImpulseV offers the opportunity to serve Argo Q/S consoles with no physical core required, see **ImpulseV Deployment Manual (926-448).**

Note: images in this manual are taken from Argo consoles served by Impulse. As such some images may display DSP capabilities that differ to the user's. Any differences between ImpulseV-served consoles and those served by Impulse or Impulse1 are noted throughout this manual.

DSP PACKS & MULTIPLE MIXERS

In addition to the 8 basic single console DSP Pack arrangements which are described in detail on the next 2 pages, the digital signal processing element of the Impulse core allows a combination of different 'Console Packs' across multiple mixing consoles. Up to 4 DSP mezzanine cards can be fitted to the DSP module, which has been designed to be flexible & to provide sufficient processing for up to 4 different consoles connected to an Impulse core, arranged to run on the 2 pairs of Mezzanine modules. The DSP Pairing Options table is shown below.

DSP MIXER PAIRING OPTIONS

DSP Pack	Argo S/Argo Q Mixer A	Argo S/Argo Q Mixer B	Argo S/Argo Q Mixer C	Argo S/Argo Q Mixer D
Base Pack 1	Pack 1 Pack 1	None Pack 1	Pack 1 Pack 1	None Pack 1
Base Pack 2	Pack 2 Pack 2 Pack 2	None Pack 1 Pack 2	Pack 2 Pack 2 Pack 2	None Pack 2 Pack 2
Base Pack 3	Pack 3 Pack 3 Pack 3 Pack 3	None Pack 1 Pack 2 Pack 3	Pack 3 Pack 3 Pack 3 Pack 3	None Pack 1 Pack 2 Pack 3
Base Pack 4	Pack 4 Pack 4 Pack 4 Pack 4 Pack 4	None Pack 1 Pack 2 Pack 3 Pack 4	Pack 4 Pack 4 Pack 4 Pack 4 Pack 4	None Pack 1 Pack 2 Pack 3 Pack 4
Base Pack 5	Pack 5 Pack 5 Pack 5B Pack 5B Pack 5B Pack 5C	None Pack 1 Pack 2 Pack 3 Pack 4 Pack 5C	Pack 5 Pack 5 Pack 5B Pack 5B Pack 5B Pack 5C	None Pack 1 Pack 2 Pack 3 Pack 4 Pack 5C
Base Pack 6	Pack 6 Pack 6 Pack 6B Pack 6B	None Pack 1 Pack 2 Pack 3	Pack 6 Pack 6 Pack 6B Pack 6B	None Pack 1 Pack 2 Pack 3
Base Pack 7	Pack 7 Pack 7B	None Pack 1	Pack 7 Pack 7B	None Pack 1
Base Pack 8	Pack 8	None	Pack 8	None

Notes: Mixers A & B reside on the first pair of Mezzanine cards slots 0 & 2 and Mixers C & D reside on the second pair of Mezzanine cards slots 1 & 3 on the DSP carrier module, and the mapping of the Mixer packs to the actual surfaces can be swapped around as required.

DSP PACK COMPARISON

The digital signal processing element of the Impulse core allows a combination of different 'Console Pack' sizes.

DSP Pack Sizes for Argo S & Argo Q

The Impulse and Impulse1 Cores have several DSP Packs available for Argo S/Q, which can be installed in the DSP Module. The table below shows each available pack size. The console will have been provided with the DSP Pack under licence ordered at purchase. Other licences may be purchased subsequently. Only packs 1-4 are available for Impulse1.

SIGNAL PROCESSING AND PACK SIZES AT 48KHZ

TOTAL DSP PATHS	2348	2128	1872	1458
DSP Pack	Pack 8	Pack 7 & Pack 7B	Pack 6 & Pack 6B	Pack 5 & Pack 5B/5C
Input Channels	2048	1792	1536	1122 OR 1024 Pack 5C
Main Output Buses	Up to 16 buses from 192 mono legs Mains & Groups pool	Up to 16 buses from 192 mono legs Mains & Groups pool	Up to 16 buses from 192 mono legs Mains & Groups pool	Up to 16 buses from 192 mono legs Mains & Groups pool
Audio Group Buses	Up to 48 buses from 192 mono legs Mains & Groups pool	Up to 48 buses from 192 mono legs Mains & Groups pool	Up to 48 buses from 192 mono legs Mains & Groups pool	Up to 48 buses from 192 mono legs Mains & Groups pool
Track/IFB Output Buses	Up to 96 buses from 96 mono legs pool	Up to 96 buses from 96 mono legs pool	Up to 96 buses from 96 mono legs pool	Up to 96 buses from 96 mono legs pool
Track/IFB Sends in Path	4	4	4	4
Aux Output Buses	Up to 48 buses from 48 mono legs pool	Up to 48 buses from 48 mono legs pool	Up to 48 buses from 48 mono legs pool	Up to 48 buses from 48 mono legs pool
Direct/Mix-Outputs per Channel-Group	Up to 4 outputs from 1024 mono legs pool	Up to 4 outputs from 1024 mono legs pool OR 768 mono legs pool on Pack 7B	Up to 4 outputs from 768 mono legs pool OR 512 mono legs pool on Pack 6B	Up to 4 outputs from 768 mono legs pool OR 512 mono legs pool on Pack 5B & Pack 5C
Insert Send & Returns	2 x Inserts/path from 1024 mono legs pool	2 x Inserts/path from 1024 mono legs pool OR 896 mono legs pool on Pack 7B	2 x Inserts/path from 384 mono legs pool	2 x Inserts/path from 384 mono legs pool
EQ on Channels Groups, Mains, Auxes & Tracks	6 band parametric EQ 6/12 dB/Oct shelves and 6/12/18 dB/Oct filters on Bands 1 & 6	6 band parametric EQ 6/12 dB/Oct shelves and 6/12/18 dB/Oct filters on Bands 1 & 6	6 band parametric EQ 6/12 dB/Oct shelves and 6/12/18 dB/Oct filters on Bands 1 & 6	6 band parametric EQ 6/12 dB/Oct shelves and 6/12/18 dB/Oct filters on Bands 1 & 6
Dynamics	2 x compressor/limiters 1 x expander/gate/ducker with sidechain source selection per Channel, Group & Main (no ducker) 2-band sidechain EQ per Channel 1-band sidechain EQ per Group & Main. 2 x compressor/limiters per Aux & Track	2 x compressor/limiters 1 x expander/gate/ducker with sidechain source selection per Channel, Group & Main (no ducker) 2-band sidechain EQ per Channel 1-band sidechain EQ per Group & Main. 2 x compressor/limiters per Aux & Track	2 x compressor/limiters 1 x expander/gate/ducker with sidechain source selection per Channel, Group & Main (no ducker) 2-band sidechain EQ per Channel 1-band sidechain EQ per Group & Main. 2 x compressor/limiters per Aux & Track	2 x compressor/limiters 1 x expander/gate/ducker with sidechain source selection per Channel, Group & Main (no ducker) 2-band sidechain EQ per Channel 1-band sidechain EQ per Group & Main. 2 x compressor/limiters per Aux & Track
Input Delay	Up to 5.4s/input from 256 mono legs pool	Up to 5.4s/input from 256 mono legs pool	Up to 5.4s/input from 256 mono legs pool	Up to 5.4s/input from 256 mono legs pool
Path Delay	Up to 5.4s/path	Up to 5.4s/path	Up to 5.4s/path	Up to 5.4s/path
Output Delay	Up to 5.4s/output from 256 mono legs pool	Up to 5.4s/output from 256 mono legs pool	Up to 5.4s/output from 256 mono legs pool	Up to 5.4s/output from 256 mono legs pool

Multiple Consoles & DSP Packs

The DSP carrier module can be loaded with up to 4 Mezzanine modules on Impulse, allowing up to 4 Argo consoles to operate simultaneously. These are arranged in pairs (first pair provides mixers A & B, second pair provides mixers C & D).

These Impulse DSP Pairing options for multiple console use are shown on page 13.

Note: in some console pairing combinations, the number of Direct Outputs are reduced. These DSP packs are known as **PACK 5B, 6B & 7B.** Also note that in one case there is also a reduction to the number of channels in **PACK 5C** from 1122 to 1024.

1056	800	672	432
Pack 4	Pack 3	Pack 2	Pack 1
768	512	384	256
Up to 16 buses from 192 mono legs Mains & Groups pool	Up to 16 buses from 192 mono legs Mains & Groups pool	Up to 16 buses from 192 mono legs Mains & Groups pool	Up to 16 buses from 96 mono legs Mains & Groups pool
Up to 48 buses from 192 mono legs Mains & Groups pool	Up to 48 buses from 192 mono legs Mains & Groups pool	Up to 48 buses from 192 mono legs Mains & Groups pool	Up to 48 buses from 96 mono legs Mains & Groups pool
Up to 64 buses from 64 mono legs pool	Up to 64 buses from 64 mono legs pool	Up to 64 buses from 64 mono legs pool	Up to 48 buses from 48 mono legs pool
4	4	4	4
Up to 32 buses from 32 mono legs pool	Up to 32 buses from 32 mono legs pool	Up to 32 buses from 32 mono legs pool	Up to 32 buses from 32 mono legs pool
Up to 4 outputs from 512 mono legs pool	Up to 4 outputs from 512 mono legs pool	Up to 4 outputs from 512 mono legs pool	Up to 4 outputs from 256 mono legs pool
2 x Inserts/path from 256 mono legs pool	2 x Inserts/path from 256 mono legs pool	2 x Inserts/path from 256 mono legs pool	2 x Inserts/path from 128 mono legs pool
6 band parametric EQ 6/12 dB/Oct shelves and 6/12/18 dB/Oct filters on Bands 1 & 6	6 band parametric EQ 6/12 dB/Oct shelves and 6/12/18 dB/Oct filters on Bands 1 & 6	6 band parametric EQ 6/12 dB/Oct shelves and 6/12/18 dB/Oct filters on Bands 1 & 6	6 band parametric EQ 6/12 dB/Oct shelves and 6/12/18 dB/Oct filters on Bands 1 & 6
2 x compressor/limiters 1 x expander/gate/ducker with sidechain source selection per Channel, Group & Main (no ducker) 2-band sidechain EQ per Channel 1-band sidechain EQ per Group & Main. 2 x compressor/limiters per Aux & Track	2 x compressor/limiters 1 x expander/gate/ducker with sidechain source selection per Channel, Group & Main (no ducker) 2-band sidechain EQ per Channel 1-band sidechain EQ per Group & Main. 2 x compressor/limiters per Aux & Track	2 x compressor/limiters 1 x expander/gate/ducker with sidechain source selection per Channel, Group & Main (no ducker) 2-band sidechain EQ per Channel 1-band sidechain EQ per Group & Main. 2 x compressor/limiters per Aux & Track	2 x compressor/limiters 1 x expander/gate/ducker with sidechain source selection per Channel, Group & Main (no ducker) 2-band sidechain EQ per Channel 1-band sidechain EQ per Group & Main. 2 x compressor/limiters per Aux & Track
Up to 5.4s/input from 256 mono legs pool	Up to 5.4s/input from 128 mono legs pool	Up to 5.4s/input from 128 mono legs pool	Up to 5.4s/input from 128 mono legs pool
Up to 5.4s/path	Up to 5.4s/path	Up to 5.4s/path	Up to 5.4s/path
Up to 5.4s/output from 256 mono legs pool	Up to 5.4s/output from 128 mono legs pool	Up to 5.4s/output from 128 mono legs pool	Up to 5.4s/output from 128 mono legs pool

IMPULSEV DSP

ImpulseV DSP
Calrec currently offers one single DSP pack with the following:

256 DSP licence providing 128 mono equivalent channel paths + 128 output paths

- 256 Total Processing Paths
- Up to 128 Input Channels
- Up to 128 Bus paths as follows:
  - Up to 8 Mains from 32 Mains bus paths
  - Up to 16 Groups from 32 Group bus paths
  - Up to 32 Auxes from 32 Aux bus paths
  - Up to 32 Track paths

- Mono, Stereo, Surround (5.1, 7.1) and Immersive (5.1.2, 5.1.4, 7.1.2, 7.1.4) support for Channel, Group and Main Paths
- 64 Direct Outputs
- 1 Mix-Minus bus
- 128 Inserts
- 64 External Inputs
- Path Delay on all Channels, Groups, Mains, Tracks and Auxes
- 28 Input Delays
- 128 Output Delays
- One monitoring system (up to 7.1.4) - 1 PFL (up to 7.1.4), 1 AFL (up to 7.1.4)
- 4 Misc Monitor selectors & outputs, 4 User Meters selectors
- 128 assignable meters

ARGO
CONTROL OVERVIEW

CALREC

SURFACE CONTROL OVERVIEW

Argo operates the way you want it to. A variety of operating modes and the different ways to display information ensure that every operator feels at home behind the console.

A range of different panels are available, a combination of which will make up the Argo surface. These are detailed in **"Surface Panel Overview" on page 23**. When using these panels, it is important to understand the different control types that make up each respective panel. The main control types on the surface are as follows:

Rotary controls

The base around rotary controls on the surface changes colour to reflect the currently assigned control. For example, they are green when assigned to an Aux control.

Buttons

Like the rotary controls, small square buttons change colour when active to reflect the currently assigned control. Where there are buttons relating to the same control as displayed on a control cell display, the buttons will be used for control. The control cell and button cell displays are not touch sensitive as a physical control is provided.

FIG. 1 - CONTROL CELL - 3 BUTTONS



Control cells

The rotary control and button interface elements described, combined with a display, make up the control cells. These cell types are shown in Figs 1 & 3.

Rotary controls and button controls alter the parameters defined by the control cell selection The associated 160px X 80px mini TFT display shows the variable parameters and button settings.

Controls that are not active (e.g., pan controls when assigned to a surround bus) are hidden, in which instance the rotary control, button and control cell display sections will not be lit.

Button cells

In a button cell, as shown in Fig. 2, the buttons map directly to the nearest control cell display. Each graphic display is divided into one, two, three or four functions. Buttons above and below are used to control the functions on the adjacent display. Some functions are shown across the full width of the display. In these cases, pressing either of the two buttons above or below will activate the function.

A strip label across the centre of a button cell is sometimes present. Labels may span across more than one display. In some cases, cells do have a label but do not have any associated button functions.

FIG. 2 - CONTROL CELL - 4 BUTTONS



Strips

A Strip is a collection of vertical controls that are specific to each fader on the surface. For example, each fader button cell on the bottom row on a standard fader panel contains controls that affect the fader directly below it. The control cells on the wild assign panel may also be arranged in this way, dependent on the wild assign panel mode selected.

Rows

Certain horizontal sets of controls are used to group similar controls. These are known as **rows**, see Fig. 4 for Argo Q and Fig. 5 for Argo S, both on the next page. The Layers and Modes row contains controls that do not relate directly to a specific fader. Conversely, the row below the Layers and Modes row is used to provide specific customised fader button functions that are path related. These rows are identified on the next page.

TFT touch screens

Various control parameters in different panel modes are changed using the 1920px X 1080px TFT touchscreen above the Wild Assign, Monitor or Short Fader panels.

TFT upstand screens

The TFT upstand display is primarily used to show audio data on meters. It uses the same 1920px X 1080px TFT display, but without touch. It is mounted above the TFT touch screen on top of the console.

Note: TFT upstand screens may be removed for a reduced-height setup.

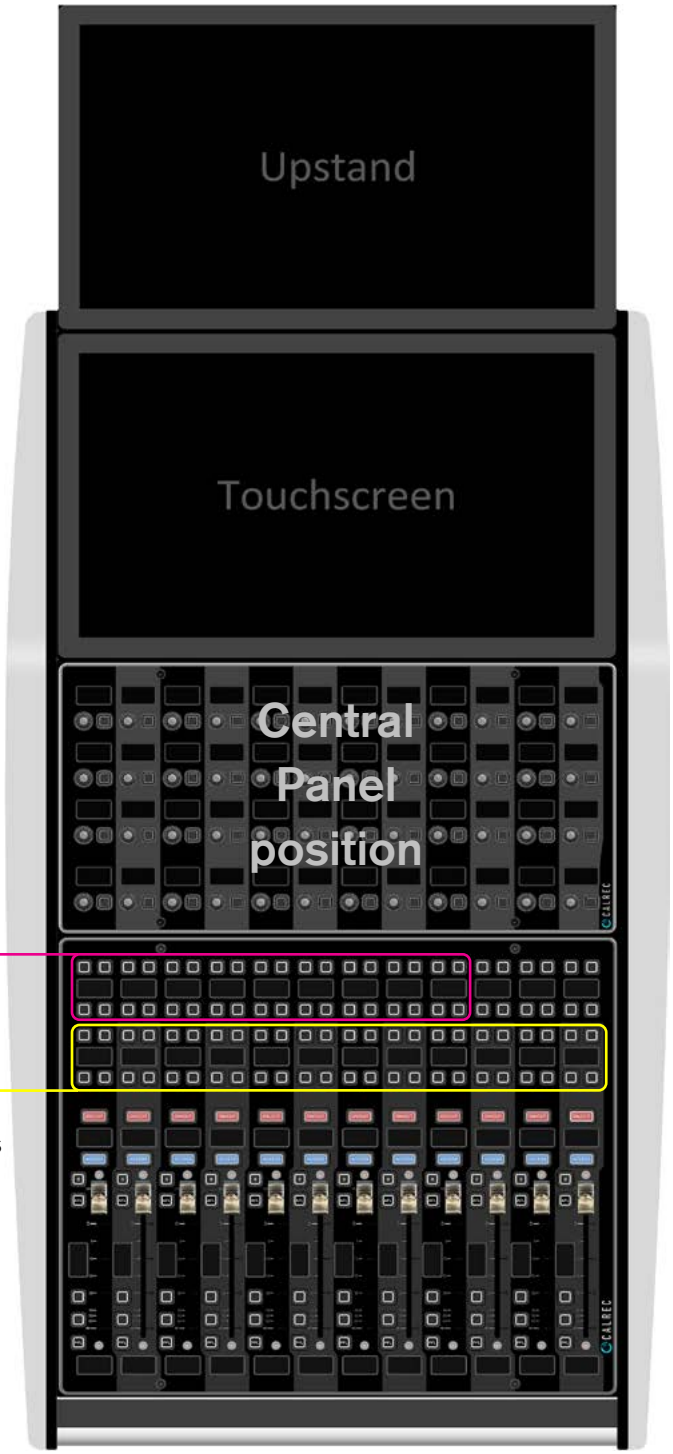
FIG. 3 - CONTROL CELL - 1 BUTTON



FIG. 4 - ROWS AND AREAS ON ARGO Q



FIG. 5 - ROWS AND AREAS ON ARGO S



Layers & Modes Row

Custom Path Button Functions Row

ARGO S METER PANEL OPTIONS

In addition to the two Argo variants shown in Fig. 4 and Fig. 5 on the previous page, the Argo S is available with the MD6772 Meter TFT panel removed and the MU6762 Touch TFT panel functioning as a dual operational display and meter panel. All functionality remains when operating this variant.

Shown below is the reduced-height variant of the Argo S. The chassis is designed to support from two to eight 12 fader wide sections, supporting up to 96 faders. The console shown below is a 36 fader wide surface with 3 standard fader panels, 2 wild assign panels and a monitor panel.

Each section can be fitted with the follows:

1 x IU6756 standard 12 fader panel placed at the bottom of the section.

1 x additional control panel above this. This can be any of the following:

- CA6765 Wild Assign panel, which provides 48 rotary control cells, each with a built-in switch, mini TFT display and soft button.
- IU6577 Short Fader panel, which provides an additional 12 short throw Faders/Cut buttons/Access buttons/24 x 4 button control cells, each with a mini TFT display and a variety of other mini TFT displays.
- MY6574 Monitor panel, which provides rotary controls for the various loudspeaker outputs with mini TFT displays/20 x 4 button control cells, each with a mini TFT display, TB Mic socket and USB port.

1 x MU6762 Touch display TFT panel. This is a 1920px X 1080px display with a multi-touch TFT screen, used to show the current operational displays and to provide on-screen touch controls.

FIG. 1 - 36 FADER ARGO S SURFACE WITH METER TFT PANEL REMOVED



Viewing the Meter Display
In the absence of the Meter TFT panel, the user can view meters on the TFT Touch display instead.

This option is available on all Argo variants. However, it is especially important when operating an Argo console without the Meter TFT panel.

A button on the Layers and Modes row of a standard fader panel can be assigned to switch the Touch panel between its standard operating mode, and the meter display mode. This is done under Show setup>Customise panels:

1. Select the panel they wish to assign this button to a panel by tapping that panel, as shown in Fig. 2.
2. Assign this switch function under Surface tools>Switch to meter display, as shown in Fig. 3.
3. The ability to switch between the standard operational mode and the meter display mode will now be available from the selected button.

Note: a similar method can be used to assign this function to a button on a specific fader's custom functions row on any Standard Fader panel.

Once assigned, the button will appear in the chosen location on the Standard Fader panel as shown in Fig. 4.

When pressed, the button appears as shown in the right image of Fig. 4. This will show the Meter display on the Touchscreen TFT panel. To return to the standard operational view, press this button again, returning the button to its original state, shown in the left image of Fig. 4.

FIG. 2 - EDIT USER CONTROLS

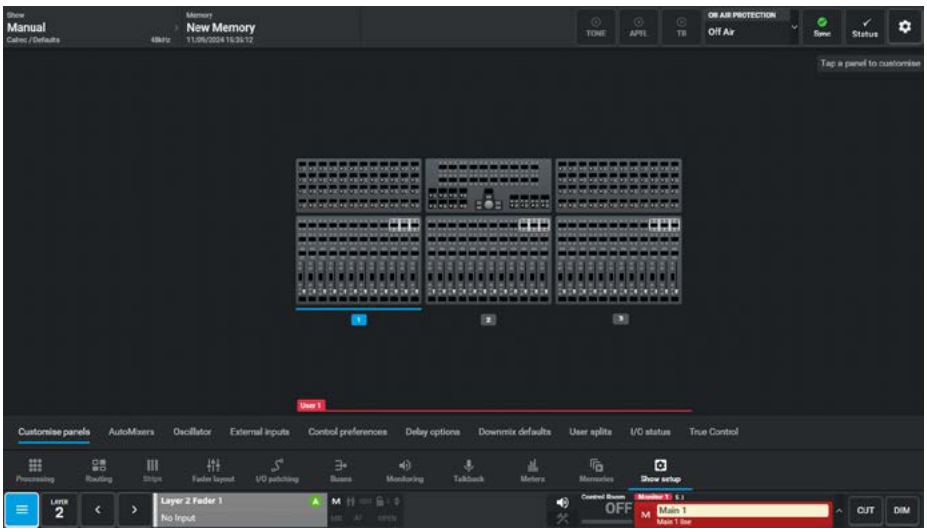


FIG. 3 - SWITCH TO METER DISPLAY

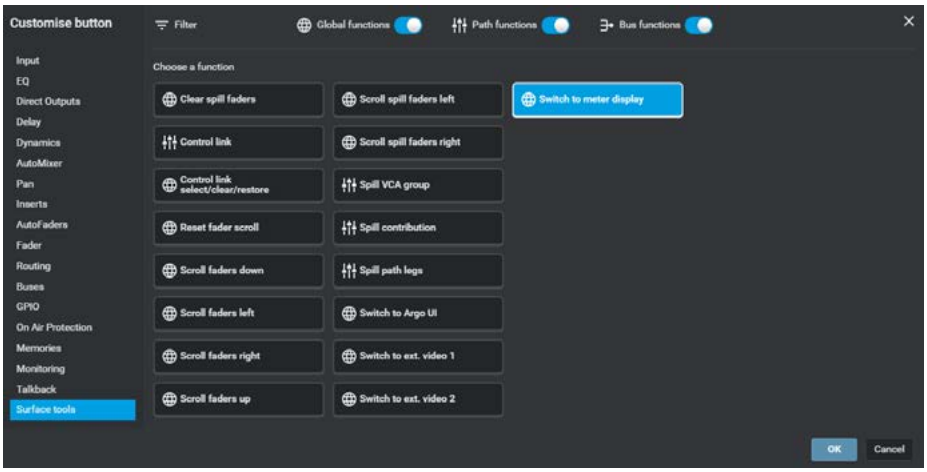


FIG. 4 - SWITCHING TO METER DISPLAY ON FADER PANEL



TOUCH OVERVIEW

Argo uses touch technologies to provide direct interaction with on-screen controls.
All touchscreen surface displays are touch sensitive and should be used with a finger rather than any other pointing device (such as the top-end of a pen), which may damage the surface of the display. Certain aspects of the software have been designed to be accessed primarily through touch. As such, some terms should be defined to aid reading this document.

Touch/Tap
The main interaction between the operator and touch control is the touch (or tap). The operator should touch the desired control, then immediately release without changing position, see Fig. 1.

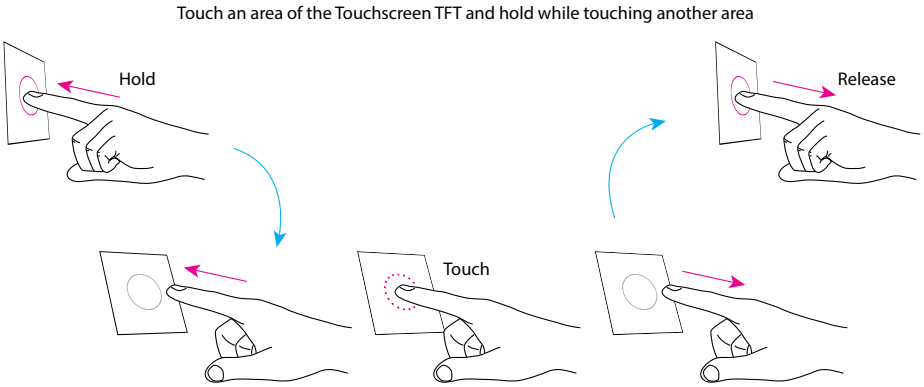
Multiple touches (Hold and Touch)
In some cases it is necessary to combine touch controls to achieve the desired result. One control will normally be held whilst touching other controls. Fig. 2 demonstrates this process.

Swipe or Drag
The swipe motion may be used to scroll through a list of items or to scroll across the page through a number of views. Touch the control and immediately swipe away in the required direction, removing at the end of the swipe. The drag motion may be used to change a slider on the surface of the Touchscreen. Touch the control and drag your finger slowly in the required direction, removing at the end of the drag, see Fig. 3.

FIG. 1 - TOUCH/TAP



FIG. 2 - HOLD AND TOUCH



Other Multi-touch actions
Scrolling: Touch the control with two fingers and drag in the required direction, removing at the end of the drag. The drag motion may be used to scroll through lists and tables to find the required entry.

Multi-touch for reset to default on sliders: Tapping on a slider with 2 fingers opens a context menu with a 'Reset to default' button. Tapping this button resets the control to its default value, see Fig. 4.

Note: If a touchscreen is not available, the same dialogue can be viewed by right-clicking. This is available from both Assist and in the Surface UI.

FIG. 3 - SWIPE OR DRAG

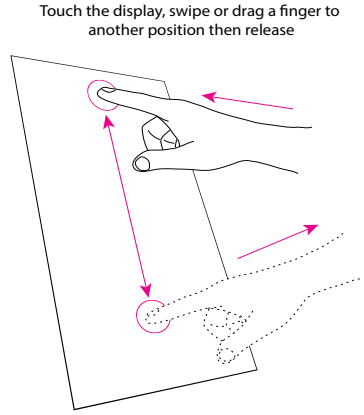


FIG. 4 - MULTI-TOUCH RESET DIALOGUE BOX



SURFACE PANEL OVERVIEW

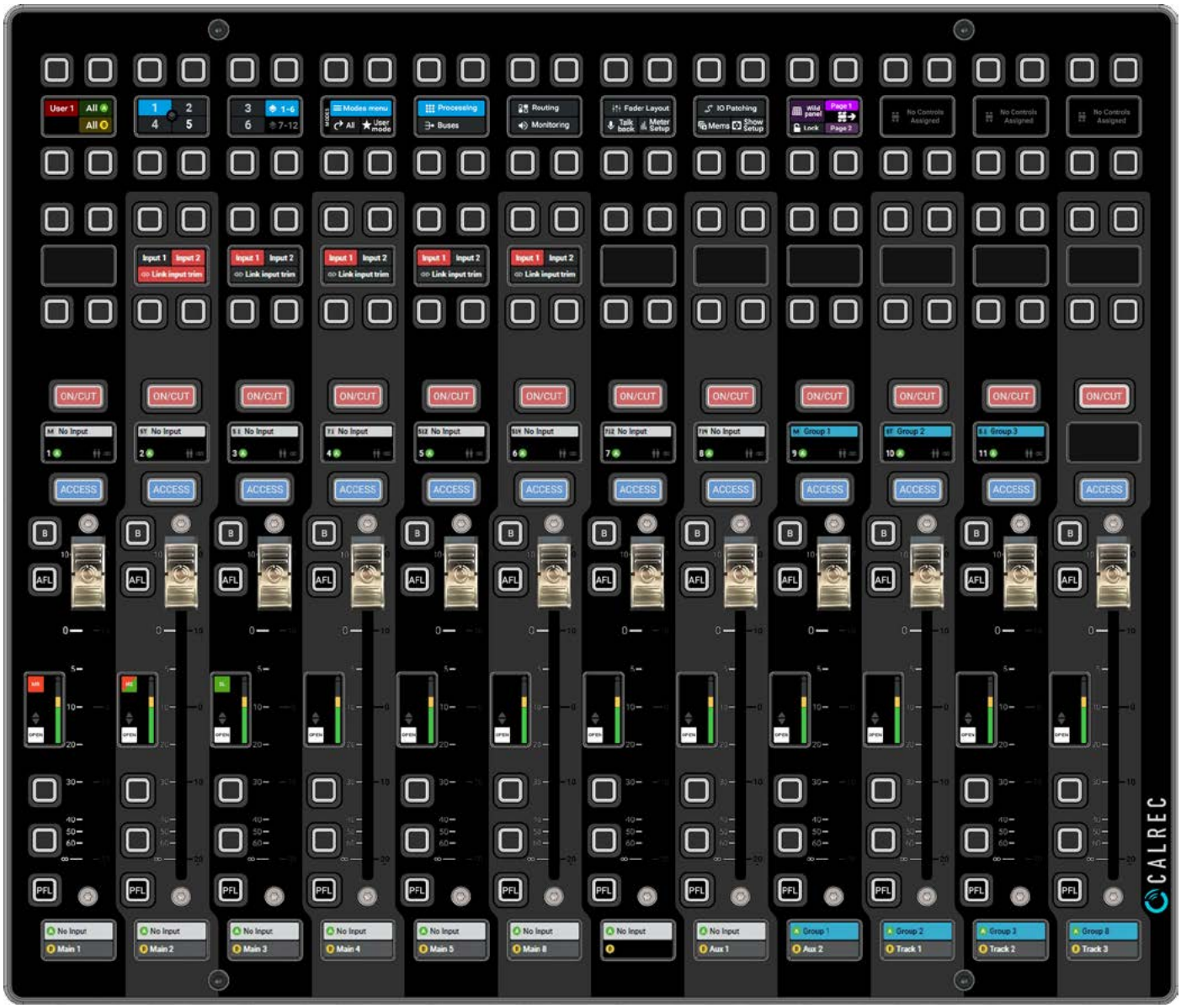
The IU6756 Standard Fader panels make up the Argo S/Argo Q fader bed. Multiple panels are fitted to make up the required fader quantity.

The IU6756 is a 378.5mm wide x 322mm high fader panel, consisting of 12 x 100mm throw touch sensitive faders on a 30mm pitch.

Each of the 12 fader strips has the following controls/displays from bottom to top in the lower area:
160px X 80px Mini TFT layer display, PFL button, 2 user definable buttons, 80px X 160px Mini TFT vertical fader/meter display, AFL button, B-Layer button (also user definable), Access button, 160px X 80px Mini TFT path display and an ON/CUT button, which can be software configured to light when the fader path is active (ON) or when the fader path is muted (CUT).

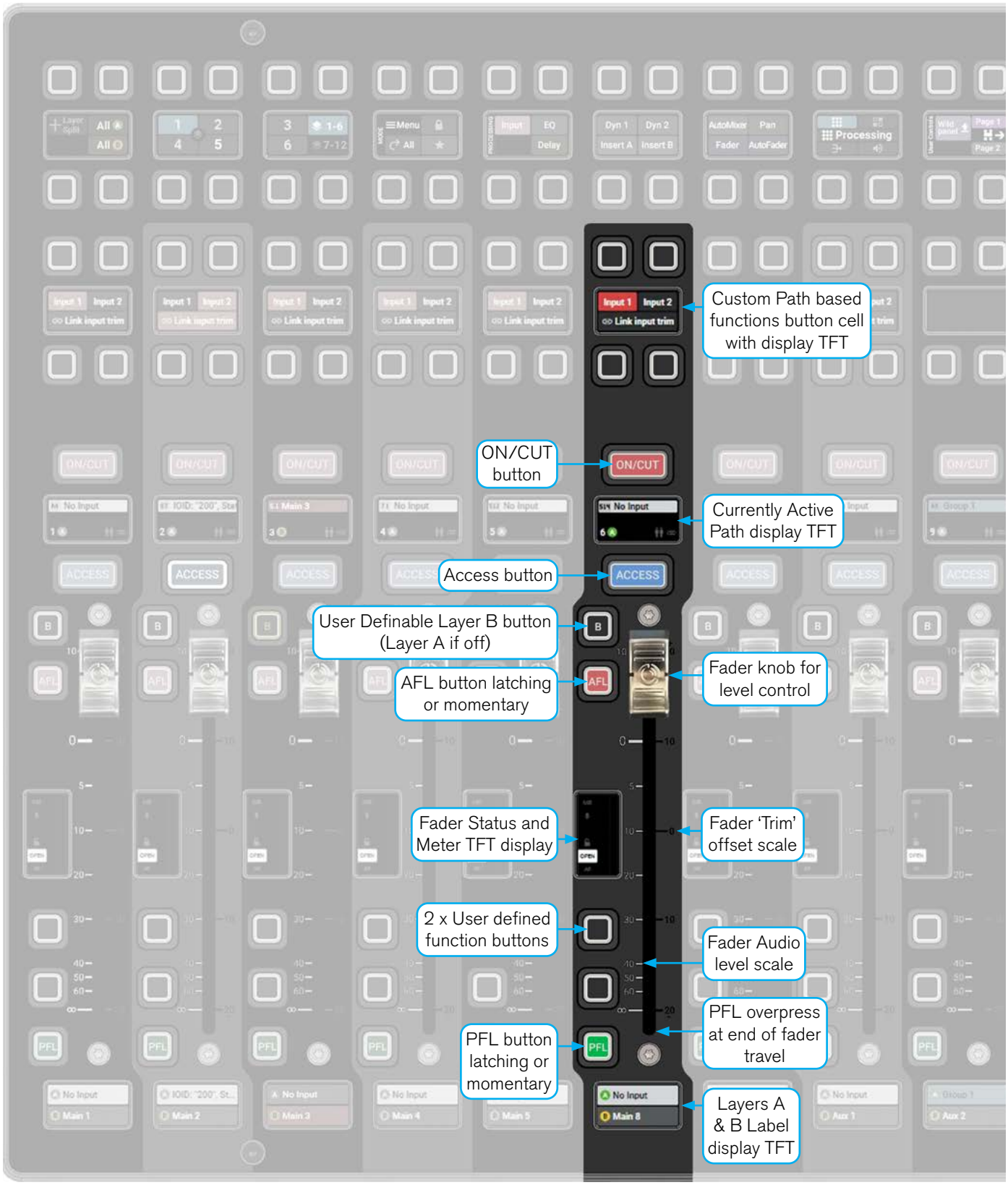
In the upper area of the panel, there are 2 sets of 4 button cells with a 160px X 80px Mini TFT Display per fader, which can be configured to display various switch functions as required. The lower row is used for Custom path button functions per fader, whilst the upper row is known as the 'Layers & Modes row'. When used in Conjunction with the Access and B-Layer buttons (where defined), this row is used to navigate to the required paths & select the various modes of operation to be applied.

FIG. 1 - ARGO S & ARGO Q - STANDARD 12 FADER PANEL



The main control features are highlighted in Fig. 2. All these controls are normally relevant to the highlighted fader and are repeated twelve times across the panel.

FIG. 2 - FADER PANEL CONTROLS FOR A STRIP

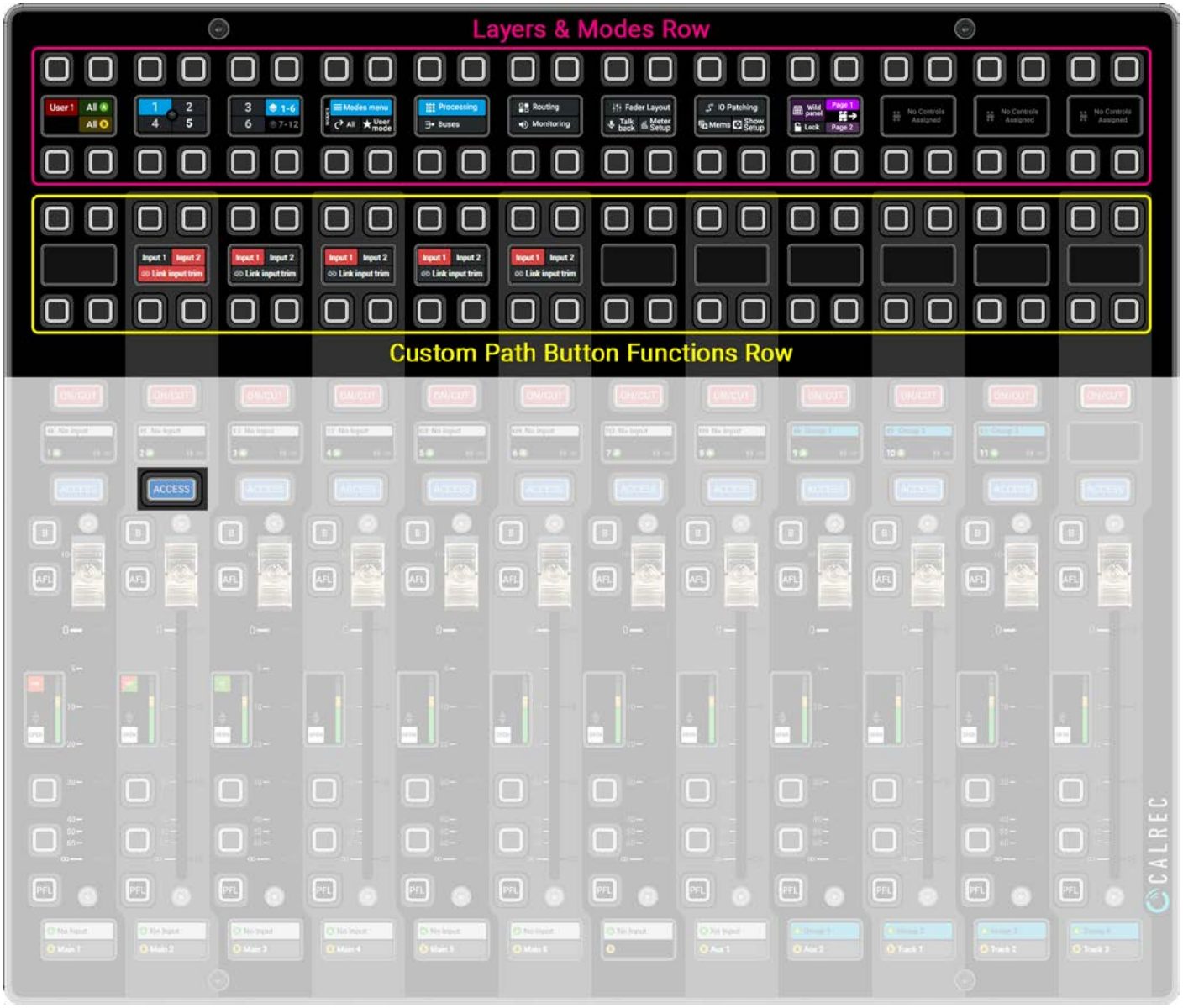


There are two, 12 wide button control cell rows that span the width of the panel. These are highlighted in Fig. 3.

The upper row is the **Layers & Modes row**. The first 3 button cells select between the 12 A/B Layers available while the All A/All B buttons change all faders under their control between sub-layer A & sub-layer B. The Modes row is used to control the mode of the wild assign panel above it. To access a particular path, first select the layer, followed by the 'Access' button for the desired path, as shown in the Fig. 3. The Modes row in button cells 5 through 8 navigate between the various Menu entries for Processing, Routing, Buses, Monitoring and other setup & operational panel functions which appear on the Touchscreen TFT.

The **Custom Path Button Functions row** below this displays customised button control sets relevant to each fader as shown.

FIG. 3 - FADER PANEL CONTROL ROWS

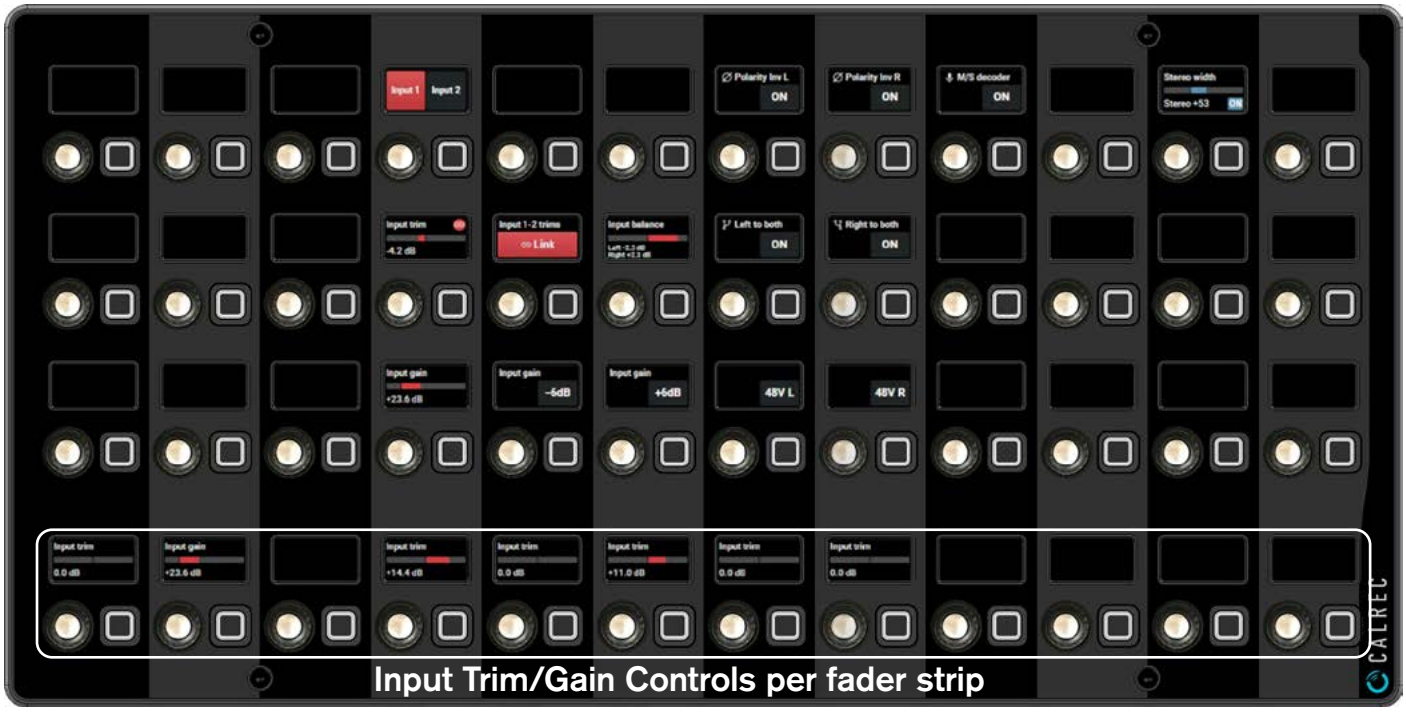


The CA6765 Wild Assign panels can be fitted in the Argo S/Argo Q central panel positions. For the Argo S, and the reduced-height variant, one row of this panel type can be fitted. For the larger Argo Q, two rows of this panel type can be fitted to make up the required console layout, **See "Fig. 4 - Rows and areas on Argo Q" on page 19** and **"Fig. 5 - Rows and areas on Argo S" on page 19.**

The CA6765 is 378.5mm wide x 190mm high and is fitted with the following controls/displays: 48 rotary control cells arranged as 4 rows of 12 sets of rotary control cells, with the bottom row separated from the other 3 rows, as shown in Fig. 4. This row is generally used for Input Trim/Gain Controls per fader strip displays. Each control cell contains a rotary shaft encoder control with integral switch. This is activated by pressing the top of the encoder down and holding, and is typically used to reset the parameter that rotary control is controlling. It also contains a separate illuminating button and a Mini TFT display per cell.

Each rotary control cell can be configured to display and control the various continuous and switch parameters as required. Fig. 4 is that of the currently accessed path - L1F2A. This is a Stereo channel and the user has accessed the Input mode, so the upper 3 rows (up to 36 cells) shows all the relevant input parameters. The layout of those controls closely mimic the layout of the same touch controls on the Touchscreen TFT that is placed above it.

FIG. 4 - ARGO S & ARGO Q - WILD ASSIGN PANEL



The MY6574 Monitor panel provides the Argo S/Argo Q full control of the various monitoring outputs of the console. Generally, one of these panels is fitted per console, although more than one can be fitted for multi-user/monitor operation.

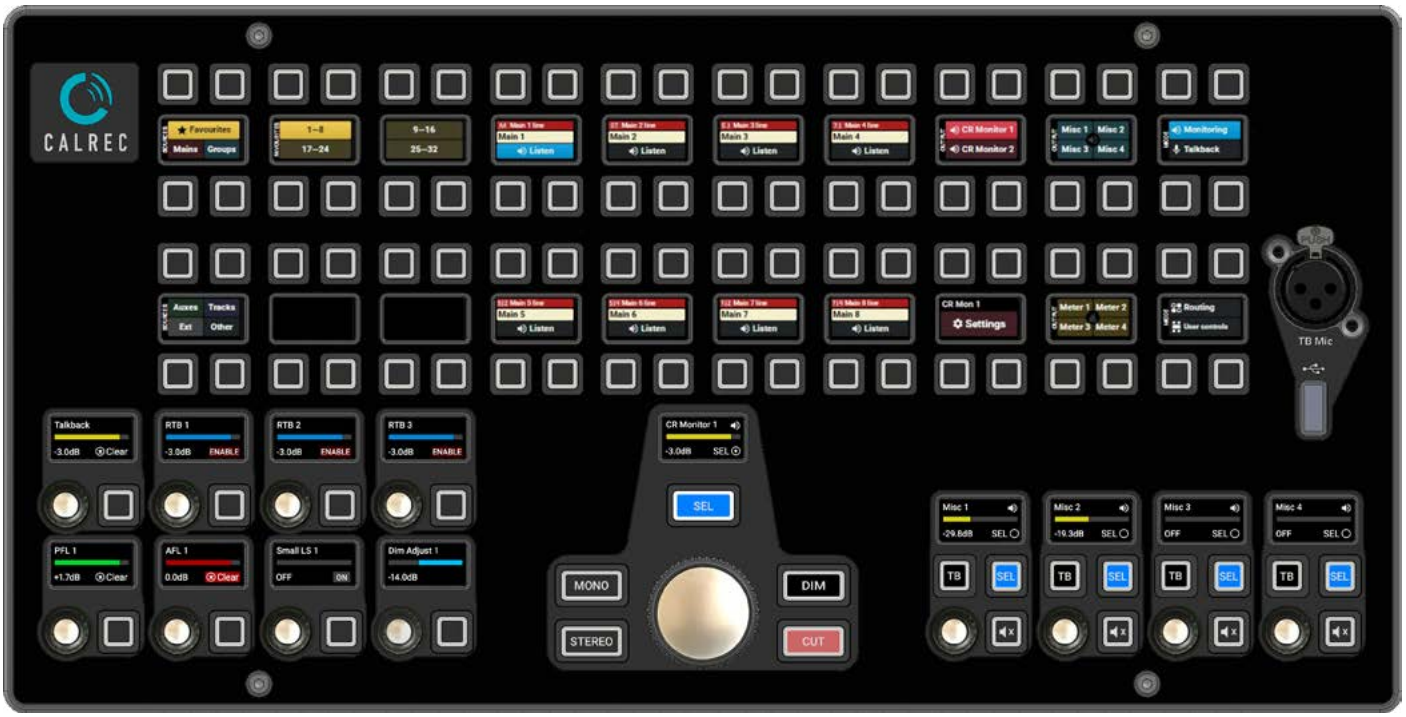
The MY6574 is 378.5mm wide x 190mm high. It is fitted with the following controls/displays, as shown in Fig. 5:
A large rotary control in the centre of the panel is used to provide control for the Main control room monitors, various buttons to CUT/DIM the monitor speakers, while the MONO/STEREO buttons change the width of the monitored signal. The associated Mini TFT display is used to show the current monitor source and level. The SELector button below opens the monitor source selection shown on the 20 sets of 4 button cells, which can be used to provide a variety of control options.

Placed to the right of the main monitor control, there are 4 misc monitor control sets, each of which has an accompanying Talkback button, a source SELector button, which operates in the same way as the main monitor SEL button described earlier, and a Mute button.

Note: the Mute button on Misc monitors may be configured to act as either a Cut or Dim control.

To the left of the main monitor control are 8 rotary control cells, arranged as 2 rows of 4 sets of rotary control cells, each of which contains a rotary shaft encoder control with integral switch. This is activated by pressing the top of the encoder down and holding. This is typically used to reset the parameter which the rotary control is controlling. It also contains a separate illuminating button and a Mini TFT Display per cell. Each rotary control cell can be configured to display and control the various continuous and switch parameters as required. On the far right of the panel is a USB connector for the user to import and export files, as well as an XLR connector, which can have a Talkback microphone fitted.

FIG. 5 - ARGO S & ARGO Q - MONITOR PANEL

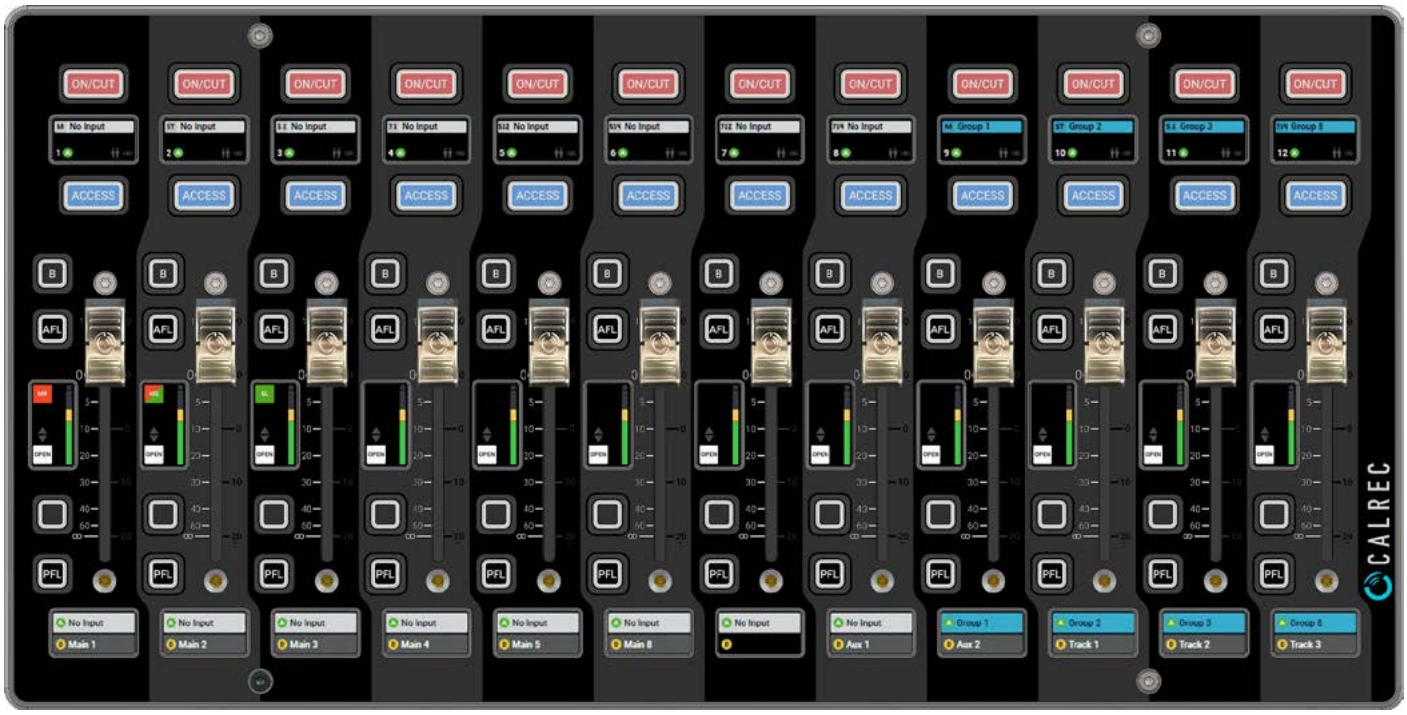


The IU6577 Short Fader panels can be fitted in the Argo S/Argo Q central control area. For the Argo S, and the reduced-height variant, one row of this panel type can be fitted. For the larger Argo Q, two rows of this panel type can be fitted to make up the required console layout.

The IU6577 is 378.5mm wide x 190mm high and is fitted with 12 x 65mm throw touch sensitive faders.
Each short fader strip also has the following controls/displays from bottom to top, as shown in Fig. 6:
Mini TFT layer display, PFL button, 1 user definable button, Mini TFT meter display, AFL button, B-Layer button (also user definable), Access button, Mini TFT fader display, and ON/CUT button, which can be software configured to light when the fader path is active (ON) or when the fader path is muted (CUT). The fader panel controls for a strip on the short fader panel are the same as on the standard panel, with the exception of Custom path-based functions button cell and 1 instead of 2 user defined buttons.

As well as providing more faders to the console without increasing the console width, this panel is also useful as a Spill panel, allowing the user to control the individual legs of a surround or immersive path.

FIG. 6 - ARGO S & ARGO Q - SHORT 12 FADER PANEL



The MU6762 TFT Touchscreen panel provides the Argo S/Argo Q with a graphical user interface to provide a 1920px X 1080px TFT video display and touch control/display of the console's various control parameters.
These panels are generally fitted across the required surface size.

The MU6762 is 378.5mm wide x 228mm high and uses a HD TFT screen to display rendered graphics and composited video data, generated on the section processor via the DP Display port 1.4 interface. It is fitted with a multi-touch digitiser circuit, also connected from the Section Processor via USB, that allows the user to select operations from a menu based GUI and to use touch control to adjust the console parameters.

It can also optionally display Input video via the Video SFP inputs on the section processor.

Fig. 7, shows an example of an interactive Equaliser page, with the sliders and buttons controllable via touch.

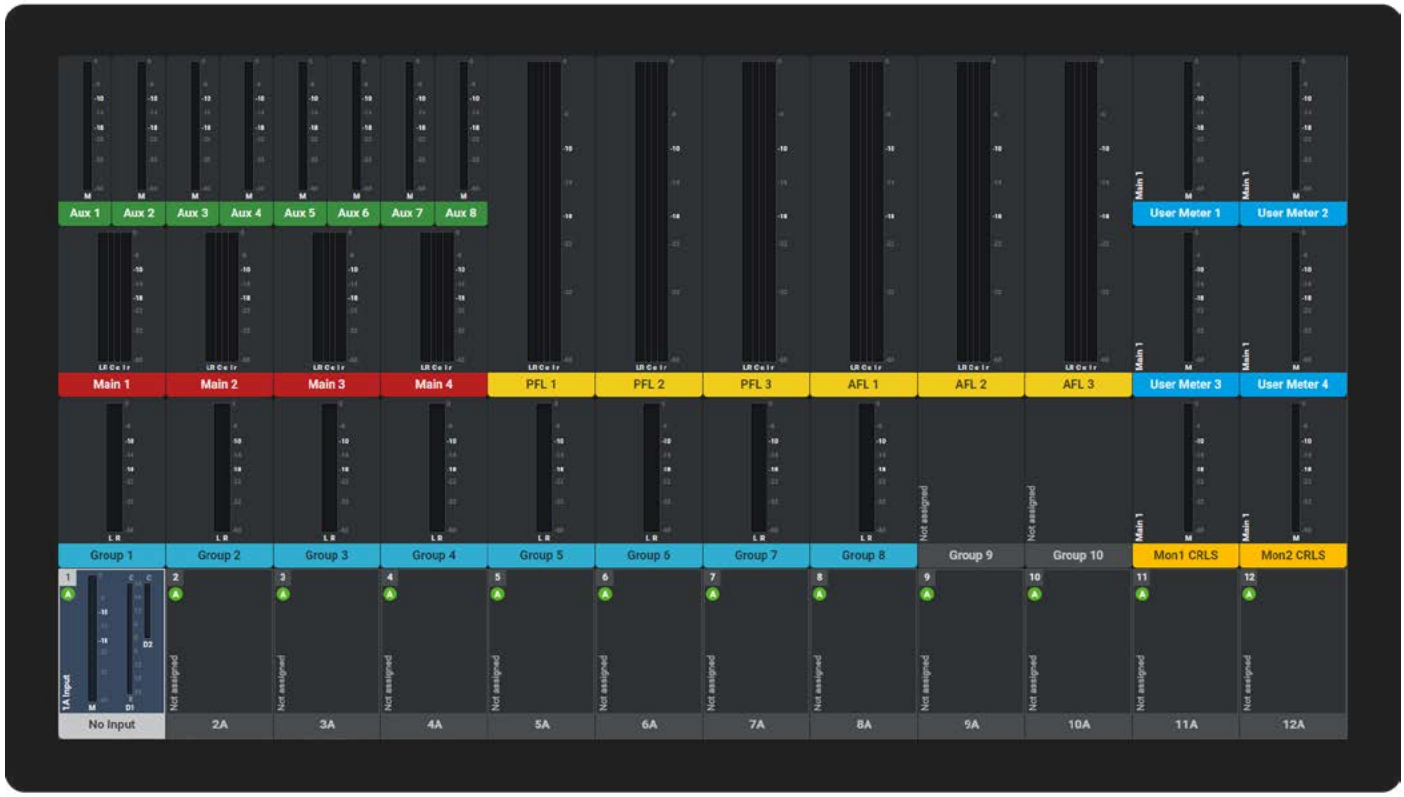
FIG. 7 - ARGO S & ARGO Q - TFT TOUCHSCREEN PANEL



The MD6772 TFT Meter panel provides the Argo S/Argo Q with a graphical user interface to provide a 1920px X 1080px TFT video display of the console's various audio input and output levels. Typically, the Meter panel shows audio metering displays. These panels are generally fitted across the required surface size.

The MD6772 is 378.5mm wide x 228mm high and uses the same HD TFT screen as the MU6762. It is primarily used to display Audio meters and optionally display input video via the Video SFP inputs on the section processor. Fig. 8 shows an example combination of Audio Metering and a 1/4 screen input video image. The TFT Meter display does not use the touch control circuitry as it is a display only module.

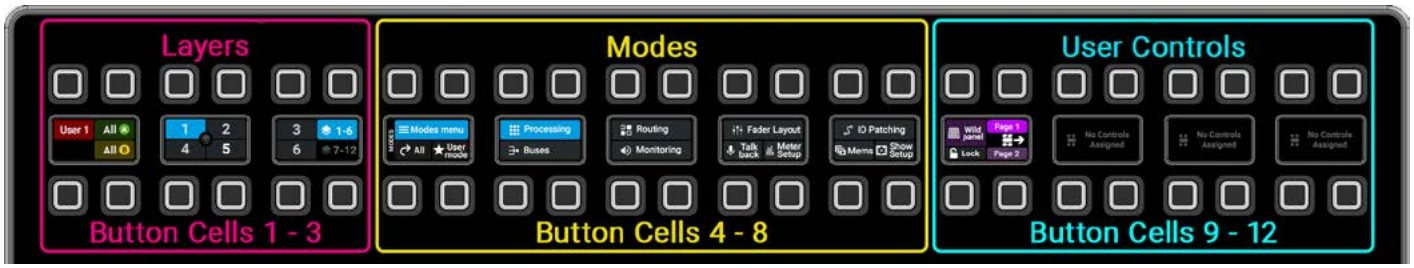
FIG. 8 - MD6772 - ARGO S & ARGO Q TFT METER PANEL



PANEL OPERATION

The Argo S and Argo Q sections that include the Wild Assign and Touchscreen can operate in different modes, four of which are commonly required for mixing. Users often set each section's panels across the console into these 'mixing' modes to make the most commonly used controls all visible simultaneously, in a layout of their preference.
The 'Mixing' modes available are: Processing, Routing, Buses & Monitoring.
These are selected from the Layers & Modes Row of the Standard fader panel, or from the Navigation controls in the Touchscreen UI.

FIG. 1 - LAYERS & MODES ROW ON STANDARD FADER PANEL



The Layers and Modes row is located on the top row of the IU6756 Standard fader panel and consists of 12 x 4 button cells with their associated displays, as shown in Fig. 1 and described below as Button Cell 1 through to Button Cell 12 from left to right on the panel.

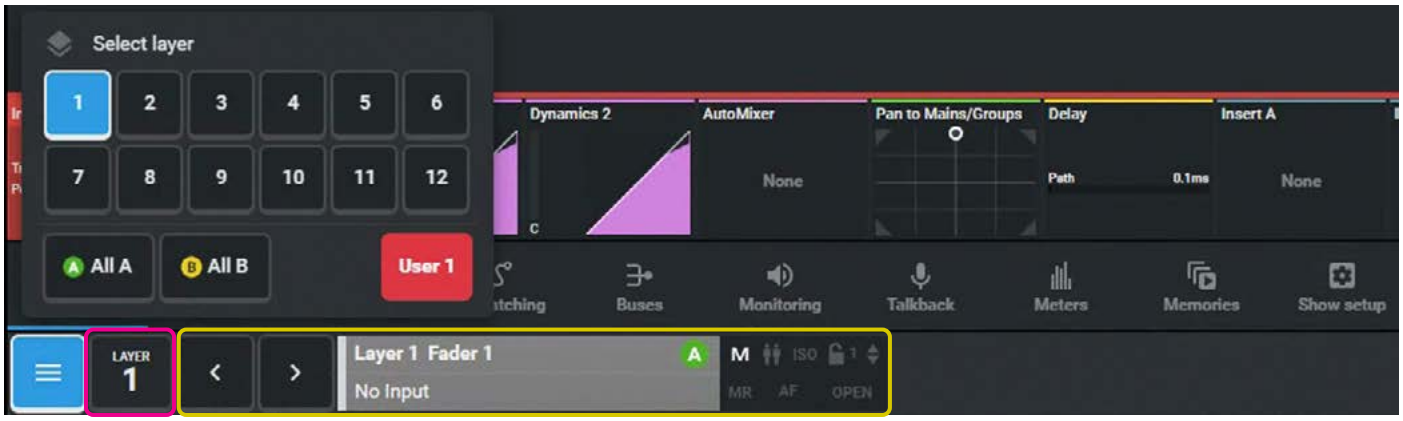
	Button Cell	
Layer Controls	1	**Layer Split/User Split** Sets the layer for this panel, and any others up to the next active Layer or User Split boundary, without affecting the rest of the surface. A maximum of three User Splits are available. When all in use, the user can Access three different faders at once, one on each User Split. For more information on **User & Layer Splits see Page X** **All A/All B** Changes all paths in that area to control all the A sub-layer paths or all the B sub-layer paths.
	2 3	Selects one of 12 A/B layers,. These are split into two banks of six, with bank selection available on the buttons on the far right of the cell.
Mode Controls	4	**Modes menu** When pressed, this allows access to all modes, including the 4 'Mixing' modes controlled from button cells 5 & 6, and the 'Setup' mode in cells 7 & 8. For more information on these see **"Fader Layout" on page 121.** **All** Applies the selected mode to all panels within the user split area. Applied by holding the desired mode button, before pushing the ALL button, or vice-versa. **User mode** Stores an arrangement of modes on the surface panels. To save a user mode for a single section, navigate to the desired mode before pressing the 'User mode' button for 1 second. The indicator will display 'Mode saved'. A short press on the 'User mode' will recall the saved mode to the section. Holding the 'All' button while saving will save the user mode for all panels within the user area. Holdering the 'All' button while recalling user modes will recall modes to all sections within the user area.
	5 6 7 8	When in the 'Modes Menu' these cells select one of the 4 'Mixing' modes or one of the 6 'Setup' modes. Once a mode has been selected these cells provide mode-specific controls. For more information see **"Control Panel Modes" on page 37.** Note: When in one of the 4 'Mixing' panel modes, the bottom of button cell 8 shows the Icons of the other mixing modes with direction arrows. This allows for quick navigation between the mixing modes without returning to the Modes menu and back to the required mode.
User Controls	9	**Wild Panel button** - Changes the function of the Wild assign panel above it from following the mode selected to a customised user control set. Where 2 wild panels are fitted, one of them will be in Wild Panel mode at all times. **Lock button -** Locks the panel to its current mode. It can be used in conjunction with the **All** button to Lock/Unlock every section in a user split area. **Page 1 & 2 buttons -** Navigate through the user defined functions in cells 10, 11 & 12.
	10 11 12	Buttons in these cells are user assignable under Show setup>Customise panels page.

TOUCHSCREEN OPERATION

Touchscreen Layers selection

The Layers section in Fig. 1 is displayed at the bottom of the Touchscreen UI. This area is used to select and display the various Layers available. The Layers section across the bottom allows for selection of the 12 A/B layers by tapping on the Layer button highlighted in magenta. This opens the 'Select Layer' dialogue box, allowing the user to change the current layer, or to select all the paths in this user's area (in this case User 1) to switch between all A paths or all B paths on the faders.

FIG. 1 - LAYERS ROW ON THE TOUCHSCREEN PANEL



To the right of the Layers select button is the current fader selection and information block highlighted in yellow. The middle area of this block informs the user the Layer Number, Fader Number, A/B sub-layer and Label of the currently accessed path in that user area. Tapping this block opens a copy of the fader layout called fader select, which provides a visual representation of all faders and all layers, showing the current path to fader assignment. This allows the user to select any path as the current access path. After selecting the required path, the fader select screen closes and the Fader information block is updated. Displayed to the right of the block are the various Icons that provide information about the current path, such as path width, clone , ISO, Lock, Null indicators, VCA status, AutoFader and fader open indication. The **<** & **>** arrow buttons on the left of the block allow the user to step through the fader selection.

Touchscreen Modes selection

The Modes section above the Layers section shown in Fig. 2 allows the user to select the various operational modes highlighted in Green and its related sub-modes above. For instance, this is currently showing that the user is accessing the Processing>Input pages. This is accessed by first tapping on the Processing Mode Icon and then on the Input Sub-mode (thumbnail image) just above it. Each Mode has its own set of Sub-modes placed above it and the Layers & Modes rows are shown in this manual for each Mode on both the Standard fader panel and the Touchscreen UI display.

Note: there is a blue menu button shown in the bottom left corner of the Touchscreen UI. When this is pressed, the Modes Row is hidden, providing more control space for the Sub-Mode pages, see Fig. 3. Press it again to re-display the Modes row.

FIG. 2 - MODES ROWS SHOWN ON THE TOUCHSCREEN PANEL

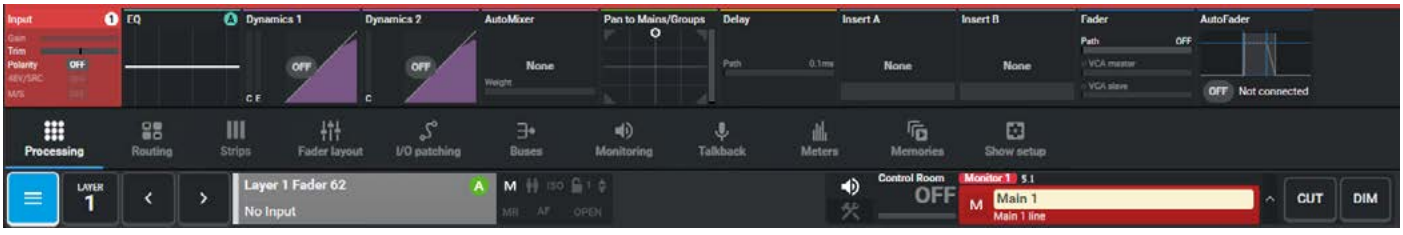
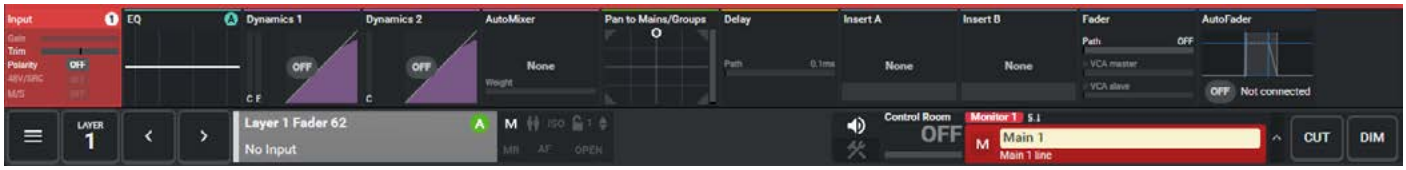


FIG. 3 - MODES ROW HIDDEN ON THE TOUCHSCREEN PANEL



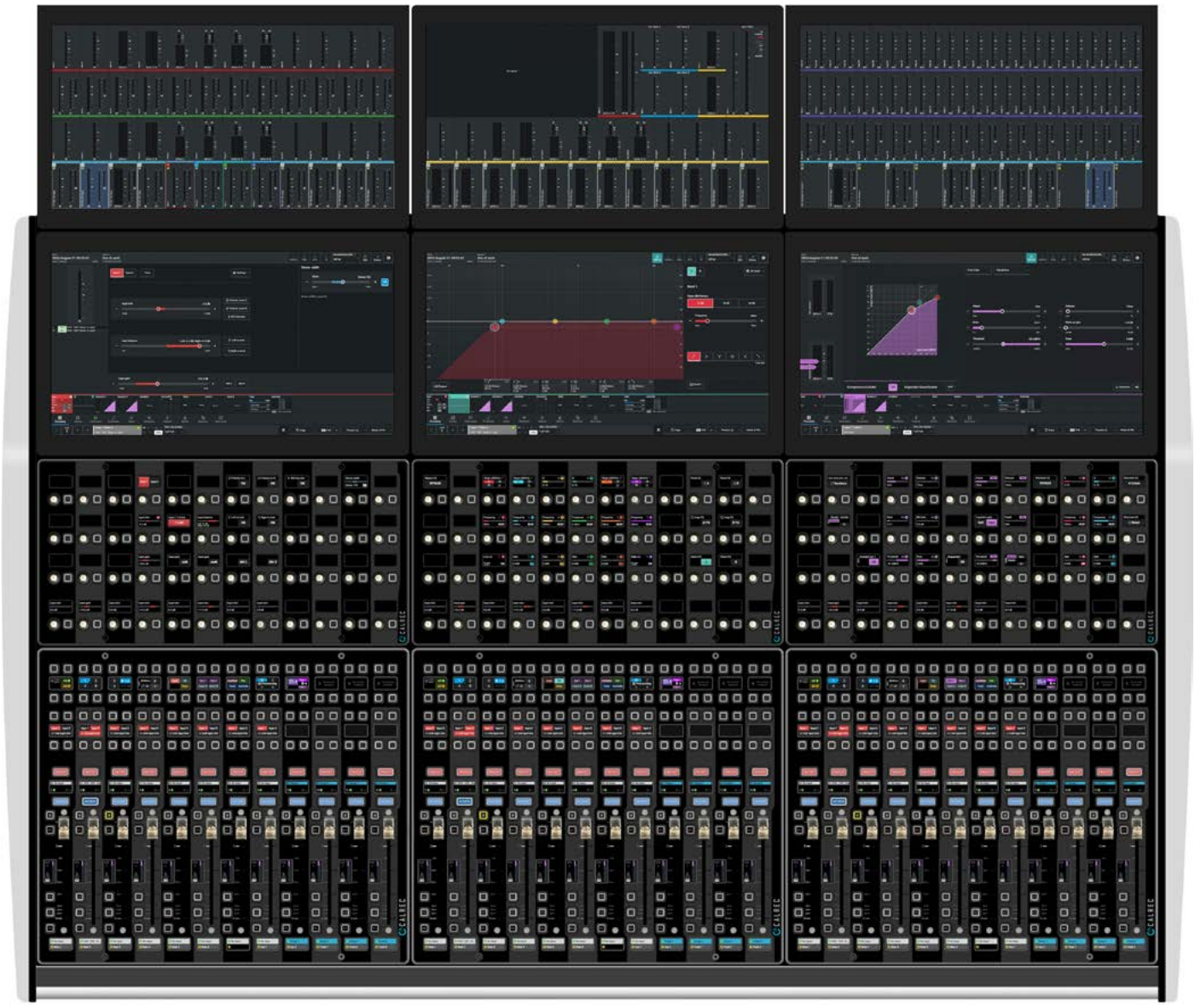
ASSIGNABLE MODES

Assignable modes

The Processing and Routing panel modes are two of the most commonly used modes. Both are assignable control modes, in that they display information for, and can adjust parameters of, the currently accessed audio path.

Unless user splits have been put in place for multiple operators, only one audio path is accessed at any given time. The currently accessed path is shown on the TFT touchscreen in the upstand when displaying either of the two assign modes. If the currently accessed path is on an active fader layer, it will be highlighted by its fader label display and its Access button will turn blue. The most common way to select an audio path to be the currently accessed path is to press the fader's 'Access' button. The actual controls available in an assignable panel mode may change depending on the type of audio path currently assigned. For example, mono and stereo paths have different available pan controls. Paths with analogue inputs patched to them have phantom power buttons, while paths with digital inputs patched to them have sample rate convertor buttons. If a Main output is the currently accessed path, fewer routing options are available than if a channel or group path is accessed. These controls appear on both the Wild Assign panel and the TFT touchscreen. Fig. 1 shows an example of various Modes placed on an Argo S console, with fader 2 being the currently accessed path. Section 1 is in Processing>Input mode, Section 2 is in Processing>Equaliser mode and section 3 is in Processing> Dynamics 1 mode.

FIG. 1 - 36 FADER ARGO S SHOWING DIFFERENT MODES



ACCESSING PATHS

An important concept of Calrec consoles is that of assignability. This allows control panels and the controls on them to be shared amongst all paths, reducing physical space requirements and providing quick and familiar access.

When a path is accessed, certain areas of the surface will display to allow control of the parameters of that accessed path. For example, any wild assign panels in an Assign mode will update to reflect values of the currently accessed path. Accessing a different path will alter these displayed values.

Accessing a path

Above each fader is a display accompanied by two buttons. These are the 'ACCESS' button and a 'B' button, shown in Fig. 1. The path display shows the name of the current A or B path being accessed. If a fader strip is accessed, the fader path's ACCESS button will turn blue. If it is set to access that fader's A path, its A path label is identified by the Green 'A', while the 'B' button will not be lit. If the B path is accessed, its B path label is shown, identified by the Yellow 'B' with the 'B' button showing as yellow. To switch between the A and B paths, toggle the 'B' button. Also note that the Label Display at the bottom of the fader strips can either show a label for the current sub-layer (A or B) or show both the A and B sub-layer paths for that layer, see **"Surface options" on page 125.**

The fader will now control the assigned path. The other areas of the surface that are set to respond to assignment will display and control the parameters of the accessed path.

Current Access Path and Overload indication shown on meters

When an Access button is pressed, the associated meter highlights in a matching colour to the blue ACCESS button and blue background for the Fader display. This is to further identify the currently assigned path. In addition, Fig. 2 shows that when a fader path (in this case fader 2A) is in signal overload, the meter background turns red.

FIG. 1 - ACCESS & B LAYER BUTTONS FOR PATH AND SUB-LAYER SELECTION

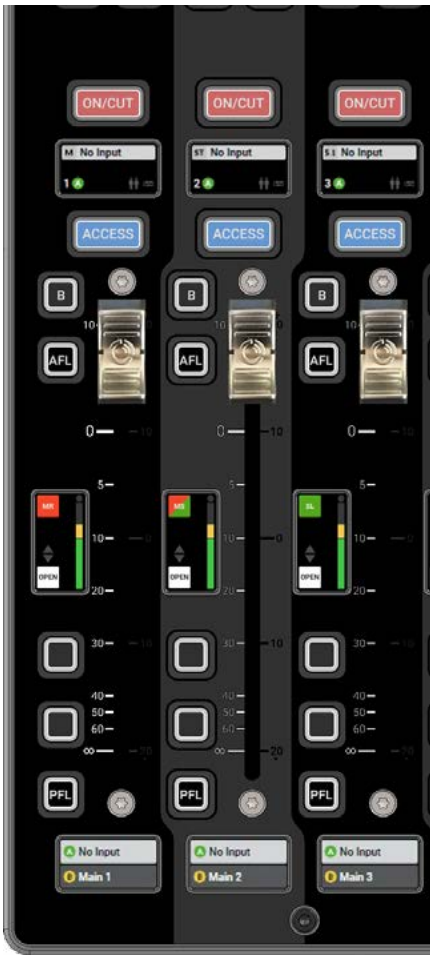
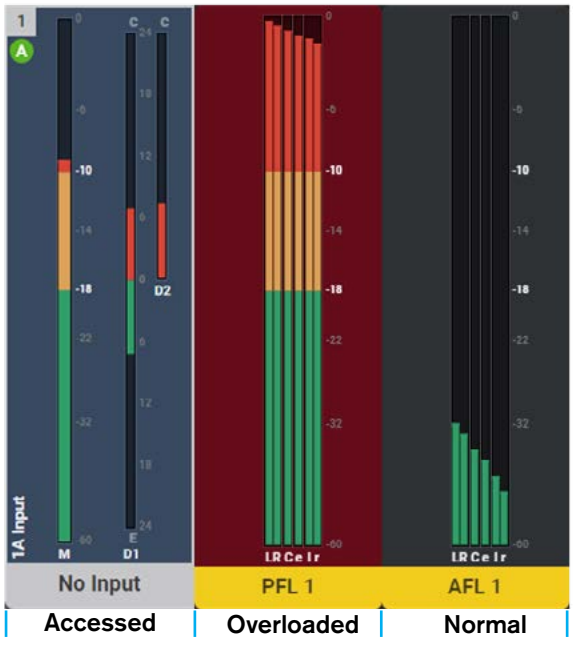


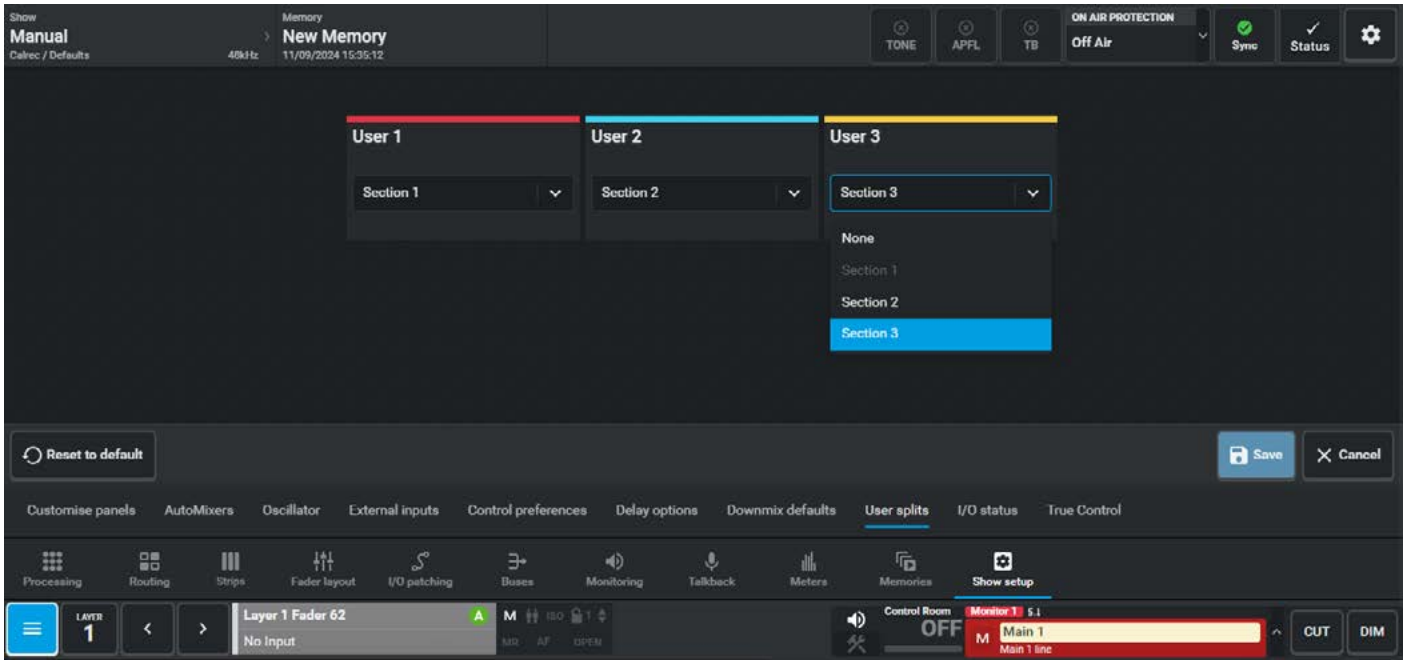
FIG. 2 - CURRENT ACCESSED PATH, SIGNAL IN OVERLOAD AND NORMAL STATES AS SHOWN ON FADER METERS



USER SPLITS

User splits allow the control surface to be partitioned, allowing multiple operators to work independently. User splits are also often used to separate an extended control surface or sidecar from the main control surface. A maximum of three user splits can be set across the combination of main console and extension/sidecar. User splits can be placed between Standard Fader panels to provide separate areas of control for up to three operators. User splits partition faders and the assignable panel modes Processing & Routing. The assignable panel modes can only affect the currently accessed path within their user area. Each area can have its own currently accessed path. Changing the accessed path within an area does not change or cancel the accessed path or focus of assignable panels, or their operating modes, in other user areas. Likewise, changing layers only affects faders within the user area from which the change was made. If multiple operators require their own monitoring, speakers/headphones can be fed from monitor output 1, monitor output 2 or miscellaneous monitor outputs, and each operator can then use the controls relevant to their area.
The PFL and AFL listen outputs of the faders within each user split can be selected to feed one of three different APFL bus sets, each of which can be patched to outputs for local monitoring. The two main monitors can be configured to be interrupted by different APFL sets, allowing each user to listen to their paths without affecting each other's monitoring, see **"Monitoring" on page 183** for details on configuring monitoring for multiple users.

FIG. 1 - TOUCH SCREEN IN SHOW SETUP>USER SPLIT MODE



Creating/removing user splits

User splits are managed under Show setup>User Splits, as seen in Fig. 1. Clicking on the 'User 1/ 2/ '3 dropdowns defines where to apply a 'Split', or where to remove an existing split, by selecting None. The choice of users 1, 2 or 3 applies the split to that panel and to those to the right of it. Tapping the 'Save' button applies the on-screen user split settings to the control surface. Alternatively, tapping 'Cancel' cancels any changes. The User split configuration is saved in the Show. Changes are not applied without tapping 'Save'.

Identifying User Split Locations

The location of active user splits is shown on the control surface in the upper left-hand button cell of the Layers & Modes row, in place of the Layer Split indication. If this display shows 'USER 1, 2 or 3', the panels to the left, if any, are in a different user area to the panel with the indication. Panels to the right, until another User split is reached, are within the user split, see Fig. 2. The User split indicator also appears on other pages and on the Argo Assist Fader Surface pages. A User split area must consist of adjacent panel sections. However, the User 1, User 2 & User 3 areas can appear in any order.

FIG. 2 - ACTIVE USER SPLIT DISPLAY



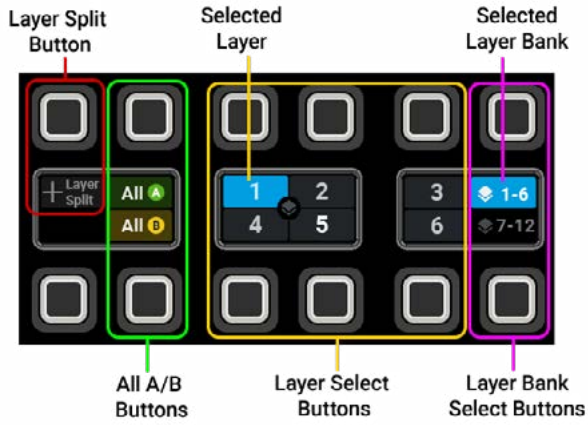
LAYERS

Argo consoles provide a comprehensive layers feature, to aid organisation and to allow paths to be quickly accessed. Layer selection is performed from the left side of the Layers and Modes row of any Standard Fader panel, shown in Fig. 1. The Layer controls are shown in the 1st, 2nd & 3rd button cells.

Layer Split

The 1st button cell on the Layers & Modes row is the 'Layer split' button. Touching this button on any panel inserts a layer split along the left-hand side of that panel. The button will light as an indication of the split. Any layer changes made to the left of the split will not affect faders to the right of the split. This applies to All A/All B selections too. Multiple layer splits can be placed across the surface, each obeying the same above rules.

FIG. 1 - LEFT SIDE OF LAYERS & MODES ROW



A/B Paths

Each fader provides instant access to two paths. These paths are known as the A and B paths, described in more detail in "Accessing Paths" on page 34. The ALL A /ALL B buttons on the Layers & Modes row are used to switch all faders to the A/B path. There are also 12 available layers on the surface. Each layer contains its own A/B paths. Layers can be switched using the numbered buttons on the Layers and Modes row, using the 2nd & 3rd button cells. The 12 layers are divided into two Layer Banks. The first layer bank contains layers 1-6 while the second contains layers 7-12. The bank and layer are highlighted when selected.

Using layers

Layers provide a flexible method for organizing paths on the surface. Layer 1, for example, may be configured to contain all main presenter microphones on path A and audience microphones on path B, while layer 2 may contain VT or server audio sources on path A. Switching between layers provides fast access to sources. Paths can appear on multiple layers simultaneously.

Layer Locking

A path can be locked to a fader and remain on the surface regardless of the selected layer. The Layer Lock can be applied in the Fader Layout page on the Touchscreen panel by selecting the path, before touching the 'Layer lock' button in the footer. Fig. 2 shows that Faders 2 & 3 on Layer 1 are locked. When a path is locked, a padlock icon appears in the path label display above the Access button, indicating that the lock is active. When a path is unlocked, the A/B display will display text to indicate the original layer location of the path, as it may not be the currently selected layer. The locked path will still remain in view until a different layer or All A/B selection is made. The User Splits 1, 2 & 3 created from the previous page are also shown in Fig. 2.

FIG. 2 - LAYER LOCK ON FADER LAYOUT PAGE



ARGO
CONTROL PANEL MODES

CALREC

PROCESSING MODE

The Processing mode comprises a set of viewing modes used to control the processing of the accessed path. It displays information for the path and can be used to adjust parameters of the currently accessed audio path.

The controls available in an assignable panel mode may change depending on the type of audio path accessed. For example, paths with mic inputs patched to them have additional gain and power controls, while paths with digital inputs patched to them have sample rate converter controls.

Fig. 1 shows the Modes row of a standard fader panel in Modes Menu>Processing>Input.

Note: the Routing Icon highlighted in magenta in button cell 8 in Fig. 1 allows for quick access to the other modes. Fig. 2 shows the available Input controls for the accessed path on the touchscreen.

Processing Mode functions include Input, Equaliser, Dynamics 1&2, AutoMixer, Pan, Delay, Inserts A&B, Fader and Autofader control. These are selected either by pressing the associated button on the modes row of the fader panel shown above in Fig. 1, or by touching the function from the touchscreen.

Processing icons show across the lower area of the touchscreen shown in Fig. 2. These icons show a thumbnail representation of each processing function. The Mode selection row below, which works in parallel with the Modes row on the Standard Fader panel, allows switching between the various modes. Also shown in Fig. 3 is the Processing>Equaliser mode, which displays the controls for band 3 of the 6 band equaliser, with its associated slider and button controls.

Details of each processing function are described in the Processing Audio section of this manual, see **"Processing Audio" on page 47.**

FIG. 1 - MODES SELECTOR SET TO PROCESSING>INPUT CONTROL

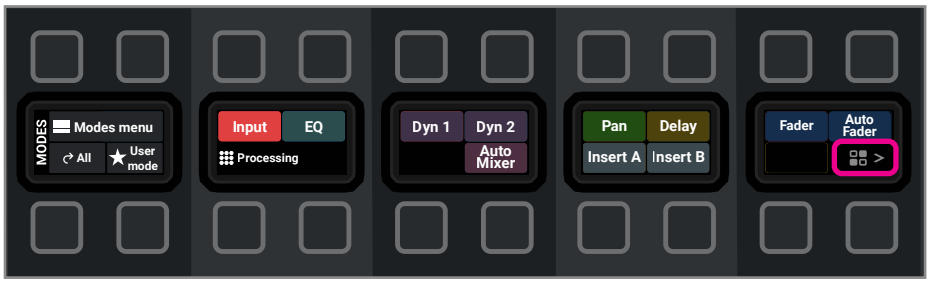


FIG. 2 - INPUT PROCESSING ON TOUCHSCREEN

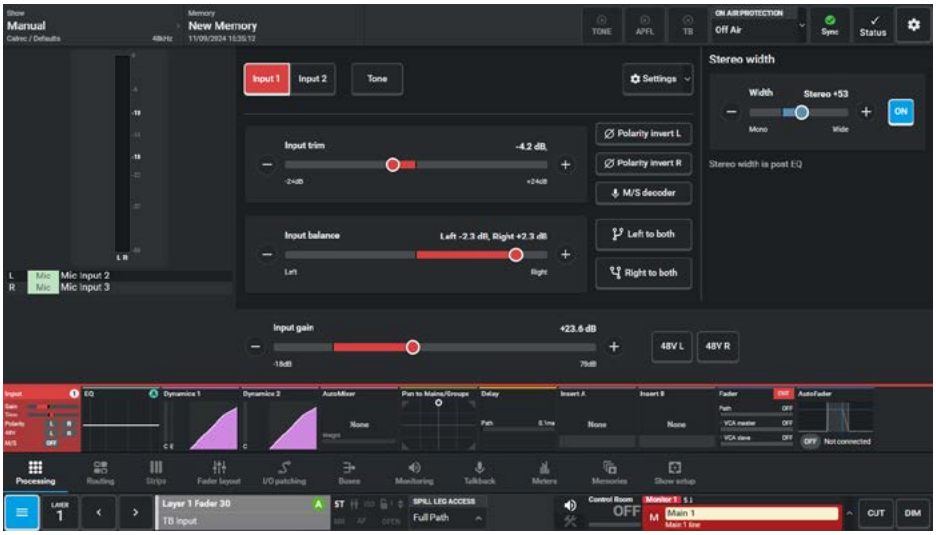
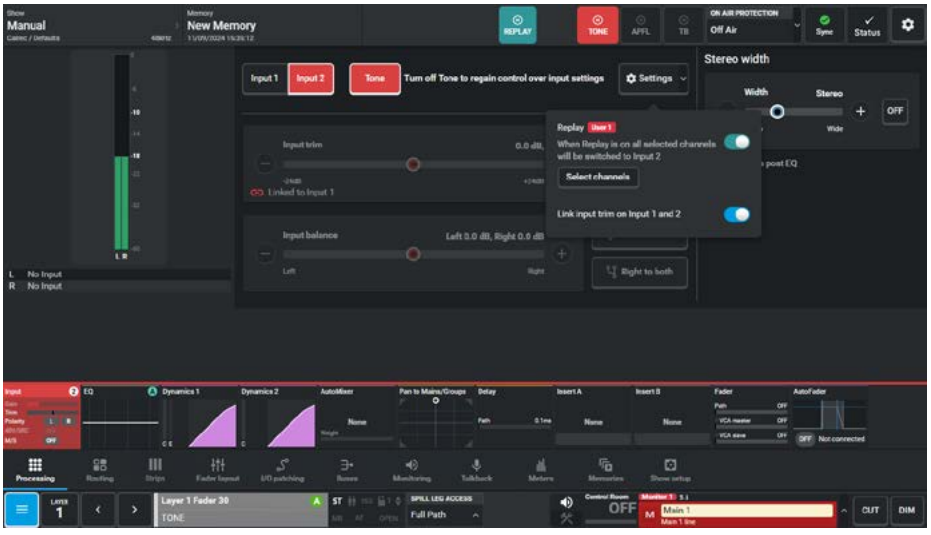


FIG. 3 - EQ PROCESSING ON TOUCHSCREEN



ROUTING MODE

The Routing mode is also an assignable panel mode, in that it displays information for, and can adjust parameters of, the currently accessed audio path.

This panel mode allows for the currently accessed path to be routed to the various buses and outputs that are available.

Fig. 1 shows the Modes row of a Standard fader panel in Modes menu>Routing>Mains mode. Here, the accessed path can be routed to any one of the 16 Main buses available on the touchscreen shown in Fig. 2.

Note: The Processing & Buses icons highlighted in button cell 8 in Fig. 1 allow for quick navigation between modes.

Some buses, such as Auxes, Tracks and Direct Outputs, also have send level controls when routed, as shown in Fig. 3 for Aux routing. In this example, the currently accessed path has been routed to Aux 3. The send level from the accessed path to Aux 3 is shown in the routing icon and is controlled from the slider & ON switch.

Any buses the accessed path is routed to are shown just above the Modes selection row on the touchscreen. These are displayed as Icons in blocks for each of the bus types. This includes Mains, Groups, Mix-Minus, Auxes, Tracks and Direct Outputs. When touched, these icon blocks work in parallel with the Modes Row on a standard fader panel, to change between the various routing types.

Details of each routing mode type are found under **"Routing Audio" on page 89.**

FIG. 1 - MODES SELECTOR SET TO ROUTING>MAINS CONTROL

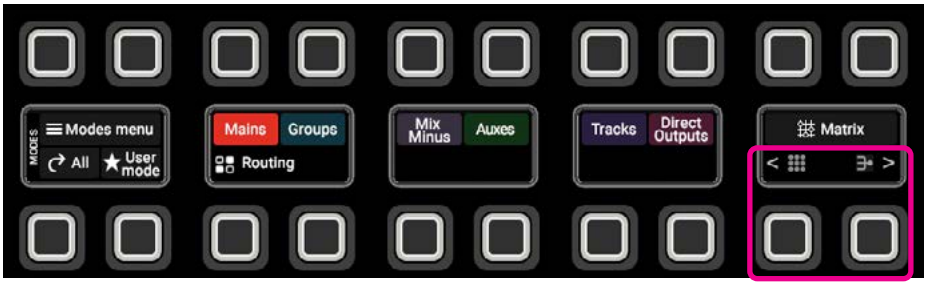


FIG. 2 - TOUCHSCREEN IN ROUTING>MAINS MODE FOR THE ACCESSED PATH

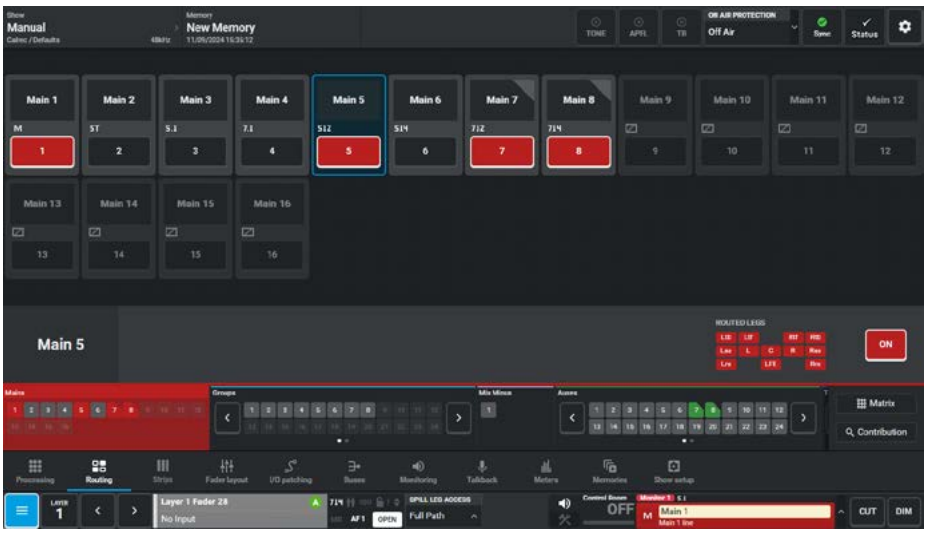


FIG. 3 - TOUCHSCREEN IN ROUTING>AUXES MODE FOR THE ACCESSED PATH.



BUSES MODE

The Buses mode provides controls for altering levels for Main outputs, Group buses, Track outputs and Aux outputs.

This mode also provides access to the Edit Buses page, from where multiple buses can be added and removed, bus widths configured and width changes locked. Fig. 1 shows the Modes row of a standard fader panel in Modes Menu>Buses Mode>Mains. The required bus output types are selected either by pressing the associated buttons on the modes row of the fader panel, after selecting Buses as shown in Fig. 1, or by touching the function selection from the Buses Icons row across the lower area of the touchscreen, shown in Fig. 2.

Note: see the Routing & Monitoring Icons highlighted in button cell 8 in Fig. 1. These icons allow for quick access to other modes.

The TFT display shows the various buses available in blocks of 24 per page, shown in the lower area, except for Main Buses, which have a maximum of 16 buses in one page. The upper area of the screen shows the name, width, current level and ON/CUT state of buses of the selected type. Tap the required bus to highlight it. Control parameters then appear in the middle area for adjustment. An important control is 'Access', which assigns the current bus as the Accessed path, even if the bus is not placed on a physical fader.

Fig. 3, shows the 'Edit Buses' page, which is selected from the 'Edit Buses' button shown in Fig. 2. This is used to add/remove buses from the console, set the buses to the various widths and to lock those widths.

Details of each Bus's mode type are described in the Buses section of this manual, see **"Buses" on page 171.**

FIG. 1 - MODES SELECTOR SET TO BUSES>MAINS CONTROL



FIG. 2 - TOUCHSCREEN IN BUSES>GROUPS MODE

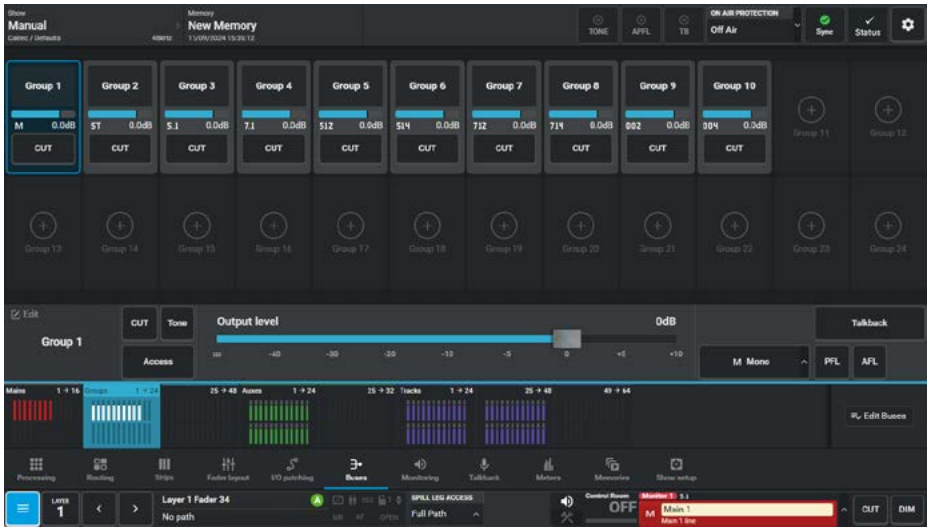
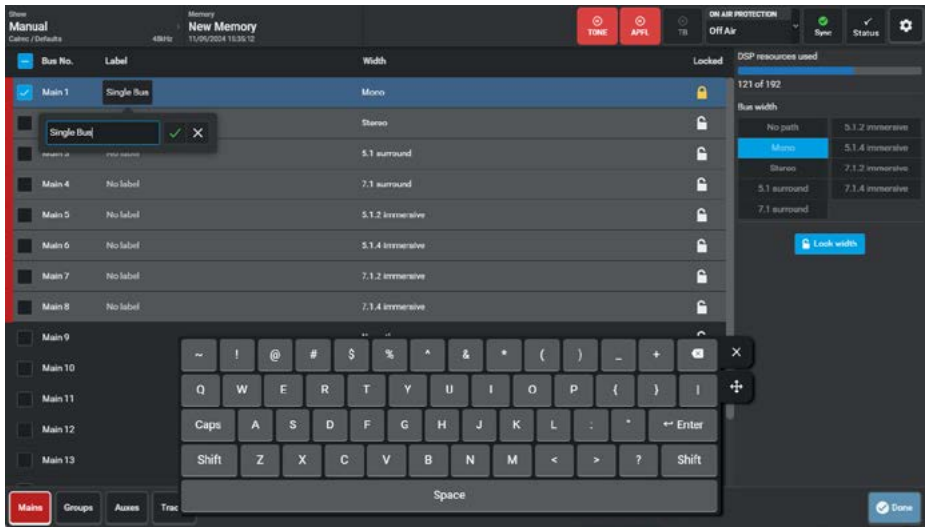


FIG. 3 - TOUCHSCREEN IN BUSES>EDIT BUSES GROUPS MODE



MONITORING MODE

The Monitoring mode complements the dedicated monitor panel, providing control over monitor configuration and source selection by providing monitor controls that can be accessed from any location on the control surface, along with provision for independent monitoring for multiple operators.

Fig. 1 shows the Modes row of a Standard fader panel in Modes Menu>Monitor Mode>CR1. The monitor outputs are selected either by pressing the associated buttons on the modes row of the fader panel, after selecting Monitoring mode shown in Fig. 1, or by touching the function selection from the Monitoring Icons row across the lower area of the touchscreen, shown in Fig. 2.

Note: see the Buses Icon highlighted in button cell 8 above. These buttons provide quick access other modes.

The TFT display shows the various monitor outputs available in the lower area. There are 2 Control Room Monitors (CR1 is not yet available with ImpulseV), 4 Misc Monitors for headphones, green rooms etc., 4 User Meters and controls for AFL, PFL and RTB/TB settings. The upper area of the screen shows the name and width of the selected monitor and the active source being listened to. Below this is a source list, each of which can be selected with a tap.

The middle & right areas of the screen display the various level controls and listening modes available to each of the monitor outputs. Fig. 3 shows the RTB/TB page, selected from the lower right side of the screen, showing:

- 3 Return Talkback level controls from the Studio back to the Control Room.
- Operator Talkback level control

Details for each Monitoring mode type are described in the Monitoring section, see **"Monitoring" on page 183.**

FIG. 1 - MODES SELECTOR SET TO MONITORING>CR1 CONTROL

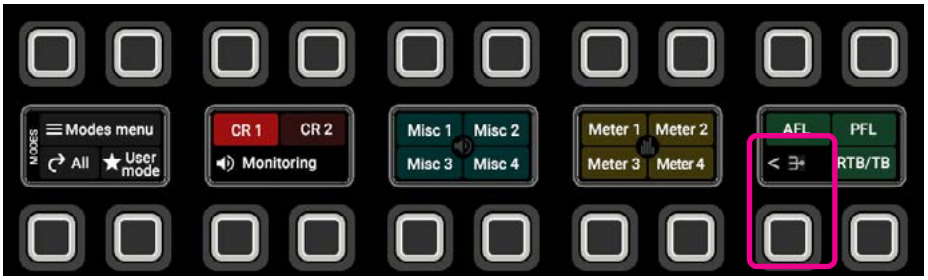


FIG. 2 - TOUCHSCREEN IN MONITORING>CONTROL ROOM 1 CR1 MODE

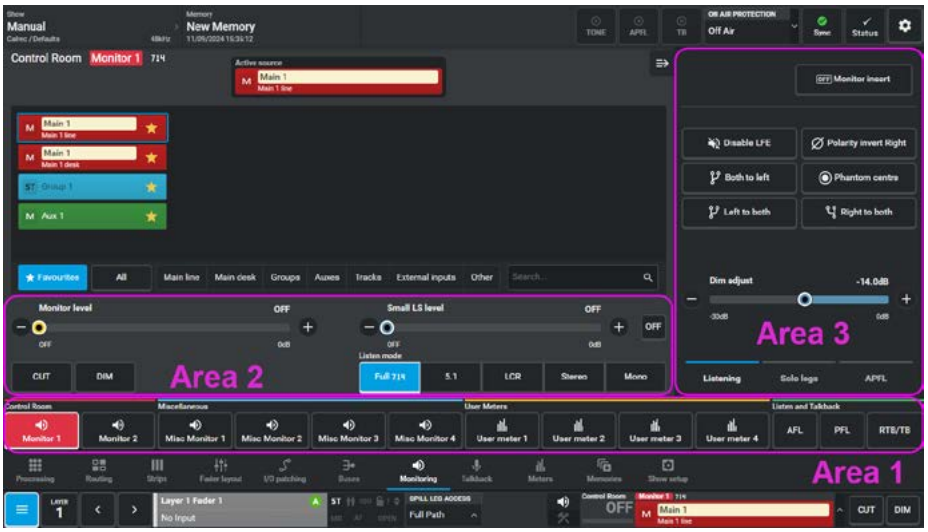
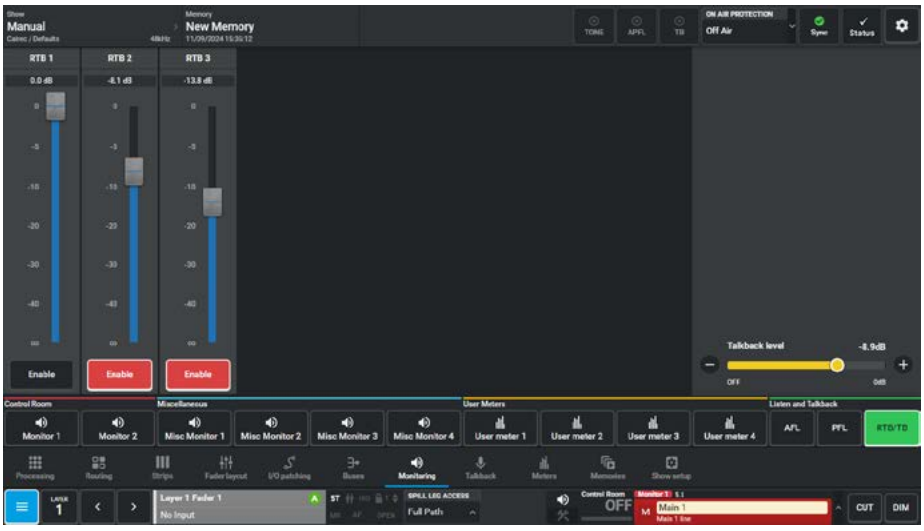


FIG. 3 - TOUCHSCREEN IN MONITORING>RTB/TB MODE



STRIPS MODE

Available from Argo v1.4 onwards, Strips mode provides a routing dashboard aligned with the physical faders, as well as mapping processing and routing controls across the Wild Panels and touchscreen.

Strips mode can be accessed from the fader panel Modes row, under Modes>Strips. The way in which each Panel behaves in Strips mode can be assigned in Calrec Configure. See the Configure guide for the relevant Impulse core for more detail.

Processing Controls

Once a section is in Strips mode, the controls available across the Wild Panels will respond to the options in the Layers & Modes row. The control categories available are:

- Input controls
- EQ
- Dynamics 1 & 2
- Pan to Mains & Groups
- Aux sends
- Track sends
- Direct outputs

Selecting one of these categories will map its controls across the fader and wild panels of the section. An example for EQ controls can be seen in Fig. 1 & 2, and more detail for the control provided across Strips mode in Fig. 3.

FIG. 1 - STRIPS MODE - WILD CONTROLS



FIG. 2 - STRIPS MODE - MODES ROW

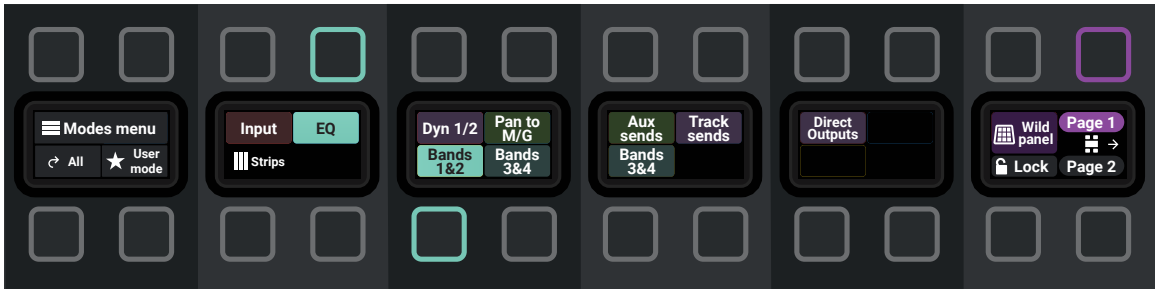


FIG. 3 - CONTROL PARAMETERS AVAILABLE IN STRIPS MODE

			Upper Wild/ Wild page 1	Lower Wild/ Wild page 2	Strip Buttons	Navigation Buttons
Input		1	Input trim	Polarity Invert L	Tone	
		2	Input gain	Polarity invert R	Input 2	Input mode select only
		3	Input balance	M/S decoder	48VSRC L	
		4	L/R to both	Stereo width	48V/SRC R	
EQ	Bands 1 & 2	1	Band 1 response selector	Band 2 response selector	Bypass EQ	Bands 1&2
		2	Band 1 slope selector	Band 2 slope selector	Bypass EQ	Bands 3&4
		3	Band 1 frequency	Band 2 frequency	Band 1 on	Bands 5&6
		4	Band 1 gain/on	Band 2 gain/on	Band 2 on	
	Bands 3 & 4	1	Band 3 response selector	Band 4 response selector	Bypass EQ	Bands 1&2
		2	Band 3 slope selector	Band 4 slope selector	Bypass EQ	Bands 3&4
		3	Band 3 frequency	Band 4 frequency	Band 3 on	Bands 5&6
		4	Band 3 gain/on	Band 4 gain/on	Band 4 on	
	Bands 5 & 6	1	Band 5 response selector	Band 6 response selector	Bypass EQ	Bands 1&2
		2	Band 5 slope selector	Band 6 slope selector	Bypass EQ	Bands 3&4
		3	Band 5 frequency	Band 6 frequency	Band 5 on	Bands 5&6
		4	Band 5 gain/on	Band 6 gain/on	Band 6 on	
Dyn 1/2	C/L 1 or C/L 2	1		Knee	C/L 1 on	C/L 1
		2		Make-up gain	C/L 2 on	E/G/D
		3	Release	Ratio	E/G/D on	C/L 2
		4	Attack	Threshold		
	E/G/D	1			C/L 1 on	C/L 1
		2		Depth	C/L 2 on	E/G/D
		3	Release	Expander ratio or Gate/ Ducker delay	E/G/D on	C/L 2
		4	Attack	Threshold		
Pan to M/G		1		Left-Right pan	Bypass pan	
		2	Non-LFE	Front-Rear pan	Bypass pan	
		3	LFE	Height pan	Centre only	
		4	Front divergence	Rear Left-Right pan	Link rear L-R pan	
Aux Sends		1	Aux send 1	Aux send 5	Auxes 1-8	Auxes 1-32
		2	Aux send 2	Aux send 6	Auxes 9-16	Auxes 33-64
		3	Aux send 3	Aux send 7	Auxes 17-24	Auxes 65-96
		4	Aux send 4	Aux send 8	Auxes 25-32	Auxes 97-128
			These controls will reflect the bank of Auxes selected from the Strip buttons. Auxes 1-8 are included as an example		*These controls will reflect the bank of Auxes selected from the navigation buttons. Auxes 1-32 are included as an example*	
Track sends		1		Send level D	Pre-EQ	
		2		Send level C	Pre-Fader	
		3		Send level B	Post-Fader	
		4	Pan to Tracks	Send level A	Split sends	
Direct Outputs	Dir O/P 1 & 2	1	Dir O/P 2 OPL	Dir O/P 1 OPL	DO 1 TB	Dir O/P 1 & 2
		2	Dir O/P 2 AFL	Dir O/P 1 AFL	DO 2 TB	
		3	Dir O/P 2 TONE	Dir O/P 1 TONE	DO 3 TB	Dir O/P 3 & 4
		4	Dir O/P 2 Level & TB	Dir O/P 1 Level & TB	DO 4 TB	
	Dir O/P 3 & 4	1	Dir O/P 4 OPL	Dir O/P 3 OPL	DO 1 TB	Dir O/P 1 & 2
		2	Dir O/P 4 AFL	Dir O/P 3 AFL	DO 2 TB	
		3	Dir O/P 4 TONE	Dir O/P 3 TONE	DO 3 TB	Dir O/P 3 & 4
		4	Dir O/P 4 Level & TB	Dir O/P 3 Level & TB	DO 4 TB	

STRIPS MODE - ROUTING VIEW

Strips mode provides a routing dashboard on the touchscreen where path routing can be quickly viewed and enabled/disabled. An example of the wide reaching functionality provided by Strips can be seen in Fig. 1.
This is divided into Mains, Groups, Auxes and Tracks. Routed buses are highlighted in colour, and unrouted buses remain grey. Buses which are unavailable for routing will be displayed in a disabled state. All available buses can be viewed using the bus range selectors below the routing indicators. The anatomy of strips in both the regular and expanded view can be seen in Fig. 2.

Bus types can be filtered using buttons along the bottom of the routing view, as highlighted in magenta in Fig. 1.

Routing can be altered in strips view by tapping a strip section to open the expanded view. In the expanded view routes can be enabled and disabled with a tap. Routed buses are highlighted in colour, while unrouted buses are displayed in grey, as seen in Fig. 2.

The routing view can be collapsed again by tapping the button at the bottom of the expanded view.

The Path label section displays the Fader number, A/B sub-layer, layer and labels. Where a path has been given a user label, this will override the system label. User defined path colours will also override the default colours and be reflected here. Paths can be accessed from Strips view by tapping this section. The currently accessed path is highlighted with a blue border.

FIG. 1 - STRIPS MODE - ROUTING VIEW

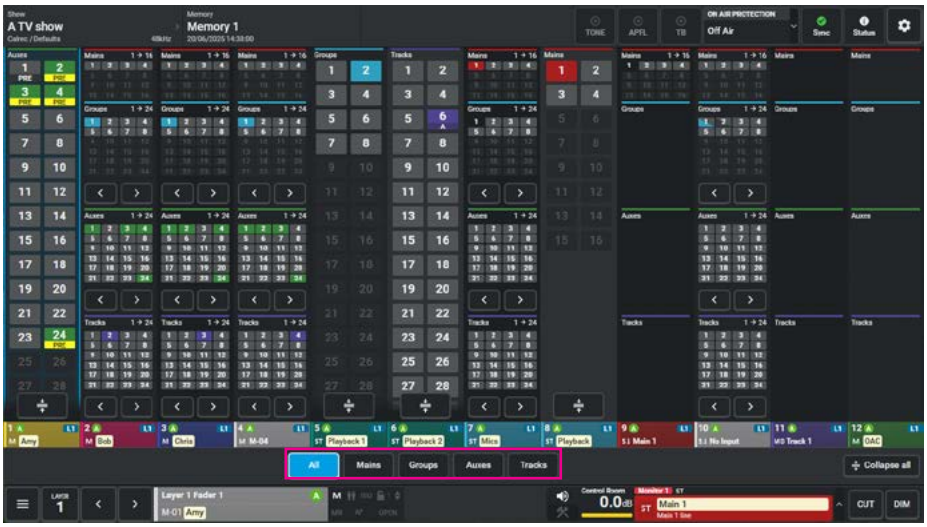
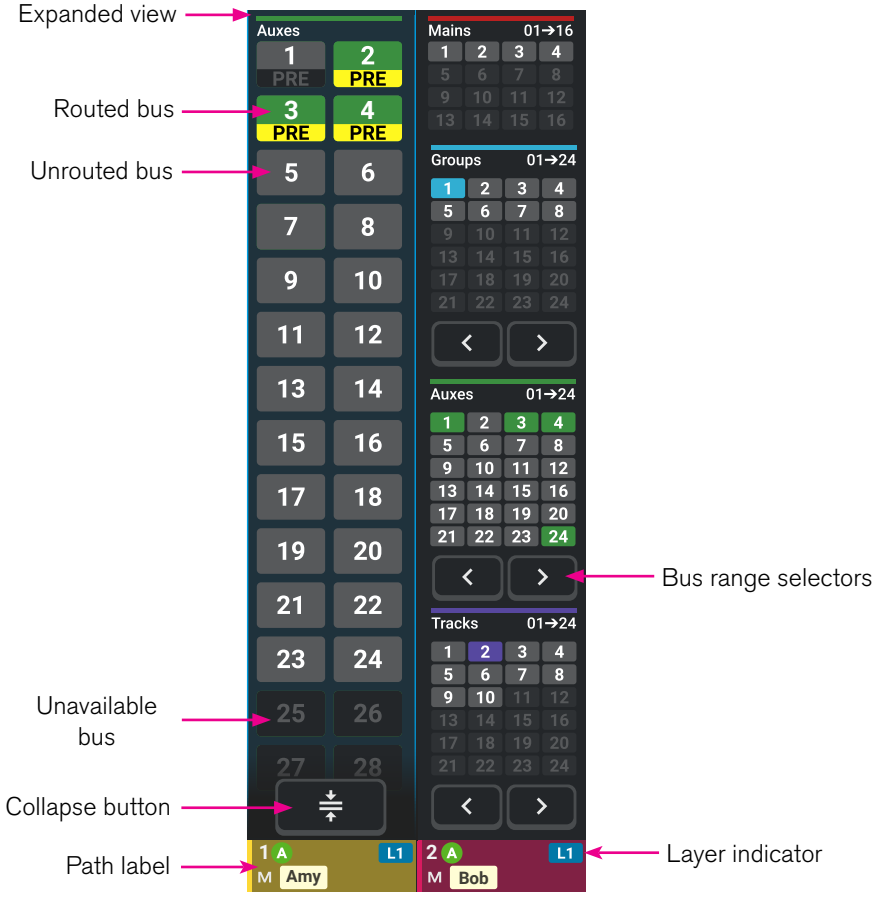


FIG. 2 - STRIPS MODE ANATOMY



Partial Routes
Where a path has been partially routed, this will be reflected in its routing indicator as seen in Fig. 3.

Routing Position
Routing position is reflected in the routing indicators for each path, as seen in Fig. 4. The 'Pre' icon indicates that a route is pre-fader.

Tracks - Split Sends
Where track sends have been split, active sends for each route will be displayed with the corresponding letter in the track route indicator, as shown in Fig. 5.

Spill Faders
Where 'Spill path', 'Spill contribution' or 'Spill VCA' is active, this will be reflected in the Strips mode. Spill faders will be highlighted through a crosshatched fill in their label, and labels reflecting the name of the leg attached to each fader. This can be seen in Fig. 6.

FIG. 3 - PARTIAL ROUTE INDICATORS



Half coloured indicator indicates a partially routed path



Fully coloured indicator indicates a fully routed path

FIG. 4 - SEND POSITION INDICATORS



'PRE' label indicates the route is sent pre-fader



No 'PRE' label indicates the route is sent post fader

FIG. 5 - SPLIT SEND INDICATORS



A/B/C/D labels show which split sends are in use

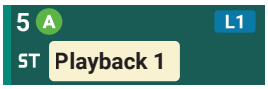


No A/B/C/D label shows that Track send is not split

FIG. 6 - FADER SPILL INDICATORS



Path labels when spill is active

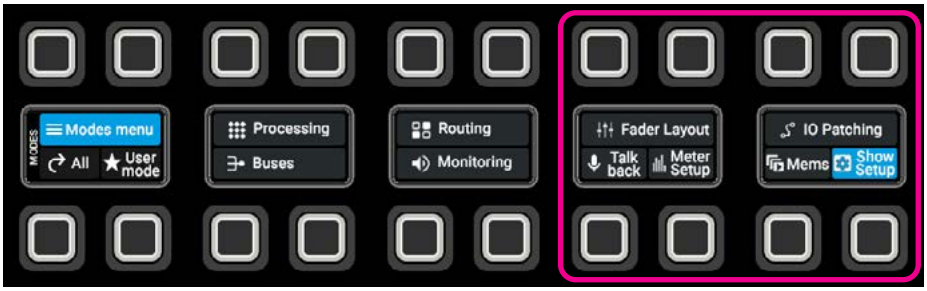


Path label when spill is not active

SETUP MODES

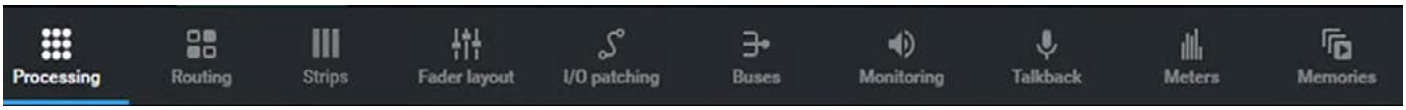
Control Panel Setup Modes are accessed by pressing the 'Modes Menu' button shown in the previous modes. These modes provide further access to the various Menu entries that are shown on the touchscreen.

FIG. 1 - SETUP MODES ACCESS



The four 'Mixing' modes are again shown for Processing, Routing, Buses and Monitoring. The 'Setup' modes refer to the further six modes shown in the highlighted button cells. When selected, these modes access the relevant menu items on the surface panels. Fig. 2 shows those menu items on the TFT touchscreen.

FIG. 2 - CONTROL PANEL MODES ON THE LOWER AREA OF THE TFT TOUCHSCREEN



Fader Layout Mode - This page is used to create and place paths onto the various layers of the control surface. It provides the abilities to move, clone, pair, label, lock and delete paths. VCA structures and User Wild Controls can also be created here.

Details of the Fader Layout mode are described in the Fader Layout section of this manual, see **"Fader Layout" on page 121.**

IO Patching Mode - This page is used to connect Sources to Destinations. A source can be a console DSP output, such as an Aux or Monitor output, while a destination can be a Console DSP input such as a channel or talkback input, an AoIP transmitter, VPB input or Port list output.

Details for the IO Patching mode are described in the IO Patching, see **"IO Patching" on page 157.**

Talkback Mode - This page is used to create up to 4 talkback sets, providing talkback to multiple destinations from a single button press. In addition, it can also be used to talkback to any of the destinations in the list.
Details for the Talkback mode are in the Talkback section of this manual, see **"Talkback" on page 205.**

Meter Setup Mode - This page is used to create and place meters onto each of the TFT upstand displays across the console. This includes Fader Meters, Bus Meters, Loudness Meters and Video inputs. Loudness settings are also set from the Loudness page.

Details of the Edit Meter and Loudness modes are in the Metering section of this manual, see **"Metering" on page 211.**

Memories Mode - This page is used to create user memories, which store processing, routing and IO patching information, and can be recalled at any time. This also allows the user to create a Cue list to stack user memories in a certain order, meaning they can be recalled in sequence.

Details of the Memories and Cues modes are in the Memories section of this manual, see **"Shows And Memories" on page 235.**

Show Setup Mode - This option, highlighted in Fig. 1, accesses another set of function pages related to the setting up of a show, including the following:

Customise Panels - assign/display custom configured functions on the selected button and rotary controls on the surface panels.

AutoMixers (not yet available with ImpulseV) - this allows the user to set the global controls for the eight Automixer masters for attack and release times.

Oscillators - this allows the user to set the level & frequency settings for the Mono, Stereo, Surround & Immersive tone generators, with optional idents.

External Inputs - this allows the user to create & configure the widths of inputs used to bring outside sources into the monitoring system.
Control Preferences - this allows the user to determine how various features behave, such as Spill Faders on a panel.
Delay Options - this allows the user to set the delay units to be displayed in Time/Frames and alter the Frame Rate/ Time settings.

Downmix Defaults - this allows the user to set the gain levels to be applied when downmixing from one format to another.

User Splits - this allows the user to partition the surface, allowing multiple operators to work on the same surface.

True Control - this allows the user to allow/protect faders from external control using Calrec's True Control.

Details of the various Show Setup functions are described in the Show setup section of this manual, see **"Show Setup" on page 251**

ARGO

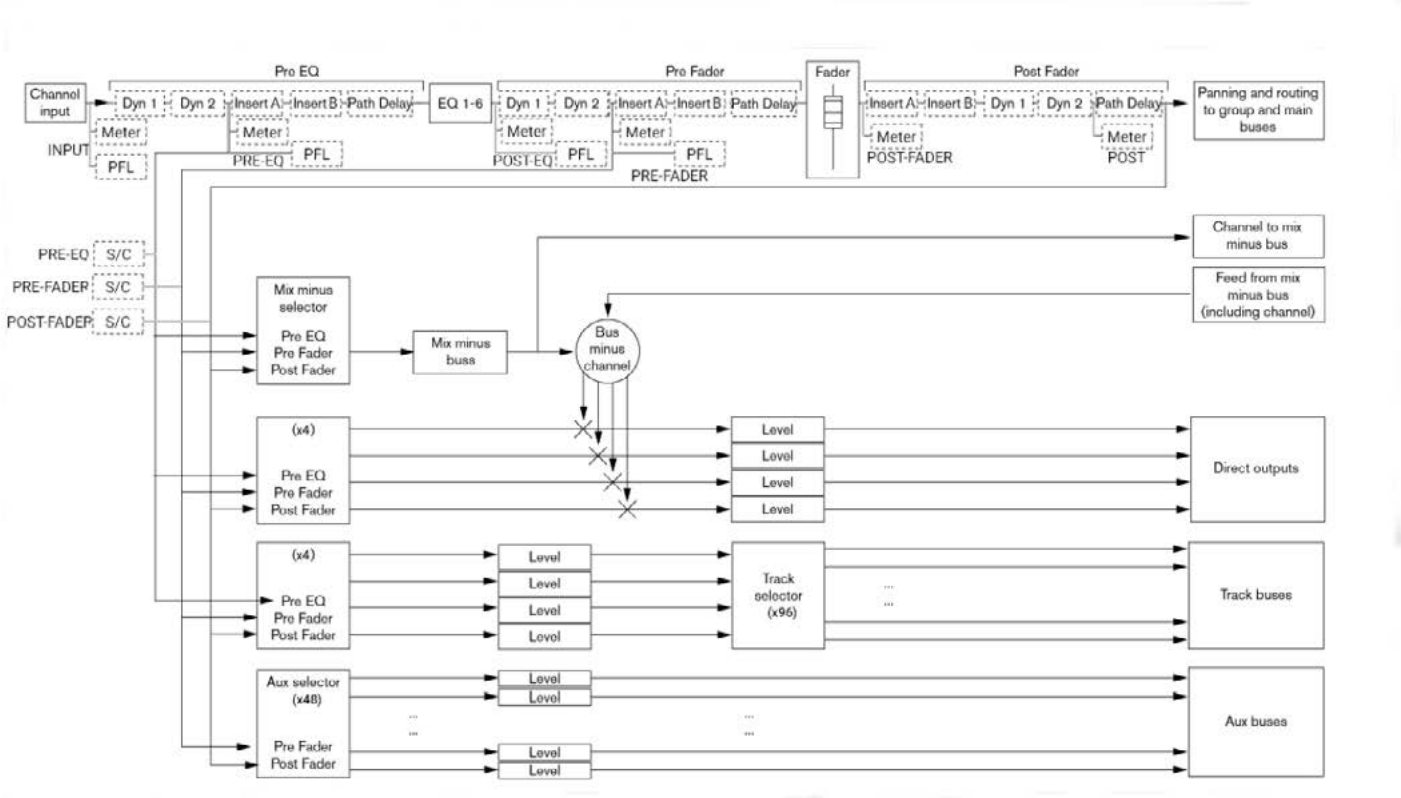
PROCESSING AUDIO

CALREC

CHANNEL SIGNAL FLOW

Fig. 1 illustrates the signal flow in an Argo channel path, showing how Inserts, EQ, Dynamics, Path Delay and the relevant send and output points can be positioned within the signal path.

FIG. 1 - CHANNEL SIGNAL FLOW



INPUT

The Input tab provides controls for the input signal once a path has been assigned to a fader.
Depending on the operating mode, controls may be accessible in various locations on the surface. This section will details the controls available on a panel in Assign Mode, using any of the standard Processing layouts. The Input controls are available on the touchscreen or from the Modes and Layers row of the Standard fader panel under Modes menu>Processing>Input, as shown in Fig. 1. This displays the Input mode with the same information also shown on the Wild Assign panel shown in Fig. 2, which shows a stereo input channel with Mic/Line inputs ported to it.

FIG. 1 - INPUT PROCESSING MODE SELECTED FROM MODES ROW

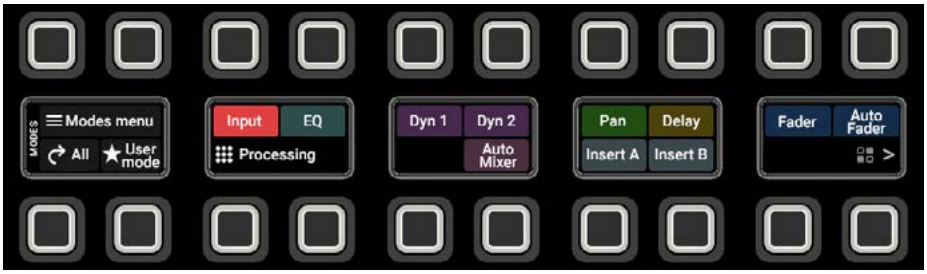
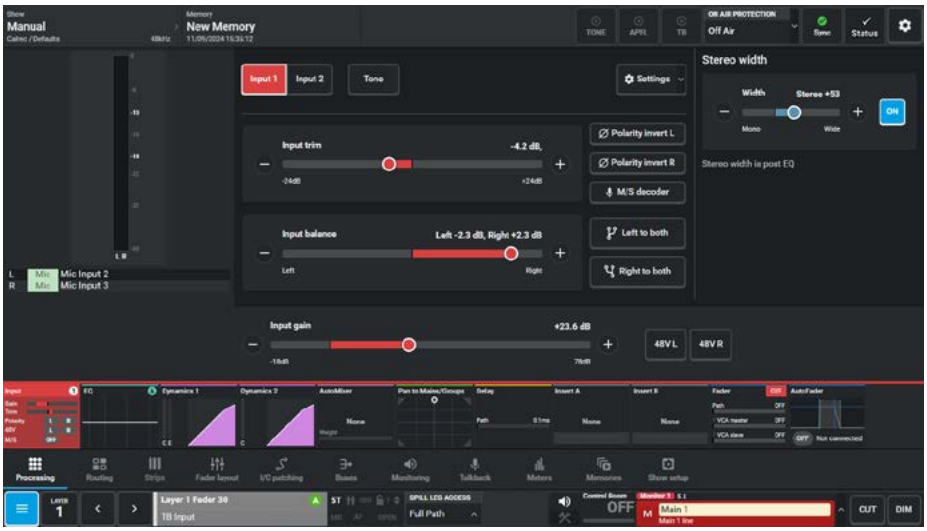
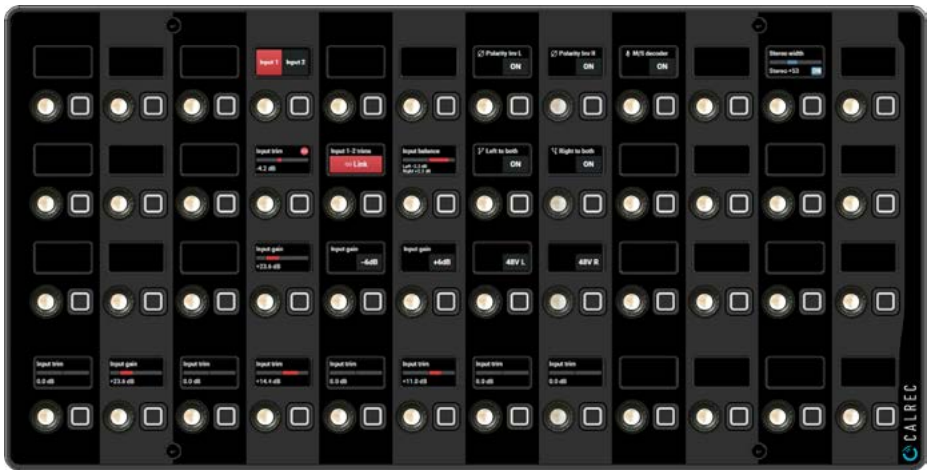


FIG. 2 - INPUT 1 CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL





Input Controls

Inputs 1 and 2: Each input channel can be quickly switched between two inputs using the Input 1 and Input 2 selection buttons. A common use for Input 2 is for backup microphones. This is useful because the backup microphone, using the same fader as the primary microphone, will have applied the same processing and routing controls as when using the primary microphone on Input 1.

Input Meter: This shows the Input signals being received by this path.

Input Ports: This shows the ports in use for this path.

Mic/Line gain: The gain of any connected mic/line input can be adjusted with this control. The gain range varies from +78dB to -18dB. Similarly, 48V power control button(s) are available.

This gain control alters the gain at the input port in an AoIP Device and will only be available to the owner of that port. Port ownership is discussed in **"Input and Output Port Protection" on page 167.** If the gain is not the same on all legs of a channel, the gain display will show the highest and lowest value.

±6dB coarse gain: These controls, shown on the wild assign panel, allow coarse gain adjustments to be made to the mic/line input gain. Pressing the + or - buttons boosts or attenuates the gain by 6dB respectively.

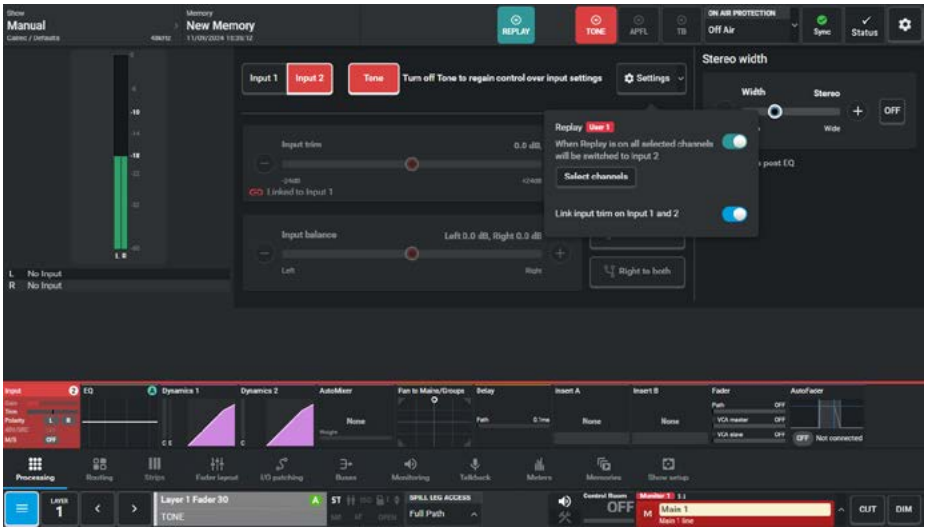
Input trim: This control boosts or attenuates an input signal by ±24dB inside the channel path. This is the only input trim control available for digital input signals and the only input trim control available for a receiver owned by another user. As the trim is applied inside the channel path, it has no effect on any other operators using the same receiver.

Input Balance & Width: If the accessed source is a stereo signal, an additional control to alter the left-right balance becomes available, as well as a Stereo width control, allowing for downmixing a stereo signal to a mono source, or to increase the signal's width if necessary.

Tone: This button on the TFT touchscreen inserts tone into the input of the channel path. When tone is applied to a channel, an indicator will appear on the input controls and the fader. Similarly, any meters relevant to the fader will act as a visual aid, informing the user that tone is active.

Linking Input Trims: Inputs 1 and 2 have separate input trim controls. These controls can be linked, either by pressing the Link button in the Input 1-2 trims button cell shown in Fig. 3, or by navigating to the Settings dropdown on the touchscreen, and using the slider switch, as shown in Fig. 3. Adjustment of a linked input trim control will be applied to both Input 1 and Input 2, maintaining any offset between them.

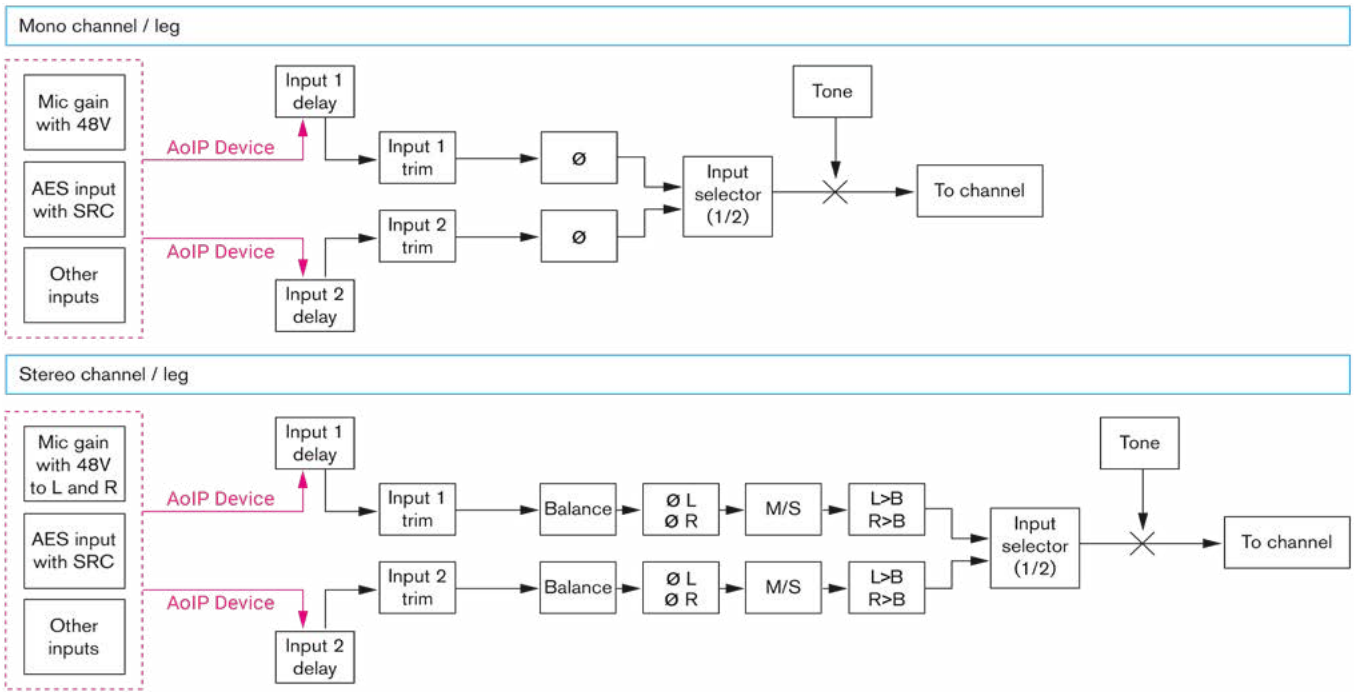
FIG. 3 - INPUT 2 CONTROLS ON TFT TOUCHSCREEN



Input 2: Fig. 3 shows the layout of Input controls accessed from the Input 2 button on either the Touchscreen or the Input 2 button on the wild assign panel. It shows that Input 2 is not yet ported. When the tone switch is turned on, the Input controls are disabled, dimming their displays. A 'Turn off Tone to regain control over input settings' message also appears.

Fig. 3 shows the input settings button in the top centre of the touchscreen. This allows the user to link input 1 & 2 trims, with the linked symbol appearing on the Input Trim control when linking is applied. Input 2 is often used for a backup mic to Input 1. As such, it is beneficial for the trims to be linked so they can track each other, allowing a changeover at the same signal level in the event of a mic failure.

FIG. 4 - INPUT SIGNAL FLOW



Replay Function
The other control accessed from the input settings button is the Replay On switch. This feature allows for the easy switching of a pre-determined set of paths between Input 1 and Input 2, within each user split. The primary use of replay is to provide a quick way to play back multi-track content over the same fader paths used for recording. This is achieved by patching each live audio source to a path's Input 1, with the corresponding recording device output patched to the path's input 2. All paths being used with the multitrack recorder are then added to the replay set, allowing their inputs to be switched between Input 1 and Input 2.

Adding Paths to the Replay Set
Paths can be added or removed from the Replay Set by pressing the **'Select channels'** button. This prompts the user to press the Access button above each fader, adding those channels to the Replay group.

Activating Replay, by sliding the Replay switch to the right, switches all paths within the Replay Set to Input 2, regardless of which input they were previously assigned to.
Deactivating Replay, by sliding the Replay switch to the left, switches all paths in the Replay Set to Input 1.

'Replay - on/off' and 'Replay - edit channels' can be mapped to surface buttons under Show setup>Customise Panels. See **"Customise panels" on page 252** for information on this process.

Note: the Replay function can also be cancelled by tapping the Replay indicator in the header.

The following controls allow for the manipulation of mono or stereo input signals only. Should a fader have a surround or immersive path assigned to it, each mono or stereo leg of this surround or immersive signal may be manipulated by accessing the relevant leg when spilled.

48V: 48V (phantom power) can be sent to each leg of the input signal using the 48V button (mono) or the 48L and 48R buttons (stereo). These are located on the Input column of the TFT touchscreen.

Polarity inversion: The polarity of the each leg of the signal may be inverted individually.

Input balance: The balance of a stereo input pair can be varied from +/- 3dB left/right, through centre stereo.

L>B and R>B: Path leg routing options L>B (left to both) and R>B (right to both) allow the user to route the left or right legs to both sides of a stereo channel.

With both switches in the off position, the left signal feeds the left leg and the right signal feeds the right leg of the stereo path. This is a 'normal' stereo setup.

Switching on L>B feeds the left signal to both left and right sides of the stereo path.

Switching on R>B feeds the right portion of the signal to both left and right sides of the stereo path.

Switching both on simultaneously sums the left and right portions of the signal together, outputting this on both the left and right legs. With both switches in the same position, either on or off, the user can access the input balance control. When both switches are off, the balance control responds as described above. However, with both controls switched on, the balance control becomes full range, i.e., turning the rotary control all the way to the left on the wild assign panel, or sliding the slider all the way to the left on the touchscreen. This outputs the left-hand signal only, from both legs of the path.

With either L>B or R>B switched on independently, the balance control is unavailable - it would have no effect, as the left and right portions of the signal would be the same.

M/S: If the input signal on a stereo input is presented as an M/S pair, it may be presented incorrectly, unless the M/S decoder is switched in. A button on the touchscreen toggles the decoder in or out.

SRC: Sample rate conversion may be turned on if an AES input is selected. This control is located in place of the 48V buttons, when a Digital Source is selected.

Signal flow
Fig. 4 on the previous page shows the signal flow for both an Argo mono input section and stereo input section, with input 1/2 selection.

Note: it is possible to change input controls for an AoIP Device which is offline. In this circumstance, it is important that console operators regularly save their User Memory to avoid losing settings once the AoIP device returns online.

Spill Leg Access: If the accessed path is wider than Mono, a dropdown box labelled 'Spill Leg Access', which normally says 'Full Path', appears to the right of the fader information block.

Opening this dropdown allows the user to access each spill leg's control parameters. In this case, this allows the user to apply offsets to the various input parameters per leg, with the legs arranged as follows:

- each L or R spill leg in a Stereo path.
- each LR, C, Lfe, Ls/Rs spill leg parameter in a 5.1 surround path.
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs spill leg parameter in a 7.1 surround path.
- each L/R, C, Lfe, Ls/Rs, Ltf/Rtf spill leg parameter in a 5.1.2 immersive path.
- each L/R, C, Lfe, Ls/Rs, Ltf/Rtf, Ltr/Rtr spill leg parameter in a 5.1.4 immersive path.
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf spill leg parameter in a 7.1.2 immersive path.
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf, Ltb/Rtb spill leg parameter in a 7.1.4 immersive path.

Note: a thumbnail view of the Input settings is also made available in the Processing>Input icon on the Touchscreen.

EQUALISER AND FILTERS

EQ controls are available to every Channel, Group, Main, Aux and Track signal path, without restriction. Each path has access to six full range, fully parametric, switchable response EQ bands.
EQ is available from both the fader panel or the touchscreen under Modes Menu>Processing>EQ, as shown in Fig. 1. This will also map the relevant controls to the Wild panel in the same section, as in Fig. 2.

The frequency range for all bands is 20Hz to 20kHz, with a gain range of -18dB to +18dB. The Q control for the bell curve can be set at 0.3, 0.5, 0.7, 1, 2, 3, 5, 7 or 10. For all other bands, the Q is set at 0.7. Each band has an associated On/Off button. Any band can be switched in or out of circuit using this associated button. When displaying an equaliser module, any control situated within the main content area affects the whole module, unless independence has otherwise been specified.

Note: when applying EQ to surround and immersive paths, the Lfe (e) leg is made independent by default. As such, this leg has its own independent equaliser controls.

Equaliser and Filter Controls

Having accessed Processing>EQ from the Menu, controls can be adjusted in a number of ways:

From the Touchscreen

- Dragging the sliders left and right for continuous controls.
- Using the + and - buttons at the end of the sliders.
- Using the on-screen buttons to select switch functions, e.g., On/Off.
- Dragging the numbered bands with their control circles on the graph.

The resultant numerical values are shown in the top right-hand corner of each control while also being reflected on the graph.

From the Wild Assign Panel

- Moving the Rotary controls round to the left or right.
- Using the button next to the rotary control to switch functions On/Off.
- Pressing the top of the rotary controls down to reset parameters to default.

The resultant numerical values & slider control displays are shown in each individual TFT on the Wild Assign Panel.

FIG. 1 - SELECTING EQ PROCESSING MODE FROM MODES ROW

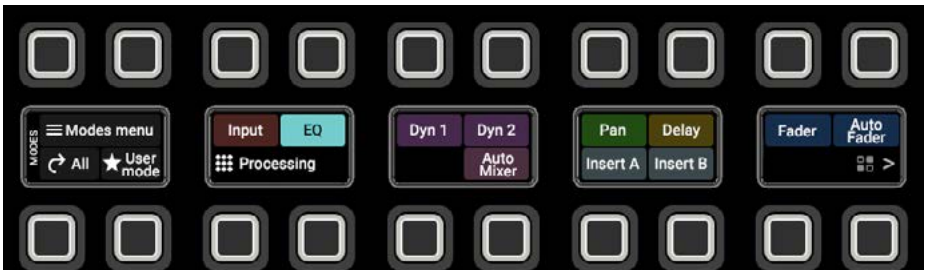
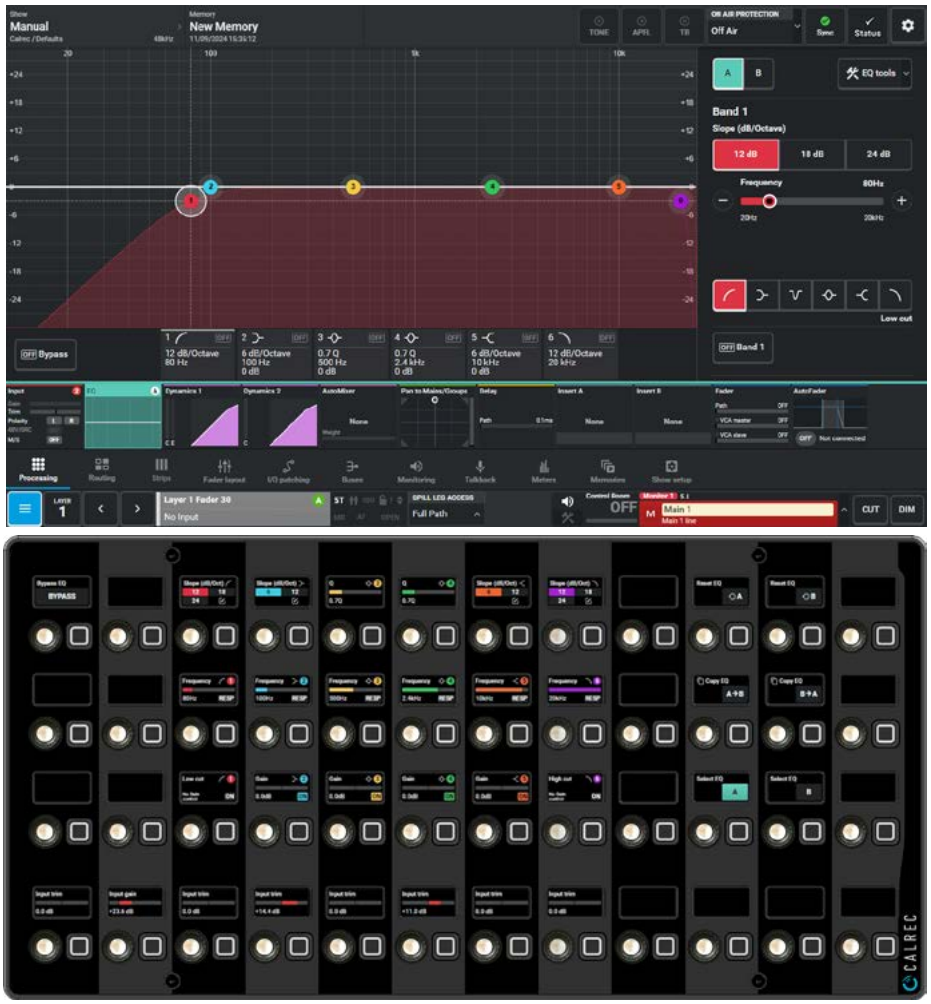


FIG. 2 - EQ CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



Touchscreen Controls
EQ bands are selected by tapping one of the EQ band tabs. This selection highlights that band in the EQ graph display.

The EQ controls to the right of the screen apply to the selected band. The graph instantly updates to reflect EQ parameter changes.

Bands 1 & 6 are by default set as Filters. However, their response can be changed to behave in the same way as EQ bands 2-5. When set to be Filters, Bands 1 & 6 can be set to apply a 12dB/Oct, 18dB/Oct or 24dB/Oct slope to the accessed path.

The 6 EQ bands can be set to any response type at any frequency and gain setting. However, it is good practice to set them in a logical, frequency-based order.

Wild Panel Controls
The 6 EQ bands are arranged left to right in columns across the panel. Three rows of rotary controls adjust the Slope or Q (from the top row), the frequency/response (from the middle row) and Gain/On (from the bottom row).

The various button controls are placed to the right of this, while the EQ Bypass button is placed top left.

EQ in/out of circuit: Fig. 2 shows that all EQ Band switches are off. As such, no EQ processing is in circuit, meaning the overall EQ curve is flat. Conversely, Fig. 3 shows that all EQ Band switches are on. As such, EQ processing is in circuit. Hence, the overall EQ curve follows the resultant shape from the active EQ bands.

Bypass EQ: Situated in the bottom left of the main content area and in the top left of the wild assign panel, the Bypass switch allows the user to quickly turn off any active EQ processing, as shown in Fig. 4. The Bypass indication also appears in the Processing EQ thumbnail, along with the overall EQ curve.

FIG. 3 - EQ CONTROLS IN CIRCUIT - STEREO PATH



FIG. 4 - EQ CONTROLS IN BYPASS - STEREO PATH



Band On/Off: This switches the selected EQ band in/out of circuit.

Slope: For Bands 1 & 6, this control offers different slope settings for both Low/High Cut filters and Low/High shelves. For Bands 2, 3, 4 & 5, this control offers different slope settings for Low/High shelves.

Q: This control sets the width of the frequency band for the selected response. The higher the Q, the narrower the bandwidth. This is valid for any band with a Bell response.

Frequency: This control sets the frequency around which the selected EQ band operates.

Gain: This control sets the gain increase or gain reduction for the selected band, with the exception of bands set as Notch filters or Low/High Cut filters for Bands 2, 3, 4 & 5.

Response: This allows the user to select the desired EQ response curve for the selected band, from low/high cut filter, low/high shelf, notch and bell.

Note: equaliser response type selection is highlighted in Fig. 3.

EQ A/EQ B Comparison: This control allows the user to compare two EQ setups. Tapping the **A/B** button switches the set-up between EQ A and EQ B. The user can change the parameters within each setup as required, switching between the two setups to compare and adjust accordingly.

EQ Tools (Touchscreen)
Tapping this button, as shown in Fig. 5, displays the following options:

Copy EQ - Copy A to B & Copy B to A
These controls allow the user to duplicate EQ settings. The EQ A/B switching buttons in the side panel, and the related buttons on the Wild Assign panel, allow the user to quickly switch between the two setups. By copying the EQ settings of one setup to another, and modifying EQ A or EQ B, the user can audition subtle differences in EQ, comparing and contrasting the different setups.

Reset EQ - Reset A & Reset B returns all the EQ A or EQ B settings to their default values respectively.

Note: see the Equaliser A/B Comparison and EQ Tools areas in Fig. 5.

Equaliser Independence Controls
For Multichannel paths, such as stereo, surround or immersive paths, it is possible to apply equaliser processing independently for:

- each L or R spill leg in a Stereo path.
- each LR, C, Lfe, Ls/Rs spill leg parameter in a 5.1 surround path.
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, spill leg parameter in a 7.1 surround path.
- each L/R, C, Lfe, Ls/Rs, Ltf/Rtf spill leg parameter in a 5.1.2 immersive path.
- each L/R, C, Lfe, Ls/Rs, Ltf/Rtf, Ltr/Rtr spill leg in a 5.1.4 immersive path.
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf spill leg in a 7.1.2 immersive path.
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf, Ltb/Rtb spill leg in a 7.1.4 immersive path.

FIG. 5 - EQ CONTROLS COPY A TO B OR B TO A



FIG. 6 - MULTICHANNEL EQ CONTROLS ON TFT TOUCHSCREEN



FIG. 7 - MULTICHANNEL INDEPENDENCE TABLE ON TFT TOUCHSCREEN

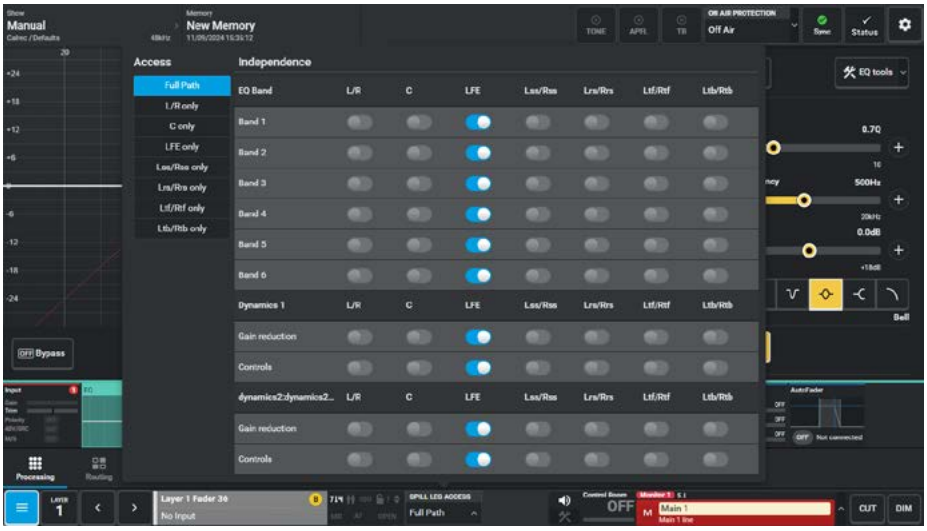


Fig. 6 on the previous page shows the EQ display for a 7.1.4 path. In the path footer is a dropdown box labelled 'Spill Leg Access', which normally says 'Full Path'.

Tapping this box opens the independence control table shown in Fig. 7 on the previous page. This determines which spill leg controls will be made independent of its multichannel master, for any of the 6 EQ bands shown in the table. For example, the user may want some EQ bands to act independently, while wanting others, such as filters, to track with the master.

Toggling the desired switches makes those controls for the chosen spill leg become independent of the master. Fig. 7 shows that all the control switches for the 'LFE only' leg are set to independent. This is by default. Fig. 8 shows that the user has selected the 'LFE only' leg. Selecting this spill leg before tapping outside the independence pop-up will display the equaliser controls for the Lfe spill leg, as shown in Fig. 8.

Tapping the 'Reset independent EQ bands' switch, located in the top right of the display and visible only when applying EQ to spill legs, resets the Q, Frequency, Gain and Response Curve to their default settings for all independent EQ bands of the spill leg(s) accessed. If the user attempts to apply EQ to spill legs that have not yet been made independent using the Independence control switch table, all controls are made unavailable and the 'Controls linked to path master' message appears.

To return to full path tap on 'Spill Leg Access' and select 'Full Path'.

Fig. 9, shows the EQ Response types along with their parameter ranges.

FIG. 8 - INDEPENDENT EQ CONTROLS FOR LFE ONLY LEG OF A 7.1.4 PATH



FIG. 9 - EQ RESPONSE TYPES AND RANGE PARAMETERS

	Gain Range	Q or dB/Octave
High Pass	N/A	12dB, 18dB or 24 dB/octave on Bands 1 & 6 else 6db/octave
Low Shelf	+18dB to - 18dB Variable	6dB or 12dB/octave
Notch	-30dB Fixed	22.2
Bell	+18dB to -18dB Variable	0.3 to 10
High Shelf	+18dB to -18dB Variable	6dB or 12 dB/octave
Low Pass	N/A	12dB, 18dB or 24 dB/octave

DYNAMICS 1

Every Channel Input, Group bus, Main bus, Aux bus and Track bus has two Dynamics processors available to them. For Channels, Groups and Mains, there is also available an associated sidechain equaliser, with sidechain listen and a sidechain source selector. The Dynamics 1 processor can be placed Pre-EQ/Pre-fader or Post-fader. It can run standalone or be linked to any of the eight Gain Reduction buses available.

Dynamics 1 is available from both the fader panel or the touchscreen under Modes Menu>Processing>Dynamics 1, as shown in Fig. 1 & Fig. 2.. This will also map the relevant controls to the Wild panel in the same section, as in Fig. 2. The Dynamics 1 control layout used here is that which is available in the standard mode.

The Dynamics 1 display is arranged in 3 blocks:

- Compressor/Limiter controls for ON, Threshold, Ratio, Attack, Release, Gain Make-up and Knee.
- Expander/Gate/Ducker controls for ON, Threshold, Ratio, Attack, Release, Depth and Delay for Gate and Ducker via the Mode selection buttons.
- 1 or 2 bands of Dynamics sidechain EQ controls for Gain, Frequency and Q/Response types, selected via the Sidechain buttons.

Compressor/Limiter 1

Compressors/Limiters provide controls for the reducing and smoothing of the dynamic range of an audio signal. Both dynamics modules can be used as limiters simply by switching the compressor in and setting the ratio to the maximum of 50:1. At this setting, the input must increase by 50dB above the threshold for the output to increase by a negligible 1dB, effectively limiting the signal. The TFT screen displays a graph of input level versus output level, along with gain reduction meters and Sidechain source metering where applied.

This displays the amount of gain reduction applied to the signal. In the case of 5.1 paths and wider, the Lfe (e) leg is made independent by default. In this case, no reduction is applied, as shown in Fig. 2, as the Lfe leg has its own independent dynamics controls.

Note: below the Gain reduction bar graphs is shown the Sidechain source audio meter display, overlaid with the threshold positions for the Compressor/ Limiter and the Expander/Gate/Ducker.

The audio meter is used to show the signal level of the sidechain source. The source can be from its own path or from an external Mono channel, group or aux source.

FIG. 1 - DYNAMICS 1 PROCESSING MODE SELECTED FROM MODES ROW

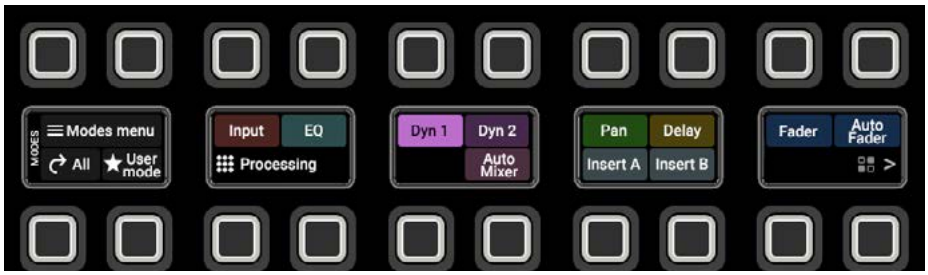
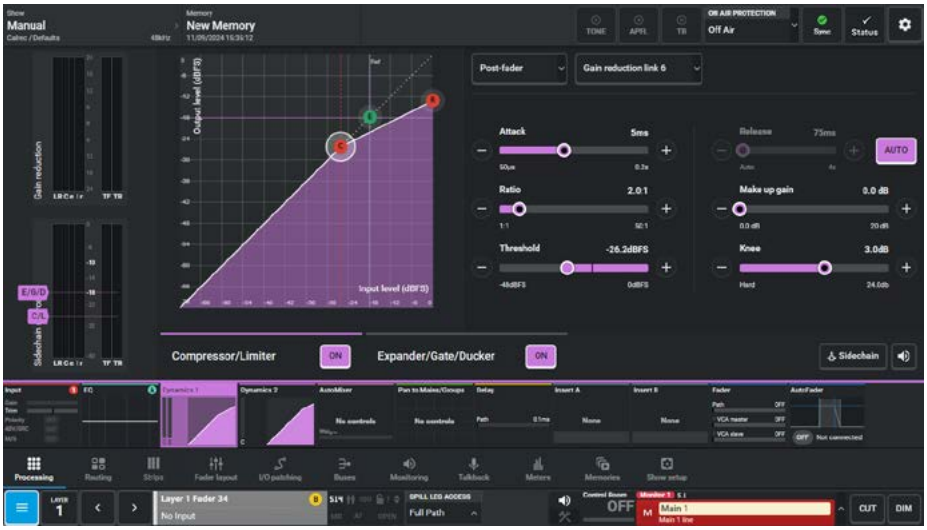
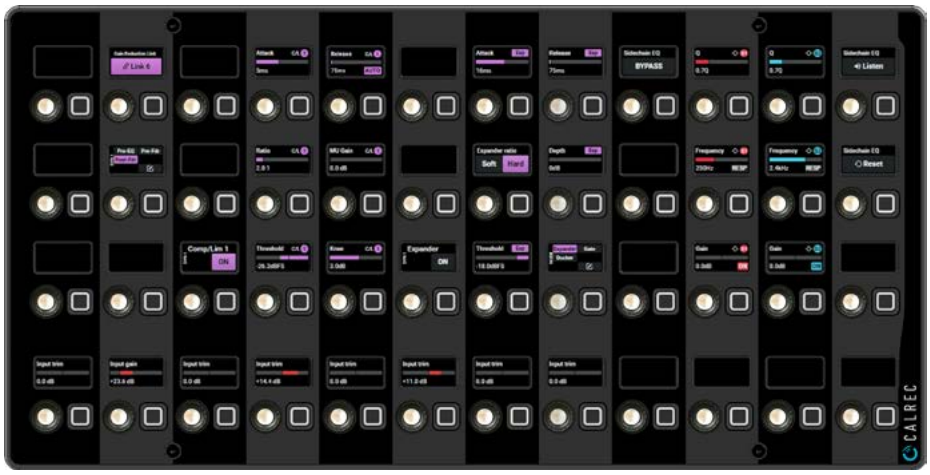


FIG. 2 - DYNAMICS 1 CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL





Compressor/Limiter 1 Controls

Tapping Processing>Dynamics 1 before selecting Compressor/Limiter from the bottom of the touchscreen displays controls that can be adjusted in a number of ways:

From the Touchscreen

- Dragging the sliders left and right for continuous controls.
- Using the + and - buttons at the end of the sliders.
- Using the on-screen buttons to select switch functions, e.g., On/Off.
- Dragging the numbered bands with their control circles on the graph.

The resultant numerical values are shown in the top right-hand corner of each control, while also being reflected on the graph.

From the Wild Assign Panel

- Moving the Rotary controls round to the left or right.
- Using the button next to the rotary control to switch functions On/Off.
- Pressing the top of the rotary controls down to reset parameters to default.

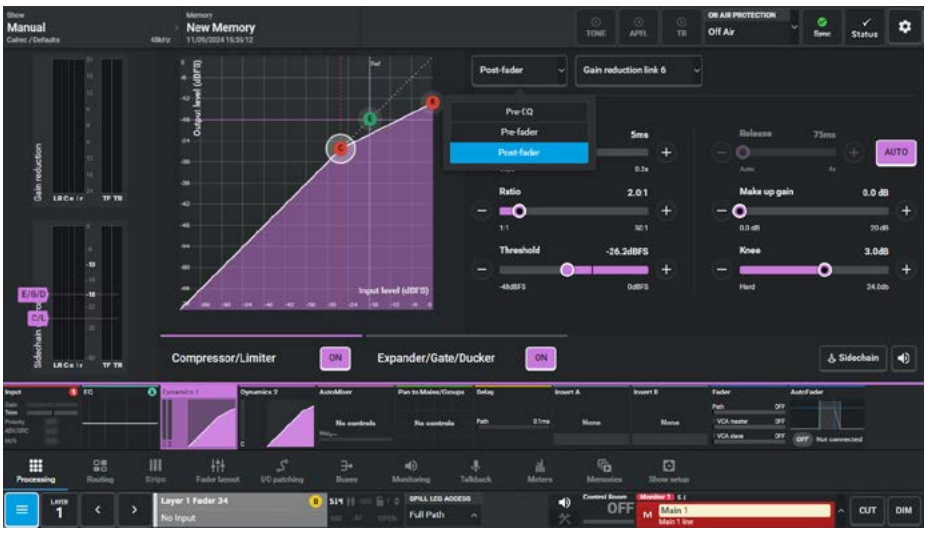
The resultant numerical values & bar graph are shown in each individual TFT on the Wild Assign Panel.

Dynamics 1 Position in Path

Each Compressor/Limiter module can be inserted either Pre-EQ, Pre-fader or Post-fader. Tapping on the dynamics position button currently showing 'Post-fader' (top centre of the screen) selects the desired path position, as shown in Fig. 3.

Note: the Expander/Gate/Ducker processing is tied to the Compressor/Limiter in Dynamics 1, in that both follow the same Pre-EQ, Pre-fader, Post-fader selection.

FIG. 3 - DYNAMICS 1 PATH POSITION ON TOUCHSCREEN



The following controls are available from both the TFT touchscreen and Wild Assign Panel:

Compressor/Limiter On/Off switch: This button switches the Compressor/Limiter in/out of circuit.

Threshold: This controls the level (dBFS) at which the signal will begin to have its gain reduced.

Ratio: This controls the gain reduction once a signal has exceeded the threshold. For example, if the ratio is set at 2:1 and the signal exceeds the threshold by 4dBFS, the gain will be reduced so it exceeds the threshold by only 2dBFS. When set to 50:1, the compressor is acting as a limiter.

Attack: This controls the time taken to reduce the gain to reach the new compressed level. Short attack times enable the compressor to catch transients in the audio feed, while an increased attack time allows initial transients through, while catching later ones. Fast attack times are good for catching transients and possibly stopping clipping. However, when an attack time is too fast, signals can sound bad, can have artefacts etc. As such, it is usually advisable to start with a fast attack time, then to reduce the attack time until the desired effect is achieved.

Release: This controls the time taken to remove gain reduction once the signal falls back below the threshold. Short release times can lead to a 'pulsing' effect, with only audio peaks being compressed. A longer release time leads to a smoother effect, but compresses some lower level audio components.

Release Auto: In this mode, a filter is applied, determining how quickly the signal comes out of compression by measuring the amount and duration of the compression attack.

This is useful in dealing with both sudden noises, which recover quickly, and sustained noises, such as applause, which recover slowly. Release Auto is enabled when the slider is dragged all the way to the left, or the 'AUTO' button is pressed, as shown on the touchscreen and on the Wild Assign panel shown in Fig. 2 on the previous page.

Make Up Gain: This allows the gain of the whole compressed signal to be increased by up to 20dB.

Knee: This allows the gain of the whole compressed signal to act on signal transients. This occurs quickly in the case of a Hard knee, while a Soft knee applies compression gradually over a range of up to 24dB.

Gain Reduction Links
By default, dynamics modules operate as standalone units.

Tap on the dynamics gain reduction link button currently showing 'Standalone' (top centre of the screen) and select an option as shown in Fig. 4. This allows the module to be put into one of eight gain reduction links. Gain reduction links allow multiple audio feeds to have the same dynamics processing applied.

Note: the compressor/limiter and expander/gate/ducker modules use the same gain reduction links.

When multiple paths' dynamics modules are set to be part of a gain reduction link, the amount of gain reduction applied across the link will always equal that for the signal which is being affected the most. For example, within a gain reduction link, if one path's signal is causing 5dB of gain reduction and another is causing a reduction of 10dB, all signals within the gain reduction link will have a gain reduction of 10dB applied. When expander/gate/ducker units are used within a link and one feed within the link reaches the threshold level to open the expander/gate/ducker, all expander/gate/duckers within the link open, regardless of their audio feed levels.

Sidechain Listen
Selecting the Sidechain Listen (speaker icon shown next to the Sidechain Button in Fig. 5), allows monitoring of the sidechain EQ's effect on the signal.

Note: activating the sidechain listen uses the APFL system. As such the APFL clear button becomes lit in the header area.

Sidechain EQ (SCEQ)
Dynamics units take copies of their input signals, analyse them, and work out how best to process the originals. These copies are called sidechains. SCEQ controls are used to process frequency components of the sidechain signal in order to control which components of the input signal the dynamics will respond to.

