zirkon / zirkonXL / VisTool

Operator's Manual

Version: R2.7

Edition: 07-04-25

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About This Manual

How To Use This Manual

Before we guide you through the operation of the **zirkon** and **zirkonXL** consoles, first a few words about this manual.

The zirkon/zirkonXL Operator's Manual covers the operation of the console and complements the zirkon/zirkonXL/Nova17 Technical Manual which describes hardware installation, servicing and software configuration.

Chapter 1 introduces the console's key features and operating philosophy, while Chapter 2 provides a step-by-step 'Getting Started' tutorial to help you master key functions as quickly as possible. If you are new to the console, please read both Chapters 1 and 2 first.

Chapter 3 covers the operation of the control surface modules in greater detail; Chapter 4 deals with the operation of the optional Vistool Runtime (RT), OnAir and Technic software applications.

Use the Table of Contents at the beginning of the manual or Index Directory (Page 161) to locate help on a particular topic. A Glossary of terms is also provided on Page 155.

Conventions

Throughout this manual we will be using a number of conventions:

Topics

Every new topic or subtopic is clearly identified in large, bold font.

Specific operational procedures are written as a sequence of numbered instructions which guide you through the task. The result of the operation is written in *italic* letters giving you the chance to identify errors at an early stage. For example:

To assign a source to a fader strip:

1. Make sure that the fader you wish to assign is closed.
2. Press the Access Key.

The ACCESS control display shows the number of the fader strip, for example 4.

Marginal notes

The following marginal symbols are used to draw your attention to:

Tip

Useful tips and short cuts.

Note

Points of clarification or cross references.

Warning

Warning

Warnings – alert you when an action should always be observed.

Action Keys

We will also be using some conventions to help distinguish explanatory text from the text referring to items on the console:

Silk screened text on the console's front panel is referred to in UPPERCASE and key cap engravings are written in **bold** – for example, press the **LIM** key located on the DYNAMICS panel.

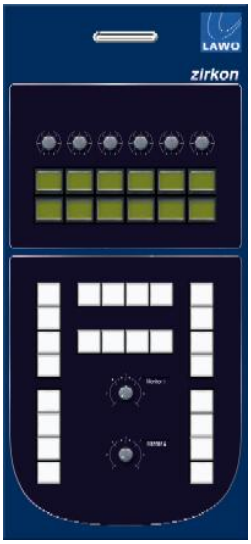
Chapter 1: Operating Philosophy

Welcome

Welcome to the **zirkon** digital broadcast mixing console, Lawo's purpose designed solution for radio/television on-air and production operations.

This chapter introduces the console's key features and operating philosophy. At the end of the chapter, you will find a quick reference guide to each of the control surface modules.

Note that this manual covers two versions of the console – the **zirkon** and **zirkonXL**. Both feature identical functionality with the exception of the central operating module:



Both versions are compact, modular and extremely flexible mixing consoles. The modular control surface and I/O system allows the console hardware to be specified to match the installation requirements. In addition, a wide range of broadcast functions may be programmed onto the console's multi-function controls using the Zirkon Configuration Tool software.

If you are a **zirkon** user, please read the operational instructions for the Central Module. Conversely, if you are **zirkonXL** user, read the instructions for the XL Central Module. These marginal symbols will help you locate the correct instructions quickly and easily.

zirkon

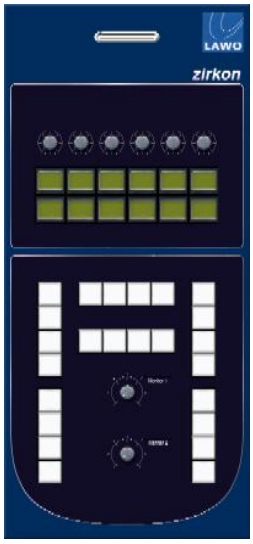
zirkonXL

As a result, the layout of every console is unique. Throughout this manual you may come across keys in different physical locations to those on your console, or even functions which do not exist within your operation! If you are in doubt about a particular function on your system, please contact your systems engineer for support. Or, refer to the zirkon/zirkonXL Technical Manual for more details on the Zirkon Configuration Tool.

Control Surface Overview

Every control surface is constructed from a single Central Module, of either standard or XL type, and any number of 4-fader Channel Modules from 1 to 10. This provides the ability to scale the control surface from 4 to 40 channel faders.

Channel Module



Central Module

Central Module XL

Modules may be positioned in any order, leaving plenty of room for scripts and other equipment, as in the on-air radio studio shown opposite. Alternatively, the control surface modules may be mounted more conventionally to create a large format mixing console.

Any fader strip may control any type of signal - microphone inputs, play out machines, transmission outputs, etc. Depending on the console configuration, you may be able to re-assign sources to fader strips to create your own operating layout. See Page 49 for more details on fader strip assignment.

Another very powerful feature is the ability to program installation-specific functions onto the Channel and Central Module's Multi-Function (MF) keys. This allows the console to be customised for the installation by your systems engineer. MF Keys are labeled with an inserted foil so hopefully you will recognize the functions that have been programmed onto your console!

For a quick reference guide to each of the above modules, please see Pages 43 to 45.

Note

Note that from version 2.7 software onwards, two alternative control surface modules are supported – the Channel Module 2s and the Monitoring Module 2s. You can find more details on these modules on Page 122.

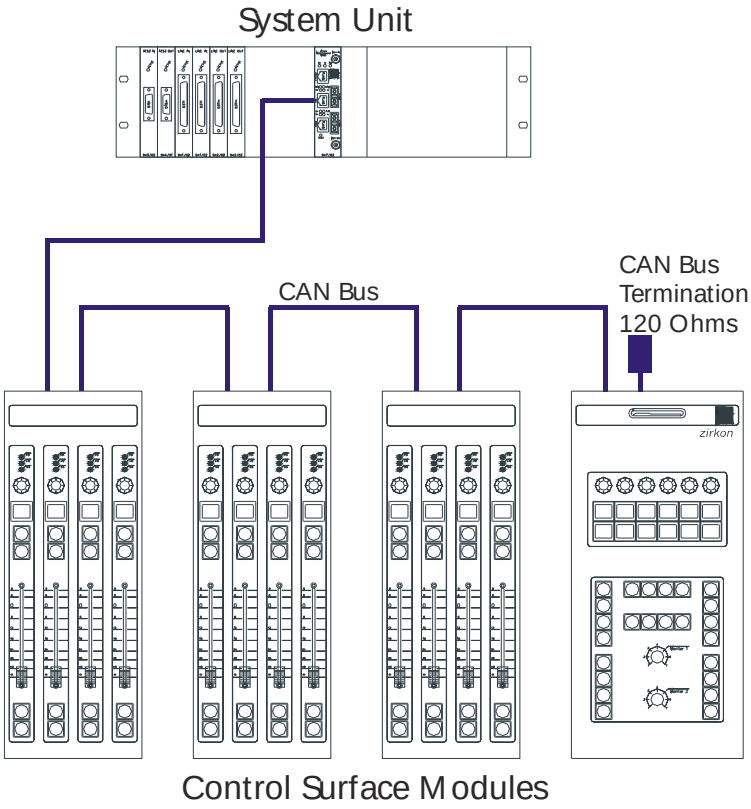
System Overview

Unlike an analogue console, the **zirkon** system consists of much more than just the control surface.

Core Hardware

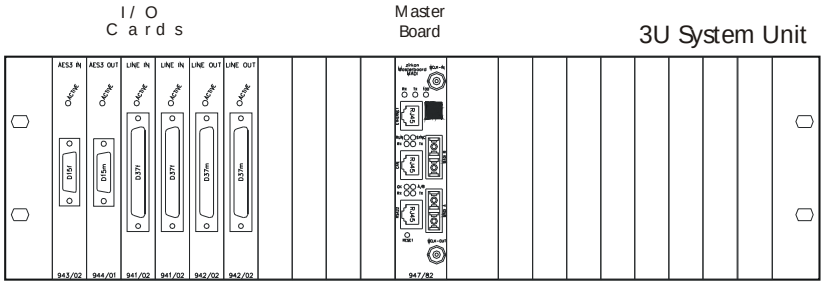
At its simplest, each **zirkon** consists of two principal components:

- zirkon/Nova17 System Unit.
- zirkon or zirkonXL control surface, comprising at least one Channel and one Central or Central XL Module.



System Unit

The system unit utilises Lawo's DALLIS (Digital And Line Level Interface) frame:



It may be either 3U or 6U in height and houses:

- **DALLIS I/O interfaces** – Lawo's tried and tested DALLIS interfacing system offering a range of input and output cards for connection to external equipment.
- **Zirkon/nova17 Master Board** – the Master Board provides the DSP, control system and routing matrix for the system. CAN bus connections to the control surface also come from here, along with Ethernet for remote PC configuration/maintenance, wordclock for external synchronisation, RS-422 for serial connections to radio automation systems and optional MADI ports for I/O expansion.

DALLIS is a very flexible and versatile I/O system that offers a choice different I/Os designed as plug-in cards. It is used across a range of Lawo products offering several significant advantages:

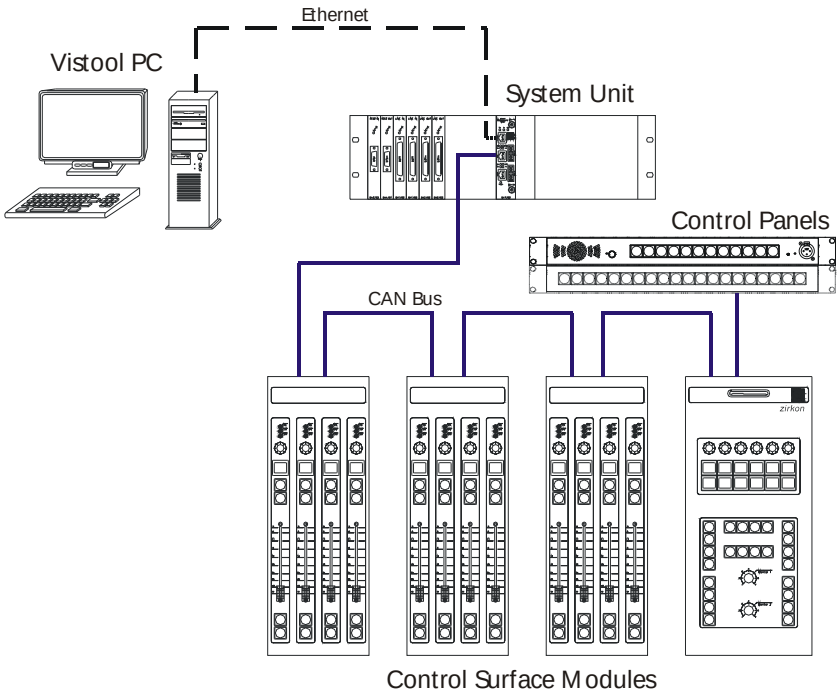
- Increased reliability as I/O cards are internally connected to the central master board eliminating any physical interfacing problems.
- All cards are hot plug-able enabling individual I/O cards to be replaced without affecting other aspects of the system.
- Optional redundant power supplies.
- Optional redundant master board. All signals are routed to both the active and redundant boards simultaneously. In the event of a main board failure, the system may be switched to the redundant board by applying a signal to the 'Force M2' input on the rear panel.

The hardware specification of the System Unit defines how many analogue and digital connections are available for external equipment. You can easily expand the system by retrofitting additional DALLIS I/O cards.

Options

You can expand the system's functionality, beyond the capabilities of the basic control surface, by adding one or more of the following options:

- **Vistool** – a software application which runs on an external PC to provide real-time console displays and touch screen control functions.
- **Key Panels** – a range of 19"/1RU rack mounted Key Panels to provide additional keys, talkback, etc.



Vistool

Vistool is a range of software applications which work in real time with the **zirkon** console or **Nova17** Lawo routing system.

Custom designed operational screens may be created using the **Vistool Edit** software application, and then used to display and control functions, via a touch screen interface, in real time using **Vistool RT** (Runtime). Each screen may feature several pages and host a range of options such as level meters, timers, signaling, parameter displays and MF key push button functions.

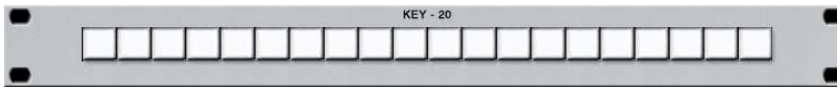
During real time operation, data is transferred between the console's system unit and Vistool PC via Ethernet. Several Vistool PC's may be connected to any single system. For example, you may have a Vistool screen beside the console operator to provide additional feedback and console control, plus a number of remote Vistool stations perhaps managing central routing or assistant functions. For more details on Vistool operation, see Chapter 4.

Key Panels

In addition, up to 15 Key Panels may be added to each system. Different panels feature a range of MF keys, self-labeling LCD buttons and other controls. All buttons are programmable within the configuration. Typical applications include communications panels. For specific details, please consult your systems engineer.

Options include:

- **KSC-T20** – 19"/1RU panel with 20 programmable buttons. (Replaces the **Key-20**):



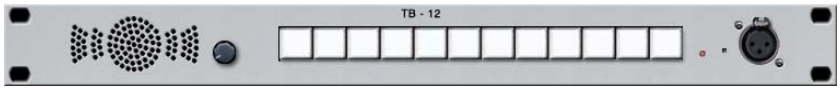
- **KSC-LCD16** – 19"/1RU panel with 16 self-labelling LCD buttons. (Replaces the **KS-16**):

- **KSC-LCD15P1** – 19"/1RU panel with 15 self-labelling LCD buttons and 1 volume control. (Replaces the **KS-15/1**):

- **KSC-LCD14P2** – 19"/1RU panel with 14 self-labelling LCD buttons and 2 volume controls. (Replaces the **KS-14/2**):

- **KSC-GPIO32** – 19”/1RU panel with 32 GPIOs:

- **TB-12** – 19”/1RU panel with 12 programmable buttons, talkback microphone and loudspeaker:



Nova17

Without the zirkon control surface modules, the system unit is otherwise known as the **Nova17** – a stand alone routing matrix with networking capabilities. On Page 24 you can see an example of a networked installation where a **Nova17** router acts as the central routing hub for several **zirkon** studios.

Nova17 can be operated from an external PC running its own software application (MtxCon), or control can be provided from VisTool screens or any of the optional hardware Key Panels.

For details on MtxCon, please refer to the NovaConnect Operator’s manual.

For details on VisTool, see Chapter 4, and for details on Key Panel operation, see Page 119.

Signal Flow

Unlike an analogue console with a fixed number of input channels and outputs busses, the **zirkon** provides a pool of DSP resource which is allocated within the console configuration. This means that your console can have a mixture of input channels, groups, mains, auxiliary sends, conference busses, etc. And, that each channel or bus may be allocated signal processing so that you can apply EQ, Dynamics and Delay to both inputs and outputs.

Sources

Each input channel on the **zirkon** is called a 'source'.

Up to a maximum of 128 sources may be defined within the configuration, and each may be mono, stereo, 5.1 or 5.1/stereo.

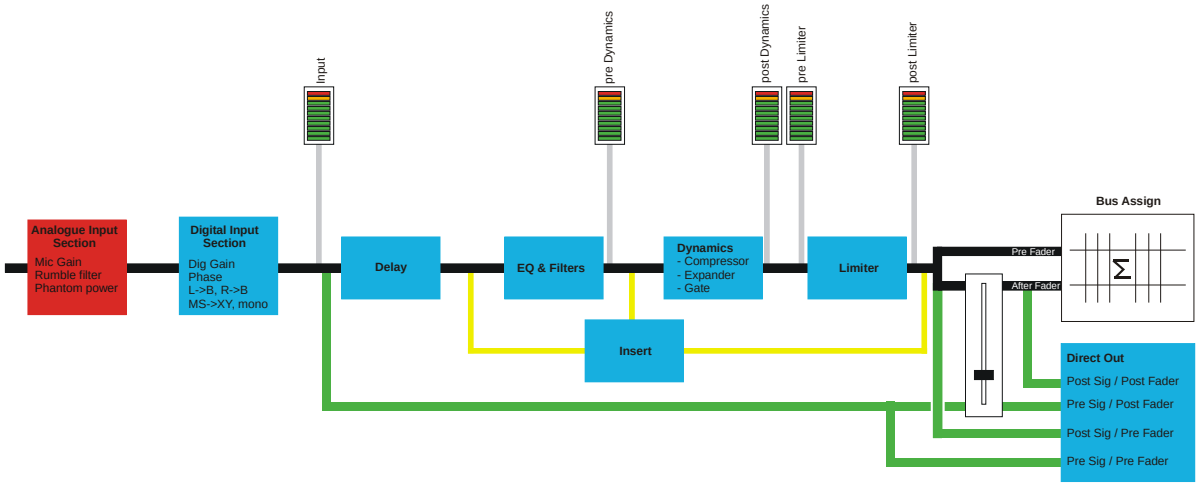
Note

Note that *only* sources assigned to fader strips are active in the mix, and that the **zirkon** can sum up to 80 mono sources together simultaneously. This means that with a full size control surface (40 faders) you can mix up to 40 mono sources or up to 40 stereo sources simultaneously. Once you add surround sources, then you may not be able to mix all 40 faders – for example, 10 x 5.1 sources uses up 60 sums, leaving 20 sums for any remaining mono or stereo sources.

The naming of sources, assignment of signal processing and source attributes are all made within the console's configuration. Physical inputs are normally 'hard wired' to sources. This allows source specific channel features such as fader start or mic live signalling to follow the source when it is assigned to different fader strips. Sources may also be fed from pre-selectors, for example, to create an A/B input switch if required.

Source Parameters

The following diagram shows the maximum amount of DSP which may be allocated to a source:



Every source features:

- **Analogue Input section** – only available for sources fed from microphone inputs; includes mic gain, 48V and high pass rumble filter.
- **Digital Input section** – available for every source; includes digital gain, phase reverse, pan or balance, surround parameters (LFE level, etc.).
- **Metering** – meter points for input, pre and post processing.
- **Fader** – a motorised fader for level control.
- **Bus Assign** – bus sends with pre/post fader selection and variable level control.

In addition, the following modules may be assigned by the configuration:

- **EQ** – 3-band parametric EQ plus High and Low Pass Filters.
- **Dynamics** – Gate, Expander and Compressor sections.
- **Limiter** – independent limiter.
- **Delay** – adjustable in ms, metres or frames.
- **Insert** – external insert point which may be:
    - Pre EQ
    - Post EQ
    - Post Dynamics

In addition, each fader on the console (i.e. not the source) can be assigned a Direct Out. The **Direct Out** is assigned within the configuration and can be:

- Pre fader, pre processing.
- Pre fader, post processing.
- Post fader, pre processing.
- Post fader, post processing.

For more details on each processing module, please see Page 30.

Note that stereo and 5.1 sources use more DSP resource than a mono source. See the Zirkon/zirkonXL/Nova17 Technical Manual. for more details.

Note

Summing Busses

Each bus on the **zirkon** is called a 'summing bus' and the console may have up to a maximum of 48 mono busses. Note that a stereo summing bus uses two busses, a 5.1 summing bus uses 6 mono busses, and so on.

Pre-Defined Busses

The first three stereo busses are pre-defined as follows:

- **Main 1** – normally used for the main programme output.
- **Main 2** – normally used for secondary outputs such as 'international sound'.
- **PFL** – a stereo pre fade listen bus which may be inserted into the studio's monitoring system, headphones or output to its own PFL speaker.

Within the configuration, there are options to route each source onto the Main 1 or Main 2 summing busses as a default. In addition, the configuration defines whether operator's can re-assign busses from the control surface, or whether sources are 'hard wired' to each bus. It is likely that in an on-air installation, sources are 'hard wired' to the Main 1 programme bus for simplicity and security.

User-Defined Busses

The remaining 42 busses are 'user' definable within the configuration. For example, to create extra main outputs, groups, auxiliary sends or conference outputs.

Within the configuration any of the 42 busses can be defined as:

- Normal summing busses – these sums can be allocated DSP, assigned to fader strips and/or assigned from sources by the operator during the show. Typically they are used to create aux sends, groups or extra main outputs.
- GP Sums – General Purpose sums which do not need DSP or control surface assignment. For example, a GP Sum may be used to create a talkback bus.
- Conf Busses – Conference busses have special conference facilities for generating mix minus (N-1) outputs.

The busses should be named to match their application (e.g. ST AUX, GRP 1, etc.). For specific details on the user defined busses within your configuration, please consult your systems engineer.

The signal flow for each summing bus is the same as for a source, so depending on the configuration, EQ, Dynamics, Delay, Fader Level, may be applied to summing bus outputs by assigning them to the control surface. Note that if summing busses have not been adjusted from the control surface, then they are output from the console at unity gain (0dB).

The Power of Configuration

The **zirkon**'s configuration defines several key aspects of the mixing console allowing it to cover a wide range of applications.

Note that the configuration is not intended as an operational tool but as a way in which your systems engineer can tailor the console's operation for the studio's requirements. For example, the production studio within your facility may require several different functions to the on-air studios.

Note

The configuration is created offline, using a PC software application called the Zirkon Configuration Tool, and then downloaded to the console. Once downloaded, the configuration resides within the control system of the **zirkon** and is loaded when the system powers on.

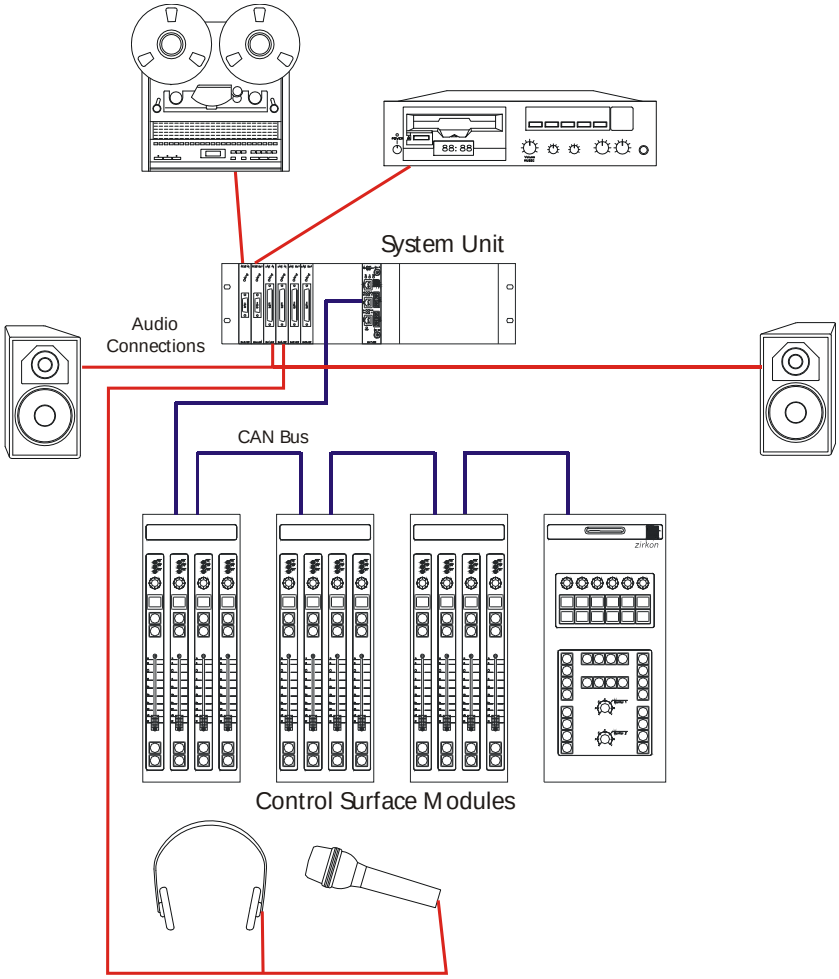
By now, your system should have a pre-prepared configuration which will define many of the operations of the console. As every configuration is unique, we can only provide guidelines on typical examples within this Operator's Manual. If you are in doubt about a particular function on your system, please contact your systems engineer for support.

Settings defined by the configuration include:

- Input and Output naming – each input and output within the DALLIS frame can be named to clearly identify connections to external equipment.
- Sources – each source may be named (e.g. DJ, CD, etc.) and defined to be mono, stereo, multi-channel, or used as a MIDI control channel to work with ProTools™.
- Summing Busses – each summing bus may be named (e.g. GRP 1, AUX ST, etc.) and defined to be mono, stereo or multi-channel.
- Signal Processing – EQ, Dynamics, etc. may be configured for some or all sources and/or summing busses depending on the resources available.
- Control Surface Layout – the configuration defines which sources may be assigned to fader strips by the operator and whether the console can be switched to access additional layers. Layers are created by adding 'virtual' fader strips to the configuration and increase the mix capacity of the console
- MF Key Functions – for the Channel and Central Modules, for any optional Key Panels and for any MF keys created within Vistool touch screen displays.
- External Control Functions – the configuration also defines how the console responds to external control functions such as GPI signals or radio automation systems.

Integrated Digital Routing Matrix

In addition to powerful mixing features, the **zirkon** includes an integrated digital routing matrix in the form of the Nova17 routing system:



Note

Note that the Nova17 is the name given to the stand alone System Unit automatically included with each **zirkon** installation.

Any input (e.g. microphone, line, AES, MADI, etc.) may be routed to any source channel, and any summing bus routed to any physical output. In addition, you may route inputs directly to outputs, for example to record a snoop of a microphone input to MiniDisc for archiving purposes.

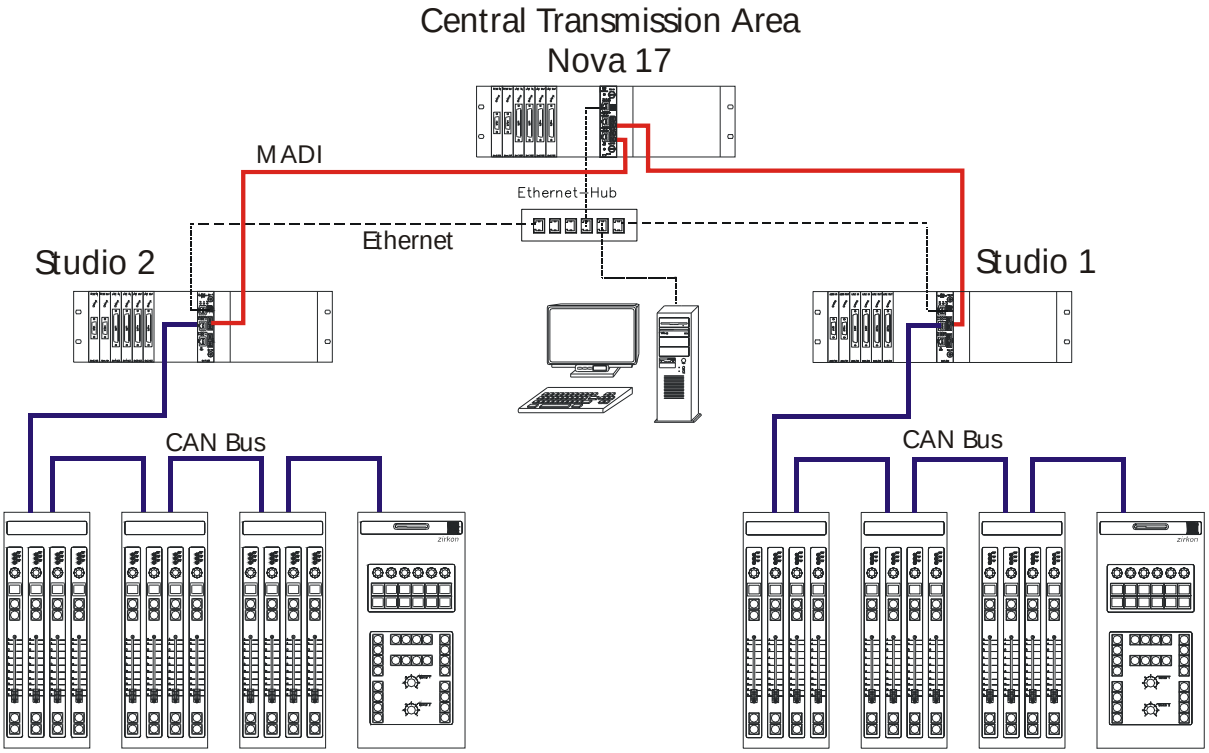
Operation of the routing matrix is typically provided by MF Keys. The operation will depend on the hardware options and configuration of your system. Here are some examples:

- Central Module and Central Module XL MF Keys – the Multi-Function keys may be programmed to action specific routes within the matrix. For example, to create a monitor or headphones selector.
- Vistool MF Keys – In the example opposite, a Record Matrix has been created using touch screen MF keys on the Vistool display.
- Optional Key Panel MF Keys – any of the MF keys on an optional key panel could be programmed to action specific routes within the matrix.

Routing within the Nova17 can also be controlled using the MtxCon software application. For more details on the operation of software, please refer to the "NovaConnect – Matrix Control for Nova17" manual.

System Networking

Multiple **zirkon** and/or **Nova17** systems may be networked in a number of ways to share resources and exchange functions. The example below shows a typical radio installation with two studios and a Central Transmission Area:



- **Resource Sharing** – connecting consoles and routers via MADI allows multiple I/O resources to be shared between studios. For example, to route a booth microphone input to any control room. The system also contains special features such as 'mic arbitration' to prevent two consoles fighting for the same mic input parameters!
- **Matrix Control** – routing within one system can be remotely controlled from another. For example, a matrix control panel (operated from a Studio Key Panel or Vistool screen) can control routes within the **Nova 17**.
- **Logic Control Signal Exchange** – the GPI/O Network allows any control signal, for example signalling, to be exchanged between systems via the TCP/IP Network. As the TCP/IP network may extend to the World Wide Web, a **zirkon** in London can issue logical commands to a **Nova 17** in Oxford. For example, during network programming, the London presenter can press an 'Ad Break' button which switches audio routing in both London and Oxford so that different sets of local adverts play out to the different transmission feeds.

- **Remote System Administration** – connecting all systems to a TCP/IP network (Ethernet) provides system administration advantages. A systems engineer can access maintenance pages and download configurations remotely from any network access point. In addition, a central networked server can be used to store PC snapshots so that presenters may load their personal settings in any studio.

Macros

In order to programme a series of complex functions, or to allow the interchange of functions between systems, the zirkon supports macros.

Each macro can be used to operate a series of functions. For example, to open a range of fader starts from a single MF key press. And up to 32 macros may be defined per system.

Once programmed, macros can be transferred to any zirkon on your system network from the **zirkon Macros** software application. This allows you to interchange functions between studios.

Note that functions can only be transferred if the console configuration supports macros.

Note

Macros are supported from Release 2.7 software onwards.

For more details on programming macros and using the **zirkon Macros** software to transfer macro sets, please refer to the zirkon/zirkonXL/Nova17 Technical Manual.

Radio Automation

The **zirkon** or **Nova17** can be controlled from an external radio automation system via the master board's serial (RS422) interface. This is an easy way to hand over the fader start functions of the console to the external system. For example, to open a fader automatically by starting a play list on the external system.

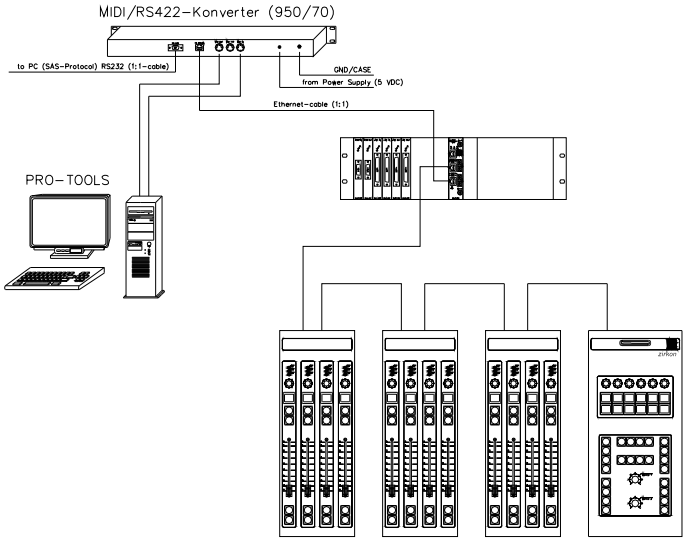
Connection is made using a standard RS422 9-pin D-Sub cable; the maximum cable length is 10m. The external system must support the Lawo Diamond protocol.

To use this type of system, source names inside the **zirkon** must match those inside the radio automation system. When the radio automation system starts, it will then control console fader strips assigned to the programmed sources.

