Live Serie

Sensory

digital live mixing desk

Essential / Grand



user's guide

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FOREWORD

This user's guide pertains only to the Sensory® Essential/Grand Live mixing console and Sensoft® software.

The Grand Live console is an Essential Live console with an extra distant audio rack called Stage Box. In this user's guide, an Essential Live or a Grand Live will also be designated by the generic term Sensory®.

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All or part of the equiment & software are protected by international patents.

The information in this user's guide may be modified without any commitments as regards the seller. InnovaSON declines any responsibility for loss or damage.

Before any use, including user of the Sensoft® software alone, the user should read this guide very carefully.

Only qualified persons are authorized to have access to the inside of the equipment and carry out maintenance operations.

For the audio Rack : the power plug acts as a device to cut off the power supply and must be installed near the equipment and be easy to access.

For any servicing or maintenance, it is recommended that InnovaSON or one of its authorized agents be called in. InnovaSON declines any responsability for any loss or damage occurring during servicing, maintenance, or repair work carried out by persons not authorized by InnovaSON.

1 LIVE DIGITAL MIXING DESK

1.1 Brief history

Several years ago, InnovaSON introduced the first digital system designed specifically for the requirements of LIVE SOUND production: providing high quality live sound identical to what is possible in the studio, facilitating complex productions, satisfying the needs of performers, promoters, and producers, etc.

For InnovaSON, LIVE is a key word, and our products reflect this. We offer reliable and robust products, designed to operate without a hitch, show after show.

We take great care in limiting the size and weight of our products (for easy loading into a truck, car, bus or plane) while allowing for speedy set-up, and above all liberating the spirit of the sound engineer, essential for creating quality LIVE performances.

Thanks to the success of the MUXIPAIRE system, InnovaSON has received feedback from a large number of users, all of whom have expressed their wish for a digital mixing desk that can handle the complex demands of LIVE shows in the 21st century. All agreed that the following features were of particular importance – imperatives that InnovaSON adopted throughout the design of the Sensory® series:

- total memorization of the functions needed for full processing of the audio signal
- instant recall of the entire desk settings
- simplicity of use, even with its sophisticated automation
- uncompromised sound quality
- all the advantages of an entirely computerized digital system.

Taking standard elements from the System line as the basis for the design, all Sensory® consoles benefit from thorough road-testing of our previous products.

The whole InnovaSON team sincerely thanks everybody who made even the smallest contribution through their suggestions, particular requirements or judicious comments.

Although entirely digital, the Live Digital Mixing Desks will not confuse users accustomed to traditional analog systems – quite the opposite in fact. Their original three-part design – mixing desk, local and (optional) distant audio rack – provides greater flexibility and uncompromising quality.

Our greatest satisfaction would be to know that, for Live sound mixing, our customers have found a tool that is perfectly adapted to their needs.

1.2 Product overview

The standard Essential Live model in the Sensory series is made up of two units, a control surface and a local audio rack, having up to 8 modules of 8 inputs or 8 outputs (A/D).

InnovaSON's "hyperdrive" modules offer "processed outputs", each one with its own dynamics, equalization, delay and level adjustment parameters.

An MC-64 module which supports coaxial connectors controls the audio signals and commands, and also provides the interface with the Essential Live's internal PC.

Next to the controller is the DSP (digital signal processor) module, which applies all the algorithms relating to the desk's functions.

Once all the input and output cables are connected to an installation, there is never any need to touch them again, as all patch operations are carried out electronically, with the mixing desk and its built-in computer.

The Stage Box option covers all the needs of a full digital installation, including stage splitter and transmission from stage to mixing desk.

The control surface is so easy to understand that even novices will quickly feel at home with digital

mixing.

The channels on the left (white faders) are dedicated to controlling the inputs, while those on the right (red and black faders) are allocated to the outputs. All of the channels are equipped with motorized faders and can be used to adjust different parameters according to the current selection. The faders move to their positions quickly and quietly, and even have a "feel point" that can be felt beneath the fingers. This provides a reference point of the last recorded level adjustment at any given time.

The bar graphs located just above the faders indicate the different working levels after processing (e.g. dynamics processors, equalization, etc.). Lastly, as soon as the mixing desk is powered up, a flat LCD screen shows the main mixing window or, at the user's request, other control windows. An IBM PC-compatible internal computer controls both the audio rack and the desk, driven by the dedicated Sensoft software.

At any time, an external PC loaded with the Sensoft software can be connected to the mixing desk in place of the internal computer. In the same way, it is just as easy to replace the standard flat screen with another screen using the SVGA standard.

1.3 Customization

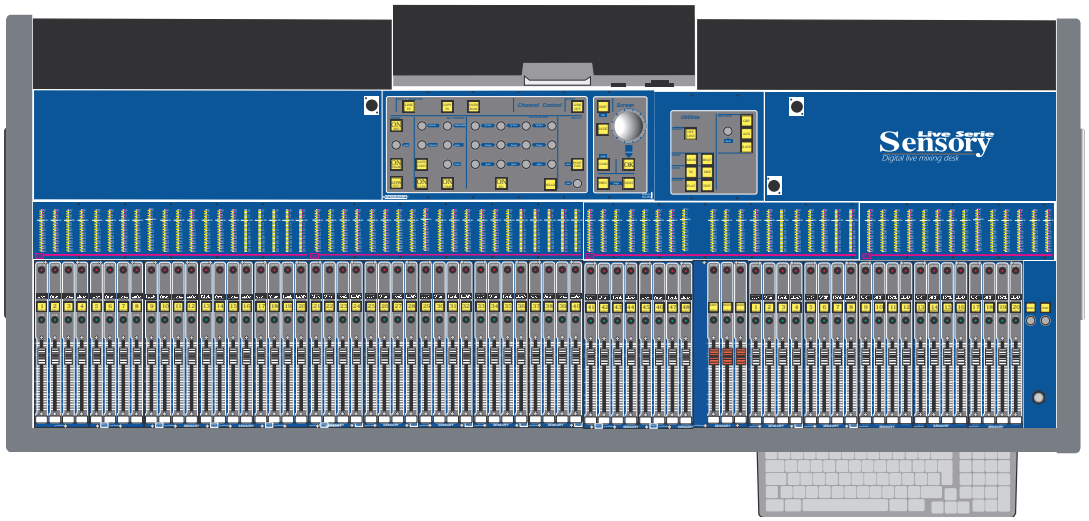
Each Sensory Live console can be adapted to the specific requirements of the user.

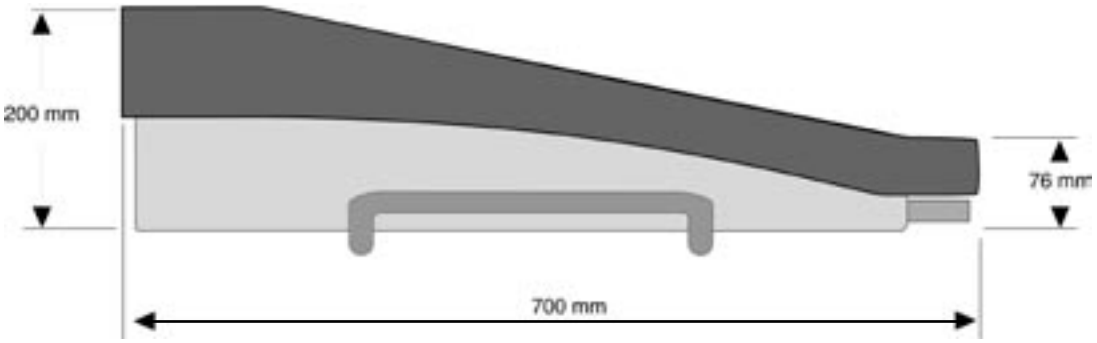
To do this, contact our approved technical services to discuss any special configuration, such as choice of modules, various options, or simply for advice.

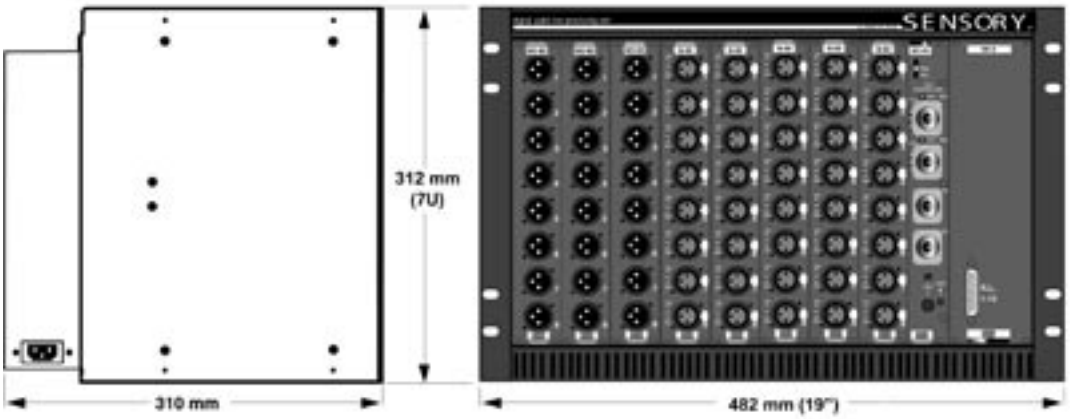
2 INSTALLATION

2.A Description of the Essential Live / Grand Live




Sensory


200 mm
76 mm
700 mm


SENSORY
312 mm
(7U)
310 mm
482 mm (19")

2.A.1 General

The «teleconsole», or control surface, is the keystone of the InnovaSON system. It is interactive, comfortable and extremely easy to use. An instant image of the current mix is displayed thanks to the Sensory Essential Live's motorized faders. Access to all the different parameters is particularly quick and intuitive, reducing the risk of error. It has never been so easy to produce a high-quality sound!

The console consists of a control surface and an audio rack, called Mix Box, containing all the modules required for its correct operation. Both are linked with a short digital snake, thus considerably reducing the number of connections to the audio rack. Each button and each potentiometer is dedicated to a single function, enabling immediate hands-on operability and no unexpected results.

2.A.2 Warnings

Read this section carefully for safe operation :

1. NEVER INTRODUCE ANY FOREIGN OBJECT, LIQUID OR METALLIC OBJECT INTO THE INTERIOR OF THE CONTROL SURFACE.

2. NEVER TRY TO CARRY OUT ANY ELECTRONIC REPAIRS TO ANY ELEMENT SUPPLIED WITH THE SYSTEM.

3. NEVER CONNECT A RECEIVER (CAMERA) WITH ITS OWN PHANTOM POWER: THIS WILL DESTROY THE OUTPUT TO WHICH IT IS CONNECTED. CUT THE PHANTOM POWER, OR, WHERE THERE IS NO OTHER OPTION, USE AN EXTERNAL UNIT (ISOLATING TRANSFORMER, INTERMEDIATE PREAMP, ETC.).

We are only able to exchange faulty modules (made straightforward by the modular nature of the control surface). DO NOT CHANGE A MODULE WHILE THE CONSOLE IS POWERED UP, AS IT CARRIES A RISK OF SERIOUS DAMAGE TO THE EQUIPMENT.

2.A.3 Connections

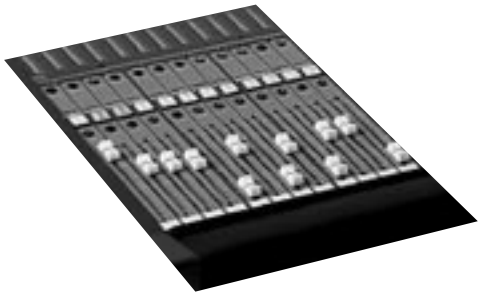
Control surface connections are reduced to a minimum for easy system installation and increased reliability.

The system may be used with an external PC (a laptop, for example), so that the PC incorporated in the control surface can be replaced.

2.A.4 Motorized QUADFAD module

A QUADFAD module contains four motorized faders (ALPS 100 mm), each of which is labeled. All the blocks are identical (Input, Master, Aux), and only a specific coding enables the controller card to recognize them.

The main characteristics of a fader block are as follows:



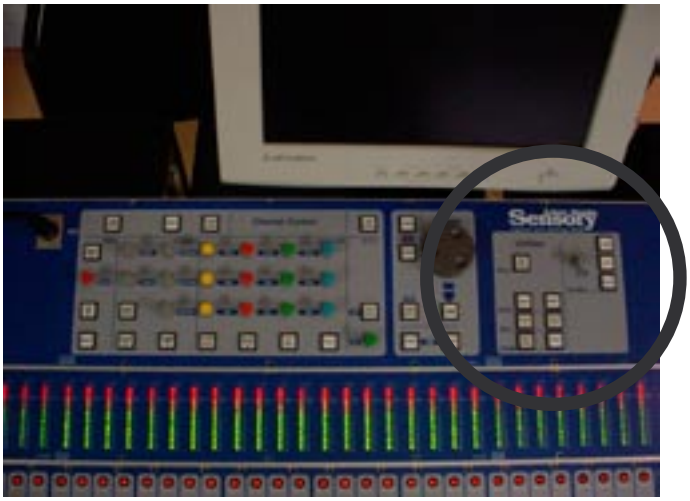
- ALPS 100 mm motorized fader
- linear 8-bit conversion for controlling the fader
- linear 8-bit conversion for reading the position of the fader
- nominal positioning time of 100 ms
- tactile point for recorded position
- LED Channel Selection switch
- LED Monitor Allocation switch (green) (CUE)
- LED Mute switch (red)
- 4-character label display (extra bright if selected)

2.A.5 CHANNEL CONTROL Panel

All the buttons and encoders on the Channel Control panel have a single and unique function, for ease of use with no unexpected results. Designed to be integrated into the chassis of the mixing desk, the Channel Control panel brings together all the controllers for the input channel parameters (or outputs for the XO-8D module).



2.A.6 UTILITIES panel



Designed to be integrated into the chassis of the mixing desk, the *Utilities* module brings together all the *Utility* buttons.

2.A.7 MONITOR panel

Designed to be integrated into the chassis of the mixing desk, the Monitor panel brings together all the buttons for controlling monitoring (NB : the output is identical to the headphone output from the MC-64 Mix Box module). The headphone socket is located to the left of the keyboard under the wrist rest.



2.A.8 General console characteristics

Control surface :

Length:	1700 mm
Width:	700 mm
Height:	200 mm (excluding screen)
Weight:	75 kg (110 kg with delivery packaging)
Wooden delivery packaging:	1860 x 500 x 940 mm

Power supply:	90/253 V AC, 46 to 63 Hz
Consumption:	276 VA
Operating temperature:	+10°C to +35°C
Faders:	ALPS 100 mm motorized (127 positions)
Input faders:	71 + 1 cross time fader
Output faders:	23
Displays:	4-character LED matrix
Screen:	15" flat TFT screen
MIDI card:	InnovaSON
Keyboard:	Cherry G84-4400 PPAUS Qwerty (keyboard + track ball)
Floppy disk drive:	3.5"
Hard disk :	64 Mb Flash Disk

Audio rack Mix Box :

Length:	482 mm (19")
Width:	310 mm
Height:	312 mm (7U)
Weight:	20 kg (50 kg with delivery packaging)
Wooden delivery packaging:	760 x 580 x 640 mm

Audio rack Stage Box (optionnal) :

Length:	482 mm (19")
Width:	310 mm
Height:	312 mm (7U)
Weight:	20 kg (75 kg with delivery packaging)
The Stage Box is provided with a metallic reel and 2 x 150 m of coaxial cable	
Wooden delivery packaging:	800 x 640 x 740 mm

2.B Safety precautions and instructions

2.B.1 general precautions

Avoid storing or using the Essential Live in extreme temperature conditions or in environments where the console could be exposed to vibrations, dust or humidity.

Do not use liquids to clean the surfaces (a soft, dry cloth is best). Use water or ethyl alcohol only to clean the casing and printed parts, as other solvents could cause damage to the paintwork or plastic parts.

Avoid placing the distant or local rack or the console near to sources of high electromagnetic radiation (such as video monitors or high-voltage wires) as this could reduce audio quality by inducing currents in the connections and the chassis.

2.B.2 Handling and transport



Before moving the equipment, make sure that everything is disconnected. Do not use unnecessary force on the buttons, switches and connectors.

Two metallic arms act as handles to help with handling.

2.B.3 Electricity supply and EC standards

The equipment's power supplies can be adjusted for most voltages in a range of 90 to 253 V ~ / 47-63 Hz.
All power supplies must be **grounded (earthed).**

For optimum performance, it is essential that the grounding network be free of noise, because all signals will be referenced to it. The same is true for all signals linked to earth. A central point should therefore be determined as the main grounding point, and all ground connections should depart from this point. We recommend that an earth wire be taken from each electric plug and linked directly to the central point as this is the best way of ensuring a good earth connection for each piece of equipment in the installation. Use separate power plugs for each piece of equipment in the audio installation, to ensure an independent power supply.

2.B.4 Audio connections

Avoid connecting other audio equipment which is switched on **before powering up the console**. The Sensory console is a computerized device which starts up with the last saved status, of which often the user is not necessarily aware. Unknown parameters relating to gain settings or output levels could damage certain equipment (such as amplifiers and loudspeakers), or even cause hearing damage to people too close to the loudspeakers. A good habit to adopt is to close a session with a blank page, returning all settings to zero.

2.C Connecting the components

2.C.1 The console screen

The standard screen is a flat, color TFT screen. It is provided with a screen stand to insert into a robust support and placed at the back of the console.

In place of the provided screen, any other SVGA-standard screen may be used. However, special attention should be paid to the electromagnetic radiation that can be generated by a CRT screen.

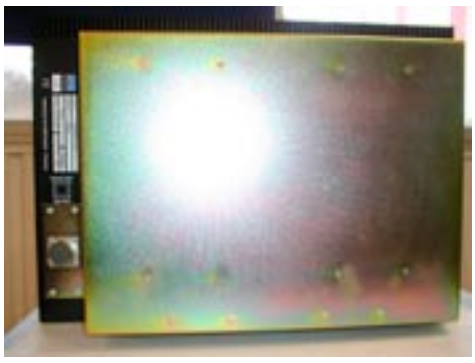
The screen connection is located on the back panel, and is linked to the internal computer. If an external computer is being used, the screen (original or added) must be connected to the computer being used. (see section 2.C.4)

The screen has its own power switch, to be switched on/off by the user.



2.C.2 Connecting the audio rack to the control surface

A cable links the audio rack Mix Box to the control surface. On the control surface, the connector is located at the back side, protected by the black paint cover, which can be moved by hand.





It is recommended to pass the cable through the existing hole at the bottom of the control surface, below the connector, in order to insure any damage to the cable. On the audio rack there is also a connector located on the back side.

The cable need to be connected to the audio rack and to the control surface before powering the system up.

2.C.3 Connecting a MIDI link.

The console's MIDI ports are located on the back panel. They accept any MIDI-compatible device.

To ensure a good connection, be sure to use standard MIDI cables.



2.C.4 Connecting an external PC

Any IBM PC-compatible computer can be used instead of the internal unit to control the operation of the Essential console. This provides a back-up to the internal computer, and also enables the use of files that have been previously prepared *Offline*, i.e. without the console. The external computer, whether a laptop or a desktop machine, must have both serial and parallel ports and a floppy disk drive.

The minimum specification required to be able to run Sensoft® is a Pentium® processor or equivalent

- a Pentium processor or equivalent
- 100 Mb of free hard disk space
- 8 Mb of RAM
- MS-DOS 6.2 or equivalent
- a 102-key keyboard and a mouse

An original version of Sensoft version 7 or later must be installed on the external computer for the set-up to work properly. It is possible that not all versions of Sensoft are totally compatible with the Sensory Essential Live console.

See Chapter 7 for more information, or do not hesitate to contact us with any further questions you may have.

Avoid using any operating system other than MS-DOS at the same time as Sensoft. Microsoft Windows (any version), in particular, could cause conflicts with the parallel and serial ports controlled by Sensoft.

To correctly connect an external PC, first switch off all the elements of the Sensory Essential Live, and then:

- disconnect the internal computer by unplugging the SVGA, keyboard and mouse connectors from the console's rear panel
- connect the serial cable (9-pin) into the corresponding socket at the back of the control surface
- do the same with the parallel cable (25-pin)
- connect these two cables to the external PC

Refer to Section 2.4 (Switching on) for how to proceed next.



Serial and parallel cables are connected pin to pin. The serial cable has one 9 pins male and one 9 pins female connectors. The parallel cable has two 9 pins male connectors.



The console will update itself as soon as the connected computer launches Sensoft, according to the parameters recorded in the most recently called page of the last file used. These parameters may be different from those previously being used. Ensure that the rest of the equipment – and any people present – are prepared for this change, as it may be drastic.

External PC connection



Embedded PC is plugged



Embedded PC is unplugged



parallel an serial connectors
on the laptop



Serial cable male to female (on the left)
and parallel cable male to male (on the right)

2.D Switching on

In order to avoid damaging the equipment and rendering certain elements unusable, the Sensory Essential or Grand Live console components need to be switched on according to the following instructions.

2.D.1 Switching on the Console

1. Plug in power leads (audio rack Stage Box, audio rack Mix Box, control surface and screen)
2. Ensure that the outputs are not connected to equipment that may be damaged by the power-up (such as amplifiers, loudspeakers, headphones, or your ears).

Switching on the audio racks :

- Switch on (plug in) the Stage Box first is there is a Stage Box. There is no power switch: once the lead is plugged in, the audio rack is powered.
- Then switch on (plug in) the audio rack Mix Box. There is no power switch: once the lead is plugged in, the audio rack is powered).
- Once an audio rack is powered, the 4 LEDs of the PWR module light up (3 green, 1 yellow) which confirm the presence of the 4 secondary voltages. The CTRL module, the one with the BNC connectors for coaxial cables, has at least one LED which lights up red or green.

Depending on the last rack use, some XLR inputs can possibly have a few LEDs which light up. Once the control surface will have started, this status will be updated to reflect the actual patch setting.

Switching on the control surface :

- Switch on at the switch located at the rear, above the power socket.

The start-up procedure should proceed as follows:

- the switches of all the channels light up twice (**SELECT**, **MUTE**, **CUE**), and three seconds later the internal computer will sound a beep
- the screen will display the MS-DOS start-up messages
- all the switches in the central control section will flash a second time when the software runs; a message in Breton meaning "the new way of seeing sound" will then appear on the screen
- the screen will now display the *Main Mix* window, as the console and the audio rack simultaneously load up the corresponding parameters of the last saved status;
- these parameters may be different from those needed or desired – ensure therefore at each stage that all the parameters are as required, and that they comply with the rest of the installation.

The console is now ready for operation.

The complete start-up procedure lasts approximately 30 seconds, and should never exceed one minute. If it does, it is possible that the console, the audio rack(s) or another element of the system has a problem, and we advise you to contact the technical support staff at InnovaSON at http://www.innovason.com.

2.D.2 Checks

Before proceeding any further, it is important to check certain details using the screen :

- either Local, Slave or Master should be displayed in the Software Status area;
- the current file name and page ("INNOVA" when the machine is first used) should appear in the corresponding area.

The screen displays the image of the faders, in their exact positions. Input faders appear in white, output faders in red, and the auxiliary faders in yellow.

Any movement of the faders on the console is immediately reflected on the screen.

The same applies to all the **MUTE** and **CUE** switches on the console, which appear in red and green respectively above each fader. Pressing the **SELECT** switch activates the corresponding channel, and lights up the **SELECT** light, brightening any text present on the associated display (label).

2.E Software configuration

The Sensory is supplied with the latest version of the software, but naturally it is designed to evolve. See Chapter 7 for instructions on how to reinstall and upgrade the software.



It is a **golden rule** that files and pages used for performances should be carefully saved on floppy disk before upgrading the software.

2.F First sounds !

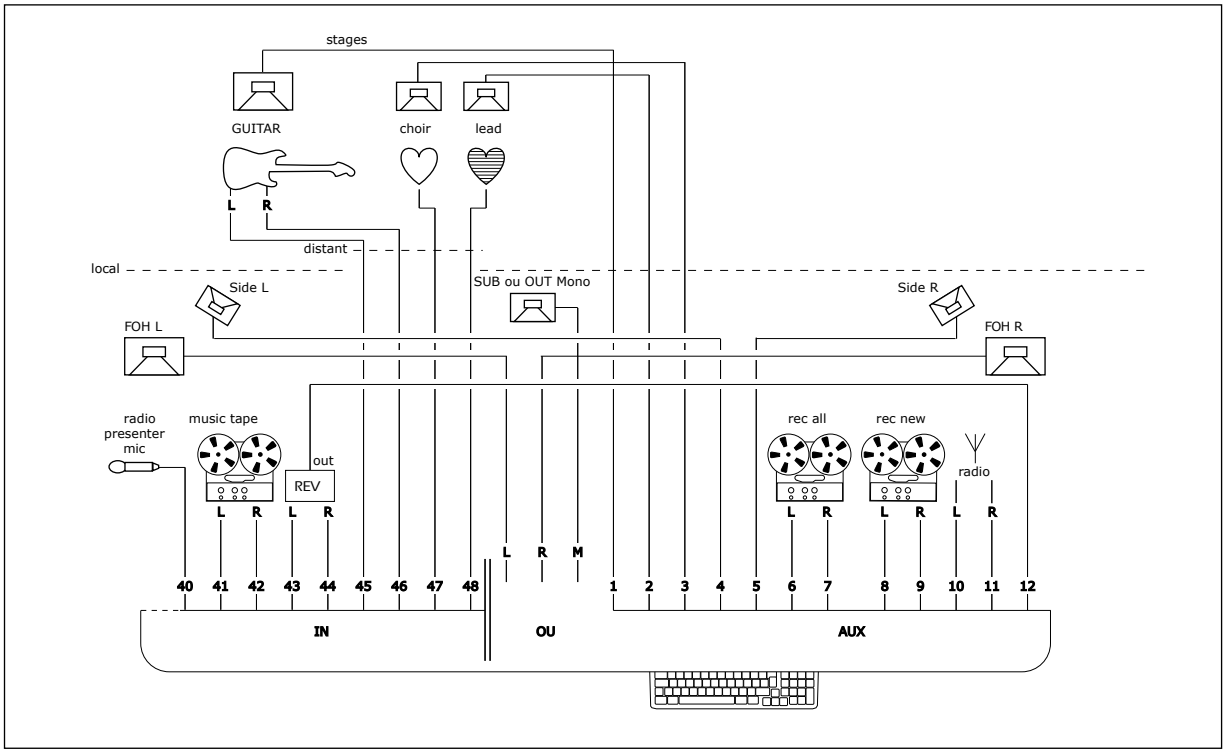
Obviously, any user faced with a Sensory for the first time has only one desire: to get a sound out of it! We will now guide your first steps in the Innova SON experience with a simple example. **Warning:** as was stated at the beginning of this manual, users should read the entire manual **in full** before operating the equipment for the first time.

This section exists simply to illustrate the user-friendliness of the system upon first contact, even if the processes involved prove ridiculously simplistic later on.

As there is not the space for a master class on the basic principles of sound engineering, it is assumed that users understand the meaning of standard terms such as phantom power, phase inverters, filters (low-cut, equalizer, etc), dynamic effects (compressor, limiter, noise gate, etc.), delays, etc..

Example

In the example below, a remote Stage Box is used (Grand Live configuration), but this example can easily be adapted to a uniquely local Essential Live configuration.



An artist arrives with a backing tape, and is also accompanied by a live backing singer and a live guitarist.

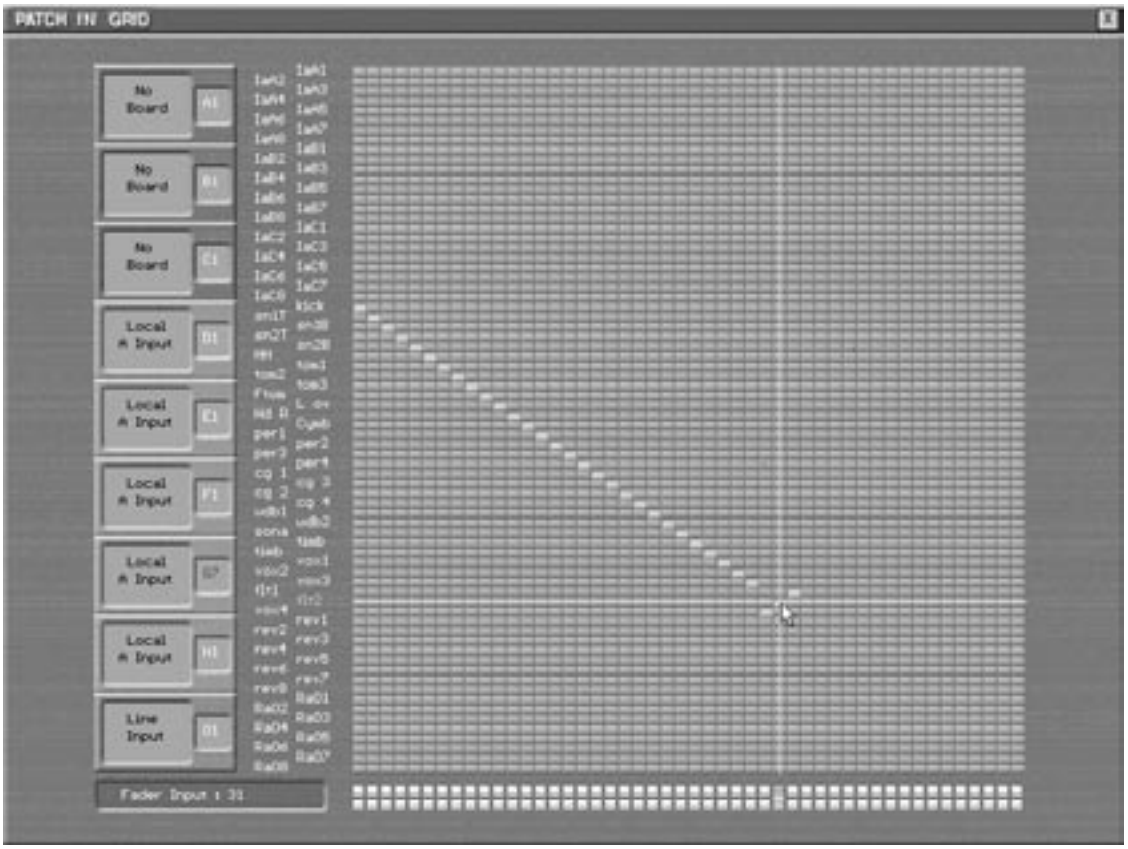
As well as providing front-of-house sound, three monitors and two side mixes, you are also required to record the front-of-house sound, prepare another music tape (with backing vocals and guitar included), and provide a «radio» output with the presenter's comments, that is to be 6 to 7 dB louder than the main mix.

Reverb (local) is applied only to the two voices, with mono send and stereo returns.

