

ALPHA TECHNICAL SPECIFICATIONS



Digital Broadcast Production Console with **Bluefin HDSP**



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ALPHA OVERVIEW



INTRODUCTION

Alpha is a large format digital console designed for the most critical broadcast production and on-air applications. It is a no-compromise design that provides comprehensive features and functionality with sophisticated failure protection systems.

System Plus celebrates a milestone in the evolution of Calrec Alpha consoles, providing increased functionality, which is upgradeable to existing consoles. Alpha continues to meet the changing requirements demanded by the on-set of surround sources in live production, providing sophisticated assignable monitoring solutions and encompassing flexible TFT style metering.

Bluefin

The Bluefin High Density Processing System provides 480 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 Alpha 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's continued commitment to customer value means Bluefin technology is fully retrofit-able to existing Alpha consoles. Having to increase console capacity to cope with HD television will not involve buying a new desk for existing Calrec users.

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 service, reflects a clear awareness of the critical nature of the operating environment.

This understanding of the real issues of broadcast operations is one of the many reasons why operators and management alike prefer Calrec. Alpha System Plus is designed to ensure 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 480 mono equivalent channels: 162 stereo channels plus 156 mono channels.
- Up to 78 full 5.1 surround channels allocated from available channel resource.
- 8 x 5.1 surround, stereo or mono audio groups.
- All channels and groups have 4-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

- 4 x 5.1 surround or stereo main outputs with Compressor/Limiter.
- 20 auxiliary outputs which can be 20 mono or 10 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 96 faders, with A and B layers of control, plus 4 dedicated main output faders.
- All faders are motorised and touch-sensitive.
- A centrally assigned fader allows control of any fader from the optimum listening position.
- Comprehensive surround panning and monitoring.
- User-definable panels for monitor selection and control.
- Flexible TFT screen-based meters with total user-configurability.
- Delay available on inputs, outputs and groups.
- 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 snapshot 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.

IMPORTANT CONCEPTS

Layering

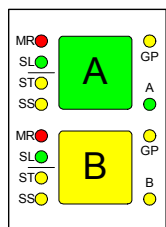
Each fader can control two independent audio signal paths, named A and B. These signal paths can be either channels or groups, although for easy reference, the faders are simply known as channel faders. B signal paths are fully equipped with all the same facilities as an A path.

The faders are motorised, 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. Channels towards the ends of the control surface can be accessed more quickly than on a conventional, single layer design.

Assignable Control



Each fader has a fader assign button for each audio path. The fader assign buttons are labelled A and B for channel or group paths, and M1, M2, M3 or M4 for the main output paths on the main faders. Pressing the fader 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, which for the stereo channels, and which for the groups.

For large consoles, some of the Assign panels may be duplicated to aid user operation.

PATHS AND PORTS

On an analogue 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 analogue 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.

SIGNAL PATHS

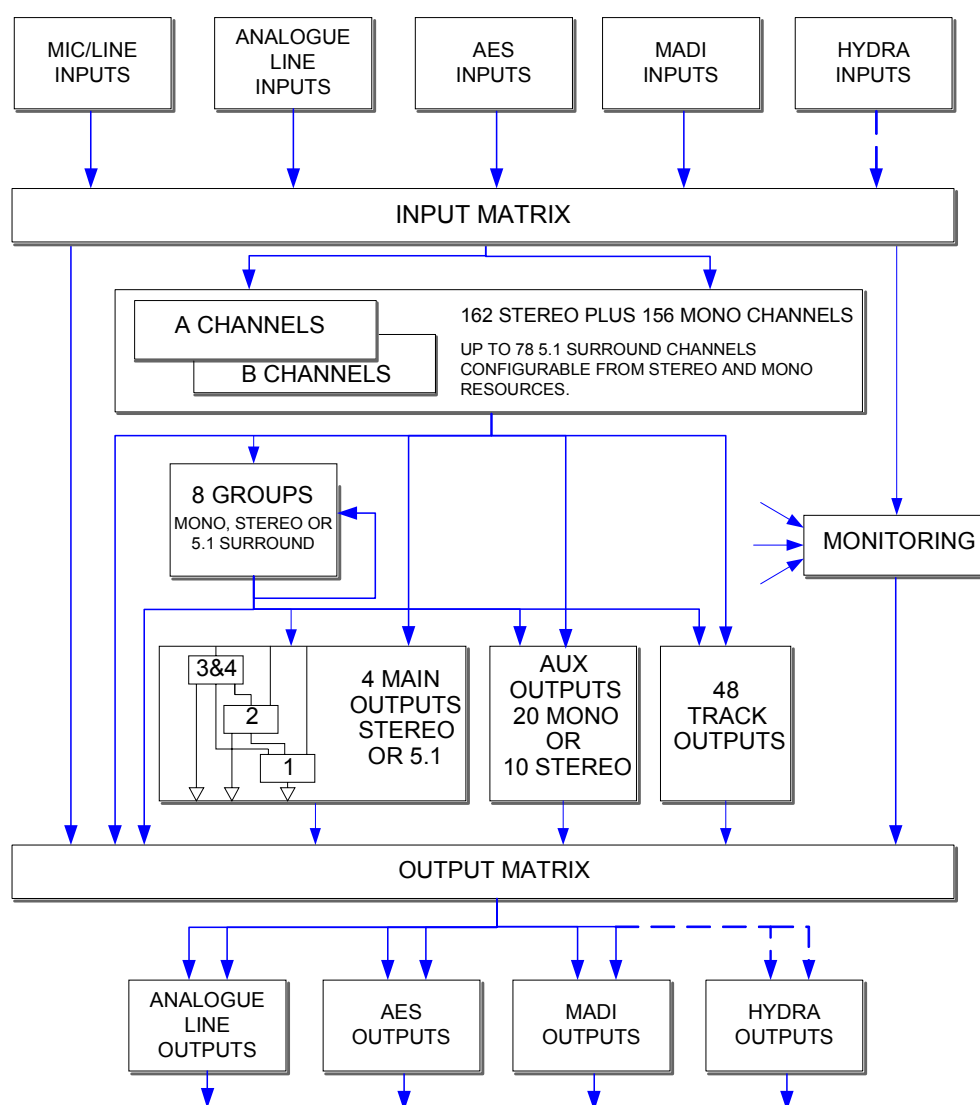
The system can have up to 480 equivalent channels: 162 stereo plus 156 mono channels. Up to 78 5.1 surround channels can be created, each of these will use the resources of 2 stereo and 2 mono channels.

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, a mono rear is derived at the output to allow them to be used as LCRS mains. Stereo and mono downmixes of the 5.1 are also produced.

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

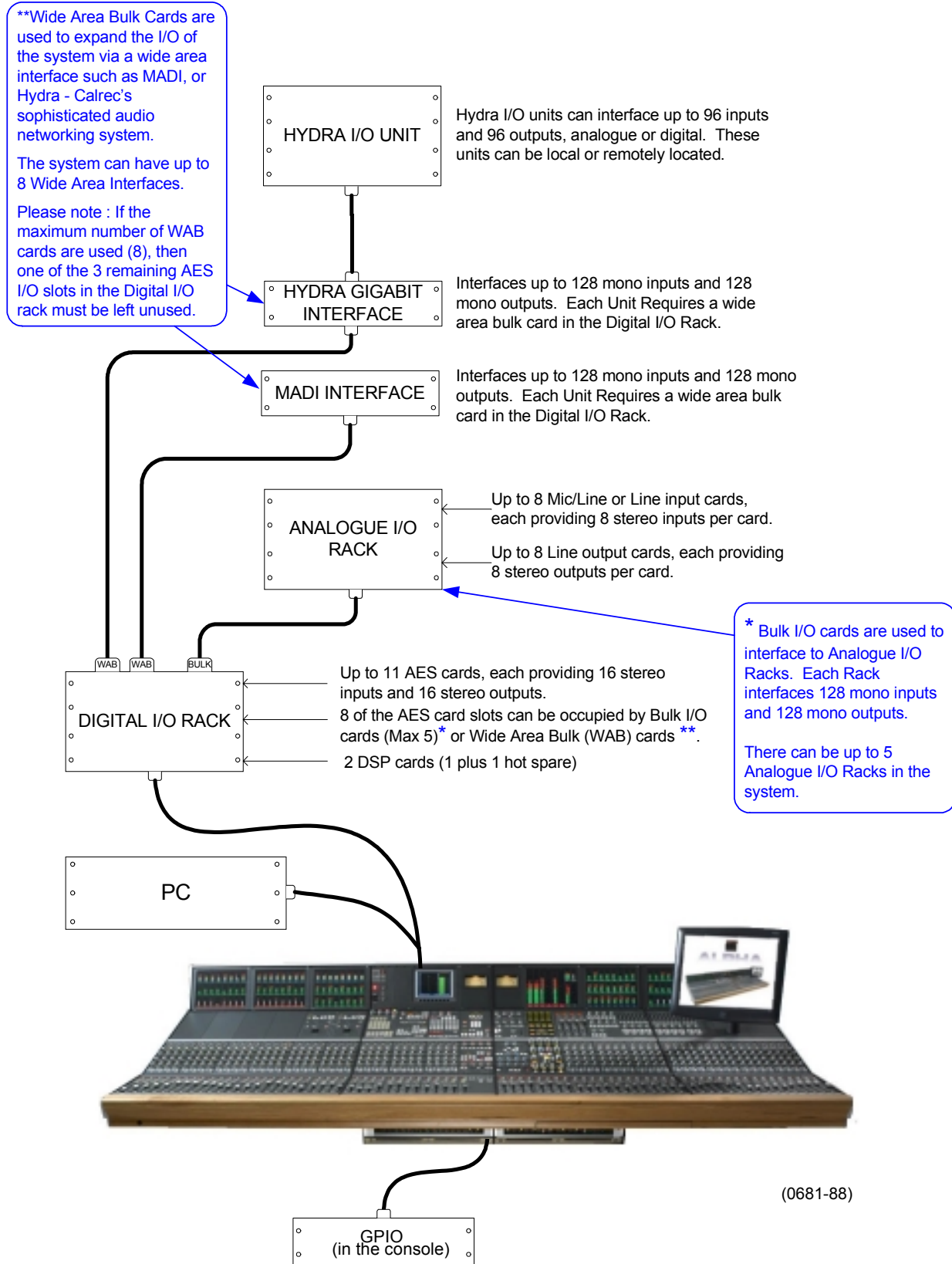
The 20 mono auxiliary outputs can be paired up to give up to 10 stereo auxiliary outputs.



— — — Please note that Hydra inputs cannot be patched to Hydra outputs.

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INPUTS AND OUTPUTS

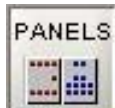


The largest system (in terms of I/O) would have 8 WAB cards and 2 AES cards. If one WAB card is reserved as a redundant hot spare, this system would have 896 mono I/O on WAB interfaces, plus 32 stereo AES I/O. If all WAB I/O was AES through a Hydra network, the system could have up to 480 stereo AES on the system.

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 screen's computer 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.



Operational reproductions of the EQ, Dynamics, Routing, Aux Send, Aux Output and Delay panels; providing alternative controls.



Sets the current state of various functions (these are not stored with the user memories or options - only in the live (hidden) memory.)



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, trouble-shooting screens.



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

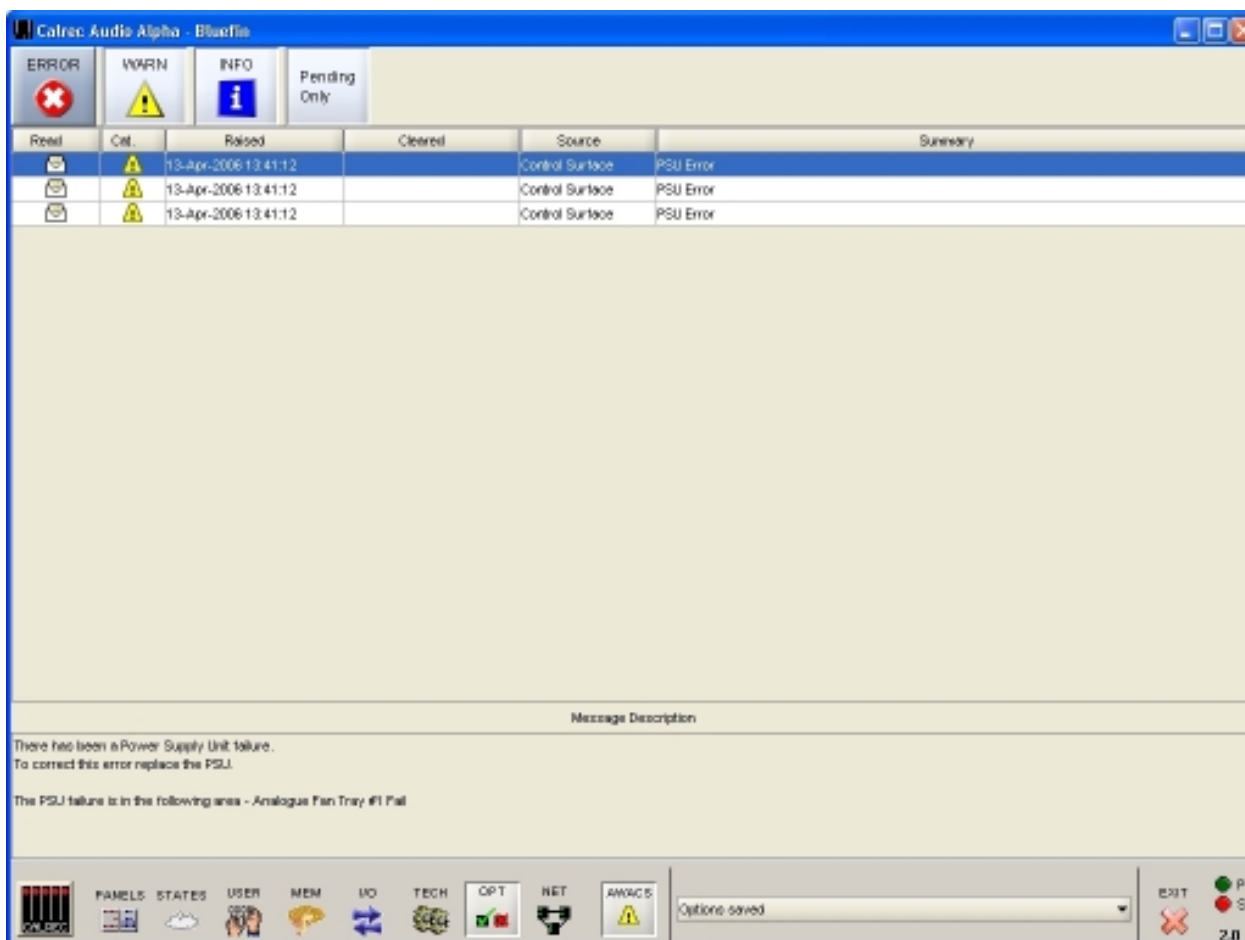
Options settings are not stored in the individual console memories but are saved and loaded separately using the buttons on each Options screen. This allows changes to be made without invalidating any saved memories. Changes to options take effect as soon as they are made, however if they are not saved, 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 overwritten 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.



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 amber, during which time, no changes can be made to the control screens (Although changes to the control surface can be made, and will take immediate effect).