The actual functions of the radio automation depend on the system used. Please refer to 'TD_zirkon_sas_protocol' document for full details on the Diamond protocol and its implementation.

ProTools™ Control

Alternatively, the master board's serial (RS-422) port may be connected, via a serial to MIDI interface, to an external Protools™ system as shown below:



The protocol used is the Mackie HUI. For more details on the MIDI interface shown above, please consult the relevant data sheet.

Snapshots and Memories

One of the major benefits of the **zirkon** is the ability to store and recall personal settings.

Tip

For example, within an on-air radio studio, you may use snapshots to recall preferred desk layouts and presenter mic settings so that each show presenter can have their own EQ, Compressor setting, etc.

Up to 128 snapshots can be stored on a Compact Flash memory card. Alternatively, snapshots may be saved and loaded onto PC using Vistool touch screen functions.

In addition to snapshots, each **zirkon** also includes 5 internal memories. Snapshots and memories store exactly the same data. However, as the 5 internal memories are stored on the zirkon/Nova17 master board, they are more suitable for specific studio setups which do not need to be transferred between consoles. For example, you may wish to use internal memories to store generic setups such as a 'zero desk' memory to reset the console to default values.

What's Stored in a Snapshot and Memory?

The following settings may be stored within each snapshot or internal memory:

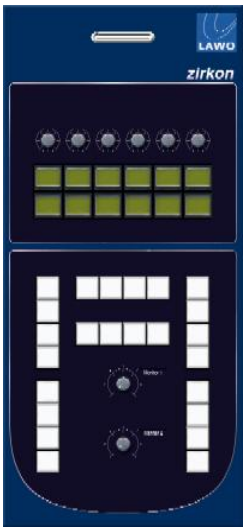
- Fader Strip Assignment – the assignment of sources to physical and virtual fader strips.
- DSP settings – Input Parameters, EQ, Dynamics, Limiter, Delay and Bus Send Levels.
- Fader Levels (optional) – the setting of the 'Save Value' parameter within the console configuration determines whether fader levels are stored and recalled. Saving of fader levels is recommended for production systems, but not for on-air to avoid accidental recalls during a live transmission. Please consult your systems engineer for details.
- Bus Assignment – the assignment of sources onto any of the console's summing busses, with level adjustment if applicable.
- 32 Logical States – the status of 32 logical states may be saved. Please consult your systems engineer for details on which states are saved within your configuration.

Note

Note that the system configuration may specify whether snapshots and memories save and load parameters for all faders of the console, or only up to a certain fader number. This is set by the 'Snapshot faderoffset' parameter. Please consult your systems engineer for details.

External Memory Cards

User snapshots are normally saved to Compact Flash card using the memory card reader/writer in the Central Module of the console:



For systems shipped after the release of V2.6 software (Central Module type 950/55), Compact Flash cards are used. Please use cards of:

- Type 1
- Minimum capacity of 64MB.

Each card stores up to 128 snapshots.

Note

Note that prior to Version 2.6 software (Central Module types 950/42 and 950/45), **zirkon** systems were supplied with a 64KBit chip card reader. Each of these cards stores a single snapshot.

Warning

Warning

DO NOT insert a **zirkon** memory card into a PC or other device as this may reformat the card deleting stored snapshots.

DO NOT insert a memory card used for other applications into the **zirkon**, as the system automatically re-formats cards of a foreign type.

Only extract the card after the data read/write LED has gone out. Failure to do so could corrupt data during the read/write process.

For operational details on how to load, save and erase snapshots to/from memory card, please see Page 93 (**zirkon**) or Page 115 (**zirkonXL**).

PC Snapshot Storage

Alternatively, snapshots may be saved to and loaded from PC using Vistool PC snapshot screen functions. In a networked installation with several consoles, it may make sense to store snapshots on a central file server.

In the example below, snapshots have been called 'profiles'. Selecting the **Load PC Snap** button brings up the snapshots folder stored on a central network server within the installation. This allows each presenter to create their own snapshot and then load it to any studio console.

Transferring Snapshots to a Different Console

It is possible to save and load snapshots on different consoles either by saving to and then loading from memory card, or using a networked configuration as shown above.

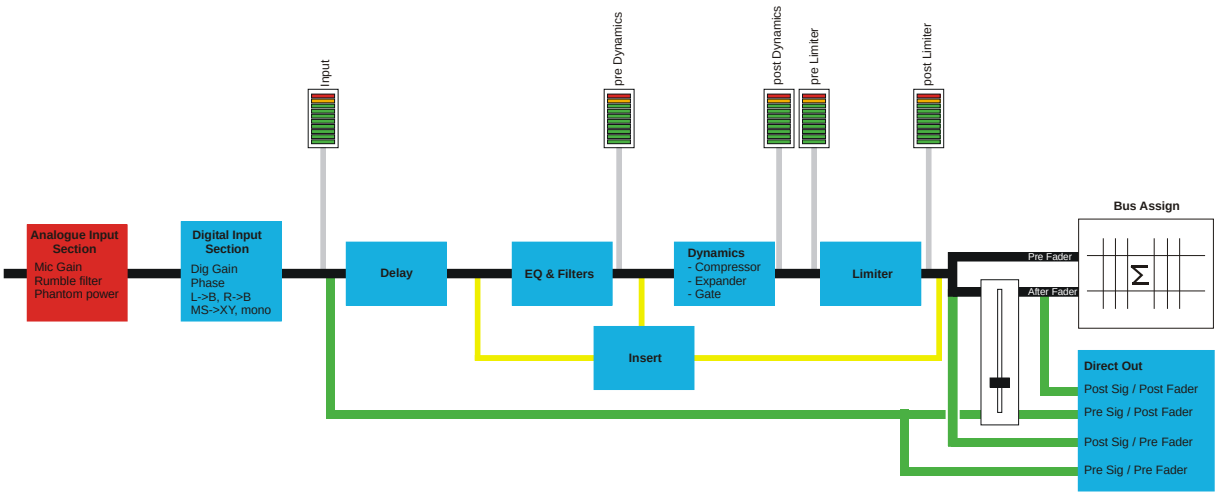
When you load a snapshot to a different console, the settings which can be recalled are dependent on the configurations of the two consoles.

Only settings for sources with the same name can be loaded to a different console. For example, if Studio 1's **zirkon** is configured with sources named **CD**, **MD**, **DJ** and **PTools**, and Studio 2 only has sources named **CD**, **MD** and **DJ**, then a snapshot saved in Studio 1 and loaded in Studio 2 will recall settings to all sources except **PTools**.

In addition, if the CD source is Studio 1 has eq but in Studio 2 there is no eq allocated in the configuration, the saved EQ settings cannot be recalled.

Source Parameters

Source parameters become active when a source is assigned to a fader on the control surface. The following diagram shows the maximum number of processing modules which may be allocated to any source:



Let's look at each processing section in more detail:

Analogue and Digital Input Sections

The 'input' sections contain input and pan parameters. The parameters available depend on whether the source is mono, stereo or surround and whether it is fed from a mic, line or digital input card.

Analogue Input Section (Mic Sources only)

This section is available for microphone pre-amplifier sources only. The following parameters may be controlled in the analogue domain before analogue-to-digital conversion:

- Mic gain – analogue mic pre-amp gain from 0dB to +70dB.
- 48V – phantom power switching.
- Rumble Filter - a high pass 'rumble' filter to roll-off subsonic frequencies at 40Hz, 80Hz or 140Hz.

Digital Input Section

The digital 'input' section contains both input and pan parameters set in the digital domain:

Mono Sources

- Gain - digital gain from -18dB to +30dB.
- Phase reverse – on/off.
- Pan position: either left/right stereo panning OR left/centre/right and front/rear 5-channel surround panning.
- Centre slope – may be adjusted from 0.0 to 1.0. This parameter adjusts signals feeding to the discrete centre channel within the surround field, and may be used to adjust the balance between discrete and phantom centre signals. To see the effect, position the channel to front centre, and adjust the slope to a setting of 1.0; the signal feeds only the discrete centre channel. Now set the slope to a value of 0.0; the signal now feeds only the left and right channels (phantom centre).
- LFE level – the level to the Low Frequency Effect (Sub) output. May be adjusted from -120 to +9 dB.

Note that surround panning, centre slope and LFE level parameters may be disabled within the configuration to simplify operation for stereo installations. Please consult your systems engineer for more details.

Note

Stereo Sources

- Gain - digital gain from -18dB to +30dB.
- Phase reverse of the left channel – on/off.
- Input options – to deal with problem sources quickly, each stereo source can be set for Left to Both, Right to Both, mono, MS->XY or normal stereo input routing.
- Balance – left/right input balance. Balance may be set from -12 to +12 with 0 representing the default position.
- Width – left/right width. Default stereo width is represented by 5; decrease the value to 0 to reduce the width, and increase the value to 10 to expand the width.
- LFE level – the level to the Low Frequency Effect (Sub) output. May be adjusted from -120 to +9 dB.

Note that the LFE level parameter may be disabled within the configuration. Front/rear panning and centre slope are not available for stereo sources.

Note

Surround Sources

- Gain - digital gain from -18dB to +30dB.
- LFE level – the level to the Low Frequency Effect (Sub) output. May be adjusted from -120 to +9 dB.

Note

Note that a surround source is assigned directly to a surround bus (e.g. Left to Left, Centre to Centre, etc.), so there is no LCR or Front/Rear panning.

If a surround source is assigned to a stereo bus, then the source is down mixed according to the surround down mix parameters set within the console configuration.

If a surround source is assigned to a mono bus, then the Centre channel from the source is assigned to the mono bus.

Summing Busses

No input parameters are available for summing busses.

For operational details on controlling input parameters, please see Page 54 (Channel Module), Page 83 (**zirkon**) or Page 104 (**zirkonXL**).

Metering

The SIG LED on the Channel Module and CHANNEL meter on the XL Central Module are *always* fed from the Input meter point.

If you have the optional Vistool RT application, then you may have on-screen Channel meters configured on the Vistool display. These can be set to meter any of the following within the configuration:

- Input
- Pre Dynamics
- Post Dynamics
- Pre Limiter
- Post Limiter

Please consult your systems engineer for more details on your configuration.

Delay

Depending on the configuration, delay may be inserted on each source or summing bus and adjusted in ms, frames or meters. Depending on whether the system is running at 48kHz or 44.1kHz, parameters may be adjusted as follows:

	48kHz Operation	44.1kHz Operation
Delay (ms)	0 to 340	0 to 368
Delay (meters)	0 to 112	0 to 121
Delay (frames)	0 to 10	0 to 11

For operational details on controlling the delay, please see Page 92 (**zirkon**) or Page 114 (**zirkonXL**).

Equalisation and Filters

Depending on the configuration, EQ may be applied to each source or summing bus. The EQ section features a 3-band parametric equaliser, plus high and low pass filter sections which may be used either as fixed slope filters (12dB per octave) or shelving EQ.

Parameters may be set as follows:

	Low	Low Mid	Mid	High Mid	High
Type	HPF/Shelf	Parametric	Parametric	Parametric	LPF/Shelf
Gain (db)	-15 to +15	-15 to +15	-15 to +15	-15 to +15	-15 to +15
Freq (Hz)	20 to 18k	20 to 18k	20 to 18k	20 to 18k	20 to 18k
Q	n/a	0.7 to 5.0	0.7 to 5.0	0.7 to 5.0	n/a

For operational details on controlling equalisation, please see Page 88 (**zirkon**) or Page 110 (**zirkonXL**).

Gate, Expander and Compressor

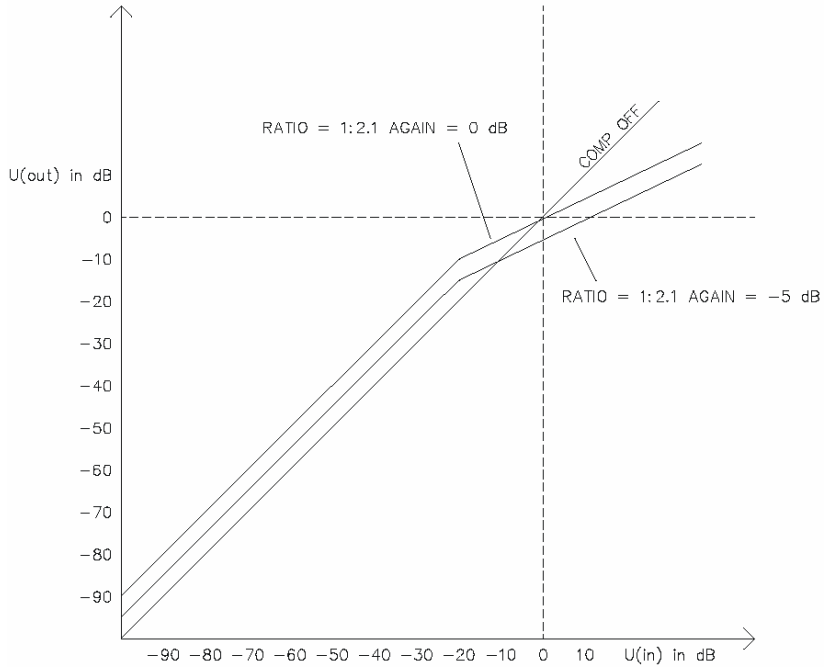
Depending on the configuration, dynamics may be applied to each source or summing bus. The dynamics section includes an independent gate, expander and compressor. Note that a limiter is also available, as a separate DSP module.

Master dynamics on/off switching and manual attenuation (-12dB to 0dB) are available for the full section, plus the following section parameters:

	Gate	Expander	Compressor
Independent On/Off	Yes	Yes	Yes
Threshold (dB)	-93 to +27	-93 to +27	-93 to +27
Ratio	n/a	1:1 to 1:0.1	1:1 to 1:16
Attack (ms)	0.16 to 82	n/a	0.16 to 82
Release (ms)	1 to 5000	n/a	1 to 5000
Automatic gain make-up	No	No	Yes

Note that the characteristic of the compressor is optimised for radio on-air operation:

Note



The ratio pivot point moves around the working point according to the input signal level and not around a fixed threshold. This allows the ratio to adapt without having to change the level considerably.

For operational details on controlling dynamics, please see Page 89 (**zirkon**) or Page 112 (**zirkonXL**).

Limiter

In addition to gate, expander and compressor, a limiter may be configured for each source or summing bus. This means that some of your sources may be configured to have dynamics plus limiter, some limiter only, and so on.

Parameters may be set as follows:

	Limiter
On/Off	Yes
Threshold (dB)	-93 to +27
Release (ms)	1 to 5000

For operational details on controlling the limiter, please see Page 90 (**zirkon**) or Page 113 (**zirkonXL**).

Insert Send/Return

In addition to onboard signal processing, each source features an insert send and return for external equipment. Inserts are not available for summing busses.

Note that the devices you may insert are programmed within the configuration. For example, analogue input 5 and output 5 may have been defined as an insert device called **DBX**, analogue input/output 6 as an insert called **L1**, etc.

Note

You may then assign mono devices on mono sources; if a stereo device is assigned to a mono source only the left channel is used.

Warning

Warning

A device may only be inserted on one source at a time. If you select an insert device which is already in use elsewhere, then the connections will be removed from the current source and replaced by the new assignment.

The insert point for each source may also be switched to the following positions in the signal flow:

- Pre EQ.
- Post EQ.
- Post Dynamics (post dynamics and limiter if both are configured).

For operational details on controlling the insert send and return, please see Page 90 (**zirkon**) or Page 106 (**zirkonXL**).

Direct Outs

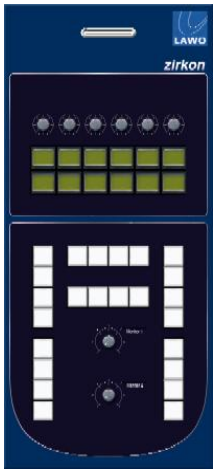
In addition to the source parameters described above, each fader on the console can be assigned a Direct Out. The Direct Out is assigned within the configuration and cannot be changed by the operator.

Configuration options for the position of the direct out are:

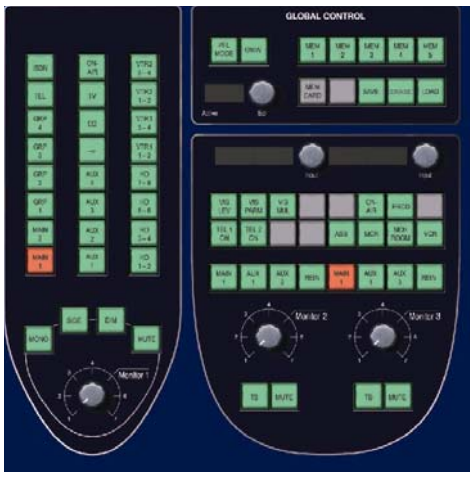
- Pre fader, pre processing.
- Pre fader, post processing.
- Post fader, pre processing.
- Post fader, post processing.

Monitoring

The console's monitoring is controlled from the programmable Monitor Level Controls and MF Keys on the **zirkon** and **zirkonXL** Central Control Modules. The functions and layout of these controls is defined within the configuration, and there are a variety of options available:



Central Module



Central Module XL

- **Monitor Level Control** - The **zirkon** features two, and the **zirkonXL** three, programmable level controls. Typically these are used provide separate controls for studio loudspeaker level, presenter headphone level and perhaps guest headphone level.
- **Monitor Source Selection** - some of the MF Keys on the **zirkon** and **zirkonXL** are normally used for monitor source selection. Buttons may be grouped so that they provide separate selectors for say the main monitoring, presenter headphones and even for the guest headphone output.
- **Monitor Modes -** other MF keys may be programmed to provide a variety of monitor modes such as **MUTE**, **DIM**, **PHASE** and **MONO** monitoring.
- **Communications and Signalling -** MF keys may be programmed to provide communications switching and signalling such as **TB 1**, **TB 2**, red light, etc.
- **Other Functions** – particularly on the **zirkon**, MF keys are often used for other console functions such as bus assignment (e.g. **MAIN 2 DEF**, **AUX 1 DEF**, etc.).

PFL (Pre Fade Listen)

PFL is a function which is programmed within the configuration.

This means that it may appear on any of the four Channel Module MF keys and may operate in a variety of ways. When PFL is activated for a source, the source is routed onto the console's dedicated stereo PFL bus. Note that if you activate PFL on a surround source (5.1), the channels will be down mixed to the stereo PFL bus.

The PFL bus may then automatically appear on your studio speakers, headphones or be routed to a separate PFL output. Alternatively, Central Module MF keys may be programmed to provide listening options such 'PFL to Phones', etc.

In addition, the colour coding and functionality of the fader strip PFL button may be programmed differently from console to console. For example, when PFL is active for a source, the key may light in red; when PFL is off, the key may light in green; when the source is in PFL prepare (see below) the key may blink. Also the PFL button may be programmed to be latching or momentary. For details, please consult your systems engineer.

Note also, that from V2.7 software, a second PFL bus may be defined within the system's configuration.

PFL Modes

A number of operator adjustable PFL modes are available from the Central Module. The following examples are based on a console with latching **PFL** buttons:

⏩ PFL SUM

This is the default mode of operation and allows multiple sources to be summed onto the PFL bus:

1. On a closed fader select the **PFL** button.

The source is routed onto the stereo PFL bus (PFL Active). Multiple PFL buttons may be selected to listen to a number of sources.

2. Open the fader.

The PFL is cancelled (PFL Off) and your monitor output will return to its previous selection.

3. Close the fader and PFL remains off.

4. On an open fader, select the **PFL** button.

Your monitoring does not change but the source is put into a state called 'PFL prepare'. This means that when you close the fader, PFL will be re-enabled. PFL Prepare may be indicated by a change of button colour or state.

5. Close the fader and PFL is enabled.

The source is routed onto the stereo PFL bus (PFL Active).

6. If you open the fader, PFL is cancelled and will not become active again until you reselect the **PFL** button.

⏩ PFL SUM R

This mode is similar to PFL SUM but allows the PFL to recur:

1. On a closed fader select the **PFL** button.

The source is routed onto the stereo PFL bus (PFL Active). Multiple PFL buttons may be selected to listen to a number of sources.

2. Open the fader.

The PFL is cancelled and your monitor output will return to its previous selection. The source is put into PFL prepare.

3. Close the fader and PFL is re-enabled.

The source is routed back onto the stereo PFL bus (PFL Active).

4. On an open fader, select the **PFL** button.

The source is put into PFL Prepare.

5. Close the fader and PFL is enabled.

The source is routed onto the stereo PFL bus.

6. Deselect all **PFL** buttons to cancel PFL active and/or PFL prepare.

⏩ PFL PFL

This mode changes the operation of the **PFL** buttons so that they inter cancel. In this mode, only one source may ever be in PFL.

1. On a closed fader select the **PFL** button.

The source is routed onto the stereo PFL bus (PFL Active).

2. On another closed fader select the **PFL** button.

The first PFL is cancelled and the new selection is routed onto the stereo PFL bus (PFL Active).

3. Open the fader.

The PFL is cancelled and your monitor output will return to its previous selection (PFL Off).

4. On an open fader, select the **PFL** button.

The source is put into PFL Prepare.

5. Close the fader and PFL is enabled.

The source is routed onto the stereo PFL bus.

6. If you open the fader, PFL is cancelled and will not become active again until you reselect the **PFL** button.

PFL PFL R

This mode is similar to PFL PFL but allows the PFL to recur:

1. On a closed fader select the **PFL** button.

The source is routed onto the stereo PFL bus (PFL Active).

2. On another closed fader select the **PFL** button.

The first PFL is cancelled and the new selection is routed onto the stereo PFL bus (PFL Active).

3. Open the fader.

The PFL is cancelled and your monitor output will return to its previous selection. The source is put into PFL Prepare.

4. Close the fader and PFL is enabled.

The source is routed onto the stereo PFL bus (PFL Active).

5. Deselect all **PFL** buttons to cancel PFL active and/or PFL prepare.

PFL AW

This mode is called PFL Always and is identical to PFL SUM with the exception that it allows open faders to be put into PFL rather than PFL Prepare.

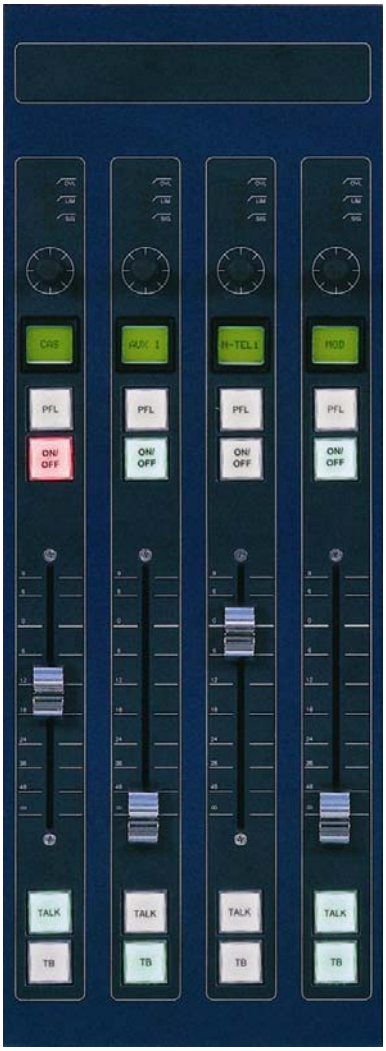
Use this mode if you wish to PFL open faders. For example, if a source is feeding a record bus but not programme the fader will be open and you may wish to PFL the signal before routing to programme.

Note

For operational details on how to change the PFL Mode, please see Page 98 (**zirkon**) or Page 118 (**zirkonXL**).

Buttons and Controls

Multi-function Keys (MF Keys)



Each MF key on the channel and central modules is programmed using the console's configuration software. Not only does this define the key's function, but also how the key lights and behaves in response to other logical functions.

Any key may be programmed to light in red, white, yellow or green, with steady state, blinking or low light modes to indicate different statuses. This means that, for example, on your console the channel **PFL** button may be green when not selected and red when active, while the fader **START** button may be green when inactive and yellow when active.

MF Keys are labeled with an inserted foil so hopefully you will recognise the functions that have been programmed onto your console! If you are in doubt about the functions or statuses on your system, please contact your systems engineer for support.

Self-labelling LCD Buttons

The fader strip Access Key, and 12 LCD buttons on the standard Central Module, feature a self-labeling display which updates depending on the current mode of operation.

Each of these buttons is coloured red when selected, and green when not selected.

Up to three lines of text, with 6 characters per line, may be displayed to indicate the button's current function.

Note that the displays work in conjunction with the rotary controls. For example, on a fader strip assigned to a microphone source, the button may currently be labeled to show the name of the source (e.g. **MOD**). Tap down on the rotary control and the display updates to show the control's function (e.g. **mic** gain) and value (e.g. **0db**). After a couple of seconds, the display returns to the source name.

Rotary Controls

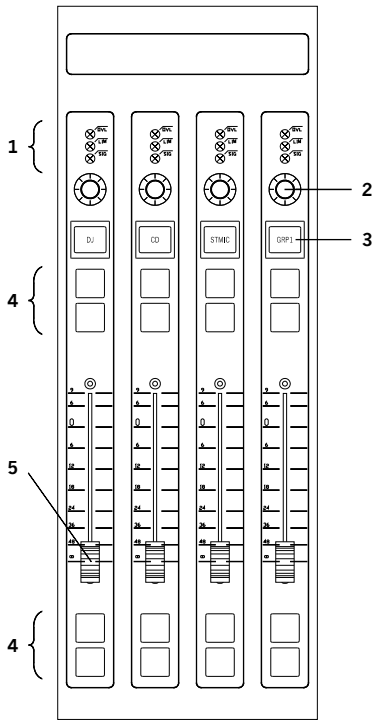
The rotary controls on both the Channel and Central Modules often toggle between two functions by pushing down on them. For example, on a fader strip assigned to a microphone source, turn the control to adjust mic gain. Now press down on the control to change to the secondary function (e.g. Pan) and turn to adjust the pan setting.

Note that the rotary controls are not touch sensitive so you will need to either turn them or press down on the control to check the value of a parameter.

Quick Reference Guide

Channel Module:

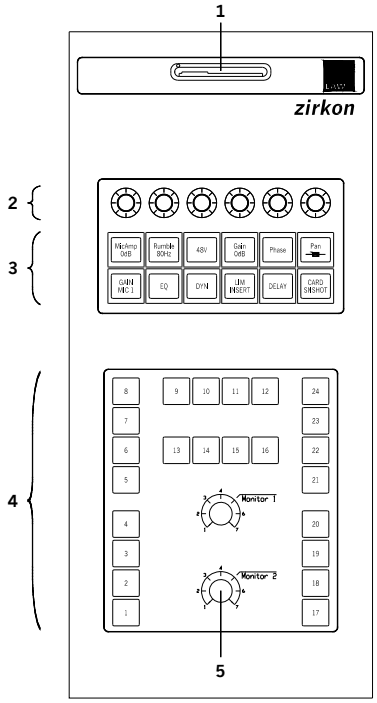
Each Channel Module provides 4 identical fader strips with the following controls:



1	**Status LEDs:**	The overload (**OVR**) LED illuminates if the input signal to the channel overloads. If this occurs, reduce your mic or line input gain to avoid signal distortion. The limiter (**LIM**) LED illuminates when the channel limiter is active. The signal (**SIG**) LED illuminates when a signal over -20dB* in level is present at the channel input. (* This threshold is set within the configuration.)
2	**Rotary Control**	The rotary control is assignable to functions such as input gain, pan/balance or aux send level. When you turn or tap down on the control, the Access Key display updates to show the current function and value.
3	**Access Key**	The Access Key is used to select the fader strip for Central Control Module operations such as assigning a new source, assigning to a bus or adjusting EQ and Dynamics. In addition, the key features a self-labelling LCD button which updates depending on the mode selected. Normally, the display shows the name of the source assigned to the fader strip.
4	**MF Keys 1 to 4**	The 4 multi-function (MF) keys are programmable within the configuration and are assigned to the source. This means that source specific functions, such as fader starts, move with the source when reassigned to a different position on the control surface. Typical MF Key applications include PFL and fader start operations.
5	**Fader**	The fader is motorised and comes with a choice of fader scale options: • - ∞ to +9dB • - ∞ to 0dB

Central Module:

The **zirkon** Central Module provides the following controls:



1	**Memory Card Reader**	Snapshots may be saved and loaded to/from an external memory card. Insert a memory card and the 12 LCD buttons automatically update to the snapshot sub menus.
2	**Rotary Controls**	The 6 assignable rotary controls work in conjunction with the 12 LCD buttons. For example, with the EQ sub menu selected, use the rotary controls to adjust frequency, gain and Q for the appropriate EQ band.
3	**12 LCD Buttons**	The 12 LCD buttons have two primary modes of operation: top level functions and sub menus (available when a source is 'in access'.) The top level functions are programmed by the configuration; typical functions may include emergency commands like 'Play/Kill Advert Break' or setup functions like fader strip assignment. The sub menus have a fixed layout and access signal processing (gain, eq, dynamics, limiter/insert, delay) and memory/snapshot management.
4	**MF Keys 1 to 24**	The 24 multi-function (MF) keys are programmable within the configuration. Typical applications include external monitor source selection, monitor modes such as Mute, Dim and Mono, communications and bus assign.
5	**Level Controls**	The Monitor Level 1 and 2 rotary controls are also programmed by the configuration. Typical applications include studio loudspeaker and presenter headphone levels or panning.

To put a source 'in access', press the fader strip Access Key.

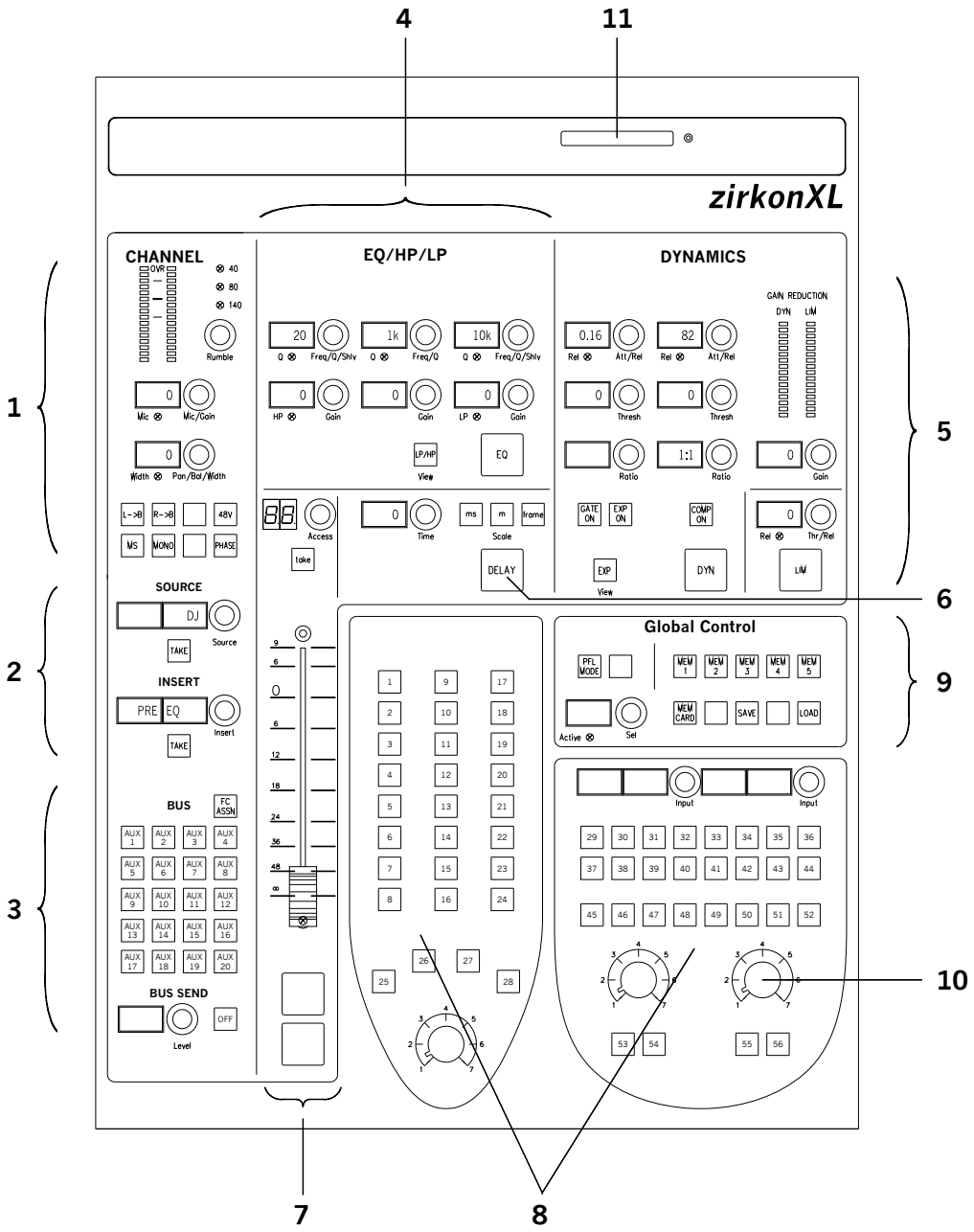
Note

Note that prior to Release 2.6 software (Central Module types 950/42 and 950/45), **zirkon** systems were supplied with a 64KBit chip card reader. Each of these cards stores a single snapshot.

