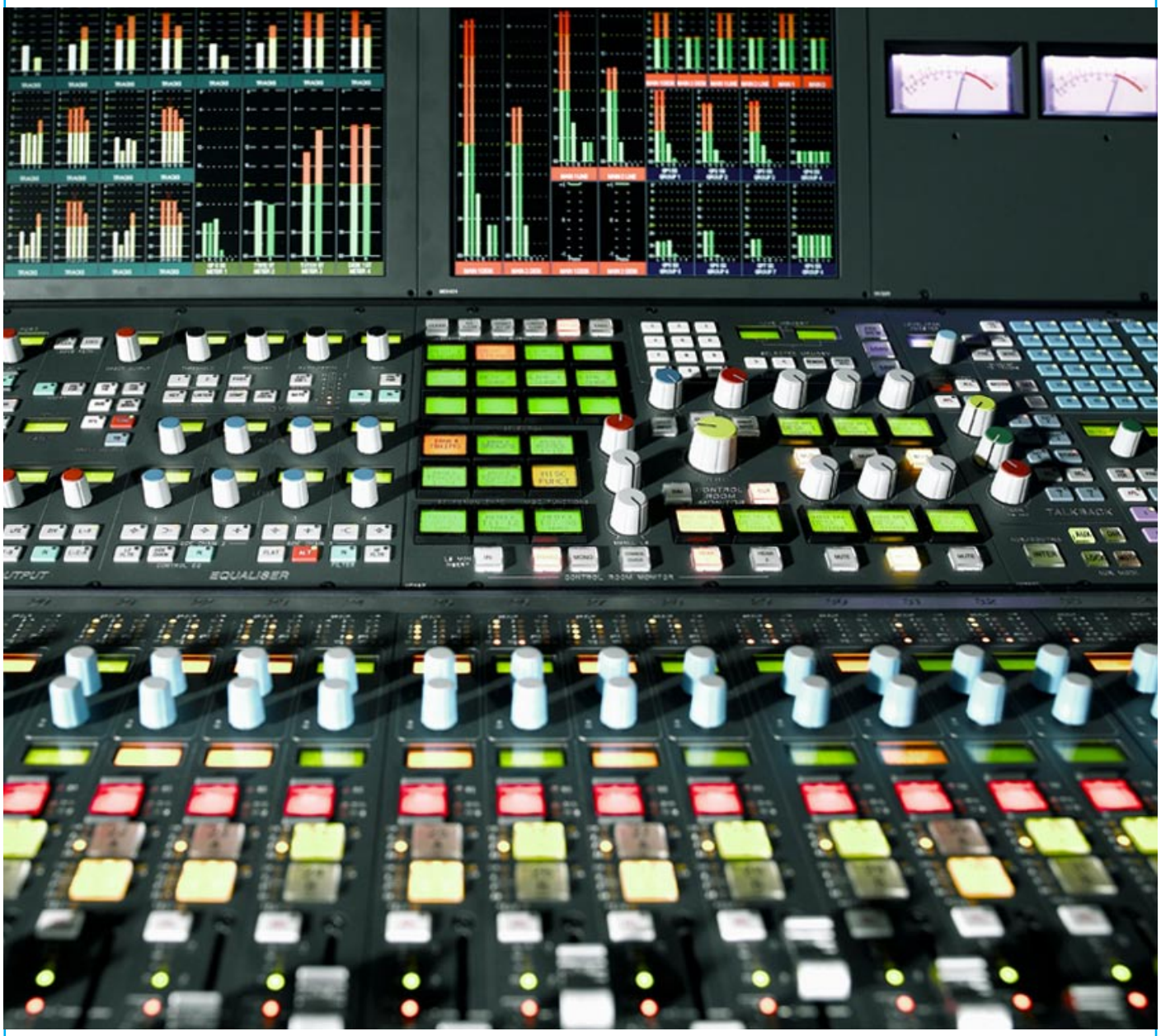
OMEGA OPERATOR MANUAL V2.8



Digital Broadcast Production Console with Bluefin HDSP

CALREC

Putting Sound in the Picture

calrec.com

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Despite considerable effort to produce up to date information, no literature published by the company nor any other material that may be provided should be regarded as an infallible guide to the specifications available nor does it constitute an offer for sale of any particular product.

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OMEGA
CONTENTS

IMPORTANT INFORMATION

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

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

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

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

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

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

HEALTH AND SAFETY

Please observe the following:

- This equipment must be EARTHED
- Only suitably trained personnel should service this equipment
- Please read and take note of all warning and informative labels
- Before starting any servicing operation, equipment must be isolated from the AC supply (mains)
- Fuses should only be replaced with ones of the same type and rating as that indicated
- Operate only in a clean, dry and pollutant-free environment
- Do not operate in an explosive atmosphere
- Do not allow any liquid or solid objects to enter the equipment. Should this accidentally occur then immediately switch off the unit and contact your service agent
- Do not allow ventilation slots to be blocked
- Do not leave the equipment powered up with the dust cover fitted
- The rack mounting parts of this equipment must be fitted into an enclosure which complies with local regulations

Cleaning

For cleaning the front panels of the equipment we recommend anti-static screen cleaner sprayed onto a soft cloth to dampen it only.

Explanation of Warning Symbols

The triangular warning symbols below contain a black symbol on a yellow background, surrounded by a black border.

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

The exclamation mark within an equilateral triangle is intended to prompt the user to refer to important operating or maintenance (servicing) instructions in the documentation supplied with the product.

Power Supply Blanking Plates (ZN4849-3 and ZN6020)

If you are in receipt of a ZN4849-3 or ZN6020 power supply unit please do not remove the blanking plates which are fitted to the unused output connectors. The maximum potential between the terminals exceeds 60 volts, the blanking plates are fitted to avoid the risk of electric shock.

TECHNICAL SUPPORT

Should you require any technical assistance with your Calrec product then please contact your local distributor, if outside the U.K. and Ireland. For a list of Worldwide distributors please see the Calrec Web site at www.calrec.com or contact Calrec UK.

For technical assistance within the UK and Ireland, please contact the Customer Support Team at :-

Customer Support
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Tel: +44 (0) 1422 842159
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Email: support@calrec.com
Website: www.calrec.com

We can deal with all technical after sales issues, such as :-

- Arrange repairs
- Supply of replacement or loan units while repairs are being carried out
- Service / commissioning site visits
- Operational training courses
- Maintenance training courses
- Supply of replacement components
- Supply of documentation
- Technical advice by telephone

Customer Support Hours
Factory based customer support engineers can be contacted by telephone during normal office hours (Monday - Friday 8:30 a.m - 5:00 p.m). Outside these hours, a message can be left on the answering machine, all messages are dealt with promptly on the next working day. Alternatively a message can be sent to them by email.

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

Repairs
If you need to return goods to Calrec, for whatever reason, please contact the Company beforehand in order that you can receive advice on the best method of returning the goods, and that a repair order reference number can be issued.

Standard of Service
Ensuring high standards is a priority, if you have any comments on the level of service, product quality or documentation offered to you by Calrec, then the Customer Support team would be pleased to receive your comments through any of the normal contact numbers, email or on the User registration form located at the end of this manual. If you have any other issues regarding your Calrec purchase, then please contact us and we will do our best to help. Calrec welcomes all Customer feedback.

Operator & Installation PDFs
This manual and the Omega Installation manual can be found in pdf format on your console's CD Handbook.

You can also access this manual on your console's PC from the start menu, under the Calrec Omega group.

OMEGA
OVERVIEW

CALREC

Putting Sound in the Picture

INTRODUCTION

Omega is Calrec's fourth all digital production console designed for the most critical broadcast production and on-air applications. It is designed for use in television and radio production studios and outside broadcast vehicles where broadcast facilities cannot be compromised but space is restricted. Based on the well established Alpha and Sigma digital system architecture, Omega provides comprehensive features and functionality with sophisticated failure protection systems.

Omega continues to meet the changing requirements demanded by the on-set of surround sources in live production, providing 5.1 surround channels, sophisticated assignable monitoring solutions and encompassing flexible TFT metering.

Bluefin
The Bluefin High Density Processing System provides 160 equivalent mono signal paths - and can provide this incredible power on just one card. The Bluefin technology project has been in development for a number of years and elements of the technology have been used in the Alpha console since its launch in 1999. It is a proprietary architecture which is has been conceived and developed entirely within Calrec.

Bluefin processing provides benefits beyond size and functionality. Calrec products have an unrivalled history of reliability and Bluefin further enhances this. The design generates less heat, uses less power and back-plane activity is reduced. System resilience is improved by 100% redundancy of all processing elements through the provision of a second card – it is like having another console as a hot spare.

The reality of HD programming is that it will continue to create more demand for 5.1 content. This technology meets production needs for HD production and live to air delivery far into the future.

Commitment
Calrec has a world-wide customer base which includes many of the world's most prestigious broadcasters. By consistently focusing upon purely broadcast products, Calrec offers consoles with the most comprehensive combination of performance and features available. The high level of reliability of all Calrec products, many of which are still in daily use after 20 years, reflects a clear awareness of the critical nature of the operating environment.

This understanding of the real issues of broadcast operations is one of the many reasons why operators and management alike prefer Calrec. Omega is designed to ensure that this level of confidence will continue in the digital era.

ISO 9001 and RAB Registered
Calrec Audio Ltd has been issued the ISO9001: 2000 standard by the Governing Board of ISOQAR.

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

PRINCIPAL FEATURES

CHANNEL / GROUP FACILITIES

- Up to 160 mono equivalent channels: 48 stereo channels plus 64 mono channels.
- Up to 24 full 5.1 surround channels allocated from available channel resource.
- 8 x 5.1 surround, stereo or mono audio groups.
- Table-top or floor stand mounting.
- All channels and groups have 6-band EQ, 2-band Filters, Compressor/ Limiter and Expander/Gate.
- Separate 2-band EQ and 2-band Filters for Dynamics side-chain.
- Up to 192 mono equivalent assignable inserts for outboard gear.
- All channels and groups can have a direct output or a mix-minus feed.
- Direct outputs can be pre EQ, pre fader, or post fader.
- Automatic cross-fading facility, with user-definable fade out and in times.
- Additional VCA style grouping system.
- Every channel can route to every buss, at the same time, without restrictions.

BUSSES

- 2 main stereo or 5.1 surround outputs with Compressors/Limiters.
- 20 auxiliary outputs which can be paired for stereo.
- 48 outputs for multi-track or general purpose feeds.
- Simultaneous LCRS, stereo and mono outputs available from each 5.1 main output.
- Direct input available to group, mains, aux and mix-minus busses.

SYSTEM

- Up to 56 faders, with A and B layers of control, plus 1 main output fader with a second sub-main output available on a second layer of control.
- All faders are motorized and touch-sensitive.
- Comprehensive surround panning and monitoring.
- User-definable monitor selection and control panel with intelligent buttons.
- Flexible TFT screen-based meters with total user configurability.
- Delay available on channel inputs, channel, group and main insert returns, channel and group insert sends, and channel and group direct outputs.
- Optional I/O expansion via a wide area interface such as MADI or Hydra, Calrec's sophisticated audio networking system.
- On board Flash ROM memory system allows 99 full console or partial memories.
- PC backup allows an unlimited number of memories.
- Sophisticated GPIO facilities.

RESILIENCE

- Console operates independently of PC.
- Independent DSP operation ensures audio continuity even during PC or control reset.
- Console and racks boot from power on in less than 20 seconds.
- Full control system reset in less than 15 seconds with no loss of audio.
- Last settings fully restored on power-up or reset.
- Automatic change over to hot spares for power supplies, control cards and DSP card.
- All cards and modules are designed to be hot plugged.
- All cards and modules are designed to initialise upon insertion.

SYSTEM SPECIFICATION

DIGITAL INPUTS	
Word length	24-Bit
Formats supported	AES/EBU (AES3) Also suitable for use with SPDIF (IEC958 Type 2) signals
Interface	110 Ohm transformer balanced, 5V Pk-Pk 75 Ohm unbalanced (BNC), 1V Pk-Pk
Sample rate conversion	24-Bit switchable on all digital inputs
SRC THD+N	-117dB @ 1kHz, 0.00014%
DIGITAL OUTPUTS	
Word length	24-Bit
Formats supported	AES/EBU (AES3)
Interface	Transformer balanced 4V Pk-Pk (nominal) into 110 Ohm load Unbalanced 1V Pk-Pk (nominal) into 75 Ohm load (BNC)
ANALOG INPUTS	
Analog - digital conversion	24-Bit
Input balance/CMRR	Electronically Balanced - Better than -70dB (Typically -80dB)
Input impedance	>1k Ohms for Mic gains (1K2 Nominal) 10k Ohms for Line gains
Sensitivity	+18 / -78dB
Equivalent input noise	-125dB (150 Ohm source, 22Hz-22kHz bandwidth)
Distortion	-1dBFS @ 1kHz - Better than 0.003% -20dBFS @ 1kHz - Better than 0.004% -60dBFS @ 1kHz - Better than 0.3%
Frequency response	20Hz to 20kHz +/- 0.25dB
Crosstalk	20Hz to 20kHz >-86dB
Delay	0.3ms
ANALOG OUTPUTS	
Digital - analog conversion	24-Bit
Output balance	Electronically Balanced, 20Hz to 20kHz, Better than -45dB, typically -55dB
Output impedance	<40 Ohms
Distortion	-1dBFS @ 1kHz - Better than 0.003% -20dBFS @ 1kHz - Better than 0.006% -60dBFS @ 1kHz - Better than 0.5%
Frequency response	20Hz to 20kHz +/- 0.25dB
Crosstalk	20Hz to 20kHz >-90dB
Delay	0.22ms
PERFORMANCE	
Digital to digital (AES/EBU) distortion	-1dBFS, 20Hz to 10kHz - Better than 0.002%
Digital to digital (with SRC) distortion	-1dBFS, 20Hz to 10kHz - Better than 0.002%
Frequency response (analog input to output)	20Hz to 20kHz +/- 0.5dB
SYNCHRONIZATION	
48kHz synchronization from	NTSC/PAL Video Internal Crystal Reference TTL Wordclock AES/EBU Digital Input

ENVIRONMENTAL CONSIDERATIONS		
	Operating	Non-Operating
Temperature range	0°C to +30°C (32°F to +86°F)	-20°C to +60°C (-4°F to +140°F)
Relative humidity	25% to 80% Non-condensing	0% to 90% Non-condensing
Maximum altitude	2,000 Metres (6500ft)*	15,000 Metres (49,000ft)

Analog input for 0 dBFS can be pre-set globally to +28, +24, +22, +20, +18 or +15 dBu

Pre-fader headroom on analog inputs is adjustable globally from +24 to +36 dB in 2 dB steps

Analog output for 0 dBFS Matches input setting into >1 kOhm (+24 dBu max into 600 Ohms)

The system can be pre-set with up to five external sync sources, plus internal, such that if the 1st source fails, it will automatically switch to the 2nd, and so on.

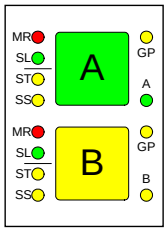
*This is the limit to which the safety tests are valid

LAYERING AND ASSIGNABLE CONTROL

Layering
Each fader can control two independent audio signal paths, named A and B. These signal paths can be either channels or groups, although for easy reference, the faders are simply known as channel faders. B signal paths are fully equipped with all the same facilities as an A path. The faders are motorized, so when switching between A and B, the fader will move to the correct position.

Less important signals can be placed on the B layer. Even then, only one button press is required to access them again. Using the ALL A and ALL B buttons is like moving to a different section of a single layer design. This arrangement allows more channels to be fitted into the space available in the frame.

Assignable Control
Each fader has an Assign button for each audio path. The Assign buttons are labelled A and B for channel or group paths; and M1 and M2, for the main output paths on the main output fader. Pressing the Assign button causes the central control panels (the Assign panels) to display and control the settings for that fader's channel, group or main path.



In this way a large number of controls can be accessed, for each audio path, from the central listening position. As there is less need to move around a large control surface, controls can be accessed more efficiently.

A number of controls and displays are also provided on a per fader basis, to allow important information to be even more easily available.

In addition to the above, the channel faders are assignable, in that the operator can choose which faders to use for the mono channels, stereo channels, surround masters or groups.

PATHS AND PORTS

Paths and Ports
On an analog desk, the channel inputs are physical connections to the channel module or card. They are fixed. Channel 1's input is always channel 1's input (even though it may be possible to control channel 1 from a different fader). Every channel will probably have both a mic and a line input, even though most will only use one of them at any one time.

In a digital desk, there are two basic types of input: mic/line and digital. However, it is not necessary to provide both types for every channel, as only one input will be used at any one time. To provide both types for each channel would increase the cost, size and power consumption of the desk unnecessarily.

Instead, a "pool" of each type is available, plus an internal matrix to allow any of them to be connected to any channel. This provides more flexibility than is possible with analog designs. The matrix can be thought of as an electronic patch-bay with the advantage that any connections made will be stored with the console's memories. A similar matrix and "pool" is provided for the outputs which is also stored with the memories.

Each channel can select from two inputs (1 and 2), which can be any combination of mic/line and digital. Both inputs can be set up independently, using separate input controls (input gain, phase reverse, phantom power, etc). The switching between the two inputs takes place after these controls.

The basic terminology is that channels, groups and mains are referred to as "paths" within the digital processing system, and the inputs and outputs are referred to as "ports" through which the audio signals have to pass. Ports are connected to paths via the Matrix.

All ports are optional, including those for the monitoring. The system can be supplied with any combination of mic/line and digital ports. Calrec digital consoles are available in a number of configurations known as Audio Packs, which are a suggested complement of ports. The Audio Pack which most closely matches the requirements of the installation can be chosen, and the port quantities can be fine tuned appropriately.

Port Labels
During installation, all the ports on the system are labelled to match the studio wiring. Some rules are imposed on this labelling:

- Inputs and outputs should be labelled in pairs.
- The label must be no more than six characters (to fit on the console's displays).
- The same label cannot be used more than once (but an input can have the same label as an output)

Inputs and outputs are labelled in pairs for use with any type of signal; mono, stereo or surround.

The system automatically adds a left (L) and right (R) suffix to the label to distinguish between the two halves of the pair, or an LR suffix when the pair is used together.

The pairs can be used either for two mono signals, or a stereo signal, or parts of a surround signal. This includes the digital ports if the external circuit allows them to be used for two mono signals.

Those inputs or outputs which are dedicated externally to mono signals only (telephone lines, mono reverbs, mono distribution feeds, etc), can be specified as being mono. In this case, the two halves of the pair have separate labels and the L & R suffixes are not applied. Inputs and outputs labelled in this way cannot be connected in pairs to stereo paths.

Port Lists
In addition to labelling, each port may be allocated to one of a number of lists using the Options - Port List screens. This allows inputs and outputs which are wired for similar purposes to be grouped together for selection. Each list can contain a mixture of normal inputs or outputs (labelled in pairs) and inputs or outputs dedicated to mono signals.

The lists can be sorted into the order in which they appear on the selection screens. The lists will appear in the same order on the control surface port selection controls and I/O screens. It is possible to restrict the lists which appear on the panel. This ensures that only the relevant lists are immediately available at the user's fingertips. All lists are always available on the I/O screens..

SIGNAL PATHS

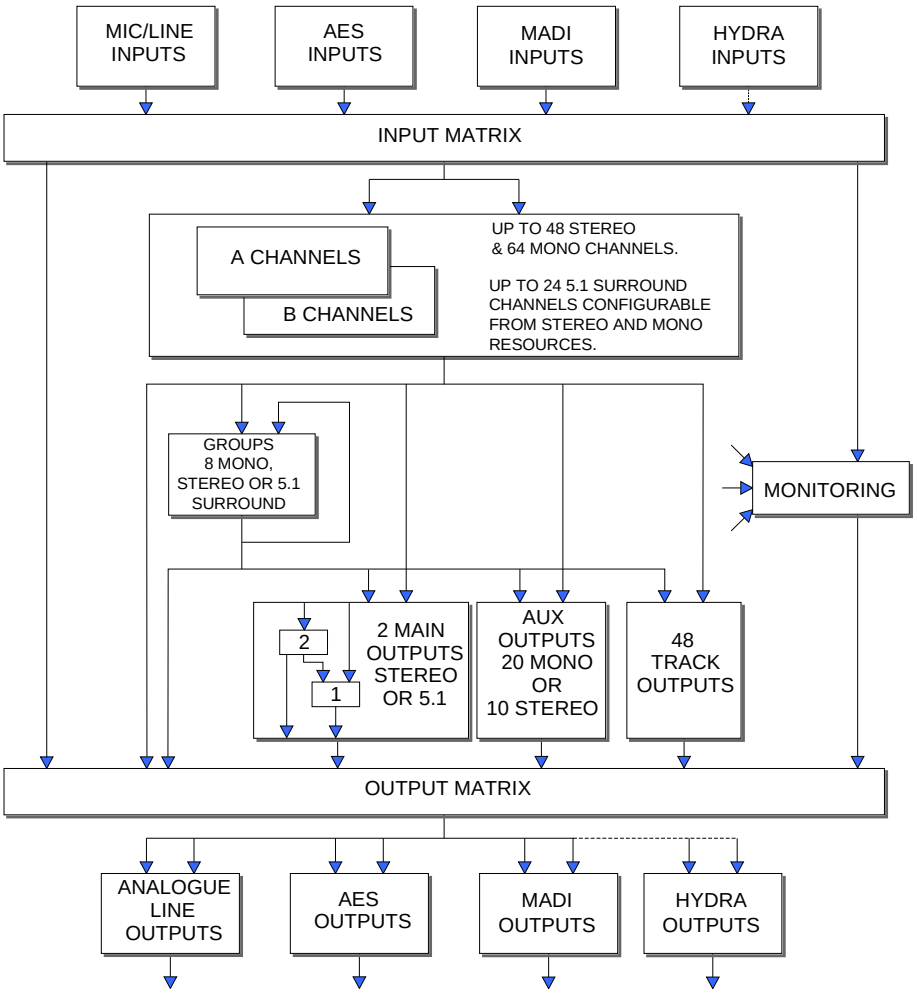
The system can have 160 equivalent channels: Up to 48 stereo plus 64 mono channels. Up to 24 5.1 surround channels can be created, each of these will use the resources of 2 stereo channels and 2 mono channels.

The 8 groups can each be designated as mono, stereo or full 5.1 surround. In addition, as many VCA style groups as required can be created.

If a main output is designated as 5.1 surround, then a mono rear is derived at the output to allow it to be used as LCRS mains. Stereo and mono down mixes of the 5.1 are also produced.

If a channel is panned to both a stereo and 5.1 bus simultaneously, the pan law to each will be correct, as though the other bus did not exist, even though the same control is used to achieve the pan.

The 20 mono auxiliary outputs can be paired up to give up to 10 stereo auxiliary outputs. This is done using the User-Busses screen.



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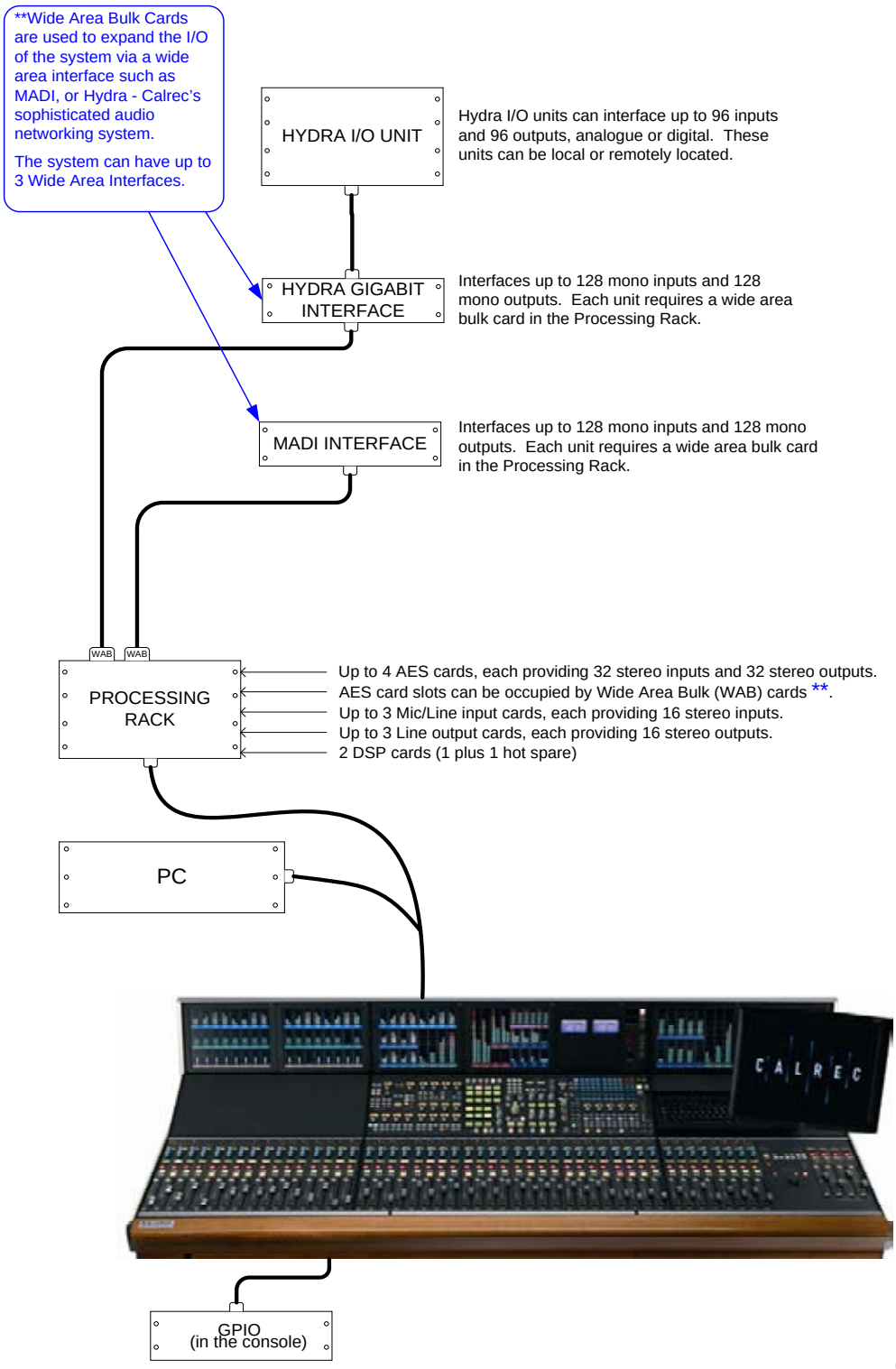
INPUTS AND OUTPUTS



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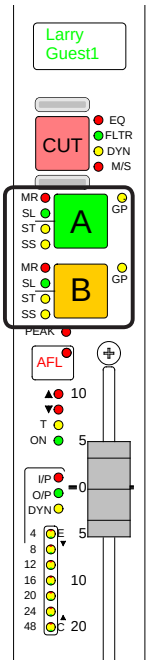
GETTING STARTED

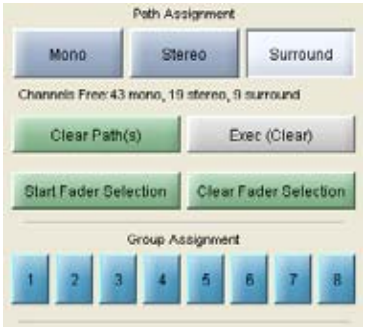
As a safety measure, ensure that all faders are minimized, and the control room level control is no more than half way up.

Check that the basic system ports have been set up and the control room monitor speakers are connected to the appropriate outputs. Then, choose a channel fader by pressing the A (or B) button on the channel fader panel.

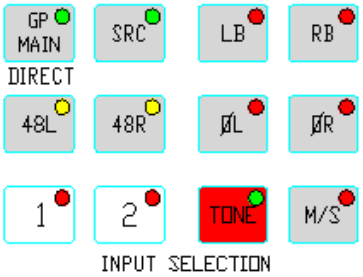


Next, go to the USER-CHAN screen by selecting USER and then CHAN on the touch screen.

If a path type is not already indicated, select either the mono or stereo button to assign a mono or stereo channel to the fader or one of the group buttons to assign a group to the fader. The surround button will create a 5.1 surround master. This is described in more detail later on in this manual.

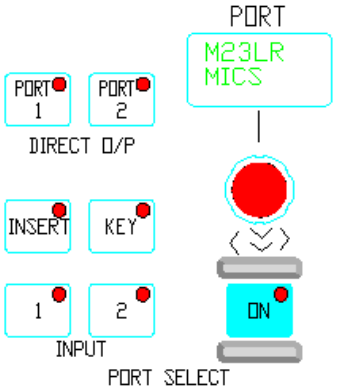


Next, go to the **Input Selection** area of the control surface and select one of the channel's two inputs 1 or 2.



Go to the **Port Select** area of the control surface and select Input 1 or 2 in order to assign a port to it. Do this by turning the selector control knob to scroll through the available ports.

Once you have arrived at the port you want, press the ON button to connect it. (This is like inserting the patch cord).

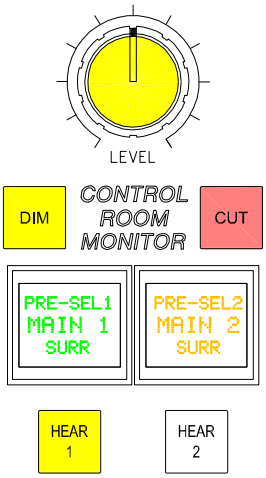


Pressing the knob down and turning it will switch to other lists of input ports (once these have been set up on the Options - Port List screens).

Port assignment can also be done using the I/O screens.

Set the input gain, panning, etc, in the Input/Output control section, the EQ and Dynamics using their controls, and route the signal, to Main 1 for example, using the routing controls.

Now fade up the Main 1 fader and select Main 1 SURR as a Control Room Pre-Select in the monitor section, and press the corresponding HEAR button. If the channel fader and LS controls are set correctly you should hear the signal.



Refer to the descriptions of the individual control panels and screens for more detailed descriptions.

TOUCH SCREEN LAYOUT

The system is designed to minimise the need for the operator to use the screen once the console has been preset. A logical user interface provides easy and quick access to the functions and information on the touch screen. Failure of the console PC has no effect on the operation of the control surface or the audio.

The Front End screens are divided into groups which are accessed using the buttons along the bottom of the display. Within each group there are a number of screens accessed by buttons up the left side of the display. On some screens, there are additional buttons to access sub-sets of the screen's function.

Options Screens

Options settings are not stored in the console memories but are saved and loaded separately using the buttons on each Options screen. This allows changes to be made without invalidating any saved memories. Changes to options take effect as soon as they are made, however if they are not saved, the next time the desk boots up the options will revert to their previous settings. Upon loading the options settings from the file on the hard disk, any changes made will be over written unless they have been saved. This allows changes to be tried out without losing the original settings and these original settings can be restored without having to re-boot the system.

Second PC screen

The software now supports use of a second PC screen which is configured as a Windows 'extended desktop'. Any of the screens showing a LOCK SCREEN button can be sent to that second monitor by pressing the button. They will remain on the second monitor whilst the main monitor is reassigned to any other required functions.

Screen controls for EQ, dynamics, routing, track output, aux send, aux output and delay; providing alternative controls to those on the control surface, plus some extra functions.

Sets the current state of various console functions. (These settings are stored in the live (hidden) memory. They are not stored with the console memories or options.

Operational screens which enhance the controls on the console and for setting options which are stored with the user memories.

Memory control screens to supplement the panel controls.

Set up and display of all the I/O connections stored with the user memories.

Entry to and control of password-protected operational modes and troubleshooting screens.

The Options screens are used to pre-set the system to the studio's required settings. This includes set up of meter configurations, monitor panel configurations, port lists, serial interface and label associations, GPIO and condition switching.

Screens for setup and control of an audio network system These screens are only visible if Hydra audio networking is installed.

The "EXIT" button at the bottom corner of the screen will exit the application. Next to this button are two indicators which show the status of the primary and secondary control processors. During normal operation, the primary processor will be in use, and its indicator will be green. When busy the processor's indicator will be yellow, during which time no changes can be made to the control screens (changes to the control surface can be made, and will take immediate effect). Whilst the secondary processor is in standby, (ready to take over from the primary should a fault develop), its indicator will be amber. If the primary processor fails, its indicator will change to red. The secondary processor will take over, and its indicator will change to green. When the primary processor becomes available again, it will automatically take back control from the secondary processor, and the secondary processor will return to standby mode.

ERROR MESSAGES (AWACS)

If a problem does develop, messages are delivered on the Automatic Warning and Correction System (AWACS) screen.

The AWACS button at the bottom of the screen will flash to alert the user that a message has been reported. Selection of this button will open the AWACS page, where messages can be viewed.

Selecting a message will reveal a more detailed description. Message history is saved to the PC's hard disk for future analysis.

Three types of messages are reported:

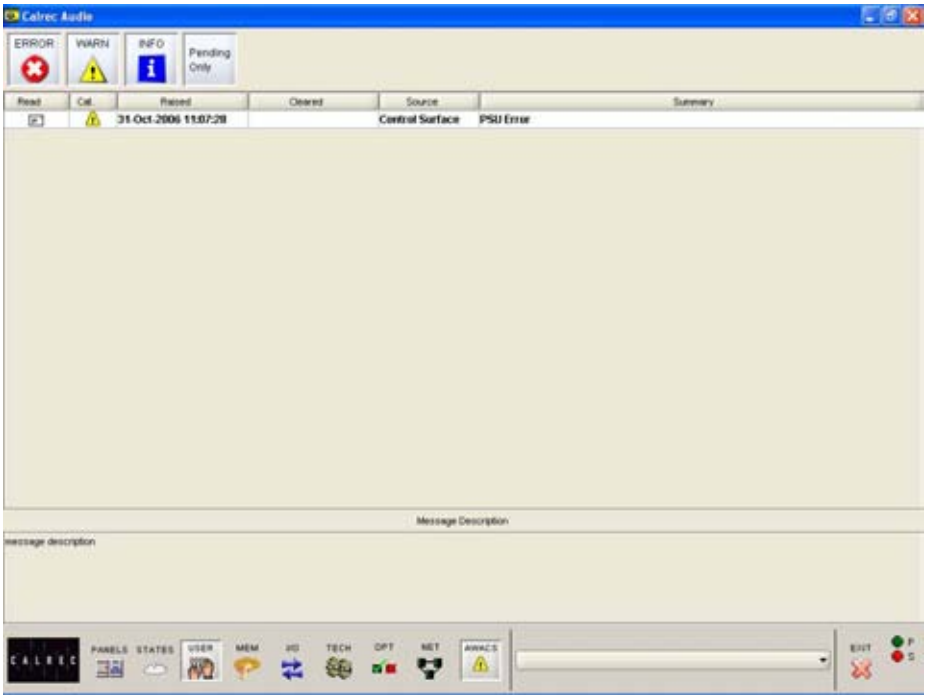
Information messages, e.g. "Control Surface UN4806 processor started successfully"

Warning messages, where the system back-up has taken over

Error messages, where the system cannot recover by itself (perhaps because the back-up is already in use)

As the system has many back-up features, it is possible to continue operating after errors are reported. If uncleared errors are still present, an icon will flash in the AWACS button. Selecting this button at any time will switch back to the AWACS screen.

Information messages can be cleared by selecting them and then leaving the AWACS screen. Warning and Fatal Error messages can only be cleared by clearing the error and restoring the system to its normal operational state.



It is possible to set the PSU Fail Indicator button on the Broadcast Facilities panel, to flash when an error message is reported. This is set up on the Options - GPO screen.

OMEGA
FADER AREA

CHANNEL AND GROUP FADERS

Channel and group paths are controlled by the channel faders. Any fader can control any channel or group path. Main output paths have their own dedicated fader in the main outputs section.

Paths A and B

Each fader can control two independent audio signal paths, A and B. The A and B buttons are used to select the two channel paths. Selecting a path causes the central control panels (the Assign panels) to display and control the settings for that fader's channel or group path. Any changes made to the Assign panels will affect the selected path only.

When switching between the two paths, the indicative displays and fader position will change to match the settings of each path. If a layer button flashes rapidly, it may be because the layers are locked.

Display Labels

The label in the display is the name associated with the input assigned to the path, or the group number if the path is a group. The input labels default to the Port ID but can be changed to a more suitable label using the I/O screens. Path A's label is shown in the top half of the display, and path B's label is shown in the bottom half of the display. If path A is active, the A fader assign button and the label will be lit in green. If path B is active, the B fader assign button and the label will be lit in amber.

Channel/Group Cut

The CUT button cuts the channel or group. Its effect is the same as fading out the channel or group. Alternatively, there can be ON buttons which switch the channel on.

Assign Button LEDs

A set of indicative LEDs give more information about the path.

- MR - The fader path is a Master of a VCA style group
- SL - The fader path is a slave within a VCA style group
- ST - The path is a stereo channel or group
- SS - The path is a surround master
- GP - A group is assigned to the path

AFL

AFL will be heard through the monitor loudspeakers (main or small). AFL will be heard in surround provided that surround panning is in use and the loudspeaker system is surround.

Indicative LEDs

The ▲ and ▼ Null LEDs illuminate when the position of the fader is not the same as the level of the audio. For example, if a VCA master is moved away from the `0' position, the null LEDs on the slaves will light to indicate whether the audio is above or below the position of the fader.

The T LED indicates that the console has recognized that the fader has been touched.

The PEAK LED will light if the channel or group signal is within 3 dB of the clipping level. The ON LED lights when the audio level is not at the ∞ position.

Fader Bargraph

The fader bargraph indicates the level at the channel input (post the input gain, input switching and the tone switching), the channel direct output, or the gain reduction of the dynamics, indicated by the three LEDs. Selection is made using the USER-CHAN screen.

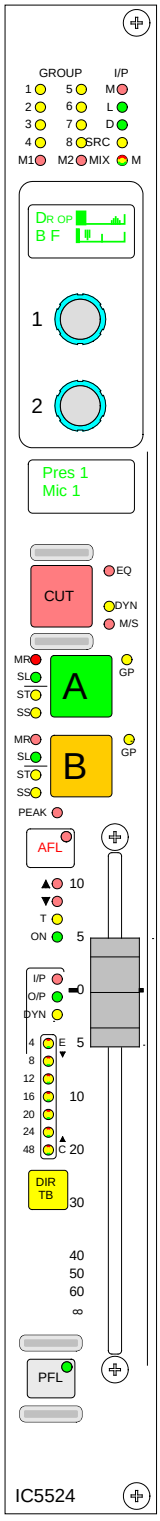
The EQ, FLTR, DYN and M/S LEDs indicate that these functions are active on the selected path (EQ, Filters and Dynamics settings may be flat - LEDs indicate that the function is switched IN).

Talkback

Talkback is available to direct outputs using the DIR TB button. All Talkback buttons are subject to On-Air inhibits, set up on the Options - TX/REH screen.

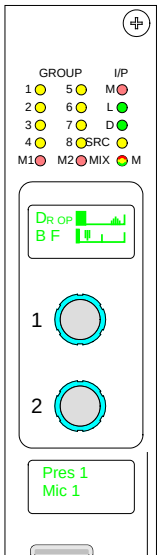
PFL

PFL will be heard on the small LS (or the main LS if PFL to Mon is selected on the States screen), or PFL LS (depending upon the monitoring configuration). PFL is also provided on the fader overpress.



CHANNEL CONTROL

Above the channel fader, there are a set of indicative LEDs and a set of user-definable rotary controls (Wild controls) for each fader path.



A set of LEDs provide good visual feedback of :

- Routing to groups and mains
- The currently selected input type (mic, line, or digital)
- If the Sample Rate Convertor (SRC) is switched in (for AES inputs)
- Whether the direct output is feeding the mix minus bus (indicated in red).
- Whether the direct output is being fed with a mix minus feed (indicated in yellow).

Wild Controls

There are two WILD controls per fader. Almost any assign panel rotary control for the selected path can be assigned to either Wild control on the fader, including:

- Input Gain
- Aux Send Level
- Dynamics
- EQ
- Direct Output Level
- Pan and Balance
- Stereo Width
- Track Output Level

Wild controls are assigned using the USER-CHAN screen. Once assigned, the Wild controls "FLIP" with the fader providing the same function for each of the two paths.

The A and B faders may also be assigned to a Wild control, in which case it will be the opposite fader which is being controlled.

The colour of the Wild control display will show which fader the control is related to: Green for A, Amber for B.

Multiple Wild Control Assignment

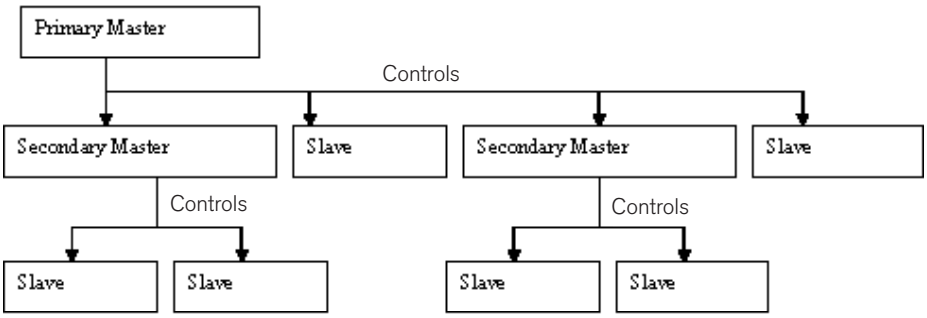
It is possible to assign controls to more than one fader path at a time, either by selecting individual fader assign buttons (A or B), or by defining a "block" or "Region" of faders. It is possible to assign the same control to Wilds 1 or 2 for all fader paths.

Wild Control Push-Switch Option

If a wild control has Aux Send or Front Pan or delay controls assigned to it, the user can control the ON/OFF or IN/OUT status of these controls using the Wild control push-switch. This feature is optional, so it can be enabled or disabled using the Options - MISC screen.

VCA GROUPING

VCA groups allow the audio level, CUT, AFL and PFL functions of several slave faders to be controlled from one master fader.



A VCA group is made or edited by holding down the Assign Button (A or B) of the fader to be master and pressing the Assign buttons of faders to be added or removed as slaves. There can be up to 48 members of a VCA group.

When the level of the VCA master is adjusted it will change the audio level of all its slaves by the same amount. Changing the CUT, AFL and PFL settings of a VCA master applies the same settings to its slaves.

The slave faders will not move when their master is adjusted, but the Null LEDs will illuminate to indicate whether the audio is above or below the position of the fader.

The MR and SL LEDs next to the Assign buttons on the fader strip indicate whether that fader is a master or a slave.

The editing of VCA groups is enabled and disabled using the States screen. This provides protection against accidental changes.

Primary and Secondary VCA Masters

It is possible to select a VCA master as a slave of another VCA group. When this happens, the slave master is known as the secondary master, and its master is known as the primary master.

When the level of a primary master is adjusted it will change the audio level of its own slaves and the level of its secondary master's slaves by the same amount. Changing the CUT, AFL and PFL settings of a primary master applies the settings to the slaves, secondary masters and their slaves.

When the level of a secondary master is adjusted, the audio level of all its slaves changes by the same amount. Its adjustment will not affect the level of the primary master or its slaves. Changing the CUT, AFL or PFL of a secondary master applies the settings to the secondary master's slaves only.

The number of slaves in VCA group with a primary master would include all the primary master's slaves and the slaves of all its secondary masters. A secondary master fader has both the MR and SL LED lit.

It is possible to create the primary or secondary group in any order. A slave can be made into a secondary master by adding slaves to it. If a slave added to the VCA group is already a master it will become a secondary master.

5.1 Surround Channels

If a surround master is part of a VCA group then the VCA primary and secondary master levels, cut settings and APFL settings affect all of its spill legs. It is not possible for the spill faders themselves to be masters or slaves of a VCA group.

VCA Group Interrogation

Interrogation provides a clear way of indicating VCA group assignments. When the fader assign button of a VCA group member is held down, the fader assign buttons of all members of the same group will be lit, and the fader assign buttons of paths which are not part of the group will cease to be lit.

Interrogation of a Primary Master will light the fader assign buttons of its primary slaves and secondary masters.

Interrogation of a secondary master will light the Assign buttons of its secondary slaves, and the primary master's Assign button will flash.

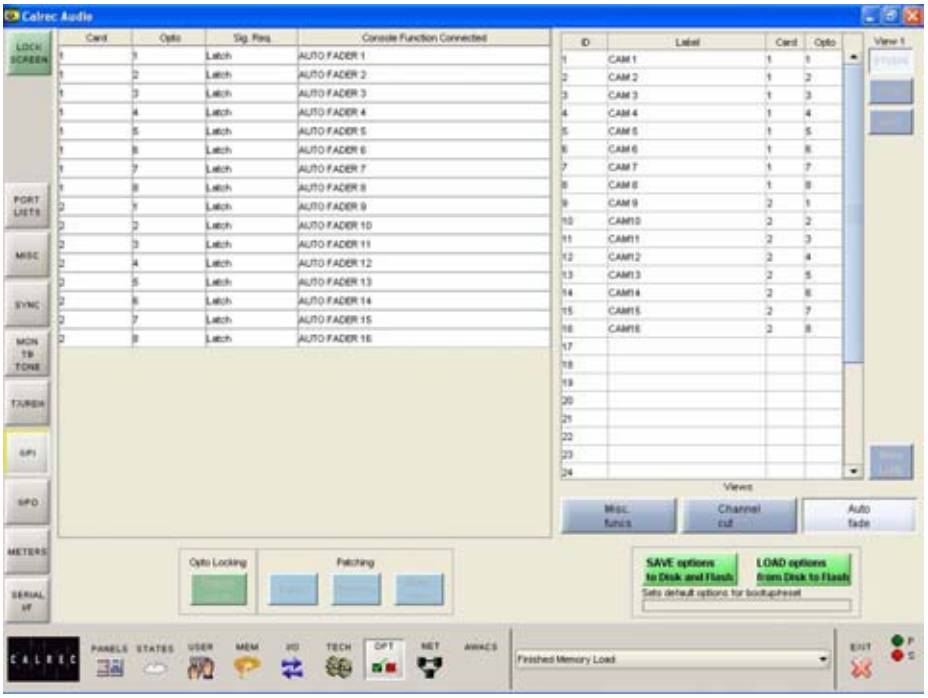
AUTOMATIC CROSS-FADING

This feature allows the user to automatically fade channel and group faders in or out under the control of an external signal. Cross-fades may be achieved by driving two or more optos with one fader being faded out while a second fader is being faded in.