If a problem does develop, messages will be 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, eg "Control Surface UN4806 processor started successfully"



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

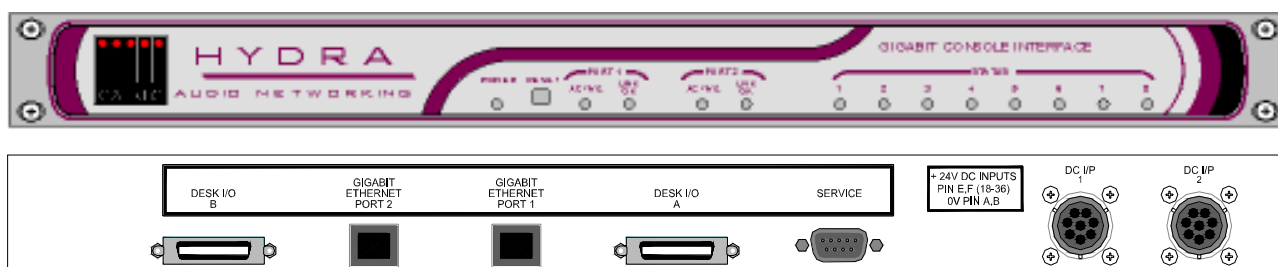


Fatal Error messages, where the system cannot recover by itself (perhaps because the back-up is already in use)

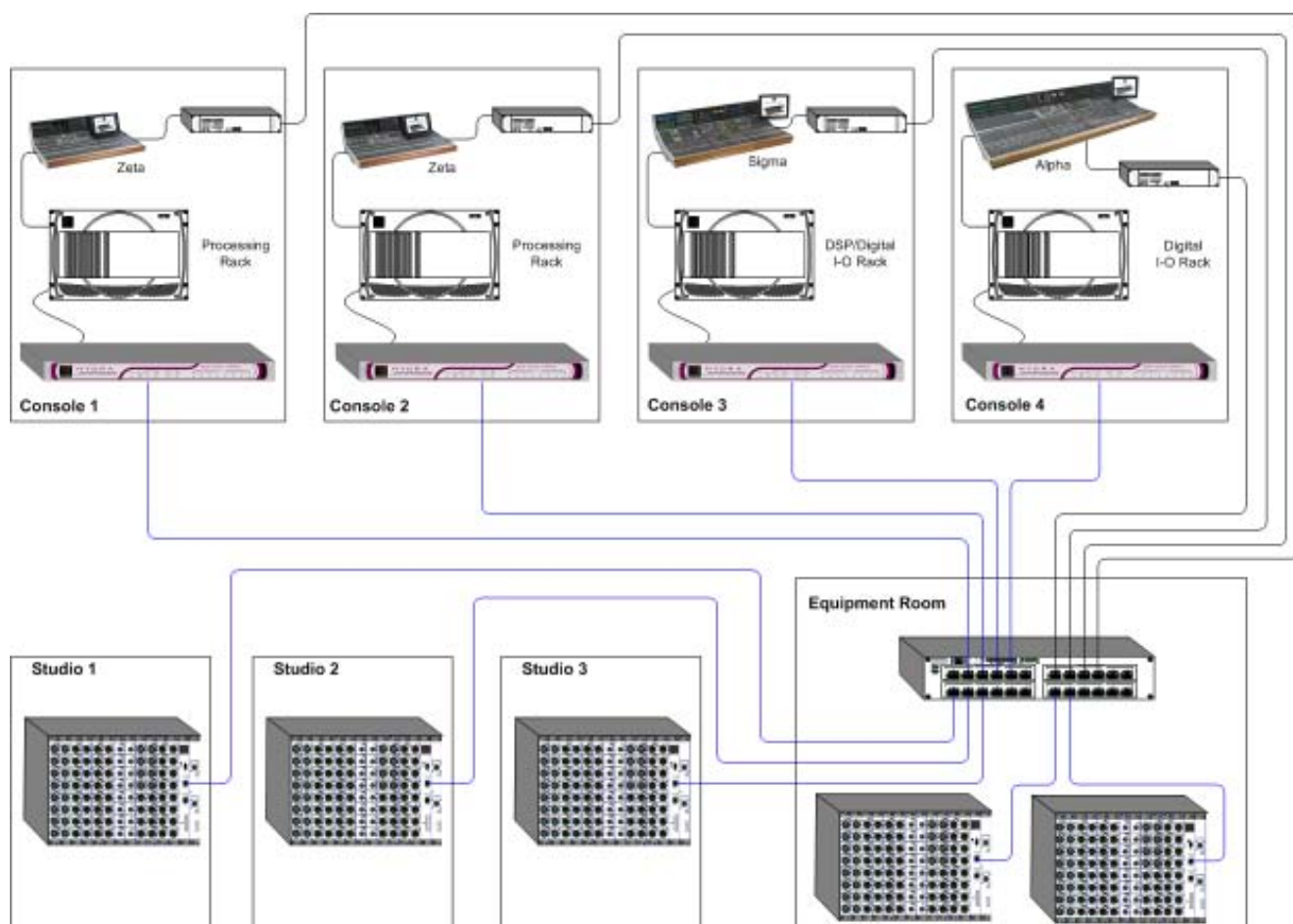
Because the system has many back-up features, it is possible to continue operating after errors are reported. If un-cleared errors are still present, an icon will flash in the AWACS button. Selecting this button at any time will switch back to the AWACS screen. Information messages can be cleared by 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.

HYDRA AUDIO NETWORKING

The Hydra audio networking system provides a powerful network for sharing of I/O resources and control data between Calrec digital consoles. Remote I/O units, with up to 96 inputs/outputs, analogue or digital, may be connected onto the network, providing remotely located sources and destinations that can be used by any or all mixing consoles.



The Alpha system interfaces to the Hydra gigabit interface unit shown above, via a Wide Area Bulk (WAB) card, which occupies one of the AES card slots in the Digital I/O rack. These units communicate information across the network via a commercially available Gigabit Switch.



The Hydra Audio Network configuration is set up and maintained using the console's front end screens.

ALPHA

FRAME OPTIONS AND DIMENSIONS



CONTROL SURFACE FRAME SIZES



Frames are made up of sections which can be 4, 5 or 6 modules wide. This allows many different sizes of console to be achieved using different combinations of different sized sections. Fader modules have 4 faders each, so console size can depend on the number of faders required.

The table below shows the dimensions of the standard frame sizes available. Sections within the frame do not have to be in the order shown. For details of custom frames, with wedge sections etc, please contact Calrec.

No of Modules Wide	Frame	Length		Depth	
		inches	mm	inches	mm
12	4:4:4	60.9	1547	43.2	1098
13	4:4:5	65.9	1672	43.2	1098
14	4:4:6	70.8	1797	43.2	1098
15	4:5:6	75.7	1922	43.2	1098
16	4:6:6	80.7	2047	43.2	1098
17	5:6:6	85.6	2172	43.2	1098
18	6:6:6	90.5	2297	43.2	1098
19	4:4:5:6	95.7	2428	43.2	1098
20	4:4:6:6	100.6	2553	43.2	1098
21	4:5:6:6	105.5	2678	43.2	1098
22	4:6:6:6	110.4	2803	43.2	1098
23	5:6:6:6	115.4	2928	43.2	1098
24	6:6:6:6	120.3	3053	43.2	1098
25	4:4:5:6:6	125.4	3184	43.2	1098
26	4:4:6:6:6	130.4	3309	43.2	1098
27	4:5:6:6:6	135.3	3434	43.2	1098
28	4:6:6:6:6	140.2	3559	43.2	1098

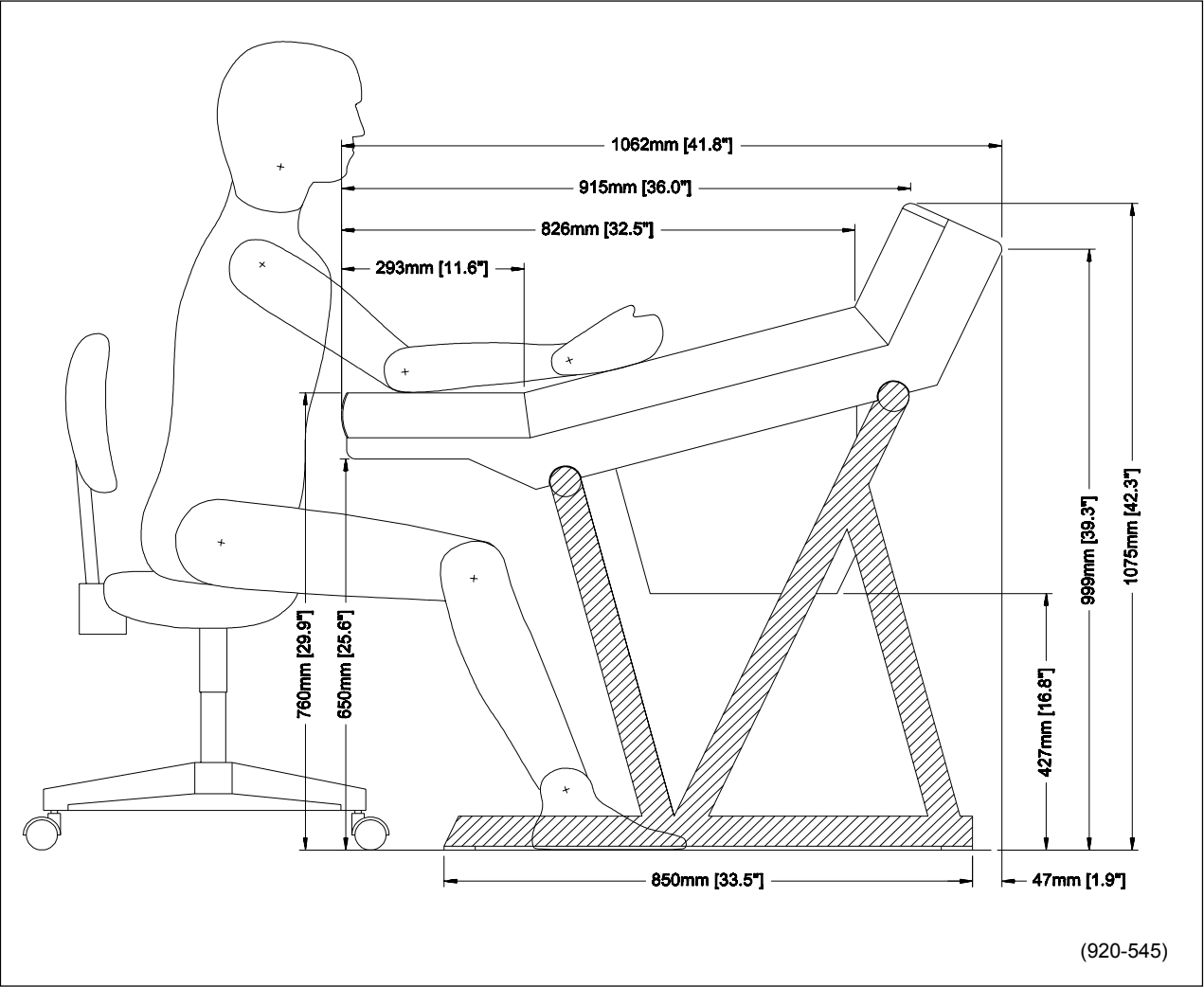
The smallest frame size is 12 modules wide, made up of 3 sections (4:4:4) and usually provides 32 faders with two audio paths on each fader. This allows up to 64 “channel faders” within a frame only 1547mm (60.9 inches) wide. The largest frame size is 28 modules wide, and made up of 5 sections (4:6:6:6:6) which provides 96 faders with two audio paths on each fader within a frame only 3559mm (140.2 inches) wide.

TYPICAL 48 FADER CONSOLE LAYOUT

[illegible]

END PROFILE

The end profile dimensions are the same for all frame sizes.

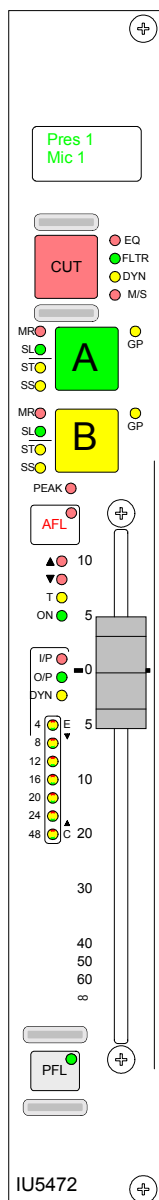


ALPHA FADER AREA



CHANNEL AND GROUP FADERS

Channel and group paths are controlled by the channel faders. Each fader controls two independent audio signal paths, A and B. Any fader can control any channel or group path. Main output paths are controlled by their dedicated faders on the main outputs panel.



The A and B buttons are known as the fader assign buttons, and are used to select either of the two channel paths A and B. Selecting a path will “call” the fader to the Assign panels, and the fader assign button will light red. 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.

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.

The CUT button cuts the channel or group, its effect is the same as fading it out completely. The button will light up when in the active state. Alternatively, there can be ON buttons here instead, which switch the channel on.

The EQ, FLTR, DYN and M/S LEDs indicate that these functions are active.

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

Fader Assign Button LEDs

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

The ▲ and ▼ Null LEDs will only 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. When illuminated they indicate whether the audio is above or below the fader's position.

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

The PEAK LED will illuminate if the channel or group signal is within 3 dB of the clipping level.

The ON LED illuminates when the audio level is not at the ∞ position.

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

PFL is provided on the fader overpress and on the button. It will be heard on the small LS (or the main LS if PFL to Mon is selected), or PFL LS (depending upon how the monitoring is configured).

CHANNEL CONTROL

Situated above the channel fader module, the channel control module provides a set of indicative LEDs and a set of user-definable rotary controls (Wild controls) for each fader.

A set of LED's provide good visual feedback of :

- Routing to groups and mains
- The currently selected input type (mic, analogue line, or digital)
- If the Sample Rate Convertor (SRC) is switched in (for AES inputs)
- Routing to any track
- Whether the direct output is being fed to the mix minus buss.
- Whether the direct output is being fed with a mix minus feed.
- The currently active fader path A or B

There are four wild controls per fader. Almost any assign panel rotary control for the selected path can be assigned to a Wild control, including:

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

Wild controls are assigned either using the Functions panel or the USER - CHAN screen.

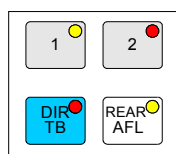
Once assigned, the four Wild controls “FLIP” with the fader providing the same function for each of the two paths. The A and B faders may also be assigned to a Wild control, in which case it will be the opposite fader which is being controlled.

Wild Control Push-Switch Option

If a wild control has the Aux Send, 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 enabled or disabled using the Options - MISC screen.

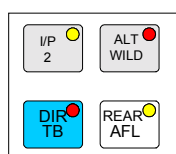
Button Options

Depending on the options purchased, the two buttons beneath the rotary controls can perform different functions.



Option 1

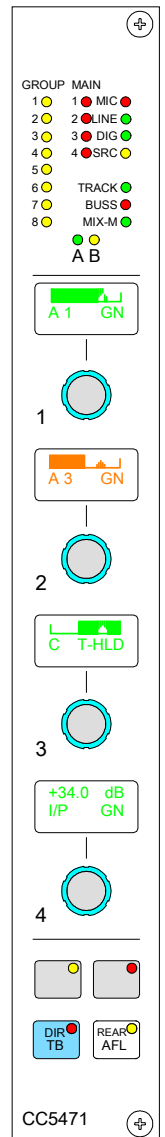
Each channel path can select between two inputs 1 and 2. This is usually done using the Input/Output panel for the currently assigned fader. As an option, these buttons can be duplicated for each path on this panel. This can be either two buttons (shown left), or just one (shown below).



Option 2

The ALT WILD button allows switching between two complete sets of Wild settings. This would then allow up to 8 available Wild controls per fader. I/P 2 allows selection between inputs 1 and 2 with just one button. Input 1 is selected when the button LED is off, and input 2 is selected with the button LED on.