Central Module XL:

The Central Module XL provides the same functionality as the Central Module with more direct access to audio parameters. The Module is divided into two main areas:

- Source Parameters (shaded grey on the drawing below) – input metering, gain, EQ, Dynamics, etc. for the source which is 'in access'. To put a source 'in access', press the fader strip Access Key.
- The remaining controls provide master functions such as snapshot/memory management, PFL options, monitoring, and communications.



1	**CHANNEL Input Section**	Input metering and control of parameters such as analogue mic/line gain, 48V, digital gain, phase reverse, panning, etc.
2	**SOURCE and INSERT Assign**	Fader strip assignment (SOURCE) and insert send/return assignment (INSERT).
3	**BUS Assign**	Direct bus assignment onto any 20 summing busses, with optional send level control.
4	**EQ/HP/LP**	Dedicated Gain and Frequency/Q/Type controls for the channel's 3-band parametric EQ section, and High/Low Pass filters.
5	**DYNAMICS**	Control of the gate, expander, compressor and limiter sections
6	**DELAY**	Control of channel delay (up to 340 ms at 48kHz) in ms, metres or frames.
7	**Fader Strip control**	Controls the fader level and MF Key 3 & 4 functions for the source 'in access'. (MF Keys 1 & 2 are only available from the Channel Module.) Turn the ACCESS rotary control to change the source 'in access'.
8	**MF Keys 1 to 56**	The 56 multi-function (MF) keys are programmable within the configuration. Typical applications include external monitor source selection, monitor modes.
9	**GLOBAL CONTROLs**	128 snapshots may be saved and loaded to/from an external compact flash memory card. In addition, you may save settings to the console's 5 internal memories.
10	**Level Controls**	The Monitor 1, 2 and 3 rotary controls are also programmed by the configuration. Typical applications include studio loudspeaker, presenter and guest headphone levels or panning.
11	**Memory Card Reader**	Up to 128 snapshots may be saved and loaded to/from an external memory card.

Note

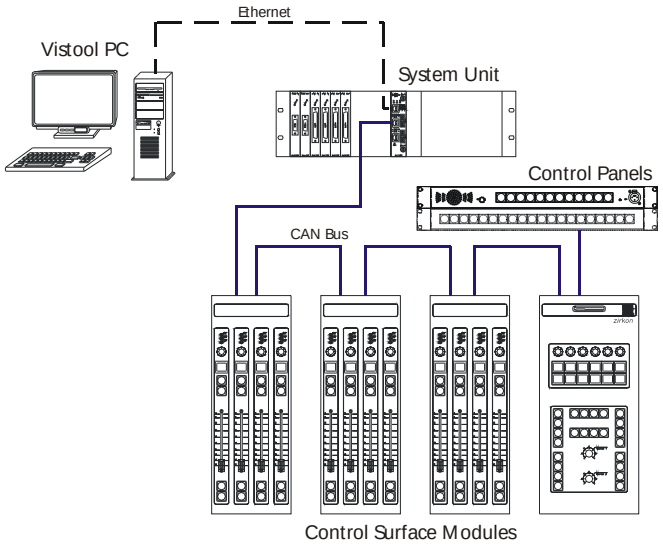
Not all signal processing functions may be available for every source in your installation. For example, if a source has not been assigned EQ within the console configuration, then the EQ section will be inactive.

Chapter 2: Getting Started

Switching on the Power

Having covered the basic concepts of the **zirkon**, let's look at how to get started on the console from scratch. We are assuming that your console is fully commissioned such that a suitable configuration has been downloaded and all MF keys are fully labeled.

The **zirkon** consists of several components: the system unit, control surface modules, plus options such as Vistool, additional Key Panels and other networked consoles or routers.



Components may be powered in any order. This means that you can begin Vistool operations without power to the control surface, or even power off a Channel Module without affecting other Channel or Central Modules in the system.

Let's assume that you turn on the master power switch for all system components. You will see an initial flicker of LEDs on the control surface modules, and flashing status LEDs on the front of the System Unit.

When the control system finishes booting, the console is ready for operation – this takes approximately 15-20 seconds from power on depending on the system specification.

At the end of the boot-up, the control system automatically loads the console's warm start data; this is the status of the console as stored when the system was last shut down. This means that when you turn on the power you will get back to wherever you were when the power was last turned off.

Depending on who was last using the console, you may be sat in front of a fully configured control surface with DSP settings or a series of blank fader strips!

Resetting the Console

At this point, it might be a good idea to reset the console back to something sensible so that you can work through some of the basic functions and create your own operating snapshot.

The fastest way to do this is to load back an existing 'zero desk' memory or snapshot. The **zirkon**'s 5 internal memories are a great place to store and recall 'zero desk' settings or starting templates for different types of show or production. A 'zero desk' template can provide a common starting point for all users from which they can create their own personal or show specific snapshots.

Note

Note that your studio may operate a different policy. For example, all your user data may be stored as snapshots either on compact flash memory cards or a networked server. Please consult your systems engineer for advice on working with snapshot/memory data within your facility.

For operational instructions on how to load an internal memory to reset the console, see Page 96 (**zirkon**) or Page 116 (**zirkonXL**).

Depending on the settings within the 'zero desk' memory, you may now be able to open up some source faders, turn up the studio monitor control and hear audio! Don't worry if this is not the case as we will now work through getting signal from input to output.

Monitoring a Signal

Next, let's take a signal (e.g. CD) from input to output.

Input/Source Attributes

Within the **zirkon** configuration software, physical inputs are 'hard wired' to source channels. This allows source specific features, such as fader start or mic live signalling, to follow the source when it is assigned to different fader strip positions.

Let's say that our CD player is physically connected to AES input 1 on one of our DALLIS I/O cards. Within our configuration, we should already have a stereo source channel, named **CD**, whose inputs are routed from AES input 1/1 and 1/2. This source will also have been given a number of attributes such as functions for the fader strip MF keys 1 to 4, allocation of DSP modules, etc.

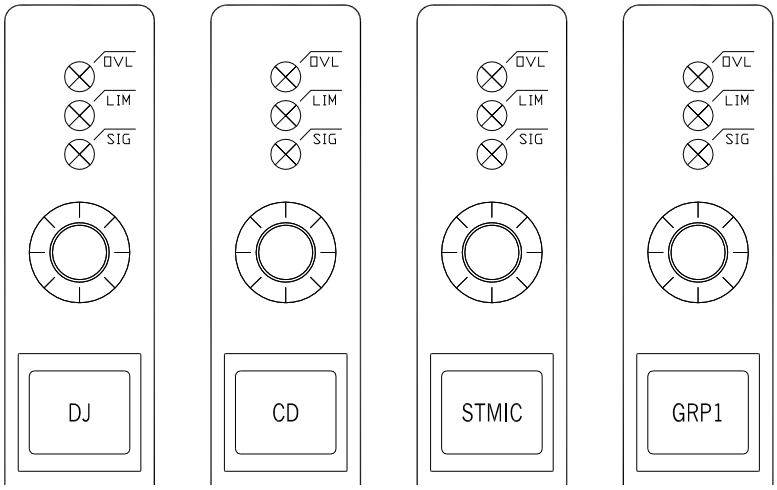
So, to route our CD player through the console, all we need to do is assign our pre-defined **CD** source channel to the control surface.

Note

Note that the configuration defines whether operators can assign all, or a subset of the system's sources, to fader strips. Therefore, it may be possible that your system does not allow fader strip assignment for simplicity of operation. For more details on your configuration, please consult your systems engineer.

Source Label

You can interrogate which sources are already assigned to the control surface from the Channel Module's Access Key displays (e.g. **DJ**, **CD**, etc):



Tip

If the Access Keys are showing additional information, then it may be that the console is in bus assign mode. Deselect any bus assign keys, see Pages 55 or 108, to revert to just the source label as above.

Assigning Sources to Fader Strips

If the CD source is not present on a fader strip, then you will need to assign it. You can assign the source to a blank fader strip or replace an existing assignment. However, note that when you remove a source from a fader strip, it is no longer input to the mix.

Note

Note that, depending on the setting of the 'Save Value' parameter within the console configuration, you may not be able to assign a source to an open fader for security reasons.

Also, you cannot assign the same source to the surface twice.

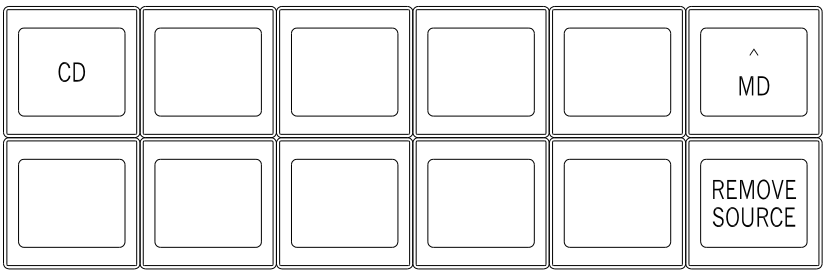
⏩ To assign a source to a fader strip:

zirkon

The assignment of fader strips on the **zirkon** Central Module is normally one of the functions programmed onto the 12 LCD buttons. However, as this is a programmable operation, please consult your systems engineer for specific details.

1. Make sure that the fader you wish to assign is closed. (Not always necessary, depending on the configuration.)
2. Press and hold the Access Key on the fader strip for about 5 seconds. Or, double press the Access Key:

The 12 LCD buttons update to show the source names which may be assigned to your fader:



3. Now press one of the source buttons (e.g. **CD**) to make the assignment.

The fader strip Access Key updates to show the new name of the source (e.g. CD); and the fader position updates to show the level of the source.

If the number of assignable sources exceeds the number of LCD buttons, then one of the buttons may display a **^** (e.g. **MD** in our example).

4. In this case, first turn the rotary control above the **^** button to scroll through more available sources and then press the **^** button to make the assignment.

5. To remove the current source leaving a blank fader strip, repeat steps 1 and 2, this time selecting the **REMOVE SOURCE** option.

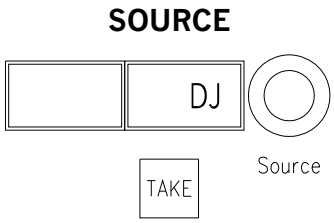
⏩ To assign a source to a fader strip:

1. Make sure that the fader you wish to assign is closed. (Not always necessary, depending on the configuration.)

2. Press the Access Key on the fader strip you wish to assign.

The ACCESS control display shows the number of the fader strip.

If you have selected a fader strip with a source already assigned, then the **TAKE** button, on the SOURCE assign panel, will be red with the name of current source shown in the SOURCE display, for example **DJ**.



3. Now turn the SOURCE assign rotary control to scroll through the available sources.

The TAKE button changes to green to indicate that you are now in select mode.

Note that summing busses are shown with a Σ prefix in the SOURCE display.

If the **TAKE** button light goes out, then the source cannot be assigned to the surface – it may be that the source is already assigned elsewhere on the surface.

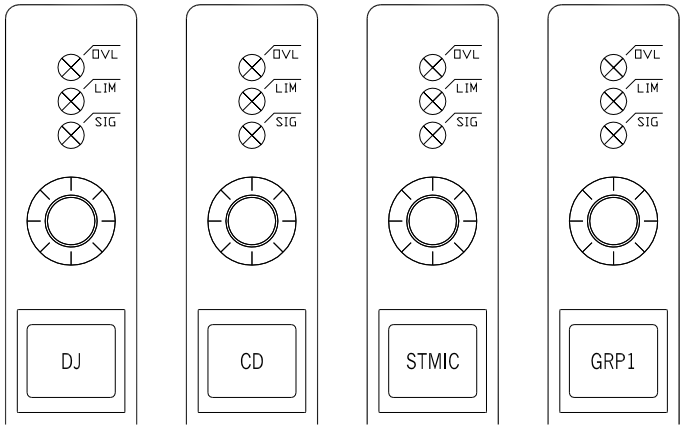
4. When you have found the source named **CD**, press the green **TAKE** button to assign it to the fader strip.

The TAKE button turns red; the fader strip Access Key updates to show the name of the source (e.g. CD); and the fader and other signal processing sections update to show the current parameters of the source.

5. To remove the current source leaving a blank fader strip, repeat steps 2 to 4, this time selecting the **REMOVE** option.

Signal Present

With the **CD** source assigned to the surface, and a disc playing in the machine, the Channel Module **SIG** LED should now be indicating signal present:



The signal (**SIG**) LED illuminates when a signal over -20dB* in level is present at the channel input. This provides a good overview of which channels have audio. (* The signal present threshold is set within the configuration so may be set to a different level according to your studio's requirements. Please consult your systems engineer for details.)

⏩ Additional input metering on the zirkonXL

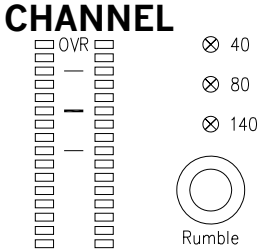
zirkonXL

On the Central Module XL, additional input metering is available by assigning the fader strip to the Central Module:

1. Press the Access Key on the fader strip you wish to meter.

The Access Key turns red to show that it is selected and the XL's Central Module updates to show the current parameters for the selected source.

The CHANNEL section features a stereo input meter:



The meter LEDs illuminate in green up to the nominal operating level, which illuminates in yellow. Once levels exceed the overload threshold, the red **OVR** flag is triggered. The nominal operating level and headroom are set within the configuration. Please consult your systems engineer for details.

Fader

Each fader on the **zirkon** is motorised and therefore the position of the fader *always* shows the mix level for that source, even when working with external radio automation systems (SAS).

When the console is commissioned, there is a choice of two fader scales:

- **- ∞ to +9dB** – On this scale, the 0dB position of the faders is clearly marked. The maximum position is at +9dB to match the headroom of analogue and digital audio interfaces.

Warning

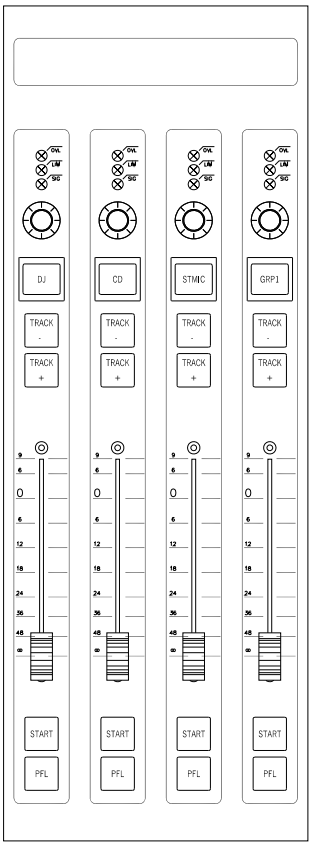
Only use the range between 0dB and +9dB to adjust very low level signals. If you apply gain in the region above 0dB for normal level signals then the output of the console may overload and cause distortion on the programme output!

- **- ∞ to 0dB** – On this scale, 0dB is the maximum position of the fader. This means that only negative attenuation may be applied to the signals from the fader.

Fader Start

One common application for the Channel Module's MF Keys is to provide a Fader Start function. This function is programmed within the configuration so may appear on your console in a number of ways. Here's a typical example:

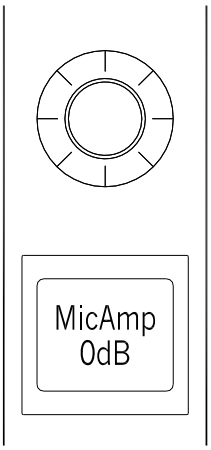
1. Select the **START** button and the fader will open automatically to the 0dB position. This guarantees precise playback levels for programme elements.
2. Deselect the **START** button to close the fader. This ensures that the fader level is now off and no longer contributing to the programme.



The faders are touch sensitive so you may intervene at any point by grabbing the fader!

Note that if the Hold mode is active within the configuration, then the fader will return to the last position set and not to 0dB.

Input Gain



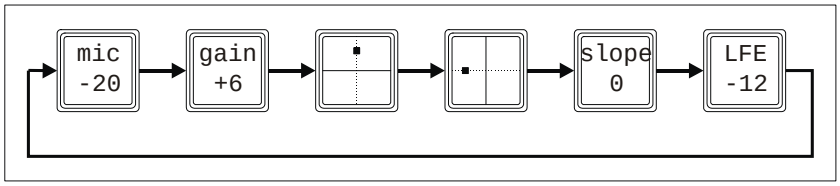
If the signal present (**SIG**) LED on the Channel Module is not illuminated or the signal seems very low level, then you should check the input gain as follows:

1. Turn the rotary control to set the input gain of the source in dB:
   - For mic sources, the display shows **mic**; gain may be set from 0dB to +70dB.
   - For line level or digital sources, the display shows **gain**; gain may be set from -30dB to +18dB.
   - If the fader strip is controlling a summing bus channel, the 'input gain' control has no function.

Note that when you are adjusting microphone input gain you are remotely controlling the analogue pre-amplifier gain before analogue-to digital conversion.

Pan/Balance

The Channel Module's rotary control may also be used to step through a number of other parameters:



For example, on a mono source:

1. Turn the rotary control to set the input gain as described above.
2. Tap down on the rotary control to switch to the next parameter - for example, Left/Centre/Right pan and turn the control to set the position.
3. Tap down on the rotary control again to step through the remaining parameters – for example, front/rear pan position, centre slope and LFE level.

Note that the available parameters depend on the format of the source, and whether or not surround panning is enabled within the configuration. See Page 30 for details on source parameters.

Also note that the order of parameters may be changed in the configuration. For example on your console, you may access panning before input gain. Please consult your systems engineer for more details.

Tip

You can check settings, without making a change, by tapping down on the control; the Access Key display updates to show the parameter function and value.

Aux Send Level

When in Bus Assign mode, the Channel Module's rotary control is used to set the send level from the source to the bus. See Page 56 or 59 for details.

Bus Assign

If the input gain and signal present LED are ok, the fader open and you still cannot hear audio, then it may be that the source is not assigned to the main output of the console.

Let's assume that your console uses the pre-defined **Main 1** bus to produce the console's main stereo output. If you are not hearing audio, then we need to check that our **CD** source is assigned to it.

Note

The configuration defines whether operator's can re-assign busses from the control surface, or whether sources are 'hard wired' to each bus. It is likely that in an on-air installation, sources are 'hard wired' to the Main 1 programme bus for simplicity and security. However, the following method is used to assign sources onto other busses such effects sends, groups, etc. For specific details on your console's bus structure, please consult your systems engineer.

⏩ Assigning sources to busses on the zirkon

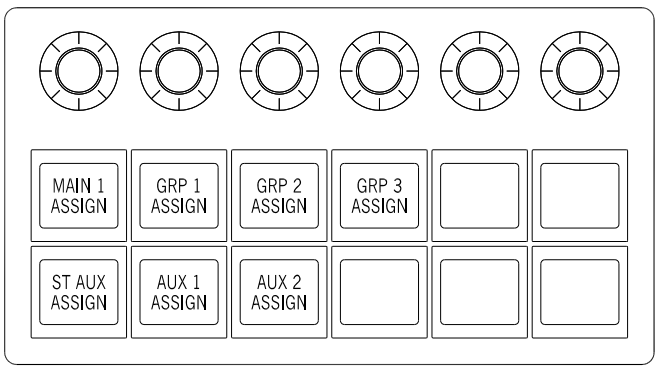
zirkon

Bus assignment on the zirkon is normally one of the functions programmed onto either the Central Module's 12 LCD buttons or 24 MF keys. As this is a programmable operation, please consult your systems engineer for specific details on which busses you can assign and how the assign buttons are labelled.

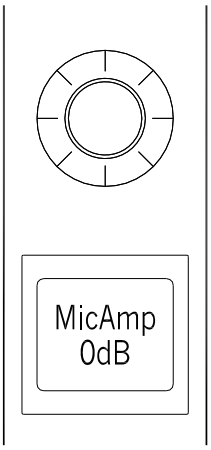
In the example which follows, the bus assign buttons are located as top level functions on the 12 LCD buttons.

1. To access the top level functions, turn off any selected (red) fader strip Access Keys.

The 12 LCD buttons update to their top level functions, for example:



2. Press the bus assign button you wish to route to – in our example **MAIN 1 ASSIGN**.



The fader strip Access Keys update to display three lines of information:

- Send level onto the bus in dB.
- Name of the bus you are assigning to.
- Name of the source controlled from the fader strip.

The Access Key colours indicate current assignments:

- Red – assigned pre fader (not available on all busses).
- Yellow – assigned post fader.
- Green – not assigned.

3. To route our CD source onto the Main 1 bus, press the **CD** Access Key until it is yellow.

Note

Note that assignments made onto the Main 1 and Main 2 busses are *always* post fader so the Access key will only toggle from green (off) to yellow (post fader send).

When assigning onto user defined busses, such as auxiliary sends, toggle the Access Key to change from pre fader (red) to post fader (yellow).

4. You may also use the rotary control above the fader strip Access Key to adjust the bus send level.

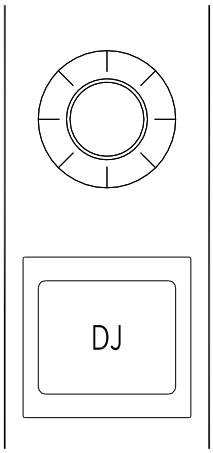
Gain may be adjusted from -120dB to +9dB.

Warning

Warning

Bus send levels to main and group busses should always be set to 0dB unless operating in special circumstances. Otherwise you will not achieve unity gain through the gain structure of the console.

5. When you have finished making assignments, deselect the **MAIN 1 ASSIGN** button on the Central Module.

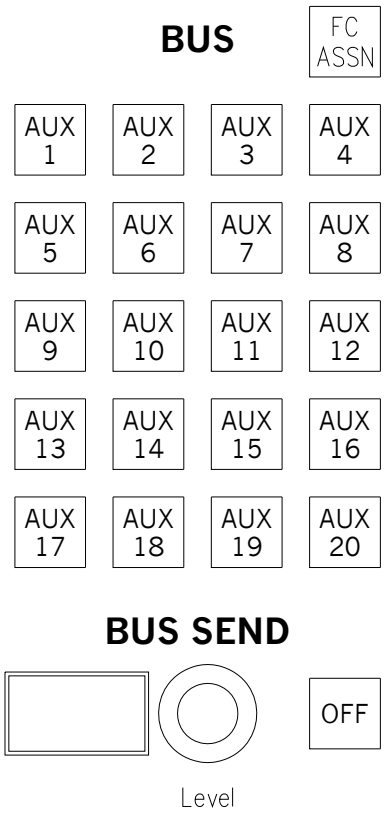


This exits the bus assign mode and returns the fader strip Access Keys to their normal source label displays.

Assigning sources to busses on the zirkonXL

zirkonXL

Bus assignments on the zirkonXL are made from the BUS assign panel:



Twenty keys are programmed within the configuration to allow assignments onto any of the Main 1, Main 2 and/or user defined summing busses. Please consult your systems engineer for specific details on your configuration.

There are two methods of assigning sources to busses on the zirkonXL:

- **Forward Bus Assign** – This is best when you wish to assign a source to multiple busses, for example to several aux outputs.
- **Reverse Bus Assign** – This is great when you wish to assign multiple sources to the same output bus, for example to set up a group.

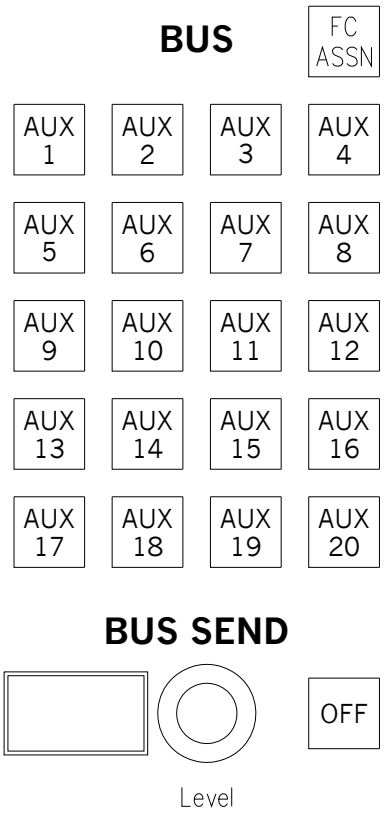
During both methods, you have the option to set the bus send level from each source.

For the purposes of this tutorial, we will use Reverse Bus Assign. Please see Page 108 for details on Forward Bus Assign.

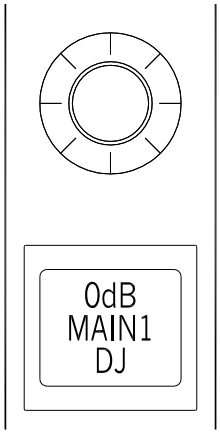
zirkonXL

Using reverse bus assign, first we select the bus and then the sources we wish to assign as follows:

1. On the BUS assign panel, press the **FC ASSN** button until it turns red:



This puts the BUS assign panel into Reverse Assign mode.



2. Now select the bus you wish to assign to, for example **MAIN 1**.

The fader strip Access Keys update to display three lines of information:

- Send level onto the bus in dB.
- Name of the bus you are assigning to.
- Name of the source controlled from the fader strip.

The Access Key colours indicate current assignments:

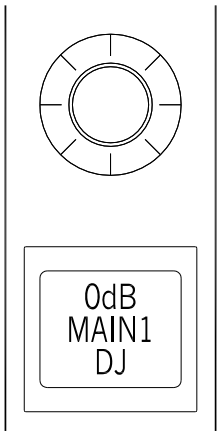
- Red – assigned pre fader (not available on all busses).
- Yellow – assigned post fader.
- Green – not assigned.

3. To route our CD source onto the Main 1 bus, press the **CD** Access Key until it is yellow.

Note

Note that assignments made onto the Main 1 and Main 2 busses are *always* post fader so the Access key will only toggle from green (off) to yellow (post fader send).

When assigning onto user defined busses, such as auxiliary sends, toggle the Access Keys to change from pre fader (red) to post fader (yellow).



4. You may also use the rotary control above the fader strip Access Key to adjust the bus send level.

Gain may be adjusted from -120dB to +9dB.

Warning

Warning

Bus send levels to main and group busses should always be set to 0dB unless operating in special circumstances. Otherwise you will not achieve unity gain through the gain structure of the console.

5. When you have finished making assignments, press the **FC ASSN** button to exit the bus setup mode.

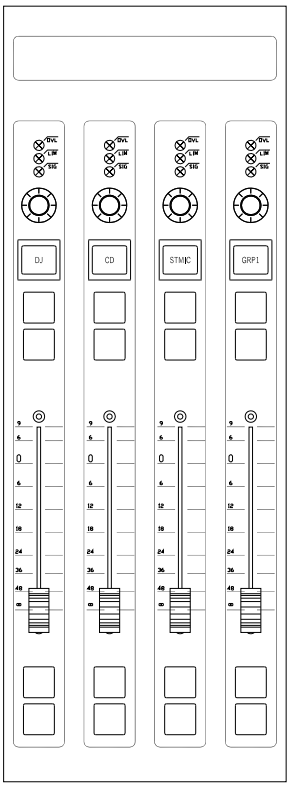
This exits the bus assign mode and returns the fader strip Access Keys to their normal displays.

Monitoring

If you still cannot hear audio, then check that you are monitoring the Main 1 output, and that the monitor level is turned up.

Note

The console's monitoring is controlled from the programmable Monitor Level Controls and MF Keys on the **zirkon** and **zirkonXL** Central Control Modules. The functions and layout of these controls is defined within the configuration, and there are a variety of options available, so please consult your systems engineer for specific details.



PFL (Pre Fade Listen)

You could also try to PFL the source by pressing the fader strip **PFL** button.

Note that PFL is a function which is programmed within the configuration. This means that it may appear on any of the four Channel Module MF keys and may be routed to studio speakers, headphones, etc. in a variety of ways.

For more details on PFL operation, see Page 39.

Trouble Shooting

Having checked the input section, bus assign and monitoring, if you are still not hearing audio then there are few other possibilities:

- Insert Send/Return is switched into circuit – check that the insert send/return is not killing the signal through the channel. See Page 90 (**zirkon**) or Page 106 (**zirkonXL**).
- Extreme Signal Processing settings – it may be possible that the signal processing is stopping the channel's signal. For example, a Gate may be set with too high a signal threshold.
- Bus Master is closed – remember that summing busses may also be assigned to fader strips, so if this is the case within your configuration, check that the output bus master fader is not closed.

If you still can't hear your audio source, then please consult your systems engineer. Or you could always go to the pub and try again later!

Applying Signal Processing

On both the **zirkon** and **zirkonXL** consoles, much of the source parameter operation is performed by assigning a fader strip to the Central Module. This is otherwise known as putting a source 'in access'.

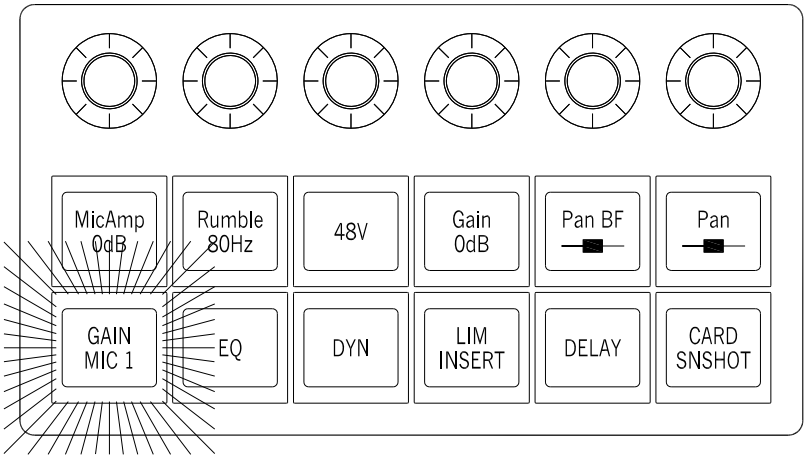
In this tutorial, we are going to look at how to apply EQ and Filters. For full details on all the available signal processing modules, please see Page 30.

Applying EQ on the zirkon:

zirkon

1. Press the Access Key on the fader strip you wish to control.

The Access Key turns red to show that it is selected and the 12 Central Module LCD buttons update as follows:



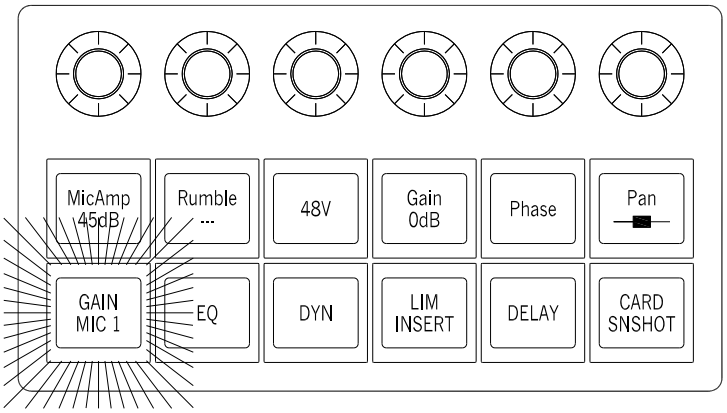
Note

Note that only one Access Key may ever be selected (red) as you can only ever control EQ, etc. for a single source at a time.