FIG. 4 - DYNAMICS 1 GAIN REDUCTION LINKS ON TOUCHSCREEN

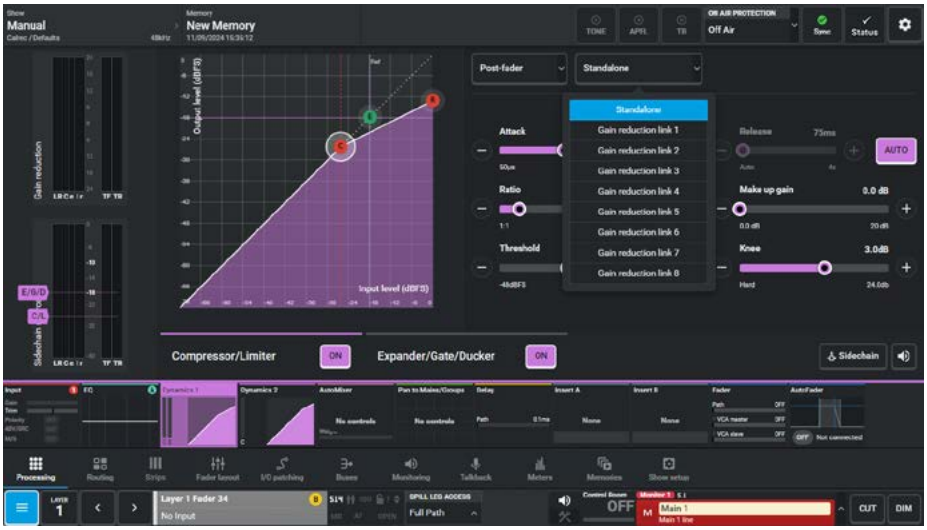


FIG. 5 - SIDECHAIN EQUALISER ON TOUCHSCREEN



With Dynamics 1 processing selected, tap on the Sidechain button in bottom right corner of the screen to view the SCEQ controls, as shown in Fig. 5.

The following controls are available from both the TFT touchscreen and Wild Assign Panel:

Sidechain EQ Band On/Off switches: Switching the SCEQ controls in/out, for Band 1 or Band 2 of the SCEQ bands, allows comparison of the signal with and without the SCEQ.

The **'Reset'** button resets the parameters of both the SCEQ bands to their default values.

The other SCEQ parameter controls, i.e., **Bypass, Response dropdown, Slope, Band On/Off, Frequency, Gain & Q** are the same as the EQ controls and are explained in more detail in **"Equaliser and Filter Controls" on page 52.**

The SCEQ function is shared between the Compressor/Limiter 1 and the Expander/Gate/Ducker of each Channel, Group and Main Path. Channels have 2 bands of Sidechain EQ, while Groups & Mains have 1 band of SCEQ each. Also note that the Ducker function is not available for Mains. Note: if served from ImpulseV, SCEQ offers one single band that can be set to High or Low cut. Frequency control is also available over this filter.

Sidechain Source Selection
This option is available for Channels and Groups. The relevant control panel appears to the right of the Sidechain EQ panel when valid. This allows the selection of a source other than itself to be used to control the amount of compression applied.

Only mono channels, groups or auxes can be used as a sidechain source. The Sidechain audio source meter display is shown overlaid with this paths C/L and E/G/D threshold markers.

Tapping the 'Choose sidechain source' button opens the 'Select a fader' dialogue shown in Fig. 6.

Once assigned, the Dynamics 1 sidechain tab will show details of the selected source, as well as option to change the source's send position between Pre-EQ, Pre-fader or Post-fader.

Although essential for ducking control, the sidechain source is also available for use with the Compressor/Limiter, Expander and Gate. It is this path's audio that is used as the source for the sidechain equaliser control.

The selected Sidechain source can be removed by clicking the 'Remove' button in the top right-hand corner of the Sidechain source panel shown in Fig. 5 on the previous page.

Expander/Gate/Ducker
An expander acts in the opposite way to a compressor. When a signal exceeds the expander threshold it is passed through unchanged. Conversely, when it falls below the threshold, it is reduced, effectively increasing the dynamic range of the signal while reducing unwanted audio content. The expander page is shown in Fig. 7.

FIG. 6 - SIDECHAIN SOURCE SELECTION ON TOUCHSCREEN



FIG. 7 - EXPANDER ON TOUCHSCREEN



FIG. 7 - EXPANDER ON TOUCHSCREEN



A gate is effectively an extreme version of an expander, with a very high ratio, resulting in the gain of the input signal being significantly reduced almost immediately as it falls below the threshold. The gate page is shown in Fig. 8 on the next page. Gates are often used to minimise unwanted audio content.

A ducker is used to reduce the level of a signal due to the presence of another signal or sidechain source. A typical use of this effect in a daily radio production routine is for creating a voice-over.

A foreign language original sound is +dubbed (and ducked) by a professional speaker reading the translation. Ducking becomes active as soon as the translation starts. The ducker page is shown in Fig. 9 on the next page.

Calrec's expander/gate/ducker processing has 6dB of built-in hysteresis to avoid unwanted 'chatter' (constant on/off switching), resulting from an input signal residing on or around the threshold. The gain reduction bar graphs are again shown on the left of the process window.

Expander/Gate/Ducker Controls
After tapping Processing>Dynamics-1 from the Menu and selecting the Expander, Gate or Ducker Mode, controls can be adjusted in a number of ways:

From the Touchscreen
- Dragging the sliders left and right for continuous controls.
- Using the + and - buttons at the end of the sliders.
- Using the On-Screen buttons to select switch functions, e.g., On/Off.
- Dragging the numbered bands with their control circles on the graph.

The resultant numerical values are shown in the top right-hand corner of each control and are also reflected on the graph.

FIG. 8 - GATE ON TOUCHSCREEN

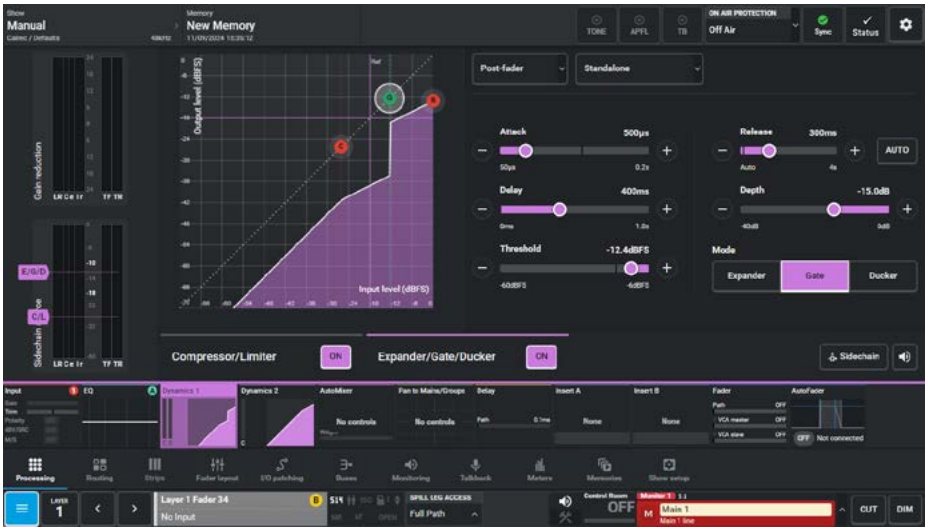
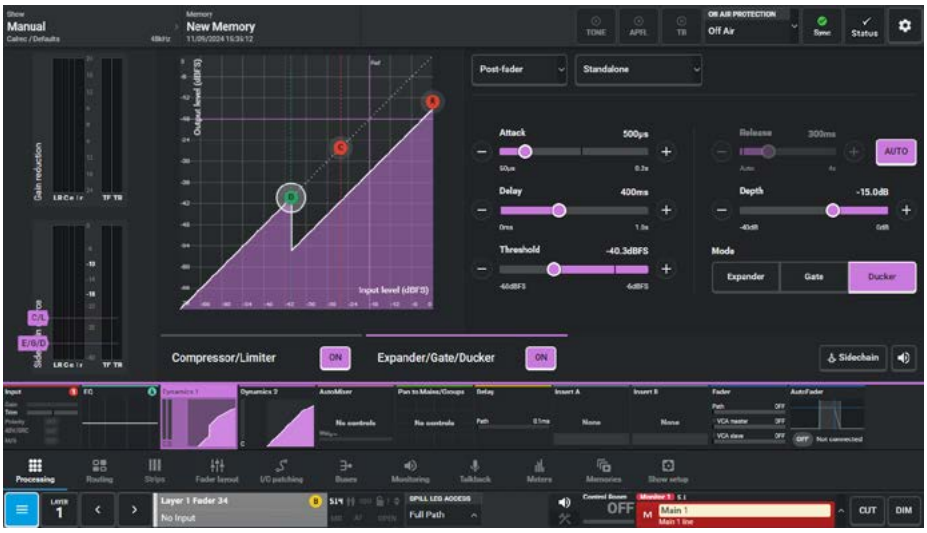


FIG. 9 - DUCKER ON TOUCHSCREEN



From the Wild Assign Panel
- Moving the Rotary controls round to the left or right.
- Using the button next to the rotary control to switch functions On/Off.
- Pressing the top of the rotary controls down to reset parameters to default

The resultant numerical values & bar graph are shown in each individual TFT on the Wild Assign Panel.

The following controls are available from both the Touchscreen (Figs 10 & 11) and Wild Assign Panel (Fig. 12):

Expander/Gate/Ducker In/Out switch: This is shown at the bottom centre of the display area. This button switches the expander/gate/ducker in/out of circuit.

Mode: The expander/gate/ducker module has a triple mode button for switching between expander, gate and ducker functionality.

Threshold: The level (dBFS) at which the signal will begin to have its gain affected.

Depth: Controls the maximum amount of attenuation which can be applied to signals below the threshold.

Delay (Gate & Ducker Only): The minimum time the gate or ducker will be held open before closing once the threshold is reached.

Ratio (Expander only): Controls the amount of gain reduction applied to the input signal level. A 2:1 Hard knee uses a fixed ratio of 2:1. This means that 1dB of gain reduction is applied for every 1dB that the signal falls below the threshold.

A Variable Soft knee uses a variable ratio dependent on the input signal level, with a final ratio of 3:1 being applied when the signal drops to 20dB below the threshold.

Attack: Time taken for the expander/gate to open. Short attack times help to preserve natural transient attacks but can result in a 'tapping' sound due to the rapid transition. A longer attack time ensures a smoother transition, at the detriment of some transient information being lost.

Release: Time taken for the expander/gate/ducker to close. Longer release times create a smoother more natural transition.

Release Auto: This mode applies a filter that determines how quickly the expander/gate/ducker closes. This is done by measuring the amount and duration of the attack. This is useful when dealing with both sudden noises, which recover quickly, and sustained noises such as applause, which recover slowly. Release Auto is enabled when the slider is dragged all the way to the left, or the **'AUTO'** button is pressed, as shown in Fig. 10.

FIG. 10 - COMPRESSOR/LIMITER ON TOUCHSCREEN

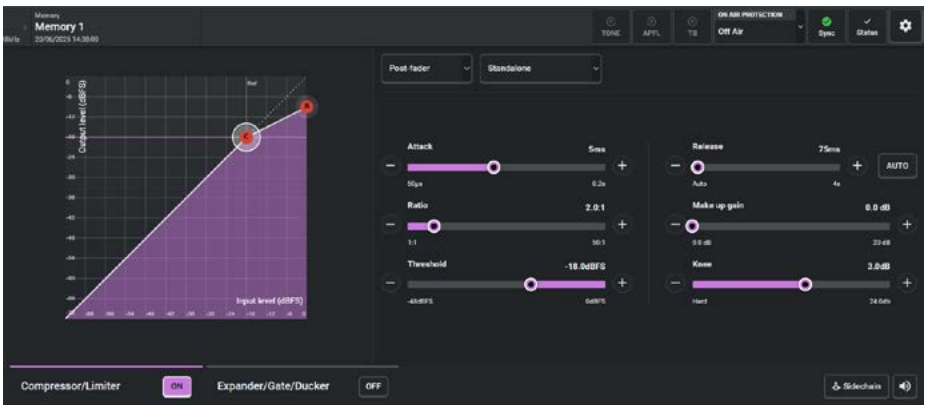


FIG. 11 - EXPANDER/GATE/DUCKER ON TOUCHSCREEN

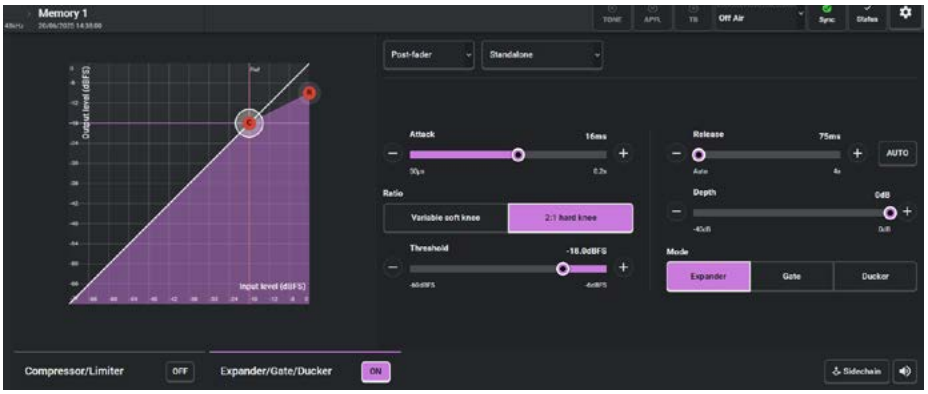


FIG. 12 - DYNAMICS 1 ON WILD PANEL



Dynamics 1 Independence Controls

For Multichannel paths such as stereo, surround and immersive paths, it is possible to apply Dynamics 1 processing independently for:

- each L or R spill leg in a Stereo path
- each LR, C, Lfe, Ls/Rs spill leg in a 5.1 surround path
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, spill leg in a 7.1 surround path.
- each L/R, C, Lfe, Ls/Rs, Ltf/Rtf spill leg in a 5.1.2 immersive path.
- each L/R, C, Lfe, Ls/Rs, Ltf/Rtf Ltr/Rtr spill leg in a 5.1.4 immersive path.
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf spill leg in a 7.1.2 immersive path.
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf, Ltb/Rtb spill leg in a 7.1.4 immersive path.

Fig. 9 on the previous page shows the expander/gate/ducker page for a 5.1.4 path. In the path footer is a dropdown box labelled '**Spill Leg Access**', which normally says '**Full Path**'.

Tapping this box opens the multichannel independence control table shown in Fig. 13.

This is used to determine which spill leg controls will be made independent of its multichannel master, for any of the dynamics controls or gain reduction elements shown down the spill leg Independence column.

Sliding any of these switches makes those particular Dynamics 1 controls and/or gain reduction elements for a particular spill leg become independent.

Note: also shown in the independence control table are the controls for the Lfe leg, which are independent by default.

In Fig. 14, the '**LFE only**' has been selected leg to be controlled/displayed. As such, the Dynamics 1 controls shown are for the Lfe spill leg only.

FIG. 13 - DYNAMICS 1 MULTICHANNEL INDEPENDENCE ON TOUCHSCREEN

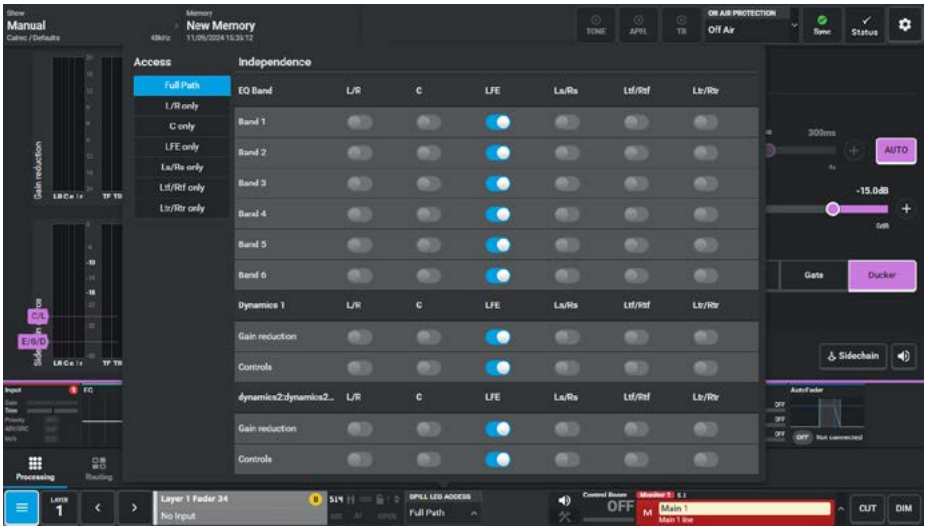
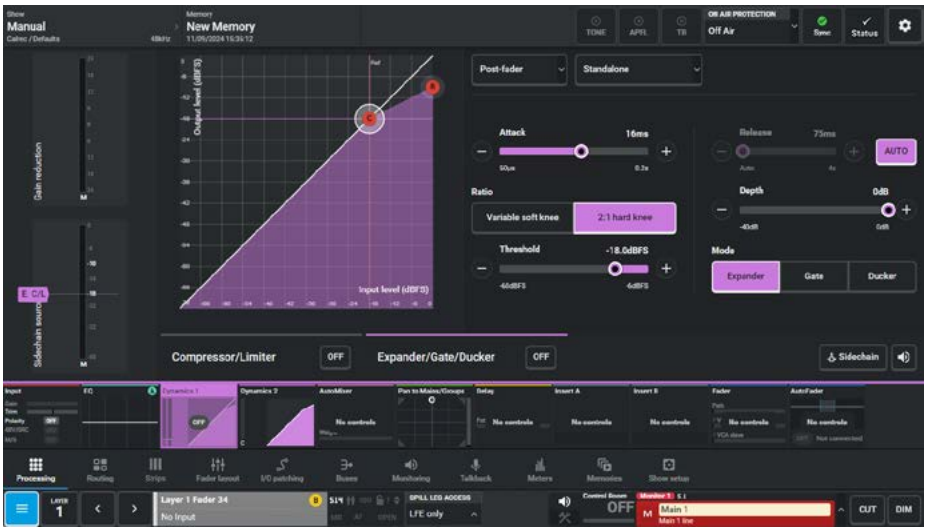


FIG. 14 - INDEPENDENT EXPANDER FOR LFE ONLY LEG OF A 5.1.4 PATH



Removing Dynamics Independence
Tapping on the Spill Legs Access button to the right of the Fader Display block, shown as 'L/R only' in Fig. 15, again opens the independence control switch table shown on the previous page in Fig. 13.

Toggling off the independence switches overwrites the independent control settings that this dynamics process had for this spill leg, replacing it with its master's settings.

If spill leg is selected that has not been made independent from its master, or selects an expander/gate or compressor/limiter control set that has not been made independent, then the display is 'greyed out' and a message saying 'Controls linked to path master' appears, meaning that no controls are available from this page.

Fig. 12 shows the Compressor/Limiter page for the L/R only spill leg of a 5.1.4 path which has not been made independent.

Note: the Gain Reduction bar graphs on the left side of the display area show the meter values for L/R only. However, no controls are available, as they are controlled from its master.

Wild Assign Panel - Dynamics 1
The wild assign panel in Fig. 16 displays the Dynamics 1 control parameters. Each column/row is identified by a position overlay as shown.

Note: this panel is not used for Sidechain Source selection.

The Wild Assign Panel controls for Dynamics 1 are arranged in 3 blocks:

Column 2: Gain Reduction Links and the Dynamics 1 path position.

Columns 3, 4 & 5: Control/display the parameters for Compressor/Limiter 1's On/Off, Threshold, Ratio, Attack, Release, Make Up Gain and Knee.

FIG. 15 - NON-INDEPENDENT COMP/LIM 1 FOR L/R ONLY LEG OF A 5.1.4 PATH

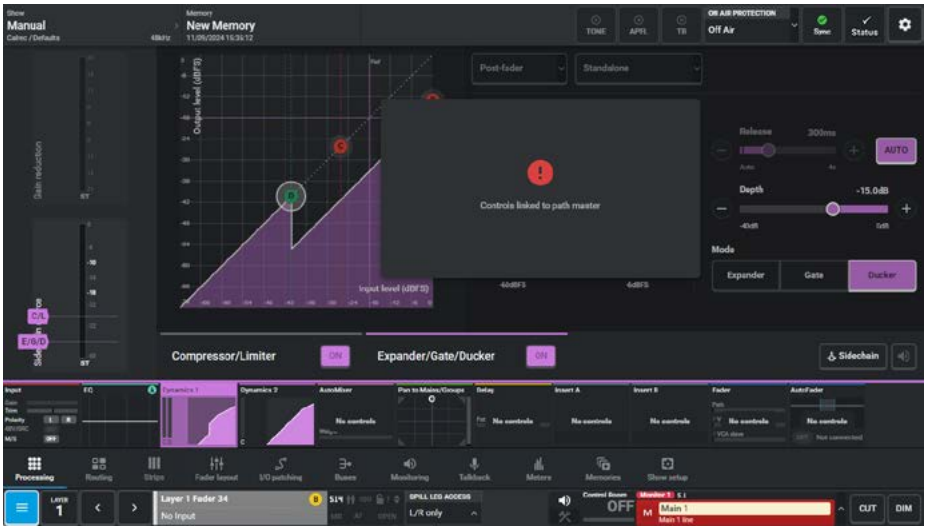


FIG. 16 - WILD ASSIGN PANEL DISPLAYING DYNAMICS 1 CONTROLS



Columns 6, 7 & 8: Control/display the parameters for the Expander/Gate/Ducker's On/Off, Threshold, Ratio (Expander Only), Attack, Release, Delay (Gate & Ducker Only), Depth and Expander/Gate/Ducker process selector.

Column 9: Bypasses the Sidechain Equaliser.

Columns 10 & 11: Control/display the parameters for the Sidechain Equaliser's On/Off, Gain, Response selector, Frequency & Q.

Column 12: Allows Listening to the Sidechain EQ and will also 'Reset' the Sidechain EQ to its default values.

Note: Channels have 2 bands of sidechain EQ, while Groups and Mains have 1 band of sidechain equaliser each.

Dynamics 1 & 2 Parameters
Fig. 14 on the next page shows the parameter ranges for Dynamics processors, including:

Compressor/Limiter 1, Expander, Gate and Ducker in Dynamics 1 and the Compressor/Limiter 2 in Dynamics 2.

FIG. 17 - DYNAMICS PARAMETERS

	Compressors both C/L 1 & C/L 2
Threshold	N/A
Release	+18dB to - 18dB Variable
Ratio	-30dB Fixed
Attack	+18dB to -18dB Variable
Make Up Gain	+18dB to -18dB Variable
Knee	N/A

	Expander
Threshold	-6dBFS to -60dBFS with 6dB of built-in hystersis
Release	75ms to 4s + Auto
Depth	0dB to 40dB
Ratio	2:1 and Var (variable according to level
Attack	50µs to 200ms (16ms default)

	Gate
Threshold	-6dBFS to -60dBFS with 6dB of built-in hystersis
Release	75ms to 4s + Auto
Depth	0dB to 40dB
Attack	50µs to 200ms (16ms default)
Delay	0s to 1s

	Ducker
Threshold	-6dBFS to -60dBFS with 6dB of built-in hystersis
Release	75ms to 4s + Auto
Depth	0dB to 40dB
Attack	50µs to 200ms (16ms default)
Delay	0s to 1s

PROCESSING INDEPENDENCE OVERVIEW

Processing independence
By default on a stereo, surround or immersive path, any processing is applied to all legs in that path.

One set of master controls sets the processing applied to all legs. However, processing can be made independent for an individual leg of a stereo, surround or immersive signal, e.g., the C leg of a 5.1 path.

A stereo, surround or immersive path which is being processed is referred to as the stereo, surround or immersive master.

EQ independence
By default, the EQ set on the stereo, surround or immersive master is applied to all legs of the path, except the LFE leg.

Independence can be set for each band of EQ for each Leg of a multichannel path with the LFE leg of a surround channel set to be independent by default.

To apply independent EQ to an individual leg of the path, first access the required leg on the spill faders, then see **"Equaliser Independence Controls" on page 54** for further information on this process.

Once made independent, the EQ band can now be adjusted to process the accessed leg independently from the assigned stereo, surround or immersive master. EQ bands that are not made independent will still follow the stereo, surround or immersive master.

Adjustments to EQ bands still following the surround master will also affect all other non-independent legs in the path.

Note: switching off the Equaliser independence of an EQ band restores its settings from its Master's values.

Dynamics independence
By default, the Dynamics settings on the stereo, surround or immersive master is applied to all legs of the path except the LFE leg on surround and immersive paths.

Dynamics of individual legs can be made independent from the stereo, surround or immersive master in two ways:

The first way is to make the gain reduction independent.

Under normal circumstances, any leg of the stereo, surround or immersive signal crossing the threshold will determine the amount of processing to be applied to all legs equally. For example, if the C leg has the highest level and is the only leg to cross the compressor threshold, it will have a certain amount of gain reduction applied to it. This same amount of gain reduction is also then applied to all other legs, even if they do cross the threshold themselves. This keeps the relative balance of the sound field intact.

By making the dynamics gain reduction linking independent for a given leg, that leg will only have gain reduction applied when it crosses the threshold itself. The control values remain common with the stereo, surround or immersive master, but the leg will be processed independently.

The second way to make dynamics processing independent is to make the control values independent for a given leg. This means that any leg in the stereo, surround or immersive master can have different dynamics controls. If dynamics linking is not made independent, paths are processed according to the first path to cross the threshold. However, their thresholds and other parameters may be set independently.

It is possible to have both dynamics linking independence and control independence set for individual legs. For example, a 5.1 surround group or main path may contain a 5.1 sports mix with a commentator in the C leg, with crowd noise, music and effects signals present in other legs.

Argo makes it is possible to compress the commentator independently from the signal in the 5.1 surround legs.

When gain reductions are linked, but control is independent, different dynamics parameters can be set. However, the same amount of gain reduction will be applied to all gain reduction linked elements if the audio crosses their threshold settings in every case.

This allows for different dynamics settings to be applied to each element whilst maintaining the overall mix level between them. If gain reduction independence is set for an element, gain reduction will only ever be applied to that element if the audio crosses its own threshold settings.

As well as EQ & dynamics, other settings can be applied to elements of a stereo, surround or immersive path that do not require an independence setting, such as input gain and routing. These parameters can simply be selected or adjusted.

By default, the LFE leg of a surround or immersive path has EQ and dynamics parameters applied which are independent from the surround or immersive master.

Note: switching off the Dynamics Independence for that control restores its settings from its Master's values.

DYNAMICS 2

Every Channel input, Group bus, Main bus, Aux bus and Track bus has 2 Dynamics processors available to them. The Dynamics 2 processor can be placed Pre-EQ/Pre-fader or Post-fader and either run standalone or be linked to any of the eight Gain Reduction buses available.

The Processing>Dynamics 2 page on the touchscreen is accessed from the Modes row of a standard fader panel by first tapping Modes Menu, then by tapping Processing before finally tapping Dynamics 2, as shown in Fig. 1. Alternatively, the user can tap the appropriate icons on the touchscreen. This displays the Dynamics 2 mode, with the same information also shown on the Wild Assign panel, see Fig. 2. The Dynamics 2 control layout used here is that which is available in the standard mode.

FIG. 1 - DYNAMICS 2 PROCESSING MODE SELECTED FROM MODES ROW

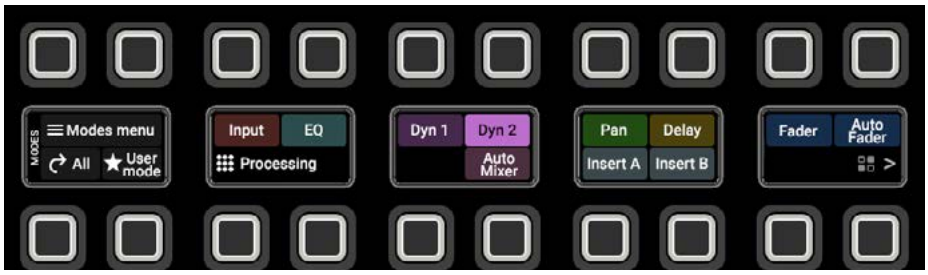
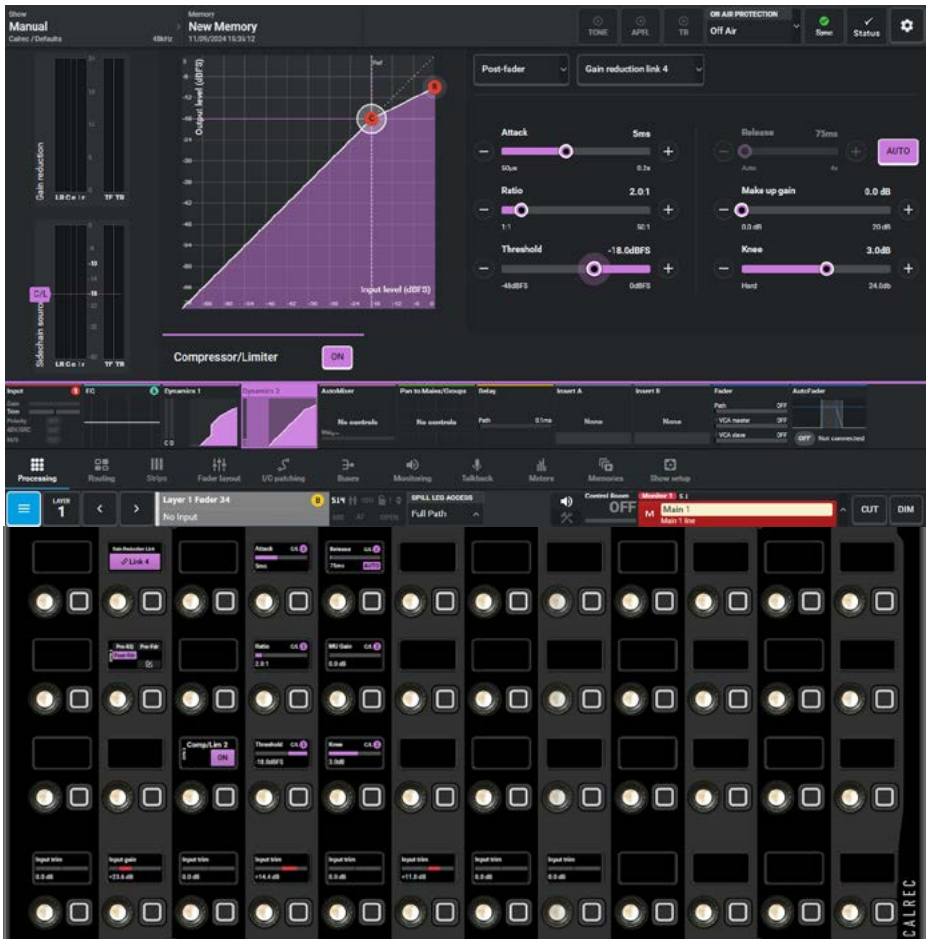


FIG. 2 - DYNAMICS 2 CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



Compressor/Limiter 2

Compressor/Limiters provide controls for reducing and smoothing the dynamic range of an audio signal. Compressors proportionally reduce the gain of a signal as it exceeds a definable threshold. When the compressor is set to be a limiter (by selecting a ratio of 50:1), the input signal must increase by a massive 50dB above the threshold in order for the output to increase by a negligible 1dB. Any control situated within the function header affects the whole module, unless independence has been specified. The gain reduction bar graphs are shown in Fig. 2 on the left side of the display area. These show the amount of gain reduction being applied to the signal. Note that in the case of paths other than mono and stereo, the Lfe (e) leg is made independent by default, meaning no reduction is applied, as shown in Fig. 2. This is since the Lfe leg has independent dynamics controls.

Note: the Dynamics 2 module is a separate compressor/limiter to the compressor/limiter in Dynamics 1. It does not have separate sidechain features.

Compressor/Limiter 1 Controls

After tapping Processing>Dynamics 1 from the Menu and selecting Compressor/Limiter from the bottom of the display area, controls can be adjusted in a number of ways:

From the Touchscreen

- Dragging the sliders left and right for continuous controls.
- Using the + and - buttons at the end of the sliders.
- Using the On-Screen buttons to select switch functions, e.g., On/Off.
- Dragging the numbered bands with their control circles on the graph.

The resultant numerical values are shown in the top right-hand corner of each control and are also reflected on the graph.

From the Wild Assign Panel

- Moving the Rotary controls round to the left or right.
- Using the button next to the rotary control to switch functions On/Off.
- Pressing the top of the rotary controls down to reset parameters to default.

The resultant numerical values & bar graph are shown in each individual TFT on the Wild Assign Panel.

Dynamics 2 Position in Path
Each Compressor/Limiter module can be inserted either Pre-EQ, Pre-fader or Post-fader. Tapping on the dynamics position button currently showing 'Post Fader' in the top centre of the screen allows the user to select a send position, as shown in Fig. 3.

Note: Dynamics 2's Compressor/Limiter can be placed independently of Dynamics 1 in the Pre-EQ, Pre-fader or Post-fader position.

The following controls are available from both the TFT touchscreen and Wild Assign Panel:

Compressor/Limiter On/Off switch: This is shown at the bottom centre of the display. It switches the compressor in or out of circuit.

Threshold: The level (dBFS) at which the signal will begin to have its gain reduced.

Ratio: Controls gain reduction once a signal has exceeded the threshold. For example, if the ratio is set at 2:1 and the signal exceeds the threshold by 4dBFS, the gain will be reduced so it exceeds the threshold by only 2dBFS. When set to 50:1, the compressor is acting as a limiter.

Attack: Time taken to reduce the gain to reach the new compressed level. Short attack times enable the compressor to catch transients in the audio feed Conversely, increasing the attack time will allow initial transients through, but will catch later transients. Fast attack times are good for catching transients and possibly stopping clipping. However, when an attack time is too fast, signals can sound bad, can have artefacts, etc. It is advisable to start with a fast attack time, then reduce the time down until the desired effect is reached.

Release: Time taken to remove gain reduction once the signal returns to below the threshold. Short release times can lead to a 'pulsing' effect, with only audio peaks being compressed. A longer release time leads to a smoother effect, but this can be at the expense of some lower level audio components being compressed.

FIG. 3 - DYNAMICS 2 PATH POSITION ON TOUCHSCREEN

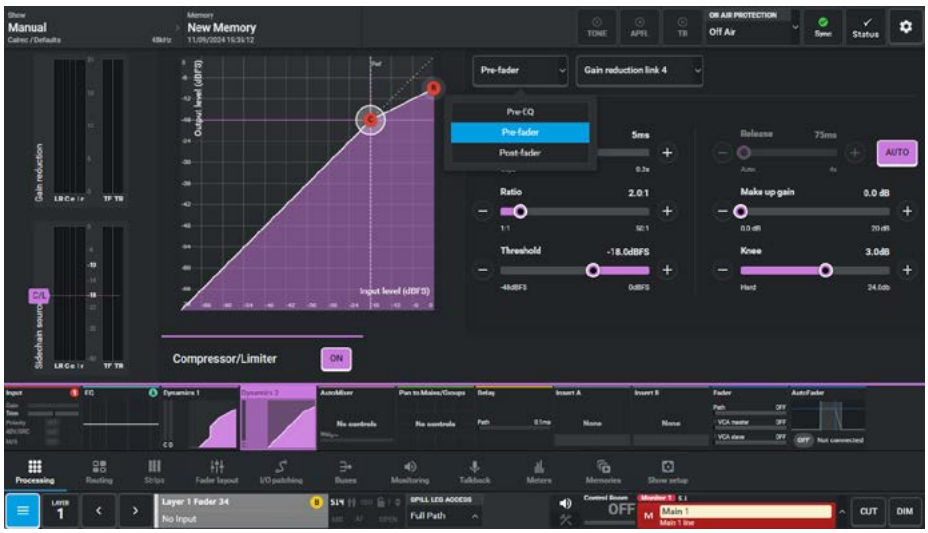
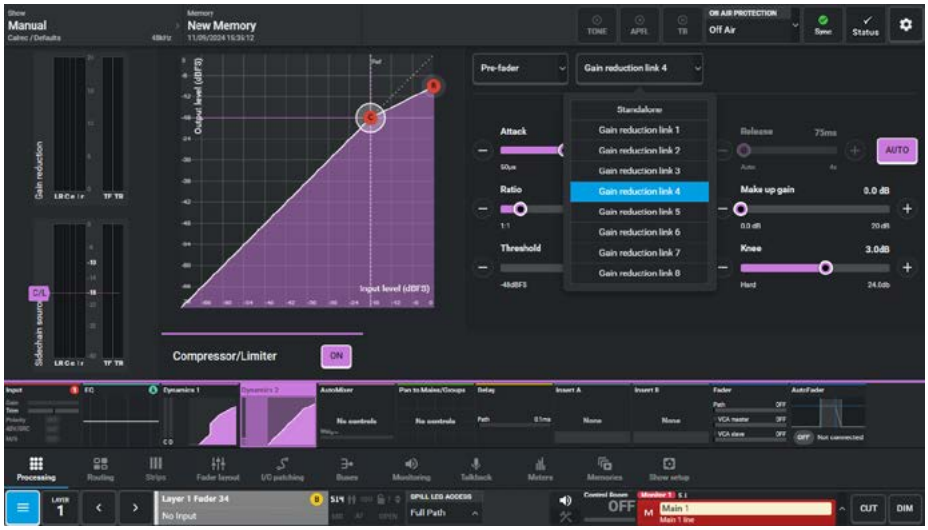


FIG. 4 - DYNAMICS 2 GAIN REDUCTION LINKS ON TOUCHSCREEN



Make Up Gain: Allows the gain of the whole compressed signal to be increased by up to 20dB.

Knee: Allows the gain of the whole compressed signal to act on signal transients quickly, in the case of a Hard knee. Conversely, a Soft knee applies compression gradually over a range of up to 24dB.

Gain Reduction Links
By default, dynamics modules operate as standalone units. Tapping on the dynamics gain reduction link button currently showing 'Standalone' in the side panel allows the user to select an option, as shown in Fig. 3. This allows the module to be put into one of eight gain reduction links.

Gain reduction links allow multiple audio feeds to have the same dynamics processing applied.

Note: the Dynamics 2 Comp/Limiter acts independently and can use different gain reduction links to Dynamics 1.

When multiple paths' dynamics modules are set to be part of a gain reduction link, the amount of gain reduction applied across the link will always equal that for the signal being affected the most. For example, if the signal of one path within the gain reduction link is causing 5dB of gain reduction, and another is causing a reduction of 10dB, all signals within the gain reduction link will have a gain reduction of 10dB applied.

Dynamics 2 Independence Controls

For Multichannel paths such as stereo, surround and immersive paths, it is possible to apply Dynamics 2 processing independently for:

- each L or R spill leg in a Stereo path
- each LR, C, Lfe, LsRs spill leg in a 5.1 surround path
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs spill leg in a 7.1 surround path
- each L/R, C, Lfe, Ls/Rs, Ltf/Rtf spill leg in a 5.1.2 immersive path.
- each L/R, C, Lfe, Ls/Rs, Ltf/Rtf, Ltr/Rtr spill leg in a 5.1.4 immersive path.
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf spill leg in a 7.1.2 immersive path.
- each L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf, Ltb/Rtb spill leg in a 7.1.4 immersive path.

Fig. 4 on the previous page shows the Dynamics 2 Compressor/Limiter page for a 5.1.4 path. In the path footer is a dropdown box labelled 'Spill Leg Access', which normally says 'Full Path'. Tapping on this opens an independence control table, as shown in Fig. 5. This table is used to determine which spill leg controls will be made independent of its multichannel master for any of the dynamics controls or gain reduction elements shown down the spill leg Independence column. Sliding any of these switches makes those controls/elements for a particular spill leg independent.

Wild Assign Panel - Dynamics 2

The wild assign panel shown in Fig. 6 displays the Dynamics 2 control parameters, with the controls arranged as follows, and with each column/row being identified by a position overlay as shown: Column 2 allows the user to set the Gain Reduction Links and the path position. Columns 3, 4 & 5 control/display the parameters for Compressor/Limiter 2's On/Off, Threshold, Ratio, Attack, Release, Make Up Gain and Knee.

Dynamics 2 - Remove AutoMixer

The AutoMixer function replaces the Dynamics 2 Compressor/Limiter processing and paths assigned to AutoMixers. If the AutoMixer is no longer required, tapping 'Remove AutoMixer', shown in Fig. 7, restores the Dynamics 2 function.

FIG. 5 - DYNAMICS 2 MULTICHANNEL INDEPENDENCE ON TOUCHSCREEN

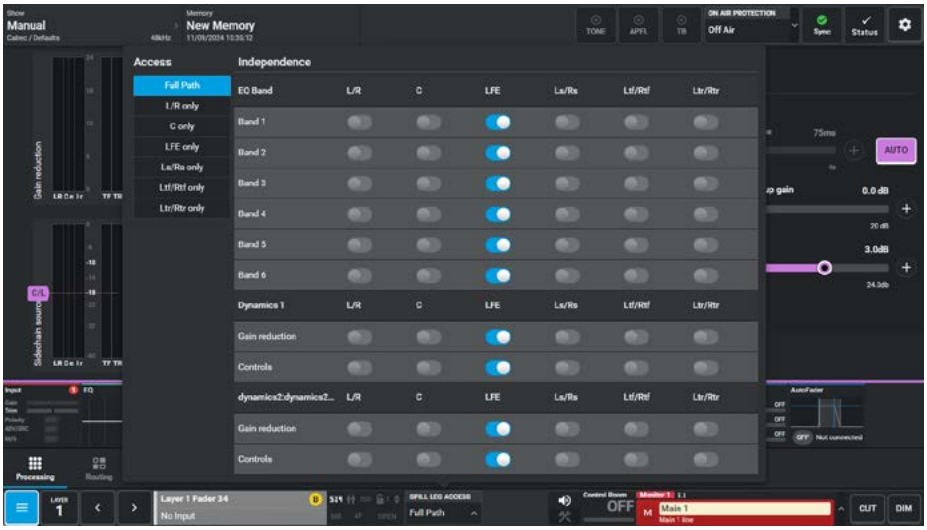
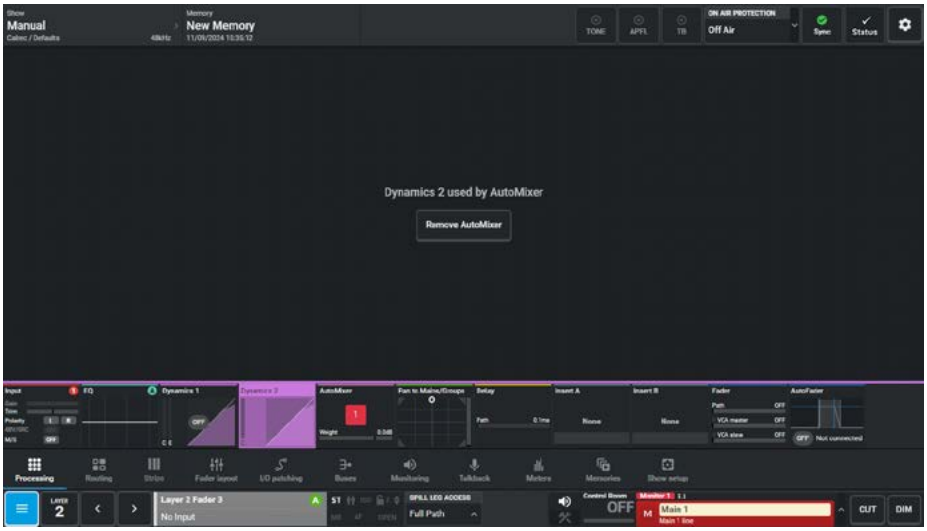


FIG. 6 - WILD ASSIGN PANEL DISPLAYING DYNAMICS 2 CONTROLS



FIG. 7 - DYNAMICS 2 PROCESSING USED BY AUTOMIXER - REMOVE AUTOMIXER



AUTOMIXER (NOT YET AVAILABLE FOR IMPULSEV)

AutoMixers are designed to control audio levels for shows where there are multiple guests or presenters talking together. AutoMixers adjust the individual microphone levels automatically and dynamically. This picks out the people speaking and reduces the level of those who are not, while maintaining consistent overall mix and ambient levels. In reality, Automixers only ever apply attenuation, signals are never actually boosted.

AutoMixer configuration is available under Modes menu>Processing>AutoMixer, and will be mirrored on the corresponding Wild Panels, as seen in Fig. 2. Eight AutoMixers are available to Argo. Each can be applied to automatically mix the levels of a selection of Mono or Stereo Channels and Groups. Paths assigned to automixer control cannot use the Dynamics 2 processor for normal compression/limiting at the same time. However, the Dynamics 1 processor remains available for full use as a compressor/limiter and expander/gate/ducker.

Accessing AutoMixers

From Processing>AutoMixer sub-menu, if no AutoMixer is present on the accessed Mono or Stereo path, a selection page will appear, as shown in Fig. 3 on the next page. Alternatively, if an AutoMixer has already been allocated, this AutoMixer will appear, as shown in Fig. 2 on both the touchscreen and the Wild Assign Panel.

Applying AutoMixers to Paths

1. Access the mono or stereo channel or group.
2. Tap the Processing>AutoMixer tab.
3. Tap to choose an Automixer bus for this path: 1-8, see Fig. 3.
4. Check the Automixer Contribution is turned on (it's on by default), see the button below the gain reduction meter on the left of the screen, shown in Fig. 2.

Setting Individual Path Weighting

AutoMixers calculate the ratios of path audio levels to the sum of all path levels to which the AutoMixer has been applied. Weighting can be applied individually to each path. The higher the weighting, the greater the prominence given to that path in the ratio calculation, giving it more prominence within the overall mix.

FIG. 1 - AUTOMIXER PROCESSING MODE SELECTED FROM MODES ROW.

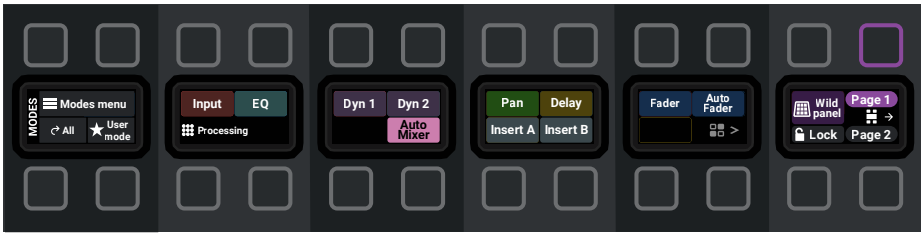
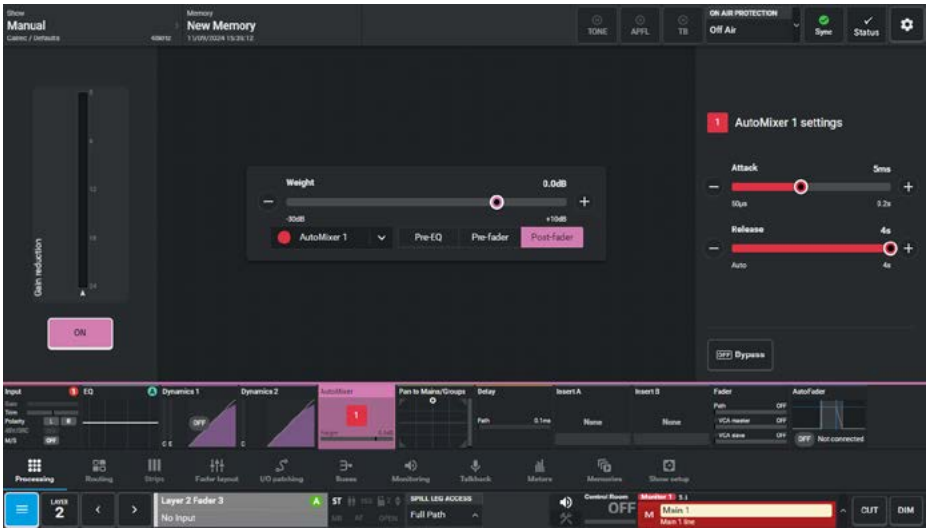
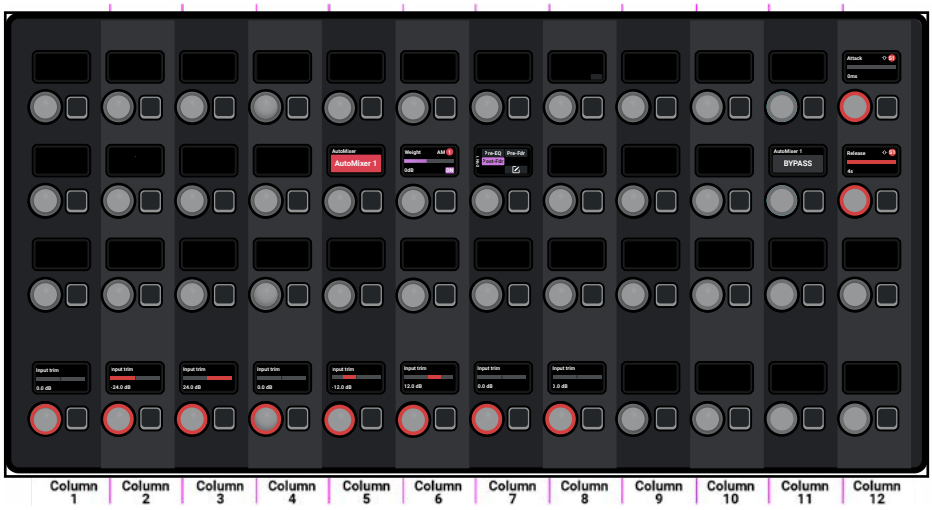


FIG. 2 - AUTOMIXER CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL





The following controls are available from both the TFT touchscreen and Wild Assign Panel:

Weight: This is used to calculate the level of attenuation applied to the path. The higher the weighting from -30dB to +10dB, the more prominent the path will be in the resulting mix.

AutoMixer On/Off: This switch underneath the Gain Reduction meter turns the AutoMixer Off/On for this particular path.

Position Buttons: This sets the position of the AutoMixer in the audio path processing. The AutoMixer can be applied Pre-EQ, Pre-fader or Post-fader, as shown in Fig. 4 just below the Weighting slider.

Gain reduction meter: This allows the user to view the gain reduction level that's being applied.

Remove/Select another Automixer
To remove an AutoMixer, select '**No AutoMixer**', or pick one of the other AutoMixers from the AutoMixer dropdown to replace it, as shown in Fig. 4. Alternatively, tap on the '**Remove AutoMixer**' button on the Dynamics 2 page. This will remove the AutoMixer and allow the user to again control Dynamics 2 processing on that path.

AutoMixer Global Control
Each of the eight AutoMixer buses has its own global attack, release and bypass controls. Attack and release controls are used to smooth signals, prior to the level ratio calculation being made. A compromise must be made between fast attacks and releases, which leads to more erratic but fast-acting functioning, and slow attacks and releases, which lead smoother functioning but is slower to function. The relevant AutoMixer global controls are shown alongside the AutoMixer path controls in the right-hand side panel, shown in Fig. 4.
The 8 AutoMixer global controls also appear in Show setup>AutoMixers. This allows the user to adjust all global controls from the same page.

FIG. 3 - SELECT AUTOMIXER ON TOUCHSCREEN

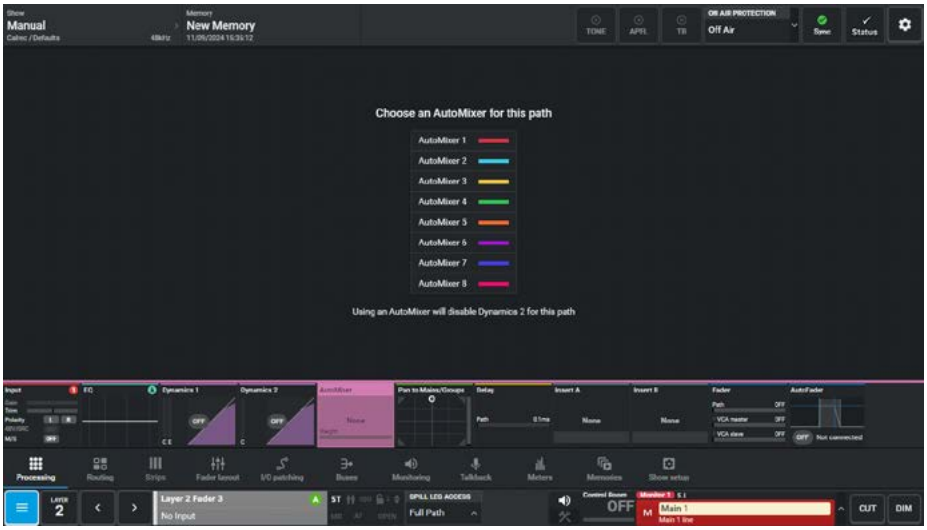
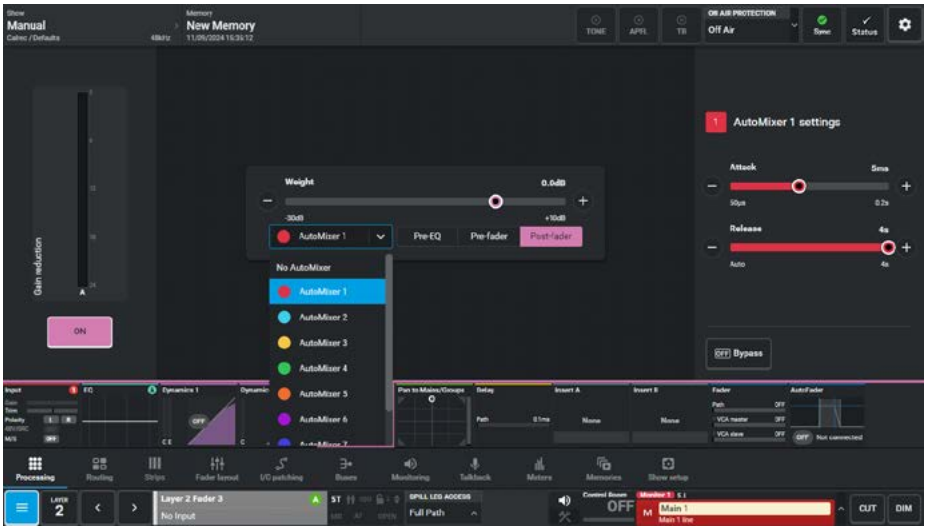


FIG. 4 - AUTOMIXER SELECTION POP-UP INCLUDING NO AUTOMIXER OPTION



Bypass Button: Tapping the **'Bypass'** button disables that AutoMixer bus for all assigned paths, also placing the Bypass flag on the menu icon.

Attack Time: The Attack Time for each AutoMixer can be set between 50µs (default) and 0.2s

Release Time: The Release Time for each AutoMixer can be set between 75ms and 4s (default).

If the user wants to momentarily take just one path out of the AutoMixer assignment, the **'AutoMixer Contribution'** On/Off button should be used. This is found underneath the Gain Reduction meter.

Wild Assign Panel - AutoMixer
The wild assign panel in Fig. 2 on the previous page displays AutoMixer 1 control parameters, with the controls arranged as follows, and with each column/row being identified by a position overlay as shown:

Column 5: Shows which AutoMixer is being used for this mono or stereo path.

Columns 6 & 7: Controls the Weight & Contribution On/Off button and Position of the contribution in the Audio chain.

Column 11: Controls the AutoMixer Bypass.

Column 12: controls the Global Attack and Release times.

PAN

Pan processing provides individual pan controls from each channel, group or main. The pan controls in this page are available for panning to mains and groups. Panning to auxes and tracks is handled in the Aux Sends & Pan and the Track Sends & Pan pages respectively.

The Processing>Pan page on the touchscreen is accessed from the Modes row of a standard fader panel by first tapping Modes Menu, then by tapping Processing, before finally tapping Pan, as shown in Fig. 1. Alternatively, the user can tap the appropriate icons on the touchscreen. This displays the Pan mode with the same information also shown on the Wild Assign panel, see Fig. 2. This page provides flexible panning controls which change to reflect the width of both the source and destination paths. It is important to note that the pan controls for a given path do not actually alter the panning of the path itself.

They do in fact alter the pan position of that path's contribution to its destination bus. It is therefore possible to have different pan positions set when sending a signal to multiple buses, for example, to an Aux, Track and Main simultaneously.

There is a shared pan position for the channel when it is routed to main and group buses. There is another pan position for the channel when it is routed to Tracks.

The channel has an individual pan position for each Aux bus it is sent to.

FIG. 1 - PAN PROCESSING MODE SELECTED FROM MODES ROW.

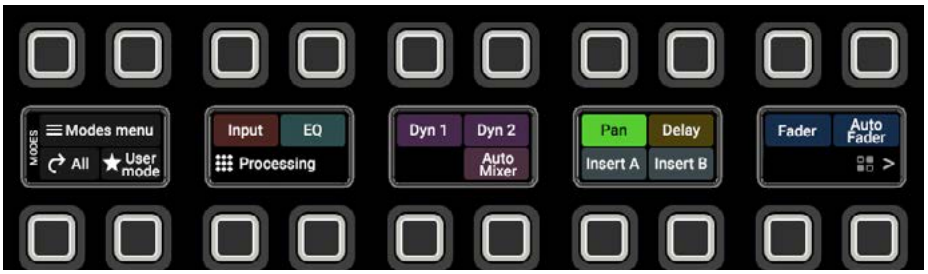
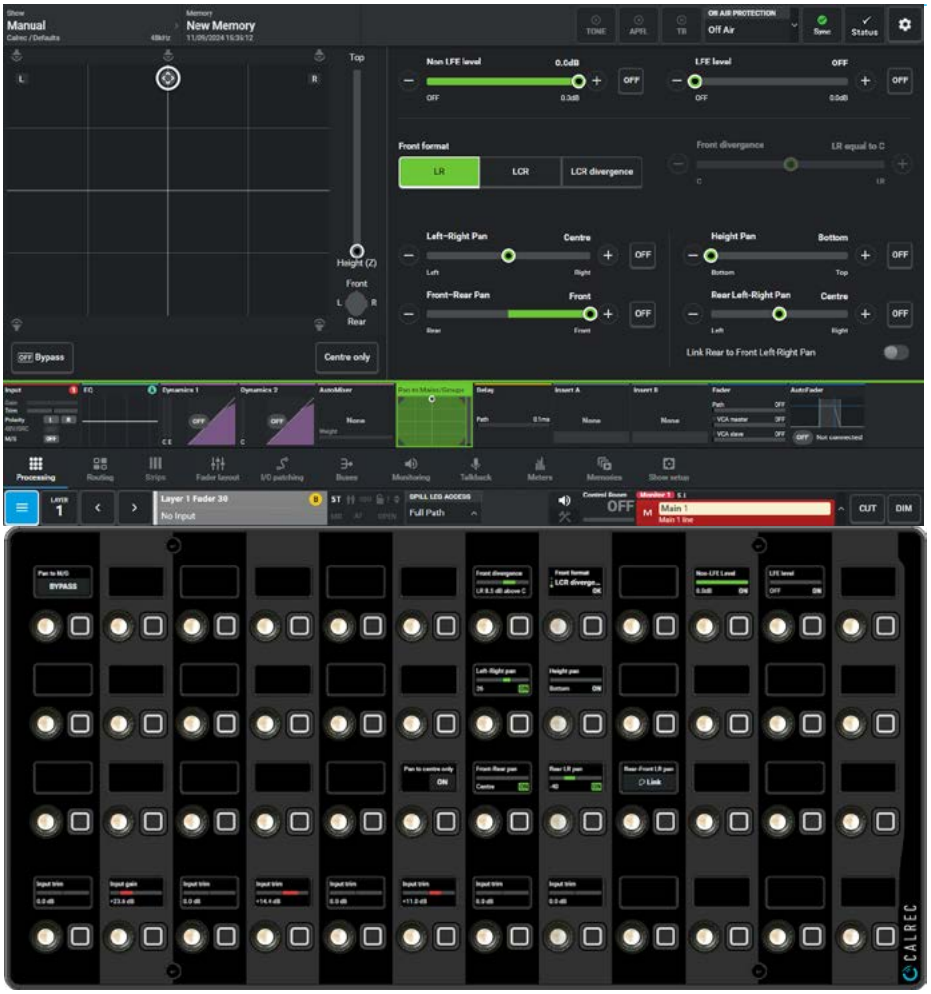


FIG. 2 - PAN CONTROLS IN LR MODE ON TOUCHSCREEN & WILD ASSIGN PANEL



Pan Controls

Depending on the width of the current path, and the width of the destination bus, different pan controls will be made available on the surface. For example, when sending a mono path to a mono bus, there will be no controls available.

When sending a mono path to a surround or immersive bus, a great deal more controls will be presented, allowing the user to control the mono path's placement in a surround or immersive field.

Tapping Processing>Pan from the Processing section of the Menu presents the user with controls that can be adjusted in a number of ways:

From the Touchscreen

- Dragging the sliders left and right for continuous controls.
- Using the + and - buttons at the end of the sliders.
- Using the on-screen buttons to select switch functions, e.g., On/Off.
- Dragging the puck control circle around the X-Y axes on the graph for left/right and front/rear positioning.
- Dragging the Height control circle up and down the Z axis for height positioning.

The resultant numerical values are shown in the top right-hand corner of each control and is also reflected on the graph.

From the Wild Assign Panel

- Moving the Rotary controls round to the left or right.
- Using the button next to the rotary control to switch functions On/Off.
- Pressing the top of the rotary controls down to reset parameters to default

The resultant numerical values & bar graph are shown in each individual TFT on the Wild Assign Panel.

The following controls are available from both the TFT touchscreen and Wild Assign Panel:

Front Pan: If the Front Format is set to LR, the (Front) Left-Right pan allows for the positioning of the signal in the L and R speakers. The button just to the right of the Left-Right pan control switches the Left-Right Pan position on/off.
Fig. 2 shows the control when switched out of circuit (OFF), while Fig. 3 shows the control when in circuit (ON). The speaker symbols also illuminate around the X-Y display to show active panning options. In this case, the L, R & C speaker symbols are active, so are illuminated. To the right of the X-Y and Z displays, Fig. 3 shows a button selector defining the Front Pan Format, with 3 options, LR, LCR and LCR Divergence, available to the user. The Front L-R and L-C-R buttons switch the Front Pan control between L-R panning and L-C-R panning.

FIG. 3 - PAN IN LCR MODE ON TOUCHSCREEN



FIG. 4 - PAN IN LCR DIVERGENCE MODE ON TOUCHSCREEN



Front Divergence: With Front L-C-R Divergence selected, the user can control the spread of the signal, ranging from fully converged in the C speaker, through equal level in L, R & C speakers, to full divergence, with no level in the C speaker and full level in the L & R speakers.

The divergence slider on the Touchscreen or the rotary controls on the Wild Assign panel only become active in front divergence mode, see Figs 6 on the next page.

Front-Rear pan: This control varies the position of the signal between the front and rear speakers.

The use of this control in combination with the Left-Right Pan control allows the user to steer and place the source audio in the sound field, as represented by the panning control/display to the left of the screen.

The button just to the right of the Front-Rear pan control switches the Front-Rear Pan position in/out of circuit, see Fig. 4.

Bypass M&G Pan only: When this switch underneath the X-Y display area is active, all the various pan controls are bypassed as though they had been switched out of circuit.

Note: this also displays a Bypass flag on the sub-menu icon, as shown in Fig. 4.

Lfe Level: Lfe varies the level sent to the Lfe speaker. When this control is switched out, no signal is sent to the Lfe. For all legs, other than Lfe itself, the Lfe level is off by default to prevent audio being added to the Lfe leg unintentionally. However, it can be added to the LFE speaker if required. When this control is switched out, no signal is sent to the LFE.

Non-Lfe Level: The level sent to all channels other than the Lfe channel can be varied with the Non-Lfe control when switched in circuit.

When this control is switched out (as it is by default) and the signal is panned to one or more channels other than the Lfe, the signal is sent at full level.

Note: the Non-Lfe control is turned on but set at the off level (by default) when an Lfe leg is being independently controlled. This is to prevent Lfe audio being added to the other legs unintentionally.

Centre only: This sets the signal to appear only in the centre speaker. It effectively overrides all pan positions. A message saying that 'No panning controls are available while centre only is enabled' is also displayed, see Fig. 5.

'Puck' Control: In addition to using the pan control sliders and switches, the pan position can be controlled by dragging the puck around the X-Y display area on the touchscreen.

The area available for panning changes depending on the panning format and the speaker symbols around it, showing which speakers the signal is being panned between.

FIG. 5 - PAN IN CENTRE ONLY MODE ON TOUCHSCREEN



FIG. 6 - INDEPENDENT REAR LEFT-RIGHT PAN MODE ON TOUCHSCREEN



When the 'Link Rear to Front Left-Right Pan' is in circuit, as shown in Figs 3 & 4 on the previous page, the puck and the green dot are shown in the same position and act in a true X-Y manner.

Note: the behaviour changes if the Rear Left-Right pan is NOT linked to the Front Left-Right pan as shown in Fig. 6.

Independent Rear Left-Right Pan: The Rear Left-Right Pan control, when NOT linked to the Front Left-Right Pan control, allows the user to vary the Rear Left-Right position to be set independently from that of the Front Left-Right Position.

The use of this control in combination with the Left-Right Pan, and the Front-Rear Pan control, allows the user to steer and place the source audio in the sound field, as represented by the control/display '**dot**' shown on the left of the screen.

Note: see the different positions of the 'puck' and 'dot'. Although the puck is showing the X-Y position, the green dot shows the actual pan position, as shown in Fig. 6.

Height Panning

Additional position control of the signal's height is available when panning a signal to an immersive path.

The combination of Left-Right (X), Front-Back (Y), and now Bottom-Top (Z) pan position controls allows the user to pan the signal in a 3-dimensional space (X,Y,Z).

The button just to the right of the Height pan control switches the Height Pan position in/out of circuit, as shown in Fig. 7 on the next page.

When the Height Pan switch is on, vertical height panning between the surround speakers at head height, and the speakers placed typically at ceiling height as top left and right front speakers for 5.1.2, 7.1.2 and 0.0.2 (height only) formats, or the speakers placed as top left and right front and top left and right rear speakers for 5.1.4, 7.1.4 and 0.0.4 (height only) formats, is enabled.

In addition to using the Height pan control sliders and switches, the area just to the right of the X-Y display also contains a Height (Z) control to provide Height panning.

Wild Assign Panel - Pan

The Wild Assign panel in Fig. 8 displays Pan control parameters, with the controls arranged as follows, and with each column/row identified by a position overlay as shown:

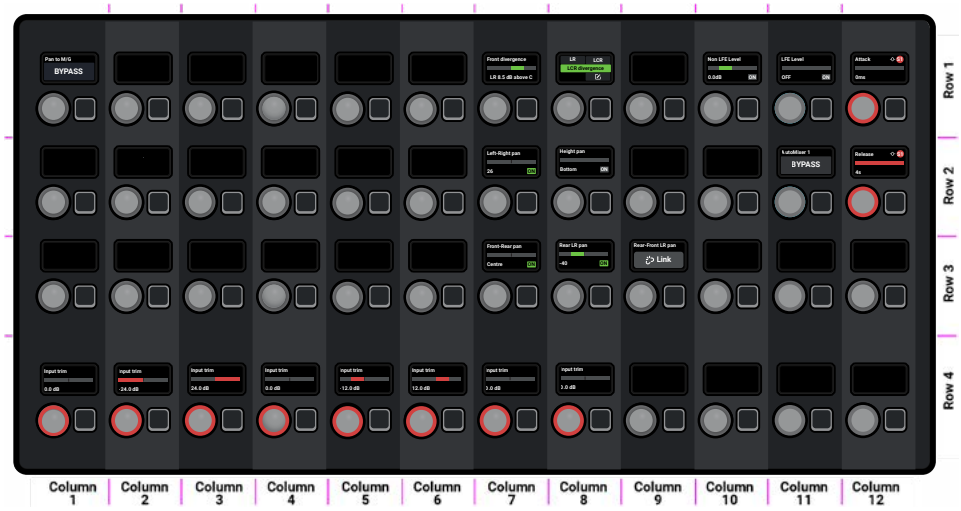
Column 1's top row control is a Bypass switch, from which all pan controls can be bypassed as though they had been switched out of circuit.

Column 6's 3rd row control is a Centre only ON switch. This sets the signal to appear only in the centre speaker. It effectively overrides all pan positions.

FIG. 7 - HEIGHT PAN MODE ON TOUCHSCREEN



FIG. 8 - WILD ASSIGN PANEL DISPLAYING PAN CONTROLS



Column 7 displays and controls the parameters for Front Divergence, Left-Right Pan and its On/Off switch, and Front-Rear Pan and its On/Off switch,

Column 8 displays and controls the parameters for Front format control switching between L-R, L-C-R and L-C-R divergence, Height Pan (Z) and its On/Off switch, and Rear L-R Pan and its On/Off switch.

Column 9's 3rd row control is the a Rear-Front L-R Pan Link button.

Column 10's top row control is used to set the Non LFE level and its On/Off switch.

Column 11's top row control is used to set the LFE level and its On/Off switch.

Pan Independence Controls

Using the independence dropdown shown previously in the EQ and Dynamics sections, it is possible to access each of the spill legs for stereo paths, 5.1 & 7.1 surround paths and 5.1.2, 5.1.4, 7.1.2 & 7.1.4 immersive paths. This allows parameter changes to be made on each spill leg. In the left of the path footer is a dropdown box labelled 'Spill Leg Access', which usually says 'Full Path'. When shown as Full Path, it is not possible to apply pan to each Mono leg of a Stereo channel. Likewise, for Surround or Immersive channels, no pan controls are made available. However, accessing each Spill leg allows the user to pan those legs to the required position.

Access Spill legs for Panning

Tapping on the dropdown box labelled 'Spill Leg Access', which normally says 'Full Path', opens the independence control table, which is used to determine which spill leg controls are be made to be independent. Clicking on a mono spill leg such as 'C' or 'Lfe', or clicking on a stereo spill leg such as 'L/R only', enables the pan controls, allowing the user to pan the selected spill legs anywhere in the 3-dimensional space, i.e., X, Y & Z panning.

DELAY

Argo has three types of delay available: Input Delays, Path Delay and Output/Direct Output Delays, which can be at the same width or downmixed, and can be placed in various positions in the Audio Chain.
The Processing>Delay page on the touchscreen is accessed from the Modes row of a standard fader panel by first tapping Modes Menu, then by tapping Processing, before finally tapping Delay, as shown in Fig. 1. Alternatively, the user can tap the appropriate icons on the touchscreen. This displays the Delay mode with the same information also shown on the Wild Assign panel, see Fig. 2.

- **Input delay:** up to 5.4s available per path from an input delay pool of up to 256 mono legs. For example, when assigning input delay to a 5.1 path, six of the mono legs are used.
- **Path delay:** up to 5.4s available per path that are **always** available for all paths. Path delay can be placed Pre-EQ, Pre-fader or Post-fader
- **Output & Direct Output delay:** up to 5.4s available per path from an output delay pool of up to 256 mono legs, applied to Groups, Auxes, Mains and Direct Outputs, in the same way as the Input delay.

Note: Input, Path and Output delay can be used individually or in combination. The number of input & output delay resources available are shown on the TFT touchscreen.

Individual Path Delay

The Path Delay control is always available on all Channel, Group, Main, Aux & Track paths. The delay process position can be placed using the Position buttons below the Path delay control on the Touchscreen, as shown in Fig. 2.
The three-state button cell allows the signal chain positioning to be changed between Pre-EQ, Pre-fader & Post-fader.

As shown in **"Channel Signal Flow" on page 48,** the Path Delay is inserted at the end of the processing block, after inserts and dynamics modules.

The Pre-EQ and Post-fader sends are situated after the respective Path Delay, but it is worth noting that the Pre-fader send is situated prior to the Pre-fader Path Delay.

FIG. 1 - DELAY PROCESSING MODE SELECTED FROM MODES ROW

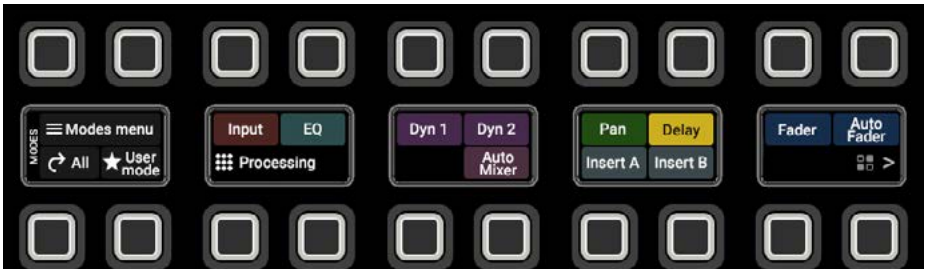
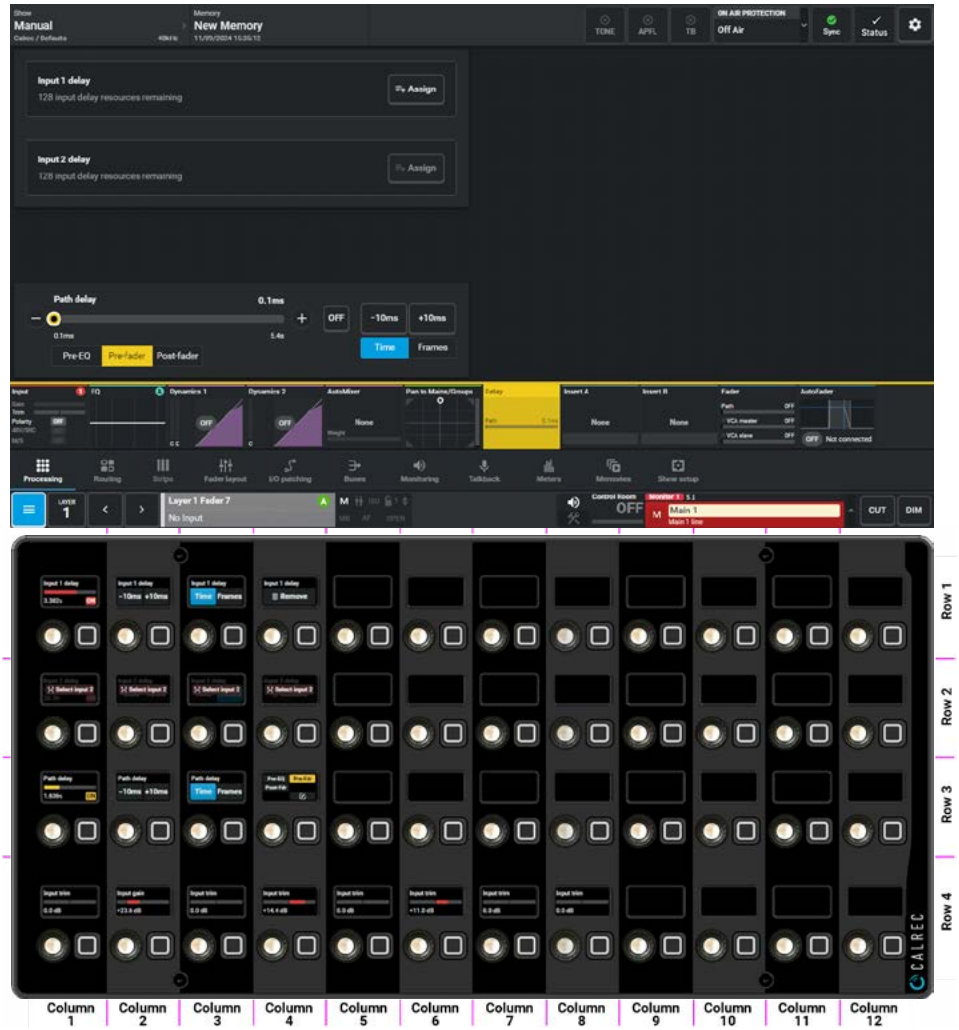


FIG. 2 - PATH DELAY CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



Input & Output Delay Controls
Tapping Processing>Delay opens the delay sub-menu, with Fig. 2 on the previous page displaying Path Delay, which is always available, and the Input 1 and Input 2 delays. Unassigned options can be added by tapping 'Assign'. Delay controls can be adjusted in a number of ways:

From the Touchscreen
- Dragging the sliders left and right for continuous controls.
- Using the + and - buttons at the end of the sliders.
- Using the On-Screen buttons to select switch functions, e.g., On/Off.

The resultant numerical values are shown in the top right-hand corner of each control above the bar graph.

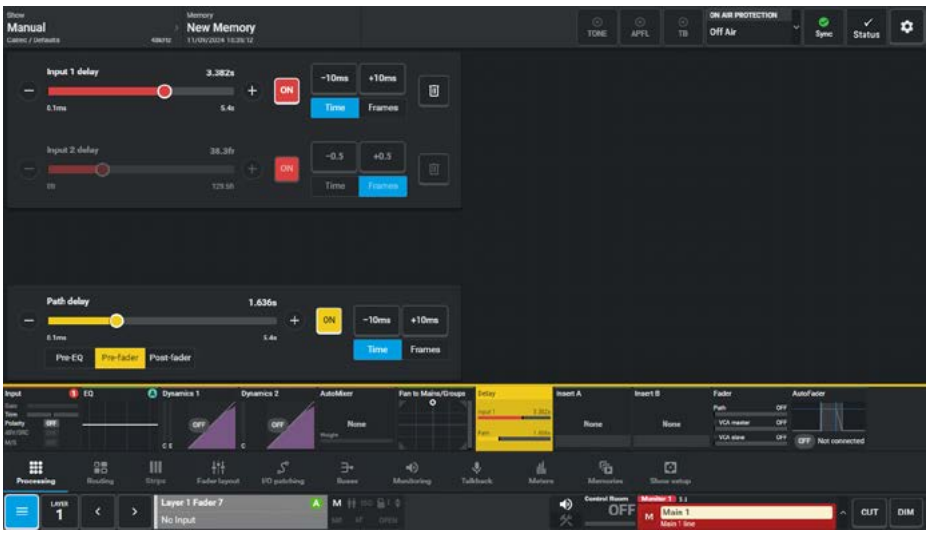
From the Wild Assign Panel
- Moving the Rotary controls round to the left or right.
- Using the button next to the rotary control to switch functions On/Off.
- Pressing the top of the rotary controls down to reset parameters to default.

The resultant numerical values & bar graph are shown in each individual TFT on the Wild Assign Panel.

Fig. 3 shows a mono input channel that has had Input 1 & Input 2 delays assigned. All 3 delays have been switched on using the slider switch to the right of the delay duration controls.

Note: if the input of the channel is selected to Input 1, the Delay value for Input 2 is also shown but is greyed out. This cannot be altered until the user changes to Input 2 and vice versa.

FIG. 3 - PATH DELAY, INPUT 1 & INPUT 2 DELAYS ON TOUCHSCREEN



The following controls are available from both the TFT touchscreen and Wild Assign Panel:

Assign or Remove Delay buttons: The user can tap '**Assign**' to assign Input and/or Output /Direct Output delay processing from their respective pools.

If the delay is no longer required, the user can tap the '**Bin**' icon to return that delay resource back to the pool.

Delay Duration: The user can adjust the amount of delay applied to any of the delays between 0.1ms up to 5.4s.

Step Buttons: To the right of each control block are +/- Step buttons, with the Step size shown, e.g., 10ms or 0.5fr.

Note: this can change depending on the delay units used (Time or Frames) as set by the switches below the Step buttons.

The frame rate in frames per second (fps) will change the delay amount being applied. There are 5 frame rates available: 23.98 fps, 24 fps, 25 fps (PAL), 29.97 fps (NTSC) and 30 fps, as set in Show setup>Delay options.

Path Delay Position: The user can select the position in the audio chain for Path delay to be applied by tapping on the Pre-EQ, Pre-fader or Post-fader buttons under the Path delay control.

Delay On/Off Switch: The user can switch in/out the amount of delay being applied to the path using the slider switches to the right of each delay duration control.

Wild Assign Panel - Input Delay
The wild assign panel in Fig. 2 on the previous page shows the Delay controls for Input & Path delays.

The Delay parameters are arranged in 3 rows across columns 1 to 4, with each column/row being identified by a position overlay as shown. The controls are arranged as follows:

Row 1 - Cell 1 to Cell 4 shows
- Input 1 Delay and its On/Off switch.
- Input 1 Delay 10ms Delay stepper.
- Input 1 Delay Time/Frame switch.
- Input 1 Delay Remove Assignment.

Row 2 - Cell 1 to Cell 4 show the same set of controls for Input 2 as for Input 1, but Input 2 must first be selected to show its delay values.

Row 3 - Cell 1 to Cell 3 show the same set of controls for Path delay as for Input 1. However, as Path delay is always present, the Path Delay position is shown in Cell 4.

Group and Direct Output Delays
Fig. 4 shows a 7.1.4 group with path delay and 4 direct output delays assigned. Note how the direct output delays are only available if the user has first created direct outputs for that path.

In this case, four different direct outputs at various widths have been assigned: the original 7.1.4 width, a 5.1 downmix width, a stereo downmix width and a mono downmix width, each of which has its own delay setting.

The user in this example has decided to work in frames of delay by changing the unit selection from Time to Frames.

Note: Output Delay can be applied to Mains, Auxes & Tracks. Channels and Groups can also have Output delay applied in the form of Direct Outputs.

Wild Assign Panel - Group and Direct Output Delay
The wild assign panel in Fig. 5 shows the Delay control parameters for the same 7.1.4 Group Path delay and 4 user assigned Direct Output delays, as shown on the touchscreen above it.

The Delay parameters are arranged in blocks across rows 1-3, with each column/row being identified by a position overlay as shown:

Row 1 - Cell 5 to Cell 8 shows a Mono Dir Output Delay and its On/Off switch, Dir Output Delay 10ms Delay stepper, Dir Output Delay Time/Frame switch and Dir Output Delay Remove Switch.

Row 2 - Cell 5 to Cell 8 shows a Stereo Dir Output Delay and its On/Off switch, Dir Output Delay 10ms Delay stepper, Dir Output Delay Time/Frame switch and Dir Output Delay Remove Switch.

FIG. 4 - GROUP AND DIRECT OUTPUT DELAY CONTROLS ON TOUCHSCREEN



FIG. 5 - GROUP AND DIRECT OUTPUT DELAY CONTROLS ON WILD ASSIGN PANEL



Row 1 - Cell 9 to Cell 12 shows a 5.1 Dir Output Delay and its On/Off switch, Dir Output Delay 10ms Delay stepper, Dir Output Delay Time/Frame switch and Dir Output Delay Remove Switch.

Row 2 - Cell 9 to Cell 12 shows a 5.1.4 Dir Output Delay and its On/Off switch, Dir Output Delay 10ms Delay stepper, Dir Output Delay Time/Frame switch and Dir Output Delay Remove Switch.

Row 3 - Cell 1 to Cell 4 - shows the Path Delay and its On/Off switch, Path Delay 10ms Delay stepper, Path Delay Time/Frame switch, and the Path Delay position selector.

Main Outputs and Downmix Delays
Fig. 6 shows the delay page for a 5.1.4 - Main Output, on both the TFT Touchscreen and Wild Assign panel.

Apart from path delay, which is always available, the user has also assigned output delays for the 5.1.4 main output, the 5.1 downmix output, the stereo downmix output and the mono downmix output.

Two delay links are also available. Assigning two or more delays to the same delay link allows the user to control the delay duration of all delays from any of the individual controls within the link.

The linking is done relatively, so that if one link member is set to 1.1s and another is set to 2.1s, then adding 0.1s to either will change both to 1.2s & 2.2s respectively.

Note: to have the same delay in each link member, set each output to the same value as the others when not in the link, before then establishing the link.

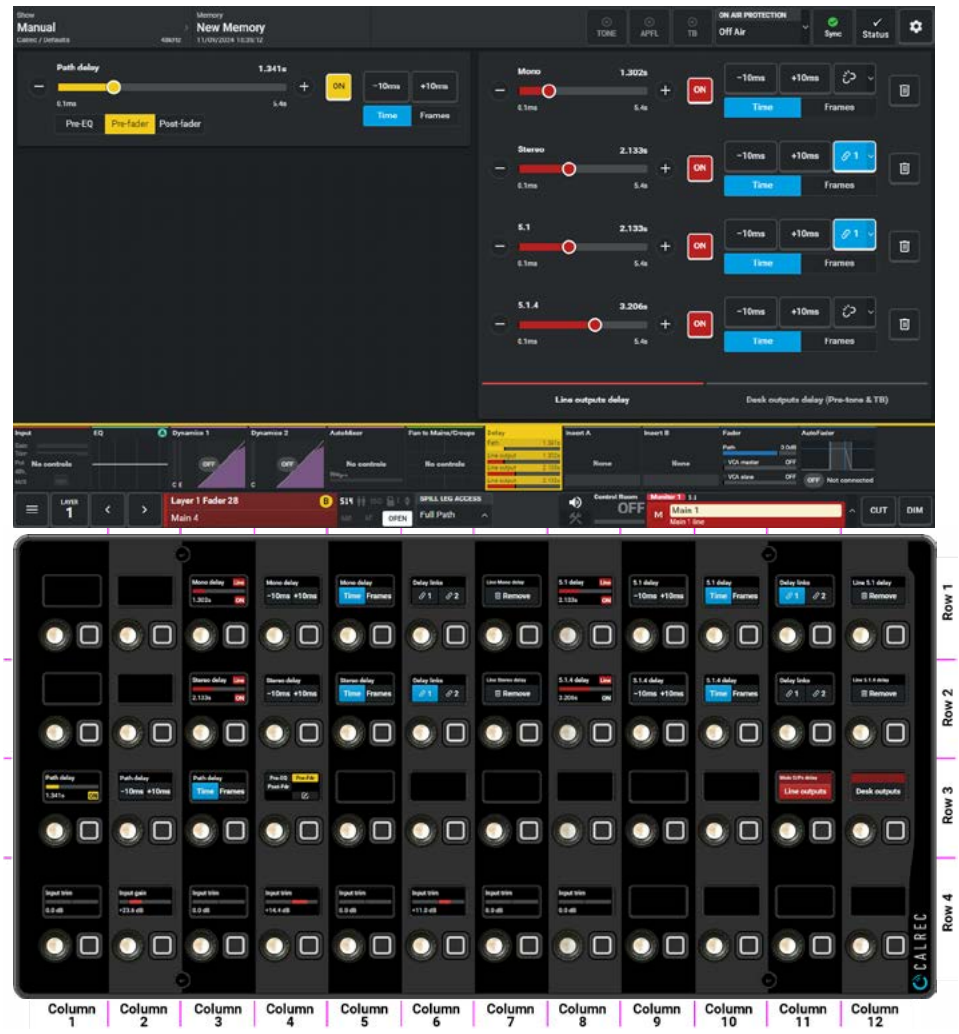
Main Line and Main Desk Outputs
On Argo there are two types of outputs from the main buses, Line Outputs & Desk Outputs. They differ because Desk Outputs are taken pre-tone & talkback, whereas Line Outputs are taken post-tone & talkback. The user can access either the Main Line outputs delay set or the Main Desk outputs delay set by tapping on the areas above the main output & downmix output delay duration controls.

Note: the Main Line delay outputs and Main Desk delay outputs may be put in the same link if required.

Also note that for all stereo, surround or immersive paths, it is not possible to independently alter the delay settings of individual spill legs.

Accessing the dropdown box labelled 'Spill Leg Access', which normally says 'Full Path', and selecting any of the Independent Spill Legs will open a message warning users that 'No Controls Available'.

FIG. 6 - MAIN AND OUTPUT DELAYS ON TOUCHSCREEN & WILD ASSIGN PANEL



Wild Assign Panel - Output Delay
The wild assign panel in Fig. 6 shows the Delay control parameters for the same 5.1.4 Main Path delay and 4 user assigned Output delays as shown on the touchscreen above it. The Delay parameters are arranged in blocks across rows 1-3 with each column/row identified by a position overlay:

Row 1 - Cell 3 to Cell 7 shows a Mono Line Output Delay and its On/Off switch, Line Output Delay 10ms Delay stepper, Line Output Delay Time/Frame switch and Output Delay Links Selector.

Row 2 - Cell 3 to Cell 7 shows a Stereo Line Output Delay and its On/Off switch, Line Output Delay 10ms Delay stepper, Line Output Delay Time/Frame switch and Output Delay Links Selector.

Row 1 - Cell 8 to Cell 12 shows a 5.1 Line Output Delay and its On/Off switch, Line Output Delay 10ms Delay stepper, Line Output Delay Time/Frame switch and Output Delay Links Selector.

Row 2 - Cell 8 to Cell 12 shows a 5.1.4 Line Output Delay and its On/Off switch, Line Output Delay 10ms Delay stepper, Line Output Delay Time/Frame switch and Output Delay Links Selector.

Row 3 - Cell 1 to Cell 4 - shows the Path Delay and its On/Off switch,
Path Delay 10ms Delay stepper,
Path Delay Time/Frame switch, and the Path Delay position selector.

Row 3 - Cells 11 & 12 - select between the path's Line Output or Desk Output delay sets for display.

INSERTS

Inserts provide a quick way to insert signal processing into the path. Input channels, Groups, Mains, Auxes and Tracks can each have two inserts labelled Insert A & Insert B. The configuration is the same for either.

Configuring inserts is a two step process. The procedure is the same for either of the 2 available inserts.

Any insert send and return resource should be patched to output transmitters and input receivers respectively. The second step is to connect the insert to the required paths on the surface.

This process is shown in Fig. 1. Each insert has a send and a return. External port connections and Sends/Returns appear in the IO patching screen. Here, they can be patched to and from external devices.

For Argo, there is a pool of up to 1024 Inserts available (depending on the DSP pack size). These can be used for channels, groups, mains, auxes & tracks.

The Processing>Insert A or Insert B page on the touchscreen is accessed from the Modes row of a standard fader panel by first tapping Modes Menu, then by tapping Processing, before finally tapping Insert A or Insert B, as shown in Fig. 2. Alternatively, the user can tap on the appropriate icons on the touchscreen. This displays the Insert mode, with the same information also shown on the Wild Assign panel, see Fig. 3.
The Processing>Insert A and Processing>Insert B sub-menus allow the user to allocate inserts from this pool to the various paths.

Note: the Monitor Sends & Returns Inserts are always available. The control for that Insert On/Off is in the monitor section.

Insert Controls on Wild Assign panel

There are just 2 controls per insert on the Wild Assign panel: Insert A or Insert B On or Off, and the path position selector for Insert A or Insert B, which places the selected insert either Pre-EQ, Pre-fader or Post-fader, as shown in the lower section of Fig. 3.

FIG. 1 - INSERT ABSTRACTION

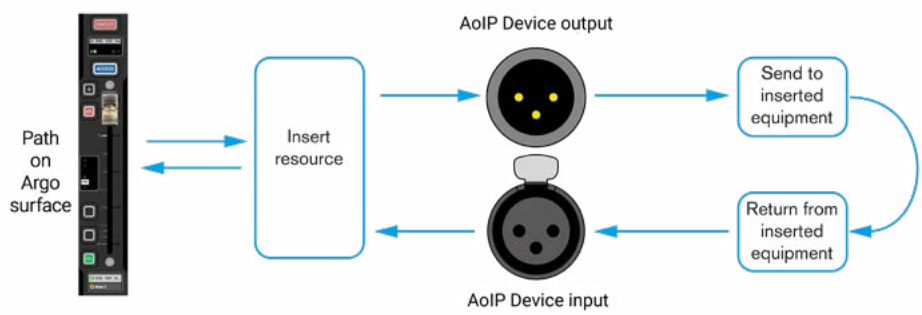


FIG. 2 - INSERT A OR B PROCESSING MODE SELECTED FROM MODES ROW

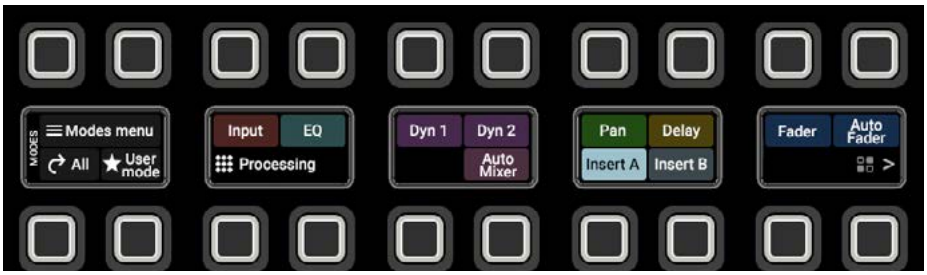
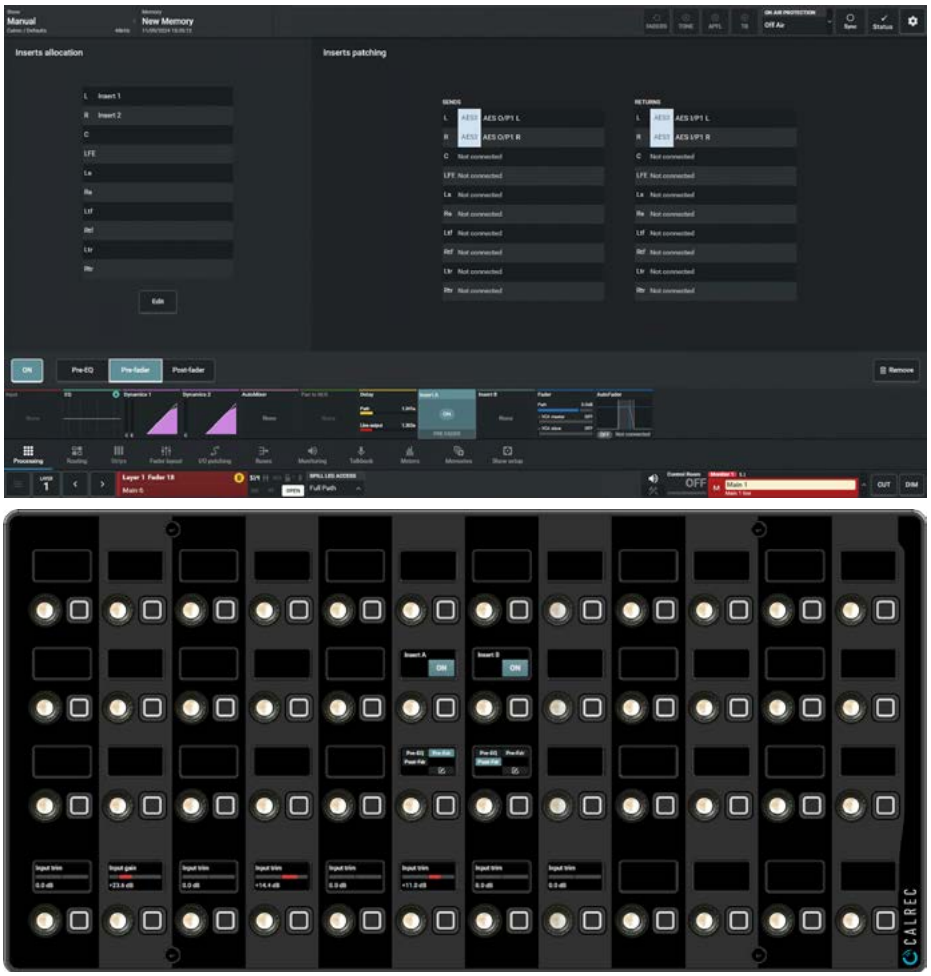


FIG. 3 - PATH DELAY CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



Path Inserts

Path inserts are associated with the attached path. For example, if an input channel is attached to a fader, and its path's insert is patched to an IO box, then the input channel on that fader will be moved to a different fader. The insert patching will move along with it to appear on the fader's insert send and return displays.

Add Inserts

Fig. 4 shows the '**Add Insert**' button, used to access the insert pool. This page is displayed when Processing>Insert A is selected and no Insert has been put in place for this path.

Select Inserts

Fig. 5 shows the dialogue box that appears when the '**Add Insert**' or **'Edit'** button (for paths with inserts present) is tapped. This allows the user to select which Insert(s) are used with this path.

The user selects the leg(s) of the path on the left and the inserts to use on the right. Pressing the '**Connect**' button confirms the selection.

The '**Remove**' button disconnects leg(s) from the A or B Insert, while the '**Done**' button exits the dialogue box.

Patching Fader Insert Sends

Fig. 6 shows that the Fader Insert sends on the left are ready to be connected to the required transmitter stream outputs on the right. This is in the I/O Patching>Desk Outputs-Fader insert sends page. The available insert resources are shown in the list in Mono format on the left.

The destination output transmitter streams are shown in the list on the right. Select the required insert resources, then select the paths to which the insert should be connected before using the '**Connect**' button to patch the source to the destination.

FIG. 4 - ADD INSERT A

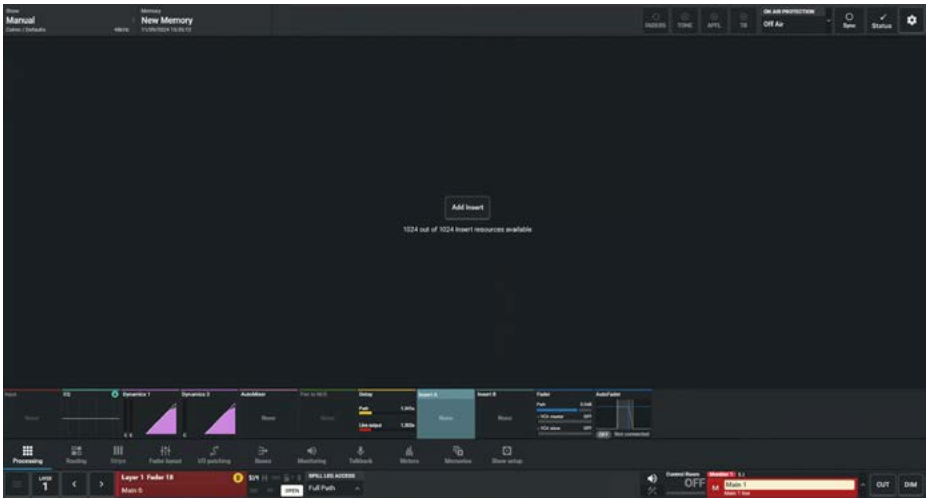
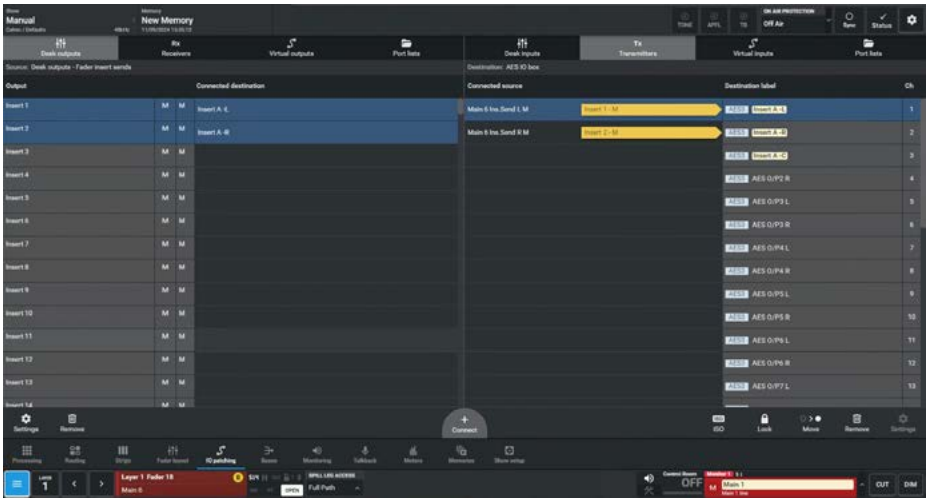


FIG. 5 - SELECT INSERTS NUMBERS FOR INSERT A



FIG. 6 - PATCHING INSERT SENDS



Naming insert resources

Insert resources may be labelled under 'Port lists' in the System Settings section of the interface.

Insert resource lists

Insert resources can be assigned to Port Lists. Port Lists provide a way of filtering the available insert resources. These can be selected when patching insert resource sends and returns to transmitters/receivers, or connecting insert resources to paths.

Patching Fader Insert Returns

Fig. 7 shows that the Fader Insert returns on the right are connected from the required input receivers stream on the left, patched using the **'Connect'** button on the **IO Patching** page.

Insert Allocation

Fig. 8 shows the current Insert allocation for each of the legs of the selected path on the left, and the patching status of Insert Sends & Returns and the transmitters and receivers on the right. Also shown are the various controls used to manage inserts.

Insert On/Off Button

The Insert On/Off control is found in the bottom left of the display. This switches Insert A in or out of the selected path. This On/Off indicator is also shown with the Sub-menu Icon.

Insert Position

The buttons to the right of the Insert On/Off button, in the bottom left of the display, show the current position placement for this insert. The user may place the insert Pre-EQ, Pre-fader or Post-fader. Insert A and Insert B can be fed from different positions in the Audio path.

Remove Inserts

Fig. 9 shows the 'Remove connections' dialogue box for Insert B. This appears when the 'Remove' button in the bottom right of the display is tapped.

This warns the user that all Insert connections associated with this path will be removed, but that the IO patches will not be changed. The removed Inserts are returned to the available Insert pool.

Note: for all stereo, surround and immersive paths, it is not possible to independently alter the insert settings of spill legs. As such, accessing the dropdown box labelled 'Spill Leg Access', which normally says 'Full Path', and selecting any of the Independent Spill Legs will show the '**No Controls Available**' message for the Insert page of a Spill Leg.

FIG. 7 - PATCHING FADER INSERT A RETURNS

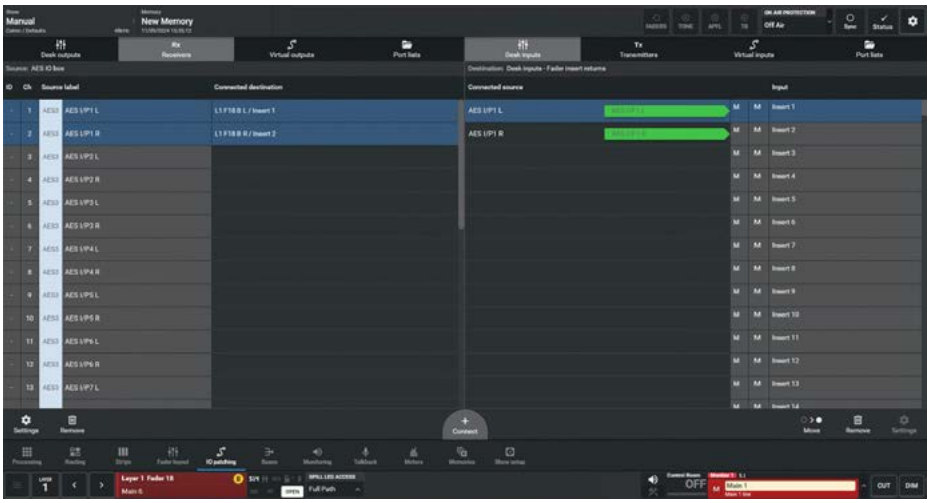


FIG. 8 - SELECT INSERTS NUMBERS FOR INSERT A

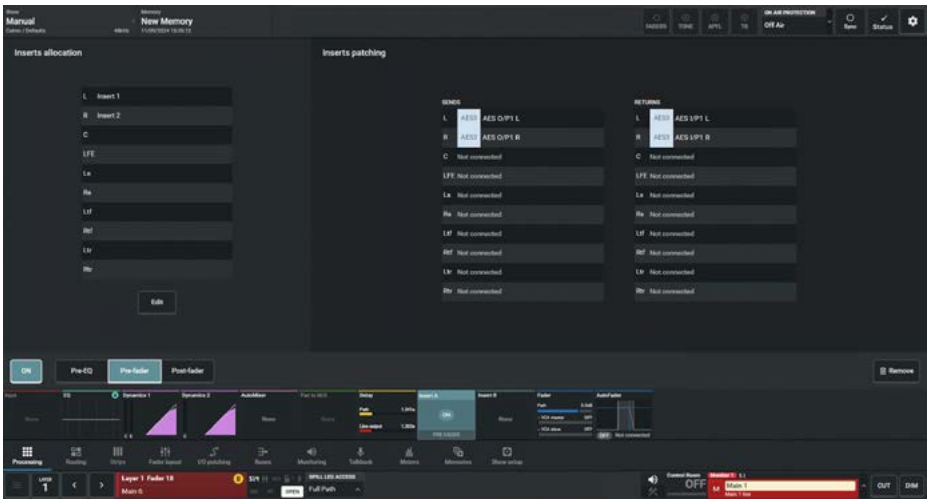
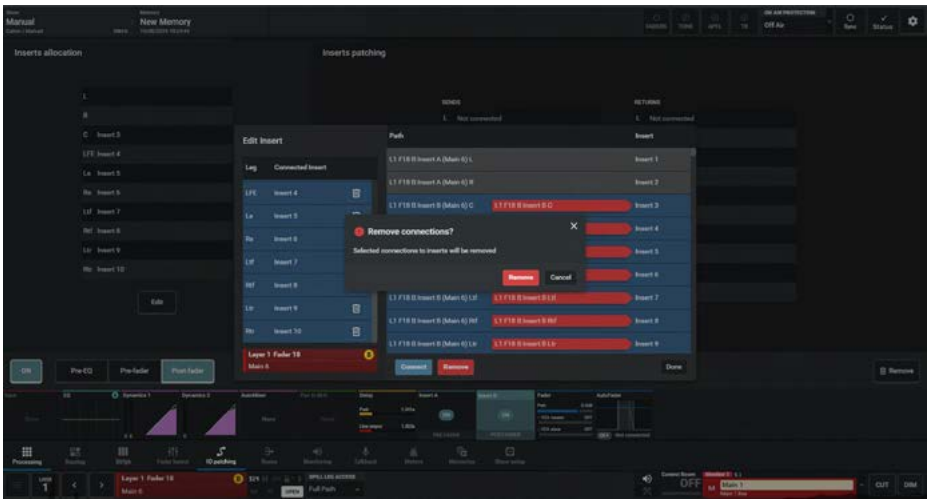


FIG. 9 - PATCHING INSERT SENDS



FADER

The Fader page consists of two tabs. The first provides the user with a set of faders related to the currently accessed path. The user can control the Fader, Cut, PFL and AFL parameters of all legs of the accessed path. These are known as Spill legs. The second tab is used to access the Downmix levels for Surround or Immersive paths.

The Processing>Fader page on the touchscreen is accessed from the Modes row of a fader panel by first tapping Modes Menu, then by tapping Processing, before finally tapping Fader, as shown in Fig. 1. Alternatively, the user can tap the appropriate icons on the touchscreen, as shown in Fig. 2. The touchscreen displays/controls the same information on the Wild Assign panel shown below. The user presses the appropriate ACCESS button to select the path whose Fader is to be accessed.

Spill Faders

Fig. 2 shows the Fader page for an input path which is a 7.1.4 immersive channel. On-screen faders can be slid up and down by touch from the touch screen, or by using the rotary controls and buttons on the Wild Assign panel underneath. Faders are displayed from left to right as follows: path fader (if Mono)/master path fader for all other path widths, followed by the Spill legs, arranged in order, in this case: L/R, C, LFE, Lss/Rss, Lrs/Lss, Ltf/Rtf & Ltb/Rtb.

Note: on the Wild Assign panel, the path, or Master path, and its Spill leg controls are arranged in columns from left to right in the same order as on the touchscreen.

The Spill Fader & Downmix Fader controls can be adjusted in a number of ways:

From the Touchscreen

- Dragging the sliders up and down for continuous controls.
- Using the on-Screen buttons to select switch functions, e.g., On/Off.

The resultant numerical values are shown just above the on-screen faders.

From the Wild Assign Panel

- Moving the Rotary controls round to the left or right.
- Using the button next to the rotary control to switch functions On/Off.
- Pressing the top of the rotary controls down to reset parameters to default.

The resultant numerical values & bar graph are shown in each individual TFT on the Wild Assign Panel.

The following controls are available from both the TFT touchscreen and Wild Assign Panel in Spill Fader mode:

Cut: The user can cut the output of the path or spill leg by tapping this button. When controlled from the Wild assign panel, the Fader levels of the path fader, or master path fader and Spill legs, are controlled using the rotary controls, while the Cuts are controlled using the adjacent button. If a multichannel path's master path is cut, all spill legs are also cut. The CUT indication may still appear depending on the 'Fader Cut/On button function' setting in System settings>General settings.

Fader Levels: The user can tap and drag fader knobs to modify the level. The current level is shown by the position of the fader knob and is also shown numerically in the box just above the on-screen faders.

FIG. 1 - FADER PROCESSING MODE SELECTED FROM MODES ROW

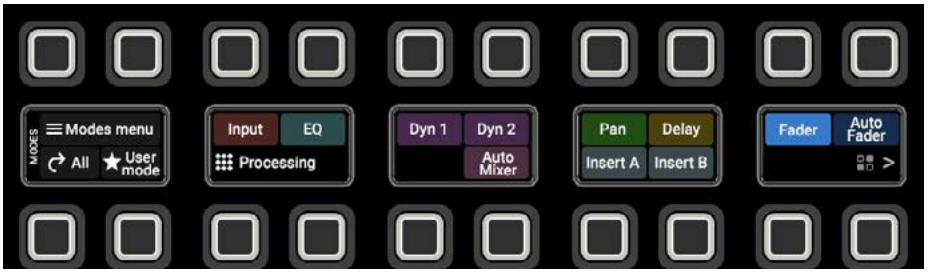
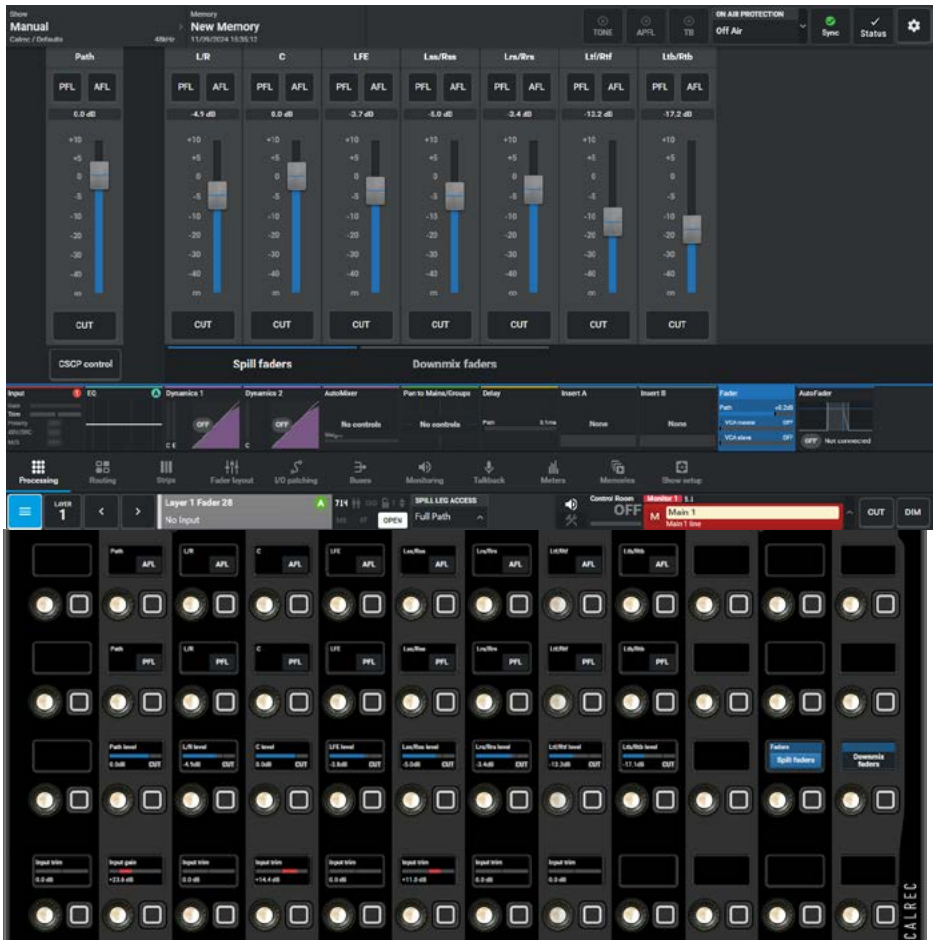


FIG. 2 - SPILL FADER CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



PFL & AFL: The user can test the PFL (pre-fader listen) or AFL (after-fader listen) using the PFL or AFL buttons. If the master path is AFL'd or PFL'd on a stereo, surround or immersive path, all spill legs are also AFL'd or PFL'd. The PFL & AFL buttons for the path, or master path, and Spill legs are accessed by tapping the buttons on the touchscreen, or by pressing the buttons on the Wild Assign panel.

Note: the 2 Tabs can be accessed by tapping on either the Spill Faders Tab or the Downmix Fader tab on the Touchscreen. Alternatively, the user can press the relevant buttons on the lower right area of the Wild Fader panel.

Downmix faders

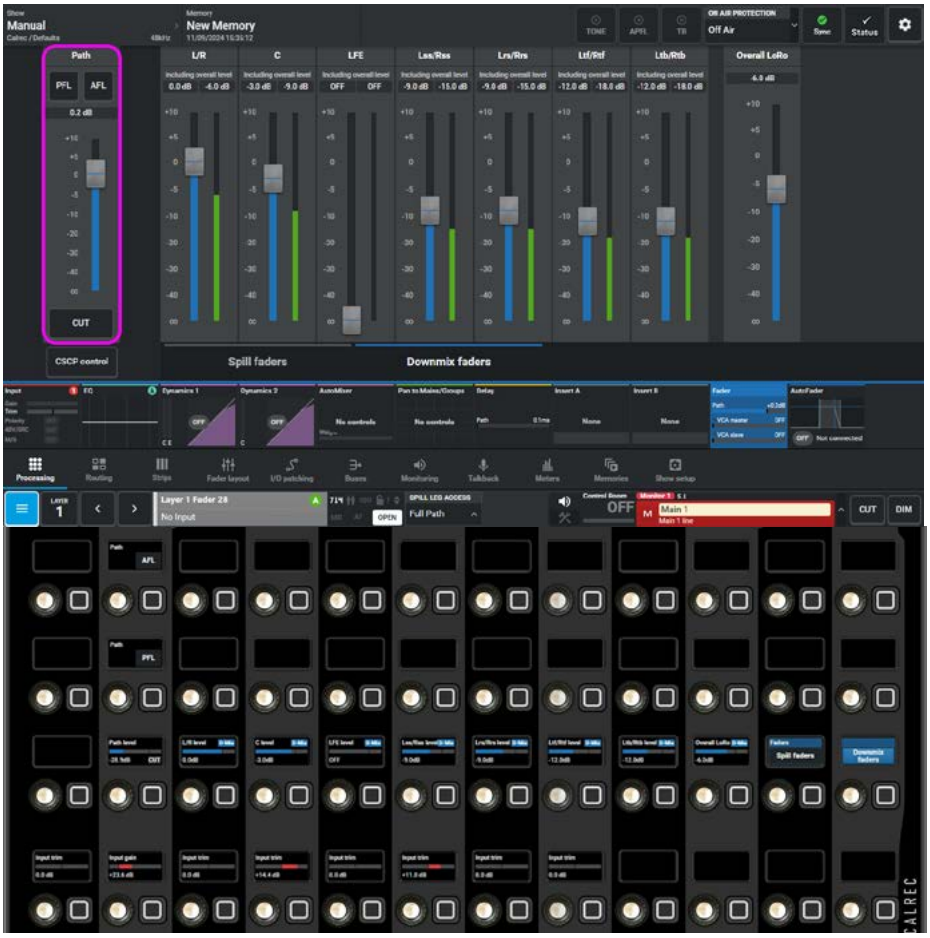
The second Processing>Fader tab shows the downmix fader controls, used for adjusting the levels for each spill leg into a Stereo Downmix. Fig. 3 shows this for a 7.1.4 immersive channel.
On-screen faders can be adjusted by touch from the touch screen, or altered by using the rotary controls and buttons on the Wild Assign panel underneath.
The faders are displayed from left to right as follows: the master path fader, which operates as an overall controller for all legs of the multichannel path, followed by the Spill legs arranged in order. For a 7.1.4 path, this is as follows: L/R, C, LFE, Lss/Rss, Lrs/Lss, Ltf/Rtf and Ltb/Rtb. The final fader is the Overall LoRo stereo downmix master level control. It should be noted that since mono & stereo paths do not have downmix faders, the second tab is greyed out.

Note: on the Wild Assign panel, the master path and its Downmix leg controls are arranged in columns from left to right and in the same order as the touchscreen.

The following controls are available from both the TFT touchscreen and Wild Assign Panel in Downmix Fader mode:

Fader Levels: The user can tap and drag the fader knobs to modify the levels of each of the faders.

FIG. 3 - DOWNMIX FADER CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



The current value of the fader level is shown by the position of the fader knob and is numerically in the box just above the Downmix faders. To the right of the Fader knob is a second green bar graph, showing the Combined level of the individual downmix leg level and the LoRo overall fader level. On the Wild Assign panel, the individual downmix leg levels are shown without the combined level indication, and the separate LoRo is shown further to the right, next to the Spill level or Downmix level tab selector buttons.

Cut: There are no Cut buttons on downmix faders. If the downmix contribution leg is not wanted (such as LFE) from the individual fader, it can be dragged to the 'Off' position on the touchscreen, or the rotary control turned full left. If the master path is cut on a multichannel path, all legs are also cut. The master fader's level & cut are controlled from the Wild Assign panel using the rotary control and adjacent button, controlling to the level and cut respectively.

PFL & AFL: In Downmix mode, only the path master is provided with PFL (pre-fader listen) or AFL (after-fader listen), using its PFL or AFL buttons. If the master path is AFL'd or PFL'd on multichannel path, all legs are also AFL'd or PFL'd. The PFL & AFL buttons for the master are accessed by tapping the buttons on the touchscreen or by pressing the buttons above the path master on the Wild Assign panel.

CSCP control: Underneath the master fader is the CSCP control button. When the CSCP controller is active, each path fader, or master path fader, can be individually enabled/disabled to respond to CSCP external commands.

Fader displays in VCA Groups
The fader on the left in the Processing>Fader page shows the mono or multichannel master fader, which controls the level of all 'legs' belonging to it. The level of that fader can be affected when that path is a member of a VCA Group.

Fig. 4 shows a fader normally shown as part of the Processing>Fader page, as highlighted in Fig. 3 on the previous page. It is not part of a VCA Group and the fader level which is shown as 0.0dB is the actual level for that path, **'Fader 1'**.

Fig. 5 shows 2 more faders, **'Fader 2'** and **'Fader 3'**, which are in a VCA Group. Fader 2 is the group master and Fader 3 is a member of that group. Fader 2 is a pathless VCA master, as it has no path associated with it and is set to a fader level of +5.0 dB. Fader 3 is controlled by this master and is set to a fader level of -22.0dB. As Fader 2's level is adjusted, this affects the levels of all faders within the group

Consequently, Fader 3's resultant level is a combination of Fader 2 and Fader 3 levels. Fader 3 shows this combined level of -17.0dB as both a green meter bar and a numeric value above the fader. Fig. 6 shows 3 more faders, **'Fader 4'**, **'Fader 5'** and **'Fader 6'**, which are in a VCA Group. Fader 4 is the overall master. Fader 5 is a submaster to the overall master. Fader 6 is controlled by the submaster.

The level of the path on Fader 6 is affected by both the master & submaster. In addition, Fader 4 and Fader 5 have paths attached to them, which is controlled by the master and submaster respectively.

When a Fader becomes a master, the fader will now show and control the master fader level by default. However, when the master also has a path on that fader, the path level can be adjusted by holding down its ACCESS button, at which point the fader will jump to the position of the path on that fader. While the ACCESS button is held, moving the fader position will change the level of the path on the fader instead.

FIG. 4 - FADER 1 NOT IN A VCA GROUP

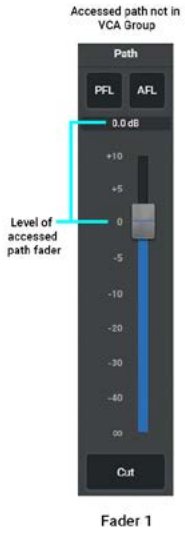


FIG. 5 - FADERS 2 & 3 - MASTER AND SLAVE VCA GROUP

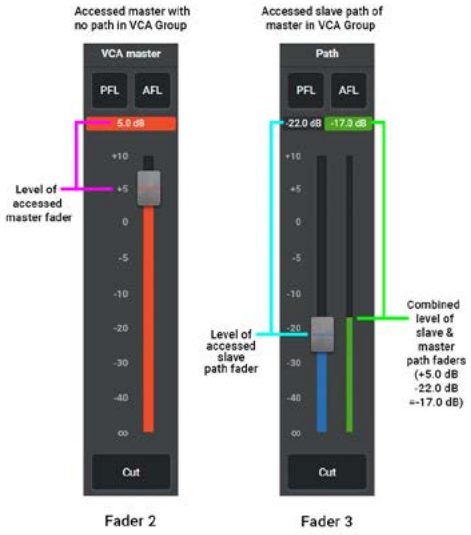
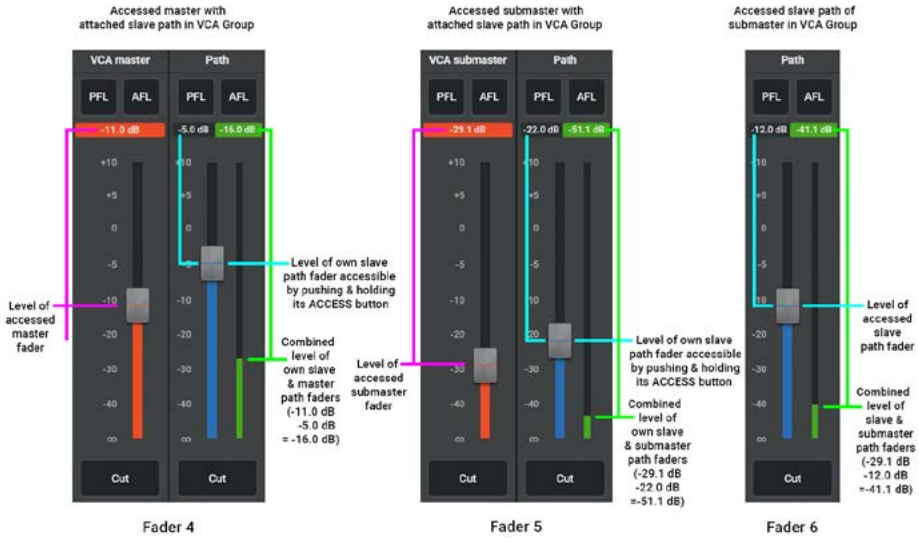


FIG. 6 - FADERS 4,5 & 6 - MASTER, SUBMASTER AND SLAVE VCA GROUP



Fader 4 is set to -11.0dB, while the path on this master is set to -5.0dB. As Fader 4's master level is adjusted, the submaster on Fader 5's level, and the levels of all paths within the group, including the path on its own fader, will also be adjusted.

Fader 4's resultant level will be a combination of Fader 4's master and path levels. Fader 4 shows this combined level of -16.0dB as both a green meter bar and a numeric value above the fader.

Fader 5 is set to a level of -29.1dB and the path on this submaster is set to a level of -5.0dB.

As Fader 5's master level is adjusted, th levels of all faders it controls, including the path on its own fader, are also adjusted. The resultant level for the path on Fader 5 is the combination of Fader 5's master & path levels. Fader 5 shows this combined level of -51.1dB as both a green meter bar and a numeric value above the fader.

Fader 6's level is set to -12.0dB. It is affected by both master and submaster level changes. Fader 5's submaster level is -29.1dB. As such, the resultant level for the path on Fader 6 is a combination of Fader 5's submaster level and Fader 6's path level. Fader 6 shows this combined level of -41.1dB as both a green meter bar and a numeric value above the fader.

AUTOFADERS (NOT YET AVAILABLE FOR IMPULSEV)

Autofaders allow faders to be opened and closed under the control of another system through the use of GPIs. To control an assignable AutoFader, select the Processing>Autofader page from the Modes row of a fader panel by first tapping Modes Menu, then by tapping Processing, before finally tapping AutoFader, as shown in Fig. 1. Alternatively, the user can tap the icons on the touchscreen as shown in Fig. 2. The Touchscreen displays/controls the same information on the Wild Assign panel shown below. The user presses the appropriate ACCESS button to select the path whose AutoFader is to be accessed.

The AutoFader screen forms a visual representation of the behaviour of an AutoFader's position over time, providing information about which AutoFader is in use from the System settings>GPI page. Fig. 2 shows the inactive AutoFaders page before being attached to an AutoFader and its GPI. The image below shows the same information on the Wild Assign panel, but with the Autofader On and connected to AutoFader 1, which is connected to a GPI.

The following controls are available from both the TFT touchscreen and Wild Assign Panel:

AutoFader Controls

AutoFader On: This button at the bottom left of the display, or the top left of the Wild Assign panel, enables/disables the AutoFader.

Note: if the AutoFader is shared across several paths, only the accessed path is affected by this button.

Rehearse: Tap & Hold the 'Rehearse' button to trigger the AutoFader. Release this button to complete the rehearsal. This allows the user to walk through the action of the AutoFader before adjusting any necessary parameters. This control is placed in the lower central area of the Wild Assign Panel.

Fade-in Duration: The fader ramp-up period.

Fade-in Delay: The delay period before the fader starts to ramp-up to the IN LEVEL.

Fade-in Level: The level reached by the fader when the GPI is triggered, shown as an 'IN' line.

Fade-out Duration: The fader ramp-down period.

Fade-out Delay: The delay period before the fader starts to ramp-down to the out level.

FIG. 1 - AUTOFADER PROCESSING MODE SELECTED FROM MODES ROW.

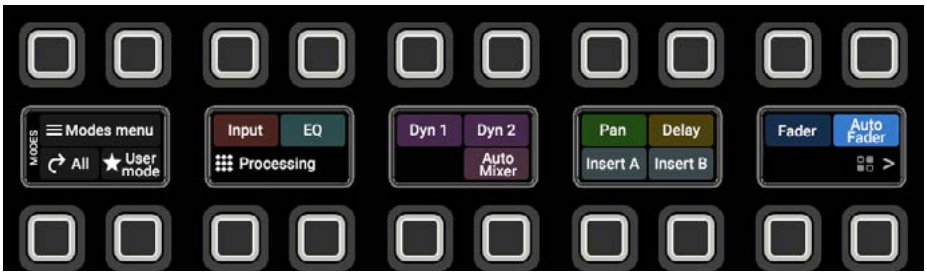
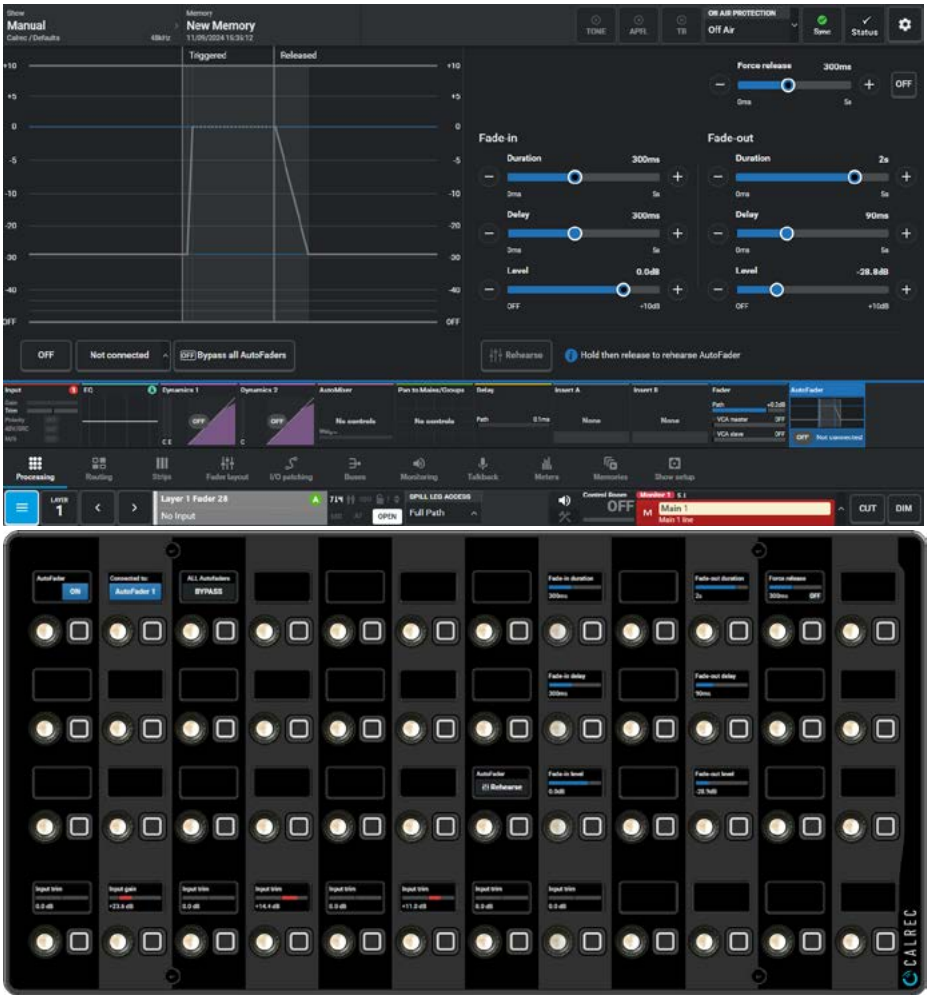


FIG. 2 - AUTOFADER CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



Fade-out Level: The level the fader reaches when the GPI is released, shown as an 'OUT' line.

These controls are placed in columns 8 & 10 respectively on the Wild Assign Panel.

Force Release: When turned ON, this time period is used to force the AutoFader into the fade out delay phase, even if the AutoFader is still triggered via the GPI.

If the Force Release control is set to 'OFF', the AutoFader will remain triggered indefinitely while the GPI is triggered. This control is placed at the top right of column 11 on the Wild Assign Panel.

Setting Up AutoFaders

There are 256 AutoFaders in the Argo system. GPIs are then assigned to control one or more of these AutoFaders upon receiving the required trigger signal. The AutoFaders can then be assigned to control one or more faders on the surface.

Autofaders are selected from the **'AutoFader'** dropdown button shown as Not connected on the touchscreen next to the On/Off button. Tapping this button allows the user to select/change the AutoFader trigger. Fig. 3 shows listed the available AutoFaders. AutoFader 1 has been selected and the AutoFader has been enabled using the ON button in the bottom left of the display.

Bypass all AutoFaders: When active, this switch bypasses all AutoFaders, as shown in the Fig. 4. This control is placed in the top left area of the Wild Assign Panel.

Note: the AutoFader thumbnail shows which AutoFader is in use, if Bypass is selected and the AutoFader On/Off state. This is true even when viewing a different control page.

Assigning GPI's to AutoFaders

GPIs are assigned to autofaders in System Settings>GPI, see Fig. 5.

There are both physical GPI interfaces, connected to Remote GPI over AoIP streams, and virtual GPI interfaces provided via the Ember+ protocol.

In Fig. 5, the user has selected the Remote GPI button and used GPIO box 300 - GPI 01, which is fed from a physical GPI via the stream connection as the GPI source, as shown on the left side of the page. This is then connected to a GPI function by tapping on the GPI Functions button, opening a pop-up with groups of available functions that can be controlled by the GPIs.

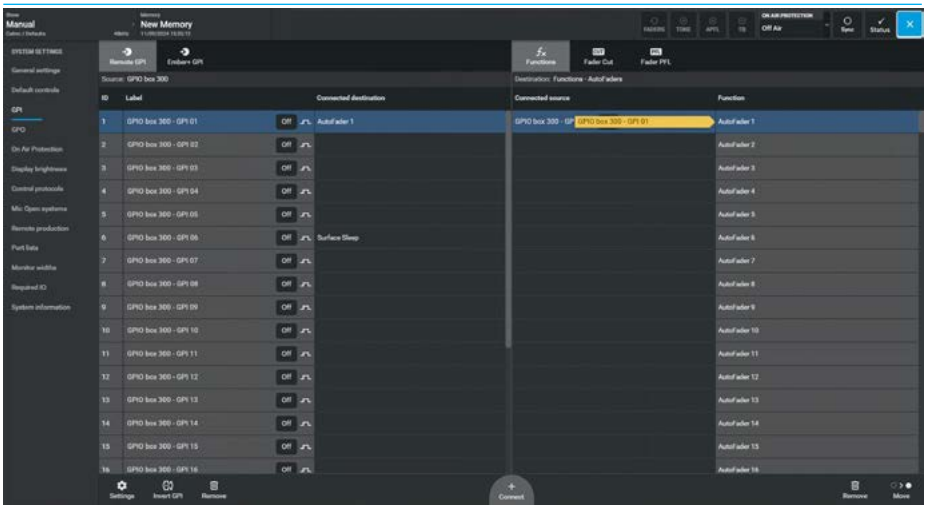
FIG. 3 - SELECTING AUTOFADERS ON TOUCHSCREEN



FIG. 4 - BYPASSING AUTOFADERS ON TOUCHSCREEN



FIG. 5 - ASSIGNING GPI'S TO AUTOFADERS ON TOUCHSCREEN



Selecting the **'AutoFader'** function populates the right-hand side of the screen with the available autofaders.

A single GPI may control any number of autofaders, so assignments can be made one-to-one or one-to-many. To do this, select the required GPI from the list on the left before selecting any number of autofaders from the right and touching the 'Connect' button.

To remove an AutoFader from a GPI, select the connected AutoFader from the right and touch the 'Remove' button in the left side of the footer.

To free a GPI port of all connections, select the GPI from the left and touch the 'Remove' button in the left side of the footer. This removes all connections made to that GPI port, including any AutoFaders

AutoFader levels
As long as the trigger signal is not present, an AutoFader that is attached to a fader and enabled will result in the fader going to the OUT LEVEL, complying with the Fade-Out Duration parameter, rather than snapping the audio to the Fade-Out level.

If an AutoFader is enabled, either from the path or global enable, for a path whose GPI is currently triggered, the audio should fade (up or down) to the Fade-In Level (if it is not there already), complying with the Fade-In Duration parameter, rather than snapping the audio to the Fade-In level.

When the trigger signal is present, the fader will follow the settings made on the Processing>AutoFader screen.

AutoFader parameter settings
The AUTOFADER screen allows AutoFader settings to be configured. The available settings for all time based controls are as follows:

- 0 to 100ms in 10ms steps.
- 100ms to 1s in 100ms steps.
- 1s to 5s in 500ms steps.
- The IN and OUT gain level settings are OFF to +10dB.

AutoFader indicators
When an AutoFader is assigned to a fader, the Fader display will show the AutoFader Number.

Default Fader Interaction Mode
This section describes the operational interaction conditions when settings and fader positions are modified in combination with AutoFaders.

Faders in this default mode allow the user to temporarily override AutoFader control using the path fader to open, close or adjust the path's level.

Faders can be manually adjusted, and their output will reflect any manually set physical positions, whether the AutoFader is active or inactive. Adjustments affect current audio, but do not affect subsequent autofades.

AutoFaders do not fight manual control. If a fader is being touched at the time an AutoFader is fired, OR when an AutoFader transitions from its initial 'Fade-In Delay' period into its' 'Fade-In' period, then the AutoFader fade-in will be cancelled.

This does not cancel the fade-out for this autofade event (which will be triggered as normal if the fader has been manually opened in the interim).

If a fader is touched while an AutoFader fade-in is in progress, the auto-fader immediately relinquishes control of the fade-in (but can still perform the subsequent fade-out if the fader is no longer touched at that point in time).

Similarly, if a fader is being touched or moved when an AutoFader enters the fade-out stage, or during the fade-out stage, the AutoFader again immediately relinquishes control of the fade-out to the operator.

AutoFader fade-in's & fade-out's begin from the current physical position of the fader. If they have been manually adjusted, this becomes the start point. They do not need to go to their specified or expected On or Off level first.

Fade-in and fade-out values are absolute in that the time taken from the beginning to the end of the fade-in or fade-out period lasts for the duration set by the relevant control, regardless of the actual physical starting level that may have been manually set, thus differing to that of the AutoFaders set On/Off level.

If a fader is positioned at or below its AutoFaders set Off-Level when a fade-out is instigated, the fade-out will be cancelled.

If a fader is positioned at, or above its AutoFaders set On-Level when a fade-in is instigated, the fade-in will be cancelled.

If the Fade-In Level is being adjusted while an AutoFader Fade-In is in progress, or similarly, the Fade-Out Level is being adjusted during a Fade-Out, then the Fade-In/Out continues at a constant rate-of-fade, until the fader and In/Out levels meet.

At this point the AutoFader stops due to the target level being met. The Fader will then track with the In/Out level control until the next AutoFader fade In/Out, by virtue of the fader being fully in/out.

Fade-In Delay, Force Release and Fade-Out Delay can all be adjusted while the AutoFader is in their phase of operation. The adjustments affect the phase they are in (rather than being applied to the next AutoFader trigger cycle).

Each phase can be extended up to its maximum duration while that phase is ongoing.

When reducing the duration, the relevant phase will end. The next phase will start when the length of time passed since the start of the phase meets that set by the control.

When an AutoFader is fully In or Out, adjusting the relevant In/Out Level control will directly affect the level output by the path - the fader will track the adjustments in real time - it will not apply a fade in/out to track the adjustments.

ARGO
ROUTING AUDIO

CALREC

MAIN & GROUP ROUTING

The Routing Section deals with the routing of sources to buses. For each path, there are a number of pages showing its bus routing. The following routing pages: Mains, Groups, Mix-Minus, Auxes, Tracks, Direct Outputs, Routing Matrix & Contribution are all accessed from the Routing Mode shown in Fig. 1.
Routing is accessed from the Modes row of a fader panel by first tapping Modes Menu, then by tapping Routing, before finally tapping the desired bus type. Fig. 1 shows this for Mains. Alternatively, the user can tap the appropriate icons on the touchscreen, as shown again for Mains in Fig. 2. The surface displays/controls the same information on both the touchscreen and the Wild Assign panel shown below. The user presses the appropriate ACCESS button to select the path whose output is to be routed from, before routing it to the required bus.

Note: Routing is also possible from the dedicated monitor panel.

Main and Group Routing

Tapping the menu selection Routing>Mains opens the image shown in Fig. 2. The user can select other Routing Destinations by tapping on the sub-menu tabs such as Routing>Groups, as shown in Fig. 3 on the next page.

Argo has up to 16 Main Buses displayed in a block, and up to 48 Group Buses, arranged in 2 pages of 24 for display purposes. These can be labelled from the Buses page.

Each Main or Group bus entry has a numbered button which routes the current access path to it. The Route On/Off button is situated in the bottom right of the page. Next to this is the **'Routed Legs'** display, which shows the routed state of each leg of the source to that bus.

Routed Legs display: For mono sources there is no **'Routed Legs'** display needed. However, stereo sources show L & R legs and surround 5.1 & 7.1 sources show L/R, C, Lfe, Ls/Rs legs and L/R, C, Lfe, Lss/Rss, Lrs/Rrs respectively.

Immersive sources show each leg depending on the width. For example, a 7.1.4 source, such as that shown in Fig. 2, displays L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf & Ltb/Rtb legs, which are lit in the appropriate colour to show that those legs are routed.

For both Main & Group routing, the only controls required are the various routing buttons that are available from both the TFT touchscreen and Wild Assign Panel.

FIG. 1 - MAIN ROUTING MODE SELECT ON STANDARD FADER PANEL

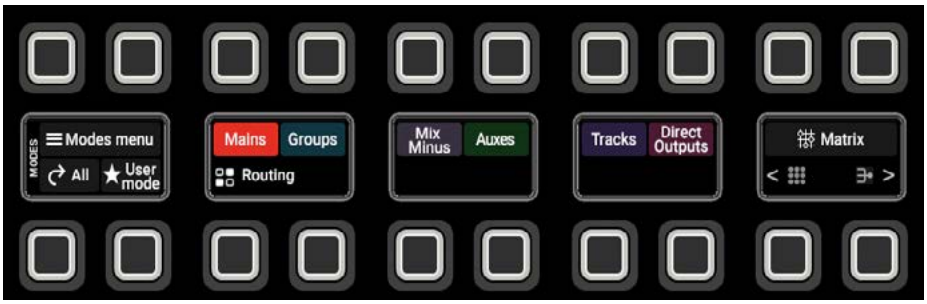
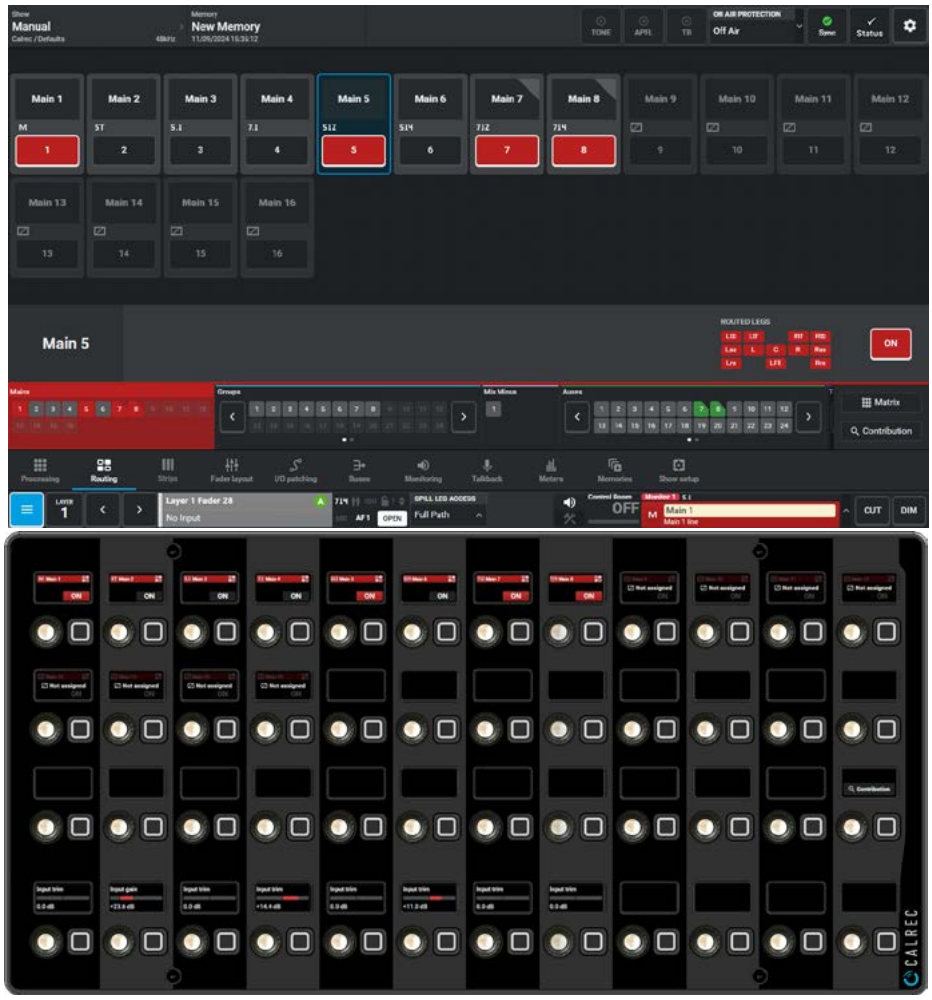


FIG. 2 - MAIN ROUTING CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



The bottom row of the display shows an overall view of what the accessed path is routed to. Where bus types have more than 24 outputs, multiple pages can be accessed using the left-right arrow buttons associated with each button type.

The Routing>Groups page on the touchscreen is accessed from the Modes row of a fader panel by first tapping Modes Menu, then by tapping Routing, before finally tapping Groups, as shown in Fig. 3. Alternatively, the user can tap the appropriate area on the touchscreen as shown in Fig. 4. This displays the same information on the Wild Assign panel shown below.

The user presses the appropriate ACCESS button to select the path whose output is to be routed from, before routing it to the required bus.

Note: Fig. 3 shows the multiple Group Routing pages, which are arranged in two pages, 1-24 & 25-48.

The user first selects the page where the required bus output is located, either from the modes row on a standard fader panel as in Fig. 3 or via the Touchscreen. The user then routes the accessed path to the selected bus, from either the touchscreen or the Wild Assign panel, as shown in Fig. 4.

Independent Routing for spill legs

Using the independence dropdown on the Touchscreen, it is possible to access each spill leg of a stereo, surround or immersive path, allowing routing changes to be made on each spill leg. This is done by accessing the dropdown box labelled 'Spill Leg Access' which normally says 'Full Path'. The user can then select any of the required Spill Legs from the independence table.

- For a stereo source the user can select either the L or R legs to route.
- For a 5.1 source the user can select the L/R, C, Lfe or LsRs spill leg to route.
- For a 7.1 source the user can select the L/R, C, Lfe, Lss/Rss or Lrs/Rrs spill leg to route.
- For Immersive sources, the user can select each leg to route such as the 7.1.4 immersive source shown in Fig. 4, for which the user can select the L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf or Ltb/Rtb spill leg to route.

FIG. 3 -GROUP ROUTING MODE SELECT ON STANDARD FADER PANEL

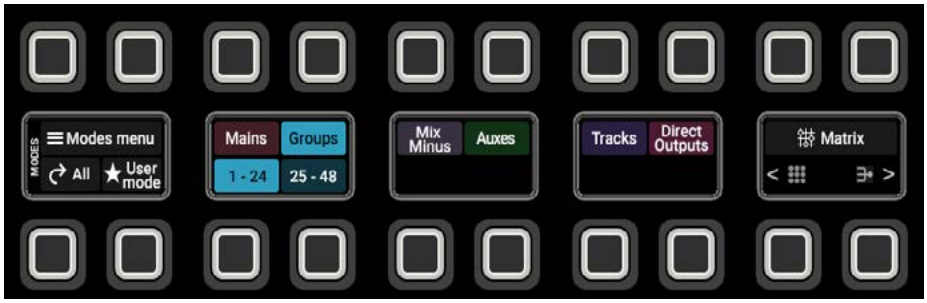
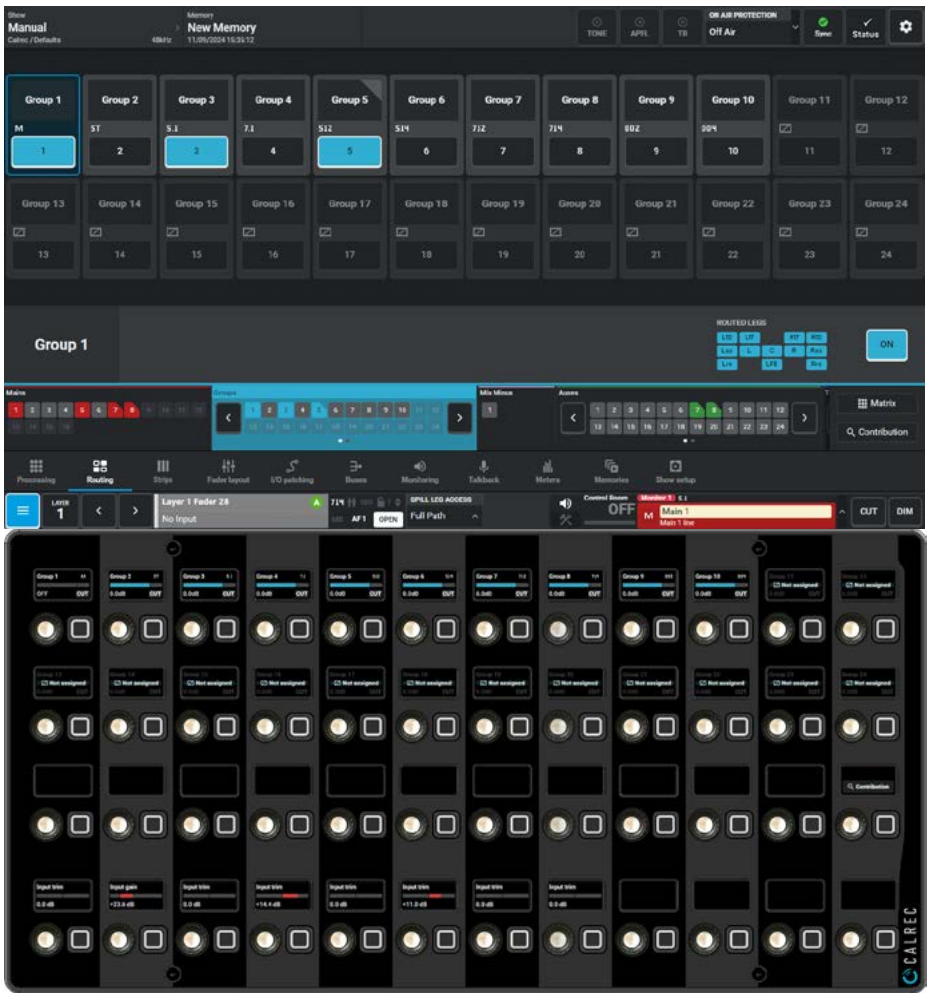


FIG. 4 - GROUP ROUTING CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



Note: when part of a path is routed, this partial routing is shown by the corner of the routing block being 'cut off' in 'Full Path' mode on the routing display, as shown for Group 5 in Fig. 4. In this instance, only the individually routed legs are lit in the Routed Legs display.

It should be further noted that the Wild Assign panel does not show this partial routing state in 'Full Path' mode. If it is partially routed to a bus, its ON indicator will be lit, showing that something is routed to that bus. If any spill leg is that is not routed to that bus is accessed then its ON indicator will NOT be lit.

AUX ROUTING SENDS & PAN

Aux buses are generally used to feed external signal processing devices, or to create Interruptible foldback feeds (IFB's). For each path, auxes have individual level controls and 2 send positions for each of the possible aux feeds. This allows for extensive control of separate mono or stereo aux mixes.

Aux routing is accessed from the Modes row of a fader panel by first tapping on Modes Menu, then by tapping Routing, before finally tapping Auxes, as shown in Fig. 1. Alternatively, the user can tap the appropriate icons on the touchscreen, as shown in Fig. 2. Once an Aux bus is selected, the surface displays/controls the same information on the touchscreen and Wild Assign panel shown below. Pressing a bus's 'Access' button selects the path whose output is to be routed from, and routes it to the required Aux bus.

Auxes also have an additional level of logic control, allowing the user to set conditions under which each Pre-fader aux send is cut, as shown in **"Aux Buses" on page 176.**

Aux Routing, Send & Pan Controls

After tapping on the menu selection Routing>Auxes, Fig. 2 is displayed. Argo has up to 48 Aux Buses. These are arranged into 2 pages of 24 for display purposes. These can be labelled from Buses>Aux. The Aux routing, send and pan controls can be adjusted in a number of ways:

From the Touchscreen

- Dragging the sliders left and right for continuous controls.
- Using the + and - buttons at the end of the sliders.
- Using the On-Screen buttons to select switch functions, e.g., On/Off.

The resultant numerical values are shown in the top right-hand corner of each control above the bar graph.

From the Wild Assign Panel

- Moving the Rotary controls round to the left or right.
- Using the button next to the rotary control to switch functions On/Off.
- Pressing the top of the rotary controls down to reset parameters to default.

The resultant numerical values & bar graph are shown in each individual TFT on the Wild Assign Panel.

The following controls are available from the TFT touchscreen:

Routing: Each aux bus entry has a numbered button which routes the current access path to it. A Route On/Off button for the selected bus is located at the bottom of the page

FIG. 1 - AUX ROUTING MODE SELECT ON STANDARD FADER PANEL

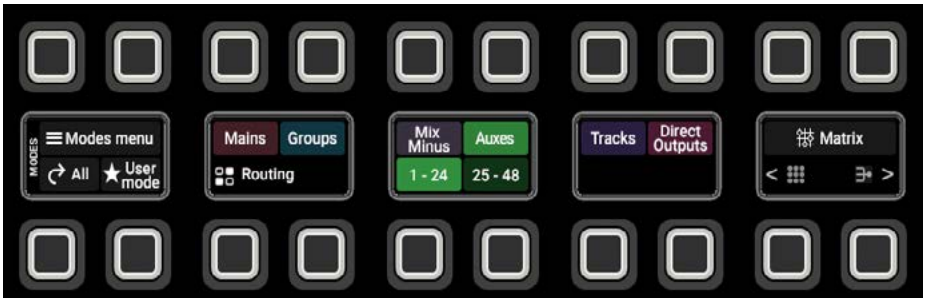
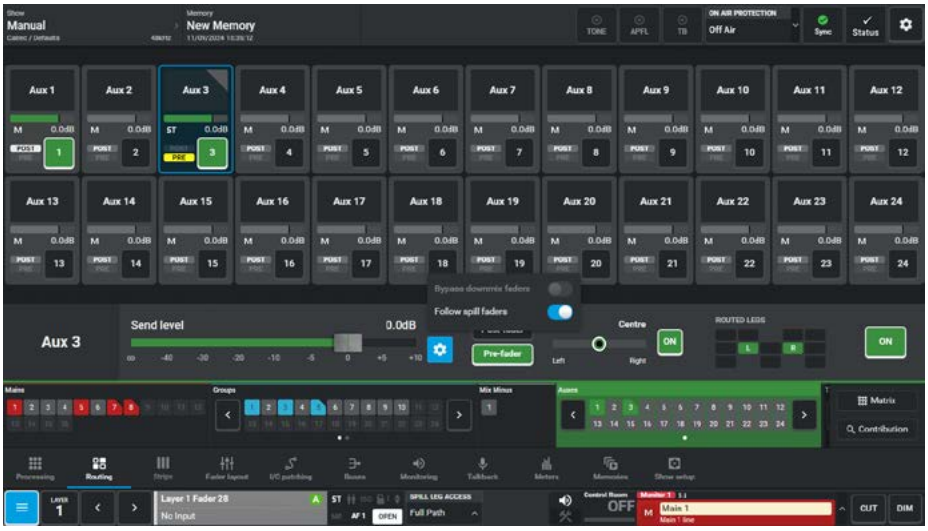


FIG. 2 - AUX ROUTING & SEND CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL





Send Level: Slide the send level control to alter the level of the aux send between 'OFF' and +10dB. The send level value is also shown in each Aux bus entry.

Aux Send Position: Aux sends can be taken at different points in the associated path's signal flow, either Pre-fader or Post-fader, using the selection buttons to the right of the level control, shown in Fig. 2 on the previous page.

Options 'Gearwheel': This accesses the Bypass downmix faders and Follow spill faders options on slider switches.

Bypass Downmix Faders: If the aux output's associated path is surround or immersive, and the aux output is stereo or mono, the user can choose whether or not to use the downmix fader levels during the downmixing process. In Fig. 2 on the previous page, this option is unavailable because the accessed path is Stereo.

Follow Spill Faders: If the aux output is stereo and the path's send position to it is Pre-fader, (as shown in Fig. 2 on the previous page) the user can choose whether to follow spill fader levels.

Note: Bypass downmix faders & Follow spill faders are only selectable when the 'Spill Leg Access' displays 'Full Path', and can only be controlled from the Touchscreen. These are not available from the Wild Assign panel.

Pan Position: For stereo aux sends, a pan control is only available in the footer of the display area, to the right of the aux send position, when the currently accessed path is either mono, stereo or a mono or stereo leg of a surround/immersive path. This allows the user to adjust the pan position. The ON button switches the pan in or out of circuit. Mono aux sends have no pan controls

Routed Legs display: For mono sources, no 'Routed Legs' display is needed. However, stereo sources show L & R legs, and surround 5.1 & 7.1 sources show L/R, C, Lfe, Ls/Rs legs and L/R, C, Lfe, Lss/Rss, Lrs/Rrs respectively. Immersive sources show each leg depending on the width, such as a 7.1.4 source shown in Fig. 2 on the previous page. This shows the L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf & Ltb/Rtb spill legs. Only the L/R legs are lit in the appropriate colour, showing that only those legs are routed.

Independent Routing for spill legs
Using the independence dropdown, it is possible to access each spill leg of a stereo, surround or immersive path, to allow routing changes to be made on each spill leg.

This is done by accessing the dropdown box labelled 'Spill Leg Access', which normally says 'Full Path', in the footer. The user can select any of the required Spill Legs from the independence table:

- For a stereo source the user can select either the L or R legs to route.
- For a 5.1 source the user can select the L/R, C, Lfe or LsRs spill leg to route.
- For a 7.1 source the user can select the L/R, C, Lfe, Lss/Rss or Lrs/Rrs spill leg to route.
- For immersive sources, the user can select the L/R, C, Lfe, Lss/Rss, Lrs/Rrs, Ltf/Rtf or Ltb/Rtb spill leg to route.

Note: when a path is partially routed, e.g., to Aux 3 in Fig. 2 on the previous page, the partial routing is shown by the corner of the routing block being 'cut off' on the routing display. Meanwhile, only the individual routing legs are lit, rather than all legs, as shown in the Routed Legs display. In this case, since the Source path is wider than Stereo, the Pan display is not shown unless a Spill Leg is accessed.

From the Wild Assign Panel:
The 1st and 2nd rows of the Wild Assign Panel shown in Fig. 2 on the previous page show up to 24 Aux bus control cells at any given time, with each column/row being identified by a position overlay as shown. There are 4 pages of Aux control sets available for these 24 Auxes, controlled from the 3rd row in cells 9, 10, 11 & 12:

Aux controls: Send levels and routing
In this case, as shown in Fig. 2 on the previous page, each rotary control cell displays/controls an Aux bus's routing and send level, as well as also displaying the selected send position.
The rotary control adjusts the send level, while the adjacent button switches the Route On or Off.

Aux controls: Bus labels & routing In this page, as shown in Fig. 3 for Stereo Aux 2 and Mono Aux 3, each rotary control cell displays the bus's user label, as set in Buses>Auxes. This displays/controls an Aux bus's routing, with the adjacent button switching the Route On/Off.

FIG. 3 - AUX BUS LABELS & ROUTING



Aux controls: Send positions In this page, as shown in Fig. 4 for Stereo Aux 2 and Mono Aux 3, each rotary control cell displays/controls an Aux bus's send position, with the adjacent button switching the Send position between Pre-fader & Post-fader.

FIG. 4 - AUX SEND POSITIONS



Aux controls: Pan controls In this page, as shown in Fig. 5 for Stereo Aux 2 and Mono Aux 3, each rotary control cell displays/controls an Aux bus's L/R pan position for Stereo Auxes only and also displays its send position. The rotary control adjusts the Pan control On/Off. If the Aux bus is Mono, the **'No pan control'** message is shown.

FIG. 5 - AUX PAN CONTROLS



TRACK ROUTING SENDS & PAN

Tracks are generally used to record copies of channels and groups, feed external signal processing devices, or to create Interruptible foldback feeds. Each path can have 4 common track level controls and 3 send positions.
Track routing is accessed from the Modes row of a fader panel by first tapping on Modes Menu, then by tapping Routing, before finally tapping Tracks, as shown in Fig. 1. Alternatively, the user can tap the appropriate icons on the touchscreen, as shown in Fig. 2. Once the desired Track bus is selected, the surface displays/controls the same information on the touchscreen and the Wild Assign panel. The user presses the desired 'Access' button to select the path whose output is to be routed from, routing it to the required Track bus.

The track send level is applied to all tracks from each path. Normally paths are only routed to one or two tracks so that individual track send control isn't required.

To further extend the flexibility of tracks, it is possible to split the track sends, allowing each Track to be fed from 1 of 4 track sends. These are labelled A, B, C & D, as shown in Fig. 2. This allows for the extensive control of up to 96 separate track outputs. The tracks are arranged into 4 pages of 24, shown in Fig. 1. There are 3 types of track: Mono Odd, Mono Even and Mono. This relates to how the odd numbered tracks are panned as a left leg, the even numbered tracks are panned as a right leg, and tracks can simply be Mono.

Track Routing, Send & Pan Controls

Tapping Routing>Tracks opens the image display in Fig. 2.

The following controls are available from the Touchscreen:

Routing: Each track bus entry has a numbered button. This routes the current access path to it. At the bottom of the page, a Route On/Off button for the selected bus send (A, B, C or D), and the routed state of each leg of the source to that bus, is shown in Fig. 2.

Note: the Routing indication for stereo, surround & immersive paths for tracks also shows the A, B, C or D send ID, if Split sends is enabled.

Track Send Level: Slide the level control to alter the level of the track send between 'OFF' & +10dB. The send level is displayed and controlled at the bottom of the bus display for each of the common send levels for the A, B, C & D Track sends. This is achieved by selecting the Split Send A, B, C or D buttons before sliding the Send level slider.

FIG. 1 -TRACK ROUTING MODE SELECT ON STANDARD FADER PANEL

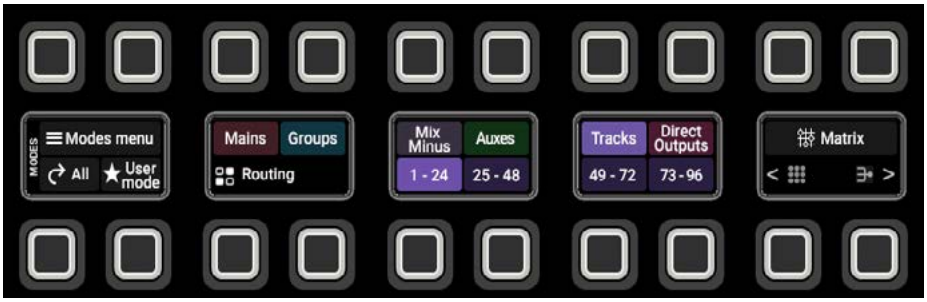


FIG. 2 - TRACK ROUTING CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL



Track Send Position: Each of the 4 track sends can be taken at different points in the associated path's signal flow, Pre-EQ, Pre-fader or Post-fader, using the selection buttons to the right of the level control.

Pan Position: For track sends, a pan control is available to the right of the track send position only when the currently accessed path is mono, stereo or a mono or stereo leg of a surround or immersive path. This allows the user to adjust the pan position of the source. This is applied to tracks defined as odd & even pairs. To the right of the pan position is an ON button, which switches the pan in/out.

Options 'Gearwheel': The slider switches for Bypass downmix faders & Follow spill faders are operationally identical to those as described in the Aux Routing section. These can be controlled from the Touchscreen and the Wild Assign panel.

More about Track Split Sends.
Each channel has up to four track sends, although by default only one is enabled. To enable the four sends, touch the 'Split send' button underneath the Send Level control. This enables the four split send buttons, which the user can select from (A, B, C or D) to create or remove routing to tracks as required. A letter will highlight below the track number entry when a route is made, indicating which send it is associated with. Each of the 4 sends has an individual level control & can be placed Pre-EQ, Pre-fader or Post-fader. This enables access to a wider range of controls for each split send.

Removing sends
If a channel is routed to track send C, then send C must be selected in order to remove the route. Only routes made with the currently selected send may be removed. In order for the track routing to be collapsed back into just one send (A), all routes from sends B, C and D must be removed. The '**Split send**' button can now be touched again to disable the three unused B, C, D send controls.

Independent Routing for Stereo, Surround & Immersive spill legs.
This is done by accessing the dropdown box labelled 'Spill Leg Access', which normally says 'Full Path', in the footer. Spill legs can be selected from the pop-up independence table. This allows the different Spill legs to be routed to the different sends A, B, C, D, as shown in the Routed Legs display.

Note: when part of a bus is routed, partial routing is shown by the corner of the routing block being 'cut off', only when looking at the 'Full Path'. This is shown in Fig. 2 on the previous page for Track 19.

From the Wild Assign Panel:
The 1st and 2nd rows of the Wild Assign panel, shown in Fig. 2 on the previous page, show up to 24 Track bus control cells at a time, with each column/row identified by a position overlay as shown. Each track shows their Type, Name, Number, Routing On/Off status and, when Track Split is applied, which track send the source path/leg is routed to. The 3rd row controls in cells 1, 2 and 3 controls the Split Send and the A, B, C, D selected send buttons. The function of these are described in detail in the 'More about Track Split Sends' and 'Removing sends' paragraphs earlier on this page. Split mode is shown in Fig. 2 on the previous page, while non-split mode is seen in Fig. 3.

FIG. 3 - TRACK SENDS IN NON-SPLIT MODE



The 3rd row control in cell 4 controls the A, B, C or D selected track send level from the rotary control between 'OFF' & +10dB. Changing the selected Split send also changes the selected send level control, as indicated by the Send A, B, C, D letter in the top right of the display. The send level value is displayed in this cell, and is the A, B, C or D send level from that path to ALL the Tracks it is routed to, see Fig. 4.

FIG. 4 - A, B, C, D TRACK SEND LEVELS



The 3rd row control in cell 5 controls the A, B, C or D Selected track send position from the rotary control, between Pre-EQ, Pre-fader & Post-fader. Pressing the adjacent button sets the selection, which is reflected on the Touchscreen. The send position and the A, B, C, D send letter is shown in that cell, as shown in Fig. 5. This sets the send position to ALL the Tracks it is routed to.

FIG. 5 - TRACK SEND POSITION



The 3rd row controls in cells 6 & 7 control the Track bypass downmix faders and Follow spill faders options, see Fig. 6. The function of these are described in detail in 'Bypass downmix faders' & 'Follow spill faders' paragraphs earlier in the Aux Routing, Sends & Pan section.

FIG. 6 - BYPASS D-MIX & FOLLOW SPILL



The 3rd row control in cell 9 controls the L/R pan to track setting, which is dependent on the Source path and the type of Track, as described in the 'Pan Position' paragraph earlier on this page. The rotary control adjusts the L/R pan position, while the adjacent button switches the Pan control On/Off, as shown in Fig. 7. When the 'Full Path' of a surround or immersive path is selected, the **'No pan control'** message is shown.

FIG. 7 - TRACK PAN CONTROL ACTIVE



DIRECT OUTPUTS

Direct outputs are path specific desk outputs, available to Input Channels and Groups. Argo has a pool of up to 1024 mono output resources, shared between Direct Outputs and *Mix Minus Outputs.
Direct Output routing is accessed from the Modes row of a fader panel by first tapping on Modes Menu, then by tapping Routing, before finally tapping Direct Outputs, as shown in Fig. 1. Alternatively, the user can tap the appropriate icons on the touchscreen, as shown in Fig. 2. The surface displays/controls the same information on both the touchscreen and the Wild Assign panel shown immediately below. The user then presses the appropriate 'ACCESS' button to select the path whose direct output is to be created on.

Direct Output Controls
After tapping Routing>Direct Output, Fig. 2 is displayed, ready for direct outputs to be created. The user taps on one of the unassigned Direct Output placeholders to open the 'Choose a width' dialogue box, shown in Fig. 3. The available width for the direct outputs are dependent on the original path's width. In the case of the 7.1.4 path shown, direct outputs can be created at this original width, or as a 5.1, Stereo & Mono downmix. The number of remaining available outputs is shown on the page. Once the pool is empty, no further direct outputs can be created. Once the direct output width is selected, the display appears as shown in Fig. 4 on the next page, which shows the four possible direct outputs at 7.1.4, 5.1, Stereo & Mono, from the 7.1.4 channel on Layer 1 Fader 28A.

Note: up to 4 direct outputs are available per path. Each can be set to any of the available widths shown. Creating, removing and changing the width of Direct Outputs is controlled from the Touchscreen.

The following controls are available from the Touchscreen:

Output Level: Slide the level control or tap on the + or - icons to alter the level of the direct output between 'off' and +10dB.

Send Position: Direct outputs can be taken at different points in the path's signal flow, Pre-EQ, Pre-fader, Post-fader or ***Mix Minus,** as shown in the 'Position' pop-up towards the right of the display/control area on the right, see Fig. 4 on the next page.

Options 'Gearwheel': Accesses the Bypass Downmix Faders and Follow Spill Faders options on slider switches, see Fig. 4 on the next page.