192 assignable auto-faders are available. Each auto-fader provides the ability for one path to be faded up to and down from the current fader level.

Assigning Auto-Faders to Opto Inputs

Each auto-fader can be assigned to any one opto input using the Options-GPI screen.

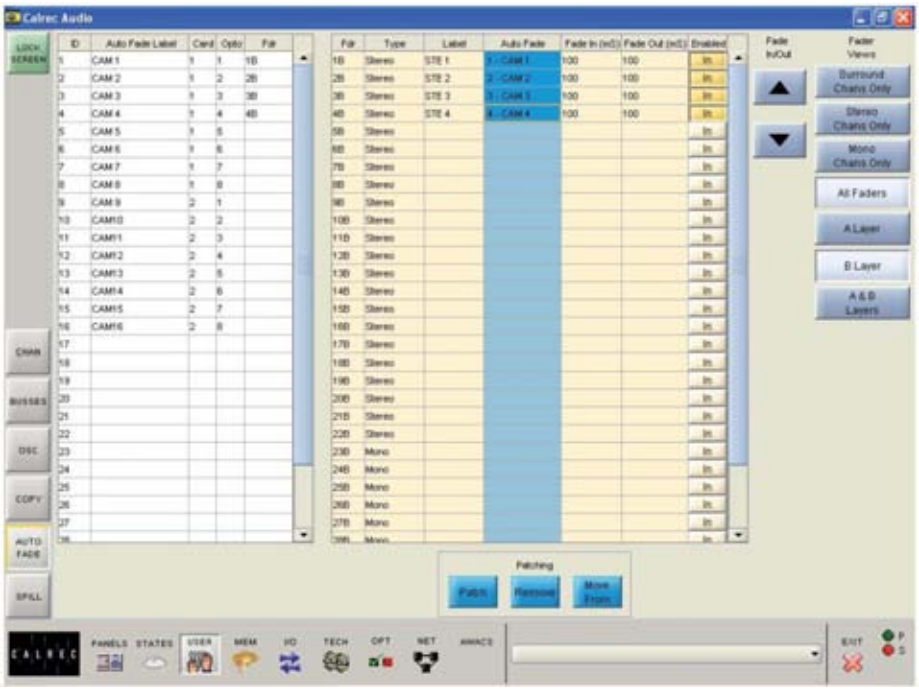


Select an Opto from the available list on the left, and an auto-fader from the auto-fader list on the right, and then select “Patch”. Each autofader has a 6 character user editable label.

Auto-Fade Screen

The User-Auto Fade screen is used to allow assignment of each auto-fader to a channel or group fader.

A list of auto-faders is on the left hand side of the screen, and shows auto-fader number, auto-fader label, assigned Opto card and circuit, and assigned fader number. Only faders with valid channel or group paths will be available for assignment although other faders may be displayed.



Auto-faders are assigned to channel and group paths by selecting an auto-fader and a channel or group from the available lists, and selecting “Patch”.

Fade In/Out Times

The fade in and out times of each auto-fader are individually adjustable either by typing a value in the relevant cell in the fade in/out columns, or by using the nudge buttons. The range for both parameters are 10 ms to 5 secs, as follows:

- 10 ms to 100 ms in 10 ms steps
- 100 ms to 1 sec in 100 ms steps
- 1 sec to 5 sec in 500 ms steps

Operation

Once an autofader has been assigned to an opto input, and has a channel or group path assigned, it is possible to automatically fade in or out the assigned channel or group fader under the control of the assigned opto input. When the opto input is fired, the path connected to the opto will be automatically faded in to the current fader level (after taking into account any VCA fader adjustment). When the opto is not fired, the fader connected to the opto will be automatically faded out. An auto-fader without an assigned opto will remain inactive, its operation will have no effect on the audio but it may still be assigned to a path.

The user can enable and disable each autofader by selecting the Enabled IN column.

Indication of an Auto-Fade

Indication of an auto-fade is provided by illuminating the down NULL LED on the fader strip when the fader is or is currently being faded out. If the current physical position of the fader is OFF then this will not apply. The down NULL LED will revert back to its original state as the path is faded back to its current position. If the path’s fader is also a VCA master, the NULL LED operates only if the fader is in VCA interrogate mode thereby exposing the status of the slaved path.

LAYER LOCKING

Each fader can be locked to always display either its A or B layer. When a fader is locked to an A or B layer, the unwanted A or B layer button is disabled and the fader is isolated from any ALL A or ALL B switching.

Enabling layer locking

To enable layer locking navigate to the Options - Misc screen.

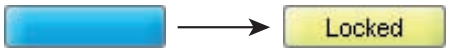
Locate the Layer Lock option and ensure the ENABLED button is selected.

Defining locked layers

To choose which layers are locked to which faders, navigate to the User - Layer Locking screen.

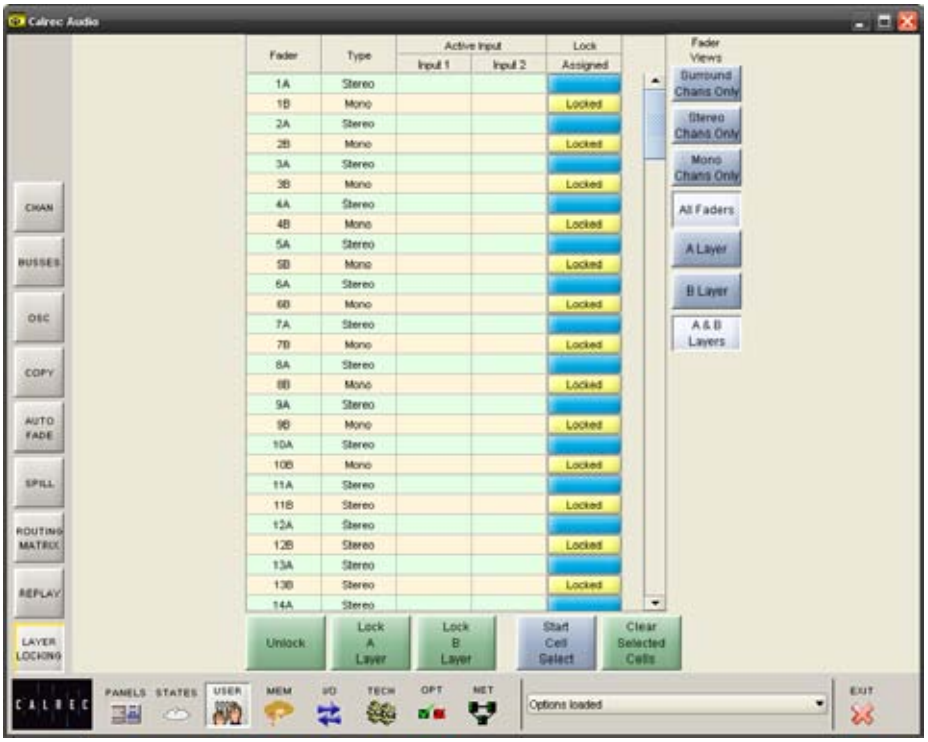
You will be presented with a list of all faders on the surface which can be filtered using the Fader Views buttons to the right.

To lock a layer to a fader, press the relevant blue assignment button in the 'Lock Assigned' column. This will change to a yellow 'Locked' button to confirm the assignment.



Multiple cell selection

To select multiple cells and simultaneously assign a layer lock, press the 'Start Cell Select' button. This allows you to click and drag over multiple lock assignment buttons. Selected buttons will be highlighted with a black border.



With multiple cells selected, pressing either the 'Lock A Layer', 'Lock B Layer' or 'Unlock' buttons will lock all selected faders to the A layer or B layer or remove all layer locks respectively. Press the 'Clear Selected Cells' button to remove the multiple cell selection.

OMEGA
5.1 SURROUND CHANNELS

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5.1 SURROUND CHANNELS

5.1 Surround channels provide the ability to control a discrete 5.1 source as a single channel. The system can have up to 24 surround channels. A surround channel consists of a surround master and the paths which are used to construct it.

Creating a Surround Channel

The surround button on the User-Chan screen is used to create a surround channel on the currently assigned fader.

When this happens, the currently assigned fader becomes a surround master, and the assign panels show and allow adjustment of the surround master settings. The surround master holds the master control settings which affect the operation of the surround channel.

Each 5.1 surround channel uses the resources of 2 mono channels for Centre and LFE; and 2 stereo channels for L/R and Ls/Rs. These resources are allocated as the surround channel is assigned, from the available mono and stereo channels.

Surround Spill

A set of screens are provided, to control the individual legs of the surround channels, groups or mains. In addition, if your console uses the optional surround spill panel, adjustment can be made from the control surface.

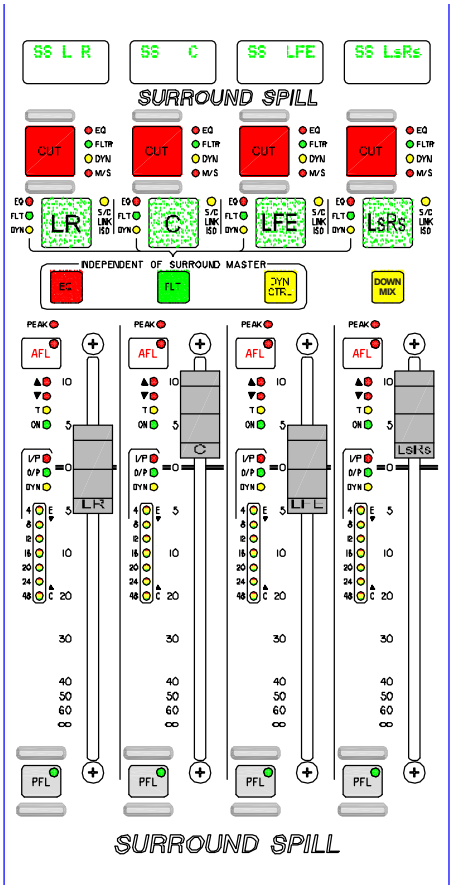
When a surround master is selected as the currently assigned fader, the spill panel becomes active and displays the information for each of its spill legs.

Each spill fader has its own assign button, which is used to select the spill leg as the currently assigned path when the spill panel is active. The spill's assign button lights when selected, and its surround master's assign button will flash. When a spill leg is selected as the currently assigned path, the assignable panels show and allow adjustment of its settings.

If a surround path is routed to a stereo bus or meter, a stereo down mix is created. When the down mix button on the spill panel is selected and the destination is a stereo group or main output, the spill faders will switch to allow adjustment of each individual spill paths contribution to the down mix. Other fold-downs, for example a stereo mix minus are not affected by the spill faders and are pre set with the following parameters.

Spill Path	Level (dB)
L/R	-4.5
C	-7.5
Ls/Rs	-10.5
LFE	Off

The surround master level controls for input gain, fader position, direct output, aux send and track send, act like VCA masters of the spill leg controls. With a surround master selected, the balance control in the Input/Output section acts as an input gain trim control.



User - Spill - Assign Screen

This screen provides alternative selection controls for the surround channels and groups, and their individual spill paths.

Input Patching

Inputs are patched to the spill legs and not to the surround master channel. When an input is patched to a spill leg its input settings (SRC, Phantom Power) are selected individually for each spill leg.

If a stereo or mono channel uses the same input port as a spill leg, and phantom power or SRC is selected or de-selected on that path, this would then change the status of the surround channel and all its spills. Each spill follows the input 1,2 setting of the surround master. They cannot be switched individually.

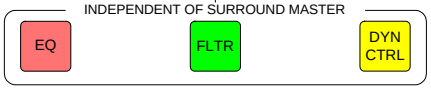
Mic Open System

When a port, which is assigned to a mic open buss (on the Options - Port Lists screens), is patched to a surround spill leg, the mic open circuit will operate when that surround spill leg is faded up and routed to the programme output.

The system takes into account the routing and fader status of both the surround master and its spills, as both will have an effect on the open path.

INDEPENDENT SPILL PATH CONTROL

When a surround master is selected as the currently assigned fader, the spill panel will become active and display the information for each spill leg of that surround channel. When a spill leg is selected using its assign button, settings can be adjusted for just that leg of the surround channel. Some settings however, are only adjustable using the surround master, unless the spill path is made independent.



Normally, settings for EQ, filters and dynamics applied to the surround master affect all the spill legs except LFE. The LFE spill leg controls its settings independently of the surround master.

The EQ, FLT and DYN CTRL buttons on the surround spill panel light when selected, and are used to allow the currently assigned spill leg to control EQ, filters and dynamics independently of its surround master. LEDs next to the spill path's assign button indicate which functions are independent.

If the spill path is made independent, it retains the existing master settings until its own buttons or shafts are operated. If the EQ, FLTR or DYN buttons are de-selected, making the spill non-independent, the spill will immediately adopt all the same settings as the master control.

Spill Independence Screen

Independence can also be activated for the spill paths of each surround channel using the User-Spill screen, by selecting the relevant cells. The fader level can also be adjusted from here, by selecting the required cell in the FDR OFFSET column, and using the nudge buttons.

USING 5.1 SURROUND CHANNELS

Dynamics Linking
There are 2 desk wide user dynamic link busses. Each surround channel or group has its own dynamic link bus.

When a surround channel is created the surround master and all its spills except the LFE are associated with the surround channel's dynamic link bus. The LFE is not linked and its settings are independent of the surround master's.

In normal operation, if a surround master is assigned to a dynamic link bus using the link buttons on the dynamics panel, all of its spill legs will also join the same dynamic link bus. It is possible however, to make each spill leg independent of its master's link bus, so that it can be linked to a different bus. Independent spill legs do not change if the surround master's link bus settings are changed or removed.

The dynamic link or "side chain" independence of the assigned spill fader is toggled using the User-Spill screen. It can also be toggled by pressing and holding down the link 1 or 2 button then pressing the other link 1 or 2 button. If a spill path's dynamic link is independent of the surround master's then when the spill is visible on the spill fader panel, the S/C Link ISO LED is lit.

If a spill path's dynamic link bus independence is removed, it is immediately linked to the same dynamics bus as its surround master.

On the surround master, the link button LED's show which user dynamics link the surround master is routed to. The OFF button's LED is lit when the master is not linked to any of the four user busses.

Alternate Equaliser and Filters
When the surround master is switched to the alternate EQ and filter settings, the same settings are applied to any non-independent spill paths. The spill paths cannot use the alternate EQ and filter settings independently of their surround master.

VCA Groups
If a surround master is part of a VCA group then the VCA primary and secondary master levels, cut settings and APFL settings affect all of its spill legs. It is not possible for the spill faders themselves to be masters or slaves of a VCA group.

APFL, Tone and Channel Cut
Each spill leg can select APFL, tone and CUT independently, but cannot select or deselect any of these when they are switched on using the surround master.

The surround master follows the tone inhibit selections on the Options - TX REH screen. The spill legs follow the inhibits via the surround master only, not individually.

An opto can remote cut a spill leg, but not a surround master.

Pre/Post Selections
A surround master's pre/post selections for inserts, direct outputs, aux sends, tracks, mix minus and dynamics forces all its spill legs to that setting, but the spill legs can then adjust these individually.

OMEGA
INPUTS AND OUTPUTS

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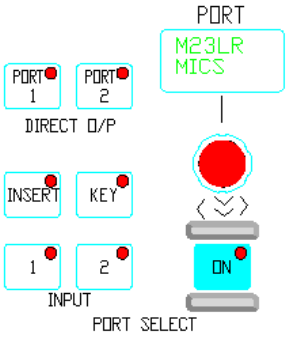
INPUT AND OUTPUT CONTROLS

The INPUT controls in the Input/ Output section allow separate settings for the two channel inputs, port assignment and gain, and ON/ OFF for the group and main direct inputs. Some of these functions can also be performed using the Panels - Input Output screen.

Input Port Assignment

Ports are assigned to inputs 1 or 2 for the currently assigned fader as follows:



- Press Port Select 1 or 2 to select an input. (Note: This does not switch the channel from input 1 to 2, or 2 to 1).
- Use the rotary control to scroll through the lists of available input ports.
- Upon reaching the desired input port, press the ON button to assign the chosen input port to the input 1 or 2.

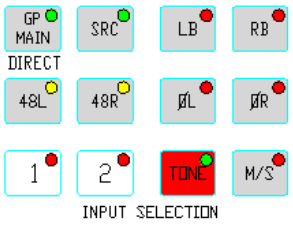
Pressing ON again will de-assign the port.

The port selection controls display shows the current port on the top half of the display, and the list it occupies underneath. Pressing and turning the rotary control gives access to lists of other types of input port which are set up using the Options - Port Lists screens. Lists appear in the viewing order set on the Options - Port Lists - Sort Order screen.

Port assignment can also be done on the I/O patching screens.

Input Selection Settings

A set of buttons are provided to select settings for the currently assigned input. Buttons 1 and 2 select between the two available inputs for the selected path.



SRC switches the sample rate converter on AES inputs.

48L and 48R switch phantom power on mic/line inputs. 48L is used for mono channels.

LB and RB provide Left to Both and Right to Both on stereo channels and groups.

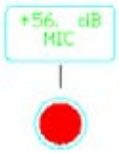
ØL and ØR buttons reverse the phase of the channel inputs. ØL is used for mono channels.

TONE switches tone to the input of the channel or group.

M/S converts a sum and difference (mono/stereo) input to left and right on stereo channels.

Gain Adjustment

Gain adjustment comprises 2 buttons for coarse ranging plus a knob for fine adjustment.



Pressing both buttons at the same time sets the gain to 0 dB. For a group or main path, the controls set the gain of the direct input.

Gain is adjustable from -18 dB to +78 dB for mic/line inputs, -18 dB to +24 dB for AES inputs, and ∞ to +10 dB for direct inputs.

Input 1 and 2 Gain Linking

The gains of inputs 1 and 2 can be linked such that if either input's gain is adjusted, the change in gain is applied to both inputs.

To link the gains, hold down one input selection button and then press the other. This function has to be enabled using the STATES screen.

The lower and upper level endstops still apply, and are dependant upon the input type. If one of the inputs reaches an endstop during adjustment, this will stop both gains going any lower or higher.

Input Balance and Width

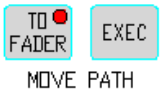
With I/P BAL selected, the rotary control adjusts input balance on stereo channels. In this mode, when LB or RB are selected, the control acts as an input pan control.

With WIDTH selected, the rotary control adjusts the width from mono, through stereo, to wide on stereo channels and groups. The control is switched in and out of the path using the IN button.

Input Delay

With I/P DELAY selected the rotary control and IN button control adjustment of Input Delay values. Delay must first be assigned to an input using the Panels- Delay screen before the controls here can be used.

Move Path and Move Strip



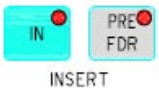
Paths can be moved or swapped from one fader to another, using the MOVE PATH buttons.
Select the assign button of the path you wish to move, and press TO FADER (the assign button will flash). Then select the assign button of the destination fader, and press EXEC to move the path. The two paths will swap over, and any Wild control assignments will move with them.
A surround master can be moved from path to path, but it is not possible to move a spill leg to another fader. It is not possible to move an isolated path.

The USER-CHAN screen can also be used to move paths. In addition, the whole fader strip can be moved to a different fader. This means that the A and B paths including any Wild Assignments will move to the selected destination fader strip. The Move Path function can be set to always perform Move Strip using the States screen.

Assignable Inserts

The system provides 96 pairs of assignable inserts which can be used in the stereo and mono channels and groups. In addition, the main outputs have their own dedicated inserts.

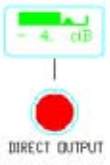
The send and return ports must first be set up using the I/O patching screens.



Pressing the INSERT port selection button allows the rotary control and ON button to control assignment of assignable inserts to channel and group paths. Assignable inserts can then be patched in and out of the channel or group path, using the Insert IN button. A button allows selection for the patch to be made pre-fader.

Direct Output and Mix Minus

Selecting PORT1 or PORT2 allows the rotary control and ON port selection controls to control assignment of 2 ports to channel and group direct outputs.

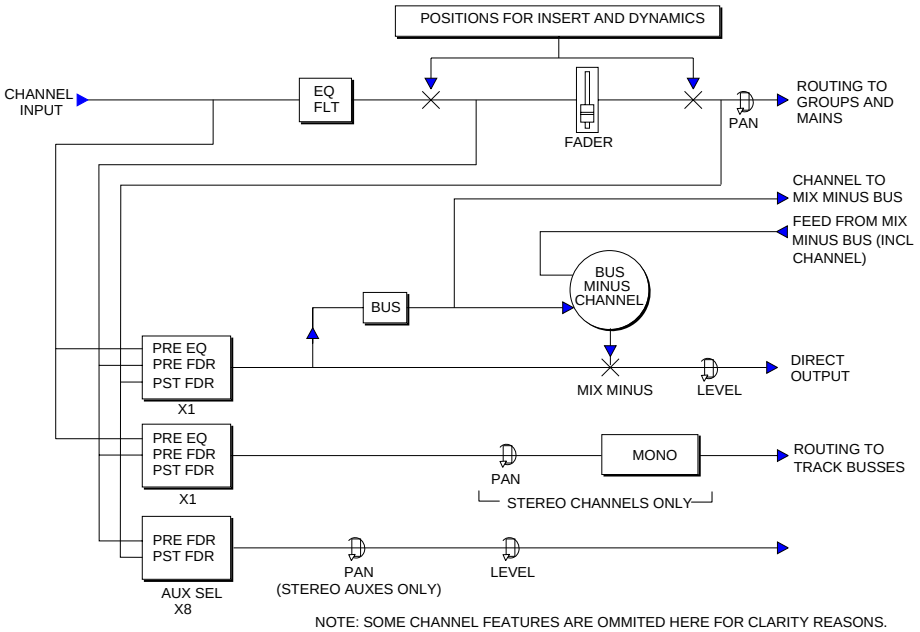


The channel or group's direct output can be Pre-EQ or Pre-fader using the selection buttons (It is post-fader with none selected), and its level is adjusted using the rotary control.

BUS feeds the direct output signal to the mix minus bus. The output of the mix minus bus feeds back into the channel or group, where its own signal is subtracted.

MIX MINUS then feeds the resulting signal to the direct output. Therefore, every channel and group can produce a mix minus output which is a mix of all the signals routed to the bus apart from itself.

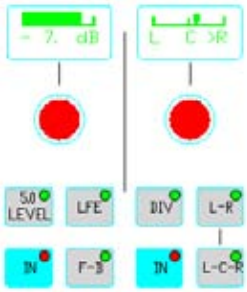
MIX MINUS and BUS are independent buttons, so the track routing selector and the direct output can be fed with the mix minus bus, even if the channel is not feeding the bus.



NOTE: SOME CHANNEL FEATURES ARE OMMITED HERE FOR CLARITY REASONS.

Stereo and Surround Panning

Stereo and surround panning is provided for channels and groups. Signals can be panned to both stereo groups and 5.1 outputs simultaneously. AFL can be heard in surround, post the pan controls, if the main outputs and monitoring are surround.



The L-C-R pan allows the signal to be panned from left, through centre, to right.

The L-R pan allows the signal to be panned between L and R and Ls and Rs simultaneously. On stereo channels and groups, the L-R PAN acts as a balance control.

The LFE button allows the rotary control to adjust the level of the LFE independently of the rest of a surround signal. The 5.0 LEVEL button allows the rotary control to adjust the level of all the surround legs except for the LFE. In order to route a channel to only the LFE of a surround main then the 5.0 level can be turned off (faded out) and the LFE level turned up. The 5.0 level is independent of the LFE level.

Divergence

On mono channels, the divergence control sets an amount of the centre signal to also feed to the left and right.

Divergence is switched in, using the IN button.

The divergence control on a stereo channel determines its left, centre and right contribution to a surround path.

When the divergence control is fully anti-clockwise the signal will be present only in the centre, and "MONO" is shown in the display. The pan control balances the mono mix of left and right into the centre.

As the divergence control is rotated clockwise the level of audio in the left and right increases and the level in the centre decreases. The display shows a bar of increasing width. Adjusting the pan control balances the left and right mix to the centre, and simultaneously balances the left and right audio.

When the pan control is fully clockwise the signal is present only in the left and right, and "STEREO" is shown in the display. The pan control acts as a balance for the left and right levels.

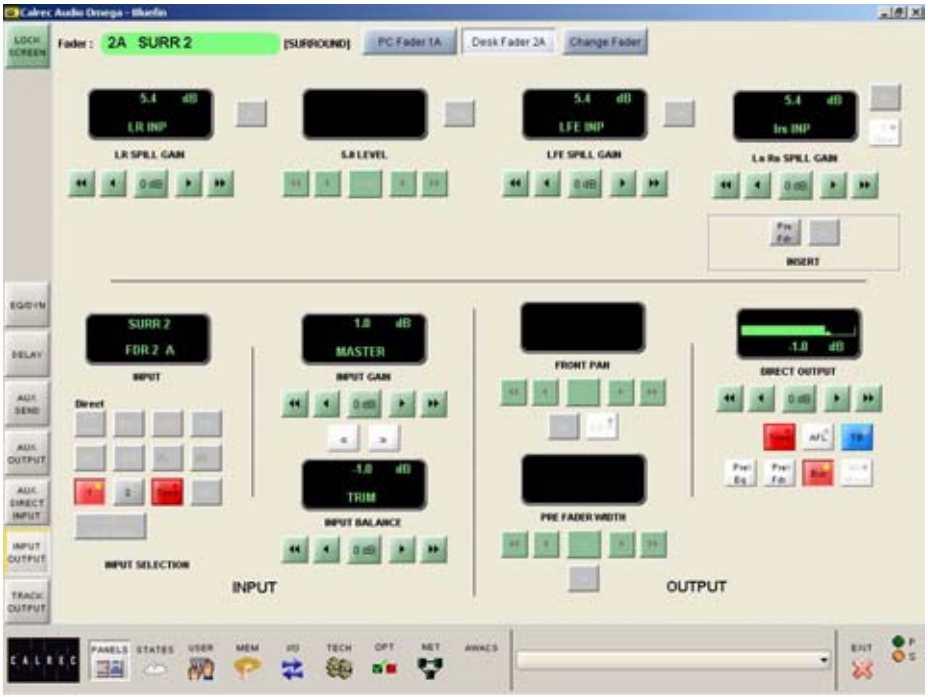
The overall audio level reduces as the pan position approaches the centre.

When LCR is switched out the divergence in of a mono channel is switched out.

INPUT AND OUTPUT CONTROL SCREEN

The Panels - Input Output screen duplicates some of the input and output controls on the control surface.

In addition, the user can choose whether to control the currently assigned fader path, or to select a different fader, known as the “PC Fader” to which settings can be applied independently of the current assignment.



MOTORIZED JOYSTICK PANEL

The motorized joystick panel can be either a single joystick, or twin joysticks. The joysticks are touch-sensitive, and the TOUCH LED lights when the joystick is touched.

The joysticks allow accurate stereo and surround panning of channels, groups or mains. Please note that the joystick is unavailable for use on 5.1 surround channels and groups; or their spill legs.

In normal operation, the joystick controls the currently selected fader path. LOCK allows the joystick to be fixed to a specific path. Pressing LOCK again will unlock the panel.

The fader display shows the path currently assigned to the joystick panel and LEDs indicate the type of path being controlled.

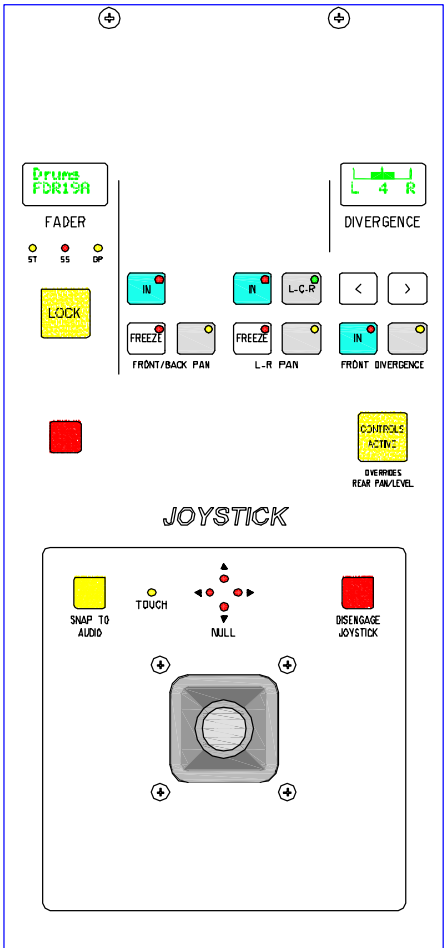
- ST - Indicates a stereo source
- SS - Indicates a 5.1 surround main
- GP - Indicates a group

Front/Back pan, L/R Pan and Front Divergence each have a set of dedicated controls. Each has an IN button to enable the function. The IN buttons and L-C-R button work in parallel with the buttons on the control surface.

Controls Active

CONTROLS ACTIVE must be selected for the joystick controls to take effect. When selected, the joystick moves to the position set by the Front Pan and F-B controls (including IN/OUT status).

If the joystick is being touched when Controls Active is selected, the audio will move to the position of the joystick. Any Rear Pan and Rear Level settings are disabled, and their displays on the Input/Output panel and any Wild Controls show "JOYSTK".



De-selecting Controls Active does not restore any previous Rear Level or Rear Pan controls, but leaves the Rear Level switched out, and the Rear Pan at the same setting and IN/OUT status as the Front Pan.

If a blank fader or a main path is assigned, Controls Active is disabled. The divergence display will be blank and the buttons will not take effect. If the joystick is engaged, it will default to the central position, unless it is being touched, in which case it will stay where it is.

Similarly, if a path is assigned where Controls Active is off, the joystick (if engaged) will default to the central position, unless it is being touched, in which case it will stay where it is.

Freeze

When freeze is pressed on either axis, the joystick ceases to alter that axis. Freeze does not affect the input/output or wild controls, they can still alter the frozen axis. The null LEDs show which direction the joystick must be moved to match the audio.

Disengage

When the joystick is disengaged, it does not control or move to follow the audio. This is to protect against accidental changes. The null LEDs will still indicate the direction in which the joystick must be moved to match the audio. When Disengage is de-selected, the joystick will move to the position of the audio, unless it is being touched, in which case, the audio will move to the position of the joystick.

Snap to Audio

Pressing this button will cause the joystick to snap to the position of the audio.

DELAY

The Panels - Delay screen allows specific amounts of delay to be applied to the currently assigned channel path.

In addition, the user can choose to control a different fader, known as the "PC Fader" to which settings can be applied independently of the current assignment. Control is chosen using the screen's selection buttons.

256 mono legs of delay are available for inputs and 128 mono legs are available for outputs, each providing up to 2.73 seconds of delay. Stereo paths use two legs, and surround paths use 6 legs. Delay can be assigned in the following places:

- Either or both channel inputs (1 & 2)
- Channel, group and main insert sends
- Channel, group and main insert returns
- A second leg of delay on either or both channel inputs (allows up to 5.46 secs)
- Channel and group direct outputs

In addition, group inputs each have 2.73 seconds of delay permanently allocated.

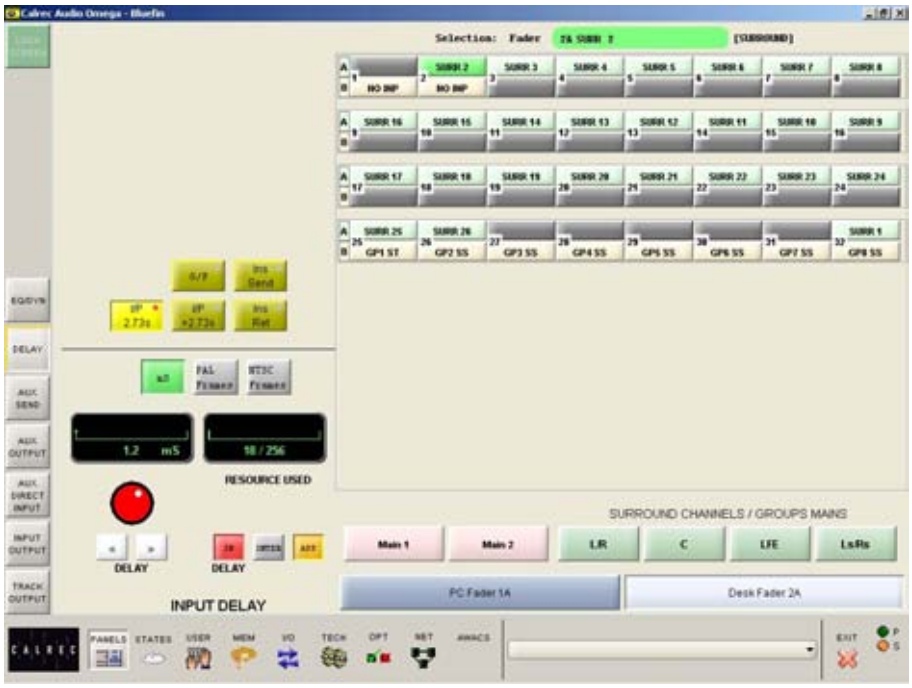
Assigning Delay

Select the path either by pressing its fader assign button or by selecting it from the screen. The yellow selection buttons allow the user to specify where the delay will be assigned. The delay value is adjustable in 0.1 ms steps using the rotary control, and 10 ms steps using the nudge buttons.

The ASS button is used to assign the delay, and the IN button switches the set value of delay in and out of the path.

The I/P DELAY button in the Input/Output section of the control surface allows the rotary control and IN button to control adjustment and switching of input delay values.

The RESOURCE USED display shows the number of legs assigned. If an attempt is made to assign more than the available delay resources a pop-up message will be reported on the screen.

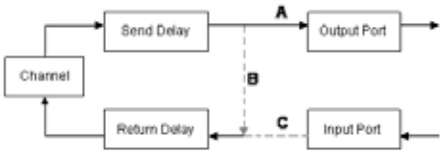


Delay on Surround Channels

On 5.1 surround channels, delay is assigned and adjusted using the surround master. Each spill leg of a surround channel will always have the same delay properties. The delay settings of an individual spill leg can not be assigned, adjusted or cleared independently of its surround master.

Insert Send/Return Delay

The delay in the Insert Send and Return paths can be used in the channel as extra delay (in addition to Input Delay) by assigning an insert to a channel and having the insert NOT switched IN. In this case, the audio follows path B in the diagram.



With these settings, an output port patched to the Insert Send will follow the Send Delay (path A).

Switching the insert IN replaces path B with path C and the return audio is from the input port patched as Insert Return.

With delay assigned to both Send and Return it is possible to have up to 5.46 seconds of extra delay in the path.

Interrogation

Holding down the interrogate button will indicate the channels which have delay assigned by lighting their fader assign buttons. It is not possible to perform interrogation from the screen when controlling a "PC Fader".

PAL Frames, NTSC Frames or ms

The selection buttons on the Panels - Delay screen allow the information to be displayed in ms, PAL frames or NTSC frames. Changing the display units changes the resolution of the delay shaft, nudge up and nudge down buttons accordingly. Display units are not adjustable on the control surface.

Wild Control Delay

When delay is assigned to a channel's wild control, then the wild delay control shaft can be used to switch the delay in and out of the channel's path. This behaviour is enabled and disabled using the Options-Misc screen.

Delay can also be assigned to Wild controls using the User-Chan screen. A screen button is provided, for use instead of the rotary control push-switch.

OMEGA
CHANNEL FUNCTIONS

CALREC

Putting Sound in the Picture

USER-CHAN SCREEN

This screen provides controls for channel functions, some of which are available on the control surface. The right side of the screen shows the fader paths A and B.

To make changes, select the required fader path either from the screen or by pressing its fader assign button, and use the controls on the left side of the screen.

Path Type Selection

The MONO, STEREO and SURROUND buttons here select the path type for the currently assigned fader. If the path is to be a group, its number is selected using buttons 1-8. Groups are defined as surround, stereo or mono on the USER-BUSSES screen.

Clearing Paths

To clear a path, select the assign button of the path you wish to clear, and select CLEAR PATH and then EXEC. “Start Fader Selection” allows a number of fader paths to be selected, either from the screen, or by selecting their fader assign buttons. In this way, a number of fader paths can be cleared in one operation. Multiple fader selection can also be used to allocate a path type to several paths at once. The multiple fader selection can be cleared using “Clear Selection”.

Move Path and Move Strip

Paths can be moved or swapped from one fader to another, using the MOVE PATH buttons. Select the required path, and select MOVE PATH (the assign button will flash). Then select the destination fader path, and select EXEC (Move). The two paths will swap over, and any Wild control assignments will move with them.

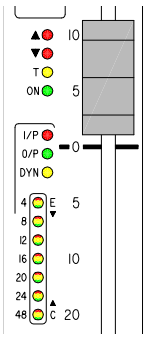
MOVE STRIP moves the whole fader strip to a different fader. This means that the A and B paths including any Wild Assignments will move to the selected destination fader strip.

Surround Direct Output Down Mix

All surround channels and groups have surround direct outputs. The buttons on this screen allow the user to choose the full surround direct output, or to down mix the output to stereo. When the down-mix button on the surround spill panel is selected the spill faders will switch to allow adjustment of each individual spill paths contribution to the down mix.

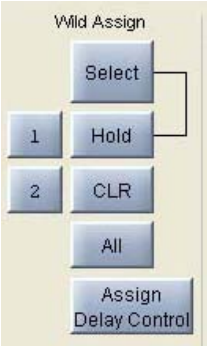
Fader Bargraph Assignment

Buttons I/P, DIR O/P, DYN and OFF on this screen will set the function of the fader bargraph on the currently assigned fader. If ALL is pressed first (flashes) all fader bargraphs will be set to the selected function.



WILD CONTROL ASSIGNMENT

Wild Control Assignment
The Wild controls above each fader are assigned from the User-Chan screen.



All the Assign panel rotary controls incorporate a switch which is operated by pushing the control. These switches are used to assign the assign panel function to a Wild control as follows:

- Select a fader path
- Select WILD ASSIGN 1 or 2
- Push one Assign panel rotary control

The control is now assigned and changes will show in the display. The Wild controls "FLIP" with the fader, providing the same function for each of the two paths. The colour of the Wild control display will show which fader the control is related to: Green for A, Amber for B.

If the fader is touched instead of pushing a rotary control, then the fader for the alternate layer will be assigned to the Wild control.

The gains of the two inputs 1 and 2 can be assigned separately to Wild controls, by holding down the required input button on the Input/Output panel before pushing the gain adjustment rotary control.

Please note that Auxiliary output controls cannot be assigned to Wild controls.

CLR will clear the selected Wild control from its assignment.

Multiple Wild Control Assignment
It is possible to assign controls to more than one fader path at a time, either by selecting individual fader assign buttons (A or B), or by defining a "block" or "Region" of faders. The button above HOLD toggles between SELECT mode and REGIONS mode.

In SELECT mode, select Wild 1 or 2 on the screen and HOLD. Any number of fader paths can then be selected individually (their fader assign buttons will illuminate). Pushing an Assign Panel rotary control will then assign that control to Wild 1 or 2 for all selected fader paths.

In REGIONS mode, select Wild 1 or 2 on the screen and HOLD. A block or region of faders can then be defined by pressing the fader assign buttons of the first and last fader path in the required region. Pushing an Assign Panel rotary control will then assign that control to Wild 1 or 2 for all fader paths in the selected region.

CLR can be used to clear regions of faders of their wild control assignments.

It is possible to assign the same control to Wilds 1 and 2 for all fader paths by selecting ALL before pushing the required Assign panel rotary control.

If the track output level control is assigned to a block of wild controls, each fader's wild control will have a different numbered track output level control, beginning with the track currently selected on the first fader in the block.

Delay can also be assigned to Wild controls using the USER-CHAN screen. A screen button is provided, for use instead of the rotary control push-switch.

Wild Control Push-Switch Option
If a wild control has the Aux Send, Input Delay or Front Pan controls assigned to it, the user can control the ON/OFF or IN/OUT status of these controls using the Wild control push-switch. This feature is optional, so it can be enabled or disabled using the OPTIONS - MISC screen.

EQ AND FILTERS

The Equaliser section of the module controls EQ and Filters on the channels, groups and main outputs. As console processing is not pooled, EQ can be assigned to every path, without fear of running out.

Once a channel has been selected by pressing its Assign button (A or B), its frequencies can be adjusted using the following controls.

Filters

LF	Flat then 20 Hz to 330 Hz 12 dB/octave
HF	3.3 kHz to 20 kHz then flat 12 dB/octave

For independently controlled LFE spill paths:

HF	12 dB/octave, 50 Hz to 20 kHz

This is so that the user can apply a low pass filter to the LFE leg of the main output (at either 80 Hz or 120 Hz for example) to remove unwanted higher frequencies.

There are buttons to allow flattening of the filters on the Panels - EQ/Dyn screen.

Equaliser:

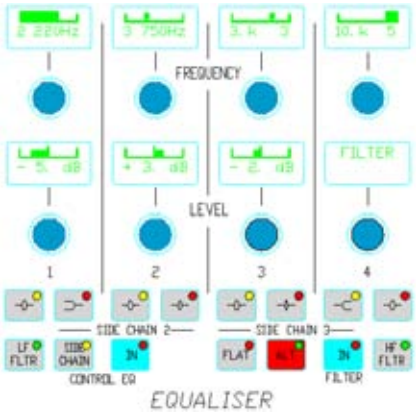
LF	30 Hz to 470 Hz, shelf or bell (Q of 1.5)
LMF	160 Hz to 2.4 kHz, Q = 1 or High Q = 3
HMF	500 Hz to 7.5 kHz, Q = 1 or High Q = 3
HF	1 kHz to 16 kHz, shelf or bell (Q of 1.5)

EQ level controls are adjustable by ±15 dB. Bands overlap to allow greater flexibility of settings.

EQ and Filters are switched in and out of the signal path using the IN buttons in each section.

Side Chain

The SIDE CHAIN button allows the panel to control the EQ and Filters in the dynamics of the assigned channel. There are 4 bands of EQ permanently available in the side chain in addition to the 6 bands available for channels and groups.



Alternate EQ

The ALT button allows switching between two complete sets of EQ and Filter controls.

EQ Flat

EQ FLAT will clear any EQ settings to flat. The button must be pressed and held down, this prevents against accidental flattening of settings.

Panels - EQ/DYN Screen

The user can view and manipulate the EQ and filter response curves, using the Panels-EQ/DYN screen.

All of the controls available on the EQ panel are also available on this screen. In addition, the user can choose whether to control the EQ and filters of the currently assigned fader path, or to select a different fader, known as the "PC Fader" to which EQ and filter settings can be applied independently of the current assignment.

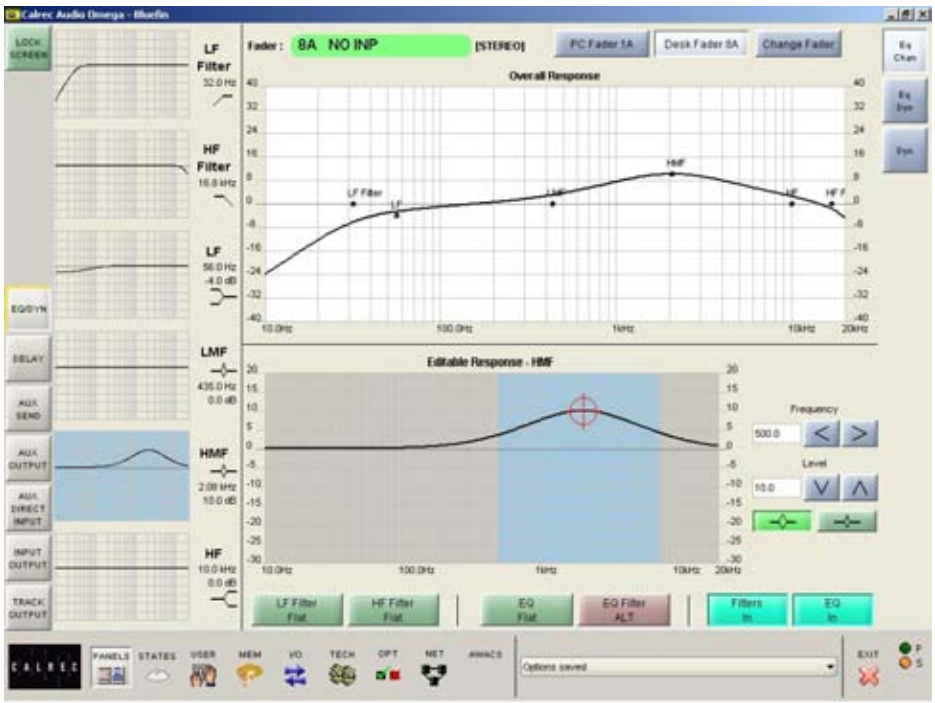
The required band is selectable from the left side of the screen. When selected, that band's response curve is shown in the Editable Response window, with the adjustable area highlighted in blue.