For purely practical reasons (the channels used are centered around the Sensory's keyboard), the choice of IN/OUT allocations we will use is as follows:

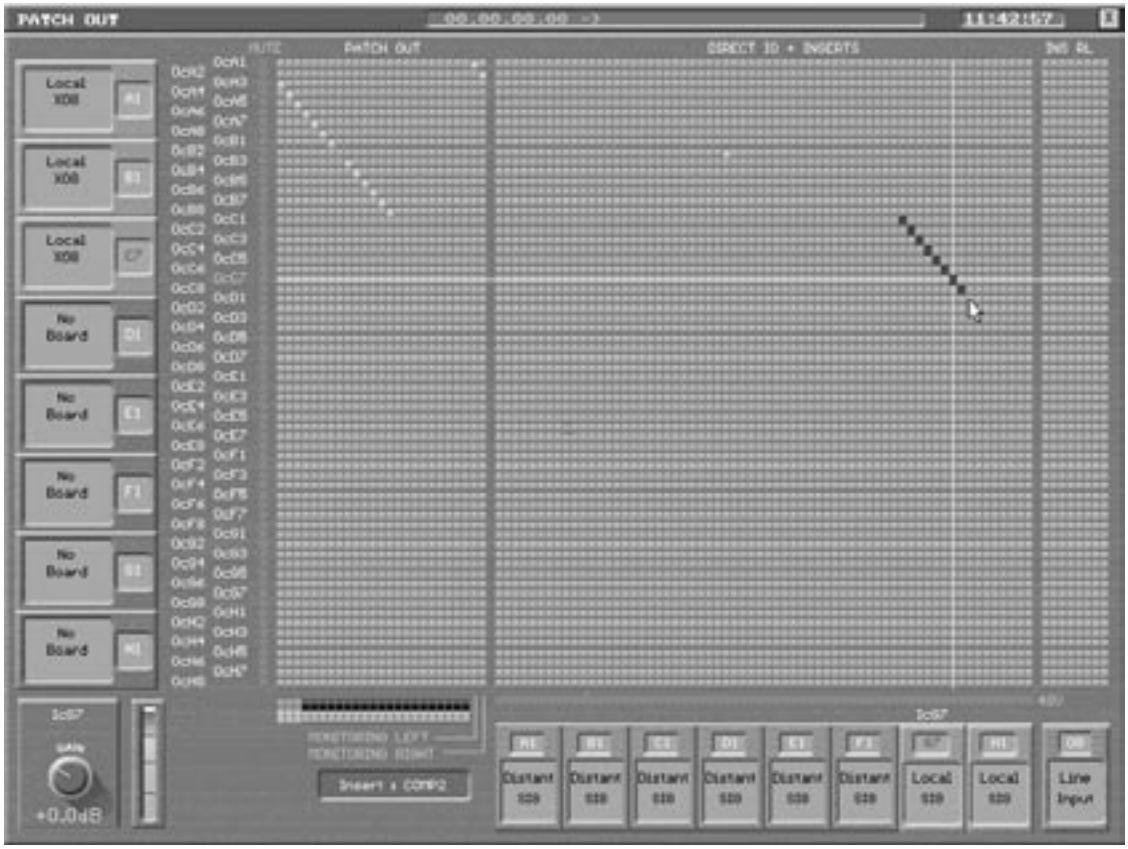
IN (white faders)

Fader 40 :	Local, radio presenter's microphone
Faders 41/42 :	Local, L/R music tape
Faders 43/44 :	Local, L/R return from external reverb (just on the vocals)
Faders 45/46 :	Distant, guitar L/R (personal post-effects: pedals, stereo outputs, etc.) but L/R are independent **except for the Mute**
Fader 47 :	Distant, backing vocals microphone
Fader 48 :	Distant, main vocal microphone



OUT (black and red faders)

Red L/R faders:	Front-of-house Master
Red fader M:	mono out + (sub?)
Black fader 1:	M1 Monitor, guitar
Black fader 2:	M2 Monitor, main vocal
Black fader 3:	M3 Monitor, backing vocals
Black faders 4/5:	Side L/R
Black faders 6/7:	Record as front-of-house L/R
Black faders 8/9:	Record «new» music tape L/R
Black faders 10/11:	air R/air L, Radio L/R outputs
Black fader 12:	Reverb OUT (mono)



You will notice that a Mono Master has been provided, in case an output to a sub-bass line is needed. All the outputs here are «local», which would not necessarily be very useful for a performance, but is convenient for a first test in private, using small high quality amplification and broadcast equipment. This enables us to demonstrate the exceptional sound performance of the Essential Live.

Once the inputs and outputs have been connected and allocated to the designated faders (IN and OUT patch bays), all that remains is to route the channels so you can hear a sound. This is very easy. By selecting an input (**SELECT** 48 button, for example) and keeping the button pressed down with the left hand, you can now assign it to the desired outputs by pressing the **SELECT** buttons for the appropriate outputs.

For example, if **SELECT** 48 is kept pressed with the left hand (the button lights up), and **SELECT** L and R are pressed with the right hand, once «48» is released the routing is complete. The «main vocal" microphone is now ready to be output on the L and R masters, once the faders are adjusted and settings for the gain and phantom power etc. are correct on "48".

The VU meters make it possible to see very quickly (inputs/outputs) if an acceptable signal is arriving at the inputs. If this is not the case, there is no point in boosting the outputs. The problem should be rectified on the relevant input channel.

When this stage is reached, the user has taken a **major step forward**, and from here the many functions offered by the Sensory Essential Live will reveal themselves intuitively



In order to avoid any surprising power-ups – for both your equipment (amplifiers, loudspeakers) and personnel – it is advisable to use a blank page for the start and end of a session, forcing the console to start up in a state that is healthy. If all users end their sessions in this way, the changeover from one file to another (between different sound engineers, for example) will take place gently and without any problems.

3 LIVE DIGITAL MIXING

3.A Basic principles of the control surface

3.A.1 basic principles

Every element of InnovaSON's consoles has been carefully designed to cover the requirements of normal live mixing. It is as simple to "do the sound" with a digital Sensory console as with any analog console. Only a few functions are different from a standard interface, and these are, of course, designed to facilitate and accelerate the job. There are many commands designed to simplify the process of setting up the console.

In this section, we will follow the standard path of a microphone signal placed in a main "master" mix and/or an auxiliary bus used for effects or stage monitors.

To make it easier to understand, note that Sensoft® software's graphical interface mimics the console interface, and so any change made on the console is immediately reflected on the screen.

So :

- moving a fader produces a corresponding movement in the position on the screen
- selecting a channel immediately displays on the screen the relative state of the channel's parameters, while the image of the corresponding fader is highlighted
- pressing a button on the console, for example the **EQ** button in the Channel Control panel, causes the button to light up, while the corresponding area on the screen changes from white to yellow, in this case showing that the equalizer for a chosen channel is working.

Depending on what is selected, the screen immediately displays the changes in state of each channel.

3.A.2 Arrangement of the control surface

The console consists of eight main sections :

- the input faders, each of which controls the different levels of an input channel in the mixing bus (going to Master or GrAUX)
- the bus faders, each of which controls the different levels of a mixing bus (levels of GrAux sends, general bus levels)
- the Channel Control section, dedicated to direct access of channel parameters (preamp, dynamics, equalizers, panning, etc.)
- the File Control section, dedicated to controlling automation
- the UTIL section, which brings together several functions, including access to advanced functions
- the Monitoring section, which controls the listen functions to check the mix (monitoring)
- the keyboard and the mouse, facilitating access to special functions, and/or completing operations carried out on the console
- the connectors and the floppy disk drive, both located on the rear of the unit and protected by a recess.

Although the faders on the console may display different mixing positions, the mix of the inputs (white faders) into the masters (red faders) is always displayed on the screen.

As soon as a channel is selected (input or bus), all the information relating to it is immediately updated on the console and/or the screen. Only one channel can be activated at a time, and all its parameters may be modified directly.

3.B Audio inputs

3.B.1 General characteristics

Sensory Live consoles adopt a new concept for audio inputs. The preamplification and conversion stages are disassociated from the actual signal processing stages (dynamics processor, equalization, mixing). Between the conversion preamps and the processing channels there is a "distribution grid", which enables any preamp (physical input) to be assigned to any processing channel. The Sensory Live therefore has a Patch IN function.

Moreover, all models allow these physical inputs to be transferred to the stage; all the signals are then transported via a digital link to one, two or even three (option) consoles. In this case, the electronic modules for these inputs are placed in another audio rack, called the Stage Box.

Finally, all the input processing channels include a preamp (gain, +48 V activation, phase inversion, low-cut filter), noise gate/expander (five parameters), compressor/limiter (five parameters), a 4-band parametric equalizer, and pre/post fader and pre/post pan routing in the GrAux busses. All these functions are pre-implemented, which simplifies the management of DSP resources. Consequently all the settings that are visible on the screen are available for each input channel, but the optimized DSP programming gives a fixed, known latency time which is totally inaudible, whatever the processing used in the mix.

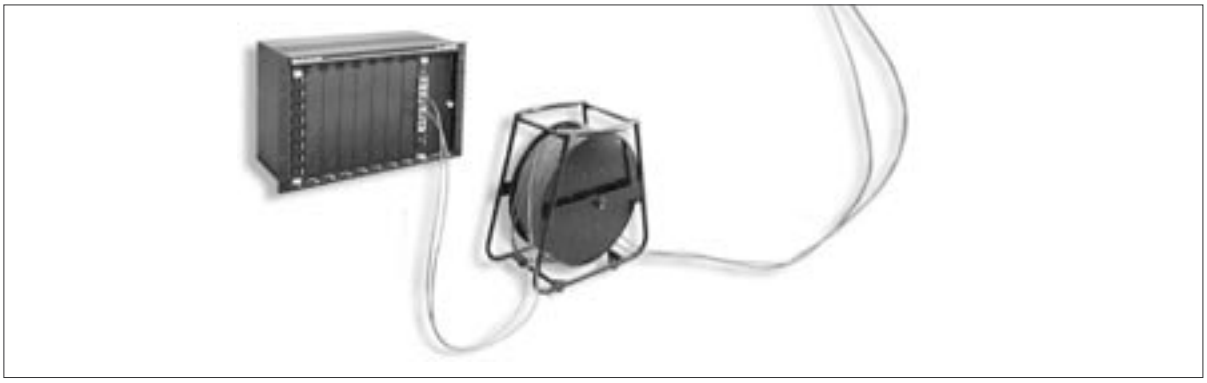
3.B.2 Arrangement of the physical inputs

Each XLR input has its own identification, governed by a simple principle: it is identified by its position in the audio racks.

Example

- the Local H4 physical input is the one numbered "4" on the module installed in slot H of the Mix Box rack
- the Distant D2 physical input is the one numbered "2" on the module installed in slot D in the stage box rack (normally located on the stage).

The Distant audio rack is supplied with one input module (SI-8D) which must be placed in slot A.

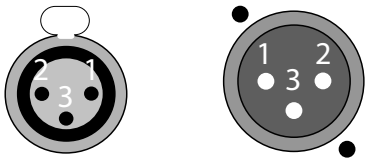


In addition, Sensory Live consoles are equipped with 8 analog line inputs which are available on the 25-pin SUB-D connector placed on the DSP module (see Connections, in Chapter 2).

3.B.3 Universal analog inputs

Each female XLR connector (SI-8D modules) leads to a balanced universal preamp, accepting signals with levels between –51 dBu and +26 dBu. Phantom power is independently switchable, channel by channel: a yellow LED lights up beside the connector. The green and red LEDs indicate the presence and absence of the signal respectively.

Each input cable must adhere to the following contact assignment:



- contact 1 analog ground
- contact 2 hot audio signal
- contact 3 cold audio signal.

Each preamp is controlled from the Channel Control section, according to the Patch IN assignment on the console (see Section 3.3, Input signal path). The potential gain range is –27 to +63 dB, in steps of 1.5 dB. The current of the phantom power is limited to 6 mA. The preamp output goes to a 18/20/24-bit Delta-Sigma analog/digital converter.

NB: Input modules must be placed consecutively in the slots of the Mix Box.

3.B.4 Analog effects return inputs

The 8 inputs at line level arrive via a 25-pin SUB-D connector, located on the DSP module in the Mix Box (or Local) rack. Each input is balanced, and arrives directly at an 18-bit Sigma-Delta A/D converter. The input level is fixed at +4 dBu. It is not possible to adjust this input level.



3.B.5 Stage inputs (Stage Box Option)

The optional Sensory Stage Box can control up to 64 stage inputs. Depending on the situation, the Stage Box is connected to the Mix Box by one or two coaxial cables, in either the Slave or Master status of the console.

The Stage Box is supplied with 8 analog inputs in slot A. It is up to the user to position each extra input module in the rack as required.

To change to another configuration, the following rules apply:

- the Stage Box has a printed strip marked from A to H that shows the audio positions; slot A is reserved for an input module (analog or digital)
- all input modules must be placed consecutively
- the modules can be installed in either of the two racks, on the principle that each input or output must have a matching counterpart: an input opposite an output, with the same slot number in the opposite rack, and vice versa.

Example

Following the first rule, as slot A of the Stage Box is reserved for an input module by default, slot A of the Mix Box can only accept an output module.

Procedure

1. Switch off all the elements of the Sensory Live console.

2. In the required slot on the Stage Box, unlock each of the four screws by turning a quarter-turn to the left, then remove the cover.

3. Unlock each of the four screws on the module with a quarter-turn to the left. Carefully remove the module, holding it solely by the handles, supporting the labels.

4. Return to the Stage Box and gently slide the edges of the module into the rails (top and bottom) on the rack. Push firmly until it is fully engaged. Lock the four screws on the rack.

5. Replace the cover on the empty slot in the Mix Box (very important, to avoid damage from dust, liquids or even animals).

Repeat operations 2. to 5. for each module to be transferred from the Mix Box to the Stage Box, according to the following table :

Mix Box slot	Stage Box slot
A (Output modules)	A (8 Input modules)
B your choice	B corresponding choice
C your choice	C corresponding choice
D your choice	D corresponding choice
E your choice	E corresponding choice
F your choice	F corresponding choice
G your choice	G corresponding choice
H your choice	H corresponding choice

The number of inputs can be expanded to 64. Contact InnovaSON to obtain further SI-8D modules.

3.C Input signal path

To get a better understanding of the functions and features of the Sensory Live console, it is helpful to consider the path taken by a regular signal (see 8.D.3).

After connecting all the microphones to the input cards, choose which microphones to assign to which faders by using the grid provided for assigning preamps to faders, named 'Patch IN'. You will see that the order of the microphones is irrelevant, since any physical input can be assigned to any fader.

3.C.1 Grid for assigning preamps to faders (Patch IN)

Each time you begin a new page, the configuration is empty, as no assignments have been pre-programmed.

Accessing the input distribution grid

To access the input distribution grid, just activate the **Patch IN** button on the console (in the 'UTIL' panel), or press [F11] on the keyboard, or alternatively click on the '*GRID*' menu. Select and click on the '*Patch IN*' function to access this same window. The grid displays the list of inputs on the left and the console faders at the bottom, with the yellow points representing the console's current assignment grid.

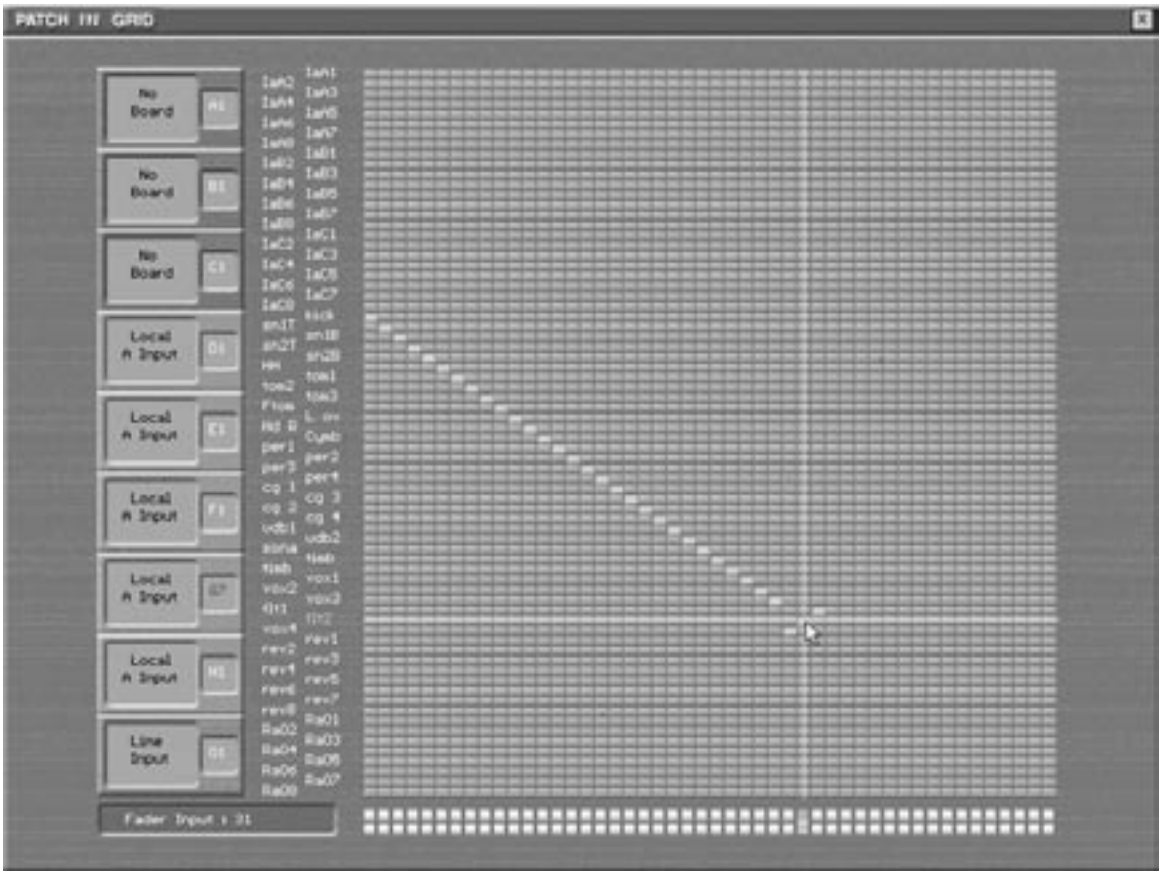
Selection

When you select various channels on the console (either directly on the console, with the keyboard's arrow keys or using the mouse), you will see a vertical blue line take up the corresponding position on the screen. Rotating the knob (or using the mouse or arrow keys) will cause a horizontal blue line to sweep the list of inputs on the left.

The "physical" position of each input appears in the small red boxes, coded as two characters (e.g. C3), as on the corresponding labels.

Assigning a patch

To create an assignment, just choose a new point at the intersection of a channel and an input, and press **OK** on the console. A yellow point appears at the corresponding location, and the input signal is immediately assigned to the desired channel. Pressing **OK** on the console again deactivates the assignment. You can also use the arrow keys or the mouse to move the pointer, and the [Enter] key to confirm the new assignment. A single microphone preamp may be assigned to several channels on the console, making it possible to use several channels parametered differently for a single input signal. To close the window, press the **PATCH IN** button again or the [Escape] key.



Preamp Label

To modify a label (having selected the required channel), press [F3] on the keyboard, type the four letters of the name and confirm the new label by pressing [Enter]. To modify several labels, press [Alt+F3] on the keyboard, type the four letters and confirm the new label. The software then moves on automatically to the next, and so on. To leave this mode, just press [Escape].

Labels can also be modified in the same way from the Patch-In window, using each channel's Select button on the console. The label is then linked to the preamp, and will follow any distribution of the preamp to the channels to which it is patched.



3.C.2 Adjusting the preamp (Gain, 48V)

Since any preamp can be assigned to a console channel, the setup is performed from Sensoft. If a preamp is assigned to multiple channels, any change in the settings for one channel will be applied to all the other channels. The +48 V, Gain and label are included in the preamp settings.



Phantom power (48 V)

To enable the phantom power for a preamp, simply select any channel to which it is to be assigned, and press the corresponding key on the Channel Control panel. The key lights up, both on the console and on the screen. The keyboard shortcut is [F7]. To disable the phantom power, simply press the corresponding key again to switch it off. The available phantom power is +48 V, with a current limited to 6 mA. Effects return channels do not include this type of power.

Gain

The default setting for all preamps is 0 dB. The analog gain range varies from –27 to +63 dB, in 1.5 dB steps. To set correctly an input signal, select one of the channels that the preamp is assigned to, and rotate the **GAIN** button on the Channel Control panel. The new value is then visible on the screen, together with the new position of the "virtual" button.

The keyboard shortcuts are [F5] to decrease and [F6] to increase the gain. On the left of the screen, two bar graphs display the signal level for the selected preamp. The left bar is a peak meter, the right bar is a VU-meter.

Depending on the gain margin you want to keep for a signal, adjust it so that the VU-meter bar moves up or down. To obtain an optimum signal/noise ratio for the A/D converter, we recommend that "undermodulation" be avoided on the peak meter scale, but that a margin (or reserve) of approximately 10 to 12 dB be maintained in order to accommodate transient levels. Note that in the case of analog stage overload, the converter current is limited – it will thus "correctly" convert a distorted signal!

3.C.3 Phase inversion and the low-cut filter

These parameters operate digitally on every channel on the console. It is therefore possible to invert the phase or adjust the low-cut filter separately on whichever channels you want, whether the input signal is common or not.

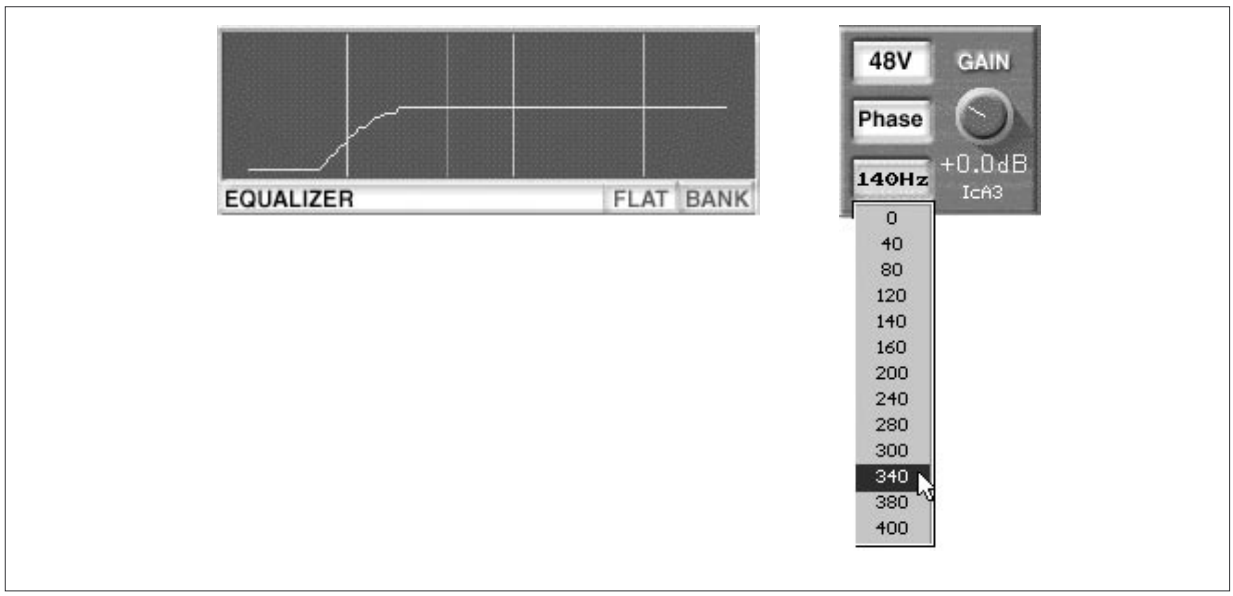
Phase ø

To invert an input signal (180°), select the appropriate channel and press the **PHASE** or **Ø** button on the Channel Control panel. The button lights up, and so does its representation on the screen. To return to normal phase, switch off the **PHASE** or **Ø** button. You can also use the mouse to click the button on the screen to carry out the same task.

The Lowcut filter

The attenuation curve of this filter is 12 dB/octave. The pivot frequency may take one of 12 values: 40, 80, 120, 140, 160, 200, 240, 280, 300, 340, 380, 400 Hz, with the value 0 corresponding to switching the filter off. To enable the filter for an input signal, select the relevant channel and then press the **LOWCUT** button on the Channel Control panel. A list appears on the screen, from which the pivot frequency can be chosen using the console's thumb wheel. Press **OK** to confirm the choice, or press the **FILTER** button again to cancel without making a change. As soon as the filter is activated, its button lights up on the console, and its influence on the equalization curve is reflected on the screen. If you like, you can use the mouse to click the button on the screen to open the list, then make your choice using the arrows, and press [Enter] to confirm.

The representation of the frequency response curve of the main equalizer is updated according to the settings of the Lowcut filter, even if the main equalizer is switched off.



3.C.4 Dynamic processing

Each channel has its own "processing" (noise gate, compressor), whose parameters operate digitally. This makes it possible to use several gates or compressors, configured differently, on the same input signal (split), by assigning the signal to as many channels as required. The dynamic processing section consists of three buttons and five rotating knobs, alternating between noise gate and compressor. The screen representation follows the arrangement of the knobs on the console, and any "physical" change is immediately reflected on the screen. Note that the curve shown on the screen is the sum of all the dynamic processes being applied (compression, gate, etc.).

By default, the five knobs in the 'Dynamics' section are allocated to the compressor's parameters. To make adjustments to the gate, activate the **GATE CONTROL**, which lights up red. On the screen, the values and

functions relating to the corresponding buttons will be updated. You can also use the mouse to click on '*G/C*' in the Dynamic frame to switch from one effect to the other.

Gate / Expander

The '*Gate/Expander*' function allows you to let the signal through as long as it exceeds a certain threshold (noise gate), or to attenuate it when it is below the threshold (expander). The attack, hold and release times affect the sensitivity and effectiveness of the effect to be adjusted. The default values are: 0.5 ms for the attack time, –95 dB for the threshold, –95 dB for the attenuation range, 0.5 ms for the hold time and 50 ms for the release time.



The value ranges are as follows:

- Attack : 0.5 à 200 ms
- Threshold : -95 à +10 dB
- Range : -95 à +10 dB
- Hold : 0.5 ms à 10 s
- Release : 50 ms à 10 s.

The screen representation mirrors the arrangement of the physical knobs on the console, and any physical change is immediately reflected on the screen. The corresponding software command is activated by clicking with the mouse on the bar above the five knobs. To activate a noise gate for an input signal, press the **GATE** button, which lights up. The function is now active, and the corresponding area on the screen is framed in yellow. It is now possible to adjust the five knobs (or, in the software, click on 'G/C' at the top right of the Dynamics window).

To adjust one of the five parameters, turn the corresponding knob on the console until you arrive at the desired value. The representation of the level curve is updated according to the settings for the threshold and attenuation.

The parameters can be adjusted in the software by clicking with the mouse (left click to reduce the values, right click to increase them) on the "virtual" knobs on the screen. To return to the default values, press the **FLAT** button followed by the **GATE** button and confirm with the **OK** button, or click on 'Flat' in the EQ window.

When the **GATE** is switched off, the highest LED on the bar graph lights up.

Compressor / Limiter settings

The compressor/limiter is used to reduce – by a selected ratio – the level of a signal when it exceeds a certain threshold. To change its sensitivity and effectiveness, alter the attack time, release time, threshold, ratio and output gain parameters. The default values are: 0.5 ms for the attack time, 350 ms for the release time, 10 dB for the threshold, 1:1 for the ratio, and 0 dB for the output gain.



However, they can be varied as follows:

- Attack : 0.5 à 200 ms
- Release : 50 ms à 10 s,
- Threshold : -95 à +10 dB
- Ratio : 1:1 à ∞ :1
- Gain de sortie : -11 à +20 dB

Before adjusting the compressor parameters, ensure that the **GATE CONTROL** button is switched off. The corresponding area on the screen changes to control the compressor, appearing in the white bar above the five knobs. The screen representation mirrors the arrangement of the physical knobs on the console, and any physical change is immediately reflected on the screen. The corresponding software command is activated by clicking with the mouse on the bar above the five knobs. To apply a compressor to an input signal, press the **COMP** button. The button lights up and the compressor is now active. The corresponding area on the screen is framed in yellow, and the five knobs can now be used. To achieve the same result in the software, just click on 'G/C' at the top left of the Compressor window. To adjust one of the five parameters, turn the corresponding knob on the console until you arrive at the desired value. The parameters can be set in the software by clicking with the mouse (left click to reduce the values, right click to increase them) on the "virtual" knobs on the screen. To return to a 'Flat' compressor (the default setting), press the **FLAT** button followed by the **COMP** button, and confirm with the **OK** button.

Compression indicators

The graphical representation of the curve on the screen reflects any changes made to the threshold and ratio values. Three small bar graphs just above the 'Compressor' window indicate (from left to right): the input level, the gain reduction and the level after compression. If you wish to see the gain reductions across all the active compressors on screen, just type the following command on the keyboard: [Alt+B]..

Notes

All the bar graphs displaying the gain reductions then appear in blue above the channel peak meters (on the screen, above the faders).

The bar graphs on the console above the faders display post-processing values.

This command [Alt+B] is also very useful for indicating whether a power cut has occurred during your absence: if [Alt+B] is inactive, something such as a power cut has taken place. Make sure that all your previous settings are correct, and if not reload the precious backup file!

3.C.5 Frequency processing

These parameters operate on every channel on the console. These are digital processes which make it possible to use several equalizers, configured differently, on the same input signal, by assigning them to as many channels as required. The equalizer section has one button and 12 rotating knobs, each of which has a unique function. The arrangement of the equalizer commands on the console is reflected on the screen, and every physical knob controls its virtual equivalent on the screen. The equalizer has four real parametric bands: central frequency, gain, and band width (or effectiveness = "Q factor"), enabling the spectrum of the input signal to be sculpted with precision.



The default values are:

- band 1 : 102 Hz, 0 dB, 1 oct ;
- band 2 : 406 Hz, 0 dB, 1 oct ;
- band 3 : 1000 Hz, 0 dB, 1 oct ;
- band 4 : 6062 Hz, 0 dB, 1 oct.

The ranges of values for the three parameters of each band are as follows:

- frequency: 27 to 19,698 Hz (96 values)
- gain: ±15 dB (in steps of 1 dB) and 1 Notch position (–50 dB)
- Q factor: from 1/8 to 8 octaves (in powers of 2).

To apply an equalizer to an input signal, press the **EQ ON** button on the console. The button lights up, the equalizer is now active, and the corresponding area on the screen is framed in yellow. The corresponding software command consists of clicking on 'EQ' in the upper left corner of the screen. To adjust any of the 12 parameters, just turn the corresponding knob on the console until you arrive at the desired value. The parameters can be set in the software by clicking with the mouse (left click to reduce the values, right click to increase them) on the virtual knobs on the screen. To return to flat equalization (the default values), press the Flat button followed by the **EQ** button and confirm with **OK**.

The graphical representation of the equalization curve reflects the slightest change to a parameter, according to the band being used; each band has its own colored line, with the color being the same as the top of the knob. There is nothing to stop you rearranging the order of the bands, but in order to avoid confusion we recommend that you leave the left band at the left of the graphical window (bass frequencies) and so on for each of the equalizer's frequencies.

3.D MIXING BUS

Following the same procedure as for assigning inputs, we shall now look at assigning outputs, before examining the bridge linking the inputs and outputs, routing.

Each InnovaSON Sensory Live console has two types of mixing bus: the GrAux busses (black faders), for the use of groups or subgroups and/or auxiliary outputs, and three Masters, for the main mixes (red faders). All of these have their own dedicated faders for controlling their respective levels, and their own Select, Mute and Cue commands.

3.D.1 Assigning mixing busses to physical outputs (Patch OUT)

Description.

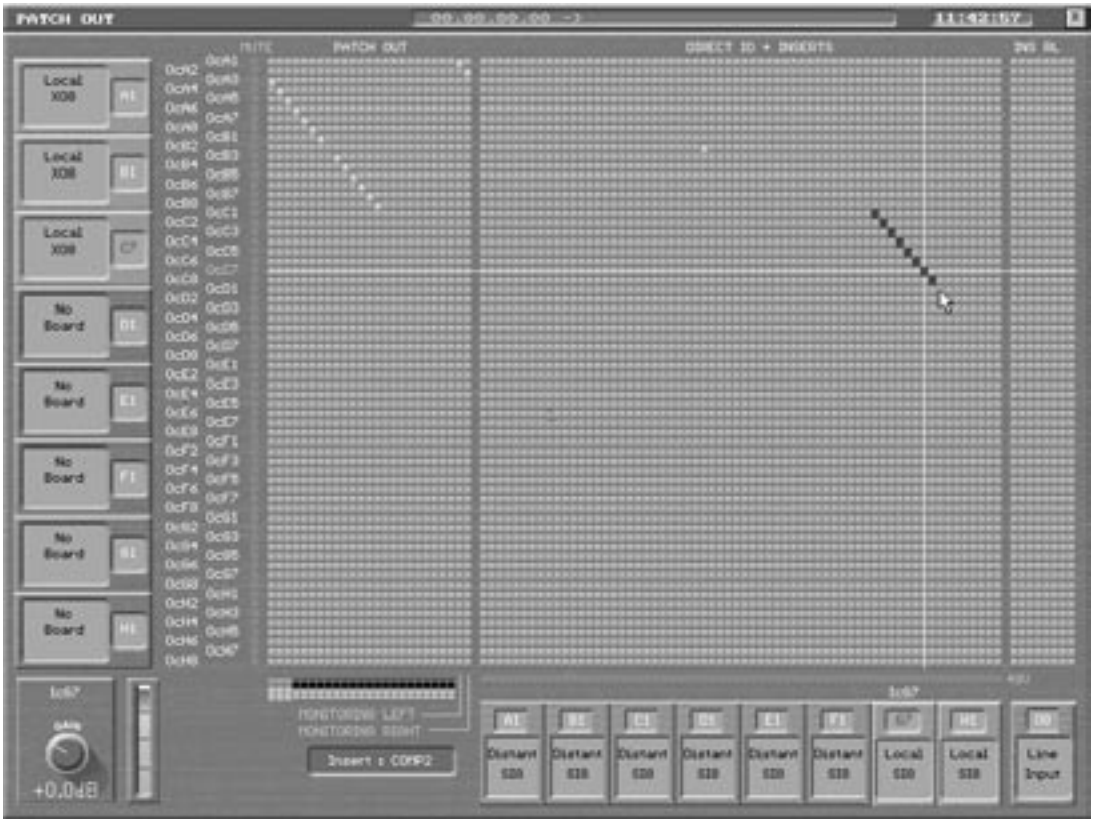
An internal grid (Patch OUT) makes it possible to assign any mixing bus to any of the physical outputs available in the audio racks. A single mixing bus may be routed to one or more physical outputs: transmission with reminders (same mix but with different speaker settings: delay, equalization, etc.), sound for the dressing rooms, rough recording, sound for a video control room, for radio, and various monitors.