FIG. 1 -DIRECT OUTPUT ROUTING MODE SELECT ON STANDARD FADER PANEL

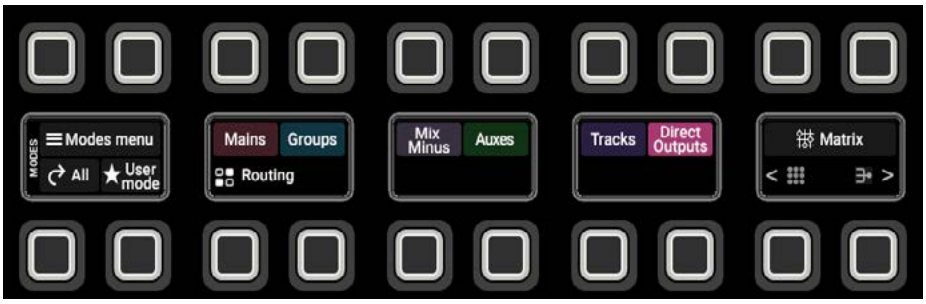


FIG. 2 -DIRECT OUTPUT ROUTING MODE - EMPTY PAGE WITH WIDTH POP-UP

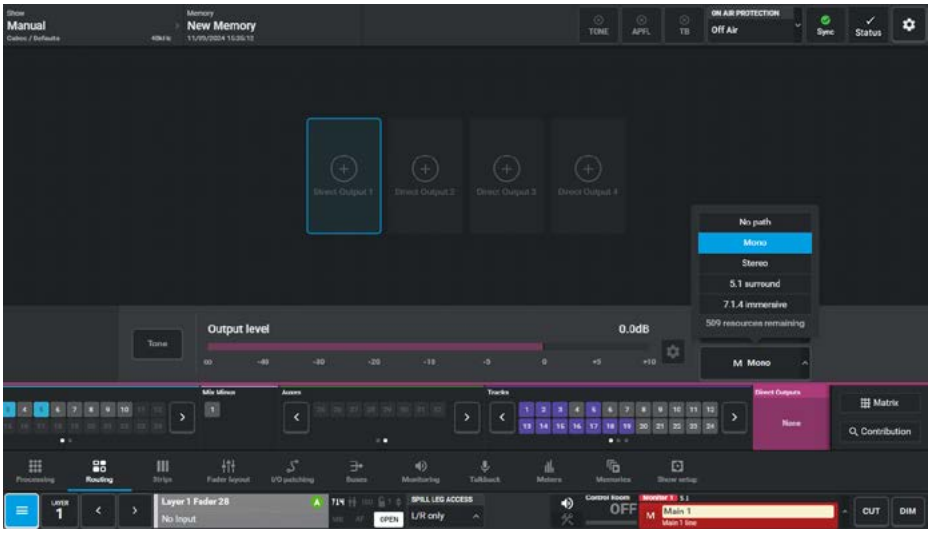
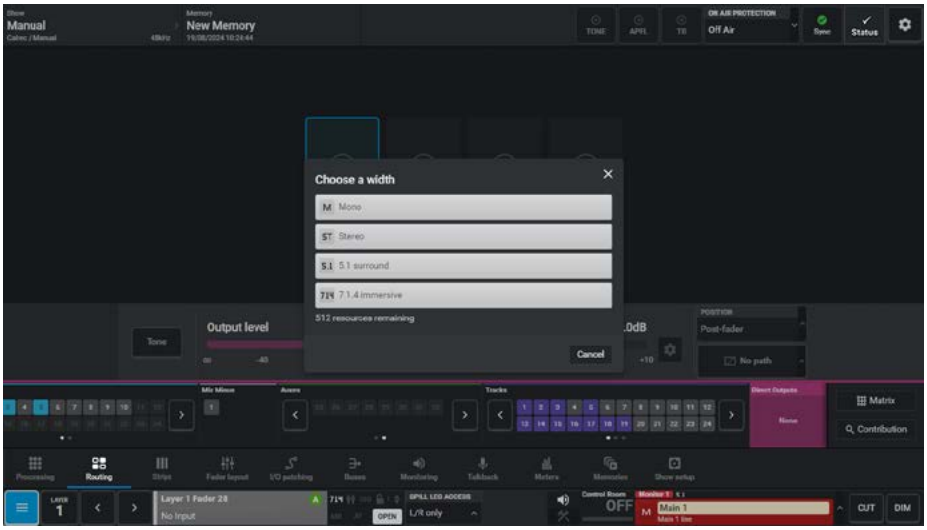


FIG. 3 -DIRECT OUTPUT ROUTING MODE - CREATE DIRECT OUTPUTS



Bypass Downmix Faders: If the direct output's associated path is immersive or surround, and the direct output is stereo or mono, the user can choose whether or not to use the downmix fader levels during the downmixing process.

Follow Spill Faders: If the direct output is immersive, surround or stereo, and its send position is Pre-EQ or Pre-fader, the user can choose whether or not to follow the levels of the Spill faders.

AFL: Tapping on AFL replaces the console monitor source with the direct output feed, post level control, providing a non-destructive solo for the direct output.

Output Listen (OPL): Similar to AFL, but with the feed taken post output delay.

Talkback: Replaces the direct output feed with the talkback input source.

Tone: Select this to inject tone into the direct output, replacing the direct output feed with the correct tone for the path width.

Path Width Box: Shown in Fig. 2 on the previous page, the path width pop-up menu allows the user to change the width of the direct output. Selecting 'No path' on an existing Direct Output will open the 'Remove Direct Output' dialogue box, see Fig. 5.

From the Wild Assign Panel:
When in Direct Outputs-Routing mode, the 1st and 2nd rows of the Wild Assign panel, shown in Fig. 4, are arranged into 4 areas, with each controlling elements of the
4 possible direct outputs. Each area contains 6 control cells, as highlighted in Fig. 4's Wild Assign panel.

FIG. 4 - DIRECT OUTPUT CONTROLS ON TOUCHSCREEN & WILD ASSIGN PANEL

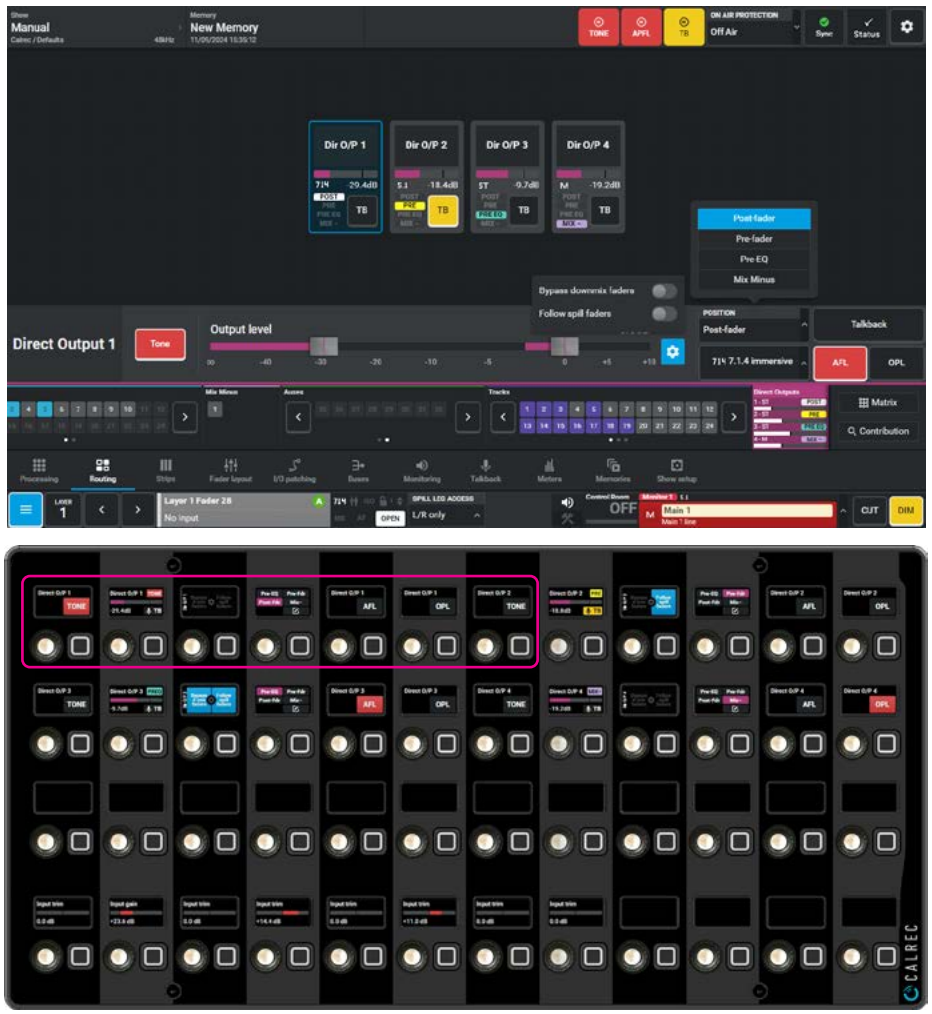
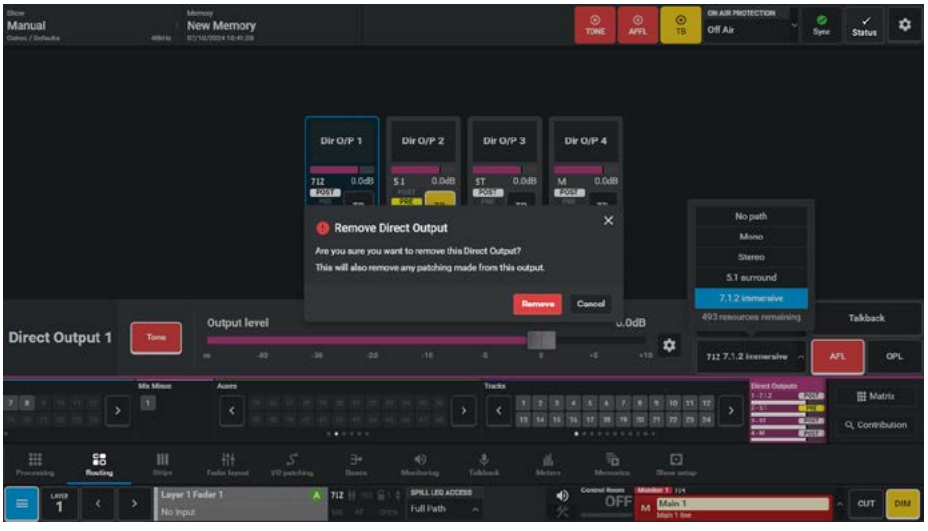


FIG. 5 -DIRECT OUTPUT ROUTING MODE - REMOVE DIRECT OUTPUTS (NO PATH)



For Direct Output 1 (Cells 1-6):

- Cell 1 provides a Tone On/Off switch.
- Cell 2 displays/controls the Output level and Talkback button, as well as displaying its send position or TONE if ON. The rotary control adjusts the output level while the adjacent button switches the Talkback On or Off.
- Cell 3 displays/controls the Bypass D-Mix Faders and Follow Spill Faders, while the rotary control selects between the two. The adjacent button confirms the selection.
- Cell 4 displays/controls the send position from the rotary control between Pre-EQ, Pre-fader, Post-fader & ***Mix-Minus**. The button adjacent to the rotary control sets the selection that is reflected on the Touchscreen.
- Cells 5 & 6 displays/controls the AFL and OPL (post delay) buttons respectively, replacing the console monitor source with the selected Direct Output.

MIX MINUS ROUTING & OUTPUTS

Mix Minus is a system that allows a comprehensive mix to be sent to multiple listeners, each receiving the complete mix, minus their own input.

Fig. 1 shows an abstraction example of a mix minus system. Assume that the sources surrounded by a blue box represents people, either presenters or field reporters. The other sources may represent VT or server audio feeds.

These sources are fed to the input of eight channels on a console. Each channel has the option for its signal to be sent to the console wide mix minus bus.

This mix minus bus can be routed back to any sources that require foldback, for example, the presenters or field reporters.

Each source would be fed the entire mix-minus bus signal, with their own contribution to that mix removed, creating a unique feed.

In Fig. 1, the mix sent to source 1 would consist of sources 2-8. Source 2 would receive a mix of sources 1 and 3-8, and so on.

Why remove a source's input from its foldback mix?

Two reasons are presented here. The first relates to field reporters, or presenters in studios communicating via long distance systems such as satellite links.

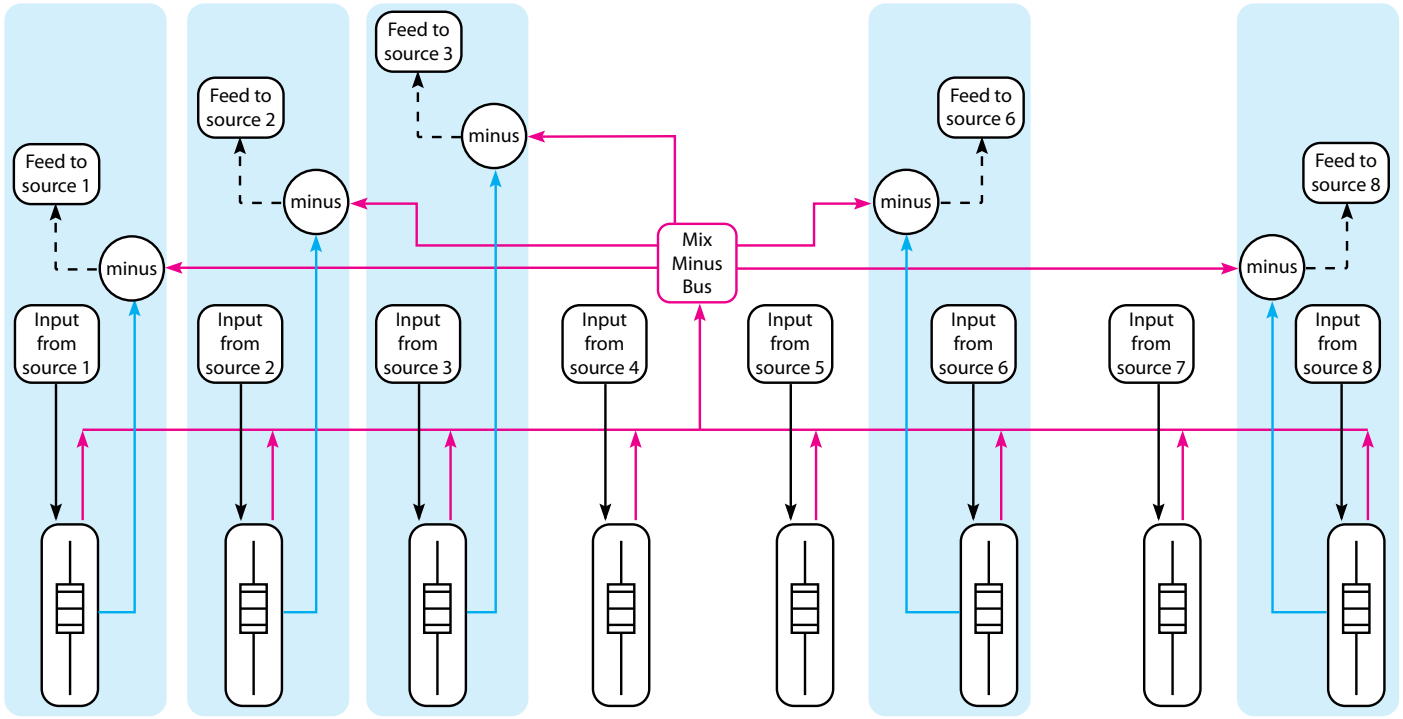
The reporter would need to hear a mix of the show's audio in order to hear cues and communicate with the presenters.

The inherent delay in these systems means that it may be a number of seconds before the audio reaches the reporter.

It can be very difficult to speak while hearing your own voice returned to you with even a slight delay. By using a mix minus feed to the reporter, their own contribution to the audio is removed before it is fed back to them, eliminating this problem.

The second reason is to eliminate feedback. If a presenter's foldback was monitored on loudspeakers without subtracting their own contribution, some of their original signal may be picked up by the microphone again, thus creating a feedback loop. By using a mix minus system to remove the presenter's own contribution, this feedback loop is broken.

FIG. 1 - MIX MINUS ABSTRACTION



Mix Minus Routing

Mix minus routing is accessed from the Modes row, under Routing>Mix Minus (see Fig. 2). If the accessed fader does not have a path assigned to it, one can be created at this point.

Routing signals to a mix minus bus

1. Access the chosen path.
2. Tap the numbered button on the associated Wild Panel, or the Route On/Off button to route/unroute the accessed path to it.

Set Send Position to mix minus bus

At the bottom right of the page is shown the routed state of each leg of the source to that bus. Signals can be sent Pre-EQ/ Pre-fader/Post-fader using the position buttons.

Mix Minus Outputs

From v1.4, paths have access to a dedicated Mix Minus Output. These outputs are path specific desk outputs , available to Input Channels and Groups. Under Routing>Mix Minus outputs the user has access to specific controls for Mix Minus outputs, as well as separate source selection depending on whether the path is open or closed. This allows operators to create bespoke mixes for each circumstance. For example - while on air, contributors may want to only hear each other, while when off air they may prefer to hear the full program mix, or only talkback and comms.

Note: These outputs share a resource pool with Direct Outputs, and creating an MMO will then limit a path to 3 Direct Outputs

Mix Minus Output Configuration

Mix Minus outputs can be created under Routing>Mix Minus Output, as seen in Fig. 3. Mix Minus outputs can be created in Mono or Stereo widths, although this can be changed after the output has been created. Once the Mix Minus output has been created, the following controls are available, as seen in Fig. 4.

Output level: Slide the level control to alter the level of the mix minus output between 'off' and +10dB.

FIG 2 - MIX MINUS ROUTING

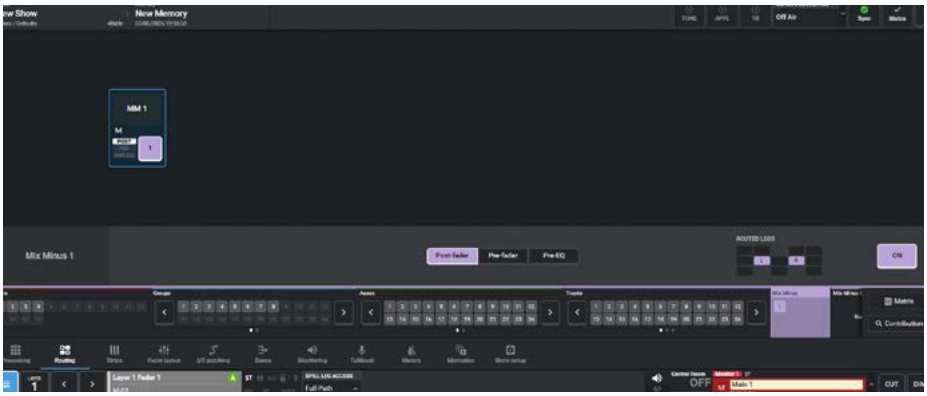


FIG 3 - MIX MINUS OUTPUT WIDTH SELECTION

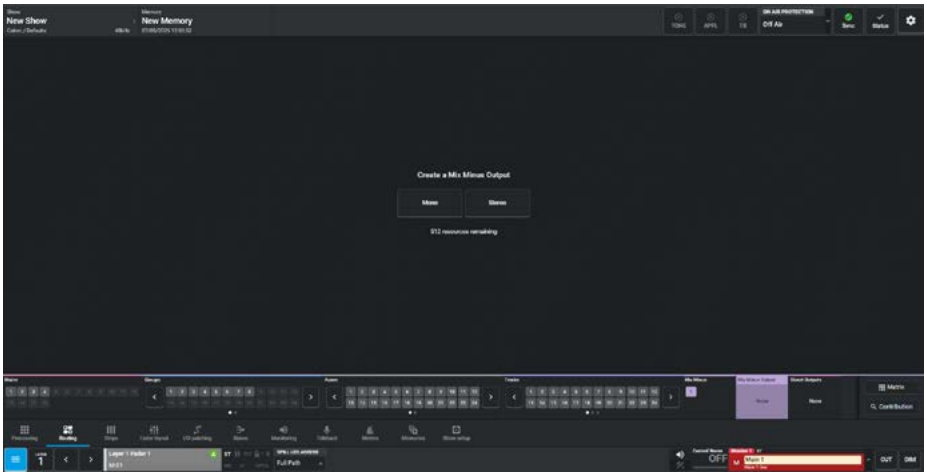
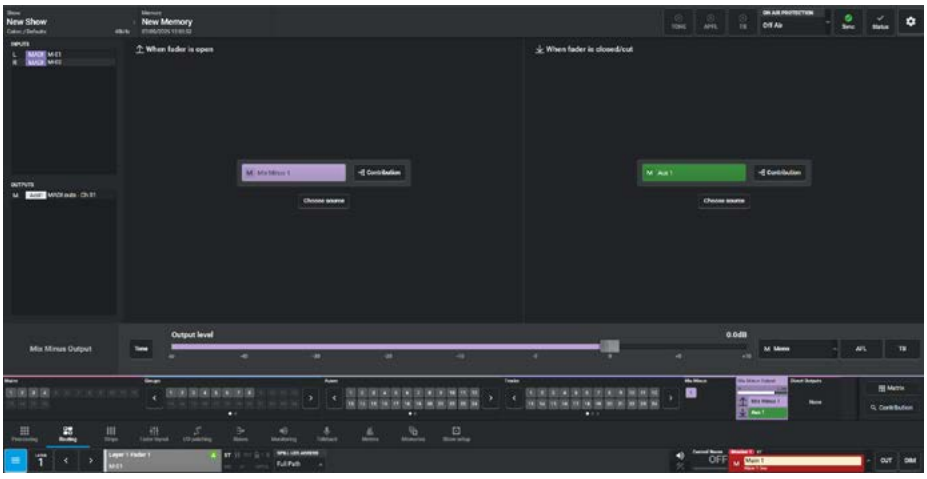


FIG 4 - MIX MINUS OUTPUT CONFIGURATION



AFL: Tapping on AFL replaces the console monitor source with the mix minus output feed, post level control, providing a non-destructive solo for the mix minus output.

Talkback (TB): Replaces the mix minus output feed with whatever is routed to the talkback input.

Tone: Injects tone into the mix minus output, replacing the mix minus output feed with the correct tone for the path width.

'When Fader Open'/'When Fader is Closed/Cut' Dropdown Box:
Tapping this box, or the 'Change source' button, opens the mix minus output feed dropdown, shown in Fig 5.

Within the dropdown, the user can select one of the following feed options:

- Nothing
- Mix Minus 1
- All available Aux buses
- All available Track buses

The 'When Fader Closed/Cut' source can also be set to be the same as the 'When Fader Open' state, with the 'Same as when open' option.

Contribution Selection
The Contribution menu allows quick access to build and manage auxiliary mixes for Mix Minus Outputs. This menu is divided into 'Routing' and 'Sends' tabs.

Routing Tab
Here paths can be routed to and unrouted from the selected bus.

Individual paths can be routed and unrouted from the selected bus by tapping them in the Contribution menu, or can be routed and unrouted in bulk by dragging across the selection and then tapping 'route to...' or 'unroute' in the bottom right corner of the contribution menu.

The fader whose Mix Minus Output is being configured is highlighted as the 'MMO host'. If the Mix Minus Output is being fed by an Aux or Track bus, then a warning will display in the Contribution menu if the MMO host fader is routed to the MMO source bus. This can be seen in Fig. 6.

If the Mix Minus Output is being fed by the Mix Minus bus, and the MMO host fader is routed to the MMO source bus, a reminder will display that this fader will be automatically minused from the MMO. This can be seen in Fig. 7.

FIG. 5 - 'WHEN FADER...' DROPDOWN BOX FADER OPEN OPTION

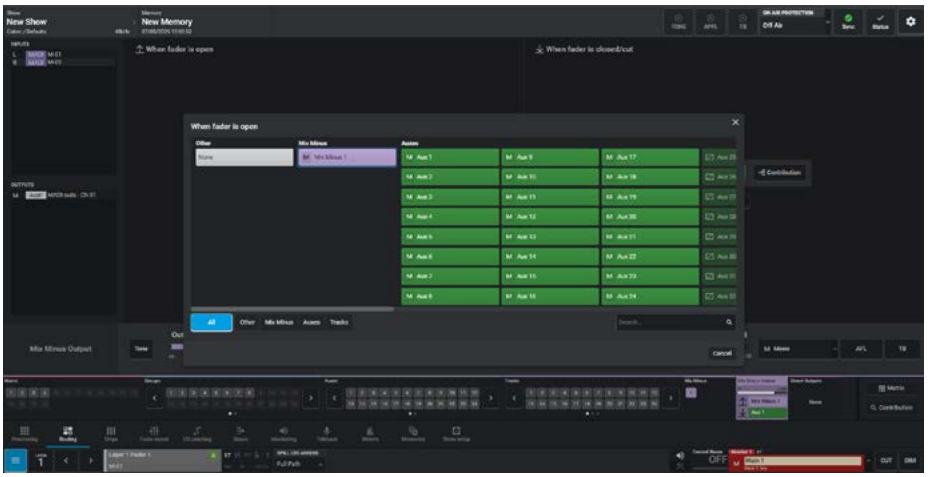


FIG. 6 - ROUTING WARNINGS WITH AUX BUSES

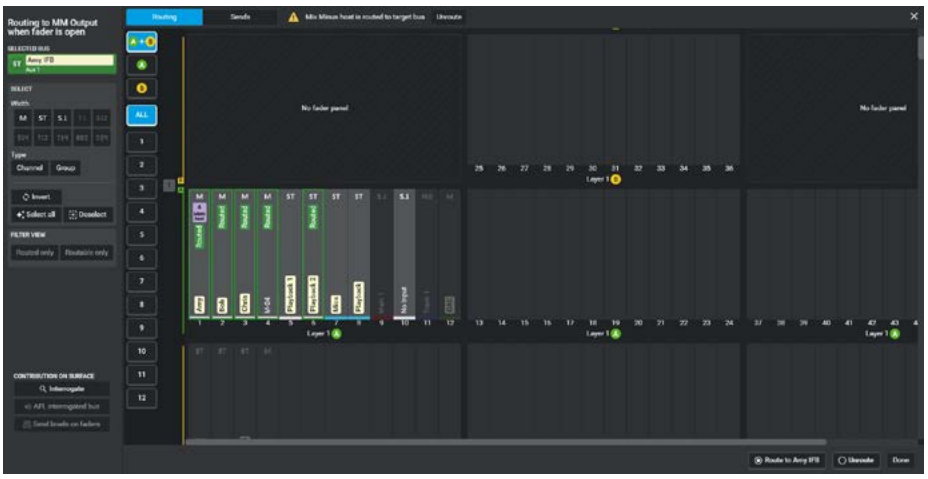


FIG 7 - ROUTING WARNINGS WITH MMO BUSES



Sends Tab

The Sends tab allows further fine tuning of a foldback mix with individual level, pan, Pre/Post send positions and routing controls for each path (See Fig. 8).

Absolute left, centre and right pan presets are available under the Pan to Aux menu for quick configuration. A sliding pan control is also available as a dropdown next to the pan presets for fine-tuning a mix.

Path settings can be altered in bulk by dragging across a selection, or by tapping the checkboxes in the left most column of the menu. Settings for the selection can then be altered using the options in the footer of the tab.

This view can be filtered by 'Routed only', and 'Routable only'.

Layer Filters

Visible paths can be filtered by Layer and A/B sub-layer. These controls will filter both Routing and Sends tabs. In the example in Fig. 9 the view has been filtered to only show stereo groups in layer 1, on either sub-layer A or B.

Selection Tools

Further selection controls are available below the width and type controls, allowing users to invert the selection, select all available faders, and deselect all selected faders. These controls are operational in both 'Routing' and 'Sends' tabs.

Note: If any layer/sub-layer filters are active, the selection tools will only highlight paths within the filtered layers/ sub-layers.

FIG 8 - CONTRIBUTION MENU - SENDS TAB

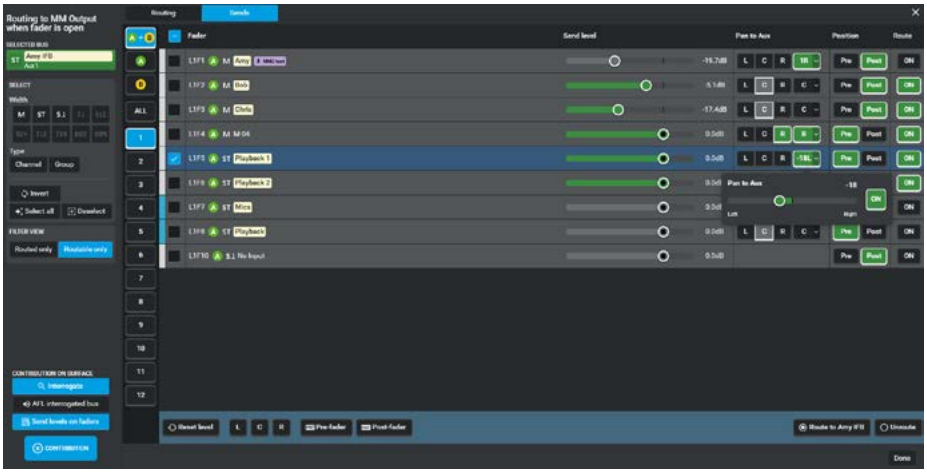
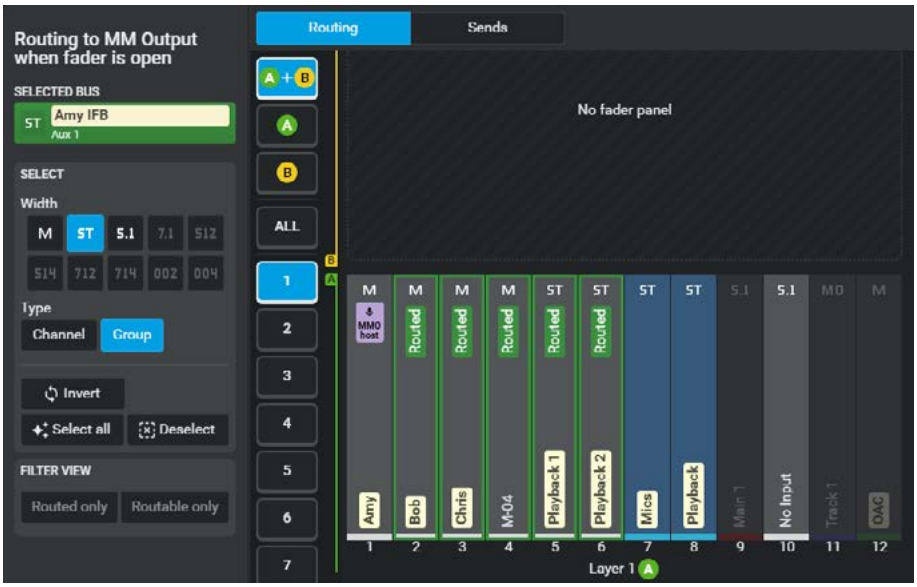


FIG 9 - SELECTION AND FILTERING TOOLS



Contribution on Surface

Path contribution can also be configured using the surface panel by tapping 'Interrogate' in the bottom left of the contribution panel, as seen in Fig. 8 on the previous page. Once in 'Interrogate' mode, the routing status of each path on the surface is displayed in the fader display. Users can route or unroute these paths using the fader Access button. Fader displays for these states can be seen in Fig. 11.

In 'Interrogate' mode, the Aux send levels will automatically be mapped across the matching faders. This can be disabled by deselecting 'Send levels on faders'. Fader displays for these states can be seen in Fig. 12.

When in 'Interrogate' mode, the selected bus can be monitored on the AFL bus with the 'AFL interrogated bus' button

FIG. 10 - CONTRIBUTION ON SURFACE



FIG. 11 - CONTRIBUTION ON SURFACE

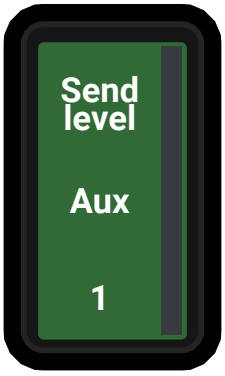


Fader display for contributing path



Fader display for non-contributing path

FIG. 12 - CONTRIBUTION ON SURFACE



Fader display when 'Sends levels on fader' is active



Fader display when 'Sends levels on fader' is inactive

Wild Panel Controls

While in Routing>Mix Minus outputs, the 3rd row from the bottom of the Wild panel will provide controls in the following layout as seen in Fig. 8.

Mix Minus Output Patching

To patch a Mix Minus output to a destination, the user accesses the Patching menu by tapping IO patching, which will display Fig. 9. From here the Mix Minus outputs can be found under Desk outputs>Fader path outputs>Mix Minus Outputs. The user then taps the Mix Minus output label on the left hand side, and the label of the destination port on the right hand side. Patching is completed by tapping the 'Connect' button at the bottom of the content area (highlighted in Fig. 9).

Mix Minus output via Direct Output

Direct Outputs can also be fed by a Mix Minus bus in order to act as a Mix Minus output. This allows continued legacy operation as per software releases prior to v1.4.

Direct Output configuration can be found under Routing>Direct Outputs. The Direct Outputs send position should then be set to Mix Minus (See Fig. 10)

FIG 8 - MIX MINUS OUTPUT WILD PANEL CONTROLS



FIG 9 - MIX MINUS OUTPUT PATCHING

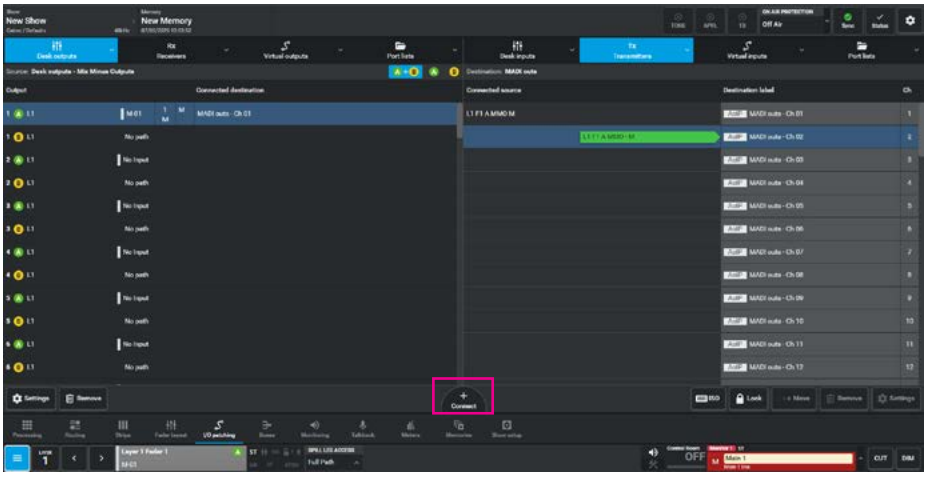
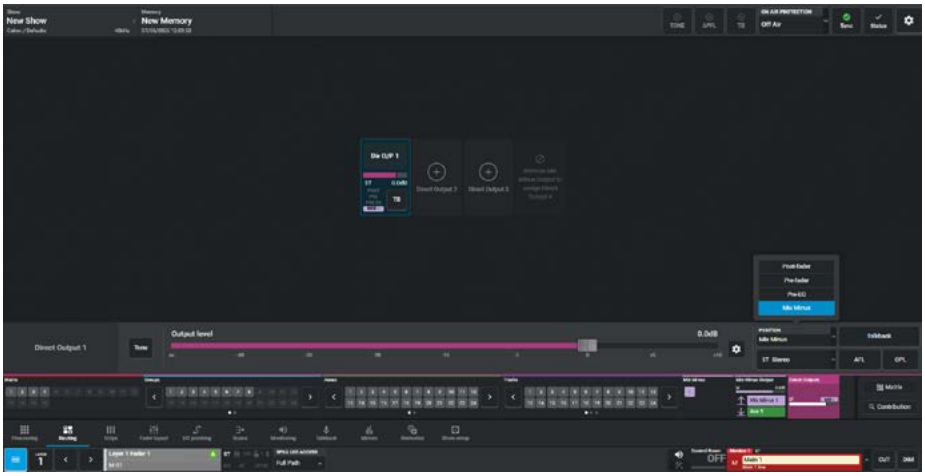


FIG 10 - MIX MINUS OUTPUT VIA DIRECT OUTPUT



MONITOR PANEL ROUTING

Routing on Monitor Panels
The dedicated monitor panel can also be put into Routing mode. It should be noted that the panel works independently from the Routing mode on the Touchscreen and Wild Assign combination, to provide continuous access to the routing destinations if required.

Fig. 1 shows that the Monitor panel is selected to show Routing to Mains. Up to 16 Main destinations can be individually routed to from here. Fig. 1 shows that Main 1 has been routed to from Fader 1A. The highlighted cell shown in Fig. 1 shows the currently accessed path, which is the source used to route to the various outputs where applicable. This cell changes with the selected accessed path. Fig. 2 shows that the Monitor panel is selected to show Routing to Auxes. Up to 48 Aux destinations can be individually routed to from here. These are arranged in sets of 32. Fig. 2 shows that Aux 3 has been routed to from Fader 3A.

Fig. 3 shows the Monitor panel selected to show Routing to Tracks. Up to 96 Track destinations can be individually routed to from here. These are arranged in sets of 32. Fig. 3 shows that Track 5 has been routed to from Fader 5A. However, the Track **'Split'** has been used, so that the level for Track 5 from Fader 5A is controlled from Track Send C.

The layout for Routing is very similar to the Monitoring Sources on the Monitor panel, in that the Destination selection types are in the 2nd column. Up to 32 destinations of the selected type are shown in the middle of the top 2 rows and the 3rd and 4th column of the top row shows the various pages of destinations.

Track columns 9 & 10 on the top row show the Track Send split options. Track columns 9 & 10 on the second row show the currently accessed path used to route from, while also showing the Contribution button.

Note: the lower half of the Monitor panel continues to provide monitoring controls as before.

FIG. 1 - ROUTING MODE ON MONITOR PANEL FOR MAINS

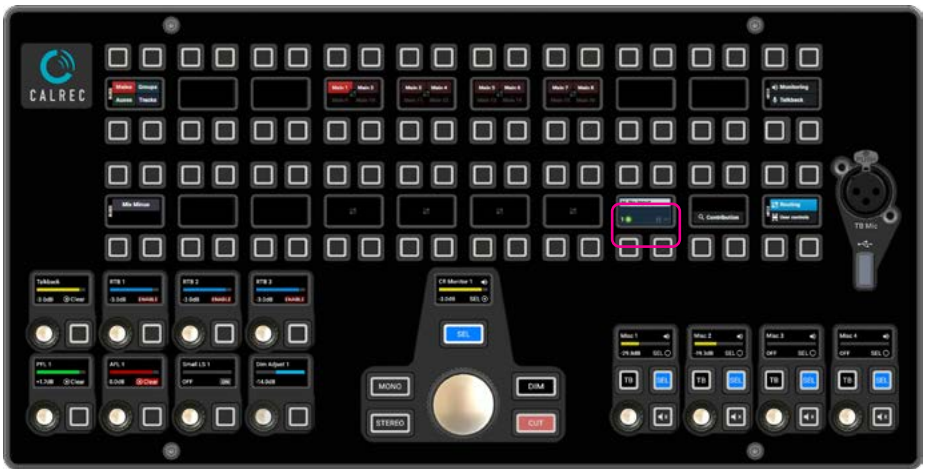


FIG. 2 - ROUTING MODE FOR AUXES ON MONITOR PANEL

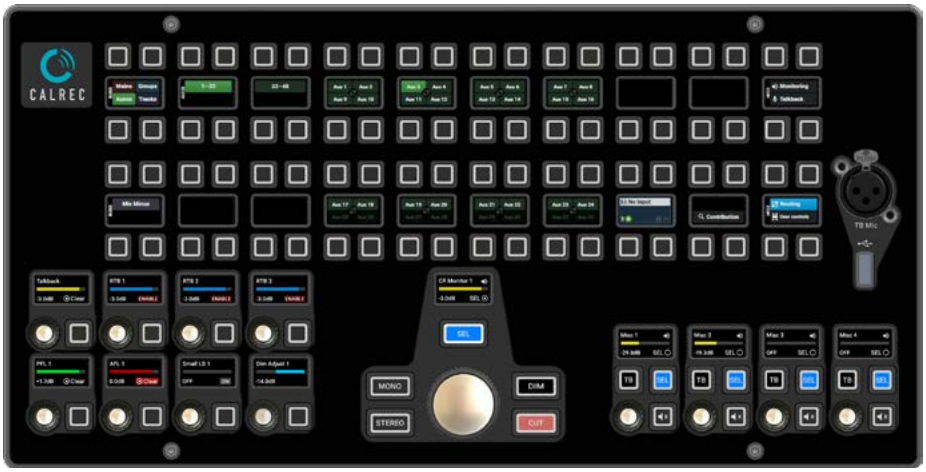
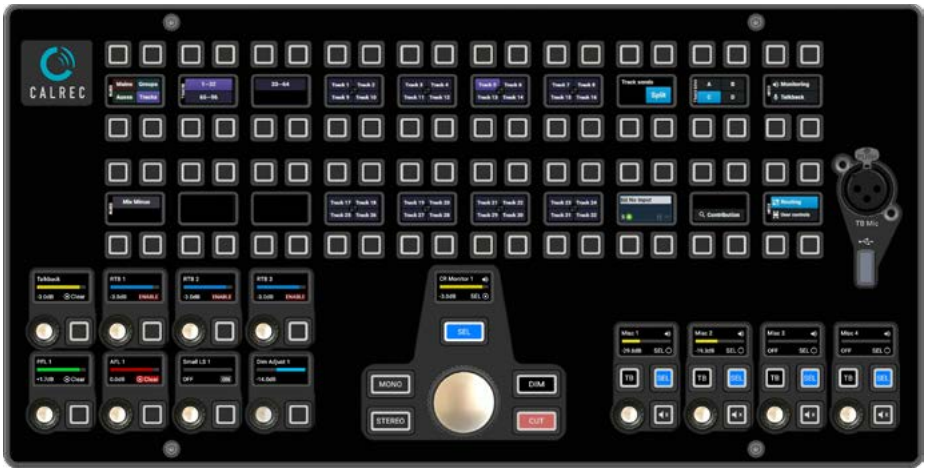


FIG. 3 - ROUTING MODE FOR TRACKS WITH SPLIT SENDS ON MONITOR PANEL



CONTRIBUTION MODE

Contribution mode allows the user to see all contributing paths that have been routed to a selected Main, Group, Aux, Track and Mix Minus bus. This is previously known as reverse routing interrogation. It also provides the user with the ability to 'AFL' the selected Aux, Track and Group buses as they are routed. Contribution mode further provides the ability to put Aux Sends on Faders, to allow Aux mixes to be created from the fader bed.

The Contribution routing mode is accessed from the Contribution icon on the touchscreen shown in Fig. 1. Likewise, the Contribution button on the Wild Assign panel is shown in Fig. 2. Alternatively, this mode can also be accessed from the Monitor panel Contribution button shown in Fig. 3. Selected panels are used in conjunction with Access buttons on Fader panels to contribute to the chosen bus.

Accessing Bus Contribution

When the screen is switched to bus contribution mode, the user can tap the desired destination to be interrogated.

Fig. 1, 2 & 3 show that the contribution button has been pressed when on the Main Routing page, showing that a bus has not yet been selected for contribution routing in this case.

In order to select a bus, the user first selects a bus type from the lower area by tapping on the Main, Group, Mix Minus, Aux or Track area.

Groups, Auxes & Tracks have more than one page of Buses available. Each block of 24 buses can be accessed, either by tapping on arrow buttons in each bus area, or by using the Routing mode buttons on the Modes row of a standard fader panel.

Once the required bus page is selected, the user can select the desired bus to interrogate by tapping that bus on the touchscreen. Alternatively, this is achieved by pressing the appropriate button on the Wild Assign panel.

For each contribution interaction, the Access display on the fader panel will indicate if a path on the current layer is routed to the selected bus, while also showing the path position it is routed from. The path access button will also be lit to show its routed status Path access buttons for paths that are not routed to the selected bus will be unlit.

This operation alerts users to paths routed from any fader layer on the surface, including those located within other user sections. This allows operators to check that routing is correct, while also quickly allowing the user to find offending paths that are incorrectly routed.

FIG. 1 - CONTRIBUTION MODE -BUS NOT YET SELECTED ON TOUCHSCREEN

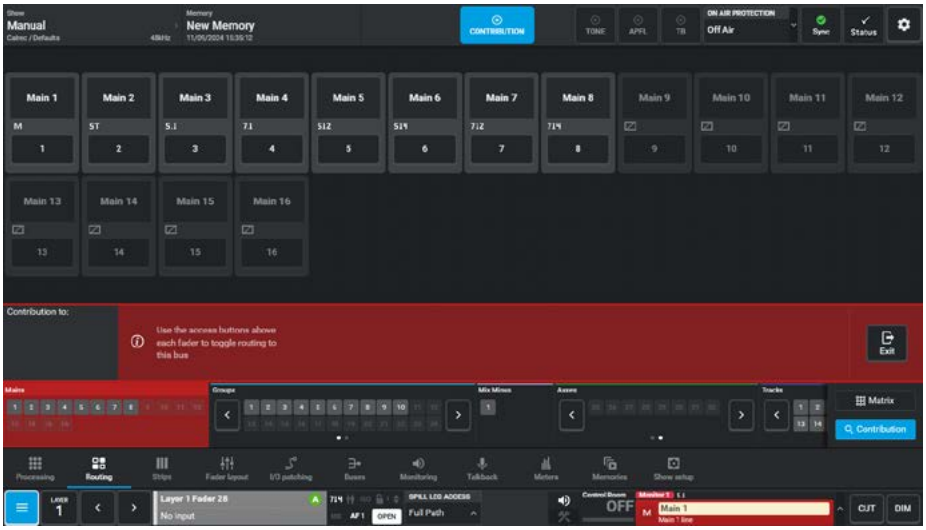


FIG. 2 - CONTRIBUTION MODE - BUS NOT SELECTED ON WILD ASSIGN PANEL



FIG. 3 - CONTRIBUTION MODE - BUS NOT SELECTED ON FADERS PANEL



Main Bus Contribution

Fig. 4 shows 'Main 1' on the contribution touchscreen, wild assign panel and fader panel path display area:

- The Touchscreen displays the current bus being interrogated.
- The Wild Assign panel shows the same page of buses, with Main 1 selected, shown by the illuminated 'Interrogate' banner.
- The Path Fader display shows that the panel is in Contribution mode. Fader 10, which has 'Main 1' assigned to it, shows the Contribution destination label.

All other paths can be in one of 3 states:

- Routed to the Contribution bus, as shown for the Channel on fader 1 and Group 1 on fader 9. Their Access buttons are lit.
- Unrouted, which is the state for the Channels assigned to faders 2-8.
- Cannot Route, shown by the No Entry symbol for Aux 1 on fader 11 and Track 1 on Fader 12.

Fader access buttons light to indicate fully routed paths while partially routed paths flash. Also note the 'Routed' label in the fader displays as shown. The layer select and layer bank buttons also flash for paths on layers that are not in view, but that are routed to the output being interrogated, see Fig. 5.

Note: It is possible to Spill the paths contributing to the contribution bus, providing it is placed on a fader path, see **"Spill Contribution Paths on surface" on page 148.**

Partial Routing Indication

If only some of the legs of a Stereo, Surround or Immersive path are routed, the access buttons flash instead of lighting solid. By scanning the access buttons of the current fader layer, the layer select buttons, and the bank select buttons, users are guided to the faders that are routed to the bus under interrogation in contribution mode.

In addition, users are informed of routes made from other user areas by notification in the contribution footer.

FIG. 4 - MAIN CONTRIBUTION ON SCREEN, WILD ASSIGN & FADER DISPLAY

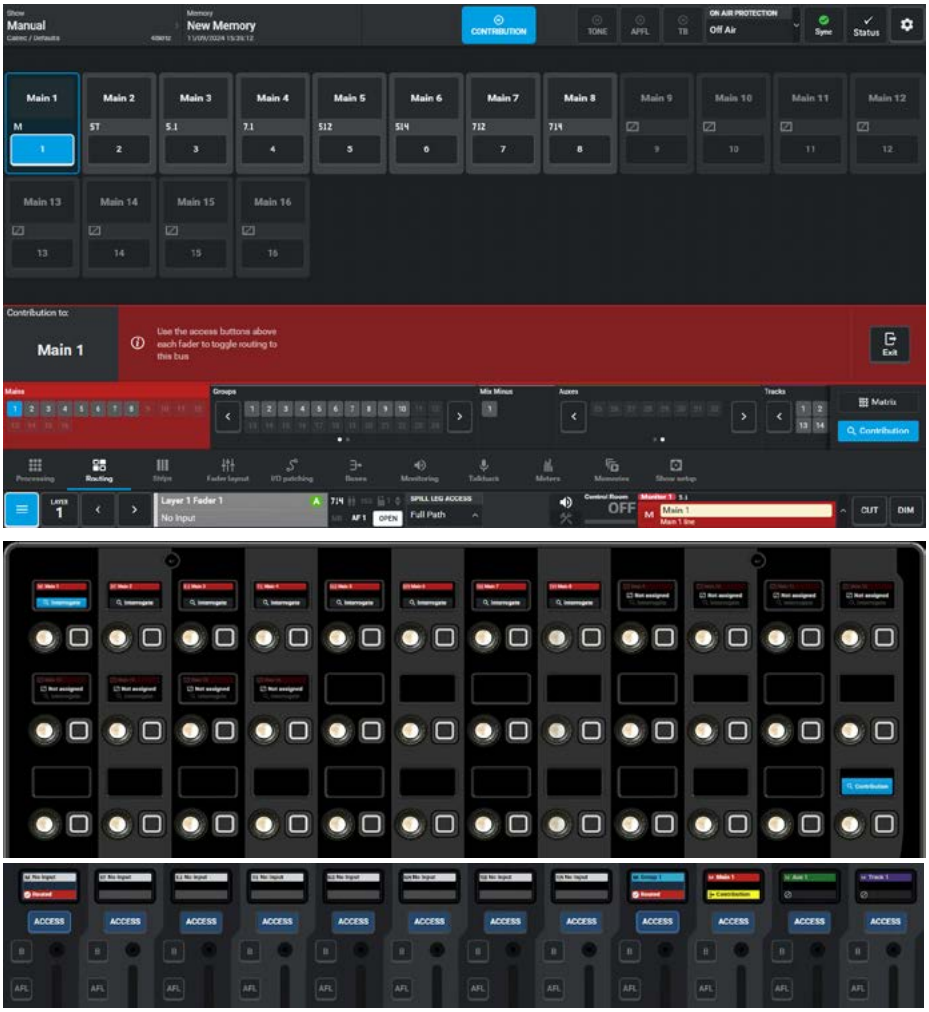
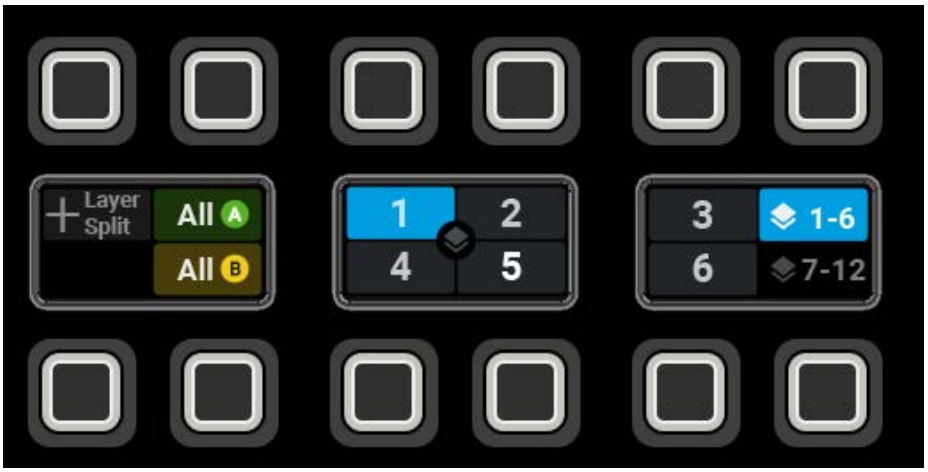


FIG. 5 - CONTRIBUTION - LAYERS & LAYERS BANK SELECTION BUTTONS



While in contribution mode, routes from multiple paths to the selected bus may be made or removed by pressing the relevant path access buttons. The path access buttons will light if the route is made. The Layer and All A/B buttons may be switched when in this mode.

Note: the access buttons no longer alter the current assignment in Contribution mode when pressed and released. However, this can still be achieved by holding the access button for an additional second.

Group Bus Contribution

Fig. 6 shows 'Group 1' on the contribution touchscreen, wild assign panel and fader panel path display area:

- The Touchscreen displays the current bus being interrogated.
- The Wild Assign panel shows the same page of buses, with Group selected, as shown by the illuminated 'interrogate' banner.
- The Path Fader display shows that the panel has gone into Contribution mode. Fader 9, which has 'Group 1' assigned to it, shows the Contribution destination label.

All other paths can be in one of 3 states:

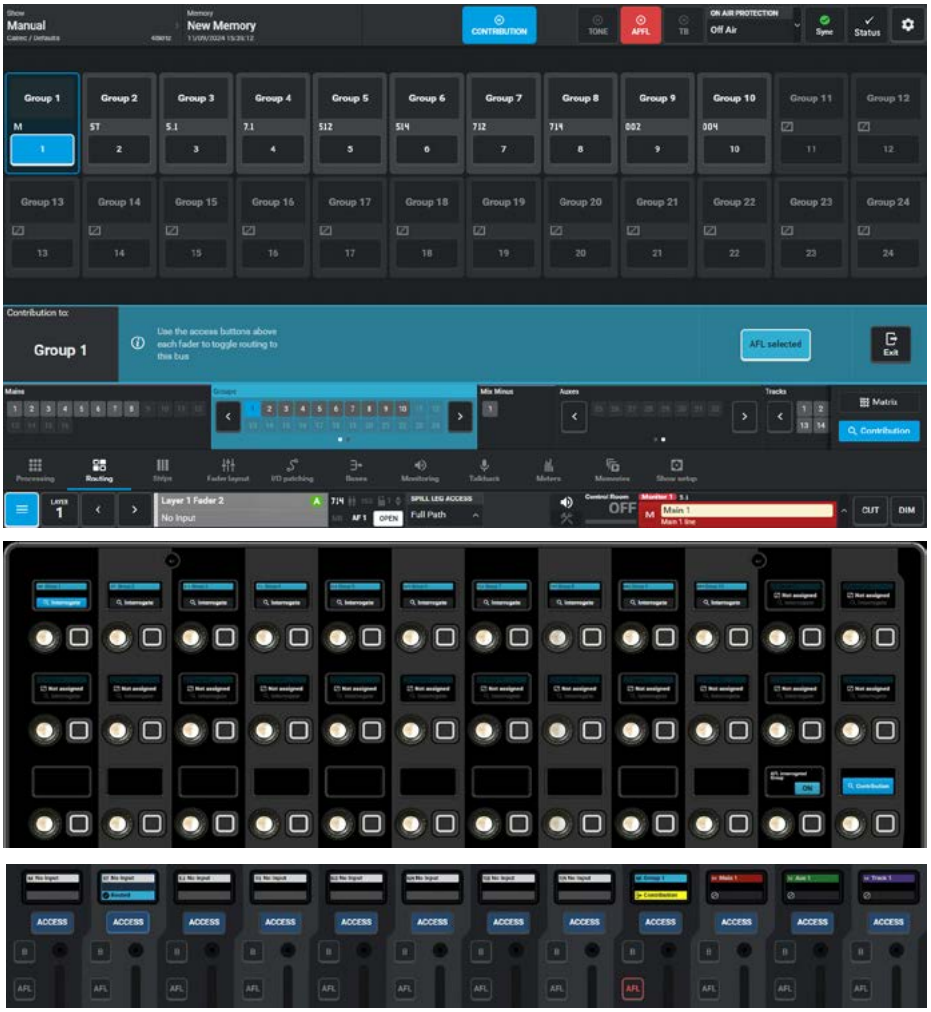
- Routed to the Contribution bus, as shown for the Channel on fader 2. Its Access button is lit.
- Unrouted, which is the state for the Channels assigned to faders 1 & 3-8.
- Cannot Route, shown by the No Entry symbol for Main 1 on fader 10, Aux 1 on fader 11 and Track 1 on Fader 12.

Access AFL in Contribution Mode

When in contribution mode, any Group bus can be AFL'd by switching on the **'AFL selected'** button in the Contribution footer and pressing the required bus on the screen, or by pressing the AFL Interrogated Group button on the Wild Assign Panel. This AFL behaves like any other standard AFL.

Note: in Fig. 6, the AFL button is turned on, as the AFL selected button is active and the Group 1 bus is selected.

FIG. 6 - GROUP CONTRIBUTION ON SCREEN, WILD ASSIGN & FADER DISPLAY



The AFL can be turned off manually by pressing the AFL selected button again, or by toggling the AFL button on the fader bed. If assigned or cancelled globally using the APFL clear button, it follows AFL level controls. Other AFLs may be activated before or after this one.

Note: this uses the AFL system that the user section is set to. If another Aux, Track or Group bus is selected, AFL on the previously selected Aux, Track or Group bus is turned off if active, and AFL on the newly selected Aux, Track or Group bus is turned on.

Mix Minus Bus Contribution

Fig. 7 shows the Contribution screen, wild assign panel and fader panel path display area for the Mix Minus 1 bus:

- This is the only Mix Minus bus currently in the system. It is routed to in the same way as any other bus, with the Touchscreen displaying the current bus being interrogated.
- The Wild Assign panel shows the Mix Minus 1 bus selected, shown by the illuminated 'Interrogate' banner.
- The Path Fader display shows that the panel has gone into Contribution mode.

All other paths can be in one of 3 states:

- Routed to the Contribution bus, as shown for the Channel on fader 3. Its Access button is lit.
- Unrouted, which is the state for the Channels on faders 1, 2 & 4-8.
- Cannot Route, shown by the No Entry symbol for Main 1 on fader 10, Aux 1 on fader 11 and Track 1 on Fader 12.

Default Send Positions

The User can change the default send position for any path that can be routed to the Mix Minus bus by tapping the 'Change send positions' button in the Contribution footer when viewing the contribution to the Mix Minus 1 bus. There is also an options button in the dialogue box that will change the default send position for all new paths to that set by the selected send position, see Fig. 8.

FIG. 7 - MIX MINUS CONTRIBUTION ON SCREEN, WILD ASSIGN & FADER DISPLAY

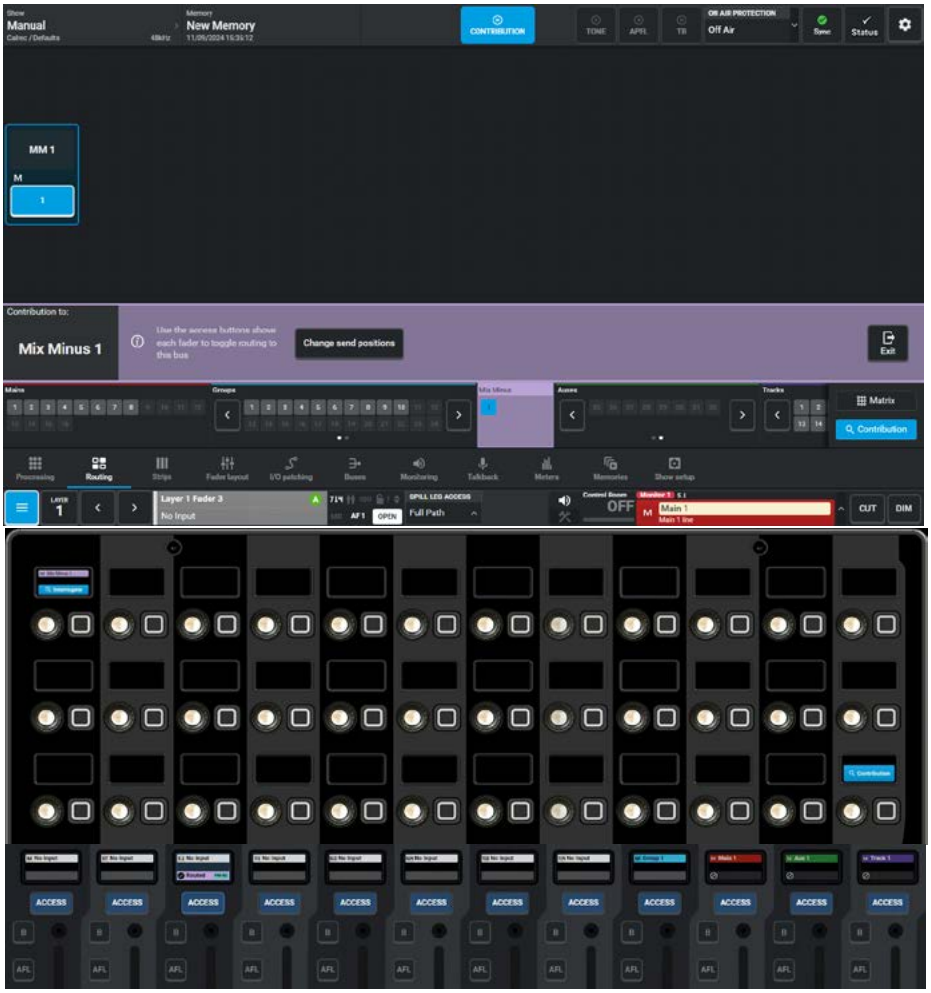
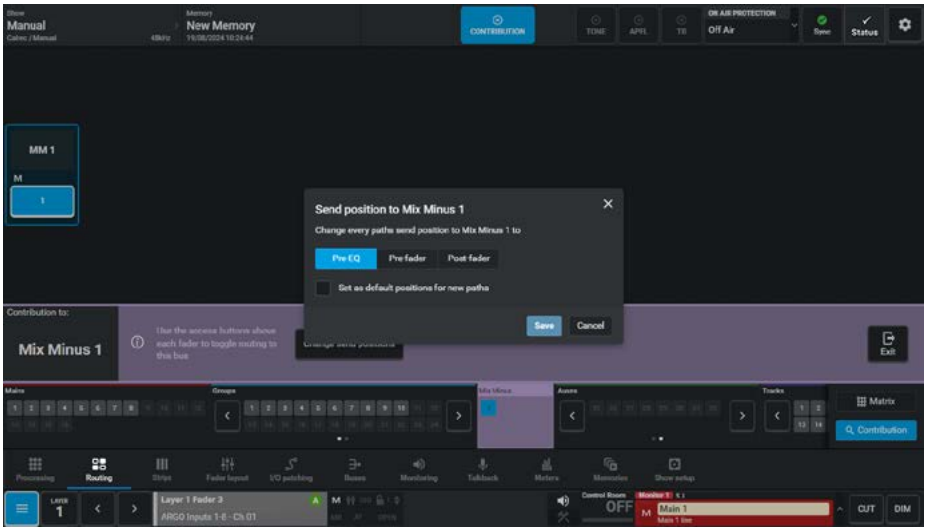


FIG. 8 - MIX MINUS CONTRIBUTION SEND POSITION DIALOGUE ON TOUCHSCREEN



Track Bus Contribution

Fig. 9 shows 'Track 1' on the contribution touchscreen, wild assign panel and fader panel path display area:

- The Touchscreen displays the current bus being interrogated.
- The Wild Assign panel shows the same page of buses, with Track 1 selected, shown by the illuminated 'Interrogate' banner.
- The Path Fader display shows that the panel has gone into Contribution mode. Fader 12 has 'Track 1' assigned to it, as shown by the Contribution destination label.

All other paths can be in one of 3 states:

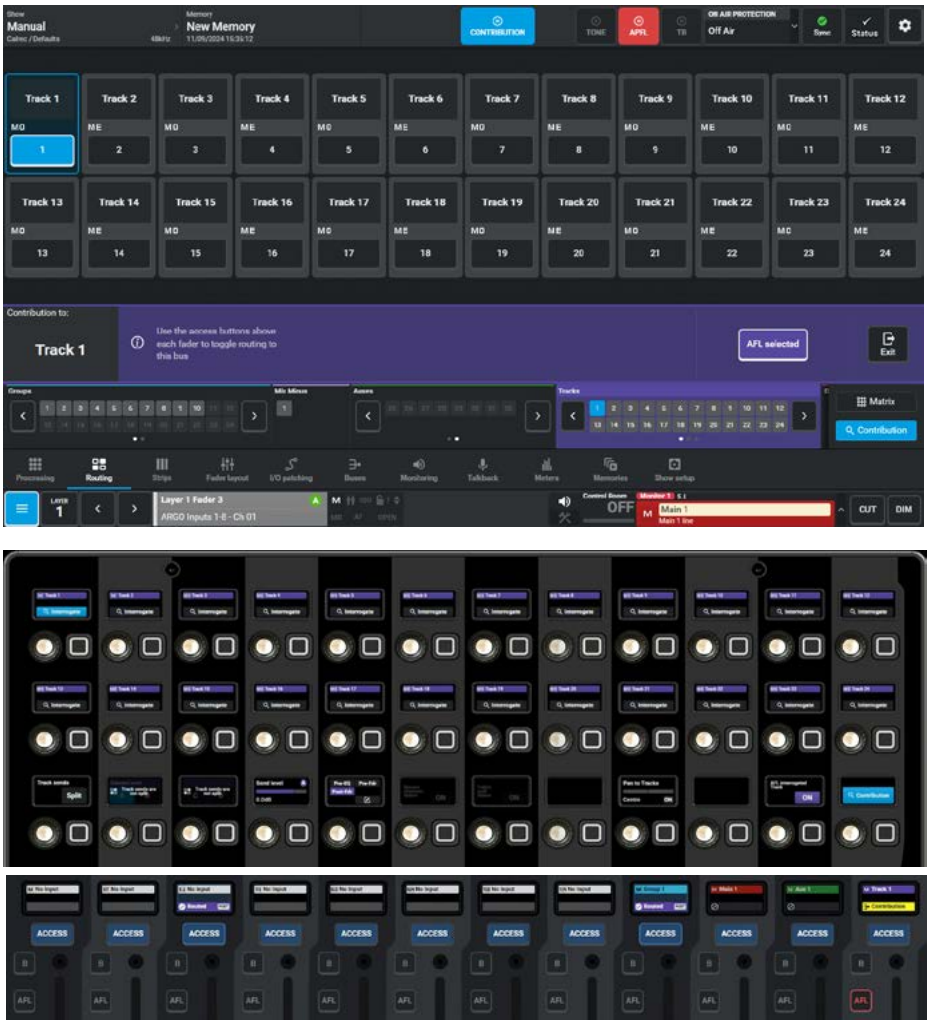
- Routed to the Contribution bus, as shown for the Channel assigned to fader 3 and Group 1 on fader 9. Their Access buttons are lit.
- Unrouted, which is the state for the Channels assigned to faders 1, 2 & 4-8.
- Cannot Route, shown by the No Entry symbol for Main 1 on fader 10 and Aux 1 on fader 11.

Access AFL in Contribution Mode

When in contribution mode, any Track bus can be AFL'd by switching on the 'AFL Selected' button in the Contribution footer and pressing the required bus on the screen, or the AFL Interrogated Track button on the Wild Assign Panel. This AFL behaves like any other standard AFL.

Note: in Fig. 9, the AFL button on Fader 12 is turned on. This is because the AFL selected button is active and the Track 1 bus is selected.

FIG. 9 - TRACK CONTRIBUTION ON SCREEN, WILD ASSIGN & FADER DISPLAY



The AFL can be turned off manually by pressing the AFL selected button again, or by toggling the AFL button on the fader bed. If assigned or cancelled globally using the APFL clear button, it follows AFL level controls and other AFLs may be activated before or after this one.

Note: this uses the AFL system that the user section is set to. If another Aux, Track or Group bus is selected, the AFL on the previously selected Aux, Track or Group bus is turned off if active, and the AFL on the newly selected Aux, Track or Group bus is turned on.

Aux Bus Contribution

Fig. 10 shows 'Aux 1' on the contribution touchscreen, wild assign panel and fader panel path display area:

- The Touchscreen displays the current bus being interrogated.
- The Wild Assign panel shows the same page of buses with Aux 1 selected, as shown by the illuminated 'Interrogate' banner.
- The Path Fader display shows that the panel has gone into Contribution mode. Fader 11, which has 'Aux 1' assigned to it, shows the Contribution destination label.

All other paths can be in one of 3 states:

- Routed to the Contribution bus, as shown for the Channel assigned to fader 4 and Group 1 on fader 9. Their Access buttons are lit.
- Unrouted, which is the state for the Channels on faders 1-3 & 5-8.
- Cannot Route, shown by the No Entry symbol for Main 1 on fader 10 and Track 1 on Fader 12

Default Send Positions

The User can change the default send positions for all paths that can be routed to an Aux bus.

This is achieved by tapping the 'Change send positions' button in the Contribution footer on the touchscreen, or by pressing the 'Change all sends' buttons between Pre-fader & Post-fader on the 3rd row cells 8 & 9 of the Wild Assign panel, when viewing the contribution to the selected Aux bus.

There is also an options button in the dialogue box on the touchscreen that will change the default send position for all new paths to that set by the selected send position, see Fig. 11.

FIG. 10 - AUX CONTRIBUTION ON SCREEN, WILD ASSIGN & FADER DISPLAY

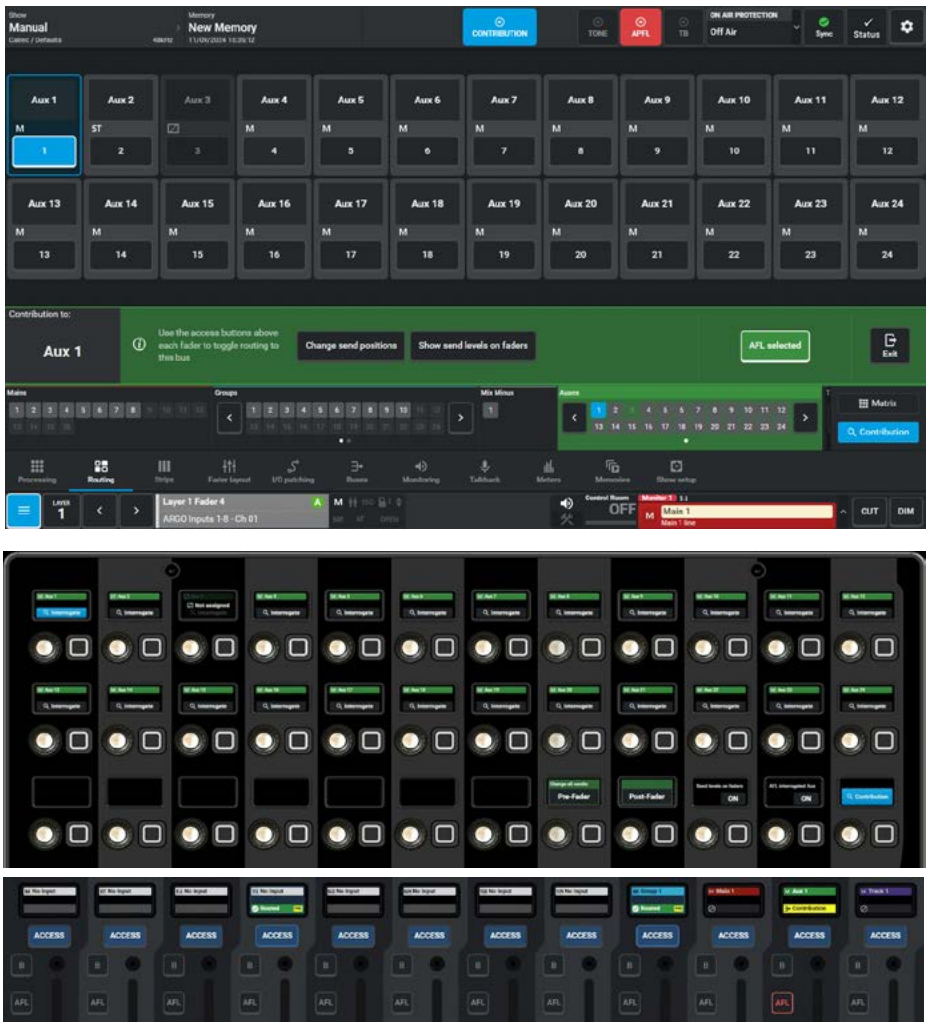
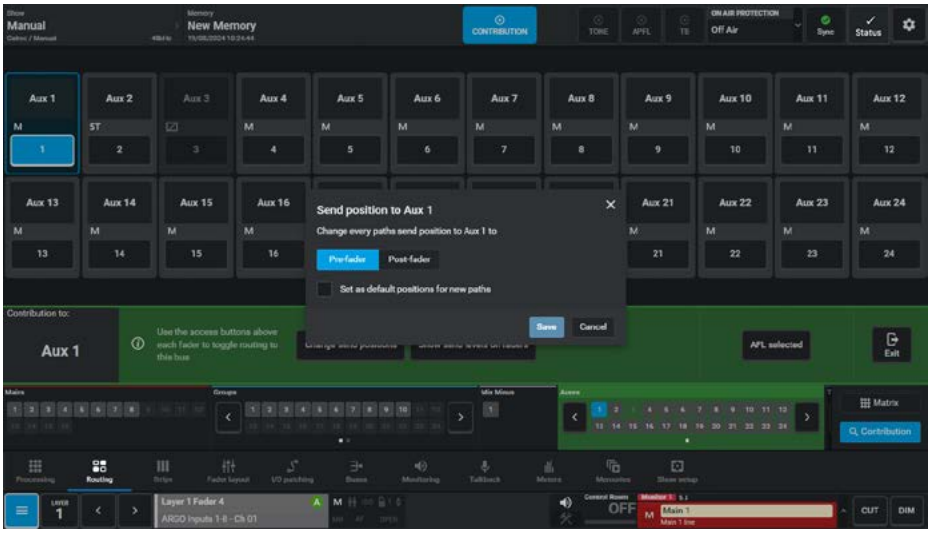


FIG. 11 - AUX CONTRIBUTION SEND POSITION DIALOGUE ON TOUCHSCREEN



Aux Sends on Faders

Fig. 12 shows the bus contribution screen when an auxiliary bus is selected and the Show send levels on Faders mode is activated, by pressing either the 'Show send levels on Faders' button on the touchscreen or the 'Send level on faders' button on the 3rd row cell 10 on the Wild Assign panel. This puts all the selected auxiliary send levels (in this case to Aux 1) from the contributing paths onto their faders.

When an Aux is selected, the faders will change from displaying their channel or group path level, to showing the relevant send level from that channel or group to the selected destination, see Fig. 12. In this case, the Channel on fader 4 and the Group 1 bus assigned fader 9 are examples of this.

If the path on a fader is routable to the selected destination, but is not routed, this is shown in the fader label display. If the path is not routable to the selected destination, the 'not valid' icon is shown in the fader label display.

In this case, a different graphic appears in the fader meter displays, to indicate to the user that the faders are showing the send levels, not path levels. The fader display will also show the routing and the send position of the sources contributing to that bus, as shown in the path fader displays on faders 4 and 9 in Fig. 12.

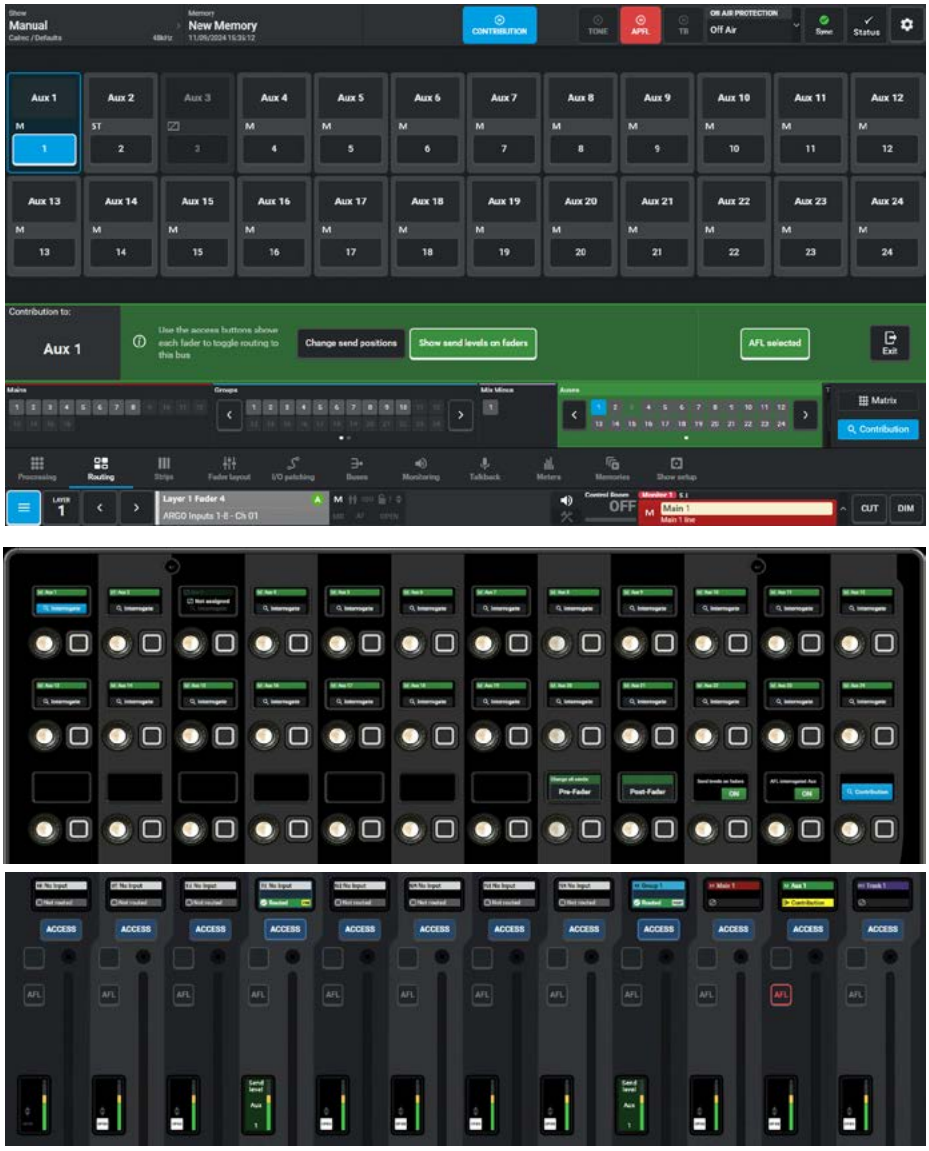
Note: when viewing bus contribution to Mains, Groups, Tracks or Mix minus, the faders will always display the channel or group path level.

Access AFL in Contribution Mode

When in contribution mode, an Aux bus can be 'AFL'd' by pressing the 'AFL Selected' button and selecting the required bus on the screen, or the AFL Interrogated Aux button on the Wild Assign Panel. This behaves like any other standard AFL.

Note: in Fig. 12, the AFL button on Fader 11 is turned on, as the AFL selected button is active and the Aux 1 bus is selected.

FIG. 12 -AUX CONTRIBUTION ON SCREEN, WILD ASSIGN & SENDS ON FADERS



The AFL can be turned off manually by pressing the AFL selected button again, or by toggling the AFL button on the fader bed. If assigned or cancelled globally using the APFL clear button, it follows AFL level controls. Other AFLs may be activated before or after this one.

Note: this uses the AFL system that the user section is set to. If another Aux, Track or Group bus is selected, the AFL on the previously selected Aux, Track or Group bus is turned off if active, and the AFL on the newly selected Aux, Track or Group bus is turned on.

When AFL is active and used in conjunction with the sends on faders option, the user can listen to the selected Aux bus while adjusting the contribution levels being sent to it.

Leaving Contribution Mode

When the bus routing task is complete, the user can either touch the 'Exit' or 'Contribution' button again, or tap on the Contribution button in the header of the Touch UI shown in Fig. 12, to return to the Routing page for the currently selected bus type.

Contribution on Monitor Panels

The dedicated monitor panel can also be put into Routing>Contribution mode by pressing the Contribution button shown next to the Routing/User Controls button cell on the second row. It should be noted that this works independently from the Contribution mode on the Touchscreen and Wild Assign combination, to provide access to the contribution destination routing if required.

Fig. 13 shows the Monitor panel selected to show Contribution to Groups. Any one of up to 48 Group destinations can be selected to be the bus to contribute to. Fig. 13 shows that Group 8 has been selected.

Fig. 14 shows the Monitor panel selected to show Contribution to the Mix Minus bus. Fig. 14 shows that the Mix Minus bus has been selected.

Fig. 15 shows the Monitor panel selected to show Contribution to Tracks. Any of up to 96 Track destinations can be selected to be the bus to be interrogated. Fig. 14 shows that Track 1 has been selected .

The layout for Contribution is very similar to the Monitoring Sources on the Monitor panel, in that the Destination selection types are in the 2nd column, up to 32 destinations of the selected type are shown in the middle of the top 2 rows and the 3rd & 4th column of the top row show the various pages of destinations.

When contributing to tracks, column 9 and column 10 on the top row show the Track Send split options and on the second row shows the active Contribution button.

Note: the lower half of the Monitor panel continues to provide monitoring controls.

FIG. 13 - CONTRIBUTION MODE ON MONITOR PANEL FOR GROUPS

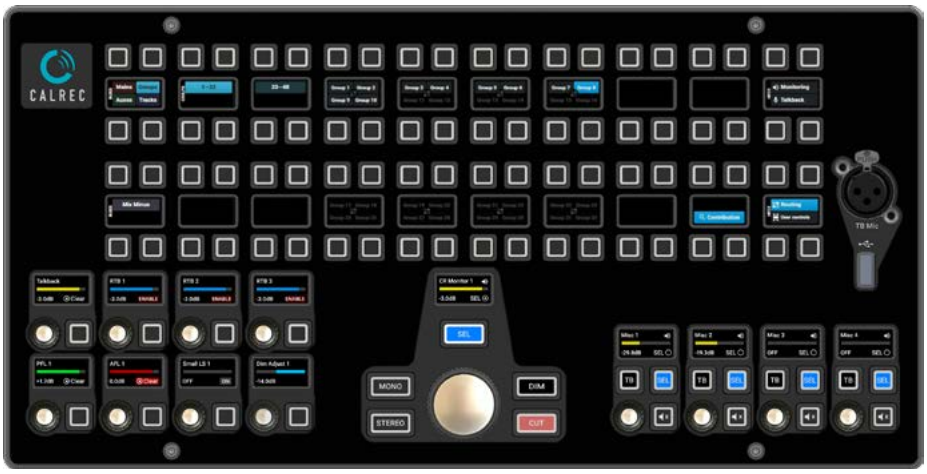


FIG. 14 - CONTRIBUTION MODE FOR MIX MINUS ON MONITOR PANEL

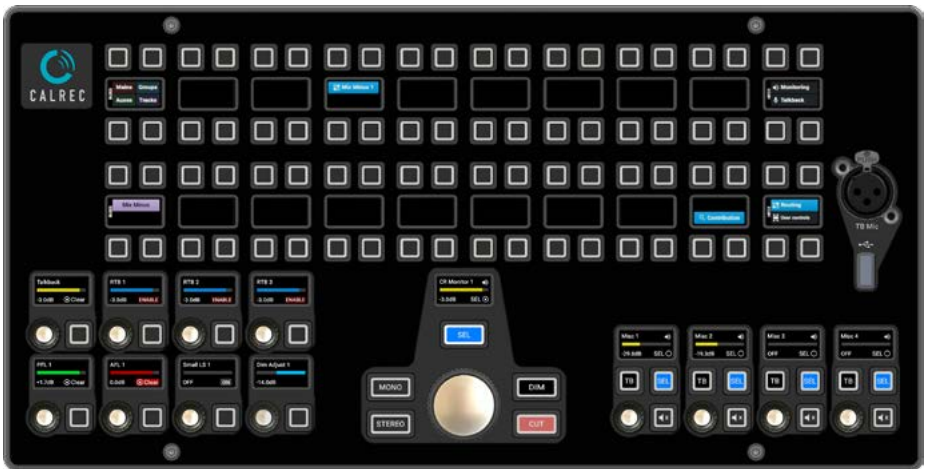
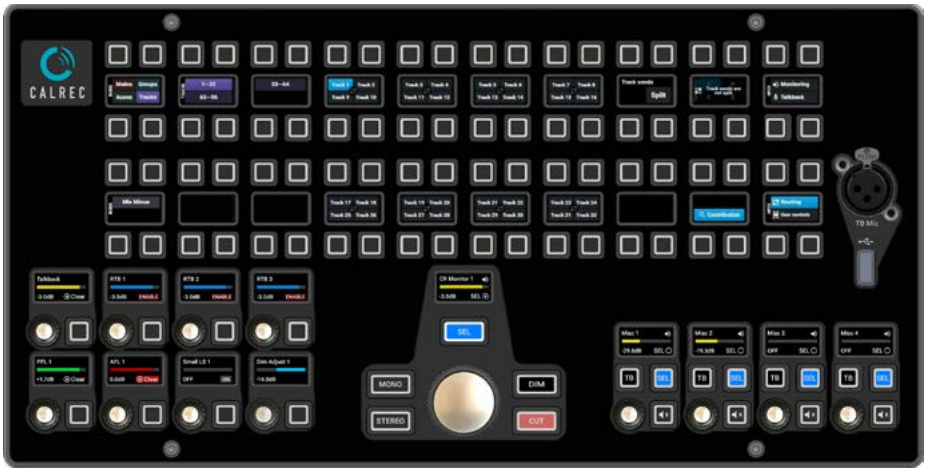


FIG. 15 - CONTRIBUTION MODE FOR TRACKS ON MONITOR PANEL



ROUTING MATRIX

The purpose of the Routing Matrix is to simplify the routing Process. The screen is arranged in a tabular X-Y format, where Rows as identified on the left represent the sources to be routed, and the Matrix to the right represents the crosspoints where the Destination Columns intersect the Source Rows.
The Matrix routing mode is accessed from the Modes row of a fader panel by first tapping Modes Menu, then by tapping Matrix, as shown in Fig. 1. Alternatively, the user can tap on the Matrix icon on the touchscreen. The touchscreen then displays/controls the routing in matrix form, as shown in Fig. 2.

Matrix Access

After tapping on the menu selection Routing>Matrix, Fig. 2 is displayed. The left side of the routing matrix shows the various source rows that are available in this show. The right side of the routing matrix shows the various destination columns that are available in this show. The crosspoint where source and destination intersect can be selected, establishing a route between them.

In Fig. 2, the highlighted blocks indicates that a route has already been made from the mono source channel on Layer 1A Fader 2 to the following bus destinations: Main 1, Group 1 and Aux 1.
Note: to exit Matrix mode, the user taps '**Done**' on the bottom right of the Matrix page.

Routing Procedure

Routing and unrouting is a two stage process. The user first selects the crosspoints to be connected before then tapping on the now active '**Route**' button in the footer. In order to route a single source to a single destination, the user selects the crosspoint by tapping on it. These selections are shown using an outline block. The user can then tap the '**Route**' button to action the selection.

If the user wishes to route a number of sources to a destination, they can click (or touch) and drag vertically down to make their selection. If the user wishes to route a source to a number of destinations, they can click (or touch) and drag horizontally across to make their selection, or drag out a block of selected crosspoints. It is also possible to use control tapping to add crosspoints to the selections. This is useful, for example, if a diagonal connection is to be made, like routing channels to tracks on a one-to-one basis. Tapping a single selection again clears that single selection.

FIG. 1 - MATRIX ROUTING MODE SELECT ON STANDARD FADER PANEL

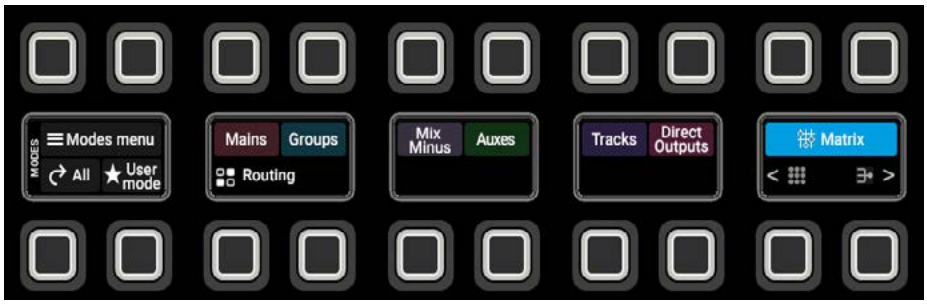


FIG. 2 - ROUTING MATRIX DISPLAY

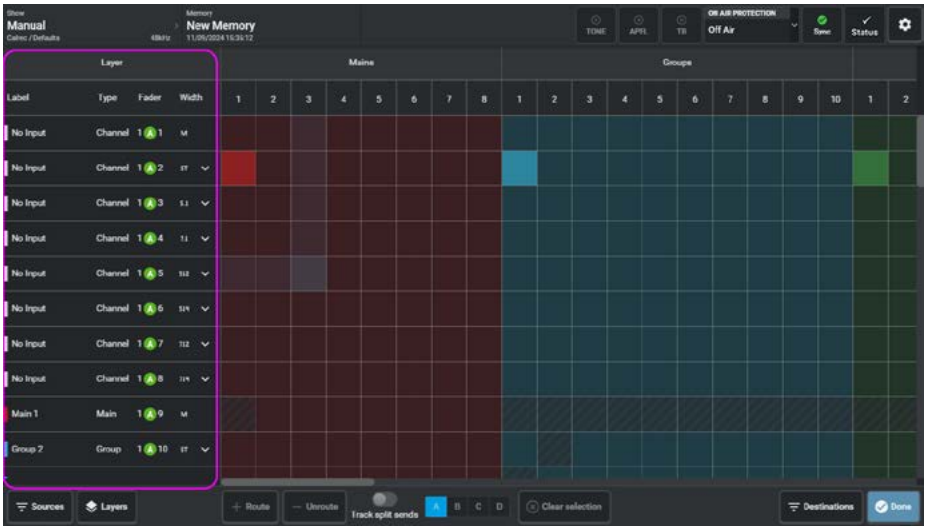
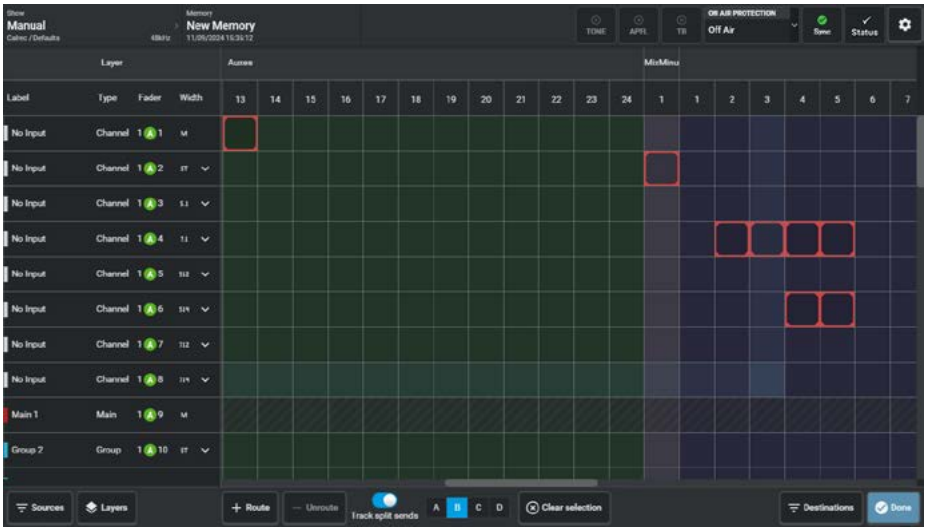


FIG. 3 ROUTING/UNROUTING SELECTION



The outline blocks in Fig. 3 on the previous page show that the following crosspoint selections are ready to be routed:

1. Fader L1F1A to Aux 13
2. Fader L1F2A to Mix Minus 1
3. Fader L1F4A to Tracks 2-5
4. Fader L1F6A to Tracks 4 & 5

The crosshatched squares in the matrix indicate crosspoints that cannot be routed to, such as in the instance of self routing or attempted routes to other invalid destinations for a particular source. Once the selection is made, the user clicks on the 'Route' button in the footer.

Unrouting Procedure

Unrouting crosspoints is a similar method to routing, with the user instead selecting the already highlighted routes. With this, the outline block appears around it. Once the required selection is made, the user clicks on the now active 'Unroute' button in the footer.

Clear selection

If the user has made a number of selections, as shown in Fig. 3 on the previous page, they can clear all selections simultaneously by tapping on the 'Clear selection' button in the footer.

Sources Area

The following fields are displayed in the Sources Layer area highlighted on the left side of the page in Fig. 4:

Label: The source label can be a user label, bus label, port label or port number. If the path is a channel that has not yet been ported, it appears as 'No Input', as shown in Fig. 4.

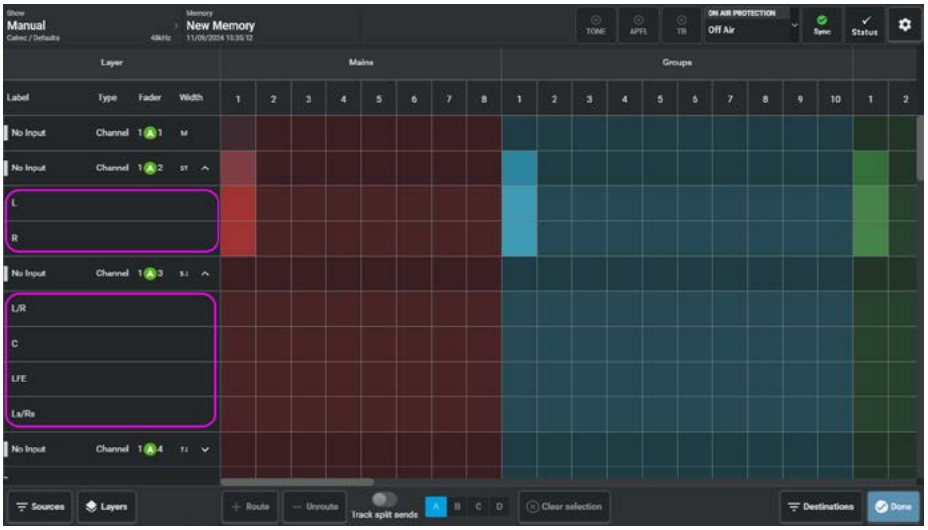
Type: This defines the source path type. In Argo, the only paths that act as sources are Channels, Groups & Mains.

Fader: This field indicates the layer number that the source is associated with, followed by the A or B sub-layer icon and the fader number. At the bottom of the source list, which is scrolled to by either the vertical scrollbar on the right or by dragging the left source area, there are buses available to be routed from. These sources do not have fader numbers.

FIG. 4 - SOURCES



FIG. 5 - ROUTING INDIVIDUAL SPILL LEGS OF SOURCES



Format: This defines the width of the source, which can be mono M, stereo ST, surround 5.1, 7.1 or immersive 5.1.2, 5.1.4, 7.1.2, 7.1.4, 0.0.2 or 0.0.4.

Note: if a source appears in more than one place in the matrix, a 'Clone' symbol will appear.

v & ^ expansion arrows: An expansion arrow indicates that this path is a stereo, surround or immersive source. Tapping on the DOWN arrow '**v**' shows the individual legs of the path, making them available for routing as shown for:

- Channel L1F2A Stereo (L & R),
- Channel L1F3A 5.1 Surround
- L/R, C, LFE & Ls/Rs)
- Channel L1F5A 7.1 Surround
- L/R, C, LFE, Lss/Rss, Lrs/Rrs

Tapping on the UP arrow '**^**' hides the individual spill legs back underneath the master path row, as shown for the Channels L1F2A & L1F3A immediately above each highlighted block, see Fig. 5. Generally, as all the legs of a source would be routed to the destination, the default view is to show these paths closed up '**v**', as shown for the Channel L1F4A 7.1 Surround path.

Source Filters: In order to simplify the view, various source filters can be applied.

Tapping on the 'Sources' button on the left side of the footer opens the Source Filter Pop-up. A notification badge appears when a filter or number of filters are active. The filters can be used in combination, allowing the user to tailor the sources shown in the routing matrix display.

Source Path filtering: The user can filter the view to see one of only Channels, Mains or Groups, or any source paths in combination, see Fig. 6.

Note: the default selection shows all source paths when the slider switches are all in the OFF position.

Source Format filtering: The user can filter the view to see only sources of certain width formats. These are: Mono, Stereo, 5.1 & 7.1 Surround and 5.1.2, 5.1.4, 7.1.2, 7.1.4, 0.0.2 & 0.0.4 Immersive formats, or any source formats in combination, see Fig. 7.

Note: the default selection shows all source formats when the slider switches are all in the OFF position.

Source Sub-Layers filtering: The user can filter the view to show only sources that have been placed on a Fader on Sub-Layer A or on Sub-Layer B, or show all sources when the Sub-Layers A and B option is selected, see Fig. 8.

Note: the default selection shows all sources when Show A & B is selected, including paths not assigned to faders. If either Show A or Show B is selected, only sources that have been assigned to faders on Sub-Layer A or Sub-Layer B will be shown. Therefore, any Main or Group paths not assigned to faders will not be displayed with these filters active.

FIG. 6 - SOURCE PATH FILTERING

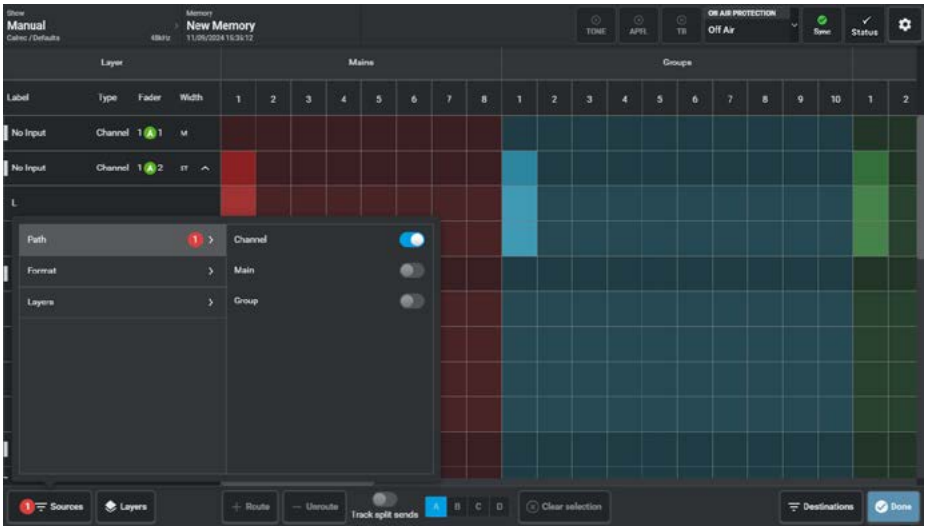


FIG. 7 - SOURCE FORMAT FILTERING

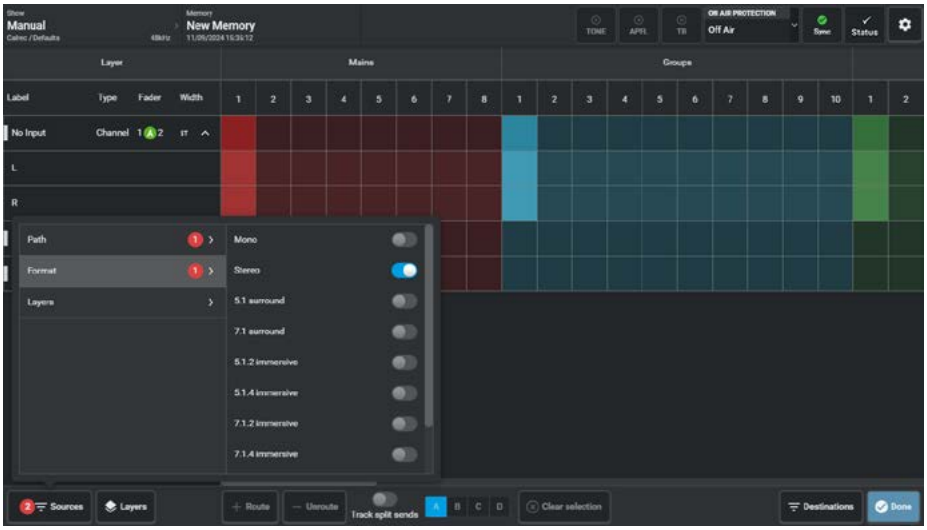
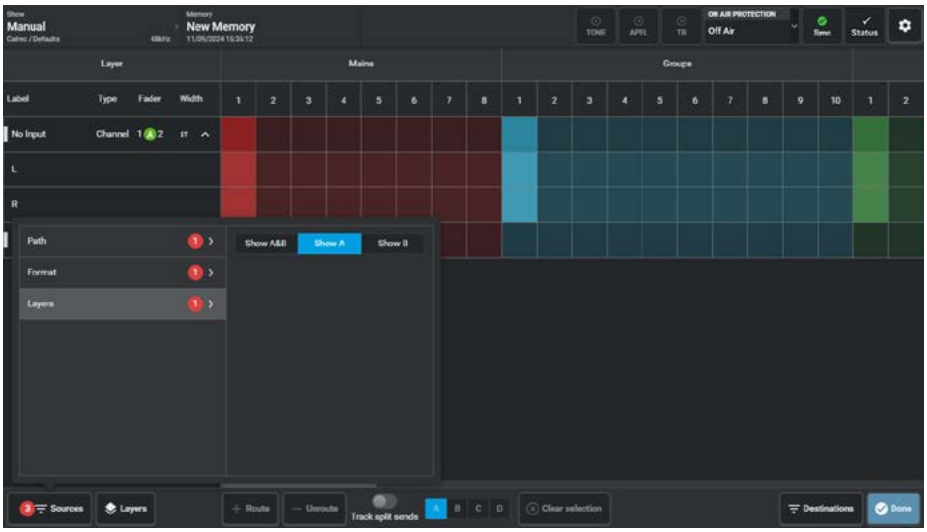


FIG. 8 - SOURCE SUB-LAYER FILTERING

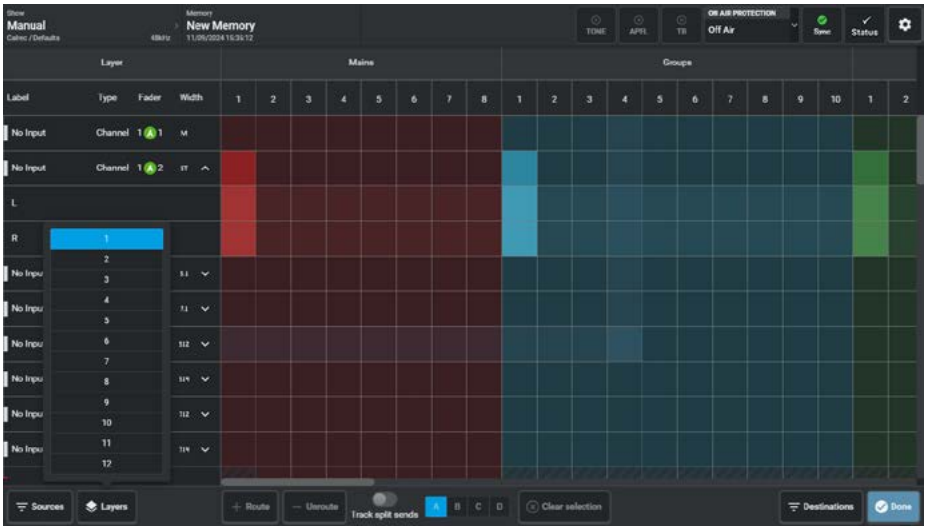


Source Layer Display Control is shown in Fig. 9. Tapping on the 'Layers' button on the source side of the footer opens the Layer Control Pop-up.

From here, the user can select any of the 12 Layers to be displayed.

Note: this layer selection is independent from the actual current layer that the console is displaying.

FIG. 9 - SOURCE LAYER DISPLAY CONTROL



Destination Area
The following buses are displayed in the Destination columns:

Mains: This shows a number of Main columns. This varies depending on the available Main buses.

Groups: This shows a number of Group columns. This varies depending on the available Group buses.

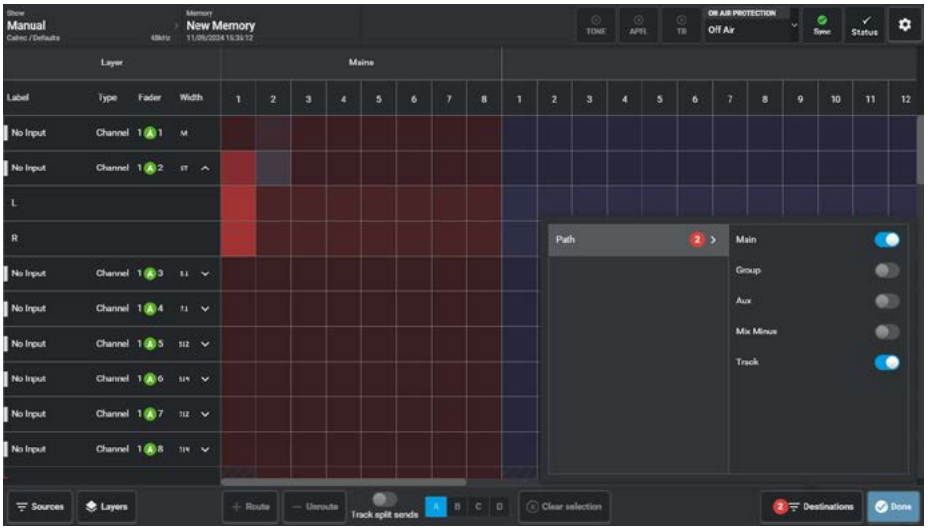
Auxes: This shows a number of Aux columns. This varies depending on the available Aux buses.

Mix Minus: This shows the single Mix-Minus Bus column.

Tracks: This shows a number of Track columns. This varies depending on the available Track buses.

If there are more buses available than can be displayed on the screen, a horizontal scrollbar will appear at the bottom of the matrix area. This can be used to scroll to the required destination. Alternatively, the user can apply the destination filters as required.

FIG. 10 - DESTINATION FILTERS



Destination Filters
Tapping on the 'Destinations' button on the right side of the footer opens the Destination Filter pop-up. This allows the user to filter the destination view by Main, Group, Aux, Mix Minus and Track bus type.

Fig. 10 shows that the destination filter for Main and Track buses has been switched on, meaning the display will only show Main and Aux bus destinations. In this case, Group, Mix Minus and Aux destinations are hidden.

There is a slider switch provided for each bus type which, when on, displays that bus type. These can be used individually or in combination. A notification badge appears when a filter or number of filter are active in the footer buttons.

Note: the default selection shows all destination buses when the slider switches are all in the OFF position. Also note that Source & Destination filters can be used in combination to better manage the required routing.

Partial Leg Routing

If a stereo, surround or immersive path only has some of its legs routed, the matrix shows this by displaying its master path with a corner cut off. This is to indicate that it is partially routed.

Fig. 11 shows that the Sub-Layer A and Channel source filters are selected, and that the Main and Group destination filters are both on. Partially routed Stereo and 5.1 paths are shown.

The stereo channel on Fader L1F2A is partially routed to Main 1 (L) and partially routed to Main 2 (R).

The 5.1 channel on Fader L1F3A is partially routed to Group 1 (L/R), Group 2 (C), Group 3 (LFE) and Group 4 (Ls/Rs).

For partial routes, the master path shows the corner cut off. When the legs are hidden underneath the master path, the corner cut off becomes an important indication of partial routing. This is shown in Fig. 12 for fader L1F1A2 (partially routed to Main 1) and fader L1F13 (partially routed to Group 1 and Group 3).

Partial Leg Unrouting

Fig. 12 shows what happens when master paths are unrouted. The complete routes are fully removed but the partial routes appear as unrouted, with the corner cut off indication. The partial routes are unrouted but are remembered, allowing the user to quickly restore partial routes by re-routing the master paths. The image shows a couple of examples of partial leg unrouting: The 5.1 channel's C leg on Fader L1F3A has been unrouted from Group 2, as has the LFE leg from Group 4. This was done by selecting crosspoints on the master path and unrouting them.

FIG. 11 - PARTIAL ROUTED INDICATIONS

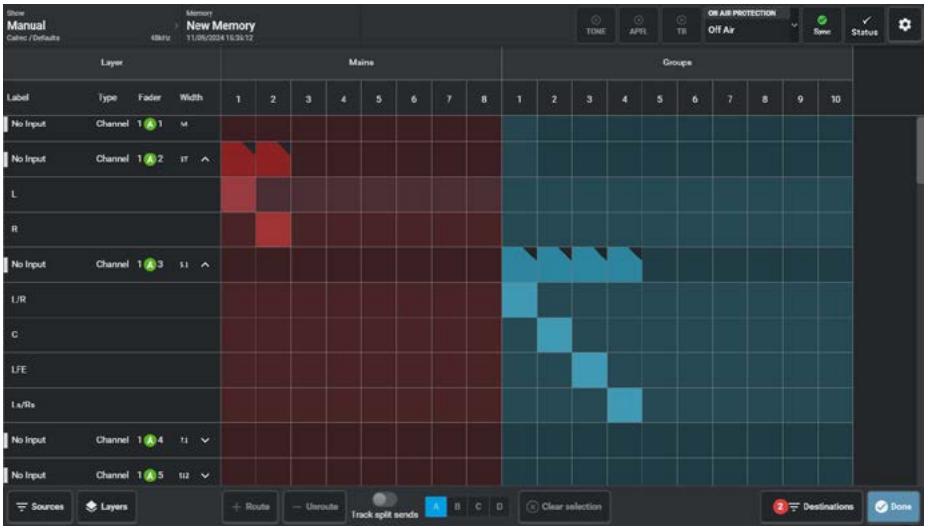
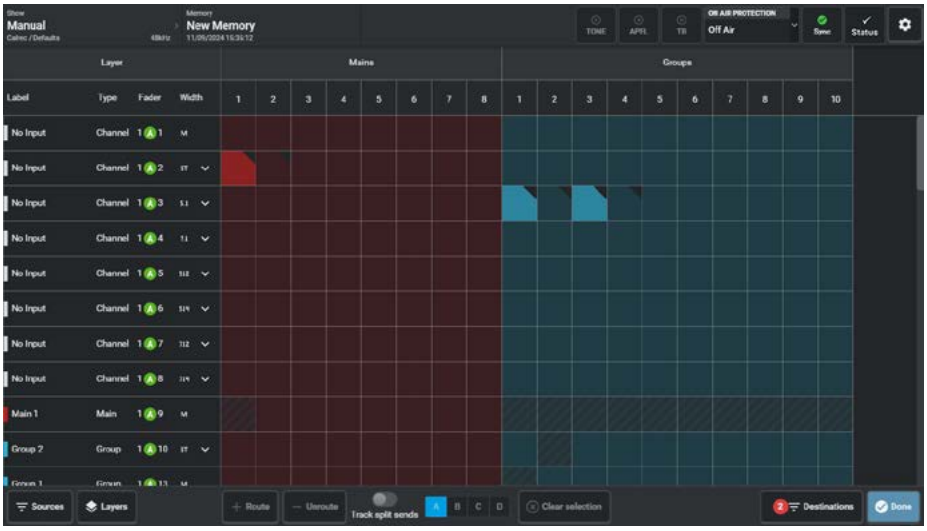


FIG. 12 - PARTIAL UNROUTED INDICATIONS



However, the routing matrix still displays the corner cut off. This is to remind the user that there are still potential partial routes that would be restored by re-routing the master paths.

Note: in order to fully remove partial routes the user must first make those partial routes active again and then unroute all the legs directly.

Track and Split Track Sends Routing
In normal operation the Split Sends option accessed from the '**Split Track'** button in the destination side of the footer is turned off. Any track routes made behave just as the Groups, Mix Minus, Mains and Auxes do, including partial route indication.

There are four track sends from each path in Argo. If Split Sends is OFF (by default) then the routes are all made via track send A. As such, these routes do not require identification as to which of the four sends are being used.

However, when Split Sends is turned on, any existing track route will appear with a letter A in it to show which send it is routed from. Looking at just the tracks area of the matrix shown in Fig. 13 by switching on the Track Destinations filter, it can be seen that a number of routes have been made from a 7.1.4 Immersive Channel, on Fader L1F7A, to Tracks 1, 2, 3, 5, 6 & 7 as follows:

Track 1 shows that complete routes have been made via track send A. This could be made by routing the master path or by routing all 7 legs individually. All the blocks show the track send A letter.

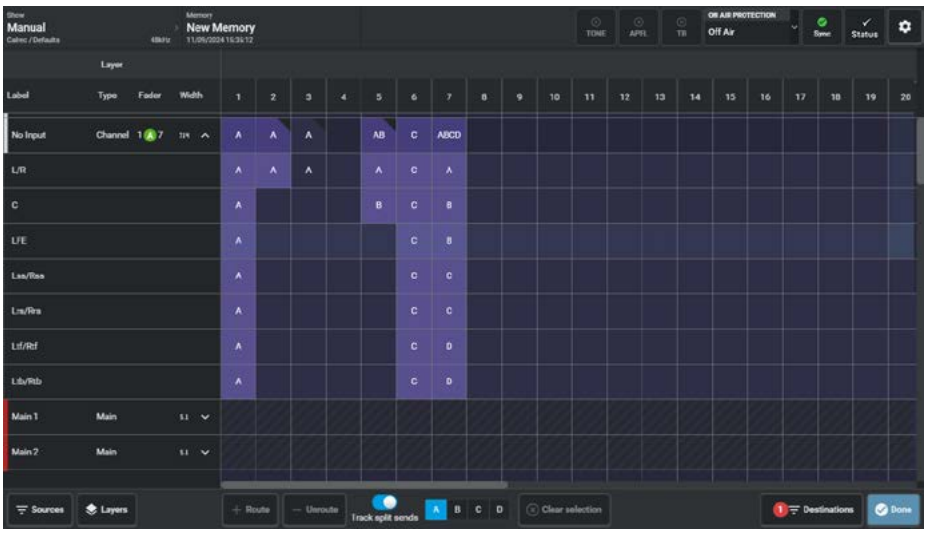
Track 2 shows a partial route with just the left & right legs being routed via track send A. The master path and the L/R legs show the track letter.

Track 3 shows an unrouted partial track send A route with the unrouted left and right legs, remembered as being from track send A. The master path and the L/R legs show the track letter.

Track 5 was created by first partially routing the left & right legs via track send A with the letter A shown (just as Track 2 was). The user has then selected the B button from the Split Send pop-up and routed the centre leg via track send B.

The letter B is then shown in the routing block for the centre leg. The master path routing indicator now shows AB, with the corner cut off, indicating that it is not only a partial route, but also routed via two different track sends, A & B.

FIG. 13 - TRACK AND SPLIT SENDS ROUTING



This allows the track send A from the left and right legs, and the track send B from the centre leg, to be set to different levels by adjusting the track send A and B level controls. For example, a vocal on the centre leg may need to be louder than the audio on the left & right legs. Hence, the track send B level can be increased without affecting the other leg levels.

Track 6 is a complete route from the channel via track send C. The user has selected the C button from the Split Send pop-up and routed the master path via track send C, meaning the output to that track is determined by the track send C level control from the channel. All the blocks show the track send C letter.

Track 7 is an extreme case of controlling all seven of the legs of a 7.1.4 channel from the four different track sends A, B, C & D. This is an unlikely routing arrangement but is shown here for completeness.

The various legs each show the A,B,C or D letters in their routing blocks to show which track send they are controlled from. The master path routing block shows as a complete route (as all legs are routed) with the ABCD letters shown. It is important to note that routing and unrouting to and from tracks with the split sends option ON is affected by which send A, B, C or D has been selected.

If a channel has been routed to a track using send C then send C must be selected when removing the route. Only routes made with the currently selected send may be removed.

As an example:
To completely unroute Track 5, the C leg that has been routed via track send B can only be unrouted by selecting the split send B button from the pop-up before the centre leg can be selected and then unrouted. Otherwise, that route would not be altered.

The user would then select the =split sends A button from the pop-up before the left & right legs previously routed via track send A can be selected, and then unrouted, at which point Track 5 would be completely unrouted.

Note: if any route is made to any path via a send other than send A then it is not possible to turn off the split sends option. When all the routes are only via track send A, the user can then turn off the split sends slider. The remaining routes will then remove their letter A identifiers.

ARGO
FADER LAYOUT

CALREC

FADER LAYOUT FROM TOUCHSCREEN

Fader/Path management is carried out from the Fader Layout page.
The Fader Layout screen provides a visual representation of all faders and all layers, showing the current path to fader assignment of the control surface. The on-screen display shows the type of path (if any) assigned to each fader, along with the input receiver/fader label and supporting indicators, such as VCA group status, layer locks, memory isolates and cloned paths. The Fader Layout screen is accessed from the Modes row of a fader panel by first pressing Modes Menu in button cell 4 of the Layers & Modes row, before then tapping on Fader Layout, as shown in Fig. 1. Alternatively, the user can tap on the appropriate icons on the touchscreen, as shown in Fig. 2. The Wild Assign panel and Fader panel displays are not shown here as the configuration of the surface can be managed from the touchscreen. There are certain functions such as Path assignment and VCA groups creation that can also be controlled via the Access buttons on the console surface. These are described in the Fader Surface Management section of the manual, see **"Fader layout from the surface" on page 138.**

Configuring the Argo Fader Layout
When a show is loaded, the fader layout screen is automatically populated as the loaded show becomes the active show. This screen can be accessed from the menu via the Fader Layout as described. Fig. 2 displays what the user would see when a new show is created. Channels must be attached to faders to exist and faders can also be assigned to control bus outputs. The Fader layout screen for Argo shows the number of faders available on the console. The empty fader layout is configured as shown in the **'Impulse Configure Guide (926-290)**'.

The example shown is for an Argo S consisting of two 12 fader sections. The 24 faders are arranged as:

Faders 1A-24A and Faders 1B-24B for each of the 12 Layers available. The fader sections are divided into blocks of 12 to emulate the physical Argo standard and short fader panels. The fader layout displayed in Fig. 2 shows the standard faders 1-24A & 1-24B. The user can use the vertical layer buttons to select which layer to view, or select **'ALL'** to view all layers.

FIG. 1 -FADER LAYOUT EXTENDED MODE SELECT ON STANDARD FADER PANEL

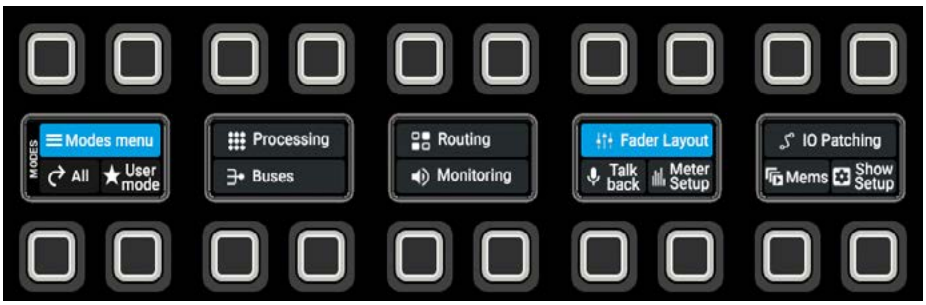


FIG. 2 -EMPTY FADER LAYOUT SHOWING STRUCTURE OF SCREEN



Attaching a Path to a Fader

To attach a path to a single fader:

1. Tap on an empty fader space to select it, in this case L1F1A.

2. Tap on '+ New' in the control screen footer. A pop-up opens to show the path options, for Channels, Mains, Groups, Auxes, Tracks and Remote Paths, as shown in Fig. 3.

3. Tap to select the desired width/type or use 'All' in combination with the Search option if preferred.

4. Tapping on the chosen path(s) places the path on the fader. Alternatively, tapping 'Cancel' returns the user to the fader layout screen unchanged.

To attach paths to multiple faders:

1. Tap and drag to select the desired range of faders.

2. Tap on '+ New' in the control screen footer. A pop-up opens to show the path options, for Channels, Mains, Groups, Auxes, Tracks and Remote paths, as shown in Fig. 4.

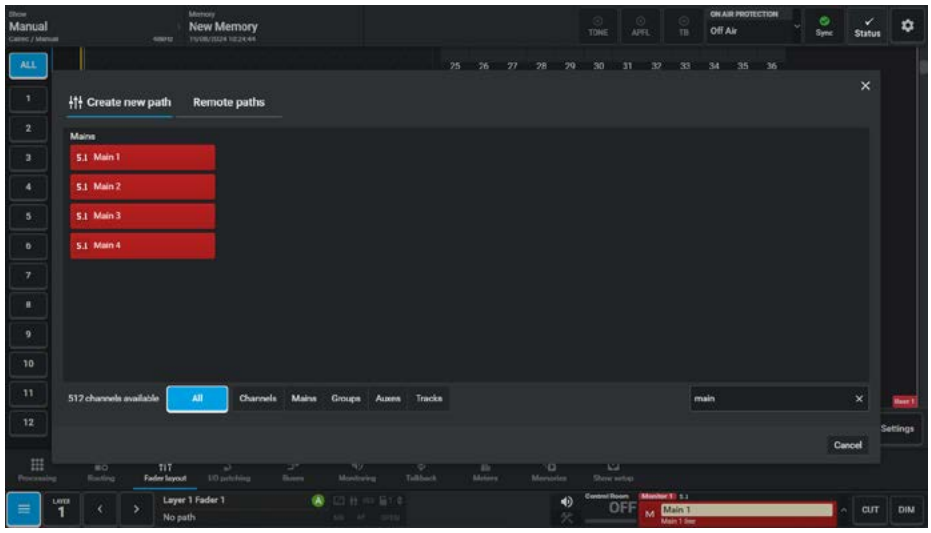
3. Select your first path. The subsequent paths will fill the selection.

Note: just the Mains paths are shown in the pop-up box in Fig. 4. This is because the user has types the word 'Main' into the search box.

FIG. 3 -CREATE SINGLE NEW PATH ON TOUCHSCREEN



FIG. 4 -CREATE MULTIPLE NEW PATHS ON TOUCHSCREEN



Remote Production Options

It is possible to place remote paths from RP1 remote production units by selecting the 'Remote paths' option in the Fader Layout screen. This allows the user to map the remote faders and remote aux masters of multiple RP1 units onto the console surface. The operation and integration of the RP1 remote production unit with the Argo console is the subject of a separate manual.

The **Remote Production Manual Impulse Edition (926-308)** can be downloaded from the Calrec Website. In the RP1 manual is a chapter called 'Operation Via Host Console', which shows how to set up and operate the RP1 remote production unit paths via a host console connected to an Impulse core.

New for version 1.2 is the ability for Argo Consoles to be a Controller of other consoles, or to be controlled from other consoles, by setting up remote connections to this remote console. This new feature is called True Control.

Populating the Fader Layout
All selected faders will then be populated with the chosen path type/width. If an output bus is chosen, the selected faders will be populated with buses in numerical order.

For example, if the user selects 12 faders, and then chooses Aux 1 from the pop-up, the faders will be populated consecutively with Aux outputs 1-12. Fig. 5 shows the fader layout screen populated with various channels & buses on Layer 2.

Placing Remote Faders on Layout
This allows the user to place selected Remote faders or buses from other remotely networked consoles onto the local Fader layout of this console, to allow control of those Remote paths.

Fig. 7 shows the Faders>Fader layout -Remote paths page. On the left are shown the various devices available to the user. In this case, these are Mixer B and Mixer C, which are 2 Argo consoles. The user has selected Mixer B and has further selected '**Remote faders**' from the selection at the bottom of the dialogue box. This shows the Remote Faders available on the surface of the Remote console. The user can tap on the chosen Remote faders to place them onto its local Fader layout using the procedure shown on the previous page.

Placing Remote Buses on Layout
Fig. 7 shows the Faders>Fader layout>Remote paths page. On the left are shown the various consoles available to the user. In this case, these are Mixer B and Mixer C, which are 2 Argo consoles. The user has selected Mixer B and has further selected '**Mains**' from the selection at the bottom of the dialogue box. The user can tap on the chosen remote Main buses to place them onto its local Fader Layout using the procedure shown on the previous page. In addition to remote Main buses, the user can also choose to place remote Group buses, remote Aux buses and remote Track buses.

FIG. 5 -POPULATED FADER LAYOUT ON TOUCHSCREEN



FIG. 6 - PLACE REMOTE FADERS ON LAYOUT

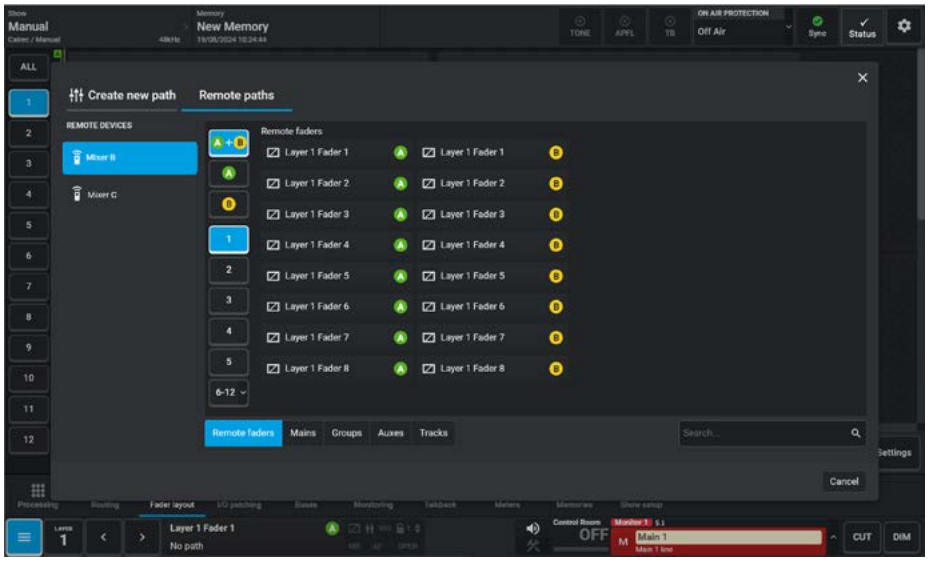
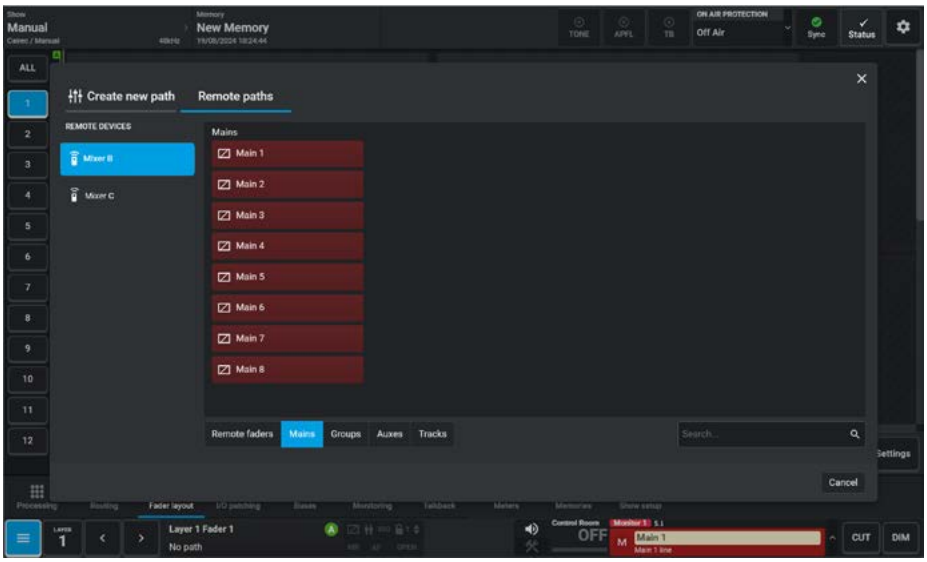


FIG. 7 - PLACE REMOTE BUSES ON LAYOUT



Fader Label Editing

Once a path has been created, the user can edit its fader label, see Fig. 6.

To edit a fader label:

1. Select one or more faders and tap on 'Label' in the screen footer.
2. The footer changes to display a text entry field & six buttons, Copy, Paste, Reset to default, Previous, Next and Done.
3. Enter fader labels using the keyboard.
4. Change the background colour of the label from the dropdown list.
5. Scroll through the fader label fields by tapping on them, or by tapping on 'Previous' and 'Next'.
6. Select a path and use the **'Copy'** and 'Paste' functions to similarly label other paths.
7. Pressing **'Reset to Default'** clears the selected labels back to default.
8. Once you are happy with your changes, tap 'Done'**.**

Note: Selecting multiple labels before exiting the 'Edit label' dialogue will change the name and colour of all the selected labels. If the name field is left blank, the label will revert to its system name.

Label Display Options

Accessed from the Settings icon in the right-hand side of the footer, the user can change the label displays for the Buses & Outputs between user and system labels. Below this is shown a hierarchy of Fader labels available: from User Fader labels, Source labels, the Source transmitter channel to the Console receiver channel. By default, the highest level of label in this hierarchy is displayed, but the user can choose to force this to show the preferred label. External labels and Patchbay source labels are only shown if the 'Dynamic Channel Labels' switch is active, else it follows the order shown bottom right of the touchscreen, see Fig. 9.

Surface options

There is a slider switch which, when active, enables auto-navigation within the Fader Layout page. With this setting enabled, the Fader Layout page will jump to whichever fader is accessed, on whichever layer. The Fader label display buttons in Fig. 9 can select just the current path label selection (A or B) as shown in Fig. 9A, or both A & B path labels, shown in Fig. 9B on the TFT display.

FIG. 8 - FADER LABEL EDITING ON TOUCHSCREEN



FIG. 9 - LABEL DISPLAY AND SURFACE OPTIONS ON TOUCHSCREEN



Both these label options show the same paths for label display comparison.

Note: As shown in Fig. 6, the single and dual labels options can also be custom coloured by the user.

FIG. 9B - LABEL SHOWS A AND B LAYERS



FIG. 9A - LABEL SHOWS A OR B LAYERS



Moving Paths

To move paths to different faders as shown in Fig. 10:

1. Select one or more faders, at least one of which has a path attached.
2. Tap on '**Move**' in the screen footer.
3. A pop-up appears in the footer, asking the user to select where the first 'Move to' destination should be.
4. Green named pointers then appear under the destinations for empty paths to show the intended move.
5. Tap on '**Move**' again to confirm.

If the user selects a move destination attached to an existing path, the pointers appear red rather than green. The user is then presented with three options:

Swap: this swaps the original paths with faders on the chosen destination.

Overwrite: this replaces the destination path with the original selection, removing the destination paths from the surface. As channels don't exist once they are removed from a fader, a pop-up appears if there is an attempt to overwrite a channel, asking for confirmation.

Cancel: this cancels the move.

Cloning Paths

To create a clone of a path from a fader:

1. Select the fader or faders to be cloned. These must be attached to a path.
2. Tap '**Clone**' in the screen footer.
3. A pop-up appears in the footer, asking the user to select the destination where the first clone should appear.
4. Green named pointers then appear under the destinations for empty paths, showing the intended move.
5. Tap '**Clone**' in the pop-up to create the clone path(s) or tap '**Cancel**' to return to the fader layout screen unchanged.
6. Once the clone has been created, all clones of that path and the original will have the clone icon attached. This is shown, for example, in Fig. 11 on faders L1F1B and L1F2B.

If the user selects clone destinations that have existing paths on them, the pointers appear red rather than green and they are presented with a '**Clone & overwrite**' option shown in Fig. 12. This first deletes the paths to be overwritten before placing the clones on the now empty paths.

FIG. 10 -MOVING PATHS ON TOUCHSCREEN



FIG. 11 - CLONING PATHS ON TOUCHSCREEN



FIG. 12 - CLONE & OVERWRITE PATHS ON TOUCHSCREEN



Note: Pointers appear yellow if the path will be overwritten but not destroyed. See, for example, Fig. 12, where the overwritten faders display buses.

Deleting Paths

To remove paths from the fader layout as shown in Fig. 13:

1. Select one or more faders, at least one of which is attached to a path.
2. Tap 'Delete' in the screen footer.
3. A pop-up dialogue appears, asking for confirmation that the selected paths are to be deleted, while advising that 'This operation cannot be undone.'
4. Tap 'Delete' in the pop-up to remove the path from the fader layout, or tap on 'Cancel' to return to the fader layout screen unchanged.

Layer Lock

This allows the user to keep important faders so that they are always present on the fader surface, regardless of which Layer or sub-layer is selected. Faders are locked/unlocked as follows:

1. Select one or more faders (with or without paths attached).
2. Tap on 'Layer lock' in the screen footer. A padlock symbol appears on the locked paths, as shown in Fig. 14 on Faders L1F3A to L1F8A.
3. To unlock the locked path(s) with the padlock icon(s), select them and tap 'Layer lock' in the screen footer.

Pair Faders

This allows the user to pair two faders together, as shown in Fig. 15. The pair operate like a link, where moving either fader moves them both by the same amount. However, this procedure only pairs the faders and cut/on switches. This is primarily designed to pair Argo faders with remote faders.

To pair two faders together:

1. Select the first fader to be paired. This fader must have a path attached.
2. Tap 'Pair' in the screen footer.
3. Select the second fader to be paired.
4. Click 'Pair' in the Pair Footer pop-up.
5. The Pair icon appears on both faders, as shown on Faders L1F7B & L1F8B.

To unpair a fader pair:

1. Select either of the paired faders.
2. Tap 'Unpair' in the screen footer.
3. This will unpair the faders, removing the pair symbol.

Note: if the user deletes one member of the pair from the Fader Layout, then the Pairing connection itself will also be deleted, removing the Pair icons.

FIG. 13 - DELETING PATHS ON TOUCHSCREEN

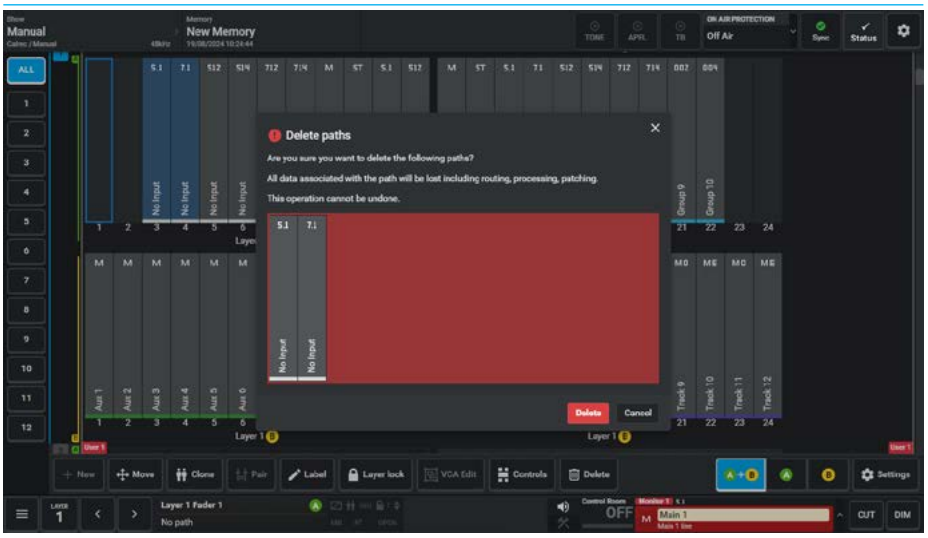


FIG. 14 - LAYER LOCK ON TOUCHSCREEN



FIG. 15 -PAIR FADERS ON TOUCHSCREEN



VCA Edit Mode

This allows the user to create, add, edit and remove VCA groups from the Fader Layout>VCA Edit page.

This process is normally carried out on a physical fader surface using access buttons. However, the system may be headless with virtual faders, so a method of setting up VCA groups is required.

A VCA group consists of a VCA master fader and a number faders within the group. Adjusting the VCA master fader level allows all fader levels within the group to be adjusted, maintaining the balance of the sound without having to adjust them individually.

Entering VCA Edit Mode

Fig. 16 shows a simple example:

Fader L1F1A is an unassigned path. Faders L1F3A to L1F5A have been assigned multichannel paths which the operator wants to control from a VCA group master fader.

The first step is to select the path that will become the VCA Master Fader. Clicking or tapping on the required fader on the fader layout page highlights it. The user can then click on the 'VCA Edit' button on the right side of the footer.

Changing the selected fader

Fig. 17 shows that Fader L1F1A is the selected fader for the VCA Edit page.

If another fader is to be set as the selected fader, the user can tap or click on the currently selected fader again. This will remove the highlight to indicate to the user that it is deselected. The Footer then shows that there is no selected fader, see Fig. 18.

The user then chooses the required fader and clicks that fader to change its status to that of selected fader.

FIG. 16 -VCA EDIT MODE ON TOUCHSCREEN



FIG. 17 -VCA EDIT FOOTER WITH SELECTED FADER ON TOUCHSCREEN



FIG. 18 -VCA EDIT FOOTER WITH NO SELECTED FADER ON TOUCHSCREEN



Creating a VCA Group

With fader L1F1A the selected fader, the user now selects the faders to be in the VCA group, as shown in Fig. 19.

In this case, just fader L1F3A has been added to a VCA group. The green '**SL**' icon has been appended to it along with a green border placed around the path, to show the fader's status within the VCA group. The selected fader L1F1A now has a label appended as VCA Master of the group and has the red '**MR**' Icon appended to it, along with a dashed red border placed around the path. The current path status window in the footer also shows the red '**MR**' icon.

The VCA **MR**, **SL** & **MS** icons appear in the Fader Surface page and on the physical surface fader panels if used.

Also note that fader L1F1A is displaying an empty path icon at the top to show that there isn't a path on the same fader, i.e., a VCA master without a path.

A VCA master with a path can be created by choosing a selected fader with a path already assigned to it, in which case the path icon will show the width of the path, M, ST, 5.1, 7.1, 5.1.2, 5.1.4, 7.1.2, 7.1.4, 0.0.2 or 0.0.4, as determined by its width.

Note: the path underneath will also be added to the group of the VCA master on top of it.

Exiting VCA Edit Mode

At this point, if the user has finished creating the VCA group, they can tap 'Done' in the footer to return to the normal Fader Layout page function. The VCA group icons remain, but the borders which are used to identify the 'selected' VCA group are removed, see Fig. 20.

Adding or Removing Faders from Groups

If the user wants to add or remove faders to/from a VCA group, they can re-enter the VCA Edit mode, choose the selected path and click on any available path, adding that path to the VCA group. Fig. 20 shows that fader L1F3A, L1F4A and L1F5A have now been added to the VCA group.

FIG. 19 - VCA GROUP CREATED ON TOUCHSCREEN



FIG. 20 - ADDING FADERS TO AN EXISTING VCA GROUP ON TOUCHSCREEN



Note: any fader that is not available for addition to the group is shaded or greyed out.

To remove individual faders from the group, the user clicks again on the paths with the associated '**SL**' icons, returning those paths to their assigned path only state, i.e., the '**SL**' icon and border colour are removed. If the user removes the last fader from the group, the VCA group and the VCA master status entry is also removed. If it was a VCA master without a path, this then becomes unassigned. If it was a VCA master with a path, then it will return to an assigned path only state.

Remove all faders from VCA group

When VCA Edit mode is active, there is a button labelled 'Remove all slaves' shown in the VCA Edit footer, which becomes active when a valid path is selected. If the user selects a primary, intermediate or simple VCA master and taps on this button, all the faders within these groups will be removed. For primary VCA masters, this means that all intermediate VCA masters are converted to simple VCA masters. For intermediate VCA masters, this means that all faders within the intermediate group are removed. As such, they are no longer VCA masters, but remain within the primary group.

Note: if the primary, intermediate or simple VCA master does not have a path underneath when 'Remove all slaves' is actioned, it's entry will be removed.

Adding a second VCA group

Fig. 21 shows that a second VCA group has been added. The selected fader was changed to fader L1F13A, which has a path attached. This became the second VCA master when it a fader attached to its group.

The VCA group here consists of the VCA master and three paths L1F14A, L1F15A and L1F13A, which is the path underneath the VCA master.

Note: the second VCA group members have borders around them to show that they are all members of the same group.

Creating VCA Intermediate Masters

Going beyond a simple VCA group structure, it is possible to create intermediate VCA group masters, allowing sub-groups to be controlled from an overall Primary VCA Master.

A practical example of this may be in an orchestral setting. The four sections of an orchestra (strings, woodwind, brass and percussion) may individually be balanced in terms of relative gain, but not balanced with respect to each other. As such, the director may want to control the overall blend between the four sections using a single fader. Four submasters, all grouped under one master, would allow the director to access four VCA groups (one per orchestral section) from a single fader, ensuring balance is retained across the four VCA groups.

Fig. 22 shows that the two VCA groups have been combined. With fader L1F1A as the selected fader, the user clicks/taps on another VCA master fader L1F13A, which becomes a VCA intermediate master. Its icon changes to '**MS**'. This is to show that it is still the VCA master of its own group, but is also within the Primary VCA group.

Faders L1F14A and L1F15A are now greyed out because they are in an intermediate VCA group under fader L1F3A.

FIG. 21 - ADDING ANOTHER VCA GROUP ON TOUCHSCREEN



FIG. 22 -VCA INTERMEDIATE MASTER CREATED ON TOUCHSCREEN



Each path can only be added to one VCA group, so these are unavailable to be added to the primary VCA group.

Note: see the green border colours around the paths that are directly controlled from the primary VCA master. Also note that faders L1F14A and L1F15A are greyed out and do not have a border colour.

Editing VCA Intermediate Groups

If the user wants to add or remove VCA faders to/from the VCA intermediate group, as shown in Fig. 23, the user would first need to deselect fader L1F1A (the Primary VCA master) before then selecting fader L1F13A, the VCA intermediate master.

Note: the VCA intermediate master shows a red border around it and its directly connected faders are bordered in green. However, in this case, the VCA primary master is also directly connected, which is why it is bordered in red although greyed out.

The user can then click/tap on any available path to add it to the intermediate VCA master's group or click on any fader already within the VCA intermediate group (as shown by the green border) to remove it.

Removing a VCA Intermediate Master

If the user removes the last fader from the VCA intermediate group, the group is also removed, along with the VCA intermediate master and simple VCA master statuses.

This can result in two states for the former VCA intermediate master:

1. If it was a VCA master with a path underneath, it now joins the group of the VCA master on Fader L1F1A. This has happened in Fig. 24.

   Clicking or tapping on any of the available paths in this state will create a new intermediate VCA group under the selected VCA fader. Deselecting the selected VCA fade returns the user to the VCA layout. This means that the master on L1F1A will continue to show faders L1F3A, L1F4A, L1F5A, and now also L1F13A, as within its group.

FIG. 23 -ADD/REMOVE VCA FADERS FROM INTERMEDIATE VCA GROUP



FIG. 24 - VCA INTERMEDIATE MASTER REMOVED



2. If it was a VCA master without a path underneath, its entry in fader layout will be removed altogether.

   Note: a VCA intermediate master can return to being a separate VCA master if the Primary VCA master is set to be the selected fader and the user subsequently clicks on the VCA intermediate master.

VCA Edit display example

Fig. 25 shows multiple VCA groups, with a VCA primary master and three VCA intermediate masters to this primary master.

The Primary VCA master is shown with a dashed red border. All its intermediate masters show a green solid border.

Paths that are not part of any VCA structure remain available for VCA grouping to the selected path. Paths that are not available to the selected path are greyed out.

Figs 25 & 26 show the following multiple VCA structures created in VCA Edit:

Fader L1F1A: Primary VCA master (without path) with faders in the Primary VCA group highlighted. These are:
Fader L1F13B: Intermediate VCA master (with a Group bus underneath) of VCA faders L1F4A, L1F15A and L1F16A, which are Group buses.
Fader L1F1B: Intermediate VCA master (with an Aux bus underneath) of VCA fader L1F2B, which is an Aux bus.
Fader L1F13B: Intermediate VCA master (with a Track bus underneath) of VCA fader L1F4B, which is a Track bus.

VCA display example in Fader Layout when not in Edit mode

Fig. 26 shows the same VCA display example when not in VCA Edit mode.

The outline coloured border displays have been removed after exiting. The VCA **MR** master icons, **SL** fader icons and **MS** intermediate master icons remain for each fader entry in the Fader Layout and are also shown on the Fader Surface.

Filtering the Fader Layout View

The fader layout view can be altered to show just the A layer paths, just the B layer paths or both A+B layer paths.

The user does this by changing the Show selection option in the bottom right of the fader layout page, as highlighted in Fig. 27 on the next page.

FIG. 25 - VCA GROUPS DISPLAY EXAMPLE IN VCA EDIT



FIG. 26 - VCA GROUPS DISPLAY EXAMPLE AFTER EXITING VCA EDIT



User Controls Editor

The standard Argo fader panel has 2 x 4 control button cell rows placed just above the faders Cut/On button. The lower row of these cells, highlighted in Fig. 27, can be configured to display a user defined set of controls.

This is carried out by first selecting the path to have its 4 button user control cell configured from the Assist Fader layout. This then makes the Controls option available in the footer of the fader layout page. Selecting this option opens the user controls editor as shown in Fig. 28.

On the right side of the editor is the 4 button layout, with the currently undefined user controls shown in the display in the centre. Tapping any of the 4 buttons in the display, or any of the 4 Add buttons functions, opens the Customise button menu with the Input Control page shown.

There is an the extensive set of control options that each of the 4 buttons for the selected path can be customised to perform.

In order to simplify some of these selections, 3 filter sets are provided:

- Global Functions: these controls are console wide.
- Path Functions: these controls apply to the selected path.
- Bus Functions: these controls apply to buses only.
- The sliders Include/Exclude that type of function in the control option lists.
- The user taps '**OK**' once the selection is made or **'Cancel'** to exit unchanged.

FIG. 27 - IU6756 - ARGO STANDARD 12 FADER PANEL

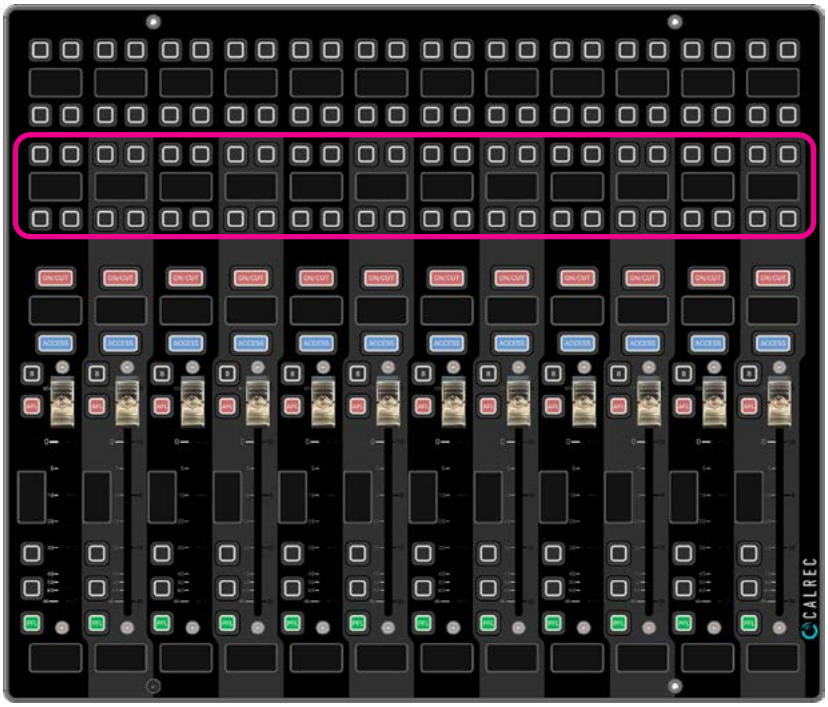


FIG. 28 - FADER LAYOUT - USER CONTROLS EDITOR FOR PATHS - INPUT

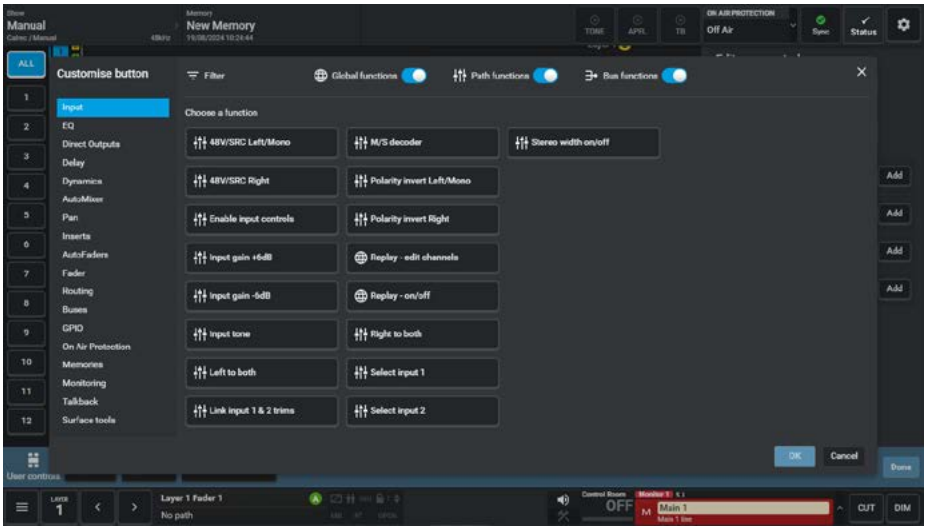


Fig. 29 shows that the buttons 1 & 2 for the selected path have been defined as ‘Input 1’ & ‘Input 2’ respectively.

Buttons 3 & 4 have been linked together by tapping on the ‘Link’ button. As such, either button actions the control, which in this case is **‘Link Input Trim’**.

The selected controls also appear under the Button functions list, along with an **‘Edit’** button which allows the user to change the control assignments again.

These functions are shown in the display and also on the Argo surface.

The path in the fader layout area now shows the User Controls Icon. This button configuration can be copied and pasted to other paths if they require similar customised controls using the ‘Copy’ & ‘Paste’ buttons in the footer of the User Controls dialogue.

Selecting the ‘Reset to default’ button opens a confirm dialogue box as shown in Fig. 30, asking if the user wants to “Remove all customisation for the selected controls?’.

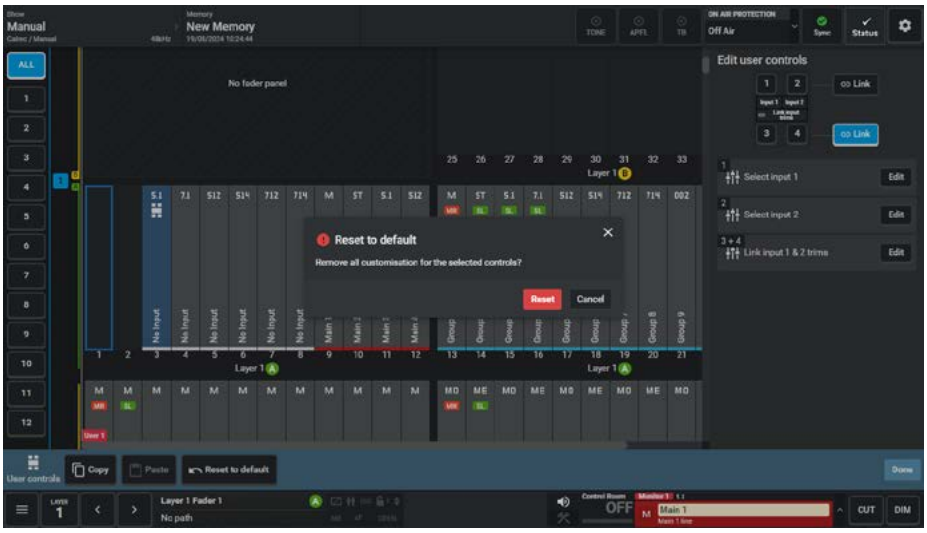
Pressing **‘Reset’** clears all the custom controls from the 4 button cell, reverting the controls back to their defaults, which are defined in System Settings>Default Controls.

Once all the User Control editing is completed, the user taps ‘Done’ to return to the Fader Layout sub-menu page which it came from.

FIG. 29 - FADER LAYOUT - USER CONTROLS EDITOR FOR PATHS - DEFINED



FIG. 30 -FADER LAYOUT - USER CONTROLS EDITOR - RESET TO DEFAULT



MIDI Controls

If a connection has already been established with a MIDI device, this dialog can be used to map Argo Faders to MIDI tracks. This is done as follows:

1. Select the fader/s which are to be allocated to MIDI control. Multiple faders can be selected by dragging across the selection (see Fig. 31). MIDI controls can only be mapped to faders which have been allocated DSP paths.
2. Tap Controls>MIDI - choose the MIDI device and track to allocate the faders to (See Fig. 32). The MIDI icon will appear on mapped tracks.
   Note: If multiple faders are selected they will be allocated to consecutively numbers MIDI tracks.

Assigning a fader to a MIDI track will automatically create MIDI mappings for the following functions for each track:

- Fader Level
- Cut
- MIDI Record Arm
- MIDI Solo

Fader level and cut will automatically map to the selected Fader and its associated Cut button. MIDI Record Arm and MIDI Solo can then be mapped in the following locations:

Default fader strip buttons (see Fig. 33)
System Settings>Default controls>MIDI
Individual fader strip buttons (see Fig. 34)
Faders>Fader layout>Controls>User controls>Select button>MIDI
Menu Row buttons (see Fig. 35)
Show setup>Customise Panels>Select a panel>Select a cell>Edit>MIDI

In each of these locations, select 'Edit' by the desired button, and select a MIDI function under MIDI tab, as seen in Fig. 36.

For more information on setting up and using MIDI & DAW control, as well as example DAW configurations, see the dedicated Argo MIDI & DAW Control Guide (926-449).

FIG. 31 - MAPPING MIXER CONTROLS



FIG. 32 - MIDI TRACK SELECTION



FIG. 33 - DEFAULT BUTTONS

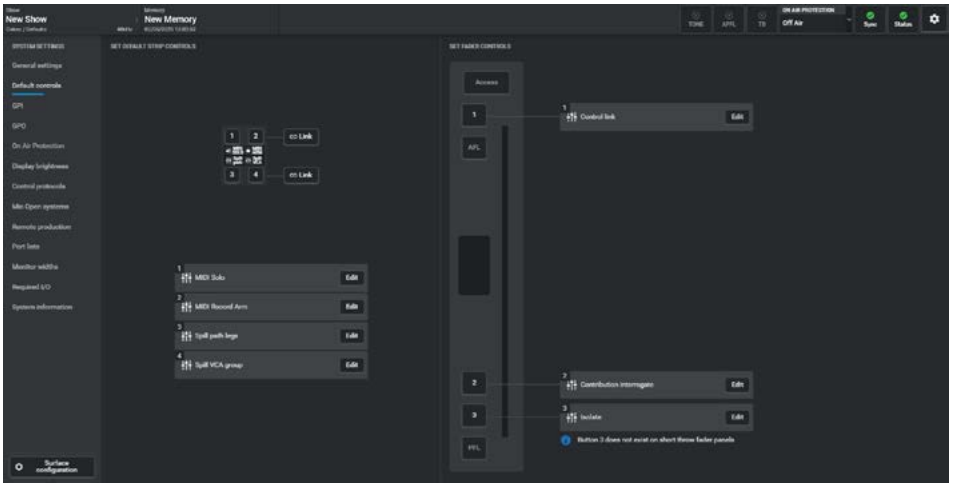


FIG. 34 - INDIVIDUAL FADER STRIP BUTTONS

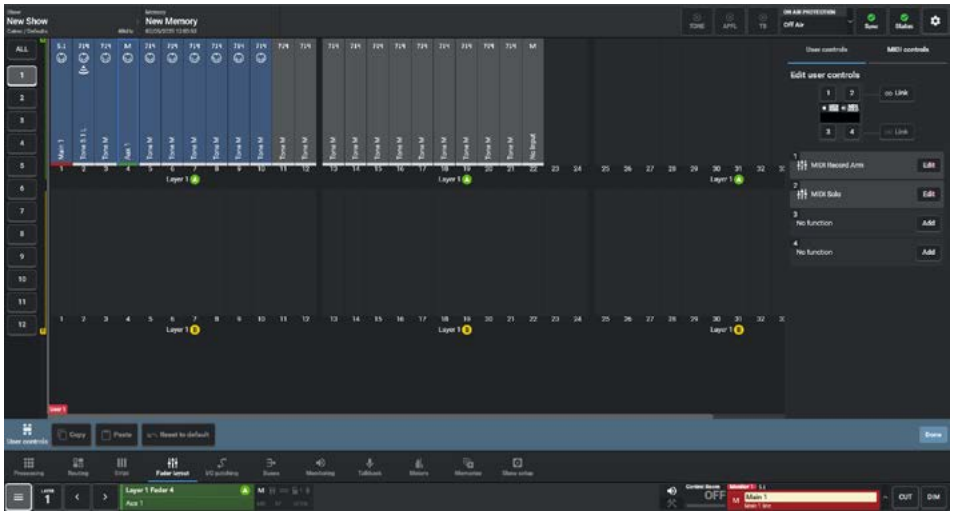


FIG. 35 - ARGO MENU ROW BUTTONS

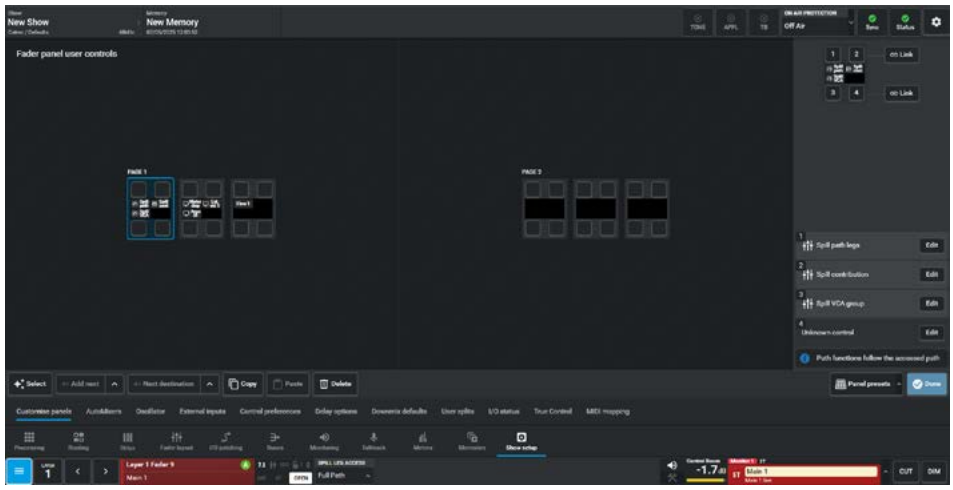
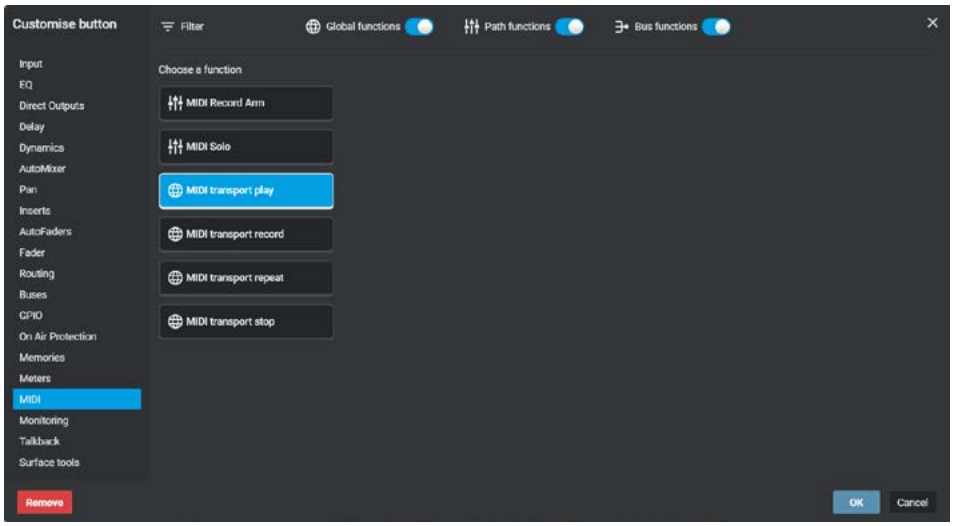


FIG. 36 - INDIVIDUAL FADER STRIP BUTTONS



ARGO
FADER SURFACE MANAGEMENT

CALREC

FADER LAYOUT FROM THE SURFACE

A path is a generic term that refers to a DSP process in the system. A signal present at an input port must be routed to a Channel path in order for it to be processed, routed, then sent back out of the system.

The user is free to configure this pool of mono resources as required. Simply assigning any path type to a fader (mono, stereo, surround or immersive) automatically allocates the required number of DSP resources available.

A mono channel path uses a single DSP resource, a stereo channel path uses two mono resources, a 5.1 surround channel path uses six mono resources and a 7.1.4 immersive channel uses twelve mono resources.

Assigning channels to faders

For an Input path to be directly controlled, processed and routed, it must be attached to a fader on the surface. Input Channels and Output buses must be patched to input and output audio signals in order for audio to pass through the system.

In order to assign a channel to a fader from the surface, the user selects the required layer from the 12 A/B layers available and selects a blank fader by pressing its Access button (A layer) or its Access button (B layer) to make it the currently accessed path - the focus of assignable controls. In this case, Fader 10 on Layer 1 has been chosen, see Fig. 1.

For an unassigned path, the touchscreen appears as shown in Fig. 2, but only when in Processing or Routing mode. The user then taps on the required width of input channel to allocate to the fader – 7.1.4, 7.1.2, 5.1.4, 5.1.2, 7.1, 5.1, Stereo or Mono.

Once selected, a DSP input channel of the chosen width is instantly allocated to the accessed fader and its label display is updated accordingly.

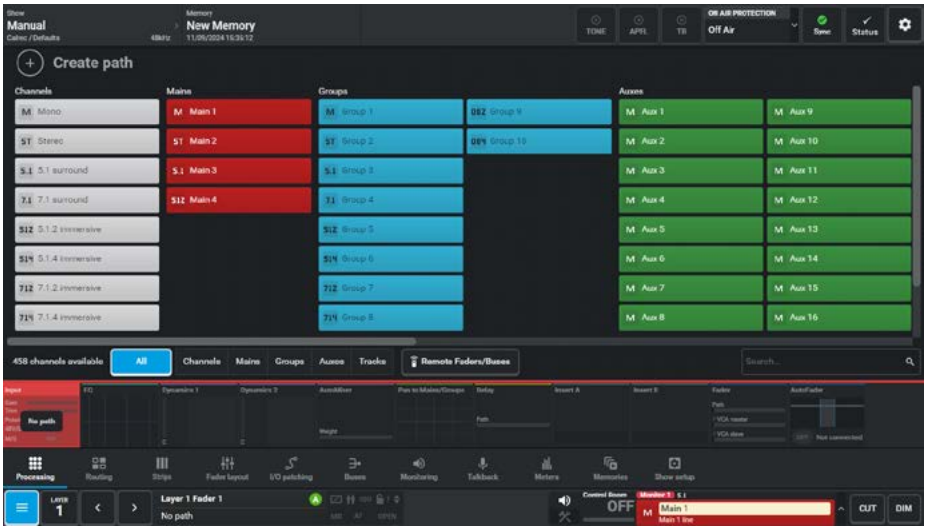
Paths of the same width can quickly be assigned to multiple faders by creating a temporary link of blank faders to allocate the channels, to then select the required channel width from the touchscreen.

Note: the Temporary Link can be created by pressing two Access buttons at the same time to create a Linked range.

FIG. 1 - ASSIGNING PATHS TO FADERS VIA ACCESS BUTTONS



FIG. 2 - CREATE PATH FADERS SELECTION FROM TOUCHSCREEN



Once a fader has a signal path on it, the path type or width cannot be changed. The path must first be removed before a different path can be allocated.

When assigning input channels to paths in this way, a new input channel is allocated to each fader from the available DSP resource pool. DSP resources are quoted in mono channel legs. When a stereo channel is allocated, 2 mono paths are used from the resource pool, and 6 are used to create a 5.1 surround channel.

Note: this Path placement method can also be used to place Remote Faders and Remote Aux Masters from RP1 units as shown in Fig. 2.

Assigning buses to faders

Main Output buses, Group buses, Aux buses and Track buses that have been configured can also be allocated to faders using this same method, see the channels shown in Fig. 1 for Fader 9, where Main 1 has been placed.

Selecting a Bus will place that DSP path on the currently accessed fader, as long as the fader is unassigned. Unlike input channels, which are configured as they are allocated to faders, the buses must already be configured from the Buses>Edit Buses screen.

Each numbered Bus is a unique bus signal path, so if the same main, group, aux or track bus, e.g., 'Main 1' is allocated to more than one fader, each fader is controlling the same bus path. Adjustment of any of them will be reflected by the others. Cloning bus faders in this way can be useful to provide access to a bus from different physical locations or different fader layers.

Note: Inserting blanks, Deleting paths, Locking a path to a fader, Cloning Channels, Moving and Swapping existing paths are all currently only carried out from the Fader Layout screen.

FADER SURFACE TOOLS

In order to manage various surface functions, a set of Surface tools can be placed on the buttons in the customisable area of the standard fader panel. This section of the manual covers those tools. However, they must first be placed on the panels.

The procedure for this is described in Show setup>Customise Panels, see **"Customise panels" on page 252.**

Fig. 1 shows an empty custom controls area, consisting of 2 pages of 12 buttons in button cells 10, 11 & 12. These buttons can be configured with various custom button functions, including those from the Surface tools template shown in Fig. 2.

The surface tool layouts shown in Fig. 3 have been customised as an example and allow access to the surface tool functions described in this section of the manual.

Surface Tool layouts

Fig. 3 shows the customised button sets to access the Surface tools. Here, they are arranged in two pages. However, the user can decide to configure the custom area to meet their needs.

Page 1 has been configured to manage:

- Control Link SELect/CLeaR/ReSTore in button cell 10.
- Display selection on the Touchscreen between the Argo UI (the default) and either of the 2 external video inputs in button cell 11.
- Button cell 12 is left unused.

Page 2 has been configured to manage:

- Surface scrolling in button cell 10.
- Spill scrolling in button cell 11, along with a Reset Scroll button.
- The various Spill modes for Path, Contribution and VCA management in button cell 12 along with a Clear Spill mode button.

Note: the following pages describe these surface management tools in detail.

FIG. 1 -CUSTOM CONTROLS AREA ON STANDARD FADER PANEL-EMPTY

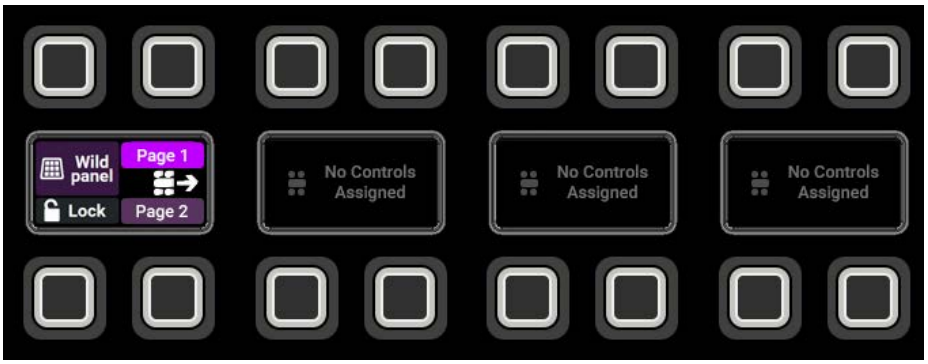


FIG. 2 -CUSTOMISING BUTTONS WITH SURFACE TOOLS SELECTIONS

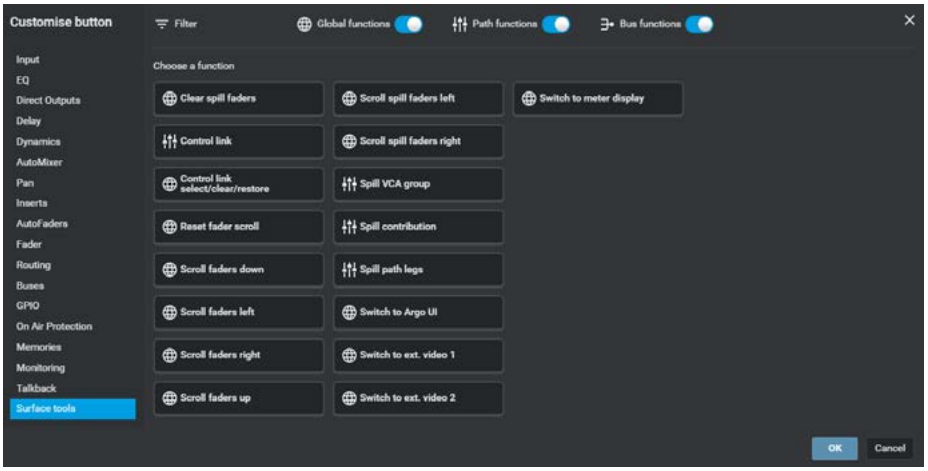


FIG. 3 -CUSTOMISED PAGE 1 & PAGE 2 CONTROLS ON STANDARD FADER PANEL





CONTROL LINKING

Control Links are a temporary way to apply control adjustments to a number of paths at the same time. Adjustment of variable controls, such as faders/levels, are relative to each other. Adjustment of controls, such as switches, are absolute in that all of the linked paths get set to the same state as each other. Control Links are constrained within user splits. There may be one control link active per user split, so up to 3 Control links may be active across the console.
There are a number of ways to manage Control Links. This is commonly done from a 'Control Link Set/Clear/Restore' button placed in the Custom button area of a Standard Fader panel to manage a number of links and/or individual 'Control Link' buttons. These can be placed on each fader path on one of the Custom buttons. Typically, the Control Link function would be assigned to one of the custom buttons adjacent to the fader. The 'Control Link Set/Clear/Restore' button and individual 'Control Link' buttons can be used in combination.

Assigning the Control Link buttons

To use the 'Control link SEL/CLR/RST' function, it must be placed on one of the Custom buttons, such as the one shown in Fig. 1, where it is shown in Clear mode. The procedure for this is described in Show setup>Customise Panels, see **"Customise panels" on page 252.**

To use the individual 'Control link' function, it must be placed on the Custom buttons adjacent to each fader. The procedure for this is described in System settings>Default Controls, see **"Setting Default Strip Controls" on page 290**. The 'Control Link' buttons in this case have been placed on button 2 next to the fader. This button is common to both Standard and Short fader panels.

Fig. 2 shows the location of the individual 'Control Link' buttons with Faders L1F1A and L1F2A shown as linked paths. Also note that the background colour of the 'Control link SEL/CLR/RST' button changes to show that it is in Restore mode and that a Control Link is in active on the console/user area.