Also note that if you deselect the Access key (green), the 12 LCD buttons revert to their top level functions.

zirkon

2. Now press one of the bottom row LCD buttons to access the following six sub menus:



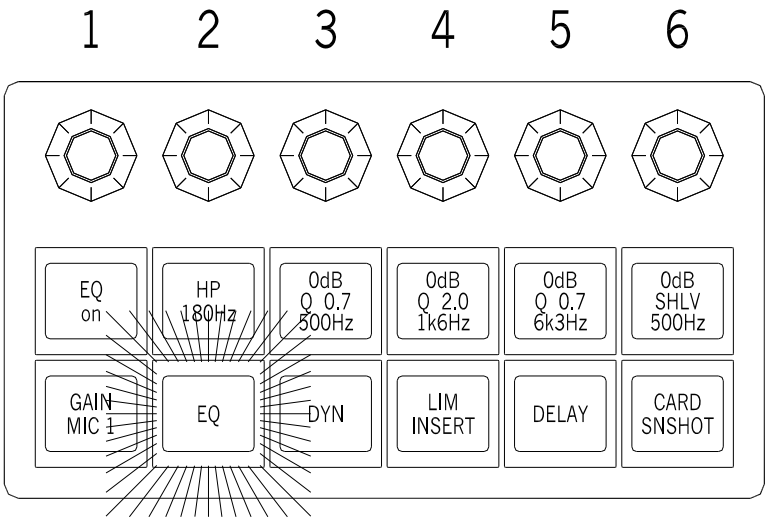
1	**GAIN/ Source Name**	Press this button to adjust input gain and other parameters. This button also displays the name of the source 'in access' (e.g. **MIC1**).
2	**EQ**	Press this button to adjust EQ and Filters.
3	**DYN**	Press this button to adjust the gate, expander and compressor sections.
4	**LIM/ INSERT**	Press this button to adjust the limiter and insert send/return.
5	**DELAY**	Press this button to adjust the channel delay.
6	**CARD/ SNSHOT**	Press this button to access the internal memory, snapshot and PFL sub menus.

Note

Note that not all the sub menus may be available for every source as this depends on the configuration. For example, if there is no EQ allocated to a source then the **EQ** sub menu will not appear.

3. To control settings within the sub menus, now use the top row of LCD buttons and associated rotary controls. For example, selecting **EQ** provides access to:

zirkon



1	**EQ on**	Master on/off switching for the EQ and Filters section. (Rotary control is unassigned.)
2	**HPF/Shelf**	Press the LCD button to toggle between a High Pass Filter (HP) and Low Frequency Shelving EQ (SHLV). Turn the rotary control to adjust gain in dB. Press and hold and turn the rotary control to adjust frequency in Hz.
3	**Low Mid EQ**	For each parametric EQ band: Press the LCD button to switch the rotary control from gain to Q. Turn the rotary control to adjust either gain or Q. Press and hold and turn the rotary control to adjust frequency in Hz.
4	**Mid EQ**	
5	**High Mid EQ**	
6	**LPF/Shelf**	Press the LCD button to toggle between a Low Pass Filter (LP) and High Frequency Shelving EQ (SHLV). Turn the rotary control to adjust gain in dB. Press and hold and turn the rotary control to adjust frequency in Hz.

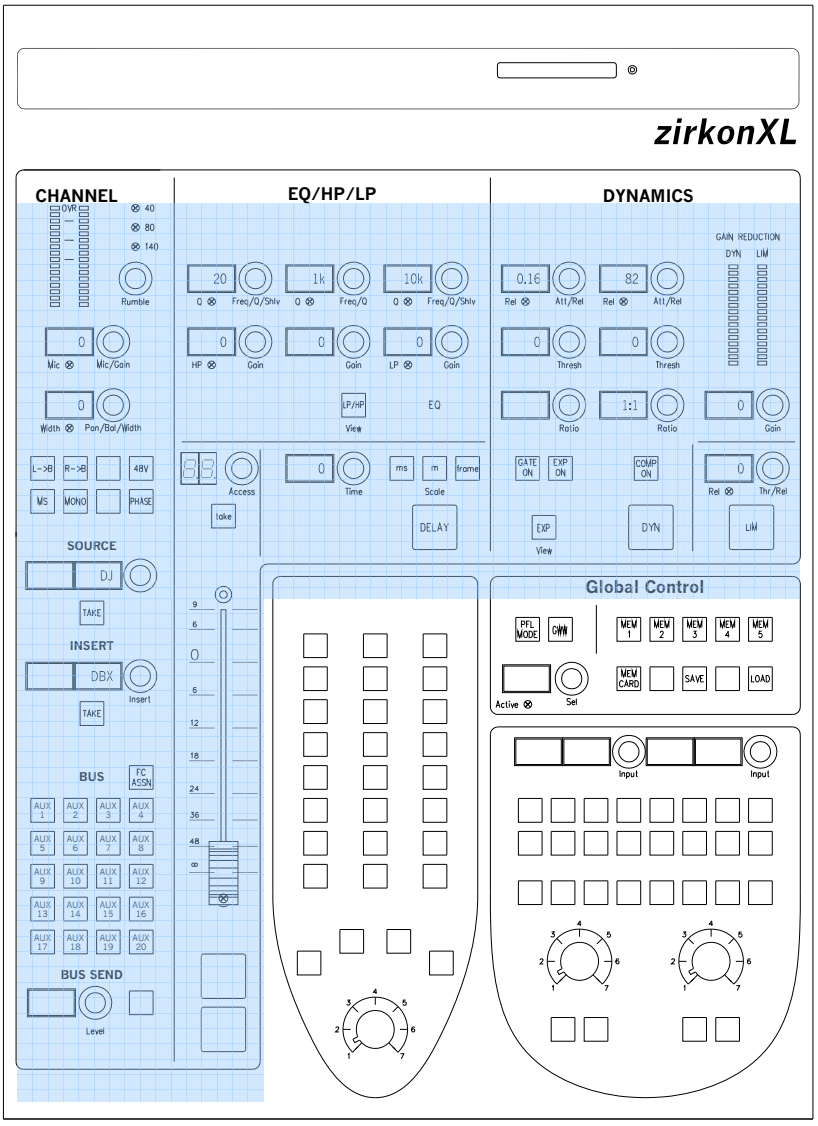
For details on EQ parameters, please see Page 34.

zirkonXL

Applying EQ on the zirkonXL:

1. Press the Access Key on the fader strip you wish to control.

The Access Key turns red to show that it is selected and the XL's Central Module updates to show the current parameter values for the selected source (the shaded areas are source specific):



Tip

The SOURCE display shows the name of the source 'in access' (e.g. **DJ**) in red.

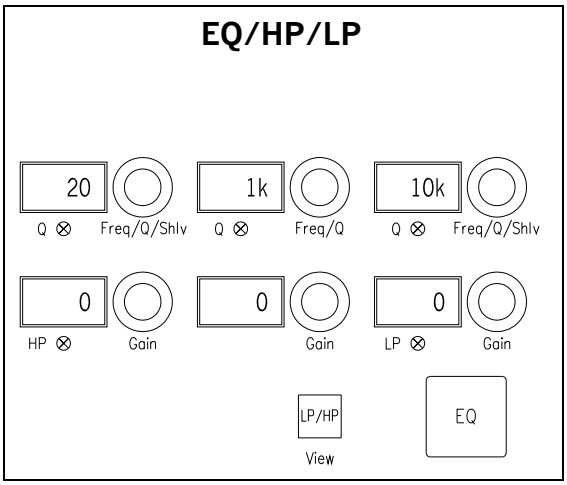
Note that the function buttons on the Central Control Section are colour coded as follows:

- Red – indicates that the function is selected or On.
- Green – the function is not selected or Off.
- Yellow – used for secondary modes or functions.

- Off (no colour) – indicates that there is no function available.

2. Adjust the 3-band parametric EQ and High/Low Pass Filter section as follows:

zirkonXL



1	**EQ**	Press the **EQ** button to switch the 3-band parametric EQ and Low/High Pass Filters on or off (Red = On; Green = Off).
2	**LP/HP View**	Deselect the **LH/HP** button (green) to view or adjust the 3 bands of parametric EQ. Select the **LH/HP** button (red) to view or adjust the high and low pass filter bands. Note that in this mode, the middle set of controls go dark as there are only two filter bands to adjust.
3	**Gain**	Turn the lower rotary controls to adjust the gain in dB.
4	**Freq/Q/Shlv**	In EQ view, tap down on the upper rotary control to toggle between Frequency and Q. In Filters view, tap down on the upper rotary control to toggle between High/Low Pass Filters (HP or LP) and Shelving EQ.

Conference Busses – Mix Minus/N-1

Any of the **zirkon**'s user-defined busses may be programmed as 'Conf Busses' to generate mix minus/N-1 or N-n feeds. Note that the system supports two completely separate conference systems (Conf 1 and Conf 2), each of which may be used to generate multiple mix minus/N-1 feeds.

Conference Busses are defined within the configuration, so please consult your systems engineer for specific details. The following provides an example of the operation.

Let's look at an example using Conference System 1 to generate two mix minus feeds to our **DJ** and **TEL** guest.

Configuration Requirements

First there are a number of assignments which must have been made within the console's configuration:

- A mix minus bus (mono or stereo) must be created for each output feed. In our example, we have created two mono busses called **DJ MM** and **TEL MM**.
- This mix minus bus must be assigned to its source. In our example, **DJ MM** to the source **DJ** and **TEL MM** to the source **TEL**. (At this stage it is possible to set whether the busses are part of the Conference 1 or Conference 2 system allowing you to create two independent conference systems.)
- The sources must then be programmed with Conf On/Off MF Key functions. In our example, we have programmed MF Key 2 to act as the Conf On/Off toggle, with the following lamp colours indicating different states:
    - Red = Conference audio
    - Yellow = Conference prepare
    - Green = Conference off

Operation

The conference system works using four logical states:

- **Conf active** = Conf ON + source fader closed.
- **Conf prepare** = Conf ON + source fader open.
- **Conf audio** = active when **Conf active** is true for several sources. In this state, the conference is enabled so that the DJ and TEL guest hear each other pre-fader allowing them to talk to each other off-air.
- **Conf off** = Conf OFF.

Note that for the system to work you must have at least two sources with Conf ON enabled.

1. Turn on the CONF buttons on the DJ and TEL fader strips and open all three source faders.

All three sources are mixed post fader to the main bus (on-air).

Both the DJ and TEL guest hear the post-fader mix minus themselves. Both sources are in the state Conf prepare.

2. Close the DJ's fader.

The DJ continues to hear the post-fader mix.

The TEL guest continues to hear the post-fader mix minus himself.

3. Now close the TEL's fader.

Now both the DJ and TEL source are in the state Conf active. This enables Conf Audio.

Both Mix Minus feeds receive a post fader mix of open sources plus a pre-fader mix of other Conf active sources. In other words, they can talk to each other while they are both off-air!

4. Open either of the DJ or TEL faders.

Conf Audio is disabled and both Mix Minus feeds return to a post-fader N-1.

5. At any time, you can take a source out of the conference system by turning the CONF button OFF.

The mix minus is cancelled (Conf Off) and the mix minus bus will be fed a post-fader mix of all sources.

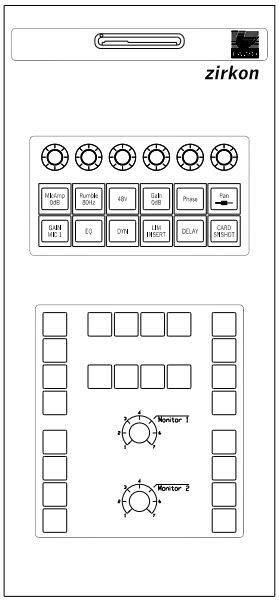
Note that this example demonstrates a system with two conference sources, but you can have multiple sources active within the conference.

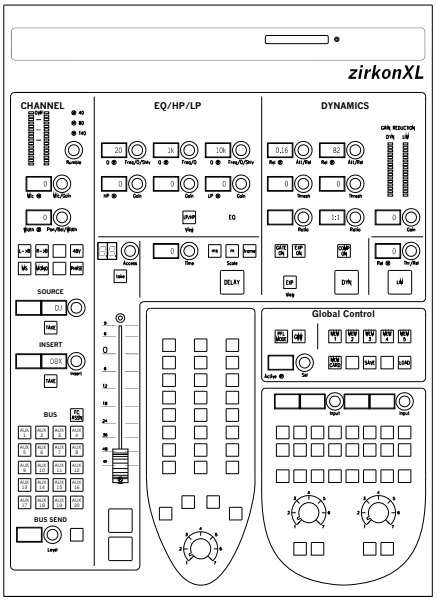
Note

Saving and Recalling Settings

By now you probably have some settings you would like to save so that they can be recalled at a later date. To do this you need to save a snapshot.

Let's look at how to save a snapshot using the memory card reader/writer in the Central Module of the console:





Note that snapshots may also be saved or loaded to PC or settings may be stored in the console's 5 internal memories, see Page 96 (**zirkon**) or Page 116 (**zirkonXL**).

Note

Saving a Snapshot on the zirkon

zirkon

Systems shipped following the release of Release 2.6 software (Central Module type 950/55) are fitted with a Compact Flash card reader. Up to 128 snapshots may be stored on a 64MB card.

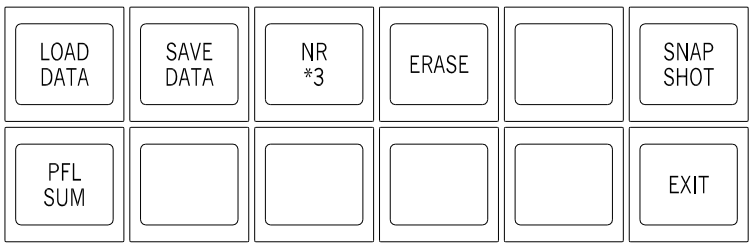
Note

Note that **Zirkon** systems shipped prior to the release of Release 2.6 software (Central Module types 950/42 and 950/45), are fitted with a 64KBit I2C EEPROM card reader. Each of these cards may store a single snapshot. Follow the instructions below except skip step 2, and insert the card with the chip facing away from your body.

To save a snapshot to a Compact Flash memory card:

1. Insert the memory card into the card reader with the 'Insert' arrow on the card facing away from your body.

The 12 LCD buttons on the Central Module update to access the snapshot menu:



2. Turn the rotary control above the **NR** LCD button to select a free snapshot location, e.g. **NR 3**.

The snapshot numbers increment from 1 to 128 as you turn the control clockwise.

Warning

Warning

Location numbers displayed with a ***** already have data stored. If you select a used location then you will overwrite the existing data when you press **SAVE**.

3. To save the current settings of the console into snapshot 3, press **SAVE DATA**.

4. Wait for a few seconds until the data read/write LED next to the memory card slot has gone out. It is now safe to extract the memory card.

Warning

Warning

Only extract the card after the data read/write LED has gone out for at least 3 seconds. Failure to do so could corrupt data during the read/write process.

Note that new cards must be removed and reinserted after the first snapshots have been saved. Only then can the snapshots be loaded.

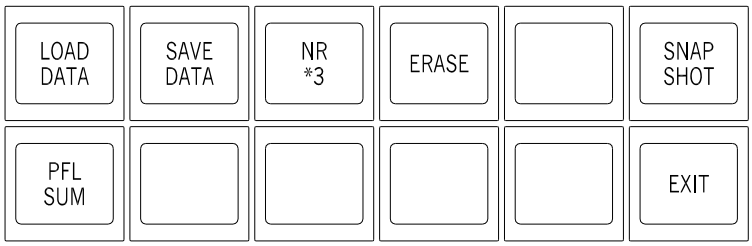
zirkon

Loading a Snapshot on the zirkon

To load back a snapshot from a Compact Flash memory card:

1. Insert the memory card into the card reader.

The 12 LCD buttons on the Central Module update to access the snapshot menus:



2. Turn the rotary control above the **NR** button to select the snapshot you wish to load, e.g. **NR 3***.

*Make sure you select a snapshot which contains data, as indicated by the * suffix. If you do select a snapshot with no data, then the LOAD DATA button cannot be selected.*

3. Press **LOAD DATA** to load the settings.

The console updates its status to show the new settings and then exits the snapshot menus, returning the 12 LCD buttons to their top level functions.

Note

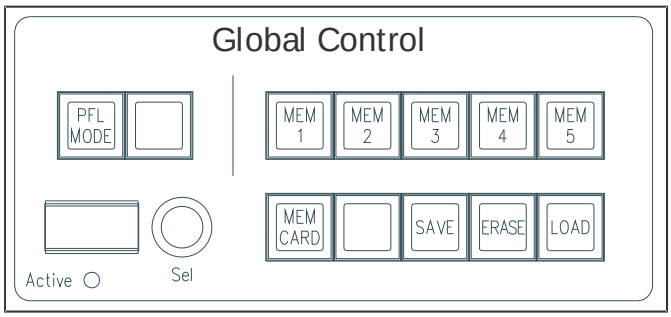
Note that if the 'Save Value' parameter within the console configuration is turned off, the snapshot will not recall fader positions.

Saving a Snapshot on the zirkonXL

zirkonXL

1. Insert the memory card into the card reader with the 'Insert' arrow on the card facing away from your body.

On the GLOBAL CONTROL panel, the ACTIVE display updates to show a snapshot number, e.g. 1 and MEM CARD button lights in green:*



2. On the GLOBAL CONTROL panel, turn the **Sel** rotary control to select a free snapshot location, e.g. **3**.

The snapshot numbers increment from 1 to 128 as you turn the control clockwise.

Warning

Warning

Location numbers displayed with a ***** already have data stored. If you select a used location then you will overwrite the existing data when you press **SAVE**.

3. To save the current settings of the console into the snapshot, press and hold the **MEM CARD** button (it turns red) while you press **SAVE**.

The console saves the current settings into snapshot number 3.

4. Finally, wait for a few seconds until data read/write LED next to the memory card slot has gone out. It is now safe to extract the memory card.

Warning

Warning

Only extract the card after the data read/write LED has gone out for at least 3 seconds. Failure to do so could corrupt data during the read/write process.

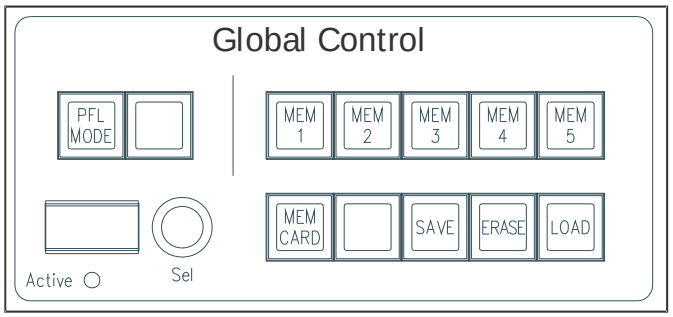
Note that new cards must be removed and reinserted after the first snapshots have been saved. Only then can the snapshots be loaded.

zirkonXL

Loading a Snapshot on the zirkonXL

1. Insert the memory card into the card reader with the 'Insert' arrow on the card facing away from your body.

On the GLOBAL CONTROL panel, the ACTIVE display updates to show a snapshot number, e.g. 1:*



2. On the GLOBAL CONTROL panel, use the **Sel** rotary control to select a snapshot location, e.g. **3***.

*The snapshot numbers increment from 1 to 128 as you turn the control clockwise. Numbers with a * contain stored data.*

3. To load the snapshot, press and hold the **MEM CARD** button (it turns red) while you press **LOAD.**

The console updates its status to show the new settings.

Note

Note that if the 'Save Value' parameter within the console configuration is turned off, the snapshot will not recall fader positions.

Chapter 3:
Control Surface Operation

Introduction

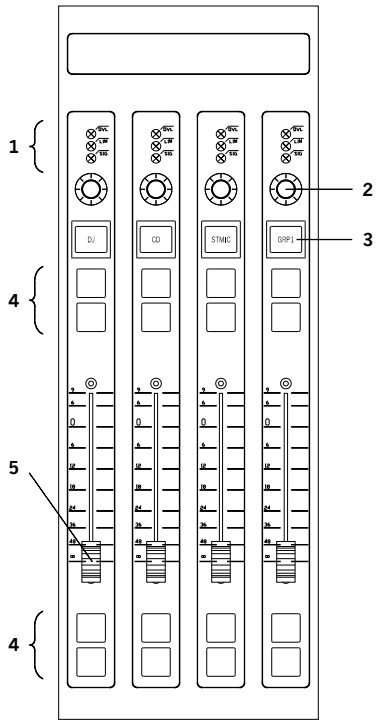
Having worked through the basic operation of the console, this chapter covers each of the control surface modules in more detail.

We will assume that you have a mixture of different source types and that at least some have full signal processing. Note, however, that some features (EQ, Dynamics, etc.) may only be available on particular sources within your installation. Please consult your systems engineer for more details on your configuration.

Note

Note that from Release 2.7 software onwards, two alternative control surface modules are supported – the Channel Module 2s and the Monitoring Module 2s. You can find more details on these modules at the end of this chapter, see Page 122.

The Channel Module



Each Channel Module provides 4 identical fader strips with the following LEDs and controls:

1	**OVR** **LIM** **SIG**	The overload (**OVR**) LED illuminates if the input signal to the channel overloads. The limiter (**LIM**) LED illuminates when the channel limiter is active. The signal (**SIG**) LED illuminates when a signal over -20dB* in level is present at the channel input. (* This threshold is set within the configuration.)
2	**Rotary Control**	The rotary control is assignable to functions such as input gain, pan/balance, surround parameters or aux send level. When you turn or tap down on the control, the Access Key display updates to show the current function and value.
3	**Access Key**	The Access Key is used to select the fader strip for Central Control Module operations such as assigning a new source, assigning to a bus or adjusting EQ and Dynamics. In addition, the key features a self-labelling LCD button which updates depending on the mode selected. Normally, the display shows the name of the source assigned to the fader strip.
4	**MF Keys 1 to 4**	The 4 multi-function (MF) keys are programmable within the configuration. Typical applications include PFL and fader start operations.
5	**Fader**	The fader is motorised and comes with a choice of two fader scale options.

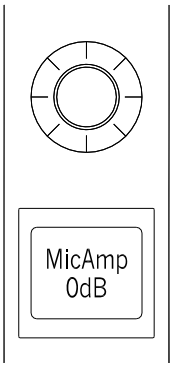
Up to 10 Channel Modules may be fitted to each console providing up to 40 physical fader strips.

The modules may be arranged in any order; each has an ID, set on the rear of the unit, which defines whether the 4 fader strips control faders 1 to 4, 5 to 8, 9 to 12, etc.

Let's look at each section of controls in more detail:

Access Key

The fader strip Access Key performs a number of functions:

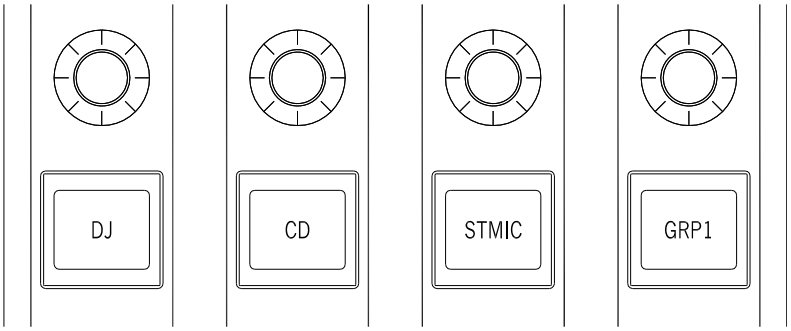


Parameter Feedback

The key features a self-labeling display which works in conjunction with the rotary control. Turn or tap the control and the display updates to show the parameter function and value, for example input gain:

Source Label

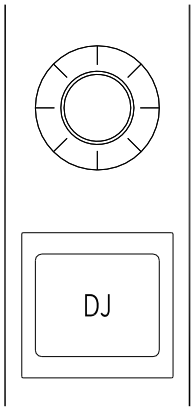
In its default state, the key normally shows the name of the source assigned to the fader strip (e.g. **DJ**, **CD**, etc):



Note that more information may be displayed if you are working in a networked installation. For example, in a networked installation with shared sources and destinations, the Access Key may display the source name within the **zirkon** console, and the group and signal names within the central Nova routing system.

Fader Strip Selection

The Access Keys is also used to select the fader strip for Central Control Module operations such as assigning a new source, assigning to a bus or adjusting EQ and Dynamics.



The Access Key has two states:

1. Green – not selected. When all Access Keys on the console are green:
   - The 12 LCD buttons on the **zirkon** Central Module default to their top level functions.
   - The **zirkonXL**'s Central Module goes dark as no source is selected.
2. Red – selected. (Only one Access Key may be selected at a time):
   - The 12 LCD buttons on the **zirkon** Central Module update to access the sub menus for the source.
   - The **zirkonXL**'s Central Module provides dedicated control sections for the selected source.

Note

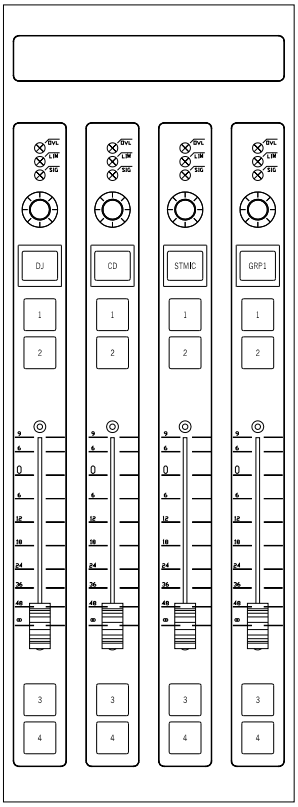
Note that when working with the **zirkon** Central Module, a third mode may also be used, depending on the configuration:

3. Press and Hold the Access Key (red) OR double press the Access Key.
   - In this mode, the 12 LCD buttons may update to access a secondary set of functions. For example, fader strip assignment as described on Page 50.

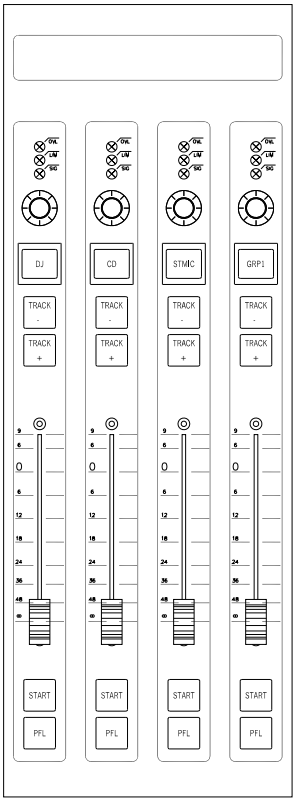
MF Keys 1 to 4

The Channel Module has 4 MF (Multi-Function) Keys numbered from top to bottom. The 4 multi-function (MF) keys are programmable within the configuration and are assigned to the source. This means that source specific functions, such as fader starts, move with the source when reassigned to a different position on the control surface.

A variety of functions may be programmed onto the MF Keys within the configuration. Once programmed, the keys are labelled and will normally remain fixed for the installation.



MF Keys 1-4



MF Key Example

Here are some common examples:

- Fader Start – see Page 53.
- PFL (Pre Fade Listen) – see Page 39.
- Track +/ Track - – when working with an external play out system, MF Keys may be programmed to cue up different tracks from that system via the Control Network.
- Talkback – MF keys may be programmed to action talkback, for example to talk to a mix minus feed.

For more details on MF Key functions, please consult your systems engineer.

Fader Scale

The fader is motorised and comes with a choice of two fader scale options:

- - ∞ to +9dB
- - ∞ to 0dB

The choice of scale is made within the configuration, and foil inlays are provided so that the surface can be modified to match the configuration.

Virtual Fader Strips

Within the configuration, 'virtual' fader strips may be defined for each Channel Module. These are presented to the operator as additional layers, allowing you to switch the console's fader strips to a 'hidden' set of sources to mix additional inputs.

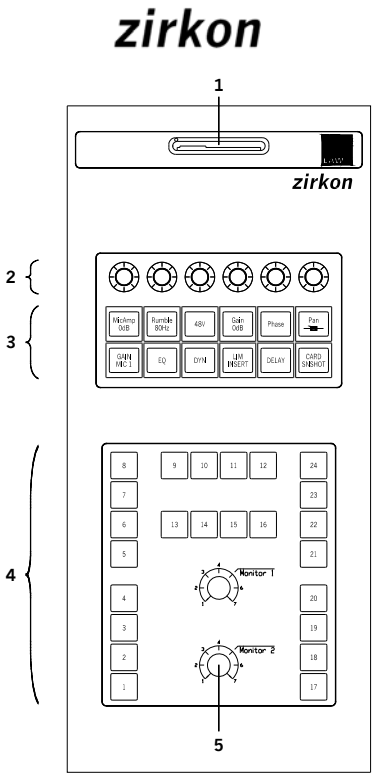
Note

Up to a maximum of 80 mono sources (or equivalent stereo/surround sources) may be mixed simultaneously from a mixture of physical and virtual fader strips.

For example, on a control surface with 8 physical fader strips (2 Channel Modules), you may sum up to 5 layers of stereo sources; on a console with 20 physical fader strips (5 Channel Modules), 2 layers of stereo sources may be summed, etc.

Layers can be switched globally or individually for each Channel Module. Normally, this switching is controlled from Central Module MF keys defined within the configuration. Press the layer access key and the physical fader strips update in front of you to show the new sources names, metering and fader positions.

The zirkon Central Module



A single Central Module must be fitted to each **zirkon** console providing the following controls:

1	**Memory Card Reader**	128 snapshots may be saved and loaded to/from an external compact flash memory card. See Page 93 for more details.
2	**Rotary Controls**	The 6 assignable rotary controls work in conjunction with the 12 LCD buttons.
3	**12 LCD Buttons**	The 12 LCD buttons have two primary modes of operation: top level functions and sub menus (available when a source is 'in access'.) The top level functions are programmed by the configuration; the sub menus have a fixed layout and access signal processing (Gain, EQ, Dynamics, Limiter, Delay) and memory/snapshot management. See Page 80 for more details.
4	**MF Keys 1 to 24**	The 24 multi-function (MF) keys are programmable within the configuration. See Page 99 for more details.
5	**Level Controls**	The Monitor 1 and 2 rotary controls are also programmed by the configuration. See Page 99 for more details.

Note

Note that prior to Release 2.6 software, **zirkon** systems were supplied with a 64KBit chip card reader. Each of these cards stores a single snapshot.

Let's look at each section of controls in more detail:

LCD Buttons and Rotary Controls

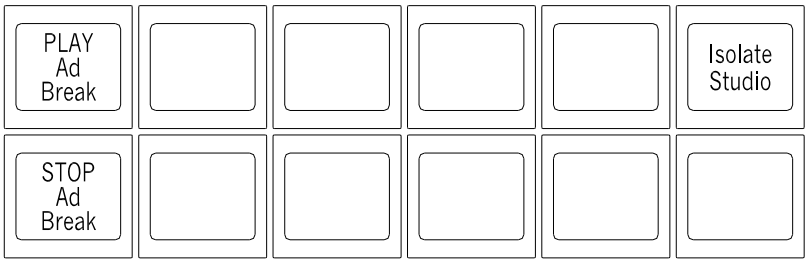
The 12 LCD buttons have two primary modes of operation:

- Top level functions, programmed by the configuration, see below.
- Sub menus, which access signal processing (Gain, EQ, Dynamics, Limiter/Insert, Delay) for the source 'in access' and memory/snapshot management.

Top Level Functions

1. To update the 12 LCD buttons to their top level functions, turn off any selected (red) fader strip Access Keys.

The 12 LCD buttons update, for example:



Note

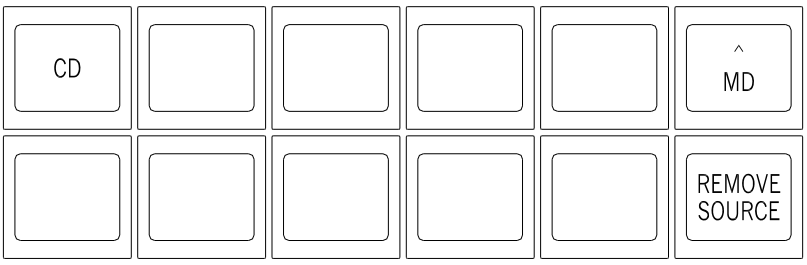
Note that the 12 top level functions are programmed by the configuration, and therefore will vary from console to console. The above example shows an on-air radio studio, with two emergency buttons to 'Play or Stop the Advert Break' or 'Isolate the Studio from external routing control'.

Alternatively, the buttons may access commonly used functions such as bus assignment, see Page 55.

Depending on the configuration, the 12 LCD buttons may also be programmed with a secondary level of functions:

2. To access the secondary functions, press and hold a fader strip Access Key.

The 12 LCD buttons update, for example:



Note

Note that the 12 functions are programmed by the configuration, and therefore will vary from console to console. The above example shows fader strip assignment as described on Page 50.