The Patch OUT grid makes it possible to make all the necessary connections.

Accessing the Patch OUT grid

There are three ways to access this grid:

- press the **PATCH OUT** button in the console's *UTIL* panel; this button is only active in the console's main screen
- with the mouse, open the *GRID* pull-down menu and select the 'Patch OUT' option in this menu
- use the keyboard shortcut [F12].



Description of the Patch OUT grid.

All the mixing busses appear horizontally in the grid.

They are identified by the colors of their faders at the bottom of the grid. The text box at the bottom left of the screen indicates the selected mixing bus, such as "Fader: Aux 3" (GrAux 3).

The vertical axis brings together all the physical outputs. Output 1 is located on the top line of the grid.

These outputs are grouped into blocks of 8, corresponding to the physical modules in the audio racks.

The outputs are described on the left of the grid, with the following information:

- the type of module present in the rack for each slot
- Local A output standard analog output module positioned in the local rack (Mix Box)
- Local D output digital output module positioned in the local rack
- Local X output module with integrating processing (hyperdrive) in the local rack
- Distant output module present in the stage rack (Stage Box);

The number of the physical output is given in the red area if the selected physical output belongs to this card; this display makes it easy to find the selected output, as the label corresponds to the physical output

- the cells to the left of the grid are identified by a color code providing the following information:
- green cells represent the available outputs in the audio rack
- mauve cells represent the available outputs in the stage rack
- gray cells indicate that no physical output is available; this means that although a patch is possible in the gray area of the grid, it will not be physically created, just stored

the yellow points show the patches in operation; a light blue cross cursor specifies the selected point.

Configuring an output patch

Patch configuration consists of moving the cursor within the grid and placing or removing the patch at the required point. There are three ways to do this:

- on the console, use the Select button for an output fader to move in the horizontal direction, the knob to choose the output to be patched, and the **OK** button to activate or deactivate the patch
- with the mouse, just click on the point to be modified (left click), and then activate/deactivate the Patch (right click)
- with the keyboard, use the cursor keys to move and the [Enter] key to activate/deactivate the patch.

To leave the 'Patch OUT' screen, press the **PATCH OUT** key in the '*UTIL*' section of the console once more. The [Escape] key has the same effect, as does a mouse click on the close icon at the top right of the window.

Modifying output labels

The labels on the physical outputs have default values such as "OuG5", corresponding to the type of card (OUT), the module slot (G) and the output number (5). These labels can be changed, within the restriction of the four characters available.

Procedure :



- Move to the line of the first output whose label needs changing.
- Press the [F3] key to change just this one label;
- Press [Alt+F3] to change all the output labels from this point on.
- Modify the label using the keyboard.
- Press the [Enter] key or click on the **OK** button to confirm.

If you wish to stop when modifying several consecutive labels, just press on the [Escape] key or click on the 'Cancel' button.

3.D.2 Basic principles of routing

All the input channels can be individually routed to all the mixing busses L/R/M/GrAux.

Routing in the Masters

The main busses are Stereo, so the corresponding routing always takes into account the relative stereo pan settings of the assigned channels. This means that one or more input channels may be routed with either of the two busses Left or Right. The routing does not therefore have to be carried out twice. (On the contrary, in fact, as the second routing would cancel out the first.) It is also possible to route either the input channels or the GrAux busses to the Left and Right Master busses, as each GrAux bus has its own pan setting.

For the Mono Master and its special features, see Section 3.D.5.

Routing in the GrAux

As well as routing to the Master busses (Left/Right/Mono), it is also possible to route an input signal to the GrAux mixing bus, either before/after panning or before/after fader.

We can thus distinguish between three principal switching functions:

- on/off assigning the input channel to the L/R/M and/or GrAux busses
- pre/post fader taking into account the level of a GrAux in the L/R/M (See Section 3.D.3)
- pre/post pan taking into account the pan of a GrAux in the L/R/M (See Section 3.D.4).

These all work in the same way on the console:

- to switch an input channel to one or more mixing busses, hold down the selection button for the relevant channel, while selecting the mixing busses you want to assign it to
- to switch an input channel from within a mixing bus, hold down the selection button for the relevant bus, while selecting the input channels to be assigned to this bus.

Either of these actions causes the corresponding selection buttons to light up, and in the case of On/Off post-fader routing there is an option enabling the Aux Send (yellow fader) to be sent directly at 0 dB (see '*General Preferences*' screen, 8.D.4).

These different statuses are also displayed on the screen in the main window. An active switching may be cancelled in exactly the same way. A selection button that is lit up shows an active switching (**ON**), while the button is not lit when the function is Off. The routing functions may also be carried out using just the software.

There is a quick way of assigning several channels or busses at the same time:

1. Select the channel or bus in question and hold down its selection button.
2. With the other hand, select the first fader of the group you wish to assign, and hold down its selection button.
3. Release the original selection button, and select the last fader in the group.

These different statuses are also displayed on the screen in the main window. An active switching may be cancelled in exactly the same way. A **SELECT** button that is lit up shows an active switching (On), while the button is not lit when the function is Off. The routing functions may also be carried out using just the software.

Example



1 Select the channel or bus in question and hold down its selection button.



2 With the other hand, select the first fader of the group you wish to assign, and hold down its selection button.



3 Release the original selection button, and select the last fader in the group.

To send inputs 24 to 37 to GrAux 12:

- Select GrAux 12, and hold down its **SELECT** button with your right hand.
- Select channel 24, and hold down its **SELECT** button with your left hand.
- Release the **SELECT** button for GrAux 12 with your right hand.
- Select channel 37 (right hand)

Release both hands, and the routing to GrAux 12 is complete!

Routing without the console (OFF LINE mode)

In the absence of the console, sends can be configured on the screen. While it is possible to modify the routing from either an input channel or a mixing bus, blocks of faders can not be configured in this mode..

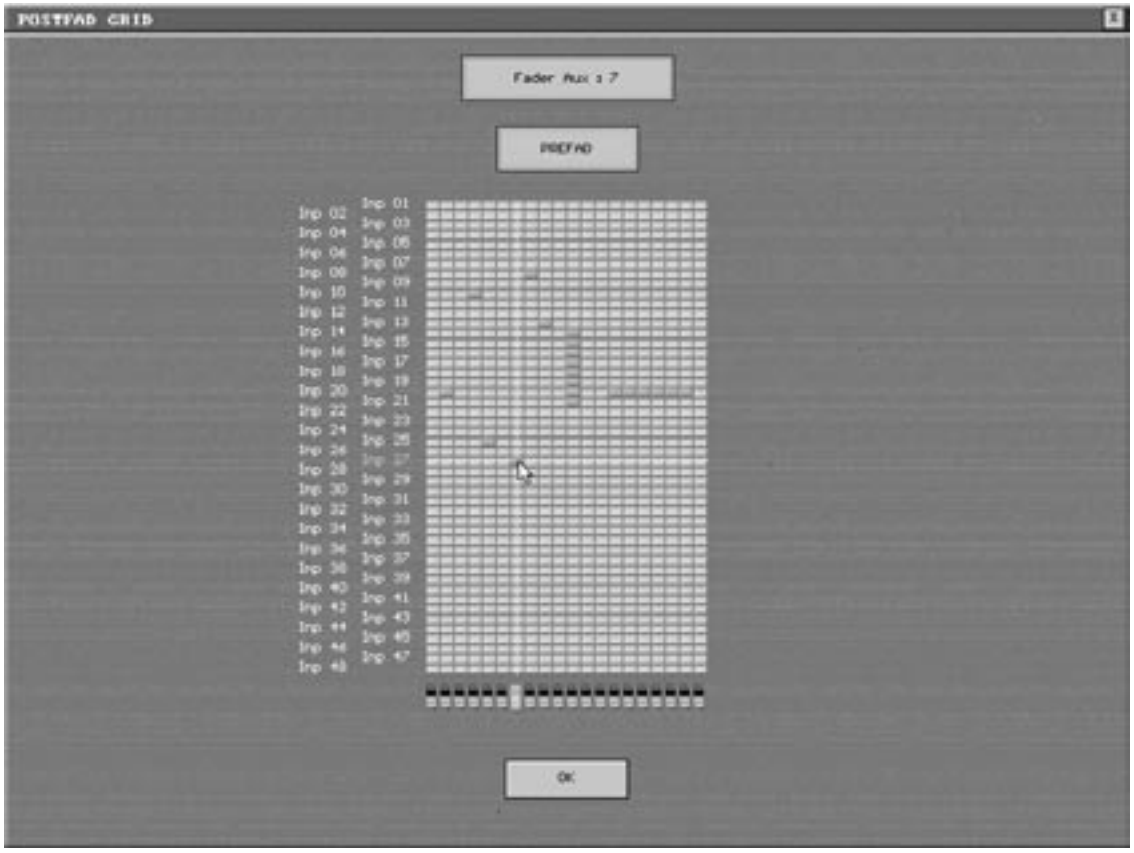
Proceed as follows:

- Select the input channel or mixing bus by left-clicking on the corresponding fader, or by using the cursor keys [←][→].
- Click with the right button on the bus whose routing is to be modified.

Yellow rectangles above the bus faders and the input channel faders indicate the routing configuration (by convention, the presence of a yellow rectangle signifies that the send is active).

3.D.3 Pre/Post fader assignments for the GrAux busses

The Pre/Post-Fader function corresponds to how the levels of the input channels are treated in the Master busses. Therefore, only the GrAux busses can be assigned to Pre/Post-Fader. Each input channel can be assigned to Pre/Post-Fader individually for each individual GrAux routing.



By default, all the input channels are assigned to Post Fader in all the GrAux busses, meaning that:

- any assignment of an input channel to a GrAux bus passes the channel to the bus with a level identical to that of the channel's fader in the Master busses
- any modification to the levels of the input channels in the Master busses (moving a white fader) influences the levels in the GrAux busses they are routed to
- any modification to the individual levels of each input channel in the GrAux busses (moving a yellow fader) is possible, without influencing the levels in the Master busses.

To make a Pre/Post-Fader assignment, use the Pre/Post-Fader grid :

- Press the **PRE/POST-FADER** button on the console, located above the panning knob. This brings up the Switching grid showing the input channels on the Y-axis and the GrAux busses on the X-axis.

- Select the GrAux bus for which you want to make the assignment. The **SELECT** buttons for the input channels either light up or switch off, depending on their status – the buttons that are lit up represent the post-fader channels, and the buttons that are off represent the pre-fader channels.

- Switch the necessary **SELECT** buttons on or off to achieve the required configuration. It is possible to group selected channels. For example, to group channels 24 to 32, hold down Select 24 with the left hand and pressing Select 32 with the right hand.

- Leave the **PRE/POST-FADER** mode by pressing the **PRE/POST** button on the console.

In the absence of the console, sends can be configured on the screen.
Proceed as follows:

- Select the input channel and mixing bus by left-clicking on the corresponding fader, or using the cursor keys [←][→].

- Now right-click with the mouse on the appropriate point to change the send configuration.

3.D.4 Pre/Post-Pan assignments for the GrAux busses

The GrAux busses can be assigned as "mono" or "stereo", depending on the choices made in the Grid Aux Stereo menu. Of course in Stereo (post-pan) mode, they will be defined in contiguous pairs (1/2, 3/4 etc.), in which they are very similar to the L/R Masters, adopting the same panning settings. In Mono mode, they will be centered, pre-pan, and will be assigned to standard mono, backstage etc. monitor outputs. In this case, the panning settings do not affect the GrAux busses.

3.D.5 Using the MONO Master

The Mono fader may be assigned to three types of control:

- Simple Mono this is the monophonic pre-panning sum of the input channels

- Center Mono this is the monophonic post-panning sum of the input channels; the center position in this case is attenuated by 3 dB by default, but this may be changed (see Section 5)

- Monitoring, where the fader controls the level of the stereo monitoring bus, replacing the rotary encoder usually assigned to this function.

These assignments are made in the *'General Preferences'* menu (8.D.4).
Routing to the Mono bus is independent of Left/Right routing, except in the case where the Mono bus is defined as Center.
Where the Mono fader controls the monitoring bus, routing settings will have no effect. If it controls the Center, just one action is needed for the three L/R/M/C assignments.
The Mono fader can be used for monophonic transmission, Mono monitoring, verifying phase coherence, sub send, etc. When configured in the Center position, the third Master bus can be used for 3:1 mixes for broadcast-type use.

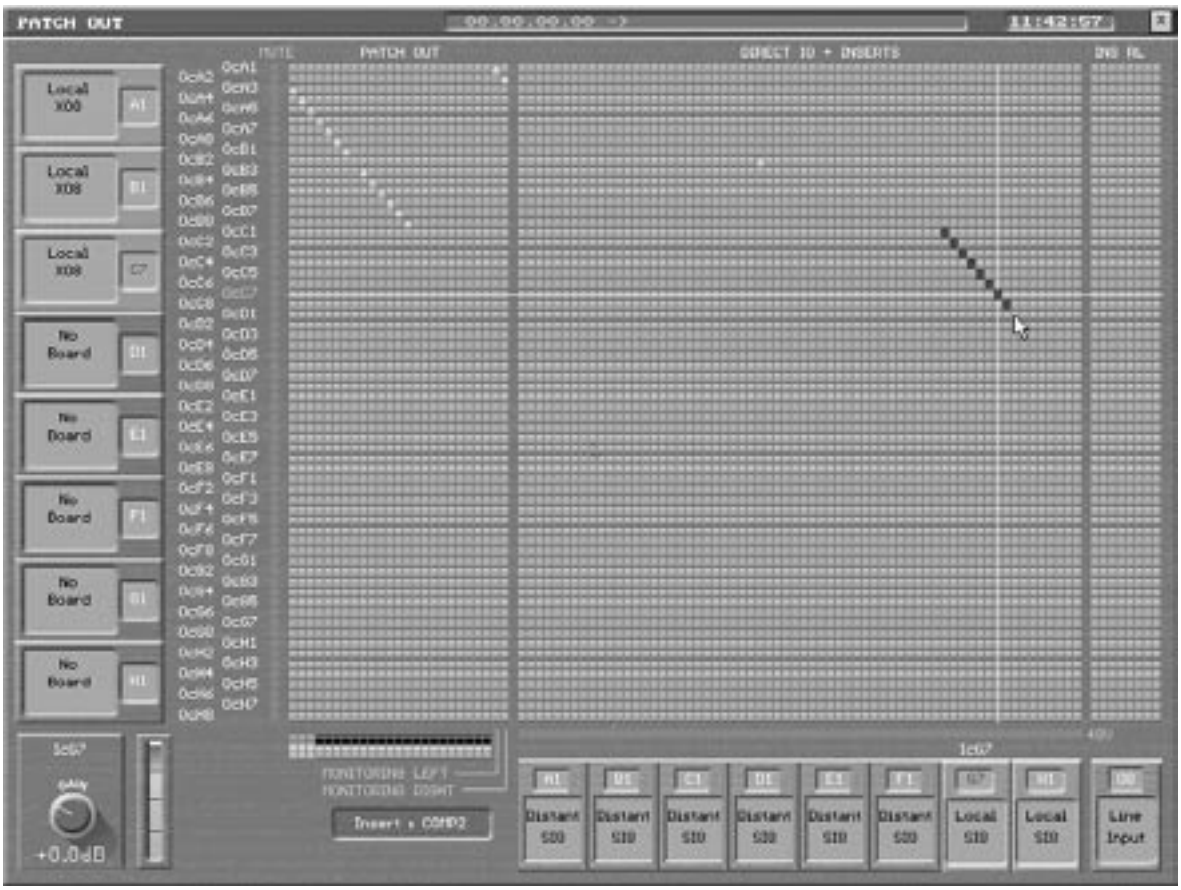
Although the Mono mode configuration is simple to access in the software, using it has a major effect on the configuration of the whole console. We therefore strongly recommend that its use be avoided during a mix. We advise that you set up the mode of the third Master bus at the beginning of the session.

3.D.6 Direct I/O

The procedure here is similar to that of the other grids. The 'Direct I/O' grid is accessed with the [F12] key from within the 'Patch OUT' window, or by pressing the **DIRECT I/O** button on the console. The grid gives a two-dimensional representation (64x64) of the input/output connections, and makes it possible for an input to be patched directly to an output without passing through the mixing busses. The existing 'Patch OUT' is then removed. The horizontal lines represent the outputs, and the vertical columns the inputs. To assign an input to an output, just position the grid pointer at the intersection of the required input and output, and press the [Enter] key.

The left section of the window displays information relating to the outputs (rack, position of the rack, type of card, slot number, output label, and mute status). The lower section of the window displays information relating to the inputs (rack, position of the rack, type of card, slot number, preamp label, and +48 V status).

To the left of the window, a VU-meter displays the level of the input selected with the pointer. The input gain can be modified with the **DIRECT I/O** button (at the bottom left of the screen) or with the [F5]/[F6] keys.



3.D.7 Insert

The choice of output(s) and input(s) needs to be defined as soon as the File (Show) is created. This must be done carefully, as it would be difficult to plug and unplug cables during a performance!

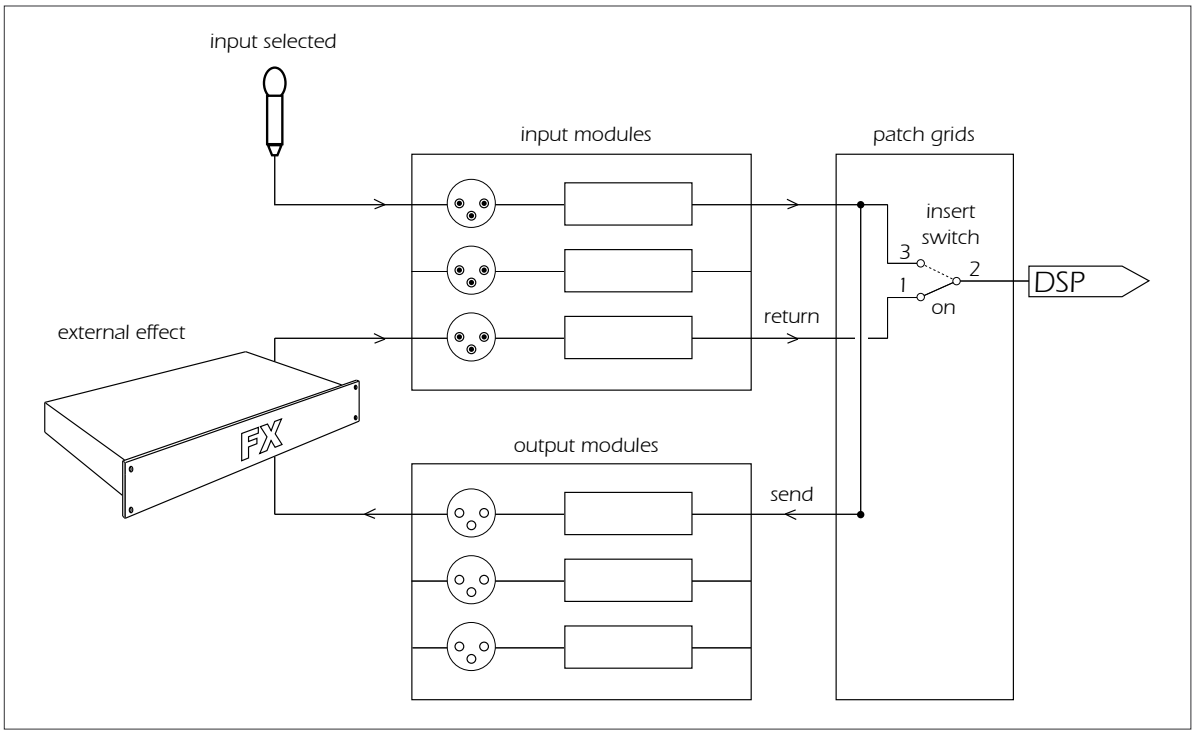
Defining connections

To define your connections, go to the 'Patch OUT' window, point to the required IN/OUT intersection (middle or or right grid), and type [I] for Insert on the keyboard.



A window opens, prompting for a name for the insert (8 characters), to be confirmed by hitting [Enter] on the keyboard or **OK** on the console. A blue point appears in the grid.

All the inserts created in this way will be permanently linked to the current file, so that all the pages of the file will contain all the insert assignments.



Assigning a channel

Select the channel on which you wish to place an insert by holding down the **SELECT** button for the input and pressing the **INSERT** button on the console. A pop-up menu appears, presenting the list of labeled inserts. Choose the predefined insert using the rotary selection knob and validate with **OK**.

At this point, the channel is directly linked to the insert input, but the return will only be active if the **INSERT** button is lit up.

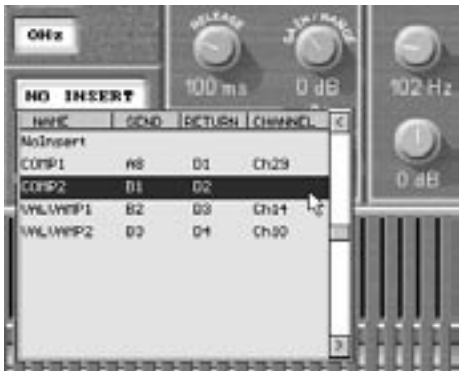
Without the console, use the cursor keys [➔] or the mouse (left click) to select the channel, then right-click on the insert cell located above the label. Choose the required insert in the pop-up menu by left-clicking on its label.

To light up the insert cell, left-click on it.

You will see that the send takes place after the gain and +48 V settings, with the phase, EQ etc. only being applied to the return from the insert.

Using an insert

In the Mix screen, a pull-down menu lists all the assigned inserts. To select one, either click on the Insert pull-down menu, or press the **INSERT** button on the console, to bring up a list of assignments like this:



The menu shows clearly the name of the insert, with the geographical representation of the input and output with which it is associated.

To access the desired insert and make it active, either left-click on the selection or press the **INPUT** button or the **OK** button on the console. Three situations may arise:

- you do not wish to change anything – click outside the list, or press the [Escape] key, or the **INSERT** button on the console
- you wish to remove an **INSERT** from a channel – select "No Insert" in the list
- you want to switch an **INSERT** on or off – right-click on the 'Insert' menu or press the **SELECT** + **INSERT** buttons on the console.

When an insert is selected and active for an input channel, the pop-up menu appears like this:



If it is selected but inactive, it becomes:



Only one insert may be assigned per channel, and each insert can only be assigned once per page. If the insert is already being used for another channel, a message such as "valvcomp-1 is already used on channel 12, do you want to transfer it?" will be displayed to ask for confirmation.

When an insert is selected and active for an input channel, the physical input is patched directly to the insert output and the insert input is patched to the channel. Inserts may be selected in the Mix screen and through the

Overram screen.

The Direct I/O patch made between the 'Patch IN' and the insert send is visible in the 'Patch OUT' screen.

insert restriction



Inserts only relate to input channels. There is no point trying to place one on an output!

Définition of the insert button on the console

If the console does not have an **INSERT** button, it is possible to choose between Lowcut and Insert in the Hard Config screen. To access this screen, open the 'About' window from the *UTIL* menu and type "innova".

3.D.8 Operating principles of the faders – Fader Mode

All the faders on the Channel Control surface are motorized, and they do not control the audio signal directly. Their "interpreted" position, combined with the current selection, makes it possible for the faders to be assigned to one or other of the mixing busses possible in the console, according to the channel or bus that you wish to change. Because of this, we have been able to replace the traditional column of auxiliary knobs on the input channels by fader "states", which makes it much quicker and easier to access and "read" the current levels.

A few operating principles to remember:

- a very useful feature when mixing for monitors – pressing the **SELECT** button of a GrAux causes the incoming mix to be displayed on the inputs' faders (Aux send, yellow faders)

- conversely, pressing **SELECT** for an input causes its levels to be displayed in the different GrAux busses.

The above very powerful Sensory functions have no analog equivalent!

- the Master faders and the Mutes on the console are always active, regardless of the window you are working in

- moving through different channel selections only makes an audible change if the corresponding fader(s) is(are) physically moved by the user. There are various memorization options to determine whether the new position is temporary or final. However, as with all computer equipment, it is wise to save your work regularly.

A special feature for giving sensory feedback of the stored position is permanently in operation, and acts as a "hard point" at the programmed position for all the faders.

- individual input levels in the main mix, as well as the general mixing bus levels, are always maintained on the screen.

The Fader Mode options (in *General Preferences*, 8.D.4) give three choices for the display of levels on the console, and only on the console, while the screen remains unaffected:

- IN useful for front-of-house sound, it sets the console display to show only the levels of the input faders (the white faders on the screen); this means there will be no more confusion between a Master IN fader and an Aux send!

- OUT more convenient for monitors, it sets the console display to show the output levels (the black faders on the screen); again, no confusion is possible between an Aux Master and an Aux send

- DUAL – the default mode, displays the respective levels of inputs, outputs and Aux sends at the same time, according to the currently active selection; this is the ideal mode for soundchecks, but should be used with care.

Examples in DUAL mode

Selecting input channel 25 causes all the output faders to be updated immediately on the console. The faders now represent the respective levels of channel 25 in each mixing bus, and they can now be modified individually. For instance, if bus 4 was in position –20, you would feel the sensory memorization point when you change the level and then return to this value.

Selecting GrAux 4 causes all the input faders to be updated immediately on the console. These faders now represent all the inputs to bus 4. As with the previous example, if the fader on channel 25 is at position –20, the sensory memorization point will be felt at this position. This means that you can change the Aux Send level of channel 25 in Aux 4 either:

- by selecting channel 25 and moving the GrAux 4 fader
- or by selecting GrAux 4 and moving the fader for input 25.

3.E Monitoring

Two choices are available in General Preferences (8.D.4) :

- Monitoring on ASM
- Select on ASM

These concepts are quite different, and are detailed below.
ASM corresponds to Auto Switched Monitoring, meaning the headphones.

3.E.1 Cue and solo buttons

Regardless of the mode chosen, the **CUE** buttons are independent and cumulative by default. When the **SOLO** button is pressed, the **CUE** buttons are switched off. The next **CUE** chosen will be the only one present in the monitoring. Pressing another **CUE** will cancel the previous one, etc. This represents solo mode, which is non-cumulative and therefore exclusive.

3.E.2 Monitoring on ASM

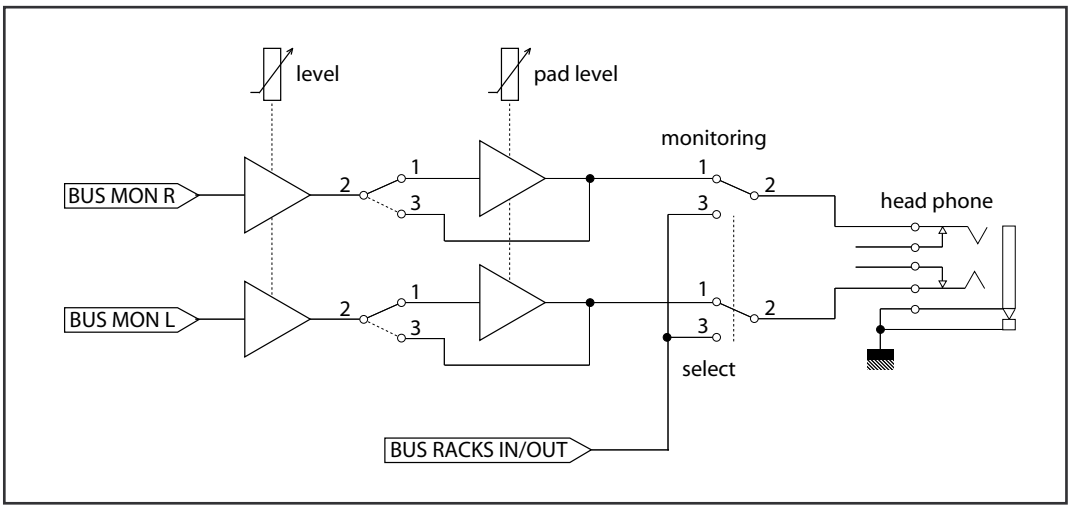
The features of this mode are :

- two busses are allocated to it
- they may be patched to physical outputs in any way the user wishes
- the **CUE** buttons send monitoring to these busses

There are three separate modes for monitoring listening:

- PFL Pre-Fader Listen
- AFL After-Fader Listen
- APL After-Processing Listen (after hyperdrive processing).

The diagram below illustrates a few basic functions.



As shown, both the Monitoring Bus outputs (L and R) have a level setting, and then, depending on the Pad switching, either pass through or skip an adjustable attenuator.

The following more detailed summary explains the various Monitoring selections available. On the diagram, the dotted lines between the Mon L and R busses indicate that sends are monophonic.

Follow an input channel (in the upper part of the diagram), and you see that the first sampling possibility arises after the preamp and the various processors (phase, frequency, dynamics, etc.), and before Mute. This is the PFL mode chosen in the *General Preferences* menu (8.D.4).

The monitoring is monophonic, but cumulative i.e. several channels can be combined in the Monitoring bus (several Cues pressed), but their balance cannot be adjusted. PFL, as its name suggests, includes neither the effect of the channel fader, nor the Pan, nor the Mute. In this mode it is possible to listen to a muted channel to check the signal before it is sent into the active distribution busses. This mode can be very useful, for example, to "open" a channel at the last moment, as the artist is about to come on stage (after a quick costume change, for example), to fix an effects send or to make sure that various signals are correctly in phase.

The AFL mode outputs a signal that enables you to listen to the sound post-Mute, post-Pan and post-fader, i.e. solo in place. But be careful: if a channel is muted or the fader is at the bottom of its run, there will be nothing in the Mon L and Mon R busses! As with the PFL mode, AFL is cumulative and so it enables precise, selective control over the channels combined in a mix.

The APL mode is not cumulative, and enables outputs to be checked post-processing. For real post-processing monitoring, clearly an XO-8D module must be inserted, otherwise the situation is the same as in AFL mode.

3.E.3 Mode Select

This mode is reserved for specialists preparing a show without the console. You will need attenuated headphones.

The features of this option are :

- listening directly to the audio rack busses (inputs/outputs), but be aware that no level adjustments can be carried out (!)
- the **SELECT** buttons send monitoring to the headphones

This makes it possible to monitor the busses one by one at their real levels.

3.E.4 Automatic listening of the stereo master busses

The Master On Monitoring option, located in the *General Preferences* control panel (8.D.4), enables automatic listening of the stereo master busses to be activated or deactivated. Usually you will want to listen to the stereo master busses most of the time, and cut them when one or more **CUE**s are activated. The Master On Monitoring option provides this facility.

3.E.5 Automatic listening of the effects returns (Link Aux-RL)

The Link Aux RL function in the *General Preferences* screen (8.D.4) makes it possible to listen to the effects returns, or any other external signal, when monitoring.

When this mode is active, monitoring remains unchanged. The use of the monitoring section and the Cues are identical, but the Link Aux RL function creates a link between the auxiliary busses and the effects returns. Effects return 1 is associated with Auxiliary 1 and so on, up to 8.This link appears when a linked auxiliary is selected, with the **SELECT** button on the console for example. In this case, the Monitoring bus enables you to listen to the effects return linked to the auxiliary, in addition to the normal monitoring.

Link Aux RL remains active until another associated Aux or Cue is chosen. This means you can continue to listen to the desired effects return after selecting an input channel, a Master bus or a non-linked auxiliary (any

auxiliary number greater than the number of effects returns).

3.E.6 Third Master bus in monitoring position

The third Master bus may be configured for Monitoring mode. There is no need to add another bus to the Monitoring section, as the fader is used to control the level.

In this case, the third Master mixing bus cannot be used. Instead, its fader directly controls the monitoring level when the monitoring level control knob is deactivated.

3.F The talk back microphone (talk back)

All InnovaSON consoles are equipped with a talkback microphone input with permanent phantom power, accessible on the DSP card (or, for Grand Live consoles, directly on the control surface). This input may be sent to various logical outputs: Masters and GrAux.

The talkback input can be adjusted on the console only.

To send the talkback microphone to one, two or all three Masters (by default all three):



- Hold down the Slate button in the console's Utilities panel (a window opens in the middle of the screen).
- Select the Masters you want to send the talkback to (when you press the channels' Select buttons, the Master patch points in the window turn yellow).
- Adjust the level of the microphone using the Level knob in the console's Utilities panel.
- Speak into the microphone. It is only set and active in the Masters you have selected.