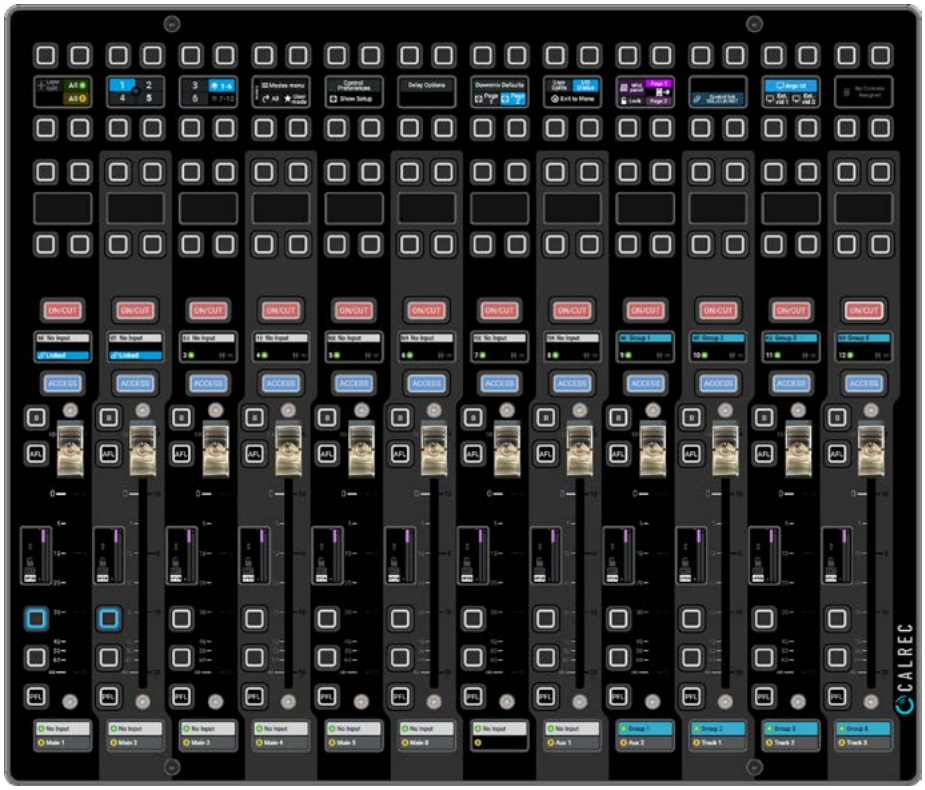
Using Control Link buttons

Once the Control link buttons have been placed on each fader, as highlighted in Blue on Fig. 2, a Control link can be formed by simply toggling each control link button on/off to add/remove them from the control link. In addition to using the Control Link button to select faders one at a time, users can also select a range of faders to add to a control link by pressing down the Access key on two different faders simultaneously, forming a control link between those two paths and all the faders that are physically between them. Once the range of faders is set the user can add/remove faders individually.

FIG. 1 -CONTROL LINK SEL/CLR/RST CLEAR MODE ON STANDARD FADER PANEL



FIG. 2 -FADER LINKING VIA INDIVIDUAL CONTROL LINK BUTTONS



Using the Control Link SCR button

The Control Link Select/Clear/Restore button is shown in a held down mode in Fig. 3 to show it in Select mode. When held down, the user can create Control Links using the Access buttons.

This button offers three functions on a single button – Select, Clear and Restore.

If there is no control link currently in place, users can press and hold the 'Control link SCR' button, then Select the faders they want to add to the link by pressing their Access buttons.

The user can release the 'Control link SCR' button and the link remains in place. While a link is in place, the user can press and hold the 'Control link SCR' button again to add or remove faders by pressing their Access buttons.
Fig. 4 shows the addition of faders L1F3A and L1F6A using the Access buttons, as highlighted to toggle the faders into or out of the Control link.

When a Control Link is active, a short press of the Control Link button will Clear it and the Linked indicators will be hidden.

Note: If the user presses a Control Link button when the 'Control link SCR' button is in Clear mode, any of the previous temporary control links will be removed and a new Control Link started.

When there is no Control Link currently active, a short press of the Control Link button will Restore the last link (if there is one), and the Linked indicators will be shown once again. Fig. 5 shows the Control Link SCR button in Restore mode.

While a control link is in place, users can switch layers/sub-layers and choose to add or remove faders on different layers or sub-layers to/from the existing control link.

Note: Control links are applied to the software/virtual fader. As such if the user scrolls faders left/right, or flips them between rows, the linked state will follow the fader as it moves (as it does when fader layer or sub-layer is changed).

FIG. 3 -CONTROL LINK SEL/CLR/RST SELECT MODE ON STANDARD FADER PANEL



FIG. 4 -FADER LINKING VIA CONTROL LINK SEL/CLR/RST & ACCESS BUTTONS

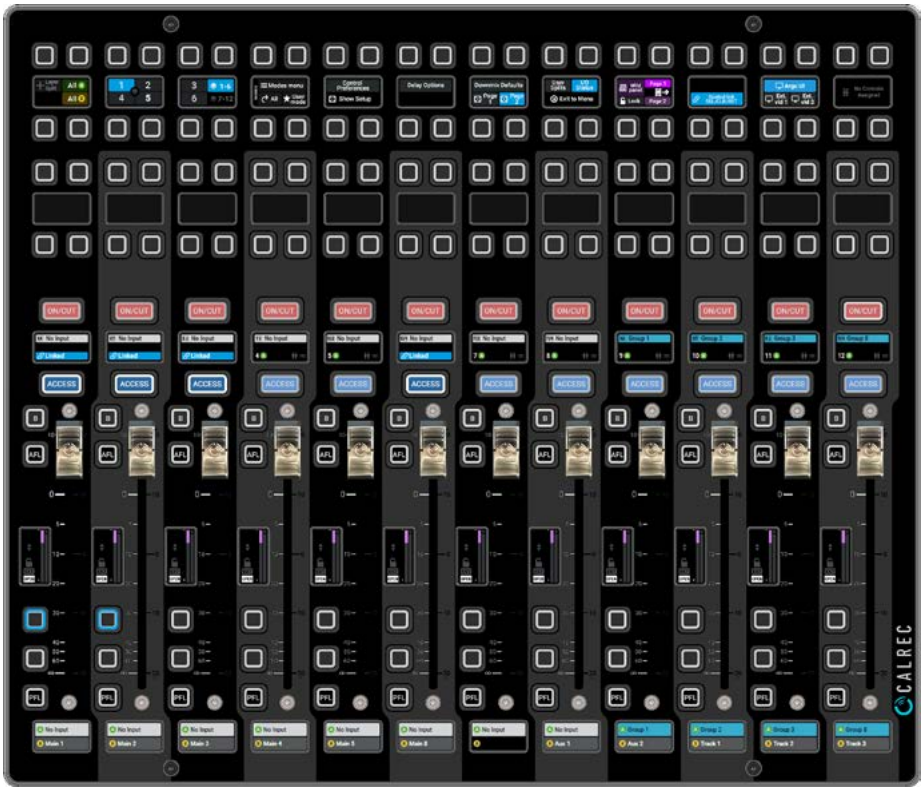


FIG. 5 - CONTROL LINK SCR RESTORE MODE ON STANDARD FADER PANEL



FADER SURFACE SCROLLING

Fader surface scrolling allows users to move their faders left and right across physical Standard Fader panels in sets of 12 faders, i.e., a panel at a time. In addition, Argo supports smaller 12 fader panels known as 'Short Fader panels' which can be placed above the Standard Fader panels. The fader paths on the short fader panels can be scrolled down and up, so that they can be exchanged with the faders on the standard fader panels in order to position the faders most important to the user in the 'sweet spot'. The Short Fader doesn't have to be in the 'sweet spot'. Its faders can be scrolled into that area and flipped into the Standard Fader panel.

Assigning the Scrolling buttons

To use the Scrolling functions, the Scroll Left, Scroll right, Scroll down, Scroll up and Reset scroll buttons from the Surface Tools template are placed onto the Custom buttons, such as those shown in Fig. 1 on the Standard Fader panel.

The procedure for this is described in Show setup>Customise Panels, see **"Customise panels" on page 252.**

Fig. 2 shows the Normal or Reset Scroll position of the faders on a 36 fader Argo surface made up of 3 fader sections:

Section 1 in the left section contains a Standard Fader panel (Faders 1-12).
Section 2 in the middle section contains a Standard Fader panel (Faders 13-24) and a Short Fader panel (Faders 25-36) above.
Section 3 in the right section contains a Standard Fader panel (Faders 37-48).

Normal Operation

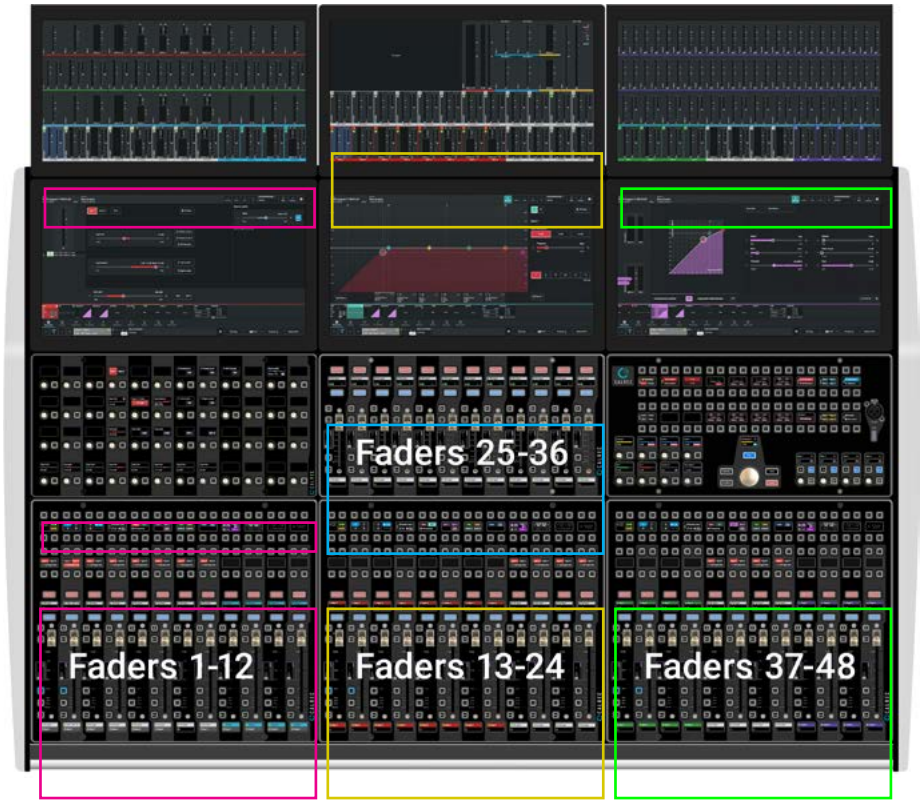
For the purpose of this description, 'Normal operation' is when all faders (within a user split if any are in place) are performing their primary task of presenting their allocated path, even if they are in a temporary mode that changes their display and control behaviour, such as Contribution mode or Replay Edit.

Fader scroll does not change behaviour during Spill actions. While a spill is active (e.g., path spill), if the user scrolls the faders, the spilled faders will move along the fader bed with everything else. If Spill-in-place is in use, the spilled faders will not scroll along with others. They will remains where they are. During normal operation, pressing a scroll button will move all faders (within a user-split if one is in place) across the physical faders on the surface, left or right, in sections of 12. As faders disappear from one end of the surface, they reappear at the other end.

FIG. 1 - SCROLLING CONTROLS ON STANDARD FADER PANEL



FIG. 2 - 48 FADER ARGO S CONSOLE IN THE RESET SCROLL POSITION



All the elements that can scroll are highlighted in different coloured sections in Figs 2, 3 & 4, to show what is scrolling.

Result when scrolling Left-Right

When the user presses the scroll left or scroll right button, the faders cycle round. As such they disappear off one side of the surface or user-split and reappear at the opposite side of the surface.

Note: there are elements that scroll with the faders and other elements that stay where they are.

Things that Scroll:
Faders move to the adjacent fader panel either left or right, depending on the scroll direction, 12 faders at a time.

The User button row below the Layers and Modes Row can have strip controls from the Fader Layout>Controls option assigned to them. When scrolled, these controls move with their associated fader.

The 4th Row of Wild Assign panels show controls that are Strip related. When scrolled, these controls move with their associated fader. The Meter Upstand display typically shows the fader meters associated with the faders below them, i.e., fader meters labelled 1-12 in the top left corner, usually display the meters for faders 1-12. However, when faders are scrolled to the left, the meters labelled 1-12 will then display the meter data from faders 13-24.

Fig. 3 shows the result when the scroll left button is pressed once. Paths that were originally on the short fader panel faders 25-36 have now become hidden under Section 1, as there is no short Fader panel in that location. In addition, as there are no fader paths in the short fader panel area in Section 2, it appears blank.

If the user wishes to see Faders 25-36 in Section 1, they would need to press the scroll up or scroll down buttons from that section.

Fig. 4 shows the result when the scroll left button is pressed twice. Paths that were originally on short fader panel faders 25-36 have now become hidden under Section 3, as there is no short Fader panel in that location. In addition, as there are no fader paths in the short fader panel area in Section 2, it appears blank.

If the user wishes to see Faders 25-36 in Section 3, they would need to press the scroll up or scroll down buttons from that section.

The Fader Meter layouts do not change as the paths are scrolled into them.
As such, in Fig. 3, for example, physical fader meters 1-12 display the meter data for faders 13-24.

FIG. 3 -48 FADER ARGO S CONSOLE IN SCROLL LEFT ONCE POSITION

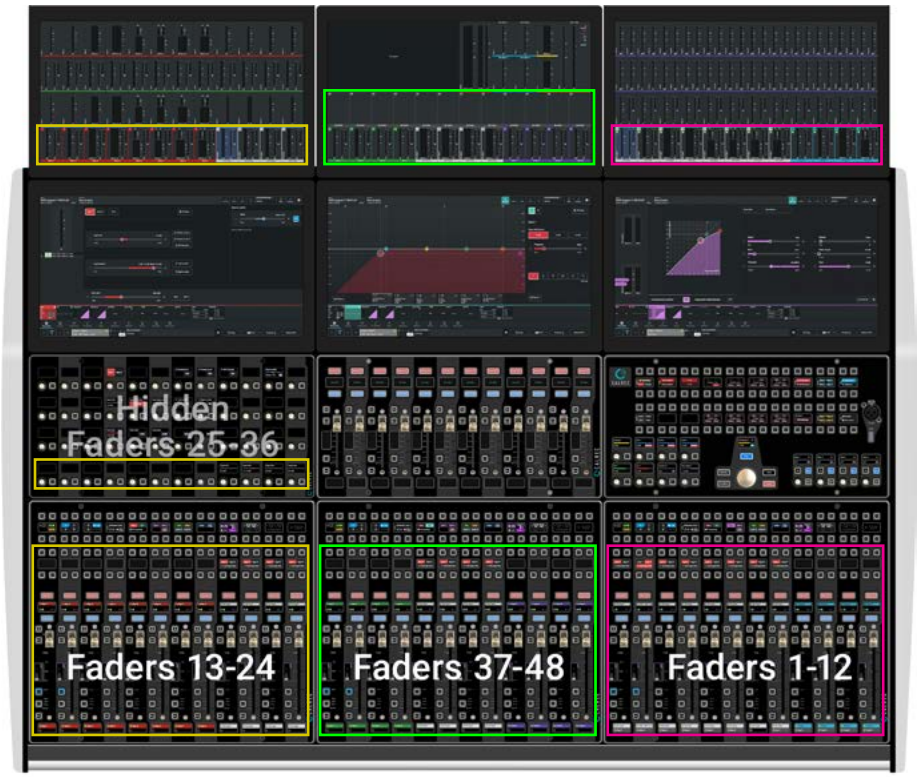
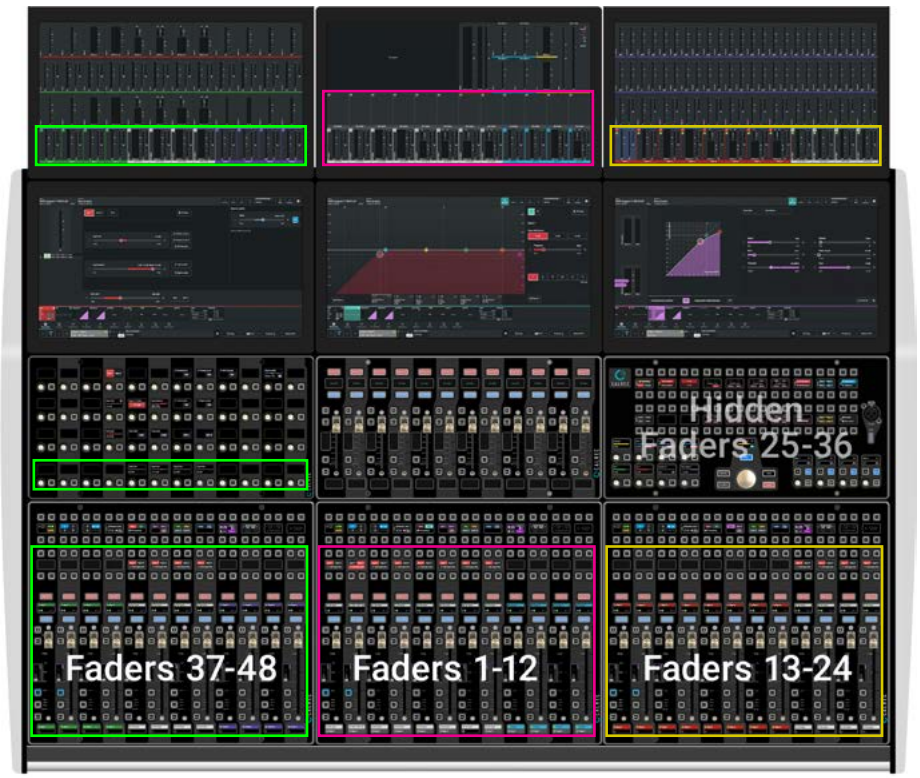


FIG. 4 -48 FADER ARGO S CONSOLE IN SCROLL LEFT TWICE POSITION



The fader meters for 25-36, which show the paths on the short fader, will show no meters in Figs 3 & 4 when scrolled, as there are no active paths to display.

Things that don't scroll:
The Layers/Modes row on standard fader panels remains as is.

The top 3 rows of the Wild Assign panel don't change as they are displaying controls for the currently accessed path.

The Touchscreens don't change as they are displaying controls for the currently accessed path.

Note: any Meters that are not Fader Meters stay where they are, i.e., Bus Meters such as Mains, Groups, Auxes, Tracks, Monitors, AFLs, PFLs, APFLs, Misc Mons, User Meters, External Inputs and other paths not on a Fader meter.

Scrolling Up and Down:
In addition to faders moving to the adjacent fader panel either left or right, if there are any Short Fader panels in the layout, then it is also possible to scroll the section down or up in order to place the paths from a Short Fader panel on the Standard Fader panel below, or vice-versa, depending on the scroll direction.

Fig. 5 shows that Section 2 has exchanged positions of Faders 13-24 and 25-36 using the Scroll Down or Scroll up controls in that section.

Note: on an Argo Q surface it is possible to have 3 fader panels in a section which can be scrolled down or up to place the required faders on the Standard fader panel position.

Once a section with a short fader panel has been scrolled down, any user controls that were defined from the Fader Layout>Controls option assigned to them will appear. When scrolled, these controls move with their associated fader. In Fig. 6, the Faders 25-36, which are now shown on the Standard Fader panel, have subsequently been scrolled to the left and appear under a Wild Assign panel. As such, the 4th Row will show those controls that are Strip related to those paths.

FIG. 5 -48 FADER ARGO S CONSOLE WITH SECTION 2 SCROLLED DOWN

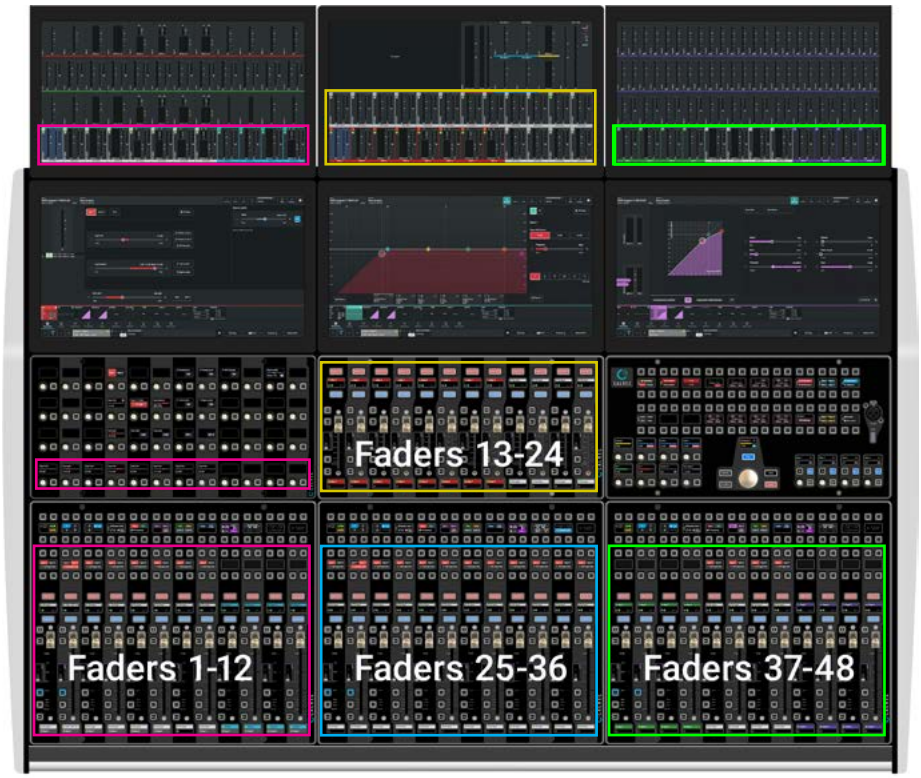


FIG. 6 -48 FADER ARGO S CONSOLE SCROLLED DOWN AND LEFT ONCE

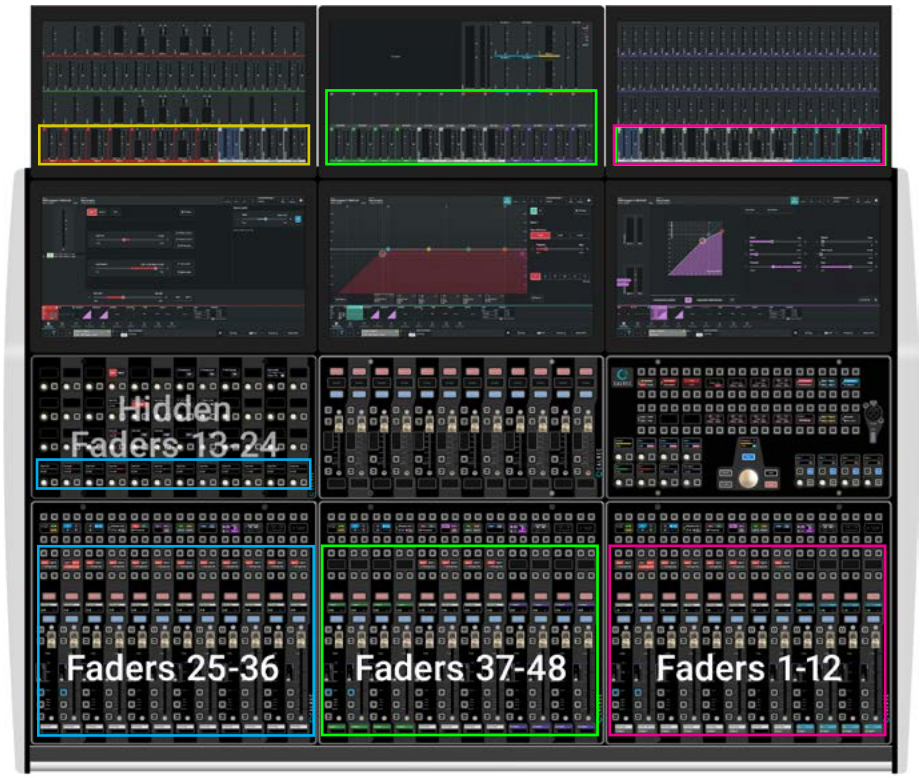


Fig. 6 shows a similar arrangement to Fig. 3 see previously. However, in this case, the user scrolls the surface to the left with faders 13-24 and Faders 25-36 exchanged.

Faders 13-24 are now hidden under Section 1 and Faders 25-36 are shown in the first section's Standard Fader panel.

If the user wishes to see Faders 13-24 in Section 1, they would need to press the scroll up or scroll down buttons from that section.

In Fig. 7, Faders 25-36, which are now shown in the Standard Fader panel, have been scrolled to the left again and will show a similar arrangement to Fig. 4 see previously. However, in this case, the user scrolls the console to the left again with faders 13-24 and faders 25-36 exchanged.

Faders 13-24 are now hidden under Section 3 and faders 25-36 are shown in the third section's Standard Fader panel.

Note: If the user wishes to see Faders 13-24 in Section 3, then they would need to press the scroll up or scroll down buttons from that section.

Fig. 8 Shows the Custom button panel area of a Standard Fader panel with the **'Reset Scroll'** button active. Pressing this will reset all the scroll positions back to Normal. The User Controls, Strip controls on the Wild Assign panels and Fader meter displays will all return to their default reset positions. The user can also reset scroll from the header on the Touch UI. This is useful if the Reset Scroll button function has not been allocated to user buttons.

FIG. 7 -48 FADER ARGO S CONSOLE SCROLLED DOWN AND LEFT TWICE

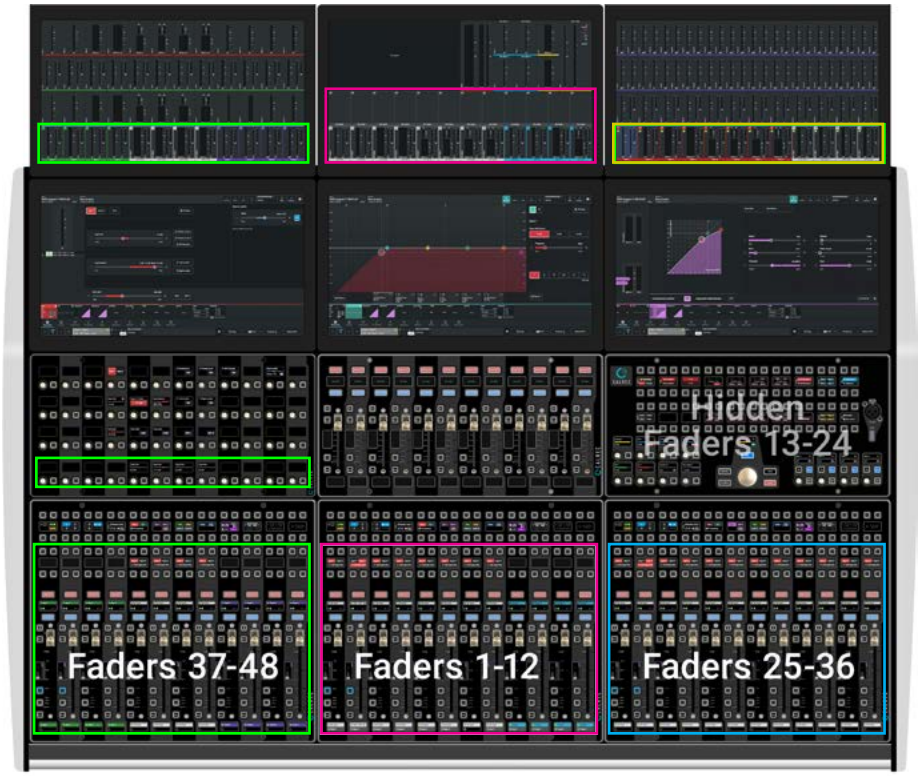


FIG. 8 -RESETTING THE SCROLL ON STANDARD FADER PANEL



SPILL PATHS ON SURFACE

Spilling Paths in Place/On a Panel
Apart from the 2 methods shown to control Spill Path Faders, i.e., on the Touchscreen or on a Wild Assign panel, as shown in the Processing>Faders section, see **"Spill Faders" on page 83,** it is also possible to either allow the Spill path faders to appear next to the master path fader on the fader bed - this method is known as 'Spill-in-Place' (the default) - or the user can dedicate a part of, or all of, a separate fader panel to be used as a fixed 'Spill panel'.

In order to define part or all of a dedicated Spill fader panel, the user must first navigate to Show setup>Control Preferences, as shown in Fig. 1, and tap 'Set Spill Faders' to open a dialogue box. From here, the user inputs the Start and End fader numbers to be used. Tapping on the 'Save & enable' button will set the 'Spill on Panel' function.

Note: the range can be edited by clicking on the '**Edit**' button shown in Fig. 2. Alternatively, the user can return to default by tapping the '**Use Spill-in-Place**' button.

In order to call the Spill fader function so that the selected path (unless Mono) is spilled out, either to the adjacent faders or on a separate 'Spill panel', the user presses the Custom 'Spill Path' button, usually placed on one of the button cells to the right of the Layers and Modes row area (button cells 10, 11 & 12), on any standard fader panel in that user area. The method for setting this is described in the Fader Surface Tools section of this manual using the Surface Tools template.

The highlighted image in Fig. 3 shows that the 'Spill path' button is active in the top left of button cell 12 on Page 2 of a standard fader panel, e.g., Faders 1-12.

The 7.1.4 fader on fader L1F1B shown has been spilled out in place with the spill legs placed to the right of the master fader (which stays where it is) on faders 2-8.

FIG. 1 - SHOW SETUP>SPILL FADERS-IN-PLACE CHANGING TO ON A PANEL

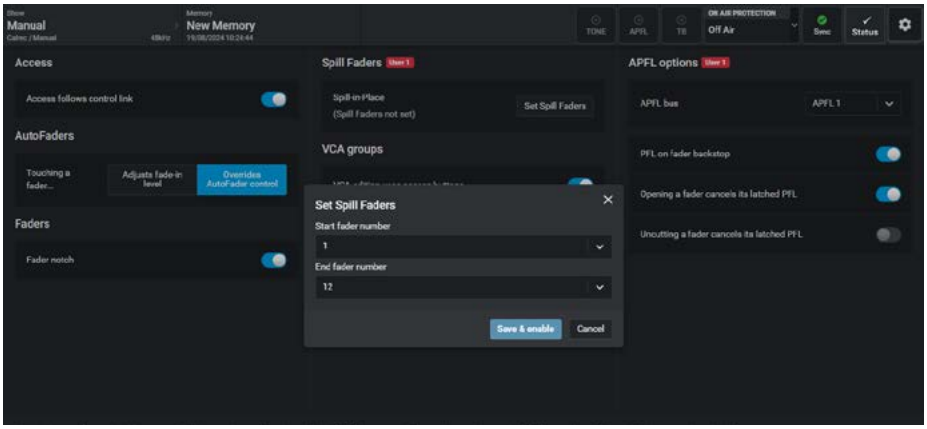


FIG. 2 - SHOW SETUP>SPILL FADERS ON A PANEL

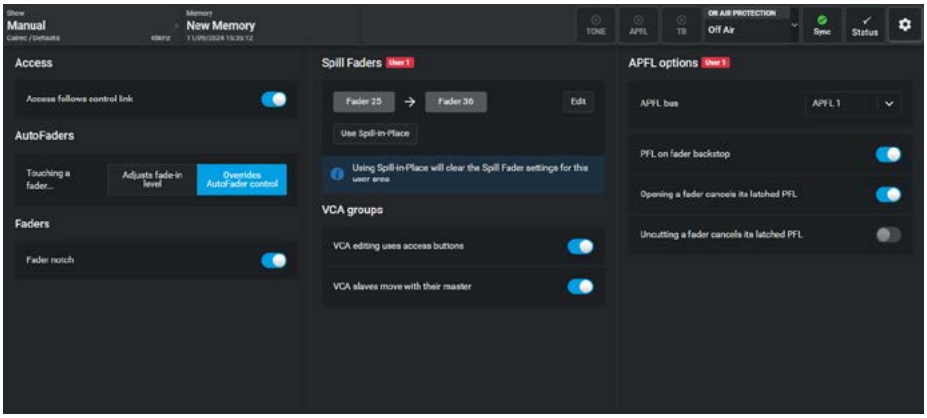


FIG. 3 - FADER 1B A 7.1.4 PATH SPILLED-IN-PLACE ON FADERS 2-8



Their status as spill faders is denoted by the hash lines at the bottom of each TFT leg display. The names of each leg also appear in the label display at the bottom.

Once the Spill is no longer required, the user presses the 'Clear Spill' button in the top right of button cell 12, shown in Fig. 5.

Note: any other fader paths that were placed on the paths now displaying the spill legs are hidden until the 'Spill path' button is released. If the 'Spill-in-Place' method is used and the width of the spill to the right requires more faders than are available, e.g., at the right end of the surface or user section, then the spill will appear to the left of the master fader.

Fig. 4 shows the same path with the 'Spill path' button active, but placed on a dedicated short Fader panel, in this case on faders 25-36. The spill legs are placed to the right of the master fader on faders 25-32, with the last four faders unused.

The dedicated spill panel doesn't need to be the whole panel. Rather, it is just arranged like this in this example, to emulate an Apollo or Artemis like spill panel, which always places spill legs on the same panel.

If the maximum width of the paths used in the show is, for example 5.1, then only 5 faders are required, i.e., Master, L/R, C, LFE and Ls/Rs. As such, only faders 25-29 would be required and the other 7 faders would show their normal path assignments. If the width of the spilled path is wider than the width of the Spill Panel area, the 'Scroll Spill' left and right buttons shown in button cell 11 are activated, as shown in the customised area in Fig. 5.

These buttons scroll the Spill legs to the left or right in order to show them within the spill panel area. The master path is placed to the left of the Spill legs and does not scroll, meaning it is always available for overall control. Fig. 6 shows the same 7.1.4 path being spilled onto faders 25-29, with faders 30-36 showing other paths.
As the spill panel area is smaller than the width of the spilled path, with only 4 of the 7 spill legs shown. Pressing the scroll spill left or right buttons allows the user to scroll the 7 legs within the window area.

The user has scrolled the spill legs one step to the right, allowing them to see and control the Lrs/spill leg. As such, the L/R spill leg is no longer shown.

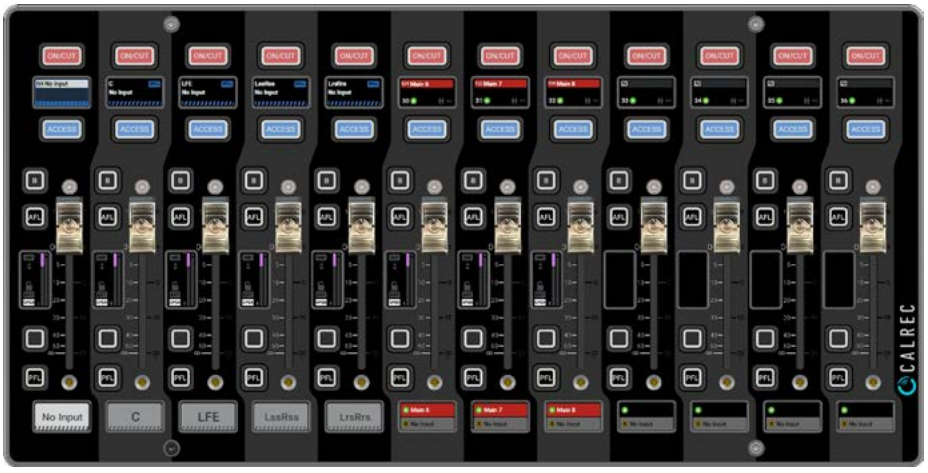
FIG. 4 - SHORT FADER WITH A 7.1.4 PATH ON 'SPILL PANEL' FADERS 25-32 OF 36



FIG. 5 - CUSTOM BUTTON AREA SHOWING SCROLL SPILL BUTTONS ACTIVE



FIG. 6 - 7.1.4 PATH ON 'SPILL PANEL' SHORT FADERS 25-29 USING SCROLL SPILL



SPILL CONTRIBUTION PATHS ON SURFACE

Spilling Contribution Paths in Place/ On a Spill Panel

In order to call the Spill Contribution paths so that the selected Contribution bus, and all the paths contributing to it, are spilled out either to the adjacent faders or on a separate 'Spill panel', the user presses the Custom 'Spill Contribution' button, usually placed on one of the button cells to the right of the Layers and Modes row area (button cells 10, 11 & 12) on any standard fader panel in that user area. To set this up, see **"Fader surface tools" on page 139.**

Fig. 1 shows a typical fader panel in Contribution mode, showing that 3 input channel paths on L1F1B, L1F3B, L1F5B and Group 1 on L1F1A are contributing to (are routed to) Main 1, which is placed on L1F7A. Contributing paths may be located on any of the A/B faders and on any of the 12 Layers of the surface. For convenience, they are shown with Main 1 on the same fader section.

For more information on the use of Contribution, or Reverse interrogation as it is also known, navigate to Routing>Contribution and see **"Contribution Mode" on page 106.**

The Spill Contribution feature allows the user to bring all those contributing paths together next to the contribution bus.

Note: to use the Spill Contribution feature from the surface, the Contribution bus must be assigned to a physical fader on the surface.

The highlighted image in Fig. 2 shows that the 'Spill cont' button is active in the bottom left of button cell 12 on Page 2 of a standard fader panel, e.g., Faders 1-12. The Main 1 bus and it's contributors have been spilled out in place with the contributing paths placed to the right of the Main 1 fader (which stays where it is) on faders 7-11. Their status as spill contribution paths is denoted by the routed indicators. While the contribution bus is identified by the yellow 'Contribution' label on the Main 1 fader L1F7A.

FIG. 1 - FADER PATHS SHOWN IN CONTRIBUTION MODE TO MAIN 1

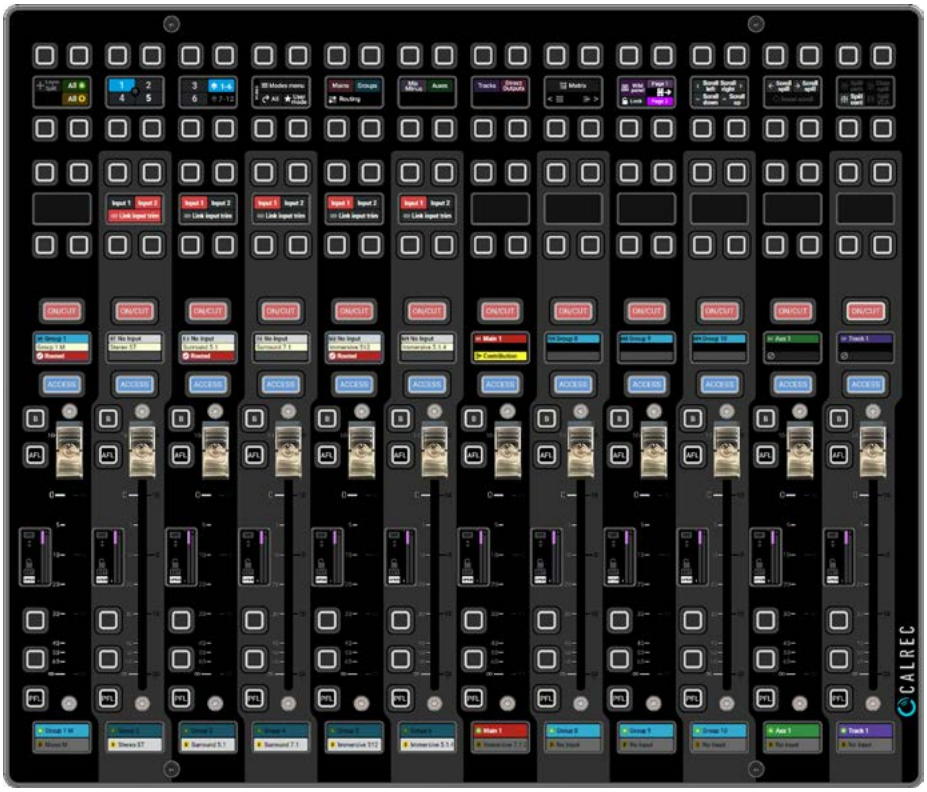


FIG. 2 - FADER 7A MAIN 1 CONTRIBUTION SPILLED-IN-PLACE ON FADERS 7-11



Once the Spill Contribution is no longer required the user presses the **'Clear Spill'** button in the top right of button cell 12, as shown in Fig. 3.

Note: any other fader paths that were placed on the paths now displaying the spill contributors are hidden until the 'Spill cont' button is released. If the 'Spill-in-Place' method is used and the width of the spill to the right requires more faders than are available, e.g., at the right end of the surface or user section, then the spill will appear to the left of the Contribution bus.

Fig. 4 shows the same Contribution set with the **'Spill cont'** button active, but placed on a dedicated Short Fader panel, with the contributors placed to the right of the Main 1 fader on faders 25-29, with the last 7 faders showing other paths not in the spill.

The dedicated spill panel doesn't need to be the whole panel. Rather, it is just arranged like this in this example, to emulate an Apollo or Artemis like spill panel, which always places the spill on the same panel.

If the maximum number of contributing paths is, for example 4, then only 5 faders are required, i.e., Main 1 and the 4 contributing paths.

If the number of contributors to the contribution bus is more than the width of the Spill Panel area then the **'Scroll Spill'** left and right buttons shown in button cell 11 are activated in the customised area, see Fig. 3.

These buttons scroll the Spill contributors to the left or right in order to show them within the spill panel area.

The contribution bus is placed to the left of the contributing paths and does not scroll so that it is always available for overall control. Fig. 5 shows the same Contribution bus being spilled onto faders 25-28, to show limited contributing paths, and the scroll spill in action with faders 29-36 showing other non-contributing paths.

FIG. 3 - CUSTOM BUTTON AREA SHOWING SCROLL SPILL BUTTONS ACTIVE



FIG. 4 - MAIN 1 BUS & CONTRIBUTORS ON 'SPILL PANEL' FADERS 25-29 OF 36

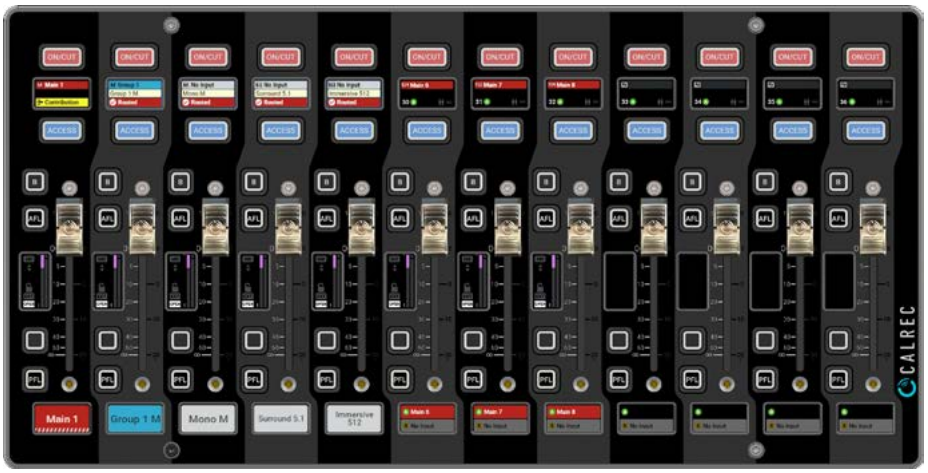


FIG. 5 - MAIN 1 BUS & CONTRIBUTORS ON 'SPILL PANEL' WITH SCROLL SPILL



As the spill panel area is smaller than the number of contributors, only 3 of the 4 contributing paths (of which there could be more) are shown. Pressing the scroll spill left or right buttons allows the user to scroll the contributing paths within the window area.

The user has scrolled the spill legs one step, allowing them to see and control the Immersive 5.1.2 contribution path. As such the Group 1 contribution on Fader 1A is no longer shown, but is still contributing.

EDIT VCA GROUPS FROM THE SURFACE

Argo has moving fader VCA groups to provide control over fader level, cut status and APFL status.

Creating and dissolving VCA groups

To set up a VCA group from the surface, first chooses a fader to be master, before selecting the faders to be added to the group. To do this, push and hold the master fader's access button, then press the access button of any fader to add it to the VCA group. Press again to remove. Each path can only be added to one VCA group.

Group hierarchy

Argo provides up to three levels of group hierarchy. A VCA master can also be added to a separate VCA group as illustrated in Fig. 1. When the full hierarchy is in place, any VCA master which has been added to another VCA group is known as the intermediate or secondary master, and its master is known as the primary master.

When the level of a primary master is adjusted, it will change the audio level of the paths within both the primary and secondary VCA groups by the same amount.

Changing the CUT, AFL and PFL settings of a primary master applies to all faders within the hierarchy

When the level of a secondary master is adjusted, the audio level of all paths in its group will change by the same amount. Its adjustment will not affect the level of the primary master, or any other faders within the primary VCA group. Changing the CUT, AFL or PFL of a secondary master applies to paths within the secondary VCA group only.

Fader status indicators

Each vertical fader display is used to show information about its VCA fader status, as shown in Fig. 2.

- No VCA icon if the fader is not part of any VCA group.
- The MR icon illuminates red if the fader is a master.
- The SL icon illuminates green if the fader has been added to a VCA group
- Both MR and SL indicators illuminate if the fader is a secondary master.

FIG. 1 - GROUP HIERARCHY

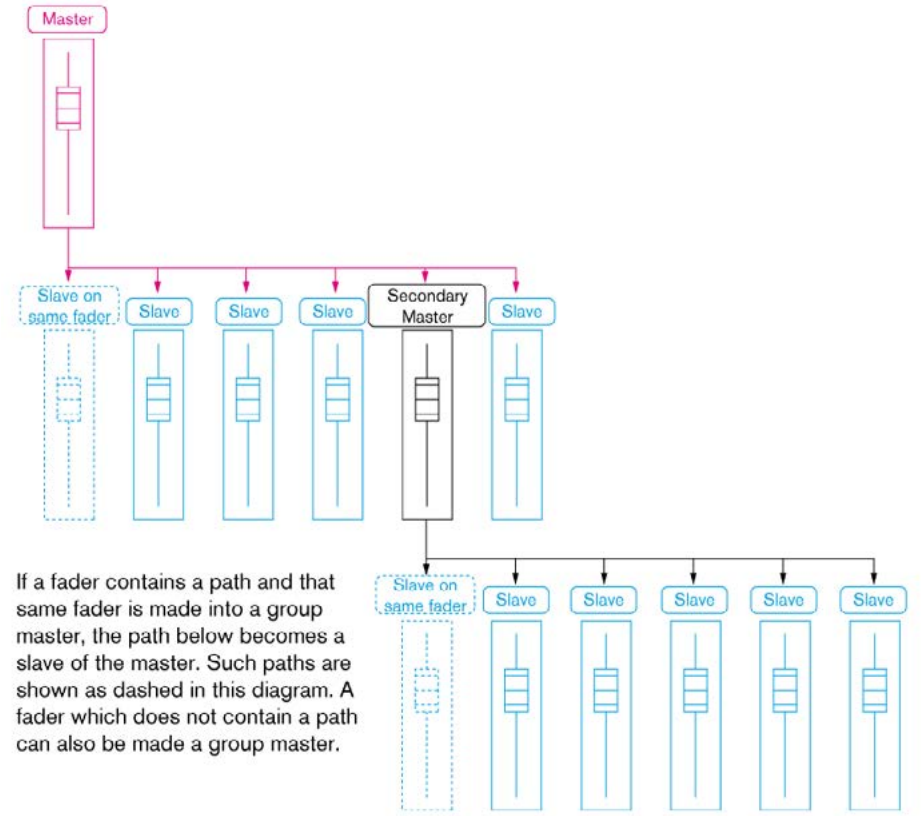


FIG. 2 - VCA FADER STATUS



Fader 1 is illuminated RED to show that it is a Primary VCA Master (**MR**)

Fader 2 is illuminated RED/GREEN to show that it is a Secondary VCA Master (**MS**)

Fader 3 is illuminated GREEN to show that it has been added to a VCA Group (**SL**)

Fader 4, Fader 5 and Fader 6 (which is the current ACCESS path in this example) are not illuminated as they are not part of a VCA Group.

VCA group interrogation

Interrogation works in a similar way to the routing interrogation feature. It provides a clear way of indicating VCA group assignment using the path access buttons. As with creating a VCA group from the surface, interrogation is performed by holding down the access button of the path to be interrogated.

A number of different situations exist:

- The interrogation of a primary master will illuminate all the access buttons of the faders in its group. If there is a path underneath the Primary Master, it will illuminate green, see fader 1 in Fig. 3. If any secondary masters exist, which are controlled by the selected primary master, their access buttons will strobe slowly and the members of the secondary group will be greyed out, with a 'No Access' Icon appended, see Fader 3 in Fig. 3. This is also to indicate that it is not possible to add those paths to the currently selected VCA group primary master, as it already belongs to the secondary master.
- The interrogation of a secondary master will illuminate all the access buttons of all faders within the secondary VCA group, and the access button of its primary master will strobe quickly, see Fig. 4.
- The interrogation of a fader within a secondary master will strobe the secondary master's access button slowly and its primary master's access button quickly, see Fig. 5.
- Where there is only one VCA level of control in place, interrogating any fader within the group will cause the masters access button to strobe quickly

While holding an access button, only the access buttons relevant to the VCA group will illuminate or strobe. The rest will be greyed out and a 'No Access' Icon will appear as shown for faders 4, 5 & 6 in Fig. 5. This is also to indicate that it is not possible to add those paths to the currently selected VCA group master.

FIG. 3 - VCA GROUP INTERROGATE - PRIMARY MASTER



FIG. 4 - VCA GROUP INTERROGATE - SECONDARY MASTER



FIG. 5 - VCA GROUP INTERROGATE - SLAVE



Masters & VCA Group paths on the same fader
Masters can be created on faders which do not contain a path. They can also be created on faders which already have a path attached to them. In this case, the path on the fader is automatically added to the VCA . The master, and the path already on the fader beneath it can be accessed and controlled in different ways.

Normally any changes to the fader level, cut or APFL status will apply to the master and subsequently all paths within the group. If the fader access button is held down, then the changes will apply to the path on the fader beneath the master.

If the fader is accessed but the button not held down, any alterations to EQ, dynamics and routing, for example, will apply to the path only. Processing outside of fader level, cut and APFL status doesn't apply to VCA groups.

Fader level indicator
Touching a fader will display its level. This indicator will disappear after a short period of time.

Nulling indicators
If the combined level of a master and a path within its VCA group is greater than +10dB or less than -100dB, the path's fader will remain at the appropriate end of its travel and the relevant up or down nulling indicator will be illuminated.

Preserving low level group balance
When a master is set to a level below -50dB, the paths within its group cannot be altered. Altering the levels of paths within a group when the master is turned down to this degree would most likely produce inaudible results.

To preserve the balance of the group and to prevent any signals being turned up excessively when the master is raised, this restriction has been put in place. In this case, both nulling indicators on the paths within the group will illuminate.

Surround & immersive spill legs
If a surround or immersive master is part of a VCA group then the VCA primary and secondary master levels, cut settings and APFL settings affect all of its spill legs. It is not possible for the spill faders themselves to be added to or assigned as masters of a VCA group.

VCA group protection
Within the Show Setup>Control Preferences>VCA Groups options is a slider switch labelled 'VCA editing uses Access buttons'.

The default status of this option is On but it can be switched to Off to stop any changes being made to VCA groups.

VCA groups created before this option is turned off will still be operational. However, changes to the VCA group organization will not be possible, as the Access buttons will no longer have access.

VCA Slaves move with VCA Masters
By default, faders within a VCA group (including secondary masters) move along with their masters to show their individual, relative levels. This feature can be disabled if preferred: Within the main application, navigate to Show Setup>Control Preferences> VCA Groups

The last option is to enable or disable **'VCA Slaves move with VCA Masters'**.

If the feature is disabled (slider switch off), faders within VCA groups will no longer move in-line with their masters but their nulling indicators will light appropriately to show whether the actual level is above or below that being shown by the fader position.

VCA operation with RP1 units
The existing mechanism for creating VCA groups has been extended to allow VCA control of Remote Faders on an RP1 unit by selecting a path or blank fader on the host console as the VCA Master, pressing and holding down its access button on the console surface and then pressing the access buttons of the Remote Fader paths which are to be added to the VCA group.

There are rules about connecting Remote faders that differ from the normal VCA system. The detailed operation and integration of the RP1 remote production unit with the Impulse based console range is the subject of a separate manual '**Remote Production Manual Impulse Edition (926-308)**' which is downloadable from the Calrec website.

In that manual is a chapter called 'Operation Via Host Console', which shows how to set up and operate the RP1 remote production unit via a host console.

SPILL VCA GROUPS ON SURFACE

Spilling VCA Groups in Place/On a Spill Panel

In order to call the Spill VCA paths so that the selected Master and all the paths that are part of the VCA group associated with it are spilled out, either to the adjacent faders or on a separate 'Spill panel', the user presses the Custom 'Spill VCA' button, which is usually placed on one of the custom button cells to the right of the Layers and Modes row area (button cells 10, 11 & 12) on any standard fader panel in that user area, see **"Fader surface tools" on page 139.**

Fig. 1 shows a typical fader panel with a VCA Group on Faders: with the Primary Master's Access button held down: Channel Inputs on the A Layer: L1F1A (Slave to Primary Master), L1F3A (Secondary Master), L1F4A (Slave to Secondary Master) and an audio Group 1 on the B Layer: L1F2B (Slave to Primary Master) which are all controlled from the Fader on L1F6A (Primary Master) on the A Layer.

Primary Masters, Secondary Masters and Slaves may be located on any of the A/B faders and on any of the 12 Layers of the surface. For convenience, they are shown here on the same fader section.

For more information on the use of VCA Groups, see **"Edit VCA groups from the surface" on page 150** or navigate to the Fader Layout>VCA Edit section, see **"VCA Edit Mode" on page 128**.

The Spill VCA feature allows the user to bring all the members of the VCA group together next to their Master. The highlighted image in Fig. 2 shows that 'Spill VCA' button is active in the bottom right of button cell 12. The Primary Master on Fader L1F6A and the other members of the VCA Group have been spilled out in place with their paths placed to the right of the Primary Master (which stays where it is) on faders 6-10.

Note: Spilling the Primary Master only shows the faders immediately under its control and secondary masters, if any are present.

FIG. 1 - FADER PATHS SHOWN IN VCA GROUP (PRIMARY MASTER ON FADER 6A)

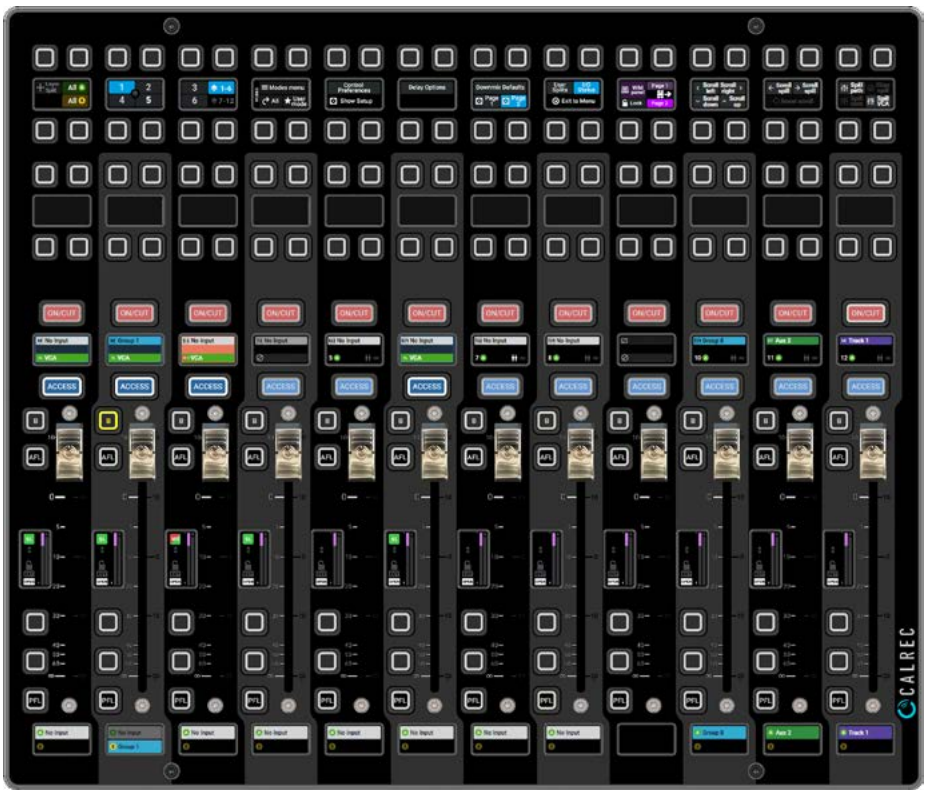
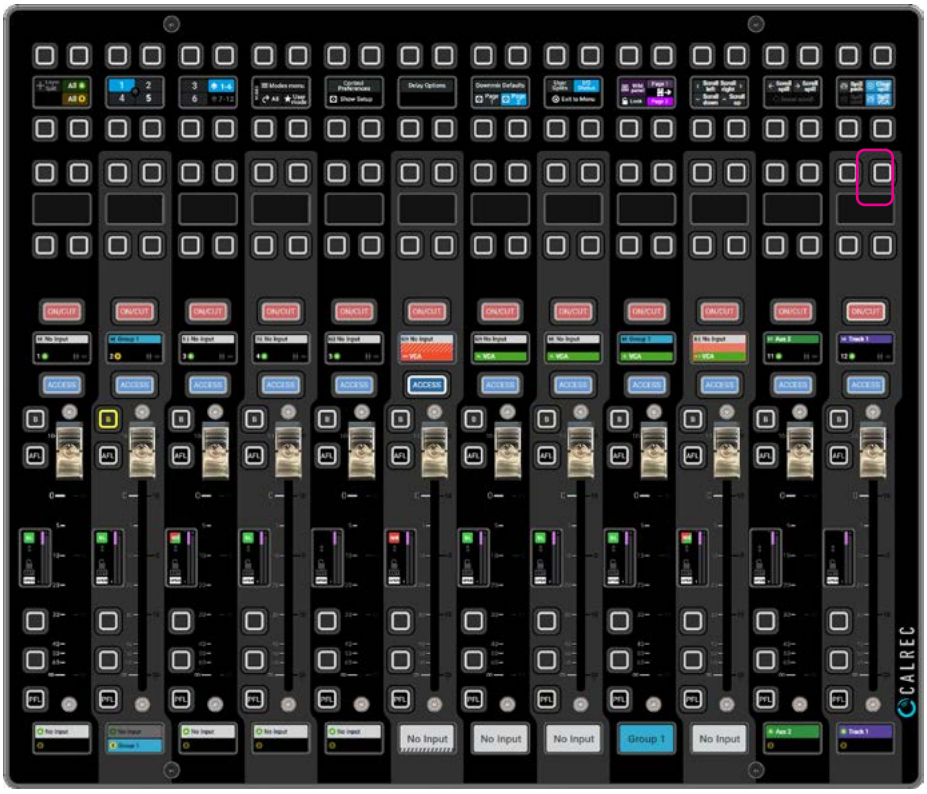


FIG. 2 - PRIMARY MASTER VCA GROUP SPILLED-IN-PLACE ON FADERS 6-10



Their status as spilled VCA Group paths is denoted by the path indicators and the VCA Indicators in the vertical Fader TFT displays as shown.

Once the Spill VCA is no longer required, the user presses the **'Clear Spill'** button in the top right of button cell 12, shown in Fig. 5 on the next page.

Note: any other fader paths that were placed on the paths now displaying the spill VCA Group members are hidden until the 'Spill VCA' button is released. If the 'Spill-in-Place' method is used and the width of the spill to the right requires more faders than are available, e.g., at the right end of the surface or user section, then the spill will appear to the left of the accessed VCA master.

Fig. 3 shows that the **'Spill VCA'** button is active in the bottom right of button cell 12. A Secondary Master on Fader L1AF3 and the other members of the VCA Group have been spilled out in place with their paths placed to the right of the Secondary Master (which remains where it is) on faders 3-5.

Note: Spilling the Secondary Master only shows the faders immediately under its control.

Fig. 4 shows the Primary Master VCA Group with the **'Spill VCA'** button active, but placed on a dedicated Short Fader panel. The other members of the VCA Group have been spilled out with their paths placed to the right of the Primary Master fader (which remains where it is) on faders 25-29 with the last 7 faders showing other paths not in the spill.

The dedicated spill panel doesn't need to be the whole panel. Rather, it is just arranged like this in this example, to emulate an Apollo or Artemis like spill panel, which always places the spill on the same panel.

FIG. 3 - SECONDARY MASTER VCA GROUP SPILLED-IN-PLACE ON FADERS 3-5

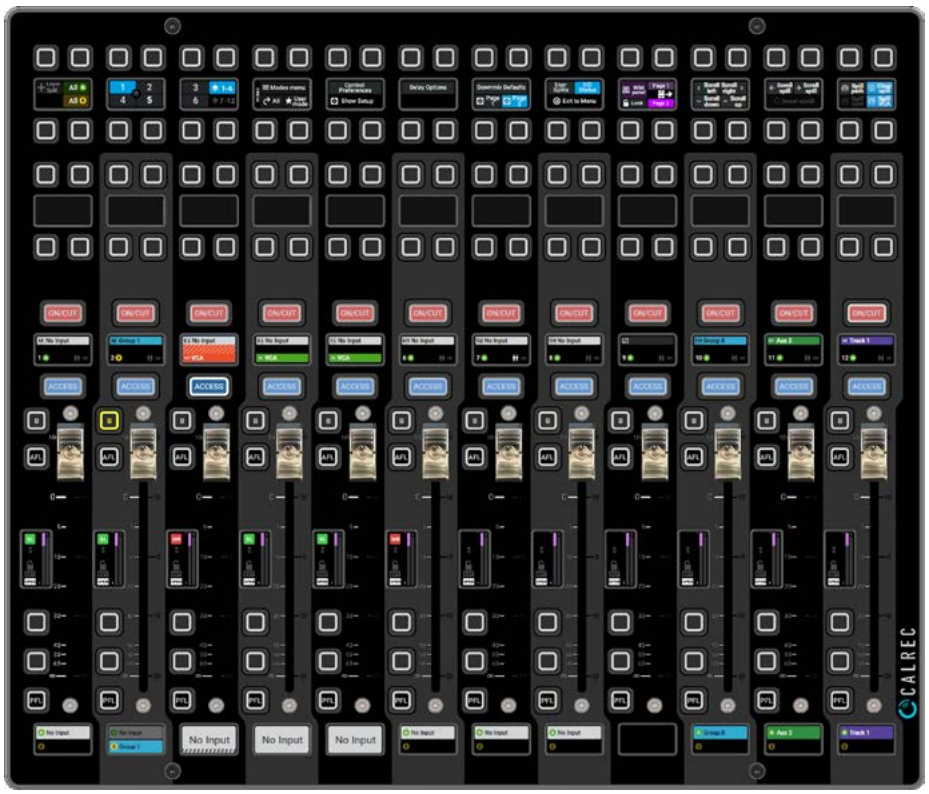
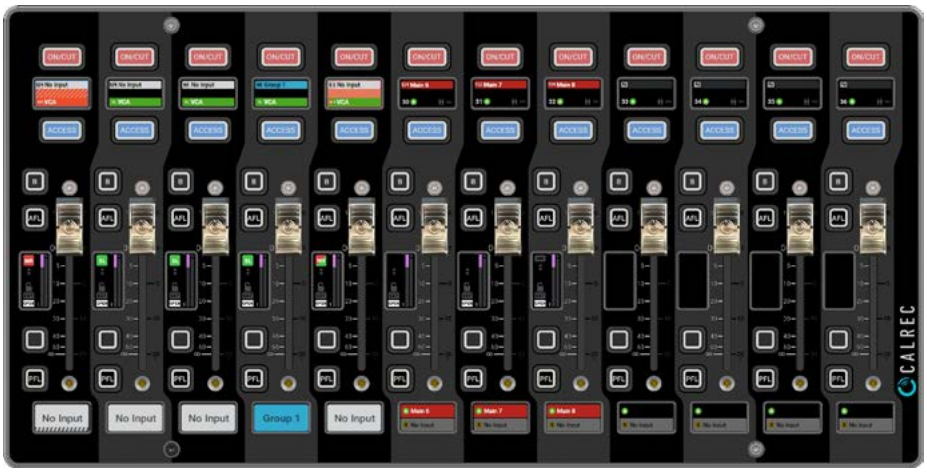


FIG. 4 - PRIMARY MASTER VCA GROUP ON 'SPILL PANEL' FADERS 25-29 OF 36



If the maximum number of VCA Group Members is, for example 4, then only 5 faders are required, e.g., Primary Master, 3 faders controlled by the group (including one hidden underneath the Primary Master) and Secondary Master.

If the number of contributors to the VCA Group bus is more than the width of the Spill Panel area, then the 'Scroll Spill' left and right buttons shown in button cell 11 are activated in the customised area of the standard fader panel, see Fig. 5.

The ‘Scroll Spill’ buttons scroll the Spilled members of the VCA Group to the left or right in order to show them within the spill panel area.

The accessed Master is placed to the left of the VCA Group and does not scroll so that it is always available for overall control.

Fig. 6 shows the same VCA Groups being spilled onto faders 25-28, to show limited contributing paths, and the scroll spill in action with faders 29-36 showing other paths not in the spill.

As the spill panel area is smaller than the size of the VCA Group, e.g., only 3 of the 4 members of the VCA Group (of which there could be more) are shown, pressing the scroll spill left or right buttons, shown in Fig. 5, allows the user to scroll the contributing paths within the window area.

In Fig. 6, the user has scrolled the spill one step, allowing them to see and control the Secondary Master. As such, the VCA group fader that was shown on Fader 26 is no longer shown, but is still affected.

Fig. 7 shows the Secondary Master VCA Group with the ‘Spill VCA’ button active, but placed on a dedicated Short Fader panel. The other members of the VCA Group have been spilled out with their paths placed to the right of the Primary Master fader (which remains where it is) on faders 25-27, with the last 9 faders showing other paths not in the spill.

Note: as the Secondary Master VCA Group shown here is smaller than the available spill panel area, the Scroll Spill buttons are not activated.

FIG. 5 - CUSTOM BUTTON AREA SHOWING SCROLL SPILL BUTTONS ACTIVE



FIG. 6 - PRIMARY MASTER VCA GROUP ON ‘SPILL PANEL’ WITH SCROLL SPILL



FIG. 7 - SECONDARY MASTER VCA GROUP ON ‘SPILL PANEL’ NO SCROLL NEEDED



ARGO UI/EXT-VID 1/EXT VID 2 SELECT

Display Options on Touchscreen
The TFT touchscreen in each section normally displays the graphical user interface shown in Fig. 2. However, each fader section has 2 external Video Inputs via SFP on the back of the console, which can be used to interface to alternate video streams on the TFT touchscreen. In addition, there is a Touchscreen output on a USB-B connector also on the back of each fader section, allowing a connected video source to be controlled via the Touchscreen in the console, such as a laptop computer.

For further technical information, please refer to 'Surface Components' in the **Argo Installation Manual (926-312).**

In order to access these options, the user can add some Custom controls into the Custom buttons area of each Standard fader, Wild assign panel or Monitor panel. Fig. 1 shows that these button options have been added to the Standard fader custom button area from the Surface Tools template, see **"Custom Controls - Fader Panels" on page 252.**

Fig. 7 on page 229 shows the Surface Tools template options, which include: ARGO UI, Ext Video 1 & Ext Video 2.

The default selection is ARGO UI but if the External Video 1 or 2 is accessed with the Argo UI button or by toggling the 'Ext Vid 1' or 'Ext Vid 2' buttons, the display returns the user to the ARGO UI function. Fig. 3 shows that the user has selected **'Ext Vid 1',** which passes the video input being received on the Ext Vid 1 SFP interface through to the TFT touchscreen. Fig. 4 shows the External Video 1 input signal on the touchscreen. In this case, no signal is being received. The **'Ext Vid 2'** display has the same functionality as the external video 1 input, except that it is being fed from the external video 2 SFP input.

Note: each fader section has 2 external video inputs, thus allowing a number of video sources to be shown in different areas of the console.

FIG. 1 - CUSTOM BUTTON AREA SHOWING ARGO UI SELECTED



FIG. 2 - NORMAL UI DISPLAY ON TOUCHSCREEN



FIG. 3 - CUSTOM BUTTON AREA SHOWING EXT VIDEO 1 OR 2 SELECTED



FIG. 4 - EXTERNAL VIDEO DISPLAY 1 OR 2 ON TOUCHSCREEN



ARGO
IO PATCHING

CALREC

DEVICE TRANSMITTERS & CORE RECEIVERS

For AoIP based systems such as Argo on Impulse, the physical I/O is contained in separate I/O devices with AoIP interfaces, which allows them to pass audio over ethernet based networks, using AoIP/ST2110 protocols.

This is managed by a web-based application called 'Connect'.

The Connect application provides the user with all the facilities required to provide the view and management of AoIP streams and devices. These can be connections to and from Calrec AoIP Devices (or other 3rd party AoIP streams from V1.0).

This application is fully described in the **Connect Guide (926-292)** and as such won't be repeated in detail here. The basic workflow is as follows:

From the Devices Menu in Connect:

- Select an AoIP device from the devices list.
- Select/Add & Configure a transmitter for the AoIP Device, see Fig. 1.
- Select the Impulse Core from the devices list, shown as 'calrec system'.
- Select/Add & Configure a receiver for the AoIP Impulse core, see Fig. 2.
- Connect the Audio Inputs from the AoIP devices to its transmitter channels, see Fig. 3.

From the Network Menu in Connect:

- Connect the AoIP device transmitter to the AoIP Impulse core receiver, see Fig. 4.

Once the AoIP device transmitters have been connected to the Impulse core receivers, all the available audio Inputs appear in the IO patching pages on the Argo TFT Touchscreens, accessed by either the 'IO Patching' button, found on the Extended Control Panel Modes row of the Standard fader panels, or from the IO Patching menu entry on any of the TFT touchscreens.

FIG. 1 - DEVICES>AOIP DEVICE TRANSMITTERS

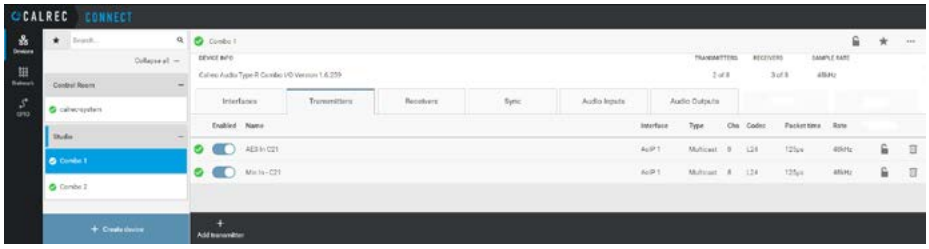


FIG. 2 - DEVICES>AOIP IMPULSE CORE RECEIVERS

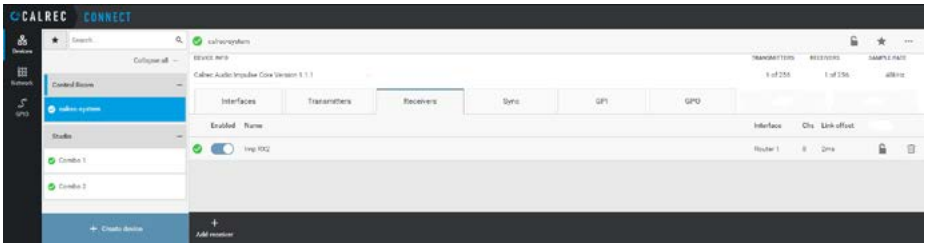


FIG. 3 - DEVICES> CONNECT AUDIO INPUTS TO DEVICE TRANSMITTERS

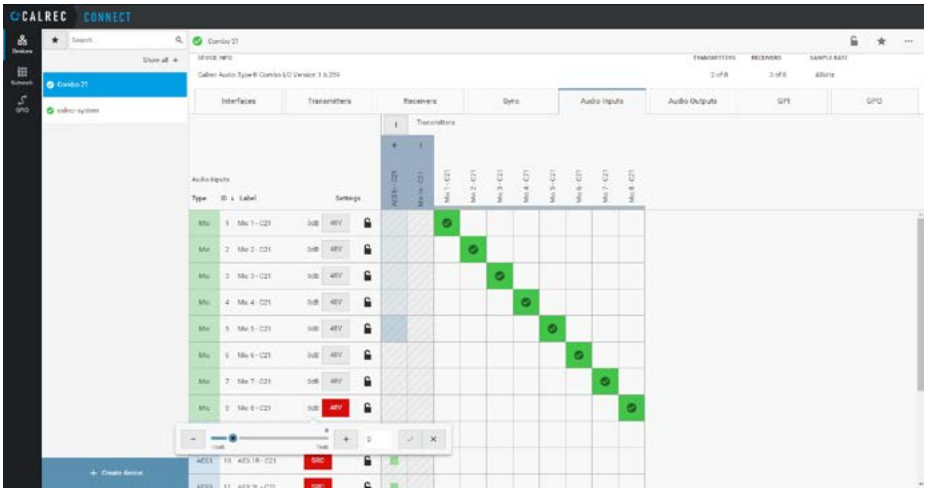
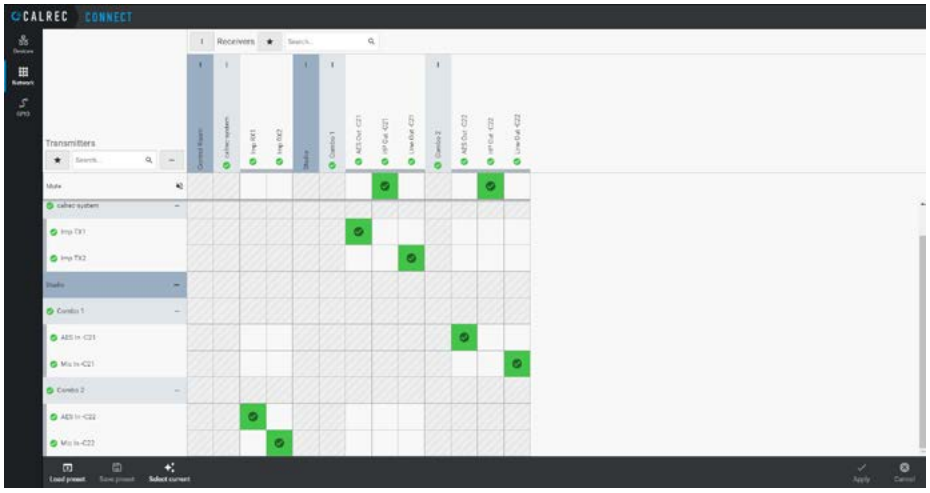


FIG. 4 - NETWORKS>CONNECT TRANSMITTERS TO RECEIVERS



INPUT AND OUTPUT PATCHING

Argo IO Patching connects Sources to Destinations in any combination. Input sources may take the form of: DSP outputs from the same console, Audio input receivers via streams, Virtual patchbay outputs from other consoles on the same Impulse core, or Virtual patchbay inputs, the sources of which can be switched remotely by 3rd party controllers. DSP outputs including Mains, Tracks, Auxes, Direct Outputs etc, can be patched to AoIP device output transmitters, Virtual Patchbays or back into channel inputs of the same console.

The IO Patching screen provides a visual representation of sources displayed on the left side of the screen, with destinations shown on the right side of the screen.

The user selects a Source and a Destination before tapping the 'Connect' button in the middle to patch them together.

Accessing the IO Patching Screen
The Fader Layout screen is accessed from the Modes row of a fader panel by first pressing Modes Menu in button cell 4 of the Layers & Modes row, before then tapping IO Patching, see Fig. 1. Alternatively, the user can tap the appropriate icons on the touchscreen, see Fig. 2.

The Wild Assign panel and Fader panel displays are not shown here as the IO Patching of sources to destinations is managed from the touchscreen.

Each source can be patched to multiple destinations. However, a destination can only have one source.

When patching an input port via an RX receiver to multiple input channels, it is important to remember that phantom power (48V), input gain and sample rate conversion are all set within the source.

Altering these controls from any point on the surface will affect that feed for every instance of it across the surface, and across the AoIP network.

FIG. 1 - IO PATCHING EXTENDED MODE SELECT ON STANDARD FADER PANEL

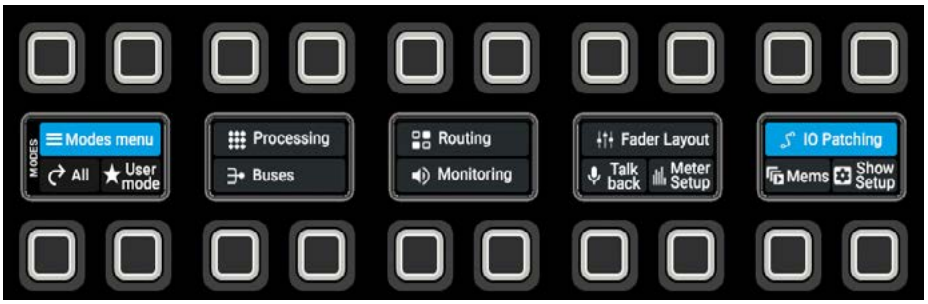
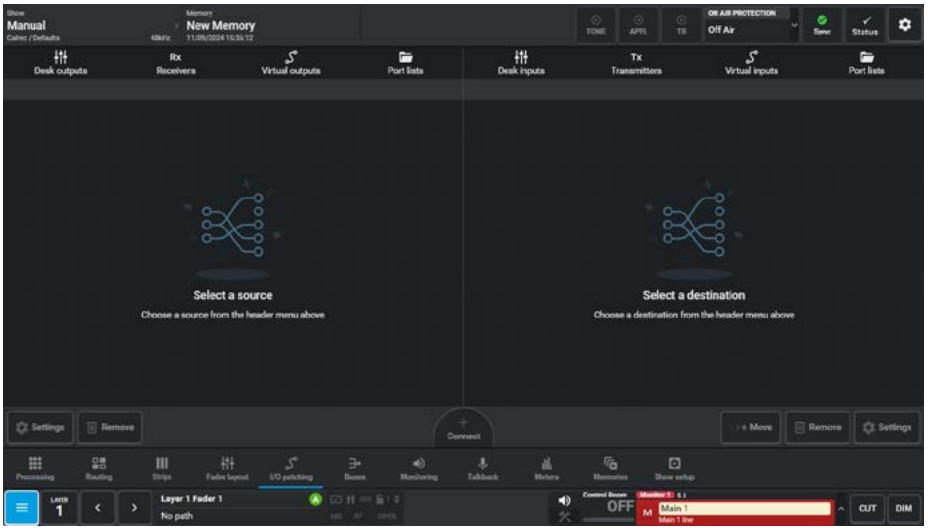


FIG. 2 - IO PATCHING SCREEN SELECTED FROM TOUCHSCREEN



The IO patching Screen Layout
The IO patching screen is accessed via the IO Patching menu entry as shown in Fig. 3. It is split into two halves, with sources displayed on the left and destinations displayed on the right.

Each side has a set of tabs running along the top, from which the user selects the source/destination types they wish to access.

Fig. 3 shows the Empty IO patching screen shown on first entry before any source or destination has been selected.

Selecting Desk Outputs & Inputs:
Tap on a source or destination selection button to open a dropdown. This reveals all available options of that type, as sets of buttons within a table.

Fig. 4 show the various Desk output/input & Virtual output/input type dropdowns available.

Selecting Receivers & Transmitters:
Fig. 5 show the various Console receiver/ transmitter & User Rx/Tx port list type dropdowns available.

Note: only one dropdown will appear at a time in Assist.

The user taps an entry in each dropdown list to select that source or destination to be used for IO patching.

When multiple entries are present in one particular dropdown, a scrollbar allows the user to view all options. Likewise, a search bar allows the user to search for sources/ destinations.

Note: As with many of the list and table entries in the touchscreen application, the scrollbar shown is an indicator of the current position in a list. The primary scrolling method is to use the two finger 'swipe' method by using two fingers in contact with the Multi-touchscreen.

FIG. 3 - EMPTY IO PATCHING ON TOUCHSCREEN SHOWN ON FIRST ENTRY

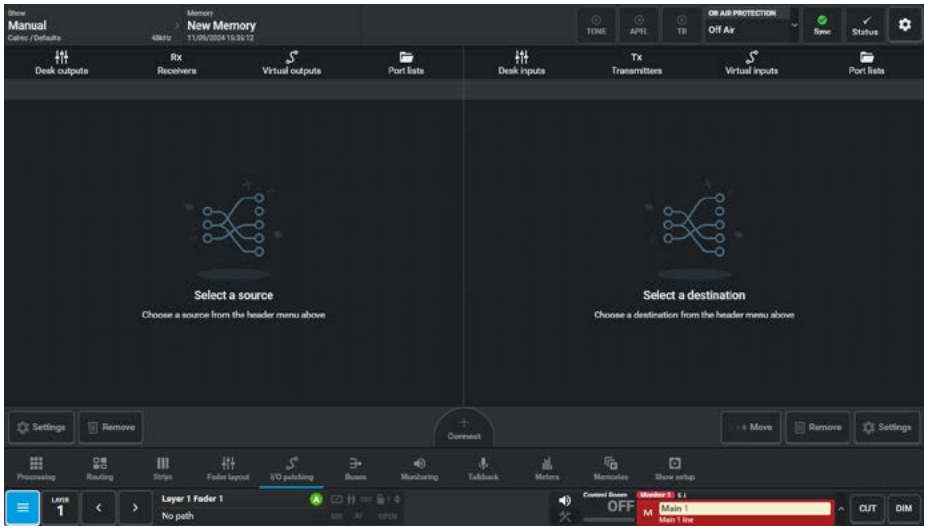


FIG. 4 - DESK OUTPUT/INPUT & VIRTUAL OUTPUT/INPUT DROPDOWNS

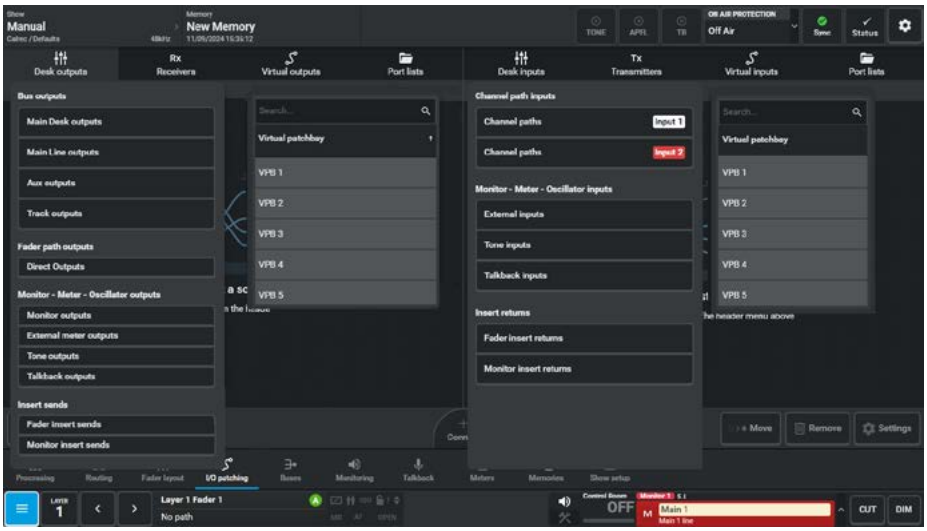
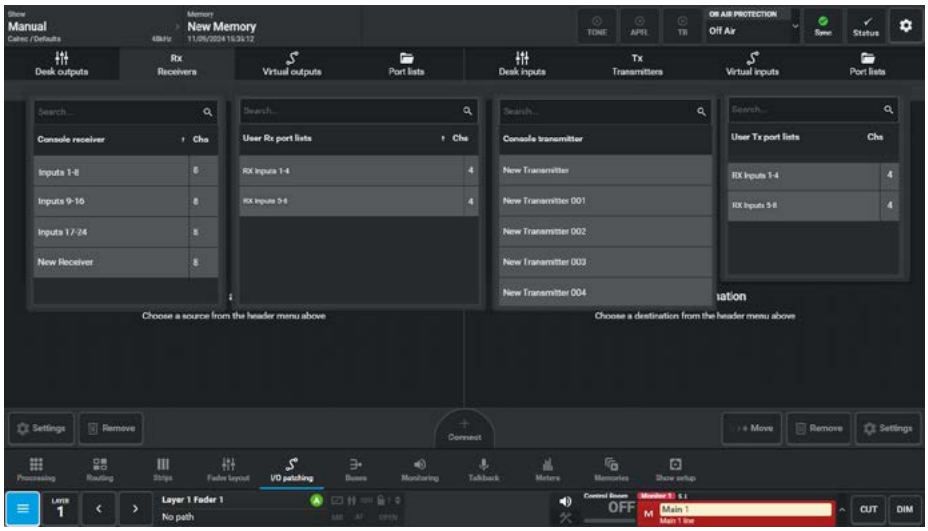


FIG. 5 - RX RECEIVER/TX TRANSMITTER & PORT LIST I/P & O/P DROPDOWNS



AoIP Receiver to Desk Input
This is one of the two basic patching requirements, necessary to pass received audio signals from an external IO interface box into DSP input channels on the console.

Fig. 6 shows that a source from Rx Receiver>Inputs 1-8 containing 8 mics has been selected and that Mic1 has been patched to a mono input channel on fader L1F4A, which was itself selected from Desk Inputs>Channel paths-Input 1. Patching is confirmed by selecting the desired source and destination consecutively, before clicking or tapping on the **'Connect'** button highlighted in Fig. 6. The Connected destination and Connected source column entries confirm that this patch has been made.
Note: the current source and current destination type tabs are highlighted.

Desk Output to AoIP Transmitter
This is the other basic patching requirement, necessary to pass the DSP output buses out of the console into transmitted audio signals to an external IO interface box.

Fig. 7 shows that a source from Desk Outputs>Main Desk Outputs has been selected as the source list and that a 5.1 Main output (Main3) has been patched to 6 output channels on Ch-03 to Ch-08, which were themselves selected from Tx Transmitters>New Transmitter. Patching is confirmed by selecting the desired source and destination consecutively, before clicking or tapping the **'Connect'** button.

The 6 Connected destinations and the 6 Connected source column entries confirm that this patch has been made.

Note: another patch from Main 2 to Ch-01 & Ch-02 is ready to be made. Green patching labels turn yellow once the patch is made.

AoIP Receiver to AoIP Transmitter
Fig. 8 shows I/O inputs being patched directly to I/O outputs from Rx Receiver>Inputs 9-16 to the Tx Transmitters>New Transmitter 001. This can be useful for format conversion, where the user may wish to bring in an AES port, then send it back out to an Analogue port without passing audio through a console DSP process.

FIG. 6 - INPUT PATCHING AOIP RX RECEIVERS TO DESK INPUTS

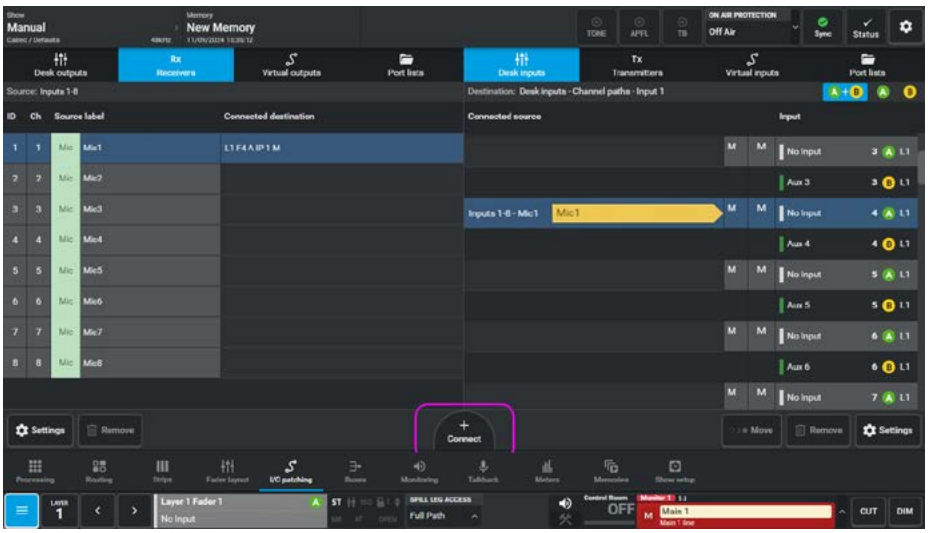


FIG. 7 - OUTPUT PATCHING FROM DESK OUTPUTS TO AOIP TX TRANSMITTERS

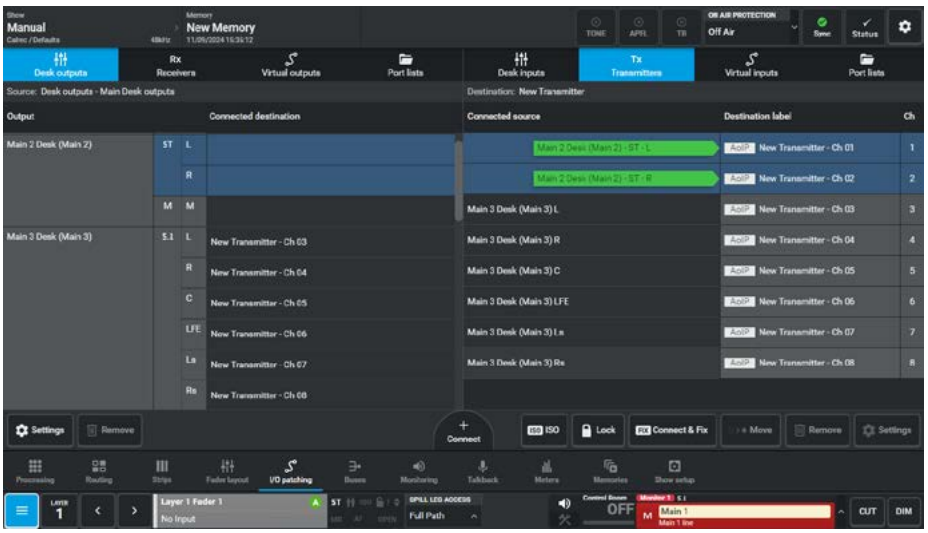
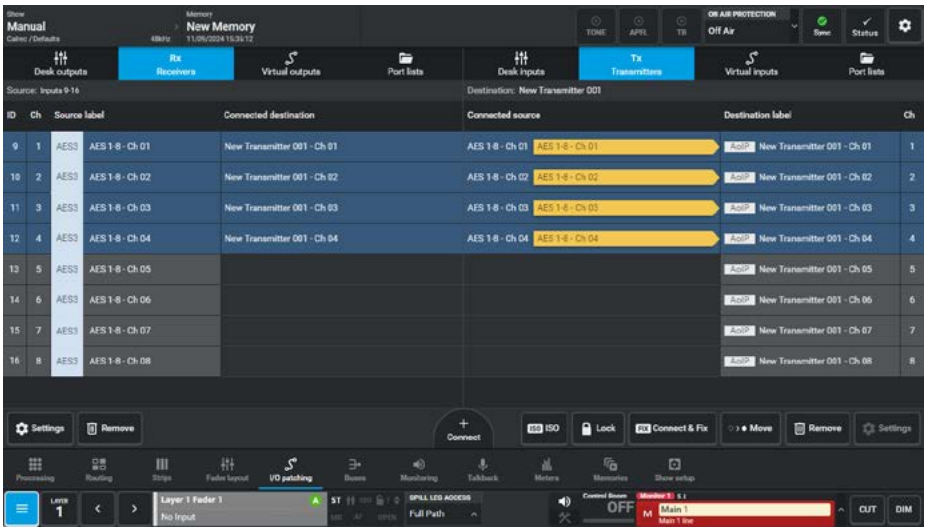


FIG. 8 - PATCHING AOIP RX RECEIVERS TO AOIP TX TRANSMITTERS



Desk Output to Desk Input

Fig. 9 shows that Desk Outputs that have been patched directly to Desk Inputs. In this case, a stereo Aux Bus Output has been patched to a stereo channel input on fader L1F2A.

This can be useful when further signal processing is required. For example, it is useful for applying further EQ signal processing to an aux bus output, without needing to pass the audio signal from the console to an output port, and use a cable to return the signal to a channel on the console via an input port. The channel can then be used to apply EQ to the Aux output. Subsequently, it can then be sent back out on, for example, a Direct output from the channel. Within the IO patching screen, sources and destinations have separate setting options, which are accessible from the left and right of the patching screen footer. The available settings vary depending on which connection type is in view.

Source Settings

If more than one destination is connected to a source, the user can make use of the **'Settings'** button on the bottom left side of the footer. When pressed, this opens a pop-up, allowing the user to compact the view, as shown in Fig. 10, or expand the view of the connected destinations column, as shown in Fig. 11.

Destination Settings

When viewing fader specific paths, such as channel inputs, layer view options are available. The user can make use of the **'Settings'** button in the bottom right-hand side of the footer. When pressed, this opens a pop-up, allowing the user to select which faders to view. The user can, for example, select to view only faders on sub-layer B, as shown in Fig. 10. This prompts the screen to no longer show faders on sub-layer A, as seen in Fig. 11.

Surface Interaction

Also in the destination footer pop-up is the 'Fader selection follows fader access' button. When this function is selected, pressing the Fader Access buttons automatically scrolls the patching table to the correct desk input selection.

FIG. 9 - PATCHING - DESK OUTPUTS TO DESK INPUTS SELECTION

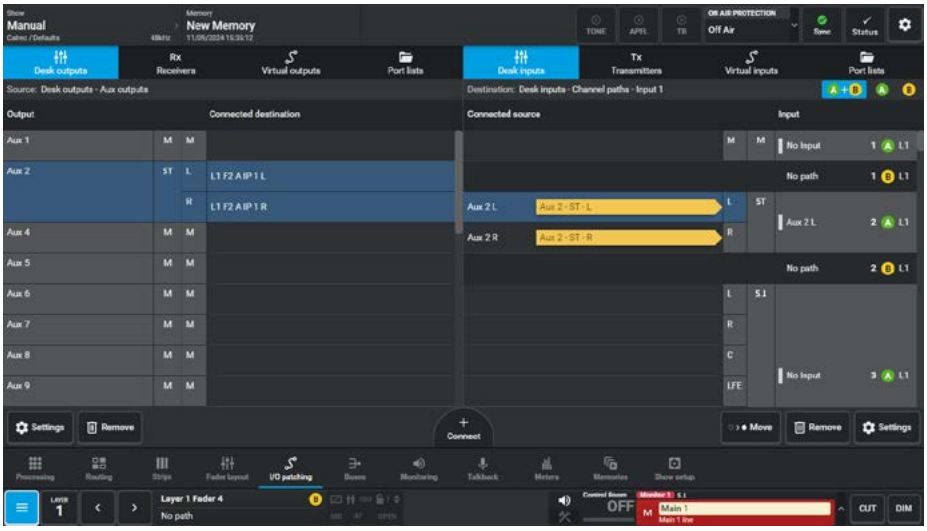


FIG. 10 - SOURCE & DESTINATION VIEWS 1

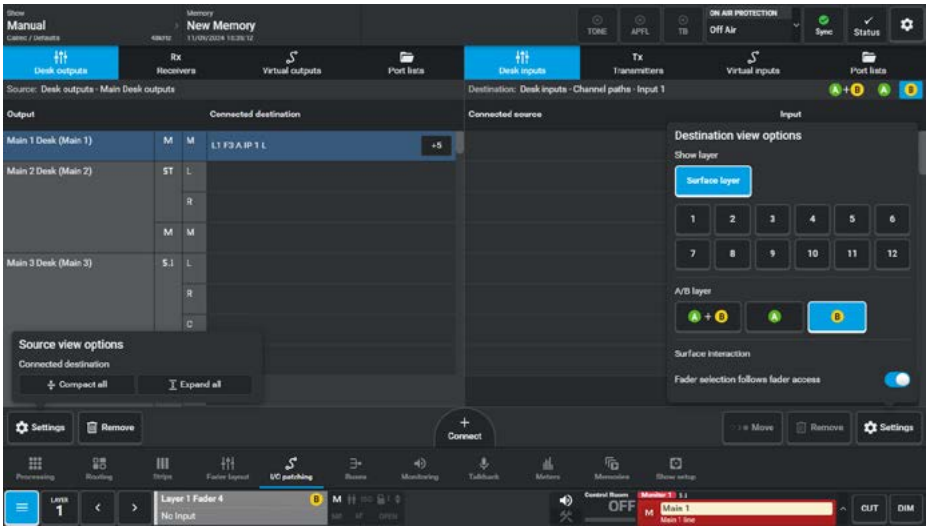
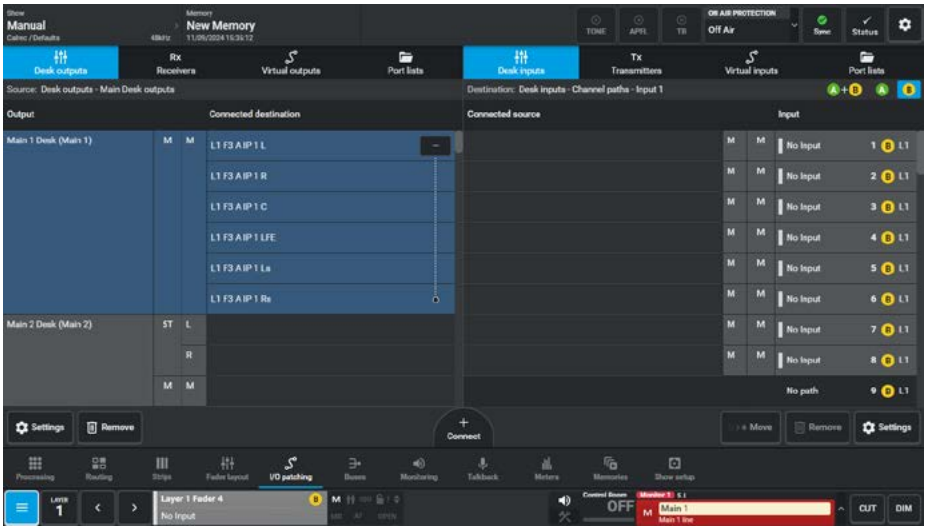


FIG. 11 - SOURCE & DESTINATION VIEWS 2



Virtual Patchbays
VPBs are virtual patchbays within the Impulse core. Like physical patchbays, VPBs are used for signal re-routing and distribution. VPBs have a number of input patchpoints which are 'hard-wired' to output patchpoints. For further information, see **"Virtual Patchbays" on page 170.**

For patching purposes, virtual patchbay inputs are destinations and virtual patchbay outputs are sources. These appear as Virtual inputs and Virtual outputs tabs, shown in the header along with the other destinations and sources, as shown in all the IO Patching pages.

When a source is patched to a virtual input, it immediately becomes available at the corresponding virtual output. For example, if a console operator patches a direct output to a virtual input, it becomes available to all users on the same core (who have been granted access), at the corresponding virtual output.

Virtual Patchbay Inputs & Outputs
Fig. 12 shows two Virtual Patchbay sets, showing the available outputs of VPB2, which has 8 channels and appears on the sources side, and the available inputs of VPB4, which also has 8 channels and appears on the destination side of the IO patching page.

Note: as shown here, the VPB outputs of a VPB can be routed to the inputs of other VPB inputs, in order to rearrange/ re-route signals and distribute them accordingly.

AoIP Receivers to VPB Inputs
Fig. 13 shows the patching of an AoIP Rx Receiver labelled 'New Receiver', which is an 8 channel input stream, to a local VPB input set labelled 'VPB 2', which is an 8 channel virtual patchbay

VPB Outputs to AoIP Transmitters
Fig. 14 shows the patching of a local VPB output set labelled 'VPB 4', which is an 8 channel virtual patchbay, patched to an AoIP Tx Transmitter labelled 'New Transmitter 002', which is an 8 channel output stream.

FIG. 12 - VIRTUAL PATCHBAYS AS SOURCES & DESTINATIONS

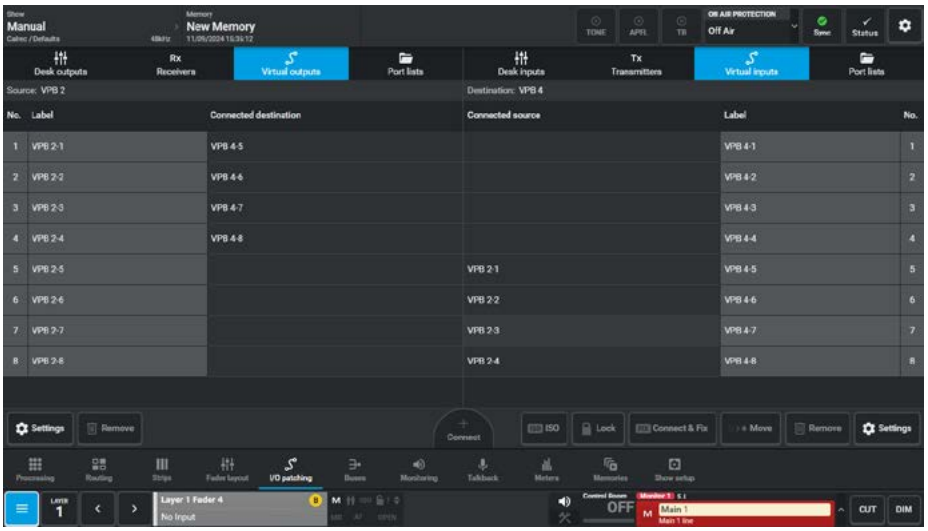


FIG. 13 - PATCHING AOIP RECEIVERS TO VIRTUAL PATCHBAY INPUTS

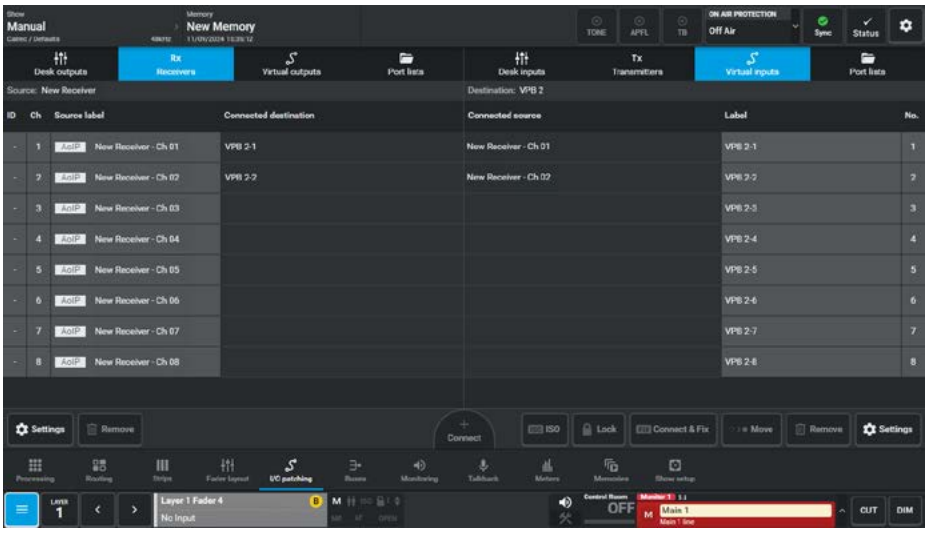
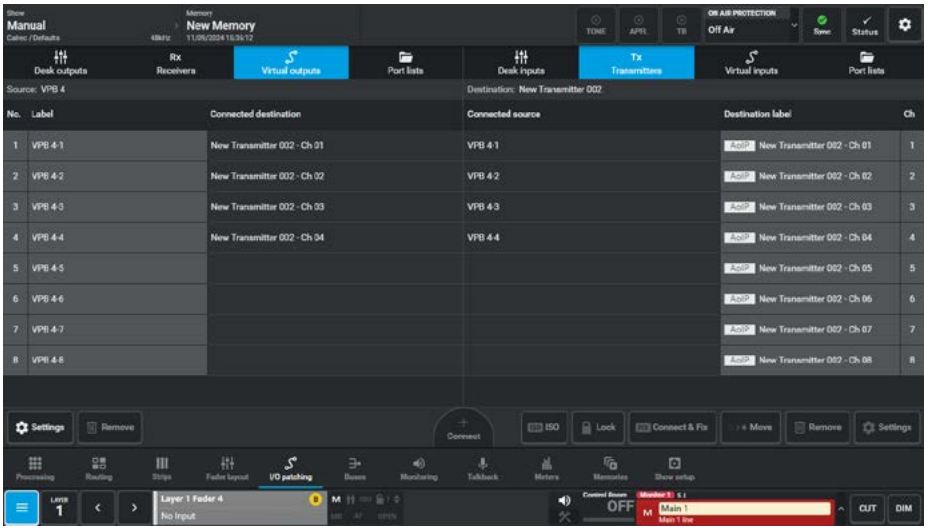


FIG. 14 - PATCHING VIRTUAL PATCHBAY OUTPUTS TO AOIP TRANSMITTERS



Port Lists
Ports can be assigned to user port lists. There are 2 kinds of port lists, the Receiver or Transmitter Port Lists, which contain complete streams and appear in the Rx Receivers and Tx Transmitters tabs for patching. User Rx and User Tx Port Lists can be created from the Rx Receiver and Tx Transmitter streams to provide a customised set of ports.

This allows the user to filter and order the information shown when patching ports. The user can place a specific set of ports into their own list, rather than need to search through the potentially hundreds of ports inside each receiver and transmitter list that may be available.

For more information on Port Lists, see **"Port Lists" on page 308.**

Port List Inputs & Outputs
Fig. 15 shows 2 Port List sets, one called 'RX Inputs 1-4', showing its 4 inputs on the sources side, and the another called 'TX Outputs 1-4', showing its 4 outputs on the destination side of the IO patching page.

Note: as shown here, the inputs of an Rx port list can be patched directly to the outputs of other Tx port lists, in order to rearrange/re-route signals accordingly.

Port List Rx Inputs to Desk Inputs> Channel Paths Input 2
Fig. 16 shows a group of 3 violin mics labelled Mic6, Mic7 & Mic8 on the 'Violins' Rx Port List. They are being patched to 3 mono channel input 2 connections for faders 1A, 2A & 3A on Layer 3.

Desk Outputs>Monitor Outputs to Port List Tx Outputs.
Fig. 17 shows the Monitor 1 Control Room LS, which is a 5.1 monitor set. It has been patched to a Tx Port List labelled '5.1 Monitors', containing a set of 6 outputs.

Arranging ports like this makes patching simpler as searching for the required Receiver and Transmitter streams can be time consuming.

FIG. 15 - PORT LISTS AS SOURCES AND DESTINATIONS

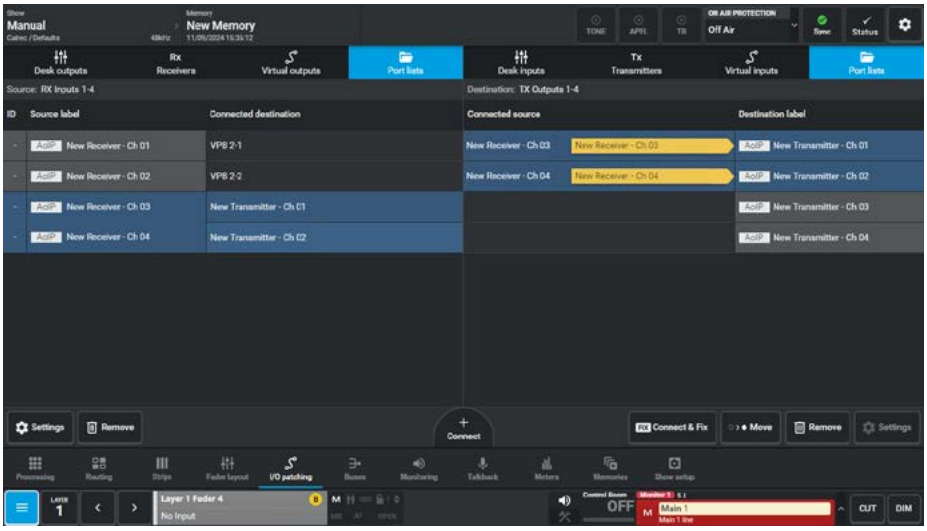


FIG. 16 - PATCHING RX RECEIVER PORT LIST ENTRIES TO CHANNEL INPUTS-2

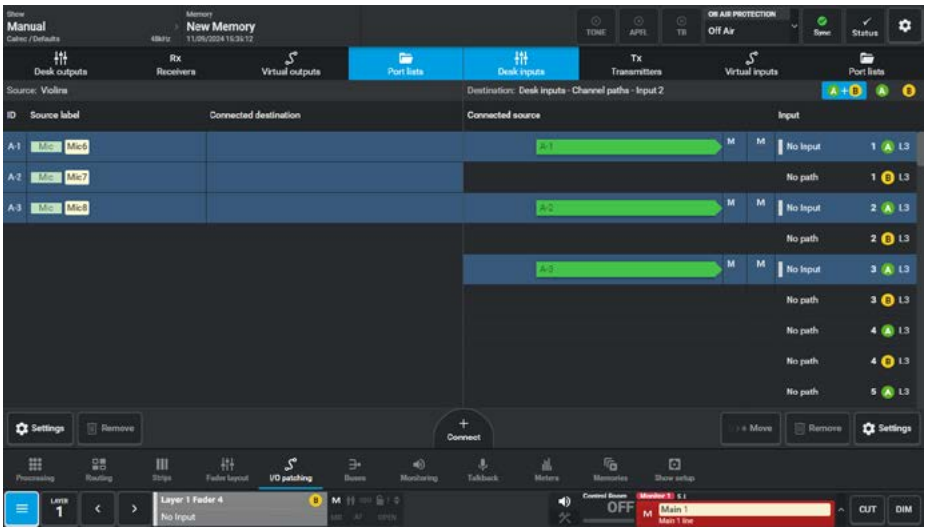
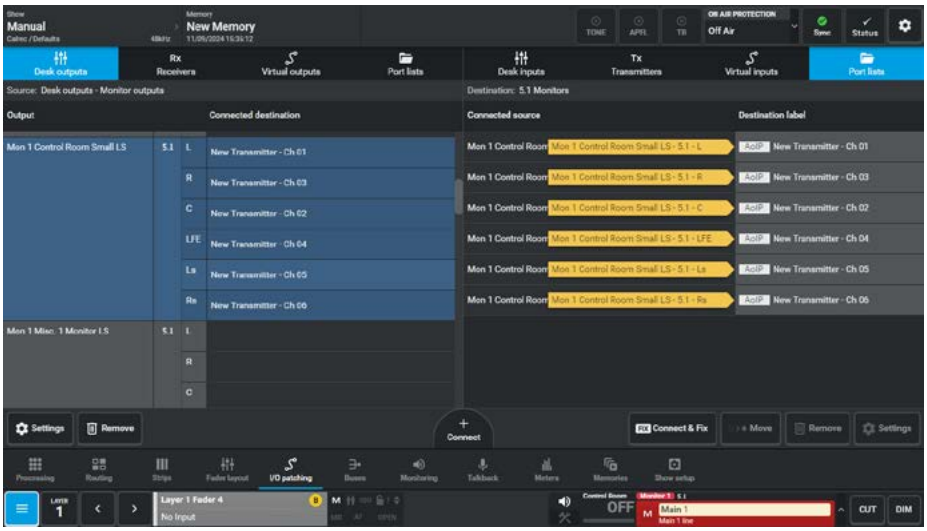


FIG. 17 - PATCHING MONITOR OUTPUTS TO TX TRANSMITTER PORT LIST ENTRIES



Footer functions
The remaining functions in the source and destination sides of the footer are described below:

Connected Destination/Sources
The user can view connected destinations from sources and view connected sources from destinations. Both are displayed within the centre columns.

Viewing and Sorting
Ports are displayed within sortable tables. The sorting options vary between port types:

- AoIP receivers/transmitters can be sorted by name or number.
- Desk connections can only be sorted by resource number, e.g., Aux 1 to 4.

Making a Patch
To patch a source to a destination:

1. Select a source type from the source screen header.
2. Select a destination type from the destination screen header.
3. Tap to select a source.
4. Tap to select a destination.
5. Tap **'Connect'**.

Moving a Destination
Once a patch has been made, the destination can easily be changed as shown in Fig. 18:

1. Select a destination.
2. Tap **'Move'** in the screen footer.
3. Select a different destination (at this point the user can also select a new destination type).
4. Tap **'Move'** once more.

Isolating a Patch
Isolating a patch protects it from changes due to memory loads. It differs from patch fixing in that patch isolation only relates to actions performed locally.

Isolated patches can still be over-patched by other users and by snapshot loads on other consoles on the network.

FIG. 18 - MOVING A SOURCE TO A DIFFERENT DESTINATION

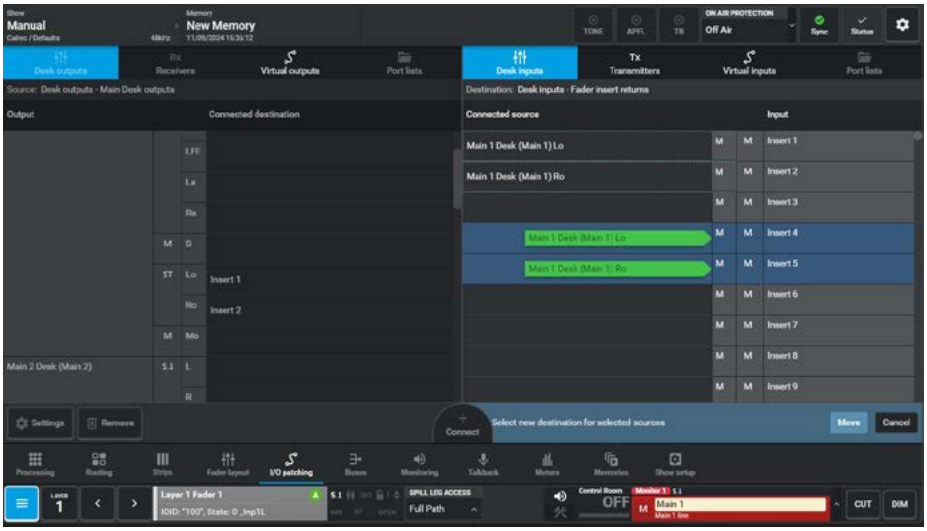
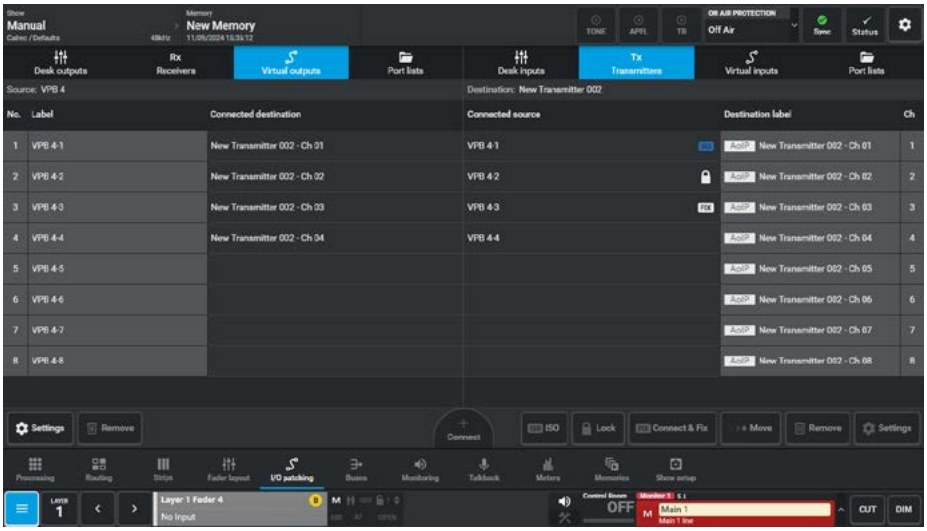


FIG. 19 - ISOLATE LOCKED AND FIX STATUS ICONS



To isolate a patch:

1. Select one or more patches on the destination side.
2. Tap **'ISO'** in the screen footer. The ISO icon is displayed against the patch entry, as shown in Fig. 19.
3. To de-isolate the patch, tap on **'ISO'** again.

Locking output port patching
Output ports may be locked to protect their patching from unintended changes. To do this, select one or more output ports in the Transmitters list before touching the **'Lock'** button below. Repeat the process to unlock the ports again. Locked ports are indicated by padlock symbols on both source & destination, as shown in Fig. 19.

Protect a Patch from Memory Loads
Patches can be 'Fixed', isolating them from snapshot load changes. Fixed patches are also protected under the port protection system in the same way as ports, which are in use by multiple network users.

To Fix a patch:

1. Select one or more patched destinations.
2. Tap 'Connect & Fix' in the footer. The 'Fix 'icon appears against the fixed patches, as shown in Fig. 19.
3. To un-fix the patch, tap on 'Connect & Fix' again.

Removing Patches

To remove patches from the system:

1. Select one or more of the connected sources from the destination side on the right.
2. Tap **'Remove'** in the right side of the footer. The patches are automatically removed as shown in Fig. 20.

Removing Multiple Patches

3. If sources are connected to a number of destinations, they can all be removed by selecting the sources from the source side on the left.
4. Tapping **'Remove'** on the left side of the footer removes all patches from the selected sources to all the connected destinations, as shown in Fig. 21.

Inputs 1 and 2

Every channel has two inputs, labelled Input 1 and Input 2, to which two entirely separate feeds can be patched.

Input 2 is generally used for patching a back-up microphone. This is in case of a failure on the feed to input 1. A back-up microphone allows the user to quickly switch to input 2, which has exactly the same processing, routing and output patching applied to it as input 1.

Patching Outputs to Inputs

Desk outputs & buses can be connected directly back into channel inputs.

Note: this method of control is different to just attaching a console output to a fader, which just uses the fader as the bus output level rather than patching it into a channel input as a source.

Desk Output Types

The following output types appear in the Desk Outputs dropdown:

Bus outputs:

- Main Desk outputs for up to 16 mains.
- Main Line outputs for up to 16 mains.
- Aux outputs for up to 48 aux outputs.
- Track output for up to 96 track outputs.

FIG. 20 - REMOVING PATCHES FROM THE DESTINATION SIDE

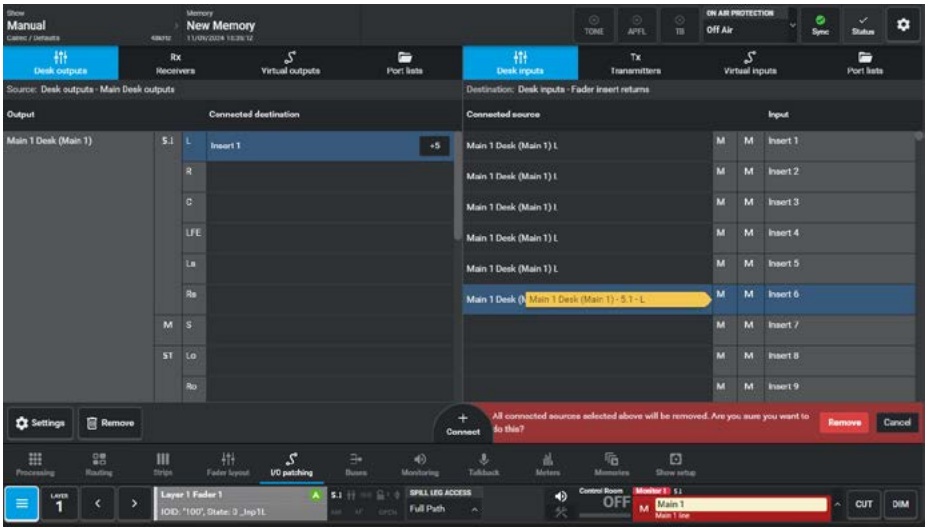
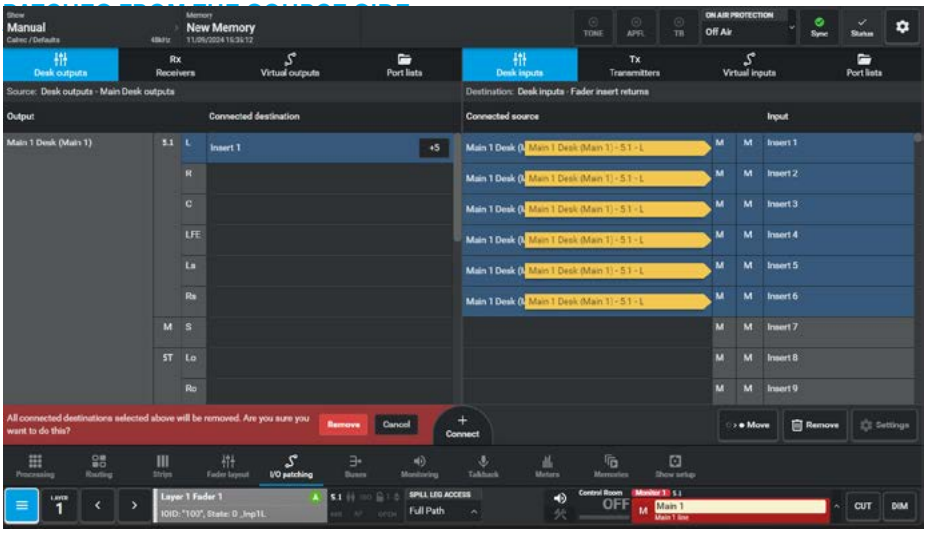


FIG. 21 - REMOVING PATCHES AND MULTIPLE



Fader path outputs:

- Up to 4 Direct outputs per channel/ group.

Monitor-Meter-Oscillator outputs:

- Monitor outputs
- External meter outputs
- Tone outputs
- Talkback outputs.

Insert sends:

- Fader insert sends
- Monitor insert sends.

Desk Input Types

The following input types appear in the Desk Inputs dropdown:

Channel path inputs:

- Channel paths Input 1
- Channel paths Input 2

.

Monitor-Meter-Oscillator inputs:

- External inputs
- Tone inputs
- Talkback inputs.

Insert returns:

- Fader insert returns
- Monitor insert returns.

INPUT AND OUTPUT PORT PROTECTION

Calrec Impulse, Type-R and their various companion AoIP based I/O products provide a scheme to protect against changes to physical audio input port settings & patches to destinations that already have sources patched by other users.

Input Port Protection States

Audio input sources can be shared by all consoles connected on the same audio network. All operators can control a shared input using their own console's input controls, but no operator has direct control of the shared input's Mic Gain, phantom power (48V) or SRC. To help avoid unwanted or accidental changes, these critical input controls can be placed in 1 of 3 states. These are set using the 'Connect' application:

Unlocked: When an Input port is unlocked, it's settings can be changed by any network user and operates on the basis of the last control change received.

Protected: When an Input port is protected, users can change its settings, but they must make this a conscious operation. They are made aware that the port is marked as protected and have to take an extra step to change settings.

Locked: When an Input port is locked, its settings (Input gain & phantom power for Mic/Line inputs, SRC for AES3 inputs) cannot be changed by any network user.

Fig. 1, shown in Light mode, shows these three highlighted states as set in the 'Connect' application. Mic 3 is Unlocked as shown by the open padlock, Mic 4 is Protected as shown by the shield and Mic 5 is Locked as shown by the closed padlock.

Figs 2, 3, 4 & 5 (shown in light mode), display the various indications that appear on the Processing>Input page for Unlocked, Protected Overwritten, Protected and Locked for the 3 Mic channels in turn.

Note: Mic 4 has been set as protected and its Input port controls are greyed out. However, pressing the 'Enable temporary control' button makes those controls available. Conversely, Mic 5 has been set as locked. As such, its Input port controls are greyed out and cannot be adjusted.

FIG. 1 - SETTING INPUT PORT PROTECTION IN CONNECT

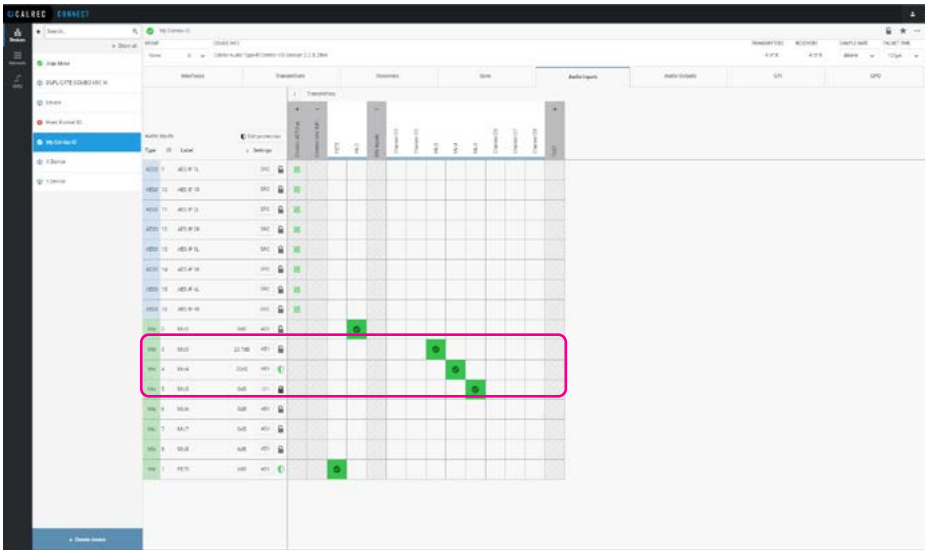


FIG. 2 - MIC 3 UNLOCKED PORT SHOWN ON INPUT PAGE



FIG. 3 - MIC 4 PROTECTED PORT SHOWN ON INPUT PAGE



FIG. 4 - MIC 4 PROTECTED PORT OVERWRITTEN SHOWN ON INPUT PAGE



FIG. 5 - MIC 5 LOCKED PORT SHOWN IN INPUT PAGE



Loading Shows/Memory Files

There are also implications for protected and locked inputs' Mic Gain, 48V and SRC settings during the process of loading shows and user memories. If memories are loaded which affect protected and locked inputs, a pop-up appears on the touchscreen, see Fig. 6.

This pop-up contains an information table to help the user to decide which protected input settings, if any, need to be overwritten. All protected/locked inputs are listed with their current settings and potential overwrite settings. Both Mic 4 & Mic 5 have different values in the memory being loaded. As shown in the pop-up, Mic 4 can be overwritten but Mic 5 is locked and cannot be changed. The left-hand check box column is used to choose which settings to overwrite. Initially, all changes are de-selected. Once selections have been made, the **'Overwrite selected'** button can be pressed to accept the selected changes and prevent changes that are deselected. The **'Keep current'** button will prevent any changes to settings. In both cases, the protected/locked input sources will still be patched to the desired console paths. It is changes to Mic Gain, 48V and SRC that are being protected.

Remember to ensure that you know what the effect of the memory load will be before selecting 'Overwrite selected', as this will alter the protected input sources for all operators.

The port protection pop-up may have 2 steps - Input Protection and Output Protection. This indicates that the memory to be loaded also contains changes to outputs which are in use by other operators, see Fig. 7 for input settings and Fig. 8 for output settings.

FIG. 6 - OVERWRITE INPUT PORT PROTECTION DIALOGUE

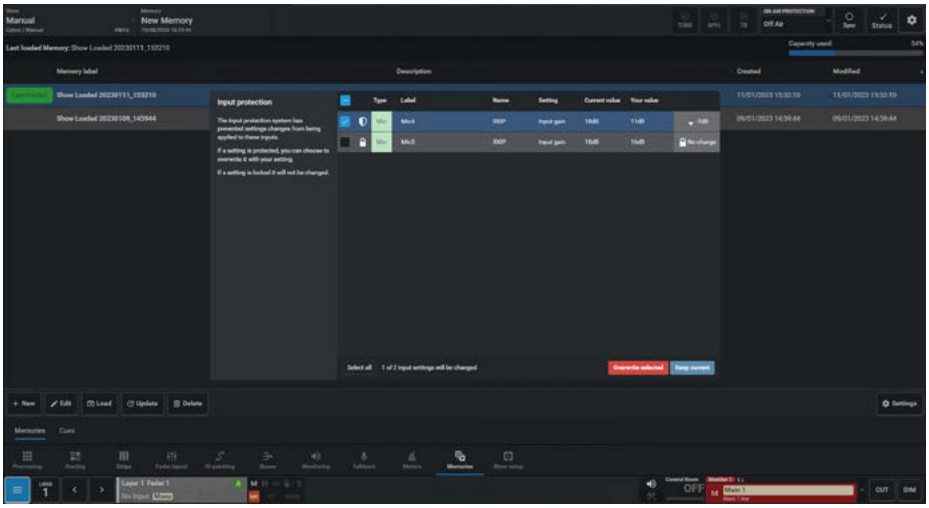


FIG. 7 - INPUT & OUTPUT PORT PROTECTION 2 STEP DIALOGUE - STEP 1

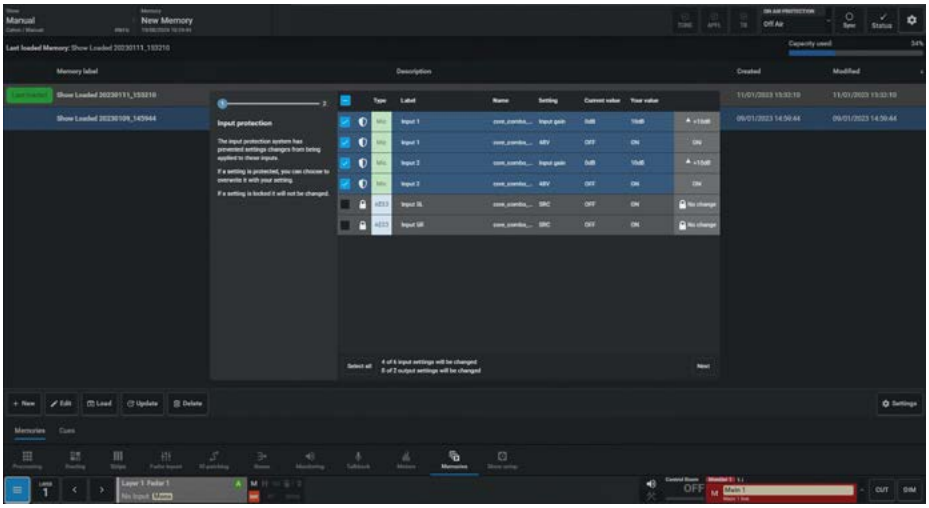
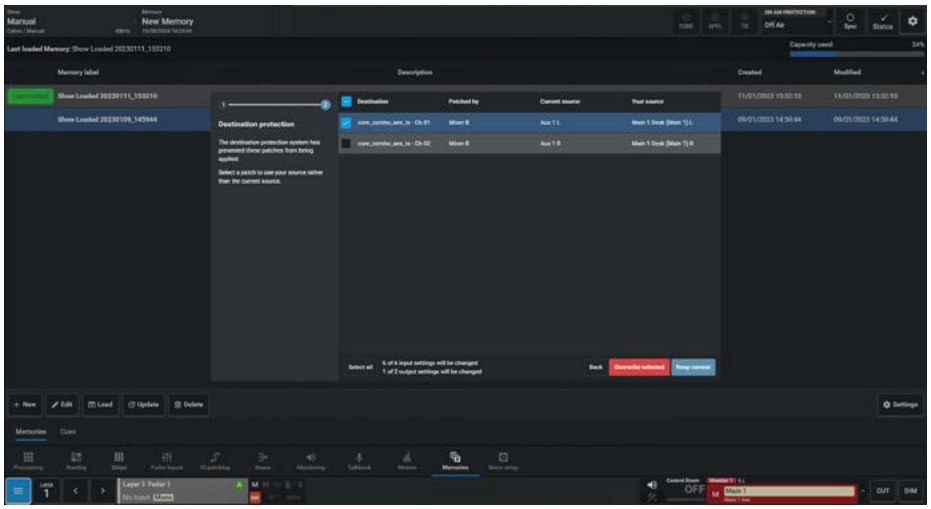


FIG. 8 - INPUT & OUTPUT PORT PROTECTION 2 STEP DIALOGUE - STEP 2



Output Port Protection States

Output port protection/locking is a system that notifies operators that the outputs they are attempting to patch to are already in use by other people elsewhere on the network. It also provides information to aid the user in deciding whether to go ahead with each patching decision for protected outputs, and when an output port is locked, meaning it cannot be changed. Output protection/locking does not directly relate to the audio outputs of AoIP I/O boxes. Rather, it relates to destinations in I/O patching screens. This provides the functionality to protect/lock output patches. It also prevents users from accidentally changing or removing the source that is patched to protected/locked destinations.

There are both manual and automatic port protection facilities provided:

Fig. 9 shows the states of the destinations to the TXOP transmitter. Selecting a connected source/destination output enables the Isolate & Lock buttons in the footer, ready to be **manually** protected. In this case, TXOP channels 7 & 8 are locked with Aux 4L & Aux 4R patched to them. Any attempt to overpatch them is prevented. TXOP channels 5 & 6 are locked without any patches made. The attempt to patch the Aux 5M output to the locked TXOP channel 5 displays a RED arrow, indicating the patch cannot be made.

Fig. 10 (shown in light mode) shows that the Aux1 L/R connections from Mixer A have been patched to two AES ports. The shield icons show that these output ports are **automatically** protected. Fig. 11 shows that Mixer B has loaded a memory that had previously patched the Main 1 Desk L/R outputs to the same two AES ports, which are now used by Mixer A. As such, the port protection dialogue has been triggered. The mechanism for selection and either overwriting or keeping the current settings from the port protection dialogue box is the same as that shown for input port protection.

When loading shows or user memories, it is likely that **both** protected outputs and shared inputs will be affected by the memory load. As such, the two step protection dialogue box will appear.

FIG. 9 - MANUAL OUTPUT PORT PROTECTION PADLOCKS IN IO PATCHING

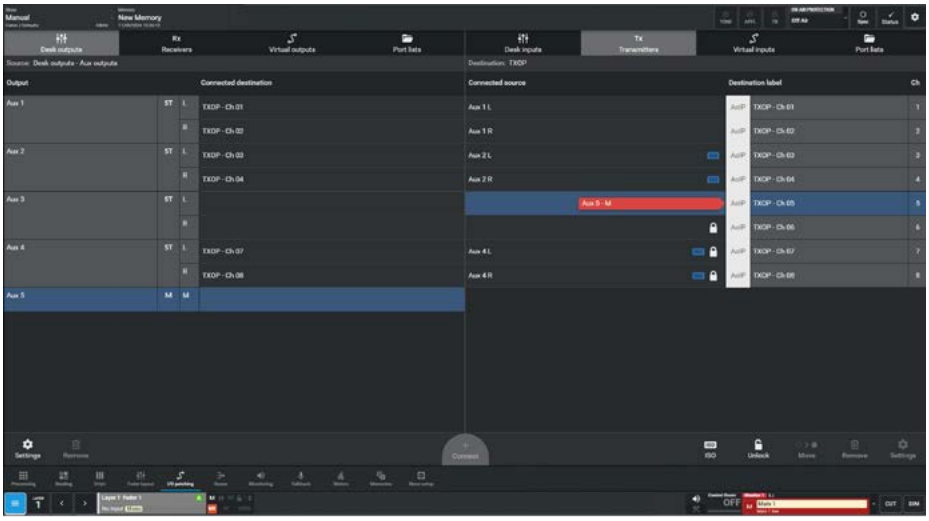


FIG. 10 - AUTOMATIC OUTPUT PORT PROTECTION SHIELDS WITH 'HOVER' ID

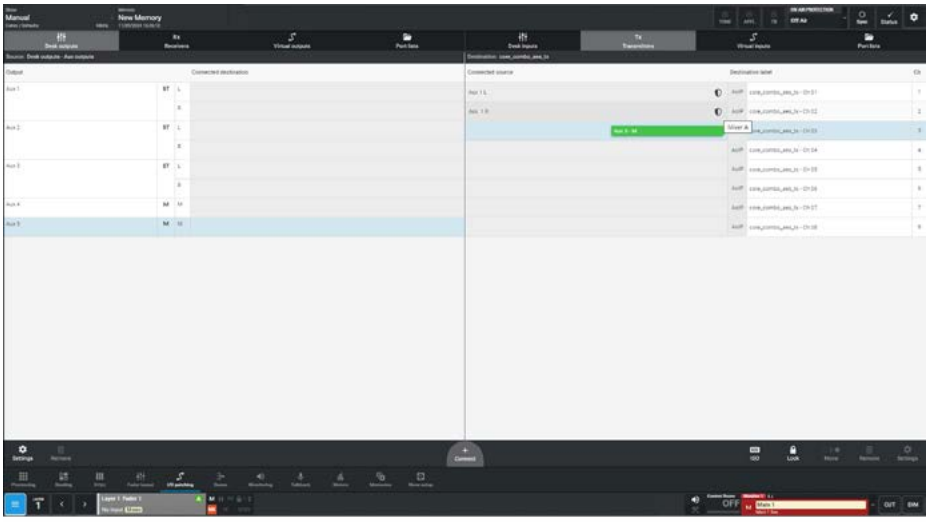
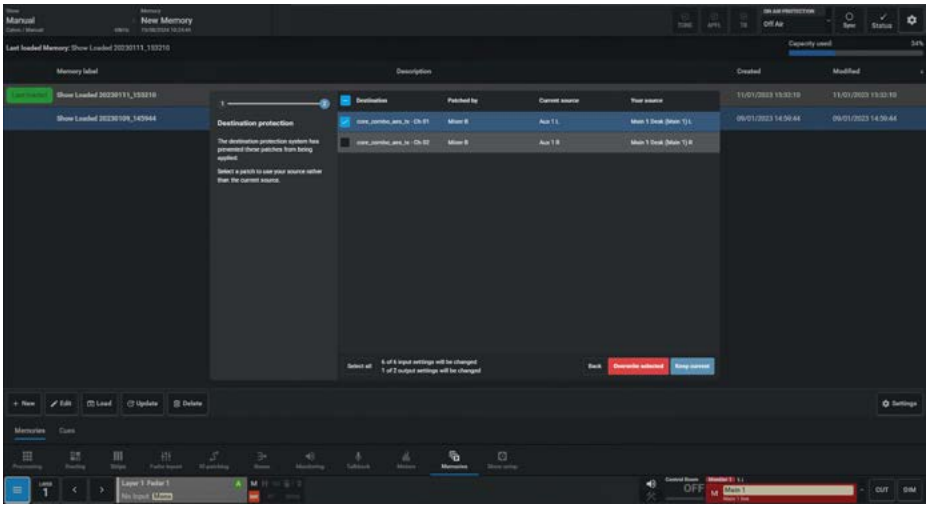


FIG. 11 - INPUT & OUTPUT PORT PROTECTION 2 STEP DIALOGUE - STEP 2



VIRTUAL PATCHBAYS

Virtual patchbays (VPBs) allow console operators to make selected DSP audio outputs available on the Impulse core. This allows other users on that core to access them, as well as allowing input sources and output feeds to be changed remotely.

VPBs are virtual patchbays within the Impulse core. Like physical patchbays, VPBs have a number of input patchpoints. These are 'hard-wired' to output patchpoints.

For patching purposes, virtual patchbay inputs are destinations and virtual patchbay outputs are sources, see Fig. 1.

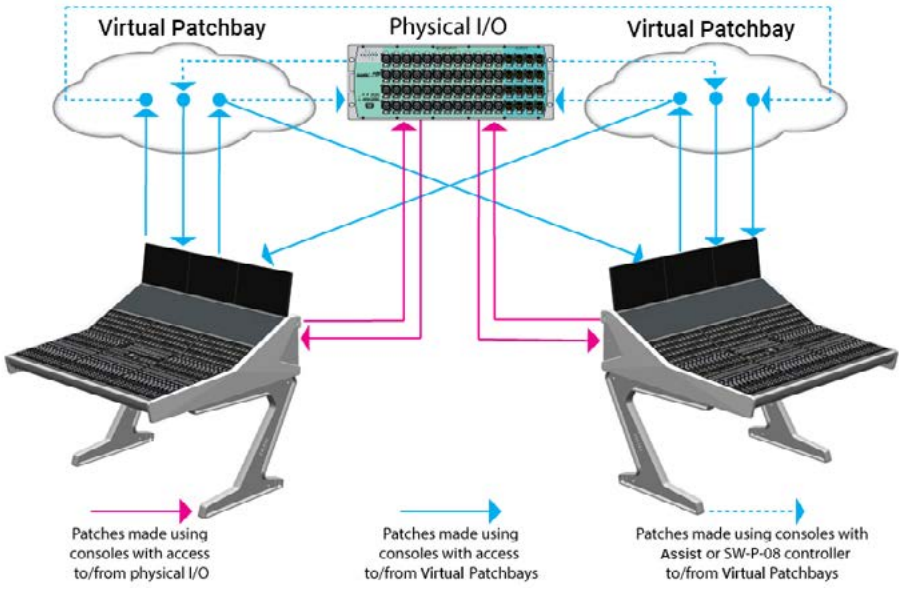
When a source is patched to a virtual patchbay input, it immediately becomes available at the corresponding virtual patchbay output. For example, if a console operator patches a direct output to a virtual patchbay input, the Direct Output feed becomes available to all users on the same core (who have been granted access) as the corresponding virtual patchbay's output.

Virtual patchbays are available to the console that they have been created for, plus 3rd party controllers via SW-P-08. These virtual patchbays can also be made available to all consoles on the same core, who have been granted access, plus 3rd party controllers via SW-P-08.

Consoles can patch signals to their virtual patchbay inputs in the same way they patch to physical output transmitters. Virtual patchbays allow network administrators to patch console inputs and outputs (which have been patched to virtual patchbay ports) to physical I/O receivers/transmitters.

Users can choose physical input receivers to connect to a console's virtual patchbay inputs, and output transmitters to connect to a console's virtual patchbay outputs. This allows them to choose and change console feeds and output destinations.

FIG. 1 - VIRTUAL PATCHBAYS BETWEEN CONSOLES ON THE SAME CORE



External routers supporting the SW-P-08 protocol can also have access to virtual patchbays, enabling 3rd party control over console patching.

Virtual patchbays are created from the Configure user interface. Please refer to the **Impulse Configure Application Guide (926-290)** for details on configuring virtual patchbays.

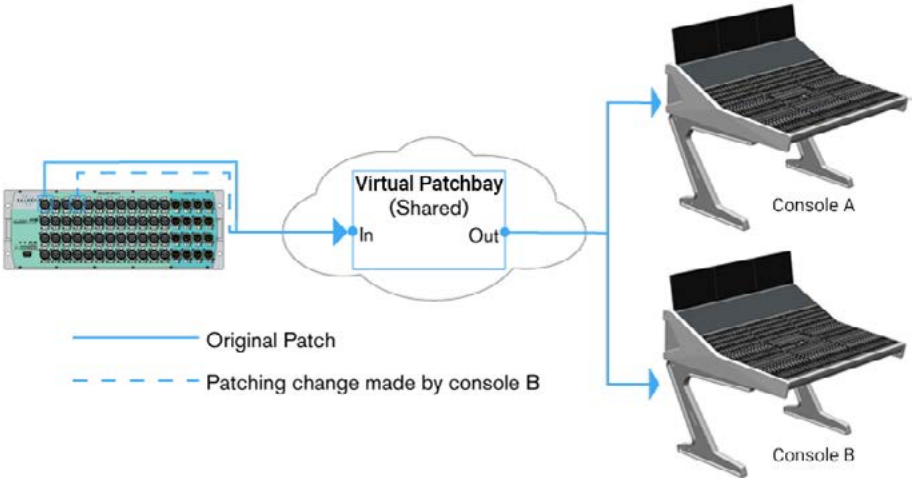
Port Sharing

Input and output protection works as normal when dealing with virtual patchbays for both Console & Assist use.

In situations when two or more consoles on the same core are using the same feed from a virtual patchbay, see Fig. 2, it is possible for one console to change the patching of the other by changing the patchpoint which is feeding the shared virtual patchbay input, either through a memory load or through changing the individual patch.

In these circumstances, it is important that the console operator understands the contents of the Input/Output protection dialogue before accepting any changes, as these changes directly affect other network users.

FIG. 2 - VIRTUAL PATCHBAY - CONSOLE PATCHING CHANGE WITHIN A CORE



ARGO
BUSES

CALREC

MAIN BUSES

The purpose of this screen is to configure and control the Main output buses. It provides the user with a screen of controls related to up to 16 configurable main buses. The user can set a bus as the accessed path, change its name, width, output level, pre-fader listen outputs, talkback and tone settings.

Buses are selected from the Modes row of a fader panel by first tapping on Modes Menu, then by tapping Buses, before finally tapping the Mains bus type selector, shown in Fig. 1. Alternatively, the user can press the Buses icon on the Touchscreen before pressing the Main bus type in the lower display area, as shown in Fig. 2. The surface displays/controls the related information on both the touchscreen and the Wild Assign panel shown immediately below. The user selects the bus to access its output controls.

Main Bus Output Controls

After tapping on the menu selection Buses>Mains, Fig. 2 is displayed, where buses are arranged in a block showing their name, width and current level. Tapping on any of the bus entries in the upper area of the screen allows the user control access for that bus in the lower area of the screen. Argo has up to 16 Main buses displayed in a block, which are labelled on the Buses page.

The controls for buses can be adjusted in a number of ways:

From the Touchscreen

- Dragging the sliders left and right for continuous controls.
- Using the On-Screen buttons to select switch functions, e.g., On/Off.

The resultant numerical values are shown in the top right-hand of each control area.

From the Wild Assign Panel

- Moving the Rotary controls round to the left or right to change levels.
- Using the button next to the rotary control to switch functions On/Off.

The resultant numerical values & bar graph are shown in each individual TFT on the Wild Assign Panel.

The following controls are available: From the Touchscreen

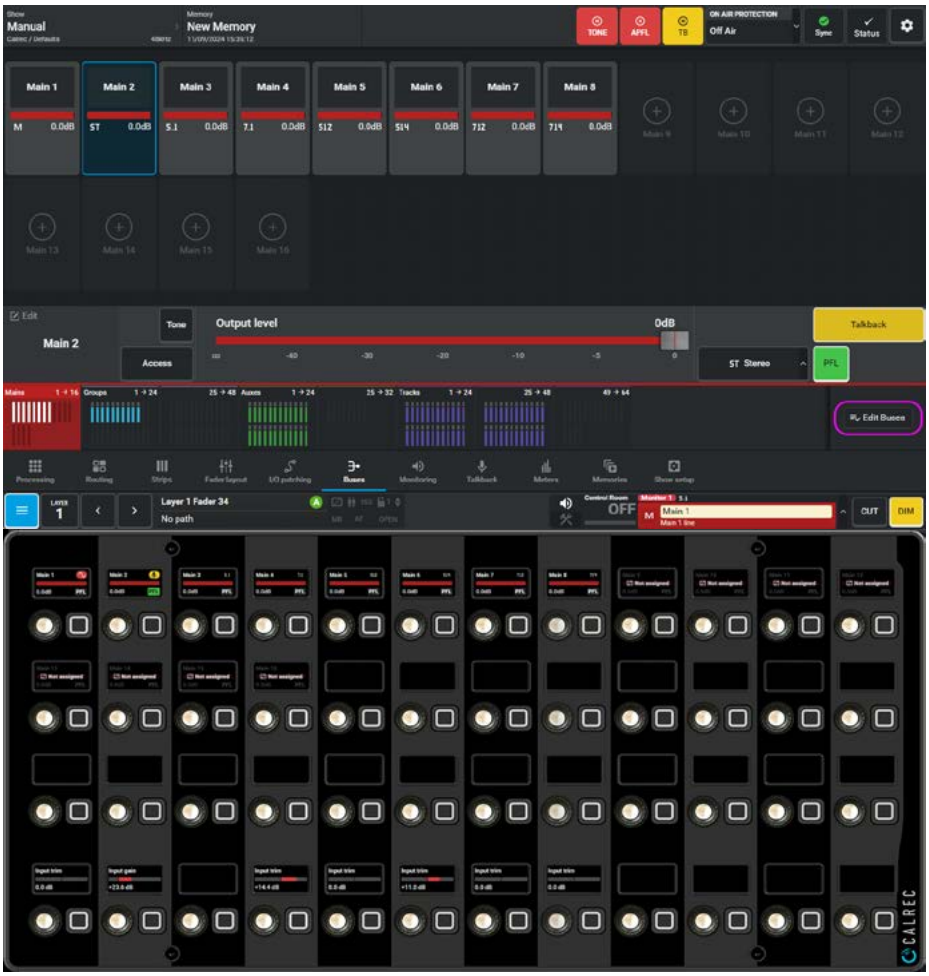
Width dialogue box: Clicking/tapping on an empty entry in the upper window, such as Main 9, opens this box, allowing the user choose the width of the 'New' main bus from Mono, Stereo, 5.1, 7.1, 5.1.2, 5.1.4, 7.1.2 or 7.1.4, see Fig. 3 on the next page.

Bus Outputs Pool:
There is a pool of bus output legs that are shared between mains and groups which can be arranged to provide various bus width combinations. The dialogue box shown in Fig. 3 shows the number of main/group resources remaining in terms of Mono legs at the bottom.

FIG. 1 - MAIN BUSES MODE SELECT ON STANDARD FADER PANEL



FIG. 2 - MAIN BUSES ON TOUCHSCREEN & WILD ASSIGN PANEL



Label window: Clicking on the Edit icon allows the bus to be edited with a user label using the on-screen keyboard, see Fig. 4 for Main 1.

Access button: This lets the user call the selected main to the access screens, see Fig. 5.

Tone: Select to inject tone into the main output, replacing the main output feed with the correct tone for the path width. A tone button applies a tone signal to that output, see Fig. 5.

Main Output Level: Slide the level control to alter the output level between 'off' & 0dB, see Fig. 5.

Change Width Pop-up button: This shows the current width of the existing selected bus. As shown in Fig. 5, the user has selected the stereo Main 2 bus. The highlighted button opens a pop-up, allowing the user to change the width to any of the widths shown.

Note: this pop-up also has the 'No path' option at the top, allowing the user to remove a bus from the system altogether.

PFL: The user can listen to the individual bus's PFL (pre-fader listen) using the PFL button shown in Fig. 5.

Talkback: This replaces the main output feed with whatever is routed to the talkback input. A talkback button allows the user to talk to that output, see Fig. 2.

Note: a talkback input should be set up in the IO patching screen for this to work.

From the Wild Assign Panel
The top two rows on the wild assign panel, shown in Fig. 2 on the previous page, are used to control the bus output levels via the rotary controls & the PFL On/Off button controls for up to 16 Main buses.

Note: in Fig. 2 on the previous page, Main 1 has Tone enabled and Main 2 has PFL and Talkback enabled, as shown in the first 2 rotary control cells on the wild assign panel.

FIG. 3 - MAIN BUSES - SET WIDTH FOR NEW MAIN BUS 9

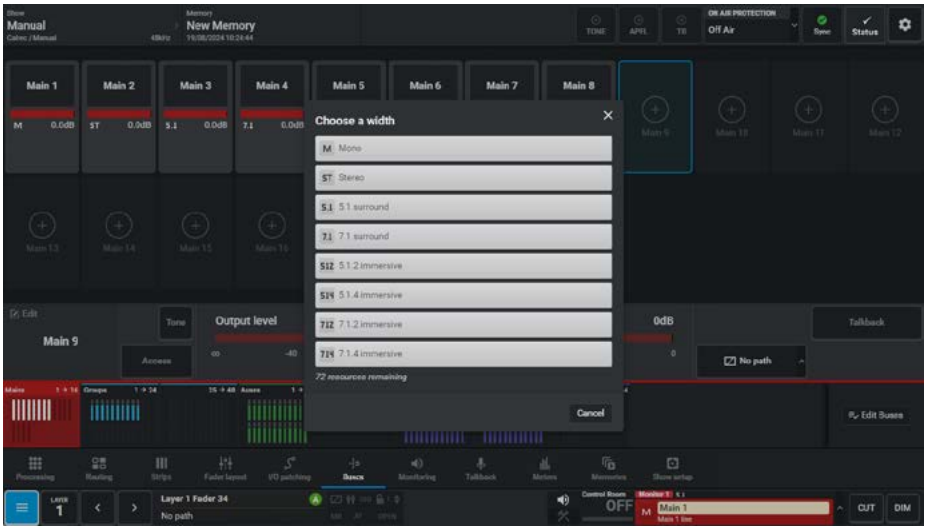


FIG. 4 - MAIN BUSES - SET USER LABEL USING ON-SCREEN KEYBOARD

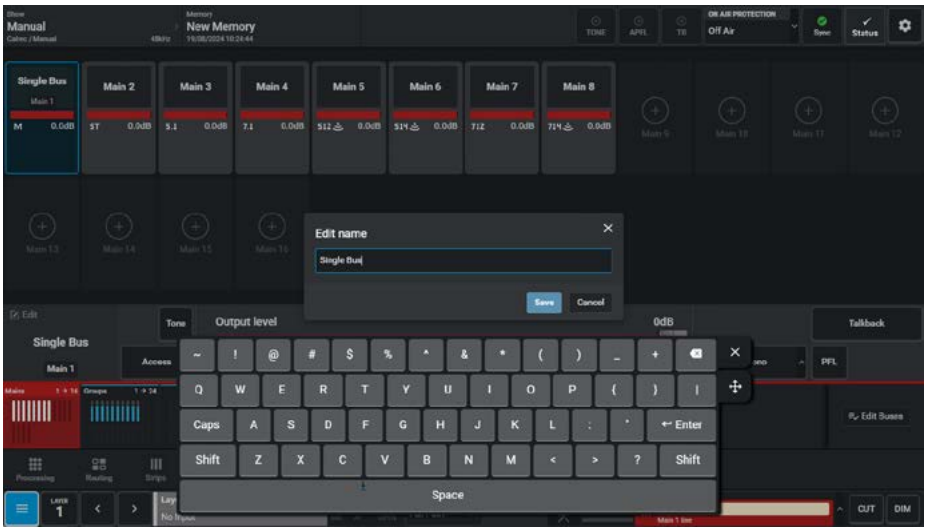
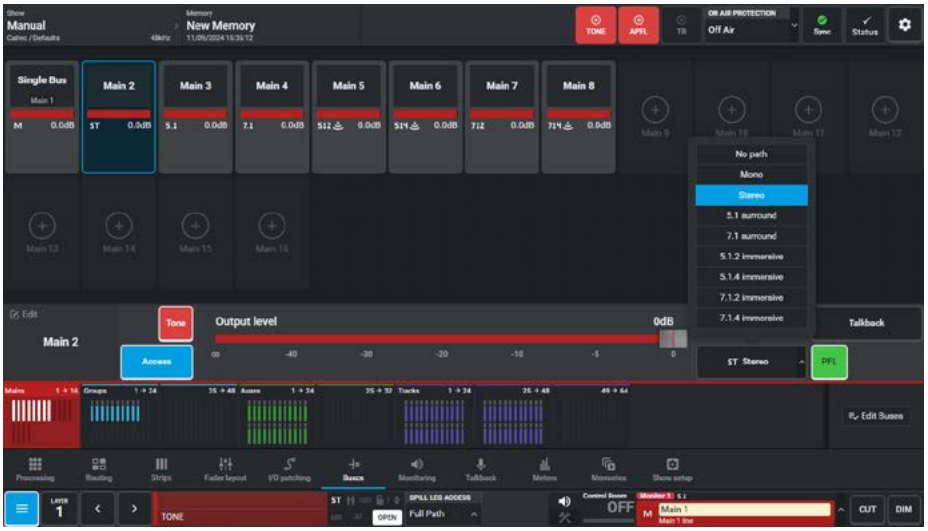


FIG. 5 - MAIN BUSES - CHANGE WIDTH FOR EXISTING MAIN BUS 2



GROUP BUSES

The purpose of this screen is to configure and control the Group buses. It provides the user with 2 pages of controls related to up to 48 configurable group buses, on which they can set the bus as the accessed path, change its name, width, bus level, cut, various listen outputs, talkback and tone settings.
The screen is accessed from the Modes row of a fader panel by first tapping Modes Menu, then by tapping Buses, before finally tapping the Groups bus type selector, as shown in Fig. 1. Alternatively, the user can press the Buses icon on the touchscreen before then pressing the Groups bus type in the lower display area, as shown in Fig. 2. The surface displays/controls the related information on both the Touchscreen and the Wild Assign panel shown immediately below. The user then selects the required block of Groups before selecting the required Group bus in that block to access the output controls listed above for that bus.

Group Bus Controls

After tapping on the menu selection Buses>Groups, Fig. 2 is displayed and arranged in 2 blocks, showing the bus's name, width & current level.

Tapping on any of the bus entries in the upper area of the screen allows the user control access for that bus in the lower area of the screen. Argo has up to 48 Group buses displayed in 2 blocks of up to 24 Groups. Each bus can be labelled on the Buses page.

The following controls are available:
From the Touchscreen

Width dialogue box: Clicking/tapping on an empty entry in the upper window, such as Group 11, opens this box, allowing the user to choose the width of the 'New' group bus to be added to as Mono, Stereo, 5.1, 7.1, 5.1.2, 5.1.4, 7.1.2, 7.1.4, 0.0.2 or 0.0.4, as shown in Fig. 3 on the next page.

Bus Outputs Pool:
There is a pool of bus output legs that are shared between mains and groups. These can be arranged to provide various bus width combinations. The dialogue box shows the number of main/group resources remaining in terms of Mono legs at the bottom.

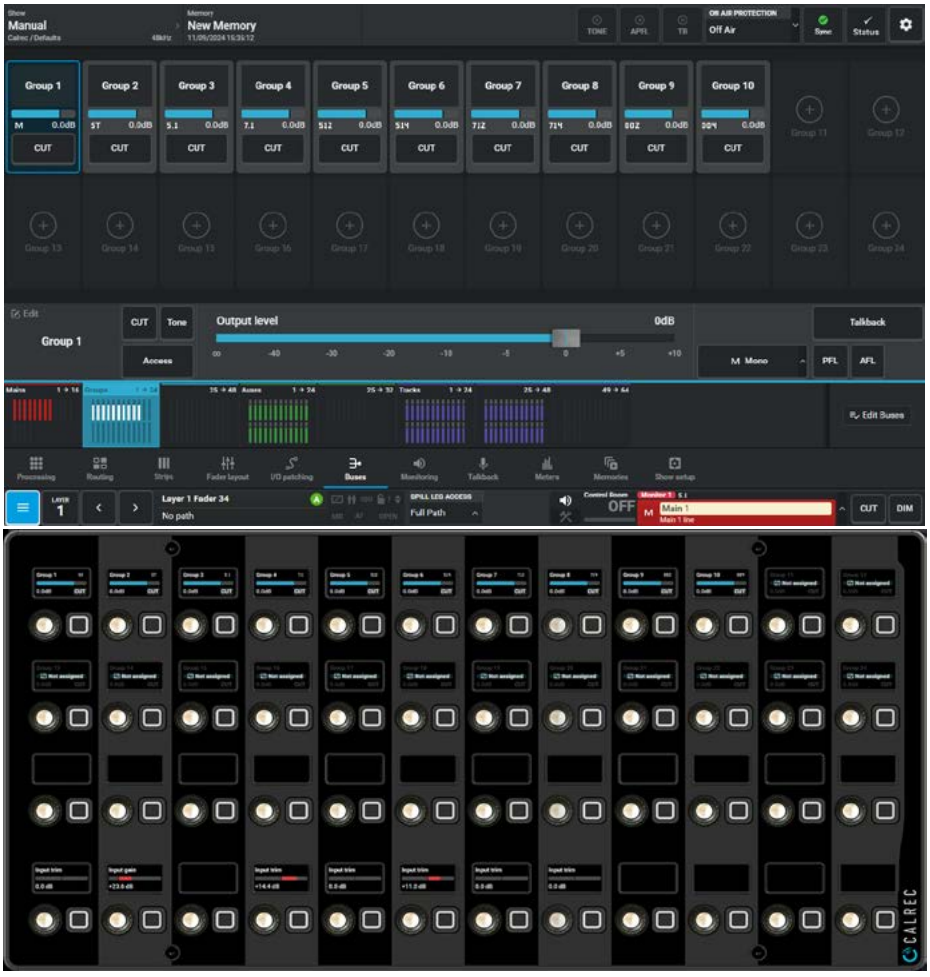
Label window: Clicking on the Edit icon allows the bus to be edited with a user label using the on-screen keyboard, as shown in Fig. 4 for Group 1.

Access button: This lets the user call the selected group to the access screens, see Fig. 5.

FIG. 1 - GROUP BUSES MODE SELECT ON STANDARD FADER PANEL



FIG. 2 - GROUP BUSES SCREEN ON TOUCHSCREEN & WILD ASSIGN PANEL



Tone: Select to inject tone into the group bus, replacing the group bus feed with the correct tone for the path width.
A tone button applies a tone signal to that bus, see Fig. 5.

Group Cut: Tap this button to Cut/Mute the output of this group bus, see Fig. 5.

Group Bus Level: Slide the level control to alter the bus level between 'off' & 0dB.

Change Width Pop-up button: This shows the current width of the existing selected bus. In Fig. 5, the user has selected the stereo Group 2 bus. The highlighted button opens a pop-up, allowing the user to change the width to any of the widths shown.

Note: this pop-up also has the 'No path' option at the top, allowing the user to remove a bus from the system altogether.

PFL & AFL: The user can listen to an individual bus's PFL (pre-fader listen) or AFL (after-fader listen) using the PFL or AFL buttons, see Fig. 5.

Talkback: Replaces the group bus feed with whatever is routed to the talkback input. A talkback button allows the user to talk to that bus.

Note: a talkback input should be set up in the **IO patching** screen for this to work.

From the Wild Assign Panel
The top two rows on the wild assign panel, shown in Fig. 2 on the previous page, are used to control the bus levels via the rotary controls & the Cut On/Off button control for up to 2 screens of 24 Group buses.

FIG. 3 - GROUP BUSES - SET WIDTH FOR NEW GROUP BUS 11



FIG. 4 - GROUP BUSES - SET USER LABEL USING ON-SCREEN KEYBOARD

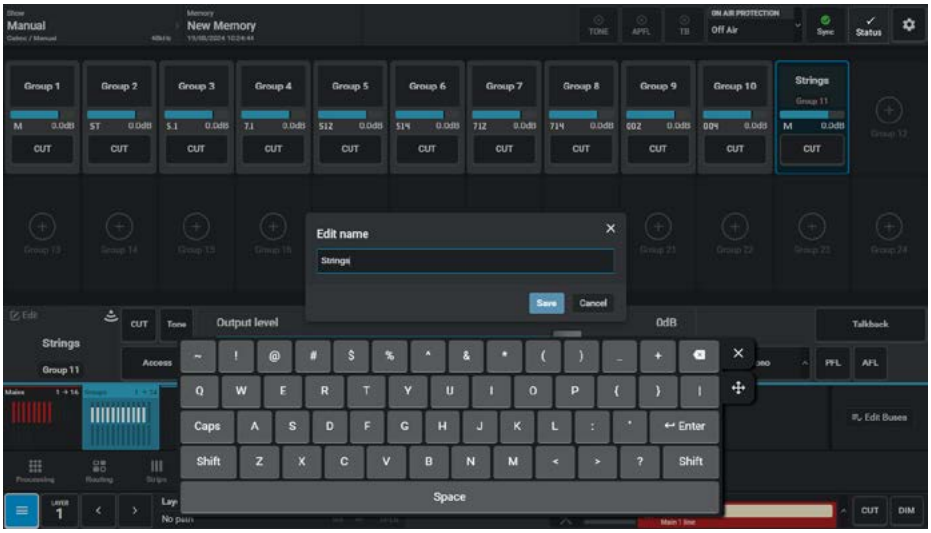
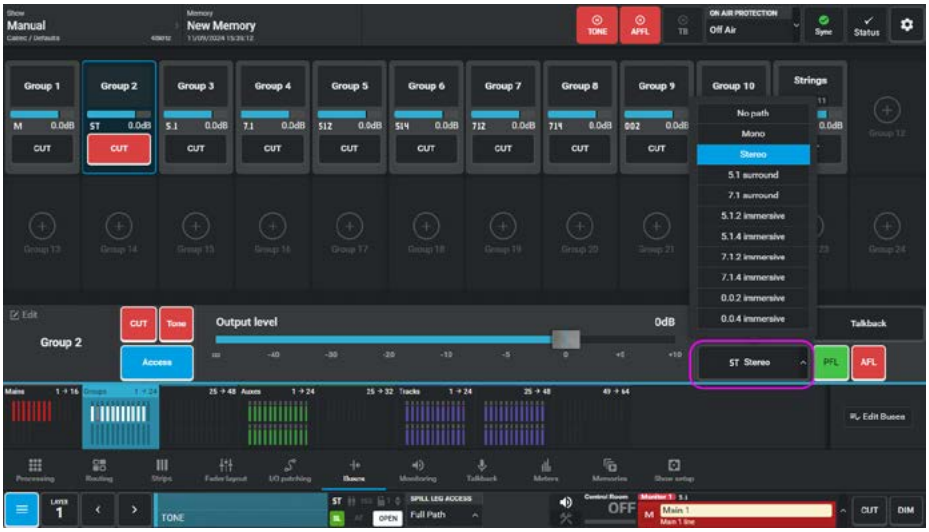


FIG. 5 - GROUP BUSES - CHANGE WIDTH FOR EXISTING GROUP BUS 2



AUX BUSES

The purpose of this screen is to configure and control the Auxiliary output buses. It provides the user with 2 pages of controls related to up to 48 configurable aux buses. The user can set a bus to be the accessed path, change its name, width, output level, cut, various listen outputs, talkback, tone settings and Pre-fader aux send cut options.
The screen is accessed from the Modes row of a fader panel by first tapping on Modes Menu, then by tapping Buses, before finally tapping on the Aux bus type selector shown in Fig. 1. Alternatively, the user can press the Buses icon on the touchscreen before pressing the Aux bus type in the lower display area shown in Fig. 2. The surface displays/controls the related information on both the Touchscreen and a Wild Assign panel shown immediately below. The user then selects the required block of Auxes before selecting the required Aux bus in that block to access the output controls listed above for that bus.

Aux Bus Output Controls
After tapping on the menu selection Buses>Auxes, Fig. 2 is displayed, arranged in 2 blocks and showing the name, width and current level of each bus.

Tapping on any of the bus entries in the upper area of the screen allows the user control access for that bus in the lower area of the screen. Argo has up to 48 Aux buses displayed in 2 blocks of up to 24 Auxes. Each bus can be labelled on the Buses page.

The following controls are available:
From the Touchscreen

New Bus Width dialogue box: Clicking or tapping on an empty entry in the upper window opens this box, allowing the user to choose the width of the 'New' Aux bus to be added to as Mono or Stereo, see Aux 3 in Fig. 3 on the next page.

Bus Outputs Pool: There is a pool of up to 48 bus output legs that can be configured as Mono or Stereo. The dialogue box shows the number of Aux resources remaining in terms of Mono legs at the bottom.

Label window: This allows the user to edit the aux bus with a user label. The procedure for this is the same as shown for Main & Group buses on the previous pages.

Access button: This lets the user call the aux to the access screens, See Fig. 4 on the next page.

Tone: Select to inject tone into the aux output, replacing the aux output feed with the correct tone for the path width. The tone button applies a tone signal to that output, see Fig. 4 on the next page.

FIG. 1 - AUX BUSES MODE SELECT ON STANDARD FADER PANEL

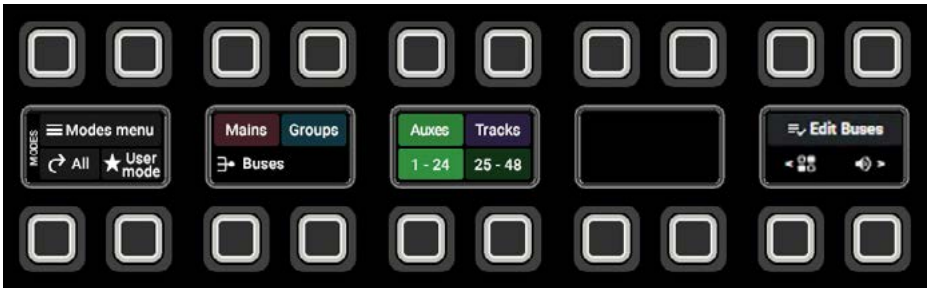
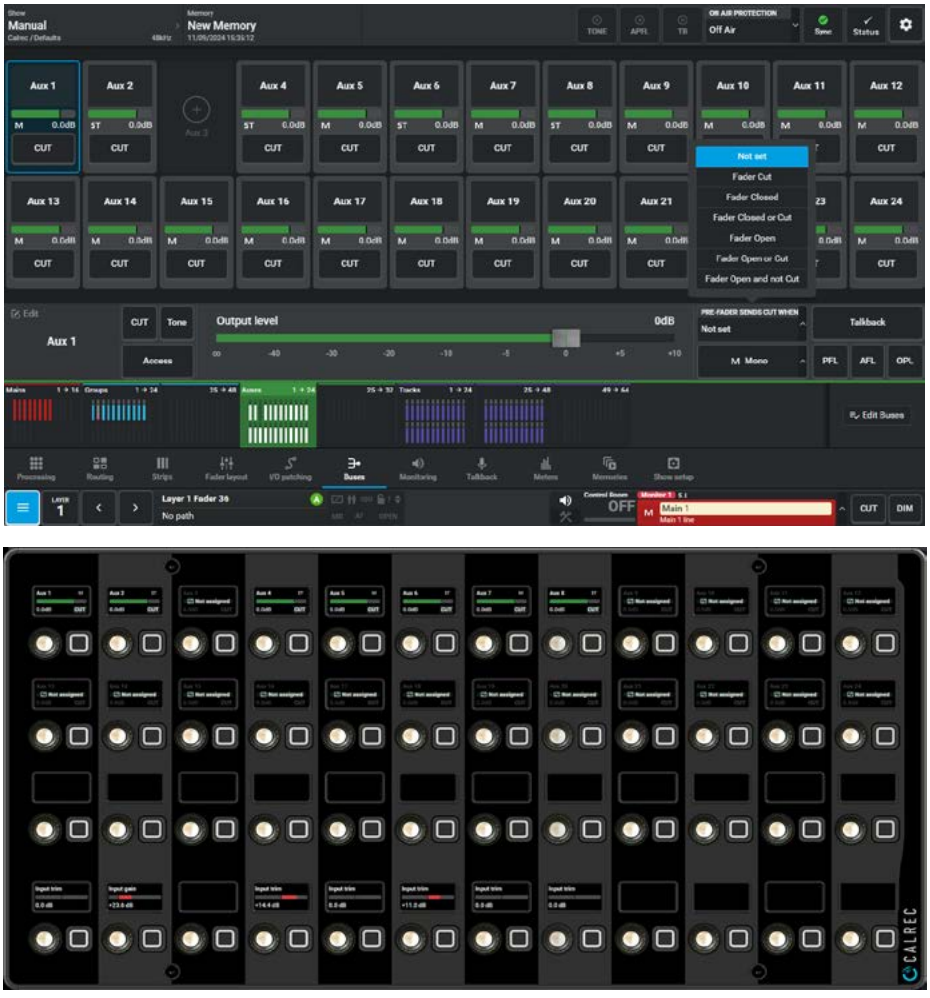


FIG. 2 - AUX BUSES SCREEN ON TOUCHSCREEN & WILD ASSIGN PANEL



Aux Cut: Tap this button to Cut/Mute the output of this aux bus, see Fig. 4.