Its frequencies can be adjusted using the touch screen, or trackball, by selecting the crosshair and moving it around within the editable area.

As it moves, the frequency and level values of the selected path (or PC fader path) will change. Nudge buttons to the right of the editable response window can also be used to make adjustments.

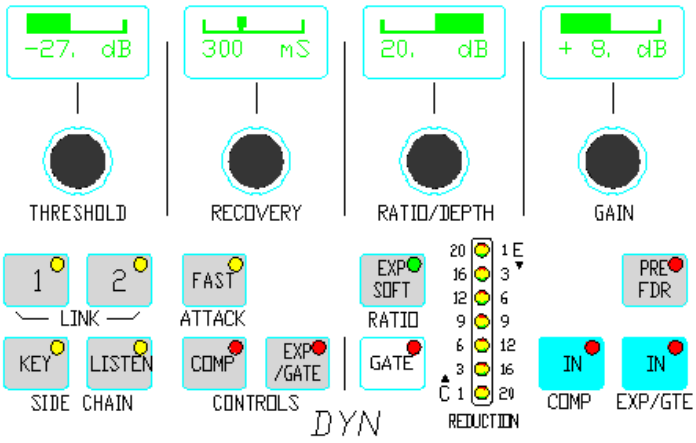
The overall response window shows the overall response curve for the selected path. The curve itself is only visible if EQ is switched into the path.

A similar screen exists to adjust the EQ if it is switched into the dynamics.



DYNAMICS

The Dynamics controls adjust the compressor and expander or gate on channels and groups, and the compressor and expander on main outputs. As console processing is not pooled, dynamics can be assigned to every path, without fear of running out.



The COMP and EXP/GATE buttons switch the controls between the two functions. The IN buttons switch the Compressor/ Limiter and Expander/Gate in and out of the signal's path.

Once a channel has been selected by pressing its Assign button (A or B), its dynamics can be adjusted using the following controls.

Compressor

Threshold +20 dB to -20 dB
Recovery 75 ms to 4 sec + AUTO
(Max clockwise setting)
Ratio 1 to 50 (Limiter)
Attack = 30 ms, Fast Attack = 250 µs
Soft knee (on channel paths only)
Sidechain Listen

The sidechain listen facility allows the user to listen to the signal driving the compressor sidechain. This allows the effect of sidechain EQ to be "previewed".

Expander

Threshold 0 dB to -40 dB
Recovery 75 ms to 4 sec + AUTO
(Max clockwise setting)
Depth 0 dB to 40 dB
Fast attack 300 µs (normal 16 ms)
Ratio 2/1 or SOFT

Gate

Threshold 0 dB to -40 dB
Recovery 75 ms to 4 sec + AUTO
(Max clockwise setting)
Depth 0 dB to 40 dB
Fast attack 300 µs (normal 16 ms)

Make up gain is adjustable from 0 dB to +20 dB.

Dynamics Linking

It is possible to have the dynamics of many channels linked by assigning them to one of two available link busses. This is useful for when the same dynamics settings need to be applied to more than one channel. With the channel selected, press Link 1 or 2 to assign the channel to the bus.

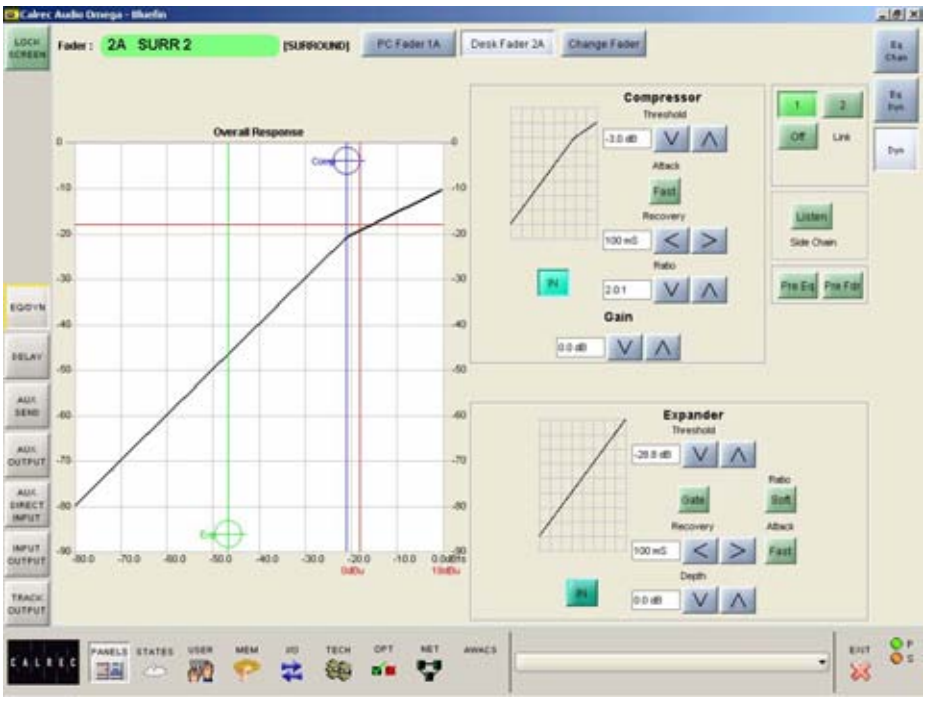
Panels - EQ/DYN Screen

The user can view and manipulate the dynamic response, using the Panels-Dynamics screen. All of the dynamics controls available on the control surface are also available on this screen.

In addition, the user can choose whether to control the dynamics of the currently assigned fader path, or to select a different fader, known as the "PC Fader" to which dynamics settings can be applied independently of the current assignment.

Compression or expansion settings can be adjusted using the touch screen, or trackball, by selecting the required crosshair and moving it around within the editable area. As it moves, the values will change. Nudge buttons to the right of the editable response window can also be used to make adjustments.

The dynamics response is only visible if dynamics is switched into the path, otherwise, it remains flat.



CHANNEL COPY

Eight sections of a channel or ALL together can be copied to another channel or channels using the User-Copy screen.

First select the fader path you wish to copy, by pressing its fader assign button.

Select the controls you want to copy, using the selection buttons I/PS, EQ/FLTR, DYN, PAN, FDR, RTG, AUX, WILDS or ALL.

Press TO FADER (flashes) then select the required destination(s). Destinations can be chosen by selecting fader assign buttons, or using the ALL A or ALL B buttons.

Once all destinations have been chosen, the EXEC button executes the Copy.

Any groups or main outputs included in the selected destinations will be ignored.

Copy Options

I/Ps copies LB, RB, ∅L, ∅R, M/S and balance settings (only ∅ for mono channels) for inputs 1 and 2, and also the input gains, SRC or phantom power when inputs are of the same type.

EQ/FLTR copies EQ and filter settings (includes IN/OUT, Alternate and CH/DYN settings).

DYN copies dynamics settings but not whether the EQ or filters are switched in the dynamics.

PAN copies pan and width settings as appropriate.

FDR copies fader and CUT settings, but not PFL/AFL selections or VCA group assignments.

RTG copies the routing to main outputs and groups but not the routing to tracks.

AUX copies the routing and levels to the auxiliaries.

WILDS copies the Wild assignments but not their settings.

ALL copies all of the above.

Copying 5.1 Surround Channels

If a 5.1 surround channel is copied to stereo or mono channels, or a stereo channel's settings are copied to mono channels, only the relevant settings are copied. Other settings will be reset to the cleared down state.

If the source fader is a surround channel and the destination is a surround channel the appropriate settings of the surround master and all its spills are copied, Master to Master and spill to corresponding spill. Groups or surround groups cannot be copied.

If the source is a stereo or mono channel and the destination is a surround master the master receives the copied settings and then applies them to all its non-independent spill legs.

Surround spill paths cannot be copied independently of their surround master, and it is not possible to select a spill fader as the destination for a channel copy.

BROADCAST FACILITIES PANEL

The Broadcast Facilities panel allows the console condition (Transmit, Rehearse) to be set; console and rack resets to be performed; and PSU Fail indication. It also houses the connector for the talkback microphone.

Panel Options

There are 2 types of panel available for broadcast facilities. The first option is a panel which is situated in the console upstand, alongside metering. This is the only option for 24 fader consoles.

On 32 and 48 fader consoles, a horizontal version of the panel allows it to be mounted by the screen and keyboard. This means that more room is available in the upstand for metering. In addition, a USB 1.1 port is provided on this version, which allows the user to connect a memory stick to the console's PC in order to transfer files, such as console memories.

Condition Switching

There are three modes which the system can be in: Transmit (TX or On Air), Rehearse, or neither. These are controlled from the ON AIR and REH buttons or from external inputs set up on the Options - GPI screen.

The Options -TX REH screen allows the condition switching for the system to be set up. Functions can be set to be active, or not, in any of the three states. This can significantly reduce the risk of human error, making the whole system a more robust, less stressful, user friendly environment for operators to work in.

Console Reset

Pressing the ENABLE and CONSOLE RESET button resets the Control System only. Independent DSP operation ensures audio continuity during console reset. The most recent console settings will be fully restored in less than 15 seconds.

As the console operates independently of the PC, rebooting or failure of the PC will affect neither the audio nor the operation of the console.

Rack Reset

Pressing the ENABLE and RACK RESET button resets the racks only, the control surface is unaffected.

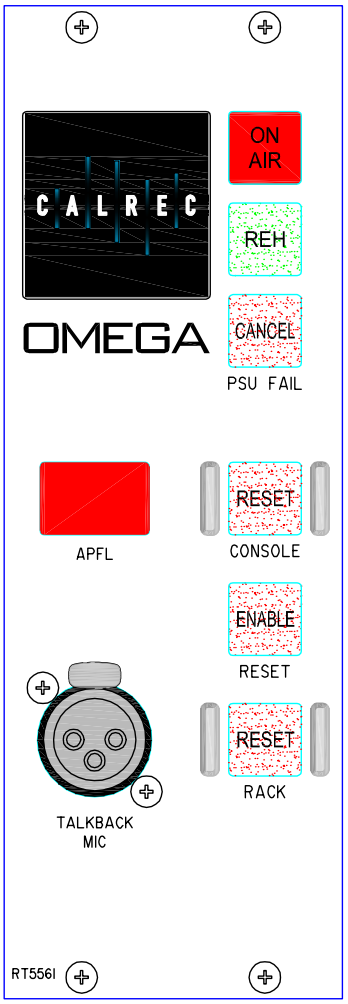
Please Note: Resetting the racks will result in a brief audio interruption.

Power Supply Monitoring

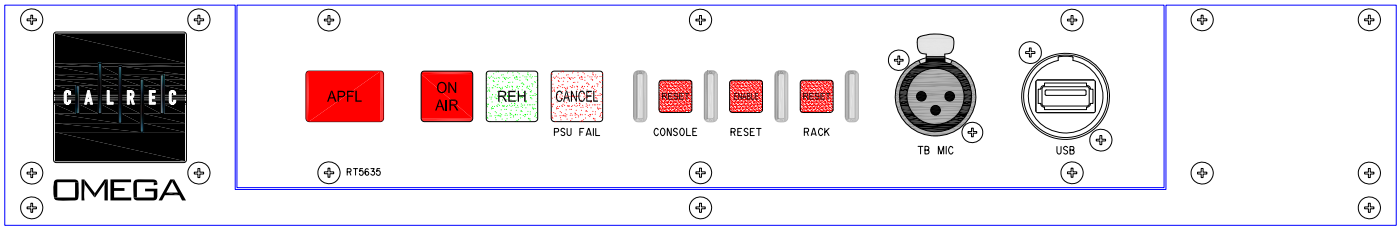
The rack mounted PSU and distribution module monitors the power supplies for failures, and the hot spare will take over if a fault develops. The PSU FAIL Indicator/Cancel button on this panel will flash if any one PSU fails (the hot spare PSU would prevent the desk from being affected). Pressing this button will change the flashing to a steady lit condition. In the unlikely event of a second PSU failing, the light will begin to flash again, to alert the user.

The PSU Fail Indicator can be set to flash whenever an AWACS error or warning message is reported. This is done using a general purpose output, set up on the Options - GPO screen.

UPSTAND VERSION

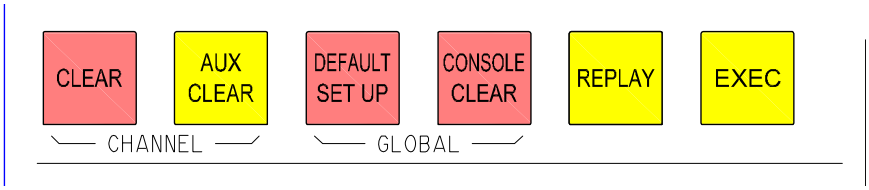


HORIZONTAL VERSION



CONSOLE FUNCTIONS

The console function buttons provide an easy way of clearing down console settings.



These buttons flash when selected and require the EXEC button to be pressed before the operation is carried out. It is recommended that settings are saved to memory before these functions are used.

Channel Clear
Clears the currently assigned channel from all settings apart from the port assignment.

Channel Aux Clear
Clears the Auxiliary send settings for the currently assigned channel.

Default Setup
Recalls the default set up configuration for the console, replacing all settings.

The default set-up will usually be created upon installation of the console using the TECH-INFO screen. This is a default memory, which could contain the fixed port set-ups which match the studio wiring, and any other settings which hardly ever change. It could have all channel settings OFF or flat, with no routes made, and would be available as a start up memory, from which more specific memories could be created.

Global Console Clear
Clears the console of all settings.

Replay
Activates Replay mode, causing all channels selected for replay to switch to input 2. When Replay mode is active, the button will be lit.

Channels are selected for replay on the User-Replay screen, by selecting the relevant cell in the “Assigned” column.

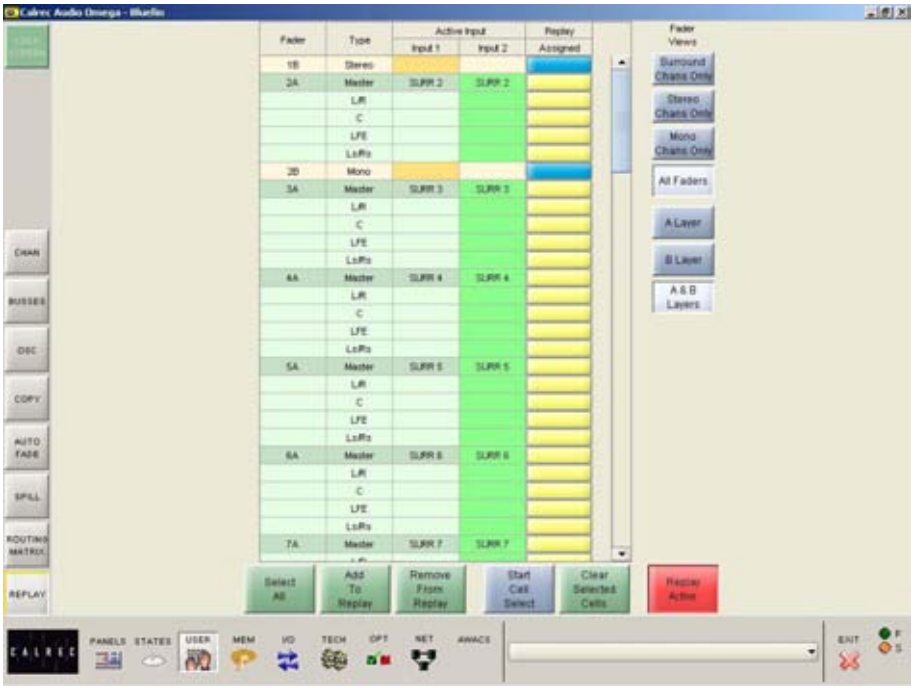
The cell will change colour to show that assignment is made.

The User-Replay screen also has a button with which Replay mode can be activated.

Many channels can be added to or removed from replay at once, by selecting “Start Cell Select”, and then choosing a number of channels. Once selected, “Add to Replay” and “Remove From Replay” will add or remove those channels from the replay selection.

If a surround channel master has the replay function assigned then the replay function shall be assigned to all its spills. It is not possible to assign the replay function to individual spills of a surround channel independently.

Replay selections are stored with user memories. Partial memories restore the channels inputs and replay assignment (unless isolated) but the current replay state shall not be restored.



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BUSSES

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ROUTING AND TRACK OUTPUT CONTROLS

Routing Buttons
Routes to tracks, groups or main outputs for the currently assigned path can be made or removed by pressing the numbered buttons in the routing section. In addition to the indicative LEDs on the fader's channel control section the button LED will light to indicate that the route is made.

Track Output
The Track Output section controls the output to the multi-track, after the track mix. The 48 track outputs can also be used as IFB or general purpose bus outputs.

The track output being controlled is selected by pressing SEL plus the required track routing button 1-48.

Tone or Talkback can be fed to the selected track using the TONE and TB buttons.

ALL makes the control a Master, controlling all the tracks at once.

Buttons allow the signal feeding the track routing selector to be pre-EQ or pre-fader.

Pan (Balance on stereo channels and groups) pans the signal between odd and even tracks. Mono (on stereo channels and groups only) makes the signal mono after the pan.

Interrogate Mode
It is possible to discover which fader paths are feeding each of the routing busses by putting the panel into "Interrogate" mode. This is done by pressing the INTER button in the Auxiliaries section of the control surface.

In interrogate mode, when any of the routing buttons (groups, mains, tracks) are held down, the fader assign buttons of all the paths feeding that buss will remain lit. The fader assign buttons of paths which are not feeding the buss will cease to be lit. This button can also be used to interrogate mix minus feeds using the BUS button on the control surface. Paths can be added or removed from the bus under interrogation, by selecting or de-selecting their fader assign buttons.

User-Routing Matrix Screen
This screen allows whole channels or individual spill paths of surround channels to be routed to mains, groups, tracks and auxiliaries, using a selection table.

This screen not only provides alternative controls to the routing buttons on the control surface, it also gives a comprehensive visual representation of the routes made in the system, and allows the user to evaluate and control the routing more effectively.

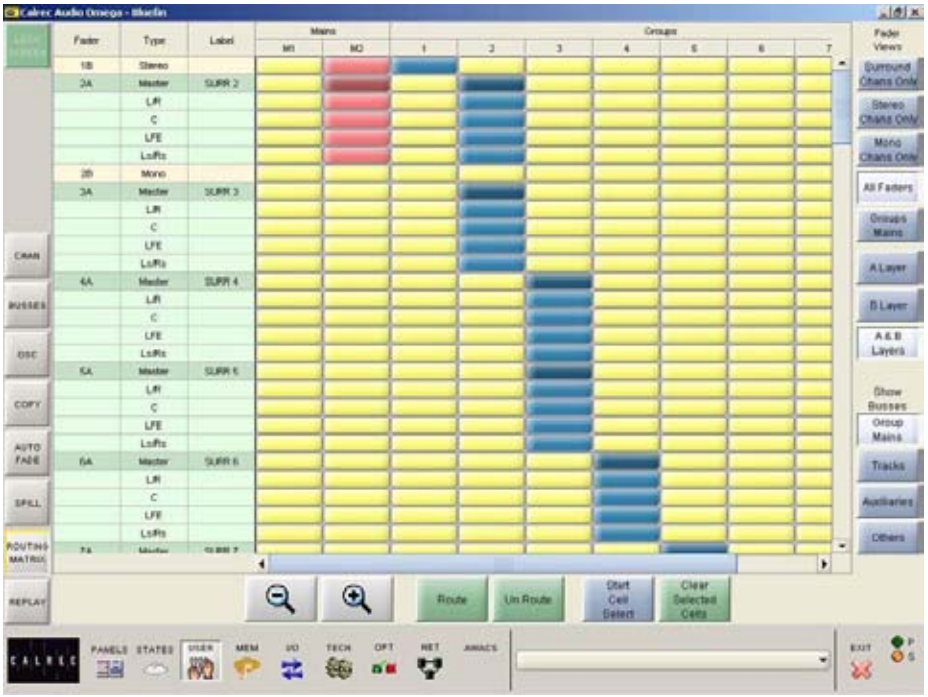
Making Routes
The channels are listed on the left side of the screen, and the destinations are shown across the top. Routes are made by selecting the intersecting cells, which change colour to show the route is made. If a route is made on the surround master, its spill paths are also routed, and their cells also change colour to show this. De-selecting the cell will remove the route.

Zoom controls are provided to allow the user to adjust the viewable area.

If surround channels or groups are routed to surround busses, all the spill legs will be routed. If surround channels or groups are routed to mono or stereo busses,

only the LR, C and Ls/Rs spill legs will be routed. Individual legs can always be routed separately, using the spill panel and routing buttons or spill screen.

A surround master cannot route to the mix minus bus, the spills are routed individually.



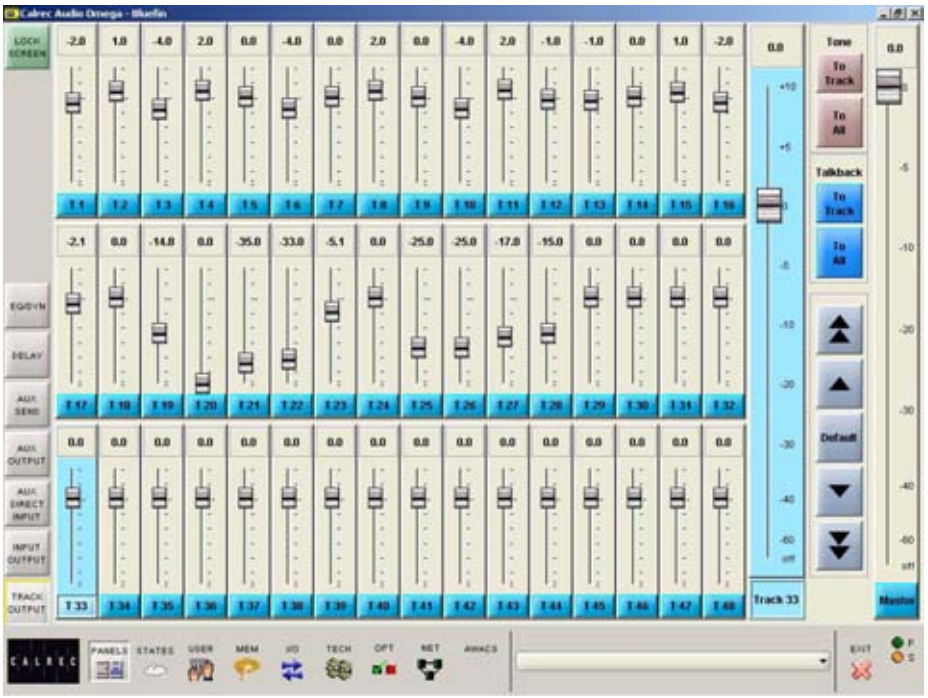
Panels - Track Output Screen

The Panels-Track Output screen allows the user to control each of the 48 track output levels using virtual faders.

Each track output has its own screen-based fader, which can be adjusted by dragging the fader using the touch screen or trackball. In addition, the selected track output can be adjusted using a larger fader at the side of the screen, or using the coarse or fine nudge buttons. The default button can be used to set the selected track output to 0 dB.

A master fader allows the level of all the tracks to be controlled simultaneously.

Tone or Talkback can be fed to the selected track or all at once using the selection buttons.

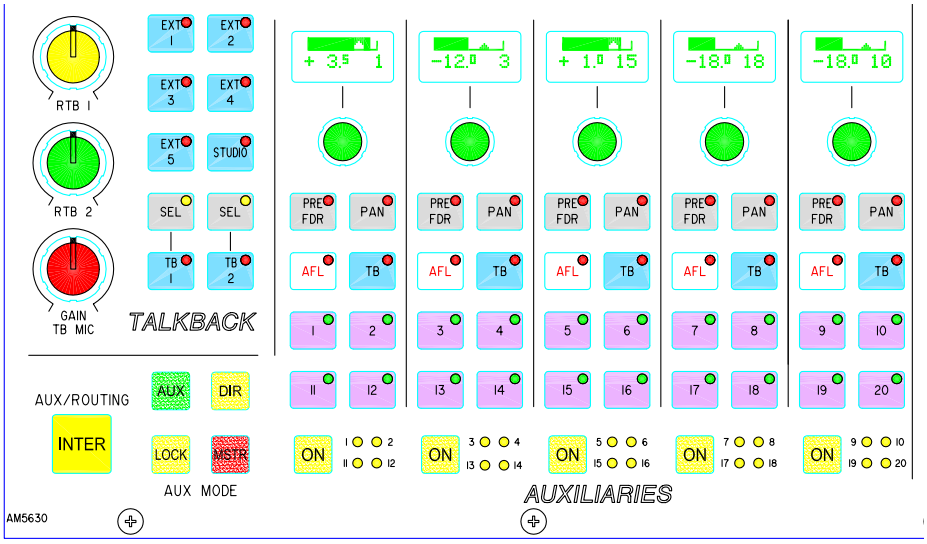


AUXILIARIES

20 mono auxiliary output busses are available. These busses can be paired up for stereo, using the User-Busses screen.

The displays above each rotary control show what is being controlled (e.g O/P or DIR) until they are adjusted, when the level is then displayed. A short time after the adjustment has been made, the display will show the label again.

The buttons at the bottom of the Auxiliaries section influence the function of the controls.



Auxiliary Sends

AUX When AUX is selected, these controls adjust the feeds from the channels or groups to the auxiliary output busses. The ON button switches the feed from the currently assigned channel or group to that auxiliary output bus. Each feed can be pre or post the channel or group fader, selectable using the PRE button.

If, for example, aux 10 is stereo, then aux 20 will not be available (and aux 20 will not work on the monitor selector). On mono auxiliaries, buttons 11 to 20 switch the control to that numbered aux send. The Pan button will be inoperative.

PAN makes the control into a Pan control (balance on Stereo channels). Any pan offset will be shown as an offset between the two bars of the display.

Aux Direct Inputs

DIRECT When DIRECT is selected, this section controls the Aux Direct Inputs. The Pre Fader and Pan controls will be in-operative.

Auxiliary Outputs

MASTER When MASTER is selected these controls adjust the auxiliary outputs. The ON buttons switch the output on and off.

On stereo auxiliaries a dual level display will be shown. There cannot be a level offset on the output display.

Please note that auxiliary output controls cannot be assigned to wild controls.

LOCK will lock the panel into MASTER (output) mode. If LOCK is not selected, the panel reverts to Aux if a fader assign button is pressed.

LOCK

When DIRECT or MASTER are selected, the displays above each rotary control show a bargraph of the gain, and what is being controlled (e.g O/P or DIR) . This remains until they are adjusted, when the dB value of the gain is then displayed. A short time after the adjustment has been made, the display will show the bar and label again.

Interrogate Mode

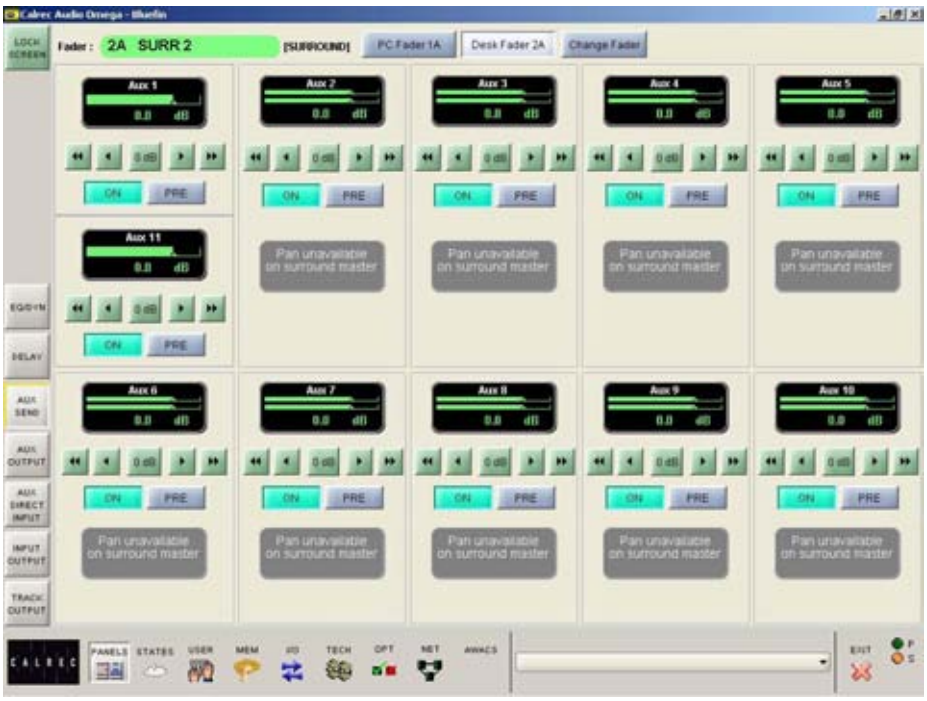
INTER (latching) puts the panel into Interrogate mode. If the Aux ON buttons are held down, the fader assign buttons of all the paths feeding that buss will remain lit. The fader assign buttons of paths which are not feeding the buss will cease to be lit.

Paths can be added or removed from the bus under interrogation, by selecting or de-selecting their fader assign buttons.

Panels - Auxiliary Control Screens

The user can view and adjust the auxiliary send, auxiliary output and auxiliary direct input controls using the Panels - Aux Send, Panels - Aux Output and Panels - Aux Direct Input screens.

All of the auxiliary controls available on the control surface are available on the screens. In addition, the user can choose whether to adjust the Aux send and output settings of the currently assigned fader path, or to select a different fader, known as the "PC Fader" to which aux send and output settings can be applied independently of the current assignment.



MAIN OUTPUTS

Like channel and group faders, the main fader design is dual path. Main 2 is incorporated under Main 1 on a second layer of control.

The ASSIGN buttons (M1 or M2) call the path to the Assign Panels to allow:

- Routing (of one main to another - indicated on the routing LEDs next to the main fader assign buttons)
- Insert on/off
- Control of EQ and filters, Compressor/Expander and direct input
- Control of a surround main's spill legs using the surround spill panel or User-Spill screens

Tone and Talkback can be fed to each main output using the TONE and TB buttons.

Surround and Stereo Main Outputs
Each main output can be pre-set to be either surround or stereo. Surround mains are 5.1 plus a rear down mix to allow a simultaneous LCRS.

There is also a stereo down mix and a mono down mix (potentially 10 outputs for each surround main). If a surround main is routed to a stereo main, the stereo down mix will be routed. The down mix contribution of each spill leg can be controlled using the surround spill panel or User-Spill screens.

The insert and direct input are also surround.

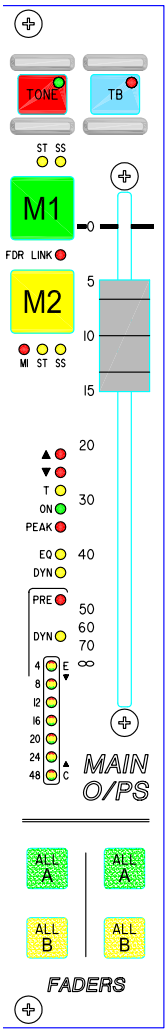
Faders Section
The ALL A and ALL B buttons switch all the channel faders to display either their A path or their B path. Using the ALL A and ALL B buttons is like moving to a different section of a single layer design.

All A/All B Action
A short press on the ALL A and ALL B buttons will switch all the channel faders to display either their A path or their B path permanently.

Buttons on the Options - Misc screen set the functionality of the All A and All B buttons when using a long press (press and hold).

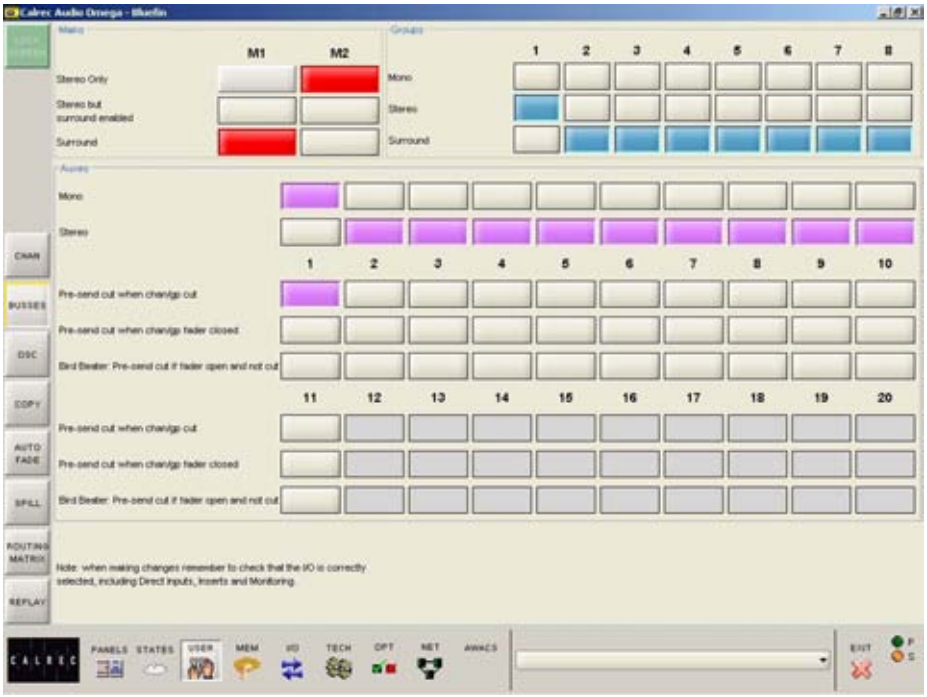
If set to change layer, a long press on the ALL A and ALL B buttons will switch all the channel faders to display either their A path or their B path permanently.

If set to "Momentary View", a long press of an All A or All B button will display and control those paths on the control surface until the button is released. The console will then revert back to the previously displayed layer on each fader. The console's A/B display pattern is not lost.



BUSSES SCREEN

The User-Busses screen allows the width of the main, group and auxiliary busses to be defined.



Mains

Each main output can be set to be stereo; stereo but surround enabled; or surround.

Groups

Group busses can be selected to be mono, stereo or 5.1 surround. Stereo channels feed a mix of left and right to mono groups. Mono channels pan L/R to stereo groups.

Auxiliary Busses

Mono auxiliary busses can be paired up to make stereo auxiliary busses. When a pair of auxiliaries are changed in this way, all settings of the pair are cleared.

Pre-send Cut

Options are available for the pre-send to be cut :

- when the channel or group is cut
- when the channel or group fader is closed
- when the fader is open and not cut (Bird Beater). This option cancels the other two pre-send cut options.

The bird beater option mutes the auxiliary pre-fader send when it's fader is open and not cut. Therefore, closing the fader or using the cut switch enables the auxiliary pre-fader send. One use of this feature is to give the producer a feed to the "cue speaker" when the announcer or commentator microphones are closed during a commercial or other break in a live broadcast.

TALKBACK

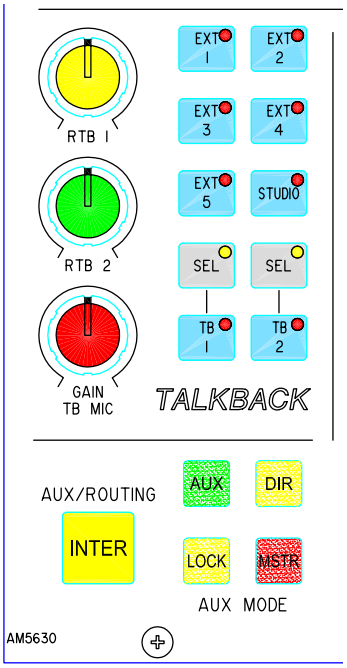
Talkback is available to all 20 auxiliaries, both main outputs, 6 external sources (via GPO switching), all tracks, direct outputs and Studio.

Talkback is available to 6 external sources (via GPO switching) and Studio LS using the buttons here.

Talkback is available to all 20 auxiliaries using the TB buttons in the auxiliaries section.

Talkback is available to direct outputs using the TB buttons on each channel or group fader; the TB button in the Input/Output section; or using the Panels-Input/Output screen.

Talkback is available to individual tracks using the TB button in the track output section of the control surface, or using the Panels-Track Output screen.



TB Pre-selects

TB 1 and 2 operate all the TB buttons which have been pre-selected by the respective SEL button.

Level Controls

The GAIN control sets the level of the TB Mic. 2 controls set the level of 2 RTB (Reverse Talkback) signals. Each RTB signal can feed a separate loudspeaker. There can also be a mix of both signals to feed a single loudspeaker. This can mix with the PFL feed.

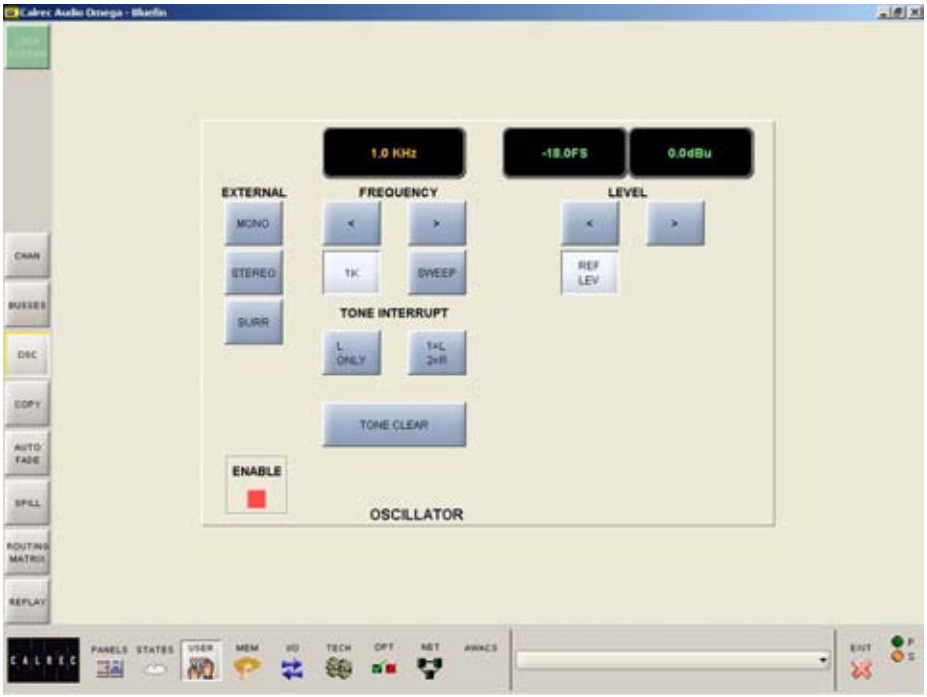
Patching Talkback Inputs

Talkback inputs are patched using the OPTIONS - MON TB TONE - Talkback and Tone screen.

All Talkback buttons are subject to On-Air inhibits, set up using condition switching (Options - TX-REH screen).

OSCILLATOR SCREEN

This screen provides controls for the oscillator, which is used to generate test tones for alignment and testing.



Frequency

The frequency of the tone can be adjusted from 20 Hz to 20 KHz in incremental steps using the nudge buttons, or set to 1 KHz using the 1K button. Alternatively, the sweep button will set the oscillator to sweep through all frequencies.

Level

The level of the test tone can be adjusted from -60 dBFS to 0 dBFS using the nudge buttons, or set to the reference level using the REF LEV button.

Tone Interrupt

The Tone Interrupt buttons are useful for testing stereo monitoring and metering. It allows the tone to be interrupted on the left side only, or on the left and right sides in an alternating pattern.

Clearing Oscillator Routes

TONE CLEAR clears all oscillator routes made, providing an easy way of removing test tones from signal paths.

External Input

The External Input buttons replace the tone with a mono, stereo or 5.1 surround external source of your choice. This allows for external oscillators to be used if preferred. The ports for this are set up on the OPTIONS - MON TB TONE - Talkback and Tone.

Enable Indicator

The Enable indicator shows that the Oscillator controls are enabled.

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MEMORY SYSTEM

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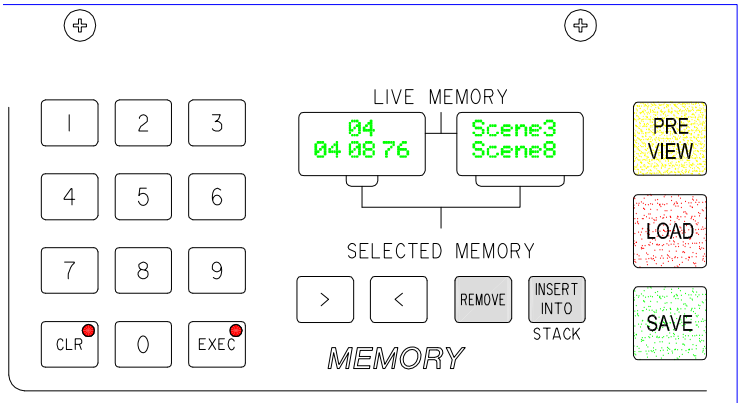
MEMORY CONTROLS

99 memories can be held in the Flash ROM for different console arrangements. In addition, the PC back-up can allow an unlimited number of memories, which are easily recalled into the Flash ROM. Memories can be stored to removable media, which can be useful when many different operators use the same console, or when the console is used to broadcast many different weekly productions.



Live and Selected Memories
The display at the top of the panel shows the "Live Memory" on the top half, and the "Selected Memory" on the bottom half.

The Live Memory shows the last memory loaded onto the console. Changes made since this memory was loaded will not be stored in this memory number unless it is re-saved. They will however be stored in the "Hidden" memory so that they are restored after a power down.

The buttons on this panel will affect the Selected Memory. The Selected Memory can be thought of as the "Ready" position, where the operator can place the next required memory until it is needed.

Pressing LOAD+EXEC will launch the Selected Memory into the Live Memory position, overriding the previous settings.

Choosing the Selected Memory
Enter the two digit memory number followed by EXEC on the key pad to call that memory number into the Selected Memory position.

In addition, selecting the required memory in the Flash ROM list on the left of the Mem-Setup screen will call it into the Selected Memory position.

Saving Memories
SAVE + EXEC will save console settings to the Selected Memory. Alternatively, SAVE+Memory Number + EXEC will save into that memory number.

To create a new memory, choose an empty memory either by selecting it from the list on the left of the Mem-Setup screen, or by typing its number on the key pad.

Memories can be given a user-friendly label on the Mem-Setup screen.

Preview Memory
When the Preview button is held down, the Selected Memory settings will be displayed on the control surface without actually changing the current settings. The Assign panel displays will be blanked out. Upon release of the Preview button, the live settings will be displayed again.

Stacked Memories
Memories can be arranged into a pre-set list, known as a stack. This is useful for setting up an easy-to-access short list of specific memories for use during a show. Stacks can be saved to the hard disk or removable media on the Mem-Setup screen.

INSERT INTO STACK adds the Selected Memory to the stack.

The > and < buttons scroll through the stack. Pressing both > and < together, will reset the position so that the last number loaded is back in the central position.

To allow the stack to use the Selected Memory position, any memory which has been selected manually, and is not part of the stack (shown in inverse text), must first be removed from the Selected Memory position, by pressing REMOVE. If REMOVE is pressed while a stack memory occupies the Selected Memory position, it will be removed from the stack. A second press will remove it from the Selected Memory position.

MEMORY SET UP SCREEN

The Memory Setup screen duplicates the memory functions available on the control surface, and allows management of stored memories and stacks.

All the available Flash ROM memories are listed on the memories screen, and when selected will occupy the Selected Memory position. Memories will be shown as empty if they have not yet been used.

To create a new memory, choose an empty memory from the list either by selecting it, or by typing its number on the key pad in the memory section of the control surface. When SAVE is selected to save the new memory, it can be given a label.

Clear Memory

The contents of the Selected Memory can be cleared by selecting Clear Memory.

When loading, saving or clearing memories from the memories screen, a confirmation box must be accepted before the action is carried out to prevent memories from being accidentally overwrittten, cleared or loaded onto the console at an inappropriate time.

When a stored memory is loaded, the system checks that the current desk configuration matches that of the stored memory. If there are discrepancies, a warning message is reported.

Managing Memories in the Flash ROM List

It is possible to back up all memories to the hard disk by selecting “Backup Memories”. Previously backed up memories can be restored from the hard disk or other media into Flash ROM by selecting “Restore Memories” .

Memories can be re-named by selecting “Re-Label Memories”.

Selecting “Clear All Memories” will remove all memories from the Flash ROM. This option is only available in Technician Mode.

Stacked Memories

Memories either side of the Selected Memory in the stack will appear in the windows either side of the Selected Memory window.

Auto

These buttons will manually move the next memory in the stack into the Selected Memory position without being loaded.

With the Auto > or Auto < check box ticked, the next memory in the stack will automatically move to the Selected Memory position after the previous Selected Memory has been loaded from the stack.

If the Selected Memory is not part of the stack (shown in inverse text on the control surface), the Auto functions will not move memories to the selected memory position.

If the Selected Memory is not part of the stack, “Change to Stack” will add it to the stack. It will remain in the Selected Memory position.

If the Selected Memory is part of the stack, the “Change to Stack” button is replaced by “Remove From Stack”, with which the Selected Stack Memory can be removed from the Stack.