The send is active as long as the Slate button is held down. As soon as it is released, communication is cut and the window will disappear.

To send the talkback microphone to one, two or more, or to all the GrAux (by default, to all):



- Hold down the Aux button in the console's UTIL panel (a window opens in the middle of the screen).
- Select the GrAux busses you wand to send the talkback to (when you press the channels' Select

buttons, the GrAux points in the window turn yellow).

- Adjust the level of the microphone using the Level knob in the console's Utilities panel.
- Speak into the microphone. It is set and active only in the GrAux busses you have selected.

The global talkback settings (level and routing to the Master and GrAux busses) are stored as a file parameter. This means that the settings are automatically saved as long as the file is in use.

4 STRUCTURE OF A PERFORMANCE22222222222222222222222222222

4.A General description

InnovaSON consoles contain functions that may well be unfamiliar to users of more traditional consoles. Certain special configurations are memorized within each page of a file.

Sensoft has been designed specifically for professional audio operations (live shows, TV broadcasts, recording, events etc.) and to provide quick access and maximum protection and recall of the settings.

User operations and settings are stored in a file, which consists of one or more pages. These pages contain the various state snapshots you need to record.

Each file may contain or more 1,000 pages, which of course includes all the user's settings (Relax Grid, General Preferences and Audio Rack Config).

Each save is a snapshot of the settings of all the console's parameters at a specific time t (or total recall).



IMPORTANT NOTES :

- **any action on the console is carried out in RAM, so to keep a permanent record you must save to the hard disk**
- **it is advisable to work with as few files as possible on the hard disk, and to remember to save regularly**

the Save button on the console only applies to pages, saving the page in RAM to the hard disk (Save principle: from RAM to hard disk).

4.B Managing files and pages

4.B.1 Editing a file

Pressing the **EDIT** button opens the System Management window, which can also be opened by clicking on '*Edit*' in the *FILE* menu using the mouse.

The 'File' Editing screen lets you construct and modify a file, based on the pages on the hard disk and in RAM. The System Management window displays all the files and all the pages stored on the hard disk, as well as the list of pages in the current file (within the limits of RAM storage).

Three indexed columns are shown on the screen:

- "File On Disk", which lists the files stored on the hard disk
- "Pages On Disk", which lists the pages stored on the hard disk in the selected file (ordered alphanumerically)
- "Pages On RAM", which lists the pages in the file currently open (in their actual sequential order).

The name of the current file is shown in the blue strip of the Edit window.



Use the arrow keys on the keyboard to navigate within a list or from one list to another, to reach the required page.

The following standard computing functions are available**:**

REMOVE button deletes the selected page in Pages On RAM (right-hand column) from the current file. Place the Pages On RAM index on the page to be removed from RAM, and use the **REMOVE** button to delete it from the list.

Insert places the selected page in Pages On Disk (middle column) after the selected position in Pages On RAM.

- select the file containing the page to be inserted in the File On Disk list
- place the Pages On Disk index on the page to insert
- in Pages On RAM, indicate the page before the position of the page to be inserted

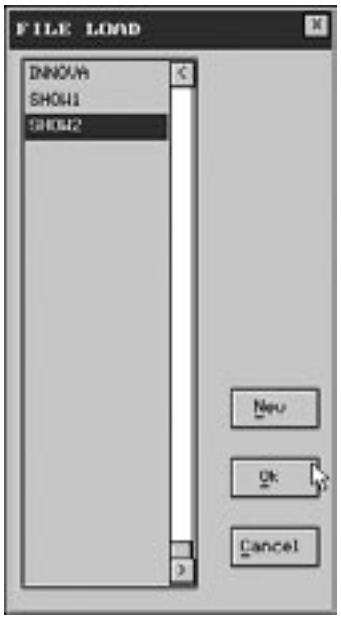
Click on the 'Insert' button to validate.



to avoid unpleasant surprises, do not give the same name to more than one page.

- 'Insert As' function is used to rename a page.– useful for creating a new file from a reference page, or for duplicating a page under another name to make changes without affecting the original
- 'New' – inserts a blank page after the position indicated in Pages On RAM
- 'Next' – duplicates a page in RAM immediately following the original, but under another name
- 'Exit' – leaves Edit mode and returns to Operating mode, as it updates the file (the active page becomes the one pointed to in the Pages On RAM list).

4.B.2 Changing file



The name of the current file is shown in the blue strip in the 'Load' window.
The screen for changing files (*Load*) is accessed via the *FILE* menu, where you can create a new file with a new page, or recall an existing file.
This screen brings up all the files stored on the hard disk in an indexed column.
Using the arrow keys on the keyboard, browse through the list until you reach the file you want. By choosing a file, all of its pages are loaded and the system is updated (screen, console, Stage Box and Mix Box) using the first page of the file.
The 'New' button lets you to create a new file. A 'File Name' window appears on the screen, prompting for the name of the file and the name of the first page. If the name already exists, a dialog box asks you to confirm that it should be replaced.

4.B.3 Saving

A file can be saved using the *Save* option in the *FILE* menu. This saves all the pages at the same time.
A window appears with the message "File Saving: Please Wait", and the **SAVE** button on the console lights up for a few seconds.

Pressing the Save button saves the current page only.

The current file can be duplicated under another name, using the *Save As* function in the *FILE* menu. A window with the message "File Save As: Enter the new name" prompts you to enter a new name for the file. This then becomes the current file, and all future changes are made to this file. If a file with the name you have chosen already exists, a dialog box asks you to confirm that it should be replaced.

4.B.4 Exporting, Importing et deleting

The Export File function is used to copy the current file in its current state in RAM onto a floppy disk. The file can be exported using the *Export* function in the *FILE* menu.
A window appears for a few seconds with the message "Export File: Please Wait".
If a file of the same name already exists on the floppy disk, a dialog box asks whether the file should be replaced with the message "Overwrite xxxx?".
If the answer is Yes, the file being replaced and all its pages are overwritten, i.e. deleted. If No, the operation is cancelled.

A dialog box reports on the state of the floppy disk if a problem occurs:

- No Floppy Disk
- Disk Write-Protected
- Disk Has Changed – the floppy disk has changed since the last read/write attempt
- Bad Disk Sector – a sector of the floppy disk is damaged
- Unformat Disk – the floppy disk has not been formatted
- Write Error, Disk Format Error – the floppy disk is not in a compatible format
- Write Error, Floppy Disk Full – there is no room on the floppy disk
- Floppy Disk Error – an unknown error has occurred.

The '*Import File*' function is used to copy a file with all its pages from a floppy disk to the hard disk and RAM.

Import a file using the *Import* option in the *FILE* menu. A list displays all the files available on the floppy disk, and a dialog box appears reporting on the state of the floppy disk should a problem arise.

The '*Delete File*' function is used to remove unwanted files from the hard disk, by choosing the *Delete* option on the *FILE* menu. A list displays all the files on the disk, from which you can select the file to be deleted. A dialog box asks you to confirm your choice.

Deleting a file also deletes all of its pages.

4.C Managing pages

4.C.1 Saving

Pages are saved using the *Save* option on the *PAGE* menu, or by pressing [Alt+W] on the keyboard. The **SAVE** button on the console only affects pages, and saves the page in RAM to the hard disk (Save principle: Hard Disk > RAM).

This saves the current page in the file.

A window appears with the message "Page Saving: Please Wait", and the **SAVE** button on the console lights up for a few seconds.

A page can be duplicated under another name using the *Save As* function on the *PAGE* menu.

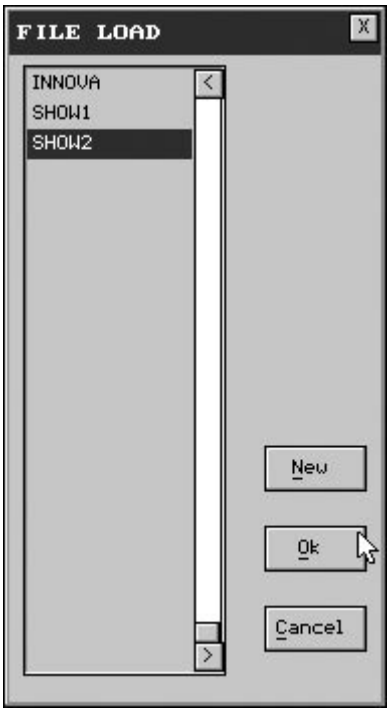
A window appears with the message "Page Save As: Enter the new name". If the name you enter already exists, a dialog box asks you to confirm whether it should be replaced.

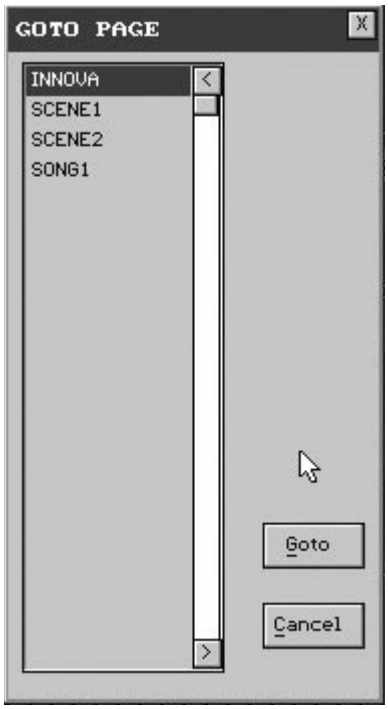
The saved page now becomes the current page, and will replace the previous one in the "Pages On RAM" list. Of course, the previous page will still be present in the file on the hard disk, and can if you wish be reinserted into the file in RAM.

When the current page has been saved onto the hard disk, its name appears in blue in the information bar. When any changes are made to the current page, its name will then appear in red.

4.C.2 LOAD and GOTO

The *Load* function displays a list of pages in RAM and allows you to move to a selected page, updating the console to the last saved settings on the hard disk.





The 'Page Selection' window is accessed with the **LOAD** button on the console, as long as the switch option <PAGE> in the *General Preferences* menu (8.D.4) is set to Load. The window can also be opened by pressing [Alt+L] on the keyboard, or with the *Load* function on the *PAGE* menu. The **LOAD** button on the console lights up.

A selection can be made in one of three ways:

- with the rotary selection knob on the console, confirming with **OK**
- with the [🡻]or[🡹]cursor keys on the keyboard, confirming with [Enter] or [L]
- by selecting the page with the left mouse button, and clicking on 'Load'.

The operation can be cancelled by pressing the **LOAD** button on the console, the [Escape] or [C] keys on the keyboard, or by clicking on 'Cancel' with the mouse.

Be aware that the page stored on disk may be different from the page of the same name stored in RAM if the latter has not been saved. This function should therefore be used with caution. The Load function does not insert a page into RAM, it just moves from one page to another in RAM. The parameters that are loaded are those from the hard disk and not those in RAM.

The *Goto* function, presenting a list of the pages in RAM, enables you to move to the selected page and updates the console with the page contained in RAM. The Page Selection window is accessed with the **GOTO** button on the console, as long as the switch option <PAGE> in the *General Preferences* menu (8.D.4) is set to 'Goto'. The *Goto* function on the *PAGE* menu has the same effect, and while performing the operation the **GOTO** button on the console lights up.

A selection can be made in one of three ways:

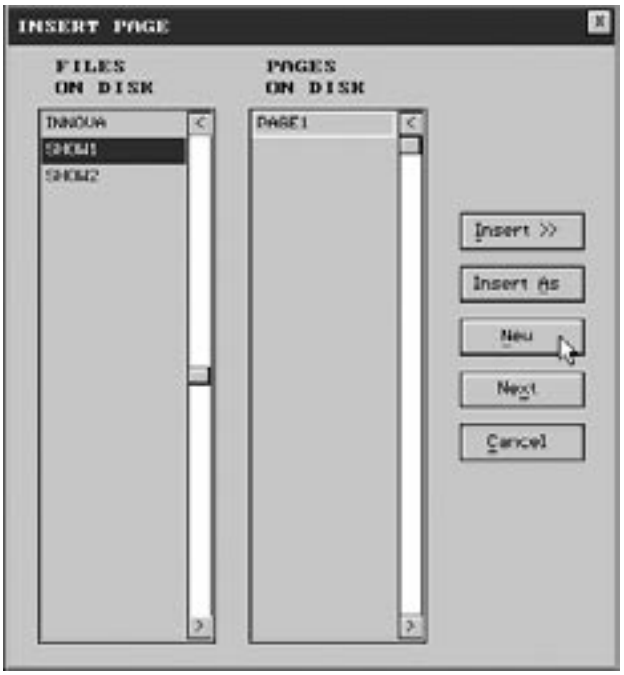
- with the rotary selection knob on the console, confirming with **OK**
- with the [↑]or[↓] cursor keys on the keyboard, confirming with [Enter] or [G]
- by selecting the page with the left mouse button, and clicking on **GOTO**.

The operation can be cancelled by pressing the **GOTO** button on the console, the [Escape] or [C] keys on the keyboard, or by clicking on 'Cancel' with the mouse.

4.C.3 Inserting

This function is accessed either with the keyboard shortcut [Alt+I], or via the *Insert* function on the *PAGE* menu. It allows you to insert a page from the list of pages in RAM just after the current page. Proceed as follows:

- Place the "File On Disk" index on the file containing the page to inserted.
- Place the "Pages On Disk" index on the page to insert.
- Click the 'Insert' button to confirm the insertion.



If the page to insert comes from a different file to the current file and already exists in the current file, the "file" (hard disk) version will be replaced by the new version. A dialog box asks you to confirm that the page should be replaced.

- Use the 'Insert As' button to insert the page in the list and change its name. If a page of the same name already exists, the same dialog box again asks for confirmation.
- Use the 'New' button to insert a blank page into the list. A dialog box asks for a name for the page.

4.C.4 Deleting

This function is used to remove unwanted pages from the computer's hard disk. It is accessed with the *Delete* option on the *PAGE* menu, and presents a list of all the pages on the hard disk, deleting the one you select. A dialog box asks you to confirm that the page should be deleted. Deleting a page does not affect any other files in which it may be included. When you close down Sensoft (*Quit*), a save is automatically carried out which stores on the hard disk all pages that have not previously been "removed" (from RAM) and "deleted" (from the hard disk). (NB. This will not happen in the case of a power cut.) For this reason, remember to 'Remove' (in the 'Edit' window) a file before deleting it, if you do not wish it to keep appearing as a "phantom" page.

4.C.5 The Next function (F2).

This innovative proprietary function lets you move quickly and safely from one carefully configured set-up to the next. The *Next* function saves the current page on the hard disk, copies it under another name, and inserts the copy after the original (in RAM) in a single stage. Simply press [F2] to save the first set-up so that the sound engineer can move on to the next soundcheck, with a different set-up.

4.D Navigating through a file using Next, Prev, Load/Goto

The Next, Prev and Load/Goto keys enable you to:

- send MIDI program changes (OUT)
- send commands remotely to the audio racks (Mix Box and Stage Box)
- refresh the console and the screen
- the Next key also triggers automation (see Section 4.E).

The NEXT button on the console lets you move to the next page in the sequence of pages in RAM. The button lights up to indicate the operation is in progress.

Confirmation is requested if the 'Confirm Previous/Next Page' option is checked in the *General Preferences* menu (8.D.4). If that is the case, confirm with the OK button ([O] or [Enter] on the keyboard) or cancel with the **NEXT** button ([N] or [Escape] on the keyboard).

The **NEXT** command can also be entered on the keyboard with the [Page U]p key; in this case, the change is immediate without confirmation.

The PREV button on the console lets you move to the previous page in the sequence of pages in RAM. The button lights up to indicate the operation is in progress.

Confirmation is requested if the Confirm Previous/Next Page option is checked in the *General Preferences* menu (8.D.4). If this is the case confirm with the **OK** button (O or Enter on the keyboard) or cancel with the **PREV** button ([N] or [Escape] on the keyboard).

The **PREV** command can also be entered on the keyboard with the [Page Up] key; in this case, the change is immediate without confirmation.

LOAD/GOTO : The LOAD/GOTO button gives immediate access to the desired page, by skipping intermediate pages.

Example

On the night of the show, an artist strays from the set list, following song 3 (page 3) with song 7. If you were to use the **NEXT** button, you would have to move through page 4, then 5, then 6 to arrive at 7 – a long and dangerously noisy procedure! Instead you can use the **LOAD/GOTO** button and move directly from page 3 to 7. To do this, press the **LOAD/GOTO** button, select page 7 (using the rotary selection knob) and press **OK.**

4.E Automation (sequencing and calling up pages).

All InnovaSON consoles have a page call-up function that uses MIDI Program Change IN and a '*page send*' function that uses MIDI Program Change OUT. However, only consoles equipped with a Crosstime Fader include programmable page sequencing (i.e. automation).

These functions are controlled from a single window called 'Automation', which is accessed with the [F4] key on the keyboard or via the menu '*UTIL/Automation*'.

4.E.1 Overview

1. In this window, all actions are carried out with the keyboard and/or the mouse.
2. As soon as a cell is opened for input into the sequence, a red cursor appears inside it.
3. To cancel the operation, press [Escape].
4. All operations must be confirmed with the [Enter] key on the keyboard.
5. If you make a typing mistake or want to delete a cell:

   - place the mouse over the cell to be deleted
   - click the right mouse button to open it (if it is not already open)
   - press the [space bar] on the keyboard.

4.E.2 MIDI Program Change OUT

When changing pages, you can send a Program Change OUT message to other peripherals (external effects processors or other drives or recording equipment) so that they load the settings for the chosen track. The Sensory Live sends the Program Change OUT message first, even before changing its own settings.

Program Change sends are managed in the central grid, which displays columns showing the 16 MIDI channels numbered from 1 to 16. These may be labeled (4 characters). The pages are displayed in the List box and the selected page is highlighted with a blue strip.

To define the Program Change OUTs, proceed as follows:

- select the page from which to send the messages by using the mouse or the cursor keys on the keyboard
- right-click on the column of the required channel, and type the program change value (from 0 to 127)
- confirm with the [Enter] key on the keyboard; (if a value contains an error, a window will inform you).

Do not forget to activate MIDI OUT by checking the corresponding Enable box in the Automation window or by typing [Alt+Y] in the main window.



If you want to program different Program Changes for a single page (line), press the [Tab] key on the keyboard when you have entered the first value. It will then confirm the value and move on to the next channel.

To label a channel:

- click in the label cell of the selected channel (located below the numbers)
- type the required label (4 characters)
- confirm with the Enter key on the keyboard.



If you want to label all the channels, press [F3], type the label of the first channel and press [Tab], which, as above, will confirm the label and move to the label of the next channel. To leave this mode, press [Enter] after you have typed the last label To cancel the last label entered, press [Escape].

4.E.3 MIDI Program Change IN

In the same way that the Sensory Live console can control peripherals, peripherals can also control page changes in the console. You can trigger a page change with a Program Change IN message in the software's Automation window. To do this:

- select the page that you wish to be loaded by the message from the external peripheral, (using the [↑] and [↓] cursor keys on the keyboard)
- press the [F3] key, and then use the keyboard to enter the Program Change number (from 0 to 127) that will switch to the required page
- press the [Tab] key on the keyboard to confirm the number and move to the choice of channel; if the value contains an error, a window will inform you
- choose the MIDI channel by typing its value (1 to 16) on the keyboard, and confirm with [Enter]
- now, when the peripheral sends the Program Change command on the chosen channel, the whole InnovaSON system will be updated using the settings of the desired page.



Do not forget to activate 'MIDI IN' by checking the corresponding Enable box in the 'Automation' window, or by typing [Alt+X] in the Main window.

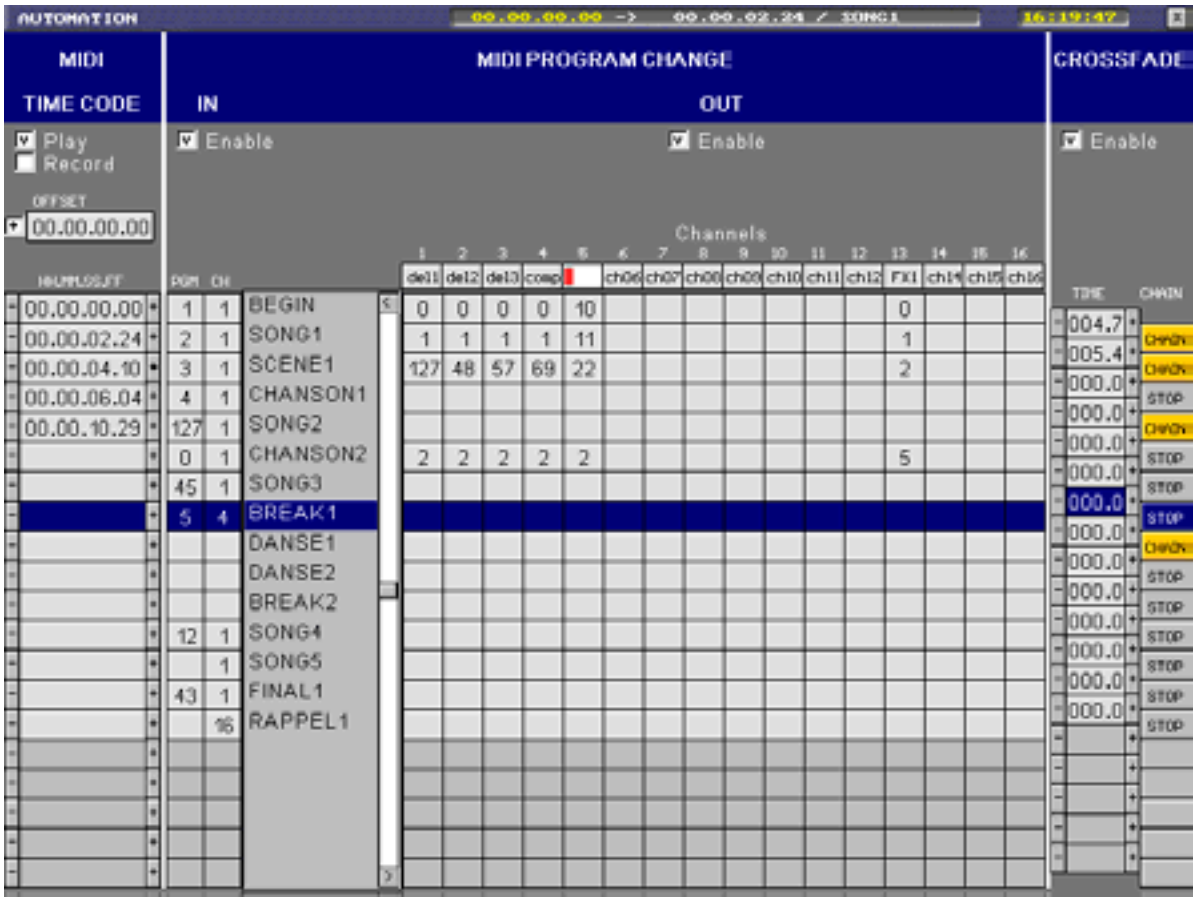
Calling up a page using a MIDI Program Change corresponds to:

- carrying out a Next operation if the page to call up is immediately after the current page
- carrying out a Goto operation if the page to call up is not immediately after the current page.

i.e. The **NEXT** command triggers automation (crossfade), while the **GOTO** command moves directly to the called page without any transition.



You can use Program Changes to control simultaneous page changes on two consoles (either a second InnovaSON console, or another brand's) by programming a MIDI Program Change OUT on the main console and a MIDI Program Change IN on the secondary console. This must be done on the same channel, of course.



4.E.4 MIDI Time Code (crosstime fader only)

At the request of our users, we have made it possible to synchronize page changes using an external peripheral with MIDI Time Code.

MTC is permanently displayed in the upper bar in all Sensoft windows. When a MIDI Time Code message is received through the console's MIDI IN connection, it is instantly decoded and displayed.



There are three operating modes associated with MTC:

- **Off-**MTC is displayed in gray, but has no influence on the console; this is useful when all you want is a direct view on the screen!
- **Play-**MTC is displayed in yellow, and triggers page changes at the recorded times; this is the operating mode used in a synchronized performance
- **Record-**MTC is displayed in red; this mode is used during rehearsals in preparation for a performance and enables MTC times to be recorded directly during a run-though.

Setting the offset

The offset has two parameters:

- the sign (+ or) of the offset
- the value of the offset, i.e. the absolute value difference between the MTC generator's display and the Sensoft MTC display.

These two parameters are set in the Automation window. The sign can be changed by clicking on it and, after clicking in the cell, the value can be entered from the keyboard (in the format indicated in the note below).
All MTC formats are accepted.

Entering a time code

MTC times are entered in the format HH.MM.SS.FF:

- HH = hours (00→23)
- MM = minutes (00→59)
- SS = seconds (00→59)
- FF = frames (00→29)

Programming

There are two ways to program page changes using MTC:

- if the time codes are known precisely they can simply be entered directly into the grid
- if the times are not known precisely they can initially be recorded directly, and then specified more precisely later.

First case

When you have an exact specification of the MTC times for the page changes, you can enter them directly, as follows:

- Call up the 'Automation» grid by pressing [F4].
- Select the first page (in chronological order) using the cursor keys on the keyboard, or the mouse.
- Click on the MTC cell and enter the time (see note at the end of this section).
- Confirm with the [Enter] key on the keyboard.
- Continue in the same way for all the pages to be programmed.

Second case

Say you are engineering a performance with a soundtrack which synchronizes the console using MTC. The file for the performance contains 10 pages. Pages 2, 3, 4, 7 and 8 are to be synchronized by the tape, while pages 5, 6, 9 and 10 are manual changes. As page 1 is at the beginning of the performance, it is loaded when the file is opened. Since you do not know the exact time codes, you take advantage of a special run-through for the sound to "fix" the performance.

1. Make all the necessary connections, and check that the MTC messages are arriving by starting the MTC generator and stopping it again. Look at the MTC display on the console:

- if its value has not changed, there is a connection problem

- if the tape MTC is different (say, by a few frames) from that on the screen, the offset needs to be adjusted (see following paragraph)

- if the MTC of the tape player and that shown on the screen are the same, you are ready to proceed.

2. Move to the page preceding the first automatic page change, page 1 in this case.

3. Bring up the Main Mix window on the screen, and activate Record mode by pressing [Alt+J]. The MTC display will turn red.

4. Start the MTC generator, and let the run-through begin!

5. Press the **NEXT** button on the console at the moment when the page change needs to occur. Do not worry about being too precise, as the time can be refined after the run-through.

- Leave the tape running and repeat step 5 to change to page 3 and then page 4.

6. As pages 5 and 6 require manual changes, you will have to change page not with the **NEXT** button, but with the **GOTO** function. (Using the **NEXT** button would record the time, which would have to be removed later.)

7. The tape is still running, so use **NEXT** again (as in step 5) to record the times for the change to pages 7 and 8.

8. Leave Record mode by pressing [Alt+J], that way you can use **NEXT** to complete the page changes during the run-through without the times being recorded.

9. Now that you have a good approximation, you can refine the times by following the procedure explained in the first case, as described above. The timings can be corrected frame by frame by clicking on the '+' or buttons surrounding the time in the 'Automation' window.

The MTC for any page must be greater than the previous MTCs, and less than the subsequent MTCs. A new page will have an MTC of Off.

Use

When the times have been set and entered into the Automation grid, return to Play mode and send the MTC signals to the console. The pages will change at the programmed times.



MTC has priority, which means that if you want to return to the page preceding the current page, the Sensory Live will immediately return to the last page called by MTC. If you want to return to Manual mode, so that MTC is no longer taken into account, type [Alt+Z] in the Main Mix screen.

4.E.5 Crossfade (crosstime fader only)

This is a very important function, which makes the automation of InnovaSON consoles possible. As we have already seen, Sensoft's pages can be regarded as snapshots of all the console's parameters. So if we wish to move the sound, we must sequence these snapshots, the pages, together like a film.

Example

In a L&R system, we want the singer's voice to move from the Left to the Right. To achieve this, the movement is divided into its elementary parts (pages) – first, the voice is panned directly to the left (first page), then to the center (second page) and finally to the right (third page). Once these three pages have been created, it only remains to animate them to achieve the desired effect.

To do this:

1. Call up the 'Automation' grid.
2. Select the first page of the movement.
3. Click in the Time box at the right of the screen and enter the transition time (fade) in seconds between the first and second pages (between 0.1 and 999).
4. Do the same for the transition time between the second and third pages.
5. Finally, set up the automatic sequence by clicking on the cell in the 'Chain' column. The cell turns yellow, and chain appears instead of stop.

Do not forget to enable the Crossfade by ticking the corresponding Enable check-box in the 'Automation' window, or by typing [Alt+D] in the main window.

Now, when the first page is loaded, pressing the console's **NEXT** button will trigger the fade from all the parameters of the first page to those of the second in the predefined time. On arriving at the second page values, the fade to the third will begin, creating a real movement in sound!

This is one of the simplest possible examples (a single parameter, PAN, and only three pages), but the user's imagination will quickly invent more complex sequences, as long as the following rules are respected:

- create enough pages for the sequence (cut the sequence up into pages, or states of the console)
- set the transition times between the pages

Now anyone can make a film!

The output processing (equalizer, noise gate, compressor and delay) is the only element not treated as a sequence of fades (these parameters are changed in steps rather than as fades). On the other hand, the output faders will fade from page to page.



To avoid abrupt changes, it is therefore advisable only to modify input parameters and output faders in a sequence.

The cross time fader



This special fader makes it possible to control the pre-programmed fade times manually. The times as programmed will apply when the fader is in the middle of its run (the default position). Pushing the fader up shortens the time until it is equivalent to an almost instantaneous transition to the next page (**NEXT**). Lowering the fader below the default position lengthens the programmed time, until at the very bottom the sequence stops on the current page.

This feature, exclusive to InnovaSON, enables the user to control pre-programmed fades manually, adapting them to the live situation.

What happens on the screen?

Firstly, this fader is not shown on the screen, but an area in the middle of the menu bar is given over to it. When the feature is inactive, this area is red, and displays "no crossfade". When the crossfade is active, the area turns gray and displays two values:



- Speed X.XX: related to the physical position of the crosstime fader, expressed as a coefficient between 0 (top) and infinity (bottom), where 1 is the default position in the middle of the fader's run, at which setting the pre-programmed times are applied.

- Time X.X: this is the programmed value in seconds for the transition time, as modified by the crosstime fader.

Example

The transition time between pages 1 and 2 has been set to 10 seconds.

- With the fader in the middle, the Speed displayed is 1.00, so the Time is 1.00 x 10 = 10.0 seconds.
- If the fader is increased this value will tend towards 0. If Speed = 0.5, the Time will be 0.5 x 10 = 5.0 seconds.
- At the maximum setting, the display will show 0.00, corresponding to an immediate transition to the following page (Next).
- If the fader is brought down from its central position (where Speed = 1.00) to Speed = 20.0, for example, Time will become 20.0 x 10 = 200 seconds, or 3.3 minutes.
- At the fader's minimum setting the display will show "+INF", corresponding to the sequence being paused.

As with all the parameters of the InnovaSON consoles, changes are displayed on screen in real time.

When the fade is taking place, the crossfade area of the screen flashes. All changes are visible on the screen, but the faders on the control surface do not move. They remain in the last position they were given before the crossfade, and will only be updated at the end of the process.

5 ADVANCED FUNCTIONS

5.A Basic concepts

Explanations by example of the difference between relative and absolute values:

Suppose that a knob is set to a value of +2, and it is moved to +5. Compared with its previous position (its origin), it has moved three points, so its value is +3 in relation to its origin. If, however, it is moved from +5 to +2, its value would be –3 in relation to the origin of +5. This is the difference between the origin and the destination, which, as we have just seen, can be either positive or negative.

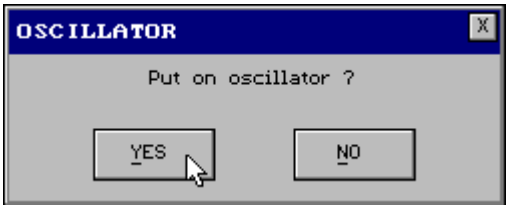
In mathematical terms, the absolute value has no positive or negative sign, only the "number" counts. So, strictly speaking, –3 and +3 both have 3 as their absolute value, which may be useful in some cases, but is of no concern us here.

More useful are the absolute values of the origin and destination, in the above example. These are no longer differences, but precise positions. i.e. the knob is set to either 2 or 5.

Returning to audio, a fader is set to –7 dB (origin), and then pushed up to 0 dB. In relative terms, it has been increased by +7 dB. In absolute terms, it has simply moved from position –7 to 0 dB. In the latter instance, it is the positions that will be stored as needed.