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



ASSIGNABLE FADER

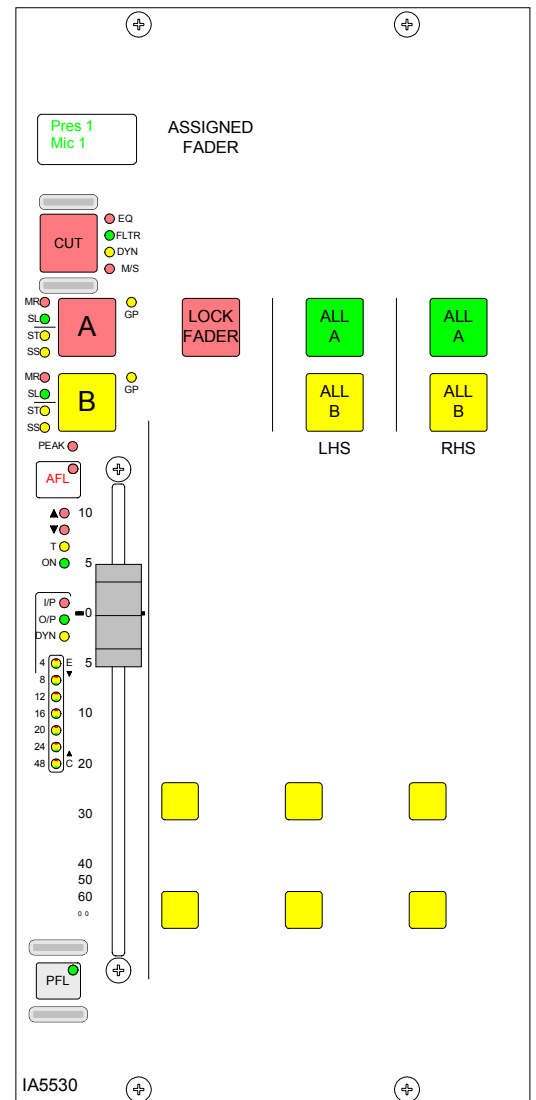
The Assignable Fader is positioned towards the centre of the console, in the optimum listening position, and works in parallel with the currently assigned channel or group fader. Alternatively, LOCK FADER allows it to be fixed to a specific path.

The assignable fader can follow a spill fader, but cannot be locked to it. It can however be locked to a surround master.

The ALL A and ALL B buttons switch all the channel faders to display either their A path or their B path. Buttons allow the left and right hand side to be switched separately for each path. Using the ALL A and ALL B buttons is like moving to a different section of a single layer design.

The “long press” (press and hold) functionality of these buttons can be set such that the All A or All B paths are displayed on the control surface momentarily, either until the button is released or until the button is pressed again. This is so that the console’s A/B display pattern is not lost. The console will revert back to the previously displayed layer on each fader. This behaviour is set on the Options - Misc screen.

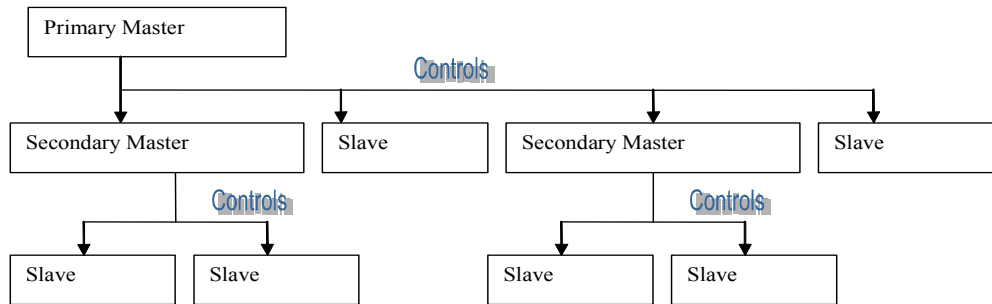
There are also All A and All B buttons available on the Functions panel. These buttons are also subject to the behaviour set on the Options - Misc screen.



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 fader assign button (A or B) of the fader to be master, and pressing the fader assign buttons of faders to be added or removed as slaves.

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. There can be up to 48 members of a VCA group.

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.

The MR and SL LEDs next to the fader assign buttons indicate whether that fader is a master or a slave. A secondary master fader has both the MR and SL LED lit.

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.

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 identifying 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 light. When interrogating a Primary Master the fader assign buttons of its primary slaves and secondary masters will light. When interrogating a secondary master the fader assign buttons of its secondary slaves will remain lit, and the primary master's fader assign button will flash.

Enabling VCA Group Editing

The editing of VCA groups can be enabled and disabled using the States screen.

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 78 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 I/O Matrix panel 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.

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. One fader path is chosen by the user to be the surround master. This path holds the master control settings which affect the operation of the surround channel. Inputs are patched to each of the spill legs.

Surround Spill Panel

A set of screens are provided, to control the individual legs of the surround channels or groups. In addition, an optional surround spill panel is available so that 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.

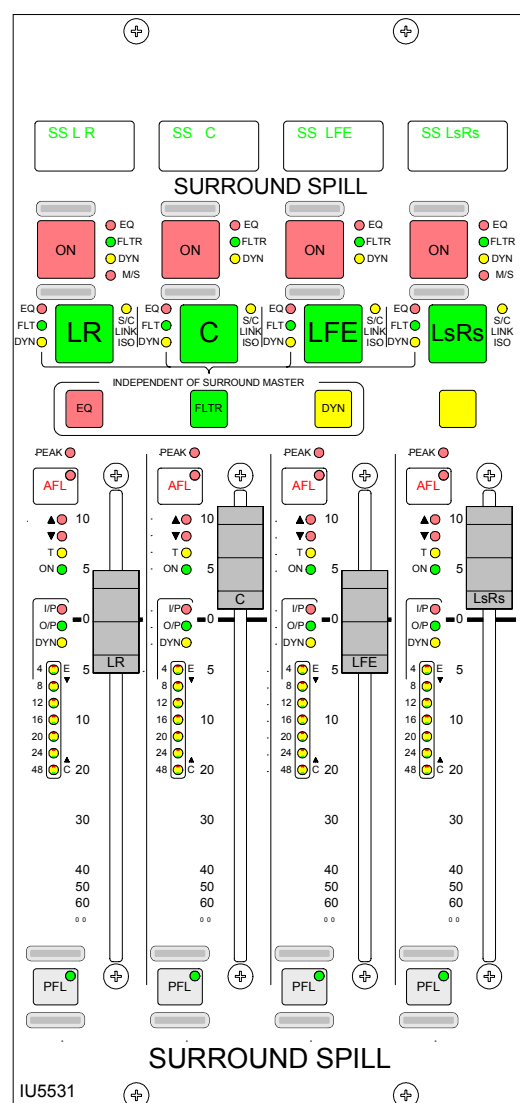
Each spill fader has its own assign button, which is used to select the spill leg as the currently assigned path when the spill panel is active. The spill's assign button lights when selected, and its surround master's assign button will flash. When a spill leg is selected as the currently assigned path,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

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. Each spill leg can select APFL, tone and CUT independently, but cannot select or deselect any of these when they are switched on via the surround master. With a surround master selected, the balance control on the Input/Output panel acts as an input gain trim control.

The spill panel should be situated near the centre of the console, but not in the fader bed, as the fader's movement may distract the user when switching between fader paths.

5.1 Surround Groups

Groups can be defined as mono, stereo or 5.1 surround on the User-Busses screen.



5.1 SURROUND CHANNELS

Independent Spill Path Control

Normally, settings for EQ, filters and dynamics applied to the surround master affect all the spill legs except LFE. The EQ, FLT and DYN CTRL buttons on the surround spill panel allow the currently assigned spill leg to control EQ, filters and dynamics independently of its surround master. LEDs next to the spill path's fader assign button indicate which functions are independent.

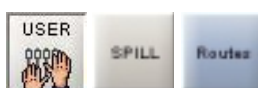


Independence can also be activated for the spill paths of each surround channel using the User-Spill-Independence screen, by selecting the relevant cells. The fader level can also be adjusted from here, by selecting the required cell in the FDR OFFSET column, and using the nudge buttons.



Surround Channel Routing

The User-Spill-Route screen allows whole surround channels or individual spill paths to be routed to mains, groups and tracks, 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 surround channel routes made in the system, and allows the user to evaluate and control the routing more effectively.



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.

Assigning Auto-Faders to Opto Inputs

Auto-faders are assigned to any one opto input using the OPTIONS - GPI screen. 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.



Assigning Channel or Group Faders to Auto-Faders

The User-Auto Fade screen is used to allow assignment of channel or group faders to the 32 available auto-faders. Each auto-fader provides the ability for one path to be faded up to and down from the current fader level. Assignments are made by selecting an auto-fader from the list on the left, and a channel or group fader from the list on the right, and selecting "Patch".



Fade IN and OUT Times

The fade in and out times of each auto-fader are individually adjustable. The range for both parameters are 10 ms to 5secs, as follows:

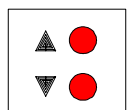
- 10ms to 100ms in 10ms steps
- 100ms to 1sec in 100ms steps
- 1sec to 5s in 500ms steps

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 channel or group fader under the control of the 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.

Indication of an Auto-Fade

Indication of an auto-fade is provided by illuminating the fader's down NULL LED when the path 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.



ALPHA

INPUT AND OUTPUT CONTROLS



(1) Input Port Assignment

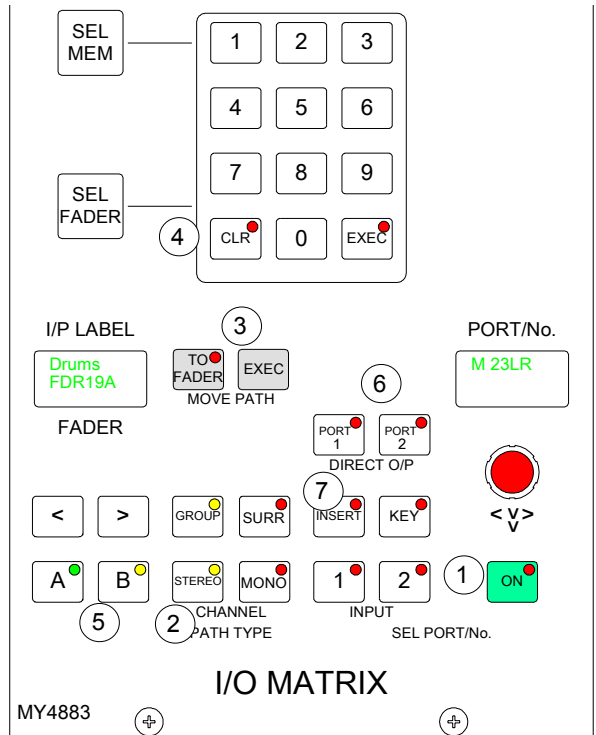
Each channel path can select between two input ports. Ports are assigned to inputs 1 and 2 for the currently assigned fader using the I/O Matrix as follows:

- Press 1 or 2 to select an input.
- Use the rotary control to scroll through the lists of available input ports.
- Upon reaching the desired port, press the ON button to assign it to the input 1 or 2.
- Pressing ON again will de-assign the port.

The display on the right shows the ports available. Pressing and turning the rotary control gives access to lists of other types of port. Each port can be allocated to one of a number of lists during installation of the console to allow I/O which is wired for similar purposes to be grouped together for selection.

It is possible to determine which lists of ports appear for selection on the I/O Matrix panel using the OPERATIONS-MISC screen. Making only the relevant lists available for selection makes it easier to find the ports you require.

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



(2) Path Type Selection

The GROUP, SURR, STEREO and MONO buttons select the path type for the currently assigned fader. If the path is to be a group, its number is selected using the rotary control and ON button. Groups are defined as surround, stereo or mono on the USER-BUSSES screen. The path type and group number can also be selected using the USER-CHAN screen.

(3) Moving Paths

Paths can be moved or swapped from one fader to another, using the MOVE PATH buttons.

To move paths, 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.

It is not possible to move an isolated path.

Please note: A surround master can be moved from path to path, but it is not possible to move a spill leg to another fader.

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 on the I/O matrix can be set to always perform Move Strip using the States screen.



(4) Clearing Paths

Channels can be cleared off the fader by pressing SEL FADER, CLR and EXEC. This will clear all settings and port assignments from the channel. This function is also available using the USER-CHAN screen.

(5) Fader Path Selection

In addition to the fader assign buttons (A and B), fader paths can be called to the Assign panels using the nudge buttons to scroll through the faders, and the A and B buttons to choose the path. This is for use when pressing the fader assign button is not convenient, or should a fault develop on the fader strip. Paths can also be selected by pressing SEL FADER and entering the fader number on the keypad. The display on the left side of the panel shows the currently assigned fader.

(6) Direct Output Ports

Ports can be connected to channel and group direct outputs, first by selecting PORT1 or PORT2, and using the rotary control and ON button to choose and select ports. (Two ports can be connected to each direct output). When scrolling through the lists of output ports, those that are in use will display "IN USE".

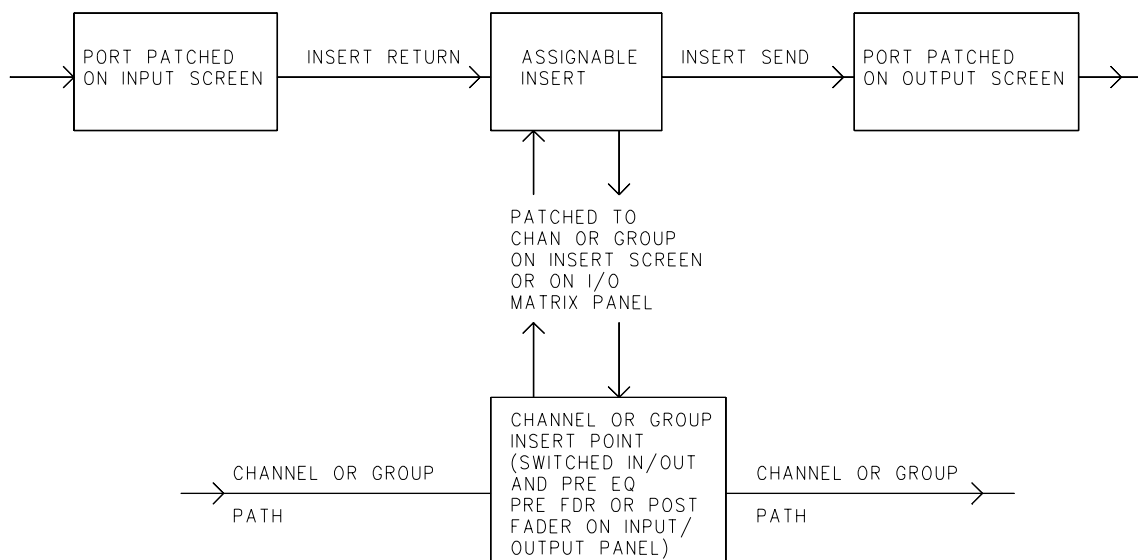
(7) Channel and Group Inserts

The system provides up to 96 L-R pairs of assignable inserts for channels and groups. In addition, the main outputs have their own dedicated inserts.

Assignable inserts are designed to be pre-connected to send and return ports which are in turn pre-wired to insertable devices or to an insert patchbay (normally there would be some assignable inserts of each type). The Input and Output screens allow send and return ports to be set up for the assignable inserts.

Pressing the INSERT button allows the rotary control and ON button to control assignment of inserts to channels and groups. This can also be done using the Insert screen. The insert is then patched in and out of the channel or group path using the buttons on the Input/Output panel.

The assignable inserts can be divided into up to 4 lists in a similar way to input and output ports. This separates them for selection on the pot-switch.



INPUT/OUTPUT CONTROLS

The INPUT controls in the Input/Output section allow separate settings for the two channel inputs and gain, and ON/OFF for the group and main direct inputs.

(1) Input Settings

Each path can switch between two input ports using buttons 1 and 2. Optionally, each fader can have dedicated selection buttons for inputs 1 and 2 on its channel control panel.

SRC switches the sample rate converter on AES inputs.

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

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

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

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

The TONE button switches tone to the input of the currently assigned channel or group. From here it can be routed as required.