Aux Output Level: Slide the level control to alter the output level between 'off' & +10dB.

Change Width Pop-up button: This lets the user change the current width of the selected aux bus to be either 'No path' (to remove it), Mono or Stereo, see Fig. 4.

PFL & AFL: The user can listen to an individual bus's PFL (pre-fader listen) or AFL (after-fader listen) using the PFL or AFL buttons, see Fig. 4.

Output Listen (OPL): Similar to AFL but with the feed taken post output delay, see Fig. 4.

Talkback: Replaces the aux output feed with whatever is routed to the talkback input. A talkback button allows the user to talk to that output.

Note: a talkback input should be setup in the IO patching screen for this to work.

From the Wild Assign Panel
The top two rows on the wild assign panel, shown in Fig. 2 on the previous page, are used to control the bus output levels via the rotary controls and the Cut On/Off button control is available to all buses.

Pre-fader send cut options
Path sends to Aux output buses can be configured to cut under certain conditions, such as when the send path's fader is open/closed and/or the path being cut. These options are set from the 'Pre-Fader Sends Cut When' pop-up, shown on the right-hand side in Fig. 2 on the previous page. The options are set on an output basis, but it is the send from each path feeding the outputs that are independently cut, depending on the status of each path routed to the aux output. For example, if pre-fader send cut When **'Fader Closed'** is selected for Aux output 1, the pre-fader sends from each path routed to Aux 1 will be muted while their fader is closed.

FIG. 3 - AUX BUSES - SET WIDTH FOR NEW AUX BUS 24

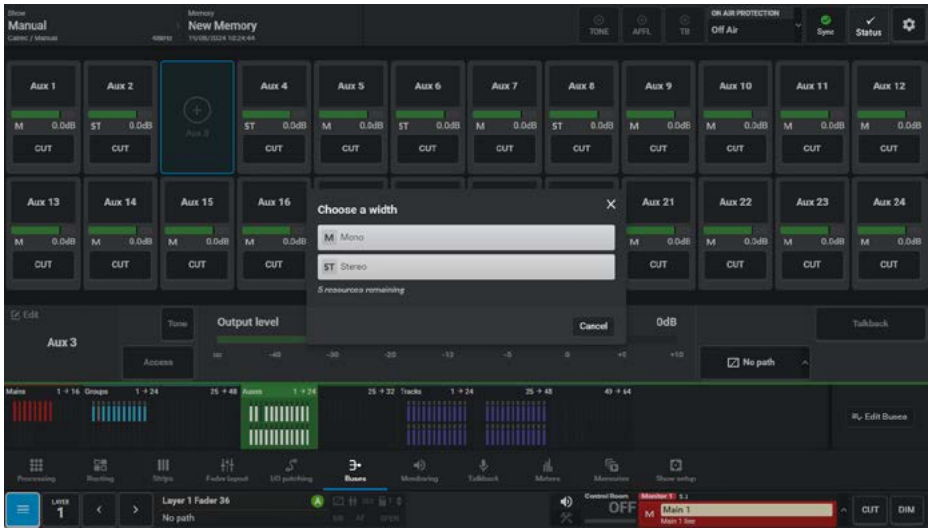
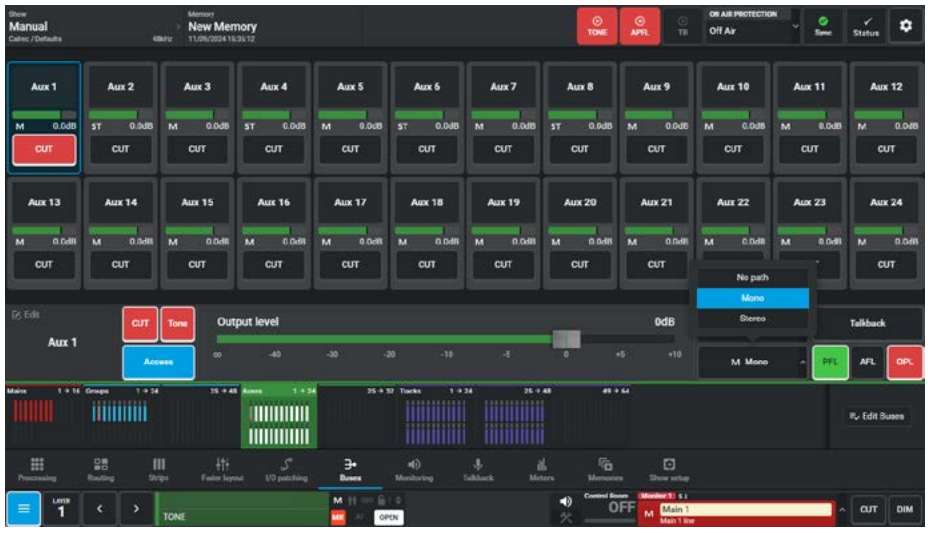


FIG. 4 - AUX BUSES - CHANGE WIDTH POP-UP



As soon as the fader is opened, the path will send audio to the aux at pre-fader level. Pre-fader sends whose faders are open, as well as any paths feeding post fader, will still pass audio to Aux 1. The available options for Pre-fader send cut to each aux output are:

- Not Set
- 'Fader Cut' (or not 'on' if fader have path On buttons rather than cuts).
- 'Fader Closed'
- 'Fader Closed or Cut'
- 'Fader Open'
- 'Fader Open or Cut'
- 'Fader Open And Not Cut' - the send is active only if fader closed, or path cut (or not 'on' if on buttons fitted rather than cuts).

The pre-fader send cut when fader cut option can be selected in combination with either the cut when fader open or fader closed options. However, other combinations would conflict with each other and as such, selecting one will cancel others.

TRACK BUSES

The purpose of this screen is to configure and control the Track output buses. It provides the user with 4 pages of controls related to up to 96 configurable track buses. The user can set a bus to be the accessed path, change its name, width, output level, cut, various listen outputs, talkback and tone settings, including Global track options.
The screen is accessed from the Modes row of a fader panel by first tapping Modes Menu, then by tapping Buses, before finally tapping on the Tracks bus type selector shown in Fig. 1. Alternatively, the user can press the Buses icon on the touchscreen before tapping the Tracks bus type in the lower display area shown in Fig. 2. The surface displays/controls the relevant information on both the Touchscreen and the Wild Assign panel shown immediately below. The user selects the required block of Tracks before then selecting the required Track bus in that block to access the output controls listed above for that bus.

Track Bus Output Controls
After tapping on the menu selection **Buses>Tracks**, Fig. 2 is displayed, with Tracks arranged in 4 blocks showing their name, width & current level. Tapping on any of the bus entries in the upper area of the screen allows the user control access for that bus in the lower area of the screen. Argo has up to 96 Track Buses displayed in 4 blocks of up to 24 Tracks. Each bus can be labelled from the Buses page.

FIG. 1 - TRACK BUSES MODE SELECT ON STANDARD FADER PANEL

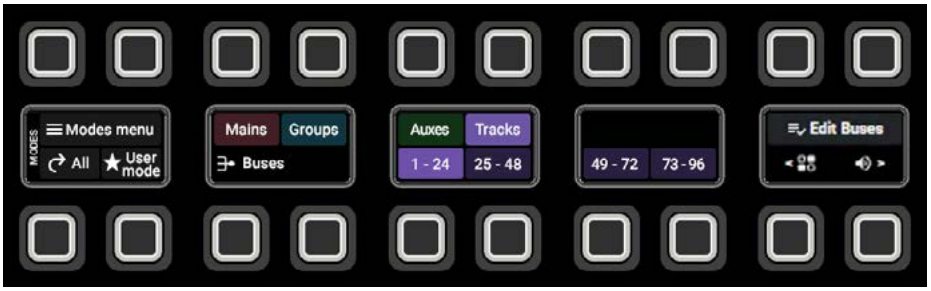
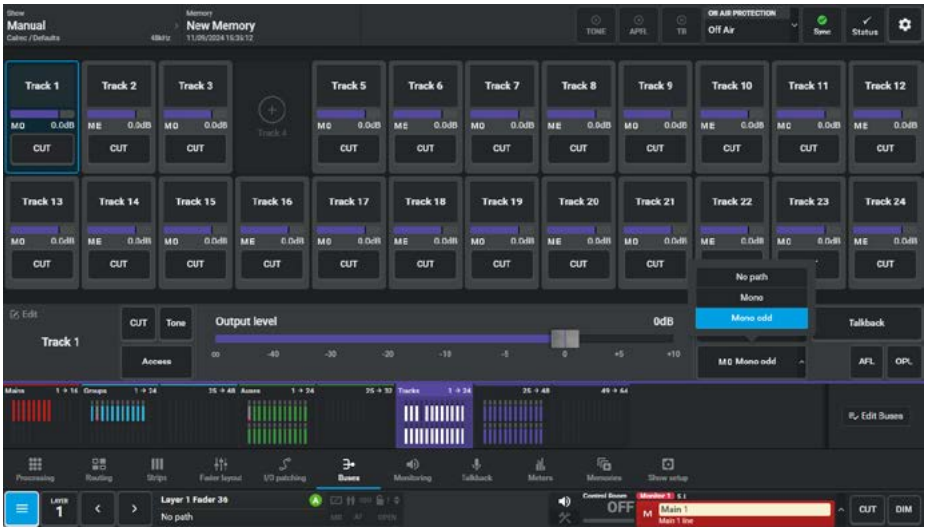
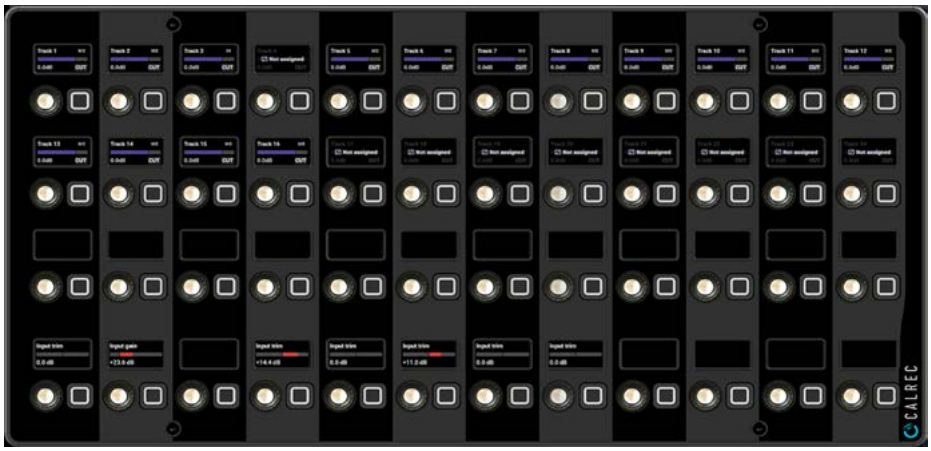


FIG. 2 - TRACK BUSES SCREEN ON TOUCHSCREEN & WILD ASSIGN PANEL





The following controls are available:
From the Touchscreen

New Bus Width dialogue box: Clicking on an empty entry in the upper window opens this box, allowing the user to choose the width of the 'New' Track bus to be added to as Mono or Mono Odd, if an odd numbered track, and Mono or Mono Even, if an even numbered track, as shown for Track 4 in Fig. 3 on the next page.

Bus Outputs Pool:
There is a pool of up to 96 bus output legs that can be configured as Mono Odd, Mono Even or Mono. The dialogue box shown in Fig. 3 on the next page shows the number of Track resources remaining in terms of Mono legs at the bottom.

Label window: This allows the track to be edited with a user label. The procedure for this is the same as shown for Main & Group buses on the previous pages

Access button: This allows the user to call the track to the access screens, see Fig. 4 on the next page.

Tone: Select to inject tone into the track output, replacing the track output feed with the correct tone for the path width.
Track Cut: Tap this button to Cut/Mute the output of this aux bus, see Fig. 4.

Track Output Level: Slide the level control to alter the output level between 'off' & +10dB.

Change Width Pop-up button: This shows the current width of the selected bus. As shown in Fig. 3, the user has created a Track 4 bus. They are now presented with the 'Choose a width' dialogue. From here, the user can select 'No Path', 'Mono' or 'Mono even' and any odd numbered track, such as Track 5, which is currently 'Mono Odd', between 'No Path', 'Mono' & 'Mono Odd'.

Note: the 'No Path' option allows the user to remove the bus from the system altogether.

AFL: The user can listen to an individual bus's AFL (after-fader listen) using the AFL buttons, see Fig. 4.

Output Listen: Similar to AFL but with the feed taken post output delay.

Talkback: This replaces the track output feed with whatever is routed to the talkback input. A talkback button allows the user to talk to that output.

Note: a talkback input should be setup in the IO patching screen for this to work.

From the Wild Assign Panel
The top two rows on the wild assign panel, shown in Fig. 2 on the previous page, are used to control the bus output levels via the rotary controls and the Cut On/Off button control.

Global track options
In addition to the above are a number of controls that can be applied to all tracks simultaneously. These appear in the Global track options pop-up shown in Fig. 4.

FIG. 3 - TRACK BUSES - SET WIDTH FOR NEW TRACK BUS 24

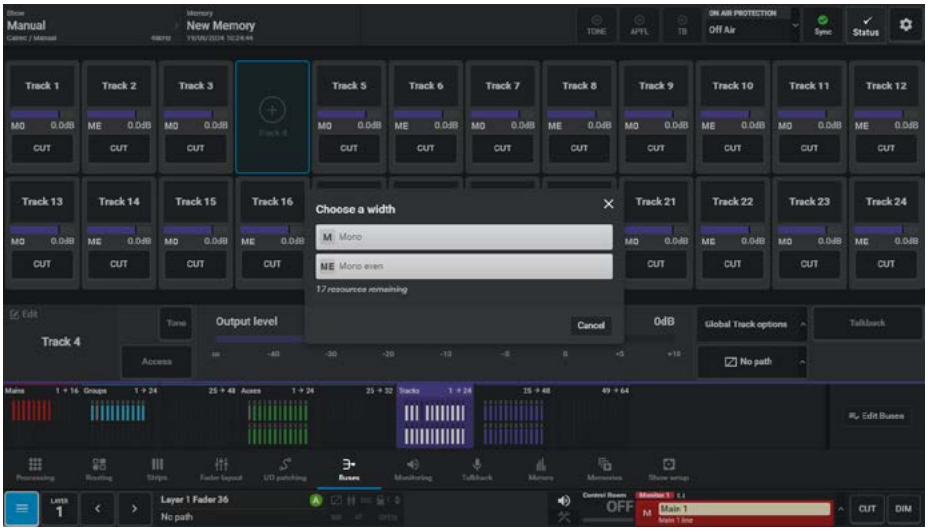
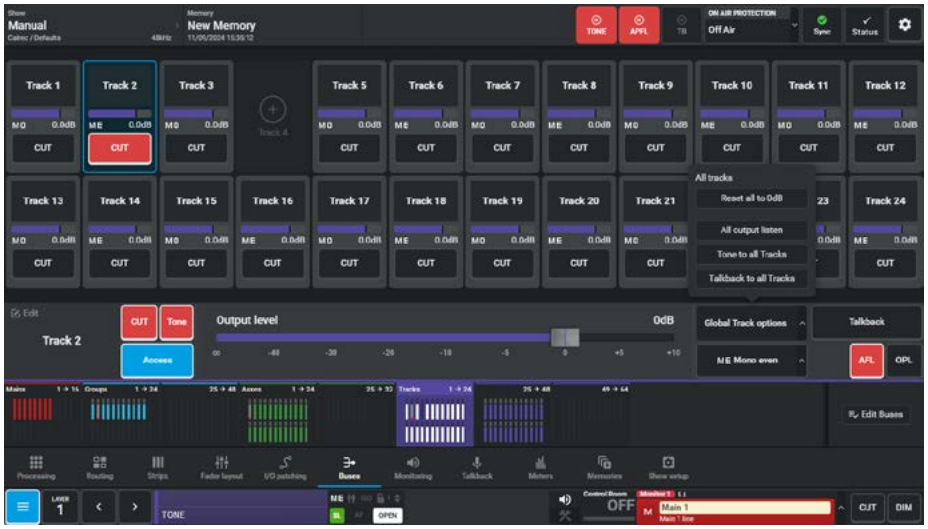


FIG. 4 - TRACK BUSES - SET GLOBAL TRACK OPTIONS



All output Listen: This allows the user to listen to all the tracks, with the feeds taken post output delay.

Tone to all Tracks: This switch allows the user to apply tone to all track outputs simultaneously. This is used as a 'lineup' facility, with all the track outputs being fed with tone at the same output level, rather than turning each individual tone switch on for all tracks. This is sometimes called Tone Omni.
Talkback to all Tracks: This replaces the track output feed for all the tracks with whatever is routed to the talkback input. This is sometimes called Talkback Omni.

EDIT BUSES

The Edit Buses pages allow the user to quickly add or remove buses of that type, define the width of the selected bus or buses, lock the bus widths and label the buses.
The Edit Buses mode is accessed from the Modes row of a fader panel by first tapping Modes Menu, then by tapping Buses, before finally tapping Edit buses as shown in Fig. 1. Alternatively, the user can press the Buses icon on the touchscreen before pressing the '**Edit Buses**' button, highlighted on the Touchscreen in the lower right display area as shown in Fig. 2.

Note: the Wild Assign & Fader panels function are not altered when Edit Buses is accessed. As such, it not shown here.

Accessing the Edit Buses mode

After tapping on the Buses menu selection, a button labelled '**Edit Buses**' is shown, highlighted in magenta at the bottom of the buses screen as shown in Fig. 2. Tapping this opens one of the 4 edit buses pages shown in Figs 3, 4, 5 & 6 on this and the next two pages. These 4 pages provide edit configuration controls for Mains, Groups, Auxes and Tracks.

Editing Main Buses

Fig. 3 shows the current state of each of the 16 Main buses. The user can select the Main buses for editing in a variety of ways. For example, clicking or tapping on or dragging down the table of buses will highlight them.

The highlighted buses will have a 'tick' placed in the first column. This allows the user to edit all selected buses together in one step. At the top of the column is a header 'tick' box. When any entries in the table are selected, a minus sign appears in the header 'tick' box. Tapping on this will deselect all selected entries, removing and adjacent 'ticks'. In addition, tapping an empty header 'tick' box will select all buses on that page.

Fig. 3 shows that Main 1 has been selected. The panel on the right of the page shows that Main 1 has had its width locked using the '**Lock Width**' button, as indicated by the locked padlock. This prevents the user from accidently changing the width for the selected bus on this, or any other page in Assist, by greying out the Bus Width controls. Tapping in the label area for each bus opens the Label editor, allowing the user to provide a unique label/name for the bus using the On-screen keyboard.

FIG. 1 - TRACK BUSES MODE SELECT ON STANDARD FADER PANEL



FIG. 2 - MAIN BUSES SCREEN HIGHLIGHTING ACCESS TO EDIT BUSES MODE

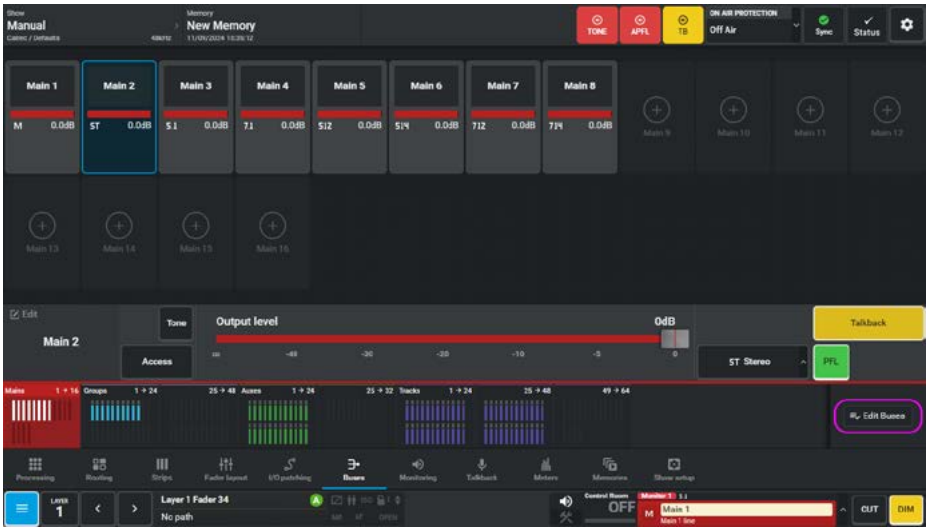
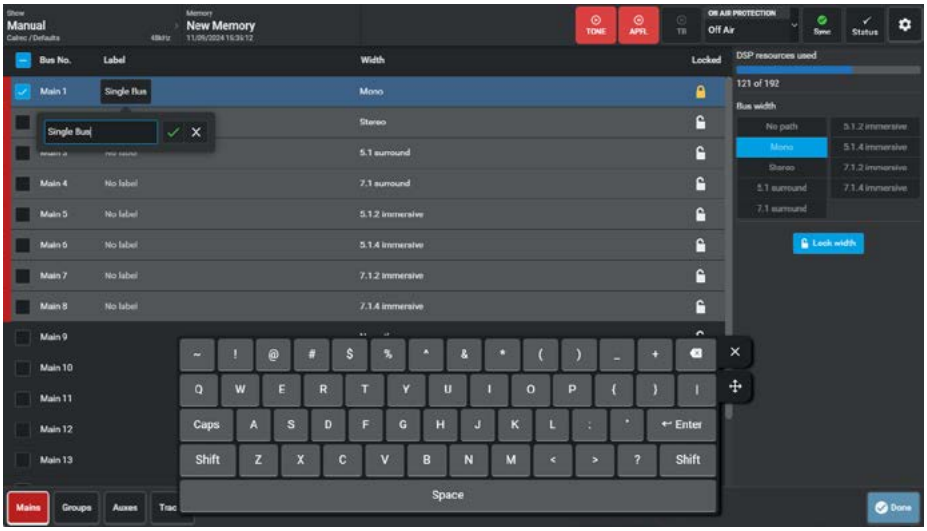


FIG. 3 - EDIT MAIN BUSES SHOWING BUS LABELLING ON ON-SCREEN KEYBOARD



Editing Group Buses

FIG. 4 - EDIT GROUP BUSES SHOWING INCREASED WIDTHS

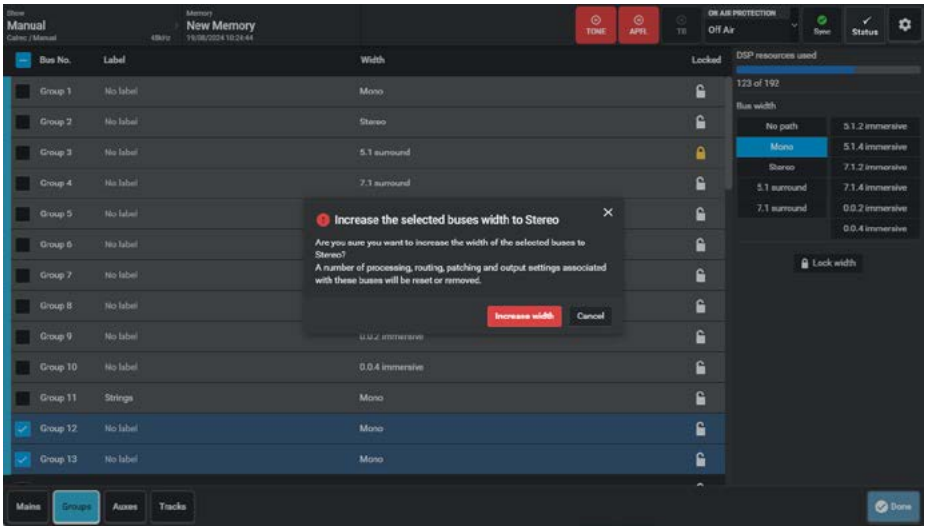


Fig. 4 shows the current state of each of the 48 Group buses. As there are more entries than the page can contain, a scrollbar allows the user to navigate to the desired bus, while also indicating the current position in the buses list. To access other sources in the buses list, swipe up/down the buses list using two finger contact on the multi-touchscreen.

The user can select the Group buses for editing in a variety of ways. For example, clicking or tapping on or dragging down the table of buses will highlight them.

As described for Main buses, highlighted buses will have a 'tick' placed in the first column, allowing the user to edit all selected buses simultaneously. In Fig. 4, Group buses 12 & 13 have been selected. They are currently set as Mono paths. However, the user tapped the 'Stereo' width option to be applied to these Groups.

A confirmation dialogue box appears, saying:

'Are you sure you want to increase the width of the selected buses to Stereo? A number of processing, routing, patching and output settings associated with these buses will be reset or removed.'

At the top right of each page is shown the amount of DSP resources used (a shared pool of 192 mono legs for Mains and Groups).

Editing Aux Buses

FIG. 5 - EDIT AUX BUSES SHOWING PRE FADER SENDS OPTION

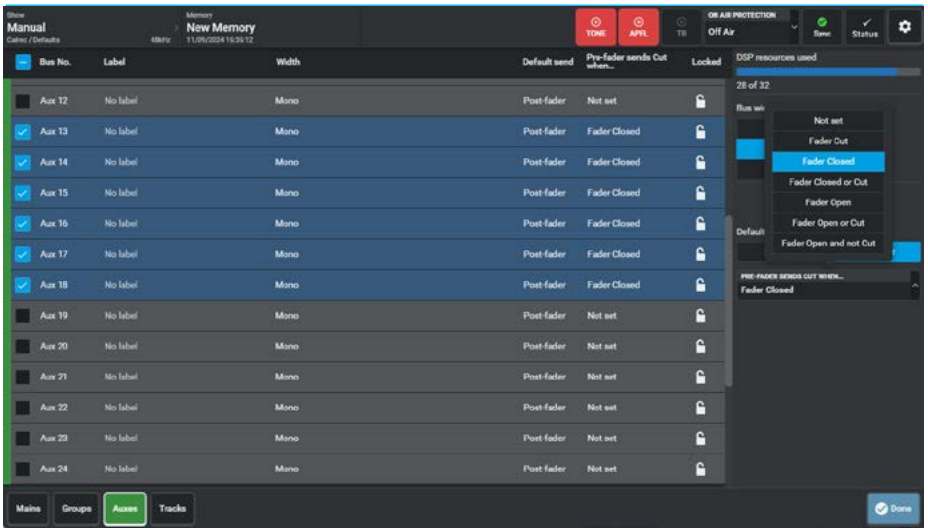


Fig. 5 shows the current state of each of the 48 Aux buses. As there are more entries than the page can contain, a scrollbar allows the user to navigate to the desired bus, while also indicating the current position in the buses list. To access other sources in the buses list, swipe up/down the buses list using two finger contact on the multi-touchscreen.

The user can select the Aux buses for editing in a variety of ways. For example, clicking or tapping on or dragging down the table of buses will highlight them.

As described for Main buses, highlighted buses will have a 'tick' placed in the first column, allowing the user to edit all selected buses simultaneously. Aux buses 13, 14, 15, 16, 17 & 18 have been selected and can be set to either 'Stereo' or a 'No path' state using the same method shown for Mains & Groups. In addition, Aux buses have an extra set of conditions that can be applied to cut the Pre-fader sends of the Aux. This is shown in the panel on the right-hand side of the page. At the top right of each page is shown the amount of DSP resources used (a pool of 48 mono legs for Auxes).

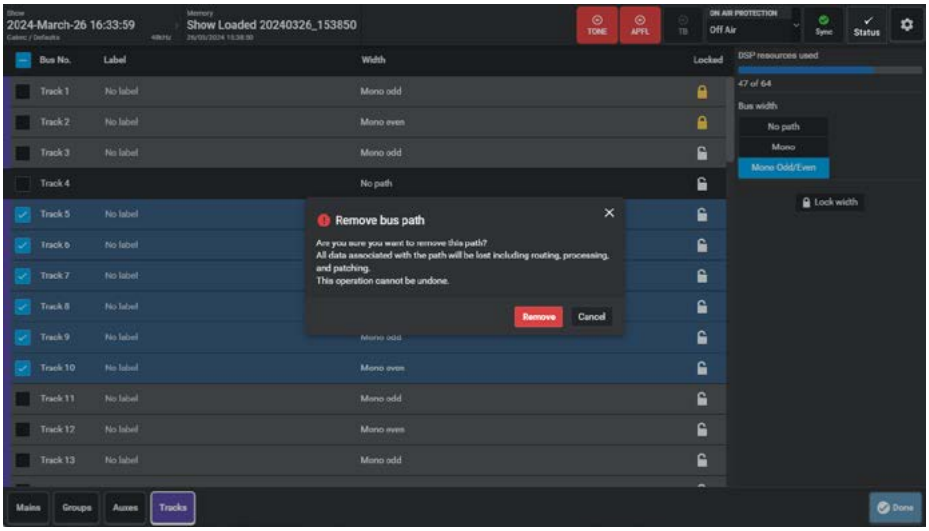
Editing Track Buses

Fig. 6 shows the current state of each of the 96 Track buses. As there are more entries than the page can contain, a scrollbar allows the user to navigate to the desired bus, while also indicating the current position in the buses list. To access other sources in the buses list, swipe up/down the buses list using two finger contact on the multi-touchscreen.

The user can select the Track buses for editing in a variety of ways. For example, clicking or tapping on or dragging down the table of buses will highlight them.

As described for Main buses, highlighted buses will have a 'tick' placed in the first column, allowing the user to edit all selected buses simultaneously.

FIG. 6 - EDIT TRACK BUSES SHOWING REMOVE BUS PATH



Track buses 5, 6, 7, 8, 9 & 10 have been selected. In this case, the user has selected the 'No path' option from the Bus width selection shown in the panel on the right-hand side of the page.

When the 'No Path' option is selected, a 'Remove bus path' dialogue box appears before removing the bus paths, saying:

'Are you sure you want to remove this path? All data associated with the path will be lost including, routing, processing and patching. This operation cannot be undone.'

It should be noted that if the user has selected a bus with a locked width, or a set of buses containing one or more buses with locked widths, and the user tries to set it or them to 'No Path', this is not allowed. Paths that did not have locked widths in the selection will be removed. This prevents the user from accidently changing the width for the selected bus on this or any other page by greying out the Bus Width controls for that bus.

At the top right of each page is shown the amount of DSP resources used (a pool of 96 mono legs for Tracks).

Exiting Edit Buses mode

Once the user has finished using the Edit Buses pages, tapping 'Done' at the bottom right corner of the page will close the page, returning the user to their last accessed Buses sub-menu page.

ARGO
MONITORING

CALREC

MONITORING ON ARGO

Argo offers extensive monitor controls. The user can select the various sources to be listened to and control the level and formats of the various monitor outputs from a number of control panels. There is a dedicated monitor panel MY6574, which provides the Argo S/Argo Q with full control of the various monitoring outputs of the console. Generally, one of these panels is fitted per console, although more than one can be fitted for multi-user/monitor operation. It should be noted that the monitor panel works independently from the Monitor mode on the console, providing the user continuous access to monitoring. There is also a Monitoring mode for the Touchscreen & the Wild Assign panel, which in combination offers both touch and physical control of all monitor parameters available from every section of the console.
The Monitoring mode operates as follows. The required monitor type is accessed from the Modes row of a fader panel by first tapping Modes Menu, then by tapping Monitoring before finally tapping on the CR1 (for example) selector, as shown in Fig. 1. Alternatively, the user can press the Monitor icon on the touchscreen before pressing the Monitor 1 selector in the lower display area, as shown in Fig. 2. The surface displays/controls the relevant information on both the Touchscreen and the Wild Assign panel shown below.

Monitor Controls

After tapping on Monitoring>CR 1 from the menu selection, Fig. 2 is displayed. The screen is arranged into 4 areas as highlighted.-

Area 1 in the lower part of the screen provides access to various monitor systems

Control room monitors

This sub-menu area is arranged into two pages, with each page representing a different monitor related to the Control Room:

Monitor 1 LS is the main monitor loudspeaker set in the control room.

Monitor 2 LS is the alternative monitor loudspeaker set in the control room. This could be a domestic surround system or may be used for a second operator when the console has User Splits applied.

Note: Monitor 2 is not yet available with ImpulseV.

Miscellaneous monitors

This sub-menu area is arranged into four pages, with each page representing a different monitor related to the Misc Monitors:

Misc monitors 1-4 are general monitoring outputs. These can be used for a variety of purposes such as headphone outputs.

FIG. 1 - CR1 MONITOR MODE SELECT ON STANDARD FADER PANEL

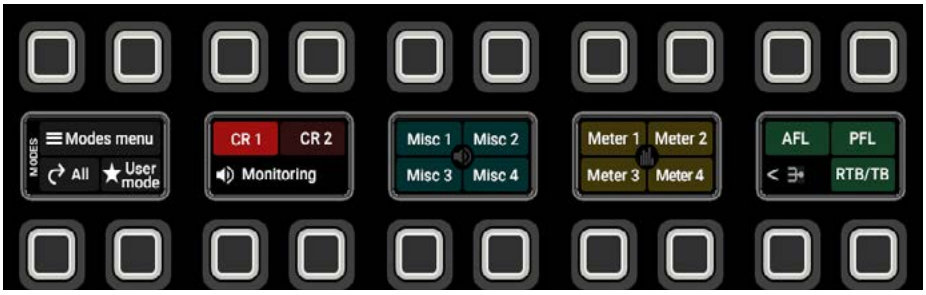
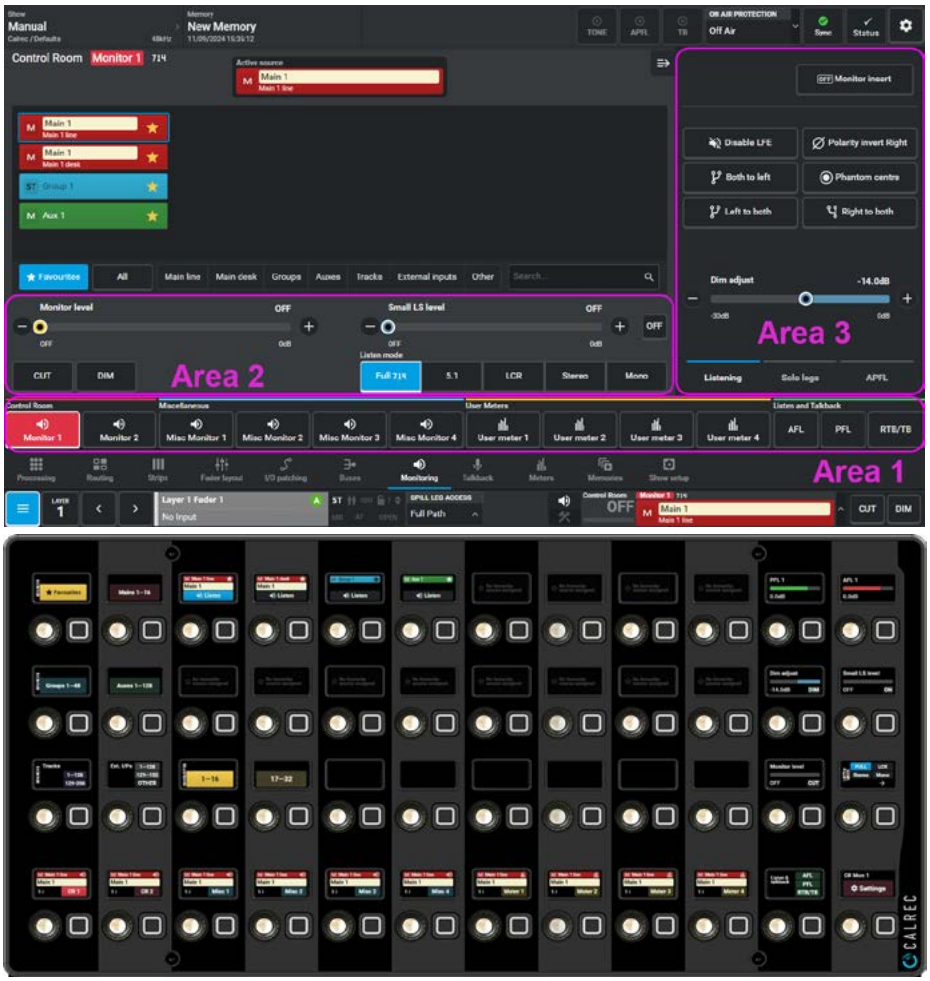


FIG. 2 -CR1 MONITOR SCREEN ON TOUCHSCREEN & WILD ASSIGN PANEL



User meters
This sub-menu area is arranged into four pages, with each page representing a different monitoring/metering related function:

User Meters 1-4 allows the user to select sources to be made available to the four user meters. These can be output externally.

Listen and talkback
This sub-menu area is arranged into three pages, with each page representing a different monitoring related function: **AFL** sets the system levels of the three AFL monitors. **PFL** sets the system levels of the three PFL monitors.

Note: PFL 2 & 3 and AFL 2 & 3 are not yet available for ImpulseV.

RTB/TB sets the system levels of the three Return Talkbacks and the Console Talkback.

Control Room Monitoring Controls
After selecting Monitor 1 from the Monitoring>Control Room area of the Menu, Fig. 2 on the previous page is displayed.

Area 2 in the middle of the display area contains the monitor output controls. These can be adjusted in a number of ways-

From the touchscreen
- Dragging the sliders left and right.
- Using the + and - buttons at the end of the sliders.
- Using the On-Screen buttons to select switch functions, e.g., On/Off.

The resultant numeric values are shown in the top right-hand corner of each control:

From the Wild Assign Panel
- Moving the Rotary controls round to the left or right to change levels.
- Using the button next to the rotary control to switch functions On/Off.

The resultant numerical values & bar graph are shown in each individual TFT on the Wild Assign Panel.

The following controls are available for both Monitor 1 LS & Monitor 2 LS:

Monitor Level: Controls the level of the monitor outputs between 'off' & 0dB.

Cut and Dim buttons: Cuts or dims the monitor output.

Small LS Level: With the Small LS active, this provides control over the level of the secondary speakers between 'off' & 0dB.

Small LS On: When tapped, this switches the monitoring over from the Monitor 1 or Monitor 2 loudspeakers to a secondary set of loudspeaker. This is usually to hear how the programme sounds on a small set of domestic speakers in the home.

Listen modes
These allow the operator to listen to the selected source at various widths. These are selected from the bottom left of Area 2 and are as described below.

Full - sends the full immersive/surround signal out to the speakers. It removes any speaker solos that may be in place.

5.1 - downmixes the monitored signal to L, R, C, Lfe, Ls & Rs surround.

Note: this only applies when the monitored source is wider than a 5.1 signal such as a 7.1.4 signal.

LCR - downmixes the monitored signal to LCR stereo.

Stereo - performs a stereo downmix when monitoring an immersive/surround signal, or outputs the full signal and removes any speaker solos when monitoring a stereo signal.

Mono - performs a mono downmix on the monitored signal.

These in turn are based on the monitor width, shown at the top left of Area 4. This is defined in System Settings>Monitor Widths.

FIG. 3 - MONITOR LISTEN OPTIONS



Area 3 on the right side of the screen is the monitor options panel. This is subdivided into 3 sections.

Monitor Listening Options
as shown in Fig. 3:

Dim Adjust Level: Alters how much the dim button changes the monitor level between -30dB & 0dB, with the default set at -14dB.

Leg monitoring option details
Areas 2 & 3 of the touchscreen contain controls over individual legs. Downmixes of the signals are sent to the monitoring outputs as described below:

Disable LFE - mutes the Lfe signal to the speakers.

Polarity Invert Right - reverses the polarity/phase of the right speaker.

Both to Left - toggles the sending of both left and right signals to the left speaker.

Phantom Centre - mutes the centre speaker and sends the centre information to the left and right speakers to create a phantom centre image.

Left to both - sends the left signals to both the left speaker and right speaker.

Right to both - sends the right signals to both the left speaker and right speaker.

Monitor Insert: This button switches in the monitor insert. This is typically connected to an encoder/decoder for reference listening.

Both console Monitor 1 and Console Monitor 2 systems have insert points to allow the console selectors to route audio to an external unit and to bring it back into the signal path.

To patch a monitor insert for use, navigate to IO patching and tap the 'Desk outputs' source button before selecting 'Monitor insert sends'.

The user can then select the 'TX Transmitters' button before selecting the transmitters to be used as the insert send outputs, e.g., AES ports. Touching 'Connect' confirms the patch, see Fig. 4.

For Monitor Insert Returns, return to the Sources list and choose the RX Receiver ports to be used as the insert return inputs.

Then tap the 'Desk Inputs' destination button and select the Monitor Insert returns entry from the list. Touching 'Connect & Fix' confirms the patch, see Fig. 5.

The width of the Monitor 1 Insert can be set independently to that of the width of Monitor 1 if required. It can be set to widths of up to 7.1.4 for an immersive insert.

This is shown in Fig. 6, where the Monitor 1 insert has been set to a 7.1.4 width in System Settings>Monitor widths.

Note: the Monitor 2 Insert is currently fixed at a width of 5.1.

FIG. 4 - MONITOR 1 INSERT SEND PATCHING

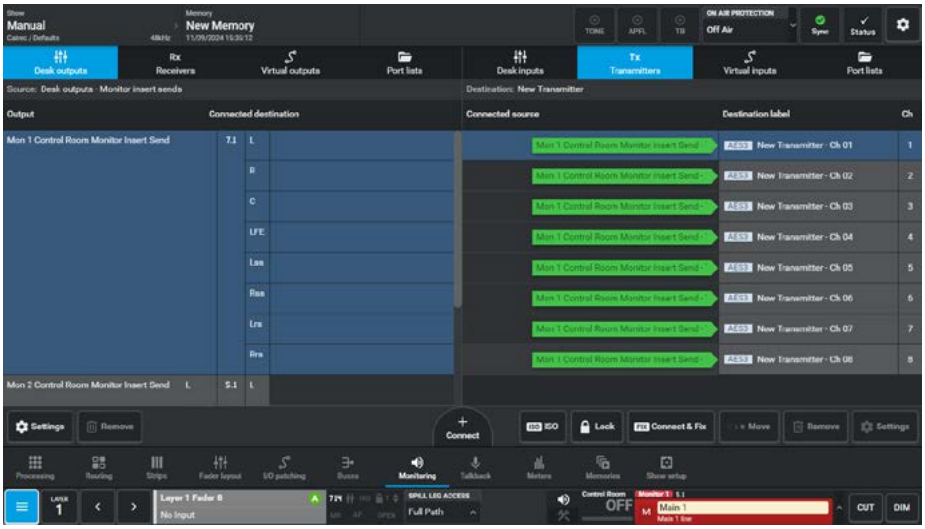


FIG. 5 - MONITOR 1 INSERT RETURN PATCHING

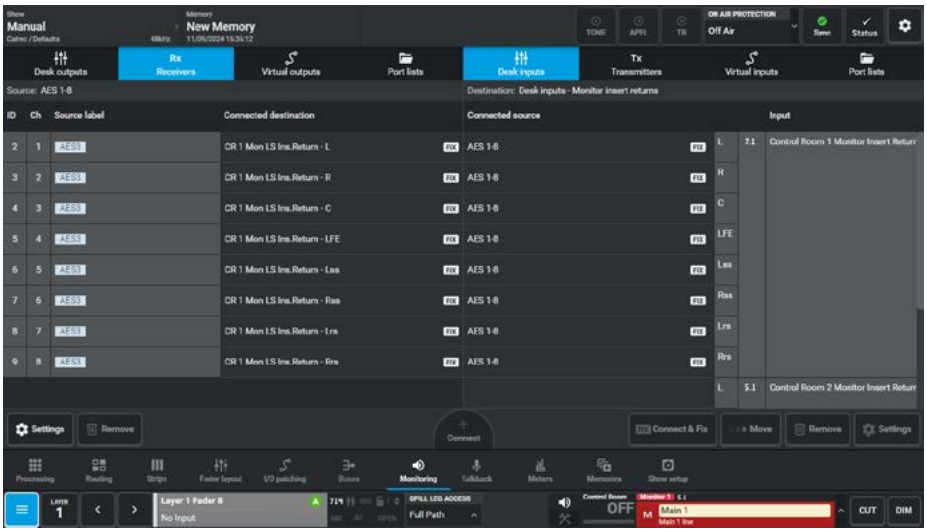
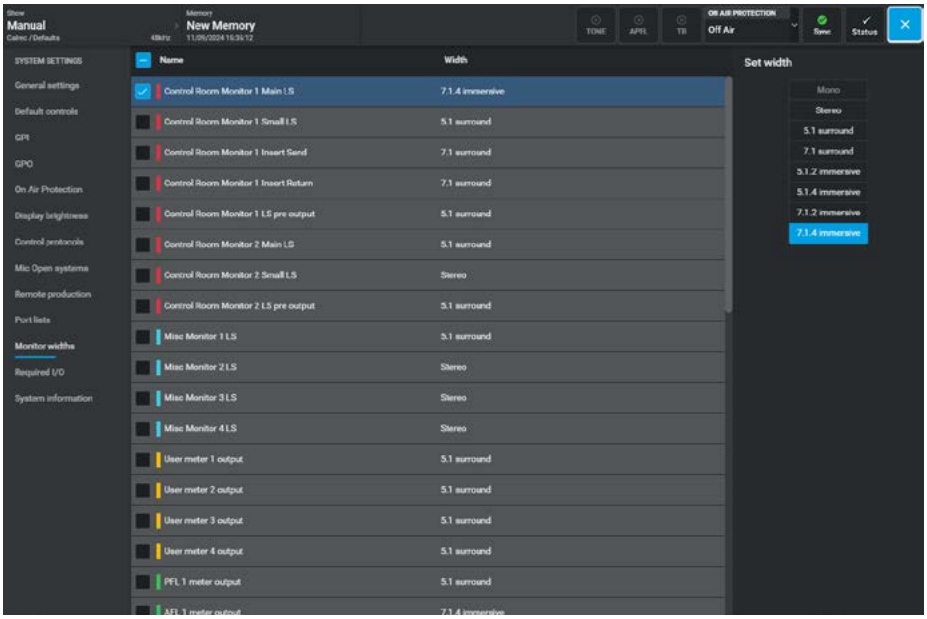


FIG. 6 - MONITOR 1 INSERT WIDTH SET TO 7.1.4



Monitor Solo legs Options as shown in Figs 7 & 8:
Each leg of the monitor has its own Solo button. Tapping any of these buttons solos that monitor output leg. This means that each leg can be auditioned individually or in combination.

Fig. 7 shows the Solo options for a 5.1 Surround Monitor with the Centre soloed. Fig. 8 shows the extended Solo options for a full 7.1.4 Immersive Monitor arrangement with the Left and Right soloed.

A 'Clear all solos' button is provided for quick solo deselection.

Note: the number of solo legs available depends on the listening mode used and the width of the monitor, set in System Settings>Monitor widths.

FIG. 7 - MONITOR SOLO LEGS FOR 5.1



FIG. 8 - MONITOR SOLO LEGS FOR 7.1.4



Monitor APFL Options as shown in Fig. 9:

APFL bus select: When tapped, this allows the user select the required APFL Bus to be used for monitoring.

AFL and PFL with multiple users:
When working with multiple user splits across the surface, each split can use an individual APFL system. The choice of which is set using the Monitor APFL Options dialogue box.

Select APFL 1, 2 or 3 from the APFL system Dropdown to set the active APFL system for that monitor system. The user then repeats this process in each user split.

PFL to Mon: When tapped this sends the PFL signal to the console monitor rather than to a dedicated PFL speaker.

PFL System Level: Adjusts the selected PFL monitor level between 'off' & 10dB.

AFL System Level: Adjusts the selected AFL monitor level between 'off' & 10dB.

PFL from GPI
PFL's can be remotely activated from GPI by sliding the switch labelled PFL from GPI shown in Fig. 9. GPI PFL selections are input port based, firing the PFL of whichever path the GPI input is patched to.

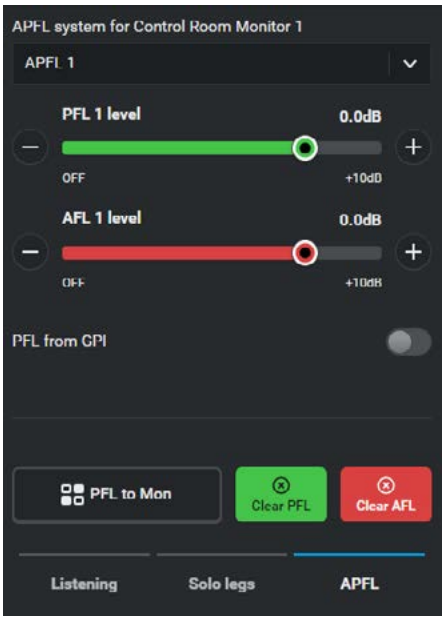
See **"GPI" on page 291** for details on patching GPIs to surface functions.

It is not possible to deactivate a GPI PFL from the desk. The PFL from GPI switch can be used to quickly regain control of any channels which are set to have their PFL activated from GPI.

For example, for APFL 1, if a GPI has activated a channel PFL and the user wishes to deactivate the PFL from the control room, simply slide the '**PFL 1 from GPI**' switch to the Off position.

Note: until this is reactivated, the PFL 1 from GPI for all channels using APFL system 1 will not work.

FIG. 9 - MONITOR APFL OPTIONS



The 'Clear PFL' and 'Clear AFL' buttons appear in this section only when PFL or AFL is present on the system. Tapping these buttons removes all PFL and AFL respectively.

CONTROL ROOM MONITORING

Control Room Source Selection
Area 4 at the top half of the screen is for source selection. This area consists of:
Active source: The current monitored source is shown at the top of the source list.

Favourites: The user can configure a number of sources by marking them with a star. Favourites to be monitored are shown in Fig. 1, allowing for quick selection. A different set of favourites can be configured for each monitor destination. The Favourites button accesses this set. Fig. 1 shows that Monitor 1 is listening to the 7.1 Group 4 bus. In order to create a Favourite entry, the user taps on the empty Star symbol of the source in the source lists. Likewise, the user can click on the full Star symbol to remove it from the Favourites set for that monitor.

Source List: The source list display contains all available monitoring sources. In order to listen directly to any source in the list, the user can tap on the required source. A blue outline box appears around the current entry. To change the monitor source, the user can simply select a different source from the 'All' sources list, or use the source filters.

Source Filters: At the bottom of the source list area are a number of filters used to filter the source list, making monitor source selection easier. There are many sources available including: 16 Main line & 16 Main desk sources, each of which can have up to 3 downmix versions, i.e., 64 Main line & 64 Main desk outputs, 48 Groups, 48 Auxes, 96 Tracks, 152 External Inputs and various Tone Outputs and Follow Mon options in 'Other'. The user selects which source type they require with the filter buttons at the bottom of the source list. Once selected, a number of pages relating to that source type appear just above the filter buttons. Tapping on a page range, e.g., 1-16, will show the sources numbered 1-16 of that source type, with Groups 1-16 shown for Monitor 2 in Fig. 2 & Aux 1-16 shown in Fig. 3.

Note: it is also possible to use the search box at the bottom right of the source list to find system labels such as 'Aux 1' or user labels such as 'IFB 1'.

FIG. 1 - CR MONITOR 1 SHOWING FAVOURITES AS SOURCE SELECTIONS



FIG. 2 - CR MONITOR 2 SHOWING GROUPS AS SOURCE SELECTIONS



FIG. 3 - CR MONITOR 2 SHOWING AUXES AS SOURCE SELECTIONS



MISCELLANEOUS MONITORING

Misc Monitoring Controls
After selecting the Misc Monitor 1 button from the Monitor>Miscellaneous section of the Menu, Fig. 1 is displayed. The upper half of the screen shows the currently active source for this monitor, just above the Select Source List available to all the monitors. The Favourites Set, Source List and the Source filters operate in the same way as described for the Control Room monitors described on the previous pages. The lower half of the screen shows the controls available to Misc Monitors 1-4, which all operate in the same way.

The following controls are available:
Monitor Level: Controls the level of the monitor outputs between 'off' and 0dB.
Cut and Dim buttons: Cuts or Dims the monitor output.
Note: The Dim level for the Misc Monitors is fixed at -30dB.

Talkback: This allows the user to talkback to the misc outputs from the Operator Talkback mic.

Listen modes: These allow the operator to listen to the selected source at various widths, based on the width of the monitor, shown in the top left of the page, and the possible downmix levels.

Note: For more detail on these options, see **"Listen modes" on page 185.**

Listening Settings
The right side of the screen shows the various listening options available to the Misc Monitors 1-4:
Leg monitoring options: Disable LFE, Polarity Invert Right, which reverses the polarity of the right speaker signal, Both to Left, Left to Both, Right to Both and Phantom Centre, which routes centre monitor feed to the left & right speakers.

Note: For more detail on these options, see **"Leg monitoring option details" on page 185.**

User Meter Controls
After selecting the User Meter 1 button from the Monitor>User Meters section of the Menu, Fig. 2 is displayed.
The upper half of the screen shows the currently Active source for this monitor,

FIG. 1 - MISC MONITOR 1

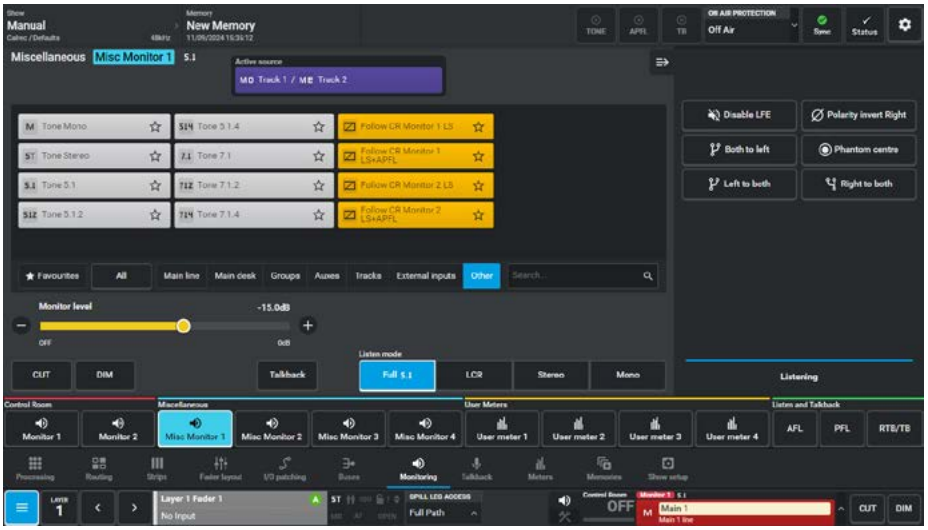
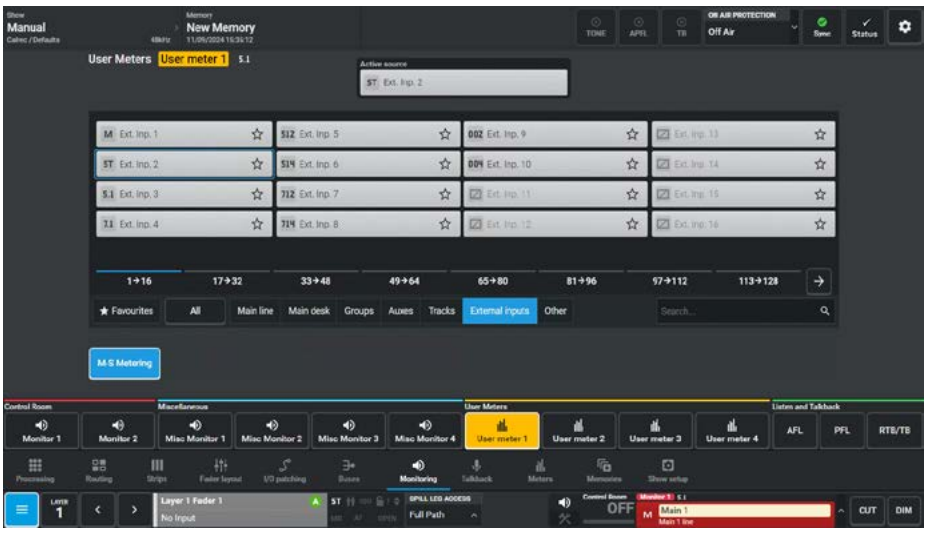


FIG. 2 - USER METER CONTROLS



in this case 'Ext. Inp 2', above the Select Source List. The lower half of the screen is blank as no controls are required.

Note: there is an optional setting under the select source list filter buttons labelled 'M-S metering'. This changes the stereo meter output to M-S format. This only applies to LoRo outputs.

Tone & Follow Options - Monitor/ Meters
If the user wants to apply tone to a Monitor output or User meter, they can select the tone source to send from the 'Other' option in the source list, see Fig. 1.

The method of source selection for the 'Other ' Sources for the User meters is the same as for Misc Monitors via the source list.

Apart from the option to send Tone to the selected destination at any selected width from Tone Mono through to Tone 7.1.4, there is a further set of options which allow the selected monitor/meter to follow the monitoring selection for Monitor 1 or 2 with or without their associated APFL buses.

Note: CR Monitor 1 can only be set to follow CR Monitor 2 and Vice-versa.

LISTEN AND TALKBACK SETTINGS

In order to access the Listen and Talkback settings for the monitors, the user selects the AFL, PFL or RTB/TB function from the Modes row of a fader panel by first tapping Modes Menu, then by tapping Monitoring, before finally tapping the AFL, PFL or RTB/TB button shown in Fig. 1.

Alternatively, the user can access the same screen by tapping on the Monitor icon on the touchscreen before selecting the AFL, PFL or RTB/TB button selector in the lower display area, as shown in Fig. 2. The surface displays/controls the relevant information on both the Touchscreen and a Wild Assign panel, as described later in this section of the manual.

Listen and Talkback Controls

AFL Controls
After selecting the **AFL** button from the Monitor>Listen and Talkback section of the Menu, Fig. 2 is displayed.

The following controls are available:
AFL 1 Level: Controls the level of the AFL 1 LS output between 'off' & 10dB.
AFL 2 Level: Controls the level of the AFL 2 LS output between 'off' & 10dB.
AFL 3 Level: Controls the level of the AFL 3 LS output between 'off' & 10dB

Note: AFL 2 & AFL 3 are dependent on having APFL systems 2 & 3 active.

PFL Controls
After selecting the **PFL** button from the Monitor>Listen and Talkback section of the Menu, Fig. 3 is displayed.

The following controls are available:
PFL 1 Level: Controls the level of the PFL 1 LS output between 'off' & 10dB.
PFL 2 Level: Controls the level of the PFL 2 LS output between 'off' & 10dB.
PFL 3 Level: Controls the level of the PFL 3 LS output between 'off' & 10dB

Note: PFL 2 & PFL 3 are dependent on having APFL systems 2 & 3 active.

FIG. 1 - AFL/PFL/RTB-TB MONITOR MODE SELECT ON STANDARD FADER PANEL

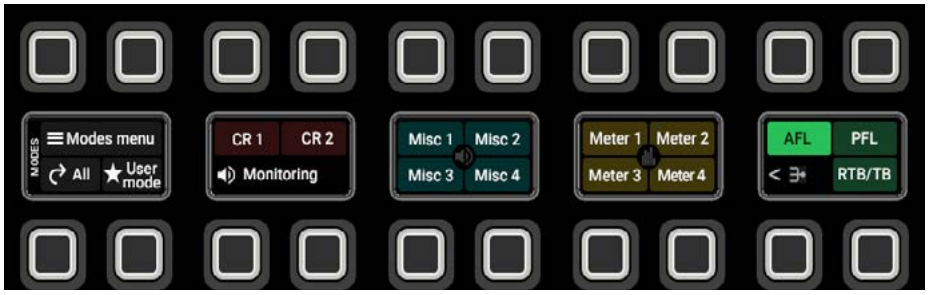


FIG. 2 - AFL CONTROLS ON TOUCHSCREEN

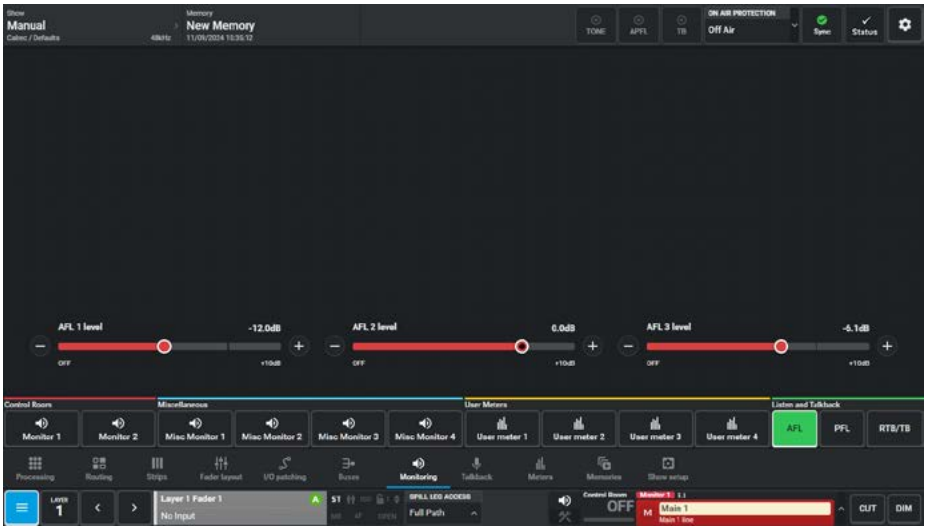
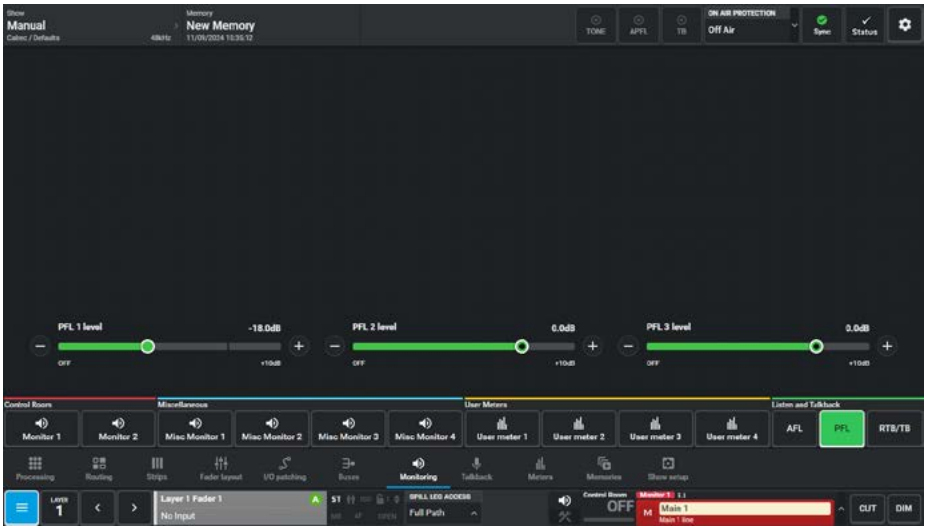


FIG. 3 - PFL CONTROLS ON TOUCHSCREEN



RTB/TB Controls
After selecting the **RTB/TB** button from the Monitor>Listen & Talkback section of the Menu, Fig. 4 is displayed.

The following controls are available:
RTB 1-3 Trim Level: Alters the RTB trim level of each of the 3 RTBs feeding into the PFL LS output between 'off' and 0dB.

RTB 1-3 Enable buttons: These buttons enable the audio from the RTB 1-3 buses to be mixed into all three of the PFL buses. If not enabled, the RTB bus output is CUT, e.g., if RTB 1 is not enabled then it cannot be mixed into the PFL1, 2 & 3 bus outputs.

Talkback Level: Alters the Talkback trim level between 'off' and 0dB.

Note: the Talkback level is applied after the input gain, but is independent of any input trim if also sent to a channel.

Monitoring for multiple users
Two main monitor outputs are available to patch to output transmitters, Monitor 1 & Monitor 2. Sections selected to monitor mode can switch between controlling monitor 1 and monitor 2 from Area 1, as described previously, see **"Control room monitors" on page 184.**

Changing between CR Monitor 1 and 2 on the touchscreen is independent of the dedicated monitor panel. The source selection display on the dedicated monitor panel displays which of the two monitor outputs it is controlling across the centre of the display, i.e., CR1 Monitor or CR2 Monitor. This means that 2 operators on the same surface (one of the monitor outputs could be patched to a headphone feed), can have their own set of monitoring controls, either from the dedicated monitor panels or from Wild Assign panels in Monitor mode. If user splits are also in place to demarcate sections of faders for use by each operator, each user area can be set so that the AFL and PFL output of their paths are routed to separate AFL & PFL buses, which in turn can be selected to feed the two main monitors. The APFL buses used by the faders in each user area can be selected from the APFL page, as shown in Fig. 6 for the CR Monitors.

FIG. 4 - RTB 1-3 & TB CONTROLS ON TOUCHSCREEN

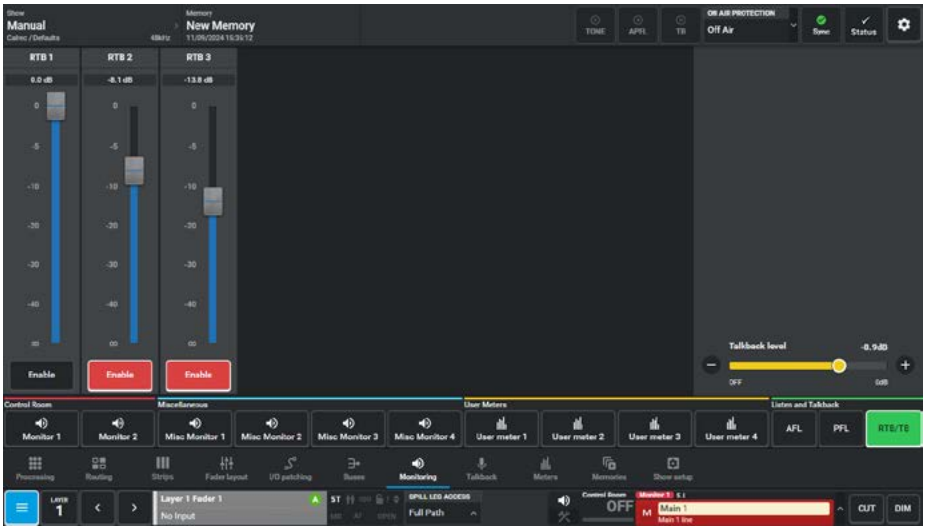


FIG. 5 - APFL BUS WIDTH SELECTION IN SYSTEM SETTINGS>GENERAL SETTINGS

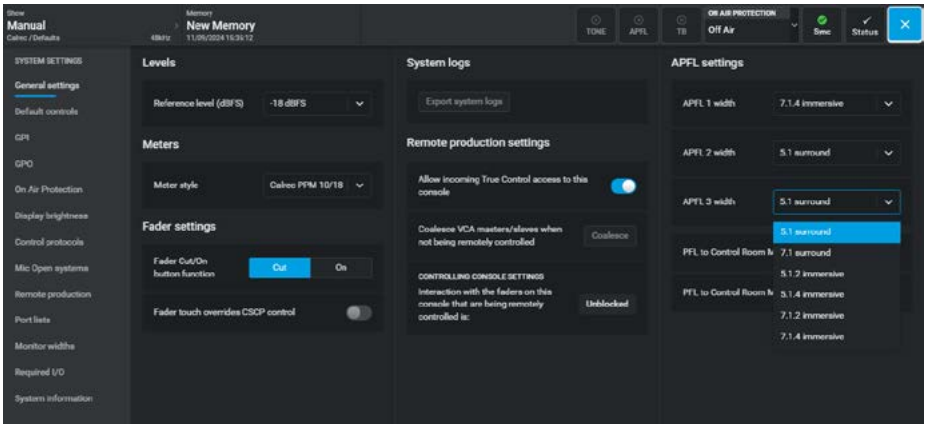


FIG. 6 - CR MONITOR 2 SHOWING APFL BUS SELECTION IN AREA 3



Note: the widths of the 3 APFL output systems can be altered to match the speaker systems available.

Each APFL system can be set to 5.1, 7.1, 5.1.2, 5.1.4, 7.1.2 or 7.1.4 in the Show Setup>Control Preferences page shown in Fig. 5.

WILD ASSIGN PANEL IN MONITORING MODE

Monitor Controls On Wild Assign
After tapping on Monitoring>CR 1 from the menu selection, Fig. 1 is displayed on the Wild Assign panel. The panel is arranged into 4 areas as highlighted. These areas are the same areas shown on the touchscreen and follow the same settings, so selections made on the touchscreen follow the Wild Assign panel and vice-versa with a few exceptions. The main difference is that the selection of Favourites for each monitor output are only configured on the Touchscreen.

Area 1 on the panel provides access to various monitor systems as described in the earlier part of this section of the manual.

The following outputs are shown from left to right along the bottom of the Wild Assign panel in the same order as on the Touchscreen:

Control Room Monitors
CR 1 Monitor 1 is the main monitor loudspeaker set in the control room.

CR 2 Monitor 2 is the alternative monitor loudspeaker set in the control room.

Miscellaneous Monitors
Misc Monitors 1-4 are general monitoring outputs. These can be used for a variety of purposes, such as headphone outputs.

User Meters
Meters 1-4 allow the user to select sources to be shown on the four user meters, which can be output externally. Each of the above cells for each Monitor system shows its current source and the width of the monitor output. The button on the bottom right shows the name of the monitor. When this button is pressed, it selects that monitor system to be controlled.

Listen and talkback
AFL sets the system levels of the three AFL monitors.

FIG. 1 - FAVOURITE SOURCES - CR MONITOR 1 ON WILD ASSIGN PANEL



FIG. 2 - MAIN OUTPUT SOURCES - CR MONITOR 1 ON WILD ASSIGN PANEL



FIG. 3 - GROUP BUS SOURCES - CR MONITOR 1 ON WILD ASSIGN PANEL



PFL sets the system levels of the three PFL monitors.

RTB/TB sets the system levels of the three Return Talkbacks and the Console Talkback.

Area 2 on the panel provides access to various monitor outputs as described earlier in this section of the manual.

The following controls are available for both CR Monitor 1 & CR Monitor 2 from the Wild Assign panel:
Monitor Level: Controls the level of the monitor outputs between 'off' & 0dB.

Cut and Dim buttons: Cuts or dims the monitor output.

Small LS Level: With the Small LS active, this provides control over the level of the secondary speakers between 'off' & 0dB.

Small LS On: When tapped, this switches the monitoring over from the Monitor 1 or Monitor 2 loudspeakers to a secondary set of loudspeaker. This is usually to hear how the programme sounds on a small set of domestic speakers in the home.

Listen modes: These allow the operator to listen to the selected source at various widths and is shown at the bottom right of Area 2.

This in turn is based on the monitor width shown in the selected Monitor system, the width of which is defined in System Settings>Monitor Widths.

Note: For more detail on these options, see "Listen modes" on page 185.

Area 3 on the panel provides access to all the available sources. The area is arranged with the 6 source type cells on the left, including the favourites, up to 16 cells in 2 rows of 8 cells for individual source selection from the source type and a 3rd row of 8 cells to select up to 8 pages of 16 sources. Fig. 1 shows that the favourites source type is selected and up to 32 favourites, arranged in 2 pages of 16 sources, can be listened to.

For example, CR Monitor 1 is listening to Favourite source 9, which is 'Group 1', as indicated by the highlighted **'Listen'** bar and shown as the CR1 currently active source in Area 1's leftmost cell.

FIG. 4 - AUX OUTPUT SOURCES - CR MONITOR 1 ON WILD ASSIGN PANEL



FIG. 5 - TRACK OUTPUT SOURCES - CR MONITOR 1 ON WILD ASSIGN PANEL



FIG. 6 - EXTERNAL INPUT SOURCES - CR MONITOR 1 ON WILD ASSIGN PANEL



Figs 2, 3, 4, 5, 6, & 7 are each displaying a different single source type for Mains, Groups, Auxes, Tracks, External Inputs and Other sources respectively.

The sources in those source types are arranged in pages of up to 16 entries.

Area 4 on the panel provides access to the monitor options when selected. It is accessed by pressing the settings button for the selected monitor system at the bottom right of the Wild Assign panel. This is subdivided into 3 sections, as shown in Fig. 8 for Control room Monitor 1.

Listening: right side of Area 4
Dim Adjust Level: Alters how much the dim button changes the monitor level between -30dB & 0dB.

Monitor Insert: Switches in the monitor insert, which is typically connected to an encoder/decoder for reference listening.

Leg monitoring options: LFE Disabled, Polarity Invert Right, which reverses the polarity of the right speaker signal, Both to Left, Left to Both, Right to Both, and Phantom Centre, which routes centre monitor feed to left & right speakers.

Note: For more detail on these options, see **"Leg monitoring option details" on page 185.**

Solo legs: left side of Area 4 in Fig. 8
As shown on the left side of the area, each leg of the monitor has its own Solo button. Tapping any of these 'solos' that monitor output leg, so each leg can be auditioned individually or in combination.

A **'Clear solos'** button is provided for quick solo deselection.

Note: the number of solo legs available depends on the width of the monitor and the listening mode used.

APFL: top right row of Area 4
APFL bus select: When tapped, this lets the user select the required APFL bus to monitor with.

PFL to Mon: When tapped, this sends the PFL signal to the console monitor rather than to a dedicated PFL speaker.

Miscellaneous functions:
Clear APFL, Clear AFL or Clear PFL. There is also a PFL from GPI enable button.

FIG. 7 - OTHER SOURCES - CR MONITOR 1 ON WILD ASSIGN PANEL



FIG. 8 - CR MONITOR 1 SETTINGS - CR MONITOR 1 ON WILD ASSIGN PANEL



FIG. 9 - FAVOURITE SOURCES - MISC MONITOR 1 ON WILD ASSIGN PANEL



PFL System Level: Adjusts the PFL monitor level between 'off' & 10dB.

AFL System Level: Adjusts the AFL monitor level between 'off' & 10dB.

Note: the layout of CR Monitor 2 (CR2) is exactly the same as the layout for CR Monitor 1. The settings button now accesses the CR2 monitor settings.

Misc Monitor Controls: Fig. 9 shows monitoring Sources for Misc Monitor 1, which is one of Misc Monitors available.

Areas 1 & 3 still apply to Misc Monitors, in that Area 1 still selects the Monitor System to be controlled and Area 3 provides the full set of Sources to be selected in exactly the same way as for the Control Room Monitors.

Area 2 offers the Monitor Level & Cut, a fixed Monitor Dim, the ability to listen to the selected source at various widths and also provides Talkback to Misc Monitor for each of the 4 Misc Monitor systems.

Note: For more detail on these options, see **"Listen modes" on page 185.**

Misc Monitor Settings: Fig. 10 shows the Monitoring Settings page for Misc Monitor 1. It is accessed by pressing the settings button for the selected monitor system at the bottom right of the Wild Assign panel.

Area 4 still applies to Misc Monitors in that it provides just the following Leg monitoring options for each of the 4 Misc Monitors.

Leg monitoring options: LFE Disabled, Polarity Invert Right, which reverses the polarity of the right speaker signal, Both to Left, Left to Both, Right to Both, and Phantom Centre, which routes the centre monitor feed to the left & right speakers.

Note: For more detail on these options, see **"Leg monitoring option details" on page 185.**

Meters 1-4: Fig. 11 shows the Sources for User Meter 1, which is one of four User Meters available.

Areas 1 & 3 still apply to User Meters, in that Area 1 still selects the Monitor System to be controlled and Area 3 provides the full set of Sources to be selected in exactly the same way as for the Control Room Monitors.

FIG. 10 - MISC MONITOR 1 SETTINGS - MISC MONITOR 1 ON WILD ASSIGN PANEL

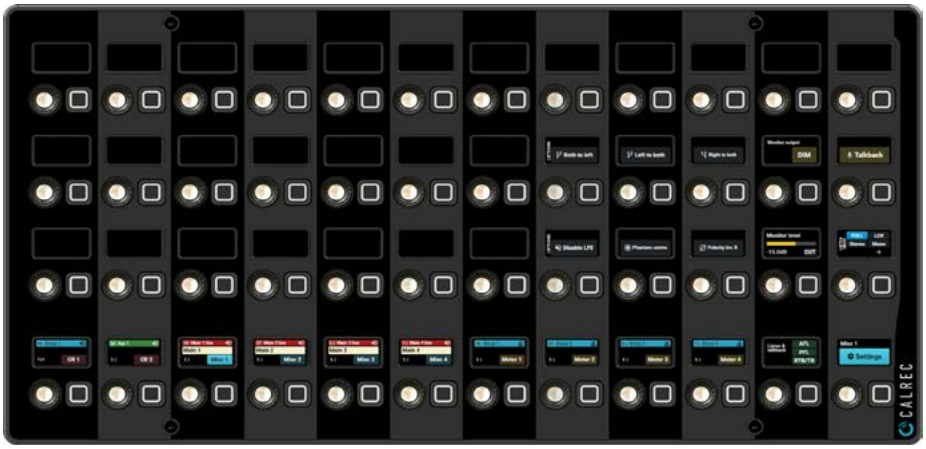
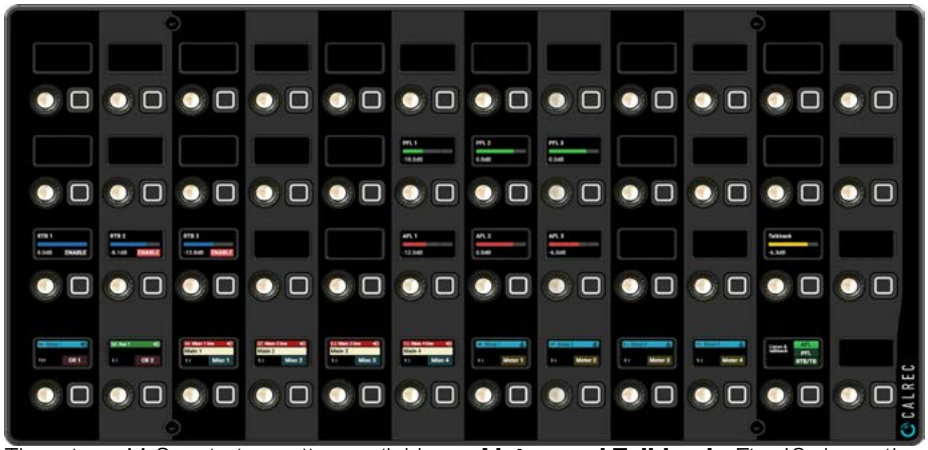


FIG. 11 - FAVOURITE SOURCES - METER 1 ON WILD ASSIGN PANEL



FIG. 12 - AFL, PFL & RTB/TB SETTINGS - APFL-RTB/TB ON WILD ASSIGN PANEL



There is an M-S metering option available that converts the audio meters from A-B to M-S, which can be sent to an external port. This only applies to LoRo outputs.

Listen and Talkback: Fig. 12 shows the level controls for AFL buses 1-3, PFL buses 1-3, Return Talkbacks 1-3 and their Enable buttons, & the Console Talkback level. Area 1 still selects the Monitor System to be controlled.

DEDICATED MONITOR CONTROLS

Monitor Controls On Monitor Panel
The MY6574 Monitor panel provides the Argo S/Argo Q full control of the various monitoring outputs of the console.

Generally, one of these panels is fitted per console, although more than one can be fitted for multi-user/monitor operation.

Note: the controls available on these panels are described in the Monitoring via Touchscreen section of this manual.

The panel can also operate in a number of other modes apart from monitoring. The two 4-button cells on the right side of the panel allows the user to switch between:

- **Monitoring:** See below for details
- **Talkback:** See **"Talkback on Monitor Panels" on page 209.**
- **Routing:** See **"Routing on Monitor Panels" on page 105** and **"Contribution on Monitor Panels" on page 113.**
- **User Controls**: See **"Custom Controls - Monitor panels" on page 256**

The Monitor panel is arranged into 4 areas as highlighted and described below:

Area 1 on the panel in Fig. 1 provides access to various monitor systems source selection, as described in the earlier part of this section of the manual.

The following outputs are shown and have the same labels as those on the Wild Assign panel and the Touchscreen:

Control Room Monitors
CR 1 Monitor 1 is the main monitor loudspeaker set in the control room.
CR 2 Monitor 2 is the alternative monitor loudspeaker set in the control room.

Miscellaneous Monitors
Misc Monitors 1-4 are general monitor outputs which can be used for a variety of purposes, such as headphone outputs.

FIG. 1 - FAVOURITE SOURCES - CR MONITOR 1 ON MONITOR PANEL

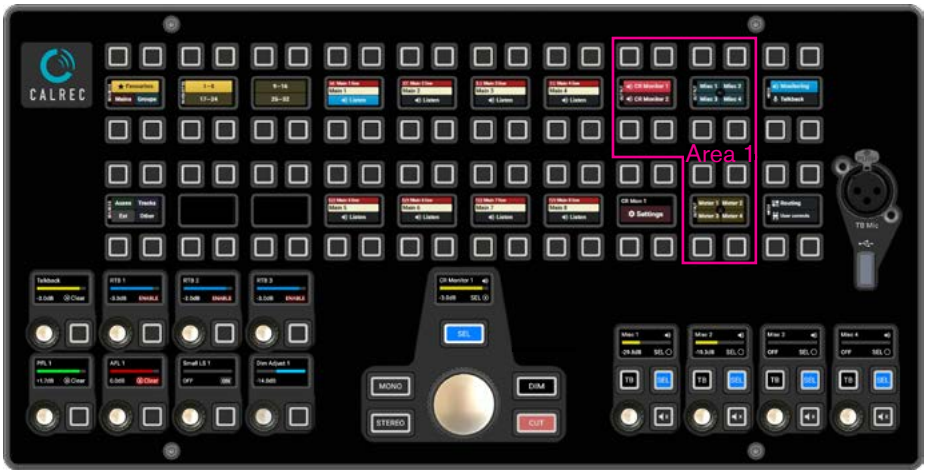


FIG. 2 - MAIN OUTPUT SOURCES - CR MONITOR 1 ON MONITOR PANEL

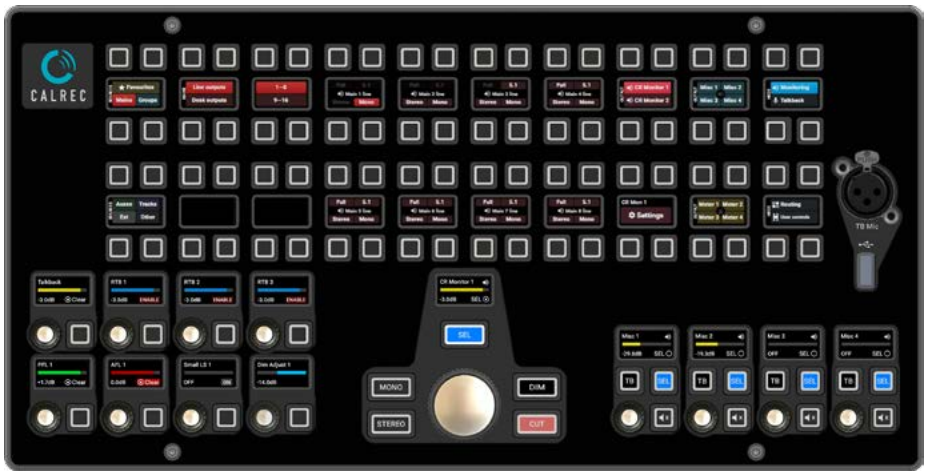


FIG. 3 - GROUP BUS SOURCES - CR MONITOR 1 ON MONITOR PANEL

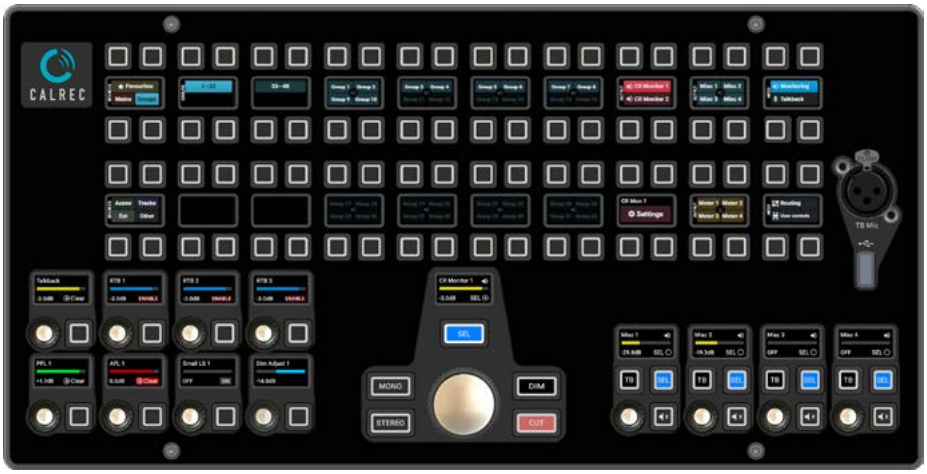


Fig. 1 shows that the favourites source type is selected. Up to 32 favourites, arranged in 4 pages of 8 sources, can be listened to.

For example, CR Monitor 1 is listening to Favourite source 1, which is 'Main 1 Line', as indicated by the highlighted **'Listen'** bar and shown as the CR1 currently active source in Area 1's leftmost cell.

User Meters
Meters 1-4 allows the user to select sources to be shown on the four user meters. These can be output externally.

Note: The RTB/TB controls are always made available on this panel even though they are generally shown as part of Area 4, as described later in this section.

Area 2 on the panel provides access to various monitor outputs, as described in the earlier part of this manual section. The following controls are available for both CR Monitor 1 & CR Monitor 2 from the centre of the Monitor panel:

Small LS Level: With the Small LS active, this provides control over the level of the secondary speakers between 'off' & 0dB.

Small LS On: When tapped, this switches the monitoring over from the Monitor 1 or Monitor 2 loudspeakers to a secondary set of loudspeaker. Usually, this is to hear how the programme sounds on a small set of domestic speakers.

Dim Adjust Level: Alters how much the dim button changes the monitor level, between -30dB & 0dB.

Stereo & Mono Listen modes: These allow the operator to listen to the selected source at various widths. It is shown at the bottom of Area 2 for the selected CR Monitor system from Area 1, whose width is defined in System Settings>Monitor Widths.

Monitor Level: Controls the level of the CR monitor outputs between 'off' & 0dB.

SEL button: This allows access to the chosen monitor's Source selection. The currently active **SEL** button is indicated by being illuminate and also in the display with a filled circle, or an empty circle when not the active **SEL**.

Note: Toggling the **SEL** button on the currently selected Control Room Monitor output switches its display to show the Current source and User label, as shown and highlighted in Fig. 6 for the CR Monitor 1 SEL.

FIG. 4 - AUX OUTPUT SOURCES - CR MONITOR 1 ON MONITOR PANEL

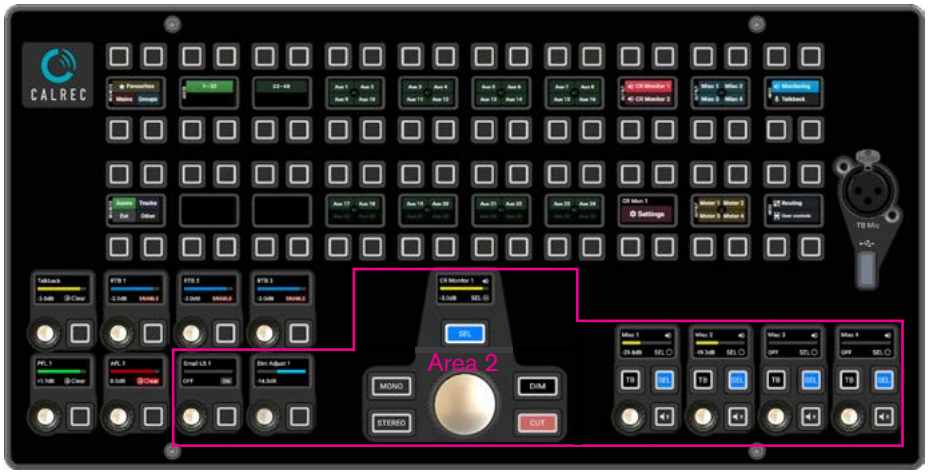


FIG. 5 - TRACK OUTPUT SOURCES - CR MONITOR 1 ON MONITOR PANEL

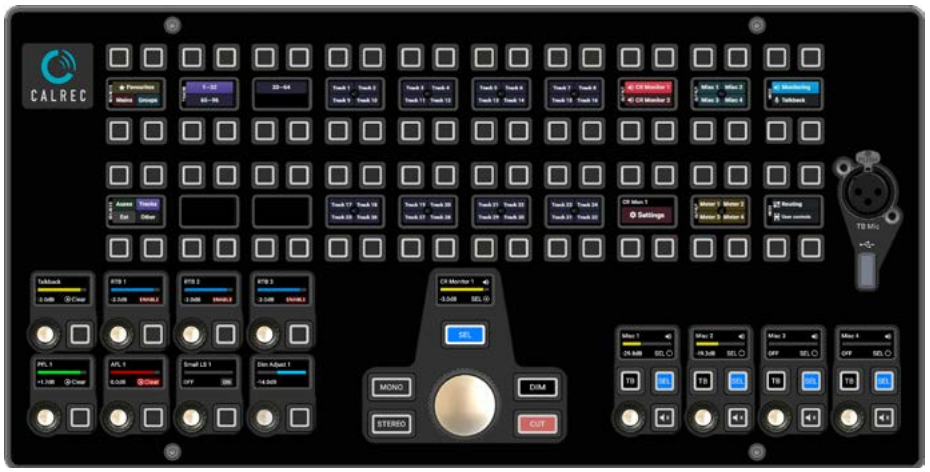
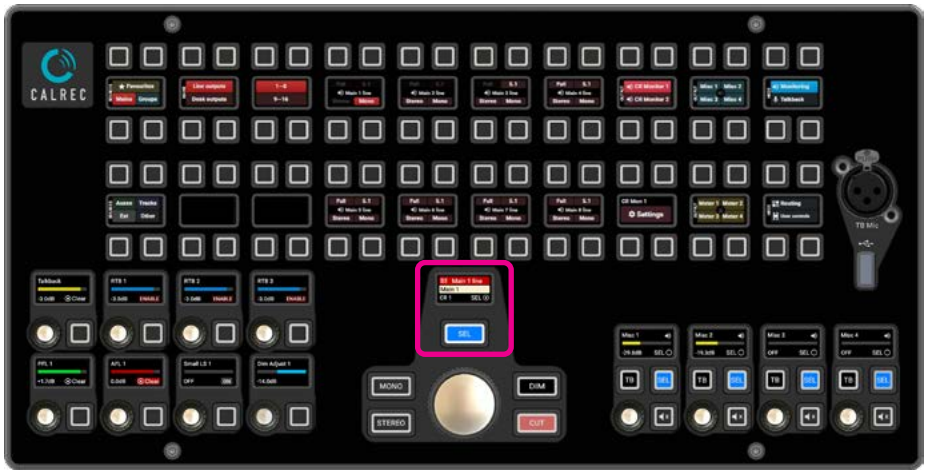


FIG. 6 - CR MONITOR 1 - SEL BUTTON SHOWING SOURCE AND USER LABEL



Misc Monitors 1-4: These are controlled from the 4 x (Rotary & 3 Button cells) on the lower right of the panel. Each of these cells contains the Misc Monitor Level, Mute button, which can be set from the User Controls to be either a Cut or Dim, **Talkback** button, to allow the user to talk to any of the Misc Mon outputs, and a **SEL** button, which allows access to the chosen Misc Monitor's Source selection. **Cut and Dim** buttons cut & dim the monitor output.

Area 3 on the panel provides access to all the available sources. The area is arranged with the 7 source type cells on the left, including the favourites, up to 32 selections in 2 rows of 8 x 4 button cells for individual source selection from the source type, and a set of 3 cells to select up to 6 pages of 32 sources.

Note : Figs 2, 3, 4, 5, 7, & 8 are each displaying a different single source type for Mains, Groups, Auxes, Tracks, External Inputs & Other sources.

Area 4 on the panel provides access to the monitor options when selected by pressing the settings button for the selected monitor system, middle right of the Monitor panel.

Listening: upper middle row of Area 4
Monitor Insert: Switches in the monitor insert, which is typically connected to an encoder/decoder for reference listening.

Leg monitoring options: Disable LFE, Polarity Invert Right, which reverses the polarity of the right speaker signal, Both to Left, Left to Both, Right to Both, and Phantom Centre, which routes the centre monitor feed to left & right speakers.

Note: For more detail on these options, see **"Leg monitoring option details" on page 185.**

Listen modes: These allow the operator to listen to the selected source at various widths. This in turn is based on the monitor width, see the selected Monitor system in Area 1. This width is defined in System Settings>Monitor Widths.

Note: For more detail on these options, see **"Listen modes" on page 185.**

Solo legs: middle of top row of Area 4
As shown in Fig. 9 on the left side of the highlighted area, each leg of the monitor has its own Solo button. Tapping any of these 'solos' that monitor output leg, so each leg can be auditioned individually or in combination.

FIG. 7 - EXTERNAL INPUT SOURCES - CR MONITOR 1 ON MONITOR PANEL

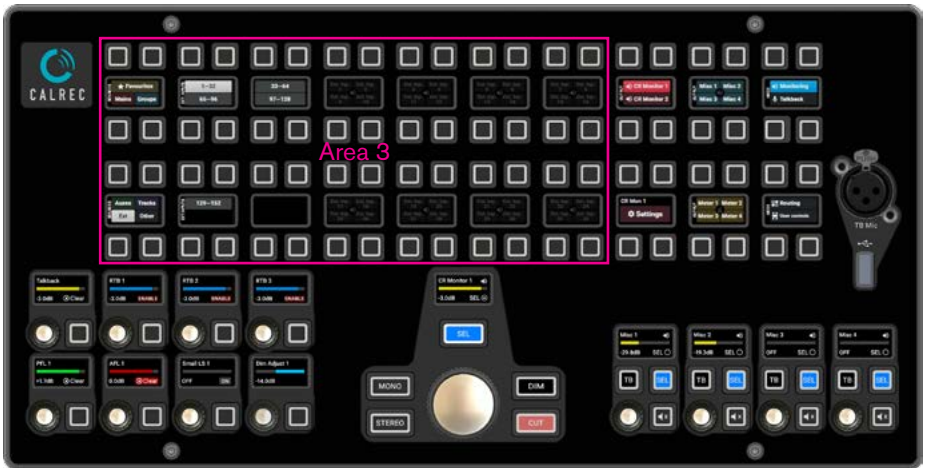


FIG. 8 - OTHER SOURCES - CR MONITOR 1 ON MONITOR PANEL

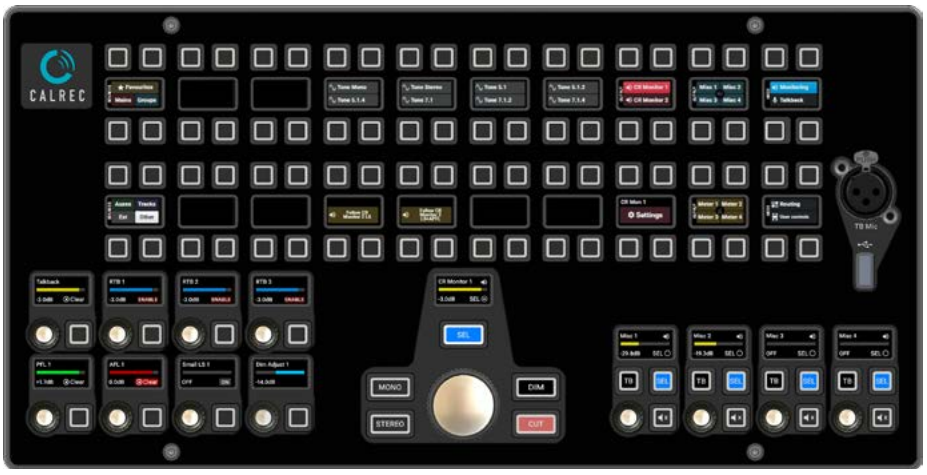
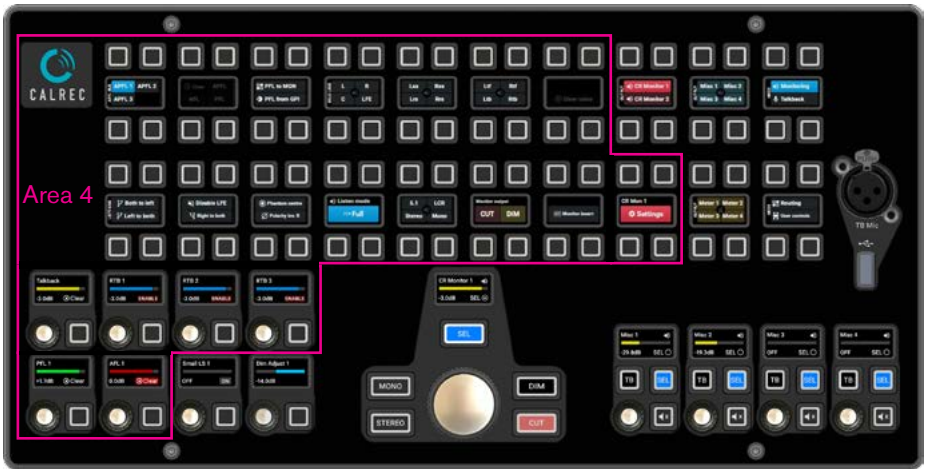


FIG. 9 - CR MONITOR 1 SETTINGS - CR MONITOR 1 ON MONITOR PANEL



A **'Clear solos'** button is provided right of the solo legs for quick solo deselection.

Note: the number of solo legs available depends on the width of the monitor and the listening mode used.

APFL: left of top row of Area 4
APFL bus select: When tapped, this allows the user select the required APFL Bus for monitoring.

PFL to Mon: When tapped, this sends the PFL signal to the console monitor rather than to a dedicated PFL speaker.

Miscellaneous functions:
Clear APFL, Clear AFL or Clear PFL, and also a PFL from GPI enable button.

AFL/PFL: left of bottom row of Area 4
PFL System Level: Adjusts the PFL monitor level between 'off' & 10dB.

AFL System Level: Adjusts the AFL monitor level between 'off' & 10dB.

Return Talkback 1-3 & Talkback: lower middle row of Area 4
Return Talkback Levels 1-3 & Enables: There are three reverse talkback inputs into the system. The level of these feeds may be adjusted using the RTB 1, 2 or 3 controls in a range between 'off' & 0dB.

Talkback level: The level of the talkback may be adjusted using the TB control in a range between 'off' & 0dB.

Note: the layout of CR Monitor 2 (CR2) has exactly the same layout for CR Monitor 1. The settings button now accesses the CR2 monitor settings.

Misc Monitor Controls: Fig. 10 shows monitoring Sources for Misc Monitor 1, which is one of Misc Monitors available. Areas 1 & 3 still apply to Misc Monitors, in that Area 1 still selects the Monitor System to be controlled and Area 3 provides the full set of Sources to be selected in exactly the same way as for the Control Room Monitors.

FIG. 10 - FAVOURITE SOURCES - MISC MONITOR 1 ON MONITOR PANEL

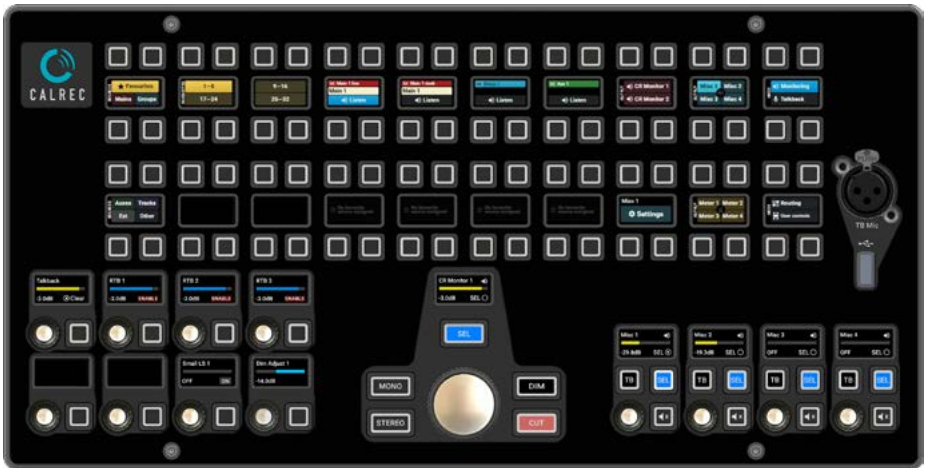
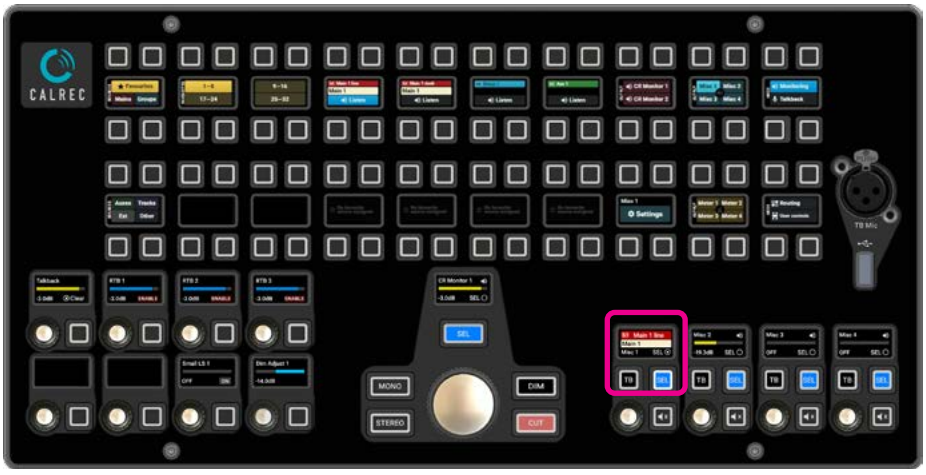


FIG. 11 - MISC MONITOR 1 - SEL BUTTON SHOWING SOURCE AND USER LABEL



Area 2, as described earlier, still offers the **Misc Monitor Level** & **Mute** button, the **SEL** buttons, which allows access to the chosen Misc Monitor for Source selection, and provides a **Talkback** button to Misc Monitor for each of the 4 Misc Monitors.

Note: Toggling the **SEL** button on the currently selected Misc Monitor output switches its display to show the Current source and its User label, as shown and highlighted in Fig. 11 for the Misc Monitor 1 SEL.

Misc Monitor Settings: Fig. 12 shows the Monitoring Settings page for Misc Monitor 1. It is accessed by pressing the settings button for the selected monitor system middle right of the Monitor panel. Area 4 still applies to Misc Monitors in that it provides the following: Leg monitoring, Listen Modes, Monitor output CUT/DIM selection and Talkback options for each of the 4 Misc Monitors.

Leg monitoring options: Disable LFE, Polarity Invert Right, which reverses the polarity of the right speaker signal, Both to Left, Left to Both, Right to Both, and Phantom Centre, which routes the centre monitor feed to left & right speakers. For more detail, see **"Leg monitoring option details" on page 185.**

Listen modes: These allow the operator to listen to the selected source at various widths. This in turn is based on the monitor width, which is shown in the selected Monitor system, whose width is defined in System Settings>Monitor Widths.

Note: For more detail on these options, see **"Listen modes" on page 185.**

Monitor Output CUT & DIM: These buttons allow the operator to Cut or Dim the current Monitor system, or switch between Cut & Dim rather than Cut and On, from the settings page.

Talkback: A button is provided to talkback to the currently selected Misc Monitor.

Meters 1-4: Fig. 13 shows the Sources for User Meter 1, which is one of four User Meters available.

Areas 1 & 3 still apply to User Meters, in that Area 1 still selects the Monitor System to be controlled and Area 3 provides the full set of Sources to be selected, in exactly the same way as for the Control Room Monitors.

FIG. 12 - MISC MONITOR 1 SETTINGS - MISC MONITOR 1 ON MONITOR PANEL

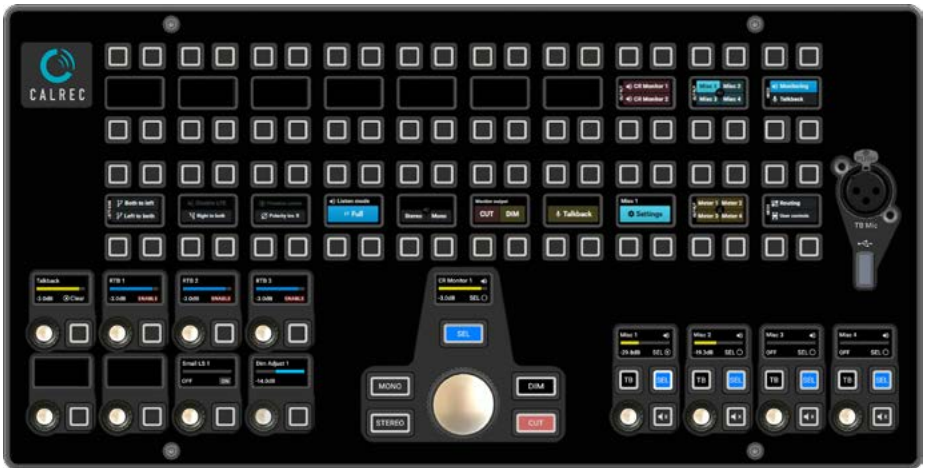
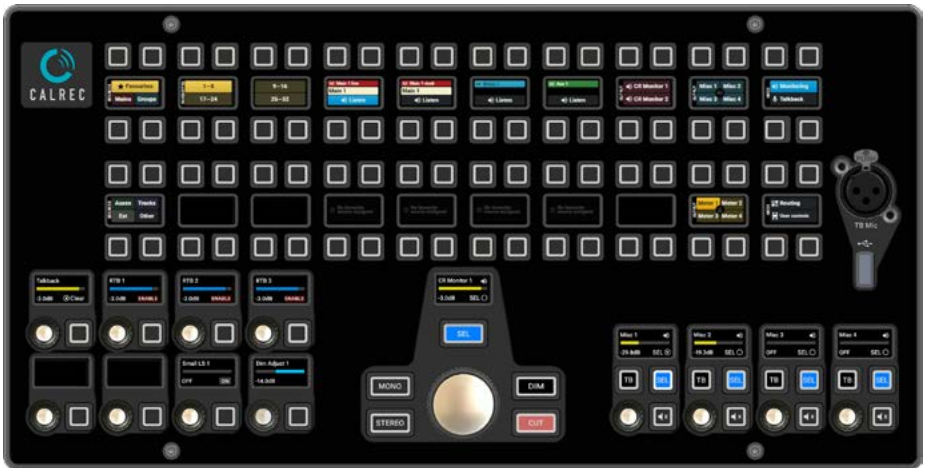


FIG. 13 - FAVOURITE SOURCES - METER 1 ON MONITOR PANEL



AFL, PFL AND OUTPUT LISTENING

Argo consoles have a comprehensive multi-user AFL, PFL and Output Listen system.

AFL

Selecting an AFL - 'After-Fader Listen', replaces the output of the control room monitor with the post fader audio of the path being AFL'd. AFL provides a 'non-destructive solo'. Only the control room monitor output is affected. No paths are cut and mixes to all other buses and outputs are unaffected, allowing users to quality-check selected paths while maintaining all mixes.

While in AFL mode, the control room monitor selection display will indicate as AFL. When all AFLs are switched off, or globally cancelled, the monitoring will revert to outputting its previously selected source.

PFL & RTB

Selecting a PFL - 'Pre-Fader Listen' sends the associated feed, by default, to a dedicated PFL/RTB LS output (RTB is 'Reverse Talkback' which allows for signals to be mixed with PFL for listening on the PFL/RTB output, e.g., for use with producer/director hot-mics).

Multiple paths can be PFL'd or AFL'd at the same time, creating a summed mix of pre- or post-fader path solos.

Output Listen (OPL)

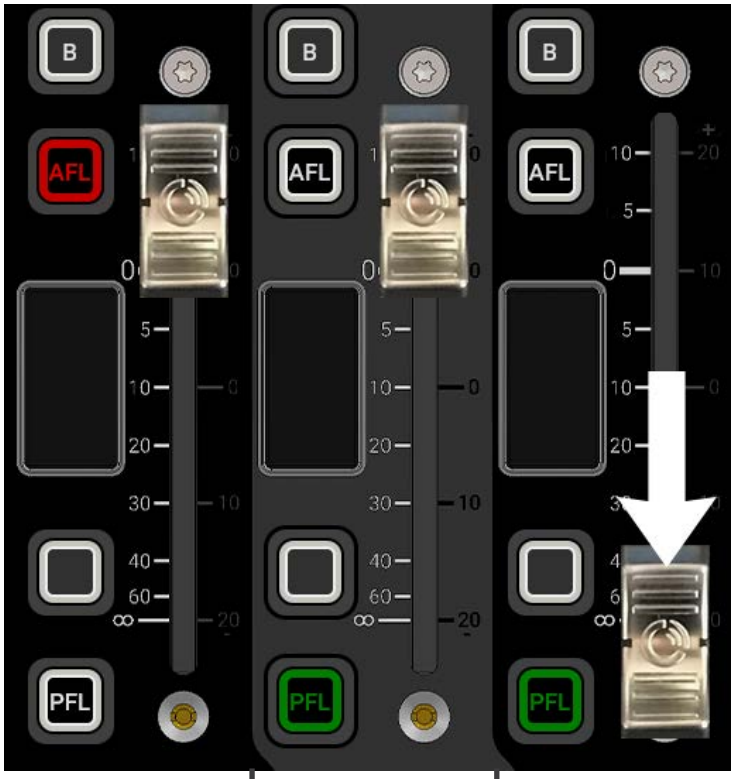
Mains, Tracks, Auxes and Direct Outputs all have an OUTPUT LISTEN (OPL) option. Like AFL, this provides a non-destructive solo, but output listen takes the feed after the addition of output delay, directly before the feed leaves the console.

Access from faders

When a path is attached to a fader, AFL and PFL can be accessed using the AFL and PFL buttons. Both are either latching if tapped briefly or momentary if held.

By default, PFL is automatically cancelled when a fader is opened, e.g., if a fader is in the OFF position while PFL is activated, PFL will deactivate when the fader reaches -90dB.

FIG. 1 - FADER AFL & PFL BUTTONS - LATCHING & MOMENTARY



Latching or Momentary AFL using the AFL button.	Latching or Momentary PFL using the PFL button.	Overpress PFL pushes the fader lower than the normal backstop to activate PFL

This feature can be disabled by turning off the **'Opening a fader cancels its latched PFL'** in the Show setup>Control preferences page.

A further latched PFL cancelling option is available that automatically cancels when a fader is uncut.

This feature can be enabled by turning on the **'Uncutting a fader cancels its latched PFL'** in the Show setup> Control preferences page.

Also by default, PFL is activated using the fader overpress feature: Move the fader down to its lowest position, then push it down passed the normal backstop position. PFL will then activate for that fader, see Fig. 1.

This is a momentary setting. As soon as you release the fader, PFL is deactivated.

This feature can be disabled by turning off the 'PFL on Fader backstop' option in the Show setup>Control preferences page.

Access AFL in Contribution Mode

When in Contribution mode any Auxiliary, Track or Group bus can be AFL'd by switching 'ON' on the AFL Selected Aux, Track and/or Group slider, and pressing the required Bus on the screen. Note that when another bus is selected, the previous bus AFL is turned off. When used in conjunction with the 'Aux send levels' option, the bus can be monitored while the levels being sent to it are adjusted. See **"Contribution Mode" on page 106** for details.

Access bus AFL, PFL and OPL
If buses are assigned to faders then the AFL & PFL buttons can be used. Otherwise, the panels can be put into Buses mode, which allows any bus to be brought into focus on the Touchscreen by selecting the bus type and then the required bus.

Once a bus is in focus, options appear in the Touchscreen for activating PFL and AFL (or Output Listen when applicable), see Fig. 2.

Cancel AFL and PFL
When any AFL, PFL or OPL is active, the APFL indicator on the Touchscreen Header, Monitor panel and Wild assign panel in monitor mode illuminates.

Press this button to cancel all AFLs, PFLs and OPLs that are currently active. This is also shown in Fig. 2 in the header section.

Note: this APFL cancel button is always available on the Touchscreen.

Move PFL within signal chain
PFL can be selected to output from various points within a path's signal flow, see Fig. 3.

This is actioned in the Meter and PFL path positions dialogue box at the bottom right of the Touchscreen and specifies where the Metering or PFL point in the selected audio path is taken from.

The 'Meter & PFL' button located in the bottom right of the screen accesses the dialogue box shown in Fig. 4.

PFL Source
The PFL pick-off point can be taken from:
- Input (at the start of path processing)
- Pre-EQ
- Post-EQ
- Pre-Fader

As shown in Fig. 3.

Note: this selection only applies to the currently selected path.

The 'Apply to all paths in user area' button at the bottom of the PFL source list, will apply this globally.

FIG. 2 - ACCESS TO PFL, AFL AND OUTPUT LISTEN FOR AUX BUSES

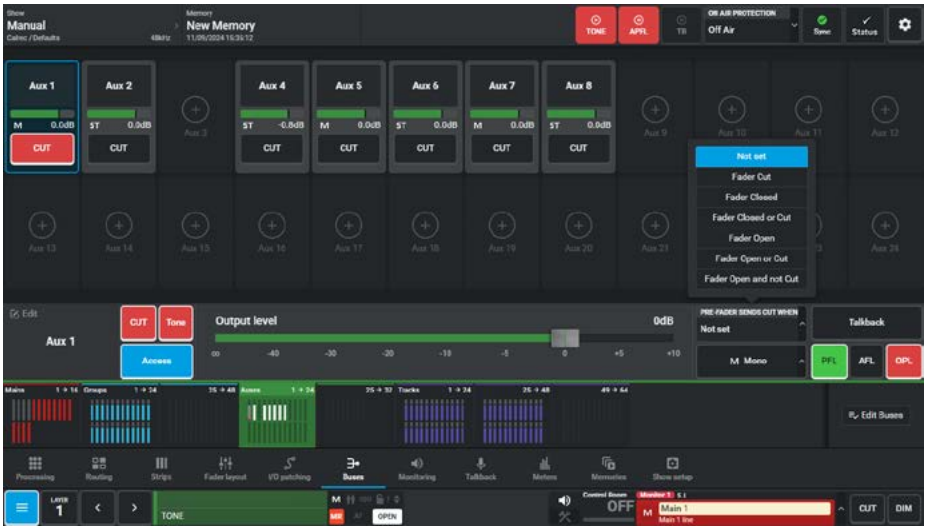


FIG. 3 - PFL OPTIONS WITHIN PATH SIGNAL FLOW

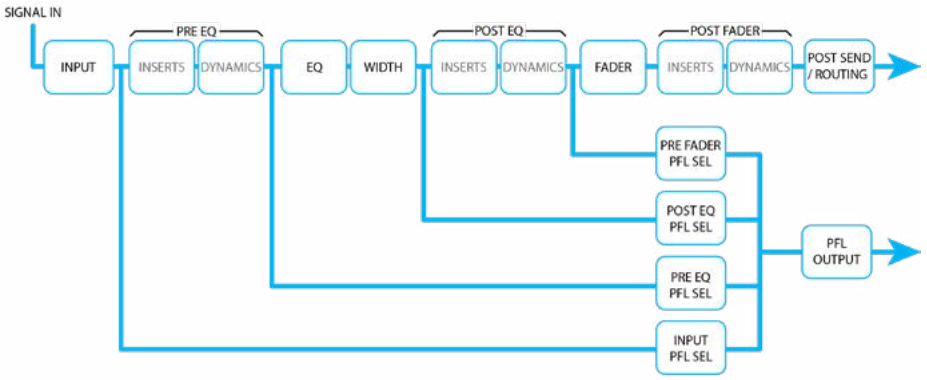
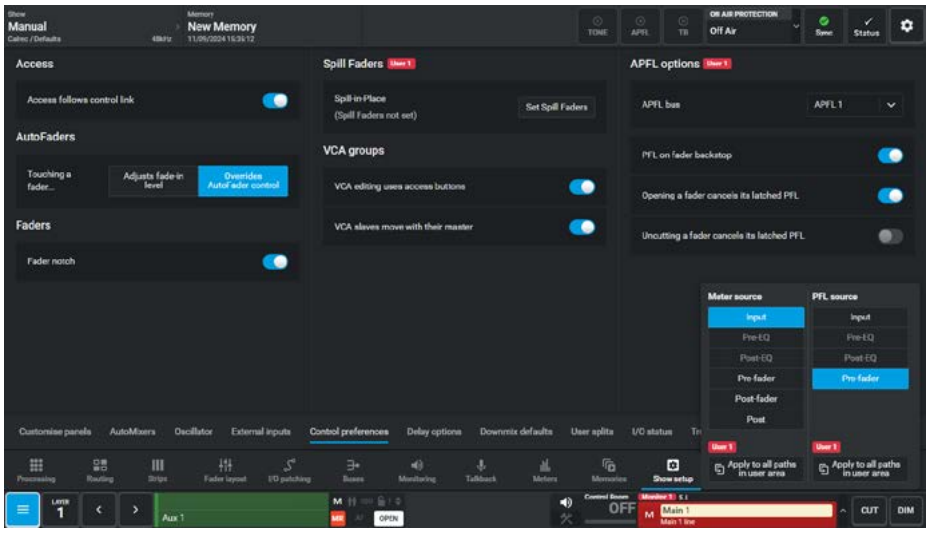


FIG. 4 - ACCESS TO PFL PATH POSITIONS



Send PFL to the small LS
The system can be configured to route PFL signals to the small loudspeakers for both Control Room Monitor 1 & 2.

The PFL then overrides any other signal presently going to it. This is set in System settings>General settings>APFL settings.

Patch AFL, PFL and APFL buses

As well as injecting into the main monitors, AFL, PFL and APFL systems are also available to patch to output ports. APFL systems are available in monitor source lists, post their level controls, and in meter lists, pre their level controls.

Patch AFL/PFL to external monitors

Navigate to the IO Patching screen and touch the 'Select Source' button before selecting 'Monitor Outputs' from the pop-up that appears.

The source list will now make all monitor outputs of the system available for patching, including the three independent AFL and PFL systems for each user section. Simply select the required source and destination ports and touch the 'Connect' button, see Fig. 5.

Note: if a path is moved to another fader on the surface or to another user split, the path's AFL or PFL status will move along with the path, feeding the APFL system that has been set for that user split.

Headphone Connections

Headphone jacks can be located in the control surface chassis. The quantity and location of headphone jacks can vary depending on the chassis build ordered.

Note: to use the headphone jacks, balanced analogue audio must be fed to the control surface.

This would normally be fed from an analogue output port in an AoIP device, such as the Combo AoIP I/O modules in the rear of the console, allowing the headphone feed to be selected from the control surface.

Please consult with your installation engineer if unsure of connectivity.

FIG. 5 - PATCHING AFL/PFL OUTPUTS TO AOIP TX TRANSMITTERS JUST CONNECTED TO EXTERNAL MONITORS 5.1 - AFL1 / STEREO - PFL1/RTB

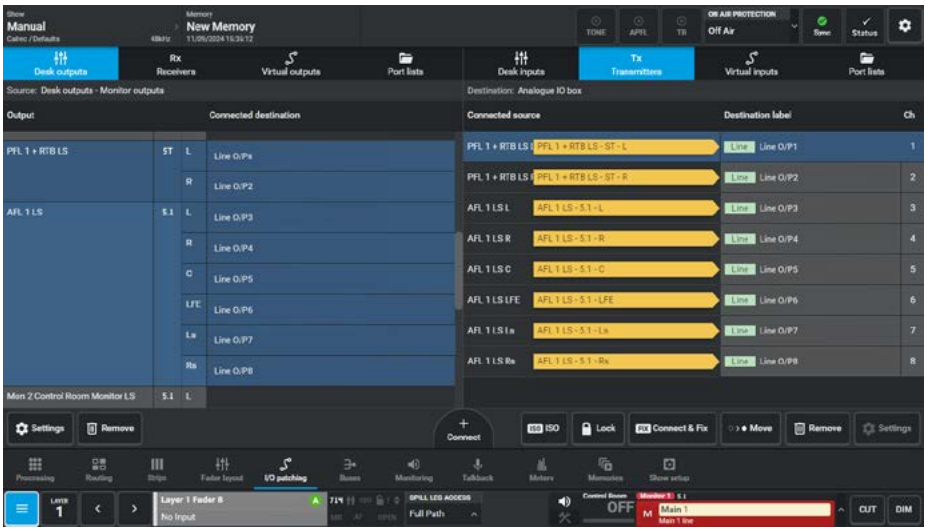
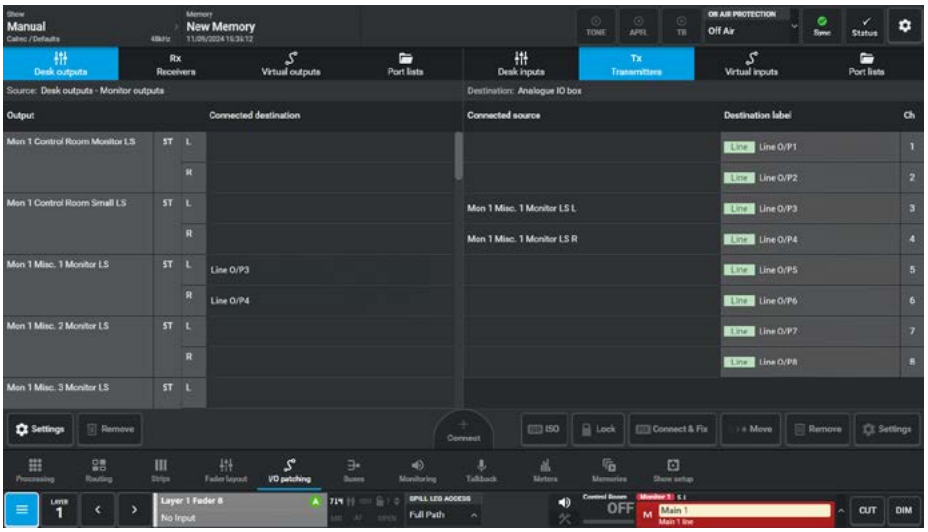


FIG. 6 - PATCHING MISC MONITOR 1 OUTPUTS TO 2 AOIP TRANSMITTERS FOR CONNECTION TO A STEREO HEADPHONE CONNECTION POINT



Patching the headphone output

Navigate to the IO Patching screen and touch the 'Select Source' button, before selecting 'Monitor Outputs' from the pop-up that appears, see Fig. 6.

From the list, select any monitor output you wish to drive the headphones.

In this case, the Misc Mon 1 outputs have been set to be a stereo loudspeaker output for a pair of headphones.

In the right-hand list, select the output transmitters that the headphone jack has been wired to and click 'Connect & Fix'.

ARGO
TALKBACK

CALREC

TALKBACK

Argo offers extensive Talkback facilities which can select the various destinations to talk to from the operator position. The destinations can be individually talked to or a number of Talkback Sets can be created, allowing the operator to talk to a group of destinations which can be configured at any time. The Talkback pages appear on the Touchscreen, Wild Assign panel and the dedicated monitor panel when set to Talkback mode. It should be noted that the Monitor panel works independently from the Talkback mode on the console, providing continuous access to the talkback destinations if required. The Talkback mode when accessed by the Touchscreen & the Wild Assign panel in combination offers both touch and physical control of all the talkback functions.

The Talkback mode is accessed from the Modes row of a fader panel by first tapping Modes Menu, then by tapping Talkback, as shown in Fig. 1. Alternatively, the user can tap on the appropriate icon on the touchscreen, as shown in Fig. 2. The surface displays/ controls the relevant information on both the touchscreen and the Wild Assign panel shown immediately below.

Distributed Talkback

On each of the bus output pages and the 4 misc monitor outputs there is a momentary Talkback button. In the header area, there is a TB indicator/button to show that there is active Talkback somewhere on the system.

Note: Talkback buttons are always yellow when active and not the matching function colour. This is to help identify them when talkback is active.

In addition to talking back to Mains, Groups, Auxes, Tracks, Direct Outputs & Mix Minus Outputs via Direct Outputs, using the Talkback buttons on those pages, Misc Mons 1-4 can also have talkback applied.

The Talkback mode allows the user to talk to destinations individually or in a group of selected destinations.

Note: the exception to this is talkback to direct outputs, which are channel & group based rather than global. As such, these are accessed on that basis.

Global Talkback Page

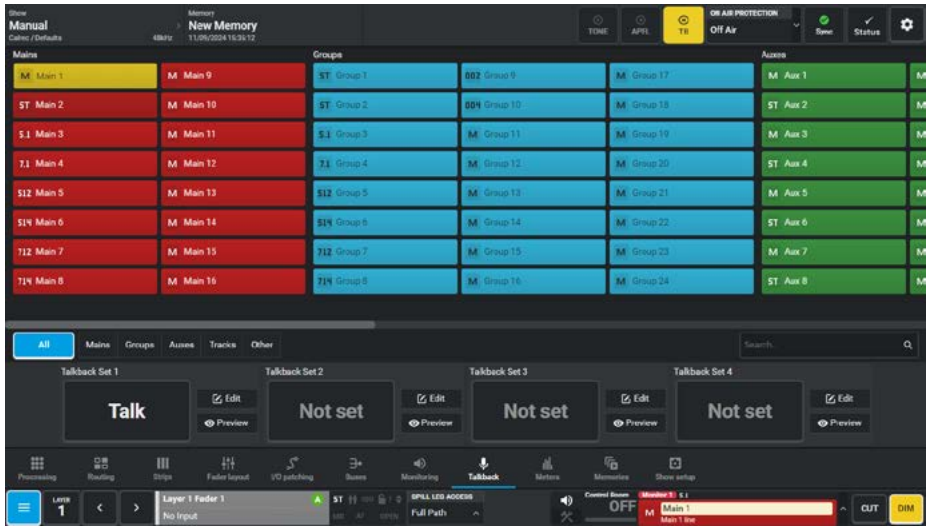
After selecting Talkback from the Menu, Fig. 2 is displayed. An individual talkback destination, in this case Main 1, has been selected. This is achieved either from the touchscreen or the wild assign panel.

This allows the user to pick any individual Main, Group, Aux, Track or one of the four Misc Monitors to be talked to from the console from this single screen, rather than in a distributed arrangement.

FIG. 1 -TALKBACK MODE SELECT ON STANDARD FADER PANEL



FIG. 2 -TALKBACK SCREEN ON TOUCHSCREEN & WILD ASSIGN PANEL





Talkback Sets

Argo provides four talkback sets to be created and selected from. A talkback set allows the user to talk to multiple destinations with a single button press.

To the right of each talkback button is the 'Edit' button, as shown in Fig. 3. This is used to select the destinations to be included in the Talkback Sets. Under that is a 'Preview' button, shown in Fig. 4. When selected, this shows the list of destinations currently in the set. Above the 4 Talkback button Sets is shown a list of all the destinations that the user can Talkback to.

In order to create 'Talkback Sets' and to add/remove destinations to/from a talkback set, the user first presses the appropriate **'Edit'** button and deselects the 'Preview' button for the selected Talkback set, allowing them to see all destinations, or a filtered subset of the destinations list, at which point 'tickboxes' appear next to each destination button as shown.

The selected TB Destinations shown can be toggled on and off from the list to make up the set as required.

Each destination is tagged with the Talkback Set number 1-4. The destination can appear in multiple sets as required. Once a TB entry is added to the talkback set, its label changes from 'Not set' to 'Talk'

Once the selection is complete, the user can then press the **'Edit'** button again to deselect it. The user can then select the **'Preview'** button to look at only what is included in each Talkback set, see Fig. 4.

The user then uses the bigger **'Talk'** buttons to talk to the selected set as shown in Fig. 5. The user can still talk to one of the destinations in the set by holding down the individual destination instead.

Note: a destination can appear in more than 1 Talkback set, see Fig. 5.

FIG. 3 - TALKBACK SET 1 - SELECTING DESTINATIONS

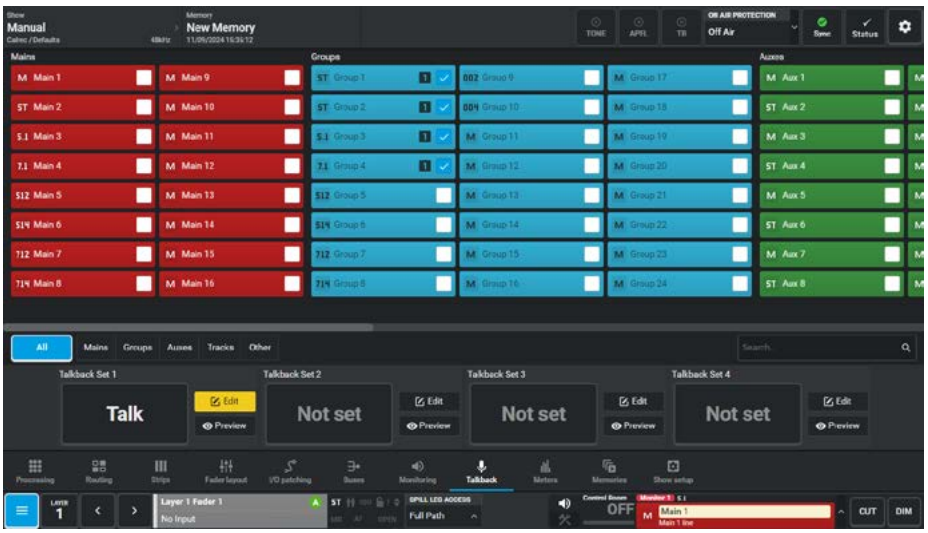


FIG. 4 TALKBACK SET 1 - PREVIEWING DESTINATIONS

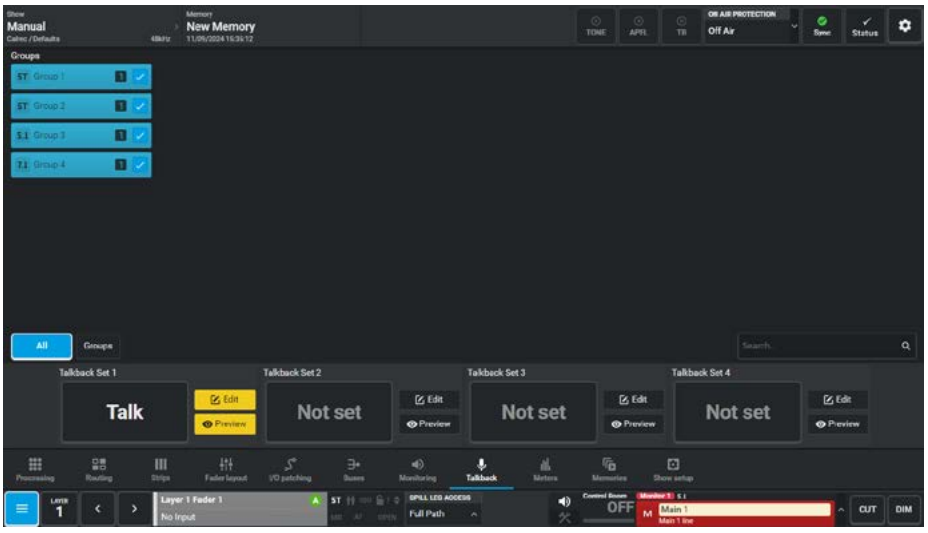


FIG. 5 - TALKBACK SET 2 - TALKING TO DESTINATIONS IN SET



If no selection is made for a particular **'Talk'** button to Talkback Set 1, 2, 3 or 4, it is greyed out. When none of the Selector for TB Set buttons or Talk to Talkback Set buttons are active, the Select Talkback destination list at the top of the page will, when pressed, function as individual talkback buttons.

There is a search box at the bottom right of the destinations list to allow the user to quickly find system labels, such as 'Aux 1', or user labels, such as 'IFB 1'. This is especially useful when trying to find a particular path using its label.

Fig. 6 shows that the user was selecting destinations for Talkback set 4 but required Talkback set 1. The **'Talk'** buttons are always available, even when a set is being edited.

Note: if the Argo is in On-Air mode, talkback to the Main Outputs is prevented. This includes any Main Outputs that have been added to the Talkback Sets.

Talkback on Wild Assign panels

Fig. 7 shows the Wild Assign panel displaying Auxes at the same time as Fig. 6 above. The Groups (not shown) and the Tracks shown in Fig. 8 are arranged in the same pattern. However, the Tracks page also has a Talk to all Tracks button, also known as TB OMNI.

Note: the '**OTHER**' button shown in the destination types area provides access to Misc Monitor 1-4's Talkback buttons.

The layout is very similar to the Monitoring on the Wild Assign panel, in that the Destination selection types are in the left 2 columns, 16 destinations of the selected type are shown in the middle of the top 2 rows and the 3rd row shows the various pages of destinations. Also shown on the 4th row are the 4 Talkback set buttons, which are available when configured and showing the word **TALK.**

In the right-hand column is shown the **'Clear all TB'**, which acts in the same way as the clear TB button in the Touchscreen header.

FIG. 6 - TALKBACK SETS 1 & 4 - TALKING TO SET 1 WHILST EDITING SET 4

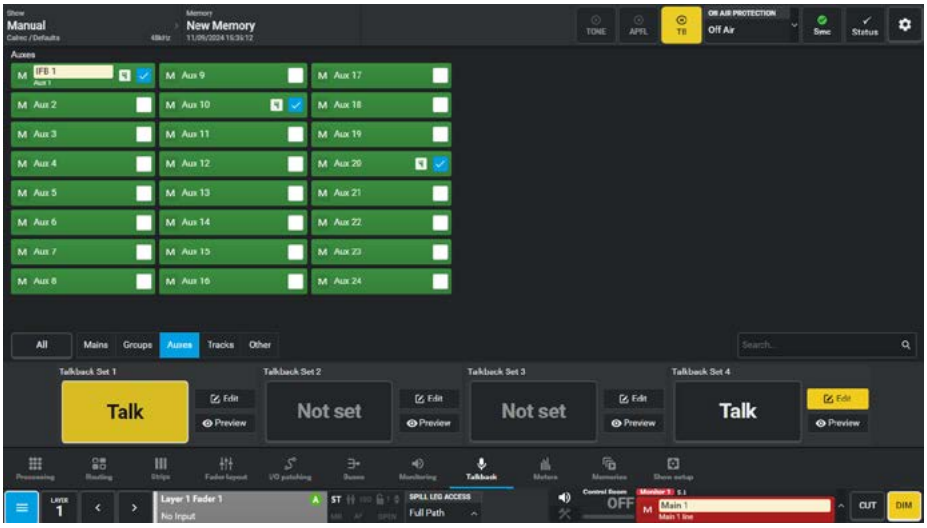


FIG. 7 - TALKBACK OFF AUXES SELECTION 1-48 ON WILD ASSIGN PANEL



FIG. 8 - TALKBACK ON TRACKS SELECTION 1-96 ON WILD ASSIGN PANEL



Below this is shown the Talkback level control for the Talkback mic used to talk to the various destinations, which must be patched into the TB Mic Input.

Note: the 'Talkback Mic' is connected to the XLR on the Monitor panel, which in turn is wired to a mic input port on an AoIP box in the back of the console.

Talkback on Monitor Panels

The dedicated monitor panel can also be put into Talkback mode. It should be noted that this works independently from the Talkback mode on the Touchscreen and Wild Assign combination, to provide continuous access to the talkback destinations if required.

Fig. 9 shows that the Monitor panel, selected to show Talkback to Mains. Up to 16 Main destinations are individually accessible from here. Fig. 10 shows the Monitor panel selected to show Talkback to Groups and Misc Mon 1. Up to 48 Group destinations are individually accessible from here and arranged in sets of 32. In this case, Groups 1, 4, 6 and Misc Mon 1 are being talked to at the same time. This has been made possible by putting the appropriate destinations in Set 1, which is also lit.

Fig. 11 shows the Monitor panel selected to show Talkback to Tracks. Up to 96 Track destinations are individually accessible from here, arranged in sets of 32. In this case, all Tracks are being talked to at the same time. This has been made possible by pressing the Talk to all Tracks button, also known as TB OMNI.

The layout for Talkback is very similar to the Monitoring Sources on the Monitor panel, in that the Destination selection types are in the 2nd column, 32 destinations of the selected type are shown in the middle of the top 2 rows and the 3rd & 4th column of the top row shows the various pages of destinations.

Also shown in columns 9 & 10 are the 4 Talkback set buttons on the top row and a copy of the 4 Talk to Misc Mons buttons on the 2nd row.

In column 2 on the 2nd row is shown the 'Clear all TB' button, which acts in the same way as the clear TB button in the Touchscreen header.

FIG. 9 - TALKBACK MODE ON MONITOR PANEL FOR MAINS

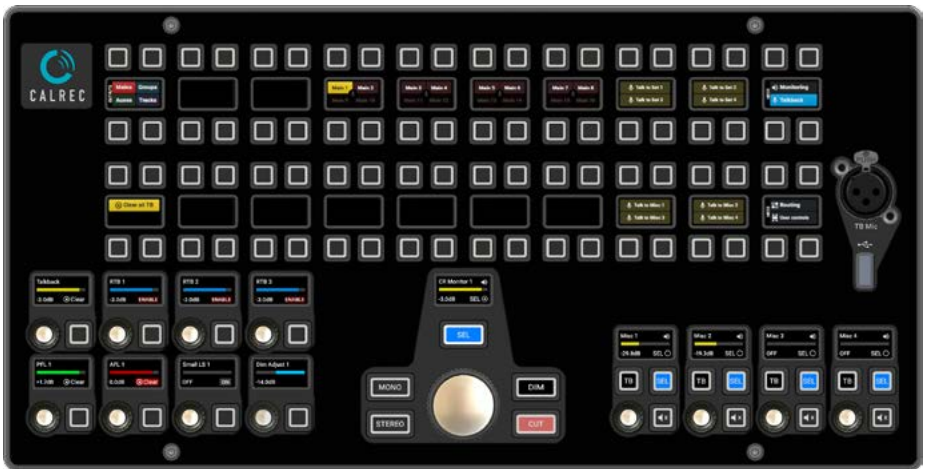


FIG. 10 - TALKBACK MODE ON MONITOR PANEL FOR GROUPS & MISC MON 1

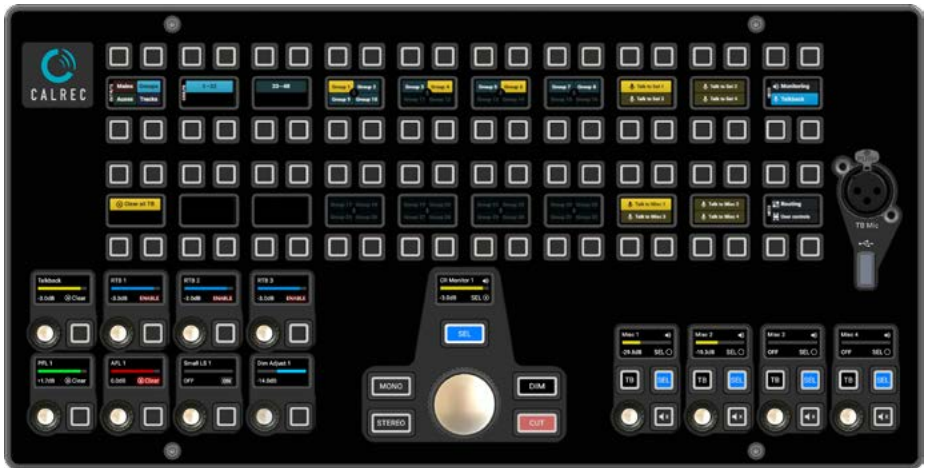
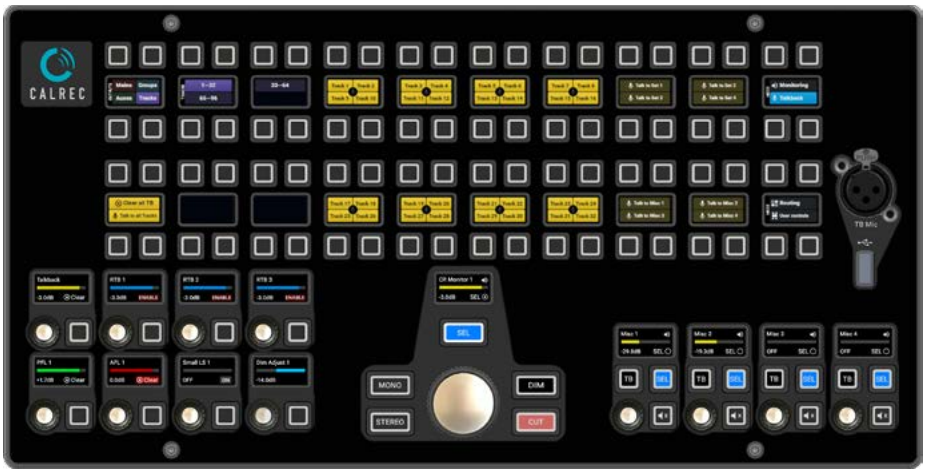


FIG. 11 - TALKBACK MODE ON MONITOR PANEL FOR TRACKS IN TALKBACK OMNI



Talkback levels

The level of the talkback may be adjusted using the TB control.

Patching talkback/reverse talkback inputs

Navigate to IO Patching, see Fig. 12. The physical input receivers which will feed the talkback, i.e., the receiver to which the talkback microphone is patched to, is shown as the Connected source on the right side of the page, as are the reverse talkback inputs.

These are shown unpatched here, but could be microphones or other inputs in other areas of the facility.

With an input receiver selected, select the desired talkback input from the list on the right, then touch the 'Connect & Fix' button.

Physically, the talkback microphone is connected to the TB Mic input XLR on the dedicated monitor panel, which can be wired out to a mic input on an AoIP box fitted in the rear of the console.

Consult the studio technician if it is not clear where talkback sources are patched.

Microphone settings

When a microphone is patched to a talkback input, the mic may be provided with phantom power for analogue inputs, or SRC applied for AES3 inputs by checking the relevant box.

To adjust the mic gain, touch the relevant 'Analogue Gain' pop-up in the Gain column to bring up a dialogue for selection of the desired gain, see Fig. 12.

Monitoring talkback/reverse talkback signals

To monitor talkback and reverse talkback inputs, the TB & RTB buses can be patched to output transmitters where loudspeakers are connected.

FIG. 12 - TALKBACK INPUT PATCHING WITH MIC GAIN

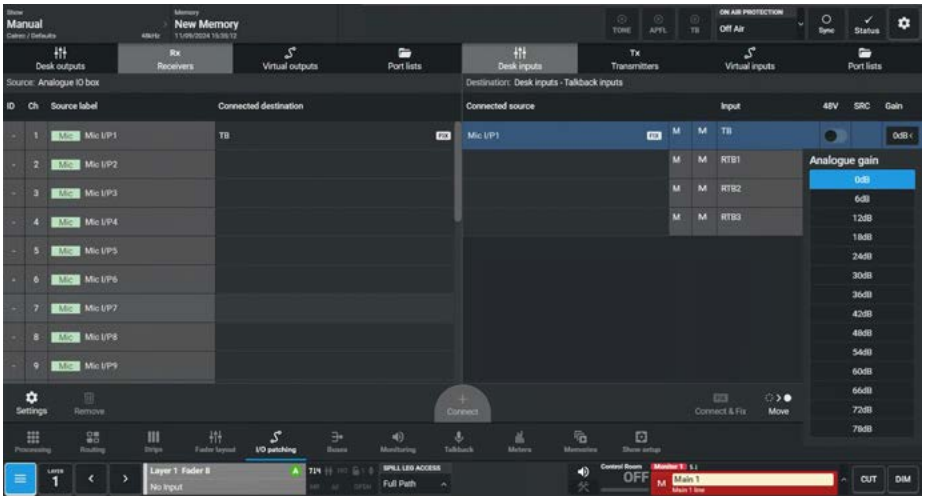
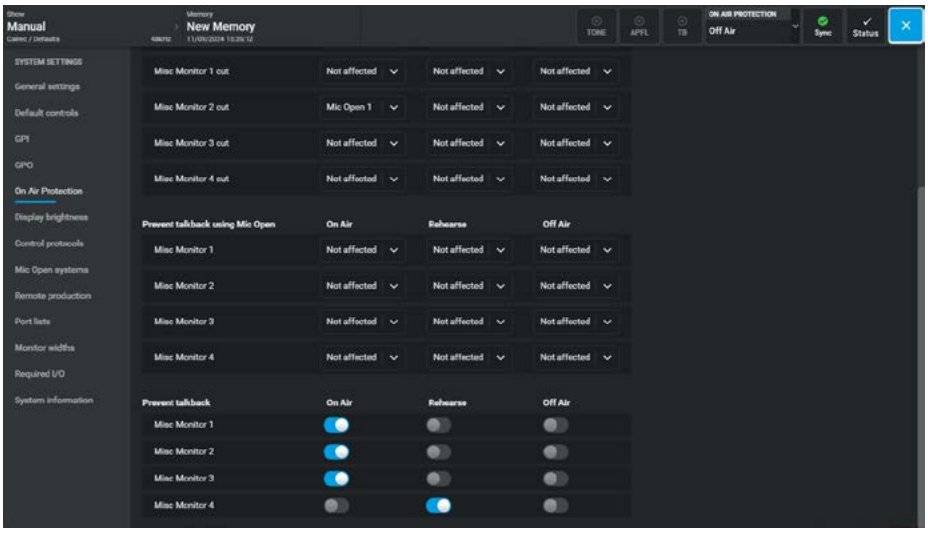


FIG. 13 - TALKBACK INHIBIT SETTINGS FOR ON AIR PROTECTION



Inhibiting Talkback

For control over whether or not talkback is routed to a loudspeaker using the 4 misc monitor outputs, the user can choose to permanently inhibit talkback to a Misc Monitor output or set inhibit to be activated when one of the Mic open systems becomes active.

These settings can be configured separately for when the console is in On Air, in Rehearse mode or neither, see Fig. 13. To access these navigate to System Settings >On-Air Protection.

ARGO
METERING

CALREC

METER SETUP

Argo offers extensive Metering facilities, allowing the user to layout and display any of the available sources, buses and monitoring outputs, on any of the MD6772 TFT Upstand Meter panels. These panels provide the Argo S/Argo Q with a configurable interface which can be used to display metering information, video feeds and routing and processing information.

Meters mode is accessed from the Modes row of a fader panel under Modes Menu>Meter Setup (see Fig.1), or from the touchscreen by tapping the 'Meters' button in the touchscreen Modes row, as seen in Fig. 4. There are 2 sub-menus shown on both the standard fader panel and the lower right area of the Touchscreen, labelled Edit Meters and Loudness Meters, as shown in Fig. 2 & Fig. 4 (following page).

Edit Meters

Opens the Meter Layout Grid, allowing users to select, arrange and configure meters, Tiles and video windows.

Loudness Meters

Allows users to configure, start, pause and reset Argo's loudness meters.

Exit to Menu

Returns the Modes row to the primary 'Modes menu'

Blank Meter layout

By default, a new show will load the meter display without any meters configured. Fig. 3 shows the Meter display when empty. Fig. 4. shows the Meter layout grid when empty.

The user can configure the Meter layout for any of the upstand meter displays from any section's touchscreen and fader panel.

Tap the meter display button or the left & right arrow buttons (both highlighted in Magenta in Fig.3) to choose which meter display to edit.

FIG. 1 - METERS MODE SELECT ON STANDARD FADER PANEL

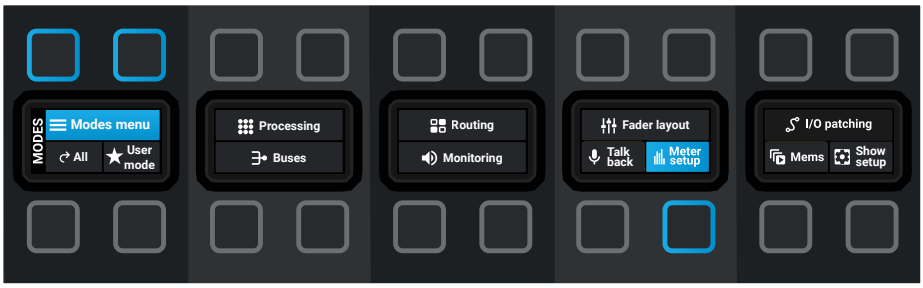


FIG. 2 - METERS MODE - EDIT METERS SELECT ON STANDARD FADER PANEL

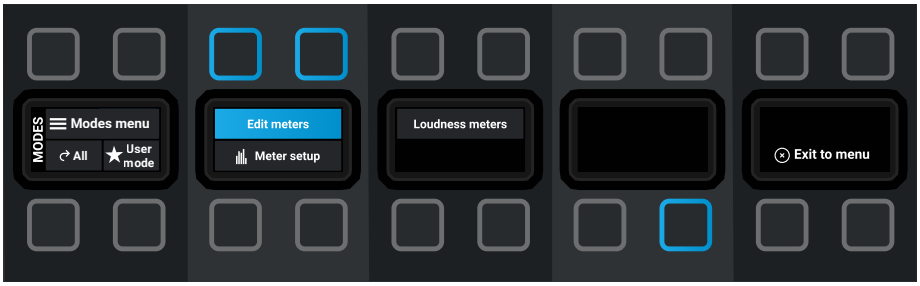


FIG. 3 - EMPTY METER LAYOUT ON TOUCHSCREEN

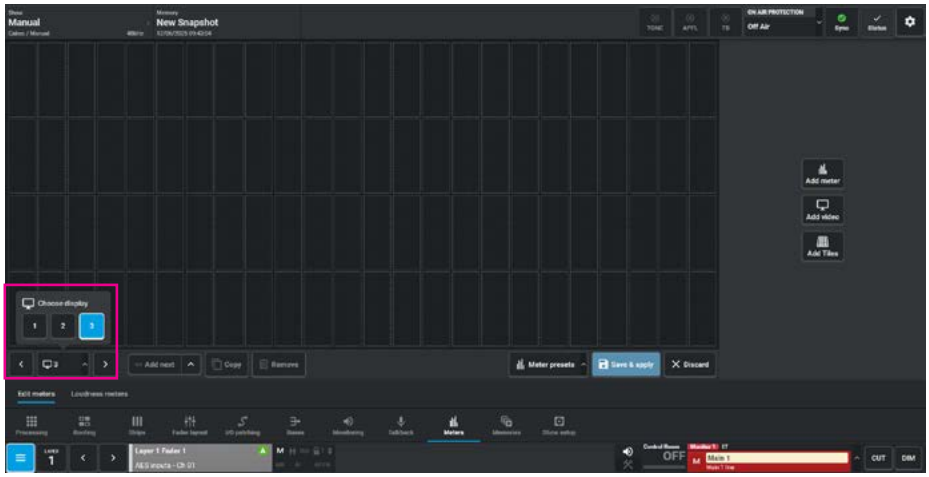


FIG. 4 - EMPTY METER DISPLAY ON UPSTAND



Creating Meters

Under Meter Setup>Edit meters tap the 'Create a meter' button highlighted in Fig. 4 on the right hand side of the screen. Tapping this opens the 'Select a source' dialogue box shown in Fig. 5. Meters can be configured for Faders, Mains, Groups, Auxes, Tracks, and can follow the accessed path.

The source list scrolls with a two finger drag on the multi-touchscreen, and the scrollbar at the bottom of the dialogue box displays the current position in the list. Source filter buttons are available along the bottom of the source list. In the bottom right hand side of the dialogue a search option is available in order to locate a source based on its system name or user label.

Tap a source to select it and open the 'New meter' panel.

Meter Placement on Meter Grid

Once the new meter has been configured, place it in the grid by dragging it onto the grid at the required destination. Releasing the drag will place the source on the meter grid. Alternatively, tap the required destination in the grid, followed by the 'Add to grid' button to place the meter.

To undo any changes made to the layout grid tap 'Discard'. The 'Revert changes' dialogue box will then ask the user to confirm this action. This cannot be undone.

To finalise changes made to meter layout, and update the layout displayed on the upstand, tap 'Save & apply'. The 'Apply changes' dialogue box will then ask the user to confirm this action. This cannot be undone.

FIG. 5 -EMPTY METER LAYOUT ON TOUCHSCREEN

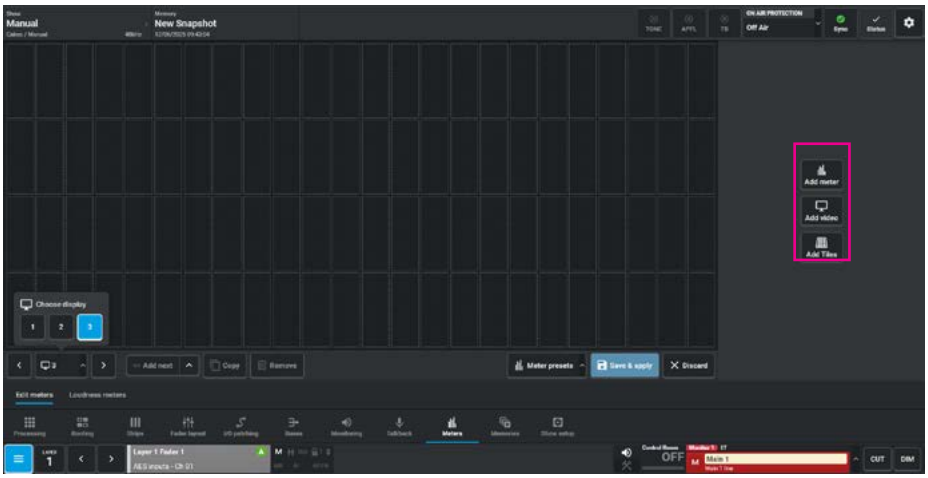


FIG. 6 - SOURCE SELECTION DIALOGUE BOX

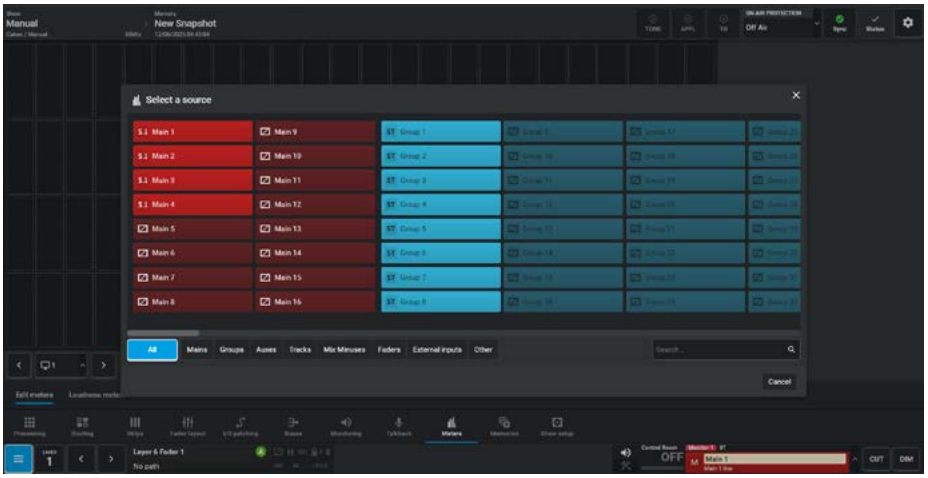
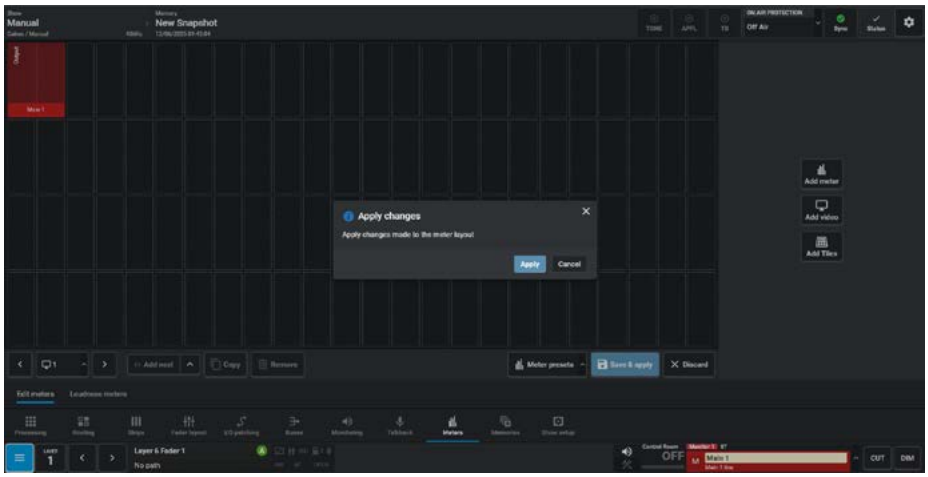


FIG. 7 - PLACE AND SAVE BUS METER ON DISPLAY GRID



METER OPTIONS

Configuring Main Meters
The Main bus meter options available on the 'Edit Meter' layout grid are shown in Fig. 1. The resulting meters display is shown in Fig. 2, with the same bus meter sources displayed in both single and double height sizes. This starts from the left, with no additional meter options, across to the right, which has all the additional options. Each bus meter is identified by a position overlay as shown.

The available variants for this 7.1.4 Main meter have all been placed on the same grid. This shows the actual display in single & double height. These are described as follows, from left to right:

No options: The 1st Main bus meter shows the audio meter using compressed immersive height meters TF & TB, placed above the surround meters.

Dynamics: The 2nd Main bus meter shows the audio meter, but includes Dynamics 1 Comp/Lim and Expander & Dynamics 2 Comp/Lim gain reduction meters.

Full Immersive: The 3rd Main bus meter shows the audio meter using the Full size immersive meters TF & TB, placed to the right of the surround meters.

Full Immersive & Dynamics: The 4th Main bus meter shows the audio meter using Full size immersive meters and the Dynamics gain reduction meters.

Pre-tone & TB: The 5th Main bus meter shows the audio meter. The meter data is taken before Tone & TB is injected.

Loudness: The 6th Main bus meter shows the audio meter, but now includes the loudness meter and its appropriate data for the 7.1.4 signal.

LoRo and 5.1 D-Mix: The 7th Main bus meter shows the audio meter, but now includes two downmix meters: a 5.1 D-Mix meter derived from the 7.1.4 to 5.1 D-Mix and a LoRo D-Mix meter derived from a 7.1.4 to a LoRo D-Mix.

FIG. 1 - CREATE MAIN METER VARIANTS

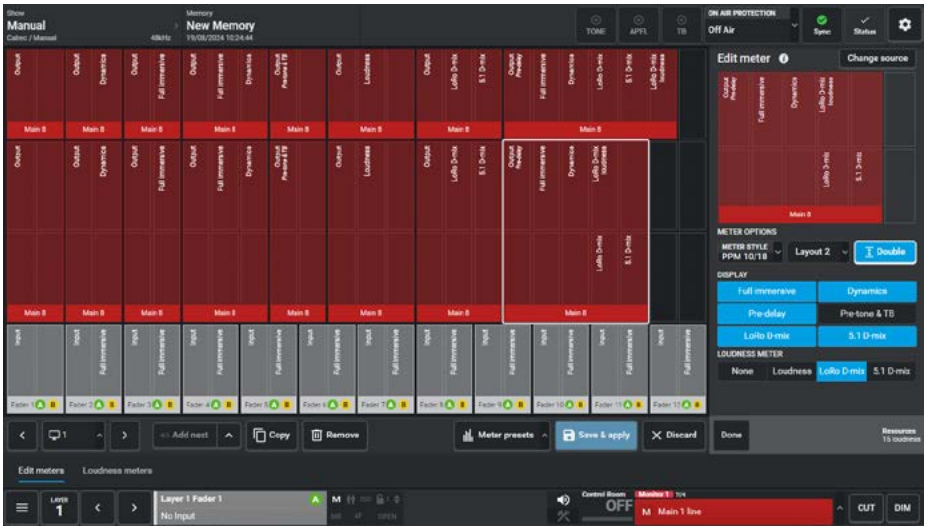


FIG. 2 - MAIN METER VARIANTS ON UPSTAND METERS



Pre-delay Output, LoRo/5.1 D-Mix & LoRo/5.1 D-Mix Loudness: The 8th Main bus meter shows a full combination of all the options. The Pre-delay option allows the user to see the audio output at the pre-delay point when a delay process has been added, with the normal audio output being at the post-delay point. The output meter is displayed in Full immersive form with its Dynamics gain reduction meters.

Also shown are the LoRo and 5.1 D-Mix meters. On the right of this 6 element wide meter is placed a 5.1 D-Mix loudness meter. There is also an alternative loudness meter that can be displayed to show the LoRo loudness meter.

Layout Options
With larger meter configurations an extra Layout dropdown button appears, offering a number of alternative layouts in order to save space This is achieved by using a combination of single and double height elements to produce more compact displays, providing the same metering information but in a smaller display format. This is shown in the double height version of the 8th Main bus meter, which saves space by using single height downmix & loudness meters.

Note: if the Main Source is not immersive the Immersive & 5.1 D-Mix options will not be displayed.

Configuring Group Meters

The Group and Aux meter options available from the 'Edit meter' layout grid are shown in Fig. 16. The resulting meters display is shown in Fig. 17, along with Aux meter variants.

The available variants for this 7.1.4 Group meter have all been placed on the same grid and are shown on the actual display in single & double height. These are as follows:

No options: The 1st Group bus meter shows the audio meter using compressed immersive height meters TF & TR.

Dynamics: The 2nd Group bus meter shows the audio meter, but now includes gain reduction meters for Dynamics 1 Comp/Lim & Exp or Gate and Dynamics 2 Comp/Lim.

Loudness: The 3rd Group bus meter shows the audio meter with dynamics and the 7.1.4 loudness meter with its data.

Full Immersive, Dynamics & Loudness: The 4th Group bus meter shows the audio meter using Full size immersive meters, Dynamics gain reduction meters and the 7.1.4 loudness meter with its data.

Configuring Aux Meters

The Aux meter options available from the 'Edit meter' layout grid are shown in Fig. 16, with the resulting meters display shown in Fig. 17, along with Group meter variants.

The available variants for this Stereo Aux meter have been placed on the same grid and shown on the actual display in single & double height forms. These are as follows:

No options: The 1st Aux bus meter shows the audio meter using stereo meters.

Pre-delay: The 2nd Aux bus meter shows the Pre-delay version of the audio meter.

FIG. 3 - CREATE GROUP AND AUX METER VARIANTS



FIG. 4 - VIEW GROUP & AUX METER VARIANTS



Dynamics: The 3rd Aux bus meter shows the audio meter, but now includes gain reduction meters for Dynamics 1 Comp/Lim & Exp or Gate and Dynamics 2 Comp/Lim.

Loudness: The 4th Aux bus meter shows the audio meter but now includes the Stereo Loudness meter and its data.

Dynamics & Loudness: The 5th Aux bus meter option for Auxes displays the audio meter, but now includes Dynamics 1 & 2 and the Stereo Loudness meter and its data.

Configuring Track Meters

The various Track meter options available from the 'Edit meter' layout grid are shown in Fig. 18, with the resulting meters display shown in Fig. 19, along with External IP meter variants.

The available variants for Mono Track meters have all been placed on the same grid and are shown on the actual display in single & double height. These are as follows:

No options: The 1st Track bus meter shows the audio meter using a Mono meter.

Pre-delay: The 2nd Track bus meter shows the Pre-delay audio meter using Mono meter at the Pre-delay point.

2 Track display: The 3rd Track bus meter shows a pair of mono track outputs, 1 & 2, side-by-side.

4 Track display: The 4th Track bus meter shows 4 mono track outputs, 1, 2, 3 & 4, side-by-side.

Track Pair Loudness: The 5th Track bus meter shows the mono track outputs 1 & 2 and the loudness meter, and its appropriate data for the combined track pair.

1st Track in Pair Loudness: The 6th Track bus meter shows the mono track outputs 1 & 2, the loudness meter and its appropriate data for the 1st track in the pair.

2nd Track in Pair Loudness: The 7th Track bus meter shows the mono track outputs 1 & 2, the loudness meter and its appropriate data for the 2nd track in the pair.

FIG. 5 - CREATE TRACK METER VARIANTS

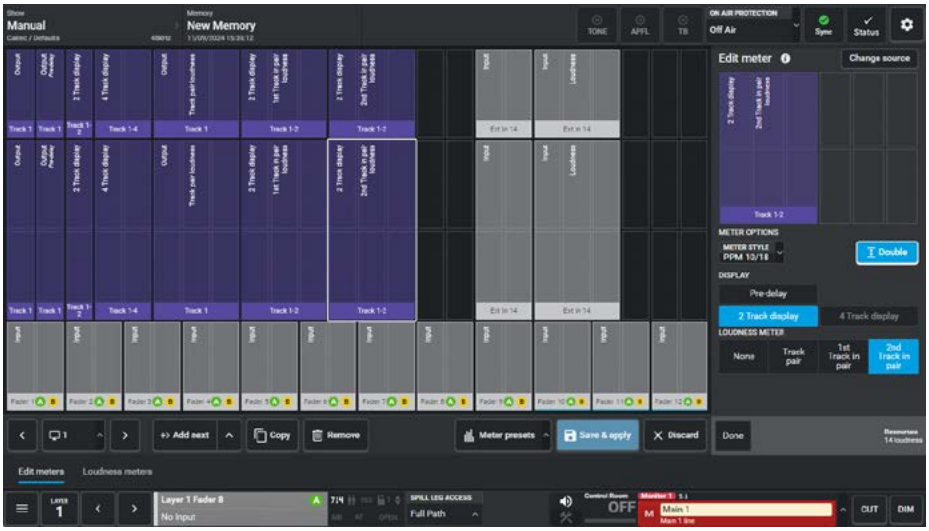
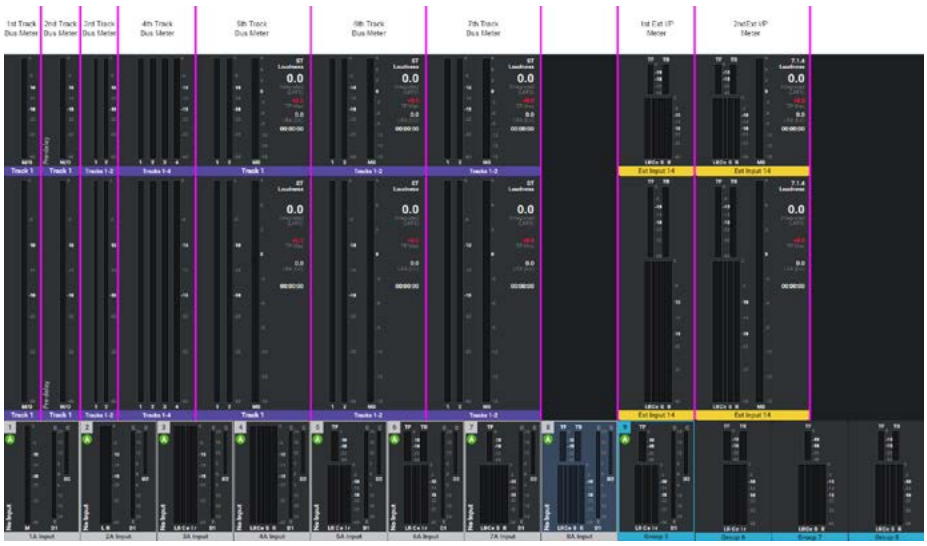


FIG. 6 - VIEW TRACK & EXTERNAL INPUT METER VARIANTS



Configuring External Input Meters

The various External input meter options available from the 'Edit meter' layout grid are shown in Fig. 18, with the resulting meters display shown in Fig. 19.

The available variants for this External Input meter have all been placed on the same grid on the actual display in single & double height.

These variants are as follows:

No options: The 1st External input meter shows the 7.1.4 immersive audio input meter.

Loudness: The 2nd External input meter shows the audio input meter, but now includes the loudness meter and its appropriate data for the 7.1.4 input.

Configuring Fader Meters

The Group and Aux meter options available from the 'Edit meter' layout grid are shown in Fig. 16. The resulting meters display is shown in Fig. 17, along with Aux meter variants.

The available variants for this Stereo Aux meter have been placed on the same grid and shown on the actual display in single & double height forms. These are as follows:

Dynamics: The meter shows reduced size audio meters, and includes Dynamics 1 Comp/Lim and Expander & Dynamics 2 Comp/Lim gain reduction meters.

Full Immersive: The meter shows full sized audio meters with TF & TB placed to the right of the surround meters.
Note: using this option removes the dynamics meter display. This is to fit the audio meter in a 2 meter element width.