Sub Menus

Every **zirkon** features six sub menus which access source parameters (Gain, EQ, Dynamics, Limiter/Insert, Delay) and memory/snapshot management.

Note that not all the functions may be available for every source as this depends on the DSP allocated to each source within the configuration. For example, if the selected source has no EQ, then the **EQ** button will be blank. Or, if surround panning is not enabled, then these parameter options will be blank.

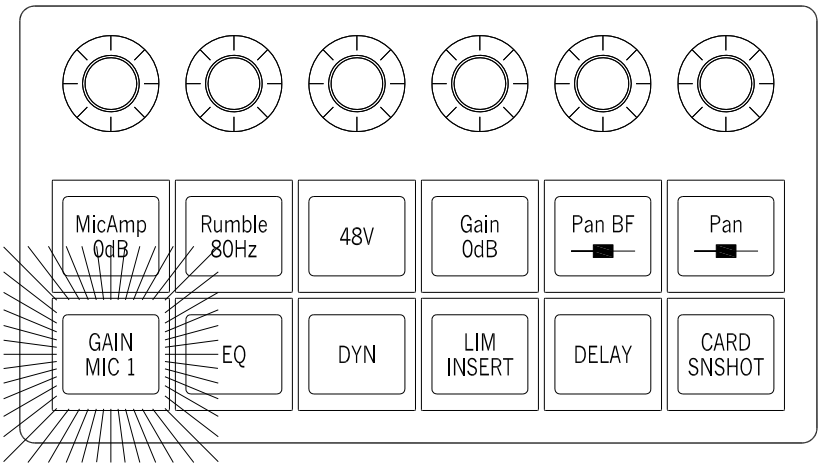
Note

It is also possible to lock out some or all of the sub menus so that they cannot be accessed by the operator, within the Zirkon Configuration Tool. This can be used in fixed on-air installations, where only the systems engineer needs access to settings such as mic gain, EQ, etc.

⏩ To control parameters for a source:

1. Press the Access Key on the fader strip you wish to control.

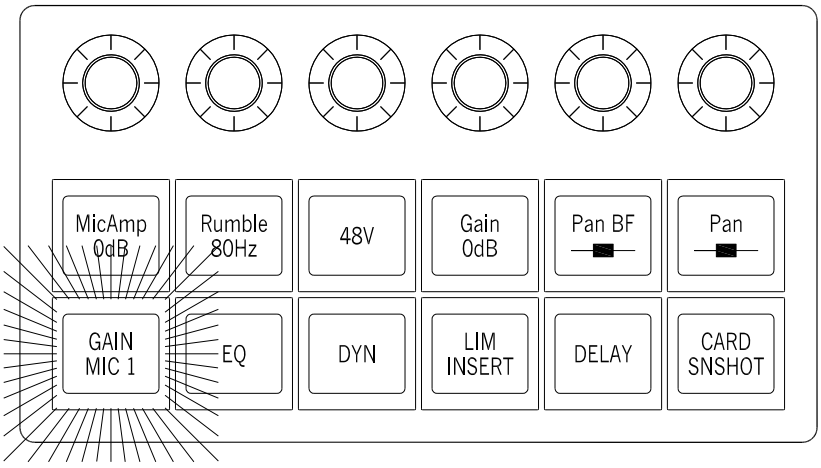
The Access Key turns red and the 12 Central Module LCD buttons update as follows:



2. Press one of the bottom row LCD buttons to access a sub menu:

1	**GAIN/ Source Name**	Sets input gain and other input parameters. This button also displays the name of the source 'in access' (e.g. **MIC1**).
2	**EQ**	Adjusts EQ and Filters.
3	**DYN**	Adjusts the gate, expander and compressor section.
4	**LIM/INSERT**	Adjusts the limiter and insert send/return.
5	**DELAY**	Sets the channel delay.
6	**CARD/ SNSHOT**	Provides access to the internal memory, snapshot and PFL sub menus.

3. Within each menu, use the top row of LCD buttons and associated rotary controls to control settings:



4. To adjust a switched parameter (e.g. 48V) press the LCD button.

Buttons are red when a parameter is selected and green when not selected.

5. To adjust a variable parameter (e.g. Gain), turn the associated rotary control.

The parameter function and value are shown in the LCD button display.

Note

Note that in some sub menus, there may be two functions on the control/LCD button:

6. Tap down on the control to toggle between functions (e.g. Gain and Phase).

Also some settings require a pre-selection, for example the high pass Rumble filter:

7. Turn the rotary control to choose the filter cut-off frequency.

The LCD button shows the selection in yellow.

8. Then press the LCD button to make the filter active.

The button changes to red to indicate that the filter is on or green if the status was set to Off.

We will now work through each of the six sub menus in turn. In the examples which follow, all sources feature fully configured DSP. However, not all DSP modules may be available on all sources within your configuration.

The Gain menu

1. Press the **GAIN** LCD button to adjust input parameters for the selected source.

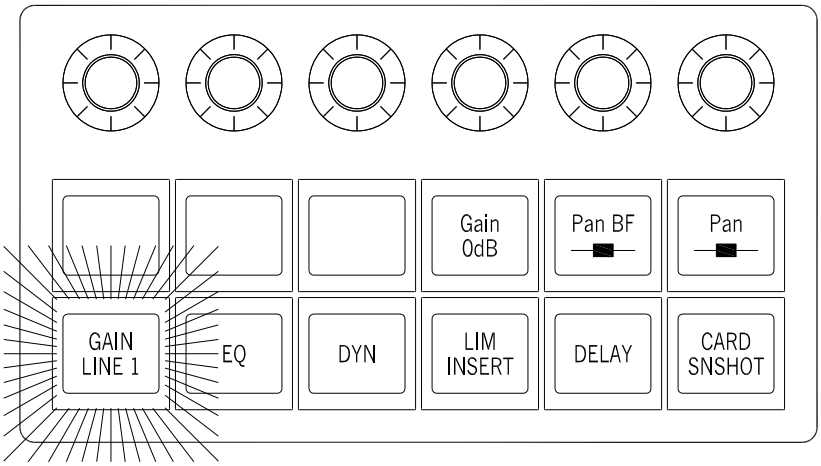
The 12 LCD buttons update to show the following parameter options depending on the type of input routed to the source:

Note

Note that the parameters available depend on whether the source is mono or stereo and whether it is fed from a mic, line or digital input card. See Page 30 for full details on input parameters.

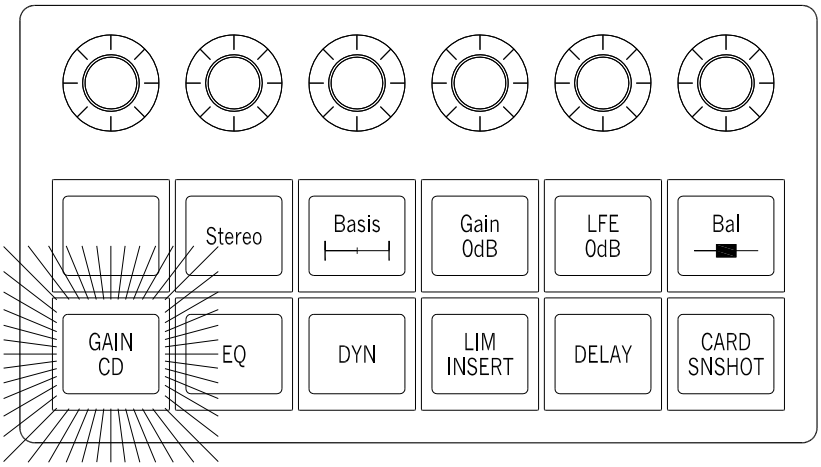
Also the surround parameters available depend on the format of the source and whether surround panning is enabled within the configuration.

Mono Line Level or Digital Source:



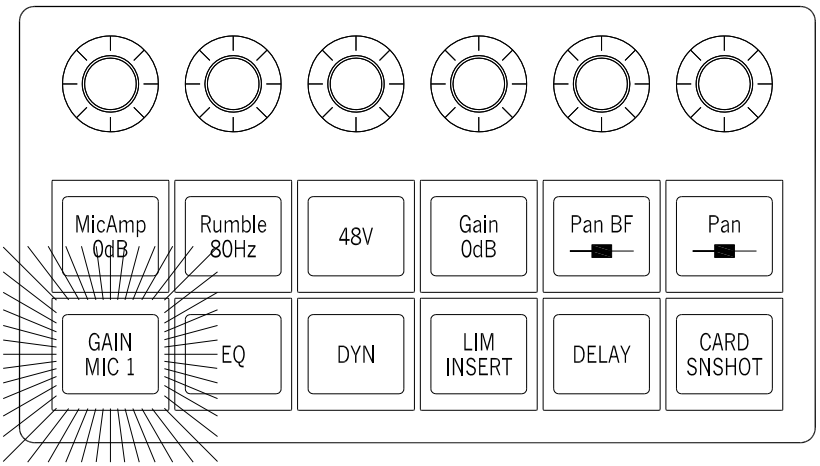
1	**Unassigned**	This control is not used within this menu.
2	**Unassigned**	"
3	**Unassigned**	"
4	**Gain/Phase**	Turn the rotary control to adjust the digital gain in dB. Gain may be set from -30dB to +18dB. Press the LCD button to reset to 0dB. Tap down on the rotary control to switch the operation to Phase; press the LCD button to switch phase reverse on (red) or off (green).
5	**Pan BF/LFE**	Turn the rotary control to adjust the Back-Front pan position. Tap down on the rotary control to switch the operation to LFE level; turn the control to adjust the level to the LFE channel (subwoofer). The LFE level may be adjusted from -120 to +9 dB.
6	**Pan/Slope**	Turn the rotary control to set the left/right pan position for the mono source. Press the LCD button to reset position to centre. Tap down on the rotary control to switch the operation to Slope; turn the control to adjust the centre slope from 0.0 to 1.0.

Stereo Line Level or Digital Source:



1	**Unassigned**	This control is not used within this menu.
2	**Stereo**	Turn the rotary control to select from: • **l->b** (left input to both sides of the stereo source) • **r->b** (right input to both sides) • **mono** (mono of the left and right inputs to both sides) • **MS->XY** (M-S stereo decoding) • **stereo** (normal stereo operation) The LCD button goes yellow during the selection process. Then press the LCD button to make the selection active (LCD button = red or green for normal stereo operation).
3	**Basis**	Turn the rotary control to reduce or expand the width of the stereo source. The LCD button display shows arrows pointing inwards when the width is reduced and outwards when the width is expanded. Press the LCD button to reset the width.
4	**Gain/Phase**	As for a mono source. Phase reverses the left channel of the stereo source.
5	**Pan BF/LFE**	As for a mono source.
6	**Bal/Slope**	As for a mono source; balance sets the left/right input balance for the stereo source. Press the LCD button to reset balance to centre.

Mono Microphone Source:



1	**Mic Amp**	Turn the rotary control to adjust the analogue mic gain in dB. Gain may be set from 0dB to +70dB. Press the LCD button to reset the gain to +45dB.
2	**Rumble**	Turn the rotary control to select the high pass filter cut-off frequency to 40Hz, 80Hz, 140 Hz or Off (LCD button = yellow). Then press the LCD button to make the selection active (LCD button = red for filter on, or green for filter off).
3	**48V**	Press the LCD button to switch 48V phantom power on or off.
4	**Gain/Phase**	As for a line level/digital source.
5	**Pan BF/LFE**	As for a line level/digital source.
6	**Pan/Slope**	As for a line level/digital source.

Tip

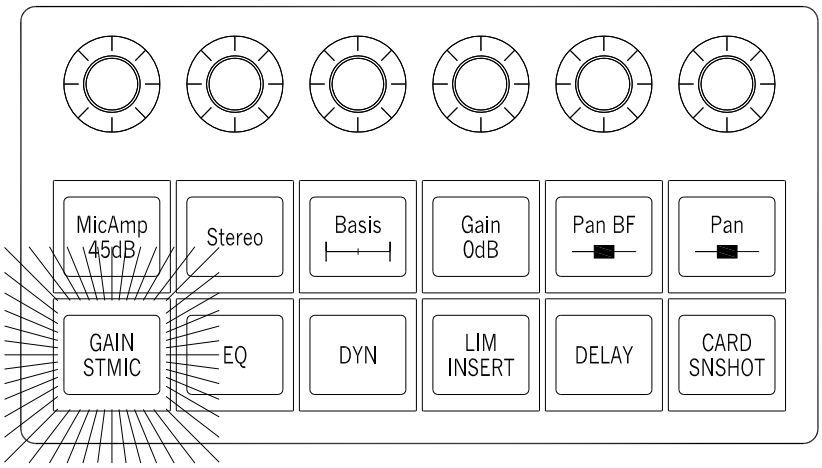
Adjust the **Mic Amp** gain for the best possible quality of conversion from analogue to digital. Then use the digital **Gain** to set the best operating level for an open fader at 0dB.

Warning

Warning

If you overload the analogue input stage, then you will get signal distortion. Reduce the **Mic Amp** gain to correct the problem.

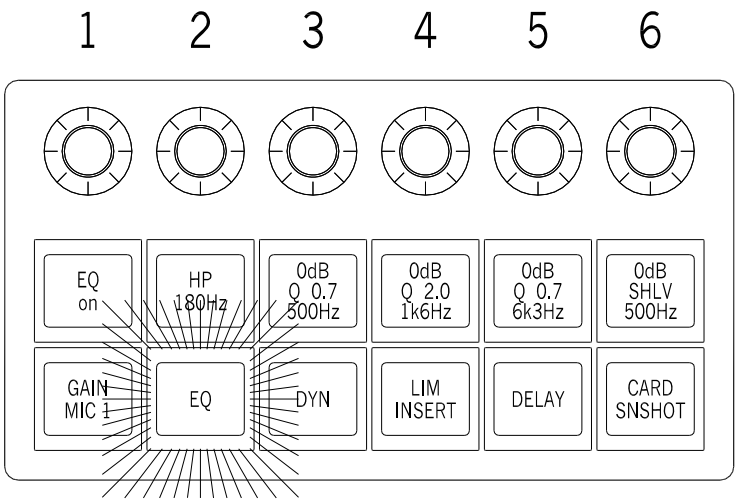
Stereo Microphone Source:



1	**Mic Amp**	As for a mono microphone source.
2	**Rumble or Stereo**	Tap down on the rotary control to switch between rumble filter and stereo source control; operation as previously described.
3	**48V or Basis**	Tap down on the rotary control to switch between 48V and basis control; operation as previously described.
4	**Gain/Phase**	As for a line level/digital source.
5	**Pan BF/LFE**	As for stereo microphone source.
6	**Bal/Slope**	As for a line level/digital source.

The EQ menu

1. Press the **EQ** LCD button to adjust EQ and Filters for the selected source:

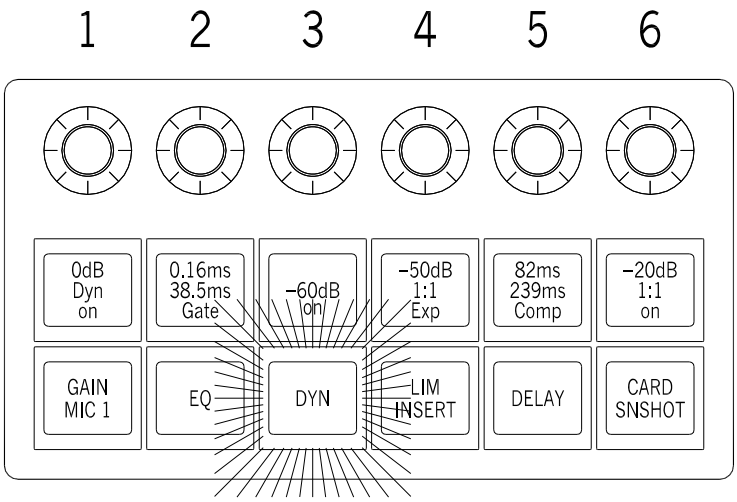


1	**eq on**	Master on/off switching for the EQ and Filters section. (The rotary control is unassigned.)
2	**HPF/Shelf**	Press the LCD button to toggle between a High Pass Filter (HP) and Low Frequency Shelving EQ (SHELV). Turn the rotary control to adjust gain in dB. Press and hold and turn the rotary control to adjust frequency in Hz.
3	**Low Mid EQ**	For each parametric EQ band: Press the LCD button to switch the rotary control from gain to Q. Turn the rotary control to adjust either gain in dB or Q. Press and hold and turn the rotary control to adjust frequency in Hz.
4	**Mid EQ**	
5	**High Mid EQ**	
6	**LPF/Shelf**	Press the LCD button to toggle between a Low Pass Filter (LP) and High Frequency Shelving EQ (SHELV). Turn the rotary control to adjust gain in dB. Press and hold and turn the rotary control to adjust frequency in Hz.

For full details on EQ parameters, please see Page 34.

The Dynamics menu

1. Press the **DYN** LCD button to adjust the gate, expander and compressor for the selected source:



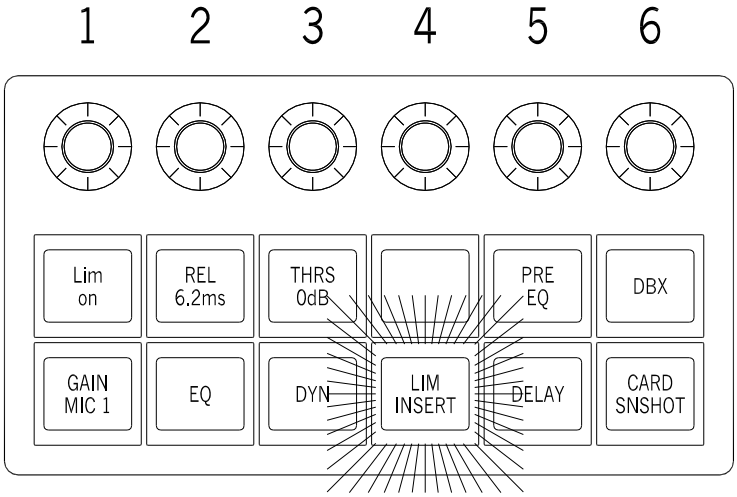
1	**dyn on**	Press the LCD button to switch all three sections of dynamics (Gate, Expander and Compressor) in or out of circuit. Turn the rotary control to set dynamics gain in dB.
2	**gate attack / release**	Turn the rotary control to set the gate attack time in ms. Press and hold and turn the rotary control to set the gate release time in ms.
3	**gate on / threshold**	Press the LCD button to switch the gate in or out of circuit. Turn the rotary control to set the gate threshold in dB.
4	**exp on / threshold / ratio**	Press the LCD button to switch the expander in or out of circuit. Turn the rotary control to set the expander threshold in dB. Press and hold and turn the rotary control to set the expander ratio.

5	**compressor attack / release**	Turn the rotary control to set the compressor attack time in ms. Press and hold and turn the rotary control to set the compressor release time in ms.
6	**compressor on / threshold / ratio**	Press the LCD button to switch the compressor in or out of circuit. Turn the rotary control to set the compressor threshold in dB. Press and hold and turn the rotary control to set the compressor ratio.

For full details on Dynamics parameters, please see Page 35.

The Limiter/Insert menu

1. Press the **LIM/INSERT** LCD button to adjust the limiter or assign an insert device for the selected source:



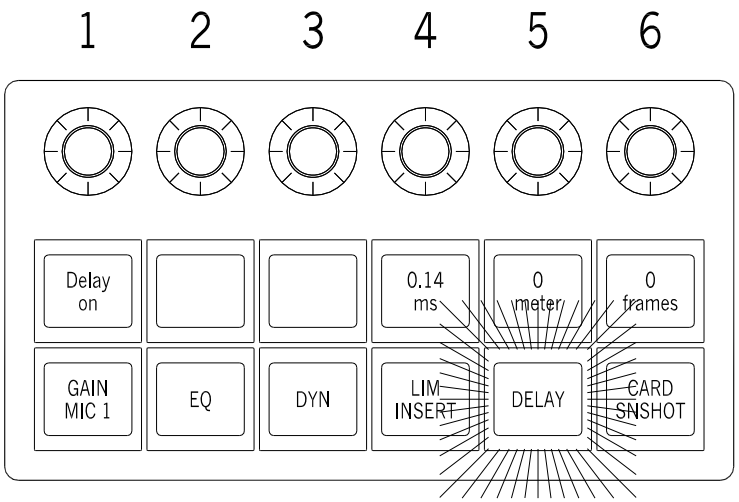
1	**lim on**	Press the LCD button to switch the Limiter in or out of circuit.
2	**Limiter release**	Turn the rotary control to set the limiter release time in ms.
3	**Limiter threshold**	Turn the rotary control to set the limiter threshold in dB.
4	**Unassigned**	This control is not used within this menu.
5	**Insert Position**	Turn the rotary control to select the position for the insert send/return (LCD button = yellow). Then press the LCD button to make the selection active (LCD button = red when insert is on, or green when insert is off).
6	**Insert Assign**	Turn the rotary control to select an insert device, e.g. **DBX** (LCD button = yellow). Then press the LCD button to make the selection active (LCD button = red when a device is inserted, or green when the insert is **OFF**).

Note

Note that you may only assign insert devices set within the configuration for each source. You may assign a mono device to a mono source and a stereo device to a stereo source. You may not assign a mono device to a stereo source. If a stereo device is assigned to a mono source only the left channel is used. For full details on Limiter parameters and Insert send/return options please see Page 36.

The Delay menu

1. Press the **DELAY** LCD button to set a delay for the selected source:



1	**delay on**	Press the LCD button to switch the Delay in or out of circuit.
2	**Unassigned**	This control is not used within this menu.
3	**Unassigned**	This control is not used within this menu.
4 **5** **6**	**delay time**	Turn the appropriate rotary control to set the delay time in ms, meters or frames. Note that as you turn a control, all three LCD button displays update to show the value of the parameter. Press and hold and turn the control to adjust delay in coarse steps; turn without holding to adjust in fine steps.

Tip

Snapshots, Memories and PFL Modes

The last of the six sub menus provides access to a number of global functions:

- Snapshot save, load and erase – to/from external memory card.
- Internal memory save, load and erase – to/from the system unit.
- PFL Modes – sets the global PFL mode for the console.

Snapshots and memories are discussed in more detail on Page 27 and PFL operation on Page 39. This section describes how to navigate to and select functions within each of the above menus.

⏩ Snapshots Save, Load and Erase to/from Compact Flash Cards

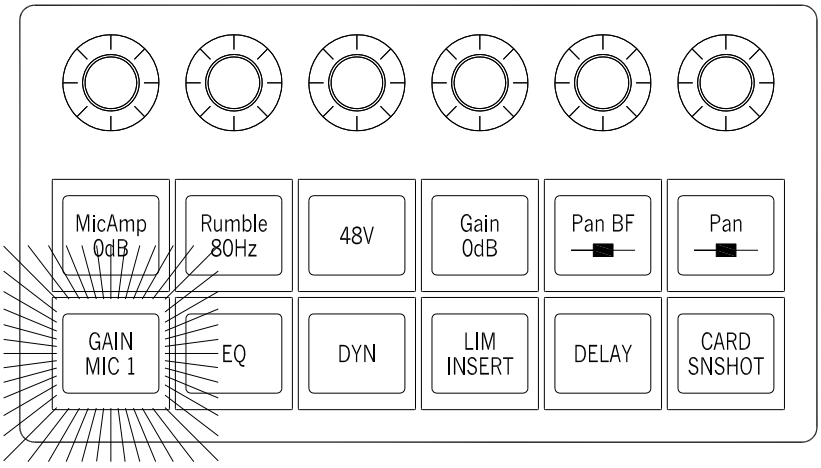
Systems shipped following the release of Release 2.6 software are fitted with a Compact Flash card reader (Central Module type 950/55). Up to 128 snapshots may be stored on a 64MB card.

When you insert the external memory card into the reader, then the system automatically takes you to the snapshots menu. You can also navigate to this menu, from the top level, as follows:

1. Press the Access Key on any fader strip which has a source assigned.

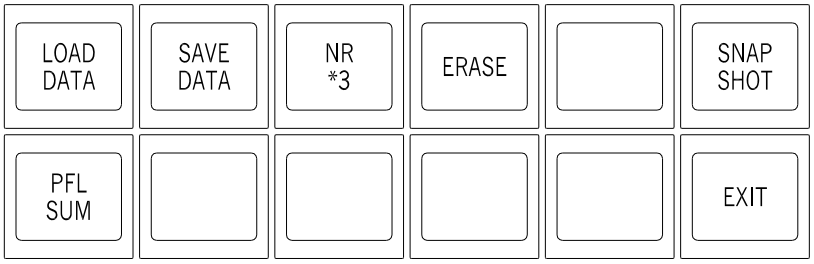
The 12 LCD buttons on the Central Module update to access the six sub menus.

2. Select the **GAIN** LCD button:



3. Then press the **CARD & SNSHOT** LCD button:

With a memory card in the reader, the snapshot menu looks as follows:



4. To load a snapshot, use the rotary control above the **NR** button to select a snapshot, e.g. **NR 3***.

*The snapshot numbers increment from 1 to 128 as you turn the control clockwise. Numbers with a * contain stored data.*

5. Press **LOAD DATA** to load the settings.

The console loads the data stored in the snapshot updating the console control surface.

Note

Note that if the 'Save Value' parameter within the console configuration is turned off, the snapshot will not recall fader positions.

When you load a snapshot, this automatically exits the internal memory menu, returning the Access Control Panel to its top level functions.

6. To save settings into a snapshot, use the rotary control to select a location, e.g. **NR 4**.

7. Press **SAVE DATA** to save the settings.

The current console settings are stored into snapshot 4. For more details on what is stored in snapshots and memories, please see Page 27.

8. To erase settings from a snapshot, select the snapshot number and press **ERASE**.

*The stored settings are erased and the * suffix disappears from the snapshot number.*

Warning

Warning

There is no undo for save or erase operations, so make sure you are certain before performing these actions.

9. Press the **EXIT** LCD button to exit the snapshots menu and return to the previous level.

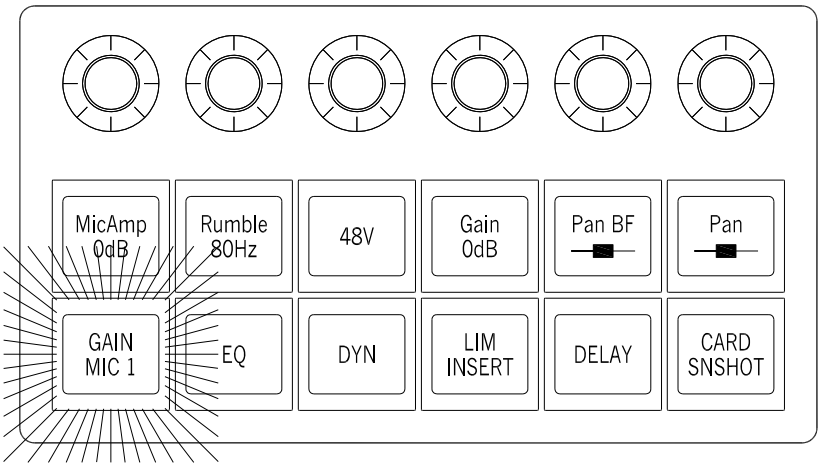
Snapshots Save and Load to/from Chip Cards

zirkon systems shipped prior to the release of Release 2.6 software are fitted with a 64KBit I2C EEPROM card reader (Central Module types 950/42 and 950/45). Each of these cards may store a single snapshot.

1. Press the Access Key on any fader strip which has a source assigned.

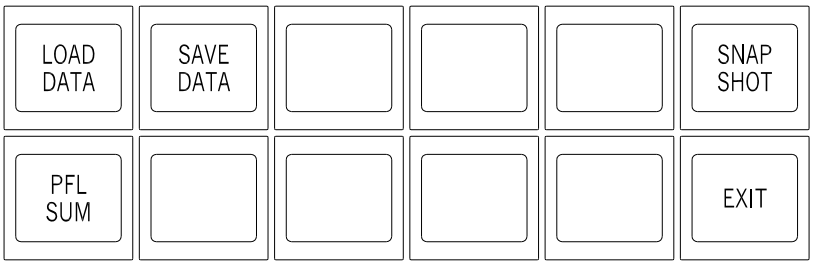
The 12 LCD buttons on the Central Module update to access the six sub menus.

2. Select the **GAIN** LCD button:



3. Then press the **CARD & SNSHOT** LCD button.

With a memory card in the reader, the snapshot menu looks as follows:



4. To load the snapshot stored on the card, press **LOAD DATA**.

The console loads the data stored in the snapshot updating the console control surface.

Note that if the 'Save Value' parameter within the console configuration is turned off, the snapshot will not recall fader positions.

Note

When you load a snapshot, this automatically exits the internal memory menu, returning the Access Control Panel to its top level functions.

5. To save settings onto the card, press **SAVE DATA**.

The current console settings are stored onto the card. For more details on what is stored in snapshots and memories, please see Page 27.

Warning

Warning

There is no undo for save operations, so make sure you have inserted the correct card before overwriting existing settings.

6. Press the **EXIT** LCD button to exit the snapshots menu and return to the previous level.

Internal Memory Save, Load and Erase

The system includes 5 internal memory locations in which you may also save and load settings.

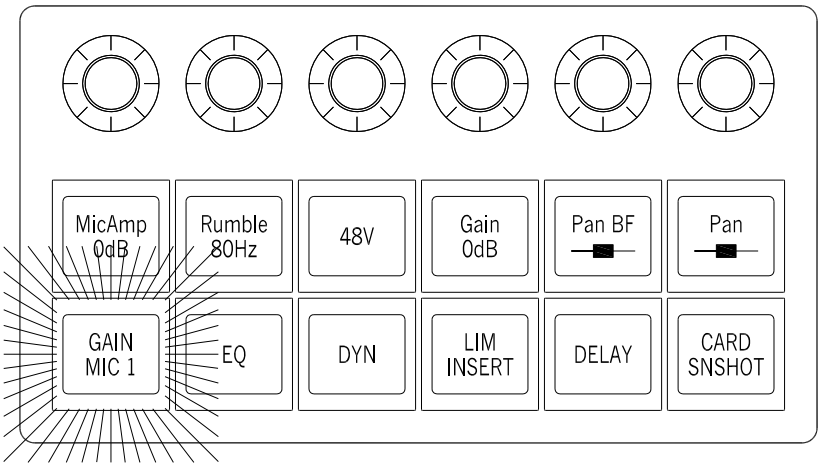
Note

Note that Snapshots and memories store exactly the same data. However, as the 5 internal memories are stored on the zirkon/Nova17 master board, they are more suitable for specific studio setups which do not need to be transferred between consoles.

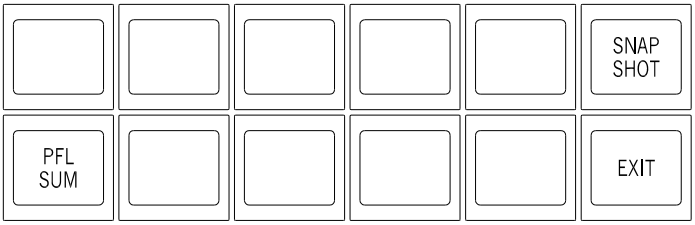
1. Press the Access Key on any fader strip which has a source assigned.

The 12 LCD buttons on the Central Module update to access the six sub menus.

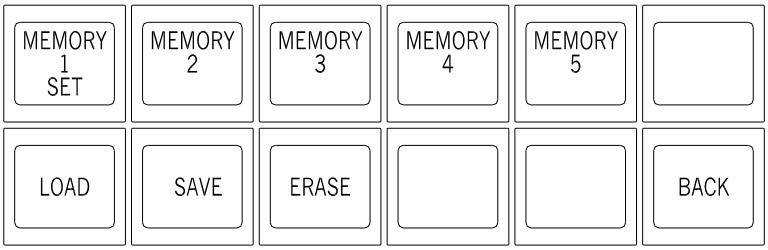
2. Select the **GAIN** LCD button:



3. Press the **CARD & SNSHOT** LCD button:



4. Then press the **SNAPSHOT** LCD button to access the internal memory sub menu:



Memories which contain stored data are flagged by the **SET** label, as in **MEMORY 1** above. If you can't see a **SET** label then the memory is empty.

5. To load memory 1, press and hold the **LOAD** LCD button while you press **MEMORY 1 SET**.

The console loads the data stored in memory 1 updating the console control surface.

Note that when you load a memory, this automatically exits the internal memory menu, returning the Access Control Panel to its top level functions.