Sessions

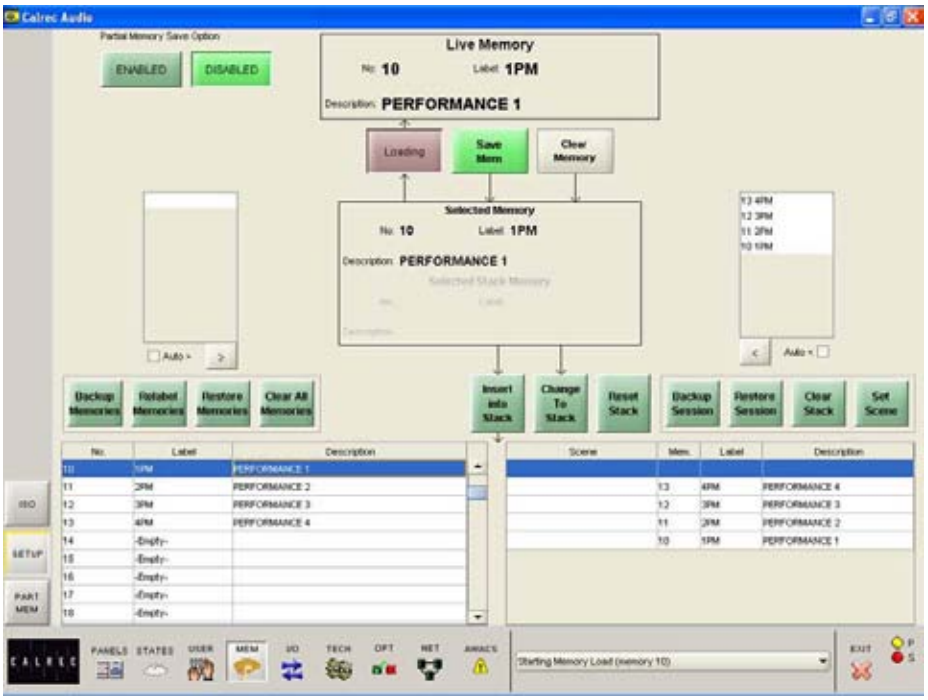
Stacks can be saved to the hard disk or removable media as sessions. Selecting “Back Up Session” backs up the stack and all the memories in it. “Restore Session” allows previously backed up sessions to be restored.

Scene labels can be applied to positions in the stack by highlighting a stacked memory and selecting SET SCENE.

“Clear Stack” will remove all memories from the stack

Partial Memories

In addition to the buttons on the partial memories screen, partial memories mode can be enabled and disabled using the buttons here. Partial memories mode allows components of console settings to be saved in the same way as full console memories. Components are chosen using the Mem-Part Mem screen.



MEMORY ISOLATION

The Isolate screen allows channel and group settings to be isolated from memory recall. This means their current settings will not be over-written when a memory is loaded.

The right side of the screen shows all fader paths. Paths can be selected from here or by pressing the fader assign button.

The buttons on the left side of the screen allow settings for the selected path to be chosen for isolation. ISOLATE ALL selects all the settings to be isolated for the selected channel or group.

APPLY TO ALL applies the selected isolation settings to all channels and groups. To clear all isolation settings from all channels and groups, ensure all settings are de-selected, and select APPLY TO ALL.

When a path or settings for a path are isolated, the path will be highlighted with a red box on the right side of the screen.

5.1 Surround Paths

A surround master can be part of a memory isolation selection, but its spill paths cannot be individually isolated from memory recall.

Isolated Ports

When an input is isolated or de-isolated, its port will also be isolated or de-isolated. However, the I/O screens allow port isolation to be turned on and off independently. Isolated ports are highlighted in brown on the I/O screens.

If an isolated port connection is changed, any isolation setting will be cleared, unless

one of the console-wide isolation options is selected and contains that port.

If an output connection in the memory cannot be made because it needs to use an isolated port, this will be reported via AWACS.

Please note that Hydra output ports cannot be isolated from memory recall.

PARTIAL MEMORIES

The partial memory save option allows components of console settings to be saved in the same way as full console memories. Once partial memory save option is active, the save buttons on the screen and control surface are used to save partial memories in the same way as full console memories.

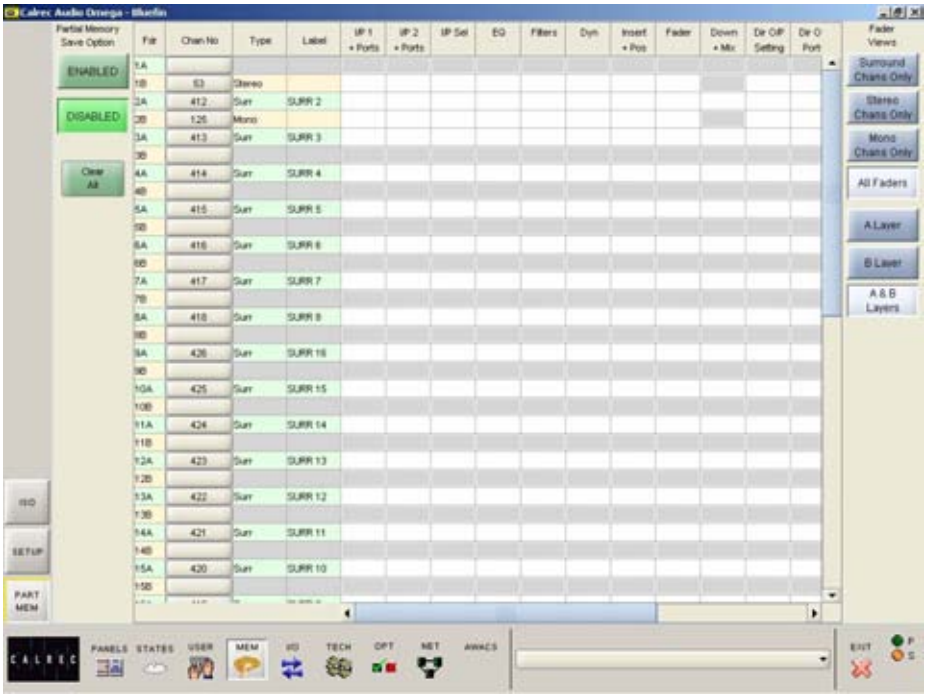
When a partial memory is recalled, only the settings saved will be updated. The partial memories screen provides a mechanism for specifying channels or sub-components of channels to be saved in a partial memory.

Partial memory save option is enabled and disabled using buttons at the top left corner of the screen. These buttons are also available on the Mem-Setup screen. When enabled, all memory saves are partial memory saves. When disabled, all saves are full console saves. Partial memory save option does not have to be enabled to allow previously saved partial memories to be loaded.

Including Channel Components in a Partial Memory

The partial memory screen contains a table with rows of channel numbers and columns of partial memory components. The sequence of the channels is in fader number order. Partial memory component selections are made by selecting the intersection of a channel and a console setting. The Channel Number field in the fader table is a selectable button, which selects or deselects all partial memory components for the channel occupying that fader.

A partial memory only loads those



channels or components on the control surface that were selected using the partial memory selections. A partial memory load does not affect the currently assigned fader and the A/B layer assignments. Partial memory selections are stored and recalled if a console reset occurs.

A surround master can be part of a partial memory, but its spill legs cannot be individually included in a partial memory.

OMEGA
MONITORING SYSTEM

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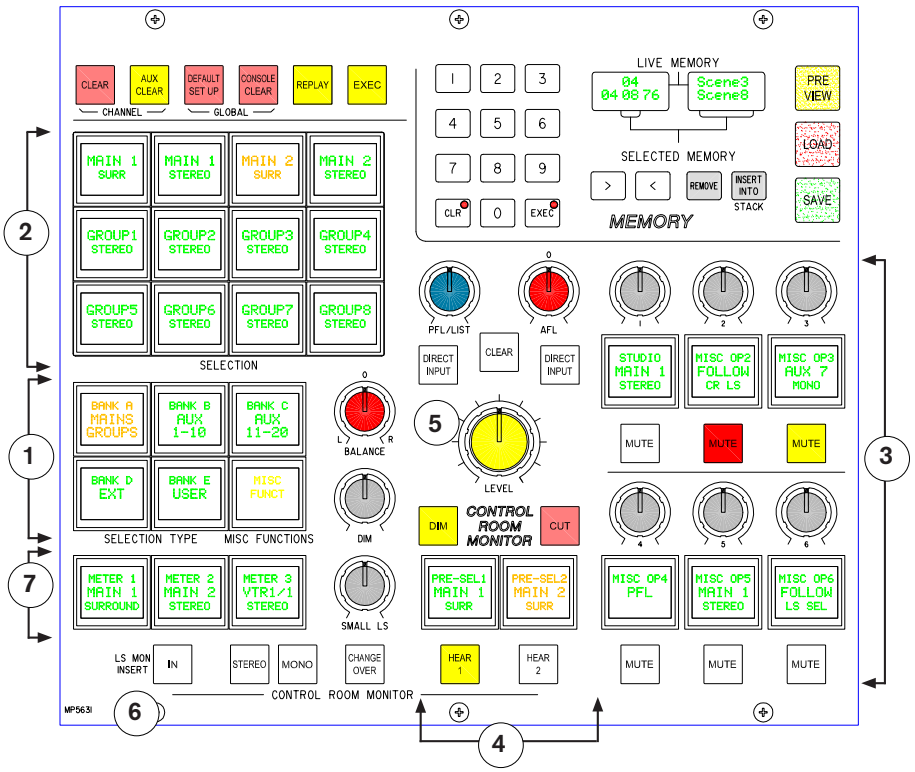
ASSIGNABLE MONITORING & METERING

The assignable monitor panels offer a high degree of flexibility and user-definability. Facilities available are:

- **6 independent monitor outputs**
- **2 control room pre-selectors**
- **3 meter selectors**
- **5 banks of up to 12 monitor sources**



(1) Selection Banks

All of the monitor sources can be grouped into 5 user-definable banks, with up to 12 sources in each bank. Sources are allocated to Banks A to E using the Options-Mon TB & Tone - Monitor Panel screen. Pressing the bank selection button will change the 12 source selection buttons to display the sources allocated to that bank.

A sixth bank allows miscellaneous functions to be applied to the selected output, and is not editable.

(2) Monitor Source Selections

Monitor sources are selected from a programmable set of buttons. These buttons display the available monitor sources or functions allocated to the selected bank. Sources are allocated to these buttons using the Options-Mon TB & Tone - Monitor Panel screen.

(3) Misc Outputs

There are 6 misc outputs to which monitor sources can be assigned. Each monitor output can select the source to monitor from the available sources, independently of the other monitor outputs. Each monitor output's button incorporates a display, on which the currently assigned source label is shown.

Misc outputs 1 and 2 can be stereo, 3 stereo, or 5.1 independently. Misc outputs 3, 4, 5 and 6 are stereo only. Each misc output will have been given a suitable name during the set up of the console. This name will then appear on the button display, and on the front end screens.

Pressing the button selects the misc output, and its display will be highlighted in amber. With the misc output selected, simply select a monitor source from the monitor selector panel to assign that source to the misc output. The currently assigned monitor source (and its bank) will also be highlighted in amber on the Monitor Selector Panel.

When a misc output is selected, the misc functions bank allows options for the mute button, CUT, DIM and mono/stereo monitoring options to be applied.

(4) Control Room Pre-Selects

The 2 Control Room pre-select buttons, allow 2 monitor sources to be preset ready for immediate listening on the main control room loudspeakers.

With a Control Room pre-select button selected, press the required monitor source from the 5 banks of 12 monitor sources to assign the source. The source label will be displayed on the button.

The Misc Functions bank allows listening modes to be applied to the Control Room monitor, APFL functions to be set up and options for decoder remotes to be applied.

The HEAR button below each Control Room pre-select button allows the user to listen to the assigned source on the Control Room Monitor. The HEAR button will illuminate to show which Control Room pre-select is currently being monitored.

(5) Control Room Main and Small LS

The SMALL LS level control is in series with the Main LS level control, allowing the Main LS level control to be used irrespective of which LS system is in use.

The Small LS level control is used to adjust for the difference between the two sets of LS. The CHANGEOVER button diverts the monitor output to the small LS for near field, or domestic check, monitoring.

Both main and small LS can be stereo, 3 stereo, or 5.1 independently. DIM, CUT and SOLO operate on both sets of loudspeakers. DIM and CUT can be externally operated. DIM can be controlled from the TB if it is set to do so using condition switching set up on the Options TX-REH screen.

(6) LS Monitor Insert

The send ports for the LS monitor insert are patched on the I/O - Outputs - Mon TB & Osc Screen. The return ports are patched on the Options - Mon TB & Tone - MON SEL (EXT I/P) screen. The LS monitor insert is switched in and out using the button on this panel.

(7) Meter Selectors 1-3

Any of the available sources can be assigned to 3 meter selectors. Meters can be surround, stereo, phase and can have an optional separate M/S (L-R sum/difference) meter.

With any of the meter buttons selected, the misc functions bank (bank 6) allows Tone and M/S to be selected for that meter.

MONITOR PANEL SETUP

This screen allows all the available monitor sources to be allocated to the 5 banks of 12 selection buttons on the control surface. This means that sources of the same type can be banked together for ease of access on the assignable monitor selection panel.

The left side of the screen shows a representation of the monitor selection panel. The right side of the screen lists all the available monitor sources. Monitor sources are allocated to the 12 selection buttons on each bank as follows:

Select the required bank (The selection buttons on the screen will change to the current button settings for that bank).

- Select the button to which you want to assign a source (screen button will flash)
- Select a monitor source from the list
- Select "Allocate" 

For external sources, a pop up window allows the user to enter a suitable label for the button, and define the source as mono, stereo or surround.

Each bank can be given a user friendly label using this screen. Select a bank, and then select the "Change Bank Label" button. Labels for the middle and bottom rows on the button can be entered. The top row will always display the bank number.

Changes to the monitor configuration on this screen will not take effect on the panels until the configuration is saved, and loaded onto the console.

Saving and Loading Monitor Configurations

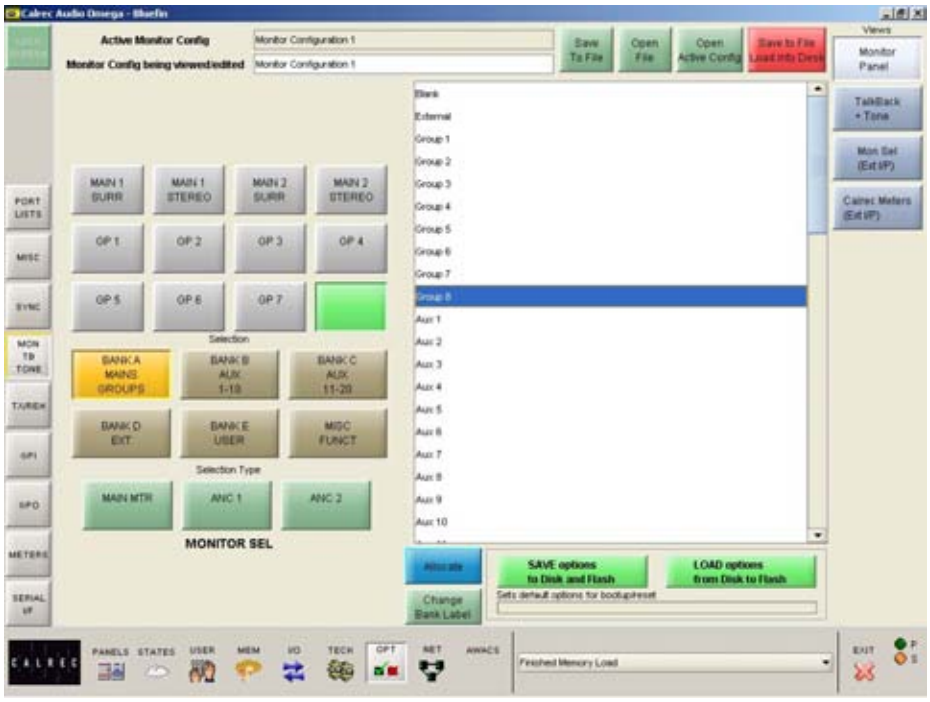
Once the user has the Assignable Monitor Panels set up as desired, the monitor configuration can be given a name and saved to the PC's hard disk, so that it can be recalled at a later date.

The name of the monitor configuration currently active on the control surface will be shown at the top of the screen, and the name of the monitor configuration currently being viewed/edited on the screen will be shown underneath.

Save To File - Load Into Desk

Changes to the monitor configuration being viewed/edited will not take effect until SAVE TO FILE LOAD INTO DESK is selected. Then the changes will be transmitted to the panels and saved to **C:/omega/cust1/monitor**.

If any changes are made to the monitor configuration, the SAVE TO FILE LOAD INTO DESK button will flash (until selected) to indicate that the changes to the monitor configuration being viewed/edited have not yet been saved and loaded onto the console.



Open File

OPEN FILE will allow a previously saved monitor configuration to be chosen.

When a file is opened, the configuration will be loaded into the front end screens as "the monitor configuration being viewed or edited", it is not sent straight to the control surface.

The monitor configuration can then be edited if desired and when it is ready to be used, select SAVE TO FILE LOAD INTO DESK, and the revised file will be saved and the settings sent to the control surface.

Open Active Config

OPEN ACTIVE CONFIG retrieves the settings that the panels are currently using and displays them on the front end screens replacing the current monitor configuration being viewed/edited.

Save To File

SAVE TO FILE will save the configuration being viewed/edited to **C:/omega/cust1/monitor** without loading it onto the console.

Save Options to Disk and Flash

As the monitor setup screens are part of the options set of screens, it is important to save the options to disk and flash once the monitor configuration is set up.

The Options screens are used to pre-set the system to the studio's required settings. These settings are not stored in the individual console memories but are saved and loaded separately using the buttons at the bottom of the screen. Although the monitor configuration itself is saved separately, its active state on the console has to be saved using these buttons.

Changes to options take effect as soon as they are made. However, if they are not saved, the next time the desk boots up the options will revert to their previous settings, which could mean that a different monitor configuration is loaded onto the console. This could cause problems should the console have to be reset during a live broadcast. It does however allow changes to be tried out without losing the original settings and these original settings can be restored without having to re-boot the system.

MISC OUTPUT AND METERS

Misc Output Misc Functions

When a misc output is selected, the misc functions selection button allows options for the mute button, CUT, DIM and mono/ stereo monitoring options to be applied.

MISC FUNCTIONS

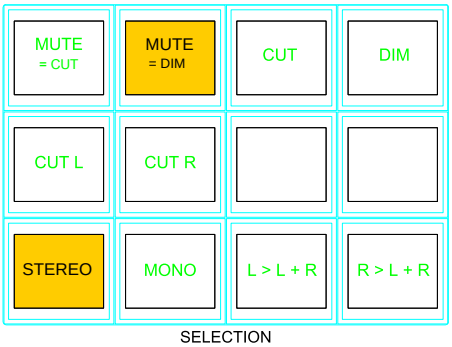
The Mute button for each Misc output can be set to CUT or DIM the selected monitor source using the MUTE=CUT or MUTE=DIM buttons. The button will light red when set to cut, and yellow when set to dim.

CUT and DIM can be applied using the buttons here.

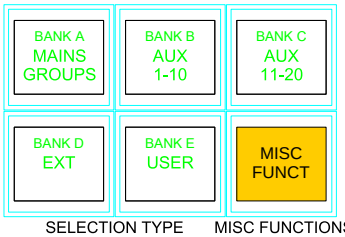
CUT L and CUT R allow the left or right leg of the selected monitor output to be cut.

Stereo or mono buttons allow the misc output to monitor the source in stereo or mono.

L > L + R and R > L + R allows either the left or the right leg to be sent to both the left and right of the stereo output.



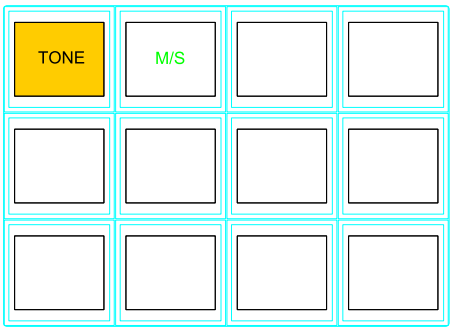
SELECTION



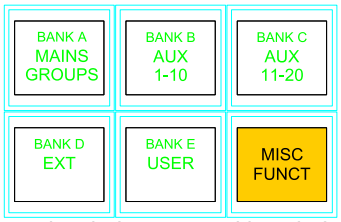
SELECTION TYPE MISC FUNCTIONS

Meter 1-3 Misc Functions

When meters 1-3 are selected, the misc functions bank allows Tone and M/S (L-R sum/difference) to be selected for that meter.



SELECTION



SELECTION TYPE MISC FUNCTIONS

CONTROL ROOM MISC FUNCTIONS

The Control Room Misc Functions selection button allows listening modes to be applied to the Control Room monitor, APFL functions to be set up and options for decoder remotes to be applied.

MISC FUNCTIONS

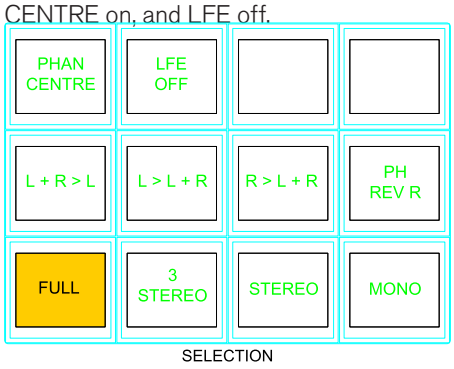
Pressing this button gives access to 5 banks, for each function, and options are chosen in the same way as monitor sources.

Listen Modes

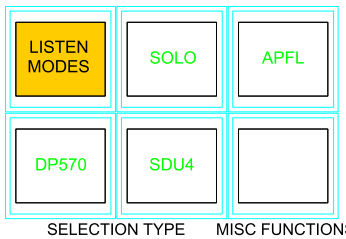
The default listen mode is mono, stereo 3 stereo or full surround depending on the LS arrangement set in the Set up application.

The selection buttons are as follows:

Selection buttons to switch PHAN CENTRE on, and LFE off.



SELECTION



SELECTION TYPE MISC FUNCTIONS

4 stereo option buttons: L+R to L, L to L+R, R to L+R and PH REV R. These will work in any mode, but are really designed for use in stereo mode or when monitoring stereo sources.

4 Listen mode selection buttons, allow the Control Room to monitor its selected source signal in Full surround, 3 STEREO, STEREO or MONO.

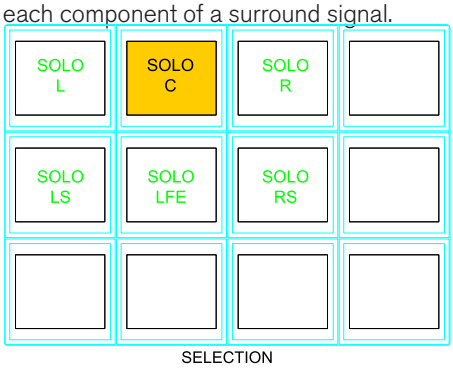
3 STEREO with Phan Centre ON is the same as STEREO except the LFE is optional.

If the source being monitored is surround, the STEREO button will create a stereo down mix of that source. If the source is stereo, the surround monitor buttons for that main output will have no effect.

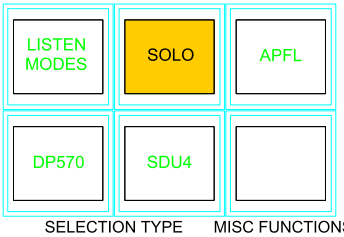
MONO feeds L, C, R, LS and RS to Center.

Solo

6 solo buttons allow solo monitoring of each component of a surround signal.



SELECTION



SELECTION TYPE MISC FUNCTIONS

APFL

There are selection buttons for:

PFL to override each misc output 1-6

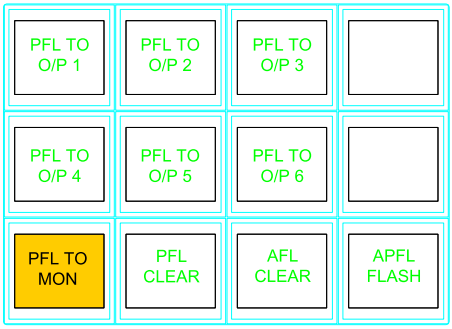
PFL to MON - Feeds the Control Room LS outputs overriding the current LS selection.

PFL clear and AFL clear, clear any latched buttons.

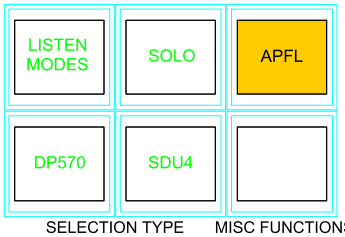
APFL Flash sets the APFL light to flash when any of the AFL or PFL buttons are latched.

PFL from surround mains is a stereo down mix of the surround signal.

If PFL to MON is not selected, PFL can override the small LS (if it has been set to do this in the setup application). Alternatively, there can be a separate stereo PFL LS output. An external RTB input can mix with PFL to the PFL LS output.



SELECTION



SELECTION TYPE MISC FUNCTIONS

DECODER REMOTES

With a Control Room pre-select button selected, the Misc Functions bank allows any decoders which are installed to be controlled. Pressing this button allows the user to select a decoder, and gives access to decoder remote functions displayed on the Monitor Selections panel.

MISC FUNCTIONS

The different types of decoder are located in separate banks, and functions are chosen in the same way as monitor sources.

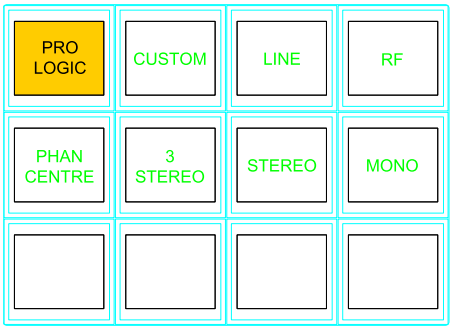
The decoder function buttons are as follows:

1 button for Pro Logic mode. When using a Dolby DP570, it is assumed that it will be set to Dolby Digital mode either in manual or auto detect mode.

3 buttons for Alternate Compression Modes: CUSTOM, LINE and RF. If none are selected, there will be no compression and no dialogue normalisation.

4 buttons for Alternate Output Modes: PHAN CENTRE, 3 STEREO, STEREO and MONO. If none are selected, the output will be full surround.

When controlling a Dolby SDU4, LT/RT decoder, only the stereo and mono output mode buttons will function.



Dolby DP570 & DP564 Setup
On the Dolby box:

<label> means press the button with the name label.

Power up the unit.

<setup>
<down arrow> until you see "SYSTEM SETTINGS"
<enter> Unit name is now displayed
<down arrow> until you see "GPI setup"
<enter> "GPI pin 23" is displayed
<enter> "GPI pin 23 trigger" is displayed
<enter>
<down arrow> until you see "Edge"
<enter>
<esc> "GPI pin 23 trigger" is displayed
<down arrow> "GPI pin 23 Polarity" is displayed
<enter>
<down arrow> until you see "Positive/High"
<enter>
<esc> "GPI pin 23 Polarity" is displayed
<down arrow> "GPI pin 23 Function" is displayed
<enter>
<down arrow> until you see "FULL" meaning surround.
<enter>
<esc> "GPI pin 23 Function" is displayed
<esc> "GPI pin 23" is displayed
<down arrow> "GPI pin 24" is displayed

Repeat the process for all the GPI pins 24 - 31

<esc> "GPI setup" is displayed
<down arrow> "GPO setup" is displayed

Now go though the same routine to set up the outputs on pins 7 to 14 (as drawing/spreadsheet) with trigger as "Level", Polarity as "Positive/High", and function as spreadsheet.

<esc> Until back at original menu.

Note: With issue 1 cable, the outputs are on pins 8 to 15.

OMEGA
METERING SYSTEM

CALREC

Putting Sound in the Picture

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TFT METERS

High quality TFT screen based meters can be incorporated into the console upstand either instead of or alongside moving coil or LED bargraph style meters. The user can dynamically change the layout of the TFT meters and their arrangement.

The screen layout is configured such that each half of the screen can have 4 or 6 columns, allowing 8 or 12 meter positions across its width. Each column can then be split into up to three rows which can be 1/3, 1/2, 2/3 or full height of the TFT meter panel.

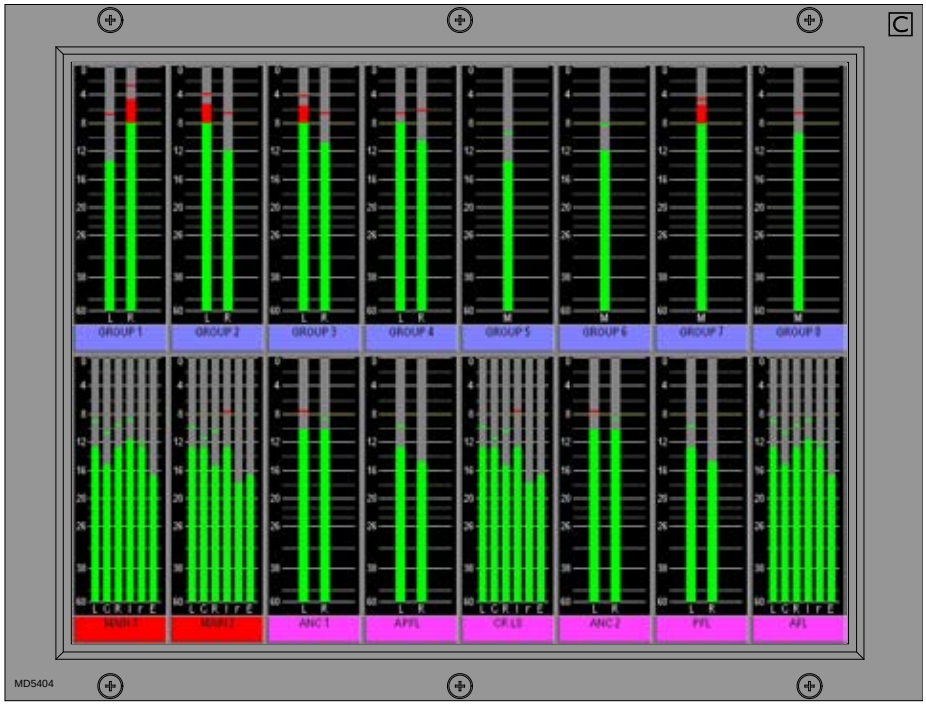
This allows a greater density of meter functions to be displayed, as each TFT meter can display up to 36 meters within the space usually taken up by just two standard meter panels.

The following functions can be metered:

- Channel Inputs, A and B paths (simultaneously, or set to follow A/B assign button).
- Main Outputs
- Group Outputs
- Auxiliary Outputs
- Track Outputs
- Meter Selectors
- External Inputs
- Miscellaneous functions

Each meter can be:

- Mono
- Stereo
- M/S (Sum and Difference of the stereo signal)
- Surround (L, R, C, LFE, LS, RS - sequence set as part of meter arrangement)
- Phase Display



When a screen is configured with 8 columns, these columns will line up with any faders positioned in that section of the console. This is useful when metering channel inputs or groups.

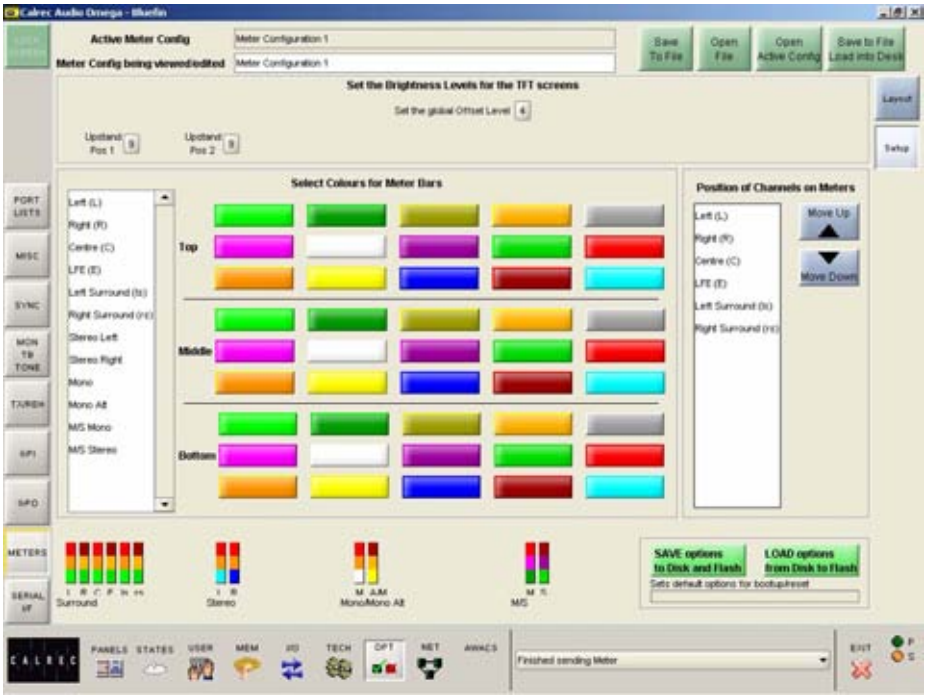
The number of meters configurable on the TFT screens is governed by the number of meter data signals available. There are 256 meter data signals available for output meters. In addition, for input meters, there is one meter data signal per audio signal. If an audio signal is metered on a TFT meter and a standard meter at the same time, it will use up two signals in the meter data stream.

There can be up to 128 phase meters in the configuration.

If a meter is set up to display an Aux or Track output and the associated channel is cut, a small X indicator wil appear as confirmation.

TFT METER SETUP SCREEN

The Options - Meters - Setup screen allows the user to change global metering settings.



Bar colours

The user can select the colours to be used on the meters. The top/middle/bottom colours for each signal can be selected independently. Select the signal from the list, then select the colours from the palette. The selected colours for each signal are shown at the bottom of the screen.

Signal Order

The user can select the order that the surround signals appear. The order can be shuffled by selecting a signal from the list and using the Move Up and Move Down buttons. The order chosen will be used for all surround meters.

Screen Brightness

Over time, the brightness of TFT screens can degrade. For this reason, a set of controls are provided to adjust the brightness of each screen individually and globally.

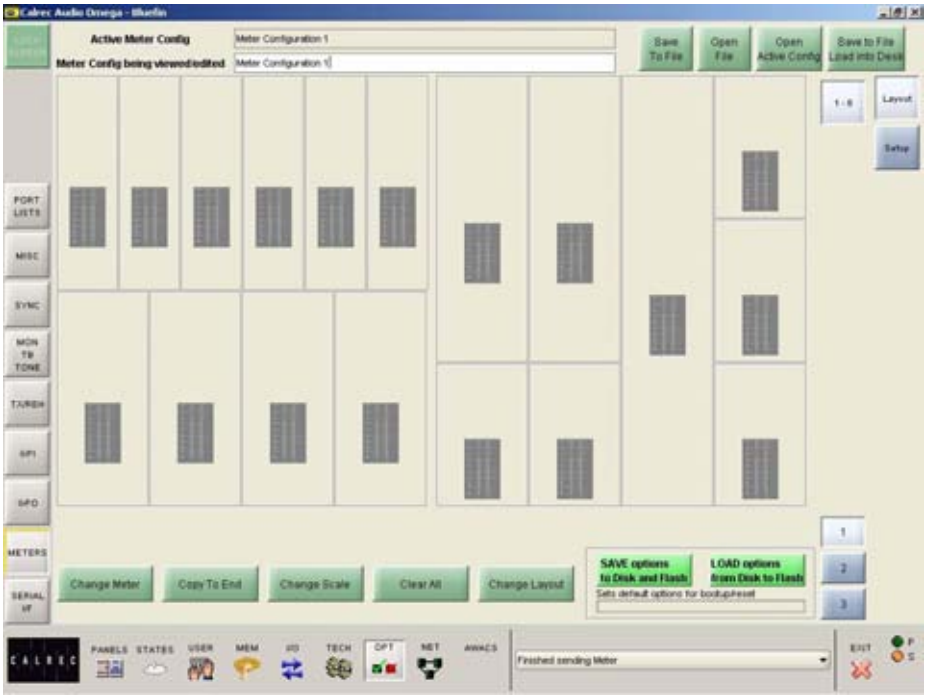
The brightness for each screen can be adjusted from 0-9 using the selection buttons. A selection window will appear with the current level highlighted.

Selecting a different level will close the window and the new level will be shown on the screen. The global offset level will adjust the brightness of all screens by the value selectable in the same way, from -5 to +4.

ADJUSTING TFT SCREEN LAYOUT

The user can (with some rules) control the layout of the rows and columns on the TFT screens. The numbered buttons on the Options - Meters - Layout screen allow the meter panels to be selected for set-up. Upon selection of one of the numbered buttons, the meter occupying that upstand position will be shown in the main section of the screen.

Select a meter position (its background turns blue), and select CHANGE LAYOUT. A dialogue box then allows the number of columns and rows in the selected meter's half of the screen to be chosen. The meter's height can then be set to span the available rows.



Rows

Each half of the screen can have two or three rows, and the meters within each column can be set to take up 1, 2 or 3 rows, to achieve different row heights for different columns. Changing the number of rows only affects meters in the selected meter's half of the screen.

Columns

There can be 4 or 6 columns in each row across each half of the screen. As the screens are set up in halves, there can be different column widths on each side of the screen. Changing the number of columns will affect the selected meter's row only (unless the change affects meters already set on other rows). This allows rows to have different numbers of columns.

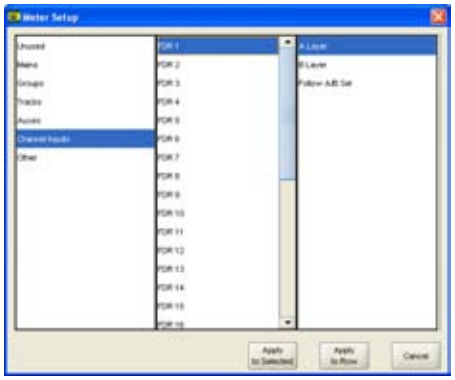
Block Height

In a column with 2 rows, selecting 1 row high makes the meter take up half of the column it occupies. Selecting 2 rows high makes the top meter position take up the full height of the column it occupies. In a column with 3 rows, selecting 1 row high makes the meter take up one row (1/3 of column height) in the column it occupies. Selecting 2 rows high allows the meter to take up the row it is on and the row below in its column. 3 rows high makes the meter the full height of its column.

METER CONFIGURATION

Sources are allocated to TFT, bargraph or moving coil meters in the same way. Select a meter position (its background will turn blue) and select CHANGE METER.

A dialogue box will appear which allows the meter source to be chosen. Select the required source from mains, groups, tracks, auxiliaries, channel inputs or other. Subsequent columns will list the available options for that source.

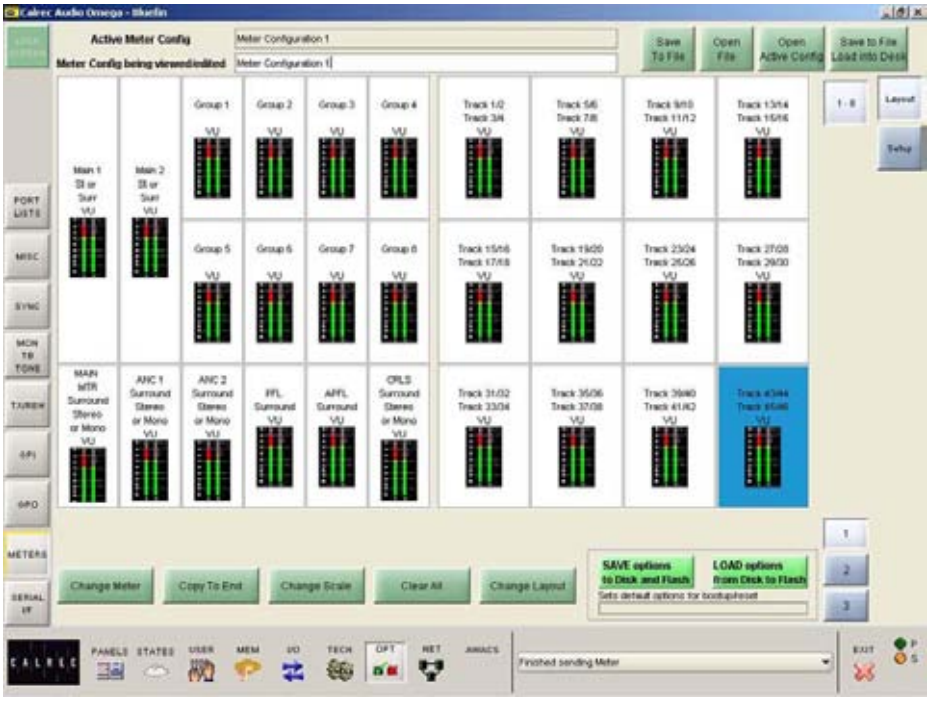


When all options are selected, APPLY TO SELECTED will apply the source to the selected meter position only.

In the case of TFT, twin or multiple-way meters, APPLY TO ROW will allocate that source to the selected meter position, and subsequent sources in the list will be applied to all the meter positions to the right of the selected meter position in the row, until the row is full, or you run out of sources in the list.

When selecting channel inputs to be metered, the fader number is selected, and the path A or B. Alternatively, the meter can be set to follow the fader's currently assigned path selection (A or B).

For surround CRLS and Meters 1-3, the width of the TFT meter will automatically change to match the source.



Copy to End

If a source has been allocated to a meter, and that meter is selected, COPY TO END can be used to allocate subsequent sources in the list to all the meter positions to the right of the selected meter position in the row, until the row is full, or you run out of sources in the list. This is similar to APPLY TO ROW in the pop up dialogue box, COPY TO END allows you to do this after the first meter has had a source allocated.

Change Scale

Each meter can be PPM, VU or Phase. There can be up to 128 phase meters assigned in the configuration, after all have been assigned the option will no longer be available.

The scale type can be selected individually for each meter or globally for all meters. Scales available to the user are set in the Set-up Application from a list which is longer than the system is capable of.

Clear All

"Clear All" resets all the meter positions, clearing all settings on all meters in the upstand. A confirmation box must be accepted before this action is carried out, this is to prevent against accidental changes.

Tracks on TFT Meters

2 tracks can be displayed in any single meter position. However, if the meter position occupies a column which is 1/8 of the screen width (that half of the screen being set to 4 columns wide), then 4 tracks can be displayed allowing the track metering to occupy a smaller space.

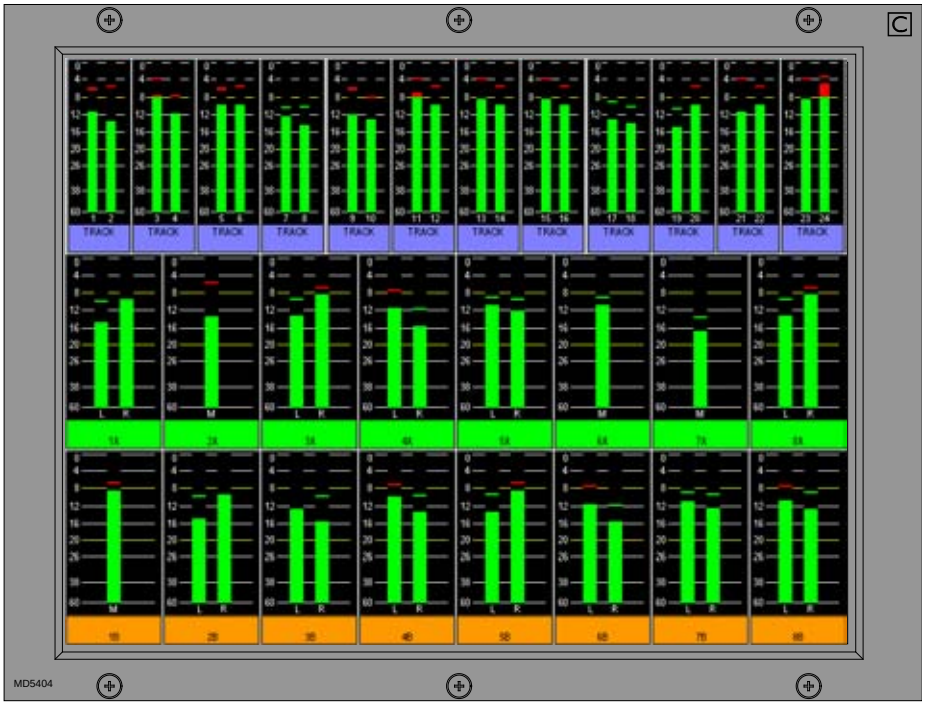
When selecting Tracks to meter, the first available options column allows two tracks to be selected for display in that meter position. The next available options column will then allow selection of the next two tracks. It is useful to change the colours for pairs of mono meters such as tracks, so that the left of the pair is a different colour to the right.