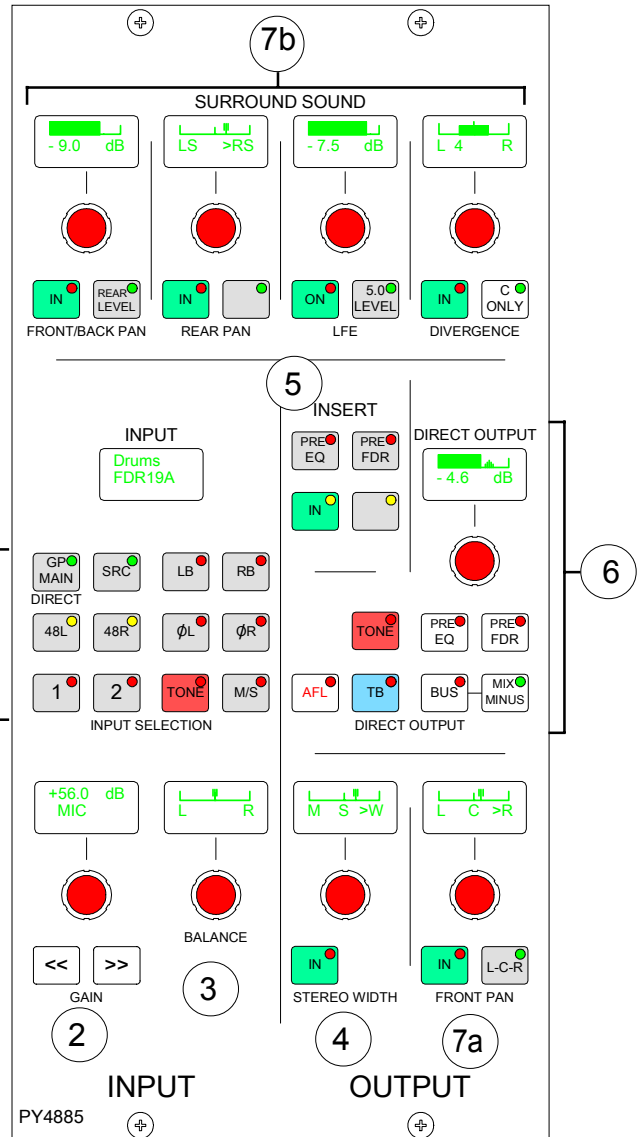
(2) Gain Adjustment

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 -18dB to +78dB for mic/line inputs, -18dB to +24dB for digital inputs, and ∞ to +10dB for direct inputs.

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. 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. The gains are linked by pressing the input 1 and 2 buttons simultaneously. This behaviour is turned on using the States screen.

(3) Balance Control

Operates as a balance control on stereo channels only. With LB or RB selected, this control acts as an input pan control. With a surround master selected, this control acts as an input gain trim control.



INPUT/OUTPUT CONTROLS

(4) Width Control

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

(5) Inserts

Assignable inserts can be patched in and out of the channel path, using the IN button. The buttons allow the insert to be patched post fader, pre fader or pre EQ. Assignable inserts must first be set up using the I/O Matrix or I/O screens.

(6) Direct Output and Mix Minus

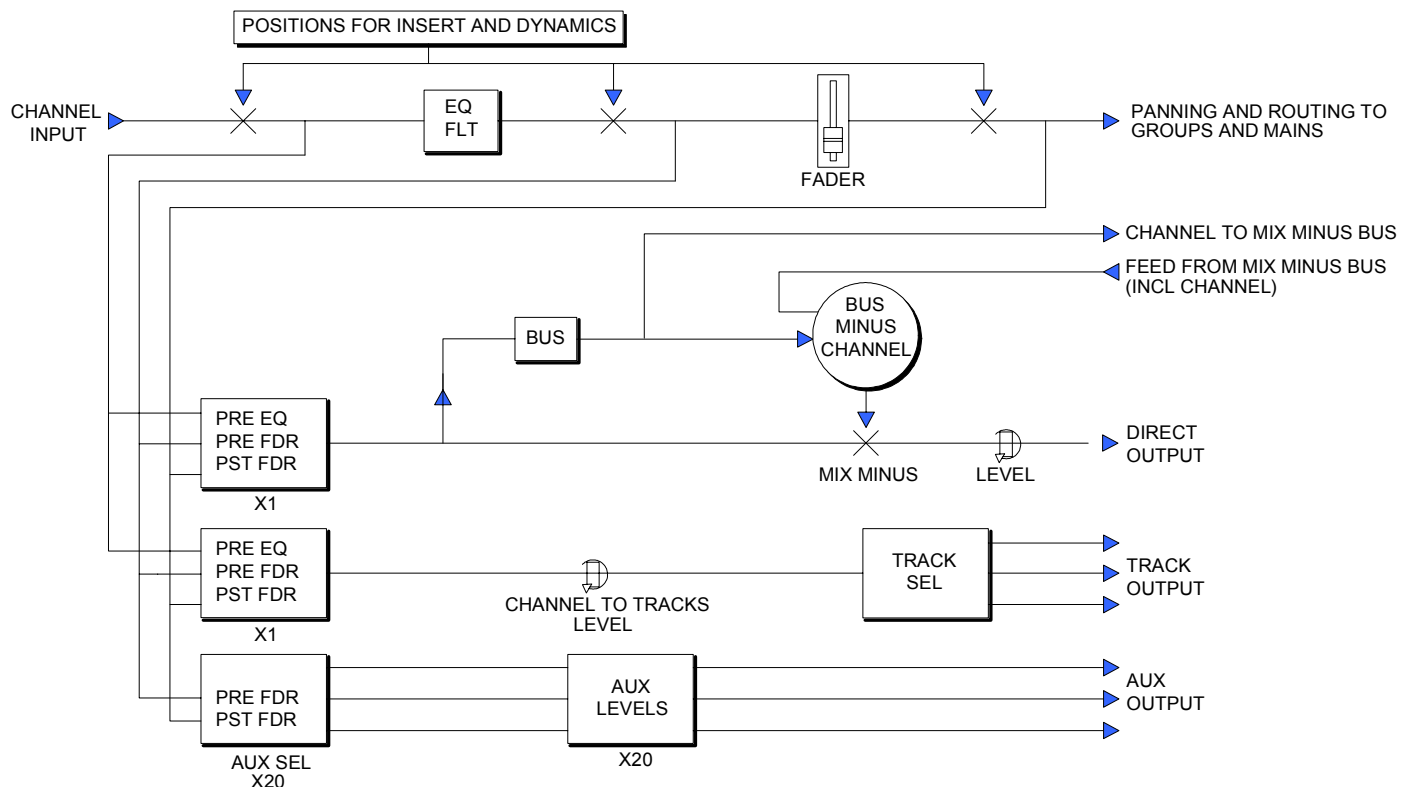
In the direct output section, the channel or group's direct output is post-fader, or can be set to Pre-EQ or Pre-fader using the selection buttons. Its level is adjusted using the rotary control.

The BUS button feeds the direct output signal to the mix minus buss. The output of the mix minus buss feeds back into the channel (or group) where the channel's signal is subtracted.

The MIX MINUS button then feeds the resulting signal to the direct output. Therefore, every channel can produce a mix minus output which is a mix of all the channels routed to the buss 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 buss, even if the channel is not feeding the buss.

All surround channels and groups have surround direct outputs with the option to downmix the output to stereo instead. The mix-minus of a surround direct output is a true mix-minus of the whole surround channel or group.



NOTE: SOME CHANNEL FEATURES ARE OMMITED HERE FOR CLARITY REASONS

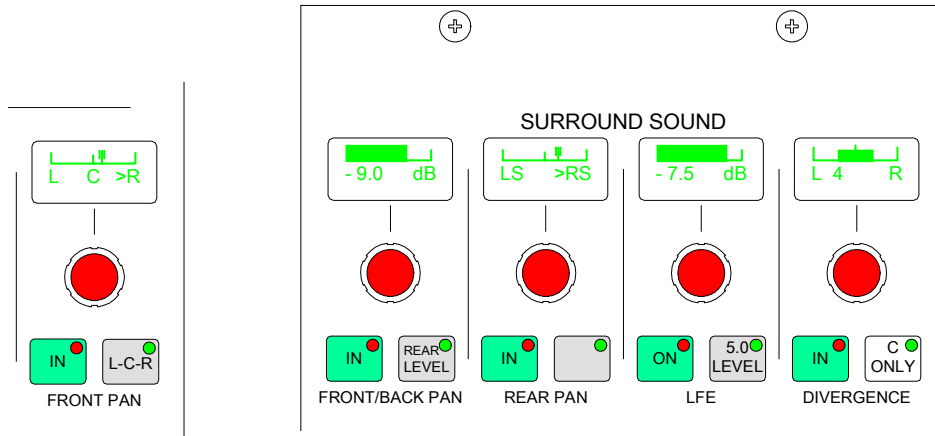
(920-546)

INPUT/OUTPUT CONTROLS

(7a & 7b) 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, provided that the monitoring is surround.



Front Pan

The Front Pan allows the front signal to be panned from left, through centre, to right. On stereo channels and groups, the L-R PAN acts as a balance control.

Front/Back Pan

The Front/Back pan control pans the signal between Front and Back. When Rear Level is switched IN, the levels to the rear and front are controlled separately. This allows signal to be fed to the rear without affecting the balance of the mix in the front speakers. Also, the front signal can be turned off and a level set to the rear which is different to that being sent to any stereo groups or mains which the path is feeding.

Rear Pan

The Rear Pan allows the rear signal to be panned from Ls to Rs.

LFE and 5.0 Level Control

The LFE ON button allows the rotary control to adjust the level of the LFE independently of the rest of a surround signal. With 5.0 LEVEL selected, the control adjusts the level of all the surround legs except for the LFE. The 5.0 level is independent of the LFE level.

Divergence

The divergence controls set an amount of the centre signal to also feed to the left and right. Divergence does not operate on stereo channels and groups. The C ONLY button connects the channel output to the centre bus only. All other panning controls are disabled. The channel is fed to both left and right of stereo busses. On stereo channels and groups, C ONLY feeds a mono reduction of the stereo signal to the centre bus only.

Stereo and surround panning controls are strengthened with the inclusion of the optional motorised joystick panel.

MOTORISED JOYSTICK PANEL

The joystick panel is available as either a single joystick, or twin joysticks. 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.

The joysticks are touch-sensitive, and the TOUCH LED lights when the joystick is touched. 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 surround sound 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 Input/Output panel.

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, then 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

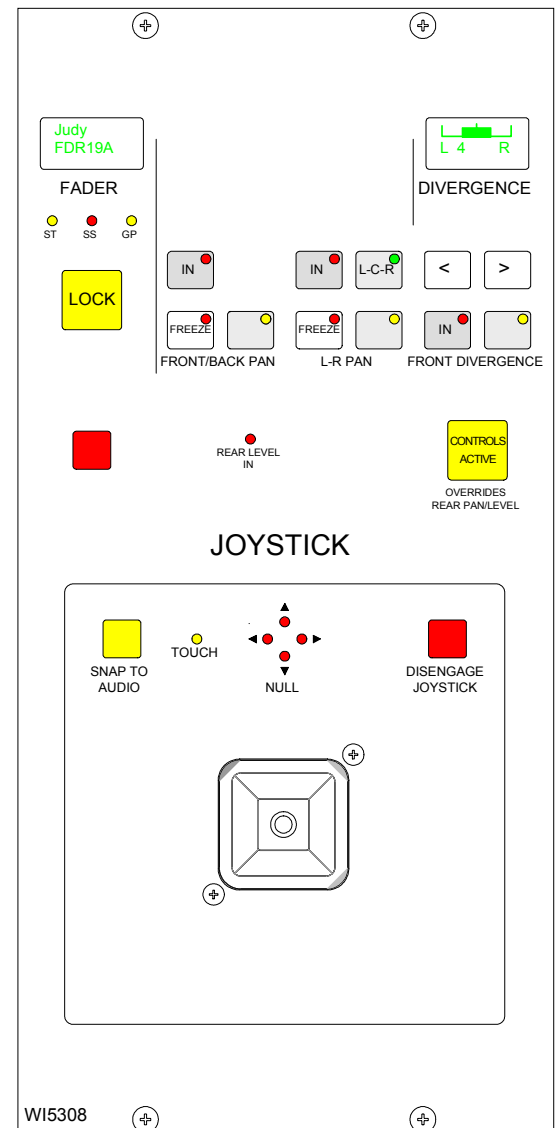
When freeze is pressed on either axis, the joystick ceases to alter that axis. Freeze does not affect the Input/Output panel or Wild controls, they can still alter the frozen axis. The null LEDs show which direction the joystick must be moved to match the audio.

Disengage

When the joystick is disengaged, it does not control or move to follow the audio. 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.





This screen allows specific amounts of delay to be applied to the currently assigned channel path. Alternatively, the user can choose to control the delay assignment and values of a different fader, known as the “PC Fader” to which settings can be applied independently of the current assignment. Control is chosen using the selection buttons.



There are 256 mono legs of delay available for inputs and 128 mono legs 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:

Inputs:

- Either or both channel inputs (1 and 2)
- Channel, group and main insert returns
- A second leg of delay on either or both channel inputs (to allow up to 5.46 seconds)

Outputs:

- Channel and group insert sends
- Channel and group direct outputs

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 0.1ms steps using the rotary control, and 10ms steps using the nudge buttons. The RESOURCE USED display shows the number of legs assigned.

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

DELAY

Interrogation

Holding down the interrogate button will indicate the channels which have delay assigned by lighting their fader assign buttons (all other fader assign buttons will be extinguished). It is not possible to perform interrogation when controlling a “PC Fader”.

PAL Frames, NTSC Frames or ms

The selection buttons on this screen allow the information to be displayed in ms, PAL frames or NTSC frames. Changing the display units also affects the resolution of the delay shaft, nudge up and nudge down buttons accordingly.

Delay on Surround Channels

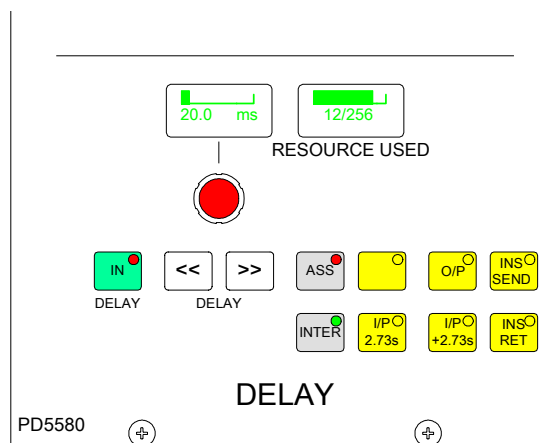
Surround channel delay is assigned and adjusted only from the surround master. Each spill leg of a surround channel will always have the same delay properties. The delay setting of an individual spill leg are not independently assignable or adjustable. The delay settings of a spill leg cannot be cleared independently of its surround master.

When delay is assigned to a surround channel then six delay legs are used. If there are not enough free delay blocks then delay is not assigned to any part of the surround channel.

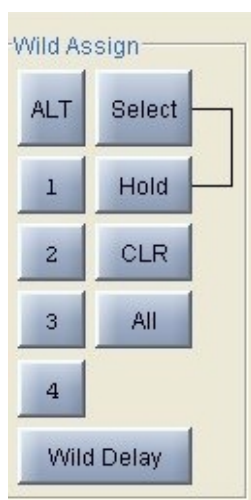
Optional Delay Panel

The Delay panel provides a set of delay controls on the control surface in addition to those already available on the Panels-Delay screen. Display units are not adjustable on the optional delay panel.

Delay controls can be assigned to Wild controls, such that the delay value can be adjusted using the channel control module. If the wild shaft push feature is enabled on the Options-Misc screen, then the wild delay control shaft can be used to switch the delay in and out of the channel's path.



If the optional Input Delay panel is not used, delay can still be assigned to Wild controls using the User-Chan screen. A screen button is provided, for use instead of the rotary control push-switch.