5.B Oscillator

The console is equipped with a variable-frequency test oscillator which can be assigned to the input channels instead of the signal:





1. Select the channel you would like to test with the oscillator.

2. Press the **TEST** button on the console (it will light up) or the [O] key on the keyboard.

3. A window asks you to confirm that you wish to activate the oscillator.

4. Once you confirm, the window showing the label and the patch (signal source) of the channel will show "Oscillator" in red. The **TEST** button on the console lights up, as soon as you select a channel patched to the oscillator.

The oscillator level is –8 dBFs. Its frequency can be adjusted from 16 Hz to 16 kHz, in increments of 1/20 of an octave, in the *General Preferences* screen (8.D.4).

5.C FLAT function

The '*Flat*' function reinitializes the DSP parameters gate, EQ, and compression of a channel to their default values.

1. Select the channel you wish to reinitialize.

2. Press the **FLAT** button on the console (it will light up) to bring up the 'Flat' window.

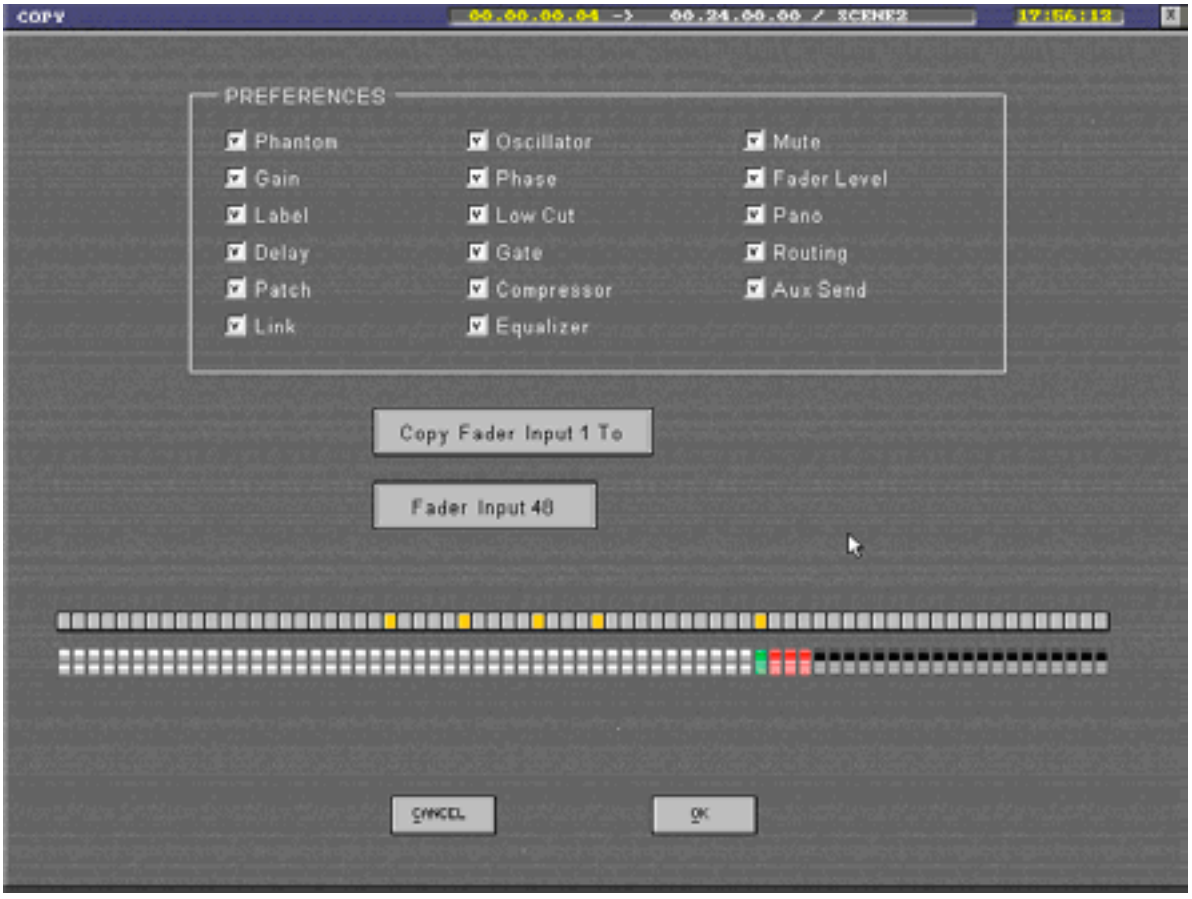
3. Select the parameters you want to reinitialize for the channel using either the associated buttons on the console (they will light up as you do so) or using the mouse in the check boxes.

4. Press the **OK** button on the console, or [Enter] or [O] on the keyboard, or click 'OK' with the mouse to confirm the reinitialization. To cancel the operation, press **FLAT** on the console, [Escape] or [C] on the keyboard, or close the window or click 'Cancel' with the mouse.

The '*Flat*' function can also be activated with the mouse, by clicking on 'Fla't in the EQ box in the Main window. The effect is immediate and irreversible!

5.D Copy function

This function copies settings as absolute values (see Section 5.1, Basic concepts).



Having set the parameters for a channel, it is possible to copy them to other channels:

1. Select the channel to copy. The fader turns green on the screen.

2. Press the **COPY** button on the console or select the '*Copy*' function from the *UTIL* menu. The **COPY** button lights up on the console, and the **SELECT** button for the channel to be copied starts flashing.

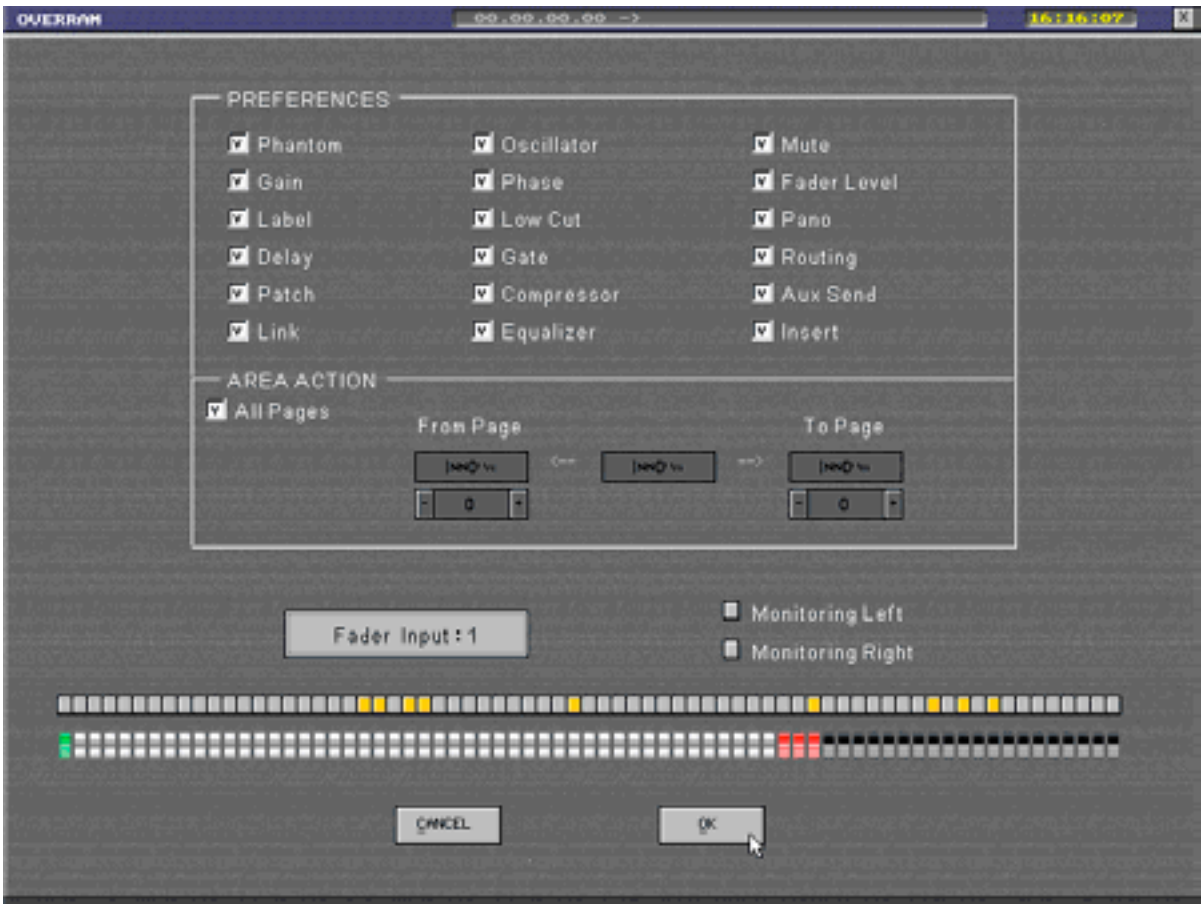
3. Select the destination channels to be set to the reference settings of the channel you are copying.

4. Tick the parameters of the channel to be copied in the 'Preference' box. These preferences are part of the file, and resume their last state each time the 'Copy' window is opened.

5. Press the **OK** button on the console, or [Enter] or [O] on the keyboard, or click 'OK' with the mouse to confirm the copy. To cancel the copy, press **COPY** on the console, [Escape] or [C] on the keyboard, or close the window or click 'Cancel' with the mouse.

5.E Overram

Having set the parameters for a channel, it may be useful to copy these settings to other pages in the file. This is the purpose of the Overram function, which enables you to copy channel parameters into pages in RAM.



Proceed as follows:

1. Press the **OVERRAM** button on the console (it will light up).

2. Select the channel(s) to be copied. The **SELECT** buttons for the channel(s) light up.

3. Tick the parameters of the channel to be copied in the Preference box. The preferences are part of the file, and resume their last states each time the Overram window is opened.

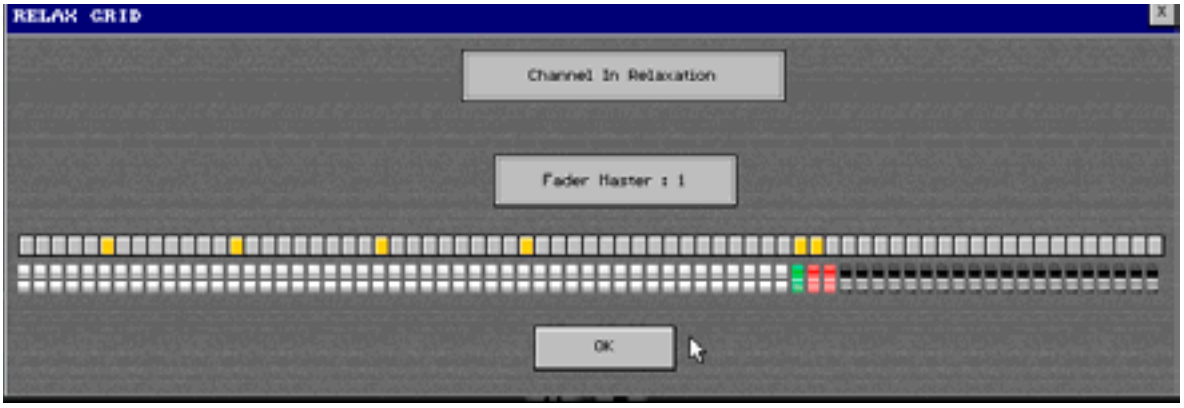
4. Choose the area of action in the Area Action box using the From Page <> To Page command. The All Pages check box allows you to copy the settings to all the pages in the file.

5. Press the **OK** button on the console, or [Enter] or [O] on the keyboard, or click [OK] with the mouse to confirm. To cancel the operation, press the **OVERRAM** button on the console again, [Escape] or [C] on the keyboard, or close the window or click 'Cancel' with the mouse.

'*Overram*' is carried out using absolute values (see Section 5.A, Basic concepts).

5.F Relax

This function enables you to "remove" a channel from the automation (which contains identical settings for all pages in the file; the grid, of course, is unique from file to file).



1. The Relax grid can be accessed using the **RELAX** button on the console, or by choosing *Relax Channel* in the *GRID* menu. The **RELAX** button on the console lights up.
2. Select the channels to be removed from the automation using the **SELECT** buttons (or by clicking with the mouse on the corresponding panel, or using the [←] and [→] cursor keys and [Enter] on the keyboard).
3. The **RELAX** button on the console lights up as soon as you select a channel to remove from the automation. The **SELECT** buttons for the selected channels also light up.
4. To leave the grid, simply press the **RELAX** button or the [Escape] key, or close the window with the mouse. The grid is immediately stored on the hard disk.

All the channel parameters are now removed from the automation.

• Relax is only activated when you move to the pages affected
• Relax does not apply to hyperdriven cards (XO-8D module)
• Relax is irreversible – all the settings for the channels "relaxed" from the affected pages are lost.

5.G Input Links

Links between input channels are defined within a single page.

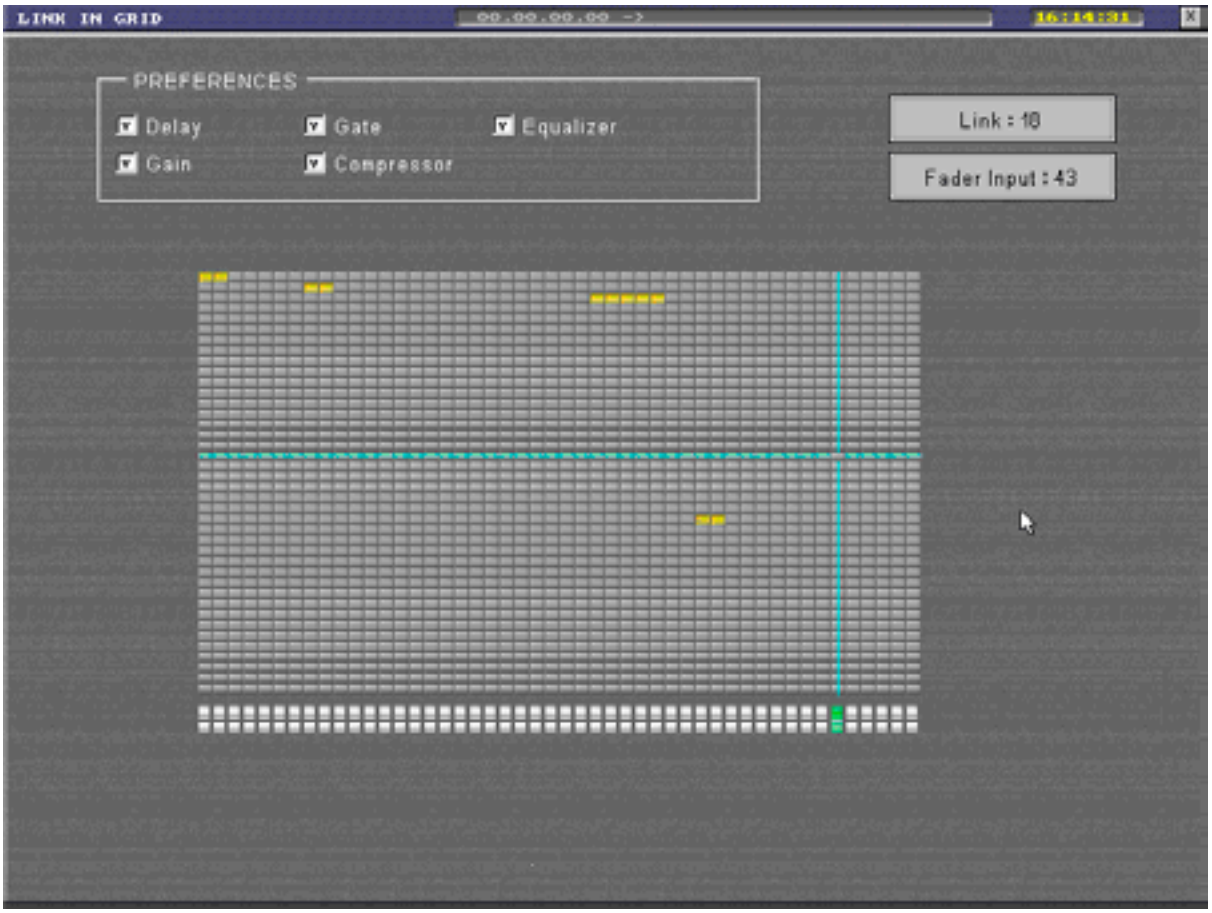
The procedure to follow is similar to that for the other grids. The Input Link enables you to make groups of relative links (stereo, groups of microphones etc.).

A given input can only belong to a single group.

It is possible to control the parameters of several inputs from one of the inputs in the group. These settings then apply to the whole grid.

The Link IN grid lets you view 40 groups of available links for the settings for several input channels. This grid is accessible via the **LINK STRIP** button on the console or the *Link IN/OUT* option on the *GRID* menu. When activated the **LINK STRIP** button on the console lights up.

Any change to the parameters (e.g. gate, compression, EQ, gain) of one channel in a group will be applied with the same (relative) effect to the other channels in the group, as long as the parameter is checked in the grid's preferences. This feature must be used with caution.



What is a relative Link IN?

A variation of x increments in a parameter of a grouped channel causes the same variation of x increments in the same parameter of all the channels in the group.

The On/Off actions are also linked, so that all the channels in the group take the status corresponding to the last change. A channel can be temporarily "removed" from the link by pressing the **SELECT** button (except in the case of On/Off actions): hold down the **SELECT** button for the channel to be "unlinked", change its parameters, and then release the button to "relink" the channel automatically.

Leave the Link IN grid by pressing the **LINK STRIP** button twice, or the [Escape] key twice.

Effect of the links on the inputs

When the input gain is changed (either increased or reduced), all the inputs with the same link number will have their gains modified in the same way.

Example

Fader number	18	21	35	38
Group number	3	8	3	3
Starting gain	0 dB	+30 dB	-15 dB	+30 dB
Final gain	+3 dB	+30 dB	-12 dB	+33 dB

In this table, only the inputs with the same link number as channel 18 will be modified:

The function keys [F5] (reducing the gain by 3 dB) and [F6] (increasing the gain by 3 dB) take the group links in the Main window into account. If the channel being pointed to belongs to an input group, all the channels belonging to this group will be modified.

An Input Link can be temporarily released to modify only the channel being pointed to, independently of its groups, with the function keys Alt+F5 (reducing the gain by 3 dB) and Alt+F6 (increasing the gain by 3 dB).

5.H Output links

Links between physical outputs are defined within a single page and as with Link IN, these settings apply to the whole grid.



The procedure to follow is similar to that for the other grids.

The Output Link enables you to create groups of relative links (stereo, multi-broadcast, multitrack outputs etc.).

The Link OUT grid lets you view 40 groups of available links, to group together the settings for several output channels.

A given output can only belong to a single group. You can control the parameters of several outputs from a single output in the group.

To access the Link OUT grid, just press the **LINK STRIP** button on the console twice, activate the *Link IN/OUT* function on the *GRID* menu and press the [Escape] key on the keyboard. When activated, the **LINK IN/OUT** button on the console lights up. Any change to the settings (gate, compressor, EQ, delay, gain for XO-8D hyperdriven cards) of one output in a group is applied with the same (relative) effect to the other outputs in the same group, as long as the parameter is checked in the grid preferences.

What is a relative Link OUT?

A variation of x increments in a parameter of a grouped output causes the same variation of x increments in the same parameter of all the outputs in the group.

The On/Off actions are also linked, so that all the outputs in the group take the status corresponding to the last change.

Leave the Link OUT mode by pressing the **LINK STRIP** button or the [Escape] key on the keyboard.

Effect of the links on the outputs.

If the Mute status of an output is changed, all outputs with the same link number will have their Mute statuses changed in the same way.

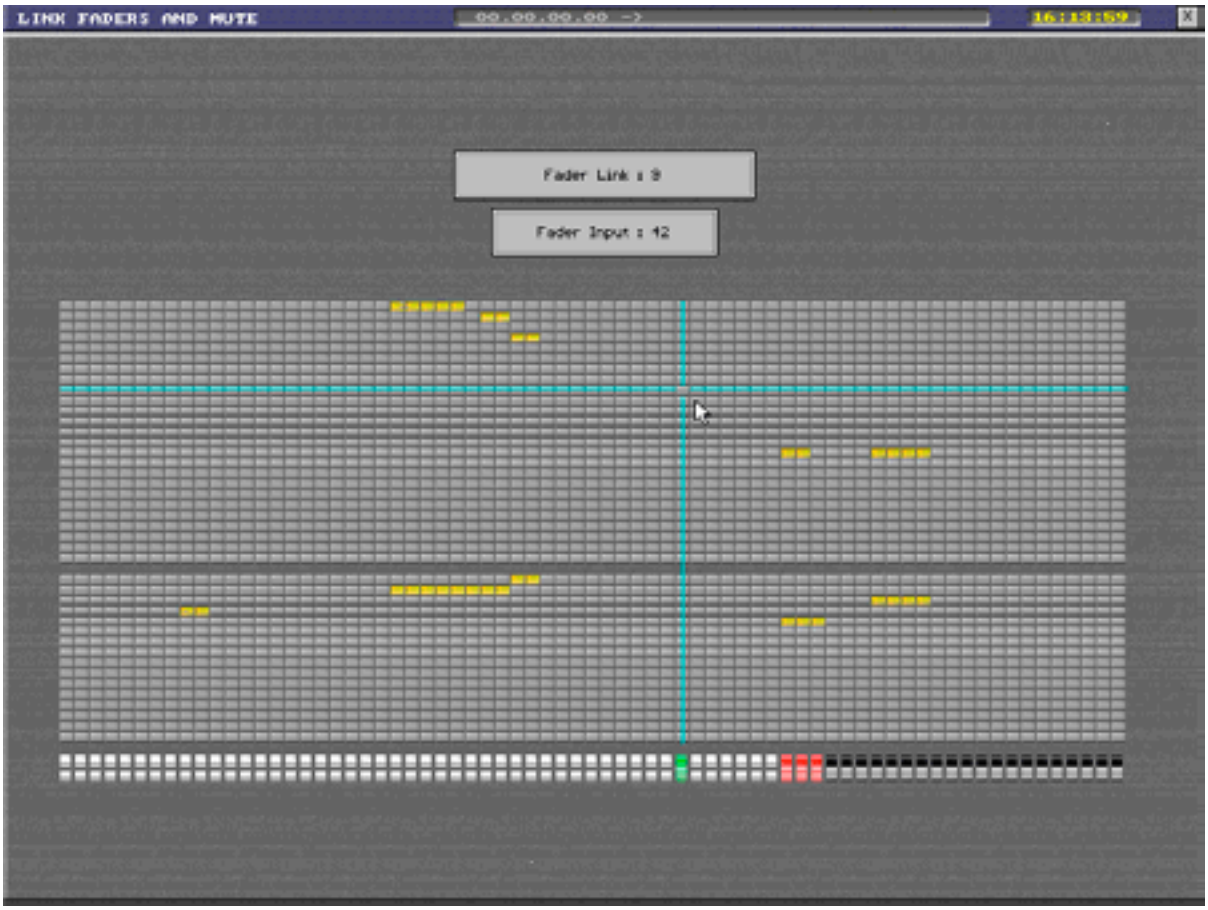
Example

In this screen, only outputs with the same link number as channel 12 will be modified:

The function key [F8] (Mute active/inactive) takes the group links in the Muxi window into account (see the example at the end of 5.K). If the channel being pointed to belongs to an output group, all the channels belonging to the group will be modified.

5.I Fader links and Mute links

Links are defined within a single page.



The procedure to follow is similar to that for the other grids. The '*Fader Link*' function is accessed by pressing the **LINK LEVEL** button on the console, or with the *Link Faders* function on the *GRID* menu. When activated, the **LINK LEVEL** button on the console lights up.

- 24 groups of mixing links are available for controlling a group of several faders with a single fader (this function is equivalent to the VCAs found on analog equipment)

- 16 groups of Mute Links are available in the same grid, to control a group of several mutes with a single mute.

In this window, all the faders on the console are shown, and inputs, generals or Auxes can be grouped without limitations.

These groups are "exclusive", i.e. a given fader can only belong to one group at a time. The "link" for the Masters is permanently activated, but the Input and Aux links only take effect when the console is showing the fader levels and not the auxiliary output levels (Aux Send/yellow faders).

For an Input Fader Link to work, the channel selection must be an input or a master (priority). The Aux faders then show the auxiliary output levels for the selected channel.

For an Aux Fader Link to work, the channel selection must be a master or an Aux. The input faders then show the output levels for the selected Aux.

The Mutes Link is permanently activated. A fader or a mute may be temporarily "unlinked" by holding down the **SELECT** button for the channel in question. After altering any required parameters, release the **SELECT** button and the channel is then automatically "relinked".

Mixed links should be avoided if you can, as certain consequences, although entirely logical, may be surprising.

What is a relative Fader Link?

A variation of x dB to a grouped fader causes the same variation of x dB to the faders of all the channels in the group.

Fader Links

To make a fader link, proceed as follows:

In the grid, each line corresponds to a group of links that can be selected according to your requirements. Use the rotary selection knob (or the mouse or the cursor keys on the keyboard) to select the number of the group of links (or lines). Select the faders to be linked using Select (or the mouse or the cursor keys on the keyboard), and confirm with **OK** (or [Enter] on the keyboard).

The procedure is the same for all the other groups of links (lines to lines).

Mute Links

Proceed in the same way, as for Fader Links (above), keeping in mind that the Mute Links are totally independent of the Fader Links.

5.J Request Mode (RQST)



Request mode gives a quick view of the state of the console for each function.

- +48 V (On/Off)
- Phase (On/Off)
- Low-cut (On/frequency selection/Off)
- Gate (On/Off)
- Compressor (On/Off)
- Equalization (On/Off)
- Oscillator (On/Off)
- LINK STRIP button (once) = (Link In number)
- LINK STRIP button (twice) = (Link Out number)
- LINK LEVEL button (once) = (Fader Link number)
- LINK LEVEL button (twice) = (Mute Link number).

In this mode, all the buttons in the Channel Control panel switch off, except the **+48 V** button, which by default represents the '*Request*' function. The result is displayed on the console's **SELECT** buttons (not on the screen), which light up when the current Request function is placed on the corresponding channels.

In addition, the '*Request*' function lets you change the On/Off state of the various functions, by pressing the **SELECT** buttons for each channel.

This window is only accessed via the **REQUEST** button on the console.

You can leave the window either by pressing the **REQUEST** button again, by pressing the **OK** button on the console or [Escape] on the keyboard, by clicking on **OK** or by closing the window with the mouse.

Displaying link group numbers

The Request function can display the different link groups:

- press the **REQUEST** button on the console
- press the type of link required (LINK LEVEL, LINK STRIP) on the Channel Control panel.

The labels disappear, to be replaced where appropriate by the numbers of the link groups. This makes it possible to see at a glimpse the links between channels, because channels that are linked together display the same number.

The number shown corresponds to the number of the line in the Fader Links grid (Link Level) and the Input Links grid (Link IN), or the column number in the Output Links grid (Link OUT).

Displaying the Lowcut filter

In the 'Request' window, pressing the **LOWCUT** button will display "Lowcut filter (Current freq./Off)" on the screen. The Lowcut has a specific characteristic – turning it On requires you to choose a cut-off frequency. The cut-off frequency proposed will be the last low-cut frequency selected, but it can be changed by pressing **SELECT** repeatedly. The cut-off frequency is shown on the labels.

5.K MUXI window

The Muxi window gives a quick view of all the MUXIPAIRE's physical outputs (all audio racks).

It can be accessed with the **MUXI** button on the console, which lights up when this screen is displayed.

On the keyboard press [Alt+M], or select the *Muxi Screen* option in the *UTIL* menu, or you can click on the minimize window button at the top right of the Main screen with the mouse.

This screen provides the main access route to the MUXIPAIRE operating system. It is used to monitor the output signals in real time.

The screen is divided into two areas:

- the information screen in the upper half (identical to the Mix screen)
- the lower half, reserved for pointing to and selecting channels, which are permanently displayed (64 selection cells).



1. The information in the upper half of the screen

This section displays the software version, the filename, the menus, the transmission status, the presence of the console, the names of the previous, current and next pages, the VU-meters (peak, VU and left/right), as well as:

- all the parameters of the hyperdriven modules (XO-8D, DO-8X)
- note that for the MO-8D and DO-8A modules, the central part is grayed out and cannot be accessed.

Using Direct I/O, the preamp parameters (gain and +48 V) are visible. Phase is only possible with hyperdriven modules.

2. The lower section of the screen

This displays 64 rectangular selection cells, which can be selected by moving the blue pointer using the cursor keys on the keyboard, or by clicking with the left button on the mouse. When the pointer is stationary over one of these cells, the cell is selected.

To give clearer information about the different states of the input/output pairs, various details are either present or absent inside each cell. The cells are grouped in blocks of eight, respecting the order of the slots in which the modules are actually present, with the type and position being indicated clearly below each block.

Example

Xdrive Output Board (XO-8D).
If "No Output Board" is visible, do not worry – just put a module in the slot!

In contrast to the traditional analog identification (channel 1, channel 2, ..., channel 64), it is preferable to use the alphanumeric identification proposed by default (A1, A2, ..., H8), which is much more representative of the physical cabling used by the Sensory Live.

Example

The kick drum microphone will not be requested on 28, but on D4.
If the user insists that the kick drum should be plugged into the 28th XLR, this can be translated by clicking on [Alt+A]. However, when on the road, the user will need a converter to translate this quickly into slot D and printed socket 4.
In each cell, the following are listed:

- the reference of each output (e.g. D4 = Slot D, XLR no. 4)
- the mute status specific to this output (red spot)
- its VU-meter
- what the output is receiving is displayed just above the cell; for a mix, for example, you might see "M01" for the Left Master fader, M02 for the right, M03 for the Mono, M04 for GrAux 1, etc
- for an input sent directly (Direct I/O), its alphanumeric reference (A1 for slot A, XLR no. 1)
- the +48 V status of an input sent directly to this output, shown as a yellow spot when it is activated.

Labels can be entered using the [F3] key on the keyboard. If an output receives an input directly (Direct I/O), the label for the input will be requested, followed by that of the output; if an output receives a mix, only the output's label will be requested (4 characters maximum). [Alt+F3] can always be used from this screen for sequential labeling.



A Mute for a physical output may be active without being indicated on the 'Mute' buttons of the control surface. This is because two mutes are possible:

- **the Mute shown on the control surface, which corresponds to sending nothing to the bus (cutting at mix output)**
- **the Mute shown on the Muxi screen, which is a total mute on the physical output.**

For this reason, if a mute is requested on the Muxi screen, it has priority, leading to total silence on this output. If you have no sound, despite the activity of the VU-meters and the fact that no Mute is shown on the console, make sure that the outputs concerned are not muted via the Muxi screen.

Example

You may wonder why there are two mutes. For more silence? Well, not quite! As mentioned in Section 3.D.1, the busses may be allocated to several tasks (using multiple outputs for recording, broadcast with a delay, engineering the sound in different places, etc.), and in this context the Mute function for the physical outputs makes sense, e.g. for selective listening : main broadcast, then only delay 1, then delay 2 etc. This enables you to refine each setting according to the location and the acoustic systems being used, and would not be possible using the control surface Mute, which would cut all sends.

5.L Off Line

This mode enables you to work on, or correct the current file, without immediately affecting the parameters. It can be accessed by pressing the **OFF LINE** button on the console or the [Alt+O] keys on the keyboard.

It has higher priority than all the other modes. When it is activated, a red indicator lights up at the top of the screen, and the **OFF LINE** button on the keyboard lights up.

You can now program all the pages in the current file, without affecting the live sound.

This mode is equivalent to unplugging the computer from the MC-64 control module.

As a result, the computer no longer exchanges information with the audio racks.

This leads to a few changes in the display:

- the peak-meters on the screen are inactive, and all remain at the top of their range
- the status window displays 'Off Line', while the VU-meters on the console directly controlled by the audio rack reflect the signals which are still active in the rack.

After saving, re-enter [Alt+O] on the keyboard, which deactivates the 'Off Line' mode. Sensoft then returns to the last active settings, and resumes giving remote commands to the racks (equivalent to the '*Goto*' function).



If the current page has been changed off line, these changes will take immediate effect.

5.M Stuck button messages



If a button on the console is stuck on or off, a window opens and informs you.

To close the window, click on 'OK' or press the **OK** button on the console, or [Enter] on the keyboard.

A button may become stuck inadvertently; by a heavy object placed on the console, such as an ashtray (forbidden!) or a notebook, for example. Or perhaps a strand of tobacco is preventing a button from rising properly.

It is also possible that a button may develop a fault. In this case, please contact our maintenance staff, who will make every effort to put the fault right as quickly as possible.

5.N Modifying the PAN CENTER curves

This operation is possible but very delicate. Before trying it yourself, please contact our authorized maintenance services.