Follow Fader Option

Above the Dynamics or Full immersive options is a 'Follow A/B' dropdown box. This allows the user to select this meter to only show what is on sub-layer A or sub-layer B, or to allow it to follow the change between sub-layer A & sub-layer B on the same meter. This is the default option.

Configuring Other Meters

All 'Other' meters can be shown in both single and double height sizes, and as default show only the audio meter. Available variants for 'Other Meters' are as follows:

None: The 1st Aux bus meter shows only the audio meter.

Loudness: The meter shows the audio meter and a loudness meter of appropriate width

FIG. 7 - CREATING FADER METER DISPLAYS

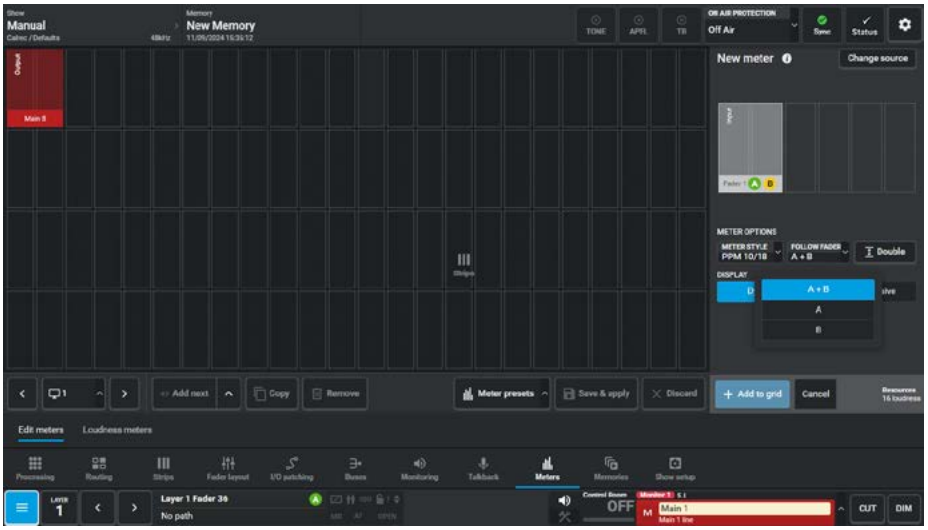


FIG. 8 - VIEW OTHER METER VARIANTS



FIG. 9 - CREATE OTHER METER VARIANTS



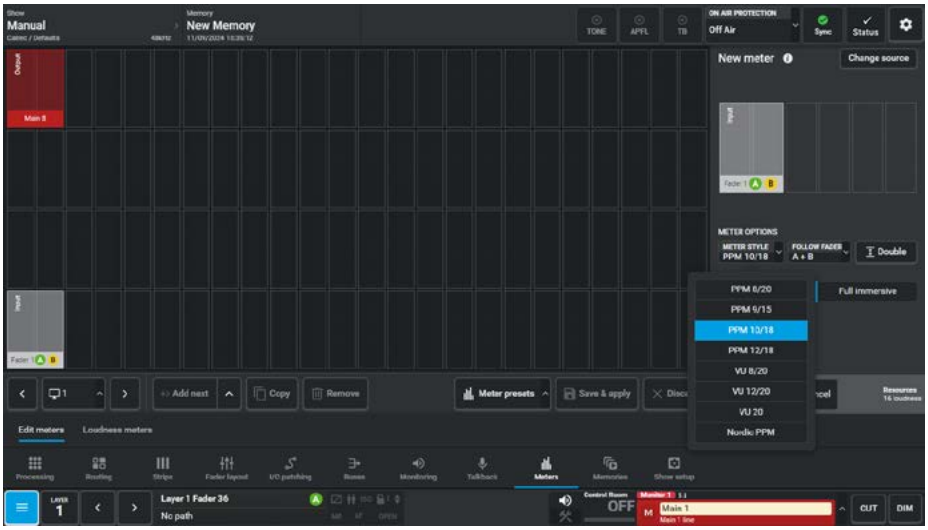
Meter Style

The 'Meter Style' dropdown (see Fig. 10) allow the user to apply different meter scales and characteristics on a per meter basis.

There are 8 meter style options available:

- PPM 8/20
- PPM 9/15
- PPM 10/18
- PPM 12-18
- VU 8/20
- VU 12/20
- VU 20
- Nordic PPM for use at 0dBFS=-18dBU.

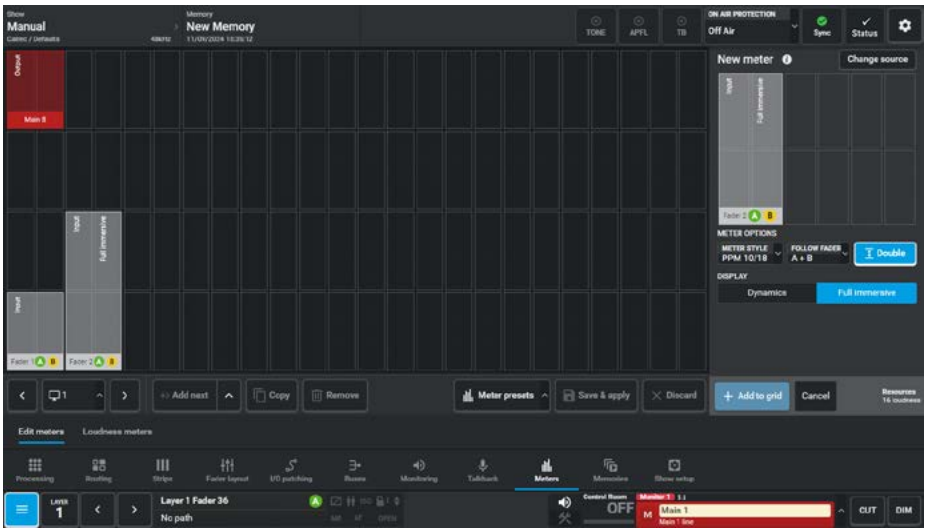
FIG. 10 - EDITING METER STYLES



Double Height Meters

Fader 2 has been defined as a double height meter, as shown in Fig. 12. It has also been set to Follow A/B, and been set to display the Full immersive meter size.

FIG. 11 - DOUBLE HEIGHT METERS



TILES

As of Argo v1.4, Processing and Routing information can be included in the Upstand Meter Layout through the use of Tiles. Tiles can be selected and arranged as required into blocks, and then included in the upstand meter layout, as seen in Fig. 1. Tiles can be configured for Mains, Groups, Auxes, Tracks, and can follow the accessed path.

Creating a Tiles Block

Under Meters>Edit meters select 'Add Tiles', as highlighted in Fig. 2. This will open the 'Select a source' dialogue box shown in Fig. 3.

The source list scrolls with a two finger drag on the touchscreen, and the scrollbar at the bottom of the dialogue box displays the current position in the list. Source filter buttons are available along the bottom of the source list to simplify selection. In the bottom right hand side of the dialogue a search option is available, used to locate a source based on the source's system name or user label.

Tap a source to select it and open the 'New Tile' panel.

FIG. 1 - EXAMPLE TILES CONFIGURATION



FIG. 2 - ADDING TILES

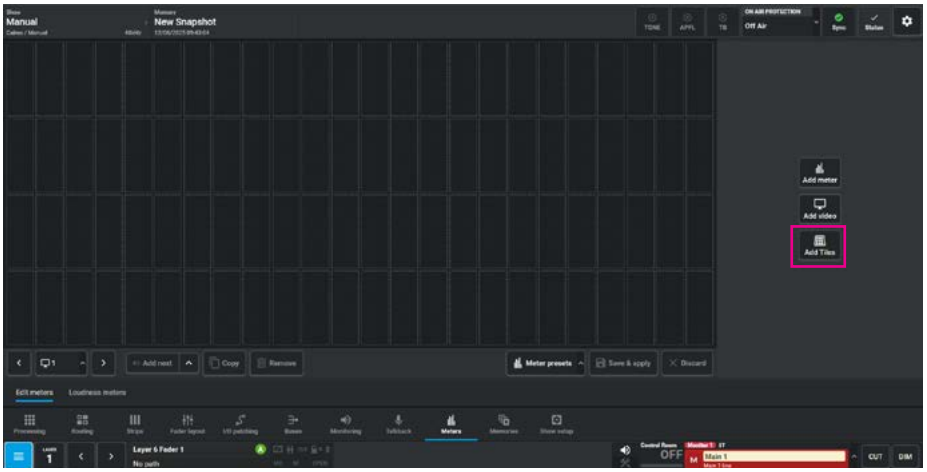
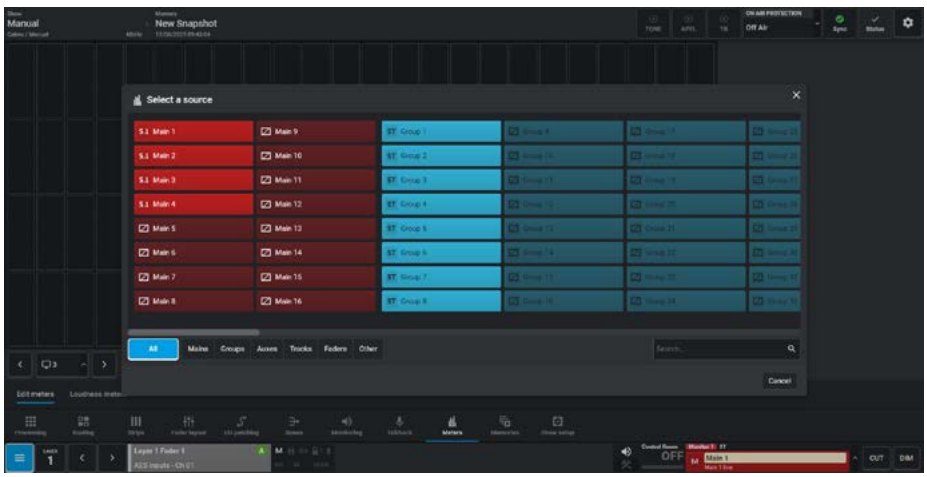


FIG. 3 - TILE SOURCE SELECTION



Configuring a Tiles Block
Once a source has been selected Tiles can be added to a block from the preview menu on the right hand side of the panel. This scrolls with a single finger drag. Available Tiles are organised into Processing and Routing tabs, the icons for which can be found in Fig. 4. Greater detail on the available Tiles can be found in Fig. 6 on page 2226 & 7.

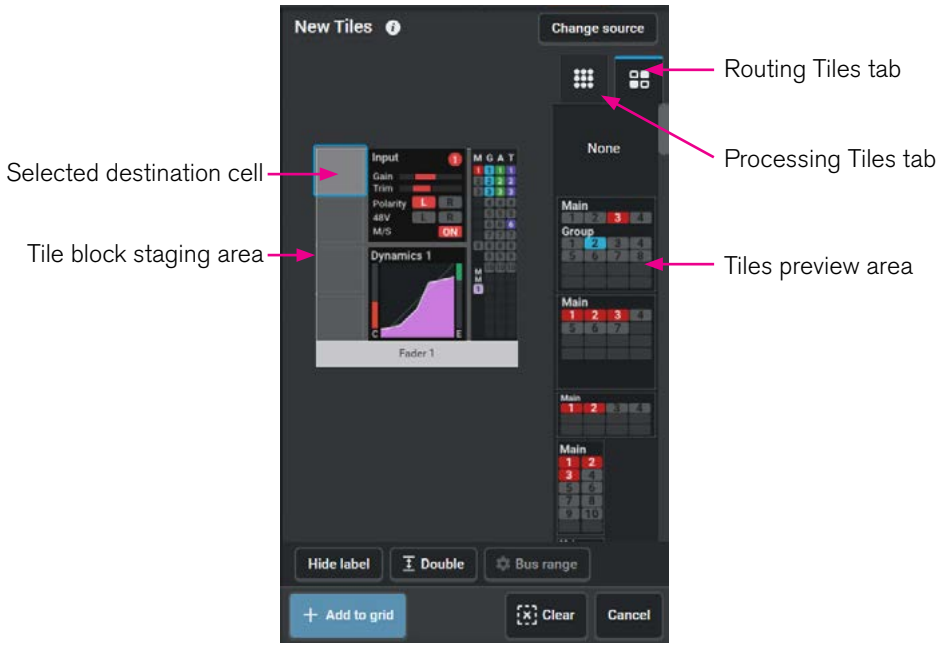
Note: Tiles shown in the preview area do not show live data, and are only available as a preview of their content once added to the upstand.

To place a Tile in a block, first tap the destination cell, and then tap the desired Tile to place it. To move a Tile within a block, tap and then drag it to a different cell. To remove a Tile from a block either tap it and then select 'None' from the preview menu, or tap and drag it out of the block.

Bus Range
Where a routing tile has more buses available to it than it can display, select the displayed range using the **'Bus range'** button in the bottom of the panel. This is only available to a Tile with at least 2 ranges available (e.g. if a Tile supports 16 Mains, but the system only has 16 Mains or less, range selectors for that Tile will not be available).

Hide Label
The **'Hide label'** button will remove the label from a tile *only* when viewed in the meters display. The label will remain visible in the **'Edit meters'** view to allow for easy editing and identification

FIG. 4 - NEW TILES PANEL



Double Height Tiles
Double height Tiles will occupy two rows in the meter grid. In Fig. 5, Fader 2 has been defined as a double height Tile, and Fader 1 as a single height Tile.

Tile Placement on Meter Grid
Once the configuration changes to the selected sources are made, the Tiles layout can be dragged onto the required location in the grid. Alternatively, the user can tap on a location on the grid before using the **'Add to grid'** button to place the Tile.

To finalise changes made to the meters, tap the **'Save & apply'** button. The **'Apply changes'** dialogue box then appears, as shown in Fig. 6.

This will load the meter and Tiles layout onto the selected upstand meter panel, as indicated by the meter display icon area, as seen in Fig. 7. The **'Discard'** button will return the layout to the last saved state.

FIG. 5 - DOUBLE HEIGHT TILES

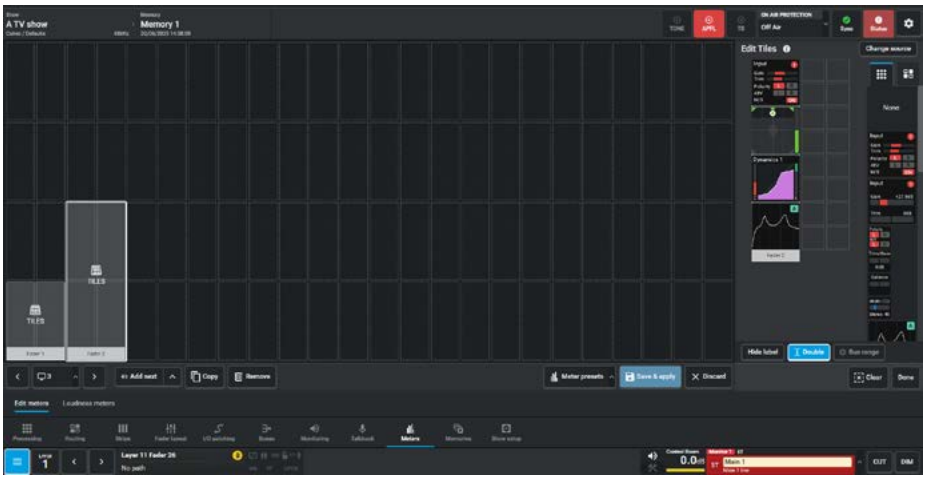


FIG. 6 - PLACE AND SAVE BUS METER ON DISPLAY GRID

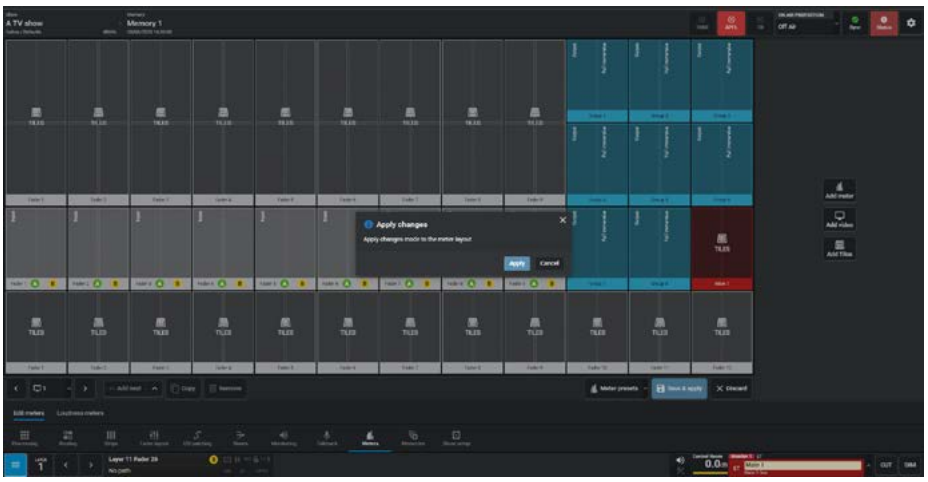


FIG. 7 - METER AND TILES LAYOUT ON UPSTAND

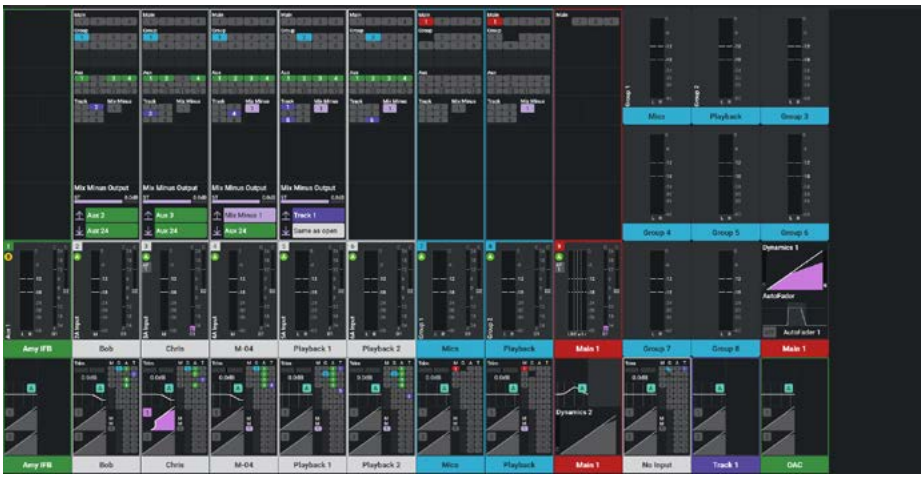
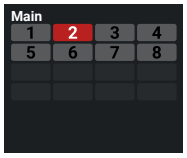
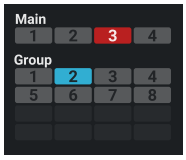


FIG. 8 - AVAILABLE ROUTING TILES

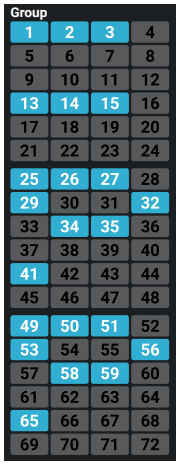
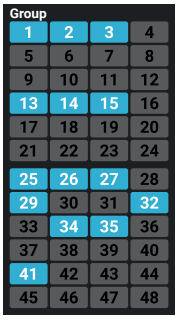
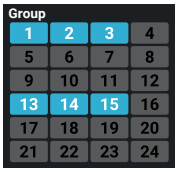
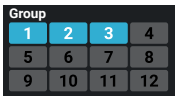
Routing Tiles

Main buses

2x2	2x1	1x2	1x1	Mains & Groups 2x2
				

Red indicators show active routes to Main buses
Blue indicators show active routes to Group buses.
Grey indicators show for unrouted buses.

Group buses

2x8	2x6	2x4	2x2	2x1
				
				

Blue indicators show active routes to Group buses.
Grey indicators show unrouted buses.

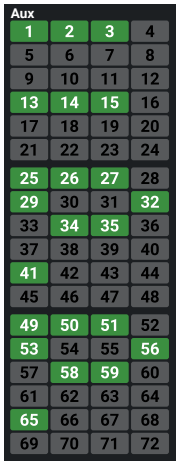
FIG. 8 - AVAILABLE ROUTING TILES (CONTINUED)

Aux buses

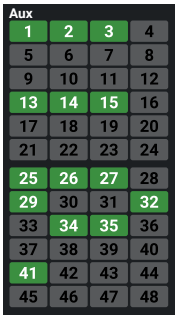
2x8



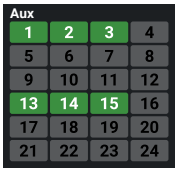
2x6



2x4



2x2



2x1



1x2



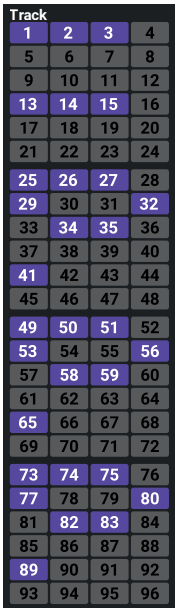
1x1



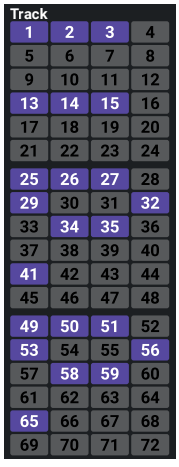
Green indicators show active routes to Aux buses.
Grey indicators show unrouted buses.

Track buses

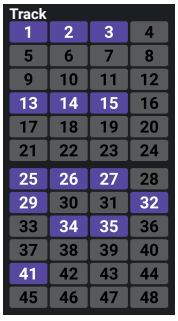
2x8



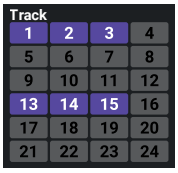
2x6



2x4



2x2



2x1



1x2



1x1



Purple indicators show active routes to Track buses.
Grey indicators show unrouted buses.

FIG. 9 - AVAILABLE ROUTING TILES (CONTINUED)

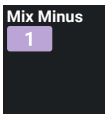
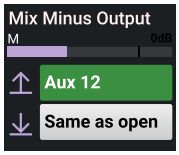
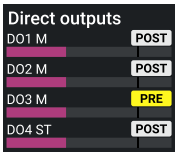
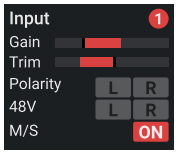
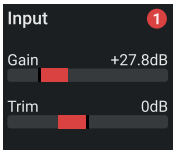
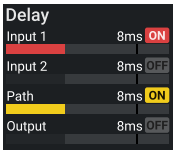
Mix Minus bus	Mix Minus Output	Direct Outputs	Routing Overview
1x1	2x2	2x2	1x3
			
Pink indicators show active routes to MM buses. Grey indicators show unrouted buses	Displays Mix Minus Output level, as well as sources for fader Open and Closed states. This Tile will not display if a Mix Minus Output has not been created.	Displays Direct output levels and send positions. This Tile will not display if no Direct Outputs have been created	Replicates the routing layout found in the Calrec Summa console. Provides an overview of current routing states for Mains, Groups, Auxes, and the Mix Minus bus.

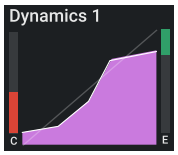
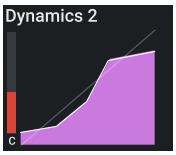
FIG. 9 - AVAILABLE PROCESSING TILES

Processing Tiles

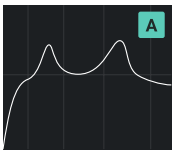
Main buses

2x2	2x2	2x2	1x1	1x1
			 	 
Indicators will light red when active		Active indicators will light red for Input delays, and with the corresponding colour for different types of output delays.	Polarity indicators will light red when polarity has been inverted.	

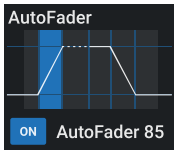
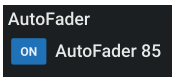
Dynamics

2x2	2x2	1x1
		 1x1 
Provides a thumbnail of the dynamic graphs for Dynamics 1. The left hand meter displays Compressor gain reduction. The right hand meter displays Expander, Gate or Ducker gain adjustments	Provides a thumbnail of the dynamic graphs for Dynamics 2. The left hand meter displays Compressor gain reduction.	Provides a thumbnail of the dynamic graphs for Dynamics 1 & 2

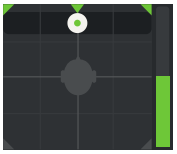
EQ Tiles

2x1	2x1
	 1x1 
Provides a thumbnail of the EQ curve. The A/B indicator in the top right corner will display which EQ setup is selected	

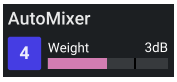
AutoFader

2x2	2x1
	 1x1 
Provides a thumbnail of the graph and/or status of connected AutoFaders. Status indicators light blue when active. Displays 'Not Connected' if no AutoFader is connected.	

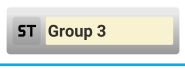
Panning

2x2	1x1
	
Provides a thumbnail of the current panning position. The right hand meter displays height information if relevant.	

AutoMixer

2x1
 1x1 
Displays status indicators and path weighting of connected AutoMixers. Status indicators light when active.

User Label

2x1

Displays path width and any user labels configured for a path.

METER LAYOUT GRID

Copying Meters/Tiles
The **'Copy'** footer button**,** is provided to make a copy of any meter or Tile placed on the grid. Copy/Paste is used as follows:

- Select the meter or Tile to be copied - this will be highlighted in white
- Tap the **'Copy'** button to open the '**Copy'** dialogue, as shown in Fig. 11.
- Tap the intended paste destination - this will be highlighted in light grey
- Tap the **'Paste'** button - this will place the meter at the highlighted cell
- Tapping '**Done**' will exit and close the Copy dialogue.

Note: Copy/Paste can be used between each of the available Argo TFT upstand meter panels by tapping the Meter Display Icon area button or the left and right arrow buttons, allowing the user to choose which displays to copy from or paste to.

Add Next
The **'Add next'** button in the footer is included to assist with quickly building out meter layouts.
Select a meter or Tile in the grid, followed by 'Add next'. This will place a duplicate meter immediately next to the selected meter or Tile, fed by the subsequent source of the same type.
For example, selecting a meter or Tile with Fader 1 as its source and then tapping 'Add next', will add a duplicate Fader meter immediately to its right, with Fader 2 as its source (See Fig. 2).

Continuing to tap **'Add next'** will auto increment the number, allowing the user to create a set of sequential meters.
Alternatively, opening the dropdown box to the right of the '**Add next**' button offers 2 other methods of creating meter rows:

- '**Fill empty space**' repeats the Add to next function until it reaches a non-empty space or row end.
- '**Overwrite row**' overwrites any existing meters to the end of the row.

FIG. 1 - COPYING METERS

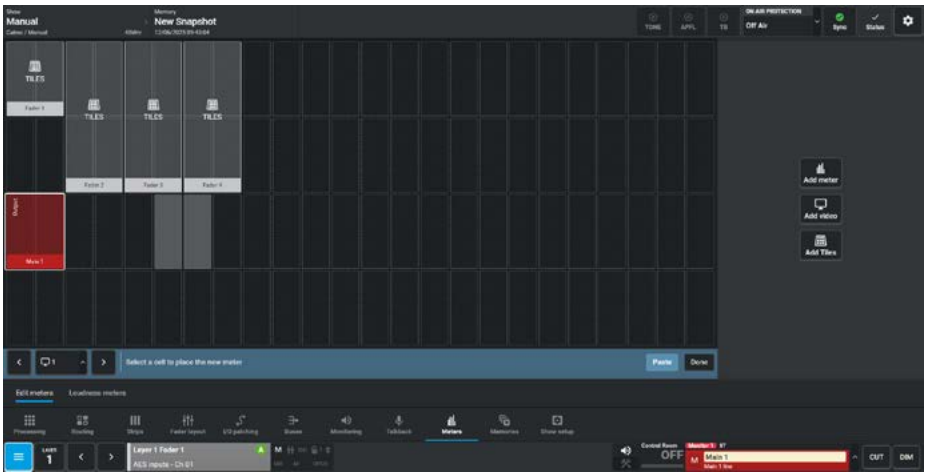
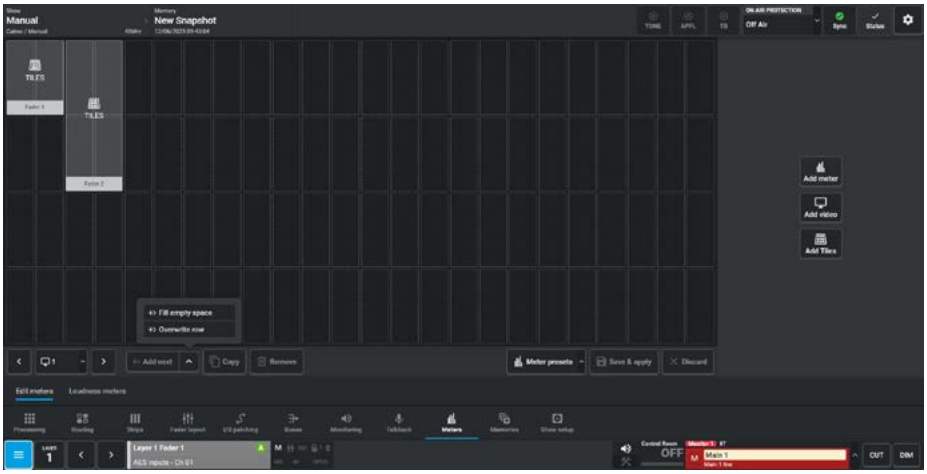


FIG. 2 - ADD NEXT FUNCTION AND FILL/OVERWRITE OPTIONS



Moving Meters/Tiles in the Grid
Meters can be moved by tapping/clicking, and then dragging the meter to move that meter to the desired new grid location.

Fig. 3 shows a Fader 2 Tile being dragged to a new location. In the background, an outline appears over the nearest location. Release the drag to place the meter in its new location.

If the new location is empty this will finalise the move. If the desired location already has meters placed on that area of the grid, a dialogue box will appear as shown in Fig. 3, advising that an existing meter is about to be overwritten. Tapping 'Overwrite' removes the meter(s) that are underneath the required space and places the meter in the same location. Tapping 'Cancel' cancels the move and returns the meter to its original location.

Removing Meters/Tiles from the Grid
To remove meters or Tiles from the Meter Layout grid, tap 'Remove' in the footer. Fig. 4 shows that a Fader 2 Tile is to be removed. The user selects the first meter to be removed in the grid and a white highlight is applied.

The **'Remove'** button then becomes available. Tapping this button opens the remove dialogue in the footer as shown. Meters and Tiles can be individually selected/deselected with a tap, or with the **'Select All'** or **'Select None'** buttons in the footer. Each meter to be removed has a white highlight applied.

The user taps the **'OK'** button in the footer dialogue to remove the selected meters from the grid. Tapping the 'Cancel' button exits the dialogue without removing any meters.

FIG. 3 - MOVING METERS/TILES

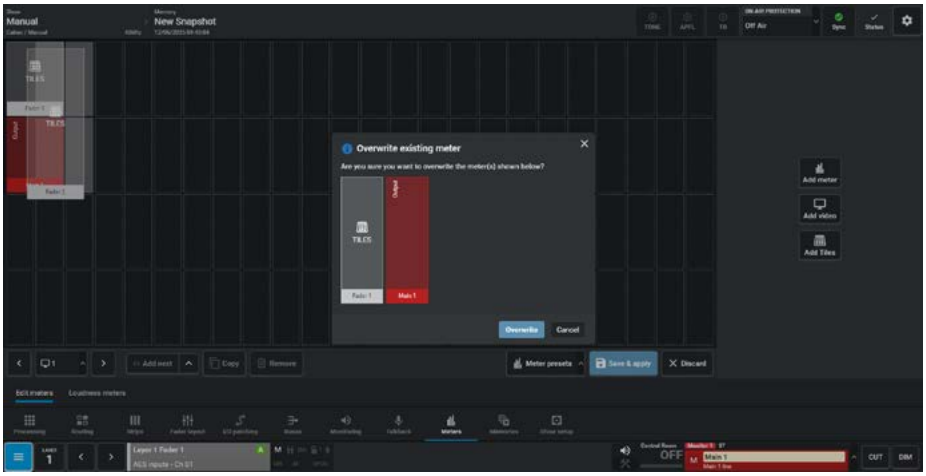
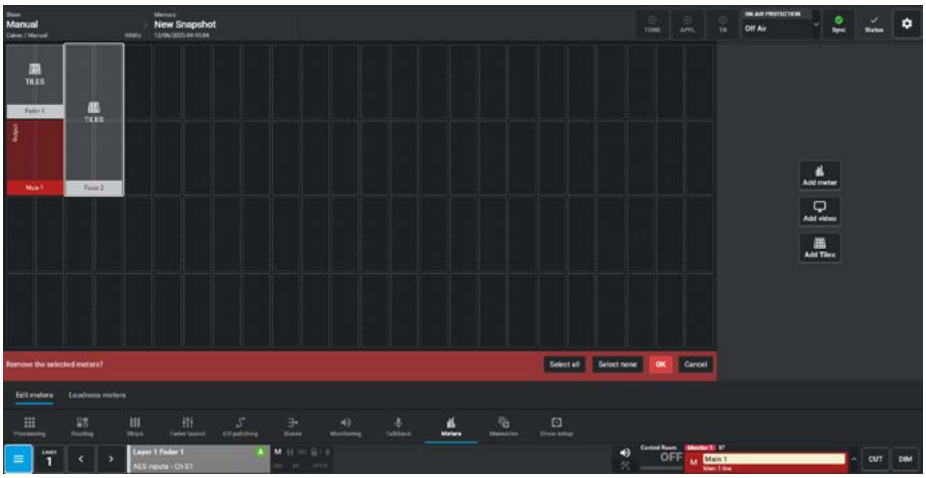


FIG. 4 - REMOVING METERS/TILES



Add Video window to Meter Display
The Argo surface offers the option of two Video inputs via SFP's connected in the back of each section processor, which can be displayed on its associated Upstand TFT meter panel. These Video inputs are labelled '1' and '2'.

Fig. 6 shows the 'Edit meters' page with Section 1 of the Argo Surface (faders 1-12) displayed. An additional Meter option is available to Insert a video window onto the Upstand Meter. When the **'Add Video'** button is pressed, the **'Edit video'** panel appears on the right side of the screen, in place of the Audio Meter Configuration panel.

Fig. 6 shows an empty meter page being configured for a full screen video window. If there are meters already on the page, pressing 'Add to Grid' will open the **'Overwrite dialogue'** box, allowing the user to either overwrite currently selected meters, or to cancel the operation.

The size and placement of the video is determined by first selecting either a Full or 1/4 window size.

The TFT display is Full HD, so if the Full screen is selected, the display will use the full 1920px X 1080px window area to show the video. If the 1/4 screen option is selected, the user can choose where to place the 960px X 540px window area to show the video. The initial options are top left, top right, bottom left & bottom right.

Beneath the video position options is the Video input selection, which determines which video input, 1 or 2, will be the selected source.

Fig. 7 shows that a 1/4 size Video window has been placed top left on section 3 (faders 25-36) and that it will appear in the top left of the TFT display. The remaining area has been populated with Audio Meters as normal.

Note: the position of the Video window, its size and where it is placed are saved as part of the meter preset.

FIG. 5 - METER LAYOUT ON ARGO TFT SECTION 1 - ADD VIDEO OPTION



FIG. 6 - METER LAYOUT ON ARGO TFT SECTION 2 - ADD FULL VIDEO-INPUT 1

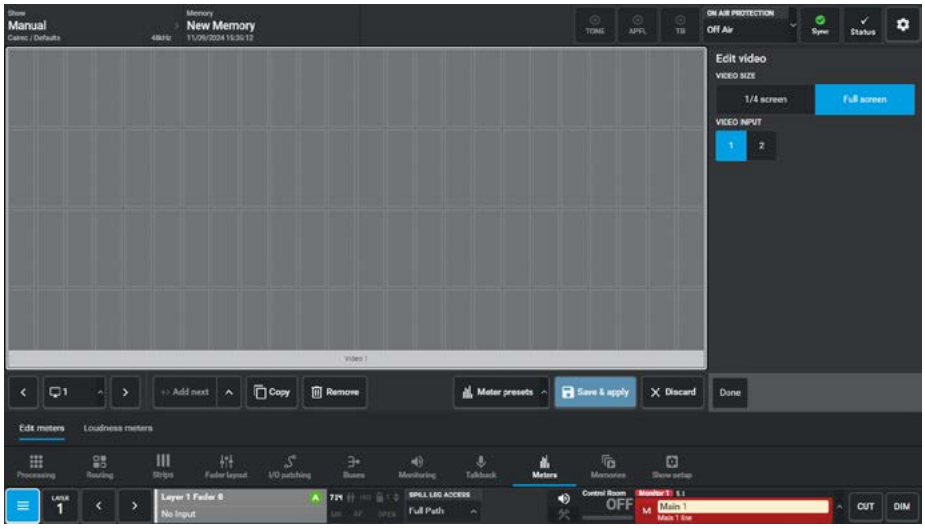
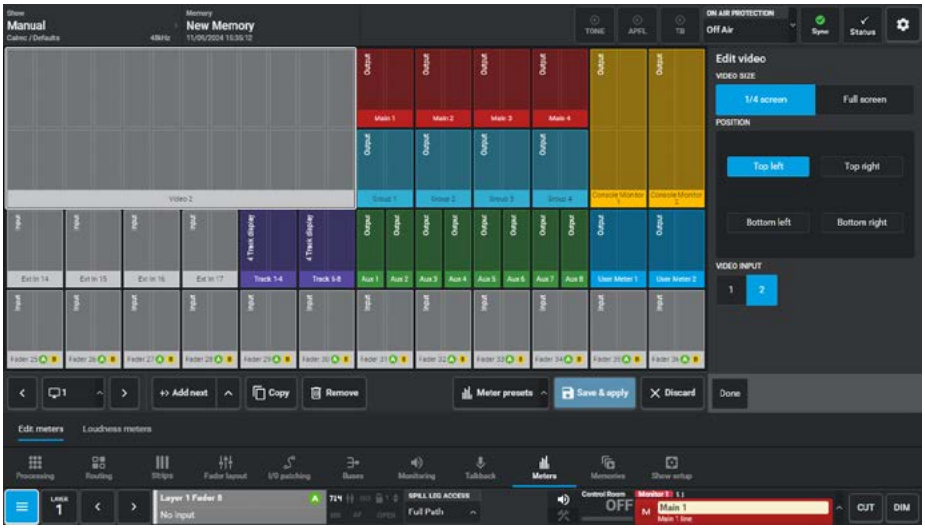


FIG. 7 - METER LAYOUT ON SECTION 3-ADD QUARTER VIDEO-INPUT 2



METER LAYOUT PRESETS

Meter Layout Presets Function
Meter layouts stored and recalled. This is carried out in the Presets dialogue. The user can access these by tapping the **'Meter Presets'** button in the meter layout page. The presets are contained in preset folders. Typically, a user will have their own preset folder. Fig. 1 shows the meter layout 'Presets' dialogue box. It is arranged into two areas. The left side allows the user to create, label or delete preset folders, each of which can contain any number of meter layout files. The right side shows the presets that are contained in the selected preset folder.

Meter Layout Preset Folders
The following functions are available:
Create Preset Folder: To create a new preset folder, the user taps the folder icon highlighted on the preset folders side in Fig. 1. The folder can then be named using the on-screen-keyboard in the 'Create preset folder' dialogue box, shown in Fig. 1. Tapping **'Create'** confirms the creation a new empty preset folder.

Edit Preset Folder: To edit the name of an existing preset folder, the user must first select the folder to be renamed before tapping the 'Edit' icon on the preset folders side. The folder can then be renamed using the on-screen-keyboard for the folder in the 'Edit preset folder' dialogue box, which appears instead of the create preset folder, see Fig. 2. Tapping the **'Save'** button confirms all changes.

Delete Preset Folders: To delete an existing preset folder, the user first selects the folder to be deleted before tapping the 'Delete' Icon highlighted on the preset folders side of Fig. 3.

The 'Delete selected folders' dialogue box appears as shown in Fig. 3. This shows the presets contained in the folder and requests confirmation that the user wishes to permanently delete the folder(s) and any presets they contain. A graphic is inset, showing the names of the folders and files affected. Once the **'Confirm'** button is tapped, the deletion is confirmed.

Note: this cannot be undone.

FIG. 1 - METER PRESET FOLDER/PRESETS FUNCTION

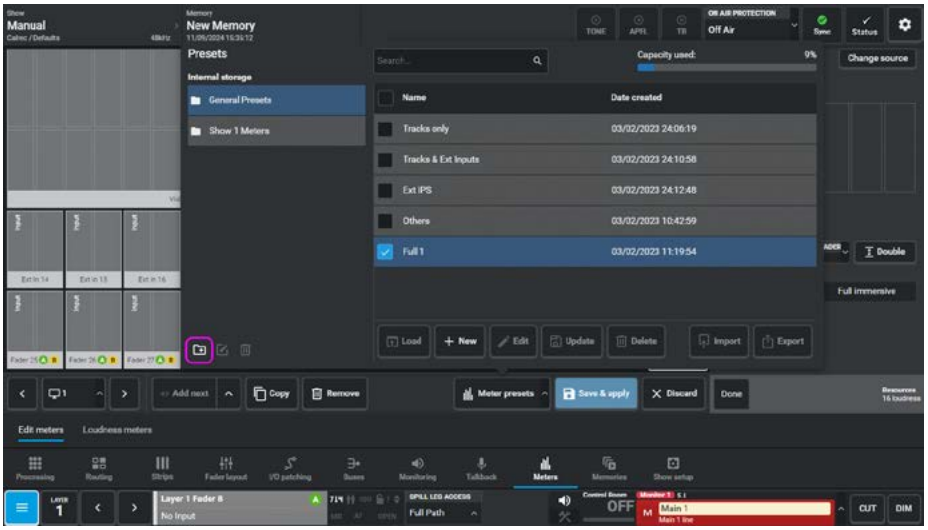


FIG. 2 -CREATE PRESET FOLDER & EDIT PRESET FOLDER

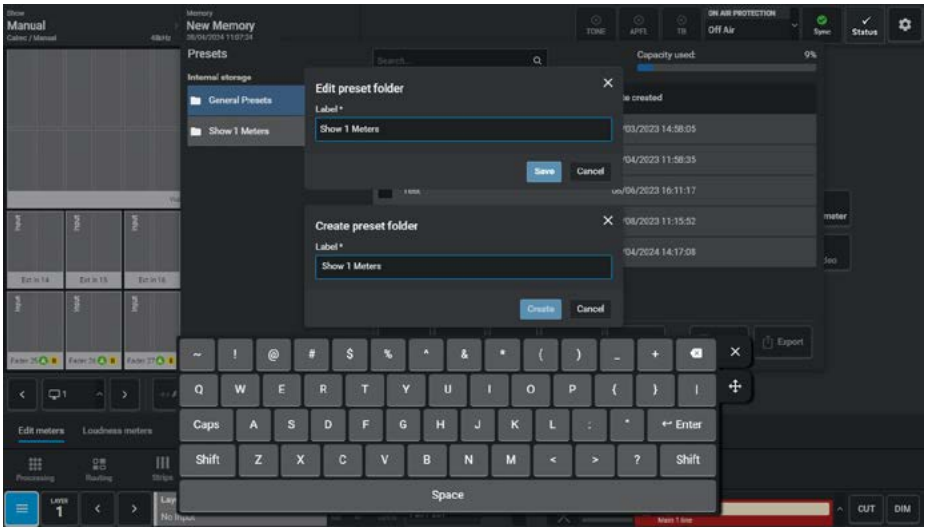
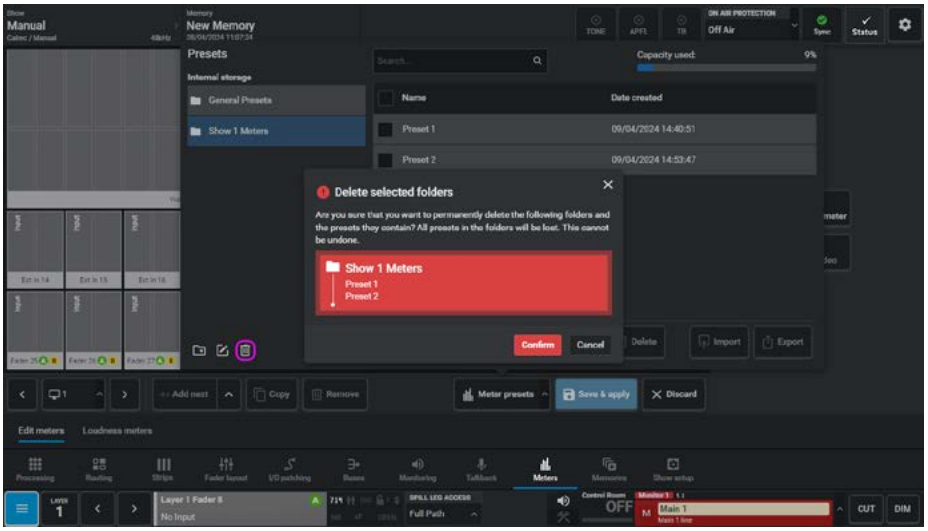


FIG. 3 -DELETE PRESET FOLDERS



Meter Layout Presets
The following functions are available:
Create Preset: To create a new preset, the user selects the preset folder where this preset is to be placed before tapping 'New' on the presets side. The new preset can then be named using the on-screen-keyboard in the 'Create preset' dialogue box, see Fig. 4. Once the **'Create'** button is tapped, the preset creation is confirmed.

Note: the Meter Preset file contains the meter layout not only of the Assist meter page, but also each of the Argo TFT meter upstand displays as well.

Edit Preset: To edit the name for an existing preset, the user must first select the preset to be renamed before tapping 'Edit' on the presets side. An alternative name can be created using the on-screen-keyboard for the preset in the 'Edit preset' dialogue box, which appears instead of the 'Create preset' dialogue box and is shown for convenience inset in Fig. 4.

Once the **'Save'** button is tapped, all changes are applied.

Load Preset: Fig. 5 shows the process of loading a meter preset. When the **'Load'** button is tapped, a 'Load' dialogue box opens, requesting confirmation that the user wishes to load this preset. Once the **'Load'** button is tapped, the preset will be loaded.

Update Preset: Fig. 6 shows the process of updating a meter preset. When the **'Update'** button is tapped, an 'Update' dialogue box opens, requesting confirmation that the user wishes to update this preset. Once the **'Update'** button is tapped, the stored preset is overwritten with the current meter layout in the grid.

Note: make sure that the correct existing preset has been selected before applying 'Update' as it will be overwritten.

FIG. 4 -CREATE PRESET & EDIT PRESET LABEL

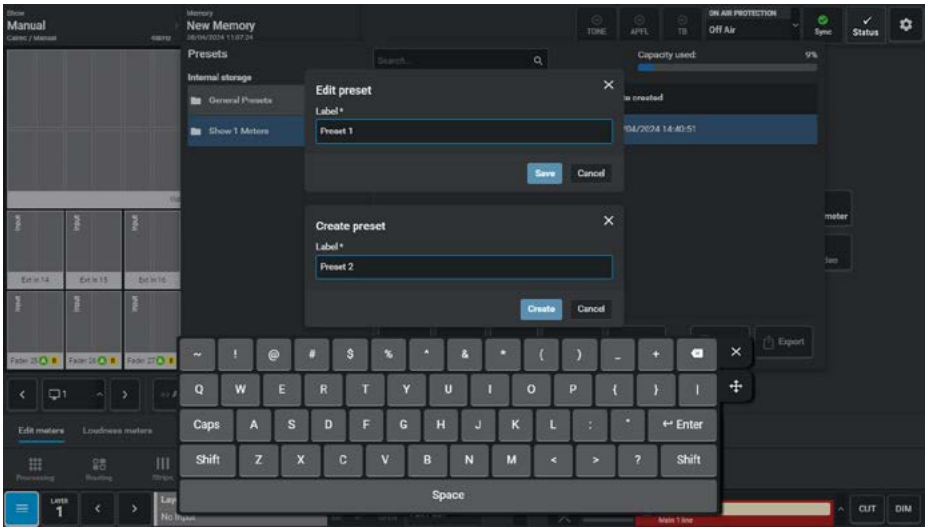


FIG. 5 -LOAD PRESET

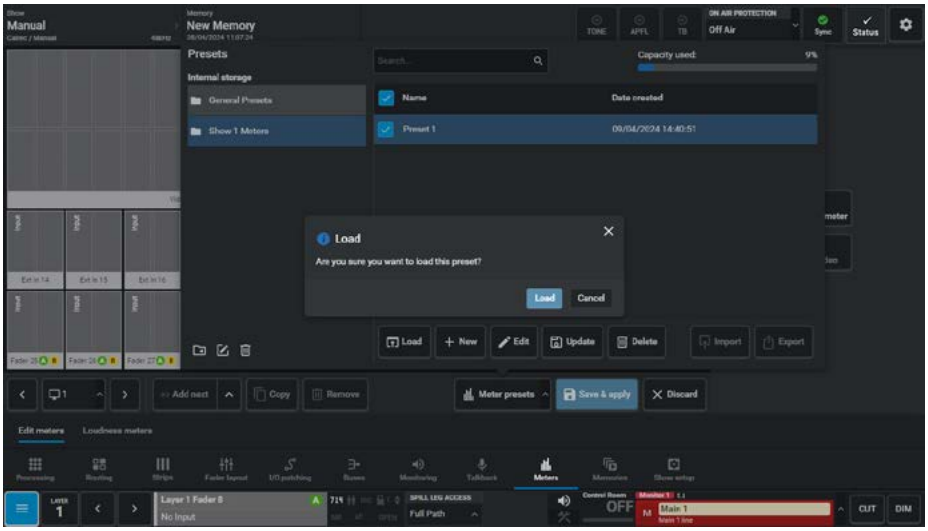
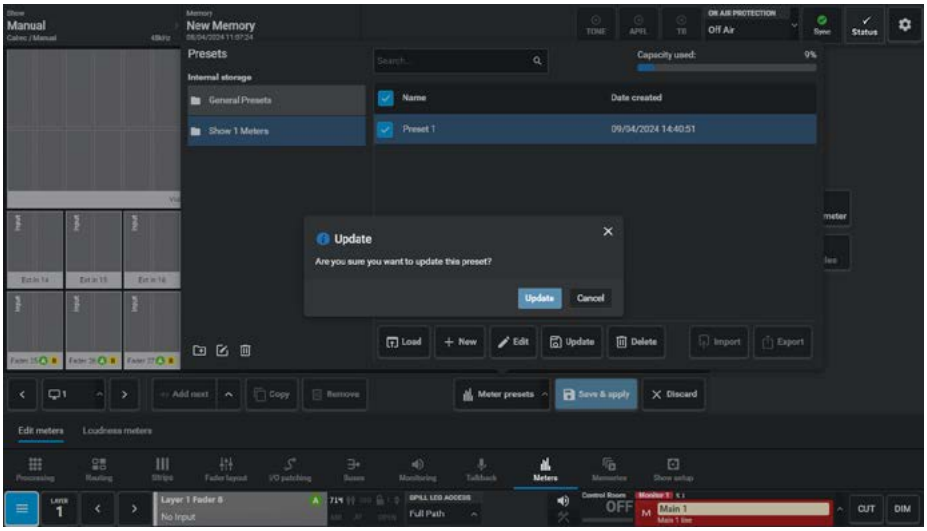


FIG. 6 -UPDATE PRESET



Delete Presets: To delete existing presets, the user selects the presets to be deleted before tapping '**Delete**' on the presets side. The '**Delete selected presets**' dialogue box appears, as shown in Fig. 7. This shows the selected presets and requests that the user confirms that they wish to permanently delete them.

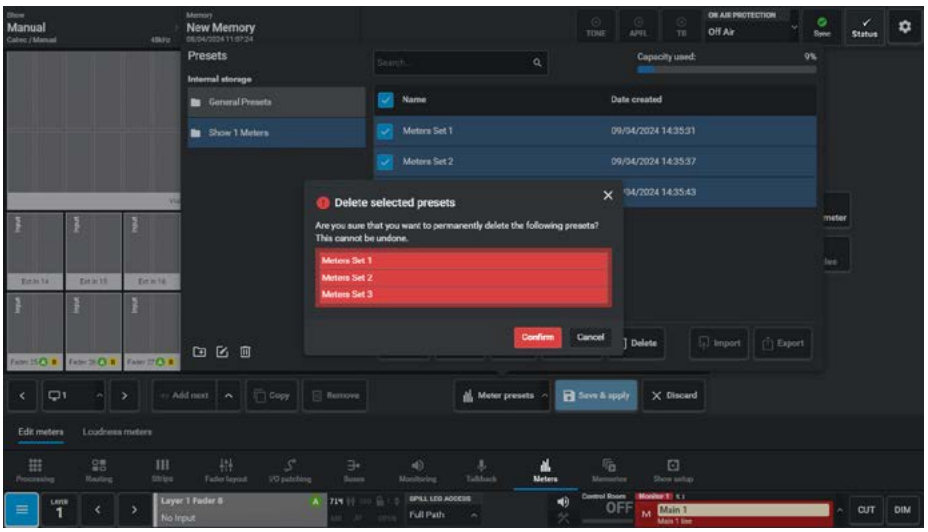
A graphic is inset in the dialogue box showing the names of the presets affected. Once the **'Confirm'** button is tapped, the affected presets are deleted.

Note: this cannot be undone.

Import/Export Meter Presets
This is available through Argo Assist.

In addition to the preset functions, there is a search box allowing the user to search for the name of a particular meter preset file. Likewise, a Capacity Used indicator bar is shown at the top of the meter presets dialogue box.

FIG. 7 -DELETE PRESETS



LOUDNESS METERS (NOT YET AVAILABLE FOR IMPULSEV)

Loudness meters provide a way to monitor and regulate average loudness levels over the duration of a programme.

16 loudness meters are available to be assigned to any output. Loudness meters can be included in the 'View meters' display using the method described in the Setup Meter layout section.

Loudness Metering Modes

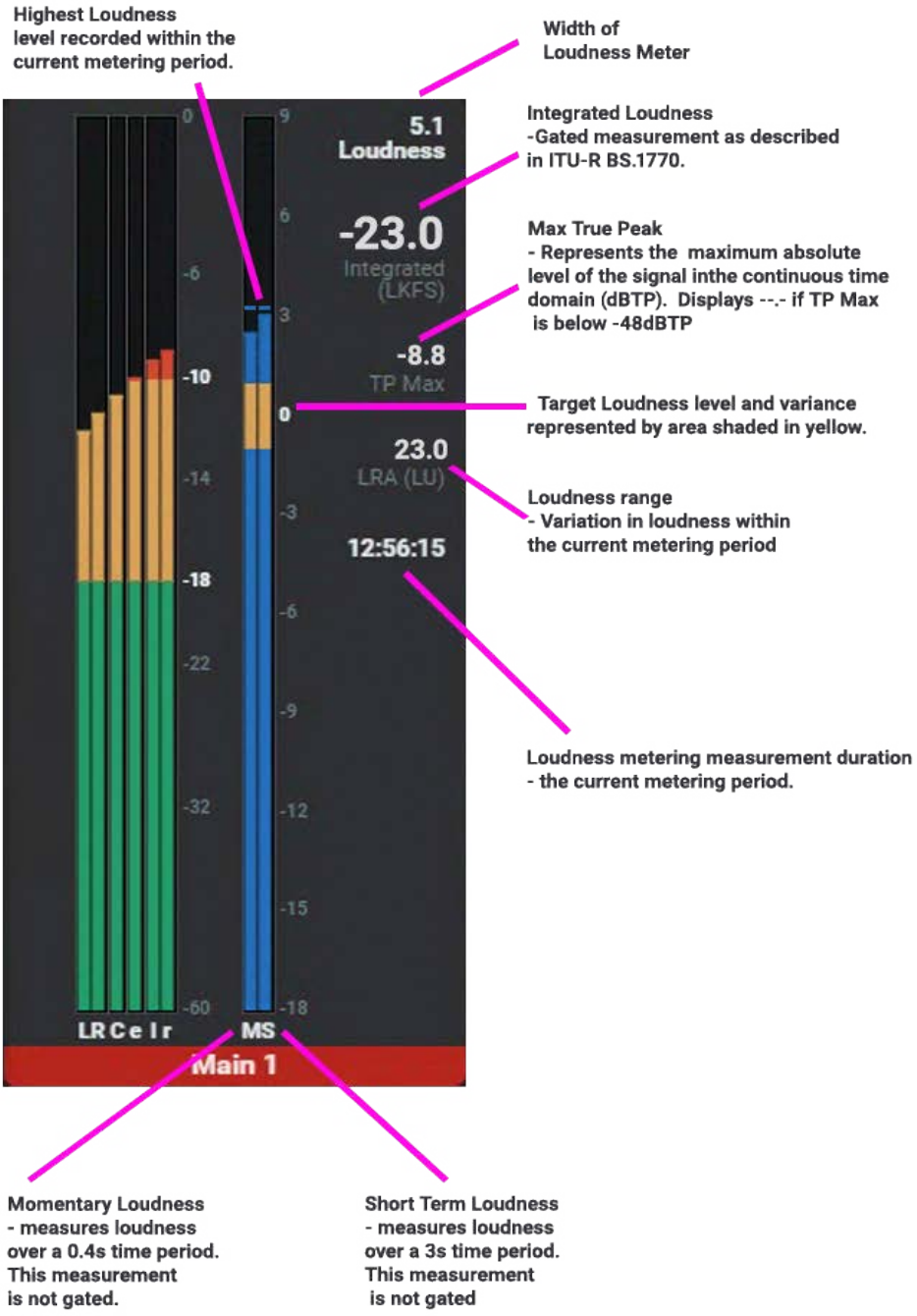
There are a number of loudness metering modes available on the console. This is shown in the dropdown mode box, the details of which are displayed in a table on the following pages. The loudness meter mode is set globally.

An appropriate loudness metering scale can also be set from this screen, as shown in the following pages. These alter the scale of all loudness meter bar graphs - the example shown on the right is displaying EBU mode with +9...-18 LU scale.

Loudness meter modes relate to standards set by organizations in different geographical regions. EBU (European Broadcasting Union) relates to Europe, ATSC (Advanced Television Systems Committee) to North America and ARIB (Association of Radio Industries and Businesses) to Japan. These are currently the main standards and are being widely adopted in other geographical regions.

See **"Loudness Metering Mode Tables" on page 234** for a table of Loudness Metering Modes.

FIG. 1 - LOUDNESS METER - ANATOMY OF COMPONENTS

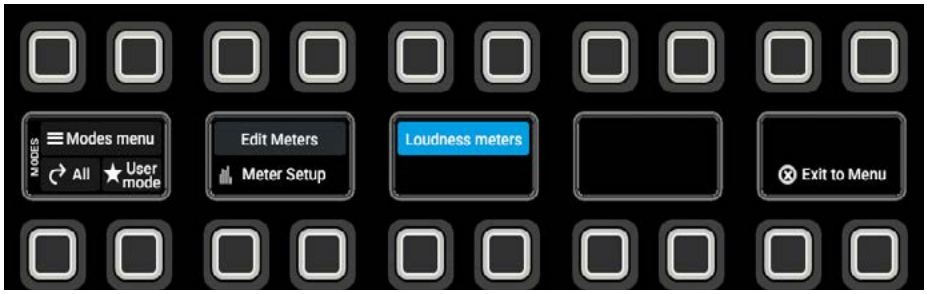


- The current metering period refers to the period since the meter(s) were last reset.
- A gated measurement is calculated ignoring signals below the gate threshold.

LOUDNESS METER OPTIONS

Loudness Page Selection
Fig. 1 shows the Modes row selection for access to the Loudness meter settings by first pressing Modes Menu, before selecting the Meter Setup button to show the Meter Setup sub-menus. This can also be accessed from the lower part of the Touchscreen as highlighted in Fig. 2.

FIG. 1 -METERS MODE - LOUDNESS SELECT ON STANDARD FADER PANEL

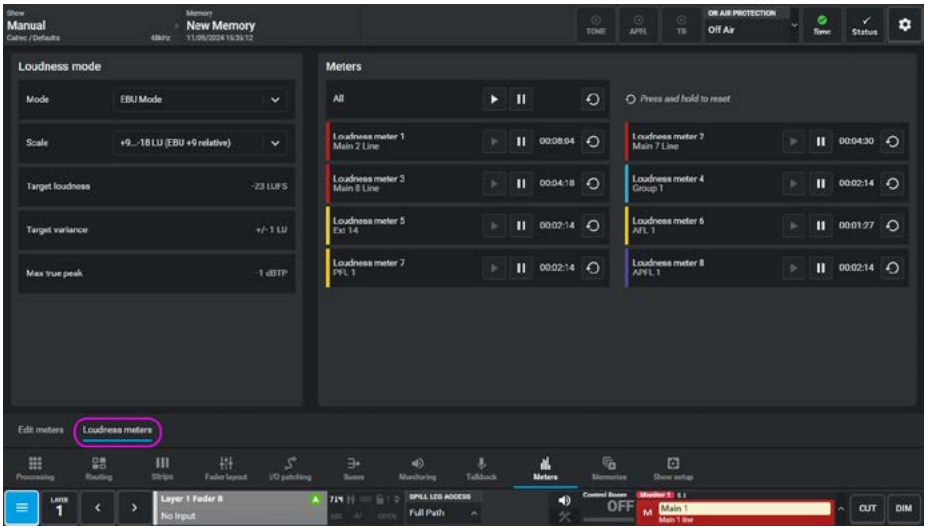


Loudness Meter page
Argo offers 16 loudness meters, which can be assigned to any of the Outputs or the External Inputs from the 'Edit meters' layout page.

This is accessed from the menu via the Meter Setup>Loudness meters page shown in Fig. 2.

It is split into two halves, with the left side dealing with the various loudness modes & scales available and the right side controlling the Start, Pause & Reset of the loudness meters.

FIG. 2 - LOUDNESS METER PAGE



Exit Meter Setup
Once the user has finished using the Meter setup functions, pressing the 'Exit to Menu' button from the console returns the display back to the primary modes menu.

Controlling Loudness Meters
Once loudness meters have been set up in the 'Edit meter' layout, the controls for each loudness meter shown in Fig. 3 can be accessed from this page.

As well as individual control cells for each loudness meter, there is a global control cell called 'All'. This can be used to start, pause or reset all loudness meters simultaneously.

FIG. 3 - LOUDNESS METER CONTROLS


Start Loudness Meter

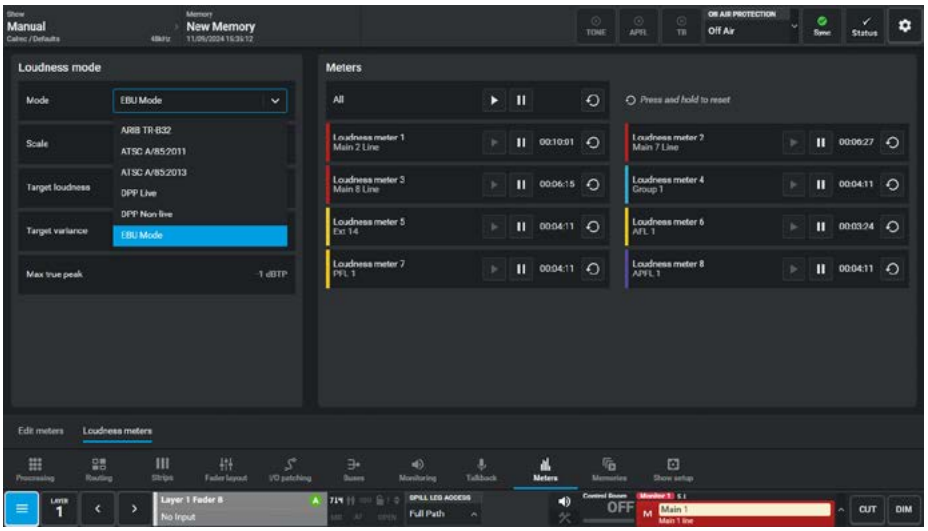

Pause Loudness Meter


Reset Loudness Meter

Loudness Modes
The various loudness modes are selected from the Loudness Mode dropdown box shown in Fig. 4.

The details of the current loudness limit settings for each of these modes are shown in the Loudness Metering Modes table, see Fig. 5 on the next page.

FIG. 4 - LOUDNESS MODES



Loudness Metering Mode Tables

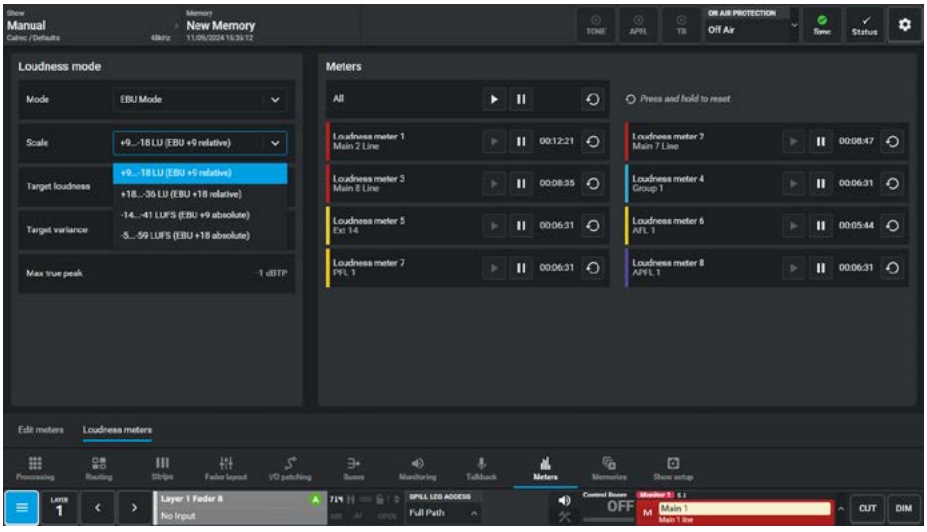
FIG. 5 - LOUDNESS METERING MODES

	Scale	Target Loudness	Target Variance	Max True Peak	Relative Gate
EBU Mode	+9...-18 LU (EBU +9 relative) +18...-36 LU (EBU +18 relative) -14...-41 LUFS (EBU +9 absolute) -5...-59 LUFS (EBU +18 absolute)	0LU (-23 LUFS)	+/- 1 LU	-1 dBTP	-10.0 LU
ATSC A/85: 2011 (BS1770-1)	+9...-18 LU (+9 relative) +18...-36 LU (+18 relative) -15...-42 LKFS (+9 absolute) -6...-60 LKFS (+18 absolute)	0LU (-24 LKFS)	+/-2 LU	-2 dBTP	N/A
ATSC A/85: 2013 (BS1770-3)	+9...-18 LU (+9 relative) +18...-36 LU (+18 relative) -15...-42 LKFS (+9 absolute) -6...-60 LKFS (+18 absolute)	0LU (-24 LKFS)	+/- 2 LU	-2 dBTP	-10.0 LU
ARIB TR-B32	+9...-18 LU (+9 relative) +18...-36 LU (+18 relative) -15...-42 LKFS (+9 absolute) -6...-60 LKFS (+18 absolute)	0LU (-24 LKFS)	+/- 1 LU	-2 dBTP	-10.0 LU
DPP Live	+9...-18 LU (EBU +9 relative) +18...-36 LU (EBU +18 relative) -14...-41 LUFS (EBU +9 absolute) -5...-59 LUFS (EBU +18 absolute)	0LU (-23 LUFS)	+/-1 LU	-1 dBTP	N/A
DPP Non-Live	+9...-18 LU (EBU +9 relative) +18...-36 LU (EBU +18 relative) -14...-41 LUFS (EBU +9 absolute) -5...-59 LUFS (EBU +18 absolute)	0LU (-23 LUFS)	+/- 0.5 LU	-1 dBTP	N/A

Loudness Scales

Within each loudness mode is a set of four loudness scales. Two of these are absolute scales, while the other two are relative scales, allowing the user to view different ranges as shown in Fig. 6.

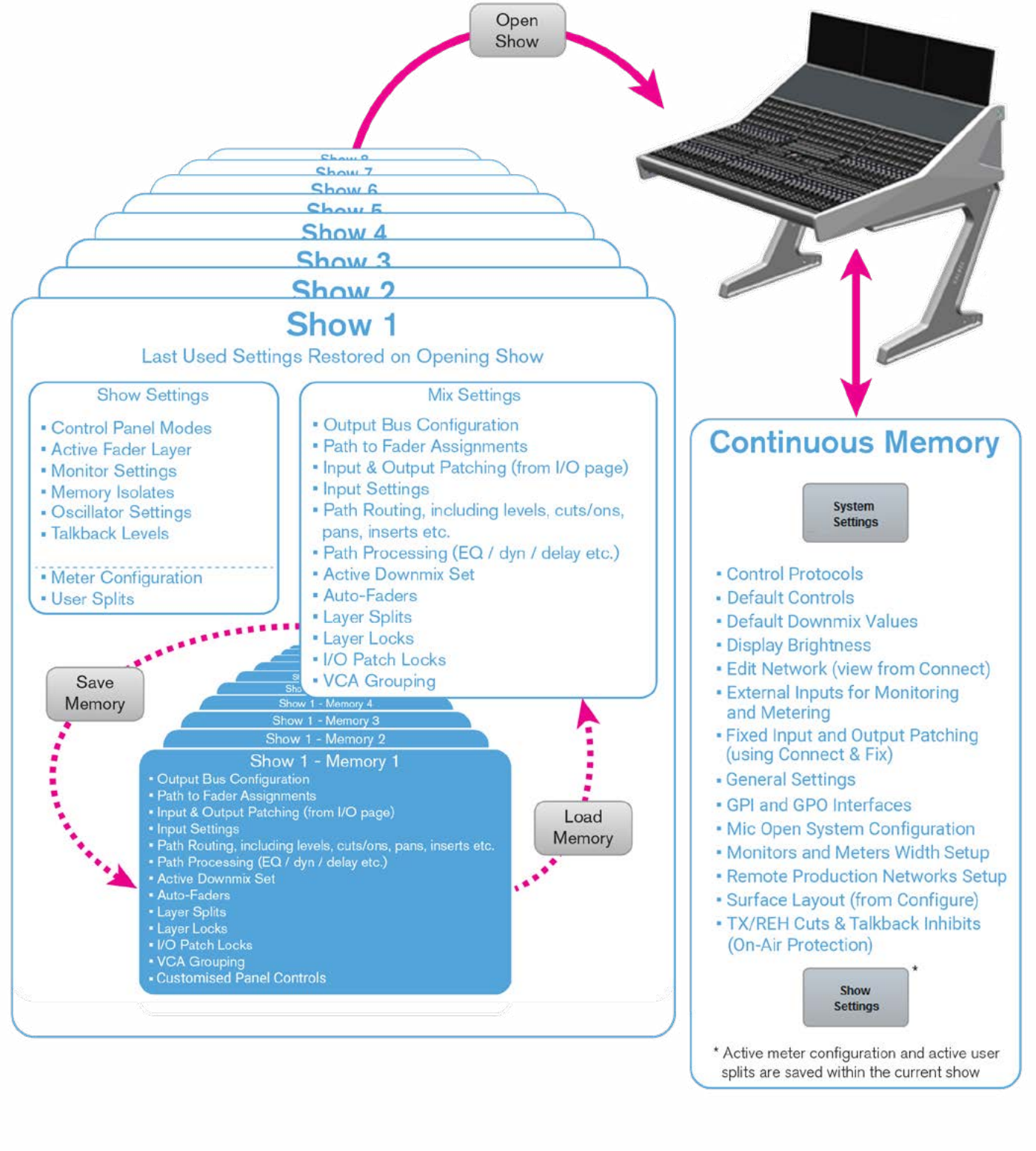
FIG. 6 - LOUDNESS SCALES



ARGO
SHOWS AND MEMORIES

CALREC

FIG. 1 - SHOWS, USER MEMORIES, ACTIVE OPTIONS FILES AND CONTINUOUSLY SAVED CURRENT SETTINGS



User memories can be thought of as snapshots - a way of recording the current settings at any given time for later recall. Argo user memories are organised within 'Shows'. Multiple Show files can be created, each containing their own set of user memories.

All current settings are continuously saved, allowing the console to boot up in its previous state after power loss or reset.

Shows do not need to be manually saved when a show is opened. Console settings automatically revert to how they were when the show was last in use.

User memories can be saved within each show to retain mix settings and configuration, such as path to fader assignments, input & output patching, path routing & levels and signal processing, see Fig. 1 on the previous page for a more detailed list. The current settings of all the parameters that can be saved to a user memory are continuously saved to a 'hidden' user memory within the show.

Note: when a show is opened (either manually or on boot-up) it is the hidden user memory that is loaded (presenting the last used settings) NOT the last saved settings.

Although the console can be used without ever saving a user memory, it is good practice to save known setups, as this means they can be reverted to in the event that parameters are changed by accident by other users. It is also useful if the user is required to clear any ad-hoc temporary changes made during operation.

Shows provide organization of user memories. Rather than searching through a long list of varied memories, consolidating similar memories into shows makes them easier to search and manage.

It may help to create a show for each type of production, e.g., 'Morning News', 'Football', 'Chat Show', 'Music', etc, before saving multiple memories within a show. It is good practice for a single setup to be built, tested, and saved as the default memory for the show.

During setup, there are likely to be changes and additions required - working with a single default memory is more manageable than having to make changes to multiple memories. Once the core setup is proven, requirements for changes are less frequent. The default memory can be used as a template for customisation and variations can be saved with different names.

New shows that are similar to existing ones can be created by choosing to Save Show As. This effectively makes a copy of the show, including the user memories within, so that it does not need to be built from scratch. Any unwanted user memories within the new show can then be deleted.

In addition to the settings that are saved within user memories (and the hidden, continuous user memory), some other settings are maintained within each show.

The most obvious and visible of these is often the active meter layout on the console up-stand, which can be different for each show.

Other settings that can change on the opening of a show file (and are not part of user memories) are as follows: the mode of control panels on the surface, the currently active fader layer, monitoring settings, memory isolates (settings that have been blocked from changing on user memory load), oscillator settings (level, frequency, idents), talkback levels and any active user splits.

These show-based settings are not manually saved. On the opening of a show file, the settings are restored as they were when previously open.

Meter layouts and user split configurations are saved as part of the show.

Other settings are not saved as part of shows or their user memories. As such, these settings will not change when opening shows or loading memories. However, like all other settings, they are saved as part of a continuous memory, ensuring they are restored from power on or reset.

These include settings that are applied from the System Settings pages of the main application, as well as some of the settings applied from the Show Setup page, see Fig. 1 on the previous page.

Shows, Memories, and Show Setup files are saved on the primary and secondary Impulse Core controller cards, fitted in the primary and secondary Impulse cores.

The number of show and memory files that can be saved is dependent upon the amount of available storage space on the controller cards, which is displayed on the Memory Load/Save page of the main application.

The size of each show/memory file depends on the amount of console resources being used. Shows and memories can be backed up using Assist.

SHOWS

Accessing the Shows List
The user taps the area highlighted in Fig. 1 to open the shows list.

Information about the system is shown on the left side of the screen. This includes the Surface, Mixer and Current Show loaded. A disk space indicator also appears at the bottom left of the display.

Various action buttons are available along the footer of the screen: create a **'New'** show, **'Edit'** the show label and show description, **'Load'** the show, make a **'Duplicate'** of the show, **'Import'** a show, typically from a USB memory stick plugged into a PC/laptop, **'Export'** a show, also typically from a USB memory stick plugged into a PC/laptop, and **'Delete'** the show.

Note: Import/Export are only available in Assist.

New Show
As part of the system, a templates folder containing default shows can be made for this desk type and used to create any number of new shows.

Note: there is always at least one default template (which cannot be deleted) available for use to create a show.

Tapping the **'New'** icon in the footer of the shows list (Fig. 1) opens the **'Create new show'** dialogue shown in Fig. 2. The user selects the show template to be used in step 1 before proceeding to step 2 by tapping the **'Next'** button. Step 2, shown in Fig. 3, allows the user to change the User/Client, Project/Series, Show Label & Show Description fields.

Once these fields have been entered, the user taps **'Create'** to automatically load this new show. The display then switches to the Fader Layout screen, allowing the user to proceed by configuring the required paths for the show.

FIG. 1 - SHOWS LIST

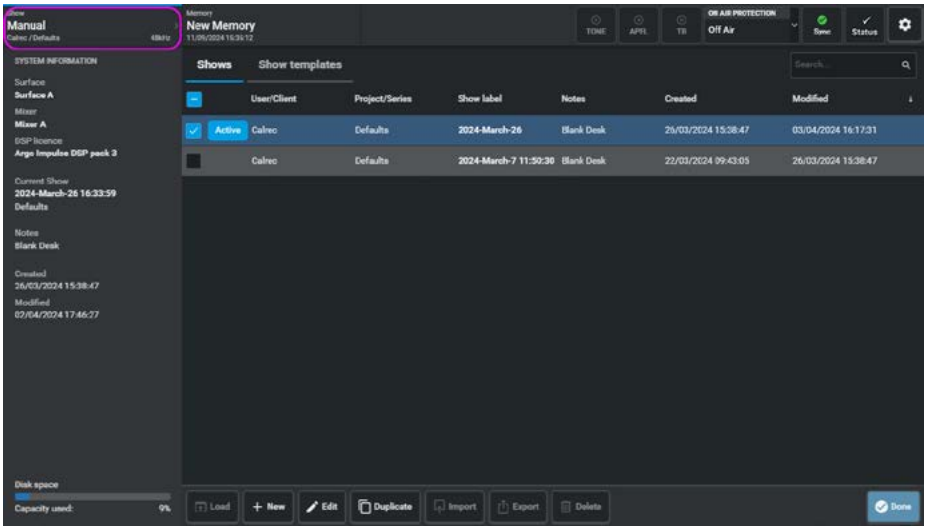


FIG. 2 - CREATE NEW SHOW STEP 1

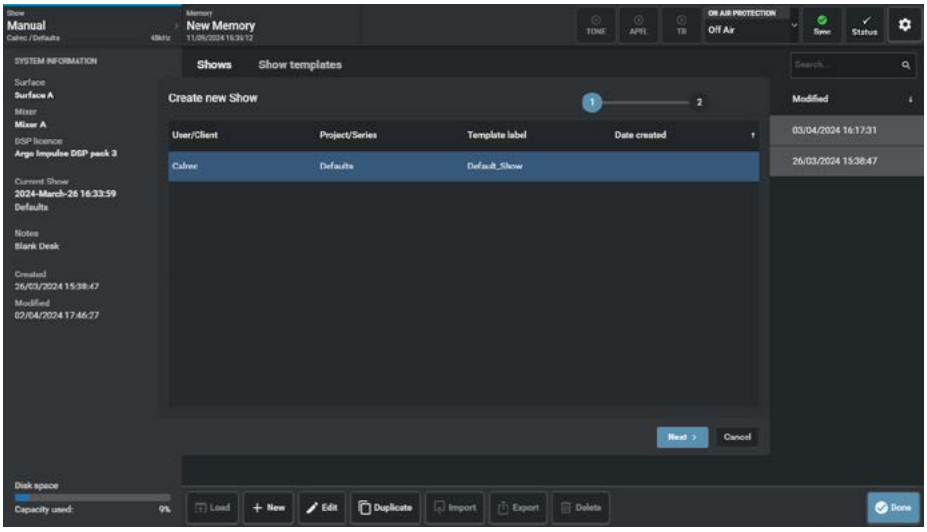
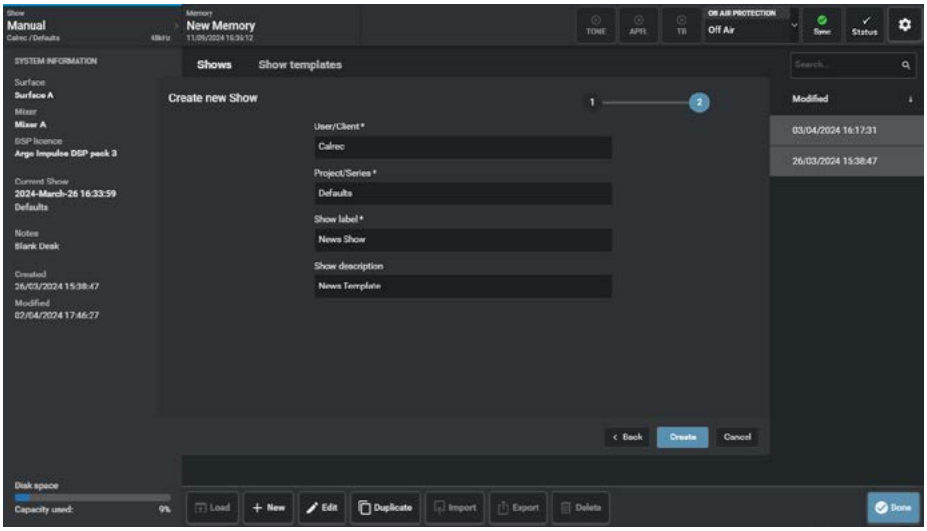


FIG. 3 - CREATE NEW SHOW STEP 2



Edit Show Label
Once a show exists in the shows list, the user can edit its show label and show description to make it more meaningful.

This is done by selecting the show before tapping the **'Edit'** icon in the shows list footer.

This opens the 'Edit label' pop-up. The user can edit the show label and show description fields as required, see Fig. 4.

Note: To Save Changes, the show label or show description must have been edited.

Load Show
To Load a Show, the user selects the show to be loaded before tapping **'Load'** in the footer.

This opens the 'Load selected show' confirmation pop-up. The user then taps '**Confirm**' to load the show, as shown in Fig. 5.

Duplicate Show
Sometimes it is useful to have an unedited or alternative copy/duplicate of a show.

To Duplicate a Show, the user selects the show to be duplicated before then tapping the **'Duplicate'** button in the footer.

This opens the 'Duplicate show' pop-up, allowing the user to change the User/Client, Project/Series, Show label & Show description fields as required.

Once these fields have been edited, the user selects **'Duplicate'** to confirm the creation of a duplicate copy of the show, as shown in Fig. 6.

FIG. 4 - EDIT LABEL

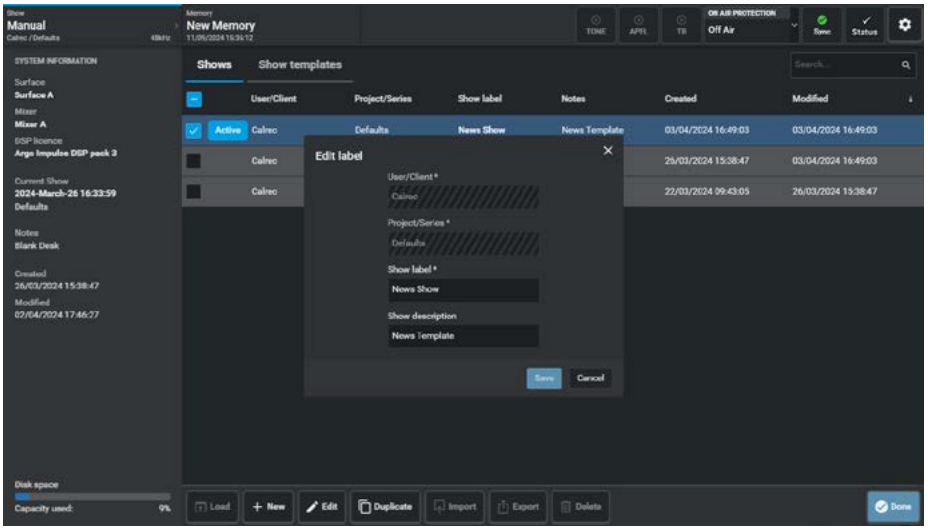


FIG. 5 - LOAD SHOW

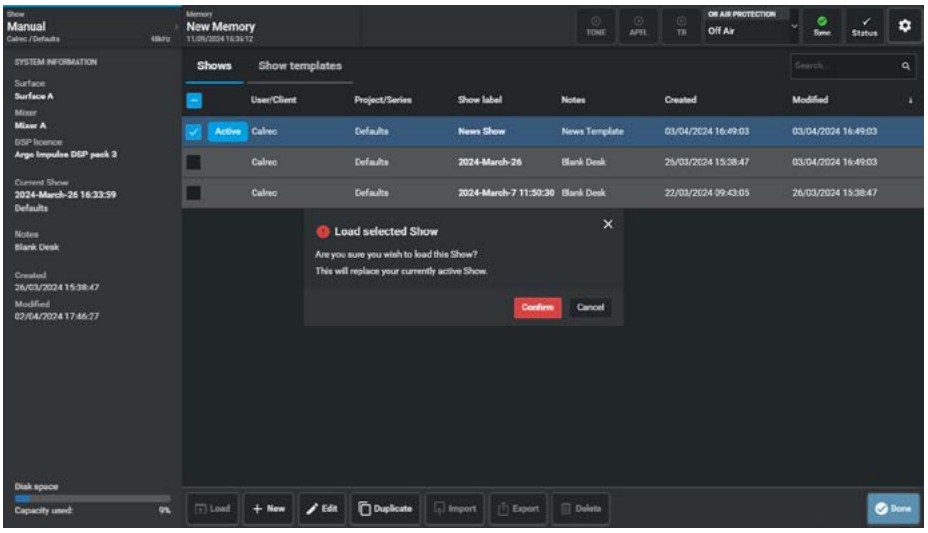
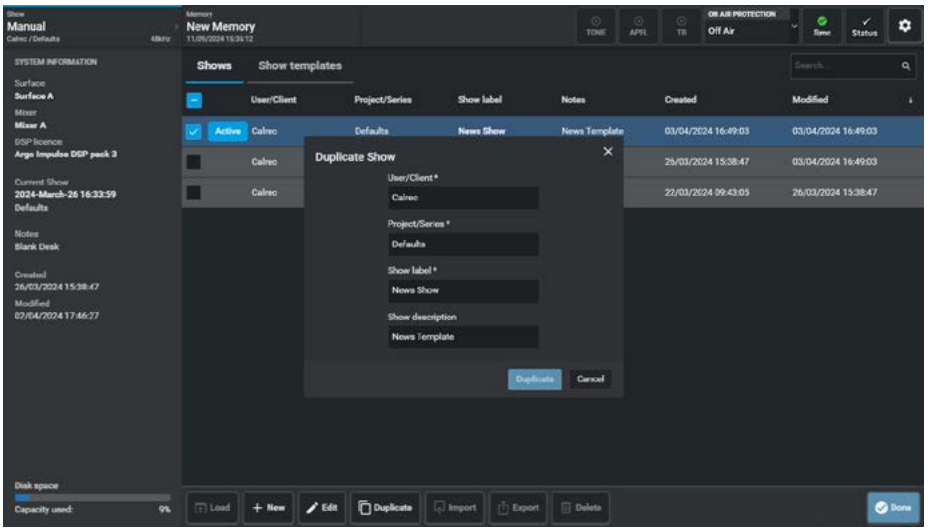


FIG. 6 - DUPLICATE SHOW



Delete Show

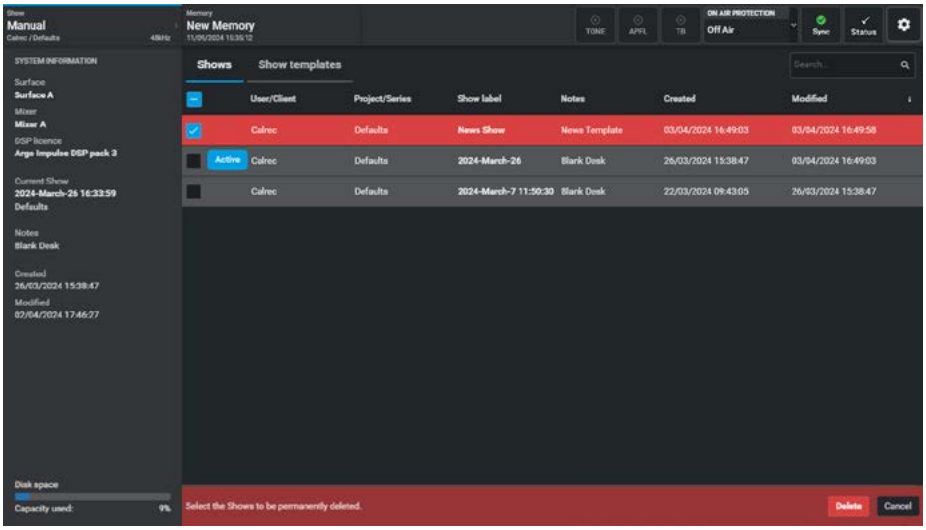
When shows are no longer required, the user can select to delete them. To delete shows, the user selects the shows to be deleted (which is confirmed with the 'tick' icon) before tapping the **'Delete'** button in the footer. This opens the delete dialogue footer, which provides information about deleting multiple shows as shown in Fig. 9. Once all the shows to be deleted have been selected, the user taps **'Delete'** in the dialogue footer to confirm deletion.

Note: the loaded 'Active' show cannot be deleted.

Import/Export Show

This is only available when using Assist.

FIG. 9 - DELETE SHOWS



Show Templates

Once a show exists in the shows list it can be used as a Show template. This is done by tapping the **'Show templates'** tab to the right of the 'Shows' tab.

This opens the show templates screen shown in Fig. 10.

Note: the Calrec Default Show Template doesn't appear in this list. However, it is always present in the system and appears when a new show is being created.

New Show Template

The User taps **'New'** in the Show templates footer to open the 'Create new template' dialogue box.

The user can then add User/Client, Project/Series and Template label information, see Fig. 11.

Once the **'Create'** button is tapped, the currently loaded 'Active' show becomes the new Show template, which is now saved as a Show template file.

Note: if buttons in the Show templates footer are not present, then they will have been set to be restricted to engineering access only. If the user does require these buttons to be enabled, please contact our Customer Support team or your local distributor for guidance.

Edit Show Template Label

Once a template exists in the show templates list, the user can edit its label. This is done by selecting the template before tapping the **'Edit'** button in the show template list footer. This opens the 'Edit label' dialogue box, allowing the user to edit the 'Template label' as required, see Fig. 12. Once the **'Save'** button is tapped, the new label for the show template is applied.

Note: the User/Client and Project/Series fields cannot be edited from here. As such they are greyed out.

FIG. 10 - SHOW TEMPLATES

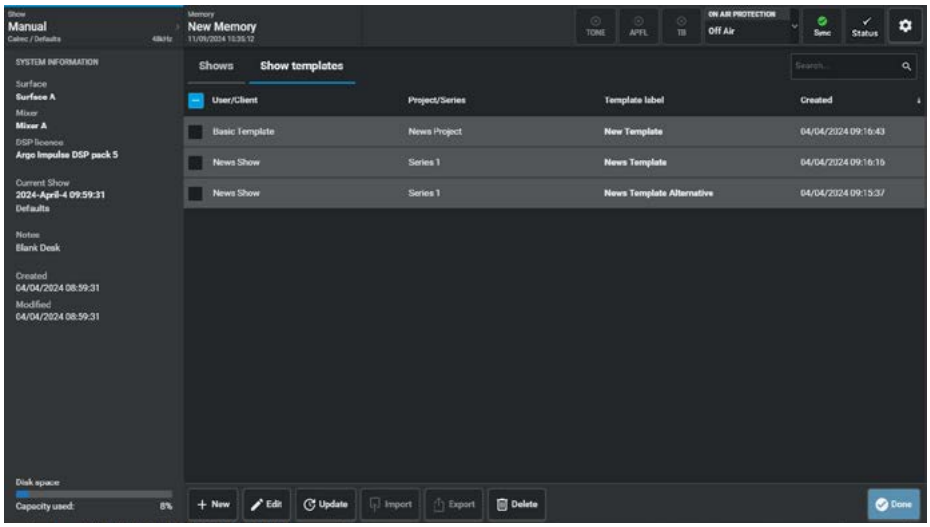


FIG. 11 - NEW SHOW TEMPLATE

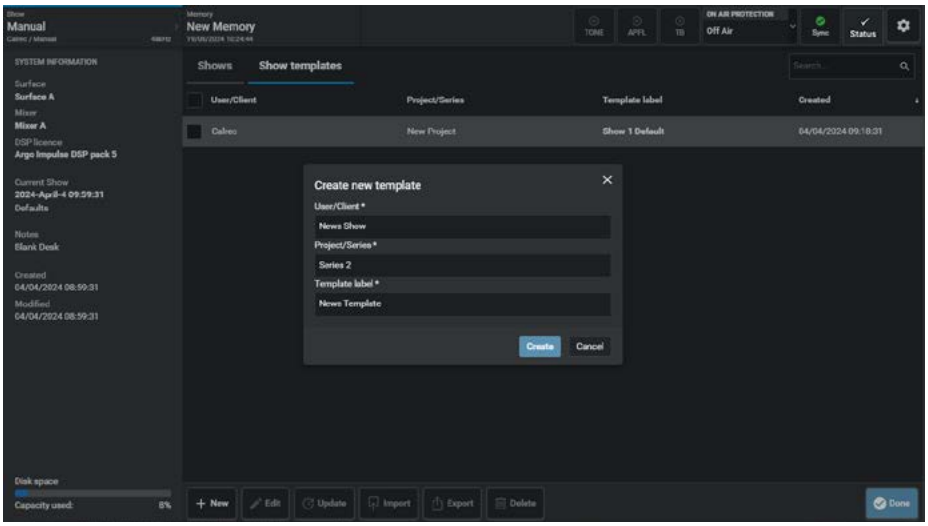
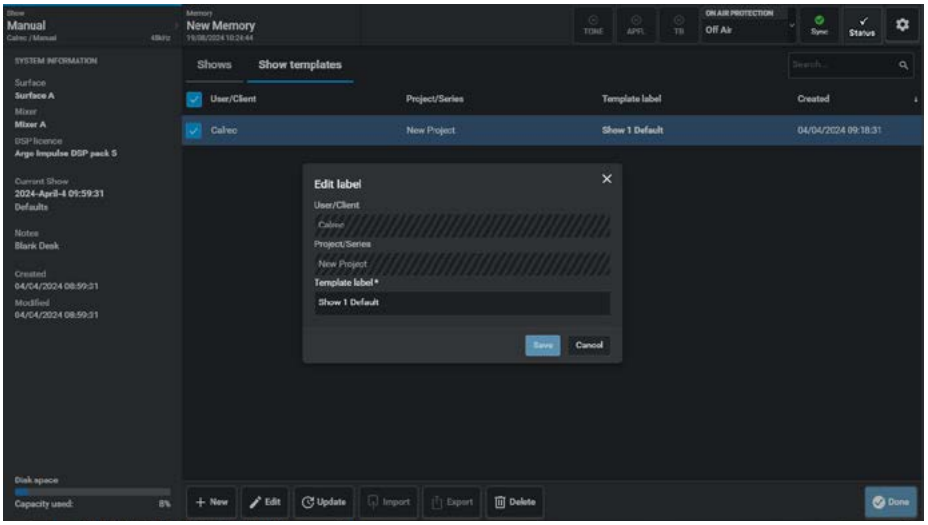


FIG. 12 - EDIT SHOW TEMPLATE LABEL



Delete Show Template
When show templates are no longer required, the user can select to delete them. In order to delete show templates, the user selects the show template to be deleted. This selection is confirmed with the 'tick' icon. The user then taps the **'Delete'** icon in the footer.

This opens the delete template dialogue footer, which provides information about deleting multiple shows by tapping all the shows to be deleted.

Once the templates to be deleted have been selected, the user taps the **'Confirm delete'** button to confirm deletion, as shown in Fig. 13.

Note: the Calrec default template cannot be deleted and is not shown in the Show templates list.

Update Show Template
Fig. 14 shows the process of updating a Show Template. In order to update a show template, the user selects the desired show template to be updated. This is confirmed with the 'tick' icon. The user then taps the **'Update'** button in the footer.

This opens the 'Update show template' dialogue, requesting confirmation that the user wishes to update the show template. Once the **'Update'** button is tapped, the stored show template becomes with the loaded Active show.

Note: make sure that the correct existing Show template has been selected before applying 'Update' as it will be overwritten.

Import Show Template
This is not available in V1.2.x.. However, this can be carried out using Assist.

Export Show Template
This is not available in V1.2.x. However, this can be carried out using Assist.

FIG. 13 - DELETE SHOW TEMPLATES

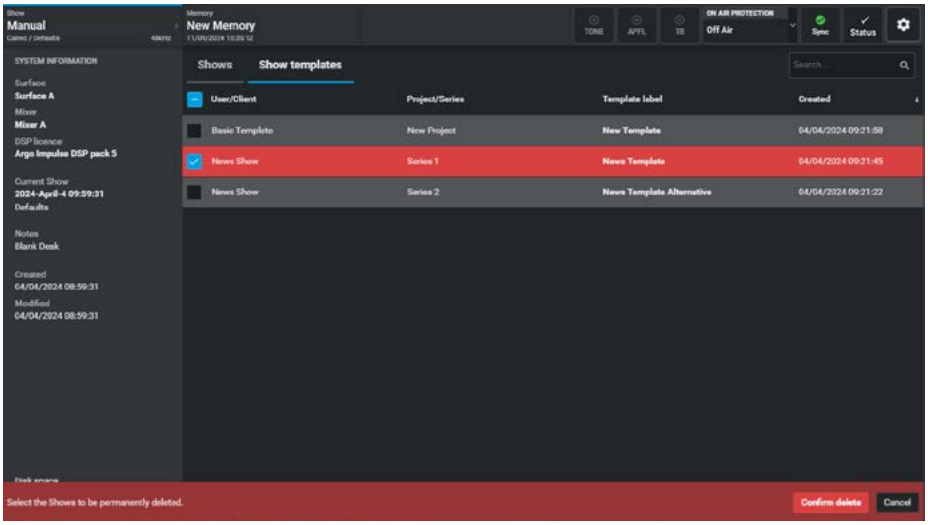
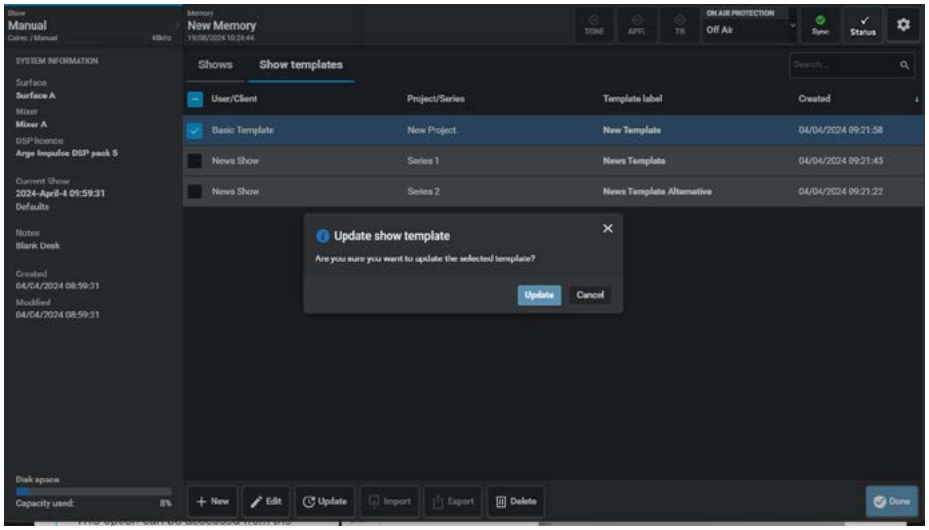


FIG. 14 - UPDATE SHOW TEMPLATE



MEMORIES

User memories are files which store processing, routing & patching information, and can be recalled at any time.
The Memories mode is accessed from the Modes row of a fader panel by first pressing Modes Menu in button cell 4 of the Layers & Modes row, before then pressing 'Mems', as shown in Fig. 1. Alternatively, the user can tap on the appropriate icon on the touchscreen, as shown in Fig. 3. The surface displays/controls the relevant information on the touchscreen. There are 2 sub-menus, shown on both the standard fader and the lower right area of the Touchscreen. These are labelled Memories and Cues, as shown in Figs 2 & 3.
Note: the Wild Assign panel is not involved in the creation or display of memories.

To access memories, the user selects Mems>Memories from the modes row of the Standard fader panel, see Fig. 2. Alternatively, these can be accessed from the Touchscreen area highlighted in Fig. 3.

Exit Memories

Once the user has finished using the Memories functions, pressing the 'Exit to Menu' button from the console returns the display back to the primary modes menu.

Memories Page Layout

Fig. 3 shows the layout of the Memories page. The central area of the page contains the list of memories available for the current show.

An indicator on the left of the list shows which memory was the last one to be loaded. To the right of that are shown the Memory Label and Memory Description.

These are labelled when the New memory is created, as shown in Fig. 4, and can be re-labelled as required by tapping the '**Edit**' button shown in Fig. 5 on the next page.

Storage Capacity

There is a capacity indicator located at the top right of the memories screen. This shows the available storage space.

If more space is required, the user should delete any old shows and memories that are no longer required.

The capacity indicator shows the amount of space available on the controller card for storing shows & memories. However, the controller card is also used for other files & folders, so capacity may vary.

FIG. 1 -MEMORIES MODE SELECT ON STANDARD FADER PANEL



FIG. 2 -MEMORIES MODE - MEMORIES SELECT ON STANDARD FADER PANEL

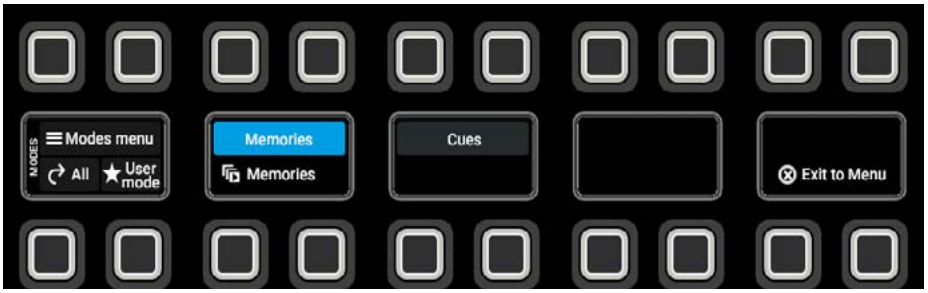
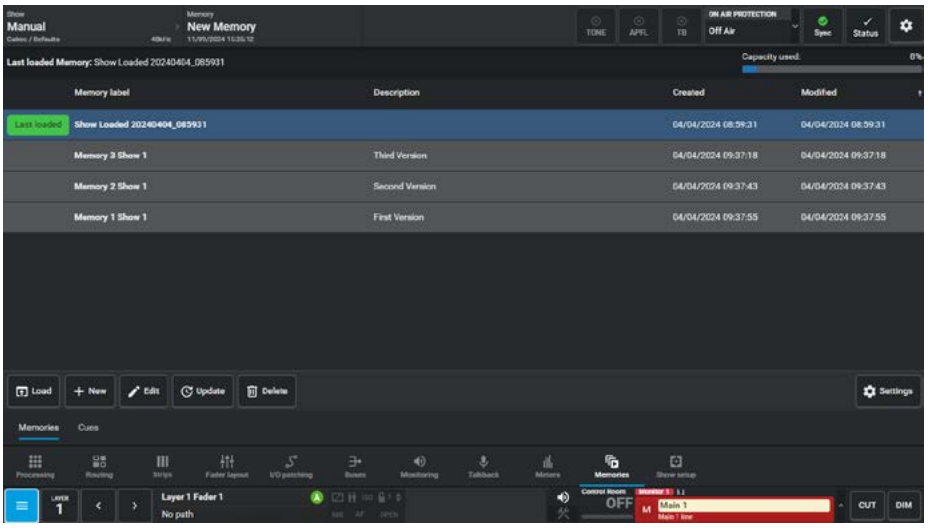


FIG. 3 - MEMORIES PAGE



Creating a New User Memory

To create a new user memory with current surface settings:

1. Tap 'New' in the memories footer.
2. Enter a label and, optionally, a short description for the new user memory.
3. Tap **'Save'** or **'Cancel'** as required, see Fig. 4.

Editing a User Memory Label

To edit a user memory label:

1. Select the memory to be renamed.
2. Tap **'Edit'** in the memory footer.
3. Edit the label and, optionally, the short description for the user memory.
4. Tap **'Save'** or **'Cancel'** as required, see Fig. 5.

Loading an Existing User Memory

To load a user memory:

1. Tap to select the user memory required before tapping **'Load'**.
2. The loading memory symbol may or may not appear (depending on memory size) in the background. The name of the memory loaded with the last loaded label is shown highlighted in Fig. 6.
3. There is a settings icon in the bottom right of the page, which is usually hidden. When loading without confirmation, it is shown as turned off. This allows the user to set a confirmation before loading a memory as a safety feature if required. Otherwise, the memory loads without requesting confirmation, see Fig. 6.

Loading with Confirmation On

To load a user memory with confirmation:

1. Tap to select the user memory required before tapping **'Load'**.
2. A dialogue box appears, displaying the confirmation request, asking the user to confirm by selecting **'Load'** or **'Cancel'** as required, see Fig. 7 on the next page.

This is because the Confirmation before loading option, which is usually hidden, has been enabled.

FIG. 4 - CREATE NEW USER MEMORY & LABELS

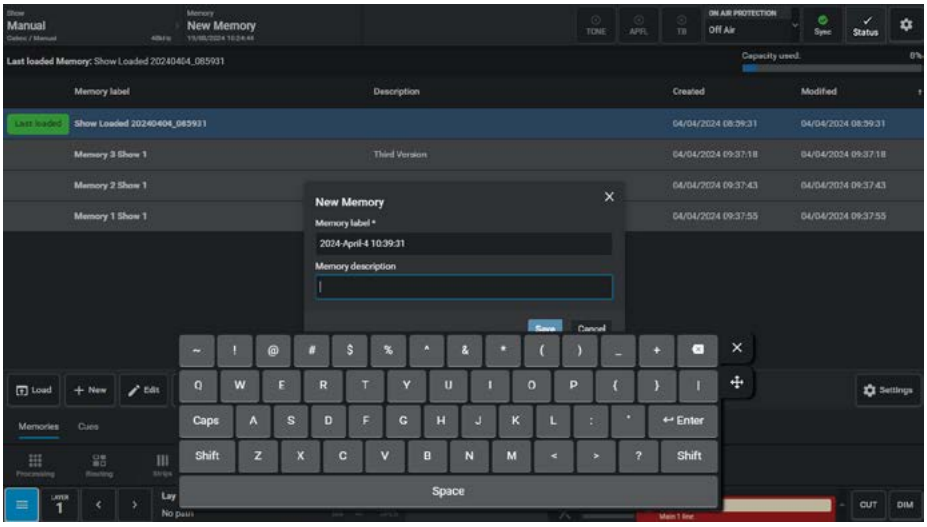


FIG. 5 - EDIT USER MEMORY LABELS

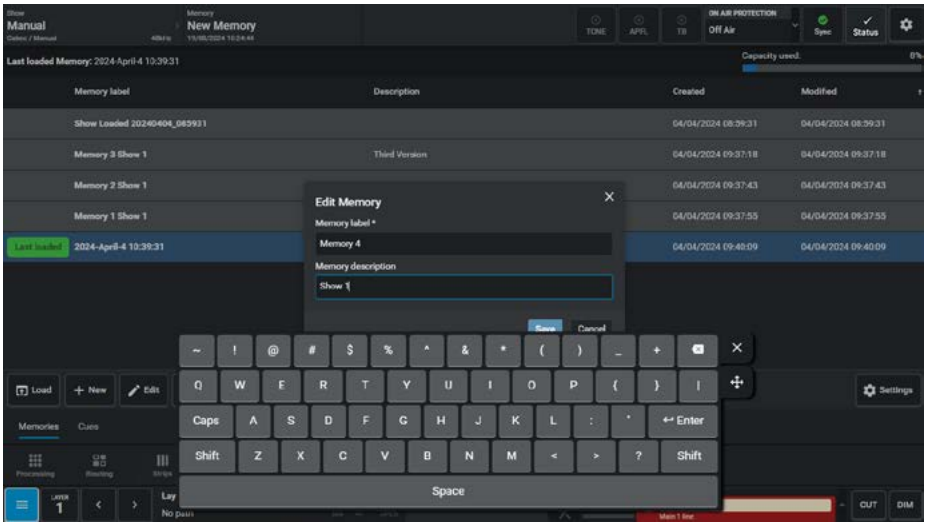
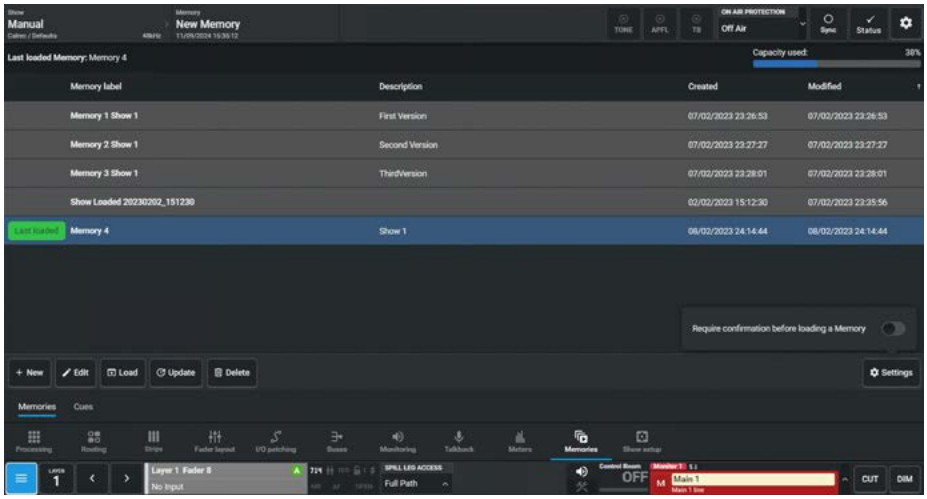


FIG. 6 - LOAD USER MEMORY (WITHOUT CONFIRMATION)



Updating a User Memory

To update a user memory with the current surface settings:

1. Select the user memory that is to be updated before tapping **'Update'** in the memories screen footer.
2. A prompt will appear for the user to confirm by tapping either **'Update'** or **'Cancel',** see Fig. 8.

Deleting a User Memory

To delete a user memory that is not the currently loaded memory:

1. Tap to select the user memory to be removed before tapping **'Delete'** in the footer.
2. This opens the delete dialogue in the footer, providing information about deleting multiple shows by tapping on all shows to be deleted.
3. Once the memories to be deleted have been selected, the user taps **'Delete'** to delete those memories, see Fig. 9. Alternatively, the user can select **'Cancel'** to cancel this operation.

Creating Multiple User Memories

It is best practice to create one 'default' user memory, test it, make any necessary changes, and then use this as the basis for all other user memories in the show.

This speeds up the process by eliminating the need to make the same changes to many different user memories.

To do this, create, test and update what is to be the 'default' user memory as described above.

With this user memory still loaded on the surface, tap **'New'.** The information will be saved into a new user memory, creating a duplicate.

FIG. 7 - LOAD USER MEMORY WITH CONFIRMATION

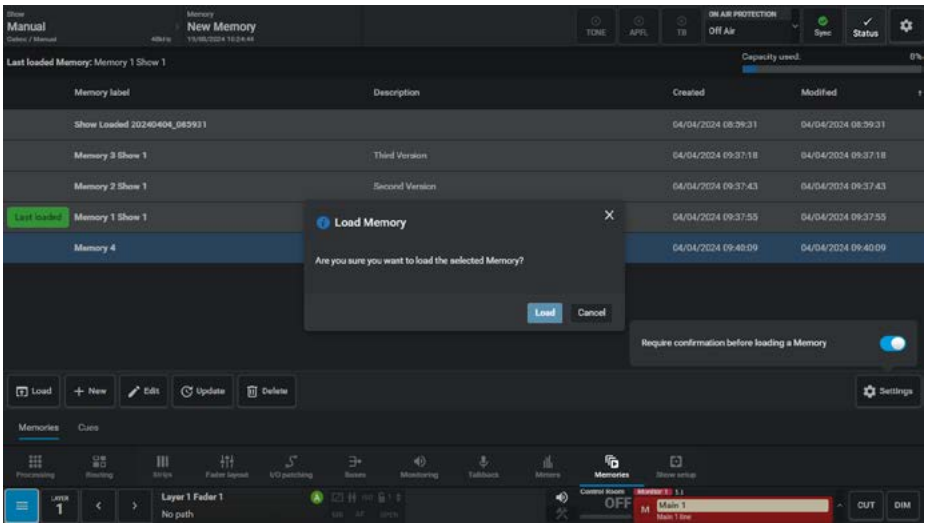


FIG. 8 - UPDATE USER MEMORY

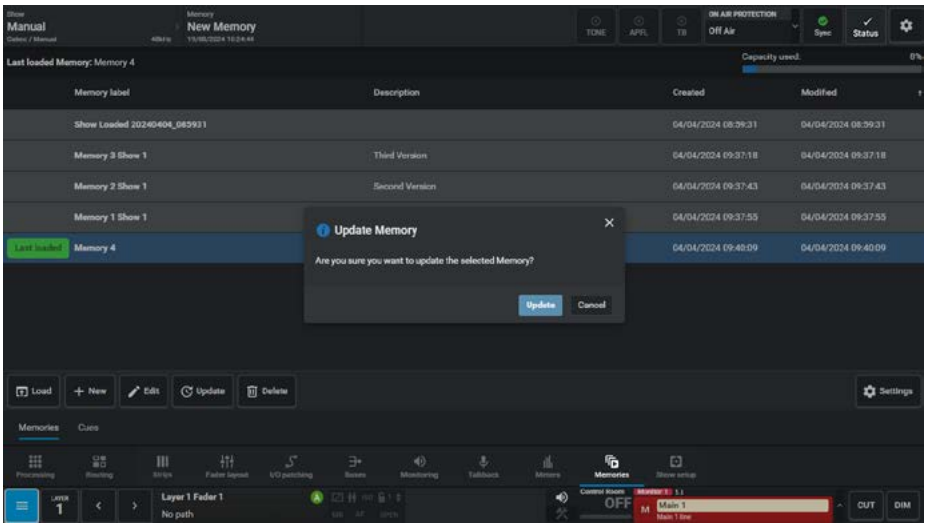
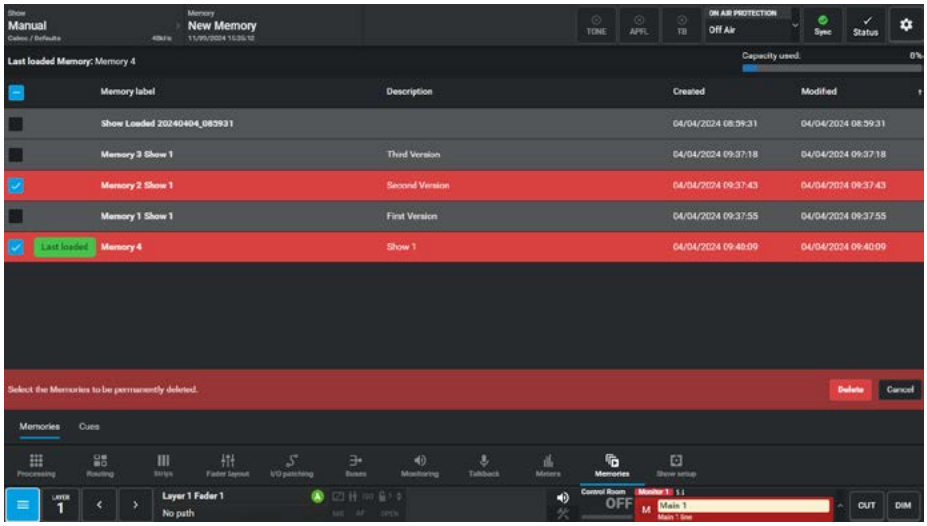


FIG. 9 - DELETE USER MEMORY



CUES

The Cues List allows user memories to be stacked in order to be able to recall them in sequence.
To access cues, the user selects the Mems>Cues entry from the menu.

This mode is selected from the Modes row on a standard fader panel by first pressing Modes Menu before then pressing the Mems button to show the Memories sub-menus as shown in Fig. 1. Alternatively, this mode can also be accessed from the lower part of the Touchscreen, as highlighted in Fig. 2.

Exit Memories
Once the user has finished using the Memories functions, pressing the 'Exit to Menu' button from the console returns the display to the primary modes menu.

Creating a New Cue
Each user cue has an associated memory which is added to the sequence list.

To add a cue to the list, tap **'New'** from in the memories footer, as shown in Fig. 2. This presents the user with three options:

Selecting 'New Cue' positions a place-holder into the list. This can be later edited to add a user memory. The user can enter a name for the Cue using the on-screen-keyboard

Creating a New Cue with memories
The user can select:
'New Cue with new Memory' to save the current console settings as a user memory and add it to the cue list, see Fig. 4.

The user can enter a name for the Cue, Memory Label and optional Description using the on-screen-keyboard.

This memory also becomes available to load from the memory list like any other memory.

Tap **'Save'** to create a New Cue with a New Memory, or **'Cancel'** to exit the dialogue as required.

FIG. 1 - MEMORIES MODE - CUES SELECT ON STANDARD FADER PANEL

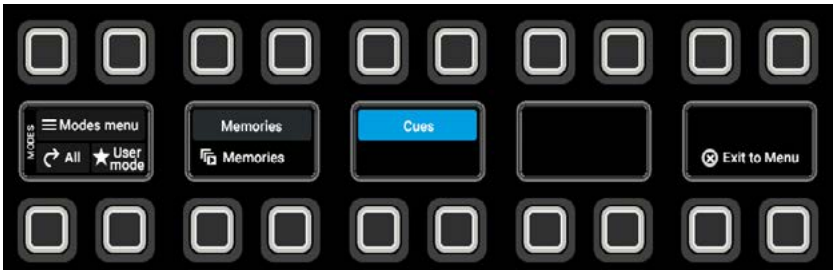


FIG. 2 - ADD NEW CUE OPTIONS

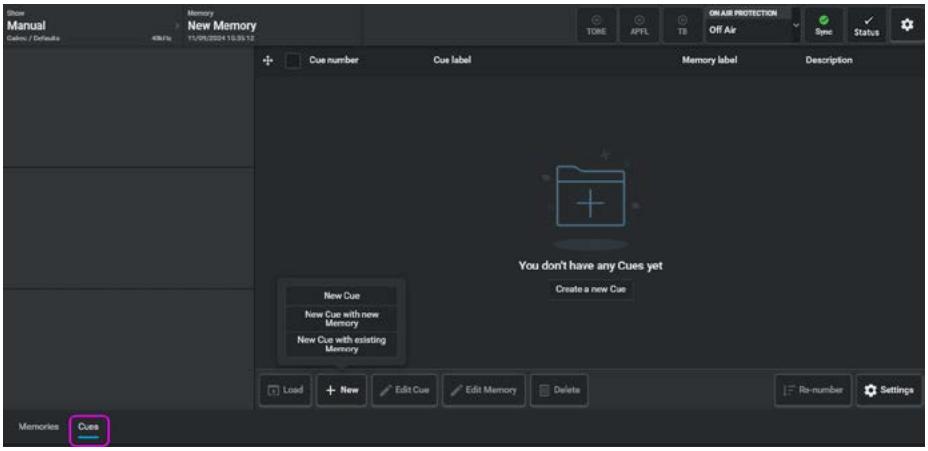


FIG. 3 - NEW CUE WITH NO MEMORY ATTACHED

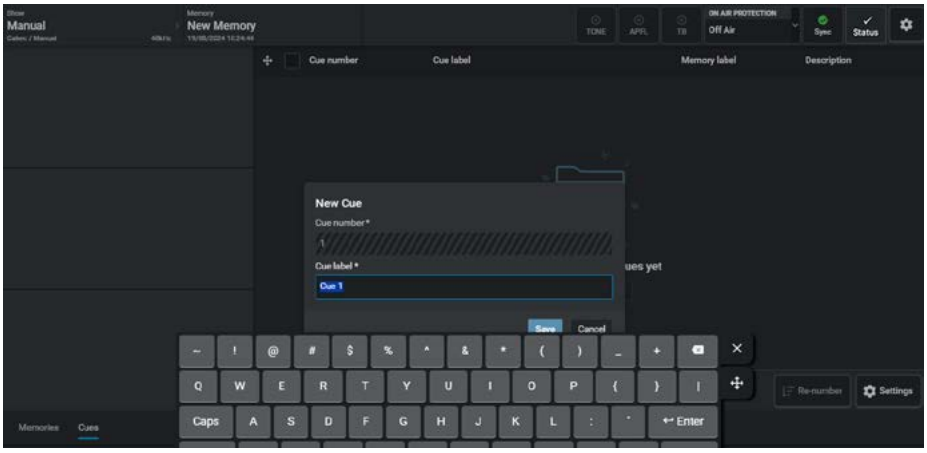
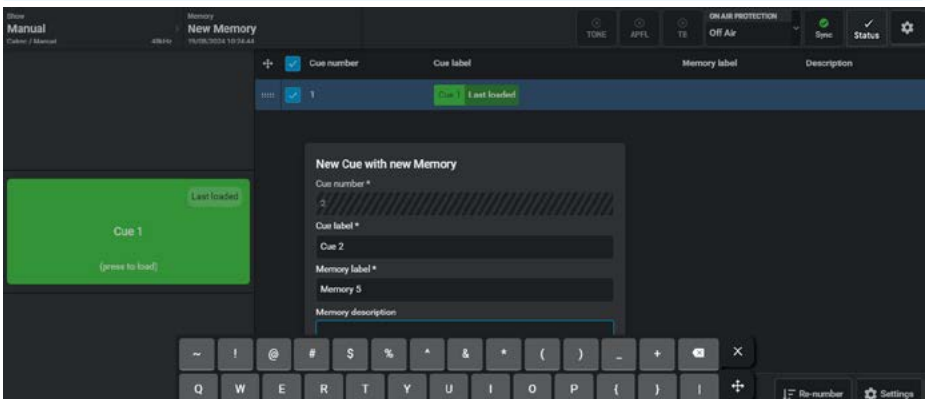


FIG. 4 - NEW CUE WITH NEW MEMORY



Alternatively the user can select: **'New Cue with existing Memory',** which allows the user to choose a pre-saved user memory from the current show to add to the cue list, see Fig. 5.

Editing a Cue Label

The Edit Cue icon in the memories footer allows the user to re-label cues. The user enters the replacement Cue Label 'Current Cue 1' in the Cue Label field, as shown in Fig. 6.

The **'Previous'** and **'Next'** buttons allow the user to select each of the cues in turn and re-label them as required, without exiting the Edit Cues dialogue.

The user taps on **'Save'** when finished or 'Cancel' to exit the dialogue as required.

Editing a Memory

The Edit Memory button in the memories footer, shown in Fig. 7, provides the user with a number of options relating to both Memories and their related Cues:

Create new Memory & attach to Cue

Tapping this will open the **'New'** dialogue, which behaves as described in the Memories>Memories section. When the new memory is created, it is also attached to the selected cue, replacing any existing memory attachment. The previously attached memory is not deleted and remains in the console, so this does not require confirmation.

Attach existing Memory

Tapping this brings up a dialogue list of all existing memories in the show and behaves as in the 'New Cue with Existing Memory' dialogue. The selected existing memory replaces any previous memory.

FIG. 5 - NEW CUE WITH EXISTING MEMORY

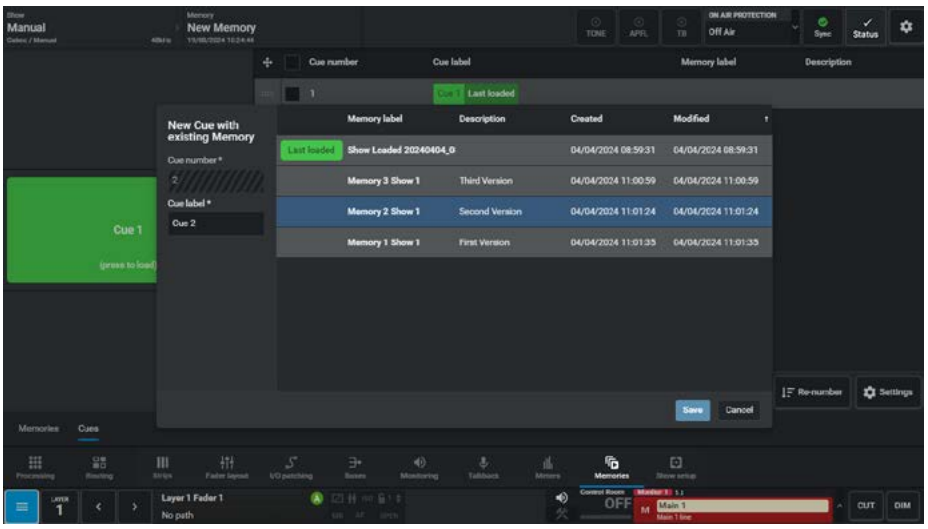


FIG. 6 - EDIT CUE LABEL

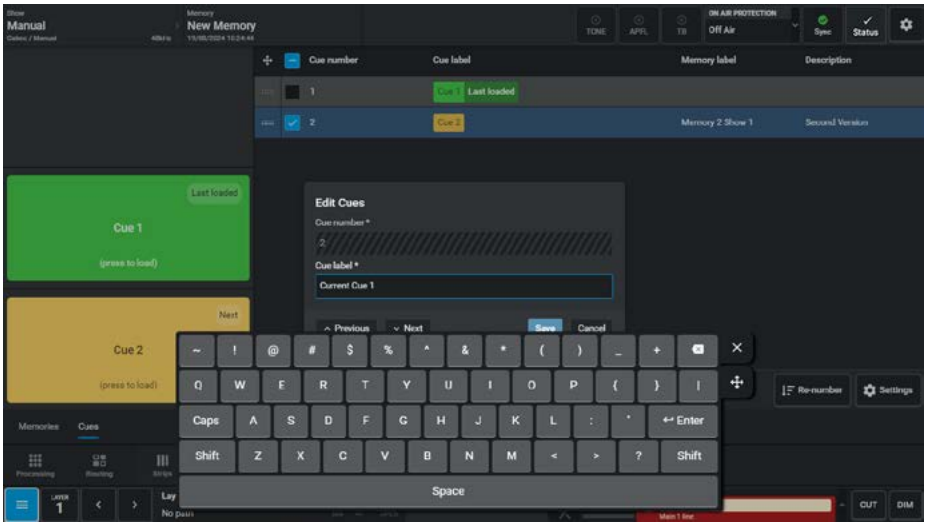
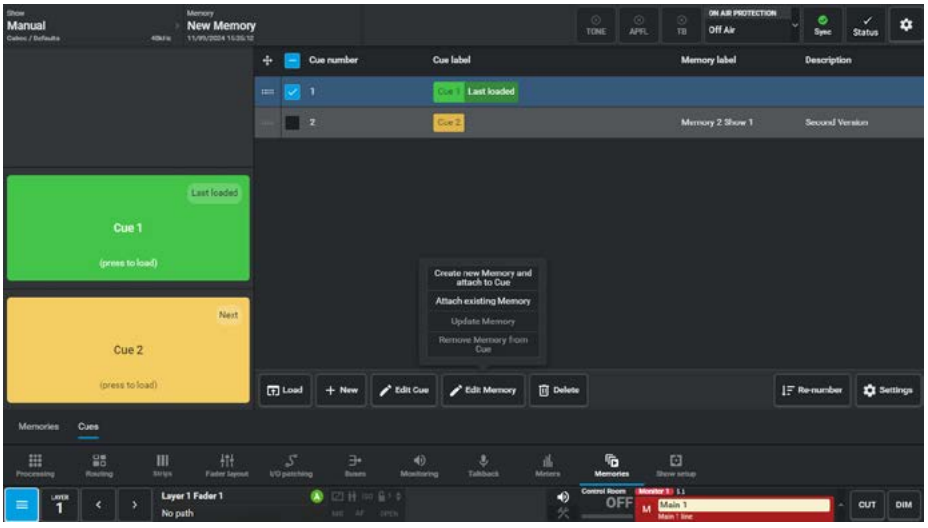


FIG. 7 - EDIT MEMORY



Update Memory

Tapping this will initiate the same 'Update' dialogue, which behaves as described in the Memories>Memories section.

The memory to be updated is the one attached to the cue and will affect any other cues that use the same memory. If this isn't what the user wants, then they can use the **'Create New Memory and attach to cue'** instead.

Remove Memory from Cue

Tapping this will remove any existing memory attached to the selected cue or cues. It is disabled if there is not a memory attached. This can be applied to multiple cues and the memories themselves won't be deleted. As such, there is no need for confirmation.

Loading Cues

Tapping the Load Icon in the footer will load the next cue number in the list. Items in the cue list are colour-coded as green for current, yellow for next and gray for previous.

The user can also tap on the Grey, Green and Yellow blocks to load those cues and associated memories directly.

Before the Load button is tapped, Fig. 8 shows that Cue 2 is the last loaded and Cue 3 is the next to be loaded.

After the Load button is tapped, Cue 2 becomes the previous cue and Cue 3 becomes the last loaded cue. The next cue, Cue 4, appears next in the list, see Fig. 9.

Deleting Cues

To delete selected cues, pick the cues from the cue list and then tap the **'Delete'** button in the footer.

The 'Delete selected Cues' dialogue appears as shown in Fig. 10, displaying the cues to be deleted.

Tap **'Delete'** or **'Cancel'** as required. The memories attached to the deleted cues will not be deleted and the numbering of all remaining cues remains the same.

FIG. 8 - CUES BEFORE LOAD

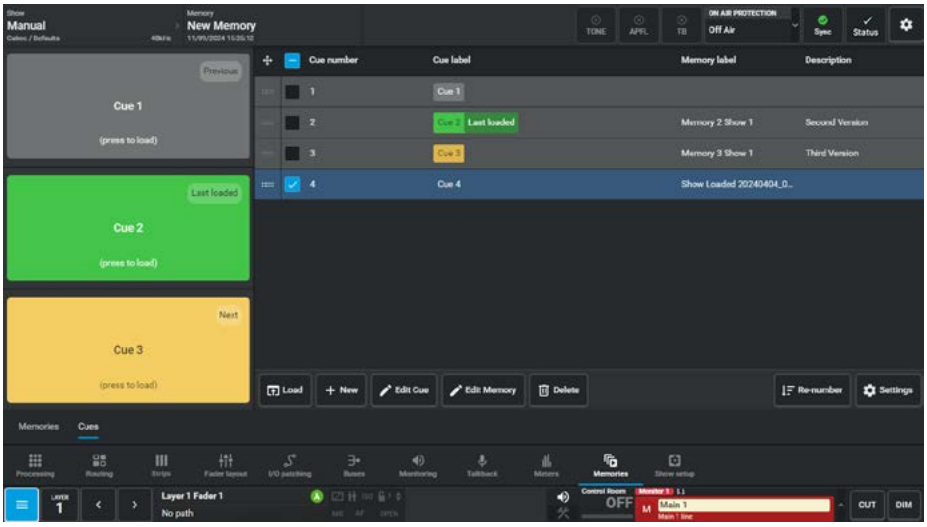


FIG. 9 - CUES AFTER LOAD

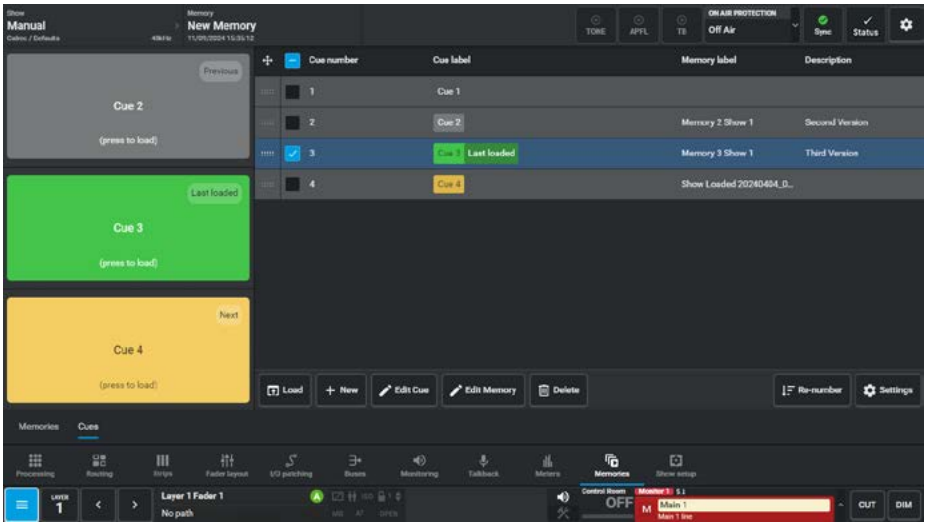
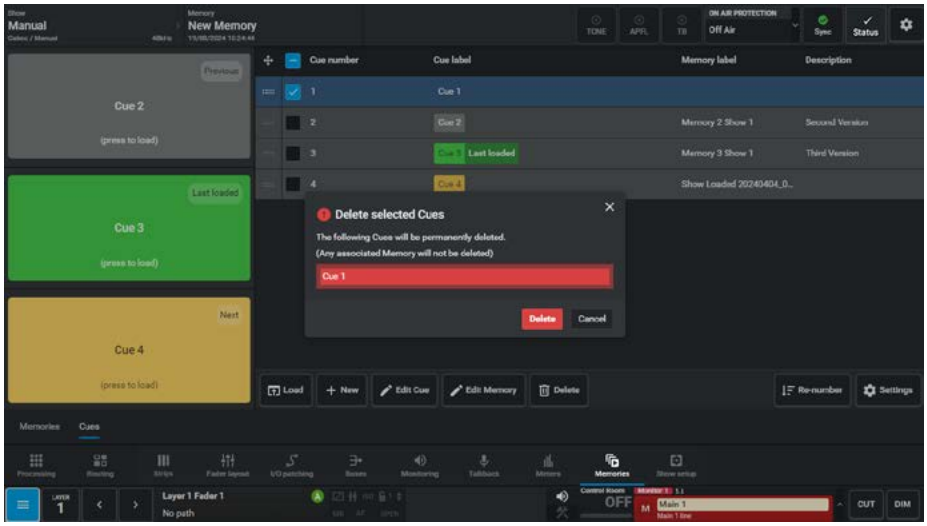


FIG. 10 - DELETE CUES



Re-ordering and Re-numbering Cues

On the left side of the cue list is a manual sort column with '**:::::**' drag handles. The user can select items in this column to drag them up or down the list. In this way, a cue list order can be arranged for use during a show.

The numbers of the selected cues that were moved remain as they were prior to the move. The Cue order was 1, 2, 3, 4 but is now 3, 2, 4, 1, as shown in Fig. 11. If Cue 2 and Cue 1 were consecutively dragged to the top, the cue numbers would return to their original sequence.

Loading the **'Next'** or **'Previous'** cues via the large cue buttons will always follow the order in which the list appears, even if cue numbers are out of sequence.

Once the list is sorted, the user can re-number all cues to make the order simpler and more obvious. This is done by tapping the **'Re-number'** button in the footer.

This opens the 'Re-number Sequence' dialogue shown in Fig. 11. Actioning this would cause the first cue to become cue number 1. All subsequent cues will be appended with incremental integers as shown in Fig. 12. To action this, Tap **'Re-number'** or **'Cancel'** as required.

Cue List Settings

On the right side of the Cue footer is a Settings icon which is tapped to reveal two optional features, see Fig. 13.

External Sequence control

An external controller can, by using GPI's or a Control Protocol such as Ember+, load the previous cue or next cue. The external sequence control slider switch can enable or disable this remote control functionality.

Keep Last Loaded Cue in View

This slider control keeps the last loaded cue visible in the list by automatically scrolling the cue list.

FIG. 11 - RE-NUMBER CUES BEFORE RE-NUMBERING

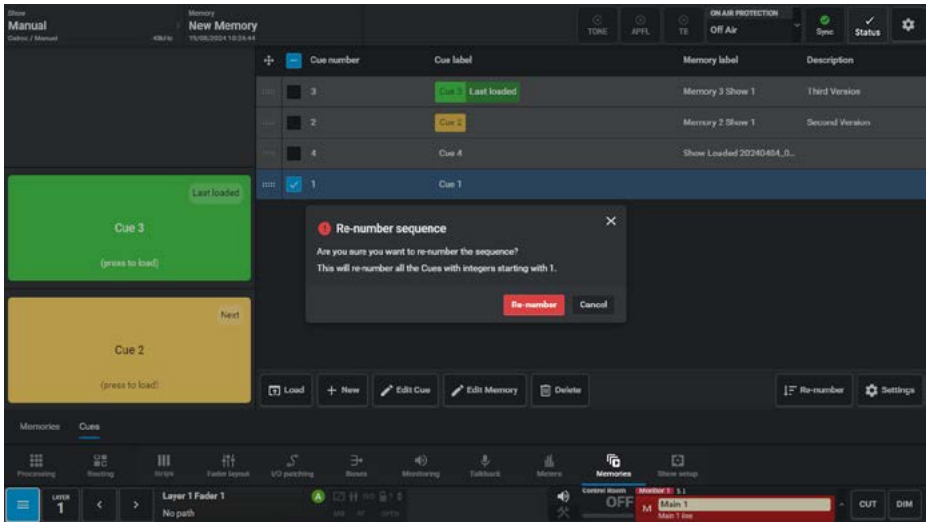


FIG. 12 - RE-NUMBER CUES AFTER RE-NUMBERING

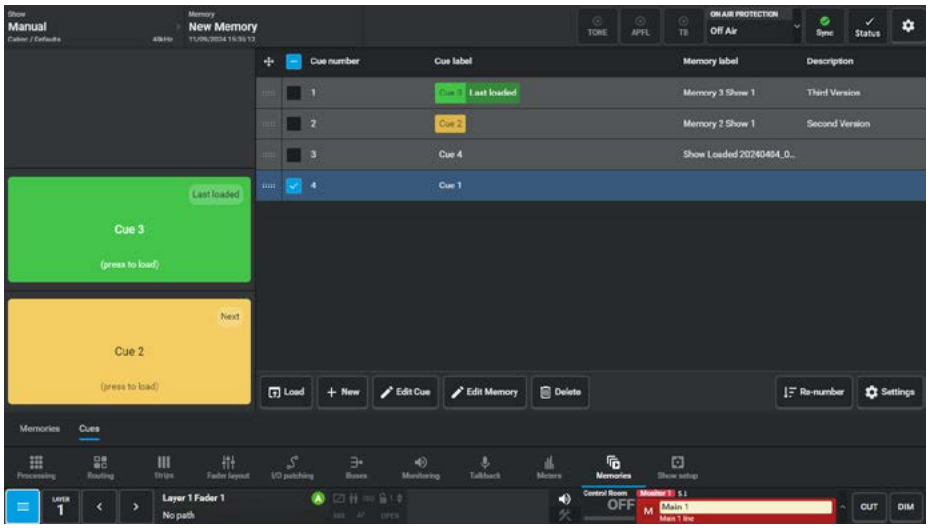
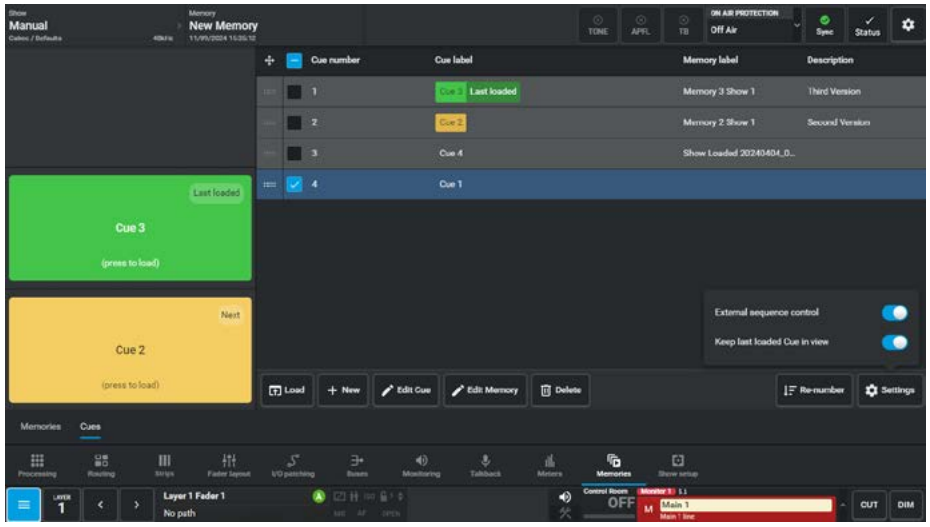


FIG. 13 - CUE LIST SETTINGS



ARGO
SHOW SETUP

CALREC

CUSTOMISE PANELS

The Customise Panels options in the Show setup pages allow the user to display a selection of Controls and place them on the control surfaces. To provide a customised control layout to suit the workflow of the operator. There is a vast selection of controls available for placement on the Fader Panels, Wild Assign panels and Monitor panels. These can be altered as needed by the user and saved into Custom panel presets. These can then be recalled, renamed, updated, exported and imported at any time, to provide a library of control functions.

The Show setup mode is accessed from the Modes row of a standard fader panel by first pressing Modes Menu in button cell 4 of the Layers & Modes row, then pressing the '**Show setup**' button as shown in Fig. 1. Alternatively, the user can tap on the appropriate icon on the touchscreen shown in Fig. 5 on the next page.

The surface displays/controls the relevant information on the touchscreen. There are 10 sub-menus shown across 2 pages on the standard fader panel, as shown in Figs 2 & 3, as a set of 10 sub-menus on the lower area of the touchscreen, see Fig. 5.

Note: the Fader panels, Wild Assign panels & Monitor panels are not directly involved in the process of creating customised panel layouts (other than displaying the resultant layouts) as this is primarily implemented on Touchscreens.

Custom Controls - Fader Panels

The Argo console has the ability to display custom configured functions on each of the control panels. The 4 x 4 button control cells placed top right on the Standard Fader panel can be used for this purpose, as shown in Fig. 4.

The first of these 4 cells allows the user to select different pages (Pages 1 & 2) for the other 3 cells, which are highlighted as shown on the fader panel images shown. The 3 cells can have their buttons configured to perform a customised set of button functions.

Note: the Wild panel button shown in the top left of button cell 9 (to the left of the Page 1 and Page 2 buttons) allows the user to switch on/off the Custom Wild controls on the Wild Assign panels above the Standard Fader panels.

FIG. 1 -SHOW SETUP MODE SELECT ON STANDARD FADER PANEL



FIG. 2 -SHOW SETUP MODE - CUSTOMISE PANELS SELECT ON PAGE 1

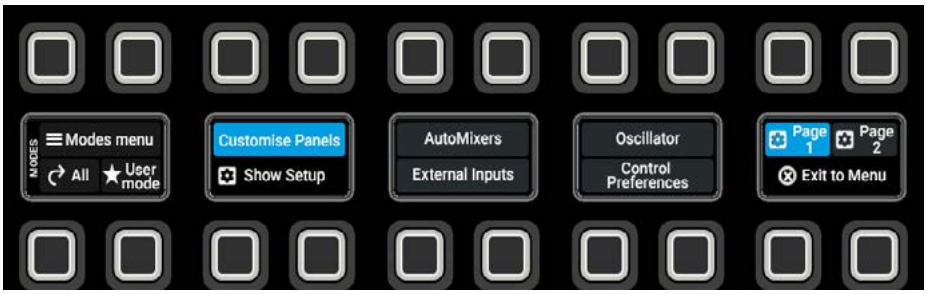
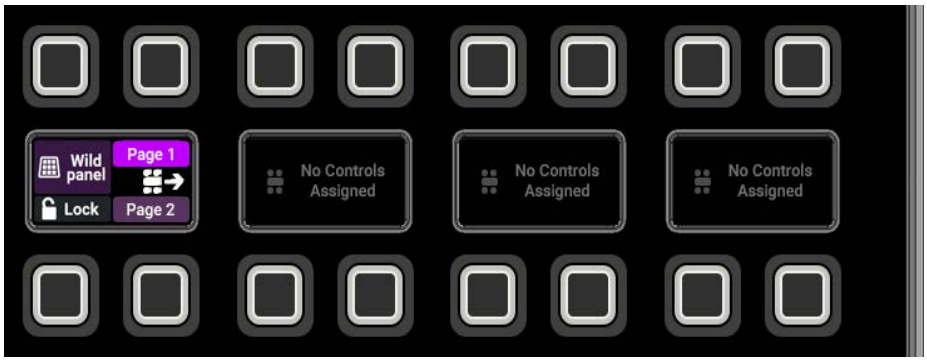


FIG. 3 -SHOW SETUP MODE - CONTROL PREFERENCES SELECT ON PAGE 2



FIG. 4 -CUSTOM CONTROLS AREA ON STANDARD FADER PANEL



To configure the 2 pages of 3 x 4 button cells, the user first selects the standard fader panel to have its control cells configured from the Surface panel layout shown in Fig. 5. This is seen when entering the Show setup>Customise panels page.

The user then selects the cell for which the controls are to be added, highlighting the cell, see Fig. 6.

Selecting this option opens the user controls editor. On the right side of the editor is the 4 button layout, with the currently undefined user controls shown in the display in the centre.

Tapping any of the 4 buttons in the display, or any of the 4 Add buttons under button functions, opens the Customise button menu shown in Fig. 7.

The following pages detail the extensive set of control options that each of the 4 buttons for the selected path can be customised to perform.

To simplify some of these selections, 3 filter sets are provided:

- Global Functions: these controls are console wide.
- Path Functions: these controls apply to the selected path.
- Bus Functions: these controls apply to buses only.

The sliders filter for that type of function in the control option lists.

The user taps OK once the selection is made or Cancel to exit unchanged.

All the button control options and operation are the same as those shown in the User controls editor in the Fader Layout>Controls page. As such, they are not repeated here, see **"User Controls Editor" on page 133.**

FIG. 5 - CUSTOMISE PANEL MODE - SURFACE PANEL LAYOUT

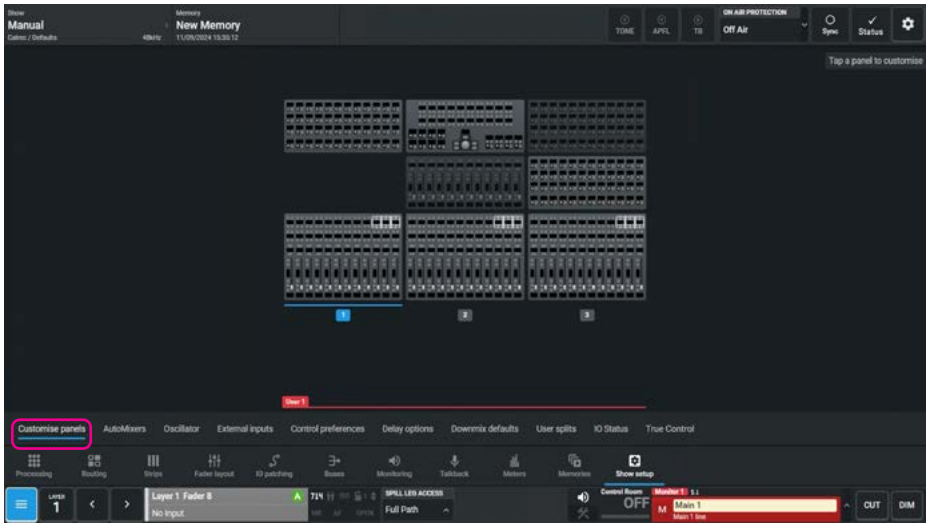


FIG. 6 - FADER PANEL CUSTOM CONTROLS

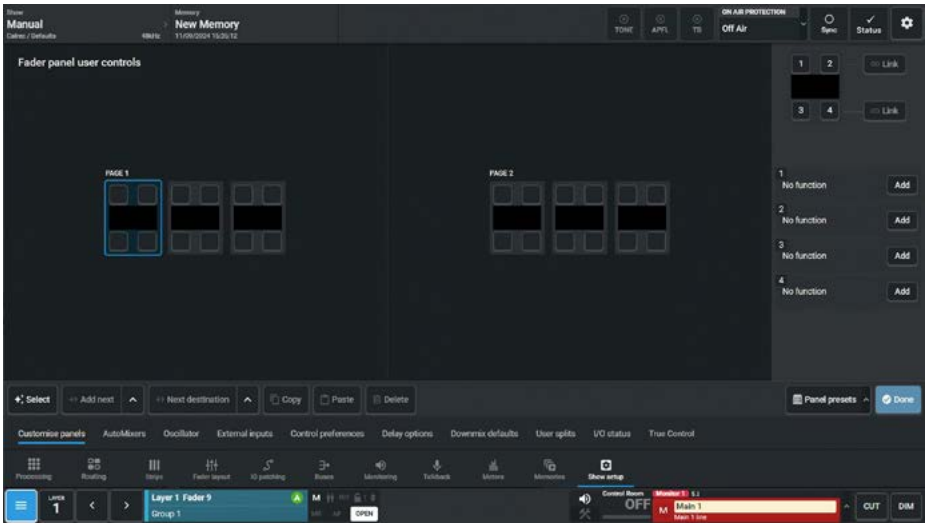
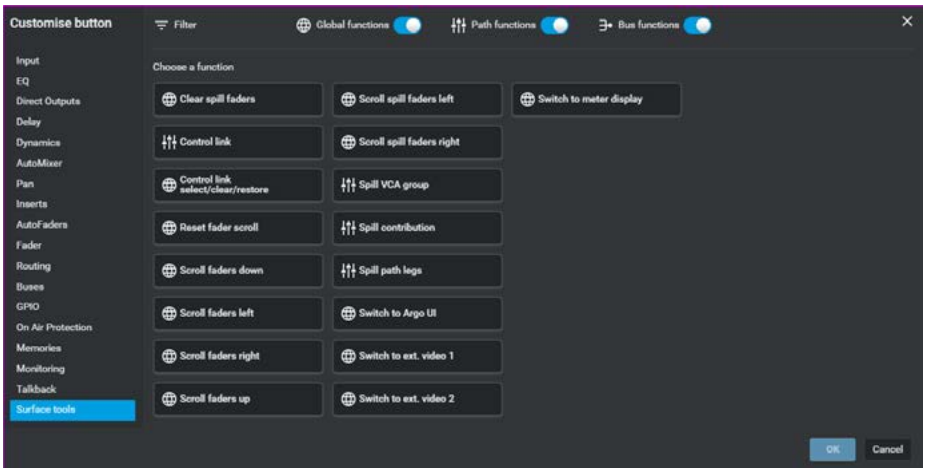


FIG. 7 - ASSIGNING FUNCTIONS TO FADER PANEL CUSTOMISED BUTTONS



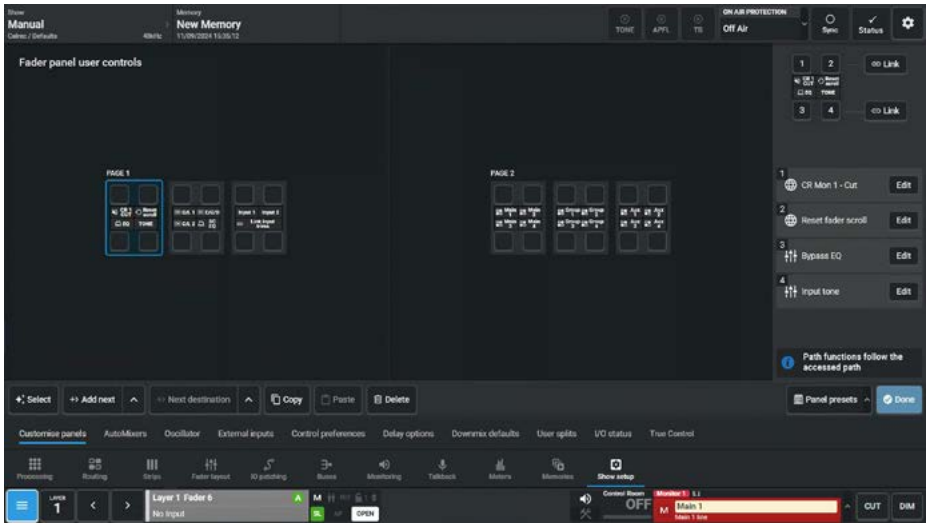
Path Follows Accessed Path

The Path functions follow area at the bottom right of the Customise panels page shows that any path functions will follow the Accessed path. It should be noted that Global and Bus functions are independent of this follow mode.

This means that, when appropriate, the custom controls will appear with the settings that relate to the currently Accessed path.

In the case of mixed control cells such as that highlighted in Fig. 8, only the Tone and Bypass controls would be applied to the currently accessed path, while the Global CR Mon 1- CUT control and Bus Aux 1- CUT control are fixed.

FIG. 8 - ONLY PATH FUNCTIONS FOLLOW ACCESSED PATH

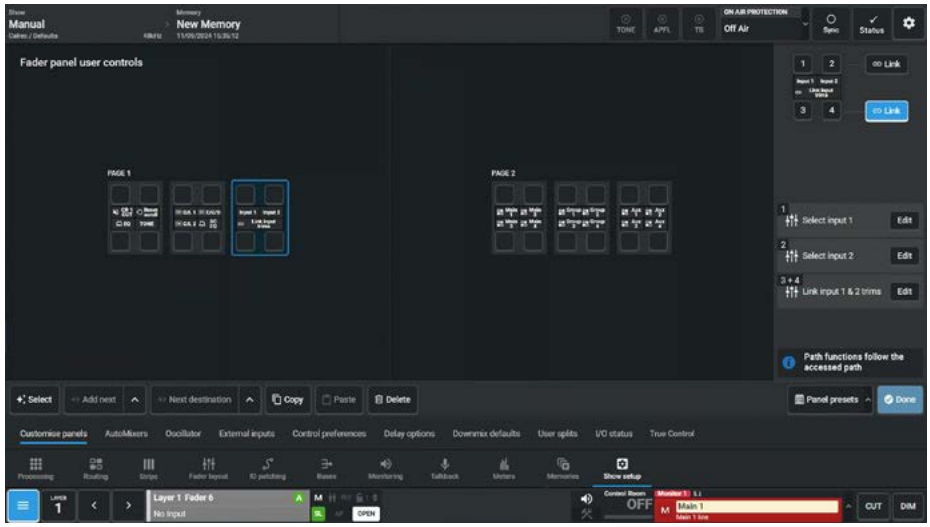


Path Input Functions Follows Accessed Path

Fig. 9 shows that the highlighted 4-button cell contains path functions related to Input controls.

This means that, when appropriate, the custom controls will appear with the settings that relate only to the currently Accessed path. In this case, the Input 1 and Input 2 selectors and the Link input trims would appear for channel input paths, but would not be available when not applicable, for example, on a Main bus when accessed.

FIG. 9 - PATH INPUT FUNCTIONS FOLLOW ACCESSED PATH (WHEN APPLICABLE)

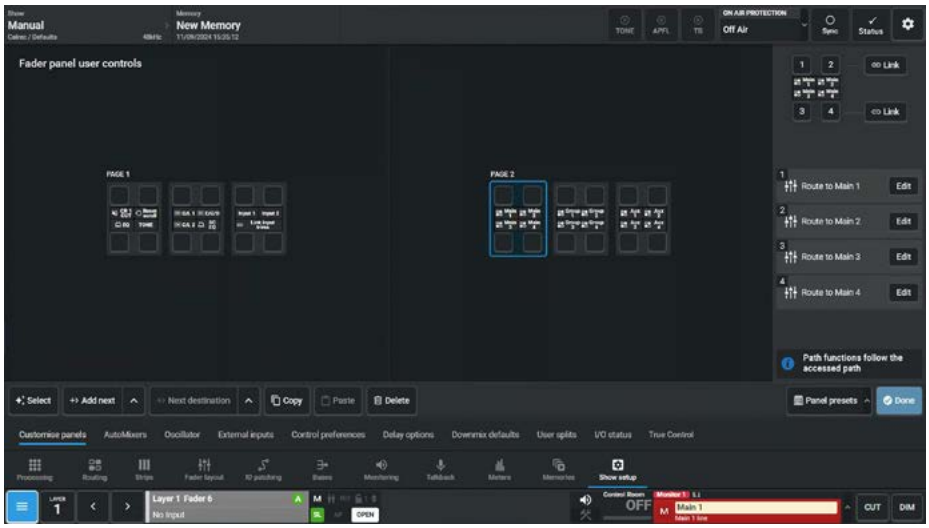


Path Routing Functions Follows Accessed Path

Fig. 10 shows that the highlighted 4-button cell contains path functions related to routing to Main outputs 1-4.

These functions would appear for paths that can be routed to Main outputs such as Channels and Groups, but would not be available when not applicable, for example, on an Aux bus when accessed.

FIG. 10 - PATH ROUTING FUNCTIONS FOLLOW ACCESSED PATH (WHEN APPLICABLE)



Custom Controls - Wild panels

The Argo console has the ability to display custom configured variable controls on the Wild Assign or Monitor panels. The rotary control cells on the CA6765 Wild Assign panel has 48 cells that can be used for this purpose, see Fig. 11.

This is carried out by first selecting the panel to have its control cells configured from the Surface panel layout, shown under Show setup>Customise panels. The user then selects the desired cell(s) for which controls are to be added. The user does so by tapping the required cell(s).

Tapping the '**Add control**' button, which appears on the right of the panel, then opens the rotary controls template. This contains all the current control variants available to be applied. The selected cell(s) can have one of the many templates attached to it. The user chooses the desired control by tapping a control from the template sets shown in Fig. 12. Tapping the '**OK**' button confirms the selection. There are many pages of Templates to choose from. These are arranged in various ways:

'All templates' contains every available template. Alternatively, a particular template, such as 'Input', can be selected to display the associated subset. Likewise, the user can search for a particular control or set of controls using the search box in the top right of the 'Choose a template' pop-up.

Fig. 13 shows that a set of templates have been configured to provide a combined Equaliser and Dynamics 1 control set. When the user selects a cell that has already had a control assigned to it, its name appears along with an edit button, allowing the user to change the function of that cell. These completed sets of controls can then be saved as presets by tapping the **'Panel Presets'** button in the bottom right of the panel page. This allows the user to save, update and load presets as required.

Note: once the Custom controls template is loaded for the Wild Assign panel, the Wild panel button (see **"Fig. 4 -Custom Controls Area On Standard Fader Panel" on page 252**) can be used to switch between custom controls and standard contextual controls.

FIG. 11 - WILD PANEL CUSTOM CONTROLS

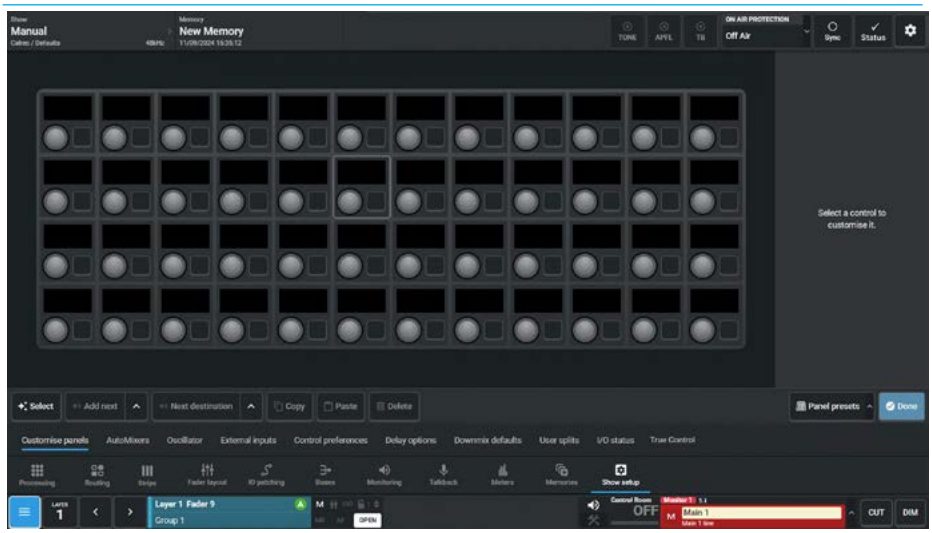


FIG. 12 - WILD PANEL CONTROLS TEMPLATE



FIG. 13 - EQUALISER & DYNAMICS 1 BUILT FROM TEMPLATE CONTROLS



Custom Controls - Monitor panels
The Argo console has the ability to display custom configured variable controls on the Wild Assign or Monitor panels.

The rotary control cells and button cells on the MY6574 Monitor panel, with its

18 button control cells, 8 rotary control cells and 4 rotary -3 button control cells, can be used for this purpose.

This is carried out by first selecting the desired panel from the Surface panel layout, shown when entering the

Show setup>Customise panels page. In Fig. 14, the user has selected the Monitor panel. The user then selects the cell(s) they wish to add controls to on that panel, highlighting the cells. Tapping

'Add control' on the right of the panel then opens either the button or rotary controls template, depending on the type of control cells selected. In this case, a rotary control cell was selected, opening the 'Choose a template' dialogue shown in Fig. 15.

Fig. 16 shows a monitor panel template set in the process of construction. Once completed, these sets of controls can then be saved as presets by tapping the **'Panel Presets'** button in the bottom right of the Customise panels page. This allows the user to save, update and load presets as required.

Note: there are separate Panel Preset files for each panel type: Standard fader, Wild assign and Monitor.

All button cell templates are already shown in the User controls editor in the Fader Layout>Controls page. As such, they are not be repeated here, see **"User Controls Editor" on page 133.**

Note: once the Custom controls template is loaded for the Monitor panel, the '**User controls'** button (see **"Monitor Controls On Monitor Panel" on page 196**) can be used to switch between custom controls and the standard contextual controls.

FIG. 14 - MONITOR PANEL CUSTOM CONTROLS

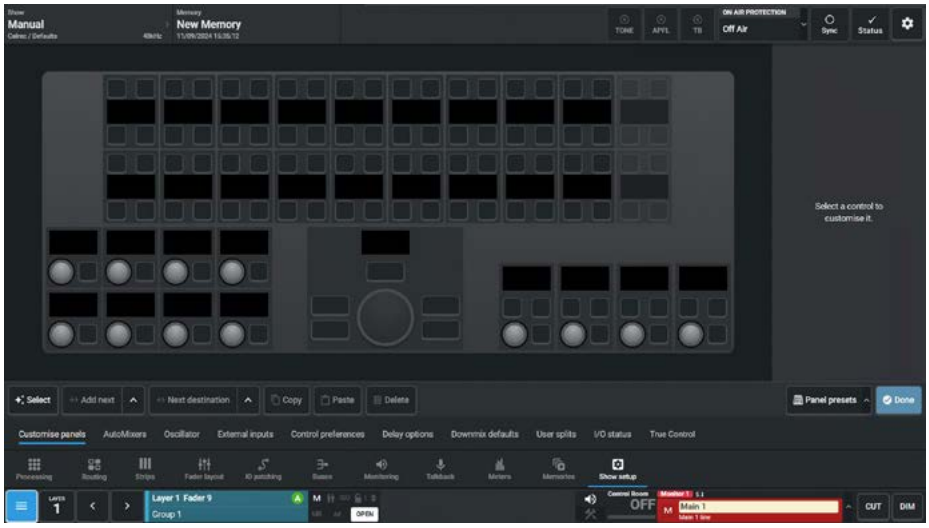


FIG. 15 - MONITOR PANEL CONTROLS TEMPLATE

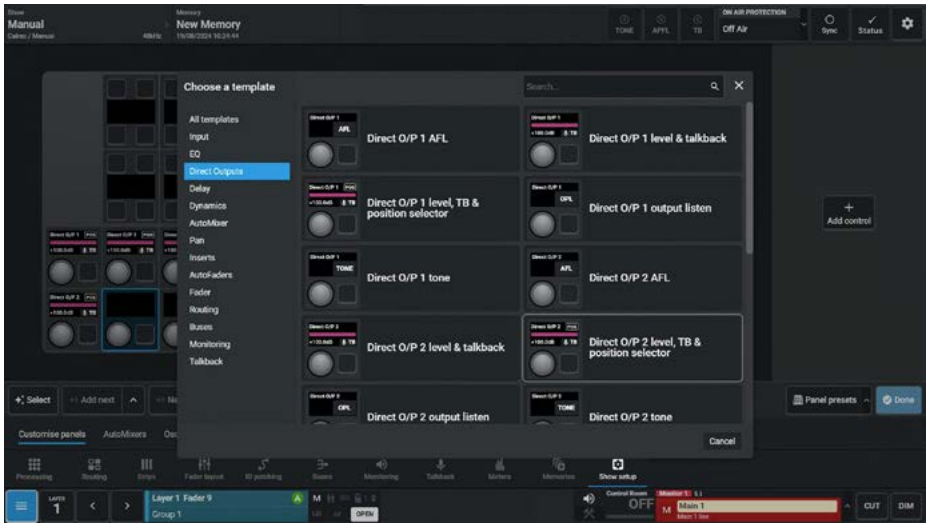


FIG. 16 - DIRECT OUTPUT, MISC MON CUT DIM, TALKBACK, SCROLL, SPILL ETC . . .



Using 'Add Next' & 'Next Destination'
To accelerate the process of creating customised panel layouts, the user can use the **'Add next'** and **'Next destination'** buttons.

Add next: Fig. 17 shows a Wild Assign panel custom controls layout in the process of being edited. The user selected the top left rotary cell, then clicked the **'Add next'** button. This has made a copy and placed it in the next adjacent cell. If the user clicks on the up arrow to the right of this button, two options appear: **'Fill empty space'** places copies of the selected cell to the right, populating empty cells until the process reaches a full cell. This is shown on row 2 in Fig. 17, which is filled up until the Dynamics control. **'Overwrite row'** places copies of the selected cell to the right, until the process reaches the end of the row. As such, this process overwrites any full cells after first showing a warning. This is shown on row 1, which has overwritten the dynamics controls. This is a useful method for creating fader strips where the same controls are to be used for each fader.

Next Destination: Fig. 18 shows a Wild Assign panel custom controls layout in the process of being edited. The user has selected the top left rotary cell before clicking the **'Next destination'** button, which has made an incremental copy and placed it in the next adjacent cell. If the user clicks on the up arrow to the right of this button, the same two options appear: **Fill empty space**, and **Overwrite row**, which operate as described above. This allows for the creation of a set of common controls that increment, such as Aux send 1, Aux send 2, etc.

FIG. 17 - USING ADD NEXT FOR FADER STRIPS

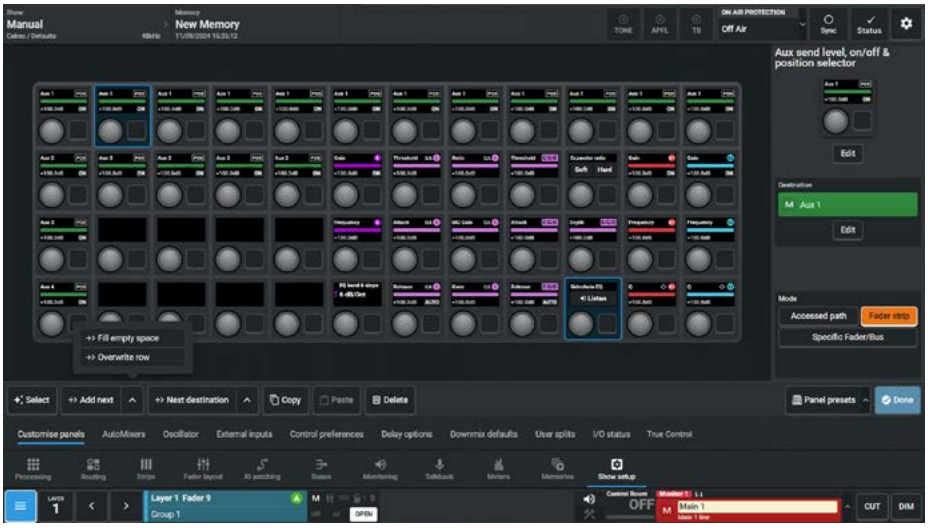


FIG. 18 - USING NEXT DESTINATION FOR CONSECUTIVE AUX SENDS

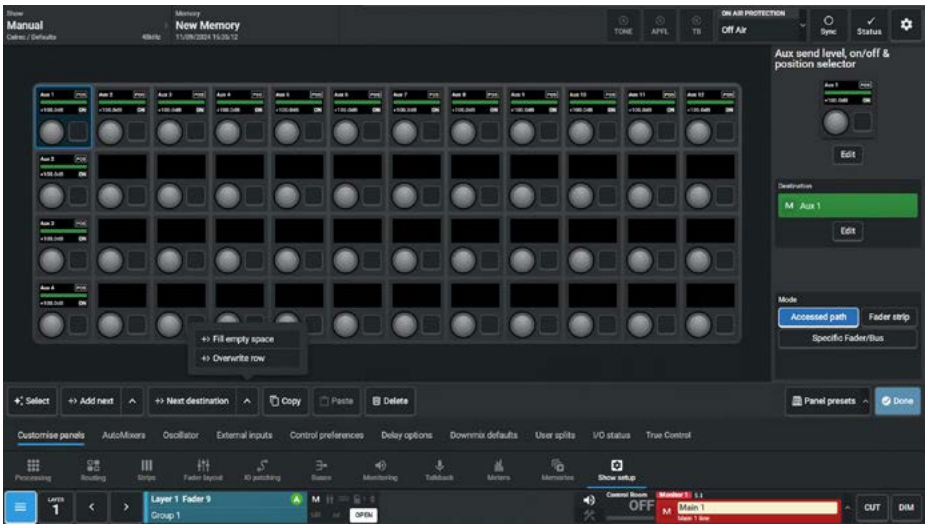


FIG. 19 - DELETING MULTIPLE CONTROLS FROM A WILD ASSIGN PAGE



Deleting multiple custom controls
Pressing the 'Select' button opens a select footer, allowing the user to: 'Select all' the panel cells, 'Select row' of cells by first selecting a member of that row, select individual cells or 'Select none'. Once an option is selected, the user is ready to delete any unwanted controls from the buttons or rotary cells. Once the user has selected the required cells for deletion, the user taps **'Delete'**. A dialogue box labelled 'Delete selected controls?' will appear. The user taps the 'Delete' button to remove the selected control(s) from a panel layout. Fig. 19 shows that the user has tapped **'Select all'** and **'Delete'**. This provides a quick way to delete all custom controls from a panel.