ALPHA CHANNEL FUNCTIONS



FUNCTIONS CONTROLS

The Functions Panel is used to control:

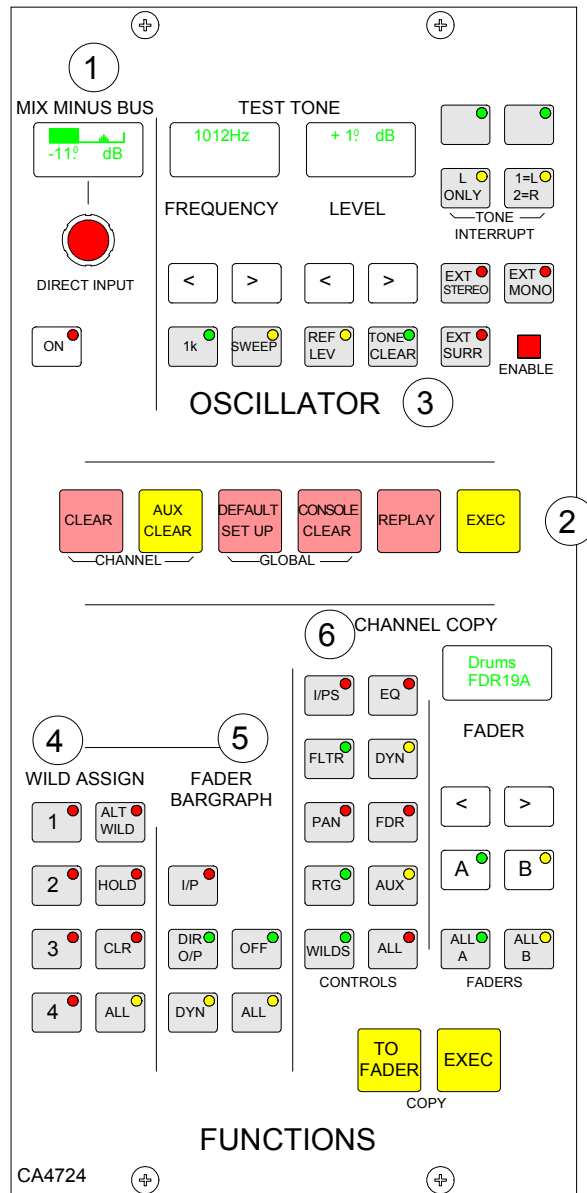
- (1) Mix minus buss and direct input level and switching
- (2) Console-wide and channel clearing functions
- (3) Oscillator Controls
- (4) Assignment of the Channel Control module's Wild controls
- (5) Fader bargraph function settings
- (6) Channel Copy

Mix Minus Buss and Direct Input

The mix minus buss and direct input are switched ON or OFF using the button, and a rotary control is provided for level adjustment. The port for this is patched on the I/O - Input screen.

Console Functions

- CLEAR** CHANNEL CLEAR - Clears the currently assigned channel from all settings apart from the port assignment.
- AUX CLEAR** CHANNEL AUX CLEAR - Clears the Auxiliary send settings for the currently assigned channel.
- DEFAULT SET UP** DEFAULT SET UP - 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.

- CONSOLE CLEAR** GLOBAL CONSOLE CLEAR - Clears the console of all settings
- REPLAY** REPLAY - This button is not used.
- EXEC** Clear, Aux Clear, Default Set-up and Console Clear flash when pressed 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.

OSCILLATOR CONTROLS

The Oscillator controls are used to generate test tones for alignment and testing. The Enable LED lights to show that the Oscillator controls are enabled.

Frequency

The frequency of the tone can be adjusted from 20Hz to 20KHz in incremental steps using the nudge buttons, or set to 1KHz 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 -60dBFS to 0dBFS 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 paths. They allow the tone to be interrupted on the left side only, or on the left and right sides in an alternating pattern.

External Mono, Stereo or Surround Oscillator Input

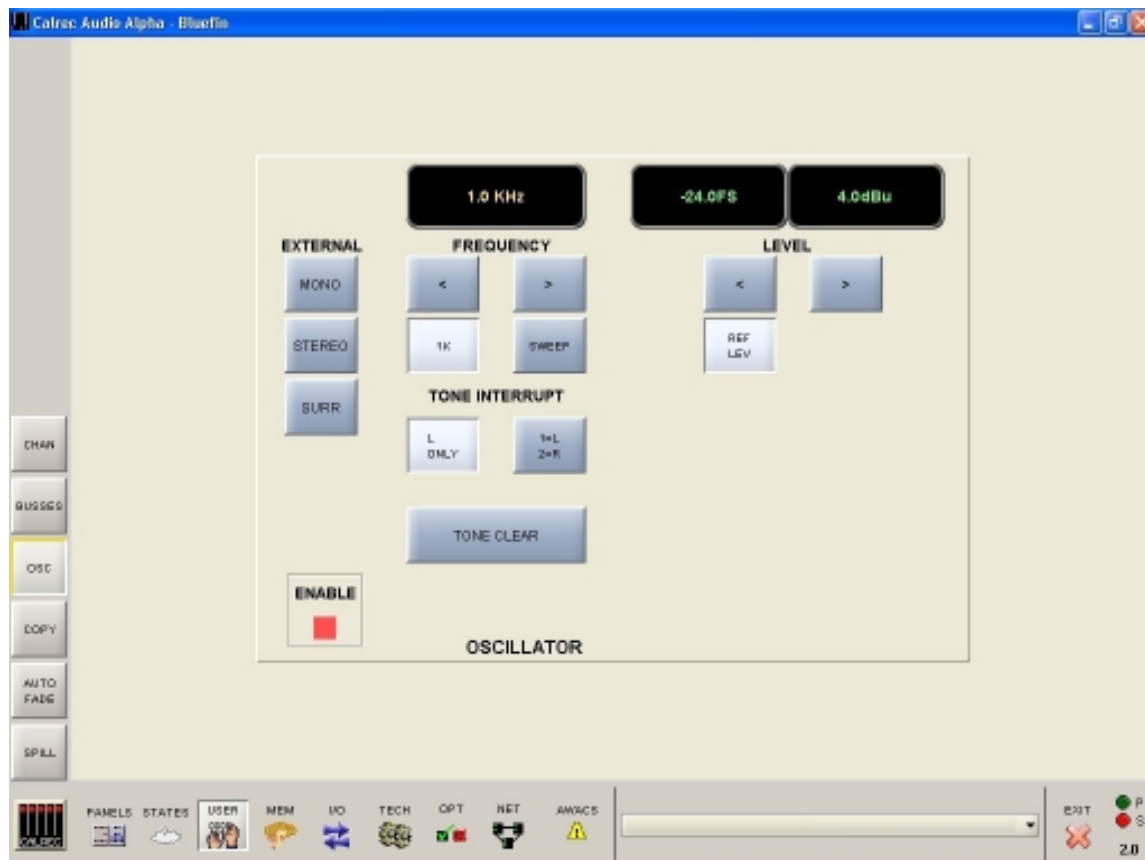
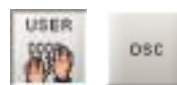
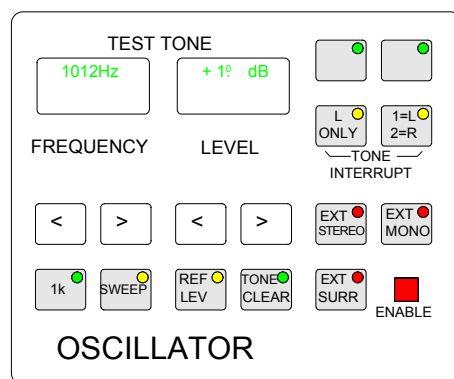
EXT MONO, EXT STEREO or EXT SURR replace the tone with a mono, stereo or surround external source of your choice. This allows for external oscillators to be used if preferred. The ports for this are set up on the OPT-MON I/P & TB screen.

Clearing Oscillator Routes

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

User - Oscillator Screen

The oscillator can also be controlled using the USER-OSC screen.



WILD CONTROL ASSIGNMENT

The Wild controls in each fader's channel control section are assigned either from the controls on the FUNCTIONS panel, or 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 control to a Wild control as follows:

- Select the required fader by pressing its fader assign button (A or B).
- Select WILD ASSIGN 1, 2, 3 or 4.
- Push one Assign panel rotary control. For example, Aux 1 Send.

Aux output controls cannot be assigned to Wild controls. If the fader is touched instead of pushing an Assign panel rotary control, then the fader for the alternate layer will be assigned to the Wild 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.

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

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.

After selecting Wild 1, 2, 3 or 4, press HOLD, then a number of fader paths can be selected individually by pressing their fader assign buttons (A or B). Pushing an Assign panel rotary control will assign that control to all selected faders.

A block or region of faders can be defined by holding down HOLD and then pressing the fader assign buttons of the first and last fader path in the required region. Pushing an Assign panel rotary control will assign that control to all fader paths in the selected region.

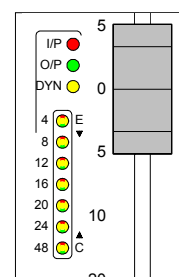
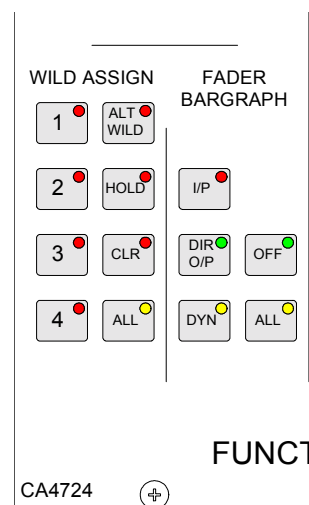
It is possible to assign the same control to Wilds 1, 2, 3 or 4 for all fader paths by selecting ALL before pushing the required Assign panel rotary control.

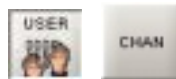
Alternate Wild Controls

The ALT WILD button allows switching between two complete sets of Wild settings. This would then allow up to 8 available Wild controls per fader.

Fader Bargraph Assignment

Buttons I/P, DIR O/P, DYN and OFF on this panel will set the function of the fader bargraph for the currently assigned fader, to either the channel input (post the input gain and the tone switching), the channel direct output, or the gain reduction of the dynamics. If ALL is pressed first, all fader bargraphs will be set to the selected function. Fader bargraph assignment is also definable on the USER-CHAN screen.





This screen provides alternative controls for channel functions already available on the I/O Matrix and Functions panels. 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.

The MONO, STEREO and SURROUND buttons 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.

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 downmix the output to stereo.

A or B paths can be moved or swapped from one fader to another, using the MOVE PATH buttons. To move paths, 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.

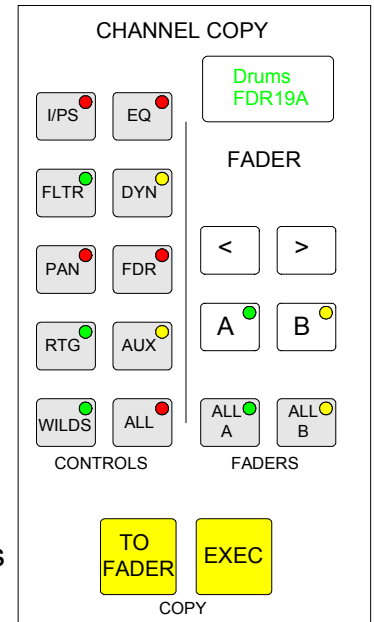
The Wild assignment controls on this screen are a duplication of the controls already available on the Functions panel. In addition, a button is provided with which the user can assign delay controls to a Wild control. This is for use where the console does not use the optional Delay panel.

Buttons to set the function of the fader bargraph are available on this screen in addition to those on the Functions panel.

CHANNEL COPY

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

1. First select the fader path you wish to copy, by pressing its fader assign button. The nudge buttons (< and >), plus A and B, can also select the channel to be copied.
2. Select the controls you want to copy, using the selection buttons I/PS, EQ, FLTR, DYN, PAN, FDR, RTG, AUX, WILDS or ALL.
3. 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. In addition to any multiple destinations set, an individual destination can be chosen using the nudge buttons and the keypad on the I/O Matrix panel.
4. Once all destinations have been chosen, the EXEC button executes the Copy.



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

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.

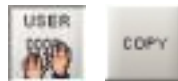
If the source is a stereo or mono channel and the destination is a surround master the master receives the copied settings and then applies them to all its non-independent spill legs.

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.

- I/Ps copies LB, RB, \emptyset L, \emptyset R, M/S and balance settings (only \emptyset for mono channels) for inputs 1 and 2, and also the input gains, SRC or phantom power when the inputs are of the same type.
- EQ and FLTR copy EQ and filter settings (includes IN/OUT, Alternate, CH or DYN and surround spill independence settings).
- DYN copies the dynamics settings but not whether the EQ or filters are switched in the dynamics. Any surround spill control and link independence settings are copied.
- PAN copies pan and width settings as appropriate.
- FDR copies the 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.

CHANNEL COPY

User-Copy Screen



In addition to the controls on the Functions Panel, the User-Copy screen allows copy functions to be carried out from the screen.

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.

EQ AND FILTERS

The Equaliser panel controls EQ and Filters on the channels and groups. As console processing is not pooled, EQ can be assigned to every channel and group, without fear of running out.

The frequencies of the currently assigned path can be adjusted using the following controls.

(1) Filters

- LF 12dB/octave plus notch, 20Hz to 330Hz
- HF 12dB/octave plus notch, 3.3kHz to 20kHz

(2) Equaliser

- LF 30Hz to 470Hz, shelf or bell (Q of 1)
- LMF 160Hz to 2.4kHz, Q from 0.3 to 10
- HMF 500Hz to 7.5kHz, Q from 0.3 to 10
- HF 1kHz to 16kHz, shelf or bell (Q of 1)

EQ level controls are adjustable by $\pm 15\text{dB}$. Excessive control ranges are deliberately avoided to simplify operation.

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

Control Assignment

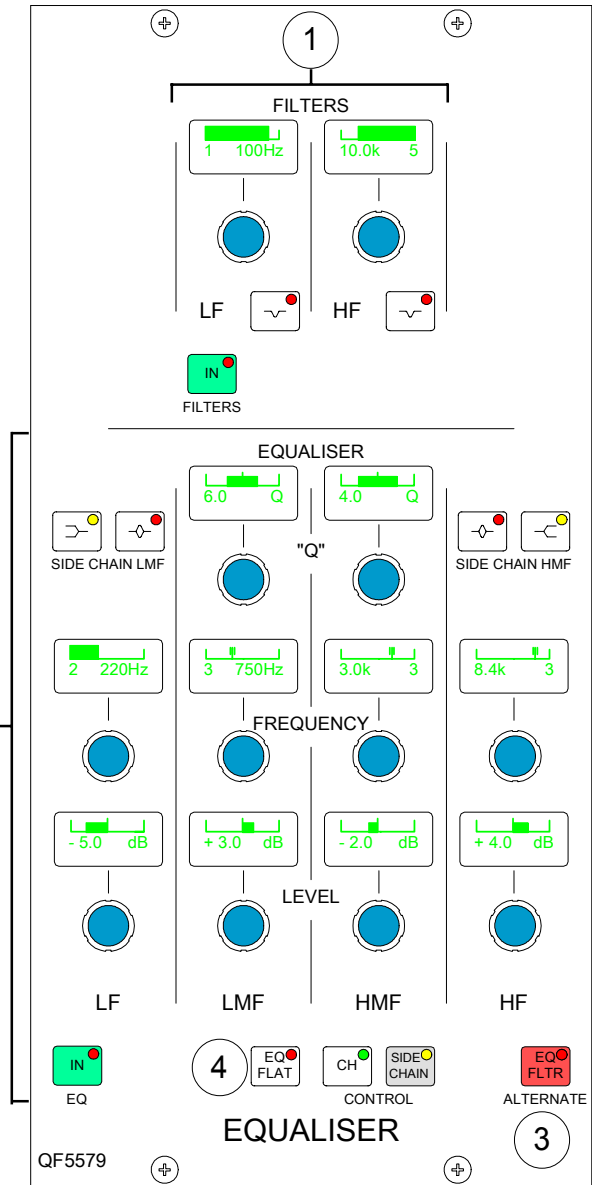
The CH button allows the panel to control the EQ and Filters in the assigned channel or group. The SIDE CHAIN button allows the panel to control the EQ and Filters in the *dynamics* of the assigned channel. There are 4 bands permanently available in the side chain in addition to the 6 bands available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

(3) Alternate EQ

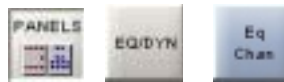
The ALTERNATE EQ FLTR button allows switching between two complete sets of EQ and Filter controls.