Note

6. To save settings into memory 2, press and hold the **SAVE** LCD button while you press **MEMORY 2**.

The current console settings are stored into memory 2. For more details on what is stored in snapshots and memories, please see Page 27.

7. To erase settings from memory 1, press and hold the **ERASE** LCD button while you press **MEMORY 1 SET**.

The stored settings are erased and the SET suffix disappears from the memory button.

Warning

Warning

There is no undo for save or erase operations, so make sure you are certain before performing these actions.

8. Press the **BACK** LCD button to exit the internal memories menu and return to the previous level.

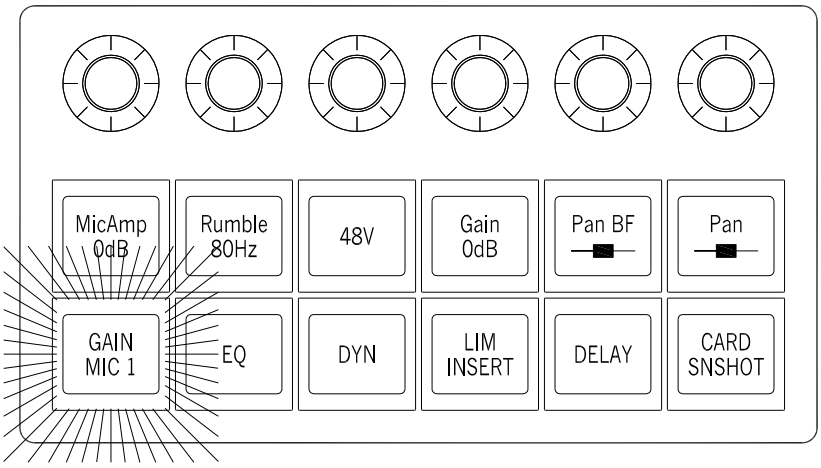
PFL Modes

In addition to the PFL options set within the configuration, a number of operator adjustable PFL modes are available from the Central Module:

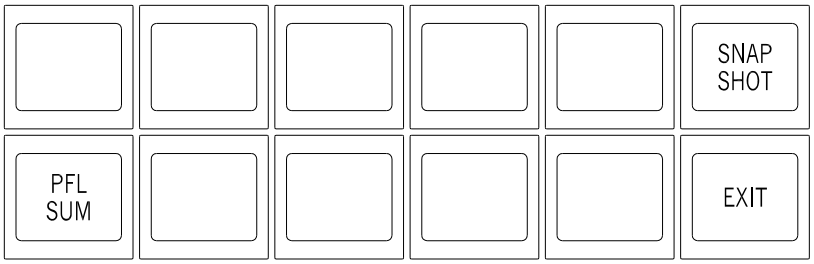
1. Press the Access Key on any fader strip which has a source assigned.

The 12 LCD buttons on the Central Module update to access the six sub menus.

2. Select the **gain** LCD button:



3. Press the **CARD & SNSHOT** LCD button:



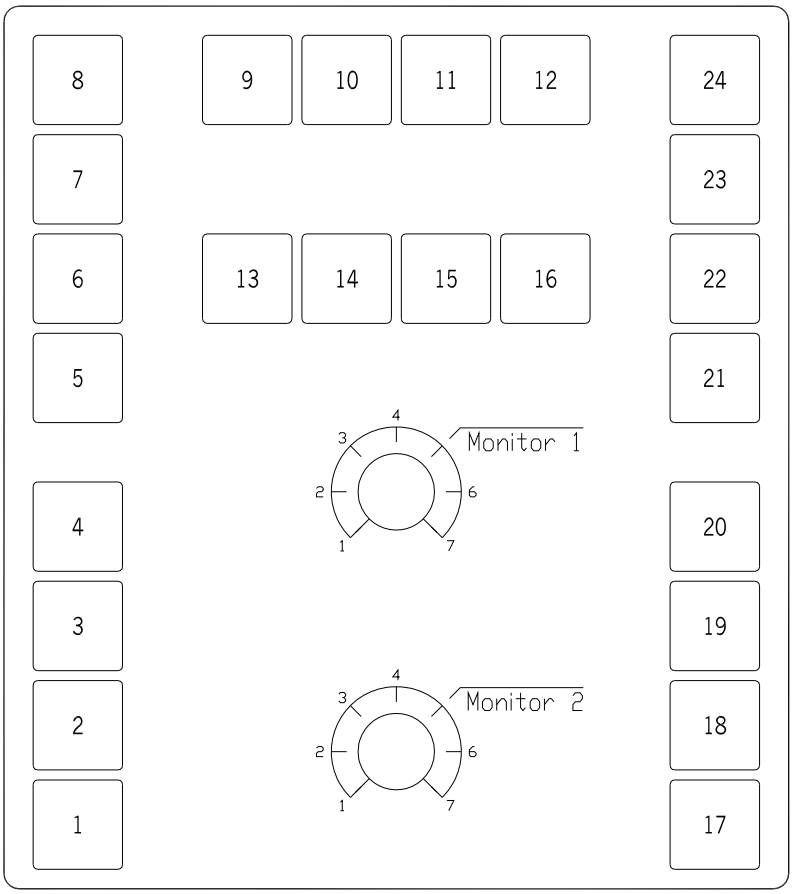
4. Now press the **PFL SUM** LCD button to cycle through the available PFL modes:

- PFL SUM – summing PFL buttons.
- PFL SUM R – summing PFL buttons with PFL recur.
- PFL PFL – inter cancelling PFL buttons.
- PFL PFL R– inter-cancelling PFL buttons with PFL recur.
- PFL AW – summing PFL buttons plus the ability to put open faders into PFL.

For more details on these modes and PFL operation, please see Page 39.

MF (Multi-Function) Keys

The **zirkon** Central Module contains 24 multi-function (MF) keys which are programmed by the configuration:



Typical applications include:

- Monitor Source Selection and Modes – see Page 38.
- Communications – for example, master talkback switching.
- Layering Control – to switch to virtual fader strips, see Page 78.

Monitor 1 and 2 Level Controls

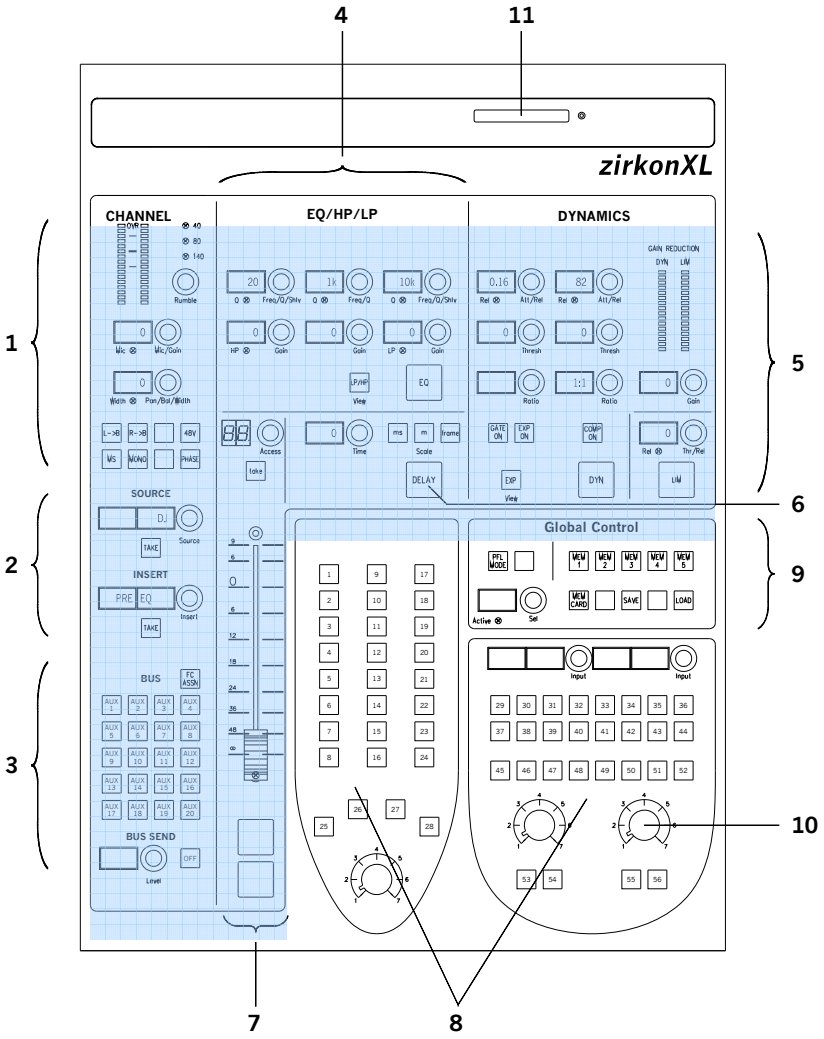
The Central Module also contains two level controls: Monitor 1 and Monitor 2. These controls are also programmed by the configuration so may be used for anything requiring level control. However, typically they used to control monitor output levels, or left/right balance, for studio loudspeakers or headphones.

The zirkonXL Central Module

A single XL Central Module must be fitted to each **zirkonXL** console providing the following controls:

- **Memory Card Reader** - 128 snapshots may be saved and loaded to/from an external compact flash memory card. See Page 115 for more details.
- **Source Parameters** – dedicated control sections (CHANNEL, EQ/HP/LP, DYNAMICS, etc.) for the source which is 'in access'. See Page 101 for more details.
- **Global Controls** – memory and snapshot management plus PFL mode selection. See Page 115 for more details.
- **MF Keys** - 56 multi-function (MF) keys programmed by the configuration. See Page 119 for more details.
- **Level Controls** - Monitor 1, 2 and 3 rotary controls programmed by the configuration. See Page 119 for more details.

Source Parameter Controls



Every **zirkonXL** features dedicated controls for the following source parameter sections:

1	**CHANNEL**	Input metering and control of parameters such as analogue mic/line gain, phantom power, high pass rumble filter, digital gain, stereo input options, panning, etc.
2	**SOURCE and INSERT**	Fader strip assignment (SOURCE) and insert send/return assignment (INSERT).
3	**BUS Assign**	Direct bus assignment onto any 20 summing busses, with optional send level control.

4	**EQ/HP/LP**	Dedicated Gain and Frequency/Q/Type controls for the channel's 3-band parametric EQ section plus High and Low Pass filters.
5	**DYNAMICS**	Control of the gate, expander, compressor and limiter sections
6	**DELAY**	Control of channel delay (up to 340 ms) in ms, metres or frames.
7	**Fader Access**	Controls the fader level and MF key 3 & 4 functions for the source 'in access'. Also assigns fader strips to the Central Module, particularly useful for assigning virtual fader strips on 'hidden' layers.

Note

Note that not all the functions may be available for every source as this depends on the DSP allocated to each source within the configuration. For example, if the selected source has no EQ, then the **eq** section will be blank.

It is also possible to lock out some or all of the sub menus so that they cannot be accessed by the operator within the Zirkon Configuration Tool. This can be used in fixed on-air installations, where only the systems engineer needs access to settings such as mic gain, EQ, etc.

MF Keys 1 & 2 are only available from the Channel Module and cannot be controlled from the Central XL Module.

⏩ To control parameters for a source:

1. Press the Access Key on the fader strip you wish to control.

The Access Key turns red to show that it is selected and the XL's Central Module updates to show the current parameter values for the selected source.

Tip

The SOURCE display shows the name of the source 'in access' (e.g. **DJ**) in red.

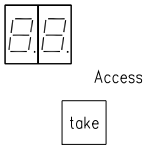
Note that the function buttons on the Central Control Section are colour coded as follows:

- Red – indicates that the function is selected or On.
- Green – the function is not selected or Off.
- Yellow – used for secondary modes or functions.
- Off (no colour) – indicates that there is no function available.

2. Now use the rotary controls and buttons to set parameters for the source.

Alternatively:

1. Turn the ACCESS rotary control to select any fader strip across the console, including virtual fader strips on hidden layers.



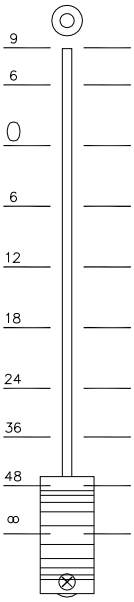
The TAKE button turns green to show that you are now in selection mode.

2. Press the **TAKE** button to assign the fader strip to the Central Module.

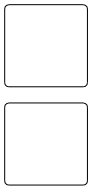
The TAKE button turns red and the Source Parameter sections update to reflect the status of the selected source.

3. Now use the rotary controls and buttons to set parameters for the source.

Buttons are red when a parameter is selected, green when the function is available but not selected, and off when a function is unavailable for the source.



We will now work through each of the Source Parameter sections in turn. In the examples which follow, all sources feature fully configured DSP. However, not all DSP modules may be available on all sources within your configuration.



CHANNEL

The CHANNEL section includes a stereo input meter and controls for setting input and pan parameters for the selected source.

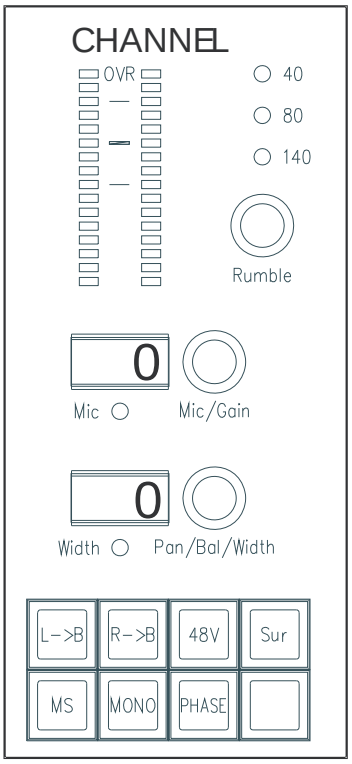
CHANNEL Meter

The CHANNEL meter provides input metering for the source, either in mono or stereo depending on the format of the source.

Input/Pan Parameters

Note

The parameters available depend on whether the source is mono, stereo or surround and whether it is fed from a mic, line or digital input card. See Page 30 for full details on source parameters.



1	**Rumble Filter (microphone inputs only)**	The 40, 80 and 140 LEDs indicate the cut-off frequency for the high pass rumble filter. Turn the RUMBLE rotary control to select a new frequency; the corresponding LED blinks. Tap down on the control to confirm. To select the filter off state, turn the rotary control anticlockwise until all 3 LEDs blink. To cancel a selection without confirming, change the source in access (i.e. press another fader strip Access Key and then reselect the Access Key for your source).
2	**Gain** **Back-Front**	This control may adjust 4 parameters: With the **Sur** button off (green), tap down on the control to toggle between analogue mic gain (Mic/LFE LED = on) and digital gain (Mic/LFE LED = off). Note that mic gain is only available for microphone sources. With the **Sur** button on (red), toggle between Back-Front pan position (Mic/LFE LED = off) and LFE level (Mic/LFE LED = on). Note that the surround parameters available depend on the format of the source and whether surround panning is enabled within the configuration.
3	**Pan/Bal** **Left-Center-**	This control may adjust 4 parameters: With the **Sur** button off (green), tap down on the control to toggle between

	Right	Left-Right Pan/Balance (Width/Slope LED = off) and Width (Width/Slope LED = on). Note that balance and width are only available for stereo sources. With the **Sur** button on (green), tap down on the control to toggle between Left-Centre-Right Pan/Balance (Width/Slope LED = off) and Centre Slope (Width/Slope LED = on).
4	**Stereo Source Options**	The following buttons are only active for a stereo source and select: • **L->B** (left input to both sides of the stereo source) • **R->B** (right input to both sides) • **MS** (M-S stereo decoding) • **MONO** (mono of the left and right inputs to both sides) When no buttons are selected, the source is in default stereo mode.
5	**48V (microphone inputs only)**	Press the **48V** button to switch 48V phantom power on or off. (Red = On; Green = Off.)
6	**Phase Reverse**	Press the **PHASE** button to reverse the phase of the source. (Red = Phase Reverse On; Green = Off.)

Tip

When adjusting gain, pan or balance, the fader strip Access Key also displays parameter values as you adjust them.

SOURCE

The SOURCE controls are used to assign sources to fader strips. Any fader may control any type of input source: microphone, play out machine, summing bus (group, aux, etc.)

Note

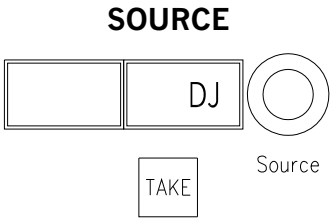
Note that, depending on the setting of the 'Save Value' parameter within the console configuration, you may not be able to assign a source to an open fader for security reasons.

Also, you cannot assign the same source to the surface twice.

1. Make sure that the fader you wish to assign is closed. (Not always necessary, depending on the configuration.)

2. Press the Access Key on the fader strip you wish to assign.

The ACCESS control display shows the number of the fader strip.



If you have selected a fader strip with a source already assigned, then the **TAKE** button, on the SOURCE assign panel, will be red with the name of current source shown in the SOURCE display, for example **DJ**.

3. Now turn the SOURCE assign rotary control to scroll through the available sources.

The TAKE button changes to green to indicate that you are now in select mode.

Note that summing busses are shown with a Σ prefix in the SOURCE display.

If the **TAKE** button light goes out, then the source cannot be assigned to the surface – it may be that the source is already assigned elsewhere on the surface.

4. When you have found the source named **CD**, press the green **TAKE** button to assign it to the fader strip.

The TAKE button turns red; the fader strip Access Key updates to show the name of the source (e.g. CD); and the fader and other signal processing sections update to show the current parameters of the source.

5. To remove the current source leaving a blank fader strip, repeat steps 2 to 4, this time selecting the **REMOVE** option.

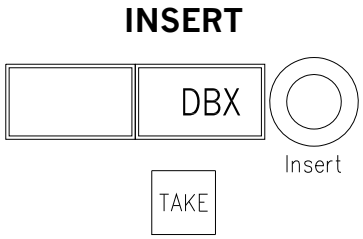
INSERT

The INSERT controls are used to assign an external insert device for the selected source.

Note that you may only assign insert devices set within the configuration for each source. You may assign a mono device to a mono source and a stereo device to a stereo source. You may not assign a mono device to a stereo source. If a stereo device is assigned to a mono source only the left channel is used.

Note

1. Turn the INSERT rotary control to select the device you wish to assign.

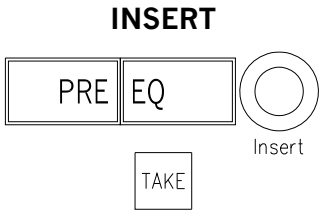


The TAKE button lights in yellow to show that you are in selection mode.

2. When you find the device you wish to insert, for example DBX, press the **TAKE** button to confirm.

The TAKE button turns red and the device is now inserted into the source path.

3. Tap down on the INSERT control, and turn to adjust the position of the insert point.



The current position is indicated by a red TAKE button, for example PRE EQ; other options are shown in yellow.

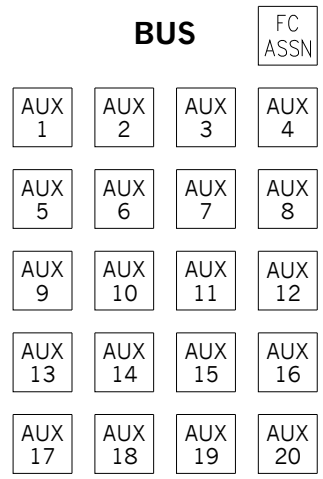
4. When you find the position you want, press the **TAKE** button to confirm.

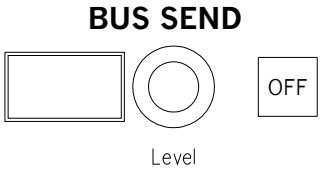
The TAKE button turns red and the insert position is set.

5. To return to the name of the device, tap down on the rotary control.

6. To turn off the insert, remove the device by repeating steps 1 and 2, and select the **OFF** option.

See Page 37 for full details on insert options.





BUS

The BUS section is used make bus assignments. Twenty keys are programmed within the configuration to allow assignments onto any of the Main 1, Main 2 and/or user defined summing busses. Please see Page 19 for details on the console's summing bus capabilities.

On the **zirkonXL** you can use two methods to make assignments:

- **Forward Bus Assign** – This is best when you wish to assign a source to multiple busses, for example to several aux outputs.
- **Reverse Bus Assign** – This is great when you wish to assign multiple sources to the same output bus, for example to set up a group.

⏩ Forward Bus Assign

Using this method, first we select the source and then the bus or busses as follows:

1. Press the Access Key on the fader strip you wish to assign.

The Access Key turns red; the SOURCE display updates to show the name of your selection; the ACCESS display shows the number of the fader strip.

2. On the BUS assign panel, press the **FC ASSN** button until it turns green.

This puts the BUS assign panel into Forward Assign mode.

3. Now select the bus buttons, for example **AUX 1** and **GRP 1**, to make your assignments.

Each button may cycle through the following states to select pre or post fader sends:

- Red – pre fader.
- Yellow – post fader.
- Green – not assigned.
- Off (no colour) – no function available from this button.

Note

Note that assignments made onto the Main 1 and Main 2 busses are *always* post fader. Other user configured busses may be fed with pre or post fader sends.

4. To adjust the bus send level and pre/post fader status from the selected source, press the **FC ASSN** button again so that it turns yellow:

This puts the BUS assign panel into Bus Send mode.

5. Select the send you wish to adjust, for example **AUX 1**.

The AUX 1 button illuminates in red to show that it is selected and the BUS SEND display shows the current level.

Note that if the **OFF** button is green then the send level is not yet applied and the bus assignment is currently operating as a post fader send at unity gain.

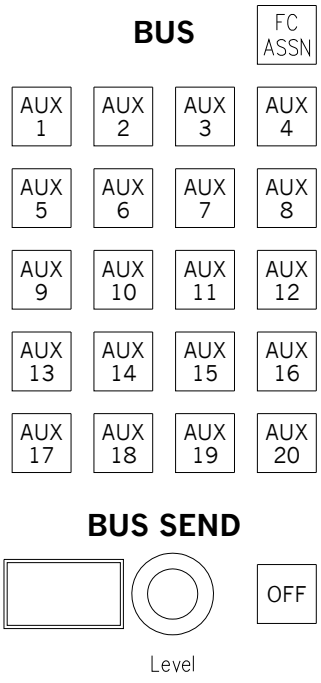
6. Enable the send level by pressing the **OFF** button so it changes to red or yellow; the colour sets whether the send is:

- Pre fader = Red
- Post fader = Yellow

7. Turn the BUS SEND rotary control to adjust the send level.

Gain may be adjusted from -120dB to +9dB.

8. If you wish to adjust other sends from the selected source, then select each bus (e.g. press the **GRP 1** button so that it turns red) and repeat steps 5 to 7.



Warning

Warning

Bus send levels to main and group busses should always be set to 0dB unless operating in special circumstances. Otherwise you will not achieve unity gain through the gain structure of the console.

9. When you are finished making assignments, deselect the fader strip Access Key.

This exits the bus assign mode and returns the fader strip Access Keys to their normal displays.

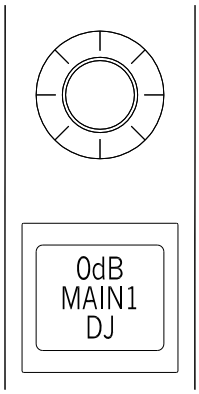
Reverse Bus Assign

Using this method, first we select the bus and then the sources as follows:

1. On the BUS assign panel, press the **FC ASSN** button until it turns red:

This puts the BUS assign panel into Reverse Assign mode.

2. Now select the bus you wish to assign to, for example **MAIN 1**.



The fader strip Access Keys update to display three lines of information:

- Send level onto the bus in dB.
- Name of the bus you are assigning to.
- Name of the source controlled from the fader strip.

The Access Key colours indicate current assignments:

- Red – assigned pre fader (not available on all busses).
- Yellow – assigned post fader.
- Green – not assigned.

3. To route our CD source onto the Main 1 bus, press the **CD** Access Key until it is yellow.

Note

Note that assignments made onto the Main 1 and Main 2 busses are *always* post fader so the Access key will only toggle from green (off) to yellow (post fader send).

When assigning onto user defined busses, such as auxiliary sends, toggle the Access Keys to change from pre fader (red) to post fader (yellow).

4. You may also use the rotary control above the fader strip Access Key to adjust the bus send level.

Gain may be adjusted from -120dB to +9dB.

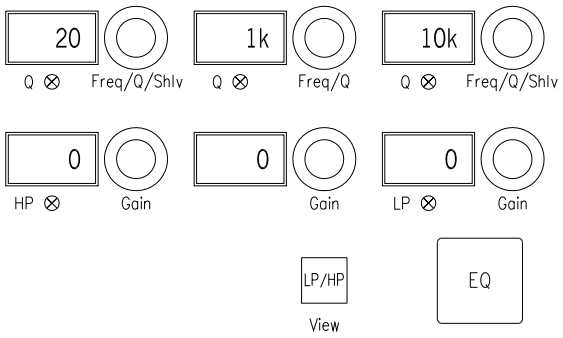
5. When you have finished making assignments, press the **FC ASSN** button to exit the bus setup mode.

This exits the bus assign mode and returns the fader strip Access Keys to their normal displays.

EQ/HP/LP

The EQ/HP/LP section adjusts the 3-band parametric EQ and High/Low Pass Filter sections for the selected source:

EQ/HP/LP

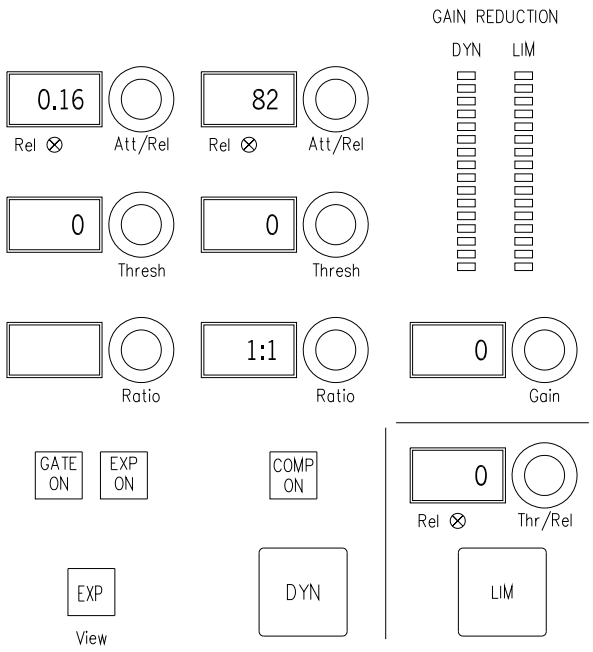


1	**EQ**	Press the **EQ** button to switch the 3-band parametric EQ and Low/High Pass Filters on or off (Red = On; Green = Off).
2	**LP/HP View**	Deselect the **LH/HP** button (green) to view or adjust the 3 bands of parametric EQ. Select the **LH/HP** button (red) to view or adjust the high and low pass filter bands. Note that in this mode, the middle set of controls go dark as there are only two filter bands to adjust.
3	**Gain**	Turn the lower rotary control to adjust the gain in dB.
4	**Freq/Q/Shlv**	In EQ mode, tap down on the upper rotary control to toggle between Frequency and Q. In Filters mode, tap down on the upper rotary control to toggle between High/Low Pass Filters (HP or LP) and Shelving EQ.

See Page 34 for full details on EQ and Filter parameters.

DYNAMICS

The DYNAMICS section adjusts the Gate, Expander and Compressor for the selected source:



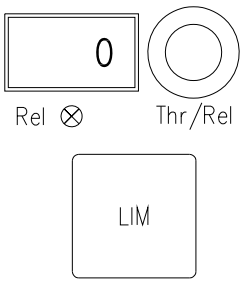
1	**DYN**	Press the master **DYN** button to switch all three sections on or off. (Red = On; Green = Off.)
2	**GATE On/ EXP On/ COMP On**	Press the **GATE ON**, **EXP ON** and **COMP ON** buttons to switch each individual dynamics section on or off. (Red = On; Green = Off.)
3	**EXP View**	Deselect the **EXP** button (green) to view or adjust the Gate. In this mode, only the attack/release and threshold controls are active. Select the **EXP** button (red) to view or adjust the Expander. In this mode, only the threshold and ratio controls are active.
4	**Ratio**	Turn the lower rotary controls to adjust the ratio of the compressor or expander (**EXP** = red).
5	**Thresh**	Turn the middle rotary controls to set the threshold of the compressor, expander (**EXP** = red) or gate (**EXP** = green).

6	**Att/Rel**	Tap down on the upper rotary control to toggle between adjusting Attack and Release times.
7	**Gain**	Turn the GAIN control to reduce the level output of the dynamics section. Note that automatic gain make up is applied to the compressor when active.
8	**Gain Reduction Metering**	The amount of gain reduction or expansion applied by the gate, compressor and expander is shown on the DYN GAIN REDUCTION meter.

See Page 35 for full details on Dynamics parameters.

LIMITER

The LIMITER section adjusts the Limiter for the selected source:

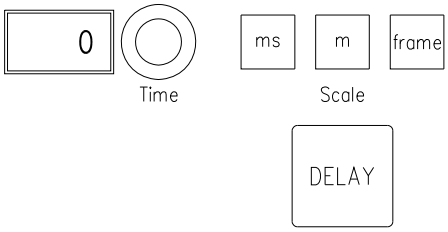


1	**LIM**	Press the **LIM** button to switch the limiter on or off. (Red = On; Green = Off.)
2	**Thr/Rel**	Tap down on the rotary control to toggle between adjusting Threshold and Release time.

See Page 36 for full details on Limiter parameters.

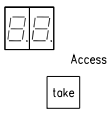
DELAY

The DELAY section adjusts the delay time for the selected source:



1	**DELAY**	Press the **DELAY** button to switch the delay on or off. (Red = On; Green = Off.)
2	**Scale**	Press one of scale buttons to adjust the delay in: • **ms** – milliseconds • **m** – metres • **frame** – frames
3	**Time**	Turn the TIME rotary control to set the delay time using fine control. If you push and hold as you turn, then you can set the delay time in larger steps.

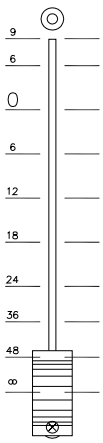
See Page 34 for full details on Delay parameters.



Access Control

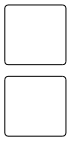
Use the ACCESS rotary control and **TAKE** button to assign different fader strips to the XL Central Module, as described on Page 103.

You can use the ACCESS controls to assign 'hidden' sources on virtual layers to the Central Module to adjust signal parameters.



Fader Strip

The fader and MF key 3 & 4 functions for the source 'in access' are duplicated on the XL Central Module. This is especially useful on large consoles where you wish to control the fader level, along with other parameters, from a central sweet spot listening position.



Global Controls

The GLOBAL CONTROL section provides access to a number of global functions:

- Snapshot save, load and erase – to/from external memory card.
- Internal memory save, load and erase – to/from the system unit.
- PFL Modes – sets the global PFL mode for the console.

Note that the Save and Erase functions may be protected using the Unlock option within the configuration. If this is the case, then you will need to activate the Unlock key before you will be able to save or erase snapshots or internal memories.

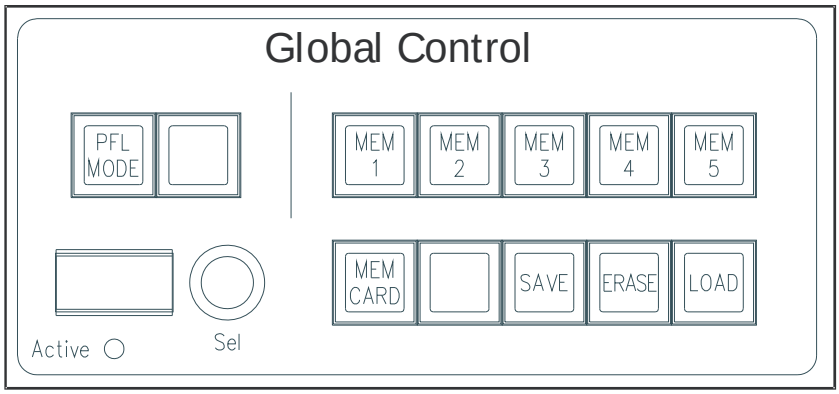
Note

Snapshots and memories are discussed in more detail on Page 27 and PFL modes on Page 39. This section describes how to perform each operation.