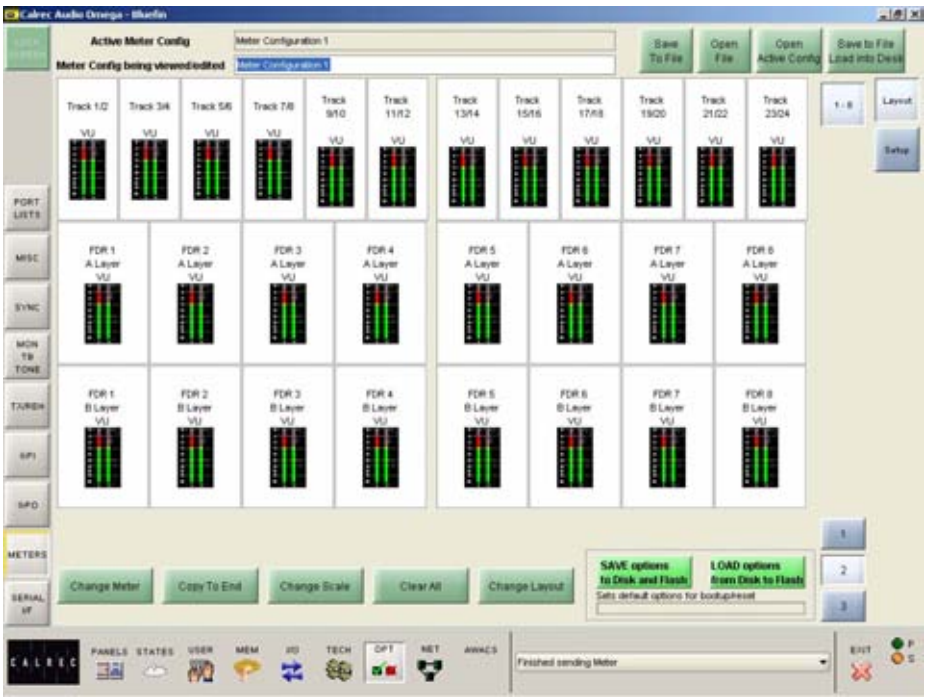
TFT CONFIGURATION EXAMPLES

In the example below, the TFT meter screen has been split up into three rows.

The top row has been split up into 12 meter positions to house the tracks, and the middle and bottom rows have been split up onto 8 meter positions across, to house the channel inputs for the A and B paths respectively.

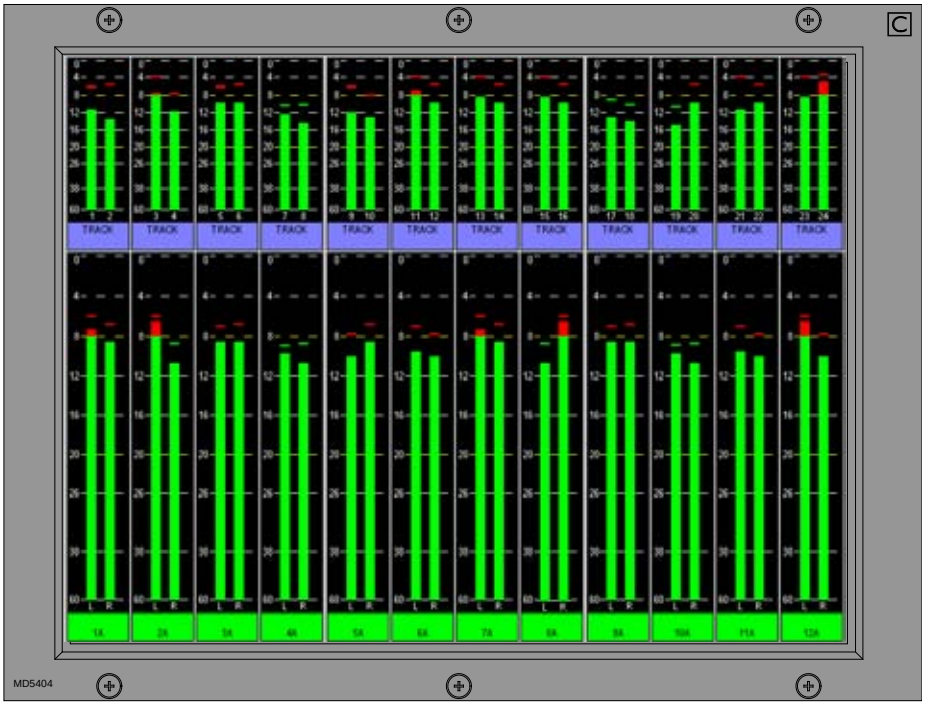
When there are 8 meter positions on a row across the width of a TFT screen, the meter positions will line up with the faders occupying that section of the console.





In the example below, the TFT meter screen has been split up into two rows with 12 meter positions across each row.

The top row takes up 1/3 of the height of the screen, and is occupied by tracks. The bottom row takes up 2/3 of the height of the screen, and is occupied by A path channel inputs.



SAVING AND RESTORING METER CONFIGURATIONS

Once the user has the meters set up as desired, the configuration can be saved to the PC's hard disk, so that it can be recalled at a later date. A configuration consists of the values set on the SETUP screen and the layouts designed on the LAYOUT screen.

The currently active configuration will be shown at the top of the Setup and Layout screens, and the configuration currently being viewed/edited on the screens will be shown underneath.

Save to File, Load into Desk
Changes to the configuration being viewed/edited will not take effect until SAVE TO FILE LOAD INTO DESK is selected. Then the changes will be transmitted to the console and saved to **C:/omega/cust1/meter**.

If any changes are made to the configuration, the SAVE TO FILE LOAD INTO DESK button will flash (until selected) to indicate that the changes to the configuration being viewed/edited have not yet been saved and loaded onto the console.

Open File
Open File will allow a previously saved meter configuration to be chosen. When a file is opened, the configuration will be loaded into the front end screens as "the meter configuration being viewed/edited", it is not sent straight to the control surface.

The settings can then be edited if desired and when they are ready to be used by the control surface select SAVE TO FILE LOAD INTO DESK. The revised file will be saved and the settings sent to the control surface.

Save to File
Save to File will save the configuration being viewed/edited to **c:/omega/cust1/meter** without loading it onto the console.

Open Active Config
Open Active Config retrieves the settings that the control surface is using and displays them on the front end screens replacing the current configuration being viewed/edited.

Save Options to Disk and Flash
As the meter setup screens are part of the options set of screens, it is important to save the options to disk and flash once the meter arrangement is set up.
The Options screens are used to pre-set the system to the studio's required settings. These settings are not stored in the individual console memories but are saved and loaded separately using the buttons at the bottom of the screen. Although the meter arrangement itself is saved separately, its active state on the console has to be saved using these buttons.

Changes to options take effect as soon as they are made. However, if they are not saved, the next time the desk boots up the options will revert to their previous settings, which could mean that a different meter arrangement is loaded onto the console. This could cause problems should the console have to be reset during a live broadcast. It does however allow changes to be tried out without losing the original settings and these original settings can be restored without having to re-boot the system.

OMEGA
ON-SCREEN PATCHING

CALREC

Putting Sound in the Picture

INPUT PORTS SCREEN

This screen allows patching of input sources to channel inputs, insert returns, direct inputs or to output ports. On the control surface, ports may also be assigned using the Port Select controls. This screen shows the patching for channel inputs.

(1) Source Lists

All of the available ports can be grouped into suitable lists using the Options - Port Lists screens. These lists can then be displayed on the left of this screen, ready to be patched to channels on the right. Different lists are accessed using the selection buttons.

(2) Viewing Options

The sources can be viewed as pairs (for patching to stereo or surround paths), individual (for patching to mono paths), or individual with the actual rack number, card slot and input shown (for diagnostic purposes). When viewed as diagnostics, the list can be sorted alphanumerically, by selecting the column header.

The DESC button brings up a window showing all the ports in the current list and their long descriptions. Upon selecting a port from this widow, a JUMP TO button will locate this port in the main patching screen.

(3) Input Views

These buttons select the console path types which can have input ports attached (channel inputs, insert returns, direct inputs or outputs). They are displayed in the main section of the screen.

(4) Fader Views

It is possible to choose which set of faders are to be available on and altered by this screen. When a fader assign button is selected, the screen will jump to the selected fader in the list. This behaviour is enabled using the States screen.

(5) Patching

Assignment is made by selecting a source, and an input or output, and selecting Patch.

The input source label will appear in the channel input label field and on the fader on the console (if that input, 1 or 2 is currently selected on the Input/Output panel). By selecting the label cell on the screen, the input name can be edited using the keyboard. The new name is stored with the channel input and replaces the source label on the fader display.

Patches can be removed when selected using REMOVE.

Connections can be moved between channel inputs when selected using MOVE FROM. The Input 1 or 2 field will be highlighted and the PATCH, REMOVE and MOVE FROM buttons will be replaced with MOVE TO, and CANCEL. Upon selection of a new patch point, pressing MOVE TO will move the connection. CANCEL will cancel the operation.

Multiple Patching - It is possible to patch regions of sources to a region of inputs.

- Select a list of input ports using the trackball by dragging down the column
- Select the fader to start patching to
- Select Patch

(6) Port Isolation

Port connections can be isolated from memory recall, so that their settings will not be over-written when a different memory is loaded. Selecting Isolate a second time will de-isolate the connection. A brown cell in the Label column indicates that a port is isolated. Other console settings can be isolated using the Mem - Isolate screen.

(7) Grab Ownership

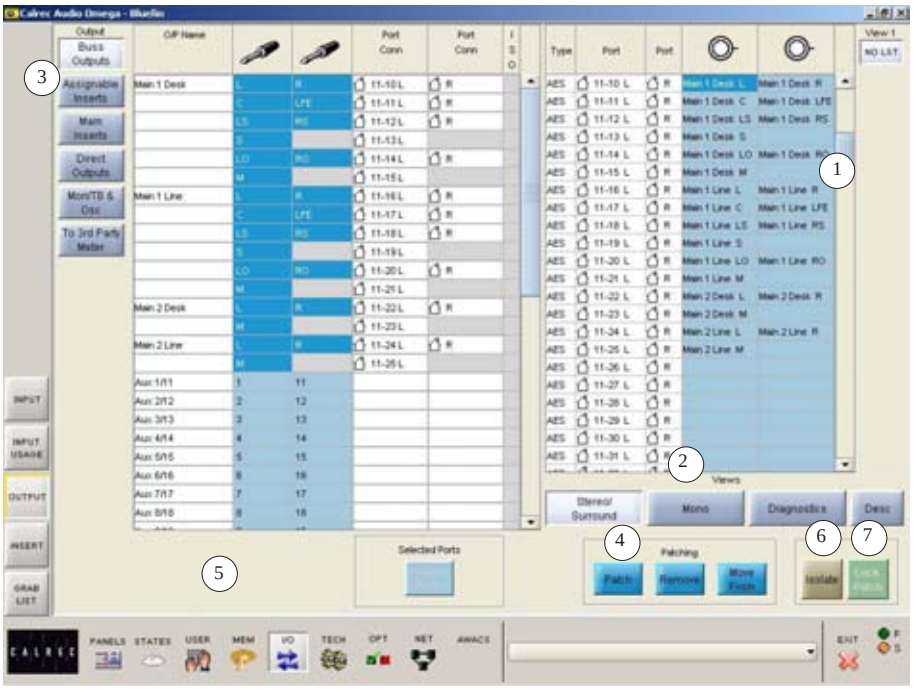
When a Hydra source is patched, ownership of it assigned to the console. When several consoles share sources on the same network, the first console that connects to a source will be given control (ownership) over it. Other consoles that subsequently connect that source will not be able to control it. The grab buttons allow the console to override ownership of the network sources, either altogether, individually, or by adding them to a “Grab List”.

GRAB ALL allows the console to take ownership of all Hydra ports in the system. GRAB SEL allows the console to take ownership of all Hydra ports selected on the screen.

ADD TO LIST and REMOVE FROM LIST will add or remove selected Hydra ports to a Grab list. When one or more Hydra sources are added to the grab list, the GRAB ALL button changes to GRAB LIST. The grab list can be viewed on the I/O - Grab List screen. Selecting GRAB LIST allows the console to take ownership of all Hydra ports on the grab list.

OUTPUT PORTS SCREEN

The I/O - Output screens allow patching of console output signals to main, auxiliary and track output ports, insert sends and direct outputs. It is also for setting up monitor, talkback, oscillator and external metering outputs. This screen shows the patching for buss outputs.



(1) Output Port Lists

All of the available ports can be grouped into suitable lists using Options - Port Lists screens. These lists can then be displayed on the right of this screen, ready to have signals patched to them from the left. Different lists are accessed using the selection buttons.

(2) Viewing Options

The ports can be viewed as pairs (for patching from stereo or surround paths), individual (for patching from mono paths), or individual with the actual rack number, card slot and output shown (for diagnostic purposes).

(3) Output Views

These buttons select the different categories of console output signals which can be patched to output ports (e.g. buss outputs, insert sends, direct outputs, monitoring outputs, Talkback outputs, oscillator outputs, external meter outputs).

(4) Patching

To make an assignment, select an output signal, and an output port, and select Patch.

Output signals can be patched to any number of output ports by repeating this procedure. (If groups are set to be mono, only the left output will have a signal on it).

Patches can be removed from selected output ports using the REMOVE patching button.

Connections can be moved between output ports when selected using the MOVE FROM button. The Name field will be highlighted and the PATCH, REMOVE and MOVE FROM buttons will be replaced with MOVE TO and CANCEL. Upon selection of a new patch point, pressing MOVE TO will move the connection. CANCEL will cancel the operation.

Multiple Patching - It is possible to patch signals to many outputs in one operation:

- Select first source point
- Select the output ports by dragging down the column, these have to be all in the same column
- Select Patch

(5) Remove

The Remove button allows an output signal to be removed from its output port assignment or assignments, without needing to locate the output port or ports to which it is patched. Simply select the port connection from the "Port Conn" column on the list of output signals, and select Remove.

(6) Port Isolation

The ISOLATE button allows the selected port connection to be isolated from memory recall, so that its current settings will not be over-written by what is in the memory. Clicking the button a second time will de-isolate the connection. A brown cell in the Label column indicates that a port has been isolated. Other console settings can be isolated using the Mem - Isolate screen.

(7) Output Port Locking

Some output ports may need to be 'locked' once they have been set up to avoid accidental removal. For example, the console's Main 1 output signal may be assigned to a particular output port. If this were the main studio transmitter output, it would be very undesirable to allow the assignment to be easily changed during normal operation. For this reason, a locking system is provided to protect critical parts of each configuration.

Operation of the locking system is only available in "Technician" or "Supervisor" mode which are password protected to add an extra layer of security. Modes are selected using the TECH - User Mode screen.

To lock an output port assignment, select an output port which has a source assigned to it, and select the LOCK PATCH button. Provided that the desk is in "Technician" mode, the lock state will be toggled.

If the lock is active, the port name will be highlighted in bright green text.

Once a patch has been locked, any attempt to patch over it, move it, or remove it will cause an error dialog box to display "Patch locked!"

ASSIGNABLE INSERTS

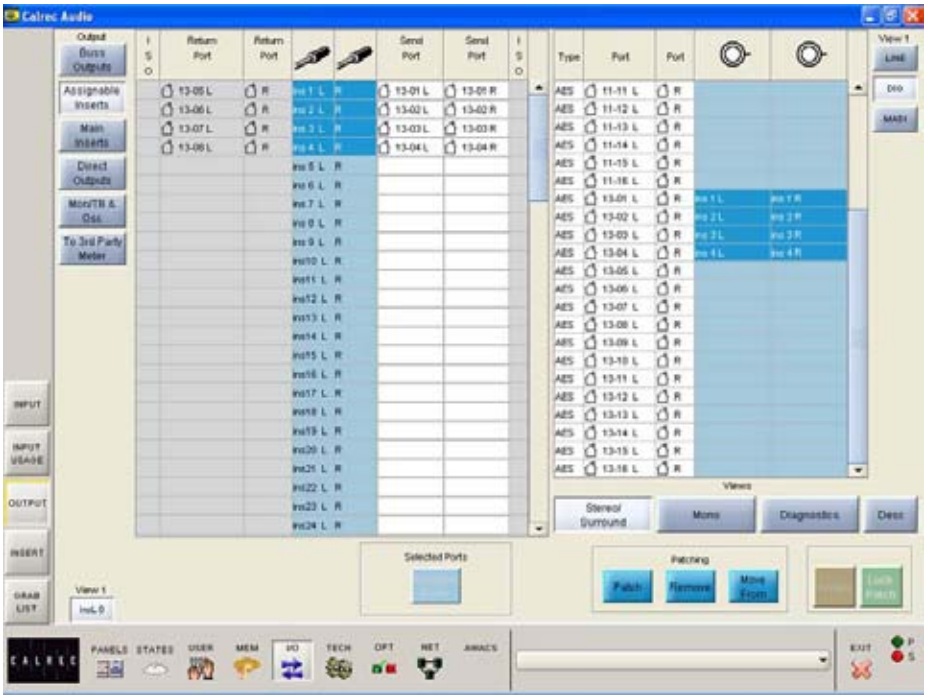
There can be up to 96 pairs of assignable inserts for use in channel or group paths. Output ports for the assignable insert sends are set up on the I/O - Output screen, by selecting "Assignable Inserts" from the list of Output Views.

The output ports for assignable insert sends can be patched, moved and removed here in the same way that buss outputs are patched.

The input ports connected to the insert return can also be seen. These are set up on the I/O - Input screen.

Once this is done the insert can be connected to any channel or group either using the Insert screen or by using the port selection controls on the control surface.

Once connected, the insert is switched into the channel path using the buttons in the Input/Output section.



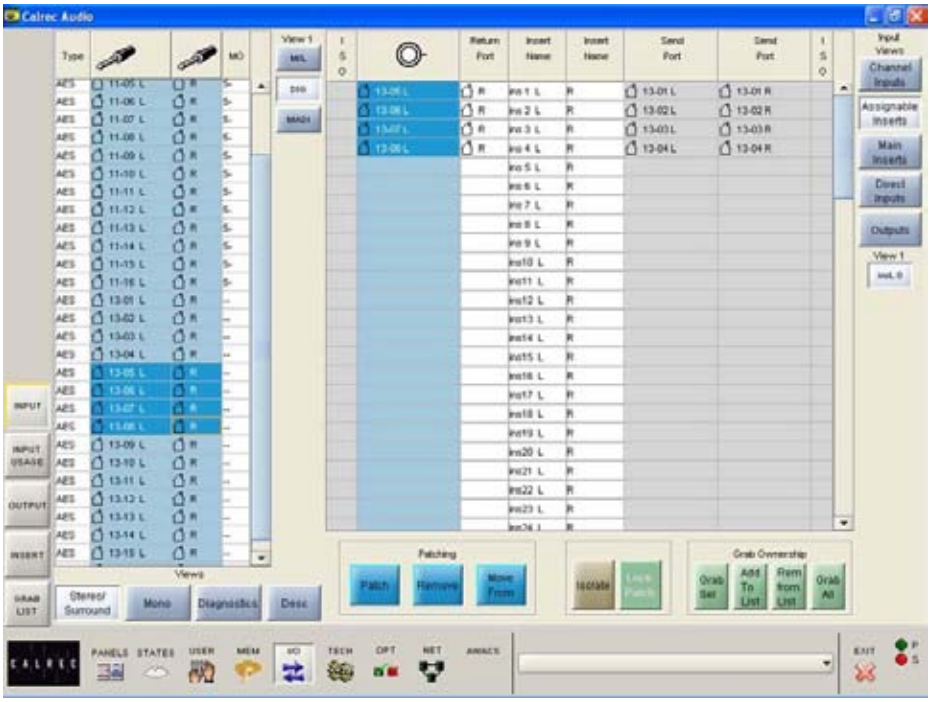
There can be up to 96 pairs of assignable inserts for use in channel or group paths. Input ports for the assignable insert returns are set up on the I/O - Input screen, by selecting "Assignable Inserts" from the list of Input Views.

The input sources for assignable insert returns can be patched, moved and removed here in the same way that channels inputs are patched.

The output ports connected to the insert send can also be seen. These are set up on the I/O - Output screen.

Once this is done the insert can be connected to any channel or group either using the Insert screen or by using the port selection controls on the control surface.

Once connected, the insert is switched into the channel path using the buttons in the Input/Output section.



INSERT SCREEN

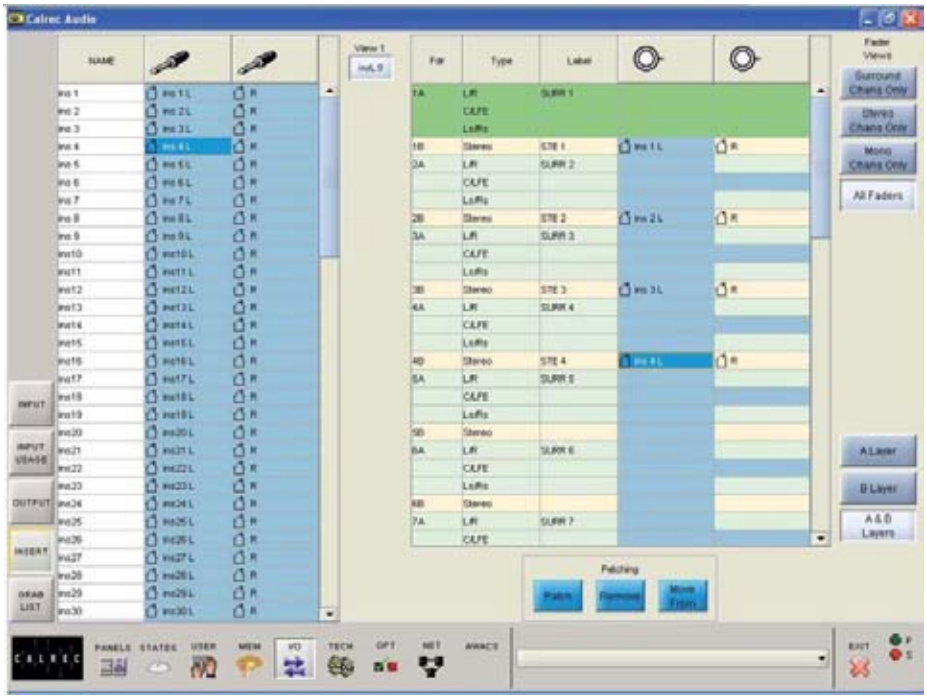
Once the assignable insert sends and returns have been set up on the I/O - Input and I/O - Output screens, they can be patched here to channels and groups.

The Fader View buttons select which paths are on display.

All the inserts can be accessed on the left hand side of the screen. Most inserts are treated as pairs in the labelling. L and R are used to distinguish the two halves of the pair. This makes it easier for them to be used as a stereo insert but does not necessarily mean they are stereo. The two halves of the pair can be used for separate mono signals. The inserts can be viewed as pairs (best for patching to stereo paths) or individual (best for patching to mono paths).

Note: If groups are set to be mono, only the left insert will have a signal on it.

Once connected, the insert is switched into the channel path using the buttons in the Input/Output section.



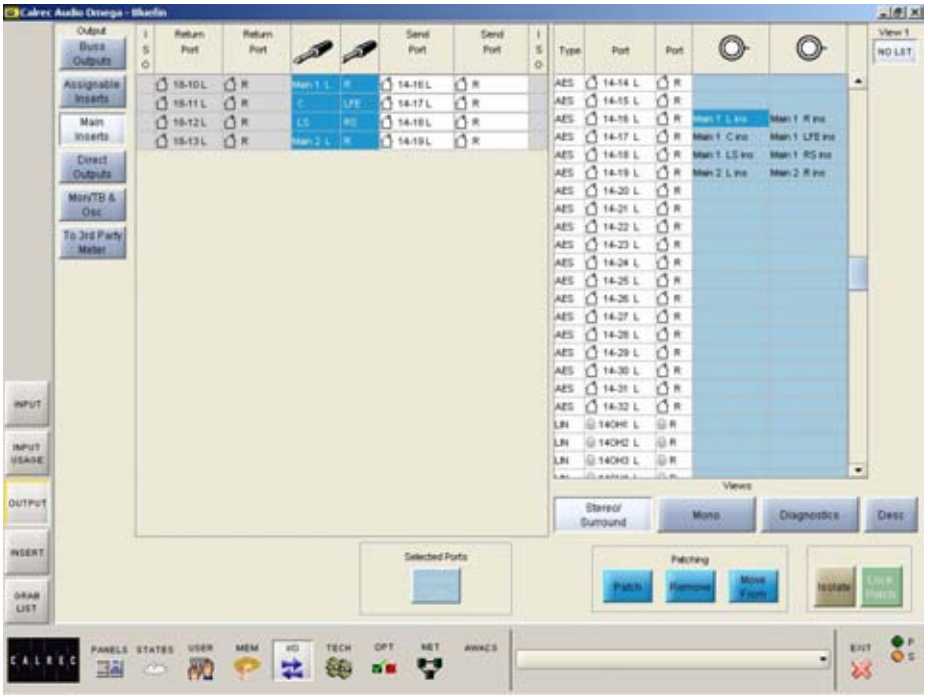
MAIN INSERT SENDS

The main insert sends are set up on the I/O - Output screen, by selecting “Main Inserts” from the list of output views. The output ports for main insert sends can be patched, moved and removed here in the same way as buss outputs are patched.

The input ports connected to the main insert return can also be seen. These are set up on the I/O - INPUT screen.

The main inserts are dedicated to the main outputs.

Once the ports have been set up, the insert is switched into the channel path using the buttons in the Input/Output section.

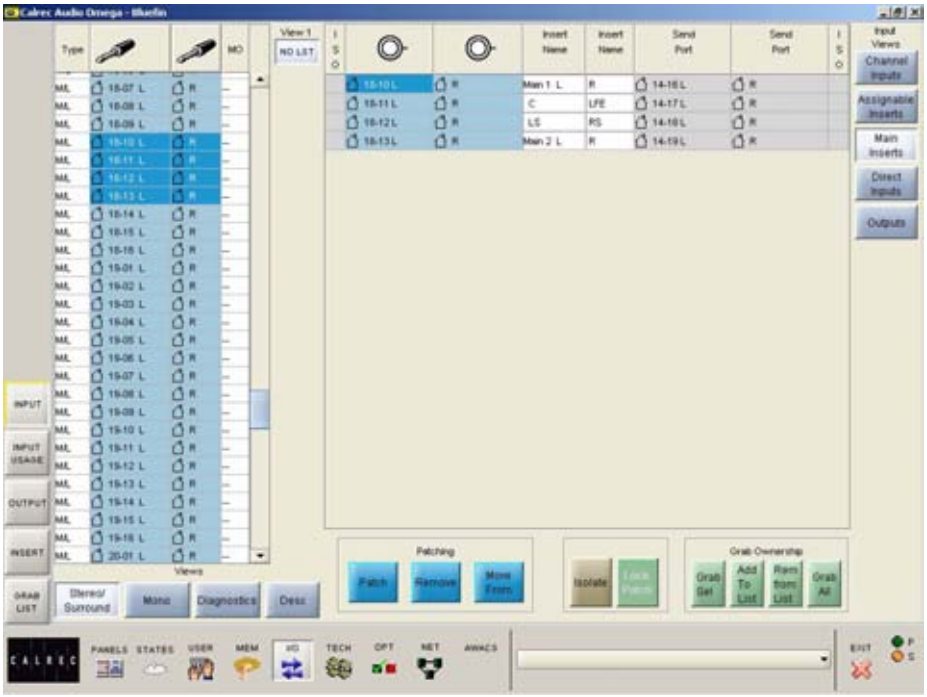


MAIN INSERT RETURNS

The main insert returns are set up on the I/O - INPUT screen, by selecting "Main Inserts" from the list of Input Views. The input sources for main insert returns can be patched here in the same way that channel inputs are patched.

The output ports connected to the main insert send can also be seen. These are set up on the I/O - Output screen.

The main inserts are dedicated to the main outputs. Once the ports have been set up the insert can be switched into the main path using the buttons in the Input/Output section.

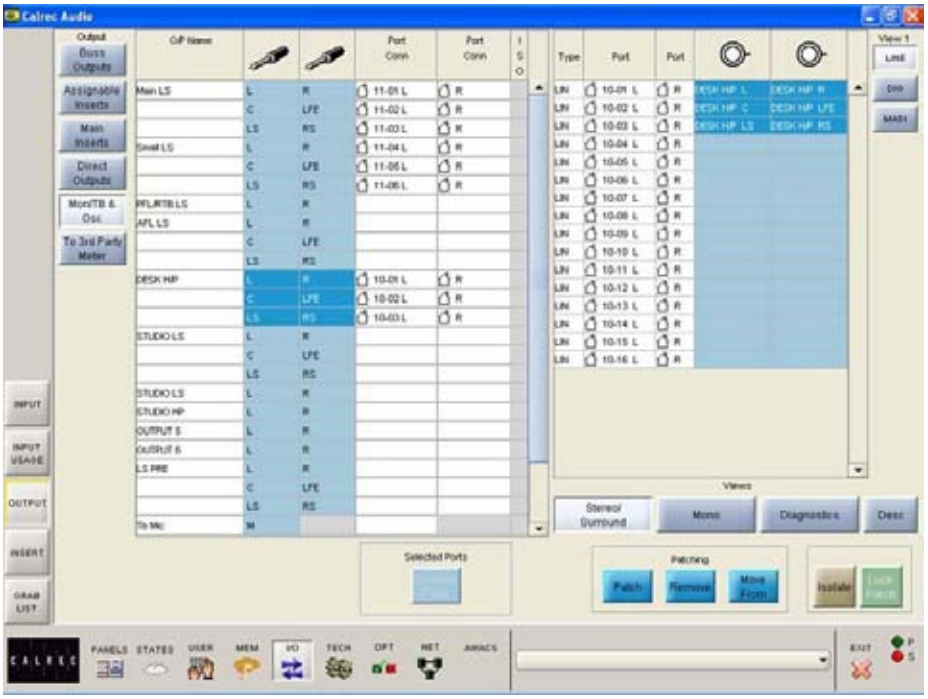


MONITORING, TALKBACK AND OSCILLATOR OUTPUTS

The output ports for the monitoring, talkback and oscillator outputs can be patched on the I/O - OUTPUT screen, by selecting “Mon/TB & Osc” from the list of Output Views.

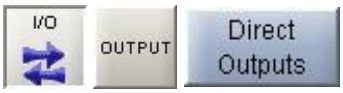
LS Monitor Insert

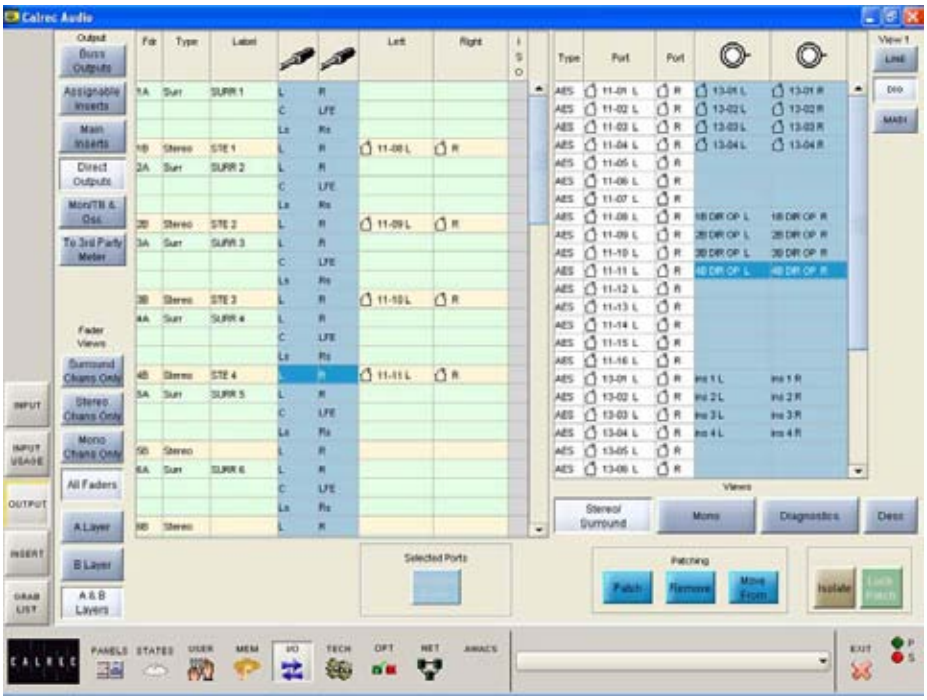
The send ports for the LS monitor insert are patched on this screen. The return ports are patched on the Options - Mon TB & Tone - MON SEL (EXT I/P) screen. The LS monitor insert is switched in and out using the button in the monitoring section of the control surface.



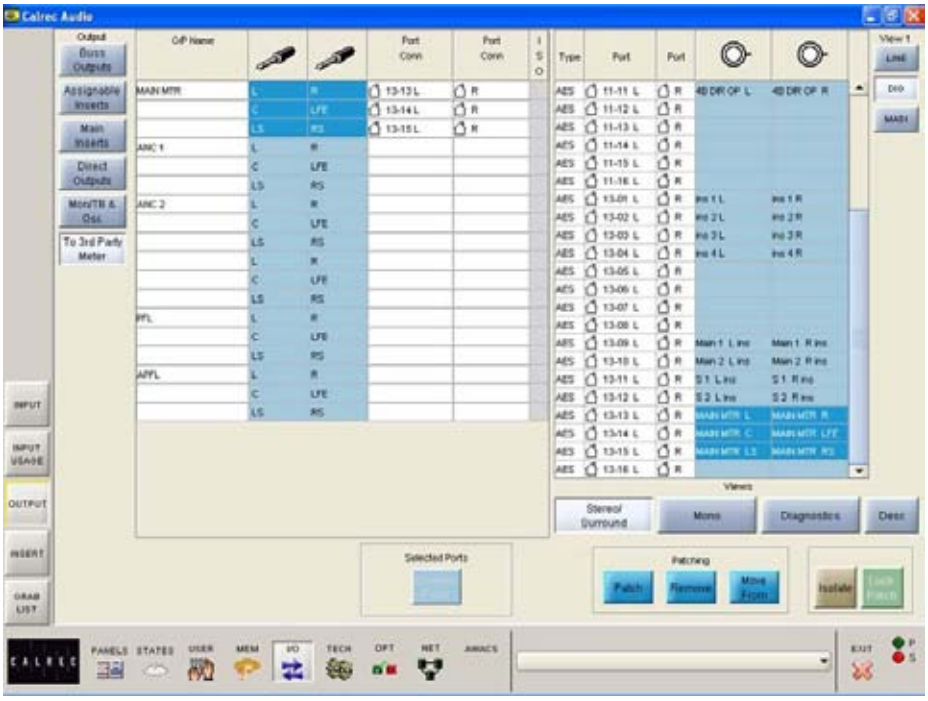
DIRECT OUTPUT PORTS

The output ports for the direct outputs, can be patched on the I/O - OUTPUT screen, by selecting “Direct Outputs” from the list of Output Views.



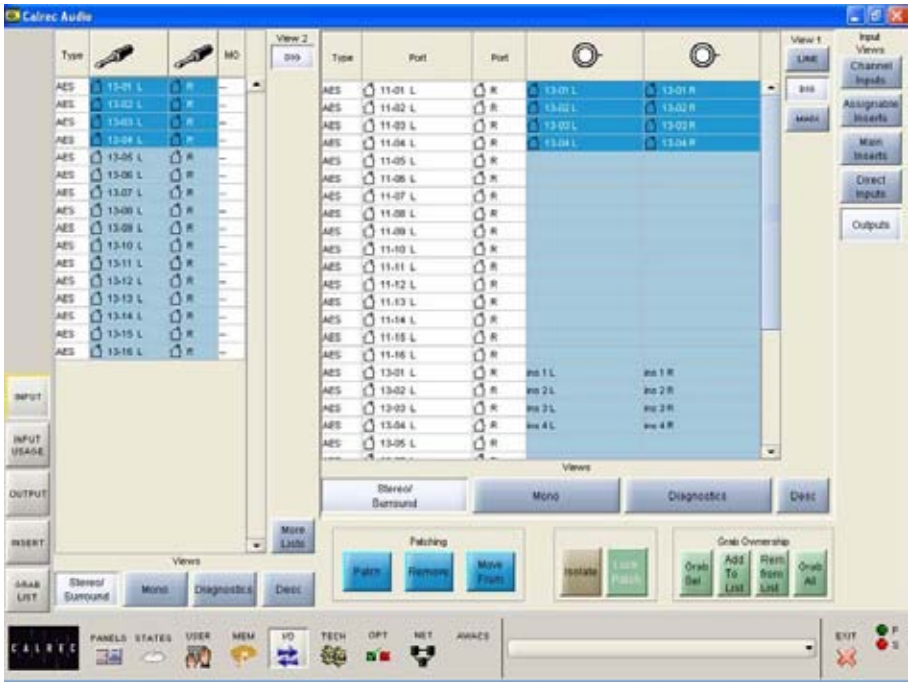


EXTERNAL METER OUTPUT PORTS



The output ports for external meters, such as a DK phase scope, can be patched on the I/O - OUTPUT screen, by selecting “To 3rd Party Meter” from the list of Output Views. Most of the meters on the console are driven internally and do not require output ports.

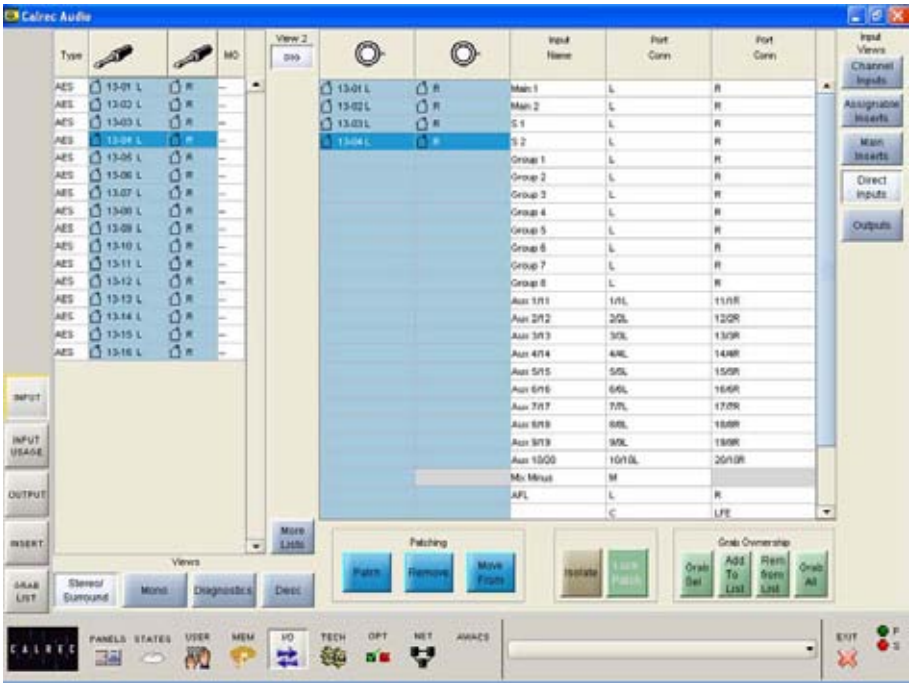
INPUT-OUTPUT PORTS



Input ports can be patched directly to output ports on the I/O - INPUT screen, by selecting “Outputs” from the list of Input Views.

DIRECT INPUT PORTS

Input ports can be patched to direct inputs on the I/O - INPUT screen, by selecting “Direct Inputs” from the list of Input Views.



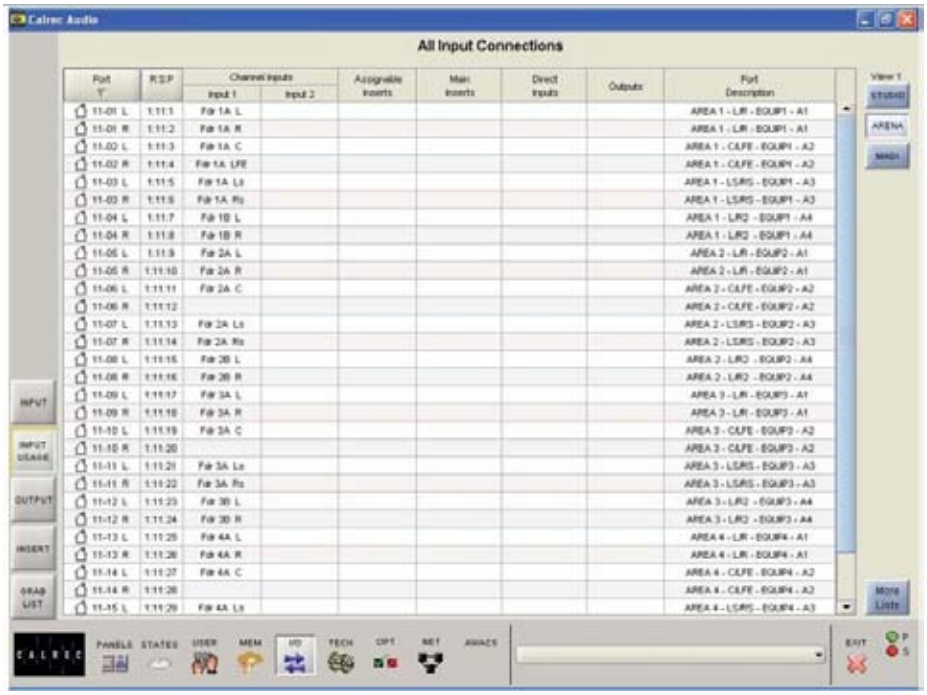
INPUT USAGE SCREEN

The Input Usage screen shows a summary of all input port connections.

Fader, insert, direct input and output allocations are shown for each input port, along with any long description entered for the port during the set up of the console, or on the Options - Port Lists screens.

The input ports can be viewed by list, using the selection buttons on the right of the screen. The “More Lists” button gives access to lists which have been allocated to subsequent views.

Lists are set up using the Options - Port List screens.



OMEGA
PORT LIST MANAGEMENT

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PORT LIST ALLOCATION

All of the available input and output ports can be grouped into lists using the Options - Ports Lists screens. These lists are then available on the input and output patching screens and can be made available on the control surface port selection controls. Lists and their settings set up here can be saved and recalled as configurations.

Up to 20 lists for input ports and 20 lists for output ports can be made available on the control surface. There can be an unlimited number of lists available on the screens. The buttons at the bottom right corner of the screen switch between input port lists and output port lists.

Allocating Ports To Lists

To add ports to lists, select the port from the Port Name column (multiple ports can be selected by dragging down the column) and select “Move to List”. A window will appear for the user to choose which list to move the port to. Alternatively, with a port or ports selected, choose “Create New List” to add the port or ports to a new list.

List Management

New lists are created using the “Create New List” button. “Remove List” deletes lists from the configuration (once lists are removed from a configuration they are deleted permanently). “Modify List” allows the user to change the name of a list.

Accessing Lists using the Port Selection Controls

For input port assignment and direct output port assignment, the port selection controls on the control surface can be used. Its display shows the current port on the top half of the display, and the list it occupies underneath. Pressing and turning the rotary control gives access to other lists. Lists appear in the viewing order set on the Options - Port Lists - Sort Lists screen.

Screen Only Lists

When creating or modifying a list, the user can choose whether the list is to be made available from the screen only. This means that the list will not be available for selection on the control surface port selection controls. This makes control surface port selection easier, as it ensures only the relevant lists are displayed. All lists are always available on the I/O patching screens.

Port Description

Each port can be given a long description, which could describe the port’s use, or it could be some information on where to find the connection within the installation, for example, its location on a patchfield. Descriptions are typed directly into the description column. In addition to being displayed on the port list management screens, these descriptions appear on the I/O patching screens under the “DESC” button, and on the I/O - Inputs Usage screen.

Mic Open Busses

Each input port can be assigned to a MIC OPEN buss, such that if the input is patched to a channel input, it will operate the mic open circuit when that channel is faded up and routed to the programme output.

First select the input from the list and then select the required mic open buss button.

The mic open buss number will appear in the “Mic Open” column (There will be two digits if both legs of a pair of inputs are assigned to a mic open buss). If a pair of inputs are patched to a stereo channel, the channel will operate the buss to which the left of the pair is assigned.

Each buss can be set to automatically cut the studio loudspeaker output (two separately cut outputs are provided, one for each buss) and/or fire a relay. These are set on the Options - TX/REH and Options - GPO screens.

Networked Ports

Hydra input and output ports can be allocated to lists along with local I/O. When a network configuration is saved, it is associated with the current list configuration. When the network configuration is restored at a later date, if the system does not match the expected list configuration, the user will be prompted to load it, or to resave the network configuration with the new list configuration.

If a network configuration is edited to remove ports, the list configuration should be re-sent to the console before the changes to the lists will take effect.

PORT LIST ORDER

Once lists are set up on the Alloc To Lists screen, they can be viewed on the Port Order Screen. Lists are selected using the selection buttons on the right of the screen.

The “More Lists” button gives access to lists which have been set up on different “views” on the Options - Port Lists - Sort Lists screen. When selected, the ports in that list are displayed in alphabetical order in the main section of the screen.