(4) EQ Flat

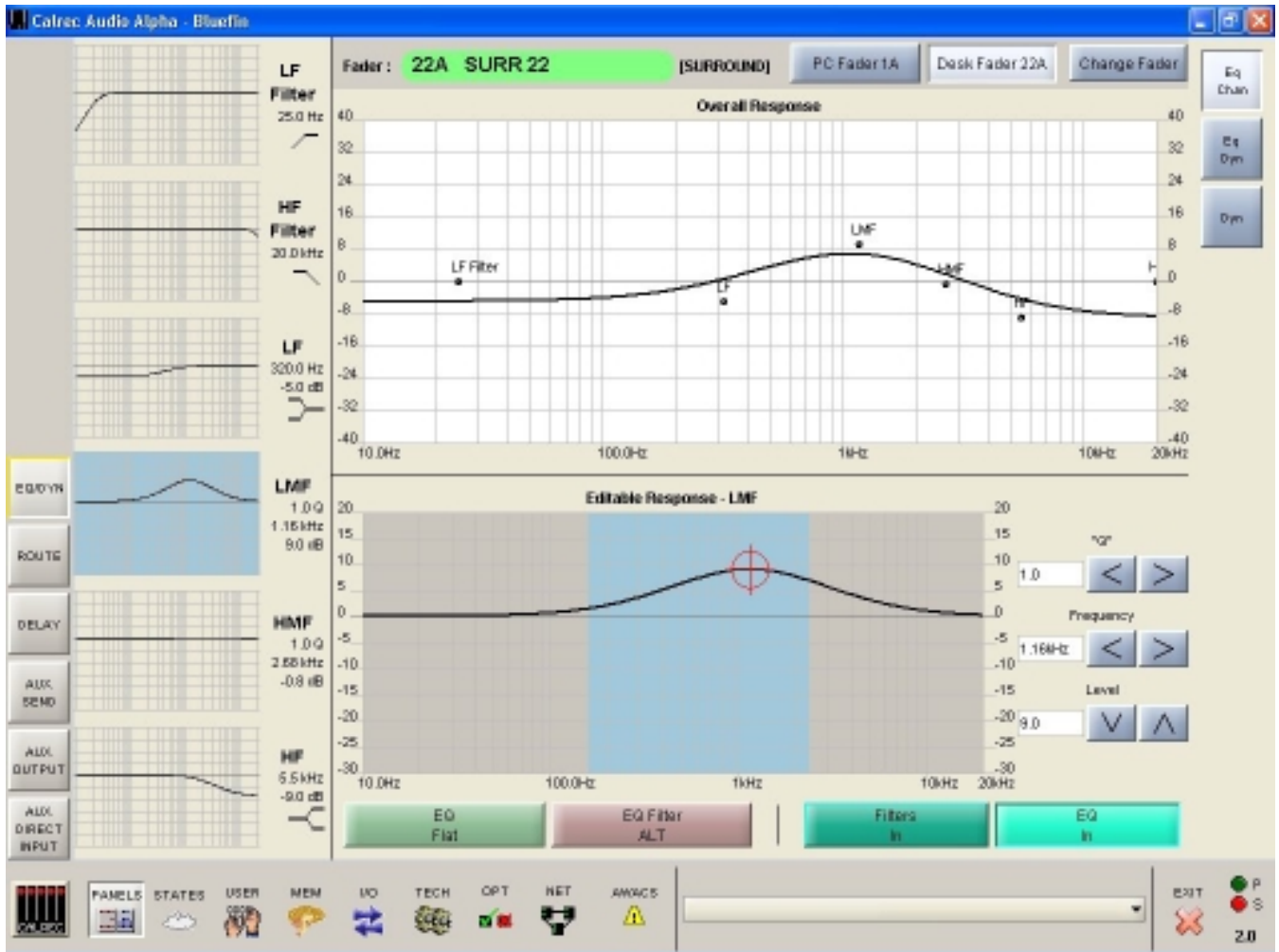
EQ FLAT will clear any EQ settings to flat. The button must be pressed and held down, this prevents against accidental flattening of settings.



PANELS – EQ SCREEN



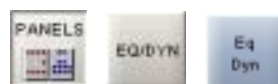
The user can view and manipulate the EQ and filter response curves, using the Panels-EQ screen. All of the controls available on the EQ panel are also available on this screen. In addition, the user can choose whether to control the EQ and filters of the currently assigned fader path, or to select a 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 panel controls compressor and expander or gate, on channels and groups, and compressor on main outputs. As console processing is not pooled, dynamics can be assigned to every path, without fear of running out.

The dynamics of the currently assigned fader path can be adjusted using the following controls.

(1) Compressor

Threshold +20dB to -20dB

Recovery 75ms to 4 sec + AUTO

Ratio 1 to 50

Attack 50µs to 30ms

(2) Expander

Threshold +10dB to -40dB

Recovery 75ms to 4 sec + AUTO

Depth 0dB to 40dB

Fast attack 300µs (normal 16ms)

Ratio 2/1 and VAR (variable - according to level)

(3) Gate

Threshold 0dB to -40dB

Recovery 75ms to 4 sec + AUTO

Depth 0dB to 40dB

Fast attack 300µs (normal 16ms)

Gate delay 0 to 1 sec in addition to 6dB hysteresis

(4) Gain

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

(5) Dynamics Linking

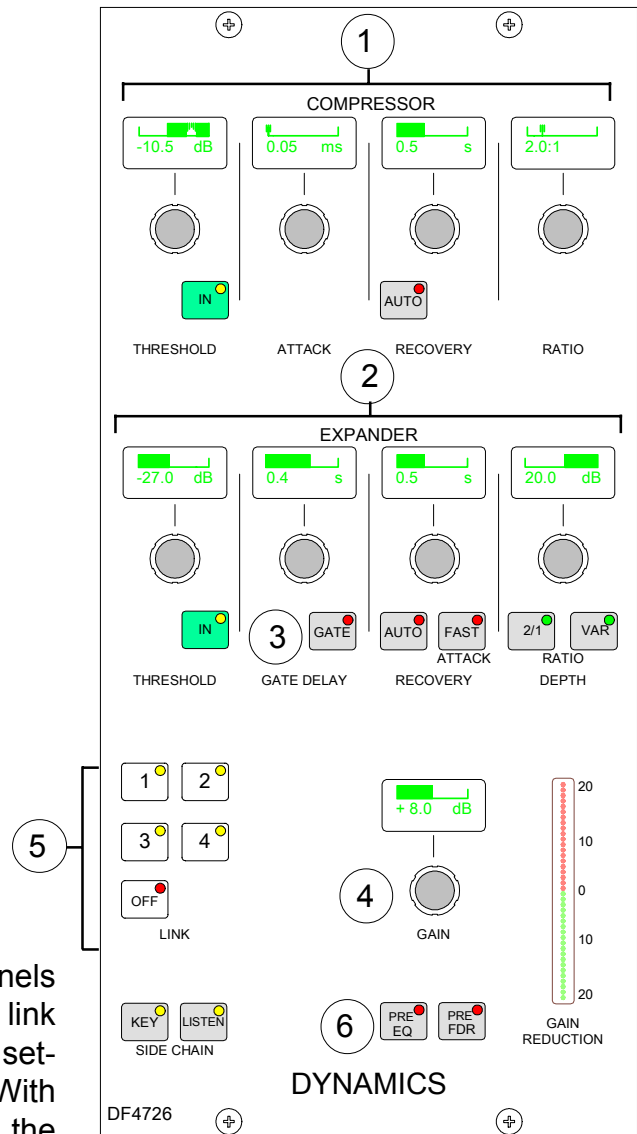
It is possible to have the dynamics of many channels linked by assigning them to one of four available link busses. This is useful for when the same dynamics settings need to be applied to more than one channel. With the channel selected, press 1, 2, 3 or 4 to assign the channel to the buss.

Each surround channel or group has its own dynamic link bus to which the surround master and all its spills (except the LFE) are associated when the surround channel is created.

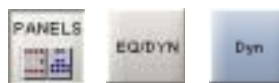
(6) Pre EQ or Pre Fader

The dynamics can be applied Pre EQ or Pre Fader. The Pre EQ button will not function on group and main paths.

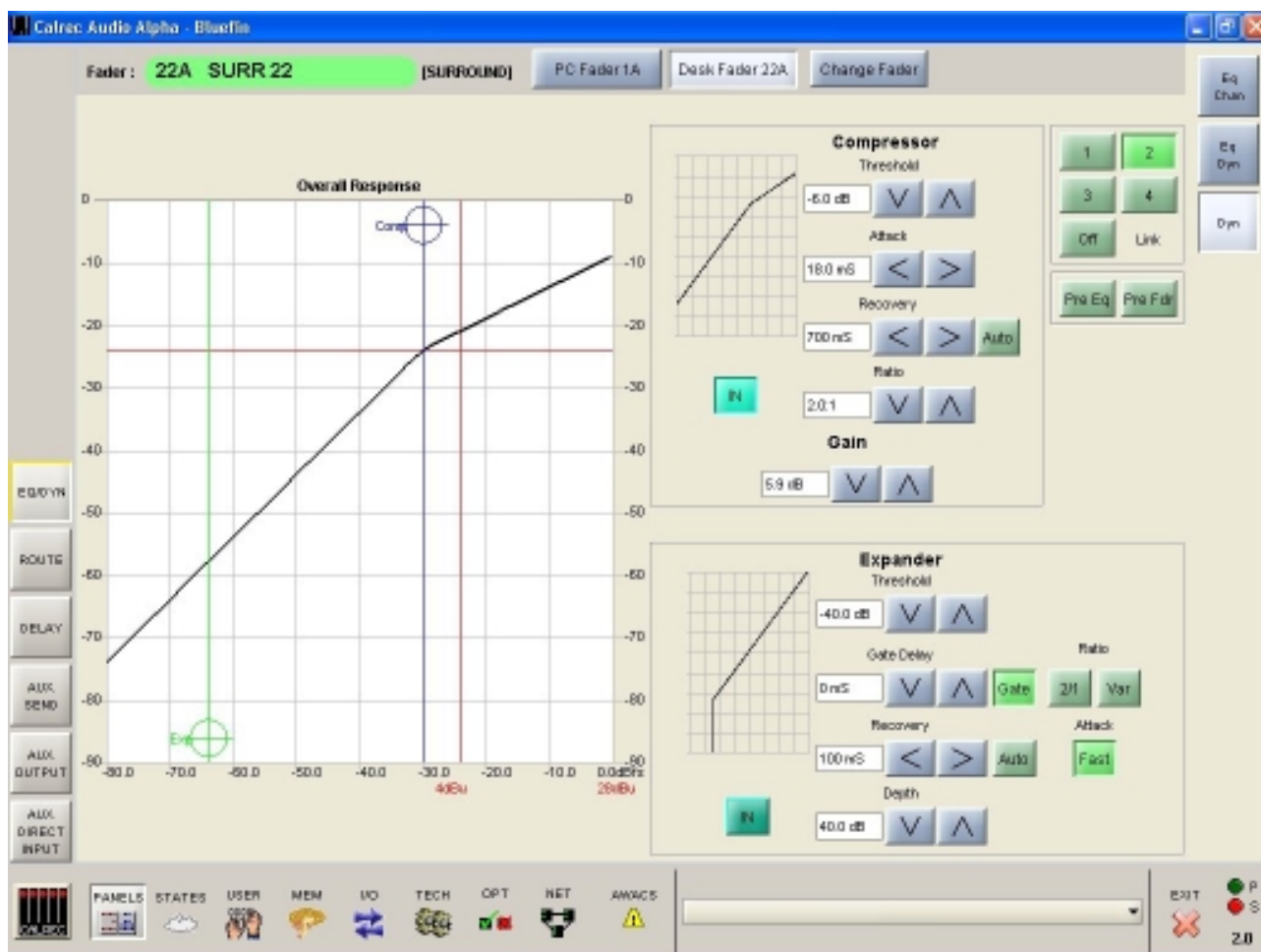
A 0dB setting on the dynamics equates to the chosen reference level for the console.



PANELS – DYNAMICS SCREEN



The user can view and manipulate the dynamic response, using the Panels-Dynamics screen. All of the controls available on the dynamics panel 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.

ALPHA BUSSES



ROUTING PANEL

Routing Buttons

Routes for the selected channel can be made or removed by pressing the numbered buttons on the routing panel. These selection buttons are duplicated on the accompanying Panels-Route Screen.

To route several adjacent channels to one buss, the nudge buttons (on the Functions or I/O Matrix panel) can be used to quickly select the channels.

Interrogate Mode

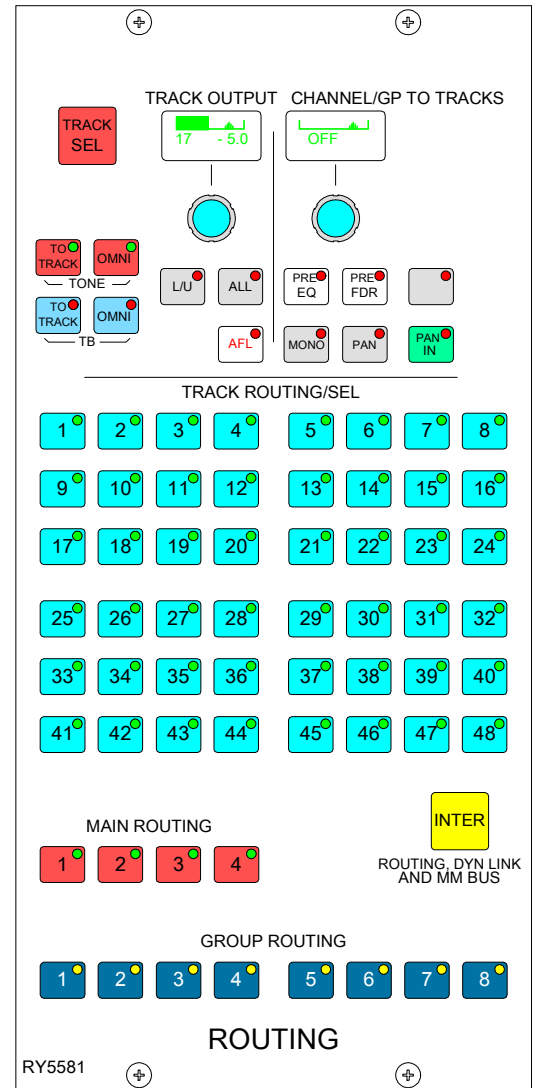
It is possible to discover which fader paths are feeding each of the routing busses by putting the panel into “Interrogate” mode. This is done by pressing the INTER button. If any of the routing buttons (groups, mains, tracks) are held down, the fader assign buttons of all the paths feeding that buss 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 Input/Output panel.

Reverse Routing

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

Tracks (General Purpose Buss Outputs)

The Channel/Group to Tracks section controls the signal, from the channel or group, feeding the track routing selector.



The Pre-EQ and Pre-Fader buttons act as a cancelling set. When none are selected the signal is sent to the track routing selector Post-Fader.

PAN makes the control into a Pan control (Balance on stereo paths). Routing is left to odd tracks, right to even tracks.