Snapshots Save, Load and Erase

1. Insert the memory card into the card reader with the 'Insert' arrow on the card facing away from your body.

On the GLOBAL CONTROL panel, the ACTIVE display updates to show a snapshot number, e.g. 1 and MEM CARD button lights in green.*



2. To load the snapshot, use the **Sel** rotary control to select a snapshot location, e.g. **3***.

*The snapshot numbers increment from 1 to 128 as you turn the control clockwise. Numbers with a * contain stored data.*

3. Press and hold the **MEM CARD** button (it turns red) while you press **LOAD**.

The console loads the data stored in the snapshot updating the console control surface.

Note that if the 'Save Value' parameter within the console configuration is turned off, the snapshot will not recall fader positions.

Note

4. To save settings into a snapshot, use the rotary control to select a free location, e.g. **4**.

5. Press and hold the **MEM CARD** button (it turns red) while you press **SAVE**.

The current console settings are stored into snapshot 4. For more details on what is stored in snapshots and memories, please see Page 27.

6. To erase settings from a snapshot, use the rotary control to select a used location, e.g. **3***..

7. Press and hold the **MEM CARD** button (it turns red) while you press **ERASE**.

*The settings are erased from the memory location; the * is removed from the snapshot location to indicate that it is now empty.*

Warning

Warning

There is no undo for save or erase operations, so make sure you are certain before performing these operations.

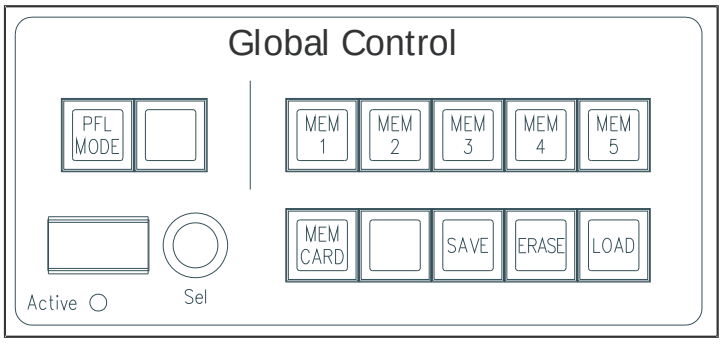
Internal Memory Save, Load and Erase

The system includes 5 internal memory locations in which you may also save and load settings.

Note

Note that Snapshots and memories store exactly the same data. However, as the 5 internal memories are stored on the zirkon/Nova17 master board, they are more suitable for specific studio setups which do not need to be transferred between consoles.

1. To load memory 1, on the GLOBAL CONTROL panel, press and hold the **LOAD** button (it turns red) while you press **MEM 1**.

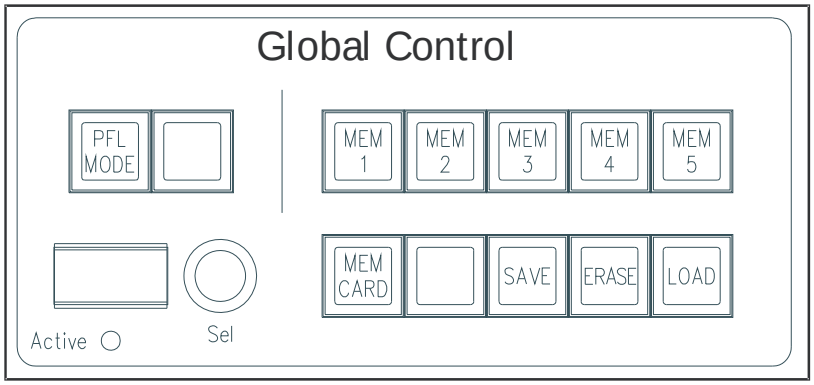


The console loads the data stored in memory 1 updating the console control surface.

Note

Note that you check which memories contain data by pressing and holding the **LOAD** button: used memories are illuminated, and empty memories are not.

2. To save settings into memory 2, press and hold the **SAVE** button (it turns red) while you press **MEM 2**.



Note

The current console settings are stored into memory 2. For more details on what is stored in snapshots and memories, please see Page 27.

Note that you check which memories contain data by pressing and holding the **SAVE** button: used memories are illuminated in red, and empty memories in green.

3. To erase settings from a memory, press and hold the **ERASE** button (it turns red) while you press the memory location – e.g. **MEM 2**.

The settings are erased from the memory location; the button changes to green to indicate it is now a free memory.

Warning

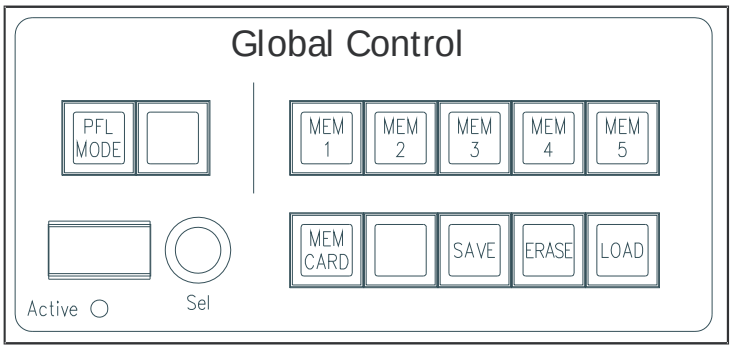
There is no undo for save or erase operations, so make sure you are certain before performing these operations.

Warning

PFL Modes

In addition to the PFL options set within the configuration, a number of operator adjustable PFL modes are available:

1. On the GLOBAL CONTROL panel, select the **PFL MODE** button:



The button turns red and the ACTIVE display shows the current PFL mode.

2. Now turn the SEL rotary control to cycle through the available modes:

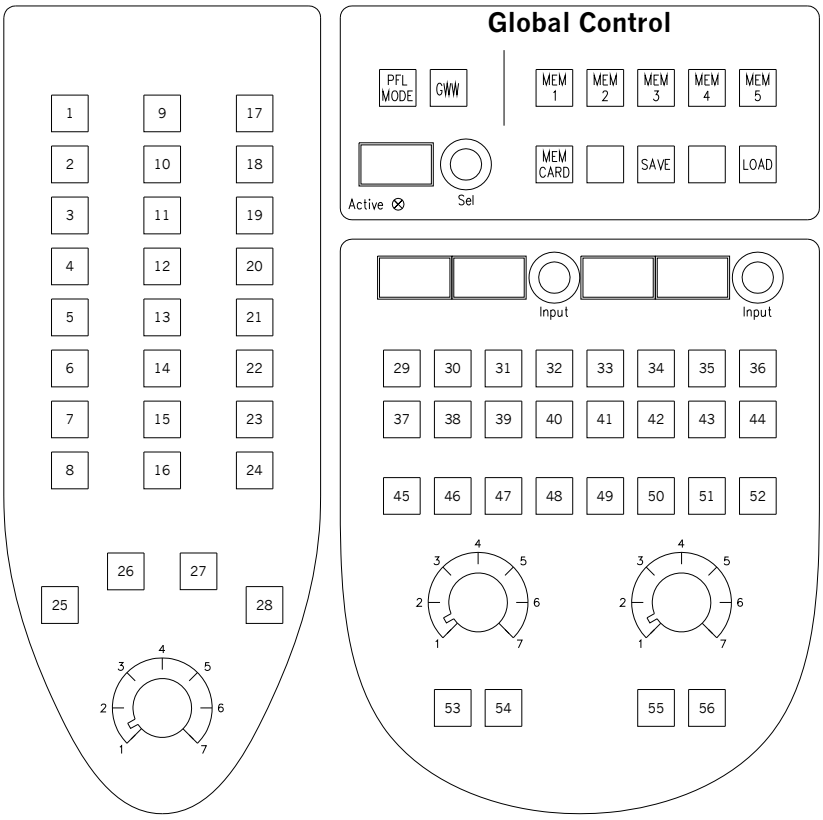
- PFL SUM – summing PFL buttons.
- PFL SUM R – summing PFL buttons with PFL recur.
- PFL PFL – inter cancelling PFL buttons.
- PFL PFL R– inter-cancelling PFL buttons with PFL recur.
- PFL AW – summing PFL buttons plus the ability to put open faders into PFL.

3. Deselect the **PFL MODE** button (it turns green) to complete the operation.

For more details on these modes and PFL operation, please see Page 39.

MF (Multi-Function) Keys

The **zirkonXL** Central Module contains 56 multi-function (MF) keys which are programmed by the configuration:



Typical applications include:

- Monitor Source Selection and Modes – see Page 38.
- Communications – for example, master talkback switching.
- Layering Control – to switch to virtual fader strips, see Page 78.

Monitor 1, 2 and 3 Level Controls

The XL Central Module contains three level controls: Monitor 1, Monitor 2 and Monitor 3. These controls are also programmed by the configuration so may be used for anything requiring level control. However, typically they used to control monitor output levels, see Page 38 for details.

Assignable Rotary Controls

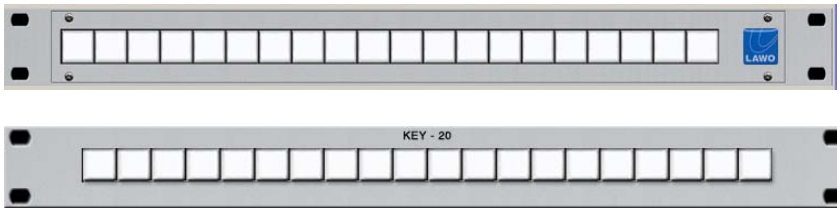
Above MF Keys 29 to 36, the XL Central Module has two assignable rotary controls, each with its own 6-character display. These controls are reserved for future implementation.

Optional Key Panels

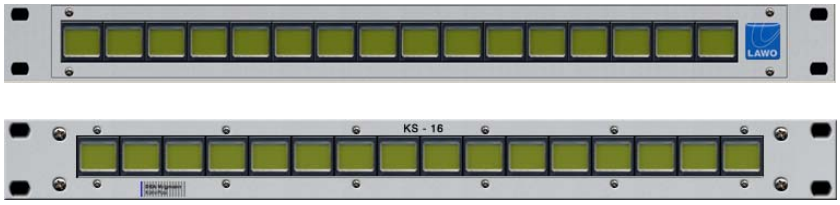
Up to 15 of any of the following Key Panels may be added to each system to expand the number of buttons and controls. Different panels feature a range of MF keys, self-labeling LCD buttons and other controls. All buttons are programmable within the configuration. Typical applications include communications panels. For specific details, please consult your systems engineer.

Options include:

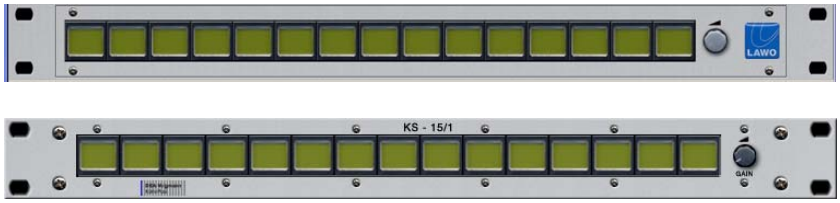
- **KSC-T20** – 19"/1RU panel with 20 programmable buttons. (Replaces the **Key-20**):



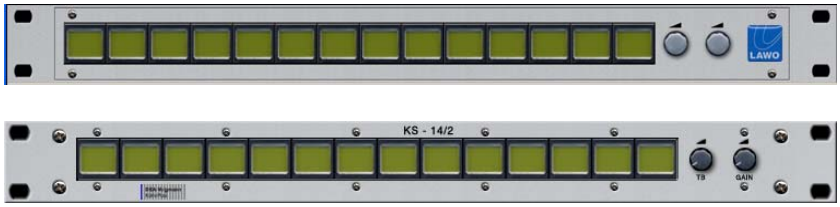
- **KSC-LCD16** – 19"/1RU panel with 16 self-labelling LCD buttons. (Replaces the **KS-16**):



- **KSC-LCD15P1** – 19"/1RU panel with 15 self-labelling LCD buttons and 1 volume control. (Replaces the **KS-15/1**):

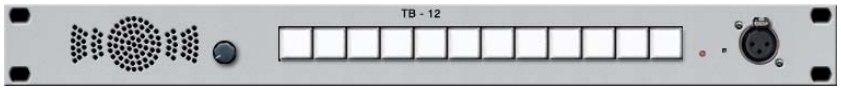


- **KSC-LCD14P2** – 19"/1RU panel with 14 self-labelling LCD buttons and 2 volume controls. (Replaces the **KS-14/2**):



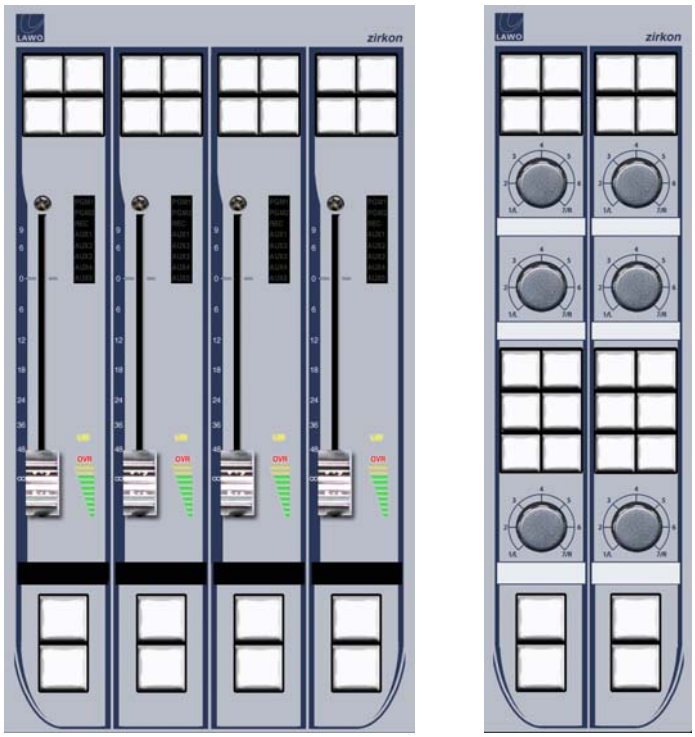
- **KSC-GPIO32** – 19”/1RU panel with 32 GPIOs:

- **TB-12** – 19”/1RU panel with 12 programmable buttons, talkback microphone and loudspeaker:



2s Control Surface Modules

As an alternative to the Channel and Central/Central XL Modules, Release 2.7 software supports two new module options designed to produce a simpler and more compact control surface:



- **Channel Module 2s** – identical to the Channel Module, but without the rotary control or dedicated fader strip Access key.
- **Monitoring Module 2s** – an alternative to the Central or Central XL Modules, designed with programmable MF Keys and rotary controls, ideal for studio monitoring.

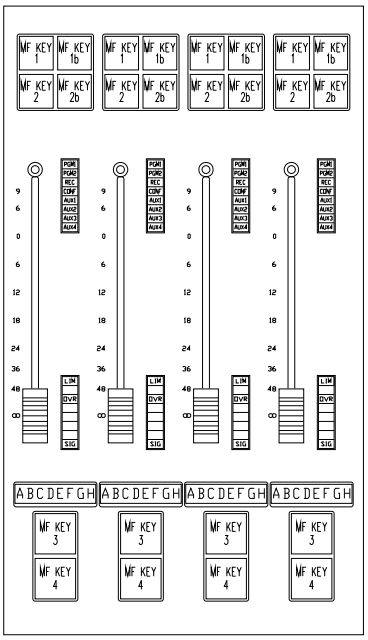
A single system can support up to 10 2s Channel Modules and up to 5 Monitoring Modules. In installations using these modules, additional functions, such as snapshot recall, fader strip assignment, mic gain control, etc. would normally be operated from Vistool, see Chapter 4.

Both modules are available either with flat or elevated (raised) keys.

Let's look at each of the 2s modules in more detail:

The Channel Module 2s

Each Channel Module 2s provides 4 identical fader strips with the following LEDs and controls:

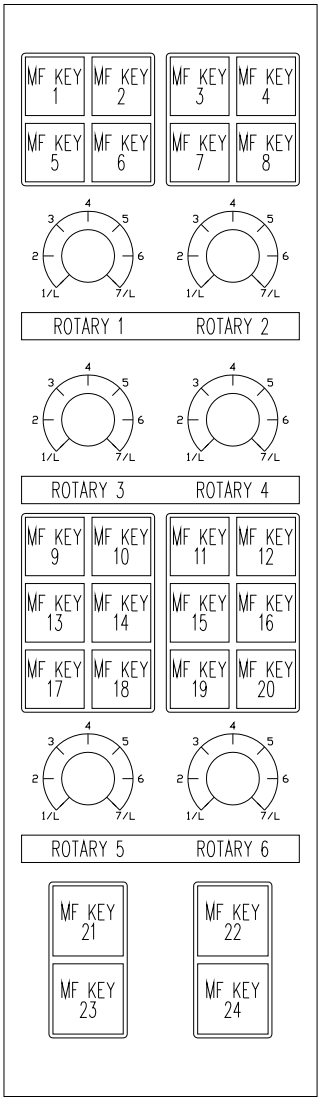


1	**MF Keys 1, 1b, 2, 2b, 3 and 4.**	The 6 multi-function (MF) keys are programmable within the configuration. Typical applications include PFL and fader start operations. The MF2b key may be defined as a fader strip Access Key, if required.
2	**Bus Assign Indicators**	Each 4-character display shows bus assignments from the source onto the first 8 auxiliary busses defined within the configuration. Inlays may be changed to rename the busses from their default engravings: PGM1, PGM2, REC, CONF and AUX1 to AUX4.
3	**Fader**	The fader is motorised and normally configured for +9dB at the top of its travel. (Note that the scale can be configured for 0dB if you wish.)
4	**LIM**	The limiter (**LIM**) LED illuminates when the channel limiter is active.
5	**Input Meter**	Meters the input to the source. The upper and lower LEDs correspond to the **OVR** and **SIG** LEDs on a normal Channel Module. The thresholds of all 6 LEDs are set within the configuration.
6	**Source Name**	Up to 6 characters display the name of the source assigned to the fader strip.

Up to 10 2s Channel Modules may be fitted to each console providing up to 40 physical fader strips.

The modules may be arranged in any order; each has an ID, set on the rear of the unit, which defines whether the 4 fader strips control faders 1 to 4, 5 to 8, 9 to 12, etc.

The Monitoring Module 2s



Each Monitoring Module 2s is the width of 2-fader strips and provides the following controls:

1	**MF Keys 1 to 24**	The 24 multi-function (MF) keys are programmable within the configuration, but typically would be used to select monitor sources for the corresponding rotary control output.
2	**Rotary Controls 1 to 6**	The 6 assignable rotary controls are programmable within the configuration, but typically would be used to control monitor levels.

Up 5 Monitoring Modules may be fitted to each console.

For more details on either of the 2s Modules, please refer to the “zirkon/zirkonXL/Nova17 Technical Manual”.

Chapter 4: Vistool Operation

Overview

Vistool is a range of software applications which work in real time with the **zirkon** console or **Nova17** Lawo routing system.

Custom designed operational screens may be created using the **Vistool Edit** software application, and then used to display and control functions in real time using **Vistool RT** (**Runtime**).

Using **Vistool Edit** and **RT**, each screen may feature several pages and host a range of options such as level meters, timers, signaling, parameter displays and MF key push button functions. In the example below, a Record Matrix has been created alongside output metering, presenter mic timer and various signaling buttons. This page (named **Rec Matrix**) is one of several available to the operator; simply press one of the 10 buttons running down the right hand side of the screen to change pages.

Alternatively, the **Vistool OnAir** and **Vistool Technic** applications provide fixed display pages as a cost effective alternative to **Vistool Edit**/**RT**.

The Vistool software runs on a PC with Windows™ operating system. Data is transferred between the console's system unit and Vistool PC in real time via Ethernet. Up to four PC's may be directly connected to any single system, or more via a network gateway. For example, you may have a Vistool screen beside the console operator to provide additional feedback and console control, plus a number of remote Vistool stations managing central routing or assistant functions.

Software Versions and Licensing

There are four versions of the Vistool software application:

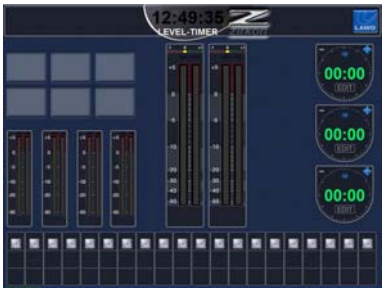
Vistool Edit

This software is used to design and build the custom screens used by Vistool Runtime.

Vistool Runtime (Vistool RT)

Vistool Runtime operates the custom screens designed by the Vistool Edit programme.

Vistool OnAir



Vistool OnAir offers a cost effective alternative to the Vistool Edit and Runtime combination. It provides a single display page:

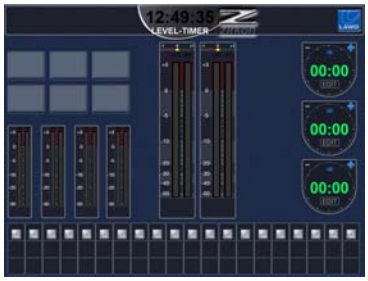
- **LEVEL-TIMER** - with timers, PPMs, channel status for 20 channels and 6 signal buttons (e.g. telephone ringing).

Vistool OnAir does not support configurable screens.

Vistool Technic

Similar to Vistool OnAir, offering 3 fixed pages:

- **LEVEL-TIMER** – as for OnAir.
- **CH PARAMETER** - with visualisations of DSP parameters (EQ curve, etc.).
- **MULTI-CHANNEL** - with peak metering and status information for 20 channels.



Vistool Technic does not support configurable screens.

Note that each version of Vistool requires its own software licence which will be emailed to you once you register the product.

Note

The licence is specific to the hardware on the PC, therefore you will need to obtain a licence for every Vistool PC within the installation. Note that if you purchase a licence for Vistool Edit you will also receive a Vistool Runtime licence for the same PC.

You may operate any of the software applications in 'demo mode' for 30 days.

For more details on installing the Vistool software applications, registering the software and configuring the system connections, please see the zirkon/zirkonXL/Nova17 Technical Manual.

This chapter deals with the operation of the **Vistool RT**, **OnAir** and **Technic** applications only. For details on **Vistool Edit**, please see the zirkon/zirkonXL/Nova17 Technical Manual.

Vistool: Getting Started

Providing you have a valid network connection between your PC and the **zirkon** master board, you can run any of the Vistool applications in real time with a **zirkon** system.

Note

Note that during real time operation, the **zirkon** system sends a continuous stream of data to the Vistool PC which is handled by the DMSDienst Windows Service. This service may interfere with other applications running on your PC. Therefore, it is recommended that the Vistool PC runs the Vistool software only, and is not used for other applications.

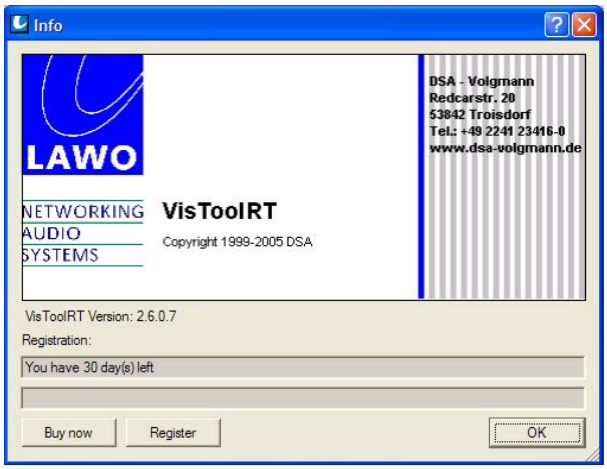
Starting the Application

1. You can start any of the Vistool applications either by selecting the desktop icon, if installed, or by selecting **START** -> **Program Files** -> **Zirkon** -> **ZirkonVistool OnAir**, etc..

Note

Note that this is the default file path created during a standard install. If a different file path was used, then please consult your systems engineer.

Until you register the software, when you first run the application you will be presented with the 'Info' pop-up:

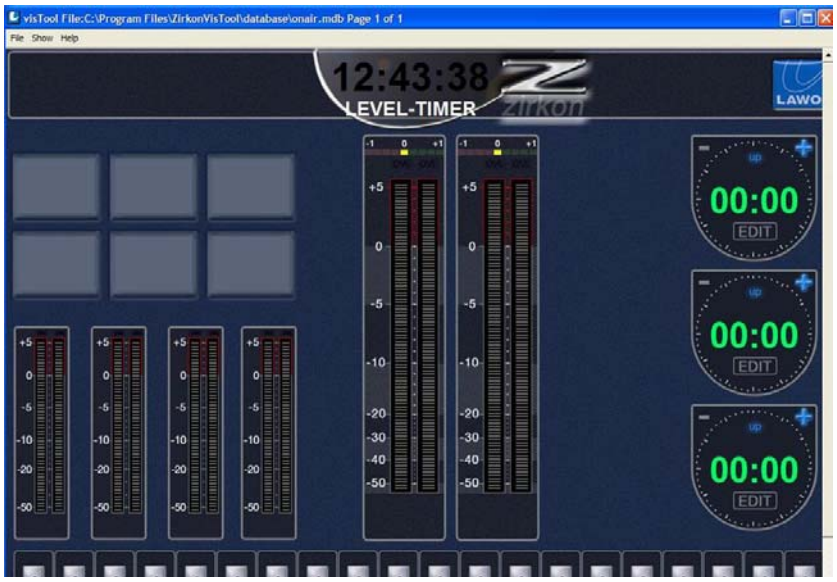


- Click on **OK** to open the application in 'demo mode'. This allows you to run the application for up to 30 days without a software licence.
- Click on **Buy now** to access the Lawo website via your web browser where you can find more information on purchasing Vistool licences.
- Click on **Register** to register your software. Please see the zirkon/zirkonXL/Nova17 Technical Manual for details.

2. If the 'Info' pop-up appears, then click on OK to open the application in demo mode.

What happens next varies slightly depending on the application.

3. If you open either **Vistool OnAir** or **Technic**, then you will immediately see the "Level-Timer" page:



4. If you open **Vistool RT**, then you may need to select a Vistool configuration database before seeing anything on the Vistool screen:

- Select **File -> Open** and use the Window Explorer menus to select the Vistool Configuration database. You should now see the first page of your configuration.

Note that if Vistool is offline, as shown above, the time (e.g. 12:43:38) is displayed in black. In addition, any signaling buttons and meters are inoperative until the Vistool PC is running online.

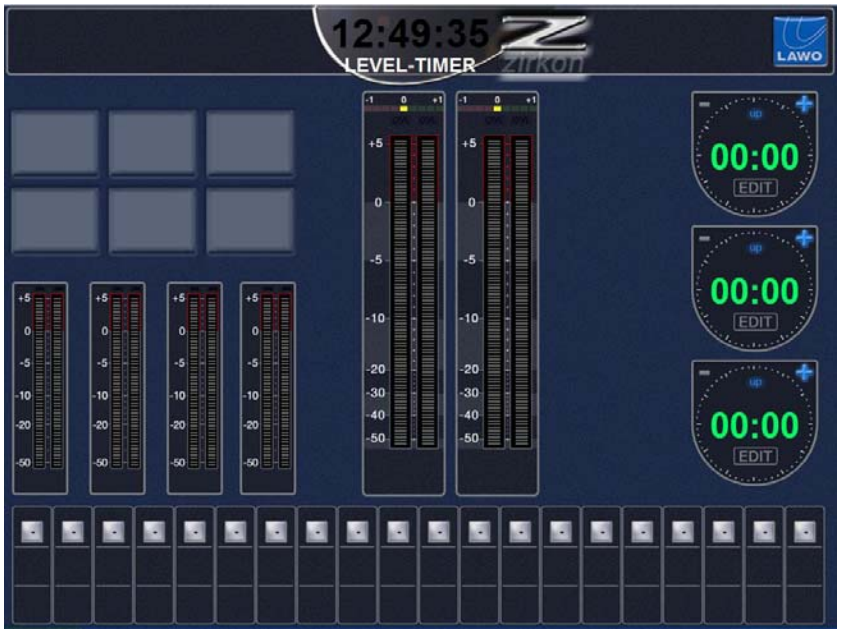
Once the Vistool PC is connected and communicating with a **zirkon** system, this time display changes to white. We are going to assume that your Vistool PC is connected and configured within the studio network, and that your Vistool working online (the time display is white). If not, then please consult your systems engineer for help and advice on checking the network configuration.

We are also going to assume that the Vistool "Properties" window has already been set up for you. These settings are required to make the appropriate links between your **zirkon** configuration and Vistool configuration database. Within **Vistool RT**, **Vistool OnAir** or **Vistool Technic** the "Properties" window is password protected, and can only be accessed by entering Admin mode. For more details on Admin mode and the "Properties" window, please consult the zirkon/zirkonXL/Nova17 Technical Manual.

Changing Views & Exiting the Application

By default the application opens with its menu bar at the top of the screen.

1. To view the display in full screen view, select **CTRL** + **L** on your PC keyboard:



2. To get back to the menu bar, press **ESC** on your PC keyboard.

3. To close the application from your PC keyboard, press **ALT** + **F4**.

Note

Note that if you close an application in Full Screen view, then it will re-open in this view the next time you start the application.

Note that within the “Properties” window, a Close Password may be set. If enabled, then you will not be able to close the Vistool application without entering the password. This will prevent you from accidentally closing Vistool during an on-air transmission! Please consult your systems engineer if you wish to bribe them for the password!

4. You can minimise, maximise or close the application in the usual Windows operating style.

The Clock & Page Title

At the top of every Vistool page you will always see:

- **Clock** – This clock shows the internal time of your PC. When the numbers are white, you have communication with the **zirkon** system. When the numbers are black (as above), there is no communication so please check your network connection to the system.
- **Page Title** – for example **LEVEL-TIMER**. For **Vistool OnAir** and **Technic**, these page titles are fixed. For **Vistool RT** they are configured within the **Vistool Edit** software.

Depending on what has been configured within the Vistool "Properties" window, you may also see a Station Logo – in our example we've added the LAWO logo to the top right of the display.

Page Navigation

If you are running **Vistool OnAir**, then you have the luxury of a single page.

However, when running **Vistool Technic** or **RT** you will have multiple pages to navigate. There are several options for changing pages depending on your configuration:

- Press the PAGE UP or PAGE DOWN keys on your PC's keyboard.
- Press a physical MF Key on the console control surface – this option must be programmed within the console configuration.
- On **Vistool RT**, there may be on-screen page buttons which you can touch or select to navigate between pages. In our example, the page select buttons run down the right hand side of the display:

The current page button (**Rec Matrix**) is illuminated in red.

Touch Screen Operation

If you have a touch screen interface fitted then you will be able to touch an on-screen button, timer, etc. to operate it.

If not, then use your mouse to select any on-screen buttons. Or, for common functions, ask your systems engineer to programme a physical MF Key!

Main Menus

In Normal view, note that each Vistool application includes the following main menu options:

- **File -> Properties** – this is used on **Vistool RT**, **OnAir** and **Technic** to set the properties for the application. Note that this menu can only be access in Admin mode and is password protected. Please see the Zirkon/zirkonXL/Nova17 Technical Manual for further details.
- **Show -> Full Screen** – selects full screen view.

Help -> About – accesses the 'Info' pop-up with information about the software version and access to software registration.

Useful Keyboard Shortcuts

Here is a list of some useful keyboard shortcuts which you can select from your PC keyboard:

Tip

- **CTR + L** – switches to Full Screen view.
- **ESC** – switches to Normal view.
- **Page Up/Page Down** – navigates between pages.
- **ALT + F4** – closes the **Vistool Edit** programme.

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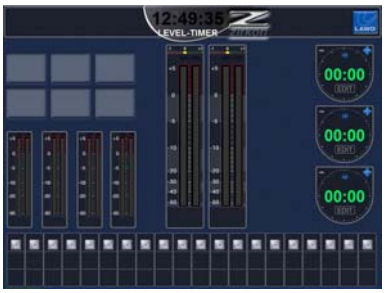
Vistool: OnAir, Technic and RT

This section looks at the differences between the three software applications:



Vistool OnAir

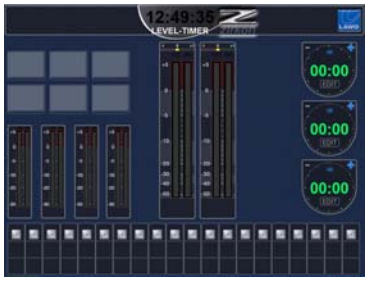
Vistool OnAir supports a single display page:

- **LEVEL-TIMER** - with timers, PPMs, channel status for 20 channels and 6 signal buttons (e.g. telephone ringing).