Copy and Paste Custom Controls
The Customise panel operation has the ability to Copy & Paste control cells. The user first selects the Cell to be copied before tapping the 'Copy' button. A confirmation pop-up labelled 'Controls copied' will appear, confirming the copy at the bottom of the page shown in Fig. 20.

The Copy is entered into the Paste buffer, ready to be placed as required. In this case, a 'Comp/Lim 1 On' cell has been copied and, as an example, is ready to be pasted into the Adjacent cell. The user selects the destination cell that is to have the copy pasted into it. A confirmation pop-up labelled 'Controls pasted' will appear once the 'Paste' button is tapped, see Fig. 21.

Note: the copy will overwrite any already occupied control cell if selected.

Delete a Selected Custom Control
In order to remove controls from button or rotary cells, the user selects the cell(s) to be deleted before tapping the **'Delete'** button. A dialogue box appears labelled 'Delete selected control?'. The user can either tap the 'Delete' button to remove the selected control(s) from the panel layout or tap **'Cancel'** to cancel the operation. Fig. 22 shows that a cell has been selected for deletion. Once the Delete/Cancel selection is complete, the dialogue box closes.

FIG. 20 - COPYING A CUSTOM CONTROL

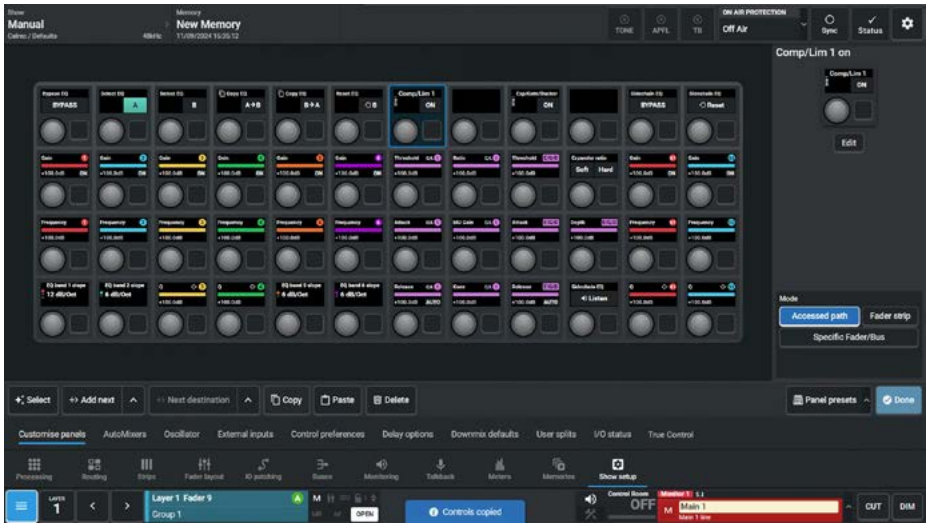
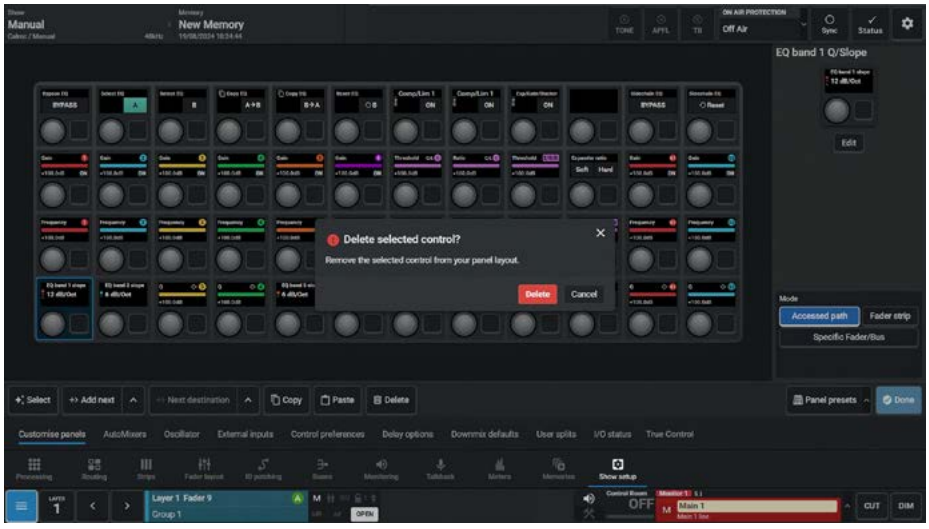


FIG. 21 - PASTING A CUSTOM CONTROL



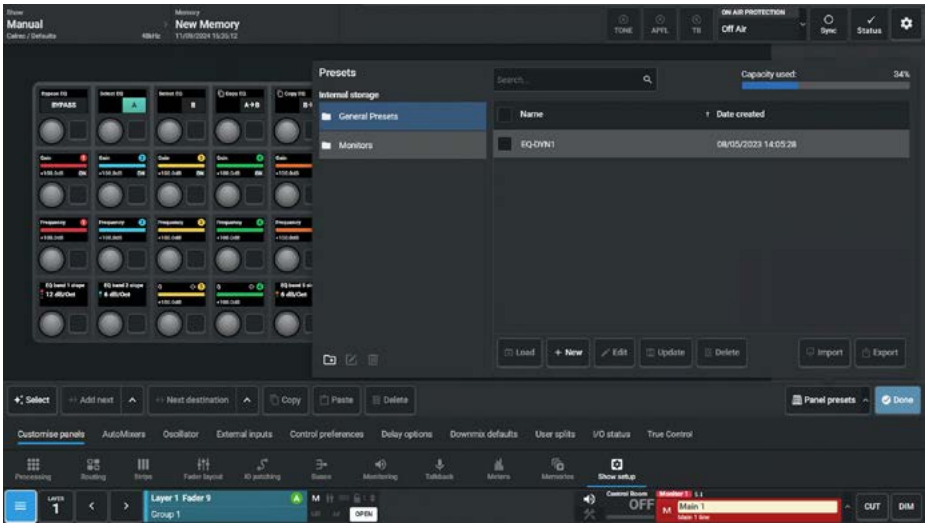
FIG. 22 - DELETE A SELECTED CUSTOM CONTROL



CUSTOM PANEL PRESETS

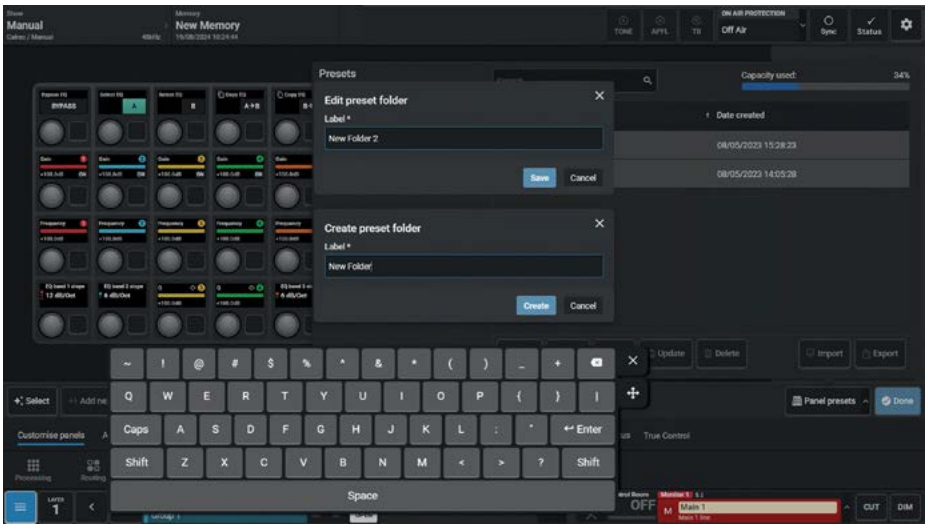
Custom Panel Presets Function
The user can store and recall custom panel layouts. This is carried out in the Panel presets dialogue. The user can access these by tapping the **'Panel presets'** button in the Customise panels pages for the Standard Fader, Wild Assign & Monitor panels. The presets are contained in these preset folders. Typically, a user will have their own preset folder. Fig. 1 shows the custom Panel presets dialogue box. It is arranged into two areas: the left side allows the user to create, label or delete panel preset folders, each of which can contain any number of custom panel layout files. The right side shows the presets that are contained in the selected preset folder.

FIG. 1 - CUSTOM CONTROLS PRESET FOLDER/PRESETS FUNCTION



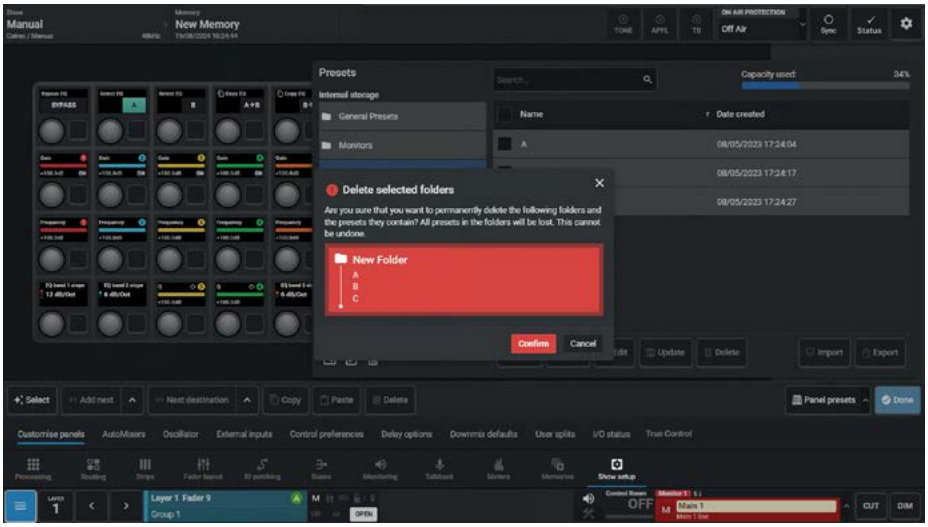
Custom Panel Preset Folders
The following functions are available:
Create Preset Folder: To create a new preset folder, the user taps the Create folder icon on the preset folders side before typing a name for the preset in the 'Create preset folder' dialogue box, shown in Fig. 2, using the on-screen-keyboard. Tapping the **'Create'** button creates a new empty preset folder.

FIG. 2 - CREATE PRESET FOLDER & EDIT PRESET FOLDER



Edit Preset Folder: To edit the name for an existing preset folder, the user selects the folder and taps the Edit icon on the preset folders side before then typing a replacement name for the folder in the 'Edit preset folder' dialogue box, using the on-screen-keyboard. This appears instead of the create preset dialogue box and is shown inset in Fig. 2. Tapping the **'Save'** button applies the edited name to the folder and saves it.

FIG. 3 - DELETE PRESET FOLDERS



Delete Preset Folders: To delete an existing preset folder, select the folder to be deleted before tapping the Delete icon on the preset folders side. The 'Delete selected folders' dialogue box appears, see Fig. 3. This shows the presets contained in the folder, asking the user to confirm that they wish to permanently delete the folders and any presets contained within. A graphic is inset showing the names of the folders and files affected. Once the **'Confirm'** button is tapped, the selected folders and presets are deleted.

Note: this cannot be undone.

Custom Panel Presets
The following functions are available:
Create Preset: To create a new preset, the user selects the preset folder that the preset is to be put into, then taps 'New' on the presets side. The preset is named by typing a name into the 'Create preset' dialogue box shown in Fig. 4, using the on-screen-keyboard. Once the **'Create'** button is tapped, the new preset will appear in the preset folder.

Edit Preset: To edit the name for an existing preset, the user selects the preset to be renamed, taps 'Edit' on the presets side and types a replacement name for the preset in the **'Edit preset'** dialogue box using the on-screen-keyboard. This appears instead of the create preset dialogue box and is shown inset in Fig. 4. Once the **'Save'** button is tapped, the newly named preset is saved.

Load preset: Fig. 5 shows the process of loading a panel preset. When the **'Load'** button is tapped, a **'Load'** dialogue box requests confirmation that the user wishes to load the chosen preset. Tapping the **'Load'** button loads the preset into the panel.

Update Preset: Fig. 6 shows the process of updating a custom panel preset. Tapping the **'Update'** button opens the 'Update' dialogue box. This requests confirmation that the user wishes to update the chosen preset.

Tapping **'Update'** confirms the decision, overwriting the stored preset with the current custom panel layout.

Note: make sure that the correct existing preset has been selected before applying '**Update**', as it will be overwritten. This cannot be undone.

FIG. 4 - CREATE PRESET & EDIT PRESET LABEL

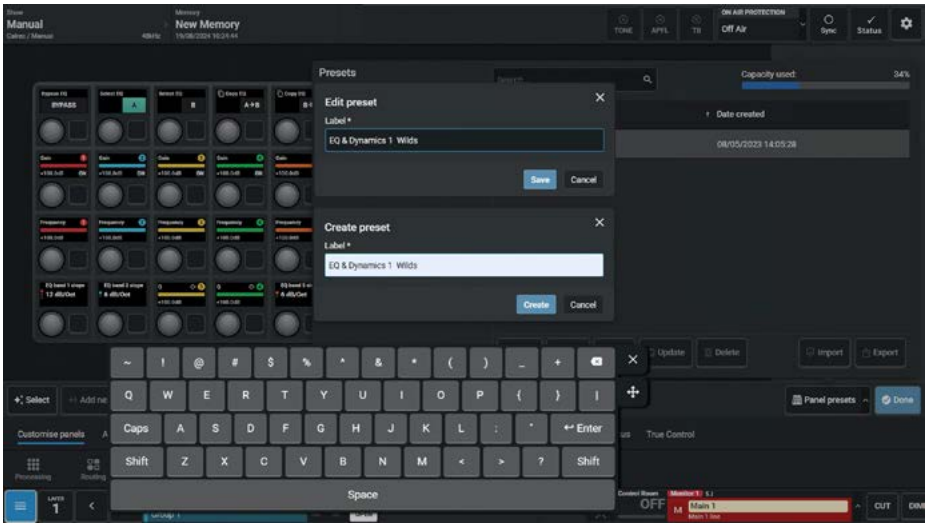


FIG. 5 - LOAD PRESET

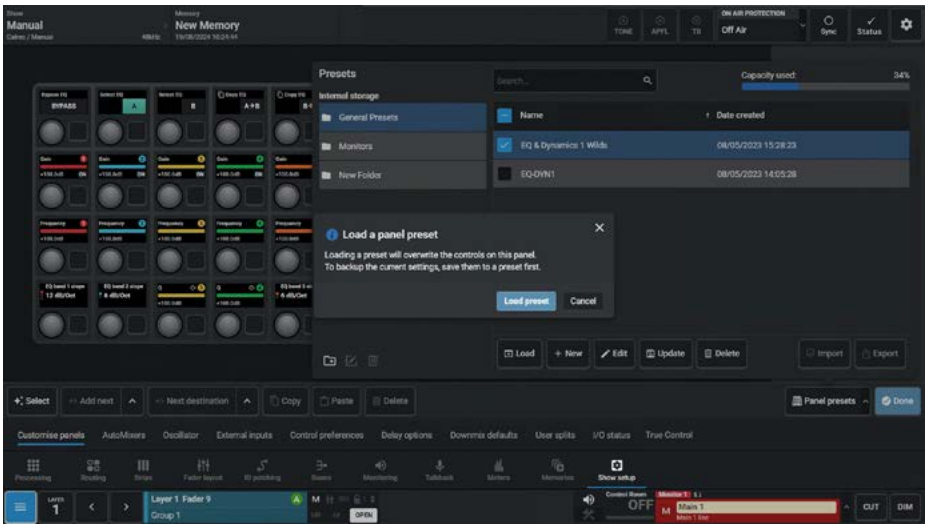
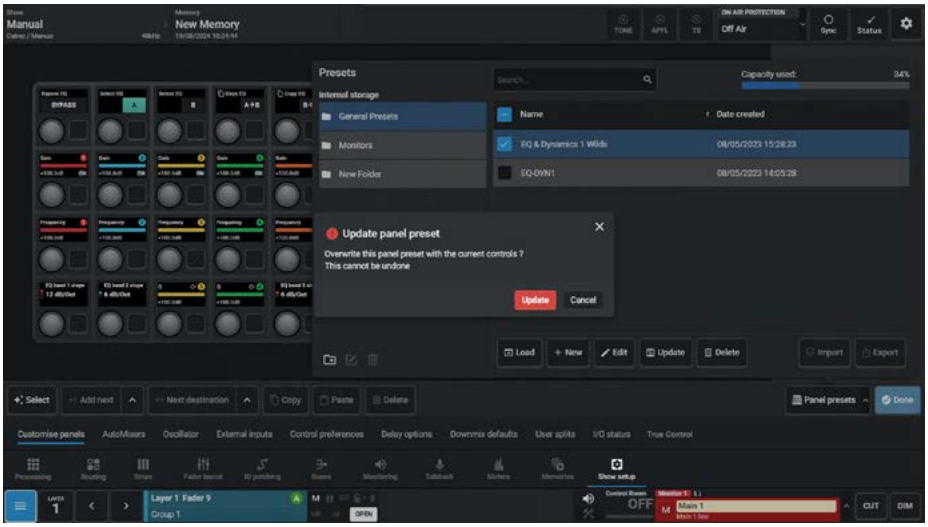


FIG. 6 - UPDATE PRESET

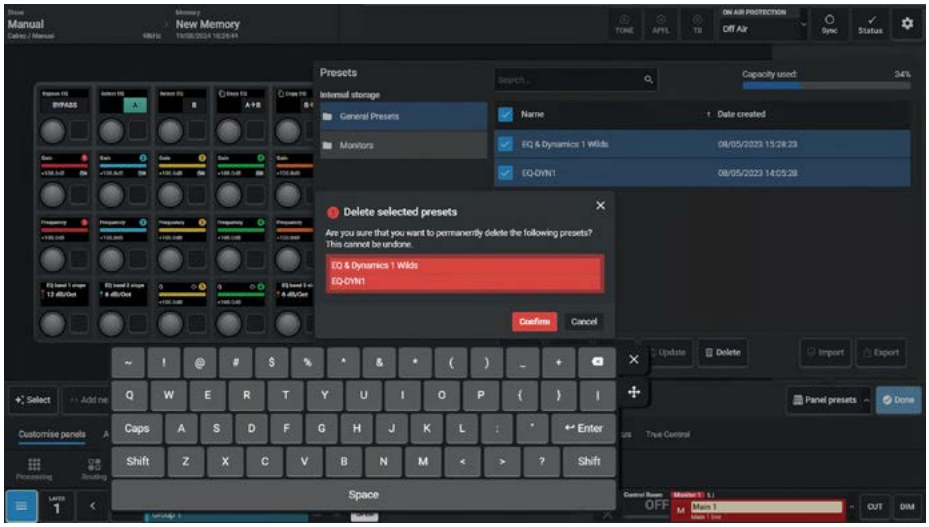


Delete Presets: To delete existing presets, the user selects the presets to be deleted before tapping 'Delete' on the presets side. The 'Delete selected presets' dialogue box appears, see Fig. 7. This shows the selected panel presets and requests confirmation that the user wishes to permanently delete them. A graphic is inset in the dialogue box, showing the names of the presets affected. Tapping **'Confirm'** deletes the selected custom panel presets.

Note: this cannot be undone.

Import/Export Presets
This is available only from Assist, not from the surface.

FIG. 7 - DELETE PRESETS



AUTOMIXER SETTINGS (NOT YET AVAILABLE WITH IMPULSEV)

The AutoMixer page in the Show Setup pages allows the user to configure the Global settings of the eight AutoMixers, which includes the Attack and Release time and Bypass control for each AutoMixer.
The AutoMixers page is accessed from the AutoMixers button in the Show Setup mode, which itself is accessed from the Modes row of a fader panel by first pressing Modes Menu in button cell 4 of the Layers & Modes row, then pressing Show Setup, as shown in Fig. 1. Alternatively, the user can tap the appropriate icon on the touchscreen, see Fig. 3. Once accessed, a number of sub-menu options appear, including the AutoMixers page, which appears as shown in Fig. 2, or from the Touchscreen sub-menu entry as highlighted in Fig. 3.

AutoMixer Global Controls

Each of Argo's eight AutoMixers have their own global attack, release and bypass controls. Attack and release controls are used to smooth the signals, prior to the level ratio calculation.

A compromise must be struck between a fast attack and release, which leads to a more erratic but fast-acting functioning, and a slow attack and release, which leads to slow-acting but smoother functioning.

To access AutoMixer global controls, the user taps Show Setup>Automixers from the modes row shown in Fig. 1 and Fig. 2, or via the touchscreen shown in Fig. 3.

For each AutoMixer, tapping the **'Bypass'** button disables that selected AutoMixer for all assigned paths.

The Attack Time for each AutoMixer can be set between 50µs (default) and 0.2s

The Release Time for each AutoMixer can be set between 75ms and 4s (default).

Auto Release: In 'Auto' mode, a filter is applied to determine how quickly the signal comes out of attenuation. This is calculated by measuring the size and duration of the attenuation attack. This is useful in dealing with both sudden noises, which recover quickly, and sustained noises, such as applause, which recover slowly. Auto Release is enabled when the slider is dragged all the way to the left.

If the user wishes to momentarily take a path out of the AutoMixer's assignment, the **'AutoMixer Control'** On/Off switch should be used. This can be found on the individual path's AutoMixer processing tab.

FIG. 1 -SHOW SETUP MODE SELECT ON STANDARD FADER PANEL



FIG. 2 -SHOW SETUP MODE - AUTOMIXERS SELECT

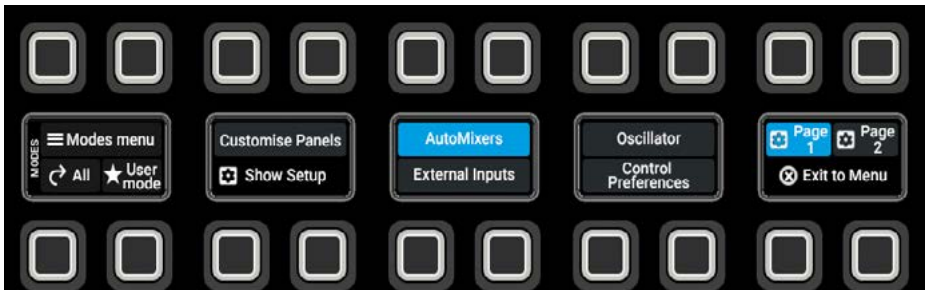


FIG. 3 - AUTOMIXER GLOBAL CONTROLS



OSCILLATOR SETTINGS

The Oscillator page in the Show Setup pages allows the user to configure the Global settings for both the Fixed and User Oscillators provided.

The Oscillators page is accessed from the Oscillator button in the Show Setup mode, which itself is accessed from the Modes row of a fader panel by first pressing Modes Menu in button cell 4 of the Layers & Modes row, then pressing Show Setup, as shown in Fig. 1. Alternatively, the user can tap the appropriate icon on the touchscreen, see Fig. 3. Once accessed, a number of sub-menu options appear, including the Oscillator page, which appears as shown in Fig. 2 or from the Touchscreen sub-menu entry highlighted in Fig. 3.

Oscillator Controls

Internal tone signals are generated by the Argo oscillators. These are accessed from Show setup>Oscillator, as shown in Fig. 2. The oscillators provide control of internal tone parameters and control over the option to override the internal tone generators with external tones. The system provides 2 fixed oscillators and 2 user oscillators. These can be adjusted using the level & frequency controls on the left of the screen. The user can set the oscillators to generate a fixed frequency tone at a specified frequency, or a stepped 20Hz to 20kHz tone frequency sweep.

Fixed Oscillators

These can provide different tone sources for Mono, Stereo & 5.1 outputs, using the internal and external tone source buttons. Selecting **'Internal'** uses the DSP internal oscillators as the tone source for that path width. Conversely, selecting **'External'** uses the feed(s) currently patched to the external tone input(s). Each leg of stereo or 5.1 tone source can be muted using their leg mutes.

Stereo/mono (ST/M) downmix

For the downmix outputs of 5.1 and wider paths, there is the option to use the ST/M oscillator instead of the 5.1 or User Oscillators, which normally feed the Lo/Ro & Mo D-Mix O/Ps from Mains and L/R/M Direct O/Ps from Channels and Groups.

Note: 0.0.2/0.0.4 O/Ps such as Groups are always fed tone from ST/M oscillators.

Clearing Tone

Tapping the 'Clear tone on all Paths' button switches off all tone on all paths.

FIG. 1 -SHOW SETUP MODE SELECT ON STANDARD FADER PANEL



FIG. 2 -SHOW SETUP MODE - AUTOMIXERS SELECT

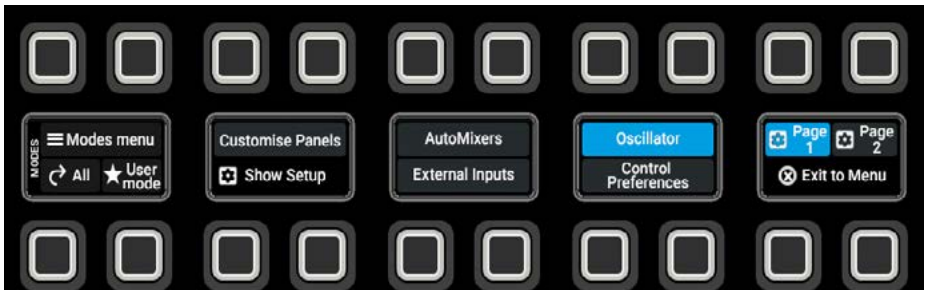
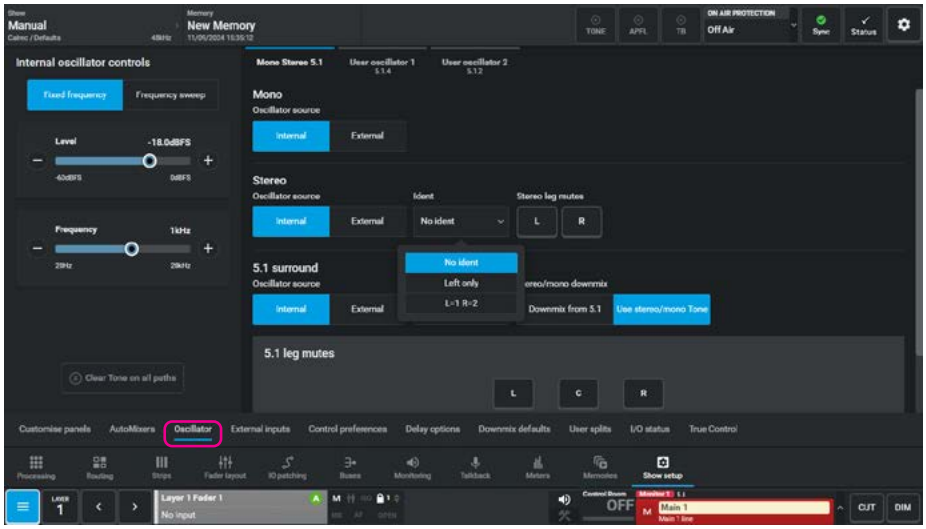


FIG. 3 - FIXED OSCILLATOR SHOWING STEREO IDENT OPTIONS & LEG MUTES



Oscillator Tone Idents
Tone idents are variations in the tone signal used to identify legs of multichannel paths when verifying routing and patching.

To set an ident for a stereo path, tap its **Ident** selector dropdown button to display a pop-up menu, as shown in Fig. 3 on the previous page. The menu is populated with the following path width ident options:

Left Only is similar to the EBU ident specification. The tone on the left audio channel is repeatedly interrupted while the right channel remains constant.

L=1, R=2 is similar to the GLITS ident specification. Tone is repeatedly interrupted on both left and right channels. Each interruption on the left channel is followed by two interruptions on the right channel. These are stereo idents and will only be applied to tone being injected onto stereo paths/outputs.
If tone is to be selected directly onto a surround output (rather than onto a fader routed to an output) the stereo ident only affects stereo downmix outputs.

Note: only one of the two stereo idents can be selected at any given time.

To set an ident for a 5.1 path, tap its **'Ident'** selector dropdown button to display a pop-up menu, as shown in Fig. 4. This menu is populated with the following path width ident options:

BLITS ident is for use on 5.1 surround paths and will not affect tone on mono or stereo paths. It can be selected & used at the same time as one of the stereo idents. Four different modes can be selected for the BLITS format, selectable from the 5.1 ident dropdown.

'Normal' is the full BLITS cycle mode - Firstly, the 'Ident' stage applies a short burst of tone to each of the channels, one at a time, in order. 4 tone frequencies are used at this stage for channel ID (see Fig. 6).

FIG. 4 - FIXED OSCILLATOR SHOWING SURROUND IDENT OPTIONS & LEG MUTES

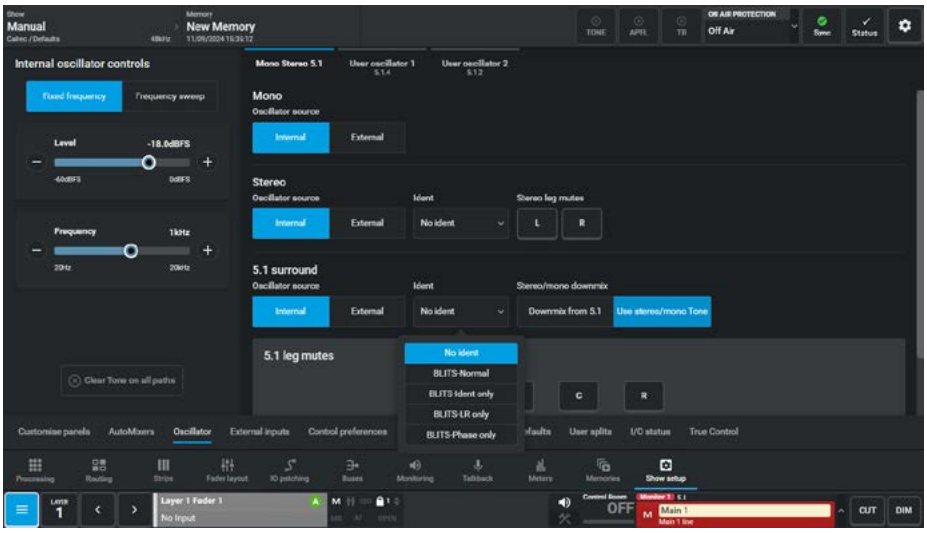
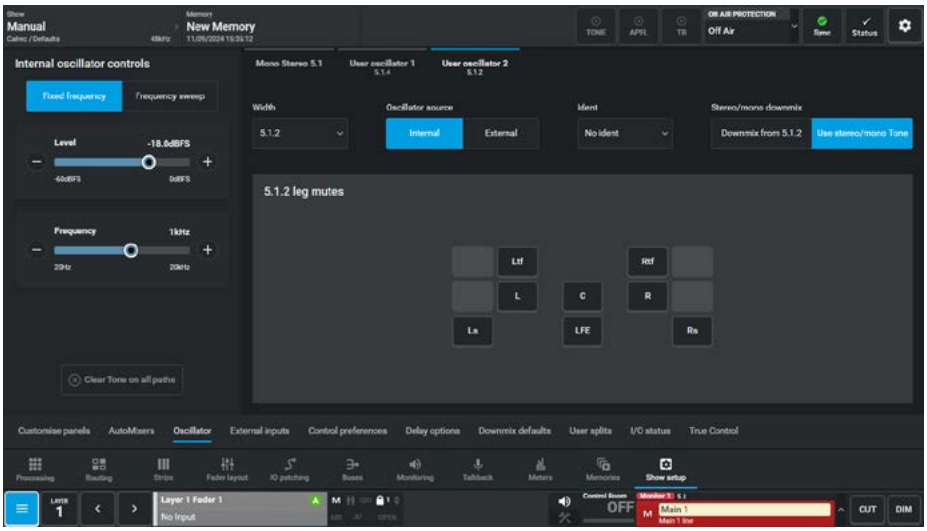


FIG. 5 - USER OSCILLATOR 2 SHOWING WIDTH OPTIONS



This is followed by the 'LR' stage, where a 1kHz tone on the L & R legs only is applied. Here, the right channel is continuous, while the left channel is repeatedly interrupted. The final stage of the cycle is 'Phase', which applies a 2kHz tone on all channels simultaneously before restarting the cycle. The different frequencies used also helps to identify each part of the cycle.

For example, if 1kHz can be heard anywhere other than front L/R then there must be a problem with routing or patching. The **'Ident Only'**, 'LR Only' and **'Phase Only'** options exist to provide each stage of the BLITS ident separately.

User Oscillators

In addition to the Mono/Stereo & 5.1 fixed oscillators, the DSP also provides 2 User definable oscillators. Each of these can be independently set to provide 7.1, 5.1.2, 5.1.4, 7.1.2 & 7.1.4 immersive tones.

Fig. 5 shows that the width has been set to 5.1.2. Fig. 6 shows the 'Ident' dropdown being applied. The user oscillators provide an extended version of the BLITS ident on top of the **5.1** version,. The frequencies applied to each leg can be found in Fig. 7.

Each leg of the selected user oscillator widths can also be muted, as shown in Fig. 6 for the C leg of the 5.1.4 leg mutes.

FIG. 6 - USER OSCILLATOR 1 IDENT OPTIONS

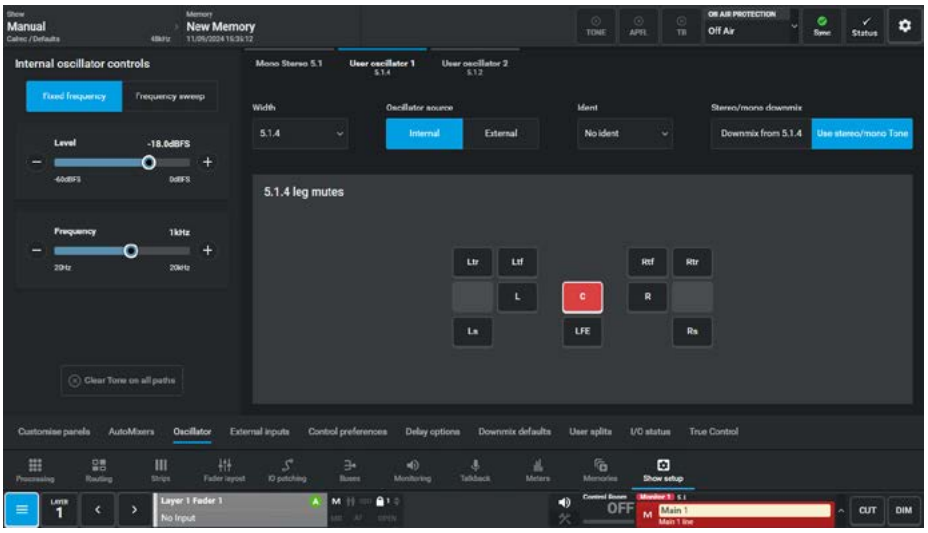


FIG. 7 - OSCILLATOR IDENT FREQUENCIES PER LEG.

	L/R	C	Lfe	Ls/Rs		Ltf/Rtf	Ltr/Rtr
5.1	880Hz	1320Hz	82.5Hz	660Hz			
5.1.2	880Hz	1320Hz	82.5Hz	660Hz		1760Hz	
5.1.4	880Hz	1320Hz	82.5Hz	660Hz		3520Hz	440Hz
	L/R	C	Lfe	Lss/Rss	Lrs/Rrs	Ltf/Rtf	Ltb/Rtb
7.1	880Hz	1320Hz	82.5Hz	660Hz	330Hz		
7.1.2	880Hz	1320Hz	82.5Hz	660Hz	330Hz	1760Hz	
7.1.4	880Hz	1320Hz	82.5Hz	660Hz	330Hz	3520Hz	440Hz

External Tone Inputs

For the Ext Mono, Ext Stereo & Ext 5.1 inputs, analogue sources have been used as the external options for the fixed oscillators patched to the Tone Inputs, as shown in Fig. 7.

For the Ext 7.1, Ext 5.1.2, Ext 5.1.4, Ext 7.1.2 & Ext 7.1.4 inputs, digital sources have been used as the external options for User Oscillators 1 & 2, patched to the Tone Inputs as shown in Fig. 8.

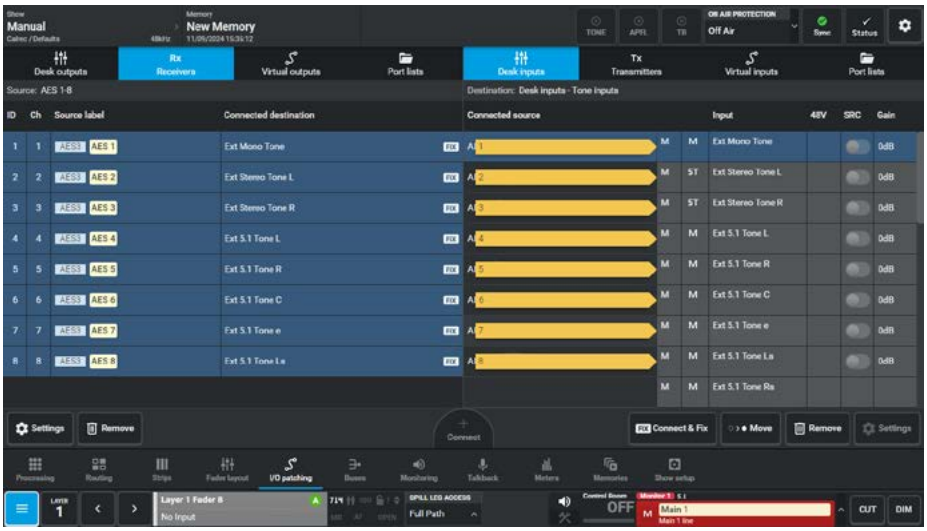
All four Tone sources are separated to support their idents. External tone can be applied and selected individually to each width of tone view, meaning a mixture of internal and external tone can be used if required.

For Analogue tone sources, both Phantom Power (48V) and Analogue Gain can be applied. For Digital tone sources, SRC can be applied.

FIG. 7 - PATCHING EXTERNAL SOURCES TO TONE INPUTS ON FIXED OSCILLATORS



FIG. 8 - PATCHING EXTERNAL SOURCES TO TONE INPUTS ON USER OSCILLATORS



Tone Troubleshooting & FAQs

No tone present when selected

Selecting external tone will replace the console oscillator whether external tone is present or not. If internal tone is not present when expected, check it is not set to external. If using external tone, check the correct input receivers are patched to the external input (and that the tone generator is connected, on and set correctly). Also check that the oscillator level/frequency are set to suitable values.

Tone on stereo downmixed outputs lower than expected

When selecting tone to a surround output bus, it is also applied to that bus's LoRo outputs at the same level. This is because tone is being applied at the final output stage. With tone to line selected, the signal on LoRo is NOT derived from a downmix of the surround channels. The same level of tone is applied to both the 5.1 & Stereo downmixed output.

Tone on stereo downmixed outputs higher than expected

If tone is fed from a surround or immersive channel/path, which is in turn routed to a surround output, the LoRo of that output will generally be of a higher level than that on the surround/immersive legs, as the LoRo output is derived from a downmix of the content on the surround legs, as defined in the downmix settings.

Tone not present or low on LFE channel of outputs

If tone is routed from a channel to a surround main output and signal is not present on the LFE leg of the output, this is likely to be due to the default state of surround main outputs having a high frequency filter switched in on the LFE leg.

Try reducing the frequency of the oscillator to circa 50Hz to observe (and hear) the LFE channel. If desired, the filter can be switched out or adjusted by selecting the main output as assigned, then selecting the LFE channel from the surround spill panel and adjusting the filters from an EQ panel.

EXTERNAL INPUTS

The External Inputs page in the Show Setup pages allows the user to configure the width of External inputs from a Pool of 152 mono inputs, which can be configured to any of the available widths from Mono, through Stereo and Surround, up to 7.1.4 immersive inputs, allowing the user to bring in outside sources of various widths as required.

The External Inputs page is accessed from the External Inputs button in Show Setup mode, which itself is accessed from the Modes row of a standard fader panel by first pressing Modes Menu in button cell 4 of the Layers & Modes row, then pressing the Show Setup button, as shown in Fig. 1. Alternatively, the user can tap the appropriate icon on the touchscreen as shown in Fig. 3.

Once the Show setup is accessed, a number of sub-menu options appear, including the External Inputs page, which appears as shown in Fig. 2 or from the Touchscreen sub-menu entry highlighted in Fig. 3.

Creating External Inputs

External Inputs are typically used to bring outside sources into the monitoring and metering systems of the console.

Argo provides a pool of 152 mono inputs. These are used to create external inputs at the selected width, ready to patch from the outside sources.

The external inputs page is accessed from Show setup>External inputs. Fig. 3, shows the creation of new external inputs.

The user taps on empty external input entries, for example 'Ext Input 11'. Tapping the 'New' button in the footer then presents the user with a path width pop-up.

The user selects the width (in this case M Mono) and the 'ticked' external input(s) will be set to that width. In the IO patching page, the user can port the inputs from the IO receivers to the external inputs.

FIG. 1 - SHOW SETUP MODE SELECT ON STANDARD FADER PANEL

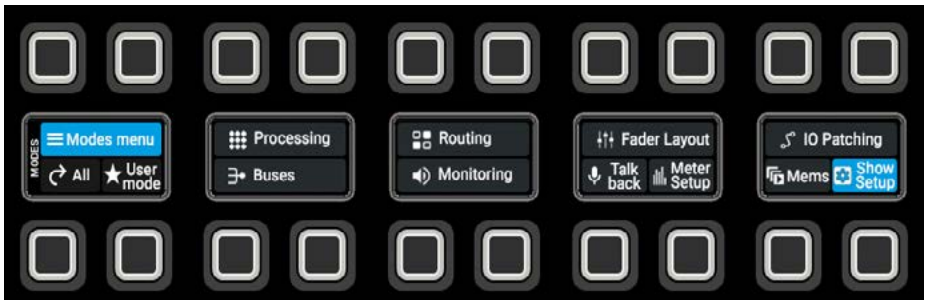
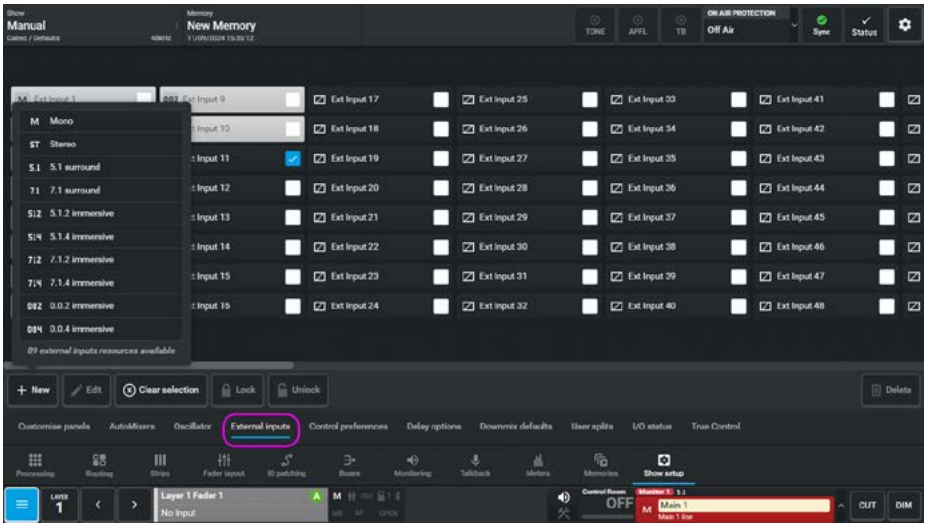


FIG. 2 - SHOW SETUP MODE - EXT INPUTS SELECT



FIG. 3 - CREATE EXTERNAL INPUTS

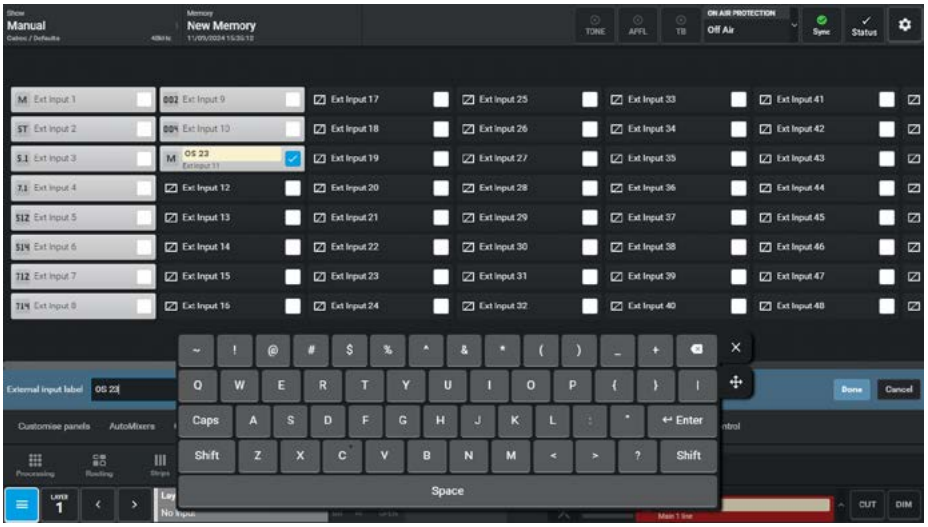


Labelling External Inputs
Each external input can have a more meaningful label attached to it as shown in Fig. 4. The user selects an external input entry from the table, after which the **'Edit'** button becomes available. Tapping this button opens an external input label footer, allowing the user to enter an appropriate label using the on-screen keyboard.

The user can tap **'Previous'** or **'Next'** to continue editing other labels, or **'Done'** to exit the dialogue.

Note: tapping Previous or Next acts as an acceptance of the new label. Tapping '**Cancel**' will only ignore the current external input label change.

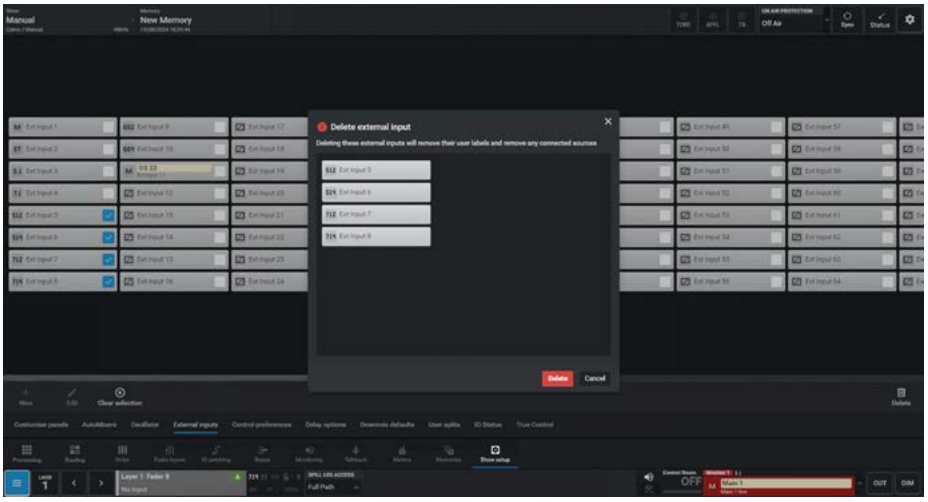
FIG. 4 - LABEL EXTERNAL INPUTS



Deleting External Inputs
Existing external inputs can be deleted when no longer required. The user selects the external inputs by tapping the external inputs to be deleted, as confirmed by the 'tick' in each entry. This prompts the **'Delete'** button to become available. Tapping this opens the '**Delete external input**' dialogue, which contains a list of external inputs that are to be deleted.

The user then taps **'Delete'**. This will remove any connected sources. Alternatively, tapping **'Cancel'** leaves the selected external inputs as they were, as shown in Fig. 5.

FIG. 5 - DELETE EXTERNAL INPUTS



Clear Selection
This button will deselect any external inputs that have been 'ticked' during the '**New**' or '**Delete'** process.

CONTROL PREFERENCES

The Control Preferences page in the Show Setup pages allows the user to determine how various features, such as AutoFaders, Faders, VCA groups and APFL options will behave. The Control Preferences page is accessed from the Control preferences button in Show Setup mode, which itself is accessed from the Modes row of a standard fader panel by first pressing Modes Menu in button cell 4 of the Layers & Modes row, then pressing the Show Setup button as shown in Fig. 1. Alternatively, the user can tap the appropriate icon on the touchscreen as shown in Fig. 3.

Once the Show setup is accessed, a number of sub-menu options appear, including the Control Preferences page, which appears as shown in Fig. 2 or from the Touchscreen sub-menu entry highlighted in Fig. 3.

Control Preference Options

This is accessed from Show setup>Control preferences. The page appears as shown in Fig. 3. Details of the various preferences are described below:

Access

When the 'Access follows link' slider switch is on and the user creates a link across a range of faders by simultaneously pressing two link buttons, the left-most path in the link will be accessed.

Using this option eliminates the possibility of accessing the wrong path after the link is created. The user can now also link faders that do not contain paths. This makes it quick and easy to select a range of faders.

AutoFaders

'Touching a fader' when fading has two options, 'Adjusts fade-in level', or as an alternative, 'Overrides AutoFader control'.

Faders

Argo faders are provided with a notch feature, where the fader motor applies a pulse to indicate when passing through the 0dB position. This can be turned off with the 'Fader notch' slider switch.

FIG. 1 -SHOW SETUP MODE SELECT ON STANDARD FADER PANEL

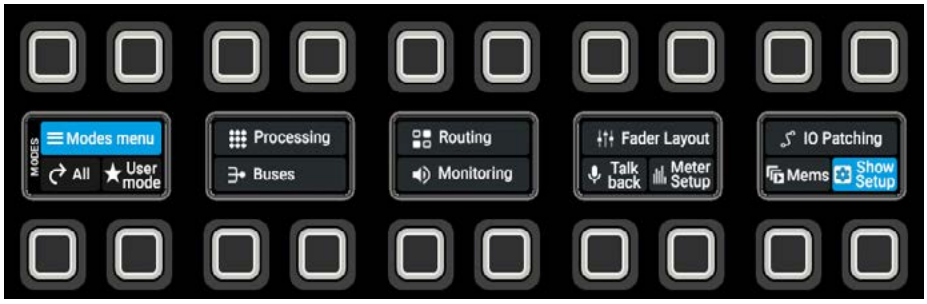


FIG. 2 -SHOW SETUP MODE - CONTROL PREFERENCES SELECT

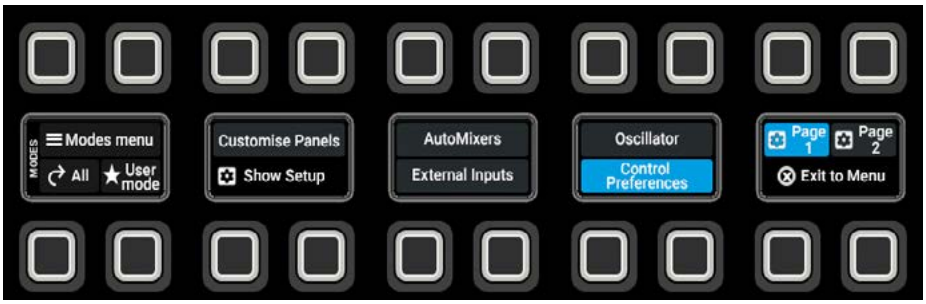
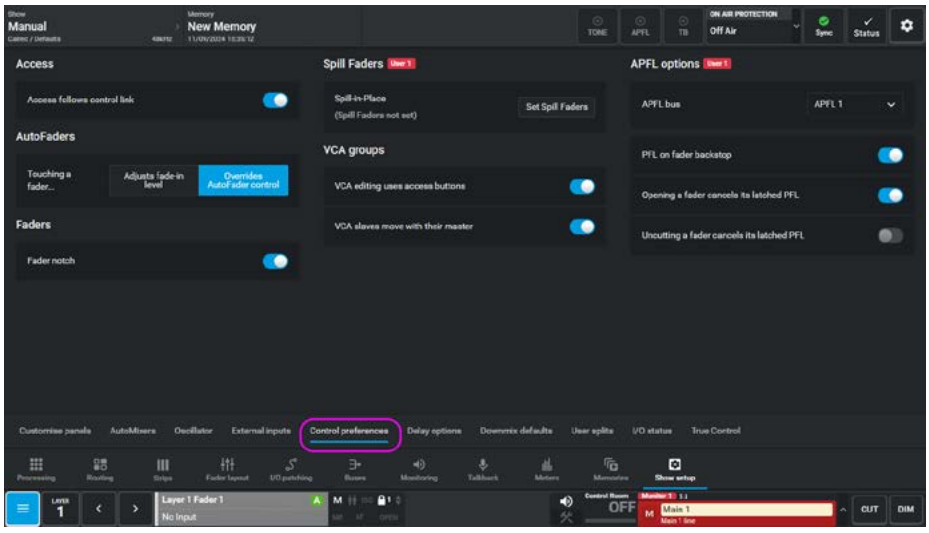


FIG. 3 - CONTROL PREFERENCES- INCLUDING SPILL-IN-PLACE INDICATION

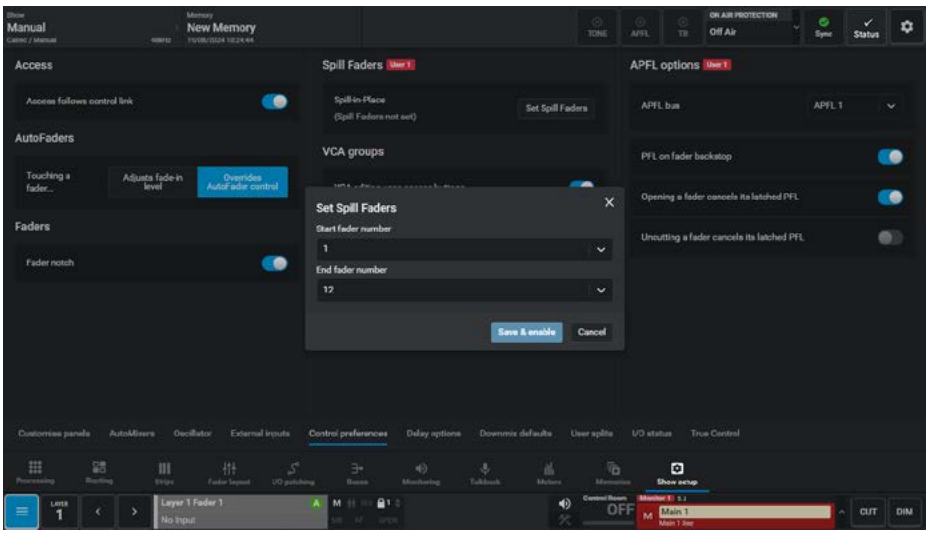


Spill Faders

The Argo surface allows the user to either allow Spill-in-place, where the spill legs are opened to the side of the selected 'path', or pre-define a range of faders that can be used as a Spill area. This is set up by tapping the 'Set Spill Faders' button, which opens the 'Set Spill Faders' dialogue box. Here, the user defines a start and end fader number before pressing the 'Save & enable' button as shown in Fig. 4.

Fig. 5 shows that a Spill area from faders 1 to 12 is set. This range can be changed using the 'Edit' button, which opens the 'Set Spill Faders' dialogue box again. Alternatively, the selection can be removed altogether with the 'Use Spill-in-Place' button, which clears the Spill Fader settings for this user area.

FIG. 4 - CONTROL PREFERENCES - SETTING THE SPILL AREA



VCA Groups

By default, VCA groups are edited using the Access buttons. This process can be disabled to protect VCA assignments and to stop VCA groups being made accidentally.

By default, the 'VCA slaves move with their master' preference is set. This is so that when the levels of paths within VCA groups are changed by their VCA master, their assigned faders will move under motor control. This functionality can be switched off and these faders will remain stationary.

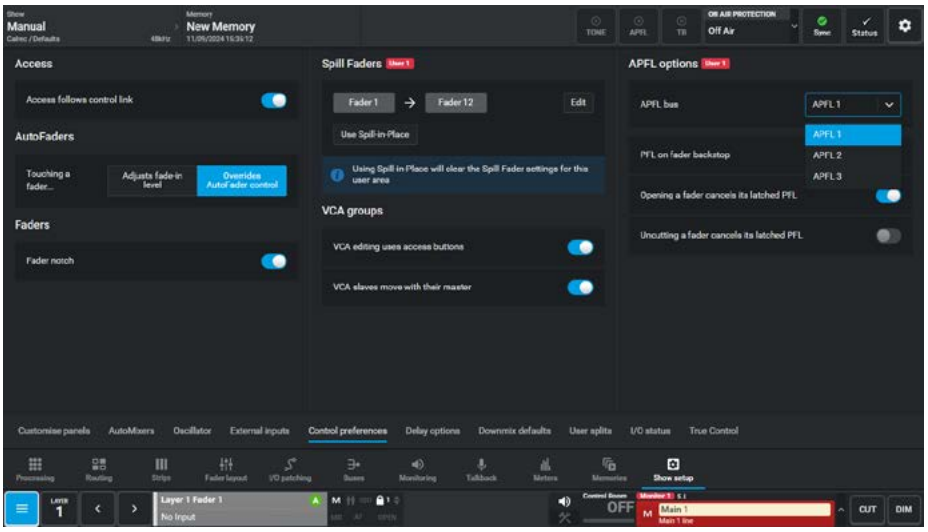
Note: the combined levels of the master, and the faders within the group, will still be indicated by nulling indicators in the fader displays.

APFL and PFL options

APFL Bus

The APFL bus to use for each User area is selected from the APFL bus dropdown shown in Fig. 5. The APFL 1, 2 or 3 buses can be selected for use in any of the 3 User areas, or by multiple user areas. APFL 1 is the default.

FIG. 5 - CONTROL PREFERENCES - FIXED SPILL ZONE & APFL/PFL OPTIONS



PFL on Fader Backstop

By default, the PFL can be turned on momentarily by pulling the fader down below its off position, and deactivated once released. This can be switched off per user area.

Opening a fader cancels latched PFL

By default, if a fader is closed and this option is selected, when its PFL is on, it will be automatically turned off when the fader is opened. This feature can be switched off per user area.

Uncutting a fader cancels latched PFL

If a fader is cut and this option is selected, any PFL that is latched on will be cancelled when the path has its 'Cut' turned off. This feature can be switched off per user area

Note: The User 1/User 2/User 3 indicators that are displayed in the UI are used to flag that those settings only apply to that user area. Settings without this flag apply to the entire control surface.

DELAY OPTIONS

The Delay options page in the Show Setup pages allows the user to determine how the delay is measured; in Time or in a pre-determined frame rate. The Delay options page is accessed from the Delay options button in Show Setup mode.

This in turn is accessed from the Modes row of a standard fader panel by pressing Modes Menu in button cell 4 of the Layers & Modes row, before then pressing the Show Setup button as shown in Fig. 1. Alternatively, the user can tap on the appropriate icon on the touchscreen, as shown in Fig. 3. Once Show setup is accessed, a number of sub-menu options appear. This includes the Delay options page, which appears as shown in Fig. 2, or from the Touchscreen sub-menu entry highlighted in Fig. 3.

FIG. 1 - SHOW SETUP MODE SELECT ON STANDARD FADER PANEL

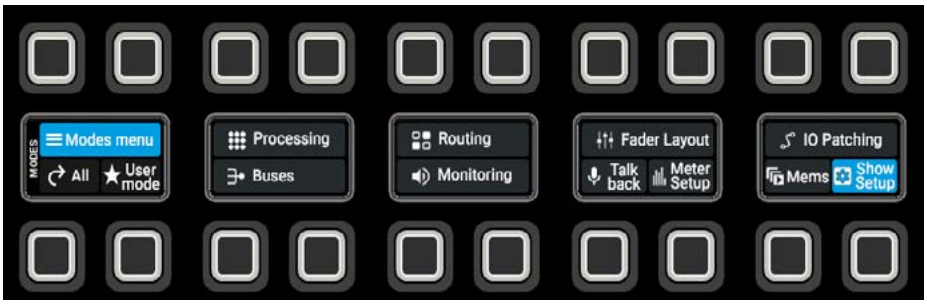


FIG. 2 -SHOW SETUP MODE - DELAY OPTIONS SELECT



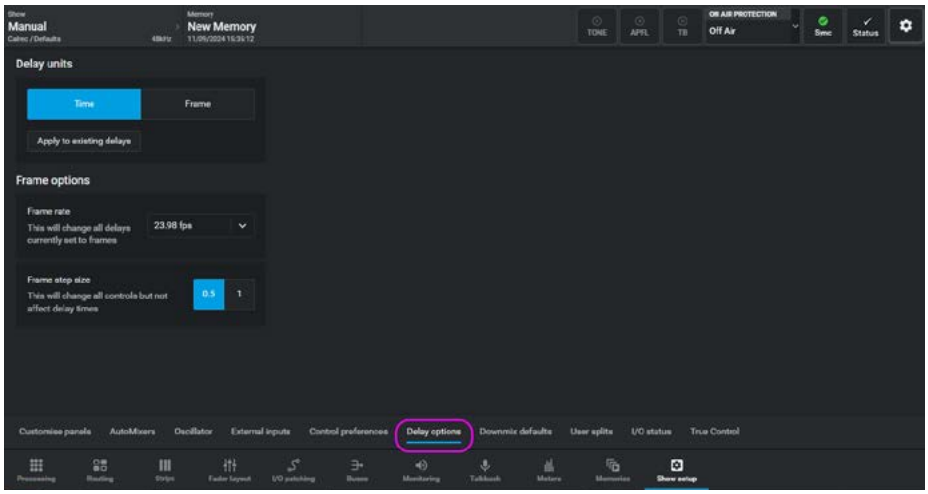
Delay Option Settings

The delay options page is accessed from Show setup>Delay options, see Fig. 3.

This page allows the user to decide if the delay period applied should be defined in Time or in Frames. The default units are time based, in 0.1ms intervals. There are three global delay settings available:

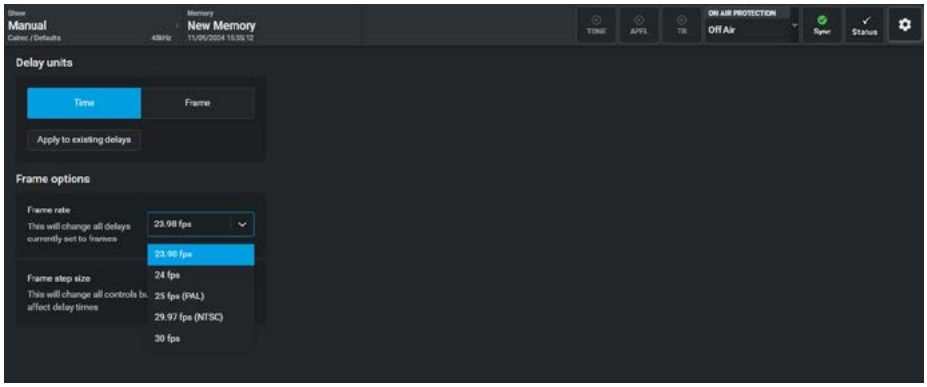
Delay Units sets the resolution type for all new delay assignments. The interface is a two-state button which switches between 'Time' in milliseconds and 'Frames' in frames per second. This 'ms'/'frames' selection can be applied to all existing delay assignments by tapping the button labelled 'Apply to existing delays'.

FIG. 3 - DELAY UNITS - TIME/FRAME OPTIONS



The **Frame rate** selection button is used to set the video frame rate for all frame-based delay assignments. The frame rate should be set to match the frame rate of the video signal that the audio feed is related to. The various frame rates available are shown in the frame rate options dropdown shown in Fig. 4.

FIG. 4 - FRAME RATE OPTIONS



Finally there is the **Frame step size** selection button, which sets the resolution of the stepper button within the surface or on the Processing>Delay page.

There are two step size options available: 0.5 frames and 1 frame.

Note: the time step size in time is not affected by frame step size changes and remains at 10ms throughout.

DOWNMIX DEFAULTS

The Downmix Defaults page in the Show Setup pages allow the user to determine what offsets are required when downmixing from one audio width format to another. The Downmix defaults page is accessed from the Downmix defaults button in the Show Setup mode, which itself is accessed from the Modes row of a fader panel by first pressing Modes Menu in button cell 4 of the Layers & Modes row, then by pressing Show Setup, as shown in Fig. 1. Alternatively, the user can tap the appropriate icon on the touchscreen, as shown in Fig. 3. Once Show Setup is accessed, a number of sub-menu options appear, including the Downmix defaults page, which appears as shown in Fig. 2, or from the Touchscreen sub-menu entry highlighted in Fig. 3 on the next page.

Downmixes

These are conversions of surround or immersive paths. Downmixing occurs automatically whenever a surround or immersive signal is routed to a bus of a width that is smaller than the original path.

Downmixes ensure that all the required elements of a surround or immersive signal are maintained and mixed together at appropriate levels when used to feed destinations of a smaller width.

In some circumstances, it may be preferable not to downmix elements of a surround path to a certain bus. For example, if a presenter is fed a surround source into their mono earpiece, it may be beneficial to omit the rear channels to enhance the clarity of any dialogue in the front.

In this case, the audio should not be routed from the surround/immersive master.

Instead, select the surround/immersive path on the surface before selecting the front L/R or C element of the surround or immersive path from the spill area, or spill-in-place area, to make the front L/R only the currently assigned path and allow it to be routed, on its own, to the required destination. When a surround or immersive path is routed to a narrower bus from its master, rather than from a spill leg, a downmix is automatically applied.

FIG. 1 -SHOW SETUP MODE SELECT ON STANDARD FADER PANEL

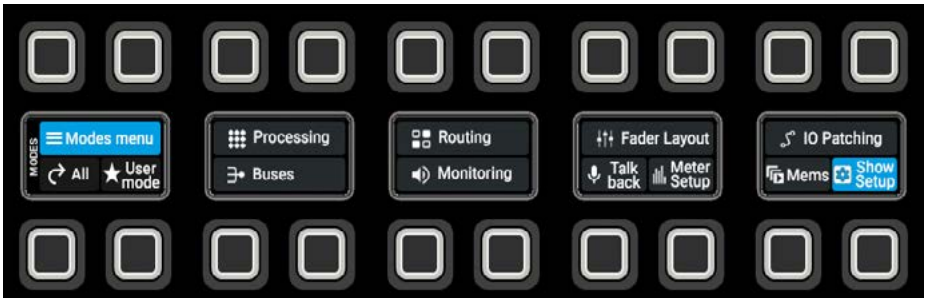


FIG. 2 -SHOW SETUP MODE - DELAY OPTIONS SELECT



Surround or immersive stereo downmixes maintain stereo separation by mixing front L, rear L & C together, and in the case of immersive sources, top L front & rear, to create a Lo - 'Left Overall' channel. Likewise, front R, rear R & C are mixed together, and in the case of immersive sources, top R front & rear, to create a Ro - 'Right Overall'. Default downmixes do not include the LFE channel, but this can be added if required.

The levels that the surround/immersive elements mix together to form a downmix are defined by the downmix set. Default downmix values are applied console wide.

Initially, Set 1 - Set 5 are set with Calrec factory defaults. However, these sets can be edited. The user can select and then apply any of the five pre-defined downmix sets. This selection is made from the left panel of the Show Setup>Downmix Defaults page.

Fig. 3 shows that the Current downmix preset is Set 1. This has been reset to Calrec default values and the table shows its active settings.

To change to a different downmix preset, the user taps the required preset (Set 3) as shown in Fig. 4. The table values then change to show the downmix values that are contained in Set 3. For example, the Front L/R and C have been changed to -3dB and -4.5dB respectively, while the '**Show active settings**' button is now turned off.

If the user wants to apply this downmix set, tapping the '**Apply Levels and update all down mix faders**' button will activate Set 3 as the current preset, and the '**Show active settings**' button will be turned on again.

The downmix values at the top of the table show the various levels applied by default to the Stereo Lo/Ro downmix from each of the Spill elements of the source path.

The first column shows the contribution from the Front left and right L/R legs that exist in all surround/immersive paths. The Centre leg C and the Low Frequency Effects leg LFE is usually set as OFF, i.e., -100dB.

The second column shows contribution levels from the Rear surrounds from either 5.1 Ls/Rs source legs or 7.1 Lss/Rss and Lrs/Rrs source legs.

The third column shows contribution levels from the Top surrounds from 0.0.2 Ltf/Rtf source legs & 0.0.4 Ltf/Rtf & Ltb/Ltr Rtb/Rtr source legs, which are from height only paths, or 5.1.2 & 7.1.2 Ltf/Rtf source legs and 5.1.4 & 7.1.4 Ltf/Rtf & Ltb/Ltr Rtb Rtr source legs, which are from fully immersive paths.

FIG. 3 - DOWNMIX DEFAULTS - DOWNMIX SET 1 SELECTED

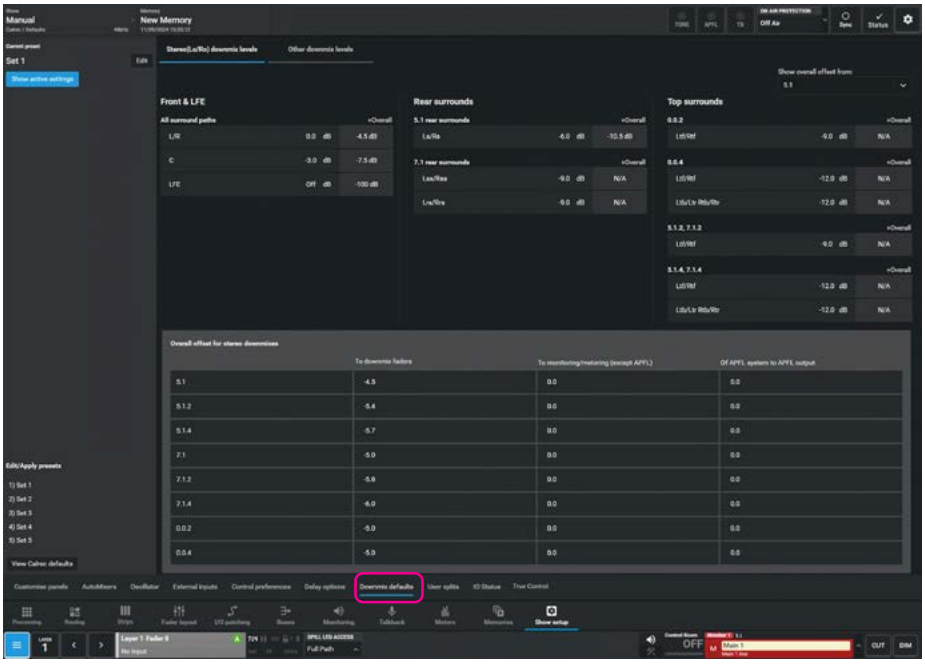
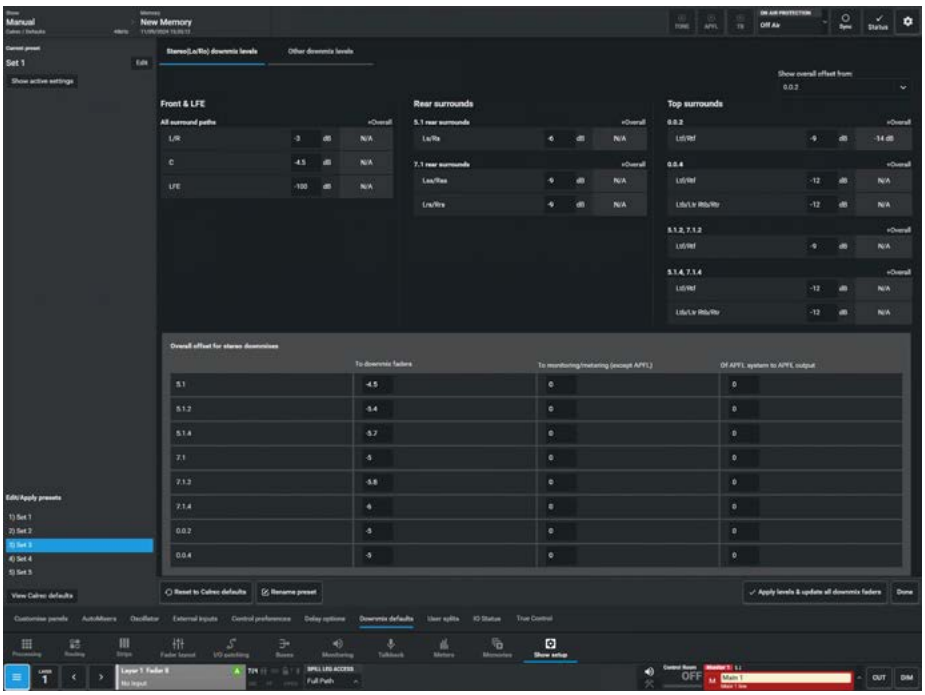


FIG. 4 - DOWNMIX DEFAULTS - CHANGING TO DOWNMIX SET 3



The downmix level is the sum of each leg and the Overall offset levels where applicable. Fig. 5 shows the overall offset levels that are to be applied from each source into the LoRo downmix. The 'Show Overall offset from' dropdown box (top right) displays those values in the table on the previous page for each source width selected from the dropdown.

As well as the LoRo downmix tables, the 'Other downmix/upmix levels' TAB, shown in Fig. 6, displays the change in levels to be applied from Source legs to Destination legs when routed, in tabular form.

The upper entry shows the Front L/R, C & Lfe legs of all surround paths being fed into 0.0.4 & 0.0.2 destinations, showing what levels are to be applied.

The upper middle entry shows the 5.1/5.1.2 & 5.1.4 rear surround Ls/Rs source legs being fed into: 7.1/7.1.2 & 7.1.4 front L/R, side surrounds Lss/Rss, rear surrounds Lrs/Rrs and the 0.0.4 & 0.0.2 destinations, showing what levels are to be applied.

The middle entry shows the 7.1/7.1.2 & 7.1.4 rear surround Lss/Rss and Lrs/Rrs sources being fed into: 5.1/5.1.2 & 5.1.4 front L/R surrounds, Ls/Rs and the 0.0.4 & 0.0.2 destinations, showing what levels are to be applied.

The lower middle and lower entries show what levels are to be applied from the Top surrounds when routed to destinations of different widths.

The lower middle entry shows the top of 5.1.2 /7.1.2 & 0.0.2 Ltf/Rtf source legs being fed into: 5.1 front L/R & surround Ls/Rs, 7.1 front L/R, side surround Lss/Rss & rear surround Lrs/Rrs.

Top front Ltf/Rtf & top back or rear Ltb, Ltr/Rtb or Rtr of 5.1.4/7.1.4 & 0.0.4 destinations, showing what levels are to be applied.

FIG. 5 - DOWNMIX DEFAULTS - OVERALL OFFSET LEVELS FOR LORO

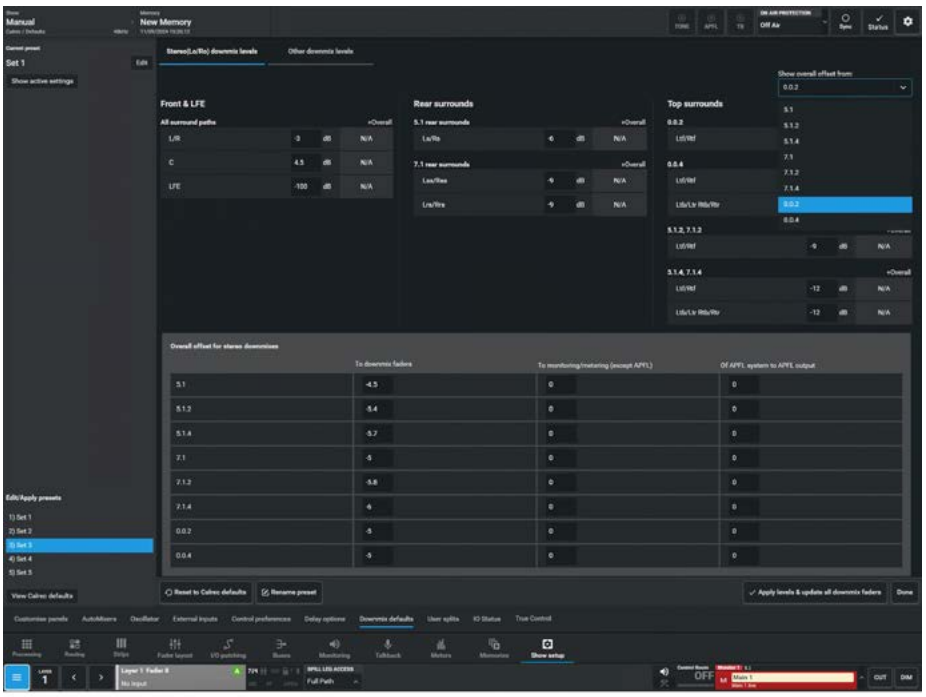
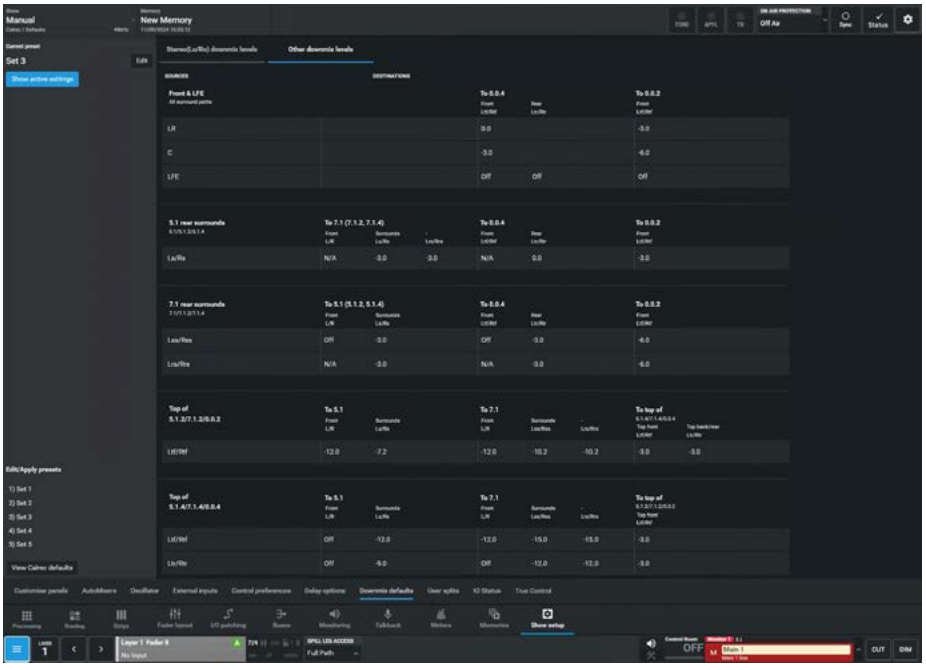


FIG. 6 - DOWNMIX DEFAULTS-OTHER DOWNMIX LEVELS



The lower two entries show the top of 5.1.4/7.1.4 & 0.0.4 Ltf/Rtf & Ltr/Rtr source legs being fed into: 5.1 front L/R & surround Ls/Rs. 7.1 front L/R, side surround Lss/Rss & rear surround Lrs/Rrs.

Top front Ltf/Rtf of 5.1.2/7.1.2 & 0.0.2 destinations, showing what levels are to be applied.

Setting downmix defaults

Users can set up any or all of the five different downmix defaults (any of which can be set to the default, set by Calrec, using the 'Reset to Calrec defaults' button).

One of these defaults can then be selected by operators to be the default for their show.

Users can edit settings in each downmix set, as shown in Fig. 7. The user first selects the preset to edit. If it is the current set, the user can tap the 'Edit' button at the top of the left panel, prompting the editable fields to change background colour.

The user here is editing Set 3 and has altered Set 3's Centre leg level from -3dB to -5dB, as shown in Fig. 7.

Each level can be altered by tapping it. This opens the editing dialogue box, where the values can be altered using the +/- buttons, the slider or typing a numeric value.

Once the value is set, the user taps the 'tick' icon to **'Save'** level changes or the 'cross' icon to **'Cancel'** level changes. Changes take effect immediately and an asterisk is shown next to the altered Set 3*. The changes are applied to all user memories within the current show.

These include downmixing for internal system routing, surround or immersive main outputs and surround or immersive channel/group direct outputs, which have downmixed versions available for patching to output transmitters.

In Fig. 8, the user is about to change the level that will be sent from the Front LR of all surround paths to the 0.0.4 Front Ltf & Rtf outputs.

When levels have been changed, an information message appears in the left panel informing the user that 'Preset values have been changed since last applied'.

FIG. 7 - DOWNMIX DEFAULTS - SET 3 EDITING C LEVEL FOR STEREO (LO/RO)

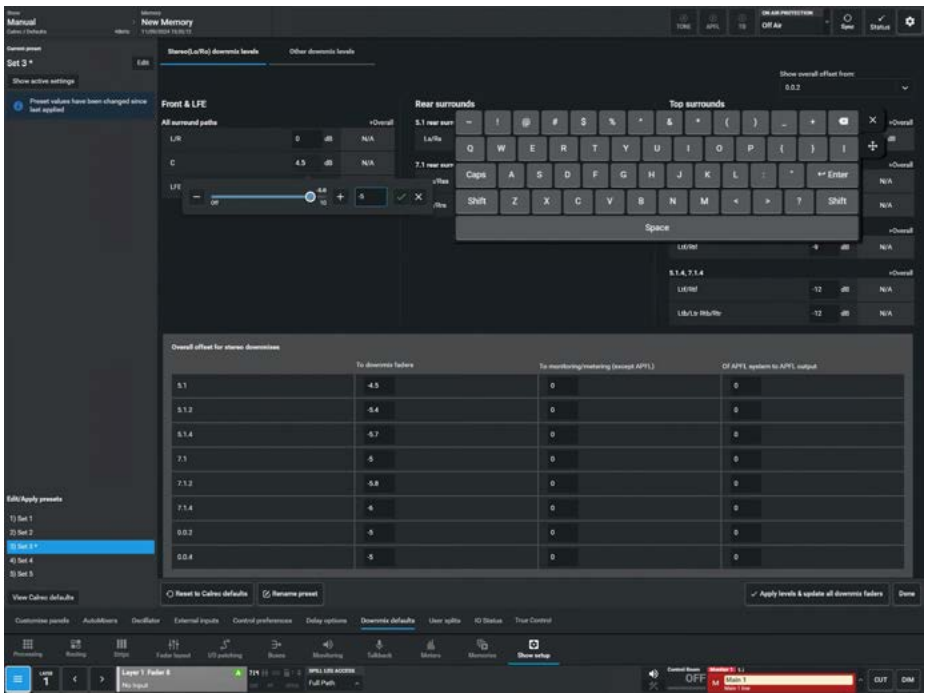
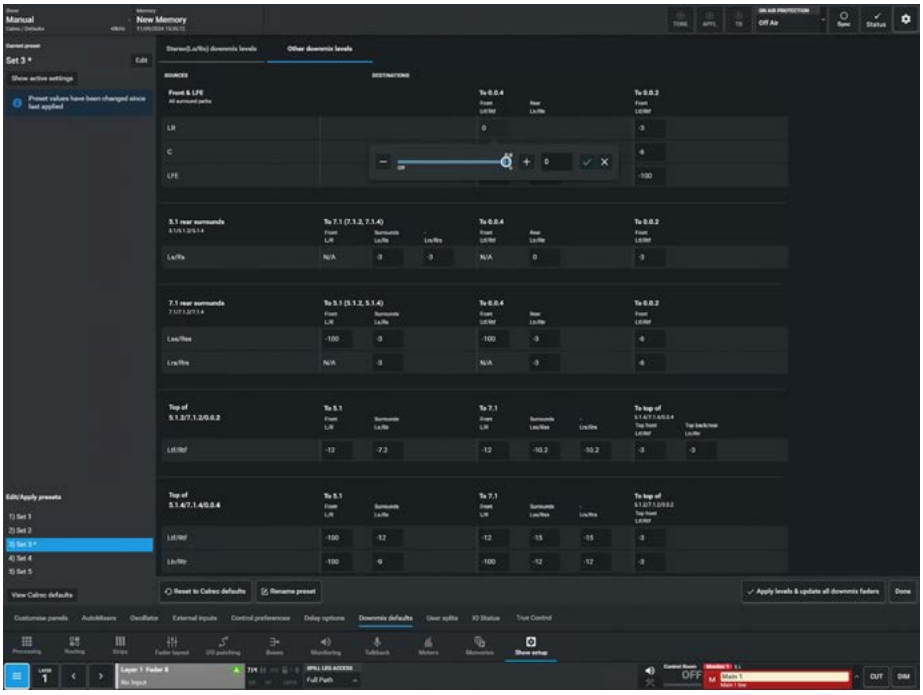


FIG. 8 - DOWNMIX DEFAULTS - SET 3 EDITING LR LEVEL FOR 0.0.4 FRONT LTF/RTF



Clicking **'Apply Levels and update all downmix faders'** saves preset value changes into the selected set. It is saved as part of the user memory. The 'Preset values ...' message and adjacent asterisk is subsequently removed.

Note: at the bottom of the left panel is a 'View Calrec defaults' button. This allows the user to do quickly compare the current preset values and the Calrec default values without changing the settings.

Renaming Presets

As shown in Fig. 9, the name of a preset may be altered by tapping the 'Rename preset' button and entering a new name in the 'Rename preset' dialogue box using the on-screen keyboard. Tapping the 'Rename' or 'Cancel' buttons confirm and cancel the change respectively.

Reset to Calrec defaults

As shown in Fig. 10, in the bottom left of the table area is a 'Reset to Calrec defaults' button. When tapped, this opens the 'Reset this preset to defaults' dialogue box.

Tapping the **'Reset'** button overwrites all downmix values for the current Set selection with the default values in the Calrec defaults. This is an easy way to clear any unwanted edits, allowing the user to begin creating a new downmix setup from a known default set of values.

Bypassing Downmix levels

When routing a surround or immersive path or bus to a bus of narrower width, the downmix levels set by the downmix faders are applied automatically. To bypass the downmix faders for a given bus, select the bus in Routing mode and slide the 'Bypass downmix faders' switch.

Pre-fader downmixes

Should a surround or immersive path or bus be sent to a bus pre-fader, it may be necessary to have the spill fader levels applied to make the downmix the same as the post-fader downmix.

This is because the post-fader downmix is processed after the spill faders. As such, adjustments to individual legs on the spill faders will have an effect on the resultant downmix. To make the pre-fader send follow the spill faders (but not the overall path fader) to produce the correct downmix, select the destination bus in Routing mode and slide the 'Follow spill faders' switch.

Note: this button will only be accessible if the send or route is pre-fader.

FIG. 9 - DOWNMIX DEFAULTS - RENAMING PRESETS

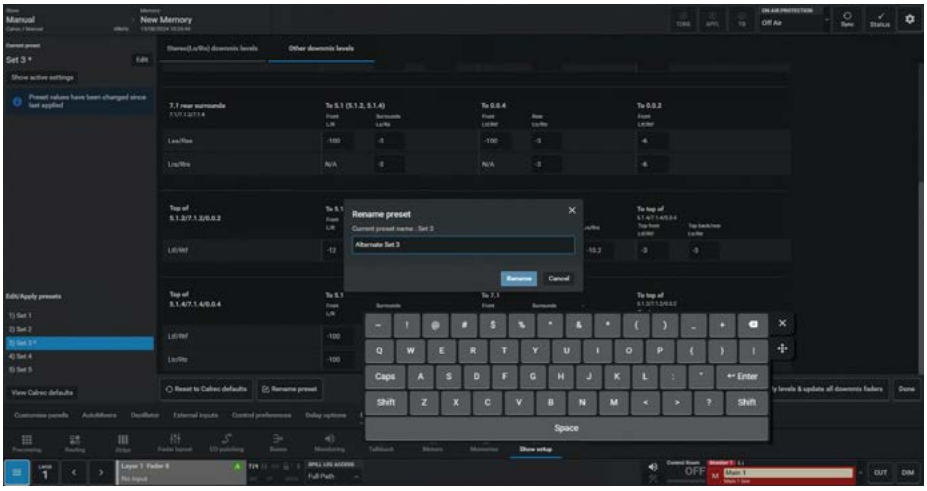
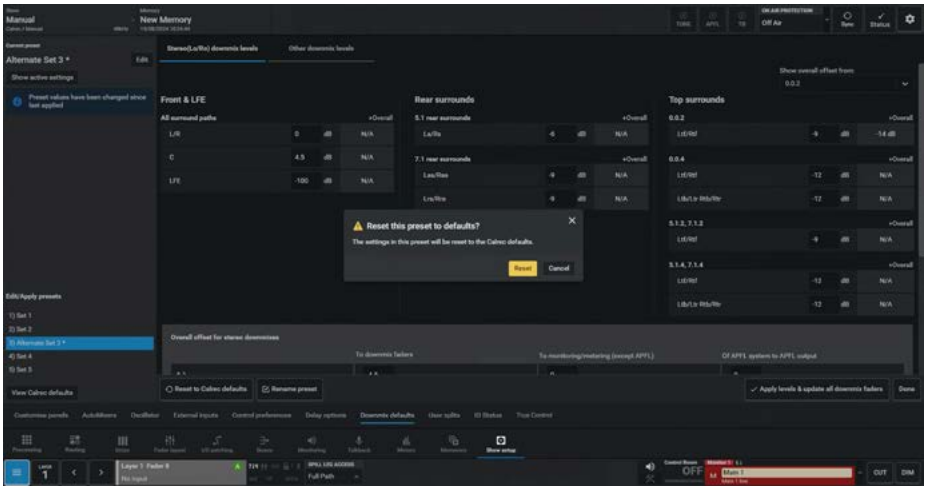


FIG. 10 - DOWNMIX DEFAULTS - RESET TO CALREC DEFAULTS



Note: globally applied downmix settings can be adjusted on a path-by-path basis from the Processing>Faders -Downmix page.

With a surround or immersive path assigned, selecting the Processing>Faders - Downmix faders mode allows the user to alter the contribution made from each element of the surround or immersive path to a downmixed feed.

Unless previously adjusted on that path, faders should show the levels as dictated by the globally configured downmix set.

Adjusting the faders in downmix mode alters the downmix contributions from the currently assigned path.

USER SPLITS

The User Splits page in the Show Setup pages allow the user to partition the surface into one, two or three operational areas. This allows multiple operators to work on the same surface without impacting on each other. The User Splits page is accessed from the User Splits button in the Show Setup mode, which itself is accessed from the Modes row of a fader panel by first pressing Modes Menu in button cell 4 of the Layers & Modes row, before then pressing Show Setup, as shown in Fig. 1. Alternatively, the user can tap the appropriate icon on the touchscreen as shown in Fig. 3. Once Show setup is accessed, a number of sub-menu options appear, including the User splits page, which appears as shown in Fig. 2, or from the Touchscreen sub-menu entry highlighted in Fig. 3.

User split Partitioning

User splits are often used to separate an extended control surface or sidecar from the main control surface in addition to partitioning the main surface.
A maximum of three user splits can be set across the combination of main console and extension/sidecar. User splits can be placed between standard fader panels to provide separate areas of control for up to 3 operators. The splits may appear in any order. For example, User 1 can be controlling faders 37-48, User 2 can be controlling faders 1-12 and User 1 can be controlling faders 13-24. The only two constraints are that a User area must be in a single block and there must be a User 1 area.

User splits partition faders and the assignable panel modes. The assignable panel modes can only affect the currently accessed path within their user area. Each area can have its own currently accessed path. Changing the accessed path within an area does not change or cancel the accessed path or focus of assignable panels in other user areas. Similarly, changing layers only affects faders within the user area from which the change was made.

If multiple operators require their own monitoring system, speakers and headphones can be fed from monitor outputs 1 or 2, or miscellaneous monitor outputs. Each operator can then use the controls relevant to their area.

The PFL and AFL listen outputs of the faders within each user area can be selected to feed one of three different APFL bus sets, each of which can be patched to outputs for local monitoring. This is chosen from Show Setup>Control Preferences.

FIG. 1 - SHOW SETUP MODE SELECT ON STANDARD FADER PANEL

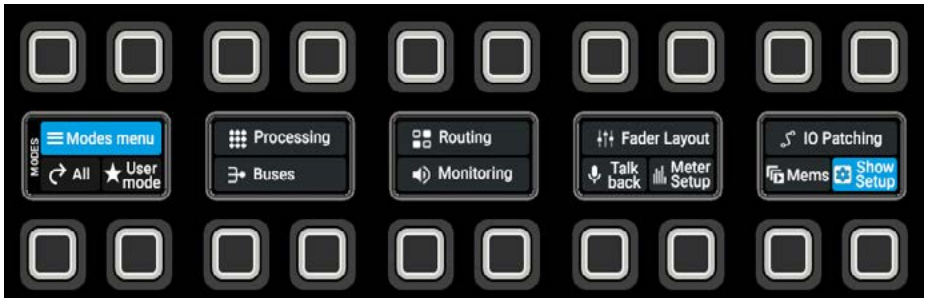
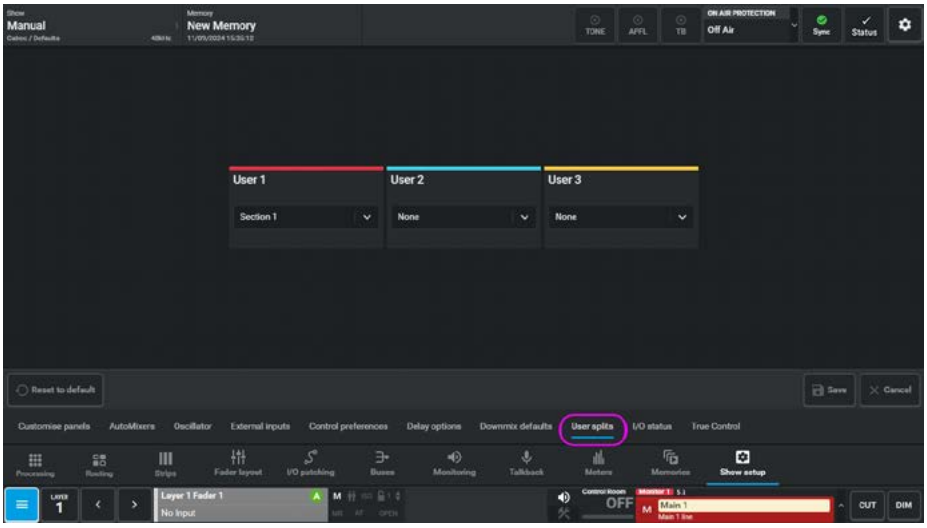


FIG. 2 - SHOW SETUP MODE - USER SPLITS SELECT



FIG. 3 - USER SPLITS



The two main monitors can be configured to be interrupted by different APFL sets, allowing each user to listen to their paths without affecting each other's monitoring. Please refer to **"Monitoring On Argo" on page 184** for details on configuring monitoring for multiple users.

Creating/removing user splits

User splits are managed from the Show Setup>User Splits screen, as shown in Fig. 3 on the previous page.

Clicking on the various dropdown buttons for each user area displays the list of sections for users 1, 2 or 3. The selection includes those panels to the right of it up to the next user split.

Tapping **'Save'** in the bottom right of the footer opens the 'Spill faders and scrolling may be reset' dialogue box shown in Fig. 4. This warns the user that 'Any Spill Faders set in the affected User Splits will be reset to Spill-in-Place. Any active scrolling will also be reset.' Selecting '**Confirm**' saves the user split on to the surface. Selecting **'Cancel'** cancels this action. Tapping **'Reset to default'** removes all user splits.

Note: the User split configuration is saved in the Show, but no changes are applied to the surface until the '**Save**' button is tapped.

Identifying User Split Locations

The location of active user splits is shown on the fader layout page in Fig. 5 and on the Customise Panels page in Fig. 6.

The standard fader panels to the left of a user area, if any, for example the User 2 split highlighted marker in Fig. 5, are in another user area, in this case User 1. Any panels to the right of a user area, e.g., User 2, will belong to the User 2 area until another User Split marker, i.e., User area 3, or the end of the surface is reached.

FIG. 4 - USER SPLITS SAVE DIALOGUE

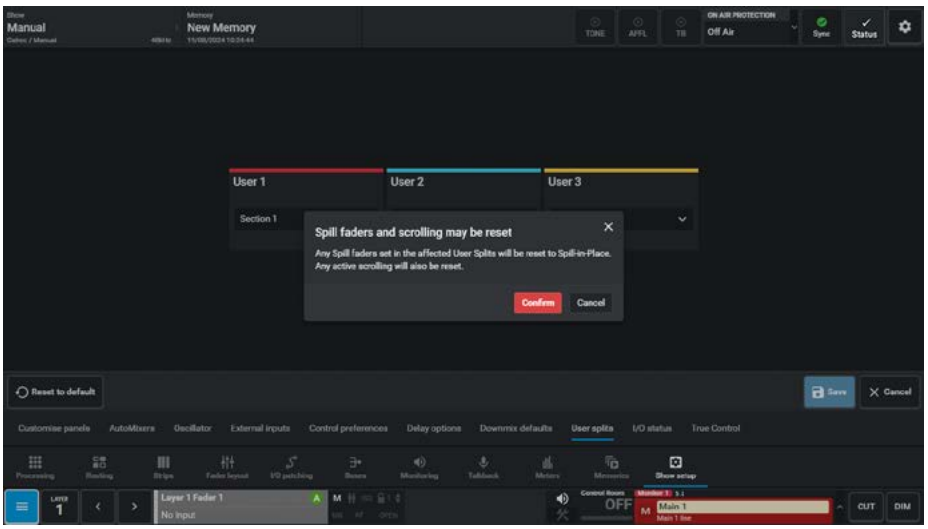
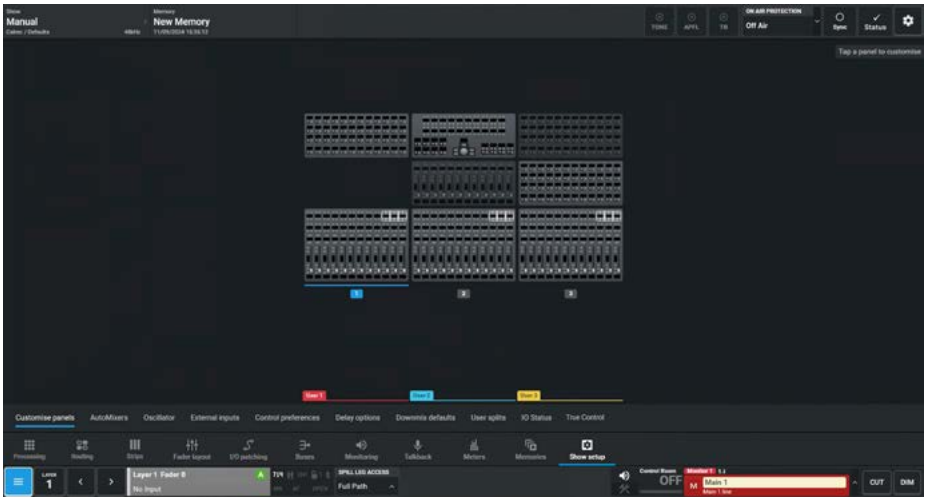


FIG. 5 - USER SPLIT SHOWN IN FADER LAYOUT SURFACE



FIG. 6 - USER SPLIT SHOWN IN SHOW SETUP>CUSTOMISE PANELS



I/O STATUS

The I/O Status page in the Show Setup mode is used to shown the Online or Offline status of any IO device that this console has been attached to from the Connect application.

The I/O Status page is accessed from the I/O Status button in the Show Setup mode, which itself is accessed from the Modes row of a fader panel by first pressing Modes Menu in button cell 4 of the Layers & Modes row, before then pressing the Show Setup button shown in Fig. 1. Alternatively, the user can tap the appropriate icon on the touchscreen, as shown in Fig. 3.

Once Show setup is accessed, a number of sub-menu options appear, including the I/O Status page, which appears as shown in Fig. 2 or from the Touchscreen sub-menu entry highlighted in Fig. 3.

I/O Status Messaging

The IO devices in the table may or may not be in use by other surfaces in the network. This page allows the user to Receive or Ignore status messages from those IO devices.

A 'Receive status messages' slider switch is provided for each IO device, allowing the user to select boxes as necessary.

When an IO device is Offline, a further option appears, allowing the user to forget the device, see Fig. 4.

If the box is no longer required by this user, tapping the **'Forget device'** button will remove that device from the table.

The three buttons at the bottom of this page allow the user to turn the **'Status messaging ON'**, turn the **'Status messaging OFF'** or to **'Forget selected'** IO Devices based on the selection 'Tick' boxes on the left side of the IO Device table.

FIG. 1 -SHOW SETUP MODE SELECT ON STANDARD FADER PANEL

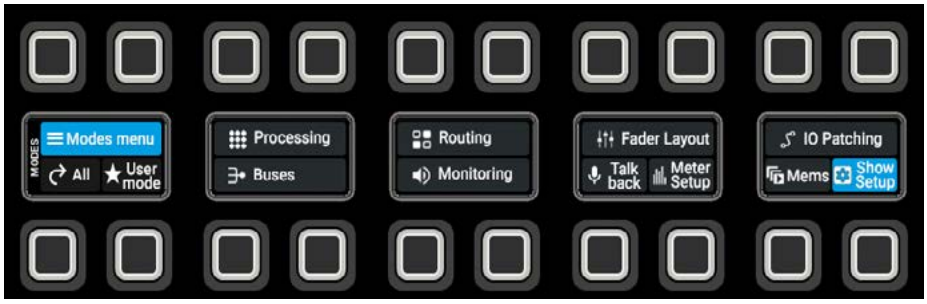


FIG. 2 -SHOW SETUP MODE - I/O STATUS SELECT

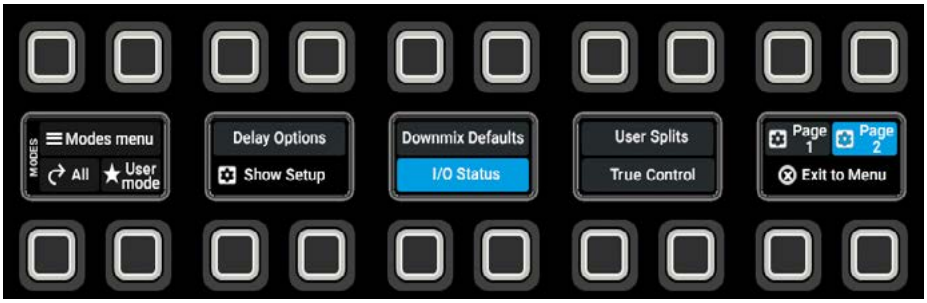


FIG. 3 - I/O STATUS WITH ONLINE DEVICE HIGHLIGHTED

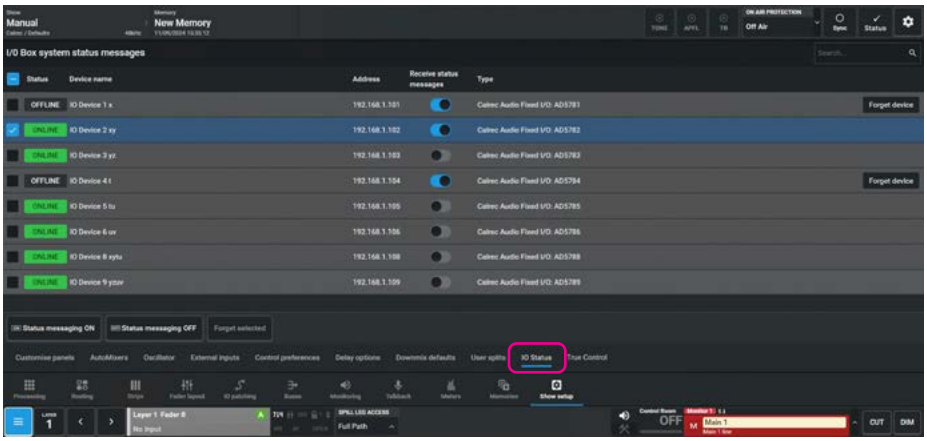
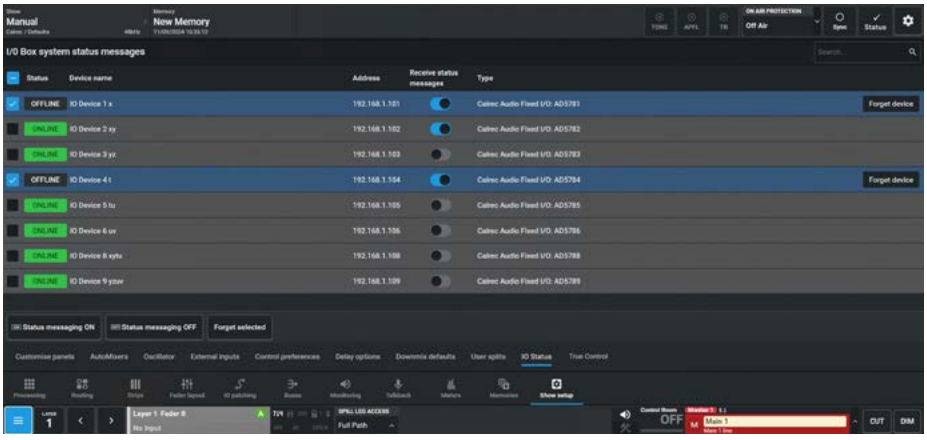


FIG. 4 - I/O STATUS WITH OFFLINE DEVICE HIGHLIGHTED



TRUE CONTROL

The True Control page in the Show Setup mode is used to allow for, or to prevent, the console's paths being controlled using True Control, a new feature for version 1.2

The True Control page is accessed from the True Control button in the Show Setup mode, which itself is accessed from the Modes row of a standard fader panel by first pressing Modes Menu, then by pressing the Show Setup button shown in Fig. 1. Alternatively, the user can tap the appropriate icon on the touchscreen shown in Fig. 3.

Protecting Individual Paths from True Control

New for version 1.2 is the ability for Argo Consoles to be a Controller of other consoles, or to be controlled from other consoles, by setting up remote connections to this Remote console.

This feature is known as True Control. The 'Allow incoming True Control access to this console' slider switch, which is found in System Settings>General Settings, allows a Controller to adjust the settings on a Remote console for all paths that have been mapped to remote paths on that Controller. However, there are situations where paths on the Remote console need protecting from external control. The Show setup>True Control page is designed to allow control or protect from control, regarding those paths from a Controller.

Fig. 3 shows a list of all the paths that exist on the fader layout of this console, including those that have been set up to be externally controlled.

This page is arranged as two lists:

Faders for paths assigned to Faders.

Buses for paths not assigned to Faders.

The Faders list can be filtered by Layer, so the user can view a particular layer (1-12) or sub-layer (A or B) selection.

FIG. 1 - SHOW SETUP MODE SELECT ON STANDARD FADER PANEL

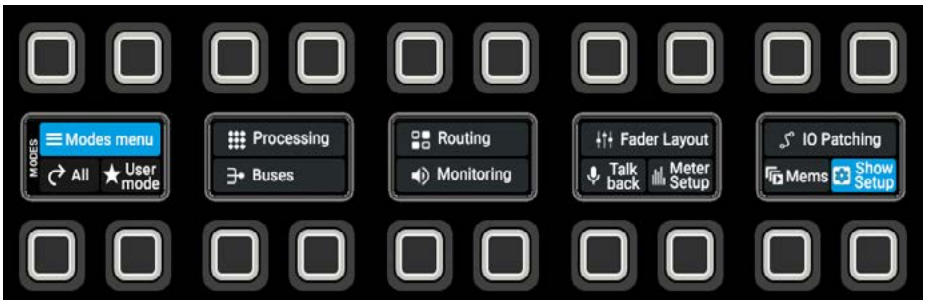


FIG. 2 - SHOW SETUP MODE - TRUE CONTROL SELECT



FIG. 3 - TRUE CONTROL - FADERS PROTECTION CONTROL

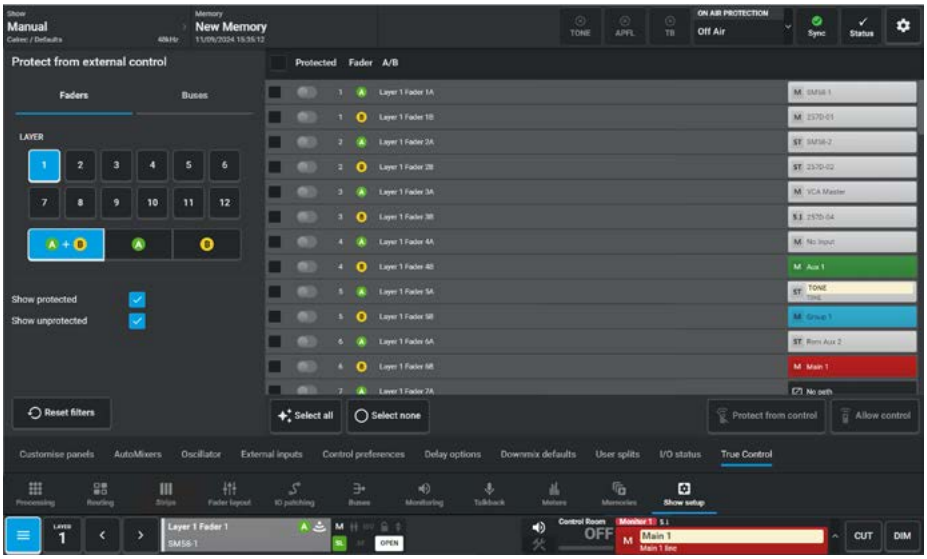


Fig. 4 shows that the user has selected the paths that are now ready to be set as 'Protected'. Currently, all Fader paths are set as unprotected.

The protected status is set by sliding the individual '**Protected**' slider switches ON or using the '**Protect from control**' button to protect all the selected paths.

Fig. 5 shows that fader paths 1A, 1B, 2A & 3B have been protected.

The '**Show unprotected**' checkbox has been unchecked. Subsequently, only those paths that are protected are shown.

Note: the fader information block in the bottom left of the footer shows that the external control icon, highlighted in Fig. 4, has been removed, to indicate that the SM58-1 input on Fader 1A is not under external control.

Fig. 6 shows that the user has checked the '**Show unprotected**' checkbox, which displays only those paths that are set as unprotected. As a result, fader paths 1A, 1B, 2A & 3B are no longer visible as they are protected.

There are a number of ways provided to manage the user selections from the list:

At the bottom of the page are 2 buttons labelled '**Select all**' and '**Select none**'. Likewise, at the bottom right of the page are buttons labelled '**Protect from control**' and '**Allow control**'. These change the state of all the selected paths.

As an example, Fig. 6 shows that the selected Aux 1 path has been placed on a fader and the '**Protect from control**' button has been made available.

FIG. 4 - TRUE CONTROL - FADER SELECTION FOR PROTECTION

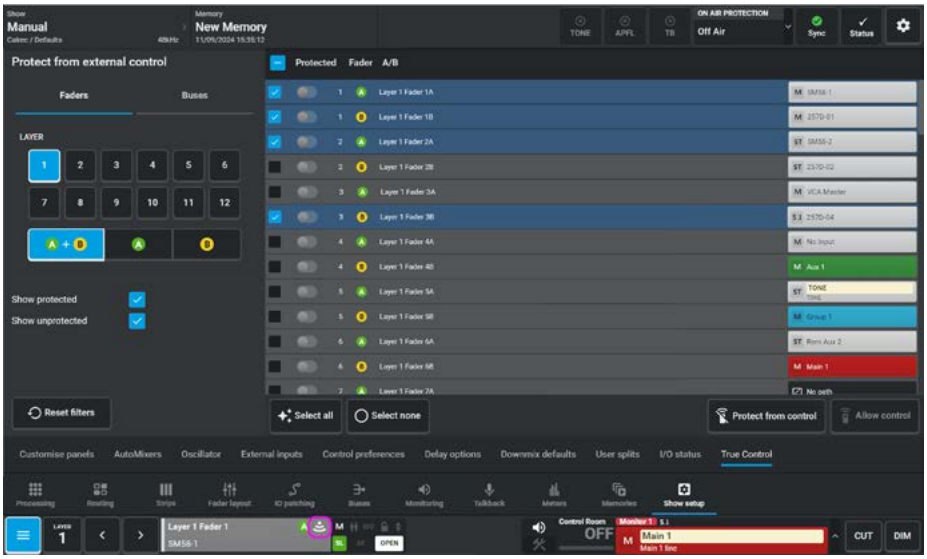


FIG. 5 - TRUE CONTROL - SHOW PROTECTED FADERS ONLY

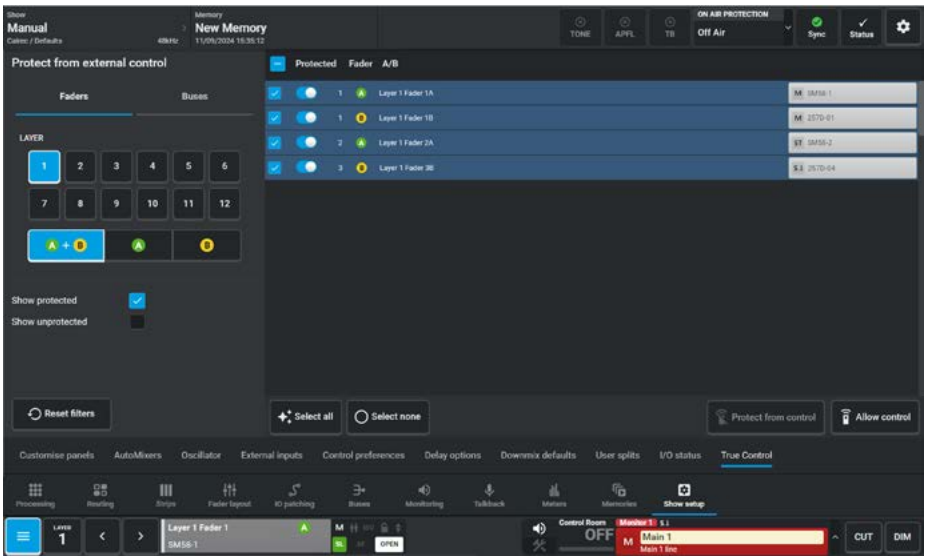


FIG. 6 - TRUE CONTROL - SHOW UNPROTECTED FADERS ONLY

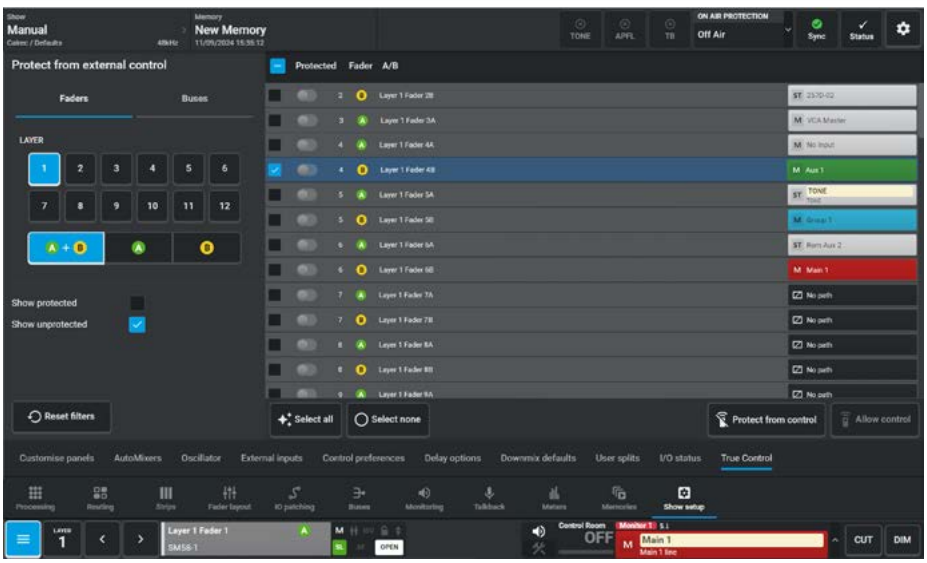


Fig. 7 shows the Protect from external control page for Buses. The layout is the same as that for Faders, except that sub-layer selection is no longer required.

Here, the selected Aux Buses 1-5 are now ready to allow external control. Aux 2 was already unprotected and so would be unaffected. Likewise, Aux 6 and beyond and not selected, so would also remain unaffected.

Fig. 8 shows the Aux Buses page with the same status as in Fig. 7, i.e., Aux 2 and Auxes 6 and above are all allowed to be externally controlled, as shown by the external control icons.

FIG. 7 - TRUE CONTROL - BUSES PROTECTION CONTROL

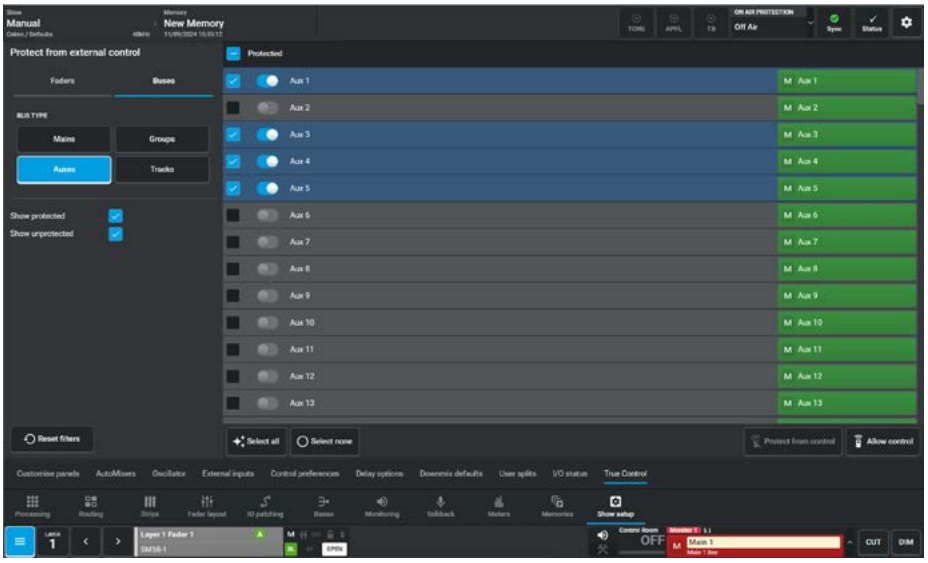
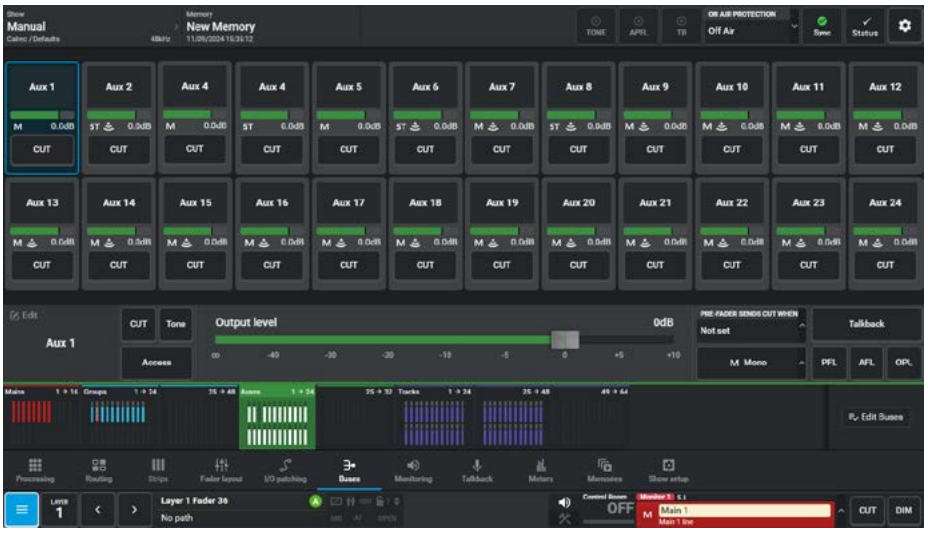


FIG. 8 - AUX SHOWING AUXES 2&6 ONWARDS UNDER EXTERNAL CONTROL



MIDI MAPPING

The MIDI Mapping table allows for in-depth mapping of MIDI messages to Argo controls and functions. The controls/functions available for MIDI mapping in Argo can be seen in Fig. 1. Here new mappings can be created and existing ones edited. This list can be filtered using the search bar on the left hand side. The table can also be sorted A-Z or ascending/descending by column by clicking on the column headers.

New mappings are created as follows:

1. Tap 'Add MIDI mapping', as highlighted in magenta in Fig. 2.
2. Tap 'Learn'
3. Adjust the MIDI control to be mapped - the MIDI Event information should fill automatically. This information can also be entered manually
4. Select the Argo control to be mapped. Available destinations for MIDI mapping can be found in Fig. 3.

Filter by MIDI
Selecting Filter by MIDI by the mapping table auto-select entries in the table to when the control they relate to is adjusted.

FIG. 1 - ARGO FUNCTIONS/CONTROLS AVAILABLE FOR MAPPING

Fader	Level
	Cut
	AFL
	PFL
	Record Arm
	Solo
	When mapping fader controls faders are formatted as "*L[Layer]F[Fader][sublayer]*" e.g. "*L1F1*" for Layer 1, Fader 1 or "*L2F6b*" for Layer 2, Fader 6B.
Bus Output level	All Mains
	All Groups
	All Auxes
Monitor Output level	Control Room Monitor 1
	Control Room Monitor 1 - Small LS
	Control Room Monitor 2
	Control Room Monitor 2 - Small LS
	Misc Monitor 1-4
MIDI	Play
	Stop
	Record
	Repeat
	General Purpose Control
	General purpose control indexes allow the mapping of MIDI controls to the Wild Panel controls, more information on which can be found on page X

FIG. 2 - MIDI MAPPING TABLE

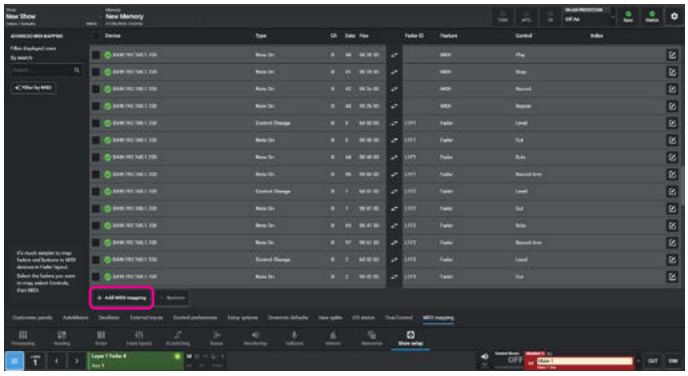
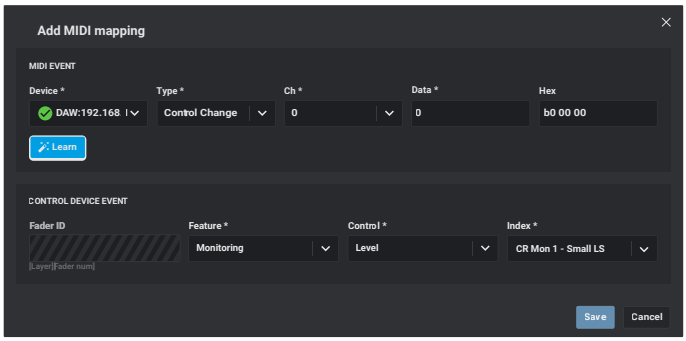


FIG. 3 - ADDING MIDI MAPPINGS



MIDI Thru Operation
Deeper customisation of MIDI mapping is available by using the 'MIDI Thru' Protocol in the MIDI Control app. When using the 'MIDI Thru' protocol, none of the controls will be automatically mapped by external MIDI software/hardware, allowing complete flexibility in mapping. However, the automatic mappings created by Argo provide a good base, from which mappings can be learned by external controllers.

Once an Argo function has been added to the MIDI mapping table, and assigned a MIDI channel and value, it will have two way control with external MIDI hardware and/or software which has been mapped to the same channel and value. MIDI Thru operation will also sync all strip settings on Show/Memory load, and DAW project load. Only transport parameters will not be synchronised on DAW or Show/Memory load.

For more information on setting up and using MIDI & DAW control, as well as example DAW configurations, see the dedicated Argo MIDI & DAW Control Guide (926-449)

Wild Panel Control Assignment
Up to 255 custom MIDI controls can be configured for use in Argo Wild panel control cells. These comprise 3 separate controls (the rotary control, its integral push-switch and the button alongside), each of which can be given a control index for use with MIDI, as seen in Fig. 4.

MIDI controls can be allocated to Wild panel control cells under Show setup>Customise panels.

These general purpose control indexes can be manually added to the MIDI Mapping table via the Add MIDI mapping button seen in in Fig 2, and configured as seen in Fig. 4 & 5.

FIG. 4 - WILD PANEL CONTROL ASSIGNMENT

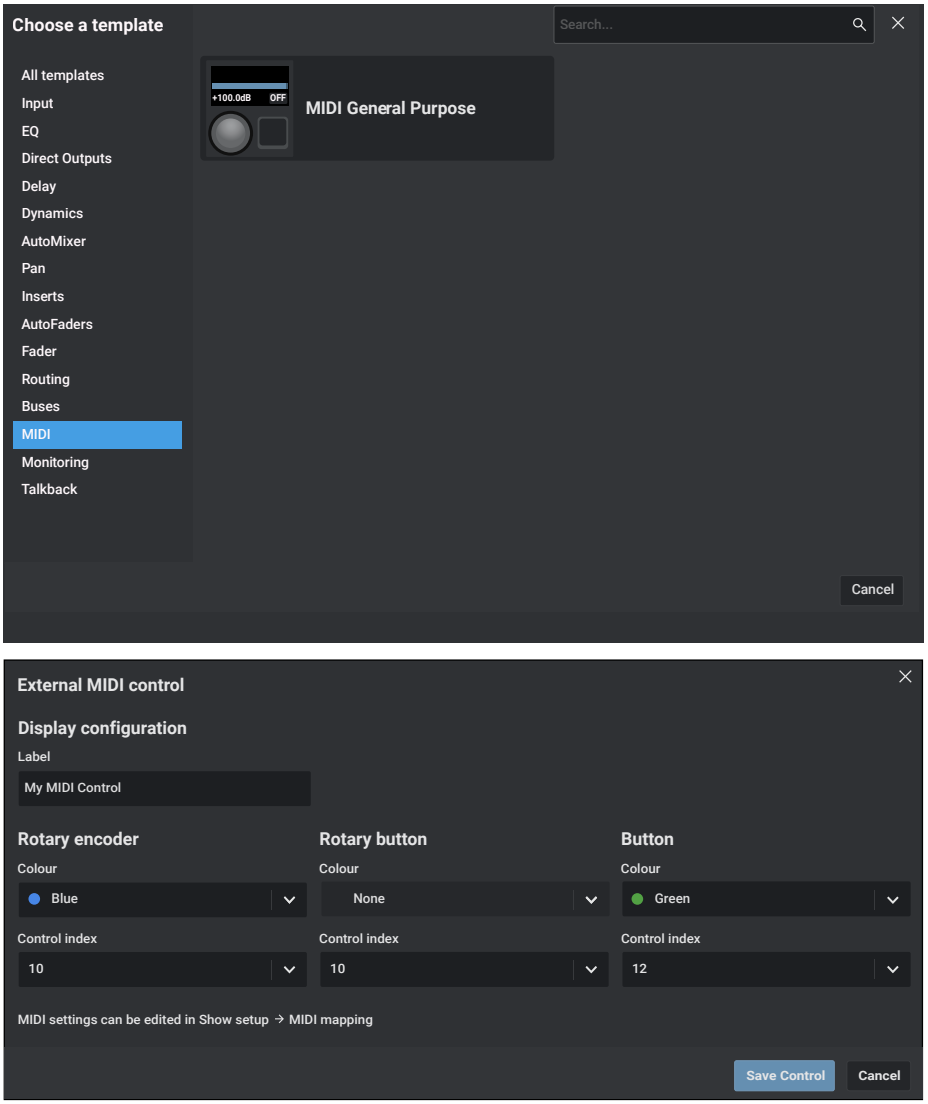
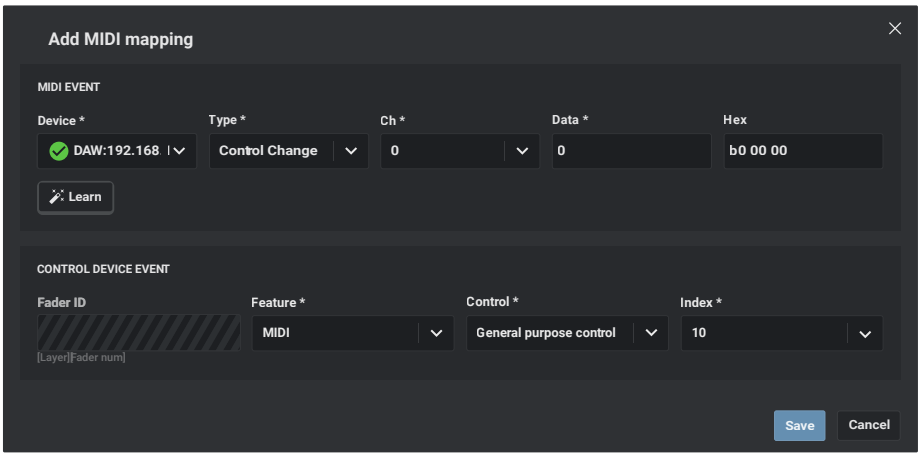


FIG. 5 - GENERAL PURPOSE CONTROL INDEX CONFIGURATION



ARGO
SYSTEM SETTINGS

CALREC

GENERAL SETTINGS

Accessing System settings
To access the System settings drawer, the user taps the gearwheel highlighted in Fig. 1. The "SYSTEM SETTINGS" drawer appears as shown in Fig. 1. On the left side of the screen are the various sub-menu pages for System Settings. The menu normally opens on 'General settings'. However, if not on this page, tap the System Settings>General Settings option from the sub-menu on the left side.

Operational Settings
Levels:
Reference Level (dBFS) - can be set to an integer value from -6 to -32dBFS.
The reference level sets default level values for the dynamics and oscillator modules, see Fig. 1.

Meters:
Meter Style - can be set for all meters on the meter displays. Various PPM or VU scales can be chosen from a dropdown, see Fig. 2. This changes the default meter style used when new meters are created, although the meter style can be changed later in the 'Edit meters' page. Existing meters are unaffected by this.

Fader settings:
Fader Cut/On Buttons - This setting switches the Cut/On buttons operation between Lit when Cut and Lit when On for the faders and in the user interfaces.
Fader touch overrides CSCP control - if this switch is active, the CSCP control of the faders can be overridden from the touch sensitive faders if touched.

System logs:
Export Logs button - when tapped, this exports the operational logs to a file for diagnostic purposes. All the log files from around the system are compressed into a gzip tar archive and written to a chosen location, e.g., on a USB memory device.

Remote production settings:
The remote production settings allow the remote connections, setup in the 'Configure' application, to control the settings on this console. This feature is known as True Control and was initially developed for control of the RP1 Remote Production Unit from other consoles.

FIG. 1 - ACCESSING SYSTEM SETTINGS & REFERENCE LEVEL SELECTION

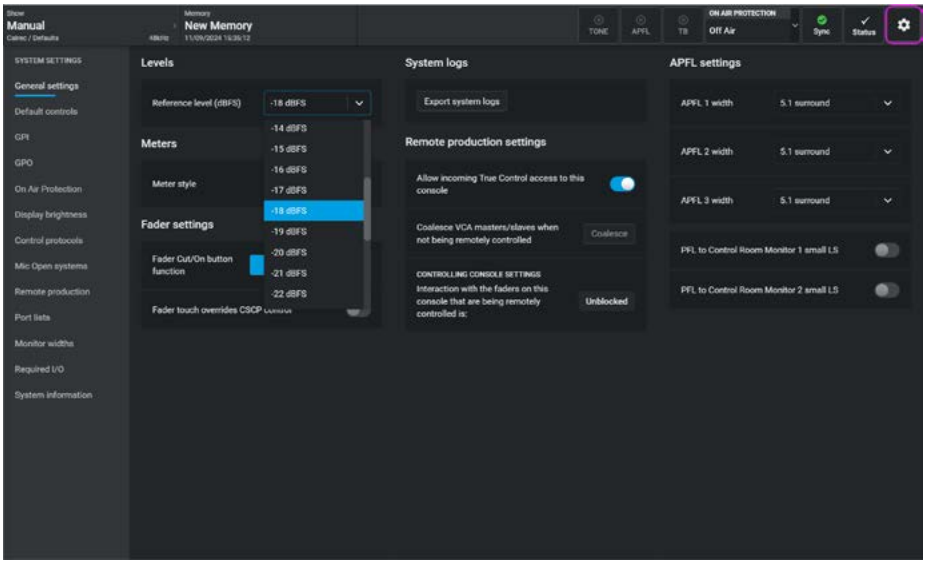


FIG. 2 - METER SCALE SELECTION

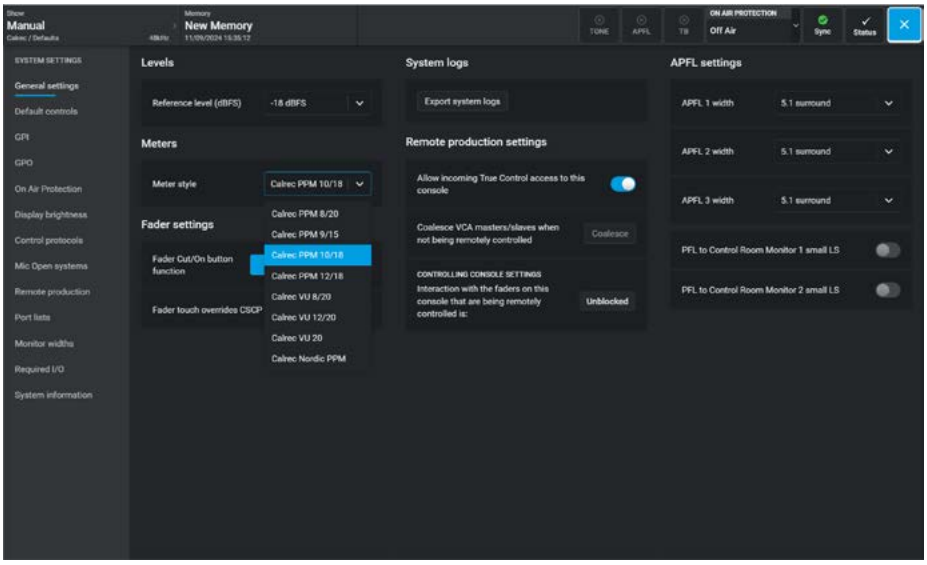
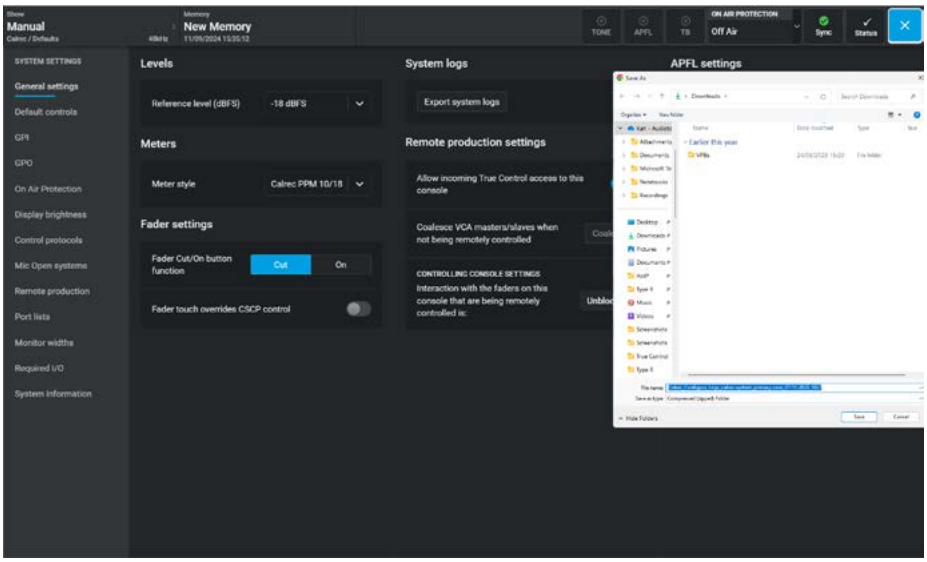


FIG. 3 - EXPORT SYSTEM LOGS



The ‘Allow incoming True Control access to this console’ slider switch has the same function as removing the Independence state for an RP1, which allows the connected Controller to adjust the settings on this Remote console.

With this slider switched off, this Remote console is set to be ‘Independent’ of the controller settings that were previously set up in the Configure>Remote Networks application.

The ‘Coalesce VCA masters/slaves when not being remotely controlled’ button is controlled from this Remote console. It becomes available when it is made independent by turning off its ‘Allow incoming True Control access to this console’ slider switch.

This is used when VCA Master/Slave groups are configured between the Controller and the Remote console, i.e., a VCA Master is placed on the Controller and its VCA Slave is placed on the Remote console. When connected, this VCA Master/Slave arrangement operates as any other VCA group. However, when the Remote console makes itself independent, the VCA Master adjustments on the Controller are no longer available to it.

Pressing the ‘Coalesce’ button adds together the last saved copy of the VCA Master value on this Remote console and its VCA Slave value, effectively suspending the VCA Group structure and allowing it to provide the full range of Gain control.

Note: when the ‘Allow incoming True Control access to this console’ slider is switched on, this Remote console is no longer independent and the VCA group structure is re-established with the VCA Master settings from the Controller being re-applied.

The ‘CONTROLLING CONSOLE SETTINGS’ and accompanying text is a status message from the controller to say that ‘interaction with faders on this console that are being remotely controlled is: unlocked.’

FIG. 4 - REMOTE PRODUCTION SELECTION

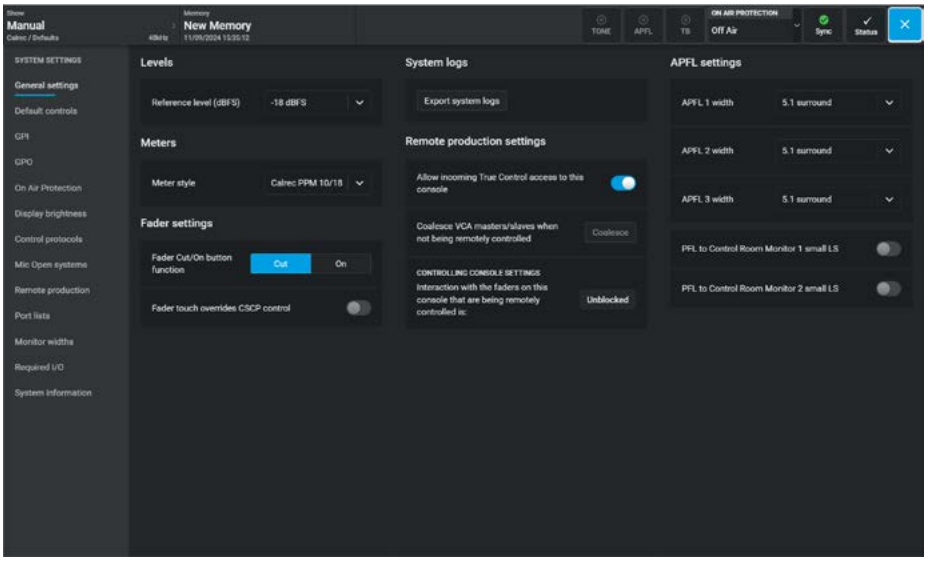
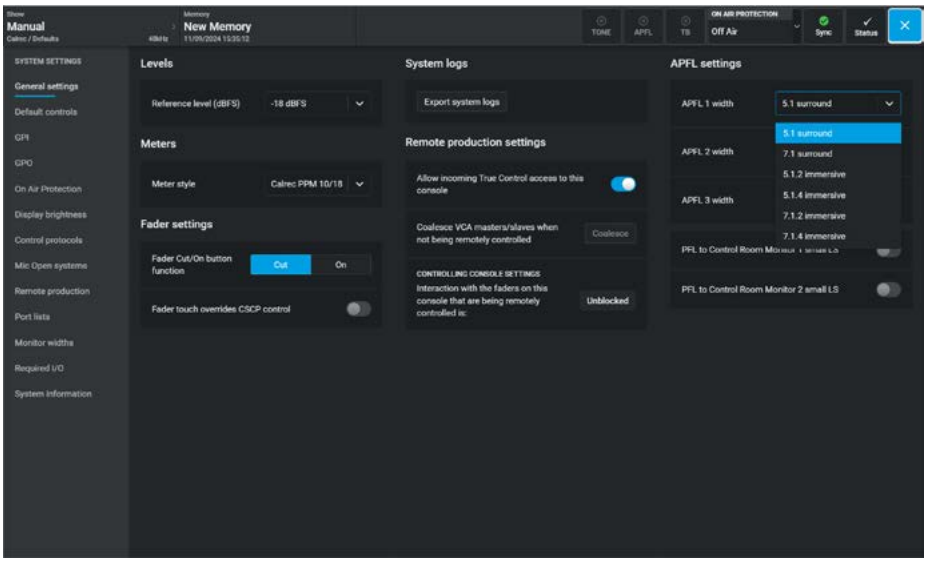


FIG. 5 - APFL WIDTH SELECTION



Note: alternatively, this can only ever be ‘Blocked’ or ‘Unblocked’.

This is used to prevent this Remote console from modifying the settings for any paths that are paired between this Remote console and the Controller. It is usually applied On-Air.

APFL Bus Widths:
APFL 1,2 & 3 Width dropdowns- when these are tapped, a dropdown appears for each of the APFL buses, which is used to select the width of the AFL and PFL buses associated with that APFL bus.

Note: since ImpulseV allows only for a single APFL bus, one dropdown appears if the console is served by ImpulseV.

PFL to Control Room monitor 1/2 Small LS:
These switches allow the user to listen to the output of the PFL bus using the Small LS output rather than a dedicated PFL LS or using PFL to Mon.

Note: since Monitor 2 is not yet available for ImpulseV, the second toggle switch is unavailable if the console is being served by ImpulseV.

DEFAULT CONTROLS

Setting Default Strip Controls
Tapping System Settings>Default Controls opens the Default controls sub-menu option from the sub-menu as shown in Fig. 1. This page is arranged into two halves. The left side of the screen is used to set the default controls that appear on the standard fader panel's lower row of 4 button control cells placed just above the faders Cut/On button on the IU6756 Standard Fader panel. This row of 4 button cells are the same cells as described in the Fader Layout section see "User Controls Editor" on page 133.

The right side of the screen is used to set the default fader button controls that appear on both the standard 12 fader panel, which has 3 definable buttons, and the short fader panel, which only has 2 definable buttons.

Tapping on any of the buttons in the 4 button cell or any of the 4 'Add' buttons under the button functions, or any of the 3 or 2 buttons next to the faders on the standard or short fader panels, opens the Customise button menu with the Input Control page shown in Fig. 2. An extensive set of control options are available to the user. Each button can be set to be used as the default functions.

In order to simplify some of these selections, 3 filter sets are provided:

- Global Functions: these controls are console wide.
- Bus Functions: these controls apply to buses only.
- Path Functions: these controls apply to the selected path.

Note: Path Functions are recommended for strip controls as they will apply specifically to the fader strip.

All the button cell templates are already shown in the User controls editor in the Fader Layout>Controls page and as such will not be repeated here, see "User Controls Editor" on page 133.

Setting up the B-layer control access
Fig. 3 shows the user editing the number 1 button next to the fader (which is now labelled **'B')** to be the **'B layer'** button by default.

FIG. 1 - SETTING THE DEFAULT STRIP CONTROLS

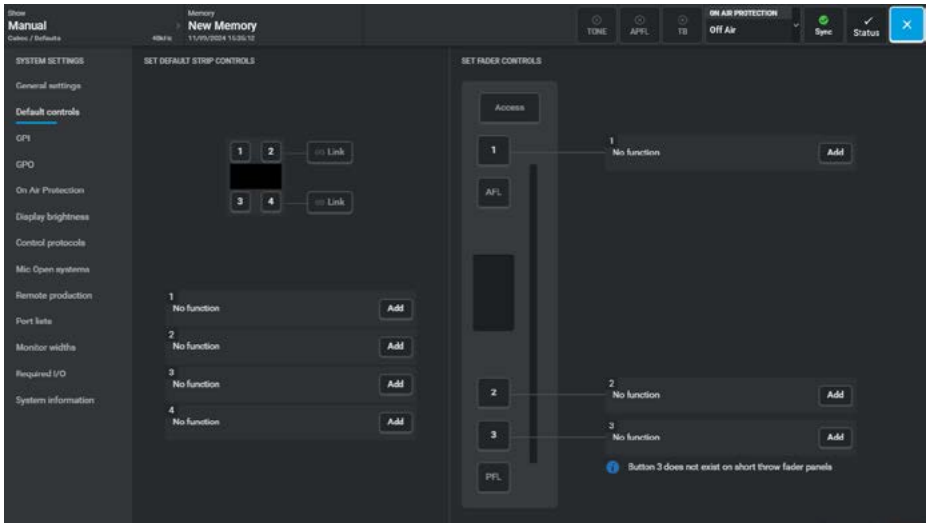


FIG. 2 - CUSTOM BUTTON TEMPLATES

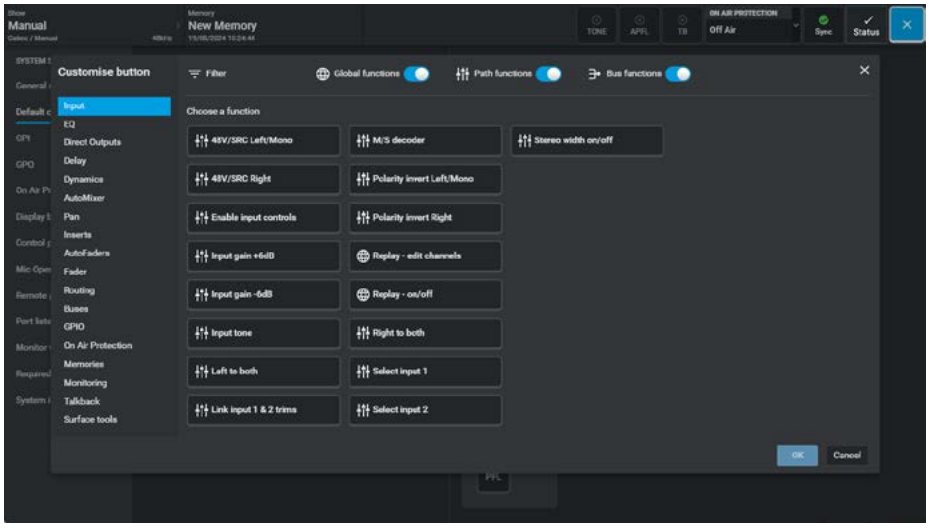
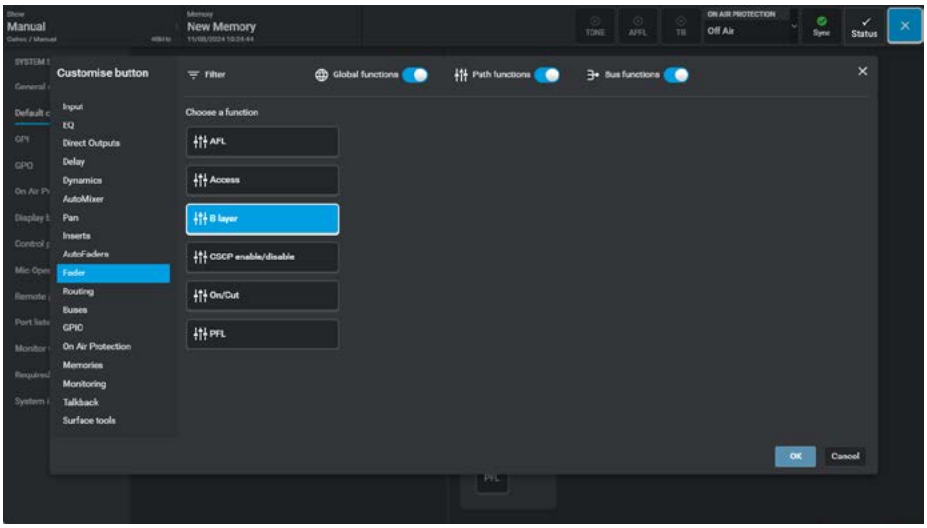


FIG. 3 - B LAYER SELECTION



GPI

Opto-isolated general purpose inputs (GPIs) can be configured to allow the Argo to respond to external control signals.

GPI Functions

To access the GPI setup screen, tap System Settings>GPI from the sub-menu on the left side.

Fig. 1 will appear, with the available incoming GPI control signals appearing on the left side of the screen and the functions they will be controlling appearing on the right side of the screen. The remote GPI is arranged as sets of Remote GPI receivers.

These are then connected to physical GPI sources located in AoIP devices using the 'Network' page of the 'Connect' application, described in detail in the 'Connect Guide (926-292)'

In Fig. 1, the user has selected the Rem GPIO 1-64 circuit and selected the 'AutoFaders' option from the list of functions to act on. Fig. 2 shows those functions that are controllable from GPI sources: GPI functions listed within the 'Functions' pop-up are specific to console functions and GPI Tallies.

The 'Fader Cut' and 'Fader PFL' functions are audio receiver input port/channel specific. For example, if a user connects a GPI to a port's Fader Cut, that GPI will remain connected to that port's fader cut, even if the port is moved to another fader.

The Audio Receiver input ports are derived from Remote AoIP Inputs received on AoIP streams.

Note: to activate PFLs from GPI, the user must slide the PFL from GPI enabling switch in the Monitoring section, see "PFL from GPI" on page 187.

Settings

If more than one destination is connected to a source, there is a settings button on the bottom left-hand side of the footer which allows the user to compact or expand the view of the connected destinations as required.

FIG. 1 - GPI PATCHING SCREEN

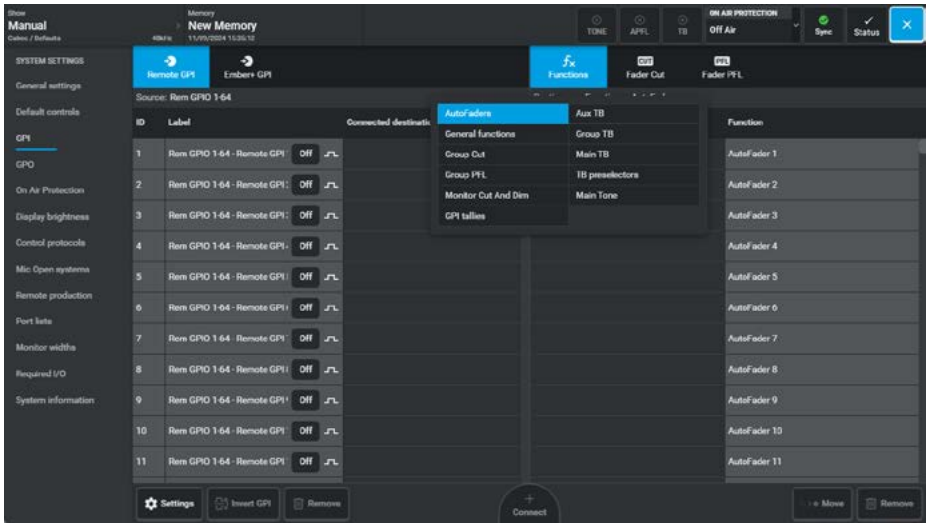


FIG. 2 - FUNCTION SELECTION TABLE FOR GPI SOURCES

Function	Description	
AutoFaders	Trigger any number of the 256 independent AutoFaders via a GPI signal	
General Functions	Ext On Air Signal:	Use an external signal to switch into 'On-Air' mode
	Ext Reh Signal:	Use an external signal to switch into 'Rehearse' mode
	Tracks Omni TB:	Use an external signal to Talkback to all Tracks.
	Tracks Omni Tone:	Use an external signal to send Tone to all Tracks.
	Next Cue:	Use an external signal to Load the next cue in sequence.
	Previous Cue:	Use an external signal to Load the last cue in sequence.
	Surface Sleep:	Use an external signal to turn off its displays.
Group Cut	Apply CUT to any of the Group Buses	
Group PFL	Apply PFL to any of the Group Buses	
Monitor Cut & Dim	Apply a CUT or DIM to any of the Mon1 LS, Mon2 LS or the 4 Misc Mons	
GPI Tallies	Use external signals to switch any of the 256 GPI Tallies On/Off	
Aux Talkback	Route Talkback to any of the Aux Outputs	
Group Talkback	Route Talkback to any of the Group Outputs	
Main Talkback	Route Talkback to any of the Main Outputs	
TB Pre-selectors	Use an external signal to action any of the 4 Talkback Pre-selectors	
Fader Cut	Apply CUT to the Fader to which a specific port is patched	
Fader PFL	Apply PFL to the Fader to which a specific port is patched	

In compact mode, the number in the Connected Destination field shows the number of connections to that source.

GPI Status Flag

To the right of the Source column is shown the GPI status flag for each GPI. If the GPI circuit is not activated then the 'Off' icon will appear as shown in Fig. 1. If the GPI circuit is activated, an 'On' icon will appear in its place.

Invert GPI

The Invert GPI button in the footer of the GPI patching screen allows the user to change the trigger between an active high input and an active low input. The user first selects the required Remote GPI and before tapping the **'Invert GPI'** button. The symbol on the right of the Source column will then invert to show the required trigger state.

Connect GPIs to Functions

To connect GPI sources to destination functions, the user first selects the required GPI source from the table on the left side before then tapping the required destination function from the right side table, as shown in Fig. 3.

A green arrow will appear, indicating which GPI is about to be connected to which function. The user then taps the **'Connect'** button in the centre of the footer for this connection to be confirmed, at which point the arrow will turn orange.

Note: a GPI can be assigned to control more than one function if required.

Remove Connected Destinations

Too remove connected destinations from GPIs, the user selects the connected destinations to be removed before tapping the **'Remove'** button in the left side footer. This opens the footer remove dialogue as shown in Fig. 4.

The user taps **'Remove'** in the footer to complete the procedure or **'Cancel'** if the user wishes to cancel this action.

If the GPI is connected to more than one destination, as shown by the **'+1'** icon, then all connected destinations will be removed.

Note: the procedure for removing single connected sources is the same as above, but applied to the right side of the page.

Move Connected Sources

In order to move a connected GPI source from one destination function to another, the user selects the connected source to be moved and taps the **'Move'** button in the right side footer. This opens the footer move dialogue shown in Fig. 5. The user then taps on the new destination for the selected source.

A green arrow will appear, indicating which GPI is about to be connected to which function. The user can then tap the **'Move'** button in the footer dialogue to complete the procedure, or tap **'Cancel'** to cancel this action.

FIG. 3 - CONNECT GPI SOURCE TO DESTINATION FUNCTION

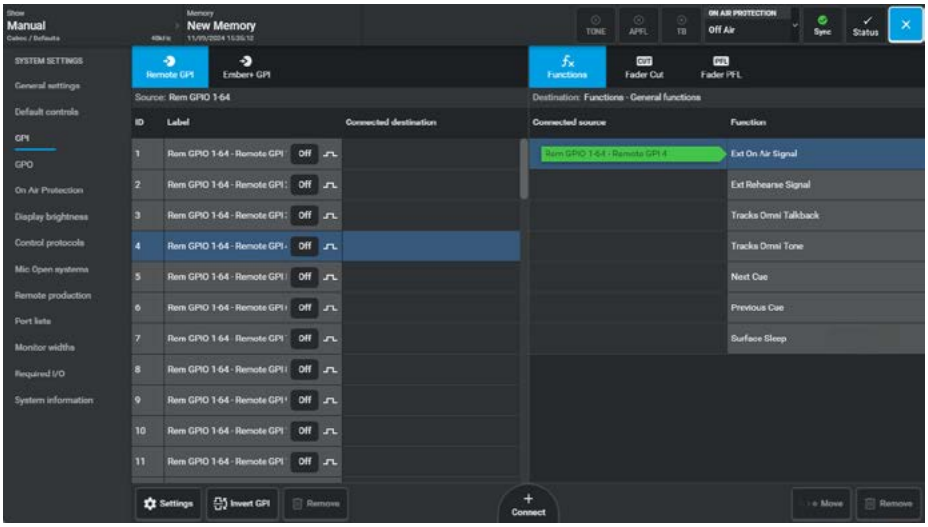


FIG. 4 - REMOVE CONNECTED/DESTINATIONS/SOURCES FROM GPI/FUNCTIONS

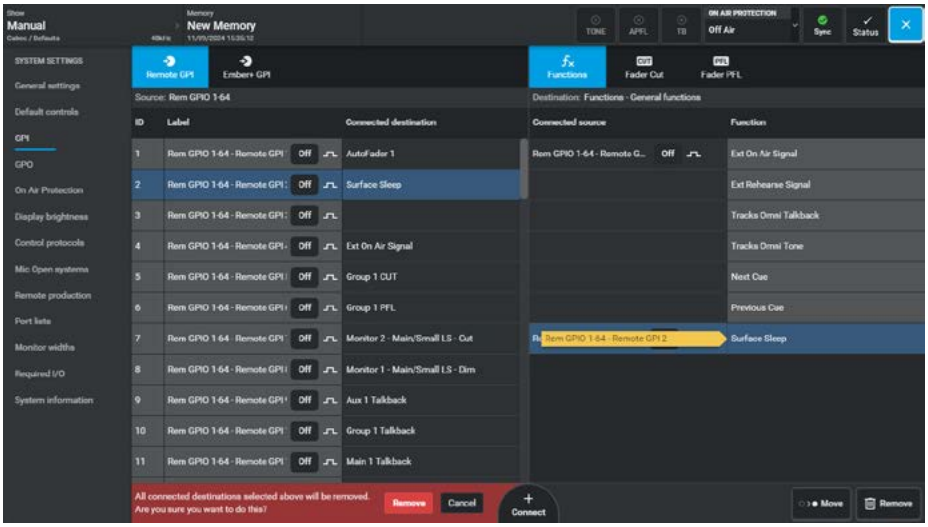
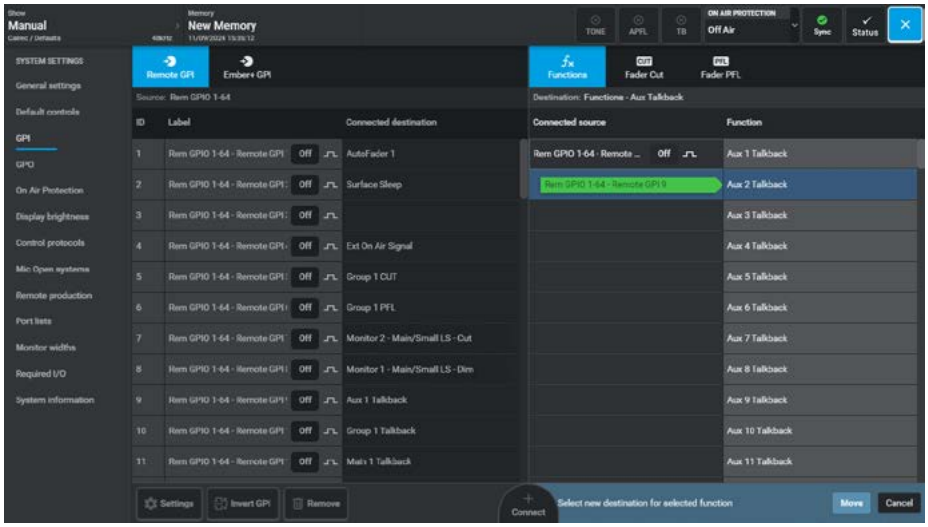


FIG. 5 - MOVE CONNECTED GPI SOURCES TO DIFFERENT FUNCTIONS



Connect Ember+ GPIs to Functions
To connect Ember+ GPI sources to Destination Functions, the user first taps the **'Ember+ GPI'** button in the left side function header. The user then taps the required Ember+ GPI Source from the left side table before tapping the required destination function from the right side table, see Fig. 6.

An arrow will appear to indicate which Ember+ GPI is about to be connected to which function. The user taps the **'Connect'** button in the centre of the footer to confirm this connection.

Note: a GPI can be assigned to control more than one Function if required, as shown for Ember+ GPI 4 controlling both Main 3 & Main 4 talkback circuits.

Select Remote GPI Receiver Stream
To select a Remote GPI, the user must first select which GPI Console receiver stream the remote GPI is contained in.

To do this, the user taps the **'Remote GPI'** button in the left side function header.

This opens the Remote GPI Console receiver stream list shown in Fig. 7. The user then selects the appropriate GPI receiver stream and then the GPI receiver channel in that stream.

Select Audio Receiver Stream
To select which Audio receiver channel the user wants to associate with either the Fader Cut or Fader PFL function, the user must first select which Audio receiver stream the Audio receiver is contained in.

To do this, the user taps the **'Fader Cut'** or **Fader PFL'** button in the right side function header.

This opens the Audio receiver stream list shown in Fig. 8. The user then selects the appropriate Audio receiver stream before selecting the desired Audio receiver channel in that stream.

FIG. 6 - CONNECT EMBER+ GPI SOURCE TO DESTINATION FUNCTION

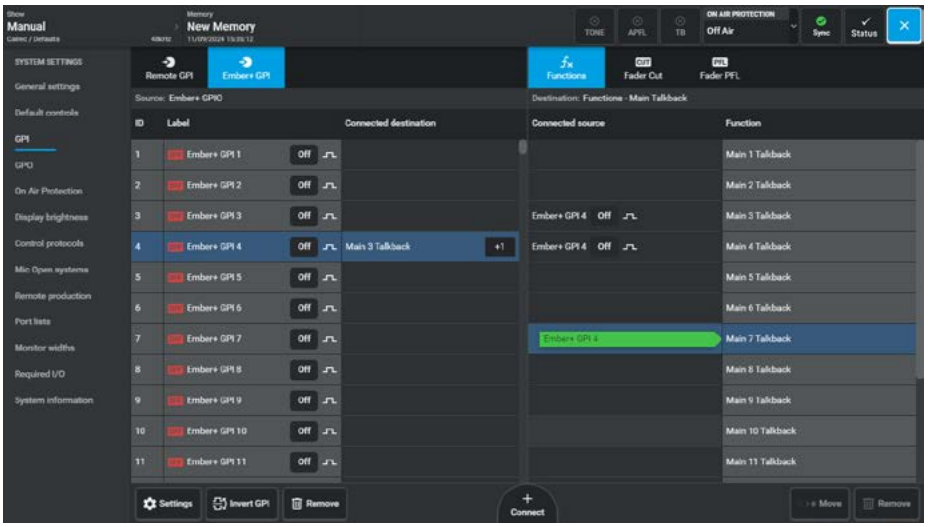


FIG. 7 - SELECT REMOTE GPI RECEIVER STREAM

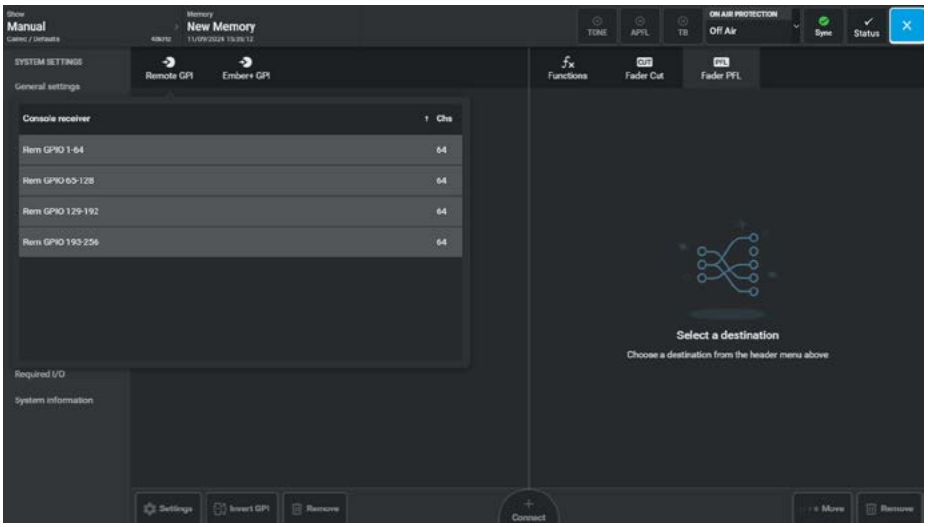
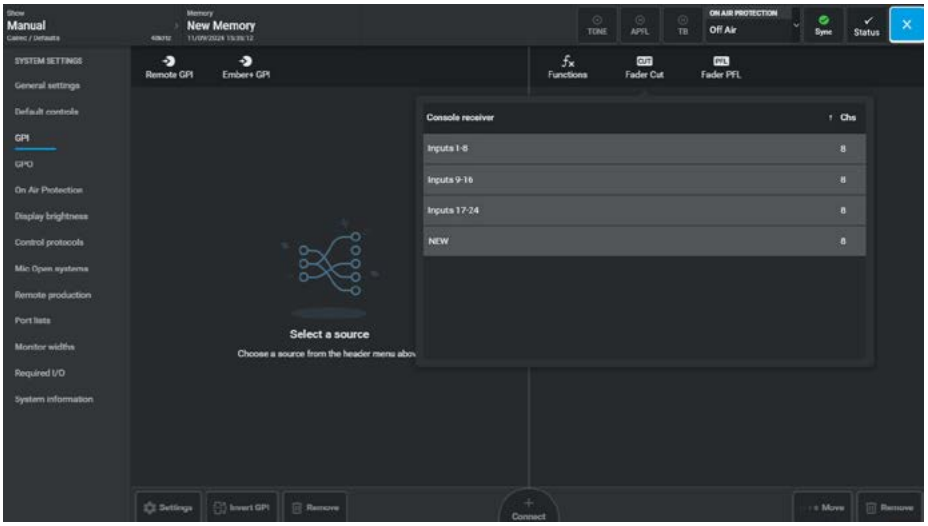


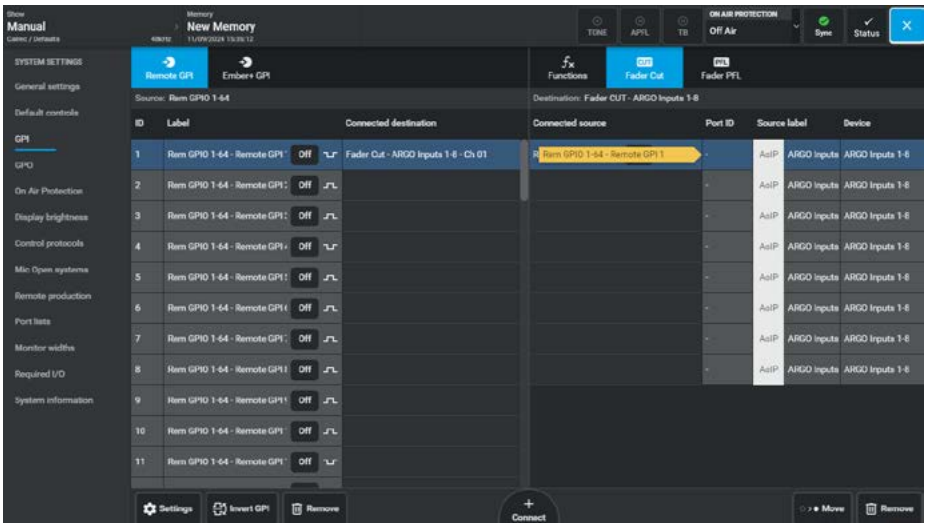
FIG. 8 - SELECT AUDIO RECEIVER STREAM



Connect Remote GPI to Fader Cut

To externally control a fader's cut state, the user selects a Remote GPI from the source list on the left side of the screen, the 'Fader Cut' function button from the function header, then the required audio receiver channel on the right side of the screen. Finally, selecting the 'Connect' button confirms the connection, as shown in Fig. 9. When activated, the Remote GPI switches that Fader's Cut on/off as required. 'Fader Cut' functions are audio receiver specific. For example, if a user connects a GPI to an audio receiver Fader Cut, that GPI remains connected to that audio receiver's Fader Cut, even if the audio receiver is moved to a different fader.

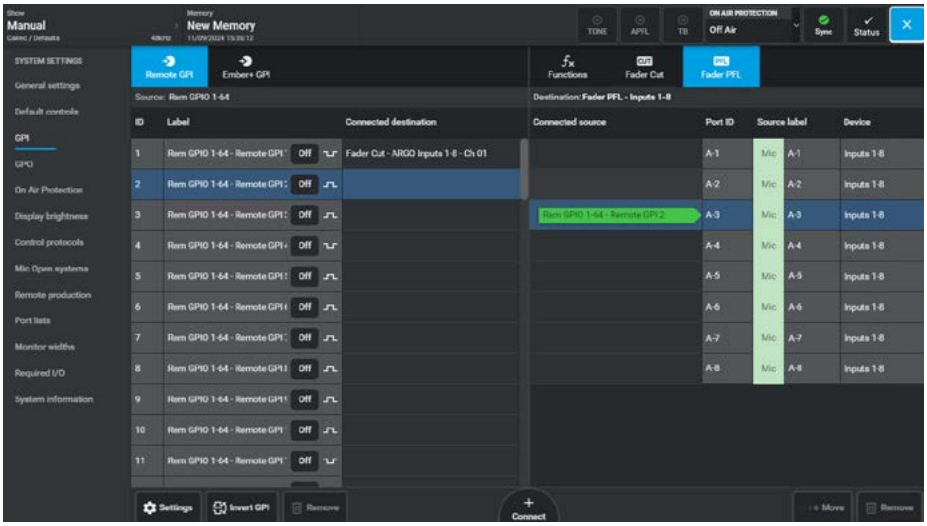
FIG. 9 - CONNECT REMOTE GPI SOURCE TO FADER CUT



Connect Remote GPI to Fader PFL

To externally control a fader's PFL state, the user selects a Remote GPI from the source list on the left side of the screen, the **'Fader PFL'** function button from the function header, then the required audio receiver channel on the right side of the screen. Finally, selecting the **'Connect'** button confirms the connection, as shown in Fig. 10.