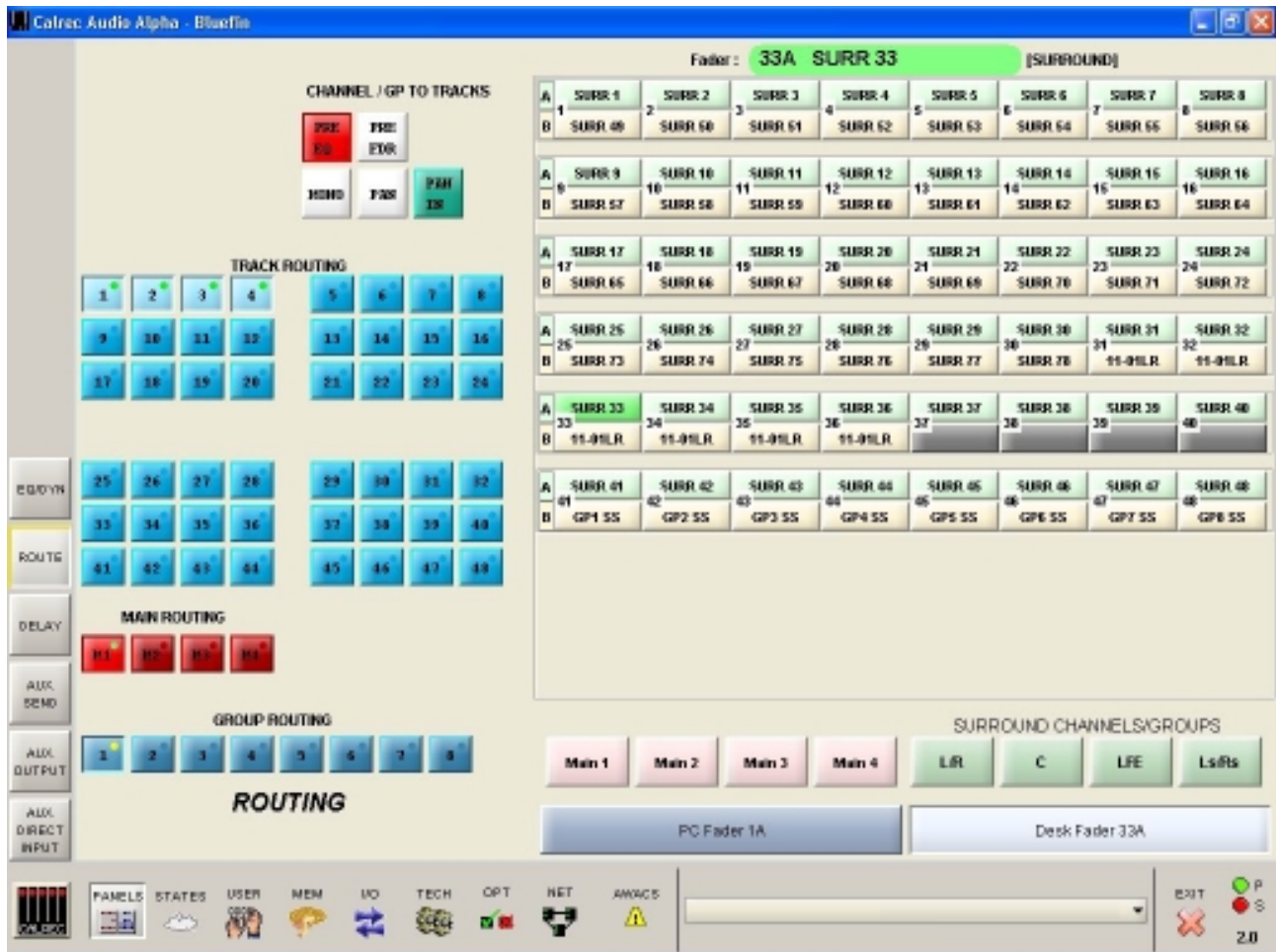
On stereo paths, the mono button monos the signal after the balance control. The mono signal can then be routed to any track. This allows the mix of left and right to mono to be adjusted for when the signal is dual mono.

The Track Control section of the Routing panel, controls the output to the multi-track, after the track mix. These outputs can also be used as IFB or general purpose buss outputs. 48 optional bargraphs can be fitted to monitor the output level.

The track output being controlled is selected by the Track Sel button plus the track routing buttons 1-48. ALL makes the control a master, controlling all the tracks at once.

Tone or Talkback can be fed to the selected track output. The OMNI buttons feed tone or talkback to all the track outputs.

PANELS-ROUTE SCREEN



This screen provides alternative controls for the routing, in addition to the Routing panel. In addition, the user can choose whether to control the routing of 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. Control is chosen using the selection buttons “PC Fader” and “Desk Fader”

The right side of the screen has buttons for channel paths A and B, and Mains 1-4. To make changes, select the required path and use the buttons on the left side of the screen to choose the routing.

AUXILIARY CONTROL PANEL

The Auxiliaries panel controls 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 buss. Each feed is post the channel or group fader, but can be pre fader, selected using the PRE button.

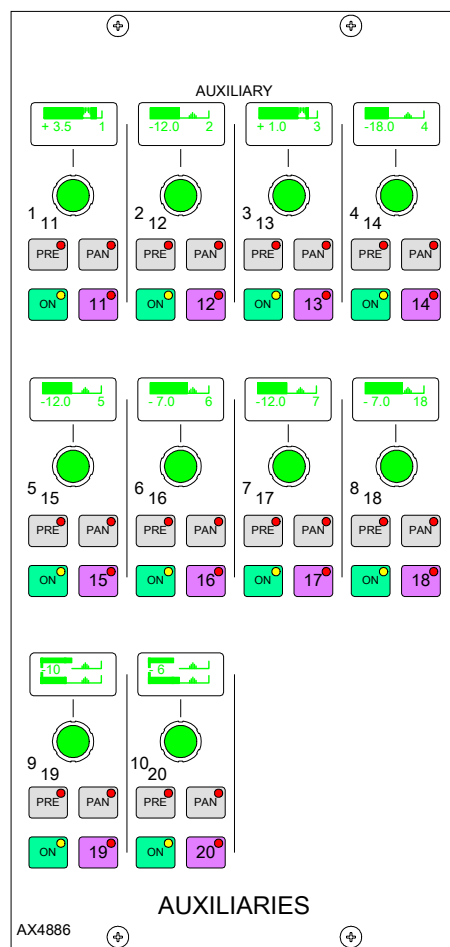
There are 20 mono auxiliary output busses, which can be paired up to be used as stereo auxiliary output busses. The busses are pre-set to be mono or stereo on the USER-BUSSES screen. If, for example, aux 9 is set to be stereo, then aux 19 will not be available (and Aux 19 will not work on the Monitor Selector panel). When a pair of auxes are changed in this way, all settings of the pair are cleared.

On mono auxiliaries, buttons 11 to 20 switch the control to that numbered aux send.

On stereo auxiliaries a dual level display will be shown. For example, aux 9 and 10. Here buttons 19 and 20 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.

The aux output levels and direct input switching and levels are controlled on the Auxiliary Output panels.



User - Busses Screen



Options are available on the USER-BUSSES Screen 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.

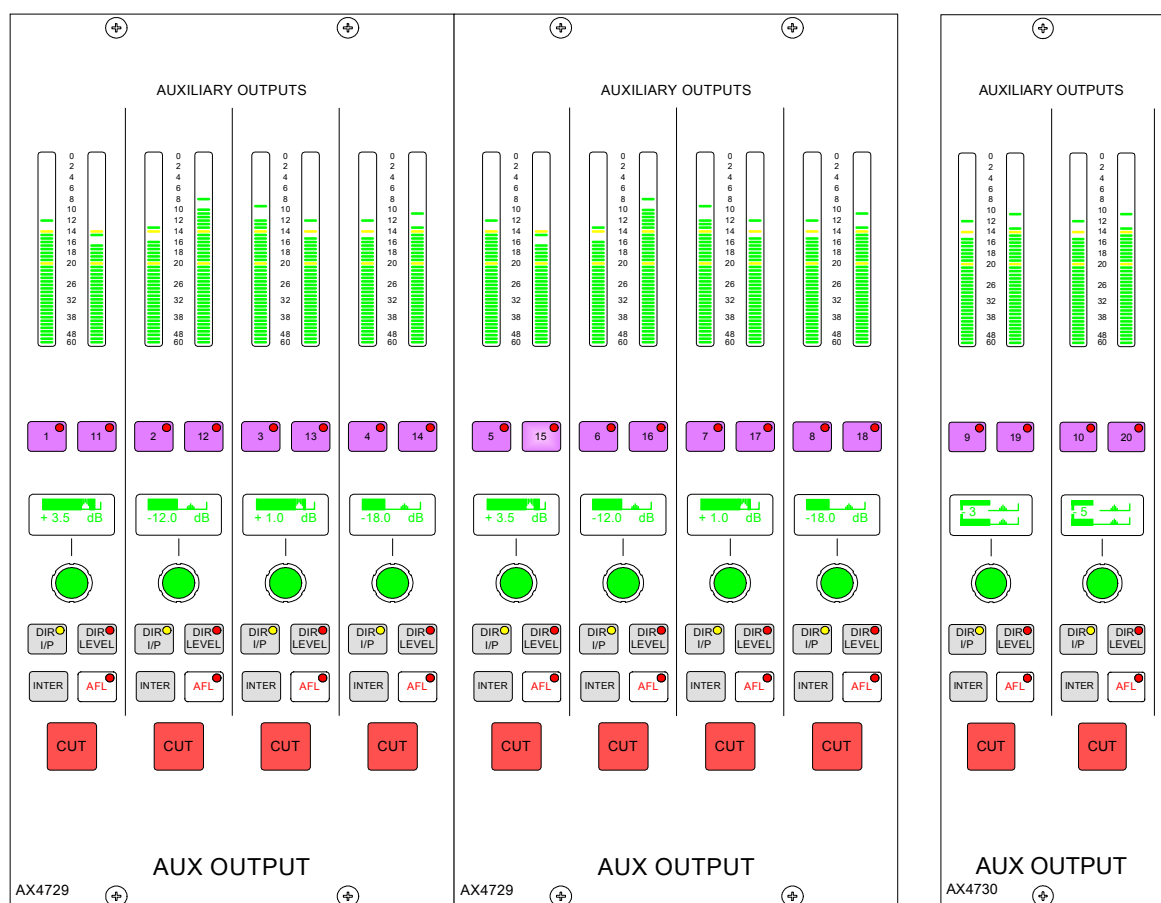
The bird beater option mutes the auxiliary pre-fader send when it's fader is open and not cut. Therefore, closing the fader or using the cut switch enables the auxiliary pre-fader send. One use of this feature is to give the producer a feed to the "cue speaker" when the announcer or commentator microphones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

Panels - Aux Send Screen



The user can view and adjust the Auxiliary send controls using the Panels - Aux Send screen. All of the controls available on the Auxiliary panel are also available on this screen. In addition, the user can choose whether to adjust the Aux send settings of the currently assigned fader path, or to select a different fader, known as the "PC Fader" to which aux send settings can be applied independently of the current assignment.

AUXILIARY OUTPUT PANELS



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. On stereo auxiliaries a dual level display will be shown, for example, aux 9 and 10. Here, buttons 19 and 20 will be inoperative. There cannot be a level offset on the output display.

Aux Output Buss Interrogation

It is possible to discover which fader paths are feeding each of the aux output busses by holding down the Interrogate button (momentary). The fader assign buttons of all the paths feeding that buss will remain lit, and the fader assign buttons of all other paths will cease to be lit. Paths can be added or removed from the buss under interrogation, by selecting or de-selecting their fader assign buttons.

Aux Direct Input

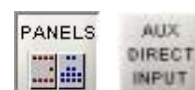
DIR I/P switches on the direct input to the auxiliary buss. DIR LEVEL makes the rotary control into the direct input level control.



Panels - Aux Output Screen

The user can view and adjust the Auxiliary output controls using the Panels - Aux Output screen. All of the controls available on the Auxiliary panel are also available on this screen. In addition, the user can choose whether to adjust the Aux output settings of the currently assigned fader path, or to select a different fader, known as the "PC Fader" to which aux output settings can be applied independently of the current assignment.

A similar screen exists with which to control the Aux direct input.



MAIN OUTPUTS PANEL

The fader assign button on each main fader calls the main output to the Assign panels to allow:

- Routing (of one main to another - indicated on the routing LEDs above the faders)
- Insert on/off
- Control of the Compressor and direct input

Surround and Stereo Main Outputs

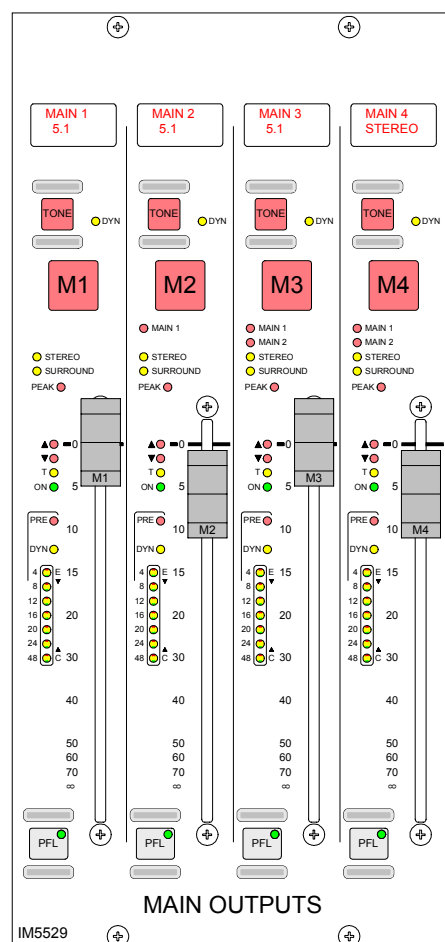
Each main output can be set to be either surround or stereo. Surround mains are 5.1 plus a rear downmix to allow a simultaneous LCRS. There is also a stereo downmix and a mono downmix (potentially 10 outputs for each surround main).

The insert and direct input are also surround.

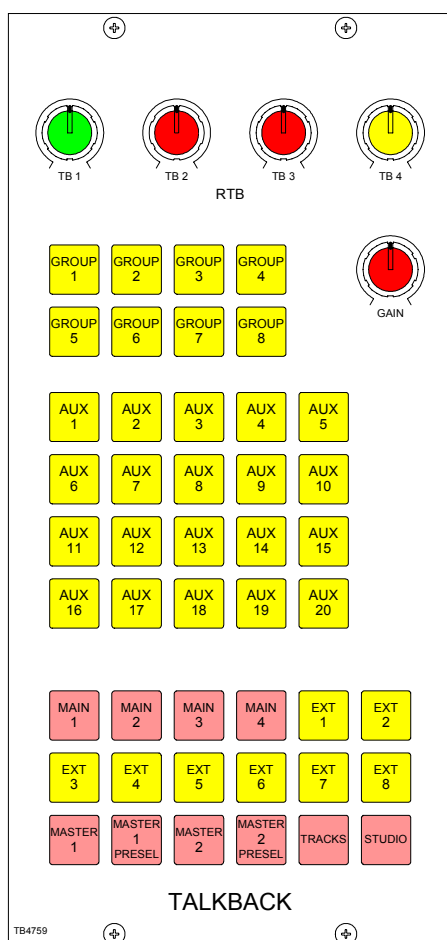
If a surround main is routed to a stereo main, the stereo downmix will be routed.

Main Meters

The main output meters display the stereo downmix if the output is surround. If the main line monitor is set to be fed back from the studio distribution via external inputs to the desk, then the meters will display this instead.



TALKBACK



Talkback is available to all groups, mains, auxes and 8 external sources (via relay switching) using the buttons on this panel. Talkback is also available to direct outputs and individual tracks using the buttons on the channel control panels, Input/Output panel and Routing panel.

MASTER 1 and 2 operate all the TB buttons which have been preselected by the respective PRESEL button.

All Talkback buttons are subject to On-Air inhibits, set up on the TX/REH screen.

The GAIN control sets the level of the talkback microphone.

TB1 to TB4 set the level of 4 RTB (Reverse Talkback) signals.

There can be a mix of all four signals to feed a single loudspeaker. This can mix with the PFL feed to the PFL loudspeaker.

BROADCAST FACILITIES

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 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.

Power Supply Monitoring

The rack mounted PSU monitoring and distribution module monitors the power supplies for failures, and ensures automatic changeover to the spare should a fault develop. 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 this mode, in the unlikely event of a second PSU failing, the light will begin to flash again.



AWACS

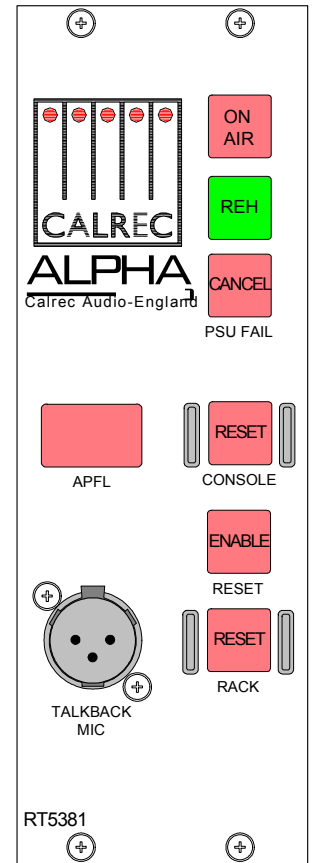
If a problem does develop, the PC will report this on the Automatic Warning and Correction System (AWACS) screen. The AWACS icon will flash to draw attention to the report.