5.O Modifying the VU meters display

This is another advanced function, to be handled with caution. It is possible to customize the VU-meter displays with help from our technical services (http://www.innovason.com).

6 QUICK START

6.A Summary of functions

Routing inputs to bus is to be done with select buttons simultaneous action or with mouse clic.

Menu FILE [Alt+F]	
Save	save the whole folder set up
Save as	duplicate and rename the whole folder, from the actual status
Load	change the current folder
Edit	open the folder edit window (play list)
Import	read a folder from a floppy disk
Export	save a file on a floppy disk
Delete	remove a whole folder, including its related pages

Menu PAGE [Alt+P]	
Save	save the active page on disk
Save as	rename the active page, from the last save
Load	download the selected page from hard disk (and replace previous version of the same name)
Goto	access to the selected page from the RAM
Remove	remove the selected page from the play list (RAM)
Insert	insert the selected page after the active page
Delete	delete the active page from the folder on the disk

Menu GRID [Alt+G]	
Patch IN	physical inputs to desk channels assignements matrix.
Patch OUT	mix buss assignement matrix to outputs
Link IN/OUT	once - channel to link groupe assignement matrix twice - x-outputs to link group assignement matrix
Link Faders	Fader and Mute Link matrix
Fader Start	faders-start assignement matrix. (if option installed)
Relax channel	assignement matrix for channel to extract from the automation (manual)
Aux stéréo	declaration screen of Mono or Stereo status in Aux
Post Fader	pre/post faders statuts declaration per bus er group

Menu Util [Alt+U]	
General Preferences	desk general parameters
Audio Rack Config	hardware configuration panel to program off line without the desk
OverRam	update throughout the whole folder selected to selected channels and parameters
Copy	copy selected parameters to selected channels
Automation	times and automation stops definition and validation (if installed)
Mute Keys	mute keys set up (if option installed)
About	system information and configuration
Help	keys and shortcuts help screen
Muxi screen	access to muxipaire screen (Outputs view)
Quit	Sensoft exit and back to MS-DOS

6.B Keyboard shortcuts

You can display keyboard shorcuts list by pressing [F1] (HELP) on the keyboard.

Function	**keyboard**	**Mouse**	**Desk**
Label	[F3] ou [Alt+F3]		
Gain	[F5]/[F6] ou [Alt+F5]/[Alt+F6]	Left/Right click on gain button	knob **GAIN**
+48 V	[F7]	L 48V window	button **48 V**
Mute	[F8]		button **MUTE**
Off line	[Alt+]		button **OFFLINE**
Cue	[C]		button **CUE**
Oscillator	[O]		button **TEST**
Next	[Page Up]		button **NEXT**
Previous	[Page Dn]		button **PREV**
Delay		L on Delay window +/-	
EQ ON/OFF		L on EQ button	button **EQ ON**
EQ adjust		L/R on EQ button	**EQ** knobs
Gate ON/OFF		L on Gate button	button **GATE**
Gate adjust		L/R on Gate button	**GATE** knobs
Comp ON/OFF		L on Comp button	button **COMP**
Comp adjust		L/R on Comp button	button **COMP**
Lowcut		L on Lowcut button	button **LOWCUT**
Select channel	cursor keys [←]/[→]	L on Fader	button **SELECT**
Level channel	cursor keys [↓]/[↑]	R on Fader	FADER
Routing		R on Fader to route	button **SELECT**
Delink IN			button **SELECT**
Delink OUT			button **SELECT**
Time	[Alt+T]		
Alpha/Decimal	[Alt+A]		
Bargraphs Compress	[Alt+B]		
VU-meters curve	[Alt+V]		
Configuration hard	[Alt+C]		
Edit	[Alt+E]	Menu *FILE* + *EDIT*	button **EDIT**
Save Page	[Alt W]	Menu *PAGE* + *Save*	button **SAVE**
Load Page	[Alt+L]	Menu *PAGE* + *Load*	button **LOAD**
Insert Page	[Alt+I]	Menu *PAGE* + *Insert*	
Patch IN	[F11]	Menu *GRID* + *Patch IN*	button **PATCH IN**

Function	keyboard	Mouse	Desk
Patch OUT	[F12]	Menu *GRID+ Patch OUT*	button **PATCH OUT**
Mix Link In		Menu *GRID+ Link Process*	button **LINK STRIP**
Process Link OUT		Menu *GRID+ Link Process*	button **LINK STRIP**
Link Fader		Menu *GRID+ Link Fader*	button **LINK LEVEL**
Link Mute		Menu *GRID+ Link Fader*	button **LINK LEVEL**
Accès Pré/Post Fader		Menu *GRID + Post Fader*	button **PRE/POST**
OverRam	[F9]	Menu *UTIL + OverRam*	button **OVERRAM**
Copy	[F10]	Menu *UTIL + Copy*	button **COPY**
Help	[F1]	Menu *UTIL + Help*	
Muxi/Mix screen	[Alt+M]	window reduction button	button **MUXI**
Midi IN ON/OFF	[Alt+X]		
Midi OUT ON/OFF	[Alt+Y]		
MTC play ON/OFF	[Alt+Z]		
MTC record ON/OFF	[Alt+J]		
Crossfade ON/OFF	[Alt+D]		
Menu FILE	[Alt+F]		
Menu GRID	[Alt+G]		
Menu PAGE	[Alt+P]		
Menu UTIL	[Alt+U]		
Insert Next	[F2]		
Automation	[F4]		

7 CONFIGURING AND UPDATING SENSOFT SOFTWARE

InnovaSON consoles are shipped with the most recent Sensoft® version. Sensoft version number is displayed in the blue title bar of the main mix screen.

Sensoft is downloadable for free from our website (http://www.innovason.com) allowing the user to update to the most recent Sensoft version for his console. The downloaded file is used to create a Sensoft installation diskette, but is not in itself a useable program. To create the installation diskette with the file you have downloaded have a floppy diskette ready and double-click on the file.

7.A INSTALLATION

There are three possibilities: update Sensoft (see 7.A.3), install it over an existing version (see 7.A.1) or make a full installation of the operating system and Sensoft (see 7.A.2).

7.A.1 Re-installation

If the first digit of the Sensoft version to install is different than the one already installed (i.e. installing Sensoft 7.1.9 and the console has Sensoft 6.xx) re-install Sensoft, do not make an update.

First of all save the existing show files on a floppy disk using *Export* in *FILE* menu. This is because previous version will be lost and the show files of the previous version probably won't be compatible.

Then quit Sensoft with *Exit* in *UTIL* menu.

Insert the installation diskette in the floppy drive of the console and run the installation by typing **a:install** at the C:\> or C:\SENSOFT> prompt:

```
C:\>a:install
```

You will have to confirm the erasing of the previous version by typing [Y] and [Enter] on the keyboard.

```
Sensoft Software Install ...

Delete directory "C:\sensoft" and all its subdirectories? [yn]
```

```
PKUNZIP (R)    FAST!    Extract Utility    Version 2.50   03-01-1999
Copr. 1989-1999 PKWARE Inc.  All Rights Reserved.  Shareware Version
PKUNZIP Reg. U.S. Pat. and Tm. Off.

■ Pentium II class CPU detected.
■ EMS version 4.00 detected.
■ XMS version 3.00 detected.

Searching ZIP: A:/SENSOFT.ZIP
  Inflating: C:/SENSOFT/accueil.bmp
  Inflating: C:/SENSOFT/divers.bmp
  Inflating: C:/SENSOFT/fond.bmp
  Inflating: C:/SENSOFT/mix0.bmp
  Inflating: C:/SENSOFT/mix1.bmp
  Inflating: C:/SENSOFT/mix2.bmp
  Inflating: C:/SENSOFT/BIG.BIN
  Inflating: C:/SENSOFT/LITT.BIN
  Inflating: C:/SENSOFT/MEDIUM.BIN
  Inflating: C:/SENSOFT/MOUSE.BIN
  Inflating: C:/SENSOFT/NORM.bin
  Inflating: C:/SENSOFT/SMALL.BIN
  Inflating: C:/SENSOFT/SENSOFT.EXE
  Inflating: C:/SENSOFT/16STUB.EXE
  Inflating: C:/SENSOFT/DPMI16BI.OVL
  Inflating: C:/SENSOFT/RTM.EXE
  Inflating: C:/SENSOFT/VM_207.HEX
  Inflating: C:/SENSOFT/TERMINAL.EXE

Good Job !
C:\SENSOFT>
```

When 'Good Job' is displayed, the software is installed.

7.A.2 Complete Installation

If the on-board PC computer in the console is replaced, you should install first, the operating system, and then, Sensoft. It's very easy and can be achieved in a few steps. The complete installation process will format the flash hard disk drive (Disk On Chip) and optimise the operating system configuration.

As the flash memory will be reformatted, it's necessary to save the existing files on a floppy disk with *Export* in *FILE* menu, and import them after the installation to get back the show files with *Import* in *FILE* menu.

Insert the 'System' diskette in the console floppy drive and reboot the console. The hard disk will be formatted.

```
SYSTEM 1.2 STARTING INSTALLATION ...

Do you have a DiskOnChip (Y\N) ?
```

Type [Y] to validate or [N] to cancel.

```
SYSTEM 1.2 STARTING INSTALLATION ...

Do you have a DiskOnChip (Y\N) ? Y
WARNING: All data on DiskOnChip will be destroyed. Continue (Y\N) ?
```

Type [Y] on your keyboard to begin the formatting.

```
Medium physical size 8192 KBytes
Boot-image size is 48 KBytes

Finished 8192 KBytes
Format complete. Formatted size is 7960 KBytes.
Please reboot to let DiskOnChip 2000(R) install itself.
```

Once the formatting is finished, reboot/restart the console with the System diskette left in the floppy drive.

```
NEXT STEP OF INSTALLATION

System Transferred
Type in keyboard 'A' key
```

The operating system is transferred and you need to type the 'A' key for the Qwerty or Azerty keyboard detection.Then system installation continues.

```
    1 file(s) copied
    1 file(s) copied
    1 file(s) copied
    1 file(s) copied
A:\DOS\DELTREE.EXE
A:\DOS\DOSKEY.COM
A:\DOS\SYS.COM
A:\DOS\HIMEM.SYS
A:\DOS\KEYB.COM
A:\DOS\KEYBOARD.SYS
A:\DOS\MEM.EXE
A:\DOS\MOVE.EXE
A:\DOS\XCOPY.EXE
A:\DOS\LABEL.EXE
A:\DOS\CHOICE.COM
A:\DOS\QBASIC.EXE
A:\DOS\EDIT.COM
A:\DOS\DFORMAT.EXE
A:\DOS\MOUSE.EXE
A:\DOS\FORMAT.COM
A:\DOS\FDISK.EXE
A:\DOS\DOC50.EXB
A:\DOS\SCANDISK.INI
A:\DOS\DINFO.EXE
A:\DOS\SCANDISK.EXE
A:\DOS\DEFRAG.EXE
A:\DOS\UNDELETE.EXE
    23 file(s) copied

PKUNZIP (R)    FAST!    Extract Utility    Version 2.50    03-01-1999
Copr. 1989-1999 PKWARE Inc.  All Rights Reserved.  Shareware Version
PKUNZIP Reg. U.S. Pat. and Tm. Off.

• Pentium class CPU detected.


                END OF INSTALLATION

      REMOVE YOUR FLOPPY DISK AND REBOOT YOUR SYSTEM
```

Once the system has been installed, you have to remove the diskette and switch off all the console components (audio racks and control surface).

A few second later, switch on the components, Stage Box first, then the Mix Box, then the control surface.

As the operating system is now installed, Sensoft installation can be processed.

Insert the Sensoft installation diskette and type :

```
C:\>a:install
```

Then hit [Enter] key.

```
PKUNZIP (R)    FAST!    Extract Utility    Version 2.50   03-01-1999
Copr. 1989-1999 PKWARE Inc.  All Rights Reserved.  Shareware Version
PKUNZIP Reg. U.S. Pat. and Tm. Off.

• Pentium II class CPU detected.
• EMS version 4.00 detected.
• XMS version 3.00 detected.

Searching ZIP: A:/SENSOFT.ZIP
  Inflating: C:/SENSOFT/accueil.bmp
  Inflating: C:/SENSOFT/divers.bmp
  Inflating: C:/SENSOFT/fond.bmp
  Inflating: C:/SENSOFT/mix0.bmp
  Inflating: C:/SENSOFT/mix1.bmp
  Inflating: C:/SENSOFT/mix2.bmp
  Inflating: C:/SENSOFT/BIG.BIN
  Inflating: C:/SENSOFT/LITT.BIN
  Inflating: C:/SENSOFT/MEDIUM.BIN
  Inflating: C:/SENSOFT/MOUSE.BIN
  Inflating: C:/SENSOFT/NORM.bin
  Inflating: C:/SENSOFT/SMALL.BIN
  Inflating: C:/SENSOFT/SENSOFT.EXE
  Inflating: C:/SENSOFT/16STUB.EXE
  Inflating: C:/SENSOFT/DPMI16BI.OVL
  Inflating: C:/SENSOFT/RTM.EXE
  Inflating: C:/SENSOFT/VM_207.HEX
  Inflating: C:/SENSOFT/TERMINAL.EXE

Good Job !
C:\SENSOFT>
```

When the message 'good job !' is displayed, Sensoft is installed and the installation process is finished.
To run Sensoft, just type **Sensoft** at the C:\SENSOFT> prompt :

```
C:\SENSOFT>sensoft
```

and hit [Enter) key.
Sensoft is now running and has to be configured. Please see 7.B Configuration section.

7.A.3 UPDATING

A Sensoft update will provide software improvements or bug fixes but has no new functions or new capabilities. Updating will keep any existing show files which you may have set up. Essential / Grand consoles can be updated from version 6.5 to 6.6, and from version 7.1.x to 7.1.y (i.e. version 7.1.9 to version 7.1.11 - update from version 7.1.x to version 7.2.x is irrelevant).

Exit Sensoft, then insert the Sensoft installation diskette and type **a:install** at the C:\> or C:\SENSOFT> prompt:

```
C:\>a:update
```

and hit [Enter] key.

```
Sensoft Software Update ...

PKUNZIP (R)    FAST!    Extract Utility    Version 2.50   03-01-1999
Copr. 1989-1999 PKWARE Inc.  All Rights Reserved.  Shareware Version
PKUNZIP Reg. U.S. Pat. and Tm. Off.

■ Pentium II class CPU detected.
■ EMS version 4.00 detected.
■ XMS version 3.00 detected.

Searching ZIP: A:/SENSOFT.ZIP
  Inflating: C:/SENSOFT/SENSOFT.EXE

Good Job !
C:\SENSOFT>
```

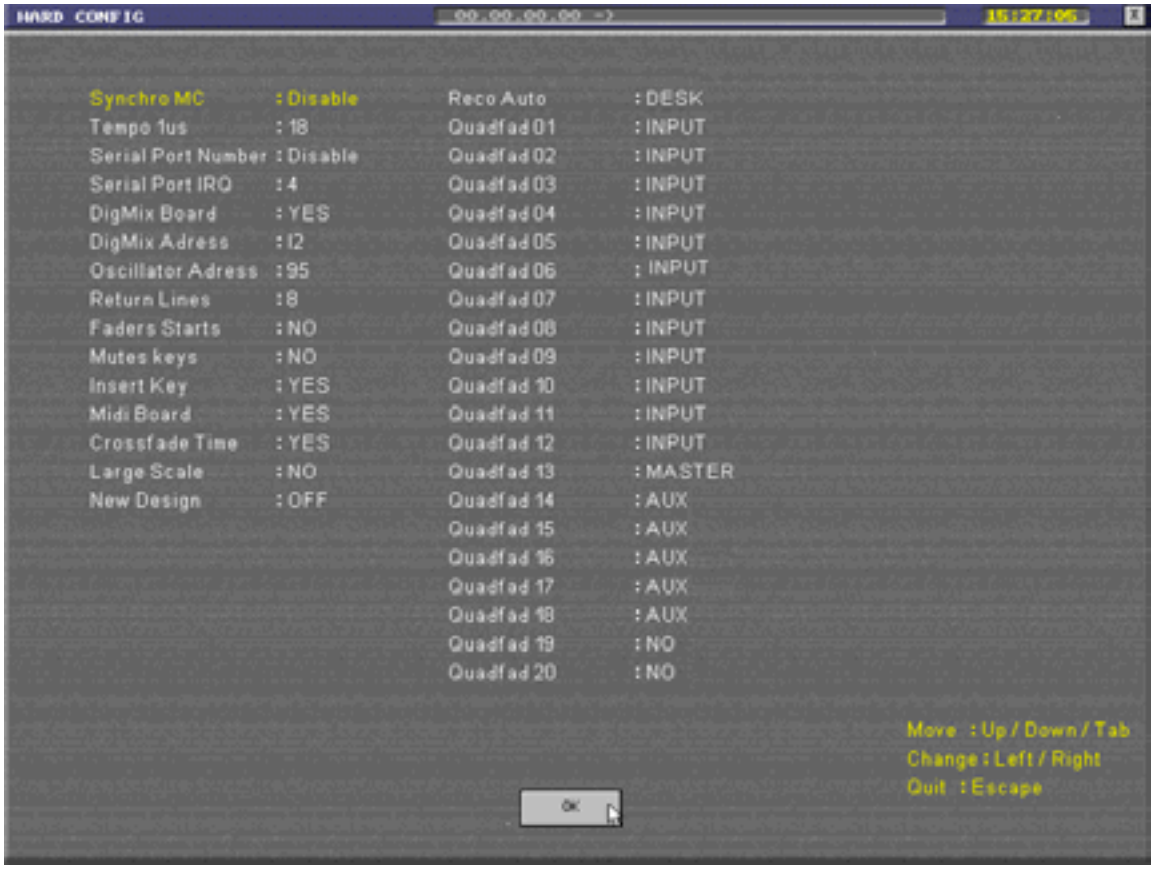
When the message 'good job !' is displayed, Sensoft is installed and the installation process is finished.
To run Sensoft, just type **sensoft** at the prompt :

```
C:\SENSOFT>sensoft
```

and hit [Enter] key.

7.B CONFIGURATION

After a new installation of Sensoft the Hard Config screen will be displayed after 10s. If it is not, you can display this screen by typing the password '**innova**' having selected the *About* command in the *UTIL* menu.



This screen allows the configuration of the control surface and communication settings between the console components (Stage Box, Mix Box, Control surface). You will get the best performance from your console components if you adhere to the following rule. Consoles are delivered with an optimised configuration and it is strongly recommended to keep the default settings until our technical support service ask you to change them.

Possible values for parameters:

Synchro MC (3 options) :

- **Disable** (default value) when using a PC without the console
- **ACK** if a MC64 board 'Large Scale' version 3.x is used
- **Tempo** when using a standard console : after a new installation Sensoft needs to adjust the **Tempo 1µs** value from the computer speed. To activate the synchronization, hit the [➔] key until the **Tempo** word is displayed as the value for **Synchro MC** cell and then hit the [➔]key once more to synchronise the system. The value **WAIT**… may appear for during a short period before the system displays **Tempo** again.

Serial port (3 options)

- **Disable** (default value) when using a PC without the console
- **1** for an Essential / Grand (Live or Actor series)
- **2** for a Compact (Live or Actor series

DigMix board :

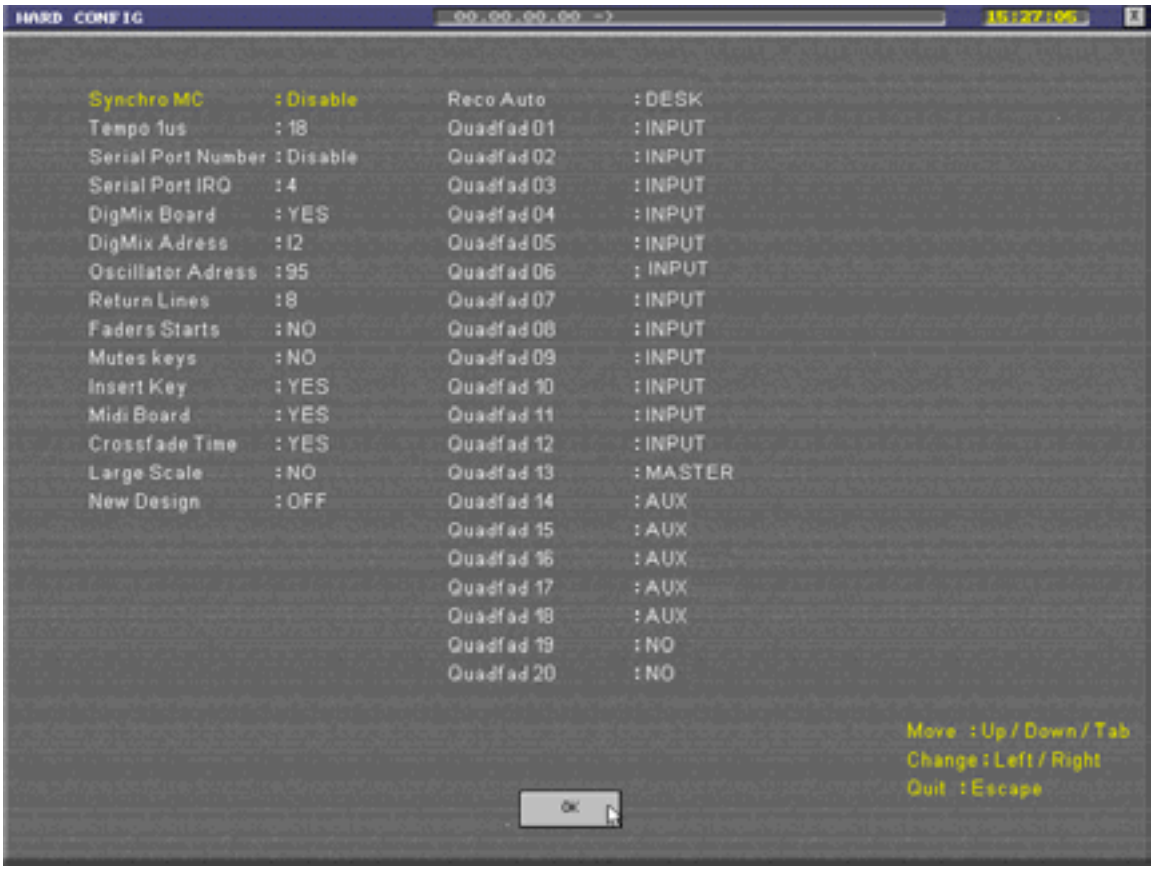
- **YES** if there is a DSP module present
- **NO** if the system is a Muxipaire

DigMix address :

- The default address value for the DSP is **I2**

Oscillator address :

- The default address value is **95**



Return Line :

- The DSP module has **8** return lines.

Faders start :

- **YES** for a console with faders start
- **NO** for other consoles

Mutes keys :

- **YES** for a control surface with an extended monitoring panel (System series)
- **NO** for other control surfaces

Insert key

- **YES** for controle surface with an **INSERT** switch on the Channel Control panel.
- **NO** for other control surfaces

Midi board

- **YES**, as InnovaSON consoles are provided with a Midi board

Crossfade time :

- **YES** for control surface with a cross time fader
- **NO** if there is no cross time fader

New Design

- **ON** when using Sensoft in the USA
- **OFF** otherwise

Then exit this screen using the [Escape] key.
The main mix screen will then appear with the following :

- the "DSP RESET " window at DSP reset
- the "XO-8D" window at XO-8D Hyperdrive reset
- and the "DESK" window establishing the communication between the internal PC and the control surface.

Check for good module detection with [Alt+C] keys.

Select *About* in the *UTIL* menu ([Alt+U] or use the mouse). The 'About' window shows the software version of the control surface and the MC-64 module, and also the number of pages the computer RAM memory can handle:

- MC-64 version : **2.5** or, in case of earlier version, **Unknown,** and the owner needs to upgrade the MC64 module. Please contact the technical support service at http://www.innovason.com.
- DESK version : **VN_2.06** ou **VN_2.07**, if **not connected** is displayed, please contact the technical support service at http://www.innovason.com.
- MAX PAGES : **1524**, depending on the PC RAM size

8 TECHNICAL CHARACTERISTICS

Introduction

The philosophy that guides InnovaSON in the design of the Audio Rack is the direct result of many years of experience.
Well-known professionals have made a significant contribution to our search for maximum user friendliness and the best audio performance. This is why InnovaSON consoles perfectly complement all situations involving live sound, whether stage, direct field sound engineering, multiple broadcast, mobile sound and video recording, or radio.
We see our product as an "intelligent" cable, with the flexibility of use that such a cable lacks, such as:

- variable between 8 and 64 channels
- inputs and outputs which can be extended and interchanged in groups of 8
- the function of an active splitter with 64 inputs for 3 outputs (with the third being an option)
- the important functions of dynamic, frequency and signal summing (DM-MK) processing
- memorizable configuration which can evolve dynamically.

A multitude of configurations are therefore possible, and we recommend you bear in mind the following definitions to avoid unnecessarily complicated operation:

Control Functions

Only the control module ensures the function of the chassis (Stage Box or Mix Box).

Stage Box/Mix Box

Designed especially to be installed in a control room, the MC-64 module (Mix Controller 64 channels) is what enables the Mix Box function. It can operate without a coaxial link and can be used as a distribution (memory patch) and local/local mixing grid.

An SC-64 (Stage Controller 64 channels) enables the Stage Box function, designed to be installed wherever the largest number of inputs needs to be distributed to several control rooms. It cannot operate without a coaxial link.

Local/Distant

Every computer connected to a local rack, or Mix Box, uses the concept of a "local" rack (where the computer is) and a "distant" rack (controlled by remote commands). An input module installed in the Stage Box gives the inputs "distant" status, while the same module installed in a Mix Box gives them "local" status.

Remote Commands (Master/Slave)

A Mix Box can have three statuses: Local, Master or Slave.

In the presence of a Stage Box, all connected Mix Boxes can independently use all the inputs of the regular Stage Box.

Local

The Mix Box is in direct contact with the console's PC, and gives total autonomy to the console (with no Stage Box).

Master

In this status the Mix Box is in bi-directional contact with the Stage Box, but is the only one able to control the two main parameters the phantom and gain of the various inputs of the Stage Box.

This means that the Mix Box "master" takes full charge of these two fundamental parameters, and the Stage Box "slaves" must obey. The Master is also the only unit that can send signals to the outputs installed in the Stage Box.

Slave

Unidirectional, the Slave simply receives the different input signals as they are established by the Master. Of course any intervention (EQ, patch, gate etc.) is possible, but will depend on the Master's prior settings (of gain and phantom).

8.A Audio Racks and modules

Constructed in a standard 19" wide format (483 mm) and 7U high (311 mm), the Audio Rack's chassis is 314 mm deep (see technical sheets). It is specially designed to house the various modules which make up the desired configuration.

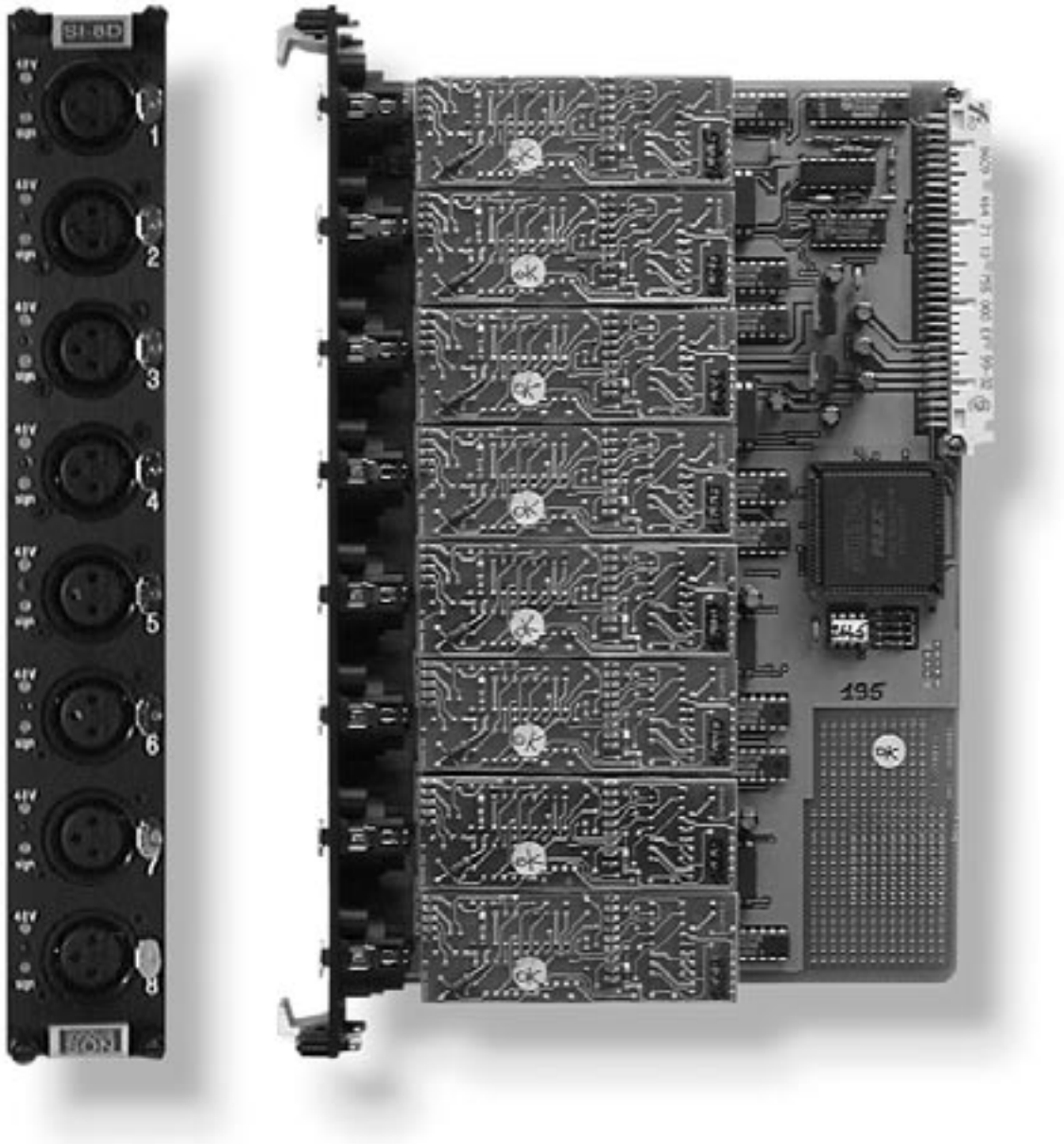
Irrespective of how the equipment is installed, it is essential to ensure that nothing blocks the ventilation slots to the front and rear of the rack. Similarly, never tamper with the back panel.

For external racks, there is a redundant power supply (two power supplies per rack) that is manually switchable using the Choix-Alim card located at the far right of the rack. To change power supplies, turn over the Choix-Alim card and make sure the two power leads, one for each supply, are connected.

A back panel, located at the rear of the rack, houses the power for all the cards and enables them to communicate with each other via 41612 bus connectors, which carry all control signals and digital audio data.

The different modules it can house are:

8.A.1 SI-8D MODULE (8 analog inputs)



This module is designed to convert analog audio signals entering the system to digital. On the front of the module there are:

- eight female XLR connectors, numbered from 1 to 8
- next to each connector are three LEDs, a first showing signal presence (green), a second showing distortion (red) and a third showing phantom power (yellow). The red LED is very important, as this shows when the analog stage is distorting before the A/D conversion. If it lights up, reduce the gain or, in extreme cases, insert a passive symmetrical attenuator of 10 dB or more into the input.