Sets

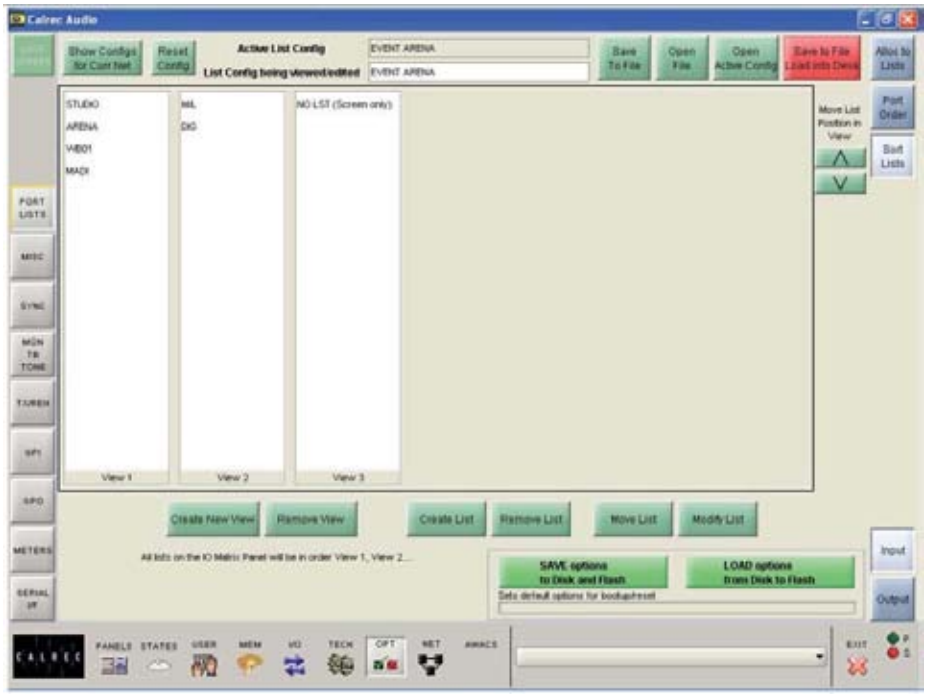
Ports within a list can be grouped into “sets” by selecting them from the list and selecting “Create Set”. Sets remain together in the list. Ports within a set are sorted alphabetically, but can be moved into a different order using the nudge arrow buttons. Each set is given a number and ports belonging to different sets are highlighted in a different colour.

“Start Port Selection” allows a number of ports to be selected from the list. Once the required ports are selected, they can be added to a new set using “Create Set”, or they can be added to an existing set using “Add to Set”.

“Remove From Set” removes any selected ports from the set they occupy.

SORTING AND MANAGING PORT LISTS

This screen allows a number of list views to be created. List views allow the user to change the order the lists appear on the port selection controls and I/O patching screens, and control the accessibility of the lists.



"Create New View" and "Remove View" allow list views to be created and removed. When a view is removed, any lists occupying it will move to previous view. "Create New List and Remove List" allow lists to be created and removed (once lists are removed from a configuration they are deleted permanently).

"Modify Lists" allows each list to be renamed, moved to a different view and set to be screen only. Screen only lists will be denoted as such.

On the I/O patching screens, all the lists in View 1 will be available for selection in the main patching area. Lists allocated to subsequent views will be accessed using the "More Lists" button on each I/O patching screen. Placing views under "More Lists" means that they are hidden from immediate view on the I/O patching screens. This ensures that only the relevant lists of ports are at the user's fingertips during operation.

Lists appear on the port selection controls in the order View 1, View 2, View 3 etc. The order of lists within a view can be shuffled using the nudge buttons on this screen.

SAVING AND RESTORING LISTS

Once the user has the lists set up as desired, the configuration can be saved to the PC's hard disk, so that it can be recalled at a later date.

The currently active configuration will be shown at the top of the screen, and the configuration currently being viewed/edited is shown in a box underneath.

When creating a new configuration, a name for it must be entered in this box.
Save to File, Load into Desk
Changes to the configuration being viewed/edited will not take effect until Save to File Load into Desk is selected. Then the changes will be transmitted to the console and saved to **C:/omega/cust1/lists**. If any changes are made to the configuration, this button will light in red (until selected) to indicate that the changes to the configuration being viewed/edited have not yet been saved and loaded onto the console.

Open File

Open File allows a previously saved list configuration to be restored. When opened, the configuration is loaded into the screens as "the list configuration being viewed/edited", it is not sent to the console. When the configuration is ready to be used, select Save to File Load into Desk, and the configuration will be saved and the settings sent to the console.

Save to File

This button saves the configuration being viewed/edited to **C:/omega/cust1/lists** without loading it onto the console.

Open Active Config

This button retrieves the settings that the control surface is using and displays them on the screens as the list configuration being viewed/edited. This allows amendments to be made.

Show Configs for Curr Net

This button allows list configurations which use the current network configuration to be opened.

Reset Config

This button clears the current list configuration of all its settings. All ports are transferred to the NO LST screen only list. A confirmation box must be accepted before this action is carried out.

Save Options to Disk and Flash

As the list configuration screens are part of the options set of screens, it is important to save the options to disk and flash once the list configuration is set up. Although the list configuration itself is saved separately, its active state on the console has to be saved using these buttons.

The Options screens are used to preset the system to the required settings. These settings are not stored in the individual console memories but are saved and loaded separately.

Changes to options take effect as soon as they are made, but, if they are not saved, the next time the desk boots up the options will revert to their previous settings. This could mean that a different list configuration is loaded onto the console, which could cause problems should the console have to be reset during a live broadcast. It does however allow changes to be tried out without losing the original settings, and these original settings can be restored without having to re-boot the system.

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TECH SCREEN

The TECH screens are for the studio technician and Calrec Support Engineers to diagnose problems, access system information such as lists and rack card configuration, save the default studio memory and enter password protected modes.

The Tech-User Mode screen allows the studio technician to enter the password protected "Technician" or "Supervisor" modes allowing him or her to operate critical parts of the system, and set up passwords for other "Technicians" or "Supervisors".

The Tech-MSGS screen reports messages, which form a history which can be used by Calrec engineers to diagnose any problems which may arise.

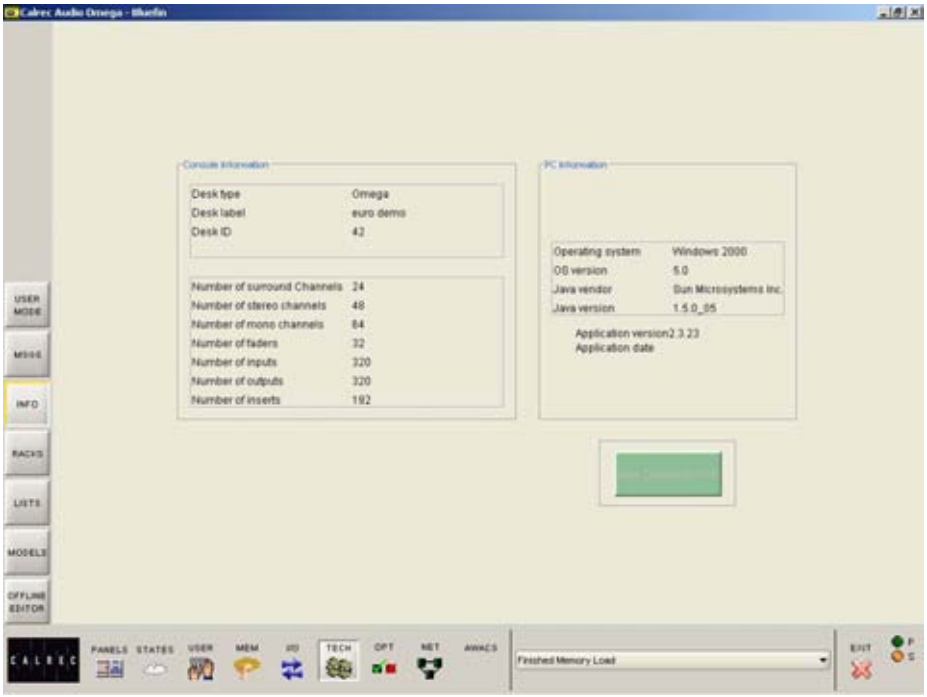
The Tech-Info screen (shown below) displays system information and allows the Default Memory to be saved.

The Tech-Racks screen gives details of the systems rack configuration.

The Tech-Lists screen shows the contents of the lists of inputs, outputs and inserts which are set up during installation, using the Setup Application.

The Tech-Models screen shows fader and path models for the system.

The Tech-Offline Editor screen allows the creation of an Offline Editor installer and saving/ loading of console bundles. Full details of these features are described in 'Appendix A - Offline Editor'.



Info Screen and Default Memory

The Default Memory will usually be created upon installation of the console using the button on this screen. This default memory could contain the input port set-ups which match the studio wiring, and settings for relays, optos, and running levels. It could have all channel settings off or flat, with no routes made, and could be available as a start up memory, from which more specific memories could be created. It is recalled using the Default Set Up button on the control surface.

OPERATIONAL MODES

The console can be in one of three modes, “User”, “Technician” and “Supervisor”. Operation of certain screen functions is only available in “Technician” or “Supervisor” mode. These modes are password protected to add an extra layer of security.

The Tech-User Mode screen is used to log in and out of different modes, and manage usernames and passwords for the different types of user.

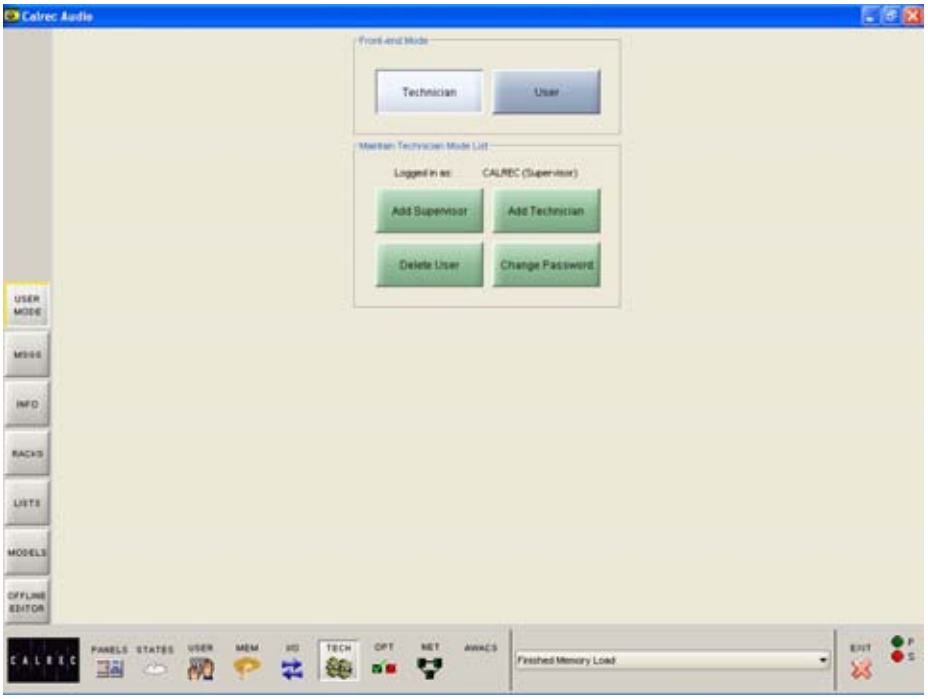
Technician Mode

It is intended that all set-up procedures and configuration may be carried out and maintained by an engineer or technical operator. Technician mode allows unrestricted access to all features of the system, permitting an authorized engineer to prepare the console for use. User mode restricts access to certain screen functions, to prevent accidental changes being made. Supervisor mode allows management of usernames and passwords for technicians and users.

Supervisor Mode

The first time the user selects to enter Technician mode, he/she will be asked to create a Supervisor username and password. As a supervisor, the user has unrestricted access to the system, and can set up usernames and passwords for technicians and other supervisors.

When the system is in Technician or Supervisor mode, the TECH icon at the bottom of the screen will flash.



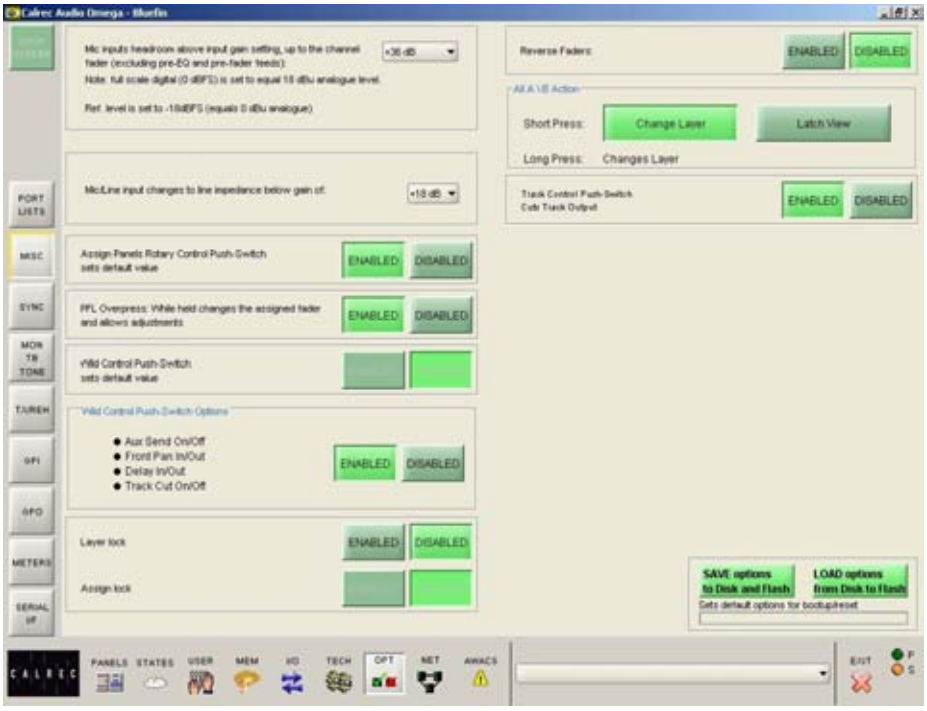
User Mode

In user mode, the user is restricted from performing the following functions:

- Allocating monitor sources to the assignable monitor selection buttons
- Save the console’s default memory
- Locking output ports
- Locking general purpose inputs (GPI)
- Remove or reset Hydra network configurations
- Clear all system memories

MISCELLANEOUS SCREEN

The Options - Misc Screen allows various console functions to be set.



Mic Input Headroom

This area allows the channel mic input headroom to be set. This is the headroom available above the input gain setting, up to the channel fader.

For example, if the input gain is set to 40 dB and the mic input headroom is 36 dB, then the channel will handle up to -4 dB up to the fader which can be backed off to avoid clipping of the programme output. Any pre-fader insert or pre-fader feeds to auxiliaries, tracks, or direct outputs will not handle this level and so these should not be used where this headroom is needed.

Please be aware that selecting a high headroom value will compromise the noise specification slightly but this should not be noticeable in practice.

Mic/Line Input Impedance

The point at which the Mic/Line input impedance changes can be set here.

Assign Panel Rotary Control Push-Switch Sets Default Value

Each rotary control incorporates a switch which is operated by pushing the control. This rotary control push-switch can be used to set the value of the control to its default. This feature is enabled and disabled using the buttons on this screen.

Wild Control Push-Switch Sets Default Value

Similar buttons exist to set the Wild control push-switch to perform the same function. If the Wild control push switch is set to control ON/OFF or IN/OUT status for Aux Send, Input Delay or Front Pan controls, then the reset to default function will not take effect.

PFL Overpress Changes Assigned Fader

When enabled, operating the PFL fader overpress will select that channel as the currently assigned one. Changes can then be made to the settings for that channel. When the fader is released, the system reverts to the previously assigned channel.

Wild Control Push-Switch Option

If a Wild control has Aux send, Front Pan or delay controls assigned to it, the user can control the ON/OFF or IN/OUT status of these controls using the Wild control push-switch on the channel control module. This feature is enabled or disabled using the buttons on this screen.

Reverse Faders

This sets the position towards the operator as being maximum level instead of minimum.

All A/All B Action

A short press on the ALL A and ALL B buttons on the control surface will switch all the channel faders to display either their A path or their B path permanently.

Options on this screen set the functionality of the All A and All B buttons when using a long press (press and hold).

If set to change layer, a long press on the ALL A and ALL B buttons will switch all the channel faders to display either their A path or their B path permanently.

If set to “Momentary View”, a long press of an All A or All B button will display and control those paths on the control surface until the button is released. The console will then revert back to the previously displayed layer on each fader. The console’s A/B display pattern is not lost.

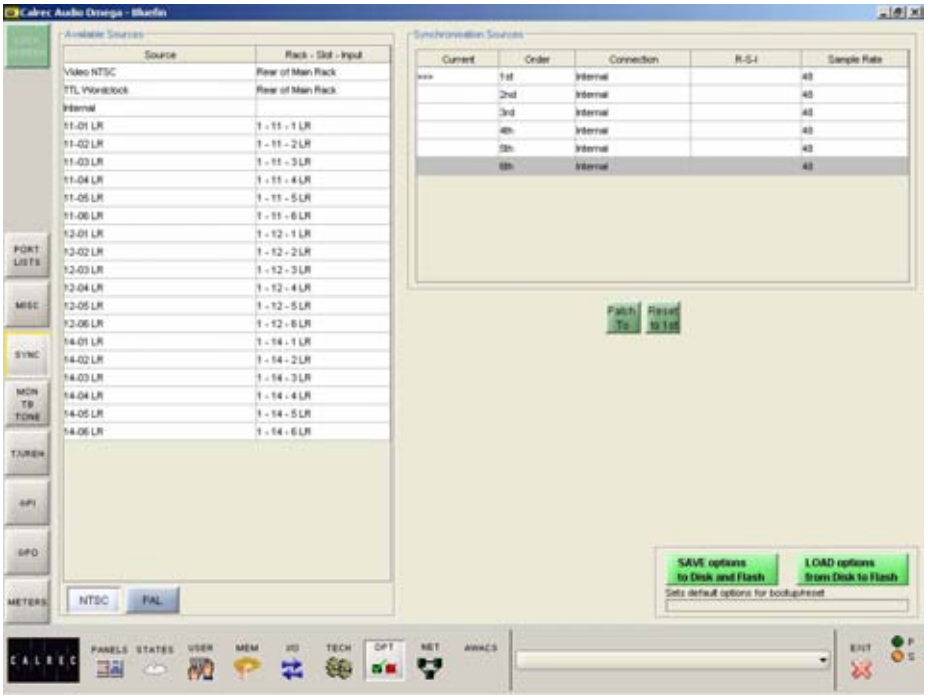
Save Options to Disk and Flash

The Options screens are used to preset the system to the required settings. These settings are not stored in the individual console memories but are saved and loaded separately. Changes to options take effect as soon as they are made, but, if they are not saved, the next time the desk boots up the options will revert to their previous settings.

SYNCHRONISATION

The system can be pre-set with up to five external sync sources, plus internal, such that if the 1st source fails, it will automatically switch to the 2nd, and so on. One of the external sources can be Video, (PAL or NTSC). TTL word clock is another possible external source.

AES inputs on the console can also be used as an external source. Please note that the facility for locking to external AES sources is restricted to the first six inputs of each AES card in the console. When using a digital input or word clock as a source, the system will tolerate a variation of up to +/- 100 Hz in the frequency of the source.



Assigning Synchronisation Sources

Synchronisation sources are assigned by selecting an available source from the list on the left side of the screen, then selecting one of the five places in the priority list on the right side of the screen, and selecting Patch To.

Reset to 1st

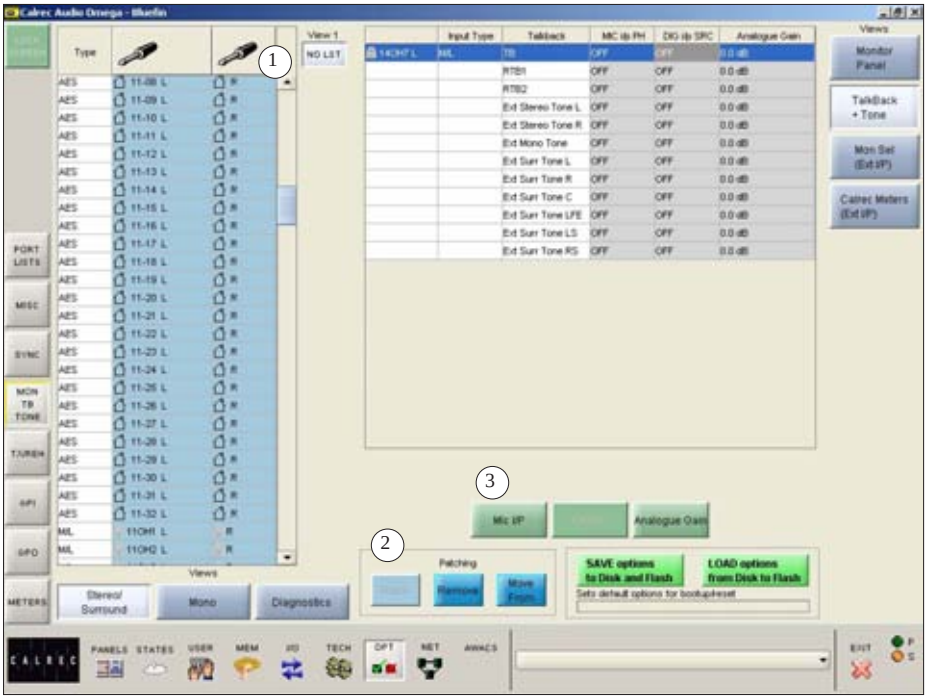
If the first source has failed, and the system is running on any of the selections 2 to 6, when the first source becomes available again, the system can be RESET TO 1ST during any convenient off-air period.

Save Options to Disk and Flash

The Options screens are used to preset the system to the required settings. These settings are not stored in the individual console memories but are saved and loaded separately. Changes to options take effect as soon as they are made, but, if they are not saved, the next time the desk boots up the options will revert to their previous settings.

TALKBACK AND TONE INPUTS

The input sources for Talkback and Reverse Talkback are patched on this screen. The ports for the mono, stereo or 5.1 surround external tone inputs for use with the oscillator can also be patched here.



(1) Source Lists

Talkback and tone input ports can be any kind of port, selected from the list on the left of the screen. Different lists are accessed using the selection buttons.

The sources can be viewed as pairs (for patching to stereo or surround paths), individual (for patching to mono paths), or individual with the actual rack number, card slot and input shown (for diagnostic purposes).

(2) Patching

The Talkback and tone inputs are listed in the main section of the screen. Assignment is made by selecting a source and an input, and selecting Patch.

(3) Parameters

The parameter buttons provide controls for analog gain control (coarse), Phantom Power (mic/line) and SRC switching for the input (AES). When selecting analog gain, a box will appear where the gain can be selected. Selecting Mic i/p PH will turn phantom power on for mic/line inputs. Dig I/P SRC will switch SRC on for AES inputs.

Save Options to Disk and Flash

The Options screens are used to preset the system to the required settings. These settings are not stored in the individual console memories but are saved and loaded separately. Changes to options take effect as soon as they are made, but, if they are not saved, the next time the desk boots up the options will revert to their previous settings.

EXTERNAL MONITOR INPUTS

The input sources for external monitor inputs can be patched here in the same way that channel inputs are patched.

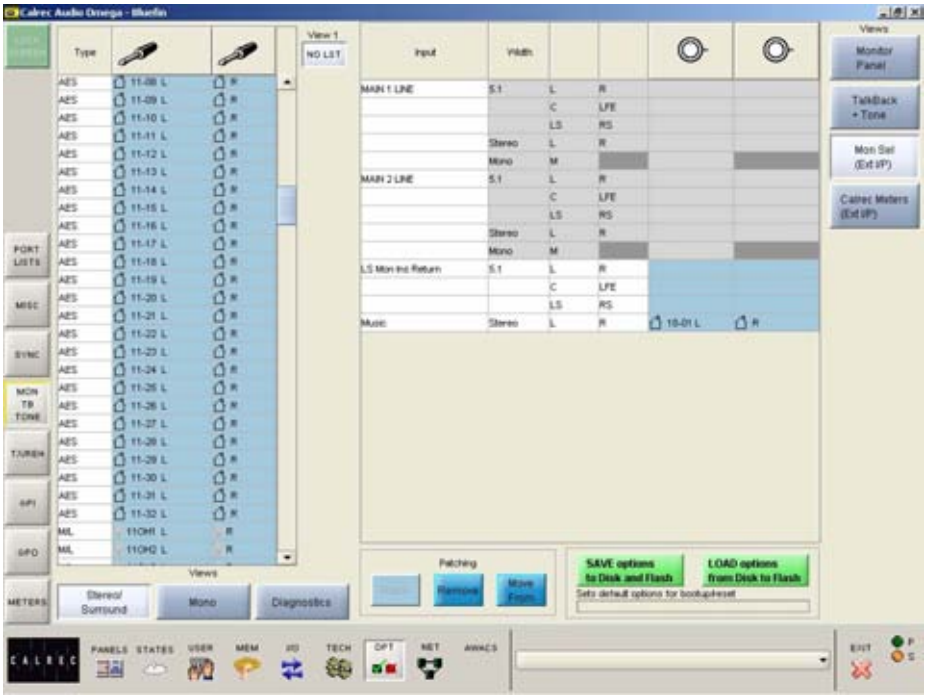
Return ports for the LS monitor insert are also patched here. The send ports are patched on the I/O - Outputs - Mon TB & Osc Screen. The LS monitor insert is switched in and out using the button in the monitoring section of the control surface.

The main line monitor inputs are applicable when the main line output monitor is set to be returned into the desk via an external distribution. Otherwise, the main line monitor points are taken from the main outputs within the desk, before they have passed though the output ports.

External monitor input ports are selected from the lists in just the same way as channel inputs. Different lists are accessed using the selection buttons. The sources can be viewed as pairs (for patching to stereo or surround paths), individual (for patching to mono paths), or individual with the actual rack number, card slot and input shown (for diagnostic purposes).

Assignment is made by selecting a source and a monitor input, and selecting Patch.

Save Options to Disk and Flash
The Options screens are used to preset the system to the required settings. These settings are not stored in the individual console memories but are saved and loaded separately. Changes to options take effect as soon as they are made, but, if they are not saved, the next time the desk boots up the options will revert to their previous settings.

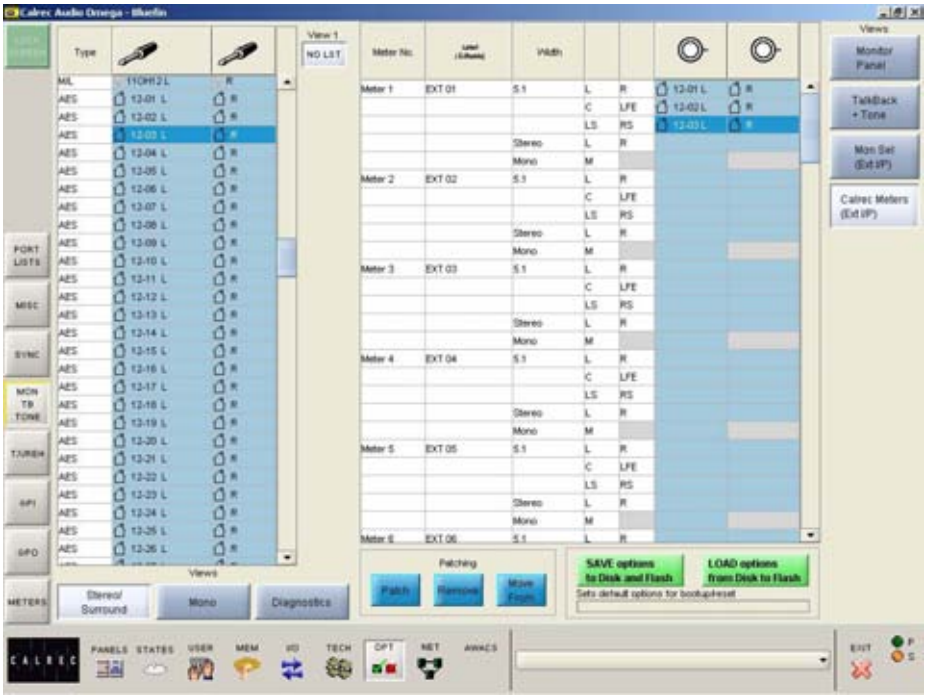


EXTERNAL METER INPUTS

The input sources for external meters can be patched here in the same way that channel inputs are patched. There can be up to 32 external meter inputs, which are mono, stereo or 5.1 surround.

External input ports are selected from the available lists on the left of the screen. Different lists are accessed using the selection buttons. The sources can be viewed as pairs (for patching to stereo or surround paths), individual (for patching to mono paths), or individual with the actual rack number, card slot and input shown (for diagnostic purposes).

Assignment is made by selecting an input source and a meter, and selecting Patch.



Save Options to Disk and Flash

The Options screens are used to preset the system to the required settings. These settings are not stored in the individual console memories but are saved and loaded separately. Changes to options take effect as soon as they are made, but, if they are not saved, the next time the desk boots up the options will revert to their previous settings.

STATES

The States Screen allows different console behaviours to be enabled and disabled.

The options are in two groups. Those in the left column ('Stored in the live/hidden memory') remain are not affected by the console memory system. The one in the right column will be changed to whatever state it had when that memory was saved.

If your console uses the traditional style monitor panel, then there are additional functions available on this screen. Please refer to Appendix B at the end of this manual for details.

VCA Edit mode

Disabling provides protection against accidental changes to VCA groups.

Input 1 and 2 Gain Linking

Channels have two inputs and the gains can either be linked, or adjusted separately.

Channel Inputs Screen

If enabled, selecting a fader assign button causes the Channel Inputs patching screen to scroll to that fader in the patching list.

Move To Fader Button Mode

The Move Path buttons on the I/O Matrix panel can be set to move the selected path (A or B) to another fader; or they can be set to move the entire fader strip (both paths A and B). In both cases, any Wild control assignments will also move with the path.

Ross Video Synergy control

This allows a Ross Synergy 2 or 3 switcher, often under control from a Ross Overdrive automation system, to control the following functions:

- level of input/group faders
- fader ON/CUT status
- activate console PFL of those faders
- level of main output faders

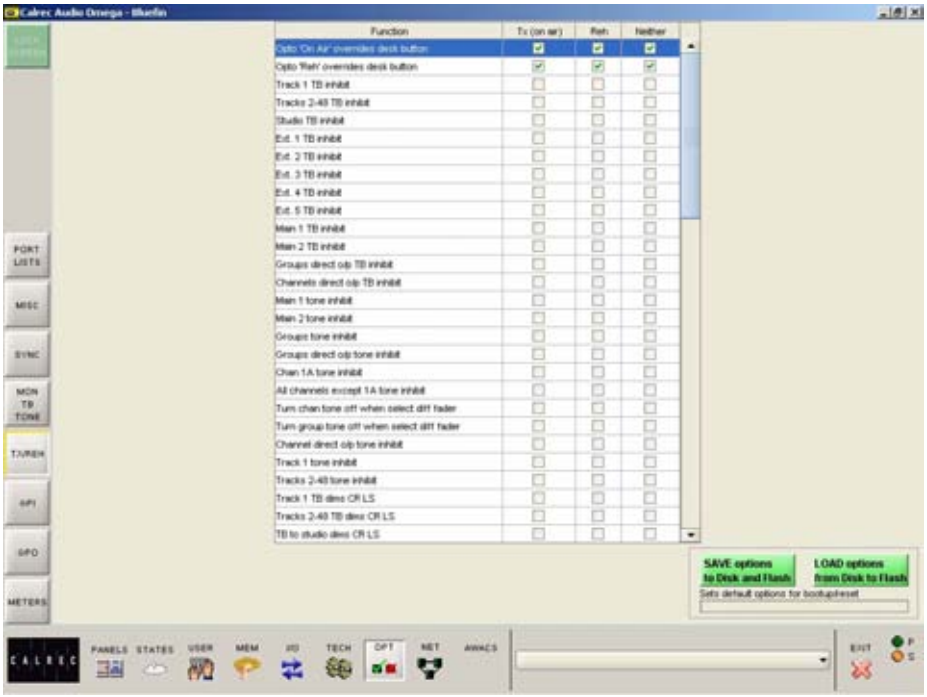
CONDITION SWITCHING

This screen provides a mechanism for the system's condition switching to be set up.

There are three modes which the system can be in: Transmit (TX or On Air), Rehearse, or Neither. These are controlled from the ON AIR and REH buttons on the broadcast facilities panel or from external inputs set up on the Options - GPI screen.

Each function can be set to be active, or not, in any of the three states (except for the "On Air" and "Reh" optos which can only override the desk buttons or not).

The functions provided are to cater for different requirements. Therefore some combinations of settings will seem invalid.



Save Options to Disk and Flash
The Options screens are used to preset the system to the required settings. These settings are not stored in the individual console memories but are saved and loaded separately. Changes to options take effect as soon as they are made, but, if they are not saved, the next time the desk boots up the options will revert to their previous settings.

GENERAL PURPOSE OUTPUTS

Connections for 16 opto outputs and 40 Darlington outputs are provided on the rear of the console. In addition to this, there are 8 double pole change-over GPIO relays on the rear of the Bulk Power Supply and Distribution Unit. The GPO screen allows the general purpose outputs to be set up.

Please note that outputs 1 - 4 are not available, as they are used for TX, REH, PSU Fail and APFL facilities.

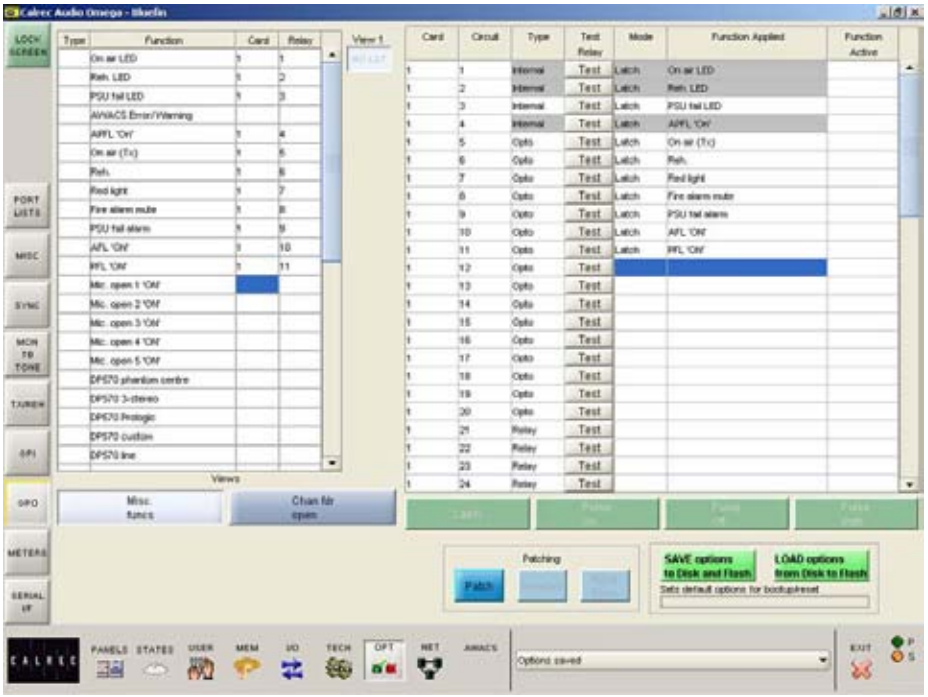
"Misc Functions" or "Channel Fader Open"

The relay-isolated general purpose outputs can have various console functions assigned (with "Misc Functions" selected), or they can be set to operate when particular faders are opened (with "Channel Fader Open" selected).

Console functions can be assigned to more than one output.

GPO Patching

To make an assignment, select a function (left side of screen), and an output (right side of screen), and select Patch. Assignment can also be moved and removed, in a similar way to port connections.



Latch or Pulse

The relay can be set to latch or pulse for 100 ms, when the console function is activated. When setting the relay to pulse, there are three different options.

Pulse On - Relay is set to pulse when the function is activated.

Pulse Off -Relay is set to pulse when the function is de-activated.

Pulse Both - Relay is set to pulse once when the function is activated, and again when the function is de-activated.

Test Relay

A test button is provided for each general purpose output which, when selected will fire the relay. This allows the user to send a test signal to that output.

Save Options to Disk and Flash

The Options screens are used to preset the system to the required settings. These settings are not stored in the individual console memories but are saved and loaded separately. Changes to options take effect as soon as they are made, but, if they are not saved, the next time the desk boots up the options will revert to their previous settings.

GENERAL PURPOSE INPUTS

Connections for 32 opto-isolated inputs are provided on the rear of the console. In addition to this, there are 8 double pole change-over GPIO relays on the rear of the Bulk Power Supply and Distribution Unit. The GPI screen allows the general purpose inputs to be set up.

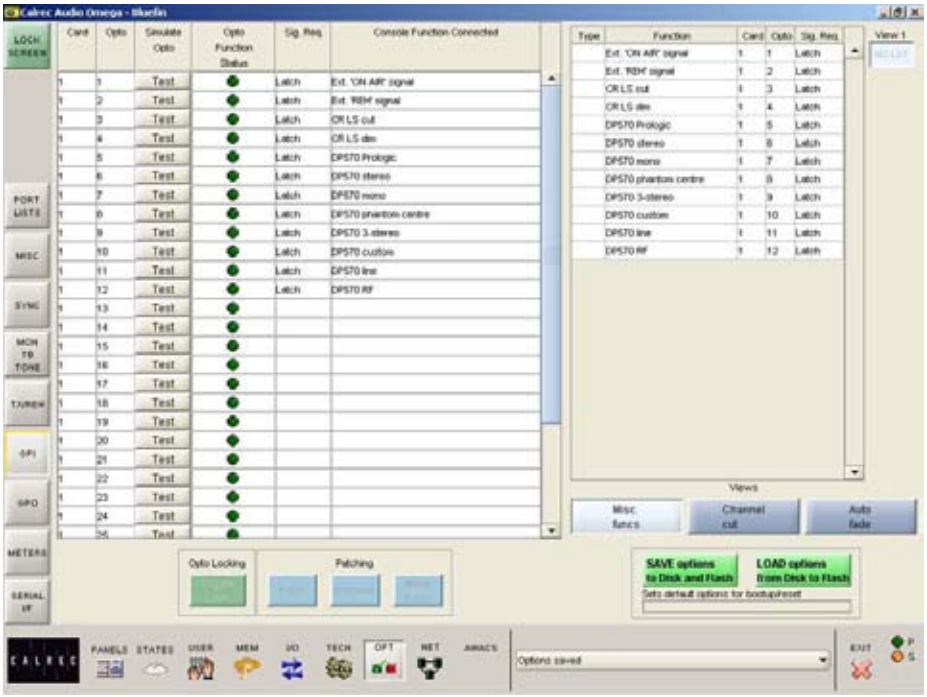
“Misc Functions”, “Channel Cut” or “Auto Fade”
Each opto-isolated general purpose input can be assigned to up to 10 console functions (with “Misc Functions” selected), or cut up to 10 channels (with ‘Channel Cut’ selected).

With Auto Fade selected, this screen allows general purpose inputs to be assigned to auto-faders, to allow automatic cross-fading.

To make an assignment, select an input (left side of screen), and a function or channel (right side of screen), and select Patch. Assignment can also be moved and removed, in a similar way to port connections.

If optos are patched to input ports, when fired externally, they will cut any channel to which that input port is connected. Once set up, opto assignments can be locked using the Opto Lock button, to prevent accidental removal.

Simulate Opto
A test button is provided for each general purpose input which, when selected will simulate an opto firing. This allows the user to simulate a test signal from that input.



Save Options to Disk and Flash
The Options screens are used to preset the system to the required settings. These settings are not stored in the individual console memories but are saved and loaded separately. Changes to options take effect as soon as they are made, but, if they are not saved, the next time the desk boots up the options will revert to their previous settings.

SERIAL INTERFACE

The system currently supports the following serial interfaces:

- Cue Director
- Nexus Router
- TSI Image Video 1000
- Ross Video Overdrive/Synergy

Please note that when a Ross Video Overdrive/Synergy system is being used to control the console, it is enabled and disabled on the States screen.

Serial port setup and label associations are made using the Options-Serial I/F screens.

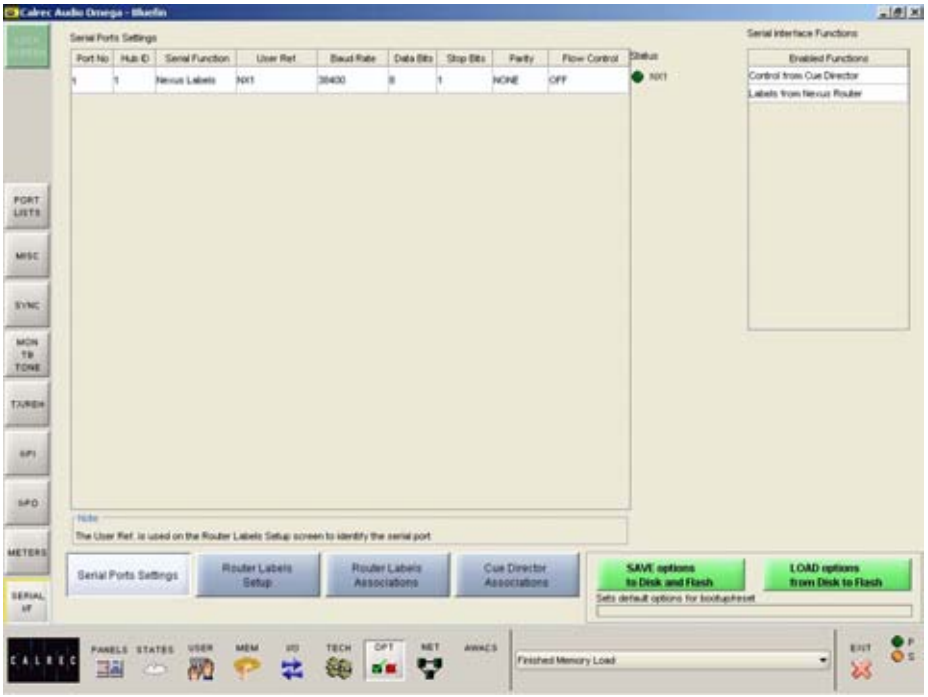
Serial Port Settings Screen
The console has a serial interface port for allowing equipment to be connected to the system.

The Serial Port Settings screen is used to tell the system what information it should receive from the serial interface port, by allocating a function to it from a drop down box in the Serial Function column.

Only the serial functions which are enabled for the console will be available for selection.

The function can be given a name by typing up to six characters in the USER REF column.

For each function there is an indicator which flashes when a valid message is received from the user serial port.



Save Options to Disk and Flash
The Options screens are used to preset the system to the required settings. These settings are not stored in the individual console memories but are saved and loaded separately. Changes to options take effect as soon as they are made, but, if they are not saved, the next time the desk boots up the options will revert to their previous settings.

ROUTER LABEL SETUP

Some Routers incorporate a label interface which is used for the transmission of source (input) and destination (output) descriptions between itself and other equipment.

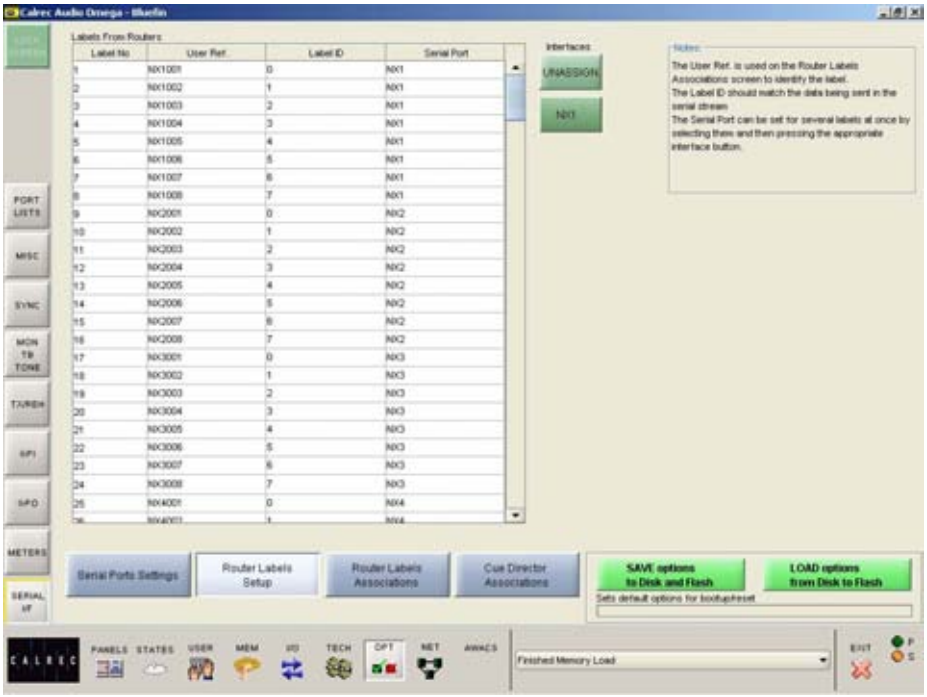
When an audio signal from a Router is connected to the console, its associated label is transmitted to the console via a serial interface. The console can use these labels as input names, and they can then be displayed and used on the control surface and front end application.

The console can support up to 256 Router labels. The Serial I/F - Router Labels Setup screen allows the link between messages from the router to be associated with one of the console's 256 labels.

The serial port function previously set up on the Serial Port Settings screen will now have a selection button on this screen. To associate labels to the interface, select the label, or region of labels, and select the serial port function button. The serial port column tells the user which serial port function the label is linked to. The UNASSIGN button when selected will remove any assignment from the selected label(s).

A Router uses a reference code to define each of its output ports The user must enter these reference codes into the Label ID column for each label.

The User Reference column allows the user to give the label a friendly name of up to six characters.