FIG. 10 - CONNECT REMOTE GPI SOURCE TO FADER PFL



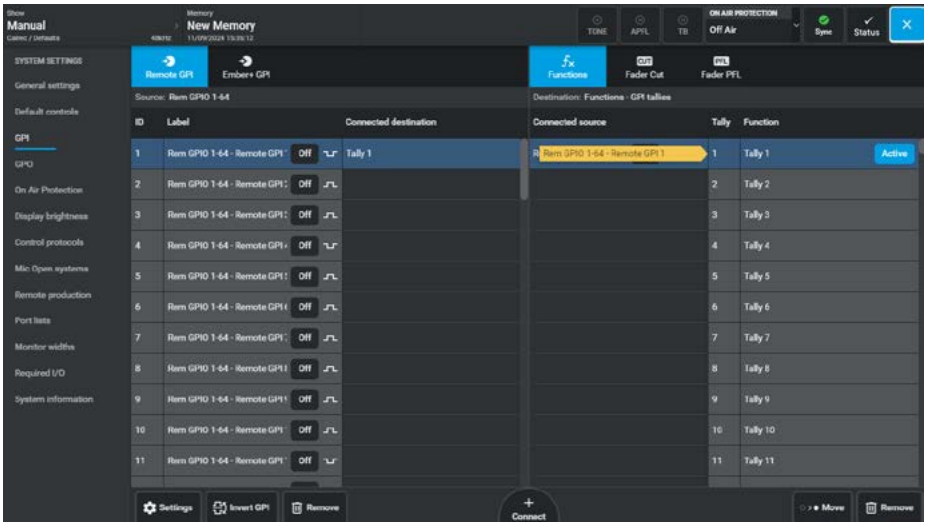
When activated, the Remote GPI switches that Fader's PFL on/off as required. 'Fader PFL' functions are audio receiver specific. For example, if the user connects a GPI to an audio receiver's Fader PFL, that GPI remains connected to that audio receiver's Fader PFL even if the audio receiver is moved to a different fader.

Note: to externally control a fader's PFL state in this way, the user must first toggle on the 'PFL from GPI' switch from the Monitoring page, see **"PFL from GPI" on page 187**.

Connect Remote GPI to tally

To control a Tally from a Remote GPI, the user selects a Remote GPI from the left side of the screen, selects a Tally from the System Settings>GPI>Functions>GPI Tallies on the right side of the screen, before finally clicking the **'Connect'** button as shown in Fig. 11. The 256 tallies available are subsequently used to flag that various external events have occurred and takes the appropriate action, such as indicating Mic Open conditions.

FIG. 11 - CONNECT REMOTE GPI SOURCE TO TALLY



GPO

Argo can output control signals via general purpose outputs (GPOs) to control external equipment.

GPO Functions

To access the GPO setup screen, tap System Settings>GPO from the sub-menu on the left side.

Fig. 1 will appear, with the functions appearing on the left side of the screen and the available outgoing GPO control signals appearing on the right side of the screen.

The remote GPO is arranged as sets of Remote GPO transmitters.

These are then connected to physical GPO destinations located in AoIP devices using the Network page of the Connect application, described in detail in the '**Connect Guide (926-292)**'

In Fig. 1, the user has selected the Rem GPIO 1-64 circuit as the Destination and the 'Functions - GPO triggers' option from the list of Source functions to activate the GPO

Fig. 2 shows the functions available:

GPO functions listed within the 'Functions' pop-up are specific to console functions.

The 'Fader On', 'Fader Open' and 'Fader Open & On' functions are I/O port specific. As such, if the user connects a GPO to a port's Fader Open, that GPO remains connected to that port's Fader Open even if the port is moved to a different fader.

FIG. 1 - GPO PATCHING SCREEN

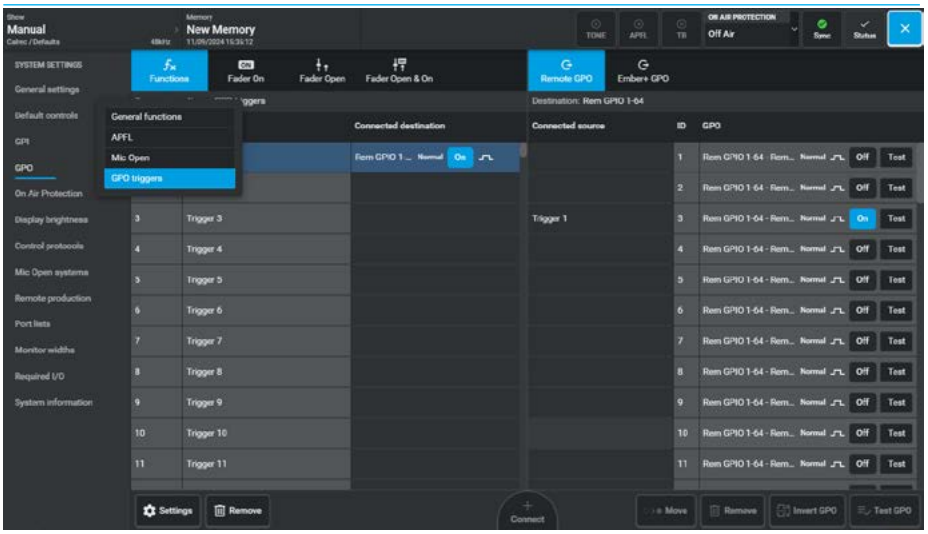


FIG. 2 - FUNCTION SELECTION TABLE FOR GPO FUNCTIONS

Function	Description	
General Functions	On Air Signal:	Use an On-Air ON state to activate a GPO
	Rehearse Signal:	Use a Rehearse ON state to activate a GPO
	Red Light:	Use a Red Light ON state toto activate a GPO
	Fire Alarm Mute:	Use a Fire Alarm Light ON state to activate a GPO
	Error Warning:	Use an Error message from the Core to activate a GPO
APFL	AFL 1, 2 & 3 ON:	Use an AFL ON state to activate a GPO
	PFL 1, 2 & 3 ON:	Use a PFL ON state to activate a GPO
Mic Open	Use any of the 5 Mic Open buses being active to activate a GPO	
GPO Triggers	Use any of the 256 GPO triggers to activate GPO for Cue lights and other purposes where a signal trigger needs to be sent.	
Fader On	Fader On (not Cut) with fader position ignored activates GPO for any Port	
Fader Open	Fader Open with Path On/Cut state ignored activates GPO for any Port	
Fader Open & On	Fader Open & Path On (Not Cut) activates GPO for any Port	

Settings

If more than one destination is connected to a source, there is a settings button on the bottom left-hand side of the footer, allowing the user to compact or expand the view of the connected destinations as required. In compact mode, the number in the Connected Destination field shows the number of connections to that source.

GPO Status Flag & Test GPO

On the right of the destination column is the GPO status flag for each GPO. If the GPO circuit is not activated, the 'Off' icon will appear as shown in Fig. 1. If the GPO circuit is activated, a blue 'On' icon will appear in its place.

To the right of this is placed a momentary 'Test' button. When pressed and held, this will directly activate the selected GPO, by-passing its associated function for test purposes.

Connect Functions to GPOs
To connect source Functions to GPO destinations, the user first selects the required source function from the left side table, then taps the required destination GPO from the right side table, as shown in Fig. 3.

A green arrow will appear to indicate which function is about to be connected to which GPO. The user then taps the **'Connect'** button in the centre of the footer to confirm the connection, at which point the arrow turns orange.

Note: a Function can be assigned to control more than one GPO if required.

Remove Connected Sources
To remove connected sources from the GPOs, the user selects the connected sources to be removed before tapping the **'Remove'** button in the right side footer. This opens the footer remove dialogue shown in Fig. 4. From here, the user can tap **'Remove'** in the footer dialogue to complete the procedure or **'Cancel'** to cancel this action.
If more than 1 GPO destination is connected to from a function, as shown by the **'+1'** icon, then all connected destinations will be removed when using the **'Remove'** option from the left side of the screen.

Note: the procedure for removing Connected Destinations is the same but applied to the left side of the screen.

Move Connected Sources
To move a connected function source from one destination GPO to another, the user selects the connected source to be moved and taps the **'Move'** button in the right side footer.

This opens the footer move dialogue shown in Fig. 5. The user then taps the new destination for the selected source. A green arrow will appear to indicate which function is about to be connected to which GPO. The user then taps the **'Move'** button in the footer dialogue to complete the procedure or **'Cancel'** to cancel this action

FIG. 3 - CONNECT SOURCE FUNCTION TO GPO DESTINATION(S)

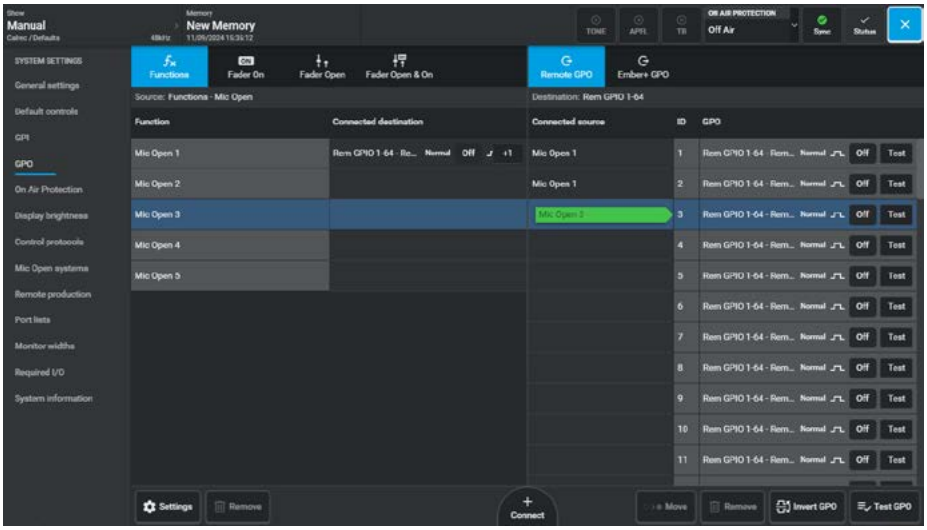


FIG. 4 - REMOVE CONNECTED/DESTINATIONS/SOURCES FROM GPO/FUNCTIONS

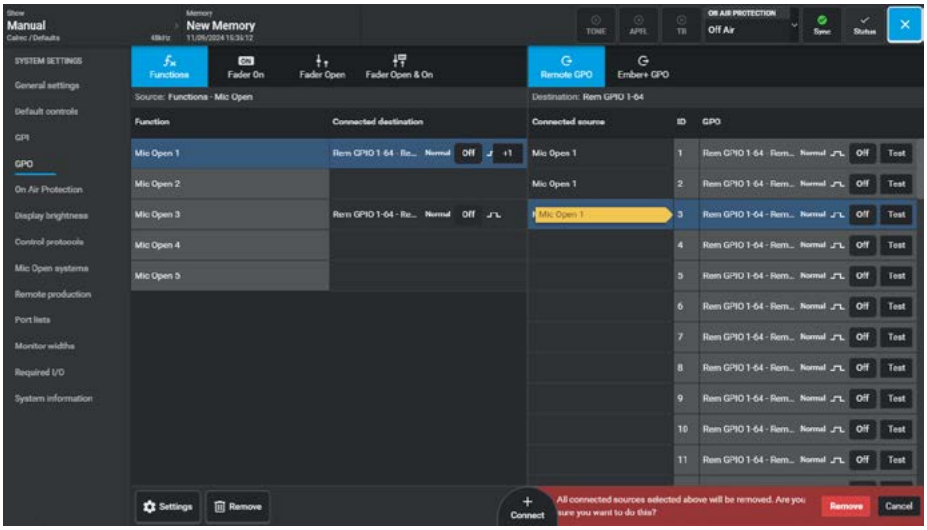
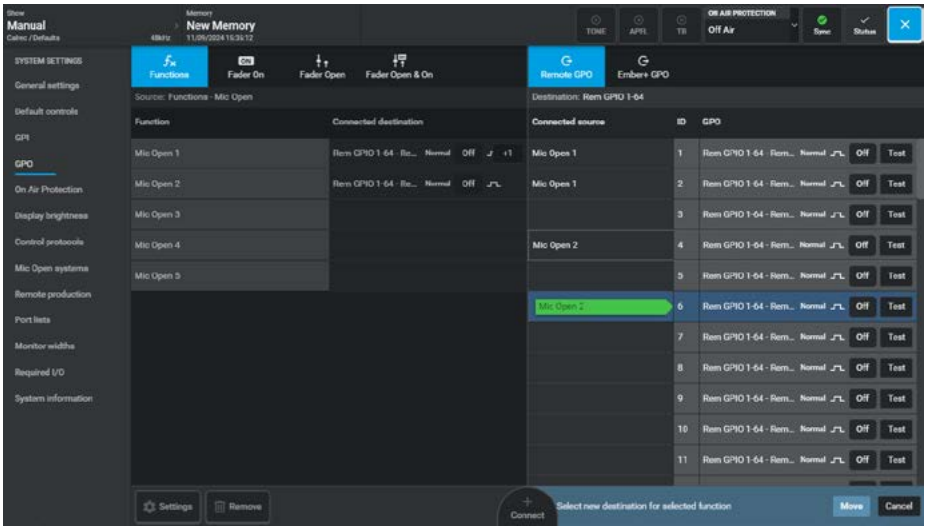


FIG. 5 - MOVE CONNECTED SOURCES TO DIFFERENT GPO DESTINATIONS



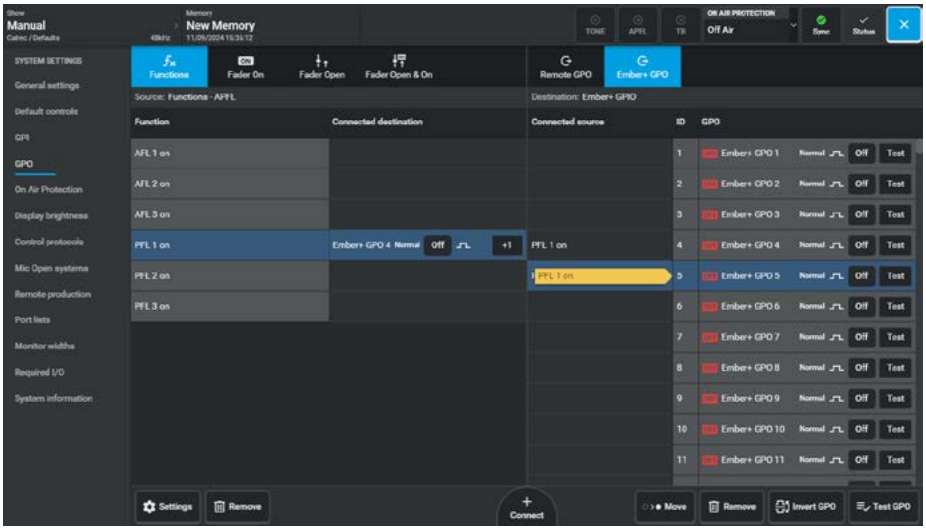
Connect Functions to Ember+ GPOs

To connect Source Functions to Ember+ GPO destinations, the user first taps the **'Ember+ GPO'** button in the right side function header before tapping the required Ember+ GPO Destination from the right side table & source function from the left side table, as shown in Fig. 6.

An arrow will appear to indicate which Ember+ GPO is about to be connected to which function. The user then taps the **'Connect'** button in the centre of the footer to confirm the connection.

Note: a function can be assigned to control more than one GPO if required, as shown for PFL1 on triggering Ember+ GPO 4 & Ember+ GPO 5 circuits.

FIG. 6 - CONNECT SOURCE FUNCTION TO EMBER+ GPO



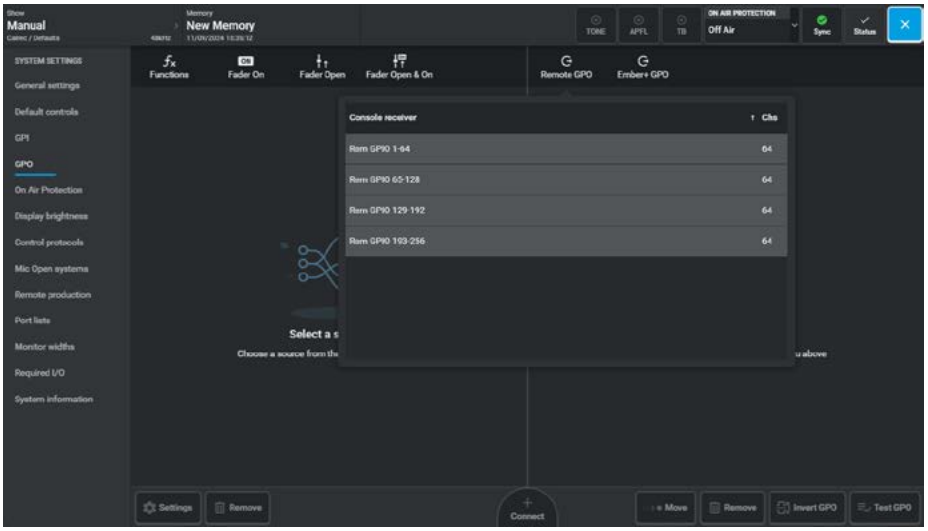
Select Remote GPO Transmitter Stream

To select the desired Remote GPO, the user must first select which GPO Console transmitter stream the remote GPO is contained in. To do this, the user taps the **'Remote GPO'** button in the right side function header.

This opens the Remote GPI Console transmitter stream list shown in Fig. 7.

The user then selects the appropriate GPO transmitter stream and then the GPO transmitter channel in that stream.

FIG. 7 - SELECT REMOTE GPO TRANSMITTER STREAM



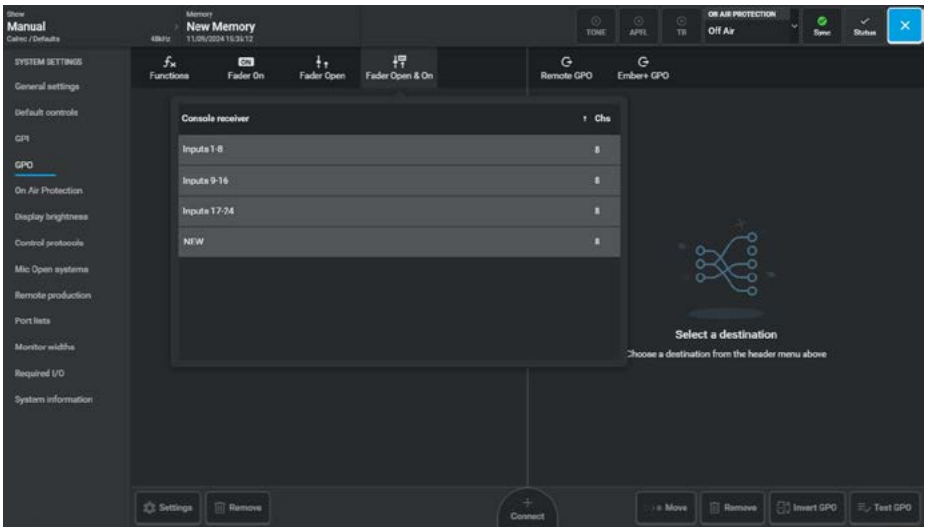
Select Audio Receiver Stream

To select which Audio receiver channel the user wants to associate with either the Fader On, Fader Open or Fader Open & On function, the user must first select which Audio receiver stream the Audio receiver is contained in.

To do this, the user taps the **'Fader On', 'Fader Open'** or **'Fader Open & On'** button in the left side function header.

This opens the Audio receiver stream list shown in Fig. 8. The user then selects the appropriate Audio receiver stream and the desired Audio receiver channel in that stream.

FIG. 8 - SELECT AUDIO RECEIVER STREAM



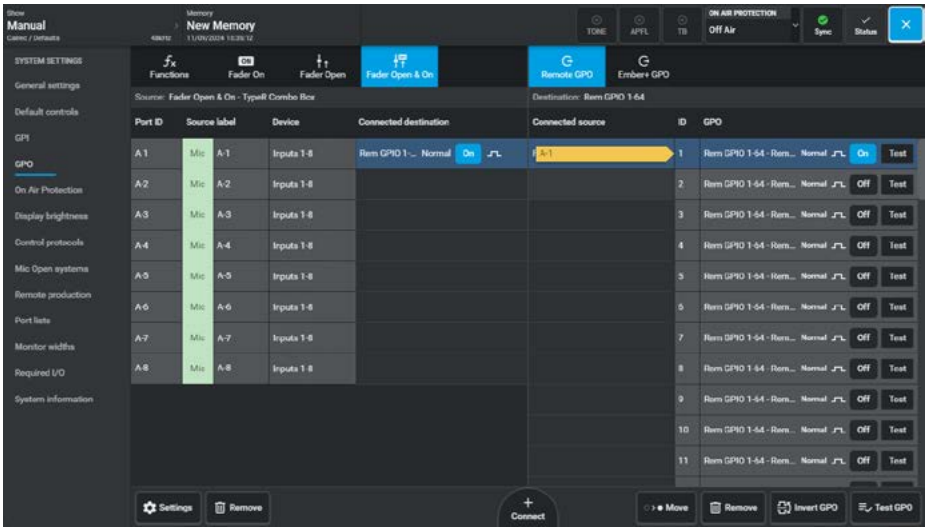
Connect Fader Open & On to Remote GPO

To control a 'Remote GPO' from a 'Fader Open or On state', the user selects a Remote GPO from the destination list on the right side of the screen before selecting the required audio receiver channel on the left side of the screen. Tapping the **'Connect'** button confirms the connection, as shown in Fig. 9.

When activated, the Fader Open & On controls switch that Remote GPO On/Off as required. 'Fader Open & On' functions are audio receiver specific.

For example, if the user connects a GPO to an audio receiver 'Fader Open & On', that GPO remains connected to that audio receiver's Fader Open & On even if the audio receiver is moved to a different fader.

FIG. 9 - CONNECT FADER OPEN & ON TO REMOTE GPO DESTINATION



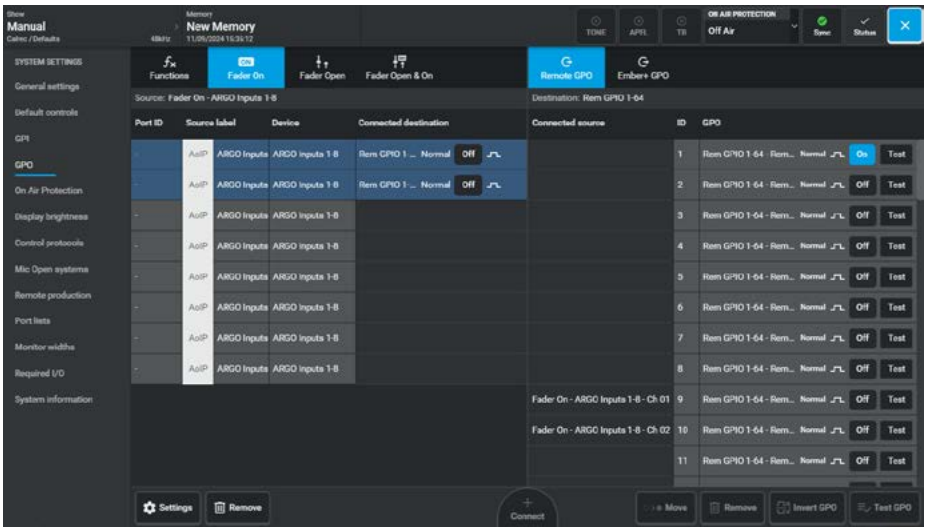
Connect Fader On to Remote GPO

To control a 'Remote GPO' from a 'Fader On' state, the user selects a Remote GPO from the destination list on the right side of the screen before selecting the required audio receiver channel on the left side of the screen. Clicking the **'Connect'** button confirms the connection, as shown in Fig. 10.

When activated, the Fader On controls switch that Remote GPO On/Off as required. 'Fader On' functions are audio receiver specific.

For example, if the user connects a GPO to an audio receiver 'Fader On', that GPO remains connected to that audio receiver's 'Fader On' even if the audio receiver is moved to a different fader.

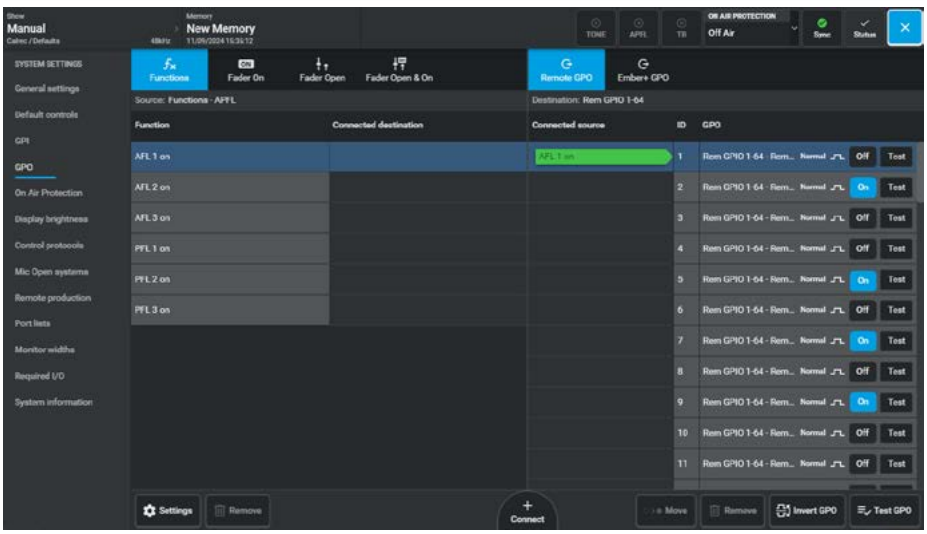
FIG. 10 - CONNECT FADER ON TO REMOTE GPO DESTINATION



Connect AFL trigger to Remote GPO

To control a 'Remote GPO' from a 'Trigger', the user selects a Trigger switch source from the System Settings>GPO>Functions>GPO Triggers on the left side of the screen before selecting a Remote GPO from the right side of the screen. Finally, selecting the **'Connect'** button confirms the connection, as shown in Fig. 11.

FIG. 11 - CONNECT AFL ON/OFF TRIGGER TO REMOTE GPO DESTINATION



ON AIR PROTECTION

To access Argo's On Air Protection settings, the user selects: System Settings>On Air Protection from the menu on the left-hand side.

This page is used to apply different functions to the various monitors in the system when in an On-Air, Rehearse or Off-Air state, based on the condition of the Mic Open Systems or, in the case of Talkback, the option to prevent Talkback as a manual override, see Fig. 1.

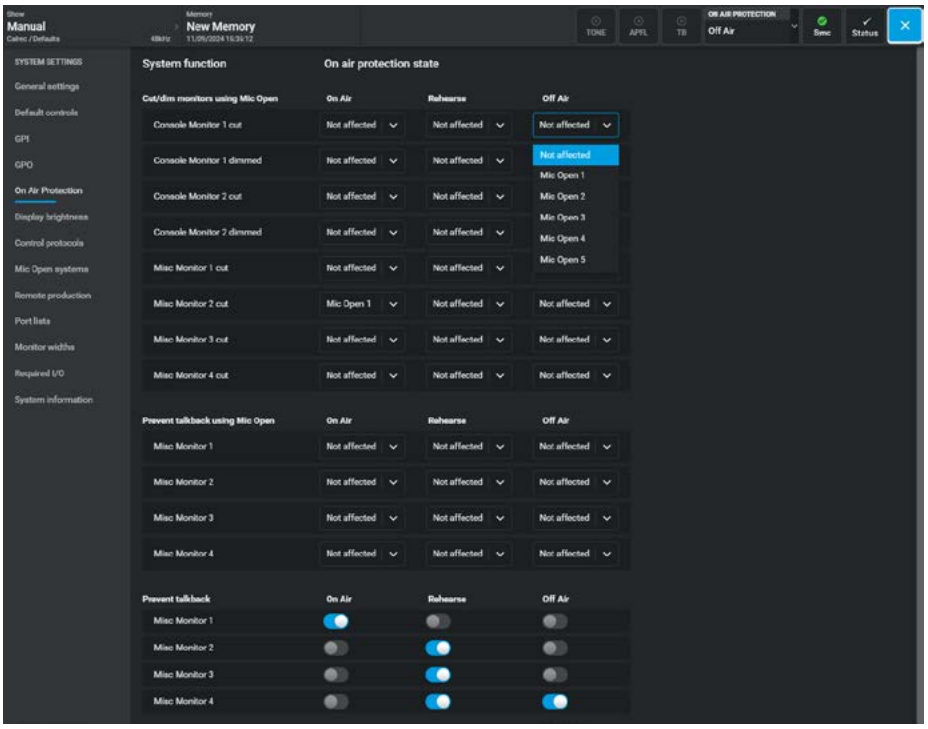
Cut/Dim monitors using mic open
The two Console monitors can be Cut or Dimmed under the 3 different states of the On-Air, Rehearse and Off-Air flags, from a selection of one of the 5 Mic Open systems that are available, see **"Mic Open Systems" on page 303.**

The Misc Monitors can be Cut under the 3 different states of the On-Air, Rehearse and Off-Air flags, from a selection of one of the 5 Mic Open systems that are available, see "**Mic Open Systems" on page 303.**

Prevent talkback using mic open
The Misc Monitors can have Talkback to them prevented under the 3 different states of the On-Air, Rehearse and Off-Air flags, from a selection of one of the 5 Mic Open systems that are available, see **"Mic Open Systems" on page 303.**

Prevent talkback
The Misc Monitors can have Talkback to them prevented under the 3 different states of the On-Air, Rehearse and Off-Air flags by sliding the appropriate toggle switch manually.

FIG. 1 - ON AIR PROTECTION OPTIONS



DISPLAY BRIGHTNESS

To access Argo's Display brightness and sleep options, the user selects System Settings>Display brightness from the menu on the left-hand side.

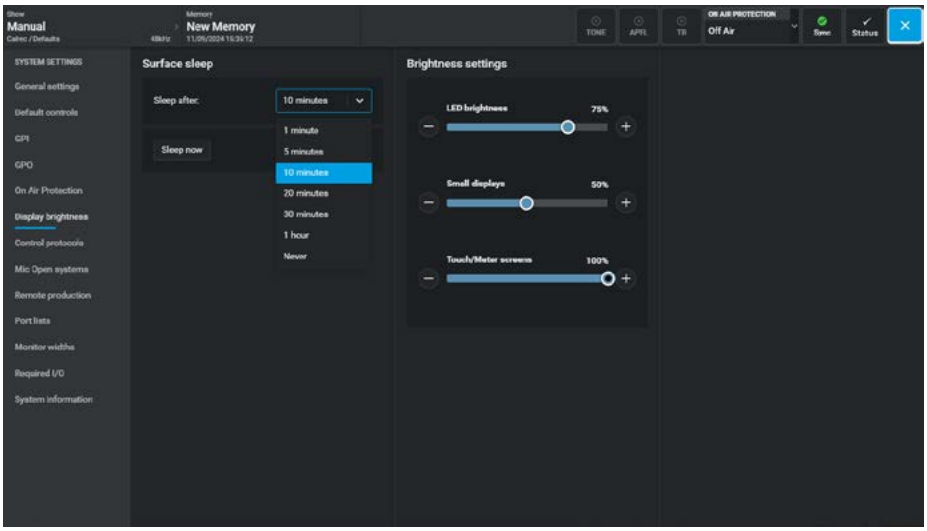
This page is used to screen-save the displays and adjust the brightness of those displays on Argo's surface, as shown in Fig. 1.

Surface Sleep
The user can set a time delay whereby if none of the controls are touched for the period of time set in the 'Sleep after' dropdown box, the displays will go to sleep, i.e., turn off. The optional times are: 1 min, 5 mins, 10 mins, 20 mins, 30 mins, 1 hr or Never. Alternatively, the user can turn off the displays immediately by tapping the **'Sleep Now'** button.

Brightness
The three controls in this area allow the user to adjust the brightness of the LED's Small TFT displays and the Touchscreen and Upstand Meter screen panels as required.

The user can either tap on the '+' or '-' buttons or drag the slider left and right to adjust the brightness of each display type.

FIG. 1 - DISPLAY BRIGHTNESS AND SLEEP OPTIONS



CONTROL PROTOCOLS

In addition to GPI activated controls, Argo supports various protocols to allow 3rd party equipment to remotely control various features. Two of these protocols directly affect surface operation: CSCP and Ember+.

CSCP

Calrec Serial Control Protocol (CSCP) allows remote control from 3rd party equipment over fader positions, PFL's, path CUT/ON status, routing to Auxes and Mains, and Aux output levels.

Accessing the following sub-menu page on the left side, System Settings> Control protocols allows these remote control interfaces to be enabled and disabled. Fig. 1 displays that the TCP ports used to access the system are set up for the serial control interfaces that are installed.

Note: as part of the system settings, these settings are not saved as part of a show or memory.

When a new CSCP interface is created the user can label it as shown in Fig. 2.

CSCP Per Fader

CSCP can be enabled and disabled per fader using the CSCP switch in the header of the Processing>Fader page for each fader. Further information on CSCP is available on request.

Ember+

The Ember controller can, when Enabled:

- Change the User Show & Memory recall that is on the control surface memory, as shown in Fig. 3.
- Change I/O input settings, labels and SDI output channel mutes.
- Allow for the use of Virtual GPIO, which can control and respond to all the functions available to physical GPIO, as shown in Fig. 3.

See **"Connect Ember+ GPIs to Functions" on page 293** and **"Connect Functions to Ember+ GPOs" on page 297.** Further information on Ember+ is available on request.

FIG. 1 - CSCP INTERFACES

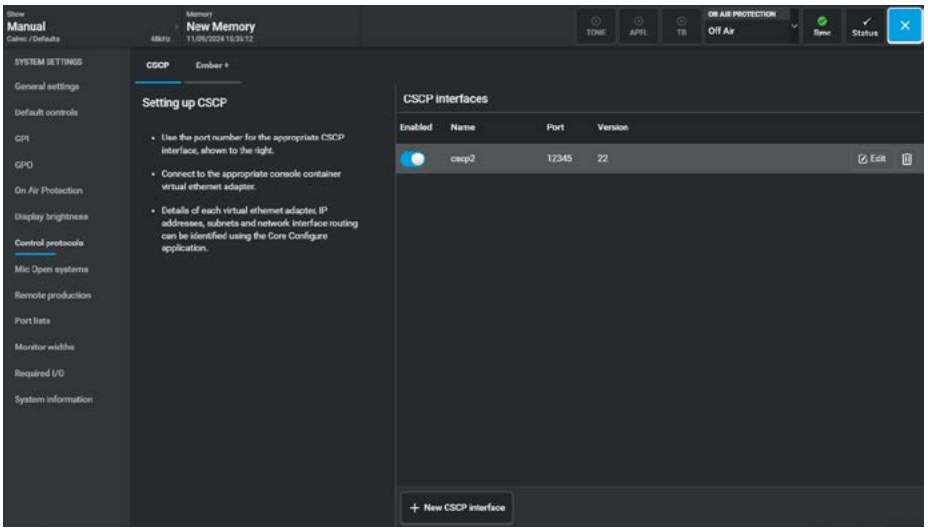


FIG. 2 - LABELLING CSCP INTERFACES

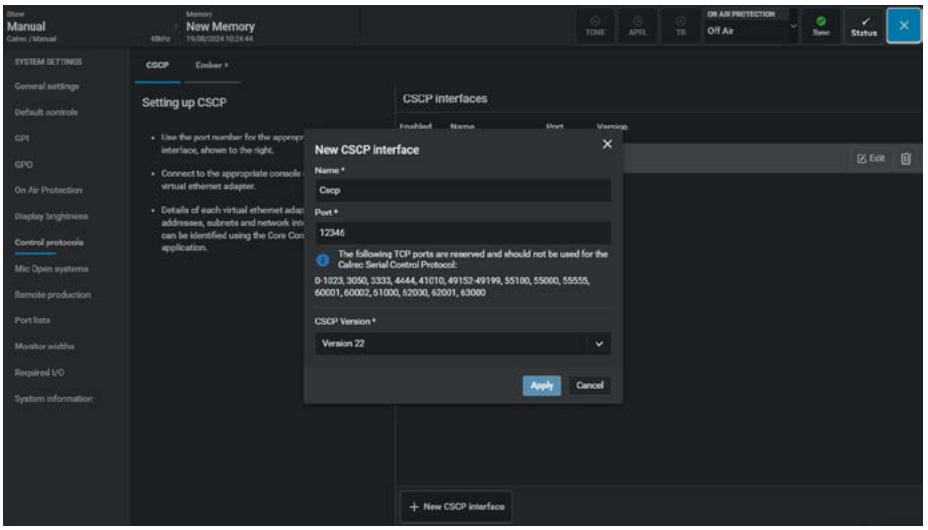
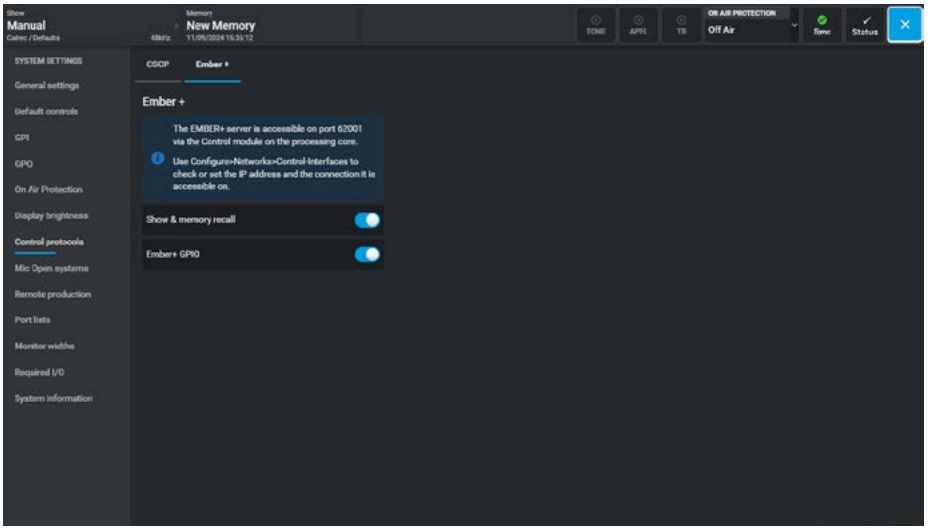


FIG. 3 - EMBER+



MIDI

If a connection has been established with a MIDI Control PC or compatible IP MIDI device, these devices should show up here and display as online (See Fig. 4).

Multiple MIDI control devices can be configured/connected. MIDI devices will persist in the configuration but show as offline if they are disconnected or shut-down.

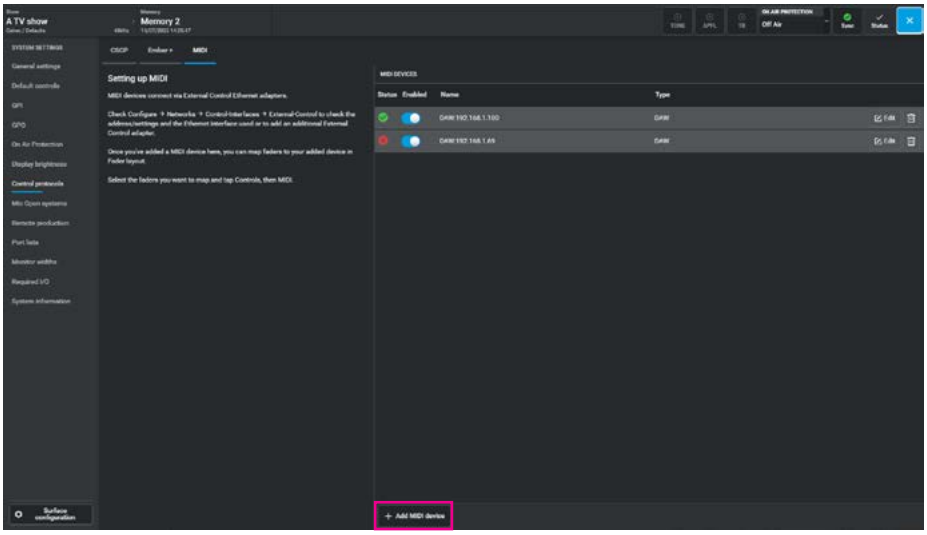
MIDI devices can be manually configured if not available at the point of setup using the 'Add MIDI device' highlighted in magenta in Fig. 4.

MIDI control can be enabled/disabled per MIDI device, as well as edited or deleted in this menu.

Being under System Settings, MIDI device management is global to all shows and memories.

For more information on setting up and using MIDI & DAW control, as well as example DAW configurations, see the dedicated Argo MIDI & DAW Control Guide (926-449)

FIG. 4 - MIDI DEVICE CONFIGURATION



MIC OPEN SYSTEMS

Mic Open Systems
Mic Open systems are used to control external devices, relative to the 'On Air' status of a signal source.
Mic Open systems can CUT or DIM a loudspeaker to avoid feedback, or control GPO relays for switching purposes, such as turning on ON AIR lights.

To access the Mic Open systems page, tap System Settings>Mic Open systems in the sub-menu on the left side, see Fig. 1.

There are 5 Mic Open systems available on the console. Each is normally associated with a physical area for control, such as a studio or an area of a studio floor.

Note: Mic Open systems work for all input signals, not just microphones.

Mic Open systems detect whether the assigned signal sources are on air.

A signal is deemed to be on air if:
- It is assigned to a channel input (one or two).
- The channel is selected to that input (one or two).
- Its fader is open and not cut.
- It is routed to a main output.
- That main output's fader is open.
- If a signal is routed via a group, or a number of groups in series, before being routed to a main output, then those group faders must also be open and not cut.

Note: the fader open trigger happens at -90dB and the fader close trigger happens at -95dB.

When a mic open system detects that a signal is on air, it switches on. Subsequently, the associated GPO/CUT/DIM is executed.

Assigning Inputs to Mic Open Systems
To allocate an input port to any of the 5 mic open systems, select either a Receiver from an incoming audio receiver stream or a port from one of the Port lists. The user then taps the required connected ports, prompting a 'tick' to appear.
Note: the user can select multiple ports rather than actioning one port at a time as required.

FIG. 1 - MIC OPEN SYSTEM-AUDIO RECEIVERS

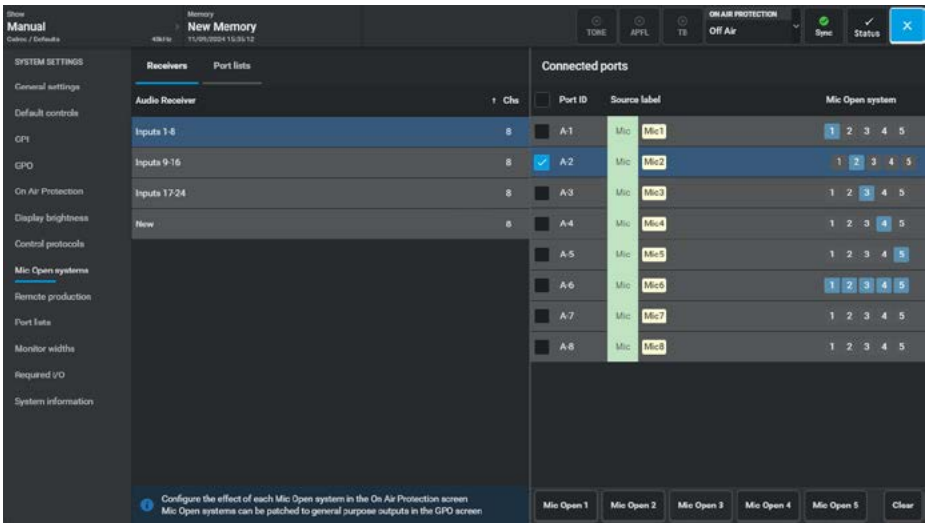
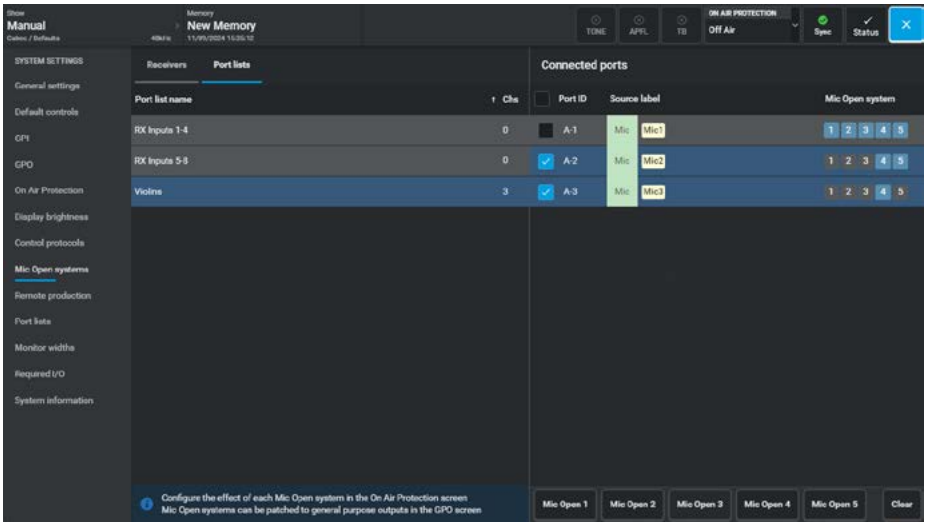


FIG. 2 - MIC OPEN SYSTEM-PORT LIST RECEIVERS



The 5 **'Mic Open n'** buttons in the footer shown in Fig. 2 can then be used to select which of the 5 mic open systems the user wishes to associate these ports with.

Note: connected ports can be associated with more than one mic open system.

For example, Fig. 2 shows that when any fader using Mic 7's input is opened, it will be set to trigger Mic Open systems 4 & 5. Clicking/tapping on each of the Mic Open buttons toggles the attachment of the port to the selected Mic Open system.

If the user no longer wishes to have a port associated with a mic open system, then selecting the port(s) before tapping '**Clear**' from the footer will clear all its mic open system selections. All Mic Open system icons are subsequently turned off.

To select/deselect all the connected ports, tap the icon box in the Port ID header area. This, in combination with the '**Clear**' button, turns off all the Mic Open system icons on that page.

Managing Remote Networks Access

To determine and/or alter the connected status of Remote consoles, the user selects the System Settings> Remote production entry in the sub-menu on the left side of the page, as shown in Fig. 1. The Remote consoles with possible '**Outgoing control connections**' in the list are uniquely identified by the Remote console type, its '**Name**' and the Primary/Secondary network IP addresses as entered in the '**Configure**' application. Looking across each entry, everything other than the '**Try to connect**' field and the '**Block incoming control of paired faders**' field is read only, while the '**Status**' and '**Latency**' fields for the Primary and Secondary IP addresses are updated by occasional polling of each of the Remote consoles. No connection is established until the '**Try to connect**' switch is selected.

The '**True Control allowed**' column status is determined for each Remote console from its '**Allow incoming True Control access to this console**' slider switch from the System settings>General Settings page.

Note: the '**True Control allowed**' switch is independent from the '**True Control allowed**' status and is used to prevent external control from its connected Controller.

The latency fields represent the current time taken to send commands from the console, up until receiving an acknowledgement (Ping). The status fields have one of 5 states: **Offline, Available, Connect, In Use** or **Incompatible**. Fig. 1 shows that 4 remote consoles have been added: RP1 '**RP1**' which is **Available**, Argo '**Argo**' which is **Offline** and 2 Type R consoles labelled '**TypeR A**', which is **Connected**, & '**TypeR C**', which is In Use. Toggling the '**Try to connect**' switch into an ON state for a particular Remote console sends a request to connect message to the chosen Remote console. If its status is **Available**, the Remote console responds with an OK to connect message, changing its status to **In Use**.

FIG. 1 - REMOTE CONSOLES ACCESS-CONNECTIONS FROM THIS CONSOLE

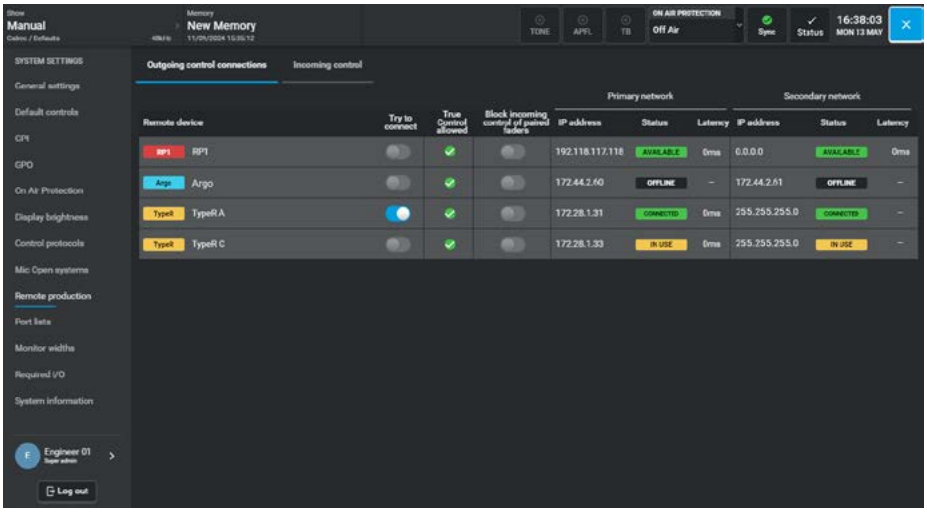
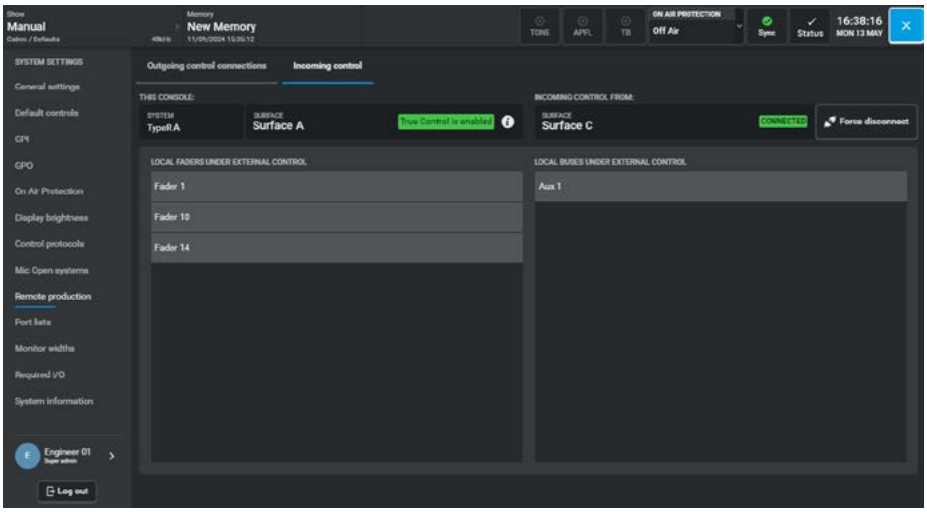


FIG. 2 - REMOTE CONSOLES ACCESS - CONNECTIONS TO THIS CONSOLE



Likewise, this console changes its status to **Connected** and becomes the Controller. If a request to connect is sent to a Remote console which is **Offline**, **In Use** or **Incompatible**, the system will continue to poll that Remote console at a higher frequency rate until an OK to connect message is received.

Note: **In Use** means that someone else is Controlling the selected Remote console, while **Incompatible** means that there's a software mismatch between the Remote console and this console, preventing connection.

Once connected, the Remote console passes control data to the Controller for those paths that have been configured as remote paths on the Controller.

Fig. 2 shows the '**Incoming control**' for Type R '**TypeR A**' and shows that three fader paths, labelled Fader 1, Fader 10 & Fader 14, along with its Aux 1 Bus, are all being controlled externally. Clicking the '**Try to connect**' switch into an OFF state sends a request to disconnect to the chosen Remote console, which responds with a disconnect message and changes it status to '**Available**, as shown for RP1 in Fig. 1. The controller then releases the Remote console, which can then respond to other console requests to connect. If a Remote console goes 'Offline' then its status is reflected in the display and the latency value become indeterminate, as shown for the Argo '**Argo**' in Fig. 1.

Forcing A Controller Disconnect

The Remote production system allows any console to become a Controller of any of the Remote consoles in its list, providing their status is set as Available.

If a connection is lost to a Remote console and another console has its 'Try to connect' switch set for that same Remote console, the other console could take over the connection unintentionally.

Note: to avoid this issue, each Controller is expected to manually disconnect from the Remote console when finished, so that it can be made available for another console.

However, in case this manual disconnect is forgotten, or another console accidently has its 'Try to connect' switch toggled on for the wrong Remote console, each console has the ability to 'Force disconnect' the current Controller.

Fig. 3 shows that the Remote console 'TypeR A' has been connected to Surface C and wants to disconnect, to allow another console to connect.

The user on 'TypeR A' has pressed the 'Force disconnect' button. When the 'Disconnect' confirmation button in the dialogue box is pressed, this turns off the current connected Controller's 'Try to connect' switch, thus disconnecting itself.

Note: if the 'Try to connect' field is returned to the ON state, it will poll that Remote console again at a higher frequency rate until an OK to connect message is received. If a Console has its 'Try to connect' switch set to OFF, then no attempt will be made to connect, although the system will continue to poll at a low frequency rate to establish its status. The status of the 'Try to connect' field is stored in the system settings of the host. As such, it is not affected by show or memory loading.

FIG. 3 - REMOTE CONSOLES ACCESS - FORCE DISCONNECT OF CONTROLLER

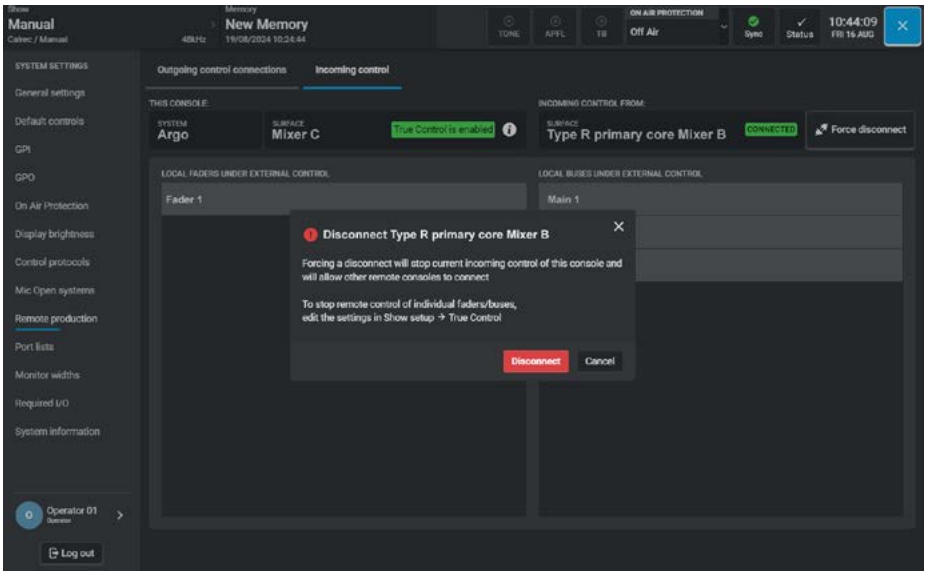
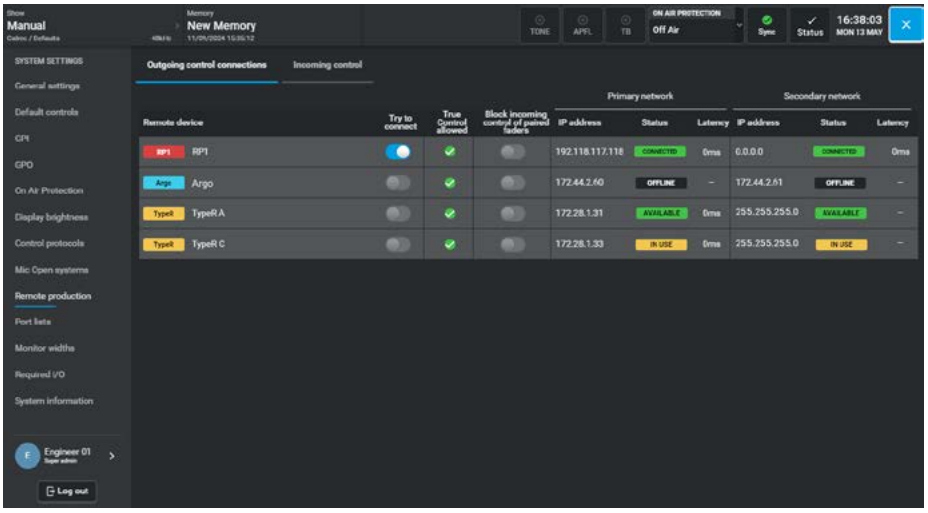


FIG. 4 - REMOTE CONSOLES ACCESS - CONNECTIONS TO RP1



In the example shown in Fig. 4, the Type R 'TypeR C' console is acting as the Controller for RP1 'RP1'. Once connected, the RP1 Faders & Aux Master Fader parameters, and the routing between them, is established and sent from the RP1 to set up the Remote faders, the Remote aux master parameters and the routing between them on the Type R 'TypeR C' console as Controller.

The other important control available to a Controller is the 'Block incoming control of paired faders' switch. If this switch is OFF (which is the case during setup), the Remote console parameters are sent to the controller.

However, if the 'Block incoming control of paired faders' switch is ON (which is usually the case during a transmission), the Remote console parameters are sent from the Controller. This latter setting is used to prevent the Remote console from accidently altering control settings that have been made when 'On-Air'. For a further description of the 'Block incoming control of paired faders' function, along with all other features relating to RP1, see the '**Remote Production RP1 System Manual Impulse Edition (926-332)**'.

REMOTE PRODUCTION RP1 OPTION

Argo Consoles have the ability to act as 'Host Consoles' for the RP1 remote production unit.
The RP1 remote production unit is designed to be a self-contained, compact mixing console, without a control surface.

RP1 allows the user to manage I/O and create zero-latency monitor mixes at venues globally, all from the familiarity of the Calrec console at the host production facility over long distance using IP services. For an overview of remote production, see '**Guide to remote production (926-253)**', downloadable from the Calrec website.

The RP1 unit is set up at the remote site using a Web browser interface called 'Calrec Assist', which can be accessed and controlled from the surface of an Argo console at the host studio either as a standalone system or as part of a network after it has been added as a 'Remote Network' in the host networks application. The operation and integration of the RP1 remote production unit with the Argo console range is the subject of a separate manual : **'Remote Production RP1 System Manual Impulse Edition (926-308)'**, which is downloadable from the Calrec website. In that manual is a chapter called 'Operation Via Host Console', which shows how to set up and operate the RP1 remote production unit via a host console, in this case Argo.

Parameter Control of Remote Paths
Once the RP1 is connected, Argo consoles currently allow the user to control a range of functions for the 'Remote Faders' & 'Remote Aux Masters' from the host, as shown in Fig. 1.

The table is arranged as Mono, Stereo & 5.1 remote fader types and Mono & Stereo remote aux master types arranged in columns. Each of the rows across the table represent a different parameter that can be controlled from the host console. In addition to the table, all the controls that are relevant to the RP1 remote faders and remote aux masters are available as wild controls.

FIG. 1 - REMOTE PATH PARAMETER CONTROLS FROM HOST

Mono RP1 Fader	Stereo RP1 Fader	5.1 RP1 Fader	Mono RP1 Aux	Stereo RP1 Aux
Fader Level	Fader Level Master	Fader Level Master	Fader Level	Fader Level Master
Cut	Cut Master	Cut Master	Cut	Cut Master
	Spill Fader Levels for L&R	Spill Fader Levels for LR, C, Lfe & LsRs		Spill Fader Level For L&R
	Spill Cuts For L&R	Spill Cuts For LR, C, Lfe & LsRs		Spill Cut For L&R
On the Processing Page Overview				
IP Trim Level	IP Triim Level Master	IP Trim Level Master		
	Spill IP Trim Levels for L&R	Spill IP Trim Levels for LR, C, Lfe & LsRs		
IP1-IP2 Switch	IP1-IP2 Switch	IP1-IP2 Switch		
Link IP1 & IP2 Trims	Link IP1 & IP2 Trims	Link IP1 & IP2 Trims		
Polarity M	Polarity L&R			
	IP Bal/IN	IP Bal/In on LR & LsRs		
	L>B & R>B	L>B & R>B on LR & LsRs Spill Legs		
	MS Decode	MS Decode on LR & LsRs Spill Legs		
Mic Gain (Protected)	Mic Gain (Protected) Master	Mic Gain (Protected) Master		
48v (Protected)	48L&48R (Protected) Master			
	Spill Mic Gains (Protected) For L&R	Spill Mic Gains (Protected) For LR, C, Lfe & LsRs		
	Spill 48v (Protected) For L&R	Spill 48L, 48R or 48v (Protected) For LR, C, Lfe & LsRs		
SRC (Protected) AES	SRCL&SRCR (Protected) Master			
	Spill SRC (Protected) For L&R	Spill SRC, SRCL, SRCR (Protected) For LR, C, Lfe & LsRs		
On the Sends & Routes Page for RP1 Aux Sends 1-12 from each RP1 fader.				
RP1 Aux Send Level	RP1 Aux Send Level Master	RP1 Aux Send Level Master		
RP1 Aux Send On/Off or Route on TFT	RP1 Aux Send On/Off Master or Route Master on TFT	RP1 Aux Send On/Off Master or Route Master on TFT		
RP1 Aux Send Pre Fader/ Post in Focus Window	RP1 Aux Send Pre-Fader/ Post Master in Focus Window	RP1 Aux Send Pre-Fader/Post Master in Focus Window		
	*RP1 Spill Aux Sends Levels, On/Off & Pre/Post	*RP1 Spill Aux Sends Levels, On/Off & Pre/Post	*Note these are as yet undefined for now Aux Sends are Masters Only*	
RP1 Stereo Aux Send Pan Position/In	RP1 Stereo Aux Send Pan Position/In Master			
	RP1 Spill to Stereo Aux Send Pan Positions/In For L&R	RP1 Spill to Stereo Aux Send Pan Positions/In For LR, C Lfe & LsRs		
On the Strips IP subpage for each Remote RP1 Fader				
IP1/2 Trim Level	IP1/2 Trim Level Master	IP1/2 Trim Level Master		
Mic Gain	Mic Gain Master	Mic Gain Master		
Polarity M	Polarity L&R			
	Stereo Width			
	IP1/2 Bal			
	IP2 button	IP2 Button		
On the Strips Aux Subpage for each Remote RP1 Fader				
RP1 Aux Send Level	RP1 Aux Send Level Master	RP1 Aux Send Level Master		
RP1 Aux Send On/Off	RP1 Aux Send On/Off Master	RP1 Aux Send On/Off Master		
RP1 Aux bank buttons	RP1 Aux bank buttons	RP1 Aux bank buttons		

PORT LISTS

Port lists

Ports can be assigned to various lists. Port Lists provide a way of filtering and ordering the information shown when patching ports. The user can put a specific set of ports into their own list, rather than having to search through the hundreds of ports that may be available on the network.

To access ports lists, navigate to System Settings>Port Lists from the sub-menu as shown in Fig. 1. The pages are arranged into Input Port Lists and Output Port Lists. In either case, the left side of the screen shows either the Receivers or all the User port lists that have been created. If the user has not yet created any port lists, the right side of the screen will be empty. Otherwise, this will show the last selected port list. Tapping the header folder opens the current set of port lists on the right side of the screen, each of which contains the user defined subset of input or output ports available from the IO network.

Note: the Receivers & Transmitters cannot be deleted. They are only affected by the IO streams available in the system. When IO boxes are brought online, these IO streams become available for use.

The right side of the screen is used to manage the selected port list, allowing the user to create a New port list, Add or Move ports to an existing port list, Label ports in a port list or Remove ports from the various existing port lists.

Creating lists

To create a new user port list, the user taps the 'New port list' button from the right side of the footer. A pop-up will appear, prompting the user to name the new list as shown in Fig. 3. Once created using the on-screen keyboard, the new list appears below the default lists and will initially be empty. The next step would be to add ports into this new list from the Default list. Alternatively, the user can select ports first from the left side of the screen and then tap the 'New port list' button, creating a new port list with the selected ports already added.

FIG. 1 - INPUT RX RECEIVERS & USER RX PORT LISTS

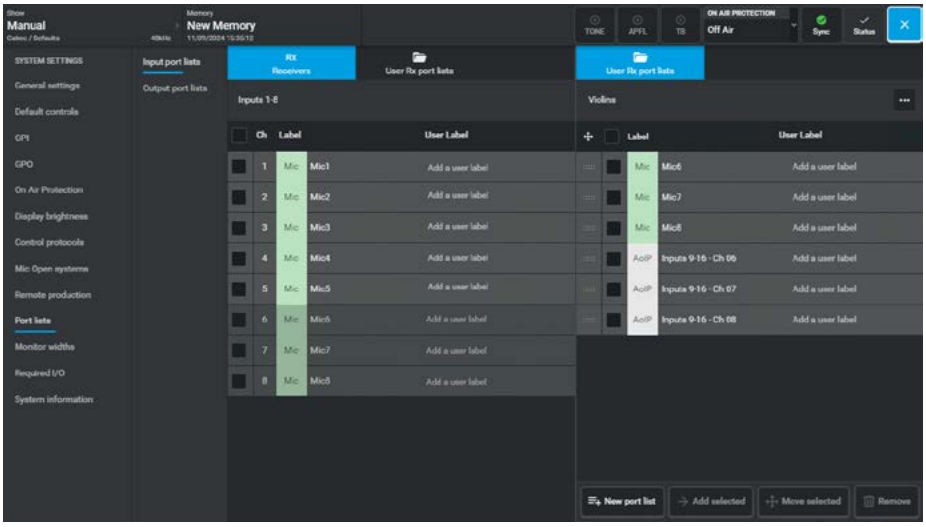


FIG. 2 - OUTPUT TX TRANSMITTERS & USER TX PORT LISTS

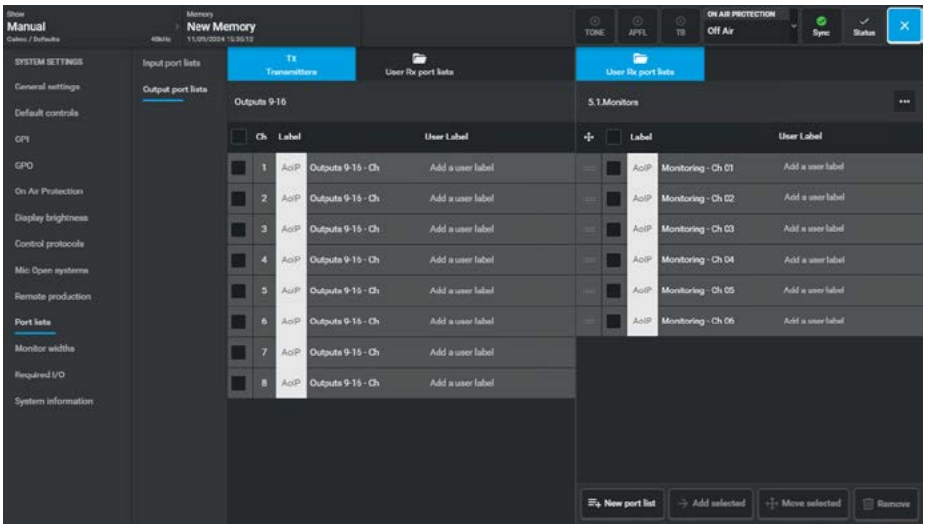
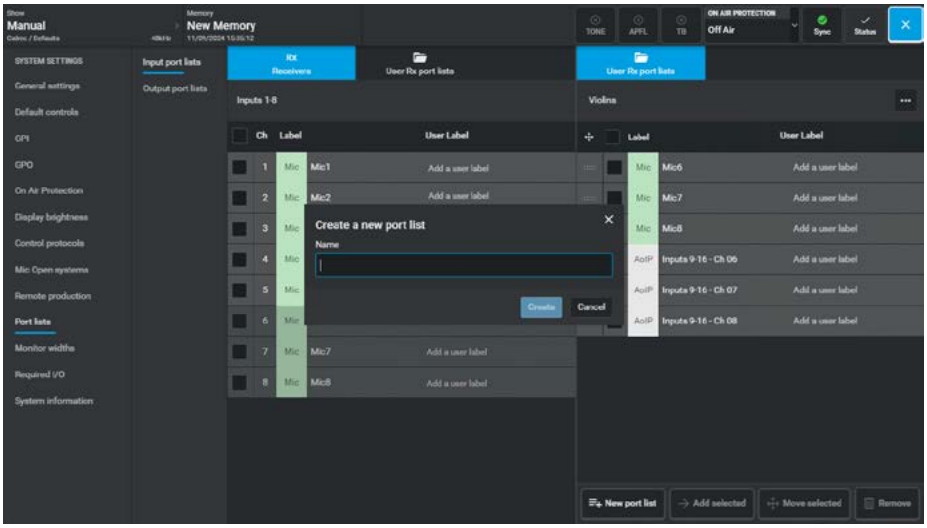


FIG. 3 - CREATING A NEW USER PORT LIST



Port List Options

The Port Lists displayed in the right side of the screen can have various options applied to them. These are accessed by tapping the **'. . .'** area, as highlighted in Fig. 4.

When tapped, the Port List options dropdown appears. This allows the user to either:

- Rename the Port List
- Remove/Delete the Port List
- Duplicate the Port List

Renaming Port Lists

To rename a port list, the user selects the required port list before tapping on the port list options **'. . .'** area. From the dropdown, the user then taps the 'Rename' button to open a pop-up dialogue.

The 'Rename port list' dialogue allows the user to enter a different name for the Port List using the on-screen keyboard.

The user then either taps **'Rename'** in the dialogue box or **'Cancel'** if not required, as shown in Fig. 5.

Removing Port Lists

To remove a port list, the user selects the required port list and taps on the port list options **'. . .'** area. From the dropdown, the user taps the **'Remove'** button to open a pop-up dialogue.

The 'Delete port list' dialogue asks for confirmation of the removal. The user then either taps **'Delete'** in the dialogue box or **'Cancel'** if not required, as shown in Fig. 6.

FIG. 4 - PORT LIST OPTIONS

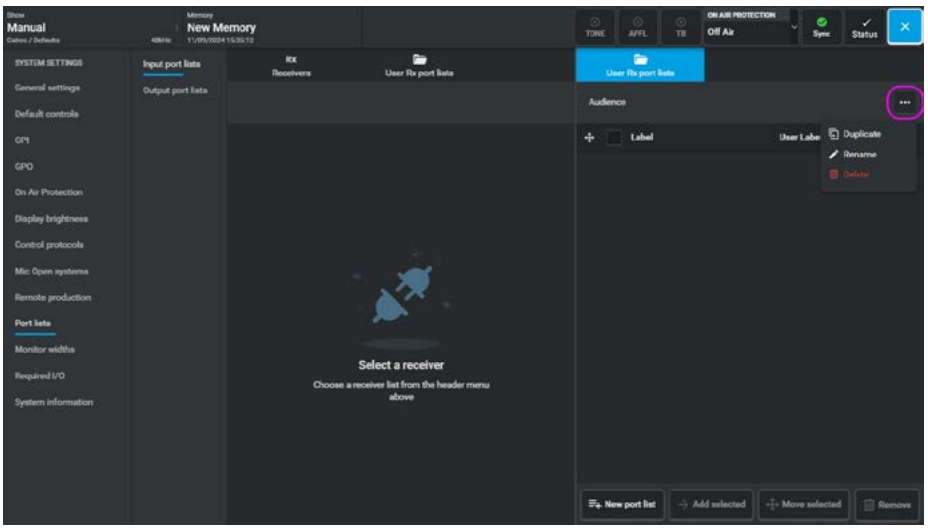


FIG. 5 - RENAME PORT LIST

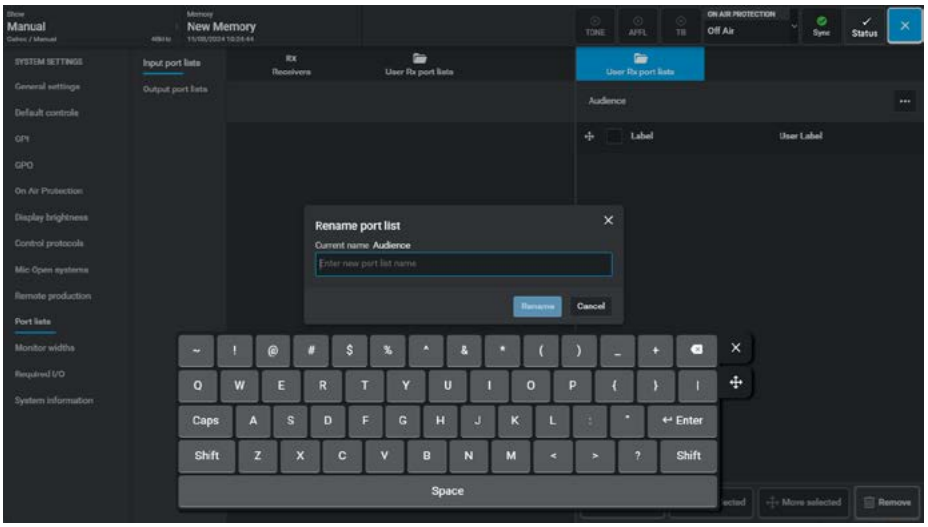
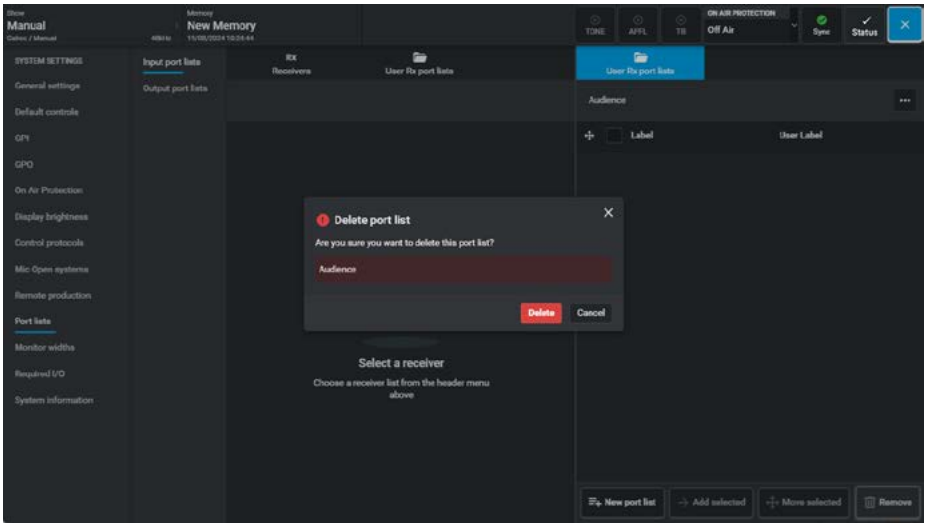


FIG. 6 - REMOVE PORT LIST



Duplicating Port Lists
To duplicate a port list, the user selects the required list before tapping the port list options **'. . .'** area. From the dropdown, the user then taps the 'Duplicate' button. This creates an exact copy of the selected port list and names it as **'New port list 1',** as shown in Fig. 7.

Port Labelling
Each port in the system can be given a local port label. This allows the port to be more easily identified than when using the network port label, e.g., SM58-3, rather than Mic7, as shown in Fig. 8.

The user selects a port to highlight it on the right side of the screen before tapping the 'Add a user label' area of the port**.**

This opens the label dialogue adjacent to the port entry, allowing the user to enter the required name in the entry field using the on-screen keyboard..

Each label is updated when the 'tick' is selected. Conversely, the 'X' cancels the change.

Fig. 9 shows the user entering labels for a Transmitter port list, which is an 8 channel stream feeding a 5.1.2 Monitor. Label entry is again inputted using the on-screen keyboard.

Re-ordering ports in a port list
In the right side of the screen, each port has an ordering icon **': : : :'**. The user may want to re-order the ports as they appear in the port list for ease of IO patching at a later stage.

If the user taps and drags on the icon, the associated port entry can be moved up and down the list, enabling the user to re-order the ports as required.

In Fig. 9, the ports have been arranged so that they follow the ITU speaker order for a 5.1.2 monitor port list.

FIG. 7 - DUPLICATE PORT LIST

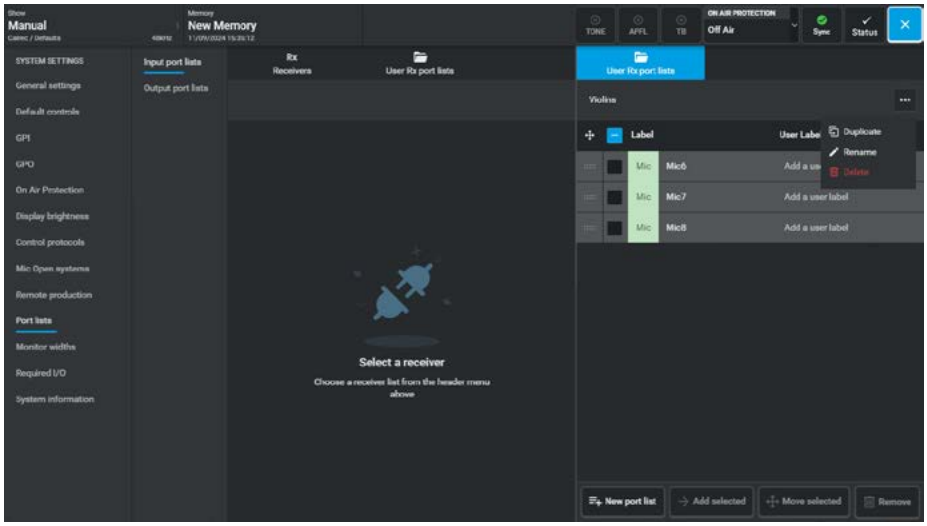


FIG. 8 - PORT LABELLING - INPUTS

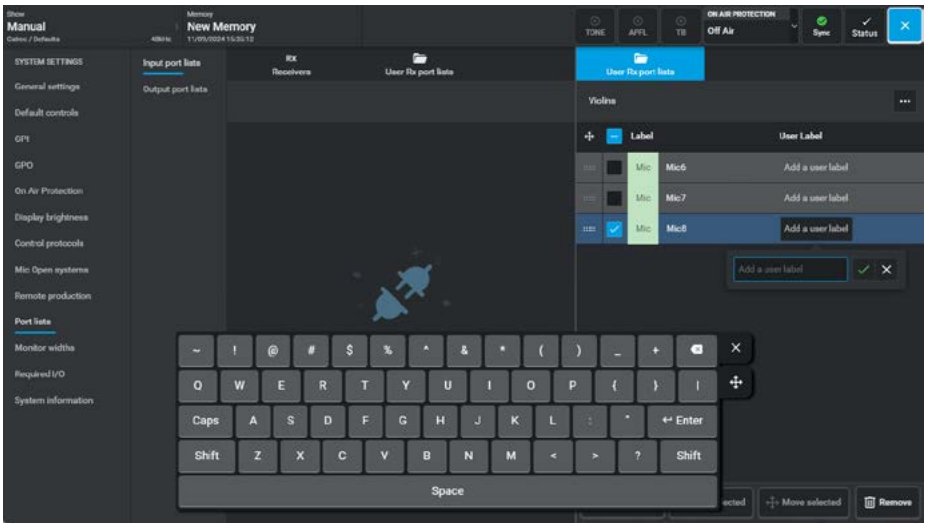
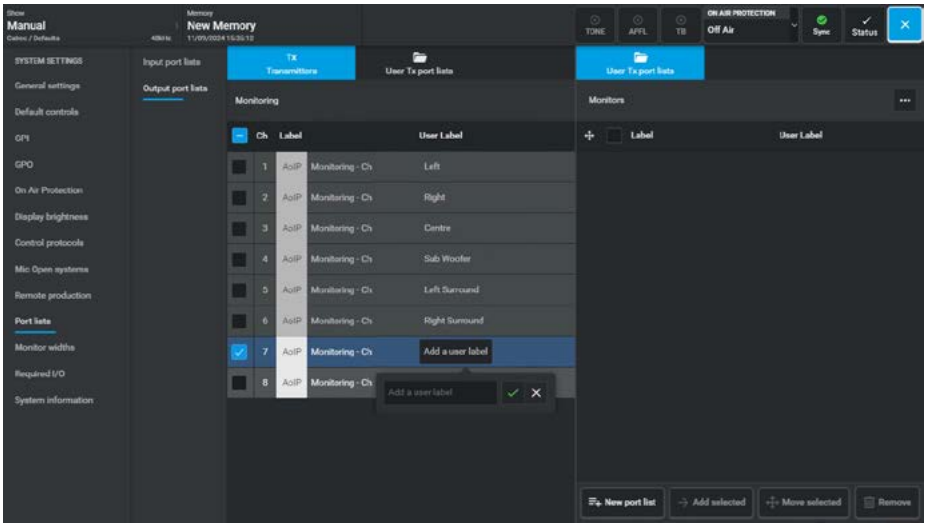


FIG. 9 - PORT LABELLING OUTPUTS



Adding ports to port lists
Ports can be added to port lists either directly from the Receiver or Transmitter streams, or from other port lists, by selecting the required ports in the required list, such as the Receivers list or the User Rx port list.

Here the 'Rx Inputs 1-4' port list in the left side, as shown in Fig. 10, has the 'Mic2' port selected. Touching the **'Add selected'** button in the right footer will add it to the port list.

The selected ports will appear in the port list on the right side of the screen.

Moving ports to other port lists
Ports can be moved to other port lists by selecting the required ports in the list, such as another User Rx port list.

Here, the 'Rx Inputs 1-4' port list in the left side, as shown in Fig. 11, has the 'Mic2' port selected. Touching the **'Move selected'** button in the right footer will move it to the 'Rx Inputs 5-8' port list in the right side. The selected ports will appear in the port list on the right side and be removed from the port list on the left side. The main difference between Add and Move is that in the move process, the ports are also removed from the source list.

Note: in the case of the Receiver or Transmitter streams, the ports cannot be removed from it via the move or remove process.

Removing ports from lists
To remove ports from a port list, select the required ports from that list and touch the 'Remove' button in the footer shown in Fig. 12. As the ports still exist in the Receiver or Transmitter streams, the selected ports are removed without confirmation.

To select/deselect all the ports in a port list, tap the icon box in the Label header area. This, in combination with the 'Remove' button, removes all the Mic selected ports from the port list.

FIG. 10 - ADDING PORTS TO PORT LISTS

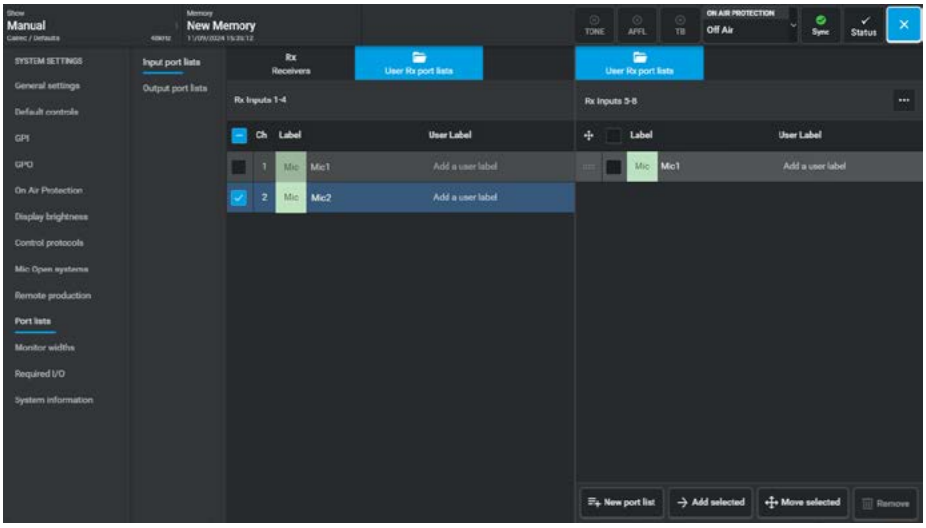


FIG. 11 - MOVING PORTS TO OTHER PORT LISTS

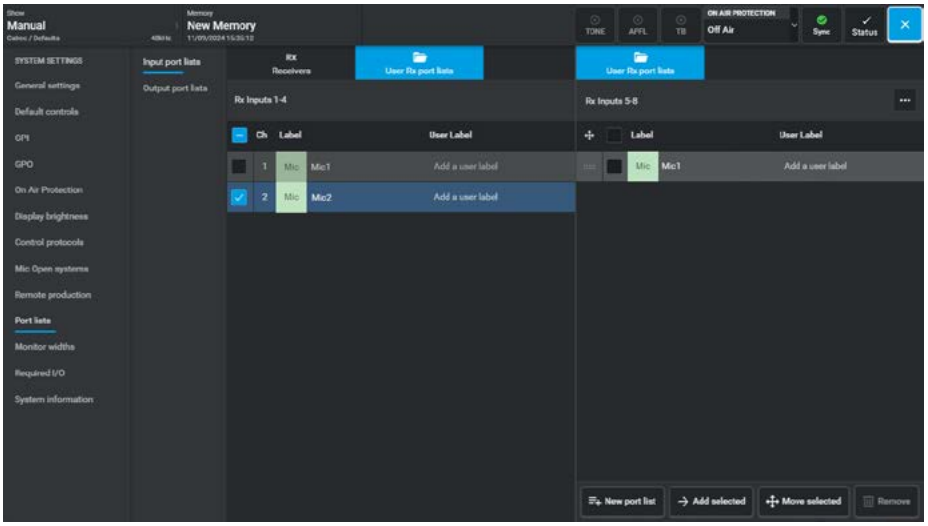
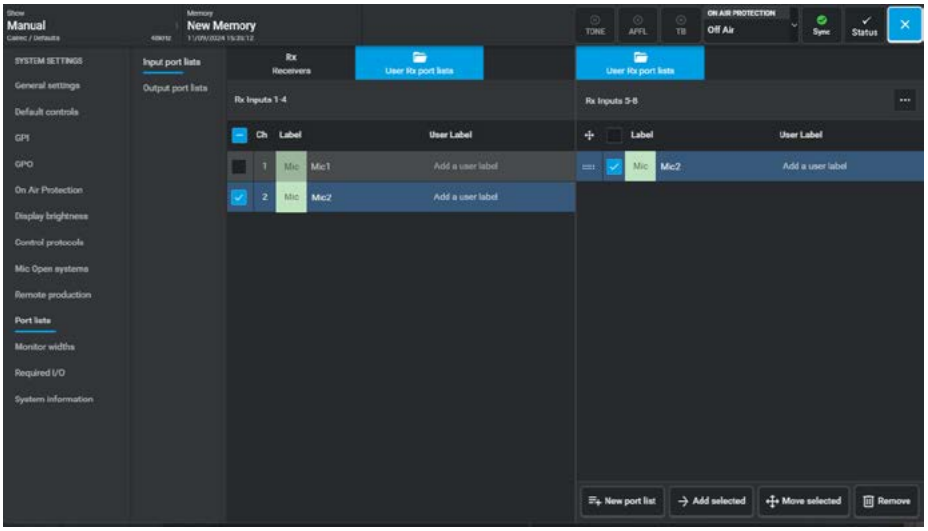


FIG. 12 - REMOVING PORTS FROM PORT LISTS



MONITOR WIDTHS

For Argo, the monitoring system provides fully immersive monitoring up to a 7.1.4 width in a 3D space for a variety of monitor outputs.

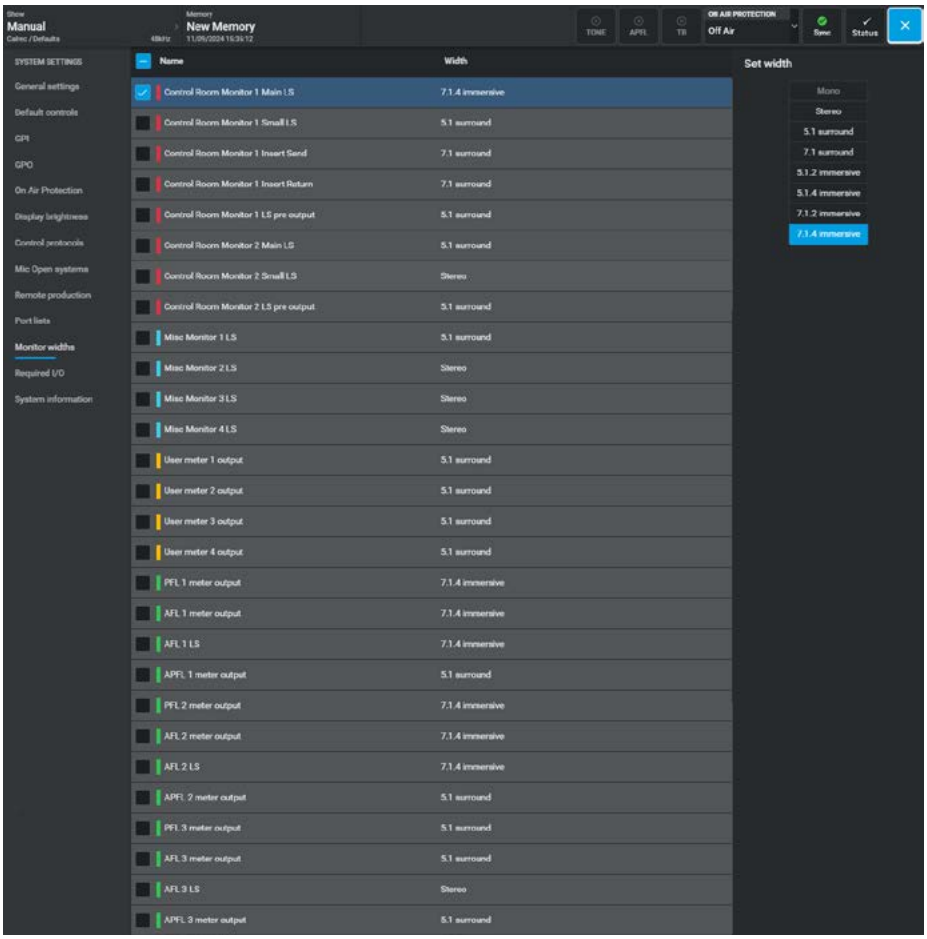
Each of the monitoring and metering outputs shown in Fig. 1 are capable of having their widths set not only to the Mono, Stereo & 5.1 settings, but also incorporates 7.1 surround and immersive monitoring widths that include height based speakers to provide a 3D sound field monitoring arrangement from 5.1.2 up to 7.1.4 widths. The final .2 or .4 indicates that there are either 2 or 4 speakers placed at ceiling height to provide a truly immersive experience.

The 5.1.2 width and 7.1.2 width monitoring system includes 2 height speakers, placed Left top front & Right top front. Conversely, the 5.1.4 and 7.1.4 width monitoring system includes 4 height speakers, placed Left top front, Right top front, Left top back & Right top back.

Channel Inputs, External Inputs, Groups and Mains are all capable of being set to immersive widths, so the monitoring system is designed to allow the user to listen to those inputs and mix outputs at those widths.

Note: Groups can also be set to height widths only, i.e., 0.0.2 and 0.0.4.
The monitor widths are setup on the System Settings>Monitor Widths page shown in Fig. 1.

FIG. 1 - MONITOR WIDTHS SELECTION



Selecting an output in the list highlights its current width in the Set Width column on the right. The user then selects its new width as required, remembering to patch the outputs for that output as needed.

The Control Room Monitor 1 & Control Room Monitor 2's Main, Small LS and LS pre-outputs, Misc Monitors 1-4, User Meter Outputs 1-4 and the PFL, AFL & APFL systems 1-3's metering and loudspeaker monitoring outputs can all be individually set to the required widths to listen to the immersive paths being monitored.

REQUIRED IO BOXES

The IO Box resource page shows the IO resources that are currently online and available to this Argo system.

To access the required I/O screen, tap the System Settings>Required IO entry in the sub-menu on the left side, as shown in Fig. 1.

The screen is spilt in two halves: the left side shows the 'Online Resources' available and the right side shows the 'Resources required by this console'.

Note: if the required resource does not appear in the right side list then it will NOT be available for use by this console.

Resources are automatically added when the Audio streams are created in the Connect application and the Virtual Patchbays are created in the Configure application.

To remove a resource from the required list, as shown in Fig. 2, the user taps the resource that is no longer required from the list on the right side of the screen to highlight that resource. The **'Remove'** button becomes available in the footer of the right side of the screen.

Tapping this opens the 'All required resources selected will be removed. Are you sure you want to do this?' dialogue in the right side of the footer.

Tapping the **'Remove'** button removes those resources from the right side of the screen, while tapping **'Cancel'** cancels this operation.

Note: When resources are removed, they cannot easily be re-added. Some resources are re-added on re-detection (TX/Rx) and others may require a reboot.

FIG. 1 - IO BOX RESOURCES ONLINE AND REQUIRED

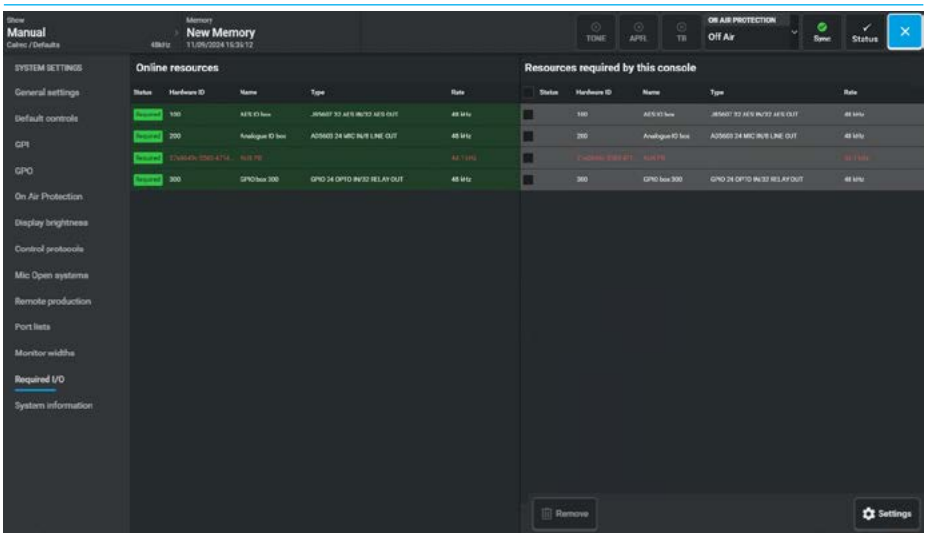
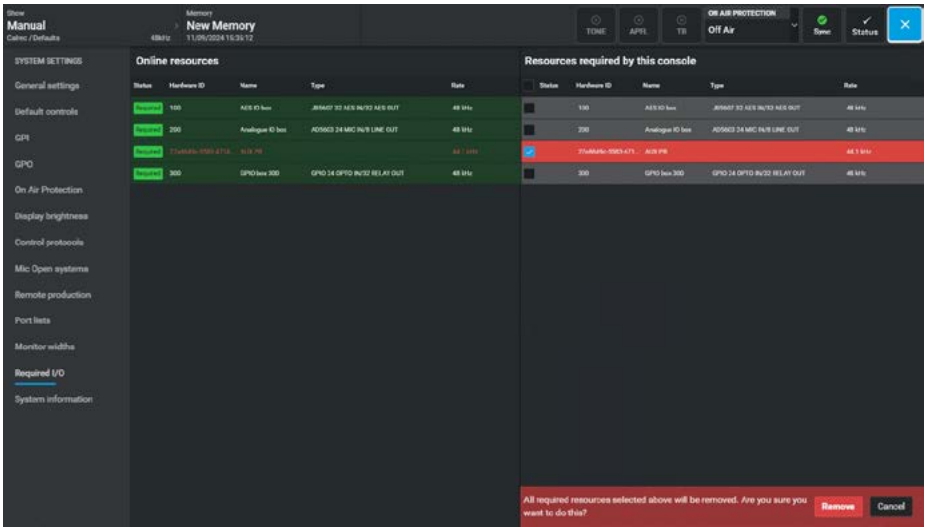


FIG. 2 - REMOVE RESOURCES



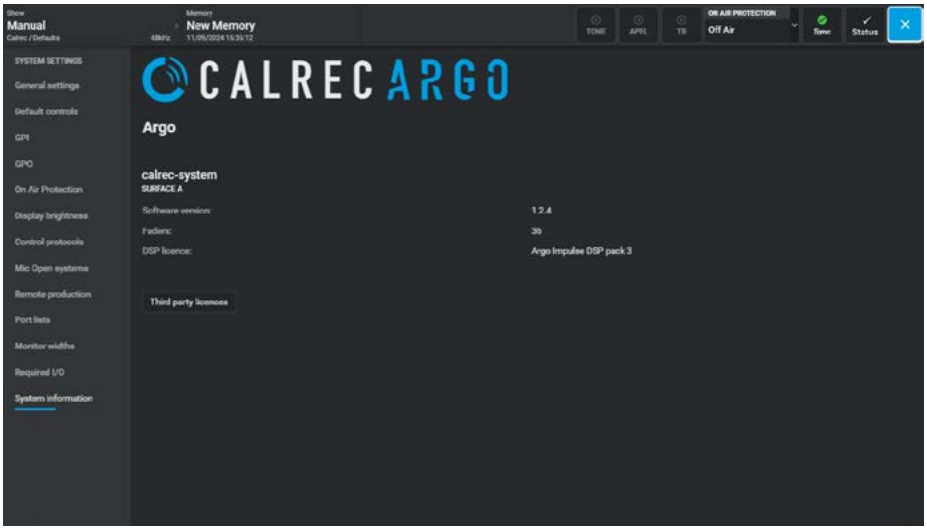
SYSTEM INFORMATION

To access the system information screen, tap the System Settings>System Information entry in the sub-menu on the left side, shown in Fig. 1.

It contains general information about:

- System Type
- Mixer A/B/C/D
- Software Version
- Number of Faders
- DSP Licence
- List of 3rd party licences used to create this application.

FIG. 1 - SYSTEM INFORMATION



ARGO
HEADER FACILITIES & TOOLS FOOTER

STATUS CLEAR FACILITIES

In the header of each Touchscreen there is a set of Status clear buttons.

Replay Clear

The Replay button in the header is lit when the Replay switch in Processing>Input -Settings dropdown is active, to indicate that all the selected channels have been switched to Input 2 as shown in Fig. 1. Tapping this button clears the Replay status, removing the button from the header.

Tone Clear

The Tone button in the header is lit when any path has Tone applied to it, as shown in Fig. 2. Tapping this button clears all active tone assignment and the button greys out.

APFL Clear

The APFL button in the header is lit when any path has either PFL or AFL applied to it, as shown in Fig. 3. Tapping this button clears all PFL and AFL active assignments and the button greys out.

TB Clear

The TB button in the header is lit when any path has Talkback applied to it, as shown in Fig. 4. Tapping this button clears all latched Talkback assignments (such as Direct outputs) and the button greys out.

Note: For momentary talkback on the surface, the TB indicator lights for as long as the selected TB button is held down. Releasing deactivates the talkback unless there is another active talkback in use. It is also possible to Trigger Talkback via GPI.

Fader Scroll Clear

The Scroll button in the header is lit when the faders on the surface have been scrolled away from its default position, as shown in Fig. 4. Tapping this button returns the faders to their default positions, removing the button from the header.

Contribution Clear

The Contribution button in the header is lit when the routing contribution mode is active, as shown in Fig. 6. Tapping this button cancels the contribution mode, removing the button from the header.

FIG. 1 - REPLAY CLEAR

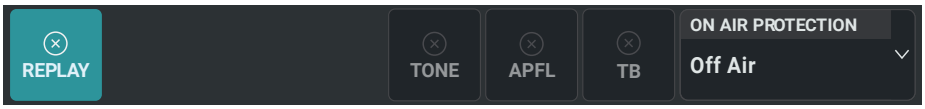


FIG. 2 - TONE CLEAR

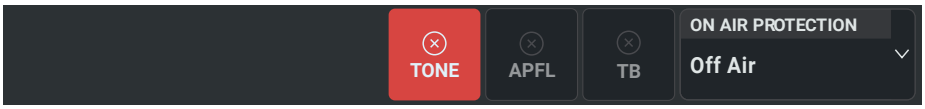


FIG. 3 - APFL CLEAR

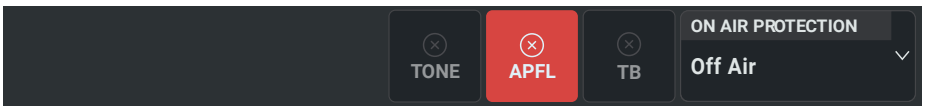


FIG. 4 - TALKBACK CLEAR

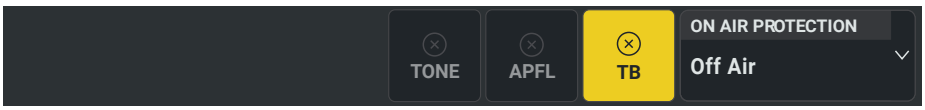


FIG. 5 - FADER SCROLL CLEAR

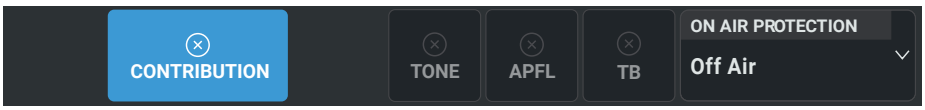
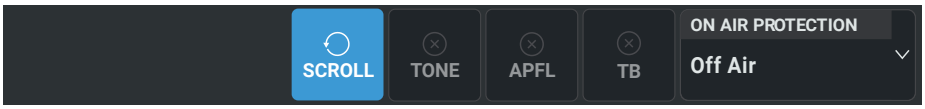


FIG. 6 - CONTRIBUTION CLEAR



ON-AIR PROTECTION

In the header of each Touchscreen there is an On-Air Status box which can set the On-Air, Rehearse and Off-Air condition for the Argo system.

The images to the right show the three states of the On-Air status.

The On-Air status determines a number of other functional states in the system. For example, when **'On-Air'** is activated, as shown in Fig. 1, the tone and talkback to main is disabled and the three On-Air status states have an effect on the mic open systems, see **"Mic Open Systems" on page 303.**

The Rehearse and Off-air status images are shown in Fig. 2 and Fig. 3 respectively.

The user can set the On-Air state by tapping the **'On-Air Protection'** status box in the Access header. This provides a dropdown from which the user can select one of the three states. Alternatively, the user can switch states at any time using GPIs.

Argo provides two GP inputs labelled '**Ext On Air Signal'** and **'Ext Rehearse Signal'**. The relevant function is active while the selected GPI signal is active.

If both a GPI function and a user selection of state are active, then the highest selection takes priority. From high to low, this is: On-Air, Rehearse, Off-Air.

If both GPI functions are active, the **'On-Air'** GPI function will take priority over the **'Rehearse'** GPI function.

Argo also provides two GP outputs, which are labelled **'On Air Signal'** and **'Rehearse Signal'**. When the relevant function is active, the selected GPOs can be used to provide external control signals such as to control indicators outside a Control Room or Studio.

FIG. 1 - ON-AIR STATUS

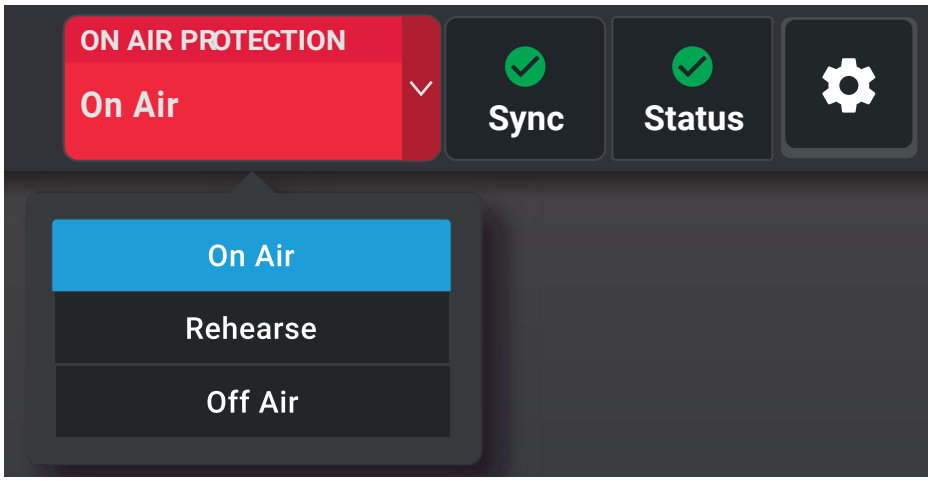


FIG. 2 - REHEARSE STATUS

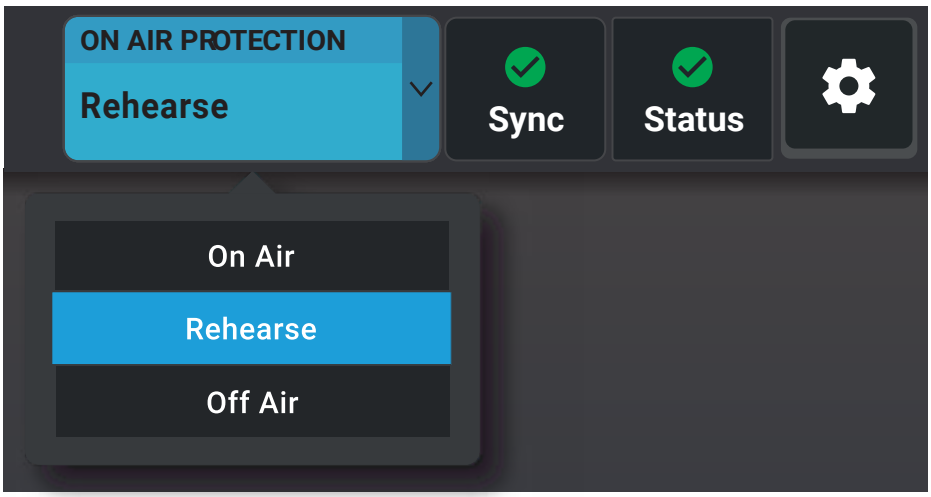
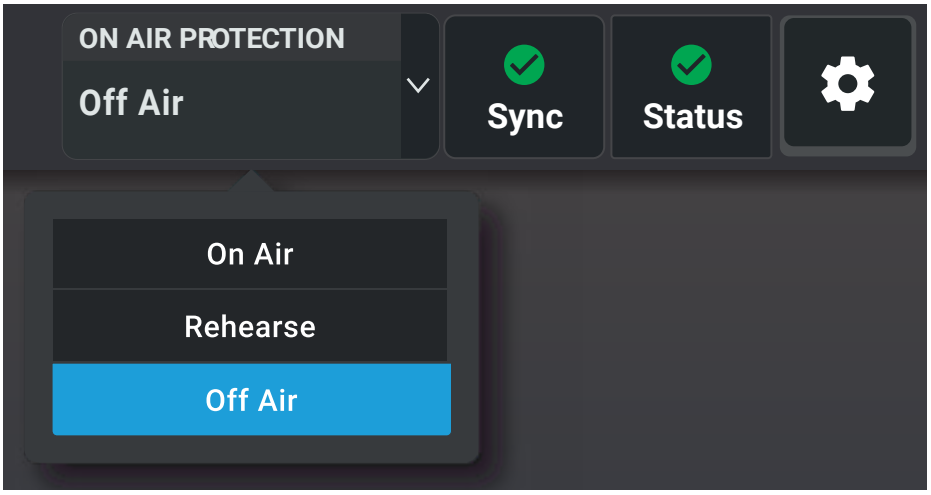


FIG. 3 - OFF-AIR STATUS



SYNC STATUS

Argo features Sync Status messaging. This reports the current sync state and is accessed from the header on each touchscreen.

The System monitors all sync components with respect to PTP clock sources.

Sync status notifications
Under normal operating circumstances, the system status notifications area to the right of the On-Air Protection block in the Access header will show a 'tick' mark to show that everything is OK and that a valid PTP clock source is being received.

Tapping the '**Sync**' button in the Access header provides a dropdown displaying the Current PTP Sync state of each core, as shown in Fig. 1.

The active sync source also indicates whether the core is acting as a PTP master or as a PTP slave, as well as which source the core's clock is currently referenced to.

Note: the PTP settings are configured from the Connect application and are also shown in the Configure application, which offers additional Synchronisation options.

In addition to acting as a PTP slave, there are Wordclock and a number of Video sync input selections available in the '**Configure**' application, which can be used to provide a sync reference to a core but only while that core is acting as a PTP master.

Note: Video sync is only available if using the Argo surface with an Impulse core, not Impulse 1/ImpulseV

FIG. 1 - CURRENT SYNC STATUS PTP SLAVE FROM EXTERNAL PTP CLOCK

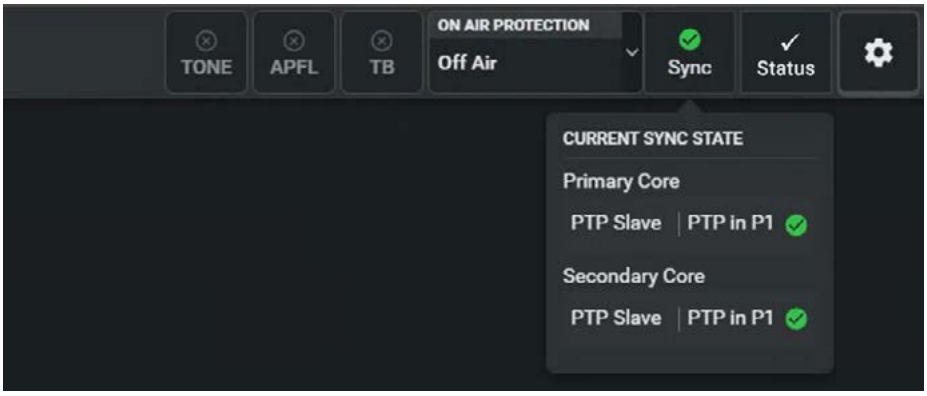


FIG. 2 - CURRENT SYNC STATUS PTP MASTER FROM CORE REFERENCED TO WORDCLOCK

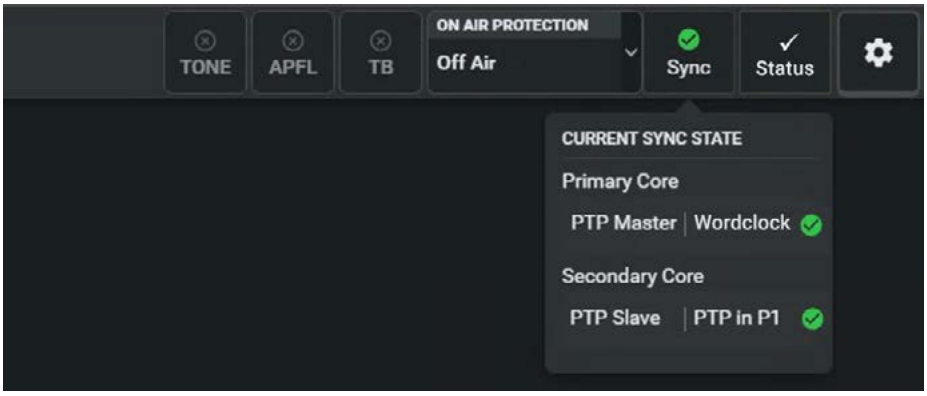


Fig. 2 shows that the Sync status has changed and that while the Secondary core is still synced as a PTP slave, the Primary Core is now acting as a PTP master, but referenced to a 48kHz Wordclock sync input.

Note: these sync inputs are unused when the core is acting as a PTP slave (as shown in Fig. 1). In this case, the core's clock is being referenced to one of the PTP inputs (P1) instead, which is coming from an external AoIP IO box.

SYSTEM STATUS

Argo features System Status messaging to report warnings, errors and system information. This is accessed from the header on each touchscreen.

System status monitors all system components and connections.

System status notifications

Under normal operating circumstances, the system status notifications area to the right of the header will display a 'tick' mark to show that everything is OK and that there are 'No events to display", see Fig. 1.

In the event that a message needs to be displayed, the notifications area will display the relevant colour depending on the message type.

Information (blue), a warning (amber) or an error (red) message.

Tapping on this notification area will open the system status screen.

The most serious notification will be shown as a priority, i.e., error messages, then warning messages, then information messages, as shown in Fig. 2 with a red indicator.

Message types

Three types of message are reported by system status:

Error Messages

Reports serious errors that could cause or has caused the system to fail.

Normally, this requires user intervention to correct the problem before operation can continue.

FIG. 1 - SYSTEM STATUS DROPDOWN FROM ACCESS HEADER - OK STATE

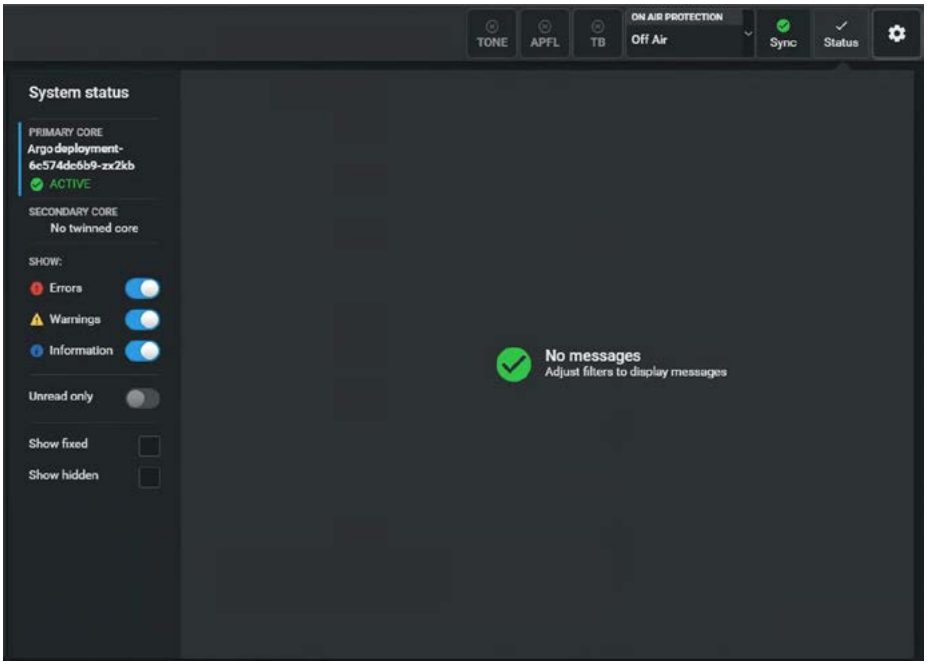
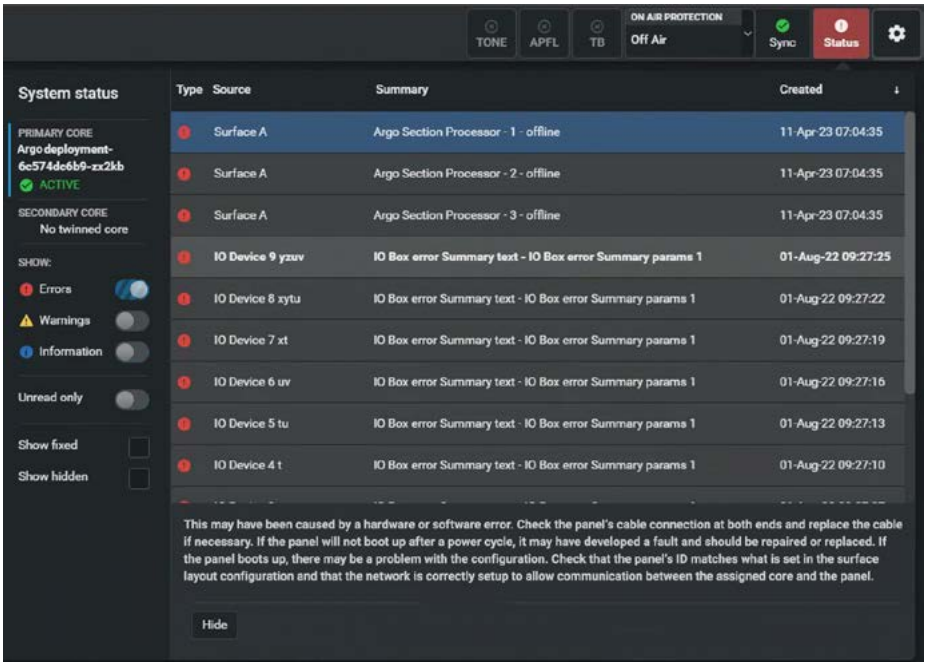


FIG. 2 - SYSTEM STATUS DROPDOWN FROM ACCESS HEADER - ERROR STATE



Warning Messages
Warning messages indicate where the system has located a fault or failure, but will still operate without intervention from the user, see Fig. 3 with a yellow warning indicator.

Certain messages should be checked as the system may be running on its secondary components.

Information Messages
Informs the user when certain actions take place. They do not report errors and no action needs to be taken to respond to them. See Fig. 4 with a blue indicator.

Managing Messages
The messages are reported in a list. Each message in the list has an associated icon shown in the left column.

This identifies the type of message to the user. Message types can be filtered using the buttons in the left-hand panel. The top 3 slider switches are used to select Error, Warning & Information message types, either individually or in combination.

The 4th switch labelled Unread only allows the user to hide messages that have already been read. Read messages have a darker background, as shown in the second entry down in Fig. 4.

In addition, items that have been 'Fixed' or 'Hidden' can be included or excluded from the status list using the 'Show fixed' and 'Show hidden' check boxes.

Selecting a message in the list will update the selected entry description window area on the bottom right of the display to show the message in greater detail.

Figs 2, 3 & 4 all show a hide button when a message is selected. If the **'Hide'** button is pressed the 'Eye' icon appears, indicating that the message it hidden, as shown in Fig. 3. Likewise, the 'Show hidden' checkbox is active.

FIG. 3 -SYSTEM STATUS DROPDOWN FROM ACCESS HEADER - WARNING STATE

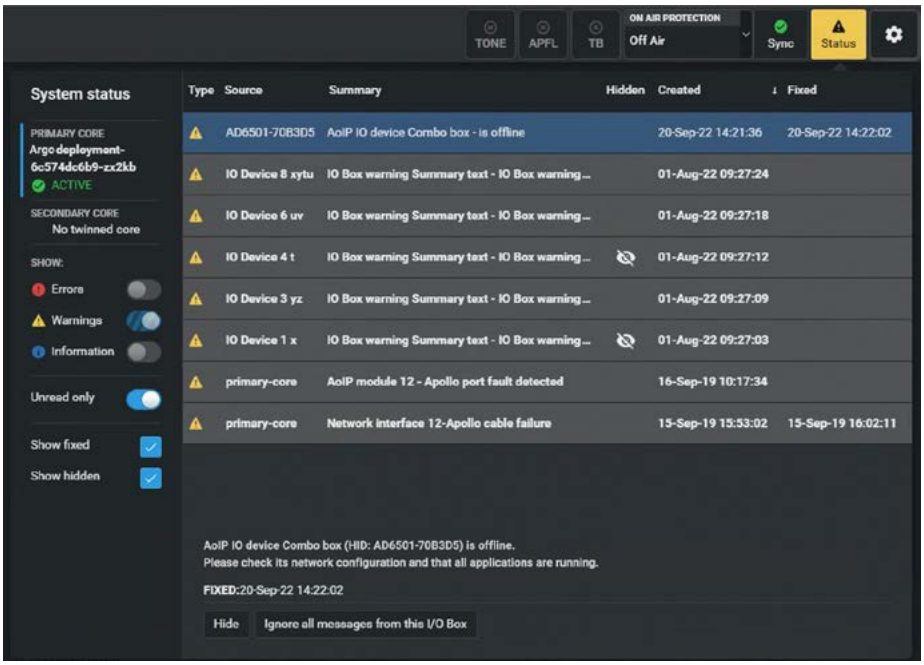
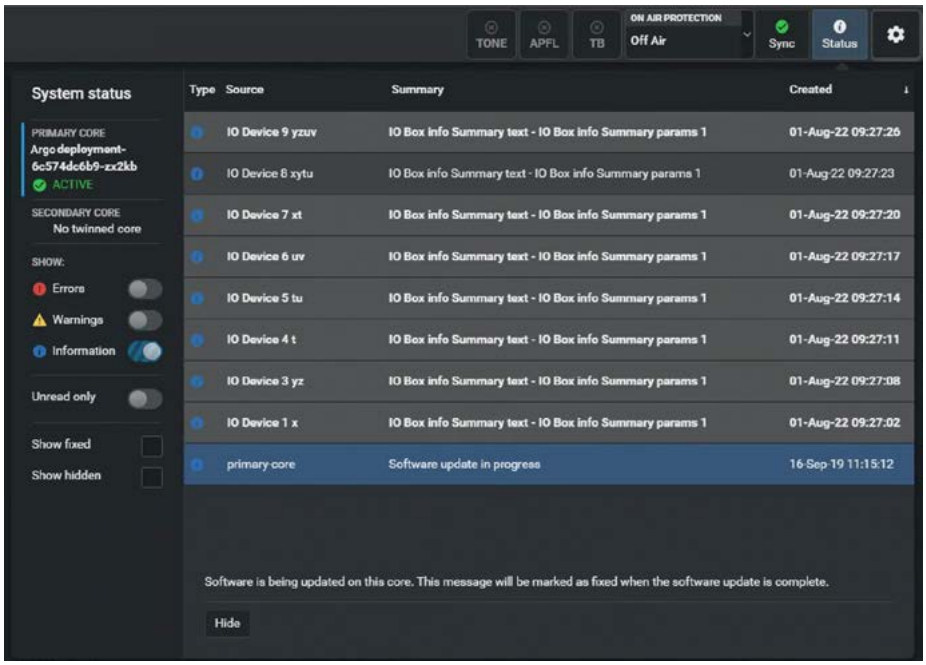


FIG. 4 -SYSTEM STATUS DROPDOWN FROM ACCESS HEADER - INFO STATE



To 'Unhide' them again, uncheck the 'Show hidden' checkbox and select the message(s) with the 'Eye' icon. The **'Hide'** button below will now act as an **'Unhide'** button. In some situations, an I/O box may be connected to the system but not be required for this production.

To avoid receiving unwanted messages from that box, as it would if it goes offline and starts sending error messages, the user can select it and click on the **'Ignore all messages from this I/O Box'** button as shown in Fig. 3. This then blocks all its messages to the system.

Reboot Core
Also shown in the left-hand panel is the 'Reboot Core' button, highlighted in

Fig. 5. Pressing this button will reboot the core, subsequently rebooting any mixer running within that core.

Note: if this button is not present, as is the case in Figs 3 & 4 on the previous page, then they will have been set to be restricted, as most users do not require this function. If the user wishes for this button to be present, please contact our Customer Support team or your local distributor for guidance.

When the user presses the 'Reboot core' button, all mixers running within the core will reboot.

When using a redundant system, the rebooting of this core will force a changeover, with the secondary core taking over as primary. Once the core has rebooted, what was the primary core will reboot to a stand-by state.

Having pressed the 'Reboot core' button, the user is prompted with a message, warning that 'Operation of all mixers configured on this core will be interrupted. Audio will be interrupted. Remote connections to this core will be disconnected.'

The user must consider all repercussions of rebooting the core, as this will have a major impact on mixers, audio and remote connections that rely on this core.

Pressing 'Reboot' confirms the rebooting of the core, while pressing 'Cancel' will cancel the reboot.

FIG. 5 - REBOOT CORE

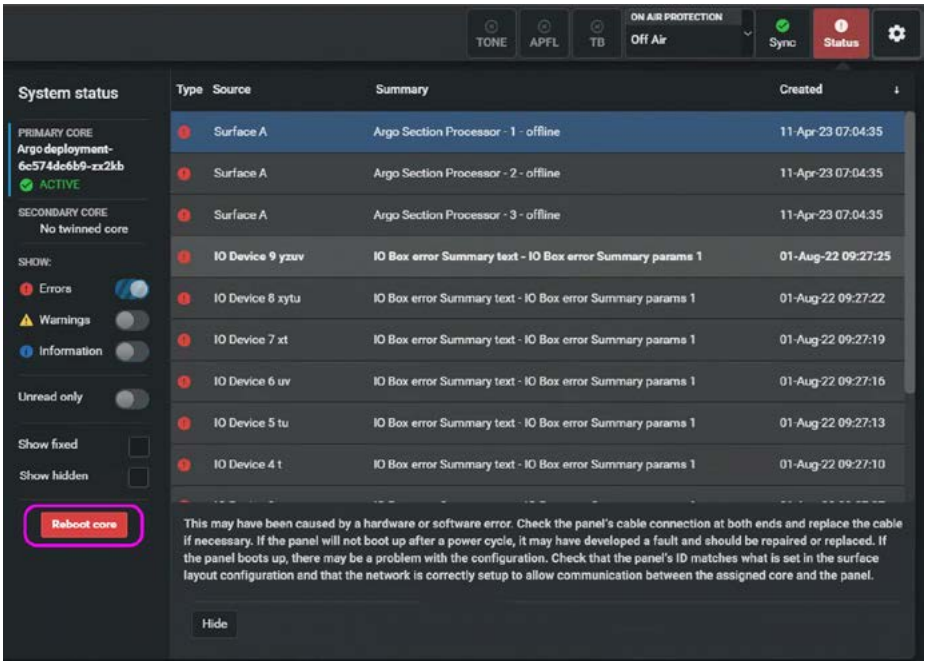
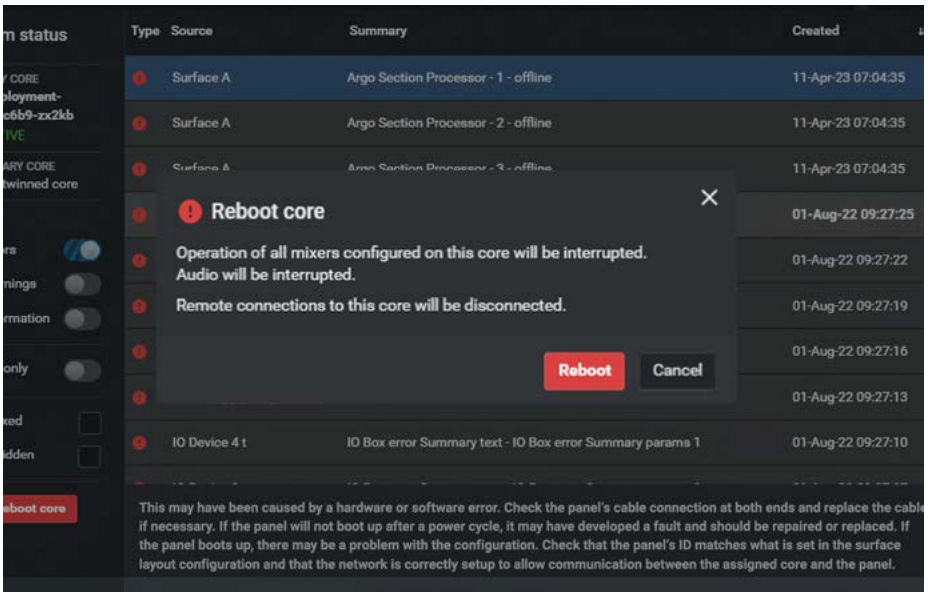


FIG. 6 - REBOOT CORE WARNING MESSAGES



FOOTER MONITORING

Monitoring from the Footer

Many of the controls available from Monitoring can also be accessed from the Monitoring section of the footer. This section is located in the right-hand side of the footer. The user must have already selected the 'speaker' icon to access this view as shown in Figs 1 & 2.

When in a minimised view (as it is for the images in this manual) the user can view the monitoring level, source selection and source information. The user can also CUT and DIM the monitoring mix as required, without needing to access the Monitoring pages.

If the user wishes to access more monitoring tools without accessing the Monitoring pages, tapping the monitoring section of the footer opens the view shown in Fig. 1. Here, the user has access to the same controls described in Area 4 of the monitoring pages, as shown and described in "**Control Room Monitoring" on page 188**.

Note: from the footer pop-up shown in Fig. 1, only favourites are available for source selection. If the user wishes to select a source that the user has not previously added to favourites, they must navigate to the Monitoring pages to do so.

The user can also access controls relating to the 4 Misc Monitors, see Fig. 2. Since Dim adjust, Small LS level, PFL level and AFL level are not applicable to the 4 Misc Monitors, these controls are greyed out.

FIG. 1 - CR MONITORING FOOTER



FIG. 2 - MISC MONITORING FOOTER



COPY AND PASTE

This tools facility in the footer makes it quick and easy to copy properties from one path and paste them to another. This can be viewed instead of the monitoring information area of the footer by tapping the 'tools' icon, shown in the images in this section.

The user accesses the path from which they wish to copy any properties from, before tapping **'Copy',** as highlighted in the tools footer as shown in Fig. 1.

This opens the 'Copy path parameters' dialogue box shown in Fig. 2.

The user then selects the parameters to copy, or taps **'Select all'** or **'Select none'** if required, before tapping **'Copy'** or **'Cancel'** as required.

Note: if 'Select None' is selected, the 'Copy' button will be greyed out.

To apply the copied properties, the user selects the path(s) sequentially to paste the properties to, then taps **'Paste'** in the Function Header. The **'Paste'** selection remains available until the **'Cancel'** button in the footer is tapped.

If the user wishes to alter the content of the Paste buffer, they can tap the **'Edit Selection'** button in the footer.

This re-opens the Copy path parameters dialogue box. The user must tap **'Copy'** again to update the paste buffer, ready for further copying.

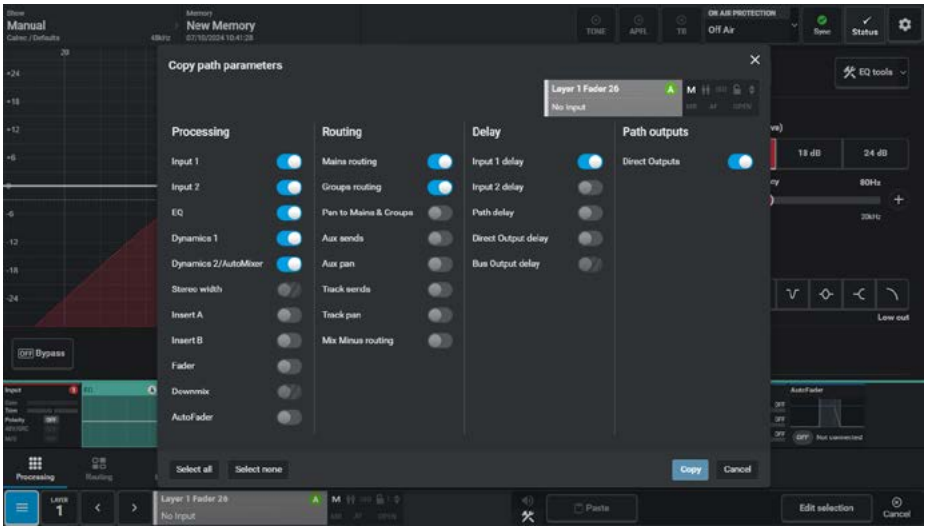
Once the user has finished copying the required parameters, tapping the **'Cancel'** button in the footer closes the Copy & Paste tools.

Note: When pasting path parameters that have been copied to a path that is in a Control Link, it is important to realise that ALL the paths in the control link will have their settings overwritten.

FIG. 1 - COPY FROM TOOLS FOOTER



FIG. 2 - COPY TEMPLATE DIALOGUE BOX



ISOLATE

This tools facility in the footer allows the user to Isolate parameters in the selected paths from change due to memory loads.

Isolate settings are stored in the continuous memory of each show. Therefore, each show may have different isolate settings.

Basic path isolation

Paths may be isolated using the **'ISO'** button in the Tools footer, as highlighted in Fig. 1. With this function selected on a fader, the paths on that fader will keep their current settings when a new memory is loaded.

The MEM ISO function may either be set as ISO full in blue, as shown in the footer in Fig. 2, or ISO partial in green, as shown in the footer in Fig. 3.

ISO Full means that all parameters of the selected path are isolated from memory loads, whereas ISO Partial means that only selected parameters have been chosen to be isolated from memory loads, the selection of which is determined by individually setting the various parameters to be included/excluded from isolation.

Setting the scope of memory isolation

Isolating a path does not necessarily mean that all settings associated with the path are isolated. It is possible to only isolate the EQ settings on a certain path, just the EQ and Input settings, or all or some of its routing.

To set the scope, touch the '^' part of the ISO button in the tools footer. This will open the Isolate path parameters dialogue box shown in Fig. 4.

The selected path has all the parameters applicable to it selected. Therefore, a Full Isolate would be applied.

To change the selection, tap the relevant switches to toggle the elements which should be isolated when the accessed path is isolated. The selected elements will illuminate.

FIG. 1 - ISOLATE FROM TOOLS FOOTER



FIG. 2 - ISOLATE FULL ACTIVE STATE AS SHOWN IN TOOLS FOOTER



FIG. 3 - ISOLATE PARTIAL ACTIVE STATES AS SHOWN IN TOOLS FOOTER



FIG. 4 - ISOLATE SCOPE DIALOGUE BOX FROM TOOLS FOOTER



The **'Isolate all'** and **'Isolate none'** buttons in the dialogue box switch all the elements on or off respectively.

When only a subset of the path parameters are set, the ISO button has a 'Partial' suffix in place of the 'Full' suffix.

Once the required isolate elements have been set, tapping the **'^'** part of the ISO button in the tools footer again, or anywhere else other than the dialogue box on the display, will exit the dialogue.

PRESETS

A preset is a complete copy of a path from which you can choose elements to load onto another path. Using presets can speed up the workflow when several paths with similar settings are required.

When a new preset is made, a full copy of the path is taken. Setting the scope of a preset defines which elements of the path are copied to a path when the preset is loaded. The scope of the preset can be set at any time.

Fig. 1 shows the Preset Dialogue box, accessed when the user taps the **'Presets'** button in the tools footer.

Creating a Preset Folder

To create a preset folder:

1. Tap **'Presets'** in the tools footer.
2. On the left side of the dialogue box, tap **'New'** to open the '**Create preset folder**' pop-up.

The user enters a label for the folder before tapping **'Create'** to make the folder as shown in Fig. 2.

Editing a Preset Folder Label

To Edit a Preset Folder label with the Preset dialogue box opened:

1. Select the Preset Folder to re-label.
2. On the left side of the dialogue box, tap **'Edit'** to open the '**Edit preset folder**' pop-up.
3. The user enters a different label for the folder before tapping **'Save'** to re-name the folder, as shown in Fig. 3.

FIG. 1 - PRESET DIALOGUE BOX FROM THE TOOLS FOOTER

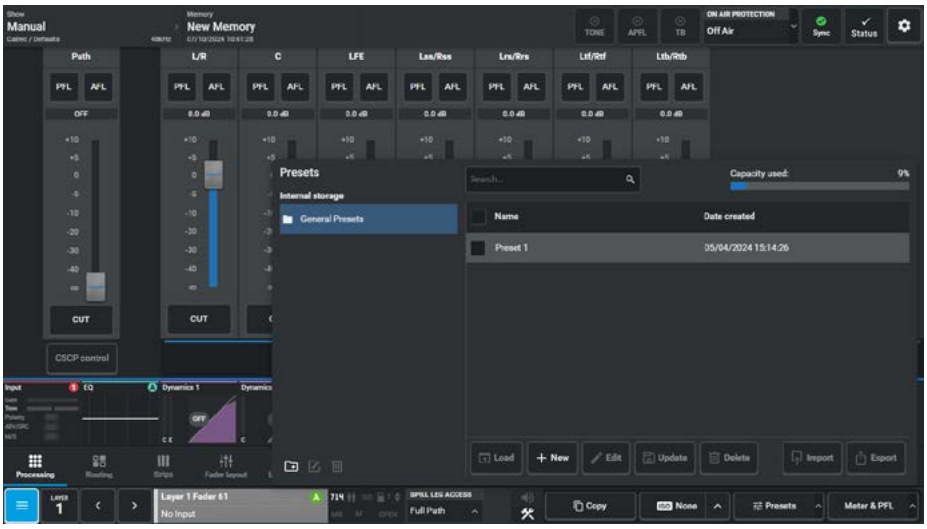


FIG. 2 - CREATE PRESET FOLDER

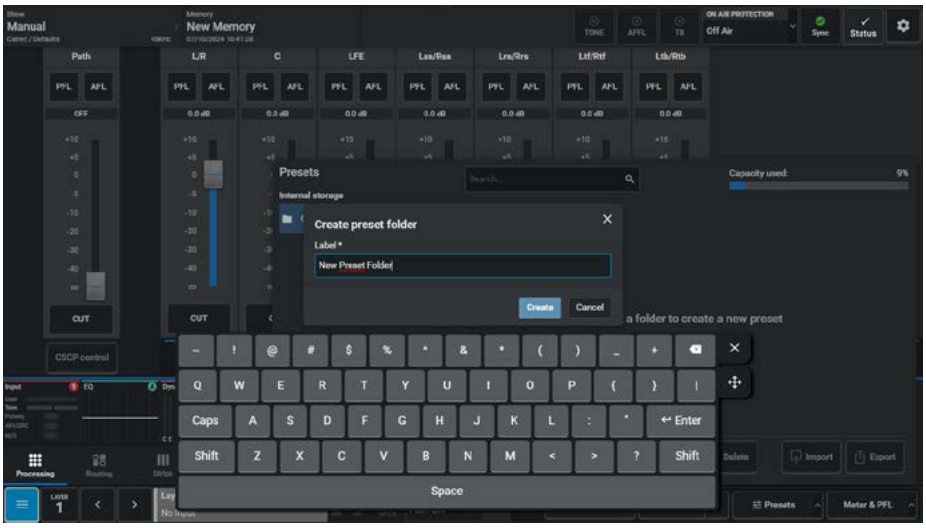


FIG. 3 - EDIT PRESET FOLDER LABEL



Deleting a Preset Folders

To delete a preset folder:

1. Tap **'Presets'** in the tools footer.
2. On the left side of the dropdown, select the folder(s) to be deleted.
3. Tap **'Delete'** to open the **'Delete selected folders"** pop-up.
4. The user taps **'Confirm'** to delete the folder, as shown in Fig. 4.

Note: all the Presets contained in the folder will also be deleted. 'Tickboxes' next to each entry can be used to select multiple folders & files to be deleted.

Creating Presets

To create a preset from the currently accessed path:

1. Tap 'Presets' in the function footer.
2. Navigate to where you wish to save the preset by first selecting a preset folder, or make a new preset folder if necessary.
3. Tap 'New' on the right side of the screen to open the 'Create Preset' pop-up, as shown right.
4. The path identifier block inset top right shows the source for the preset.
5. Slide the switches to the right for those parameters to be loaded when 'Load' is tapped on.
6. Fig. 5 shows all the parameters that can be loaded for this path type. The 'Select all'/'Select none' buttons can also be used for quick selection/ deselection.
7. The user enters a label for the preset in the top left corner.
8. Tapping 'Create Preset' then creates the preset and places it in the selected folder, see Fig. 5.

Editing a Preset Label

To Edit a Preset label with the Preset dialogue box open:

1. Select the Preset to label.
2. On the right side of the dialogue box, tap **'Edit'** to open the 'Edit preset' pop-up.
3. The user enters a label for the preset before tapping **'Save'** to rename the preset, as shown in Fig. 6.
4. The user may also alter the settings to be applied on loading the preset by changing the switch settings on the elements in the Edit preset box.

FIG. 4 - DELETE PRESET FOLDERS

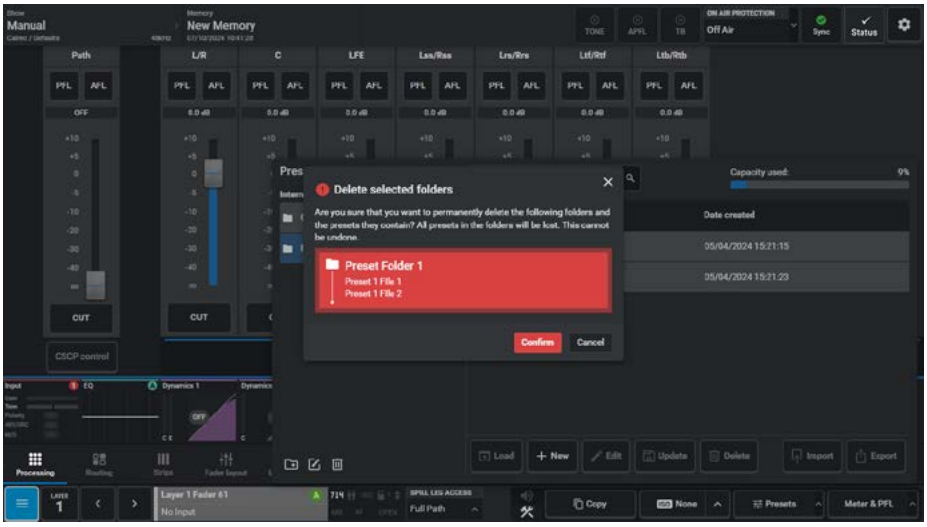


FIG. 5 - CREATE PRESET PARAMETERS

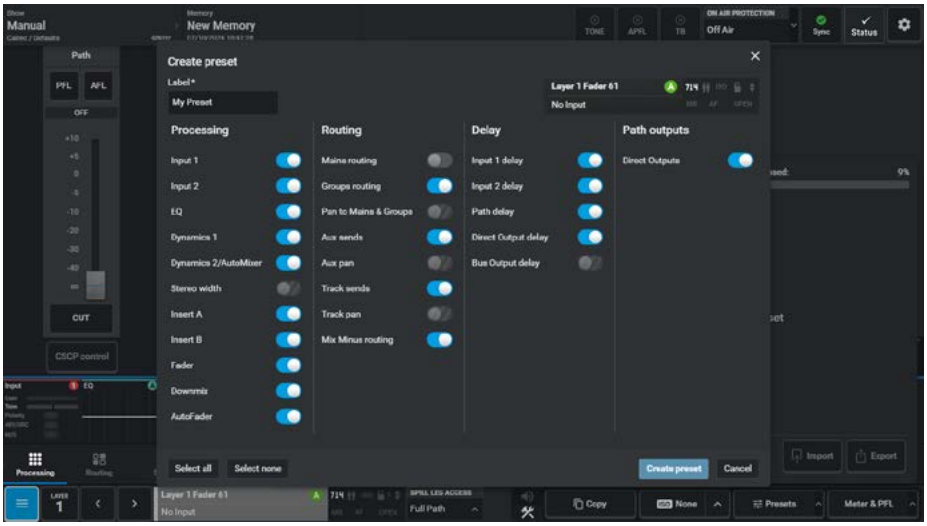
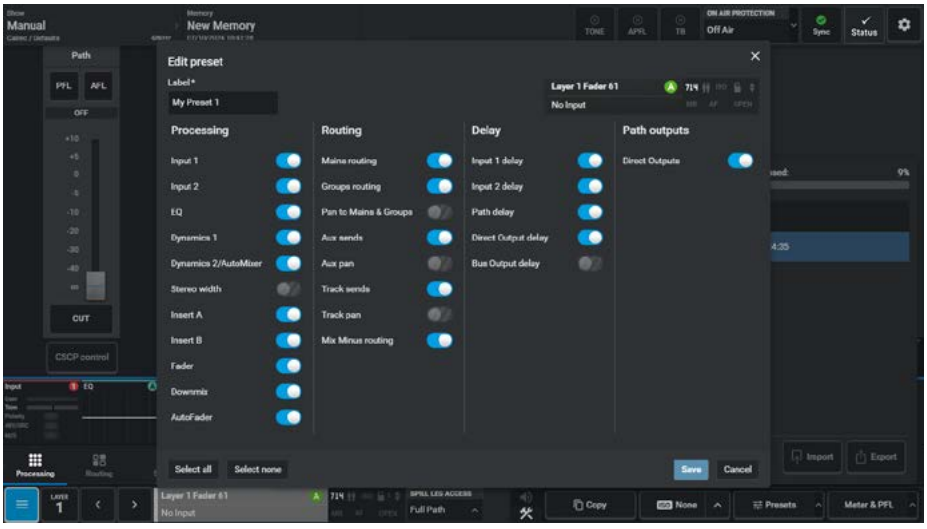


FIG. 6 - EDIT PRESET LABEL AND/OR PATH ELEMENTS



Loading a Preset

To Load a Preset:

1. Select the access path the Preset is to be applied to.
2. Tap **'Presets'** in the tools footer to open the dialogue box.
3. Select the Preset to be loaded.
4. On the right side of the dialogue box, tap **'Load'** to open the 'Load' confirmation pop-up, see Fig. 7.
5. The user taps **'Load'** to apply the preset to the selected path.

Updating a Preset

To Update a Preset:

1. Select the access path the Preset is to be updated from.
2. Tap **'Presets'** in the tools footer to open the dialogue box.
3. Select the Preset to be updated.
4. On the right side of the dialogue box, tap **'Update'** to open the 'Update' confirmation pop-up, see Fig. 8.
5. The user then taps **'Update'** to copy parameters to the preset from the selected path.

Deleting Presets

To delete a Preset with the Preset dialogue box opened:

1. Select the Preset(s) to be deleted.
2. On the right side of the dialogue box, tap **'Delete'** to open the 'Delete selected presets' confirmation pop-up, see Fig. 9.
3. The user taps **'Confirm'** to delete this preset from the system.

Note: the 'tickboxes' next to each entry can be used to select multiple presets to be deleted.

Import Presets

This is not available in V1.2.x. However, this can be carried out using Assist.

Export Presets

This is not available in V1.2.x. However, this can be carried out using Assist.

FIG. 7 - LOAD PRESET

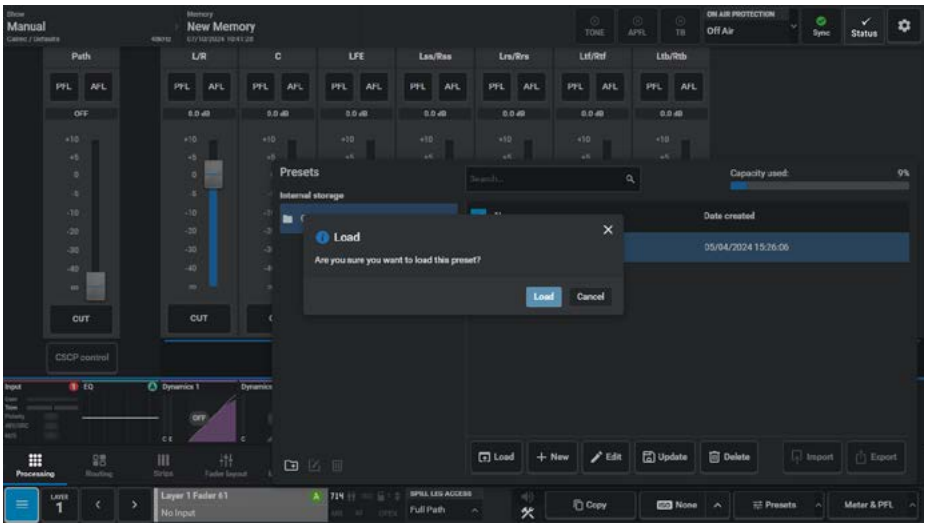


FIG. 8 - UPDATE PRESET

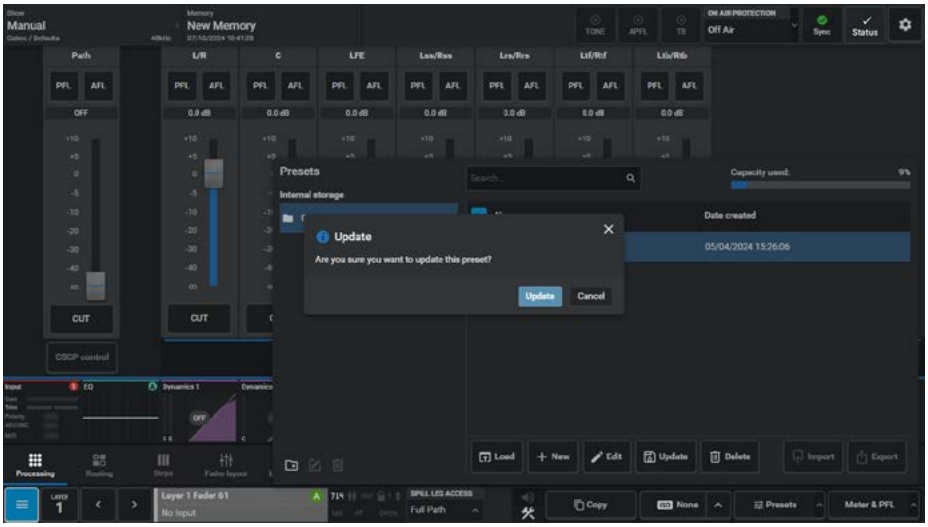
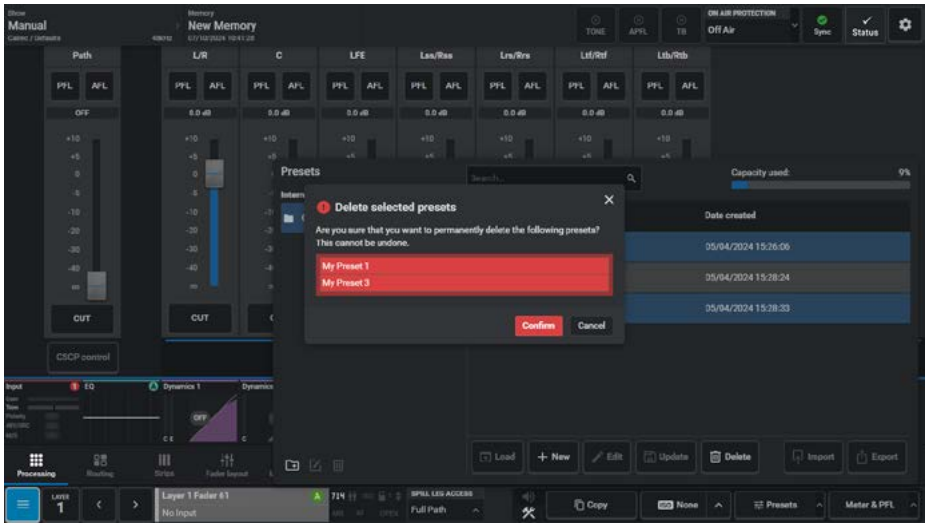


FIG. 9 - DELETE PRESETS



METER & PFL OPTIONS

The Meter and PFL path positions dialogue box in the tools footer allows the user to select where the Metering or PFL point in the selected audio path is taken from.

The '**Meter & PFL**' button is located in the tools footer, as highlighted in Fig. 1.

Once accessed, this opens the Meter & PFL dialogue box from the footer, as shown in Fig. 2.

Meter Source

The metering pick off point can be taken from:

- Input (at the start of path processing)
- Pre EQ
- Post EQ
- Pre Fader
- Post Fader
- Post (at the end of path processing)

Note: this selection only applies to the currently selected audio path.

Optionally, there is an **'Apply to all paths in user area'** button at the bottom of the Meter source list if this is to be applied globally.

PFL Source

The PFL pick off point can be taken from:

- Input (at the start of path processing)
- Pre EQ
- Post EQ
- Pre Fader

Note: this selection only applies to the currently selected path.

Optionally there is an **'Apply to all paths in user area'** button at the bottom of the PFL source list if this is to be applied globally.

The Meter and PFL path positions dialogue box is closed by tapping again on the **'Meter & PFL'** button.

FIG. 1 - METER AND PFL PATH ACCESS BUTTON IN THE TOOLS FOOTER



FIG. 2 - METER AND PFL PATH DIALOGUE BOX FROM THE TOOLS FOOTER



ARGO
GLOSSARY OF TERMINOLOGY

CALREC

Access Mode
An operating mode of the surface in which it acts as an assignable console. A fader is accessed and all controls on the Touchscreen and Wild assign panel become relevant to the accessed path.

ADC (Analogue to Digital Conversion)
The process by which continuous analogue signals are sampled and converted into discrete digital representations. The frequency of samples in the resultant digital signal is determined by the Sample Rate of the system (e.g. 48kHz). The dynamic range of the sampled signal is dependent on the wordlength (e.g. 24bit).

AFL
After-Fade Listen. Monitors the selected channels after they have been affected by fader position, pan position and channel processing. Multiple AFL signals can be sent to the AFL bus. AFL does not affect the main outputs, so can be seen as being similar to 'safe solo'.

APFL
A bus that combines both AFL and PFL signals. This removes the need to have separate loudspeakers and meters for monitoring AFL and PFL signals.

Assign Panel
When a wild assign panel is set to operate in Access Mode it can be referred to as an Assign Panel as the controls and information 'assigned' to this panel will reflect the data associated with the currently accessed path.

Auto Fade
Faders can be set to fade in and out in response to GPI signals. This might be set up so that a vision mixer can control relevant audio sources by simply fading up or down the video signal.

Aux / Auxiliary
An Aux is a bus to which signals can be sent and grouped. The send for the originating channel may be pre or post fade. Auxes can be patched to output ports and can be controlled by certain logic functions such as pre-send cut when originating channel is cut, pre-send cut when originating channel fader is closed and for a given Aux, the pre-fade send from an originating channel can be cut when the originating fader is opened and not cut.

Bluefin 3
The next generation of Calrec's High Density Signal Processing (HDSP) system. Capable of up to 2048 input channel paths from just a single module.

Bus Path
A path in which multiple signals can be combined. A bus is the general term and can refer to a number of path types including Group, Aux, Track, Main, Mix Minus, AFL, PFL.

Button Cell
A collection of four buttons around a display.

Calrec Assist
This is a web browser application which when connected to a console, allows an alternative control interface which works in parallel.

Channel Faders
Channel Faders are located on the Standard or Short throw Fader Panels. Note that this is a generic term, as Channels, Groups, Mains, Auxes and Tracks can all be attached to them allowing assignment and level control. They may also be used to control VCA groups with or without an underlying path.

Continuous Memory
A continually updated memory that stores the state of the system. In the event of a restart after power loss or reset, the system can reload the continuous memory and continue from almost the same state prior to power loss.

Control Bed
The main, shallow angled area of the control surface as opposed to the upstand. The Argo control bed can be fitted with a row of standard fader panels and a second row, mainly populated with Wild assign control panels.

Control Cell
The collection of controls consisting of a small TFT display, a rotary control and one or more buttons.

Control Processor Module
The control processor module acts as the main controller of the Argo system, passing messages between all modules. The surface communicates with the rack via the control processor module.

Core
Processing rack for a mixing console or standalone router.

DAC (Digital to Analogue Conversion)
The reverse of ADC. The digital representation of a signal is converted back into a continuous analogue signal.

Desk Output
Type of Main bus output which does not receive the output tone or talkback switching that affects Main Line outputs.

Direct Output
Output from a channel or group path with level control and pre EQ / pre fader / post fader selection. By default a direct output contains only the audio present on the path, but can be switched to output mix-minus - everything routed to the mix-minus bus apart from the path's own audio.

Downmix
The process of converting a signal of a given width into a signal of a smaller width allowing fixed or variable amounts of each of the contributing legs to be included. For example, a downmix must be applied to a 5.1 surround signal for it to be correctly translated into a stereo format. Without a downmix, surround, LFE or centre information may be lost and levels may become unbalanced.

DSP
Digital Signal Processing. Discrete mathematical operations applied to a stream of digital audio signals.

DSP Module
A module fitted in the Impulse rack which performs all the DSP functions of the system.

Expansion Router
The Impulse Rack supports up 4 router modules each capable of handling 1024 channels with full AoIP redundancy within the rack.

Fader
Fader refers to one of the physical faders available on the surface (see Channel Faders, Main Faders and Spill Faders).

Fader Bar graph Meters
TFT meters next to each fader on the surface provide input metering.

Fader Panel
A panel containing TFT Displays button cells and motorised touch sensitive faders.

Touchscreen
The TFT touchscreen display in the mid section of a console section, provides flexible options for displaying and controlling information directly through touch.

Foldback
An audio mix sent to a presenter or artist. Applications include enabling them to hear their own input or communications.

Gigabit Ethernet
A family of network technologies used for connecting equipment and efficiently passing large amounts of information over copper or fibre links.

GPI/O (General Purpose Inputs/ Outputs)
These connections allow simple on/off signals to be sent and received by the system. Functions of the system can be controlled from external sources via opto-isolated inputs. The system can control external items of equipment based upon surface actions via relay outputs. GPI/O connections are optional fittings fitted to various AoIP device I/O boxes.

Group Bus
A bus to which many audio signals can be routed, summed and controlled simultaneously with a single fader. For example all audience microphones may be sent to the same group bus for easy access. Buses can be patched to physical outputs and have full EQ and dynamics processing. For a non-summing group see VCA Groups.

Host Console
A Host console is one which is configured to act as a remote controller for RP1 units.

Impulse Router Module
All AoIP I/O boxes connect to the network via a router. The router module contains 8 SFP sockets that can accept either copper or a range of fibre connections by using the appropriate adaptor.

Interrogation/Contribution
Interrogating a bus reveals all contributing paths. For example an Aux bus could be interrogated in order to find all the paths which have been routed to it. Routing can also be performed in reverse where a number of paths can be selected and be routed to the currently interrogated bus. (See Reverse Routing).

Interruptible Foldback (IFB)
IFB is a foldback mix which can be interrupted by tone or talkback. This function is normally handled by the track buses.

Layers
Layers allow the faders on the surface to change the paths they are controlling. On each layer, a different path can be attached to and controlled by a given fader. There can be up to 24 layers on the Argo surface arranged as 12 layers each with and A and B sublayer. Given an example surface containing 84 faders and using 12 layers, may control up to 1008 paths with the faders simply by changing layers.

Line Output
A type of Main output bus, that is interruptible with output tone and talkback selections.

MADI (Multichannel Audio Digital Interface)
A coaxial or optical transmission medium providing a 56 or 64 channel capacity. The MADI standard (AES 10) allows simple high density connectivity between different manufacturer's equipment. MADI is interfaced with an Argo system via a MADI card in an AoIP Modular I/O Rack or on the Argo Combi IO boxes.

Main
A main is an output bus, a final point at which signals are mixed and affected before they leave the console. Each main path can be accessed for external patching via a Desk Output and a Line Output.

Mic Input Headroom
The amount of headroom above the mic gain setting, used as a safety net in the case of sudden high signal level. It is set per device using Connect. In Devices, select the IO box then select the ... options menu in the top right corner. A dialog appears, select Mic Input Headroom. You can choose a level from 20dB to 36dB in steps of 2dB. A high headroom offers greater safety at the expense of slightly more noise.

Mix Bus
When multiple signals are routed to a bus they are mixed together. This allows the combined signal to be processed, routed or have its level controlled from a single location.

Mix Minus Bus
A dedicated bus used for simple yet powerful creation of mix minus feeds. A unique mix is created for each recipient which consists of the whole mix minus bus, minus their own contribution. Each mix minus feed is sent from a channel or group's direct output.

Mode Buttons
The mode buttons allow the operating mode of each section on the surface to be switched.

On Air Mode
On Air mode allows certain operational functions to be activated or inhibited when the system is switched in to it.

Port
A port refers to any physical audio input or output in an AoIP device. Ports can be of any form of analogue or digital I/O. In the case of analogue signals, a single port relates to a single signal in the system. Where digital signals are connected, multiple signals become available for each port. A single AES3 port provides two signals, SDI can provide up to 16 signals and MADI can provide up to 64 signals.

Patch
A patch is a connection made between a source and a destination in the system. For example an input port may be patched via stream receivers to one or more channel inputs, or a main output may be patched to one or more output ports via stream transmitters.

Path
A generic term that refers to a DSP process in the system. A signal present at an input port must be routed to a path in order for it to be processed and then sent back out of the system. Paths include channels, groups, auxes, tracks, mains, talkback and monitor paths. Paths can be routed to other paths, for example a channel path can be routed to a group path and a main path simultaneously.

PFL
Pre-Fade listen. A function to allow a signal to be heard before it has it's level altered by a fader. Multiple PFL signals can be sent to the PFL bus.

Presets
Path presets allow you to save a complete copy of all a path's parameters. This preset can be recalled onto any other path at any time.

PSU Module
The PSU module provides power to the rack and the other modules contained within it.

Rack (ImPulse)
The single 5U enclosure containing all power, control, processing and routing modules for up to 4 Argo systems.

Receiver/Transmitter
Audio data, when passed via AoIP/AES67 streams are sent from an AoIP device channel which is known as a Transmitter and is received by another AoIP device channel which is known as a Receiver.

Redundancy
All main components of the system can be provided with Redundancy, meaning that with the provision of a Twinned Core there is always a secondary hot spare ready to step in and take over control if the primary component fails. The failed primary unit can be replaced with a working unit which then becomes the new hot spare, effectively re-introducing redundancy.

Remote Aux Masters
When a RP1 unit is being controlled from a console, the RP1 Aux Masters can be mapped onto the console surface which act in parallel with the RP1 Aux Masters, these are called Remote Aux Masters.

Remote Faders
When a RP1 unit is being controlled from a console, the RP1 channel inputs are placed on the RP1 Faders. These faders can be mapped onto the console surface which act in parallel with the RP1 faders, these are called Remote Faders.

Reverse Routing
When a bus is interrogated, routes to that bus may be made in reverse by specifying which paths will be routed to it. This is also known as Contribution mode. Normal routing involves specifying which buses a certain path is routed to. (See Interrogation/Contribution).

Rotary
A knob which can be rotated, allowing variable control of a parameter. In some cases it can be pressed giving it extra functionality. Each control cell contains a rotary control.

Route
A route is a connection made from one path to another within the system. For example a group path may be routed to a main path, or a channel path may be routed to an Aux path via an aux send. (See also Reverse Routing).

Row
A row is a horizontal arrangement of controls on a surface panel. For example the row of displays at the top of a standard fader panel is called the 'Modes Row'.

RP1
This is a Remote Production unit designed to be a self-contained compact mixing console without a control surface. Its purpose is to provide latency free mixing at a remote site for commentary mixes.

SDI (Serial Digital Interface)
Although SDI is primarily a means for encoding and transporting video signals, audio signals can also be encoded and sent through in the ancillary data space. Calrec SDI de-embedders can decode all groups and extract up to 16 mono signals per SDI stream.

SFP (Small Form-Factor Pluggable) connections
SFP sockets accept a range of adaptors which provide different interface connections for copper or fibre connectivity. This allows units fitted with SFP sockets to be customised to meet a range of requirements. Many of the network connections in a Argo system make use of SFP sockets.

Spill Faders
Allow control of legs of a multichannel signal. For example the overall level of surround or immersive channels is controlled by a single fader. By using the spill faders, components of the multichannel signal can be altered. If a spill fader is the currently accessed fader, then processing can also be applied to that component using the assign panels. For example a 5.1 channel its legs are separated into the following components: L/R (stereo), C (mono), LFE (mono), LsRs (stereo).

SRC (Sample Rate Conversion)
A sample rate converter is by default switched in on each AES3 input in the event that an incoming external signal is at a different sample rate or not synchronised to the same source as the system. It can be switched out if the incoming signal is known to be synchronous.

Standard Fader Panel
A physical surface panel containing 12 faders, 2 rows of 12 quad button cells each of which surround a 160px X 80px TFT, Access & On/Cut buttons, B-Layer, AFL, PFL, 2 User buttons and 3 further TFTs for each fader. Along with the Wild assign panel which has 4 rows of 12 control cells, each of which contain a button and a rotary control, the standard fader panel is the most common panel on a surface.

Strip (Channel Strip)
Strip refers to a vertical arrangement of controls on the surface which can be a combination of fader and assign panels. There are twelve strips on an Argo standard or short fader panel.

Surface
The surface is the physical control surface for an Argo system containing the collection of faders, rotary controls, buttons and displays allowing hands on control of the audio signals. Sometimes referred to as the Console, Desk or Board.

System
The term 'system' encompasses the rack, surface, and AoIP devices. From the moment a signal enters an AoIP device input it is in the system and remains there until it is passed out of an AoIP device output.

System Status
This system provides information, warning and error logs of any developing or occurring faults in the system.

TFT display
Generally refers to the larger display screens in the control surface - the upstand meter panels and the large display on Argo Touchscreen panels.

Tracks
Multi function buses that can be patched to physical outputs. Used for such purposes as generating multiple interruptible clean feeds (IFB) or sending audio to a multitrack machine.

Upmix
The opposite of Downmix. Narrow width signals can be processed in order to be sent to a wider bus. This occurs when monitoring a mono signal through a stereo bus. Hence the pan control can be considered an upmix parameter as it varies the resultant stereo upmix.

Upstand
The upper, steeply angled section of the control surface, mainly fitted with TFT and meter panels. Often referred to as the meter bridge.

VCA Groups
The term VCA stands for Voltage Controlled Amplifier. A VCA group, unlike a group bus does not sum any audio. Instead it allows a single fader to control the relative levels of any contributing paths. This maintains the relative levels of all paths in the group yet still allows individual control where required.

Wild Assign Panel
A panel containing multiple cells with rotary controls, buttons and displays. The function of this panel can be altered during operation of the surface.

Wild Assign Touchscreen
The TFT touchscreen display located in the mid section of an Argo console, provides flexible options for displaying and controlling information directly through touch.

Wild Custom controls
Assigns any combination of path controls to the rotary controls and buttons controls on any Wild Assign panel, Monitor label or Customised area of a Standard fader panel, in each fader section.

ARGO
FURTHER READING

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FURTHER READING

Impulse has a number of Manuals associated with it. This is the Argo Operator Manual:

1. **Impulse - Argo Product Info Sheet (926-320)**
   This information sheet shows how to collect information on Impulse.

2. **Impulse - Argo Start Up Guide (926-321)**
   This guide shows how to Power Up and Access/Configure the Impulse core, Configure the Surface IP connections, Connect the Surface to the Impulse Cores, Power Up the Surface & Create a New Show, Configure Network Switches & Devices, Access the Configure/Connect/Software Updater/Assist* applications, Update the Core Software to the latest version (optional), Configure AoIP Router & AoIP Device IP addresses, Connect Audio Switches & AoIP Devices to the Core and Examine an example system.

3. **Impulse Installation Manual (926-288) * Updated for Argo S & Argo Q**
   This contains a number of chapters including an overview of the Impulse system, Defining the system elements of an Impulse core, Core DSP pack options, Synchronisation, Surface Connections, AoIP network connections, Redundancy, AoIP network examples, External Control connections and Technical specifications.

4. **Impulse Configure Application Guide (926-290) * Updated for Argo S & Argo Q**
   This defines how Impulse system Core(s) can be configured and partitioned into different mixing surfaces with varying amounts of DSP processing channels available in different 'Pack' sizes under licence. It provides guidance on updating the system software, backing up and restoring user data, setting the sample rate, controlling the application containers that run the system and provide maintenance logs. It's also used to configure the IP addresses of the Network Interface Controllers for the application containers, manage the Remote Network interfaces such as the RP1, AoIP interfaces for the Audio Routers, PTPv2 interfaces for synchronisation, setting up synchronisation sources and Core I/O Virtual Patchbays.

5. **Connect Guide (926-292)**
   This defines how the Impulse/Type R Core IP Input and Output streams are connected to AoIP based interfaces and how the AoIP streams are managed including GPIO devices. These can be connections to and from either Calrec AoIP Devices or other 3rd party AoIP streams.

6. **AoIP I/O Manual (926-293)**
   This contains information about AoIP devices available for use with Impulse/Type R in terms of Control, Audio & GPIO Connections.

7. **Argo Installation Manual (926-312)**
   This contains technical information about the configuration, installation and setup of the Argo surface for use with Impulse systems.

8. **Argo Operator Manual (926-313)**
   This defines how an installed Argo console is configured and controlled via its surface. It includes creating/managing shows, setting up shows in terms of configuring paths, displaying and controlling the fader surface, saving and loading snapshots and patching inputs and outputs to the channels and buses. There are then various sections about parameter access including: processing, routing, configuring and controlling the buses & outputs and setting up the monitoring & metering. The show setup and system settings sections provide configuration tools for both show and system configuration.

9. **Argo Assist Manual (926-317)**
   This defines how an Argo with or without a physical console is setup and controlled via Calrec Assist, which is Calrec's web-based user operation tool.

10. **Impulse1 Installation Manual (926-329)**
    This contains a number of chapters including an overview of the Impulse1 system, Defining the system elements of an Impulse core, Core DSP pack options, Synchronisation, Surface Connections, AoIP network connections, Redundancy, AoIP network examples, External Control connections and Technical specifications.

11. **Remote Production Manual Impulse (926-308)**
    This defines the features of RP1 that are available to Impulse consoles.

12. **ImpulseV Deployment Manual (926-448)**
    Details how to deploy and serve consoles from Calrec's ImpulseV DSP cloud processing.

13. **Argo DAW & MIDI Control Guide (926--449)**
    Step-by-step guide in setting up MIDI Control on Argo. Includes example setups in ProTools, Logic & on JL Cooper panels.

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