Vistool Technic

Similar to Vistool OnAir, offering 3 fixed pages:

- **LEVEL-TIMER** – as for OnAir.
- **CH PARAMETER** - with visualisations of DSP parameters (EQ curve, etc.).
- **MULTI-CHANNEL** - with peak metering and status information for 20 channels.



Vistool RT

Vistool RT will run Vistool configurations created by the **Vistool Edit** software. **Vistool RT** provides several areas of expanded control compared to **Vistool OnAir** or **Technic**:

- **Multiple Page Operation** - Vistool RT may run multiple pages, each with its own customised layout.
- **MF Buttons** - in addition, to general elements like Timers, Meters, Channel Status, etc. Vistool RT allows operators to control console functions from on-screen MF Buttons. These MF Button functions are configured within the Zirkon Configuration Tool, and then mapped to the Vistool page using the Vistool Edit software. Within Vistool RT, the operator may either press the on-screen MF Button (when using a touch screen interface), or control the button from the PC mouse.
- **PARM control** - Vistool RT also allows operators to control source and bus parameters in a similar manner. Settings which may be viewed and adjusted include Input settings (e.g. Gain), EQ, Dynamics, Limiter and Delay.

For full details on the configuration of Vistool pages using Vistool Edit, please see the Zirkon/zirkonXL/Nova17 Technical Manual.

Remember that **Vistool RT** can run multiple pages and be designed using a range of options. As the **Vistool RT** pages within your installation will have been customised for your needs, we cannot show your screens! However, the following sections will demonstrate the most common Vistool elements.

Vistool: Common Elements

Many of the elements used within Vistool are common to all three versions of the software. Depending on whether you are running **Vistool OnAir**, **Technic** or **RT**, you may have access to some or all of the following.

Signal Buttons

Vistool OnAir and **Technic** include 6 Signal Buttons; **Vistool RT** may include up to 6 Signal Buttons depending on the configuration.

This type of button is used for display purposes only and does not offer any control.

Each button can display up to 4 different icons in response to control signals set within the **zirkon** configuration. For example, a button may change from a 'telephone ring off' to a 'telephone ring on' icon when the telephone line becomes active.

Each Signal Button has 4 states:

- Default – the default state of the button.
- Prio 1 – highest priority; responds to the Prio 1 control signal set within the **zirkon** configuration.
- Prio 2 - medium priority; responds to the Prio 2 control signal set within the **zirkon** configuration.
- Prio 3 - lowest priority; responds to the Prio 3 control signal set within the **zirkon** configuration.

This means that our telephone line status button can show whether the line is off, ringing, answered, etc.

Typical applications include telephone line status and studio on-air signaling.

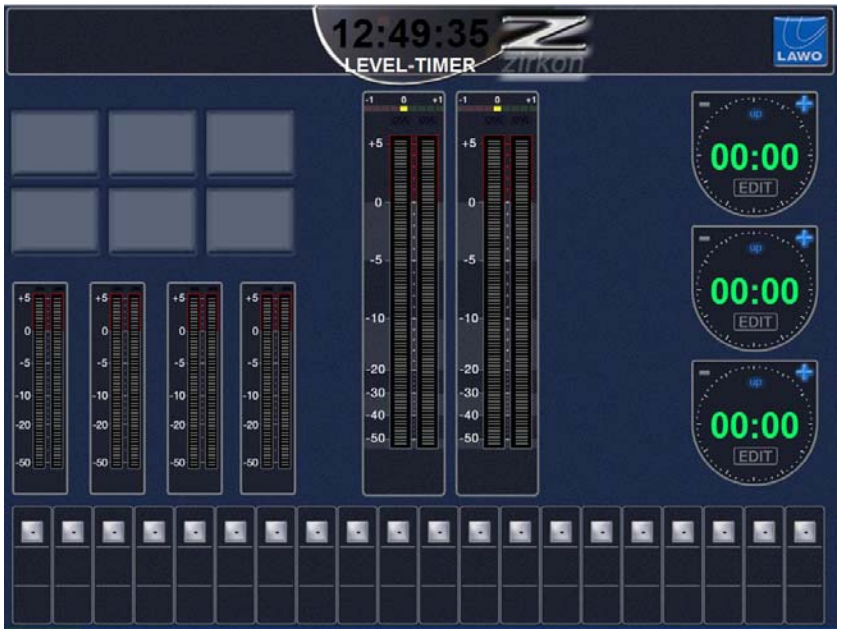
Metering (PPMs)

Vistool OnAir and Technic

The meter design and layout within **Vistool OnAir** and **Technic** is fixed. All meters are stereo and include the following:

Main A & B and Meters 1 to 4

The LEVEL-TIMER page on **Vistool OnAir** and **Technic** includes 4 'Small Static' meters (Meters 1 to 4) and 2 'Static Zebra' meters (Meters A and B):



The source for each meter is set within the **zirkon** configuration and once assigned, the meter will show the name of the source or bus. This is a fixed assignment, so you can be sure that these meters will always show the same source or bus.

Note that the two 'Static Zebra' meters (Meters A and B) will only include the stereo correlation meter if they are assigned from the **MAIN 1** or **MAIN 2** output busses.

Note

Channel Meters

Vistool Technic also includes 20 Channel Meters on the MULTI-CHANNEL page:

The source assigned to each of these meters is set within the **zirkon** configuration and once assigned, the meter will show the name of the source or bus.

Unlike the Meter A & B and Meters 1 to 4, Channel Meters may be paged to view different sets of sources or busses.

Up to 4 pages may be accessed using MF Keys programmed within the **zirkon** configuration. For example, on a large console you may have a 4 Meter Page MF Keys to switch metering between different sources and/or output busses.

Vistool RT Metering

While the meter design and layout within **Vistool OnAir** and **Technic** is fixed, **Vistool RT** may include any number of the meter source types already mentioned and some additional options. The design and layout of your metering is configured within **Vistool Edit**, and will vary depending on your configuration. In summary:

⏩ Meter Sources

Vistool RT may include any number of the meter source types already mentioned:

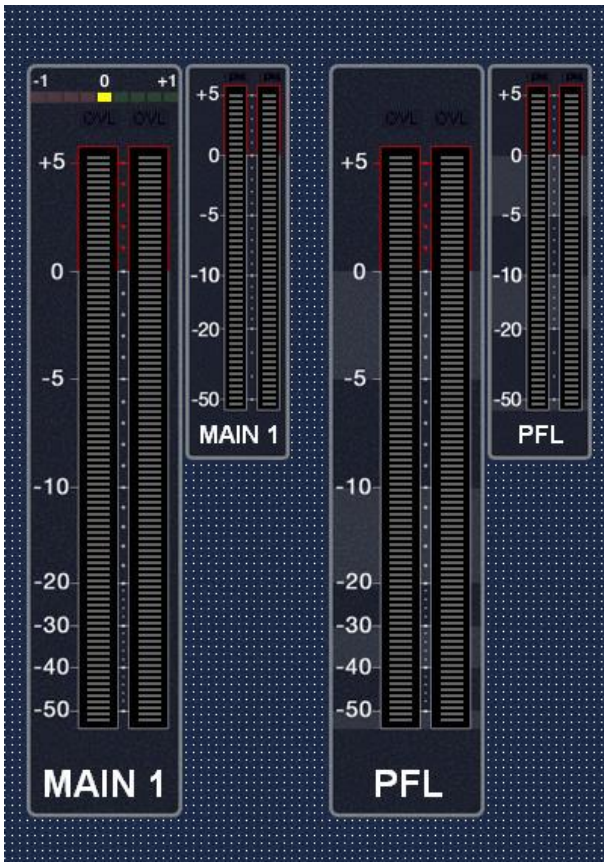
- **Meter A & B** – sources are assigned within the **zirkon** configuration.
- **Meters 1 to 4** – sources are assigned within the **zirkon** configuration.
- **Channel Meters 1 to 20** – sources are assigned within the **zirkon** configuration. These meters may be paged with up to 4 pages.

In addition, a fourth meter source is supported on **Vistool RT** - the Access meter.

- **Access Meters** - are always assigned to the source in access, and may be set to any of the following metering points:
    - **Input**
    - **Pre Dynamics**
    - **Post Dynamics**
    - **Pre Limiter**
    - **Post Limiter**

Meter Design

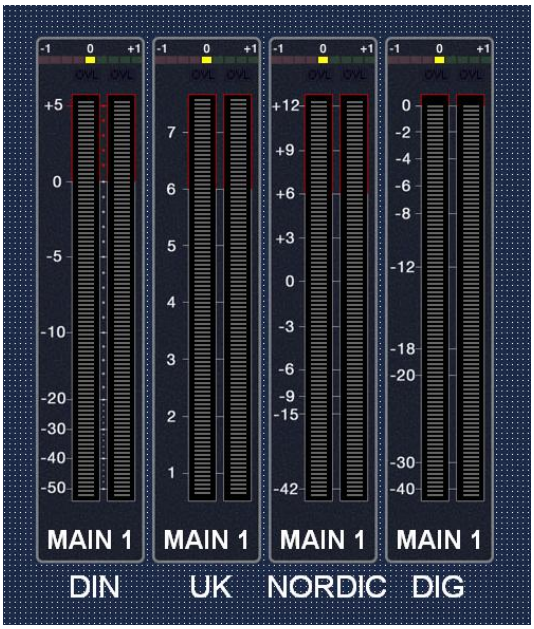
In addition, **Vistool RT** PPMs may appear using any of the following designs:



- **Static** – when assigned to the Main 1 or Main 2 busses, these meters include a stereo correlation meter.
- **Small Static** – as for static but with no correlation meter.
- **Static Z (Zebra)** – as for Static but with stripes!
- **Small Static Z (Zebra)** – as for Small Static but with stripes
- **Channel meter** – this is a smaller more compact design ideal for metering multiple sources.

Meter Scale Options

Finally, **Vistool RT** also supports any of the following meter scales:



Note that all metering options are set and configured either within the **zirkon** configuration tool or Vistool Edit so for specific details, please consult your systems engineer.

Note

Timers

Vistool OnAir and **Technic** include 3 timers, and **Vistool RT** can support up to 6 depending on the configuration.

Each timer can run in one of two modes – Count-Up or Count-Down – and is operated from an external control signal such as an MF Key on the control surface or Vistool screen (Vistool RT)..

The control signals for the timer are set within the **zirkon** configuration so if a key isn't obvious, please consult your systems engineer.

For this example, we will assume that you have **Timer START**, **STOP** and **RESET** MF keys either on the console or Vistool screen:

Timer Name

Each Timer is named. The name is assigned within the zirkon configuration (e.g. in our example, Timer 1 has been named **OnAir**).

Count-up Mode

1. Select the **+** sign on the Vistool screen to use the timer in count-up mode:

2. Press the **timer start** MF Key to start the timer.

The timer starts counting up and the EDIT button on the Timer changes to STOP:

3. Press the **timer stop** MF Key, or click on **STOP**, and the timer will stop at the current time.

4. Press the **timer start** MF Key again and the timer will restart from the current position.

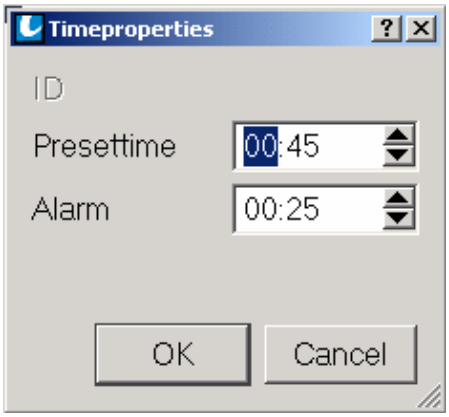
5. You can reset the Timer clock to 00:00 either by:

- Selecting the **+** sign while the timer is running.
- Pressing the **timer reset** MF Key set if configured.

Count-down Mode

1. Select the **-** sign to use the timer in count-down mode:

2. Select the **EDIT** button to adjust the timer settings:



- The **Presettime** is the reset value. In other words, when you reset the timer, it will return to this setting.
- The **Alarm** value is the time below which the timer number turns red.

3. To change the **Presettime** or **Alarm**, click with the mouse on one of the 2-digit fields (e.g. **00**) and then use the up and down arrows to adjust the setting.

4. Select **OK** to confirm the new settings.

5. Now press the **timer start** MF Key to start the timer.

The timer starts counting down from the Presettime, and the EDIT button on the Timer changes to STOP:

When the timer reaches the Alarm value, the numbers turn red to warn you that you are almost out of time!

6. You can stop and start the timer from the MF Key as before.

7. You can reset the Timer clock to the **Presettime** either by:

- Selecting the **-** sign while the timer is running.
- Pressing the **timer reset** MF Key if set within the console configuration.

Note that if the timer counts down to 00:00 and no stop signal arrives, it will then start to count up showing how many seconds you are overrunning! In this case, the Alarm status remains active until the timer is reset.

Note

Channel Status Information (Sourcestate)

At the bottom of **Vistool OnAir** or **Technic**'s Level-Timer page you will see 20 elements which provide an overview of channel status:

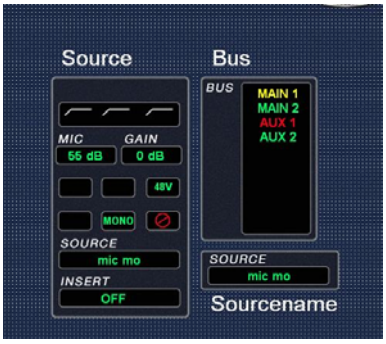
Each element is set for a specific channel (fader strip) and displays the following parameters:

- Source name (e.g. **mic mo**)
- Channel number (e.g. **4**) and fader status:
  - Red – indicates that the fader is open.
  - Green – indicates that the fader is closed
  - Yellow – indicates that the fader is in access.
- EQ, DYN, LIM status – these indicators turn from green to red when the EQ, Dynamics or Limiter is in circuit.
- MAIN 1, MAIN 2, AUX 1 bus assignment status – these indicators show the name and status of the first three auxiliary bus assignments (Aux 1 to Aux 3) as defined within the **zirkon** configuration:
  - Yellow – indicates a post-fader assignment.
  - Red – indicates a pre-fader assignment.
  - Green – indicates no assignment.

‘Access’ Source Information

The MULTI-CHANNEL page within **Vistool Technic** provides a good example of how various Source and Dynamic Vistool elements can be arranged to provide feedback on the source ‘in access’:

‘Access’ Source Elements may include:



- **Sourcename** – the name of the source ‘in access’ (e.g. **mic mo**).
- **Source** - displays the status of input parameters (e.g. Mic Gain, 48V, etc.) for the source in access:
- **Bus** - displays the name and status of the first 10 auxiliary bus assignments (Aux 1 to Aux 10) as defined within the **zirkon** configuration.
    - Yellow – indicates a post-fader assignment.
    - Red – indicates a pre-fader assignment.
    - Green – indicates no assignment.
- **Delay** – delay time.
- **Eq** – EQ graph and parameters.
- **Dynamic** – Expander, Gate and Compressor graph and parameters.
- **Limiter** – Limiter graph and parameters.
- **PWB** – Pan, Balance or Width parameters.

Note that when a DSP module is in circuit (e.g. EQ, Dynamics and Limiter above), the graph display is shown in red. When a DSP module is out of circuit, the graph is shown in green.

Note

Vistool RT: Application Examples

This section looks at some common application examples which can be supported by **Vistool RT**:

- Matrix Control
- Source to Fader Strip Assignment
- Source Parameter Control
- Snapshot Management using Vistool

Remember that **Vistool RT** can run multiple pages and be designed using a range of options. As the **Vistool RT** pages within your installation will have been customised for your needs, we cannot show your screens!

For details on configuration of these examples, please refer to the zirkon/zirkonXL/Nova 17 Technical Manual.

Matrix Control

A common application for Vistool is to create a matrix control panel using Vistool on-screen buttons.

The example below shows three rows of buttons:

- The top row selects the source using MF Buttons.
- The middle row selects the destination using MF Buttons.
- The bottom row displays the name of the source connected to the destination using Text Buttons.

The icon represents the mute source (silence).

Routes are first selected using the top and middle rows, and then confirmed using the **TAKE** MF Button. This method provides the advantage that several assignments can be pre-selected and then confirmed with one TAKE operation.

Operation

To make a route:

1. Select a source from the top row of buttons (e.g. **in01L**):

The selected source button blinks in yellow.

2. Now select a destination (e.g. **out02L**):

The pre-selected source blinks in yellow on the third row of buttons below the selected destination.

3. To confirm and make the route, press **TAKE**:

The route is made, and the source and destination buttons turn red to show that they are now assigned. The name of the source assigned to out02L is shown in the text button beneath it.

4. Using this method, you can make multiple assignments by selection a source and then a destination several times:

The pre-selections blink in yellow.

5. To confirm and make the routes, press **TAKE**:

Note

Note that the amount of time for which a pre-selection is active is set within the **zirkon** configuration. Therefore if you wait too long before pressing **TAKE**, the pre-selections will cancel.

In our example, we have used a Screen Module MF Key (**TAKE1**). However, the Take control signal can be any logic control signal – GPI, MF Key, etc.

Note

Note that you can also configure a matrix control system without a **TAKE** function. For example, if you wish routes to be made by selecting a source and then a destination. This will alter the operation such that only one route can be made at a time – first select the source, then the destination and the route is made:

Assigning Sources to Fader Strips

Another common application for Vistool is to provide source assignment buttons on the Vistool display.

The example below shows five source selection buttons and a **REMOVE** function:

Operation

To assign a source:

1. Select the fader you wish to assign to by pressing the Access Key on the fader strip.
2. Select a source from the Vistool source assign buttons:

Any sources in red are already assigned to the surface. Those in green are not assigned.

Note that if you select a red source button, you will remove the source from its current fader strip only if the fader is closed.

Note

3. To remove a source from a fader, hold the fader Access Key and select the **REMOVE** source assign button.

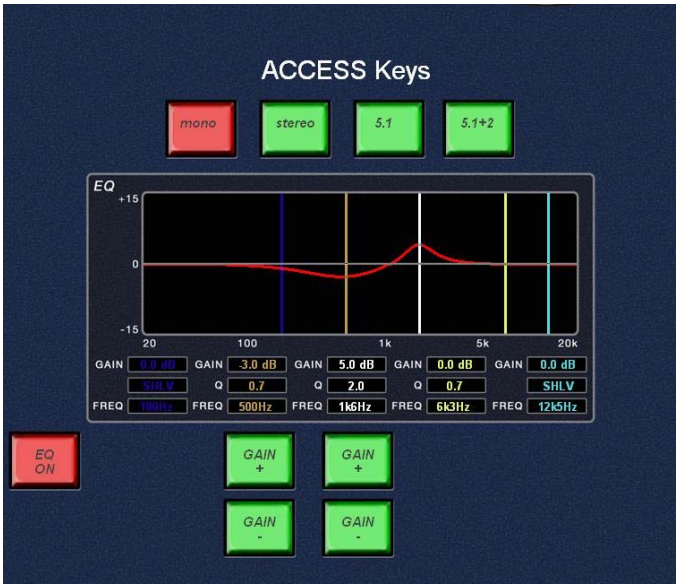
Source Parameter Control (PARM)

By adding PARM control MF Keys to a Vistool screen, you can use screen buttons to control processing modules, such as EQ, Dynamics, etc.

Note

Note that the PARM control buttons always adjust parameters for the source in access.

The example below shows **EQ ON**, **GAIN +** and **GAIN -** PARM buttons, along with Access Keys to allow source selection. The Vistool screen also incorporates an EQ so that you can see what you are adjusting.



Operation

To control parameters for a source:

1. Select a source, either by pressing a Vistool Access Key (e.g.**mono**), or pressing a fader Access Key on the console surface.
2. Press the **EQ ON** button to turn the equaliser on or off.

For switched functions such as EQ On/Off, red indicates that EQ is on; green indicates that EQ is off.

3. Press the **Gain +** or **Gain -** buttons below each equaliser band to boost or cut the current frequency.

For variable functions such as EQ Gain, use the + and – buttons to increase or decrease the parameter value.

Note

Note that the list of PARM control functions is very comprehensive and provides access to virtually all source parameters.

Snapshot Management (PC Snapshots)

PC Snapshots are snapshots which are saved and loaded to/from a PC file - the **Visconfigurations.mdb** file.

Note that if your system incorporates a networked file server as the central storage point for the **Visconfigurations.mdb** file, then you will be able to save, load or delete PC snapshots from any studio within the network.

Note

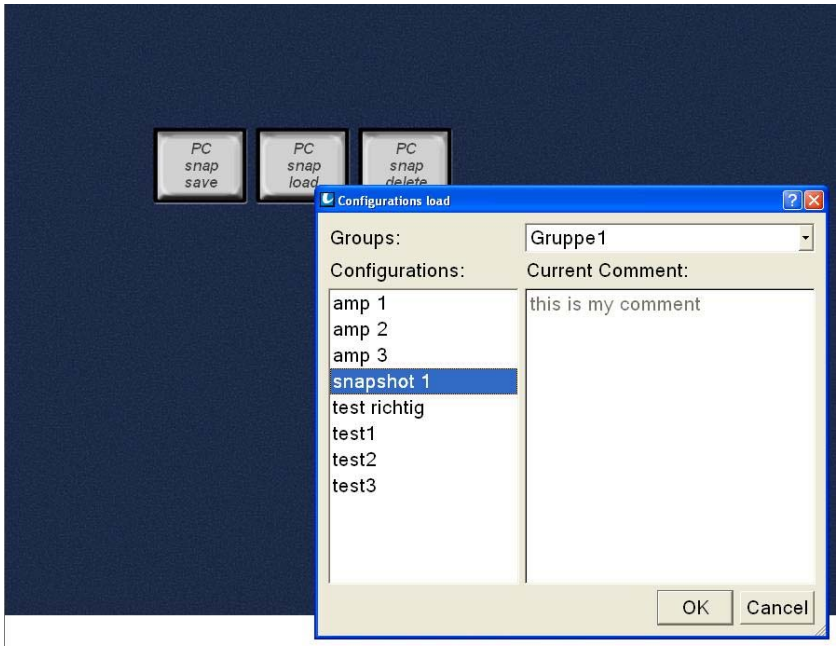
PC Snapshot buttons for loading, saving and deleting snapshots can be created as on-screen MF Keys or as physical MF Keys. In the example below, we are using Screen Button Module MF Keys:

Operation

To load a snapshot using Vistool:

1. Select the **PC snap load** button from the Vistool screen.

The Configurations load window appears:



2. Select a snapshot configuration from the list on the left hand side of the window (e.g. **snapshot 1**).

Note that, if configured, your system may provide a choice of Groups. If so, first select the Group (e.g. **Gruppe 1**) and then the snapshot configuration.

3. Select **OK**.

The snapshot settings are loaded to the system.

You can save and delete snapshots in a similar manner. When you save, you will be asked to enter a name for the snapshot and also a comment if you wish.

Glossary

48kHz or 44.1kHz — See Sample Rate.

Access — On both the **zirkon** and **zirkonXL** consoles, much of the source parameter operation is performed by assigning a fader strip to the Central Module. This is otherwise known as putting a source 'in access'.

Attack Time — In the context of dynamics processing (compressor, limiter, gate or expander), the attack time defines the duration over which an input signal is measured. The longer the attack time, the slower the processor will react. For example, when using a gate, a fast attack time causes the gate to open quickly when signal exceeds the gate threshold.

Aux — Auxiliary

An Aux is a general purpose mono, stereo or multi-channel summing bus which can be used for a variety of applications such as sending to outboard effects devices.

Aux Send — Auxiliary Send

Source channels feed onto each aux via their Aux Send. The aux send from each channel can be either pre or post fader and has variable level control.

Aux Master — Auxiliary Master

The Aux Master is a master source channel used to control the level and processing of the Aux output. The direct output of the Aux Master is the signal routed to the outboard effects send.

Aux Return — Auxiliary Return

The Aux Return is the name given to the return channel from the outboard effects device. This channel controls the level and processing of the effect as it is summed into the rest of the mix.

Band Pass Filter — See Filters.

Balance — Balance is applied to the input of a stereo channel and is the ratio between the left and right input levels. When Balance is set to its default value, the level of left and right inputs are equally weighted.

Bargraph — An optical display instrument in the shape of a LED bar for displaying signal level.

Clean Feed — See Mix Minus.

Compressor

A dynamics processor used to smooth out uneven signal levels. For example, when a presenter shouts and then whispers, they are producing sound which has a wide dynamic range; one moment it is very loud and the next very quiet. This can mean that if we listened to this signal on our radio without compression, we would forever be turning the level up and down! A compressor smoothes the signal such very loud audio is reduced in level and very quiet audio is increased in level. This results in smaller dynamic range ideal for radio transmission.

Configuration

The console configuration is a file created by the Zirkon Configuration Tool software. This file is then downloaded to the console's system unit where it is then loaded every time the console powers on. The configuration defines key elements of the system such as sources, summing busses, signal processing, MF key functions.

DALLIS

Lawo's modular I/O interfacing system based on 19" frames using plug-in cards for different interfaces.

dB

deciBel

A unit of transmission giving the ratio of two powers.

The number of bels is the logarithm to the base 10 of the ratio of the two powers. One decibel equals one tenth of a bel.

dBu

dBu is used to describe levels within the analogue domain, and is a measure of absolute voltage level based on 0dBu = 0.775 Volts (RMS). dBu is often used to indicate nominal broadcast operating levels. For example, in the EBU normal broadcasting level = +6dBu.

dBFS

dB Full Scale

dBFS is used to describe levels within the digital domain. 0dBFS describes the system's internal clipping point; this is the maximum level which may be handled by the system without signal distortion. For example, your system may be set for +18dBu = 0dBFS. If your normal broadcast level is +6dBu then this leaves an operating headroom of 12dB.

Delay

The signal output from a delay module is x ms behind the signal input to the module. Delay is often applied to audio sources whose video has undergone digital video processing; delay is required such the audio remains in sync with the video.

Direct Out

Direct Output

The direct output of a source channel is the output of the individual source. Direct Outputs are often used to provide a record or 'snoop' feed of a single source, and may be taken from various points within signal flow: pre fader, post fader, etc.

DSP

Digital Signal Processing

Digital signal processing (DSP) is the study of signals in a digital representation and the processing methods of these signals.

Within **zirkon**, DSP is also used as the collective name given to the processing chips, within the system unit's master board, which provide audio signal processing such as equalization, dynamics and delay.

Dynamics

Dynamics is the collective terms given to audio processing which responds to changes in signal level. For example, a Compressor, Limiter, Gate or Expander.

In the **zirkon**, Dynamics is also used to describe the dedicated DSP module containing the three sections – Gate, Expander and Compressor.

EQ

Equaliser.

An equaliser is a processor which changes the frequency characteristics of a signal, for example to increase the amount of treble or bass components in the signal.

Expander

A dynamics processor used to magnify changes in the dynamic range of the input signal. For example, to reduce noise in speech pauses. See also Compressor.

Fader

A potentiometer used to adjust the gain of a signal.

Filters

Filters are equaliser sections which are used to cut out or reduce specific frequency bands within the signal. For example, a Low Pass Filter cuts out high frequencies so will result in less treble to the sound. A High Pass Filter cuts out low frequencies, for example you may use this to remove unwanted low frequencies like hum or rumble. A Band Pass Filter cuts out both high and low frequencies allowing frequency components within the band to pass through the signal; for example, you may use this type of filter to create a telephone effect on a normal voice.

Gain

Adjusting the gain of a signal results in a change in the perceived level or amplitude. An increase in gain (positive values) results in amplification and a reduction in gain (negative values) in attenuation.

Gate

A dynamics processor used to remove unwanted signals below a certain threshold level. For example, if a gate is applied to a presenter's microphone source, then when they speak signal level exceeds the gate threshold and the gate opens, while if they make a low level sound, like shuffling in their seat, the gate remains closed. The result is that only the signal we want to hear is output from the source channel!

GPI

General Purpose Interface – inputs for logical signals with two states (e.g. optocoupler).

Headroom	The amount of operating level which is in reserve between normal operating level and 0dBFS.
High Pass Filter	See Filters.
Insert Point	A connection point within the source channel which interrupts the signal flow and routes out to a piece of external equipment and returns back to the source channel. Insert send = route out from the source channel to the external device. Insert return = input to the source channel from the external device.
Limiter	A dynamics processor used to stop signals exceeding a certain threshold level. For example, you may place a limiter across the main output of the programme to prevent a sudden increase in level exceeding the clipping point of your transmission feed and causing signal distortion.
Low Pass Filter	See Filters.
Main Bus	The **zirkon** has two pre-defined summing busses called Main 1 and Main 2. These may be routed to from any source channel and output to any external connection. Often Main 1 is used to generate the programme output of the desk.
Mix Minus	Mix Minus, Clean Feed and N-1 are all terms used to describe a feed which is created from a number of channels minus a particular channel or channels. For example, to provide telephone hybrids with a feed of the programme minus the incoming phone call.
MF Key	Multi Function Key Programmable keys which can be used for a variety of functions as set in the console's configuration.
Module	Within the **zirkon**, this term is used to apply to the control surface Channel, Central and Central XL modules, or to the different sections of signal processing (EQ, Dynamics, etc.)
Monitor	Term used to describe the outputs and functionality of feeds to loudspeakers or headphones for the purpose of listening to a mix.
ms	milliseconds Unit of time measurement.

M-S Middle and Side Stereo

Used to describe an arrangement of two coincident microphones, one pointing to the front (Middle) and the other (bidirectional) at right angles providing a Side signal. The **zirkon** provides M-S to X-Y decoding to turn the Middle and Side signal into normal Left and Right stereo.

Nova17 A stand alone routing matrix with networking capabilities; the name given to the zirkon system unit without a control surface.

N-1 See Mix Minus.

On-Air Term used to indicate that a radio or TV programme is being broadcast.

Overload Occurs when the signal level is too large for the system, resulting in signal distortion.

Panning Used to control the left/right position of a mono source when routed to a stereo or multi-channel output. For example, if a source is panned left, then you will all signal from the source is routed to the left side of the summing bus. If a source is panned centre, equal levels are applied to the left and right sides of the summing bus, etc.

PFL Pre Fade Listen

Used to listen to signals before the application of fader level. Provides a way of listening to a source when the fader is closed to check its signal before the fader is opened to route it onto the programme output.

Phantom Power This is the power supply required when working with condenser microphones. The console supplies 48V to the microphone via the audio connector.

Programme The main output of a live broadcast console. This is the mix which feeds the transmission chain.

Ratio In the context of a compressor or expander, the ratio defines how much compression or expansion is applied. For example, the high the compressor ratio, the more signal levels above the compressor threshold will be compressed.

Release Time In the context of dynamics processing (compressor, limiter, gate or expander), the release time defines the time taken for the action of the processor to subside. For example, when using a gate, a short release time will cause the gate to close quickly after signal falls below the gate threshold.

Roll-off Frequency See Shelving EQ.

Routing — Signal Routing

Term used to describe the connection made between an input and output.

RS422 — Type of serial interface used by the **zirkon** to communicate with external devices such as radio automation systems.

Rumble Filter — Name given to the High Pass Filter which can be inserted in the analogue microphone preamplifier of the **zirkon** system. Used to cut out or reduce unwanted low frequencies, such as rumble, before analogue-to-digital conversion.

Sample Rate — The speed at which the internal processing of the system takes samples respective to values from a continuous, analogue audio signal to make a discrete, digital one. For example, when running at 48kHz, incoming analogue audio is sampled at a rate of 48000 values per second.

Shelving EQ — A shelving equaliser band is used to increase or decrease high or low frequency components of a signal. The slope of the shelf defines how steeply the gain increase/decrease is applied. The roll-off frequency defines the frequency at which signal level is reduced by 3dB.

Slope — See Shelving EQ.

Source — Used within the **zirkon** system to describe a channel setting including input signal and associated attributes (e.g. DSP parameters, MF Key functions, etc). Becomes active when assigned to a fader channel.

Different to “Input”, which is the term for a pure input (the physical interface) without the respective parameters which characterises a “source”.

Sum — Summing Bus

The result of several audio signals mixed together within the console.

Telephone Hybrid — Device which deals with bi-directional signals to/from a 2-wire phone line. One line provides an incoming feed from the phone line (e.g. the guests voice), and the other sends signal back to the receiver (e.g. the mix minus feed).

Threshold — In the context of dynamics processing (compressor, limiter, gate or expander), the threshold defines the signal level at which the processor starts to act. For example, the gate threshold sets the level at which the gate will open and then close.

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