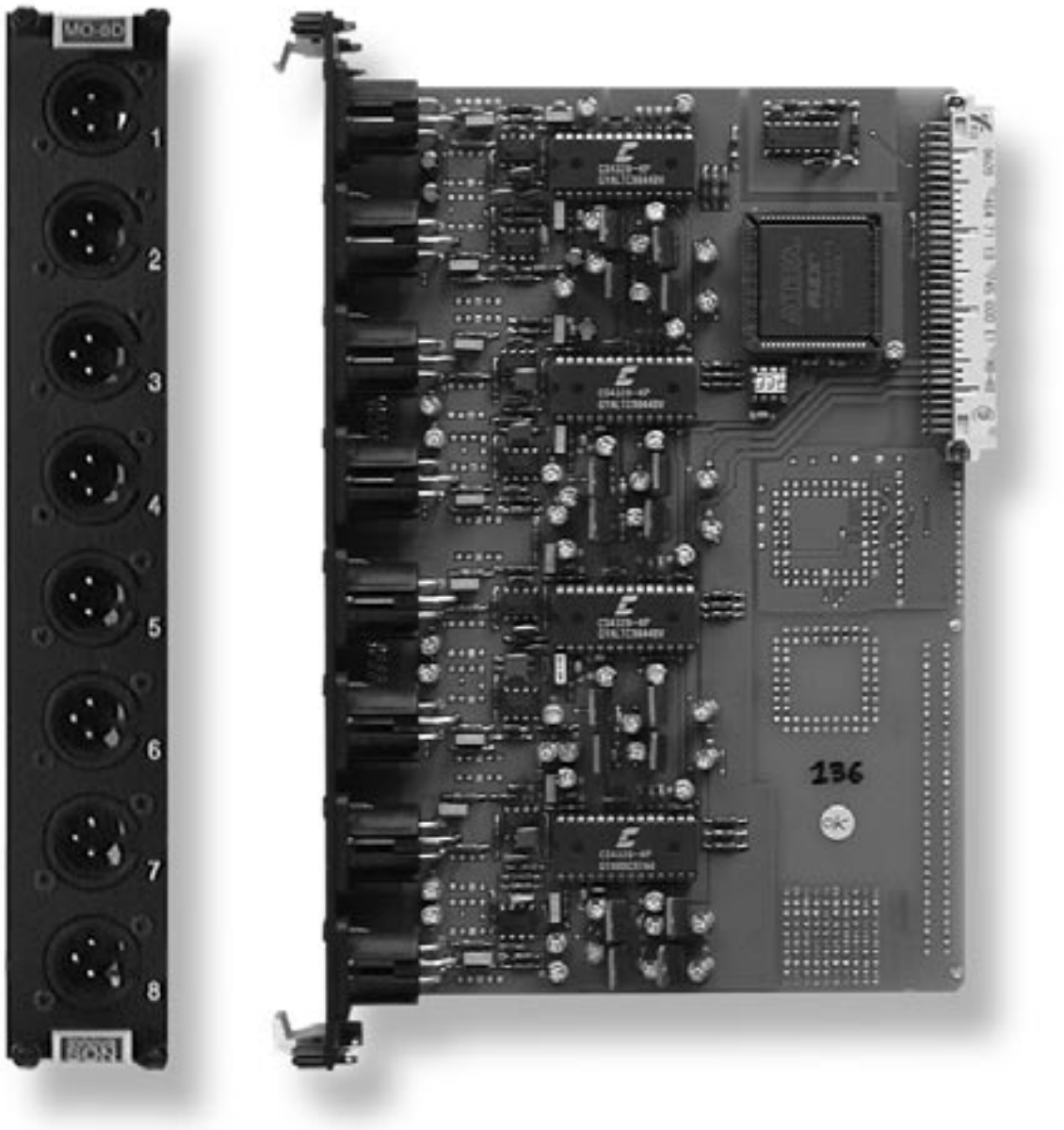
This module makes it possible to receive eight different analog signals with the following characteristics:

- the sensitivity range is programmable in increments of 3 dB; the gain range extends from 27 dB to +63 dB, accepting signals between 51 and +26 dBu
- symmetrical inputs, with programmable phantom power (+48 V)
- 20-bit analog/digital conversion; 48 kHz, Delta-Sigma type (oversampling: 64xfs)

Installation

Follow the instructions in Section 3.2.e.
The SI-8D module may be installed in any of the slots A to H in either the Stage Box or Mix Box,.

8.A.2 MO-8D MODULE (8 analog outputs)



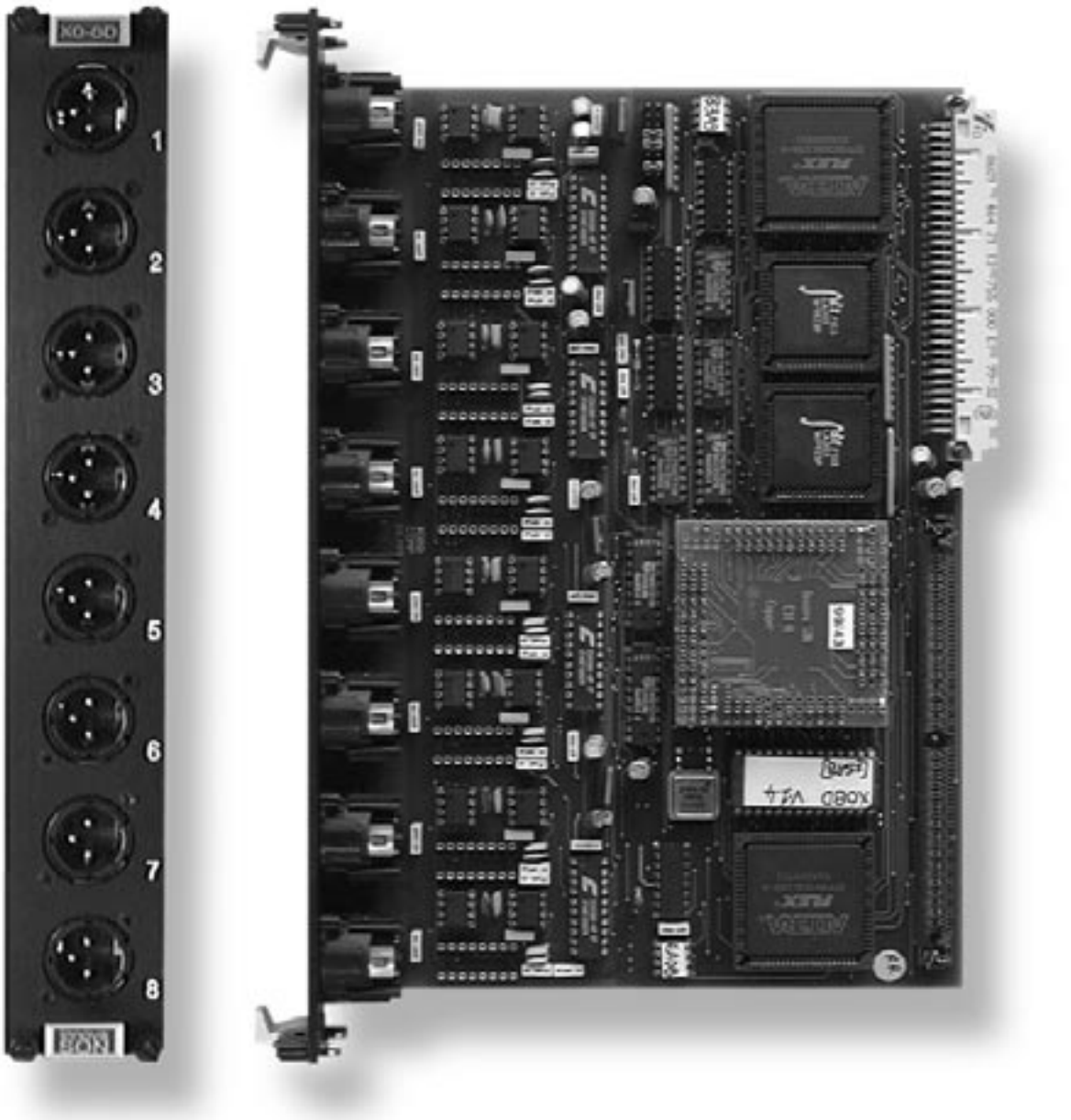
This module is designed to convert digital audio signals leaving the system to analog.
On the front of the module there are eight male XLR connectors, numbered from 1 to 8.
The module distributes eight analog signals:

- symmetrical outputs with the level adjustable by "jumpers" of +11.5, +18 and +22 dB for an input signal at 0 dBFs
- programmable output mutes
- patch programmable using the operating software
- 24-bist digital/analog conversion: 48 kHz, Delta-Sigma type (oversampling: 128xfs)

Installation

The MO-8D module may be installed in any audio rack, in slots B to H for the Stage Box or A to H for the Mix Box.

8.A.3 XO-8D MODULE (8 hyperdriven analog outputs)



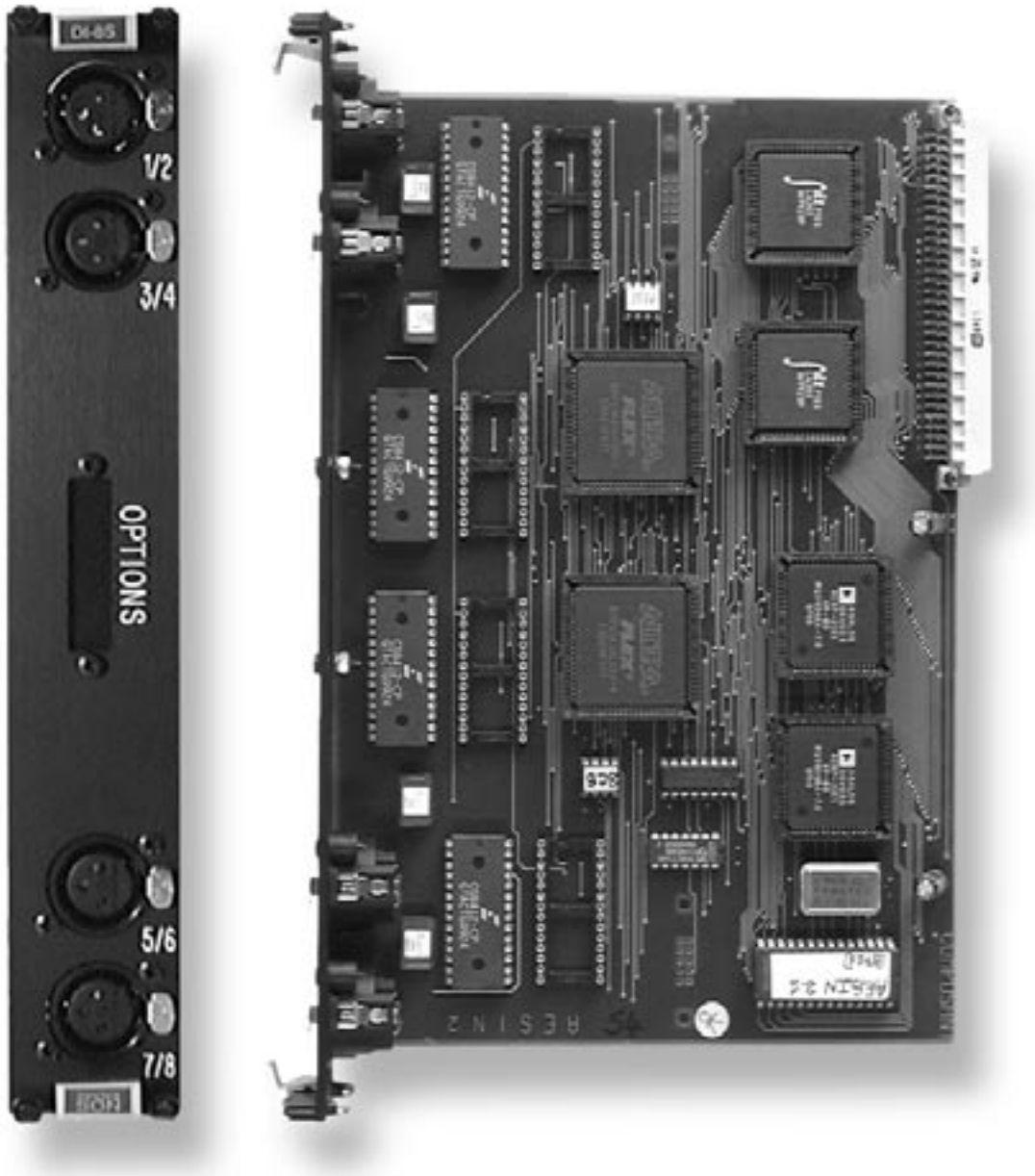
The XO-8D module has 8 symmetrical analog outputs. It replaces the MO-8D with new functions, making it extremely flexible and powerful:

- maximum output level adjustable through Sensoft from 10.5 to 22 dB in increments of 0.5 dB (corresponding to an output level varying from 0 to +11.5 dBu for an input at 0 dBFs)
- 24-bit digital/analog conversion; 48 kHz, Delta-Sigma type (oversampling: 128xfs)
- parametric equalizer with 8 independent bands
- independent gates and compressors for each output
- a delay of 1.3 s per output, adjustable to the nearest sample
- signal processing functions provided by two DSPs
- programmable output mutes.

Installation

The XO-8D module only works in a Mix Box rack, in any of the slots A to H.

8.A.4 DI-8S or DI-8Src MODULES (AES digital inputs)



This module is designed to convert digital audio signals entering the system to the AES format. On the front of the module there are four female XLR connectors, numbered from 1/2 to 7/8.

The module makes it possible to receive four AES frames (or eight different audio signals):

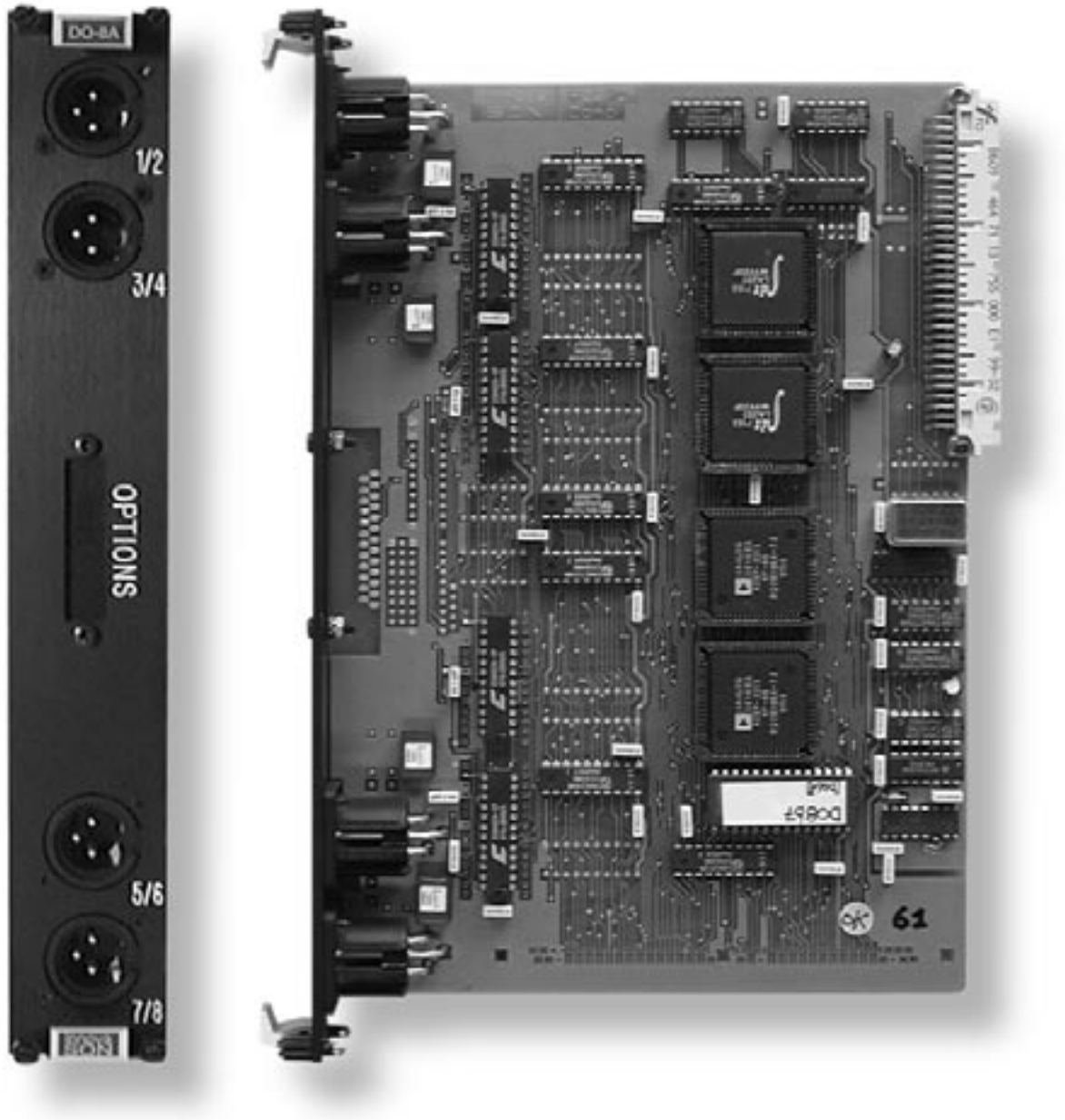
- programmable dynamic sensitivity range from +6 to 6 dB in increments of 0.1 dB
- 110 Ω symmetrical inputs, with levels and sensitivities subject to the AES standard
- sampling from 43 to 49 kHz according to the system's general clock or external synchronization
- programmable delay from 0 to 5 ms
- SRC (Sample Rate Converter) option available.

NB : When digital input cards are installed in a Stage Box, they are recognized as SI-8D cards by Sensoft.

Installation

The DI-8S (or DI-8SRC) module may be installed in any of the slots A to H in either the Stage Box or the Mix Box, depending on the position of the switch located on the card.
When DI-8S cards are placed in a Stage Box, they are recognized by Sensoft as SI-8D cards.

8.A.5 DO-8A MODULE (AES digital outputs)



This module is designed to convert digital audio signals leaving the system to the AES format. On the front of the module there are four female XLR connectors, numbered from 1/2 to 7/8.
The module distributes four AES frames (or eight audio signals):

- 110 Ω symmetrical outputs, with levels subject to the AES standard
- sampling from 43 to 49 kHz according to the system's general clock or external synchronization
- programmable output Mutes.

Installation

The DO-8A module may be installed in any audio rack, in slots B to H for the Stage Box and A to H for the Mix Box, depending on the position of the switch located on the card..
When DO-8A cards are installed in a Stage Box, they are recognized as MO-8D cards by Sensoft.

8.A.6 DO-8X MODULE (AES digital outputs)



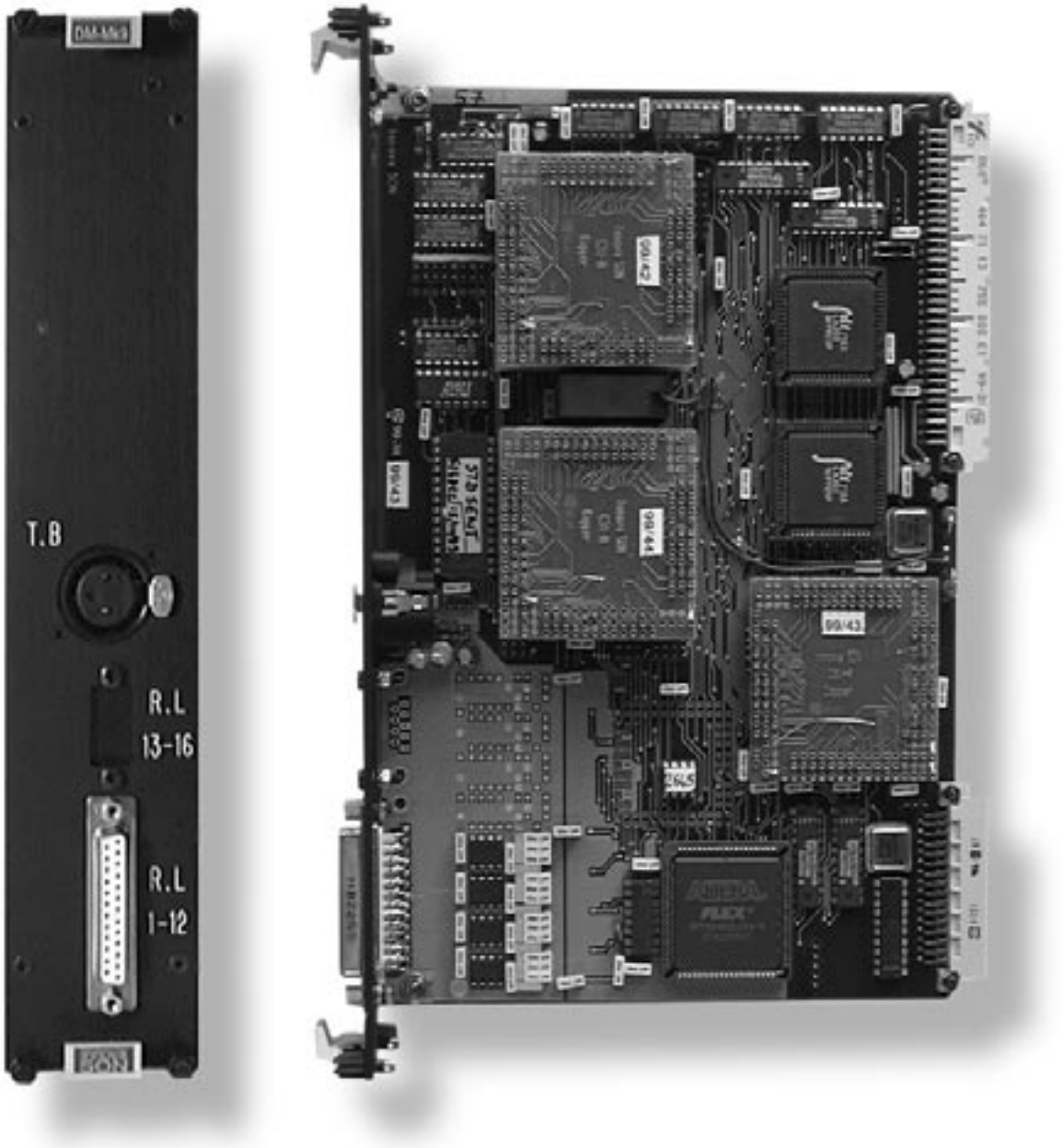
The DO-8X module has 8 AES digital outputs. It replaces the DO-8A with new functions, making it extremely flexible and powerful:

- 110 Ω symmetrical outputs, with levels subject to the AES standard, with an attenuator between 0 and 11.5 dBFS in steps of 0.5 dB
- sampling from 43 to 49 kHz according to the system's general clock or external synchronization
- parametric equalizer with 8 independent bands
- independent gates and comprsessors for each output
- a delay of 1.3 s per output, adjustable to the nearest sample
- signal processing functions provided by two DSPs
- programmable output mutes.

Installation

The DO-8X module only works in a Mix Box rack.
It may be installed in any of the slots A to H in the Mix Box.
DO-8X modules are recognized by Sensoft as XO-8D cards.

8.A.7 MODULE DM-MK MODULE (signal processing)



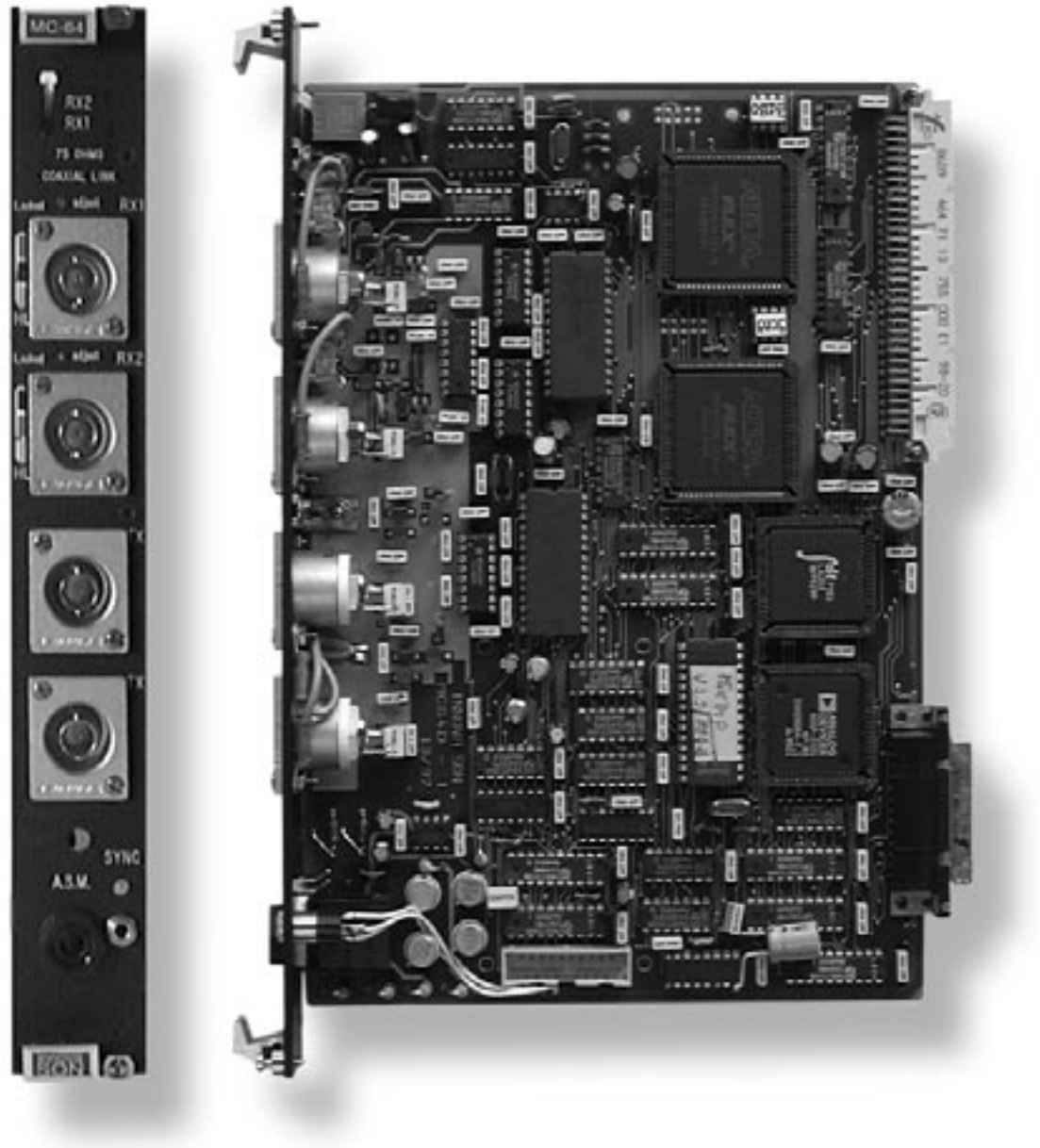
This module is the heart of the system, and its purpose is to manage the processing of all the inputs (phase, low cut, EQ, gate, compressor) and their mixing into the various busses.
On the front of the module there are a female XLR connector (talkback), a SUB-D25 connector (return lines) and a red LED that indicates when the module is reset.
The signal is digitally processed in 32-bit floating point. There are various possible configurations of the DM-MKx card (where x represents the number of DSPs present on the card):

- DM-MK7 (6 calculation processors + VU-meter) 24 mixing busses for 36 channels or 30 mixing busses for 32 channels
- DM-MK9 (8 calculation processors + VU-meter): 28 mixing busses for 48 channels.

Installation

The DM-MK module only works in a Mix Box rack.
It must be installed in the slot labeled "DSP" in the Mix Box.

8.A.8 MC-64 MODULE (Mix Box controller)



This module is designed to control the other modules, and for transmission. It provides the link between Sensoft and the cards in the Mix Box. On its front there are four BNC-type coaxial sockets for the coaxial cables, a 6.35 mm headphone jack and a 3.5 mm synchronization jack with a yellow status light. There is a small screw above each BNC socket labeled "Rx" (refer to section 8.3 – Adjusting the transmission). On the rear of the module, there is a 41612-type connector and a sub-D25-type connector. The module has a number of functions:

- receiving digital frames from the input cards in the distant Audio Rack (Stage Box)
- transmitting digital frames of signals from the local input cards
- transmitting remote commands to the input and output cards in the Stage Box
- managing the distribution of remote commands to the various cards as programmed within Sensoft.

Functions of the different connectors

- BNC transmission and reception of digital frames (20 bits) between two Rx boxes and two Tx boxes (one Rx active at a time)
- 3.5 mm jack synchronization input for the Audio Rack in TTL format (AES as an option)
- 6.35 mm jack headphone socket.

Choosing the BNC reception connector

A switch above the BNC Rx connectors lets you choose the reception channel (1 or 2). RX1 corresponds to variable cable lengths, while RX2 is optimized for a length of 150 m.

Significance of lights on front panel

Lights placed near to each BNC Rx:

- green LED error-free transmission
- red LED transmission error
- yellow LED indicates a long-distance transmission (> 300 m) confirmed by a switch placed on the copper side of the card.

Light placed near the 3.5 mm jack

- yellow LED – indicates the synchronization of the Audio Rack by the signal applied to the Synchro input.

Adjusting the transmission

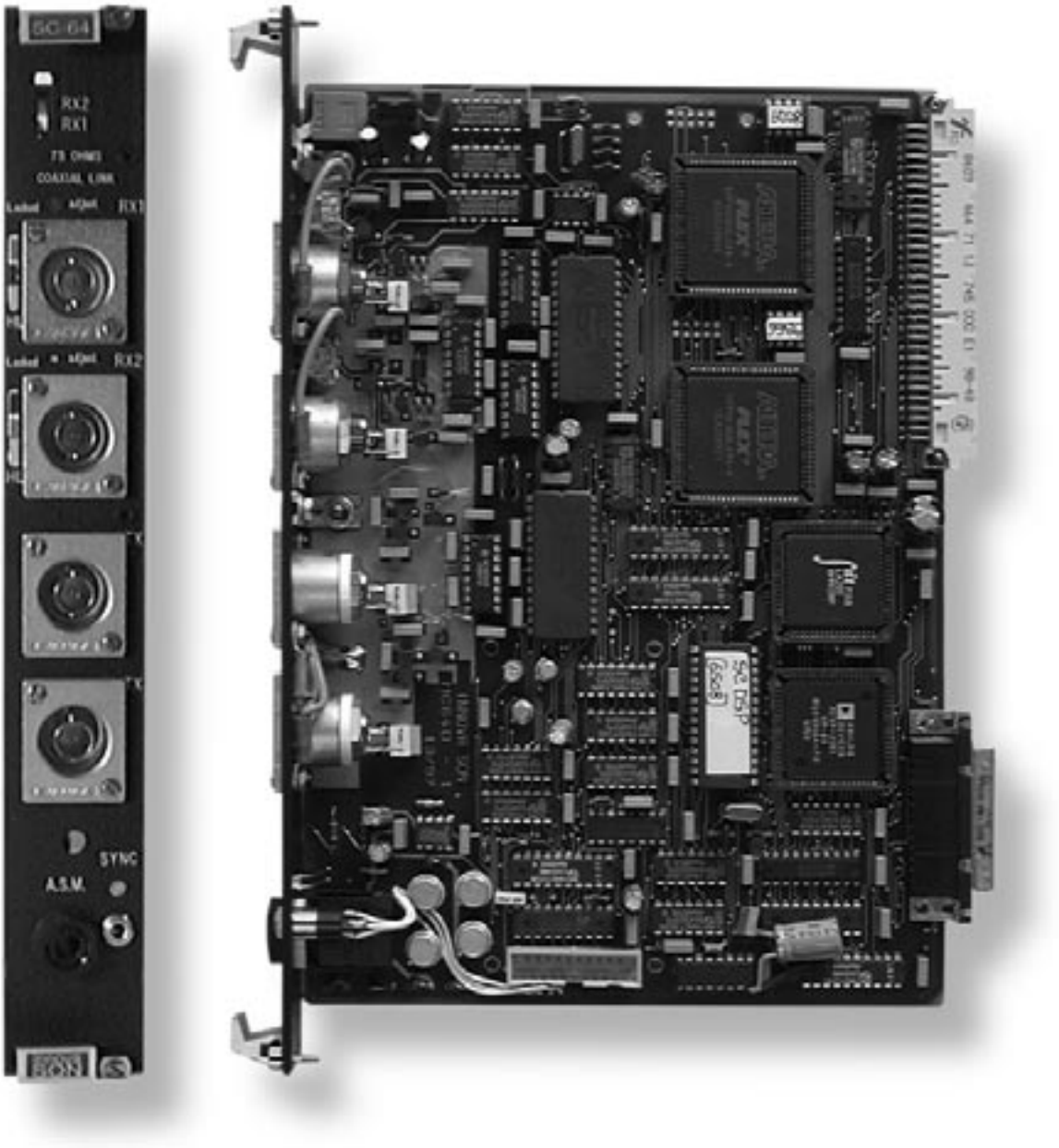
The digital frame reception stage can be adjusted with a small screw above the reception BNC RX1.

To achieve stable illumination of the green LED (correct transmission), see section 8.C, adjusting the transmission.

Installation

The MC-64 must be installed in the reserved slot opposite the Control (CTRL) reference point on the Mix Box.

8.A.9 SC-64 MODULE (Stage Box controller)



On the front panel of the SC-64 module are four BNC-type coaxial sockets for the coaxial cables. A small screw is located above each socket marked "Rx", and there is also a 6.35 mm headphone jack and a 3.5 mm synchro jack.
The only difference between this and the MC-64 card is the onboard software. The Sub-D25 connector on the back is not used (no distant PC).
The module has a number of functions:

- distributing digital frames from the input cards in the rack to the various Mix Boxes
- receiving digital signal and parameter frames from the master Mix Box
- managing the distribution of remote commands to the various cards as programmed within Sensoft.