ROUTER LABEL ASSOCIATION

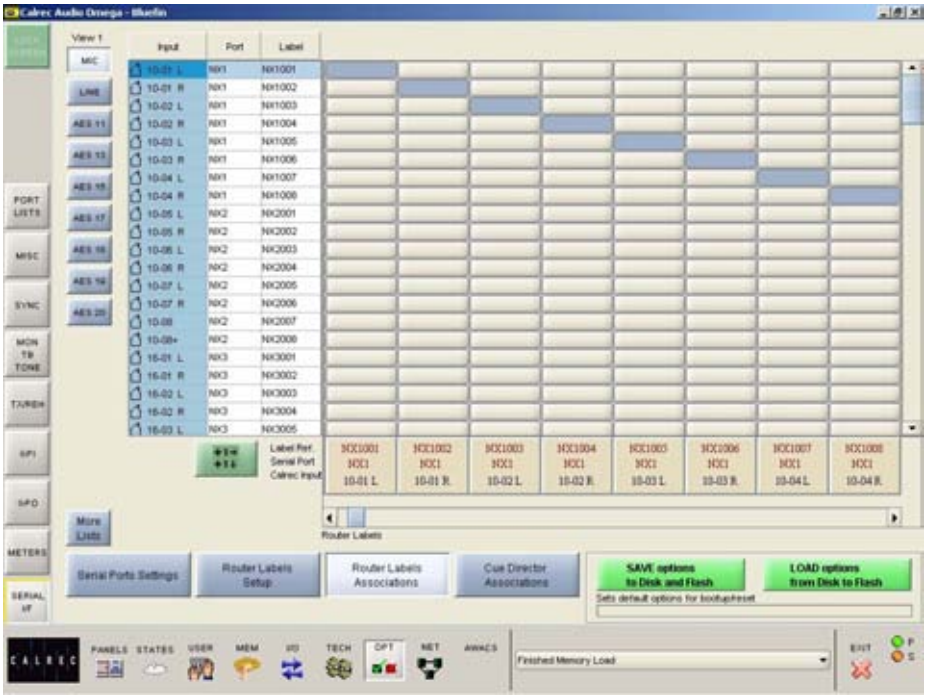
The Serial I/F - Router Labels Associations screen allows each of the defined labels to be associated with one of the console's input ports.

The input ports are shown down the left hand side of the screen, and the Router labels are shown along the bottom of the screen. This forms a grid, and associations are made by selecting the intersecting cell between input port and router label. Each leg of the input ports is always presented as if it were a mono port.

When an association is made, the cell will turn yellow. Associations can be unmade by selecting the cell again, whereby its colour will change back to grey. The +1 button is used to automatically move diagonally down the grid to the next association cell and toggle its condition. The action occurs out of sight even if you go beyond the viewed section of the screen.

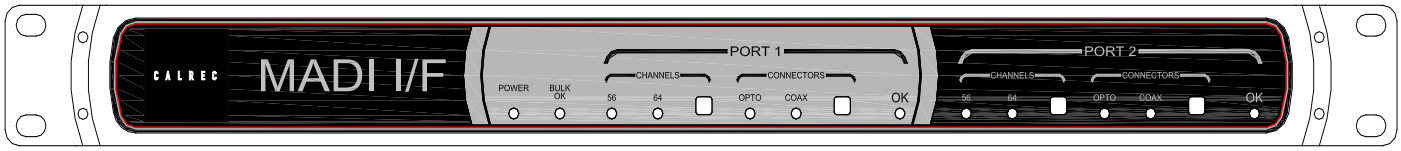
Once an input port is associated with a Router label, the labels will be visible on the fader label column on the I/O - Input screen on whichever channel the port is patched. If a new fader label is entered on the I/O - Input screen, it overrides the router label. The router label will also be displayed on the channel display on the fader module.

If the Router fails to communicate for longer than ten seconds then the Router label text is cleared and the fader labels revert back to displaying the input port label.

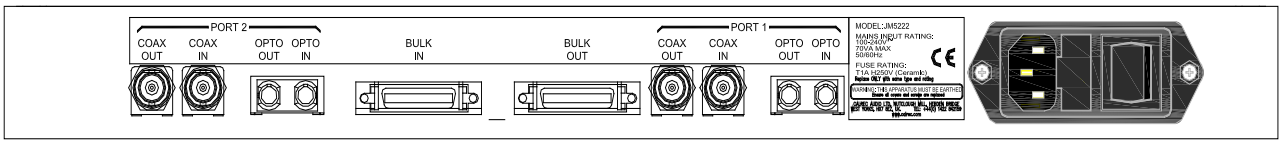


MADI

FRONT



REAR



The rack mounted MADI Interface unit contains two independent, AES 10 MADI compatible interfaces.

The two ports are interfaced to the console via a Wide Area Bulk (WAB) card, which occupies one of the AES/bulk card slots in the Processing Rack.

Each MADI interface can operate in either 56 or 64 channel mode and can transmit over a coaxial AND optical medium and receive over a coaxial OR optical medium. A switch allows receiver selection.

Sample Rate Conversion is not available on MADI inputs or outputs, therefore all equipment connected via MADI must be synchronized to the same source as the console.

MADI Unit	Power	Fiber		Copper	
		Connection	Max cable length	Connection	Typ. cable length
JM5407	DC (24V)	ST - Multi-mode	2 km	BNC (75 Ohm)	<50 m
JM5418	AC (100-240V)	ST - Multi-mode	2 km	BNC (75 Ohm)	<50 m
JM5450	DC (24V)	SC - Multi-mode	2 km	BNC (75 Ohm)	<50 m
JM5451	AC (100-240V)	SC - Multi-mode	2 km	BNC (75 Ohm)	<50 m

PC INFORMATION

Remote Access
USB connectors are provided on both the front and rear of the PC for the option to add an external modem of your choice. If a modem is added, and a suitable telephone line installed, the console can be remotely accessed by Calrec Support Engineers to aid software upgrades and diagnostic work. This can greatly enhance the level of service and support we can provide. A dial-up facility must first be activated at the PC before this is possible, to ensure that connections are not made at inappropriate times or without the user's knowledge and consent.

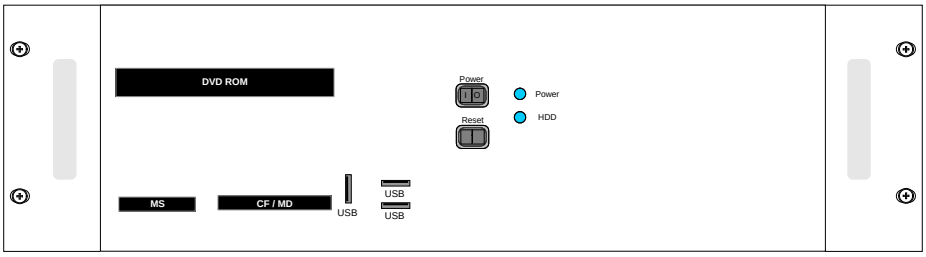
Local Network
A network port is provided to enable the user to connect to their own LAN. Calrec will not be responsible for the configuration of this port or for any performance issues arising from its use.

Hydra Network Connection
A Gigabit Ethernet port is provided to enable the PC to be connected to a Calrec Hydra Audio Network, which is an option which can either be purchased with the console or in the future.

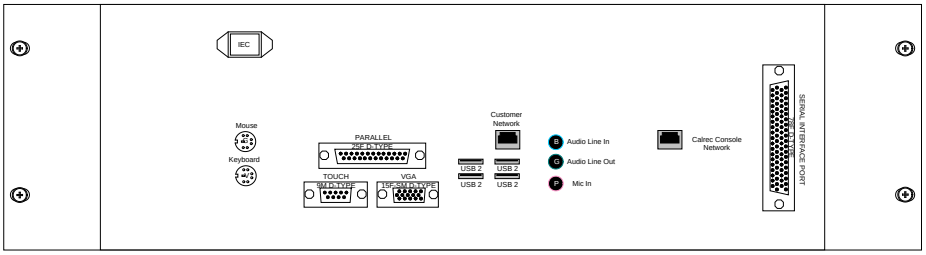
Software Supplied
An OEM PC Operating System license is supplied with each console, and the operating system software is pre-installed. The console software is also pre-installed, and supplied on a CD-ROM.

3rd Party Software
Calrec recommends that the PC is regarded as an integral control device for the console, and not as a general purpose PC. If 3rd party software is installed on the PC, care must always be taken to ensure that it does not interfere with the normal performance of the PC. The installation of inappropriate software on the PC may invalidate the console warranty.

FRONT



REAR



Usernames and Passwords
The PC will initially be set up with two sets of usernames and passwords:

Username: CalrecAudio
Password: (none)

This user can install and run programs, but cannot change PC hardware settings (i.e. set up network, install drivers. It is recommended that this user is used during normal operation.

Username: CalrecAudioAdmin
Password: calrec

This user has full rights to the PC and can install and change PC hardware settings. It is recommended that this user is used during configuration of the PC and the setup of Hydra Audio Networking.

Operating System	Windows XP
CPU	Intel Celeron D430
RAM	512MB DDR2
HDD	80GB
Optical Drive	16x Dual Layer DVD Writer
Network Ports	1 x 10/100/1000 1 x 10/100
Card Slots	Compact Flash/Microdrive, SmartMedia, MemoryStick, Secure Digital/Multimedia Card
USB 2 Ports	4 (Rear of unit), 3 (Front of unit)
IEEE1394 Port	1 (Front of unit)
Additional Hardware	8 port serial card

FILE BACKUP

A number of flash card slots are provided on the front of the PC for file backup. In addition, backup could also be to a LAN or to a USB device which can be plugged into the front or rear of the PC.

The following files are not installed from the CD-ROM as they are specific to each individual console. As such, a backup copy should be kept of these files in-case of PC or hard-drive failure:

The system will automatically back up these files to a user-specified drive, if it is set to do so. This is done using the Set-up Application.

FILENAME	DESCRIPTION
C:\Omega\Cust1\Config.ini	This file should only be altered by an approved Calrec engineer using a specifically designed application. The file can be copied but any unauthorised changes made will render it inoperable, including changing the date stamp of the file (such as saving even if not edited). If the file needs to be e-mailed to Calrec for any reason it should always be zipped to protect the file time/date stamp. A new backup copy of this file should be made after a console upgrade.
C:\Omega\Cust1\Setup.ini	This file is updated when changes to console settings are made and saved using the set-up application. It should not be altered by any means other than by using the set-up application. A new backup copy of this file should be made after such changes are made or after a software upgrade.
C:\Omega\Cust1\Options\Options.bin	This file is updated and a new backup should be made when changes to any of the sub-pages of the options screen are made and saved.
C:\Omega\Cust1\memories	This is the default location for the user memories. However, operators can choose to save them to any location they desire. The maintenance department should keep a backup of the important default memories, whilst operators should be encouraged to keep their own backups of their own memories and to update them whenever they make important changes to them. After a software upgrade the main set of memories will be upgraded and checked by the engineer carrying out the upgrade. A new backup should then be made of these memories.
C:\Omega\Cust1\Meter	This is the default location for the user-definable meter configurations. You should keep a backup copy of the files in this folder.
C:\Omega\Cust1\Network	If your console uses Hydra Audio Networking, you should also keep a backup copy of the files in this folder. These are the configuration settings for the network units.
C:\Omega\Cust1\Monitor	This is the default location for the user-definable monitor panel configurations. If your console uses these, you should also keep a backup copy of the files in this folder.
C:\Omega\Cust1\Lists	This is the default location for the user-definable port list configurations. You should keep a backup copy of the files in this folder.
C:\Omega\Cust1\Router	This is the default location for any router configurations made using a serial interface. If your console uses these, you should also keep a backup copy of the files in this folder.

OMEGA
HYDRA AUDIO NETWORKING

CALREC

Putting Sound in the Picture

HYDRA TECHNOLOGY

Gigabit Ethernet is founded on key principles of preceding Ethernet technologies and provides a data rate of 1000 Mbps over copper or optical fiber.

Audio and control data is transferred using the Ethernet frame format over switched media in a network constructed from standardized structured cabling.

Hydra I/O boxes providing fixed or configurable I/O may be connected onto the network, providing remotely located sources and destinations that can be used by any or all mixing consoles.

The Hydra Audio Network fabric is constructed using low-cost off-the-shelf hardware. The network topology is similar to that of an office LAN, being created out of a central Gigabit switch with connections to each mixing console and Hydra I/O box, in a star formation. Connections may be made with Category 5e UTP, up to 90 metres, or with optical fiber, up to 10 kilometres.

Hardware

There are many commercially available Gigabit switches, repeaters and media converters that can be used to build the network, however some proprietary hardware is required to interface the consoles and Hydra I/O boxes to the network.

The diagram below shows a console and racks connected to a network via a Wide Area Bulk Card and Hydra Gigabit interface unit. 3 Hydra I/O boxes and 2 modular Hydra I/O boxes are also shown, each with up to 96 inputs/outputs available to any console on the network.

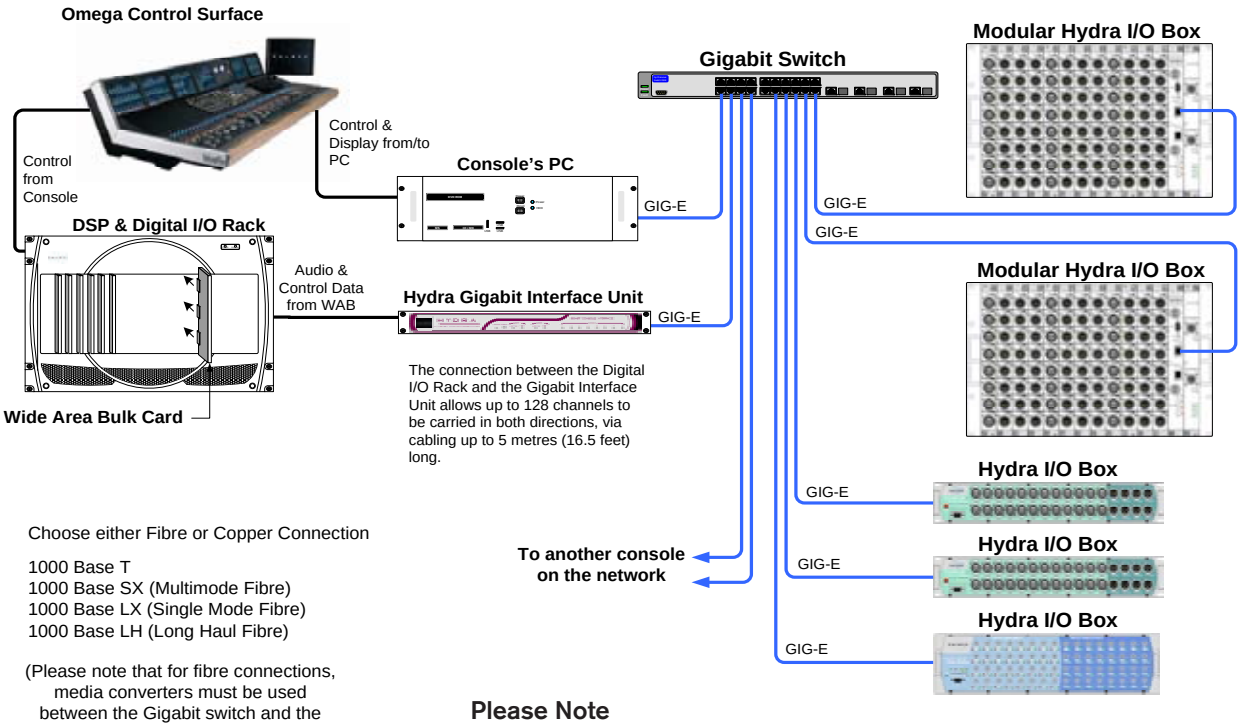
Network Editor

For a network to be truly useful, it must be easy to use and maintain. The system's control software constantly monitors the network, performing essential administration functions, leaving the user free to creatively exploit network resources as easily as if they were locally connected.

The console's Network Editor consists of a set of screens for :

- Configuration of modular Hydra I/O boxes
- Off-line editing of Hydra I/O and Audio Network
- Status representation of all devices on the network
- Utility for forcing ownership to be dropped

The Network Editor can be run independently of the Front End (console application), allowing the modular Hydra I/O boxes and audio network to be configured off-line. During this time, any operations which require a console are disabled.



Choose either Fibre or Copper Connection

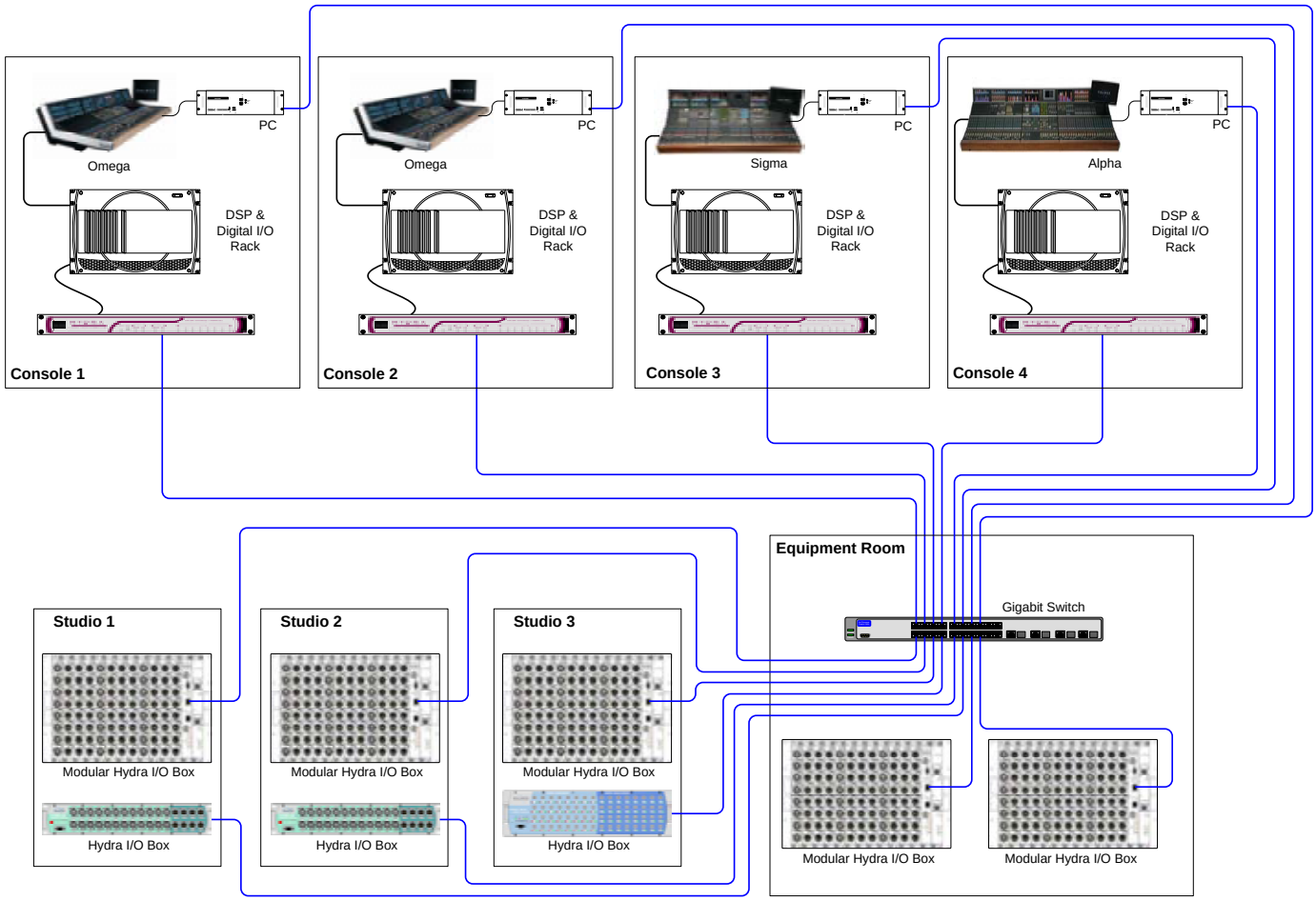
1000 Base T
1000 Base SX (Multimode Fibre)
1000 Base LX (Single Mode Fibre)
1000 Base LH (Long Haul Fibre)

(Please note that for fibre connections, media converters must be used between the Gigabit switch and the Modular Hydra I/O Boxes)

Please Note

Connections to the modular Hydra I/O box are via RJ45 connectors on the front of the unit's processor module. As this is a copper interface, when using fiber cabling, it is necessary for media converters to be used between the Gigabit switch and the modular Hydra I/O boxes.

TYPICAL HYDRA NETWORK EXAMPLE



The above diagram shows 4 control rooms, each with a Calrec digital console. The Gigabit interface unit for each console transmits and receives audio data to and from the Hydra I/O boxes, via a Gigabit switch located in the Equipment Room.

The console racks and Gigabit interface unit could also be in the Equipment Room if this was more suitable.

Synchronisation

Consoles sharing sources must be synchronized (e.g. to station sync or video). The Hydra I/O boxes synchronise to the console Gigabit interface with the lowest IP address on the network.

Private Network

In order to guarantee fully deterministic performance, it is necessary to apply the restriction that the network must be kept private. This means that it must not be made to carry any data other than that generated by the audio network.

Local I/O

Local I/O in the console's own racks can be used for connections to routers, monitoring, talkback, inserts, etc. It is not networked to the other consoles.

HYDRA I/O BOXES

Status LEDs
The following indicative LEDs are visible from the front panel:

PSU OK (green)
Fan Fail (red)
Port 1 connected (yellow)
Port 1 active (green)
Port 2 connected (yellow)
Port 2 active (green)
Status (x 8 red)

In addition, each input connector has its own tricolour LED to indicate signal presence. The incoming signal will cause the LED to light green when the signal is between -60 dBFS and -38 dBFS, amber when between -38 dBFS and -2 dBFS, and red when the signal clips at -2 dBFS or above.

Each output connector has a green LED to indicate that there is a route established to it from a console on the network.

Synchronization
Units are frequency synchronised using synchronization packets received from the Hydra network.

Diagnostics
The units support remote FPGA firmware and software updates across the network via the Ethernet ports. In addition, an RS232 port is provided, such that system diagnostics can be performed by a Calrec approved engineer. Connection to the port is via a front-mounted 9 pin D-Sub connector.

IP Addresses
Calrec will supply each device in your system with its own unique IP address, which the system uses to identify each network connection. On the front of each Hydra I/O box, there is a label showing the IP address. The secondary port will use the address of the primary port + 100 decimal. For example:

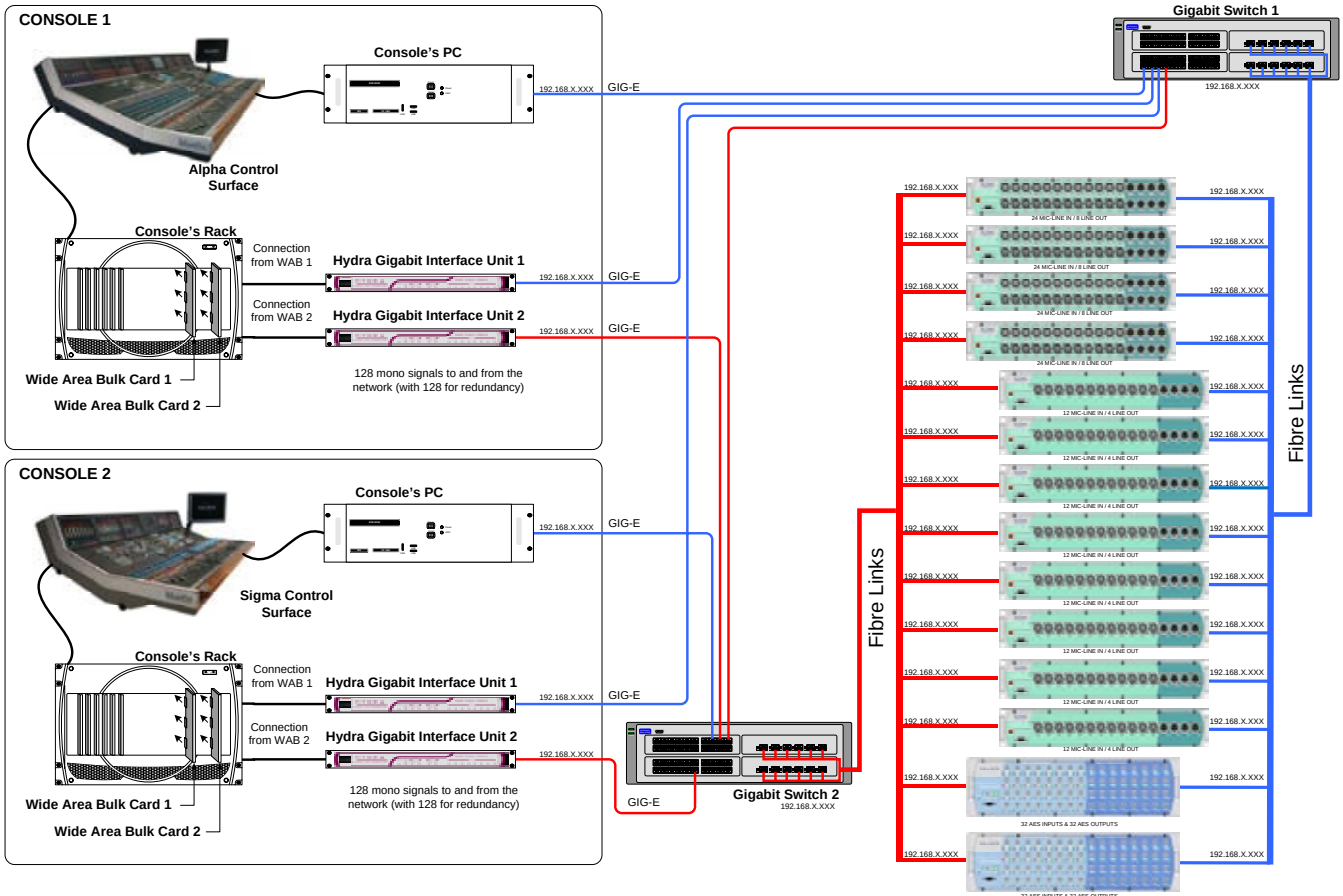
Primary Port 192.168.0.050
Secondary Port 192.168.0.150

In an installation, the first 3 bytes (shown in red) are fixed. The 4th byte or least significant byte is the part of the address which is unique to that port on the device.

For mobile installations, the 3rd byte of the IP address will be unique to that installation, such that it is possible for different installations to connect their networks together.

If a Hydra I/O box needs to be swapped out, the replacement unit must be programmed with the correct IP address. The 8 way switch on the rear of the unit allows the least significant byte of the IP address of the primary port to be set in binary.

Surround Signals
It is not recommended that ports on a modular Hydra I/O box should be combined with ports on a fixed Hydra I/O box to create a 5.1 surround signal.



FIXED FORMAT BOXES

These robust, self-contained boxes can provide audio input and output facilities for use in areas such as:

- Equipment Room Rack
- Studio Wall Box
- Studio Gantry / Lighting Grid
- Control Room Rack
- Outside Broadcast Truck
- Outside Broadcast Flight Case

Variants

Units are available in the following variants:

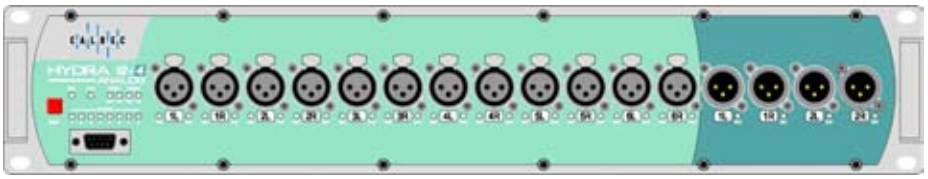
- 12 mic/line inputs and 4 line outputs (XLR)
- 24 mic/line inputs and 8 line outputs (XLR)
- 48 mic/line inputs and 16 line outputs (XLR)
- 32 AES inputs and 32 AES outputs (BNC)
- 4 SDI inputs with 'thru' connectors (rear panel connections)

The units connect to the network via an Ethernet port on the rear of the unit. Each unit has two identical ports to provide network redundancy. All versions are supplied with two RJ45 ports for copper connections (1000BASE-T for distances up to 90 m = 290 feet). In addition, plug-in GBIC modules allow connections with 1000BASE-SX (for distances up to 550 m) and 1000BASE-LX (for distances up to 10 km) are available.

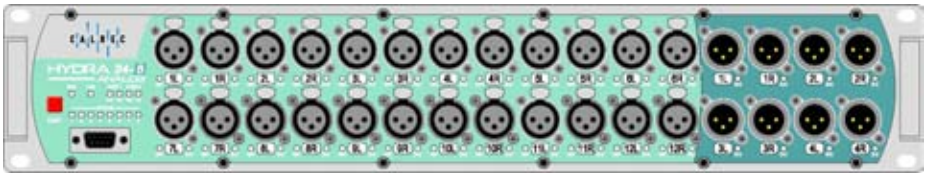
All external connections to the units are hot pluggable. If more than one media type is detected, the system will switch to fiber as its connection.

Hydra networks can include all versions forms of modular and fixed format boxes, though signals from SDI boxes can only be patched to consoles using Bluefin DSP systems or running software 1:36 or later.

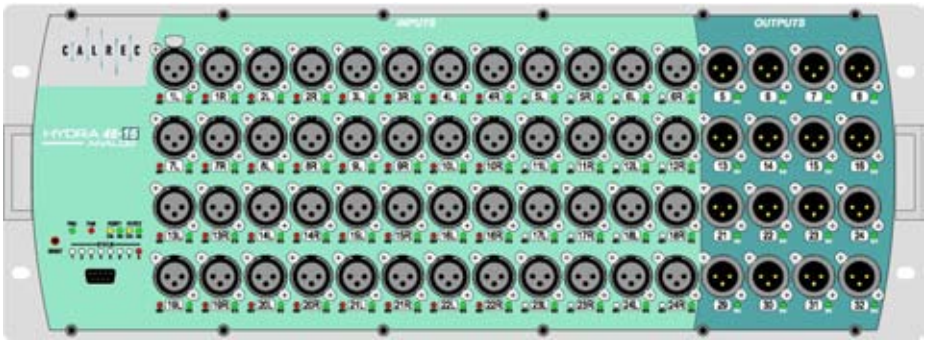
12 MIC/LINE IN & 4 LINE OUT (AD5608)



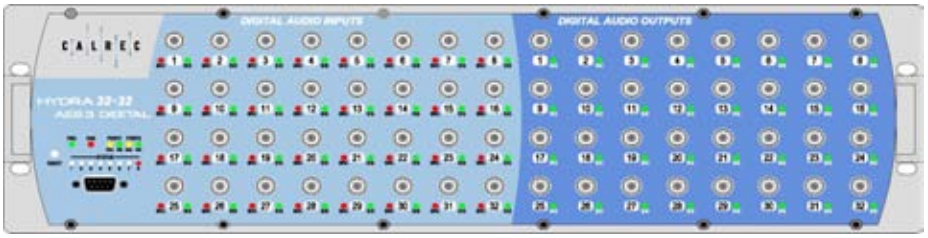
24 MIC/LINE IN & 8 LINE OUT (AD5603)



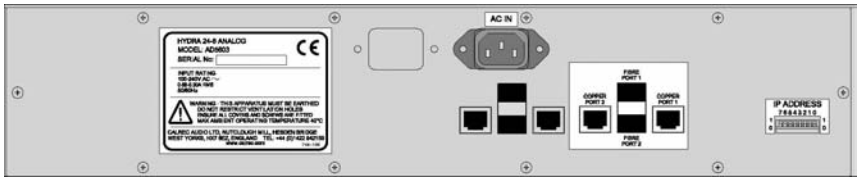
48 MIC/LINE IN & 16 LINE OUT (AD5600)



32 AES IN & 32 AES OUT (JB5607)



REAR CONNECTORS (SIMILAR FOR ABOVE UNITS)



DIMENSIONS & WEIGHTS

Unit	Height	Width		Approx Depth (incl. mating cons)		Approx Weight		Input Power Rating	Acoustic Noise (dB-SPL A-Weighted 1M from source)
		Inches	mm	Inches	mm	lbs	kgs		
AD5603 24 mic/line in & 8 line out - XLR	2U	19	483	12	300	12.5	5.7	100-240V AC ~ 0.58-0.30A RMS 50/60Hz	26
AD5608 12 mic/line in & 4 line out - XLR	2U	19	483	12	300	11.5	5.2	100-240V AC ~ 0.42-0.23A RMS 50/60Hz	26
AD5600 48 mic/line in & 16 line out - XLR	4U	19	483	12	300	16.1	7.3	100-240V AC ~ 1.0-0.48A RMS 50/60Hz	27
JB5607 32 AES in & 32 AES out - BNC	3U	19	483	12	300	12.0	5.8	100-240V AC ~ 0.38-0.20A RMS 50/60Hz	27

Power and Redundancy

The units are mains powered and have two internal power supply units, providing PSU redundancy.

As standard, one IEC input connector is fitted to power both internal PSUs. Versions of each unit (with the 'P' suffix after the unit number, for example AD5600P) provide a second IEC inlet. The twin IEC approach supports mains supply redundancy, as well as internal power supply component redundancy.

The units incorporate a cooling fan module. Each PSU module and the fan module within the unit are monitored to ensure proper performance. PSU OK and FAN FAIL indication is provided on the front of the unit.

Status LEDs

The following indicative LEDs are visible from the front panel:

PSU OK (green)
Fan Fail (red)
Port 1 connected (yellow)
Port 1 active (green)
Port 2 connected (yellow)
Port 2 active (green)
Status (x 8 red)

In addition, each input connector has its own tricolour LED to indicate signal presence. With analog signals the incoming signal will cause the LED to light green when the signal is between -60 dBFS and -38 dBFS, amber when between -38 dBFS and -2 dBFS, and red when the signal clips at -2 dBFS or above.

Each output connector has a green LED to indicate that there is a route established to it from a console on the network.

Synchronization

Units are frequency synchronized using synchronization packets received from the Hydra network.

Diagnostics

The units support remote FPGA firmware and software updates across the network via the Ethernet ports. In addition, an RS232 port is provided, such that system diagnostics can be performed by a Calrec approved engineer. Connection to the port is via a front-mounted 9 pin D-Sub connector.

Surround Signals

It is not recommended that ports on a modular Hydra I/O box should be combined with ports on a fixed Hydra I/O box to create a 5.1 surround signal.

SDI BOXES

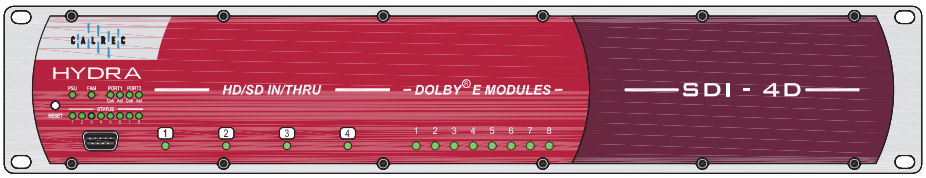
Calrec SDI de-embedders are available in four and eight way versions, each SDI stream providing up to eight stereo output pairs. Up to 33 SDI boxes can be used in a Hydra network (up to 9 if using pre V2.8 software).

The SDI boxes are available in four way (VI5699) and eight way (VI5698) versions, both supporting HD (high definition) and SD (standard definition) video. Both units may be fitted with a secondary IEC inlet for redundant external AC power.

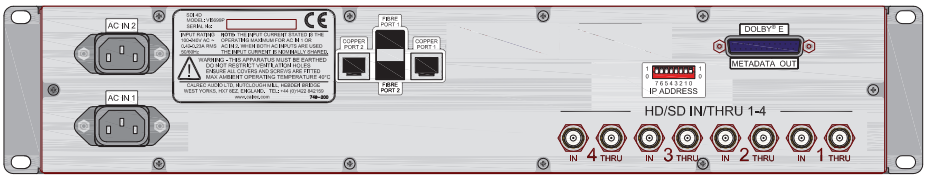
The four way version can be fitted with up to eight optional Dolby E decoder modules. An extra rear connector is provided with this option for accessing Dolby E metadata.

As with the analog and AES-3 boxes, these SDI interfaces connect to the network via an Ethernet port on the rear of the unit. Each unit has two identical ports to provide network redundancy. All versions are supplied with two RJ45 ports for copper connections (1000BASE-T for distances up to 90 m = 290 feet). Plug-in GBIC modules allow connections with 1000BASE-SX (for distances up to 550 m) and 1000BASE-LX (for distances up to 10 km) are available.

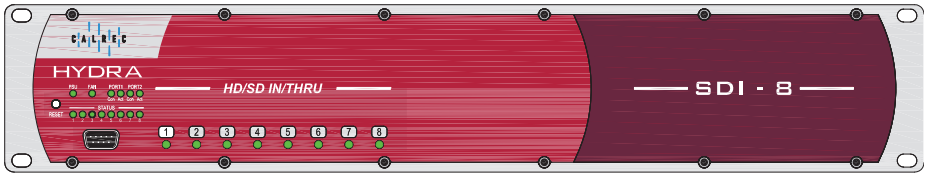
4 SDI IN & PASS THROUGH WITH OPTIONAL DOLBY DECODERS (VI5699)



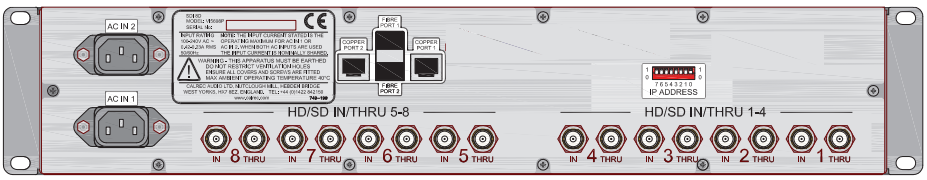
4 SDI IN & PASS THROUGH (VI5699, NOTE THE EXTRA IEC INLET)



8 SDI IN & PASS THROUGH (VI5698)



8 SDI IN & PASS THROUGH (VI5698, NOTE THE EXTRA IEC INLET)



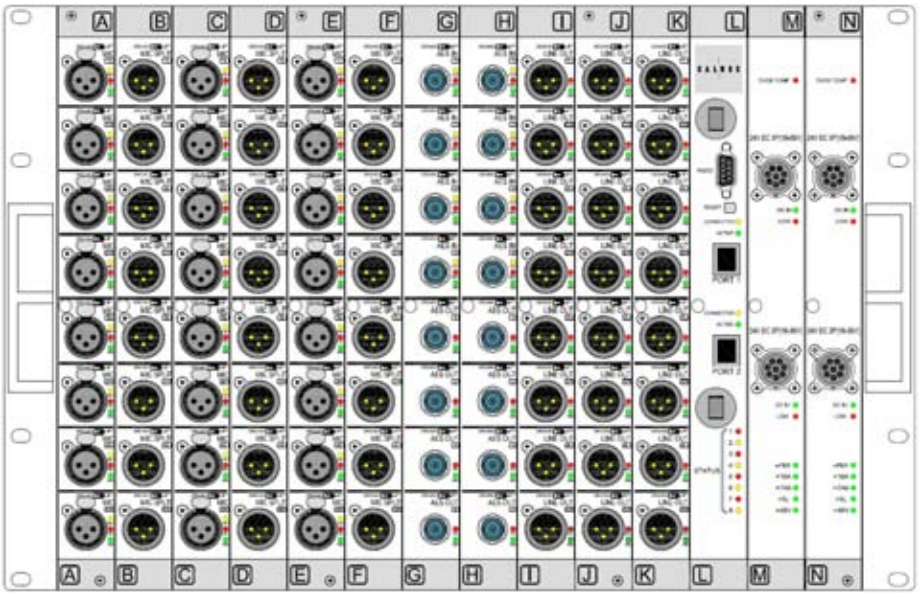
SDI signals can only be patched to the inputs of consoles with Bluefin DSP systems or classic desks running V1.36 or later software.

The 8 way SDI de-embedder is only available on consoles running V2.7 software or later.

DIMENSIONS & WEIGHTS

Unit	Height	Width		Approx Depth (incl. mating cons)		Approx Weight		Input Power Rating	Acoustic Noise (dB-SPL A-Weighted 1M from source)
		Inches	mm	Inches	mm	lbs	kgs		
VI5699(P) 4 SDI in and through (rear connectors, P suffix version provides 2xIEC inlets)	2U	19	483	12	300	11.9	5.4	100-240V AC 0.42-0.23A RMS 50/60Hz	25
VI5698(P) 8 SDI in and through (rear connectors, P-suffix version provides 2xIEC inlets)	2U	19	483	12	300	11.95	5.42	100-240V AC 0.42-0.23A RMS 50/60 Hz	26

MODULAR HYDRA I/O BOX



Modular Hydra I/O boxes allow a user-configurable set of analog and digital I/O to be connected via the networking system to one or more Calrec digital consoles.

Modular Structure

There are 14 modular slots across the width of the unit, labelled A to N. Input, output, processor and DC PSU modules fit into these slots, in accordance with the requirements of the installation. Input and output modules receive and transmit analog or digital audio signals, to the Gigabit interface processor via a 32 bit TDM bus. The module options are listed in the table below. Each modular unit is 1.2 inches (30.48 mm) wide.

All 14 slots may be used by any of the modules in any combination. However, it is advised that the three slots at the right hand side of the unit are best occupied by a processor control unit and provision for two DC PSU modules, the second of which would be the optional hot-spare, providing power redundancy if the first unit, or the connection to it should develop a fault.

If no spare DC PSU is present, a blank panel can be fitted or the processor unit can move to slot M allowing a twelfth input or output module to be fitted into slot L.

Ground Lift Switches

Input and output modules are available with or without ground lift switches. On modules with switches fitted, the ground is lifted if the switch is toggled to the right.

Module Extraction

A module extraction hole is located on the module front panels to help remove modules for service purposes. The module slides in and out the unit on two runners at the top and bottom of the rack. The rear interface connector on the module then locates into the appropriate connector on the backplane. To aid accurate plugging-up, some guide strips are located between the three interface connectors on the backplane.

External Connections

All external connections are located on the front face of the Hydra I/O box. Space must be allowed in excess of the box dimensions to feed cables to the front interface from any rear access routes.

Mounting

The modular Hydra I/O box is mounted in place using 4 fixing screws on each side angle bracket. Support slides should normally be used to prevent excessive twisting forces on the front fixings.

Fan Operation

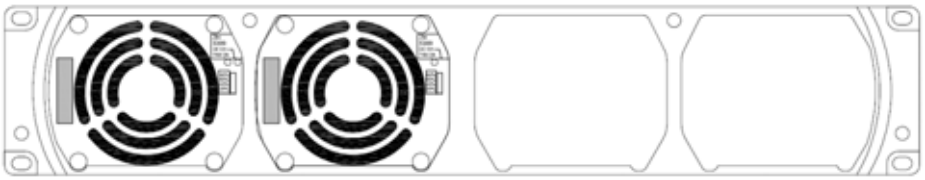
To dissipate the heat, 3 low-noise fans are located in the rear of the modular Hydra I/O box. They are controlled from the DC power supply unit. The unit's rear panel has venting holes which must not be obstructed.

Earthing

The box is fitted with an external earth stud on the rear, for connection to an external earthing system. No AC mains power is contained within the rack. All power connections should be unplugged prior to removing the earth connection.

Module Number	Description	Connector Type
AD5090	4 stereo or 8 mono mic/line inputs	XLR
LN5230	8 split outputs for adjacent left mic/line input module	XLR
JB5340	4 AES inputs and 4 AES outputs	BNC
JX5341	4 AES inputs and 4 AES outputs	XLR
DA5091	4 stereo or 8 mono outputs	XLR
UC5339	Processor with copper interface	RJ45
ZN5231	DC Power Supply	8 PIN PLUG

RACK MOUNTED AC PSU



Rack-Mounted AC PSU

A 2U rack-mounted power supply unit is available to provide the DC power for the modular Hydra I/O box. This holds up to four identical AC plug-in PSU modules. One module will provide power for a fully populated modular Hydra I/O box, with a second providing redundancy. Two other modules could be fitted to power a second unit.

The rack has separate AC power inputs and DC outputs for each of the four PSU's. Any one PSU can be removed from the rack without disturbing the operation of the others in the rack.

Diode feeding allows supplies of the same type to be parallelled together.

Mounting Instructions

The power supply rack should be mounted in a horizontal position by means of the side brackets, each of which has two mounting holes. The rear mounting brackets fix to the rear of the equipment bay and should be used when no support is provided under the rack assembly. Extensions of the rack sides slot into these rear supports, allowing the rack to be removed without removing the support. The rack should not be supported by front flanges alone.

Cooling

The rack is fan cooled with fans mounted in the front of each plug-in PSU. The warm air is directed out of the rear of the rack. To ensure proper cooling, there must be a minimum clearance of two inches (50 mm) from the fans and rear air outlets, and also any walls or other surfaces.

Input Power Connections

3-wire safety AC outlet sockets should be located near the power system (number as required). Each line cord will provide AC power to one of the power supply modules.

The AC line cord is the mains disconnect for each module. The AC line cords should have an IEC320 connector to plug into the rear of the power system chassis.

Each line cord MUST be suitably rated and FUSED (or have an equivalently rated circuit breaker). The maximum inrush current is 30 Amps. Fuses should be at least 250 V AC, T6.3A HRC rated to avoid nuisance "blows". Breakers should be at least 6A , Type C.

Safety grounding is provided via ground connections in the line cord entry receptacles.

If in doubt, please consult Calrec's customer support team.

FAN OPERATION

Internal Ambient Temperature	Fan Speed	DC PSU
<50°C (122°F)	OFF	OK
50°C to 55°C (122°F to 131°F)	SLOW	OK
55°C to 60°C (131°F to 140°F)	FAST	OK
60°C to 70°C (140°F to 158°F)	FAST	OVER TEMP
>70°C (158°F)	FAST	DISABLED

Bulk PSU Rack Fan Noise (dB SPL A-Weighted)	
These measurements were taken on axis at 1 metre from the dominant noise source:	
1 x 24V 200W PSU	24dBA
2 x 24V 200W PSU	27dBA
3 x 24V 200W PSU	29dBA
4 x 24V 200W PSU	30dBA

DIMENSIONS & WEIGHTS

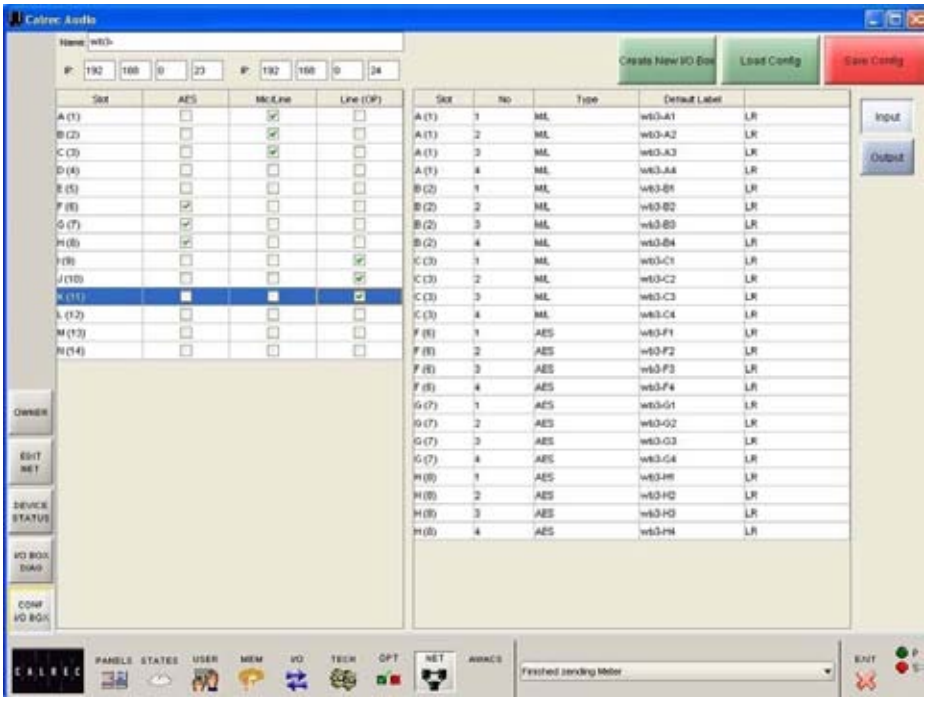
Unit	Height	Width		Approx depth (incl. mating cons)		Approx weight	
		inches	mm	inches	mm	lbs	kgs
Modular Hydra I/O Box (Fully Populated)	7U	19	483	12	300	35.2	16
Optional Rack Mounted PSU (with 2 plug-in units)	2U	19	483	12	300	15.6	7.1
Optional Rack Mounted PSU (with 4 plug-in units)	2U	19	483	12	300	25.3	11.5

MODULAR I/O BOX CONFIGURATION

This screen allows the user to manually setup the type of input and output modules occupying each slot in a Hydra I/O Rack.

In some situations, it may be necessary to re-configure Hydra I/O Racks to meet the requirements of each program. This can be done off-line, and the configurations can be saved and loaded, when on-line again.

The Hydra sources can be grouped into lists along with local sources to make them easier to access either on the front end (FE) application or on the port selection controls on the control surface. This is done using the Options - Port Lists screens.



NETWORK CONFIGURATION

This screen allows the network to be configured.

The window on the left side of the screen shows the devices available to the console (loaded via the Conf I/O Box screen). The window on the right side of the screen shows the devices the user selected for this session.

The Add and Remove buttons are used to add or remove devices to and from the session. Configurations can be saved and restored, to allow use on a job by job basis. This allows multiple setups to be configured off-line, and stored for later use.

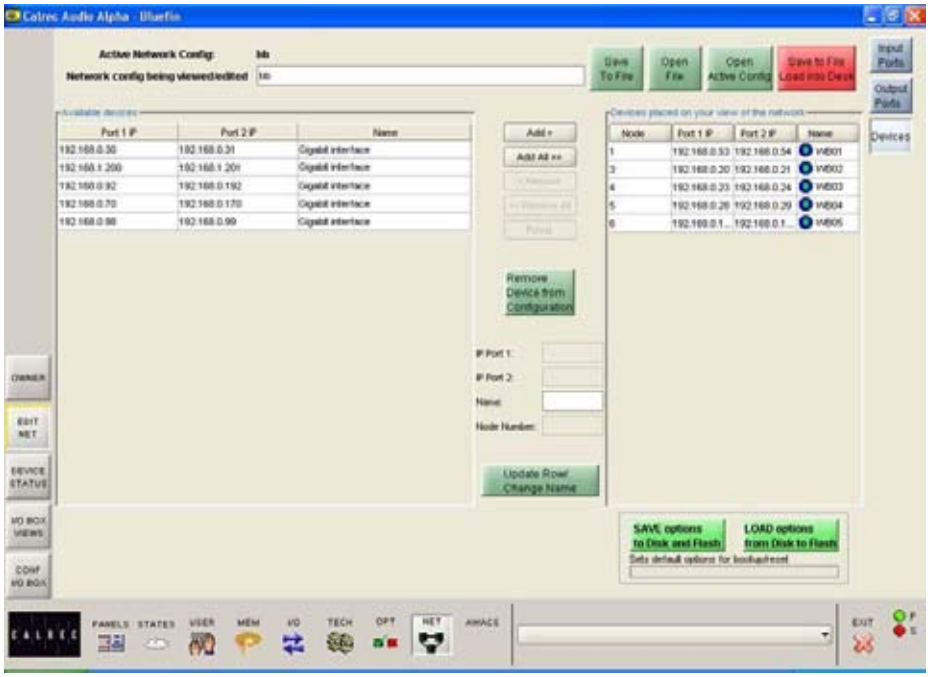
Save To File, Load Into Desk

Changes to the network configuration will not take effect until "Save to File, Load Into Desk" is selected. Then, the changes become active and the configuration is saved to the hard disk. If any subsequent changes are made, the "Save to File, Load Into Desk" button will flash to indicate that the configuration on the screen does not match the active configuration.

Opening and Saving Configurations

Open File allows a previously saved configuration to be opened. When opened, the configuration will be loaded onto the screen, but will not take effect until "Save to File, Load Into Desk" is selected.

The button flashes to indicate that the configuration on the screen is different to the active configuration. The console checks that the configuration is compatible with the system. If there are discrepancies, an "Error Showing Active Config" message will appear.



"Save to File" saves the configuration to the hard disk without loading it onto the console.

Open Active Config

"Open Active Config" retrieves the settings that the system is currently using and displays them on the screen, replacing the current configuration being viewed.

Saving Options

Network configurations are not saved with the user memories, so it is important to save the options to disk and flash once the network is configured using the buttons at the bottom of the screen.

If they are not saved, the next time the desk boots up the console will revert to its previous settings, which could mean that a different network configuration is loaded.

This could cause problems should the console have to be reset during a live broadcast. It does however allow changes to be tried out without losing the original settings and these original settings can be restored without having to re-boot the system.

HYDRA I/O SOURCE LISTS

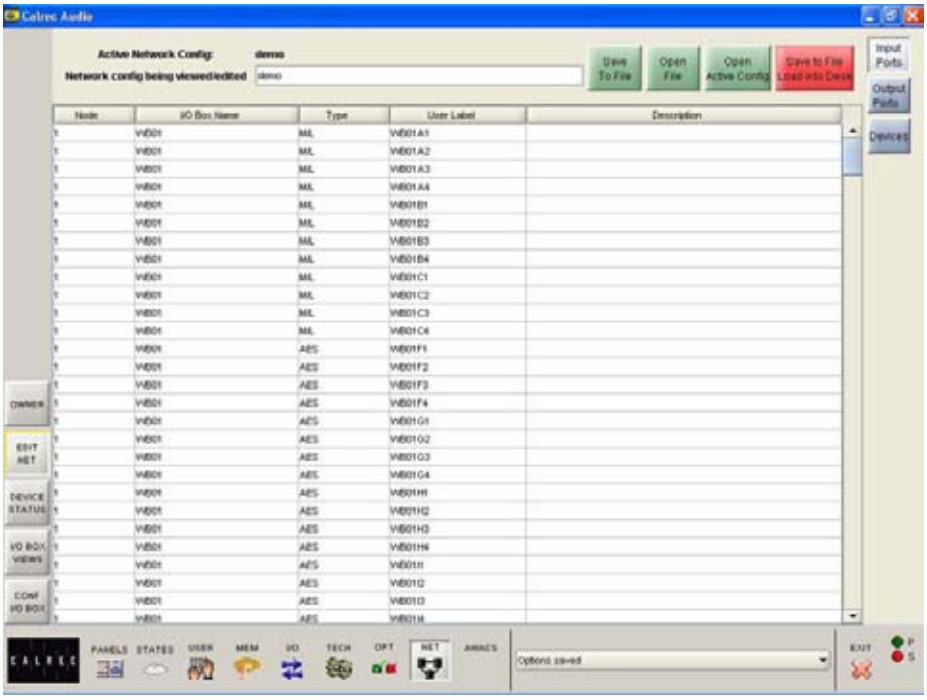
This screen allows the user to view the Hydra sources, their location and type. A similar screen is available to view the output ports.

Hydra ports are always treated as pairs. They can be used for two mono signals, a stereo signal, or as part of a surround signal. Hydra port labels consist of the 4 character unit name (user-defined) plus the module letter (A-N), plus the port number (1-4), plus L or R.

Port Lists

Once the network is configured, Hydra input and output ports can be allocated to lists along with local I/O using the Options - Port Lists screens. These lists are saved as list configurations. List configurations are linked to network configurations. When a network configuration is saved, it is associated with the current list configuration. When the network configuration is restored at a later date, and the system does not match the expected list configuration, the user will be prompted to load it, or to re-save the network configuration with the new list configuration.

If a network configuration is edited to remove ports, the list configuration should be re-sent to the console before the changes to the lists will take effect.



DEVICE STATUS

The Device Status screen provides a graphical overview of the status of all devices configured on the network.

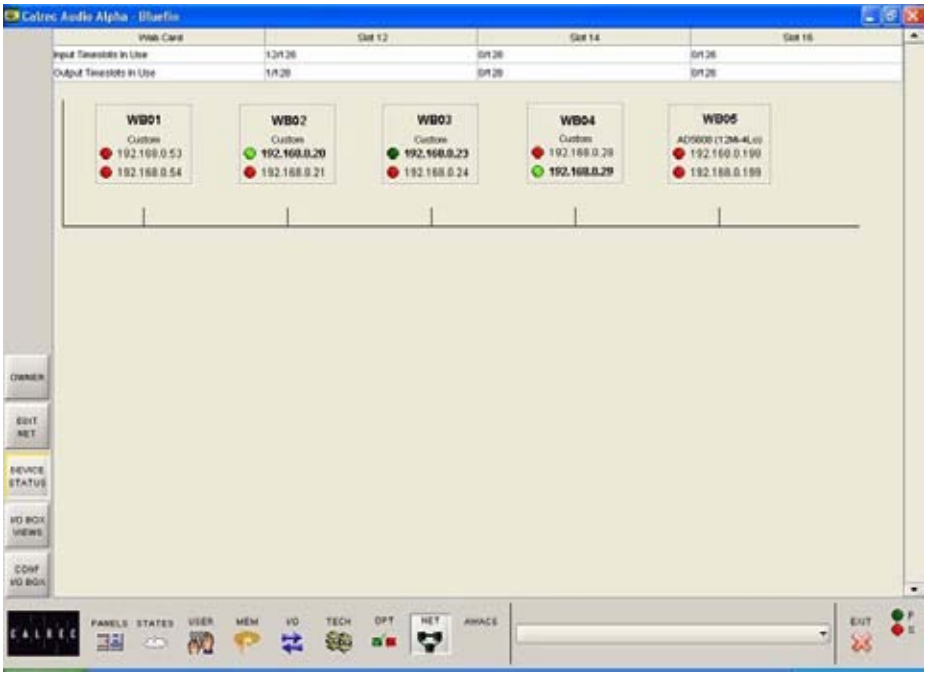
Each port has an indicator, which will "heartbeat" (flash green) to indicate that the unit is running and can be reached. If the device is not "heart-beating" then it cannot be reached and its graphic will be greyed out.

In the case of Hydra I/O boxes using both ports (for redundancy), each port will have its own heartbeat indicator. The preferred port will be highlighted. If a port is not heart-beating, its indicator will light red (But the device could still be in use through the other port).

If neither port is heart-beating, then the device is no longer available, and it will appear greyed out on the screen.

If the device does not appear to be heart-beating, but it is not greyed out, then the console can access the device, but the PC cannot. This situation could arise in redundant systems, where the PC is connected to just one of two switches, and the connection between the switches has failed.

The PC will only be able to "see" the devices connected to the same switch as itself. As the console will be connected to both switches, normal operation can continue.



PATCHING HYDRA SOURCES

Once set up, Hydra sources are selectable on the control surface and I/O screens just like local sources, and can then be patched to faders on the console in the same way.

Sources have icons to denote their type, they are as follows:


House - A source which is local to the console


World - A Hydra source on a Hydra device which is heartbeating


World with a red cross - A Hydra source on a Hydra device which is not heartbeating


Green Padlock - The console has ownership of this Hydra source


Grey Padlock - Another console has ownership of this Hydra source


Black Padlock - The source has been added to a grab list.

Please note that Hydra inputs cannot be patched to Hydra outputs.

Hydra Source Ownership
When a networked source is patched, ownership of it assigned to the console. In the case where several consoles share sources on the same network, the console that connects to the source first will be given control (ownership) over that source. Other consoles that subsequently connect the same source will not be able to control it.

The Net - Owner screen shows which sources are owned by which console on the network. In circumstances when the ownership needs to be overridden, (i.e. when a microphone is needed for the next show but has not be released from the previous show). The Force Ownership to be dropped function can be used to release a source from its owner.

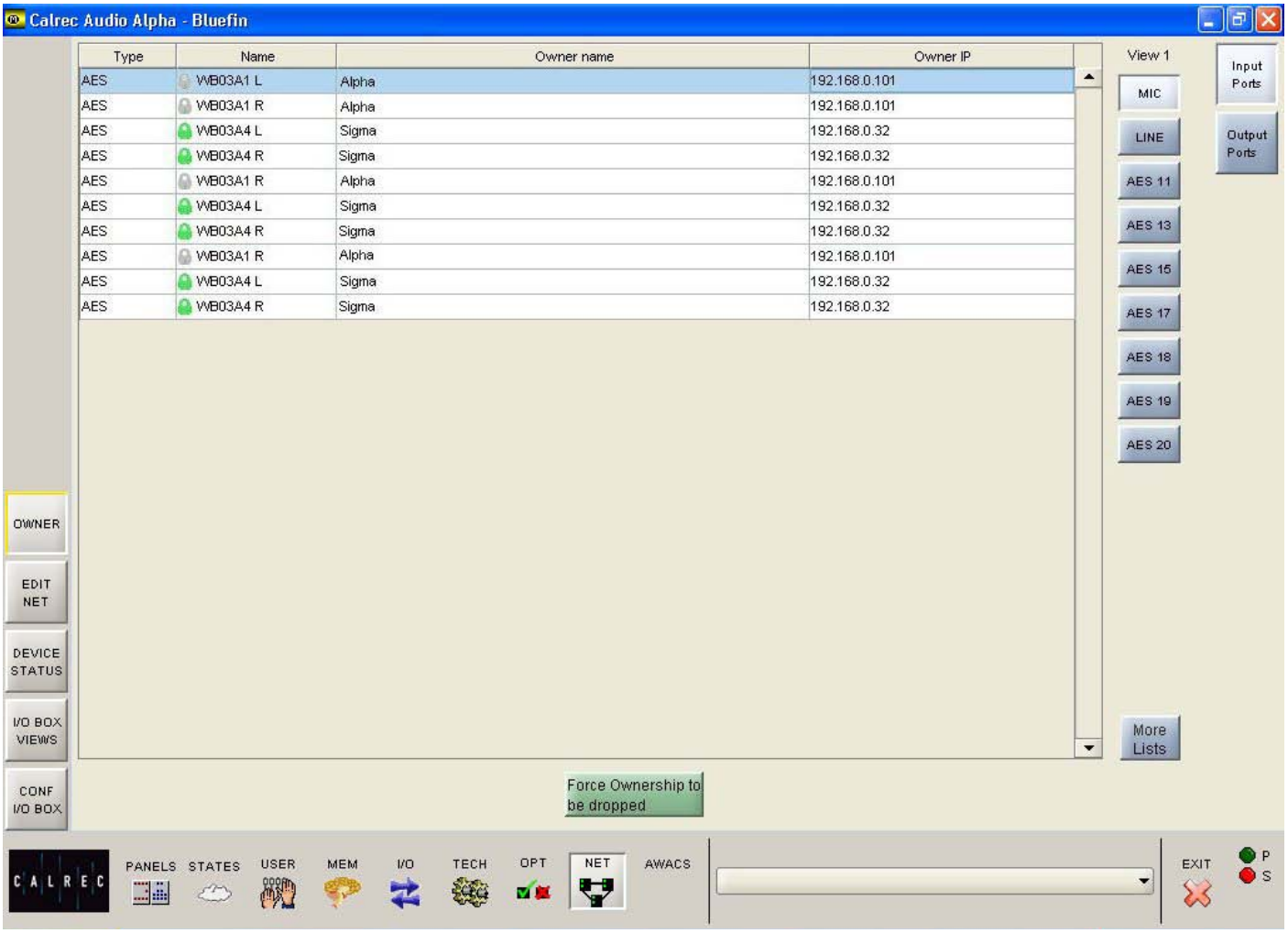
Grab Ownership
In circumstances when the ownership needs to be overridden, the grab buttons allow the console to grab ownership of the patched network sources, either altogether, individually, or by adding them to a "Grab List". When one or more hydra sources are added to the grab list, the "Grab All" button changes to "Grab List".

The grab list can be viewed on the Grab List screen, accessed on the left side of the I/O screens.

Important note:

Hydra inputs cannot be patched to Hydra outputs. It is not possible to isolate Hydra output ports.

SOURCE OWNERSHIP



When a Hydra port is patched, ownership of it is assigned to the console. The console is given control (ownership) over that source. Other consoles that subsequently connect the same source will not be able to control it.

There may be circumstances when a source's ownership needs to be overridden, for example, a microphone is needed for the next show but has not been released from the previous show. "Force Ownership to be Dropped" releases the source from its owner, allowing another console to control it.

This function is necessary for the situation where grabbing the ownership is not sufficient. This could be because the user wants to load a memory using ports it does not own. Upon loading a memory, any gain settings saved for ports the console does not own will be ignored, and the gain settings applied by the owner will be applied. In this case, it would be necessary to force the ownership to be dropped before loading the memory, such that the correct gain settings are recalled.

SDI INPUTS

Each SDI input stream has the capacity to carry 16 mono legs of audio and these are configured as though 8 AES stereo pairs. This makes for a total of 32 AES pairs (64 mono legs).

Whilst the incoming digital audio may often be synchronous with the console reference, sample rate converters are always in the signal path to ensure digital sync is never an issue.

Signals are patched to desk channels in a similar fashion to those from all other types of inputs. The significant difference is that unlike other Hydra input boxes that allow ports to be named in the console software, SDI inputs use a fixed name structure of the form:

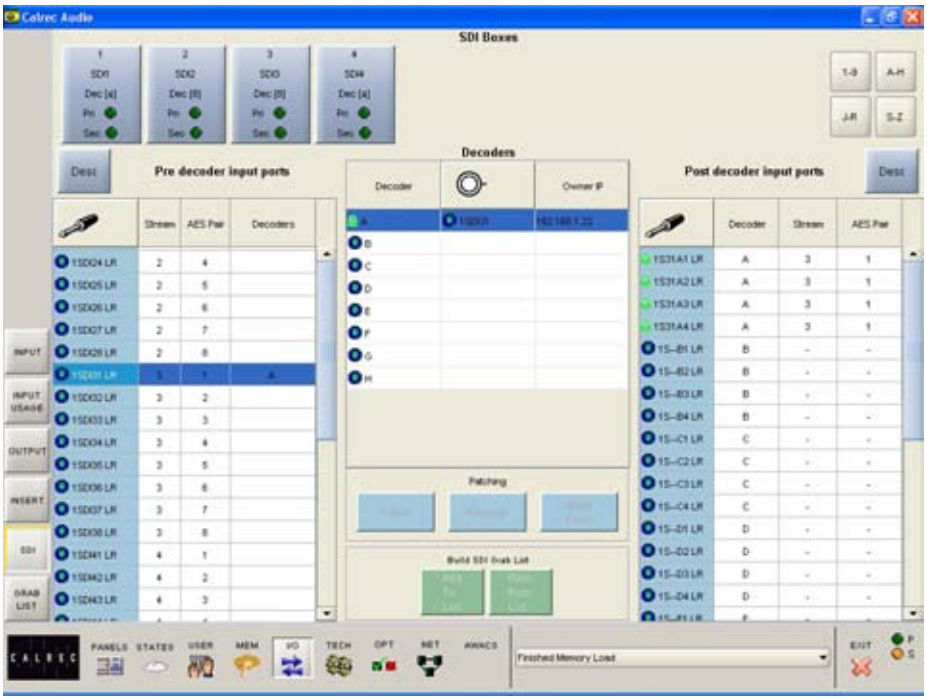
1S--B1

The first character identifies the box and can be any digit from 1-9 or any letter of the alphabet (excluding I and O which may be confused for 1 and 0). The boxes are named in the form SDI1, or SDIZ for example. Up to 33 SDI boxes can be used on a network using this naming convention. The available boxes are listed at the top of the screen and separated into four pages accessed by the buttons at the right hand side.

The B following S-- indicates that this signal is coming from SDI input stream 2 (stream 1 being labelled 'A'). The 1 shows that this signal is the first AES pair on that SDI stream.

Optional Dolby Decoders

If optional Dolby E decoders can be fitted and are installed, an extra level of patching is required to assign decoders to the AES pairs that have been decoded from the SDI streams.



Select the incoming AES pair carrying the encoded signal, choose an available Dolby E decoder and select PATCH. Dolby E can carry up to 8 legs of audio per AES pair so each Dolby decoder extracts four pairs of signals.

In the example above, Dolby decoder A in SDI box number 1 has received the 1st AES pair from SDI stream 3; the signal referred to as 1SDI31.

At the decoder outputs, this example shows the first of the four decoded signal pairs being known as:

1S31A1

The 'DI' parts of the original name now take on the stream and pair indication. The A shows it is decoder A and the 1, that it is the first decoded signal pair.

These are the pairs that appear as sources in the normal I/O patching system.

It is likely that customers will have defined a usage for streams and pairs within SDI signals and for Dolby E encoded signal pairs within the SDI pairs. A possible input patch scenario is the one shown below where the surround channel on fader 25A carries signals decoded from three Dolby E pairs and the stereo channel on fader 25B carries an LtRt version of the same signal.

Fdr	Type	Input 1		
		Label (Editable)	◎	◎
23B	Stereo			
24A	Stereo			
24B	Stereo			
25A	L/R	sdiDOL	1S31A1 L	R
	C/LFE		1S31A2 L	R
	Ls/Rs		1S31A3 L	R
25B	Stereo	LtRt	1S31A4 L	R
26A	Stereo			
26B	Stereo			
27A	Stereo			
27B	Stereo			

OMEGA
APPENDIX A – OFFLINE EDITOR

PART 1 – ON THE CONSOLE PC

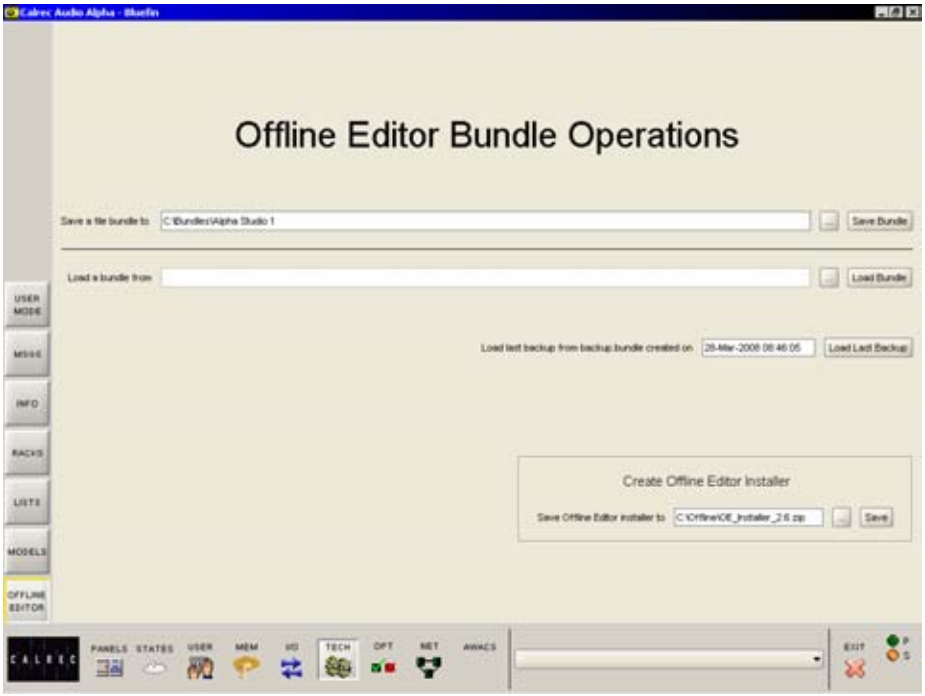
The Offline editor works by providing an emulation of the Calrec console PC application on any other PC such as a laptop. To avoid confusion, this Calrec supplied rack mounted PC will be referred to as 'the console PC' and the computer on which the offline application is to be run is referred to as 'the laptop', though of course it could be any desktop PC.

The version of the Calrec Offline Editor application to be installed on the laptop must mirror the version of the console software in use. If the laptop is going to be used with non Bluefin desks, it will need the offline application for version 1.36 and if it is also needed to prepare sessions for Bluefin desks, it will also need the offline application for software version 2.6 installing. Desks must be running 1.36 (non-Bluefin DSP) or 2.6 (Bluefin) to work with the offline editor. If later versions are used on a console, additional offline application programs will need to be installed.

When installing a new version of the Offline Editor, be sure to remove any previous versions from your machine

Preparing for offline working

The Calrec main application on the console PC relies on an up to date version of Java being installed. The laptop also needs to have a current Java version installed. If there is none, or if any of the offline editor displays seem incorrect, download the latest version from:
www.java.com/en/download/manual.jsp.



Creating the Application

The application program is created from the console PC by going to the Offline Editor page.

The editor installation application can be created anywhere on the console PC, including removable USB or drives, or when the PC port is appropriately linked, it can be a network location.

... In the 'Create Offline Editor Installer' section, click the browse button to browse to the required location then press Save.

Bundles

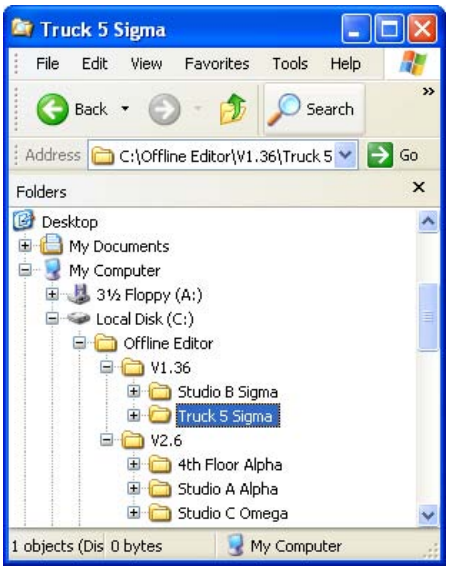
As most Calrec consoles have a unique configuration by way of fader quantity, I/O port numbers, surface panels etc. the Offline Editor has to know all the specific details about the desk which is being emulated and it does this by reference to a file "bundle".

This same screen allows a location to be specified for the console's file bundle to be created.

PART 2 – ON THE LAPTOP PC

Organising bundles

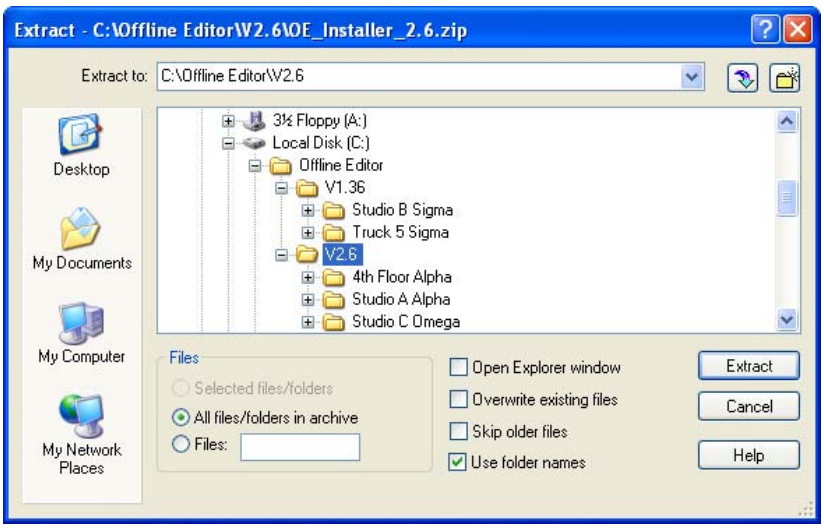
Once the installer and bundle are created, they can be copied to the laptop. If it is likely the laptop will be used for offline work with several different consoles, it is worth devising a logical 'tree' structure to make it simple to manage the various file bundles that you will soon have for various consoles.



Installing the Application

Unpack the installation program 'OE_Installer_x.y.zip' (x.y being the version number) to the desired installation location using either the Windows unzip utility or any other suitable decompression program.

Be sure that your unzipping utility does not fail to 'Use Folder Names'. In the version shown here this is enabled with a tick in the box.



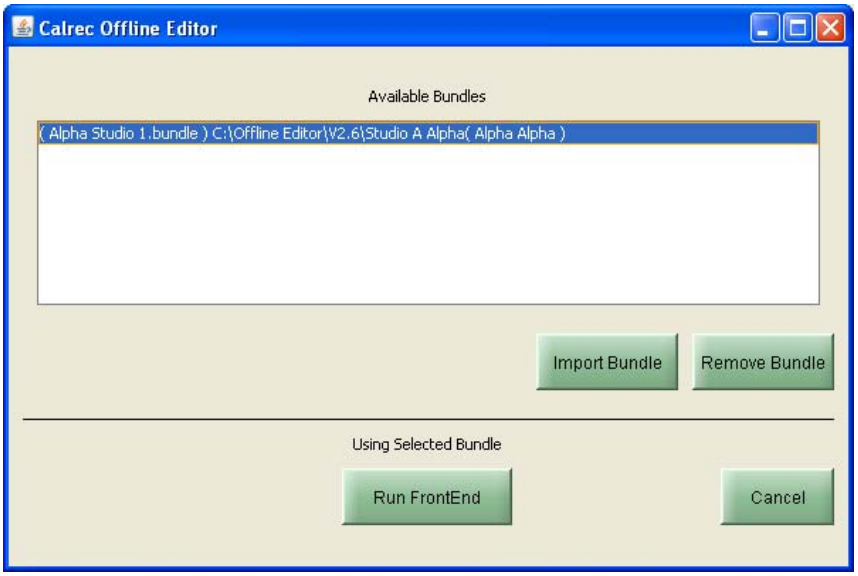
Once the files have been extracted, locate the file InstallOfflineEditor.exe and double click on it. This will give you the option to create a shortcut to the application in your preferred program group but will default to 'Calrec OfflineEditor'. The application files are installed to the same directory as the installer file.

The offline editor is now installed and ready for use. Depending on the options selected during installation, the application may be run from the new program group or from the icon that has been placed on your Windows desktop.

Loading a desk into the laptop
Start the offline editor by double clicking on the desktop shortcut, or by going via the Calrec OfflineEditor program group.

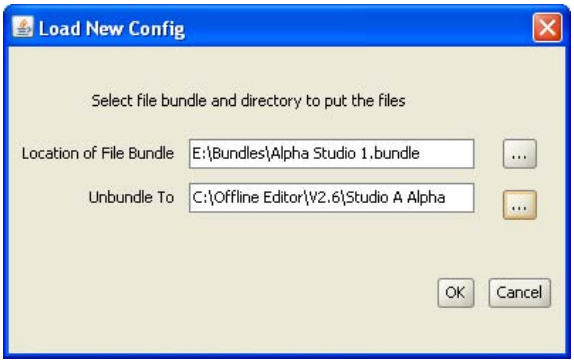
The first time the editor is run, no bundles will be listed. Once you have loaded bundles into the application, subsequent launches will list the available bundles.

Java applications can sometimes decide to check for Java updates and depending on your Windows security / firewall settings, you may sometimes be asked to click an "OK" to give them access through the laptop's firewall.



The Import Bundle button opens a browse dialogue box to locate the required file which, once selected, appears in the list and provides that particular console as an available emulation.

Highlight the required bundle and click 'Run Frontend'. The application checks that the console file bundle being loaded is compatible with that version of offline editor. If you have installed more than one version of offline editor, for example both 1.36 and 2.6, be sure you are running the correct one for the file bundle you need. If you do try to load an incorrect bundle, an error message is given.



Once the 'Run Frontend' button is pressed the laptop screen will show what is normally displayed on the console PC. If the console runs with a network, you may be prompted to load the network ini file. It is then possible to start using the console front end on the laptop screen, making whatever changes are needed. The start point is whatever was live on the console when the file bundle was created.

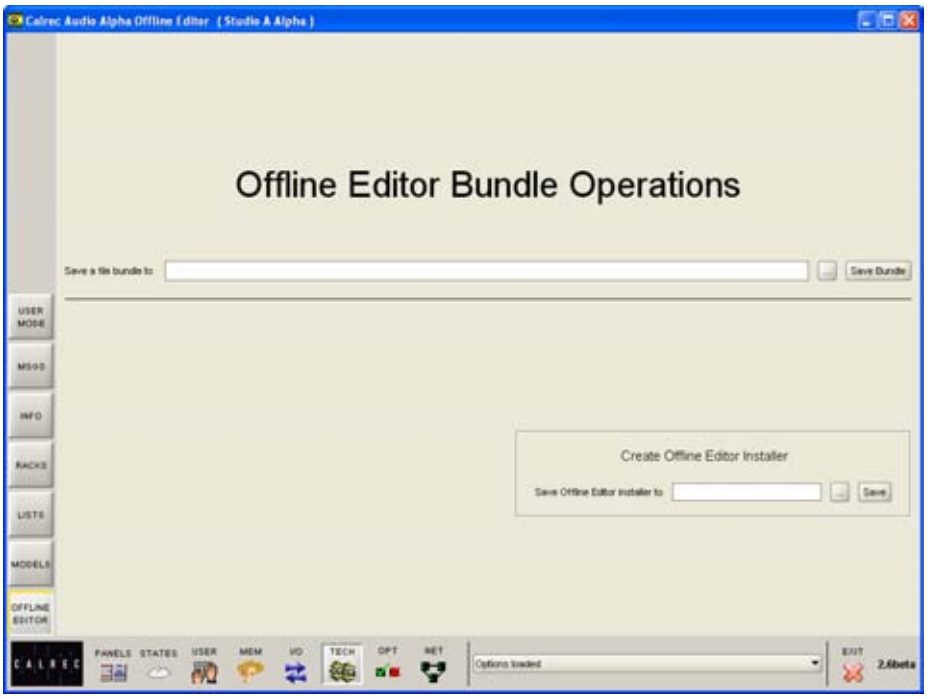
If you want to start from one of the memories that had previously been saved on the console, go to the MEM screen and the SETUP page to load whichever memory is the correct start point.

Saving offline changes
When all the setting and configuration changes have been completed they need to be a saved into a bundle that can be loaded back into the console.

When working on the console, some items such as meter settings are always saved to console PC files but some choices such as channel/fader setups, port patching etc. normally get saved in the console surface. To get these to the console it is necessary to save them to a memory then backup that memory to the PC. The same process is used with the offline editor.

Once new memories have been saved in the offline editor, go to the MEMORY page and the SETUP screen. Use the BACKUP MEMORIES function to make a new PC file on the laptop. As with online operations, just one, several or all of the memories can be selected for back up. The path to which they will be backed up normally defaults to the one most recently used with operations involving that console.

Once the memory has been saved and backed up, the modified files need to be built into a file bundle, which can be an over-written version of the old one or a new one.



On the laptop screen, go to the TECH screen, OFFLINE EDITOR page. This is similar to the one in the on line version, though without the load bundle option.

This page also allows a new editor installer to be created, though this is only likely to be necessary if the original one has been lost and it is required to setup up offline working on another computer.

Browse for a path for the saved file bundle and click 'Save'. The bundle files are not large, generally less than 1 MB so there are normally choices of method to get that back to the console PC.

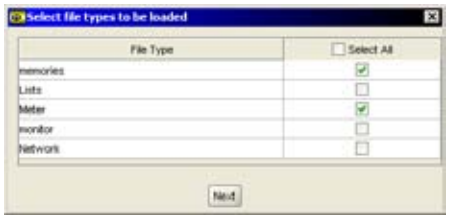
Once you are sure the modified files have been built into a new bundle, it is safe to exit the Offline Editor application.

PART 3 – ON THE CONSOLE PC

Loading a modified bundle
On the console PC, go to the TECH screen and the OFFLINE EDITOR page which opens the now familiar 'bundle operations' screen.

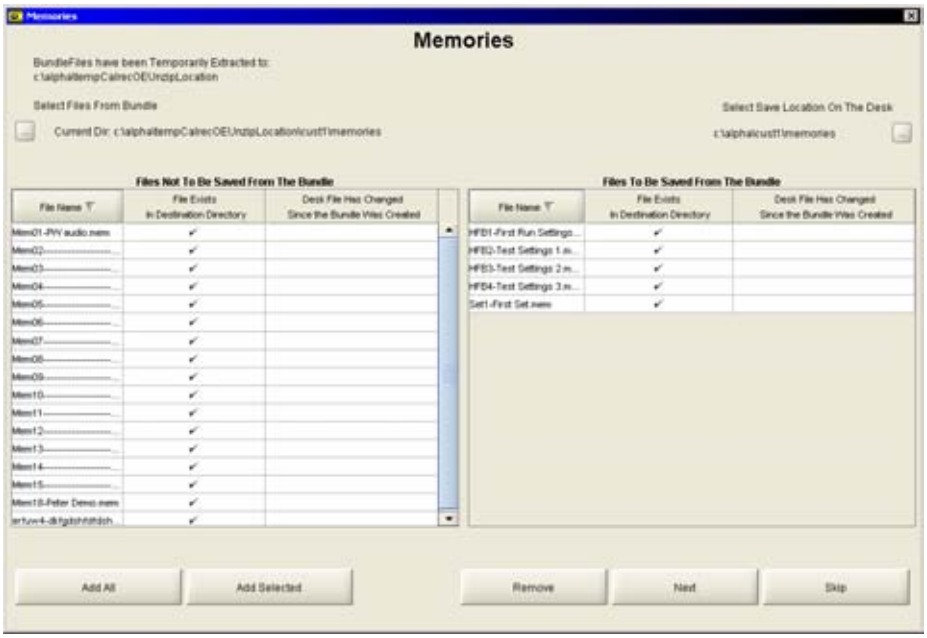
Browse for the modified bundle file using the 'Load a bundle from' field.

In many instances, the offline changes may all be stored in console memories but as the offline editor includes the screens that can be used to change meter configurations, router settings etc., there is an option to select which file types should be loaded from the bundle.



It is possible to select all file types by clicking on the tick box at the top of the column but unless there is new information in all the file types, this will add unnecessary steps to the loading process.

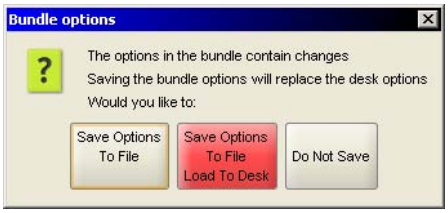
As the image above shows 'Memories' selected to be loaded into the console, the next screen to appear would be the memory selection screen. Depending on the file types that were specified for loading, the selection and save process may appear different and may also need repeating to load meter, monitor, network or router settings. The operation of these other screens is exactly the same as the memory selection screen.



Select memories to load
The application should automatically find the location of the memories in the bundle. If not, the list of available memory files is displayed by clicking on the browse button towards the upper left region of the screen. The destination on the console PC can be confirmed using the browse button in the upper right.

Once the memories are displayed, either 'Add All' or 'Add Selected' buttons can be used and the selected one are copied to the right pane of the window. 'Save' then processes that set of memories.

Repeat this process for any other file types you selected. When you have finished you will be presented with a dialog box confirming that you wish to load the data to the console.



Finishing up
Once the various types of files have been loaded to the console PC, they can be loaded in the same way as other files that had been created and saved to the console PC. For example, going to the OPTIONS page and METERS screen gives you access to Open a saved meter file which can then be loaded into the desk.

Many offline operations are likely to have involved saving a memory file so it will usually be necessary to use the MEMORY page, SETUP screen to get to the RESTORE MEMORIES function.

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APPENDIX B – VERSION CHANGES

VERSION CHANGES

Please note that some version numbers are not generally released for all products, and are therefore not documented here.

V2.3 included:
160 channel processing paths, configured as 48 stereo plus 64 mono channels, with the capability for up to 24 surround channels (constructed from the available resources). There is one pack size and it will not be possible to swap stereo for mono in the config.

20 Auxiliary busses.

48 tracks.

EQ/Filters on channels, groups and mains.

2-band EQ and 2-band Filter dedicated to dynamics on each channel, group and main.

All 8 groups can be mono, stereo or 5.1 surround.

96 pairs of assignable inserts (These are signals available, not ports).

Every channel and group can produce a direct output simultaneously. All surround channels and groups have surround direct outputs with the option to down mix the output to stereo instead (On the User-Chan screen). The mix-minus of a surround direct output is a true mix-minus of the whole surround channel or group.

PFL to Mon and PFL to small LS (from surround paths) are surround, (PFL LS output is stereo).

There are 256 mono legs of buss/output metering and there can be up to 128 phase meters (using 2 mono legs each).

Channel input delay of 256 mono legs of 2.73 seconds. Delay Work - allowing delay on group inputs, direct outputs, insert send/return for channels, groups and mains.

New panel - AM5630 - Auxiliary, Routing, Talkback and Main Outputs panel.

New panel - PY5632 - Input, Output, EQ and Dynamics panel.

New panel - MP5361 - Monitor and Memory panel with intelligent buttons.

New panel - RT5661 or RT5635 - Reset panel.

New panel - IC5524-2 - Fader & channel control panel.

Side Chain Listen.

Dynamics - Soft Knee and Recovery Hold.

Reset faulty DSP after hot swap (Self Healing DSP).

Cue Director can now associate Hydra input ports with external router inputs and Hydra output ports with external router outputs. It is still not possible to route Hydra inputs to Hydra outputs.

Routing matrix screen

For Surround CRLS and Meters 1-2, TFT Meter width is now dependent upon the source selected. The TFT Meter will automatically change to match the source.

Track Output screen.

Replay button and setup screen. Channels selected by the replay screen will flip to input 2 when the replay button and EXEC is pressed. Memories will store replay selections.

Divergence/Convergence on stereo channels and groups. Also, divergence will be changed such that the overall volume isn't increased when it is applied.

EQ on main outputs including HF filter to go down to 50 Hz (for use as LFE filter).

Expander on main outputs.

Spill out Surround Mains - so that the spill panel can be used to control each leg of the surround main.

Spill panel to be used to control down mix levels from surround channels and groups to stereo busses. Spare button on the spill panel will be used to select the mode of the panel. Also controls Main output stereo down mix on surround Mains.

Thicker Peak spot/Phase marker on TFT meters.

Longer time constant on peak spot on TFT meters.

FrontEnd COM ports. If the entry "SecondaryPCPort" is left blank in cust1/ports.ini then the FrontEnd will only connect to the console through the primary port (PCPort entry). This can be used if running the FrontEnd on a laptop so only one COM port is available.

A change to the screen indicators for primary and secondary control processors. The active processor's indicator will be green. When the secondary processor is not in use, but is in standby, ready to take over should the primary fails, its indicator will be amber.

V2.5 included:
Support for Hydra I/O Box - AD5600 48 mic/line in and 16 line out.

Support for Hydra I/O Box - JB5607 32 AES in and 32 AES out.

Clear all memories is now available in 'technician mode' only.

GPIO Test Function.

PFL overpress to change assigned fader. Release overpress to revert to previously assigned fader.

Force Ownership drop on Hydra outputs. This is to change so that the port can be overpatched by another console after the ownership is dropped.

Number of auto-faders increased to 192.

Shorter timer for TB buttons.

Improvements to how stereo channels can be used as mono channels. To prevent the occurrence of mono ports following each other when assigned to two stereo channels when Left to Both or Right to Both are used.

Change to filters such that the endstop creates a flat response. There will be an additional setting past the end-stop which turns the filters off rather than leaving them at -3 dB at 20 Hz and 20 KHz. This allows HF filter on LFE without filtering LF.

V2.6 included:
Support for Ross Video Overdrive/ Synergy system via a serial interface.

V2.6B included:
Off-line Editor functionality.

V2.6F included:
Default compressor attack time changed from 5ms to 30ms.

V2.7 included:
SDI-8 support.

V2.8 includes:
Increases limit of SDI boxes on a Hydra Network to 33.

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