Installation

The MC-64 must be installed in the reserved slot opposite the Control (CTRL) reference point on the Stage Box.

8.B Configuring and installing the system

Each InnovaSON console is supplied with the following fundamental elements:

- an MC-64 module to control the Mix Box
- a DM-MK signal processing and mixing module.

The Audio Rack is entirely modular so that it can be configured to suit the user's needs or the demands of the event:

- number of inputs/outputs at each control point
- signal processing (digital/analog)
- transmission (Stage Box or not)
- number of systems (front-of-house, monitors, recording etc.).

Beyond this, the system specification is completed with the required modules. Be sure to take into account all the rules and conditions laid out in Section 3.B.5, as well as in each module's specific section in this Chapter.
This operation is carried out as follows:

1. Switch off all systems and unplug all power leads.
2. The front of each module is distinguished by the presence of handles. Take the module by these handles and hold it the right way up, i.e. so that the writing on it can be read.
3. Bring the rear of the module to the appropriate slot, with the module sloping down slightly at the front.
4. Engage the lower edge of the printed circuit on the lower guide of the chosen slot.
5. Straighten the module and gently engage the top edge against the upper guide.
6. Slide the module gently until it is almost totally inserted in the chassis (be careful never to force a module along the guides).
7. Connect the module to the rear panel, pushing a little more firmly.
8. Make sure the module is securely held by turning all the fixings on the front panel a whole turn (locking takes place when the screw is inserted into its guide); for the SC-64 and MC-64, regular screws are used.

Having followed the instructions for inserting a module and ensured the module is held securely in place, plug in the system in the following order:

1. Connect the necessary coaxial cables.
2. Plug in the Stage Box and then the Mix Box (ON for the Compact console), and finish with the control surface (for the Grand Live/Actor).

Make sure the four LEDs on the control surface (for the Compact console) or the front panels of the external racks (Choix-Alim) light up. If any of them do not light up, the module is faulty. In the case of a faulty unit, disconnect the power and contact InnovaSON.

Check that the lights on the MC-64 and SC-64 modules are green (correct transmission); if they are red, see Section 8.C : Adjusting the transmission.
If all the indicators are correctly lit a big sound is now possible!

8.C Adjusting the transmission

The digital link provided by the MUXIPAIRE (Stage Box + Mix Box + coaxial connections) is a high-speed connection: around 125 million bits travel through the coaxial cables per second. As the quality of transmission determines the quality of the installation as a whole, it is very important to take great care with it.

In most cases, the MUXIPAIRE will immediately establish a stable transmission. However, in order to ensure the best possible conditions, you will need to adhere to the following rules:

Type of cable	KX-6	VCB-75	KX-8	VCB-100	1505A
Manufacturer	Alcatel	S2CEB	Alcatel	S2CEB	Belden
100m @ l00MHz	l2dB	7dB	5dB	4.8dB	5dB
size	6mm	6mm	10mm	7mm	6mm
Max lenght	150m	300m	500m	500m	500m

The maximum distance between two racks depends on the attenuation characteristics of the cable used and its impedance continuity.

Beyond 150 meters, remember to switch the Long Distance switch on the MC-64 and SC-64 modules (see the descriptions of these modules).

Connections

The BNC connectors recognized by InnovaSON are limited to: VB10-2031 (Vitelec), BCP-C4F (Canare) or BCP-C7F (Canare), NBNC75-PLS9 (Neutrik). The maximum attenuation must be less than 25 dB at 100 MHz.

Users should insist upon reasonable working conditions, such as the absence of HF disturbances, motors, lighting power modules, or any elements that do not comply with the applicable EC rules. Exclude "exotic" connections (T BNC, I, and any other combination or do-it-yourself solution).

Do not hesitate to check the cables and change them if necessary.

Ground

Proper grounding of the system's exposed conductive parts is fundamental.

Only under these conditions can InnovaSON guarantee correct operation.

The MUXIPAIRE offers three methods of monitoring transmission quality:

- the indicators on the SC-64 and MC-64
- the operating software, which permanently displays the status (Local, Master and Slave) of the racks to which the computer is connected
- when the transmission is disturbed, the software will display unusual behavior (such as erratic peak-meters, erroneous commands, repeated hard disk operation, etc.), so that it is easy to detect an unstable transmission.

In general, the quality of the link is directly tied to the system's audio qualities (background noise, distortion, crackle).

Transmission Faults

If the red indicator remains permanently lit, or flashes along with the green indicator,:

1. Check the condition of the cables and their connectors.

2. Check that each of the coaxial cables links a transmitter (Tx) with a receiver (Rx).

If in spite of this, the transmission does not establish itself correctly, set both cards to RX1 and adjust the transmission preamplifiers by slowly changing the position of the Adjust knob, accessible through the screw hole on the SC-64 and MC-64 modules, with a small flat screwdriver.
The procedure is as follows:

1. Turn the screw as far as it will go, in either direction. The LED should be red.

2. Turn gently until the point where the light turns green. Note this position (position A).

3. Keep turning in the same direction until the LED turns red (position B).

4. Now turn back to halfway between positions A and B.

Transmission will now be optimized and reliable.
The procedure is similar to that for tuning a radio without CAF to a radio station: just before it and just after it you lose the station, and in the center you are stable.



Professionals always have the "right" screwdriver to hand, on which they have made marks serving as an index. This makes positions A and B easier to remember, and the center easier to find.
This adjustment will probably be necessary if you use a quality or length of coaxial cable other than those previously used with the system.

Note

Transmission between a Mix Box and a Stage Box is only established after Sensoft is launched. After a few seconds of operation, each computer will have recognized its rack, and as soon as a file is used the status box will be displayed in the menu bar:

- "Master" All is well! The computer recognizes itself as the Master, and can therefore remotely control the parameters of the modules in the Stage Box to which it is connected

- "No System" the computer cannot detect an active Mix Box, either because the rack is not powered up, or because the link between the computer and the Mix Box has not been established

- "Local" use of the Mix Box alone, or incorrect communication with the Stage Box

"Slave" – the computer recognizes itself as a Slave, which means that transmission between the Stage Box RXD and the Mix Box TXD is incorrect (or not connected).

8.D Specifications

NB. Any feature may be modified without prior notice.

8.D.1 General audio rack characteristics

Dimensions (LxHxP)	483 x 311(7U) x 314 mm
Weight	18 kg (maximum configuration)
Power supply	90 / 253Vac, 47/63 Hz (automatic switching)
Redundancy as a standard	
Consumption	230 VA
Temperature range	+10°C à +35°C
Transport case	wood case, 760 * 580 * 640 mm

8.D.2 Audio characteristics

General audio specifications (typical configuration : SI-8D Input and XO-8D Output modules)

Fader	motorised ALPS 100mm, sensitive touch point (InnovaSON patent)
Internal Signal Processing	32/40-bits, floating point calculation
Sampling frequenc	internal : 48 kHZ external : 43...49 kH
Signal delay (input-mix-output)	0.18 ms (standalone) digital to digital 0.1826 ms (with Stage Box) digital to digital 1.1024 ms (standalone) analog to analog 1.1050 ms (with Stage Box) analog to analog
Frequency range	15 .. 22kHz (+0,-3 dB / input gain -6 dB / level +4 dBu)
Dynamic range	105 dB (input gain -3 dB / output gain 22 dB)
THD+Noise ratio	-90 dB (input gain -3 dB / input level +4 dBu
Hum & Noise	-127 dBu Equivalent Input Noise -95 dBu Residual Output Noise -95 dBu Outputs, all AUX fader at 0 dB and all Inputs channels at minimum level -79 dBu Output, all aux faders at 0 dB and 1 Input channel, input gain 60 dB, Output gain +22 dB
Maximum voltage gain	+ 73dB, from SI-8D to Stereo Out

Analog Inputs and Outputs

	Module	Converter	Frequency range	Dynamic range	input gain/ output level	THD + N ratio	balanced impedance	Hyper Drive*	Connector
Input	Si-8D	24 bits@48kHz delta/sigma (x64)	3Hz.. 20kHz +0,-3dB	105dB gain=-3dB	-27 .. +63dB 1.5dB step	-90dB gain=-3dB	> 1.7 kohms	no	XLR-3 female
Output	MO-8D	24 bits@48kHz delta/sigma (x128)	5Hz.. 20kHz +0,-1dB	117dB gain=22dB	+10.5, +17, +22dBu	-97dB gain=22dBu	< 200 ohms	no	XLR-3 male
	XO-8D				10.5..+22dBu 1.5dB step			8-band PEQ compressor gate delay 1.35 s output level	

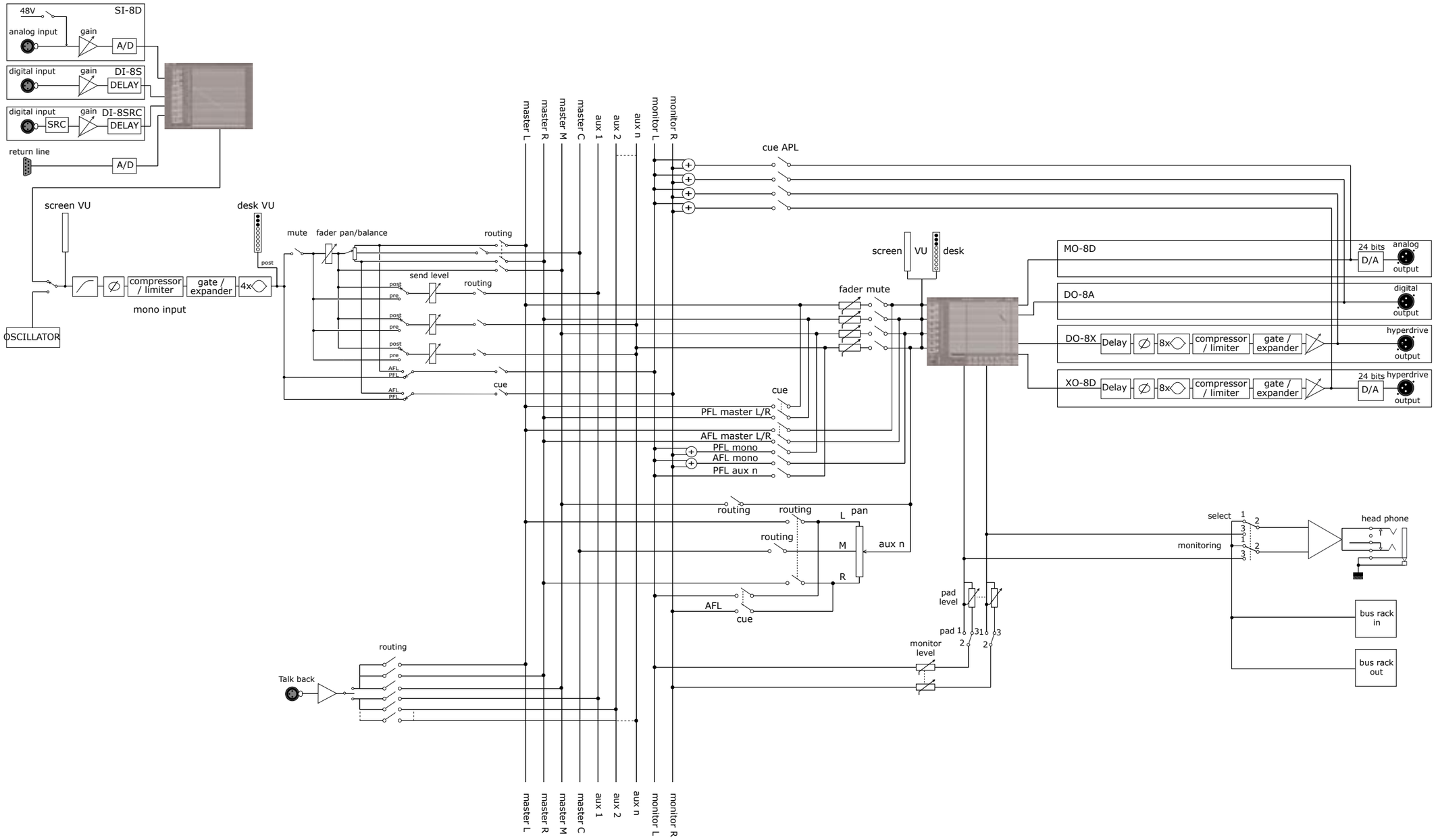
Digital Inputs and Outputs

	Module	Format	Impedance	Sampling	Delay	Sample Rate Converter	Hyper Drive*	Connector
Input	Di-8S	AES/EBU	110 ohms	sync 43..49 kHz	0..5 ms	no	no	XLR-3 femelle
	Di-8Src			async 32..53 kHz		yes		
Output	DO-8A	AES/EBU	110 ohms	sync 43..49 kHz	no		no	XLR-3 male
	DO-8X				0..1.35 s pas de 0.02 s		8-band EQ compressor gate delay 1.35s output level	

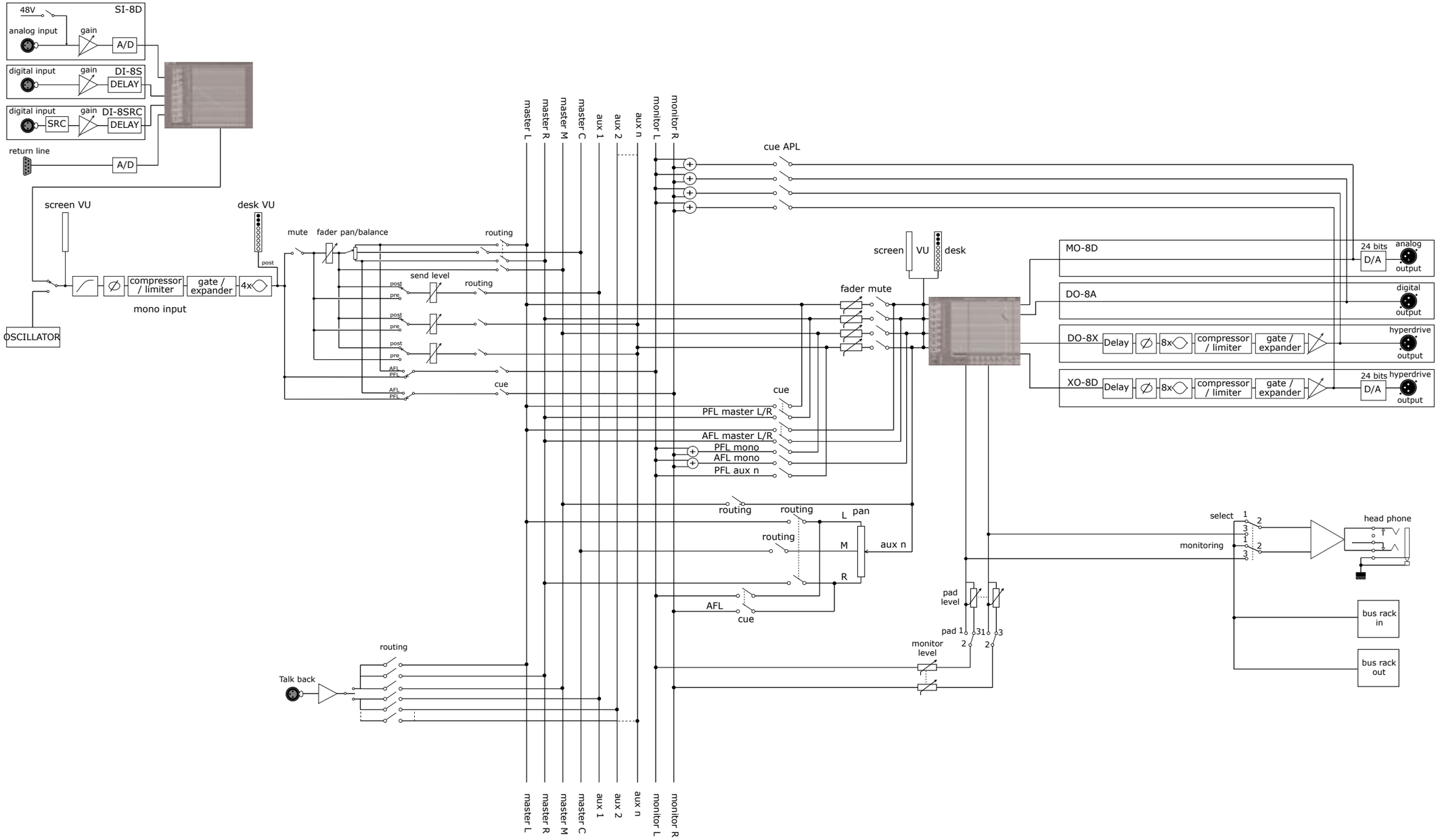
Hyper Drive

Parametric equalizer	Dynamics	Output Level
8 full parametrics bands Freq. range = 27 to 27KHz in 96 steps Gain range= -15 .. + 15dB plus notch Q Factor range = 1/8 .. 8 oct. in 8 steps	Compressor and gate Treshold level range = -96dB + 10dBFS Time parameters range = 0.5 to 200 ms Compressor ratio range = 1/1 .. 1/-oo	Analog = +10.5..+22dBu (XO-8D module) Digital = - 11.5 .. 0dBFS (DO-8X module)

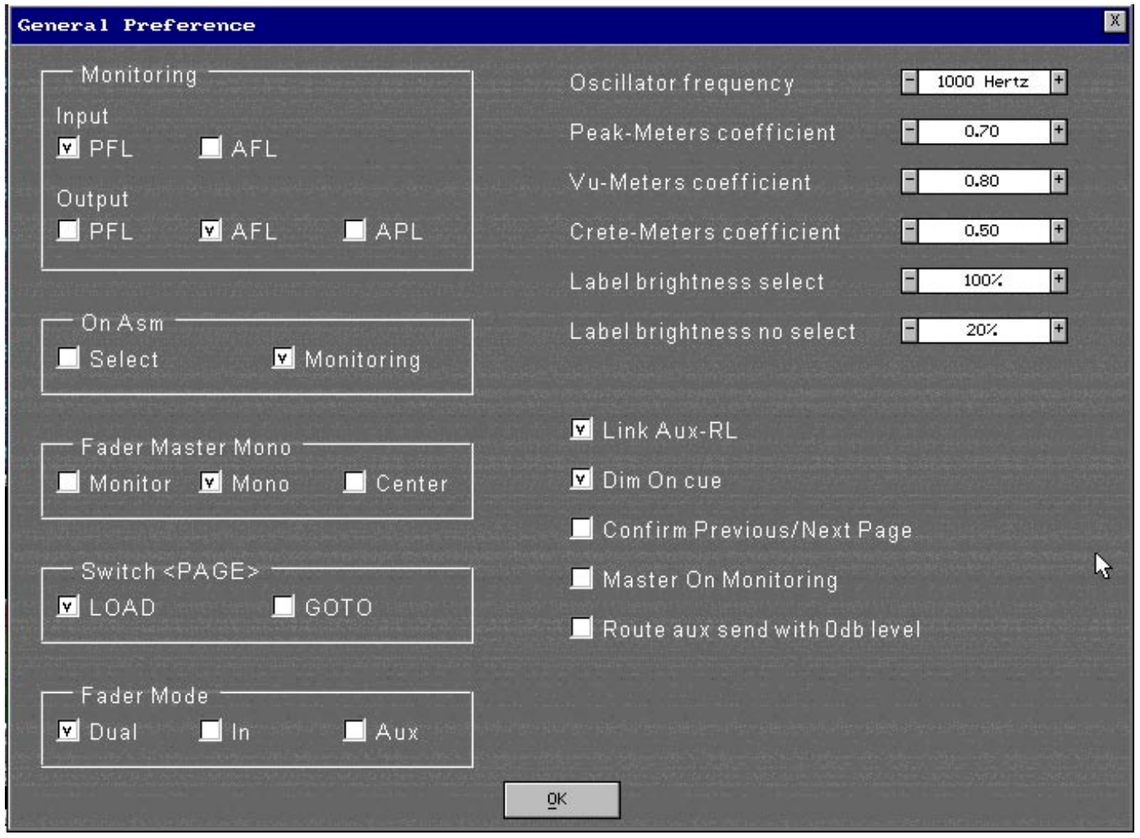
8.D.3 Diagram


48V
SI-8D
analog input
gain
A/D
digital input
gain
DI-8S
DELAY
digital input
gain
DI-8SRC
SRC
DELAY
return line
A/D
screen VU
desk VU
mute
fader pan/balance
routing
post
compressor / limiter
gate / expander
4x
mono input
ØSCILLATOR
send level
routing
post
pre
AFL
PFL
cue
master L
master R
master M
master C
aux 1
aux 2
aux n
monitor L
monitor R
cue APL
screen
VU
desk
fader mute
PFL master L/R
AFL master L/R
PFL mono
AFL mono
PFL aux n
routing
routing
L
pan
routing
M
aux n
R
AFL
cue
pad level
pad 1
monitor level
MO-8D
24 bits
D/A
analog output
DO-8A
digital output
DO-8X
Delay
8x
compressor / limiter
gate / expander
hyperdrive output
XO-8D
Delay
8x
compressor / limiter
gate / expander
24 bits
D/A
hyperdrive output
select
monitoring
head phone
bus rack in
bus rack out
Talk back
routing

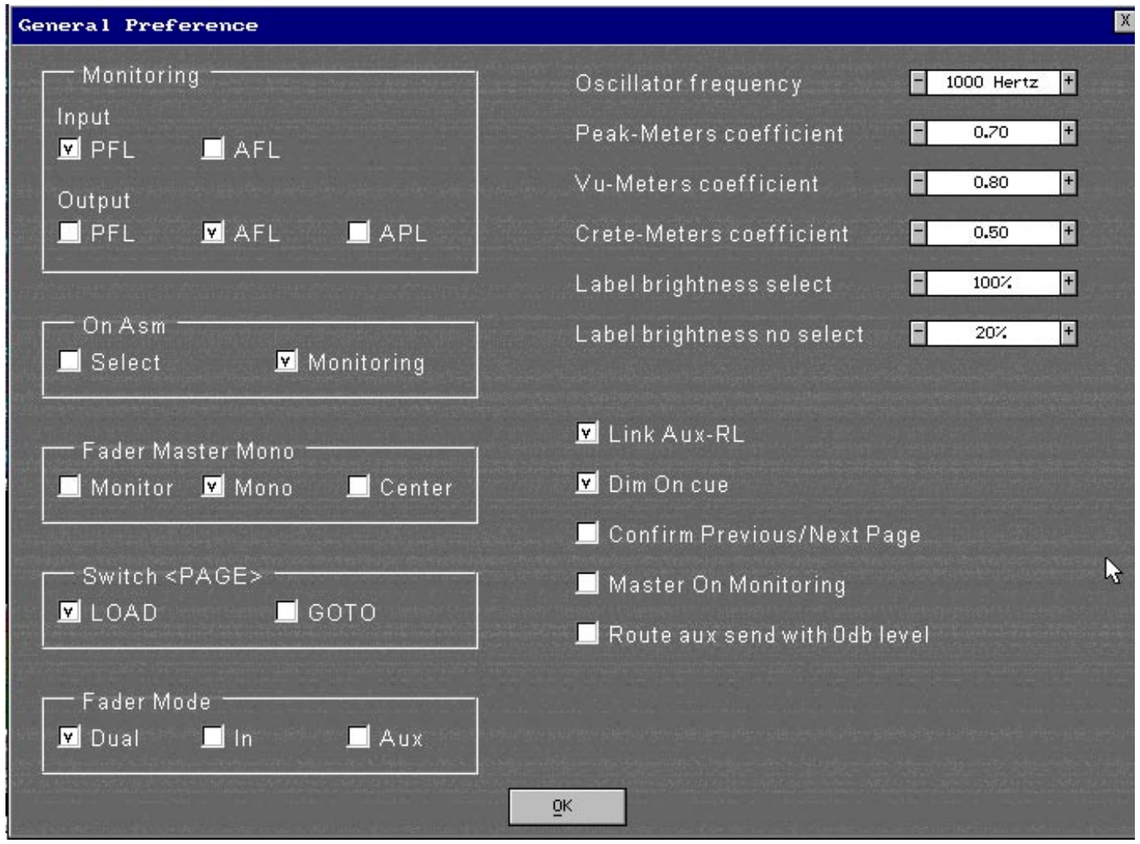
8.D.3 Diagram


48V
SI-8D
analog input
gain
A/D
digital input
gain
DI-8S
DELAY
digital input
gain
DI-8SRC
SRC
DELAY
return line
A/D
screen VU
desk VU
post
mute
fader
pan/balance
routing
send level
routing
post
pre
AFL
PFL
cue
compressor / limiter
gate / expander
4x
mono input
OSCILLATOR
master L
master R
master M
master C
aux 1
aux 2
aux n
monitor L
monitor R
cue APL
screen
VU
desk
fader mute
cue
PFL master L/R
AFL master L/R
PFL mono
AFL mono
PFL aux n
routing
routing
routing
L
pan
M
R
aux n
AFL
cue
MO-8D
24 bits
D/A
analog
output
DO-8A
digital
output
DO-8X
Delay
8x
compressor / limiter
gate / expander
hyperdrive
output
XO-8D
Delay
8x
compressor / limiter
gate / expander
24 bits
D/A
hyperdrive
output
pad level
pad 1
monitor level
select
monitoring
head phone
bus rack in
bus rack out
routing
Talk back

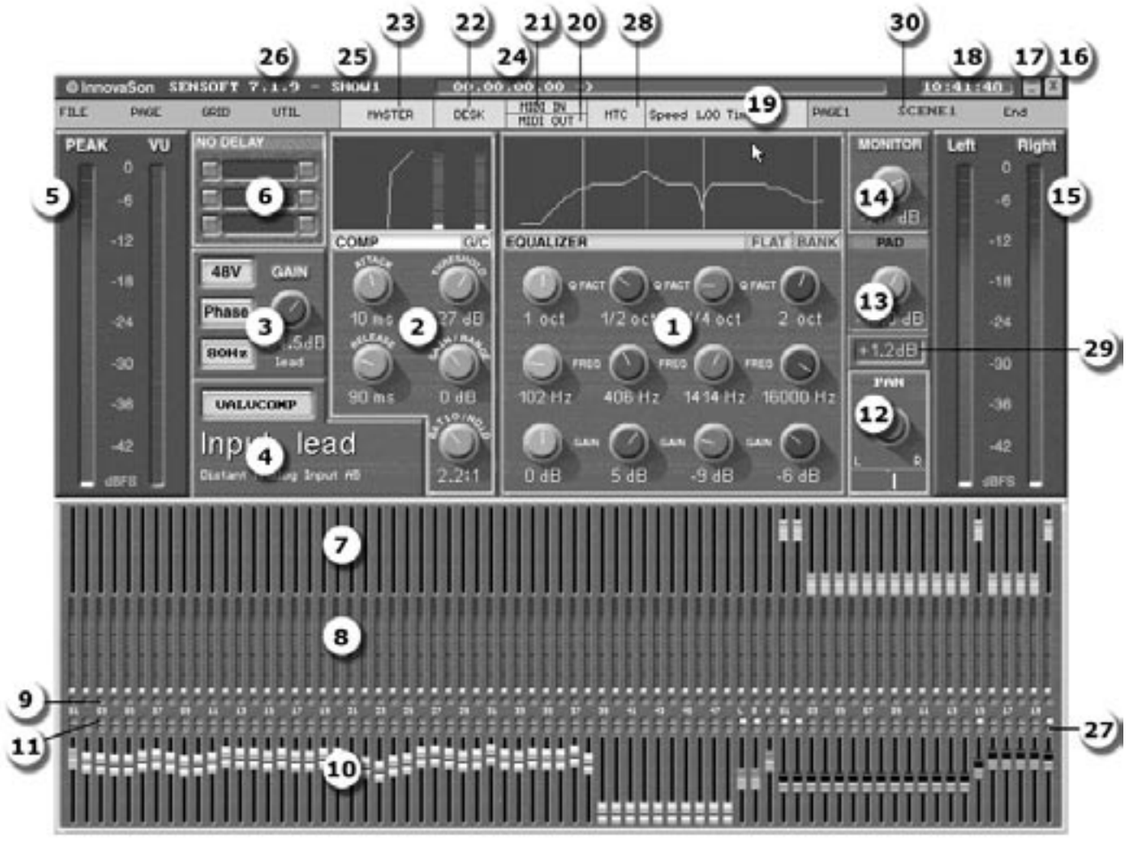
8.D.4 General preferences



8.D.4 General preferences

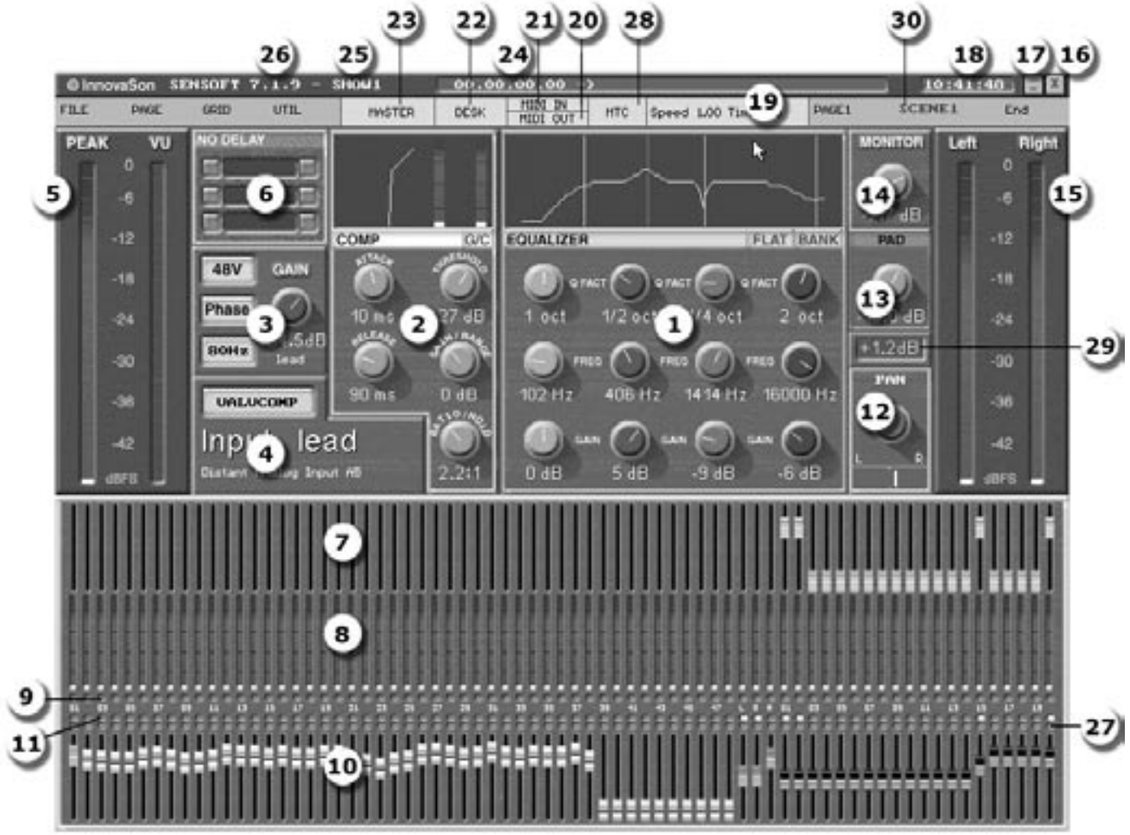


8.D.5 Main mix screen



1 - Parametric equalizer
2 - Compressor/Gate
3 - Parameters of the selected channels
4 - Name, status, type of the selected channel
5 - Peak level and Vu-meter of the selected channel
6 - Delay
7 - Aux send
8 - Vu I/O
9 - Mute
10 - Fader master in Aux
11 - Routing
12 - Panning of the selected channel
13 - Pad
14 - Level monitor
15 - Vu-meters Master L/R
16 - Exit Sensoft
17 - Muxi screen
18 - Clock
19 - Crossfade's settings
20 - Status Midi Program Change OUT
21 - Status Midi Program Change IN
22 - Status of the control surface
23 - Statut of the Mix box
24 - counter MTC
25 - Display current file
26 - Sensoft software version number
27 - Cue
28 - Status MTC
29 - Level Fader of the selected channel
30 - Current page

8.D.5 Main mix screen



1 - Parametric equalizer
2 - Compressor/Gate
3 - Parameters of the selected channels
4 - Name, status, type of the selected channel
5 - Peak level and Vu-meter of the selected channel
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28 - Status MTC
29 - Level Fader of the selected channel
30 - Current page

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