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.

Console Reset

Pressing the 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.



ALPHA MEMORY SYSTEM



MEMORY CONTROLS

Once the console has been set up as required, its settings can be saved in the memory system. Up to 99 memories can be held in the Flash ROM for different console arrangements. In addition to this, an unlimited number of memories can be backed up to the PC's hard disk and recalled into the Flash ROM at a later date quickly and easily. Memories can be stored to removable media.

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 is 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 be stored in the “Hidden” memory so that they are restored after a power down.

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 launches the Selected Memory into the Live Memory position, overriding the previous console settings.

Choosing the Selected Memory

Select SEL MEM and enter the two digit memory number followed by EXEC on the keypad to call that memory number into the Selected Memory position. The Selected Memory can also be selected from the Flash ROM list on the left of the MEM-SETUP screen.

Clearing the Selected Memory

The contents of the Selected Memory can be cleared by pressing SEL MEM + CLR + EXEC on the keypad or selecting CLR MEM on the MEM-SETUP screen.

Saving Memories

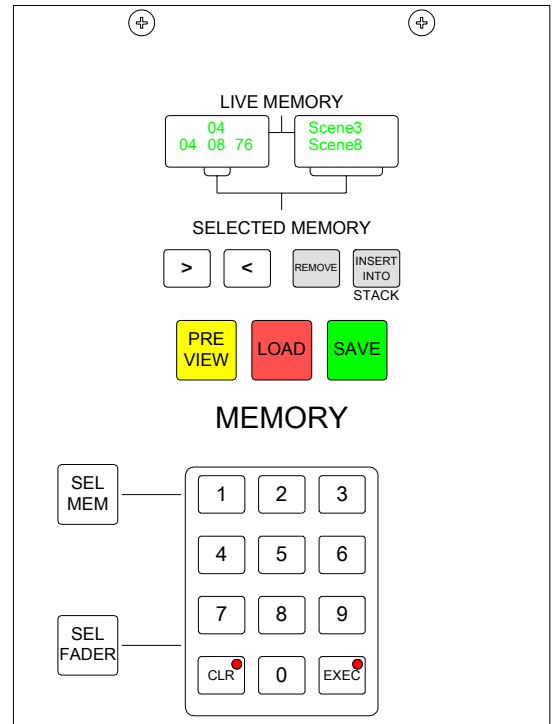
The Save button saves console settings to the Selected Memory. Therefore, the memory to which you want to save must be in the Selected Memory position when Save is pressed. Alternatively, SAVE + Memory Number + EXEC will save into a specified memory number. To create a new memory, choose an empty memory by pressing SEL MEM and typing its number on the keypad, or by selecting it from the list on the left of the MEM-SETUP screen. The memory being saved can be given a suitable title. If however, you wish to simply update changes you have made to the Live Memory, it must be occupying the Selected Memory position aswell.

Preview Memory

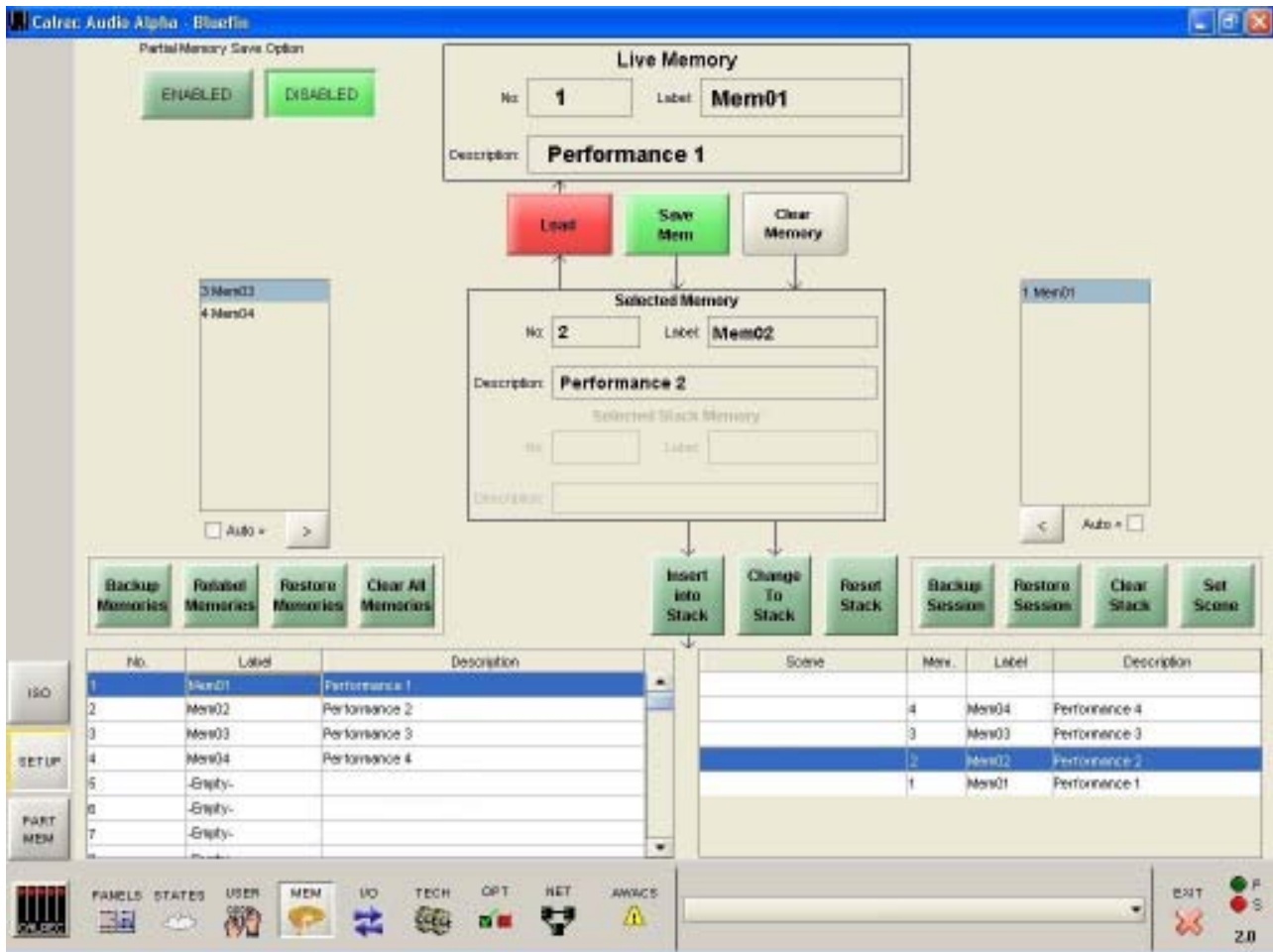
When PREVIEW is held down, the Selected Memory settings will be displayed on the control surface without actually changing the current settings. The Assign panel displays are blanked out. Upon release of the Preview button, the control surface will display the live settings again.

Stacked Memories

The memories can be arranged into a pre-set list, known as a stack. This can be useful for setting up an easy-to-access shortlist of specific memories for use during a show. Stacks can be saved to the hard disk or removable media as sessions using the MEM-SETUP screen. INSERT INTO STACK adds the Selected Memory to the Stack. The > and < buttons scroll through the stack.



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. The two memories either side of the Selected Memory will appear in the windows either side of the Selected Memory window. 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.

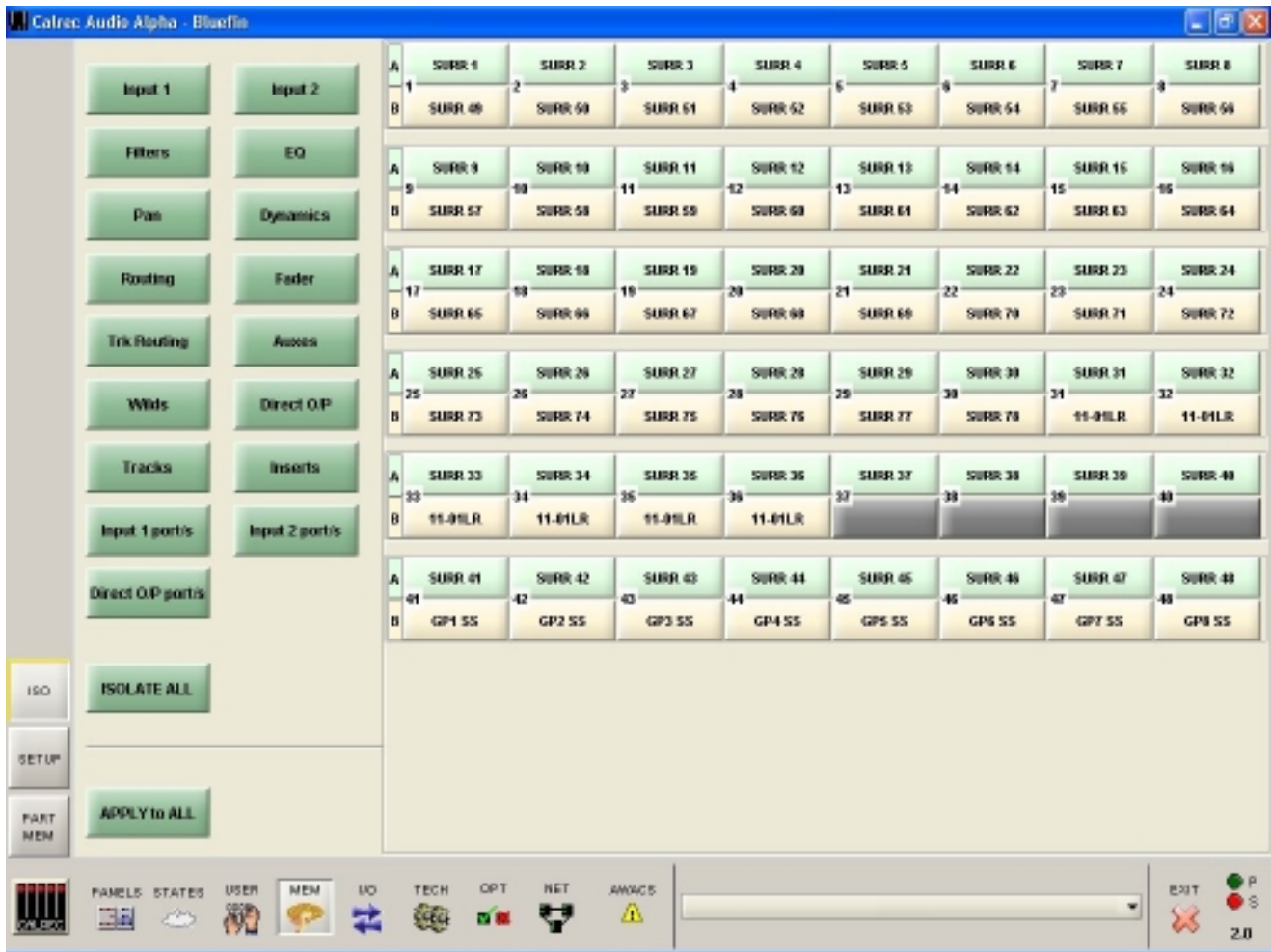
All the available Flash ROM memories are listed on the left of the screen, and when selected will occupy the Selected Memory position.

Managing Memories in the Flash ROM List

It is possible to back up all the memories both stack and non-stack, 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.

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 stacked memories from the stack.



The Isolate screen allows some console settings to be isolated from memory recall. This means their current settings will not be over-written when a different 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.

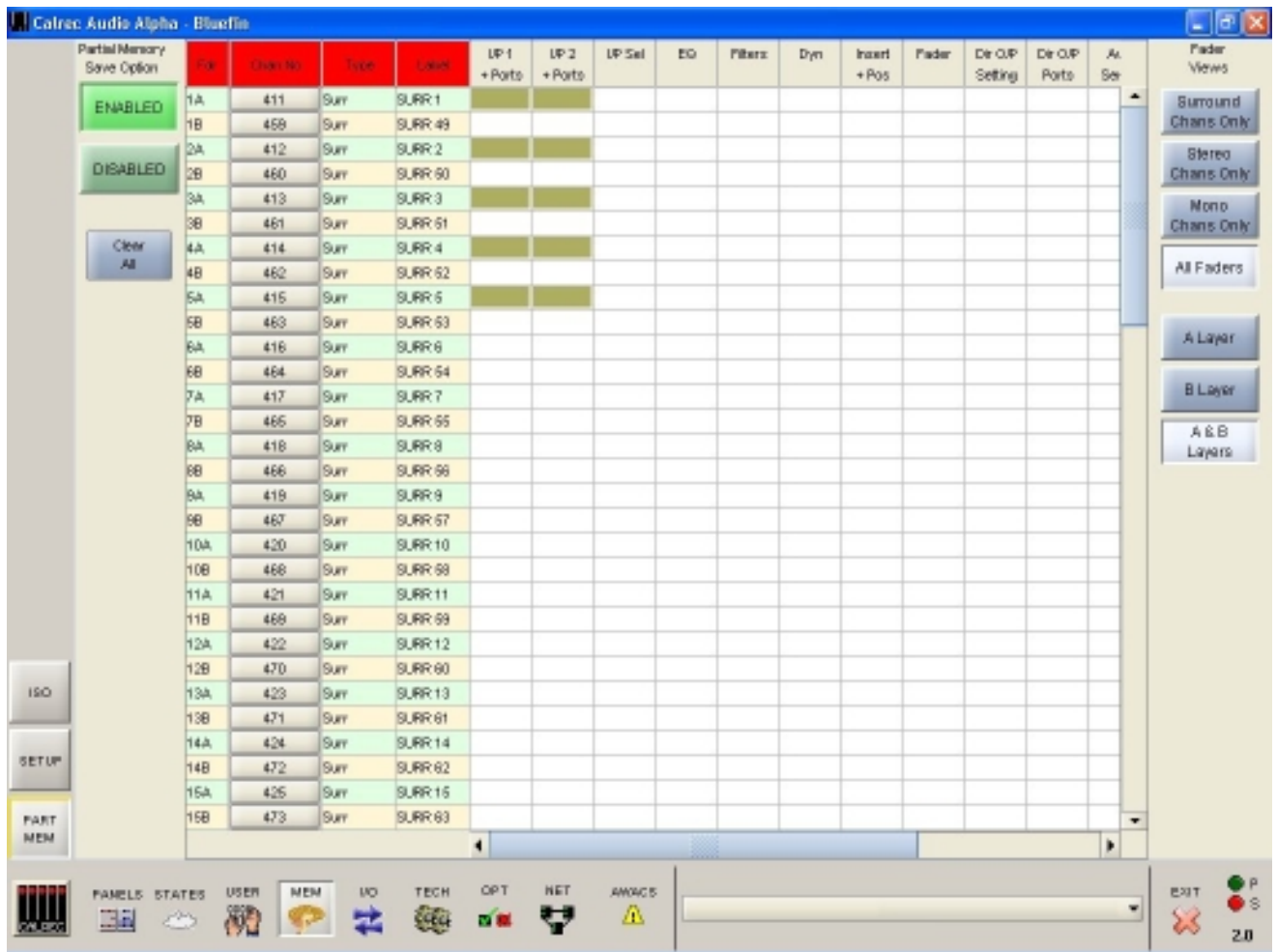
APPLY TO ALL applies the selected isolation settings to all channels and groups. To clear all isolation settings from all channels and groups, ensure all settings are de-selected, and select APPLY TO ALL.

When 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.

PARTIAL MEMORIES



Partial Memories mode allows the user to specify components of console settings to be saved. When a partial memory is recalled, only the settings saved will be updated. The partial memories screen provides a mechanism for selecting channels or sub-components of channels to be saved in a partial memory.

Partial Memories mode is enabled and disabled using the buttons on this screen or the Mem-Setup screen. When enabled, all memory saves are partial memory saves. When disabled, all saves are full console snapshot saves. Once partial memory mode 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.

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.

Partial memory selections are stored and are recalled if a console reset occurs.

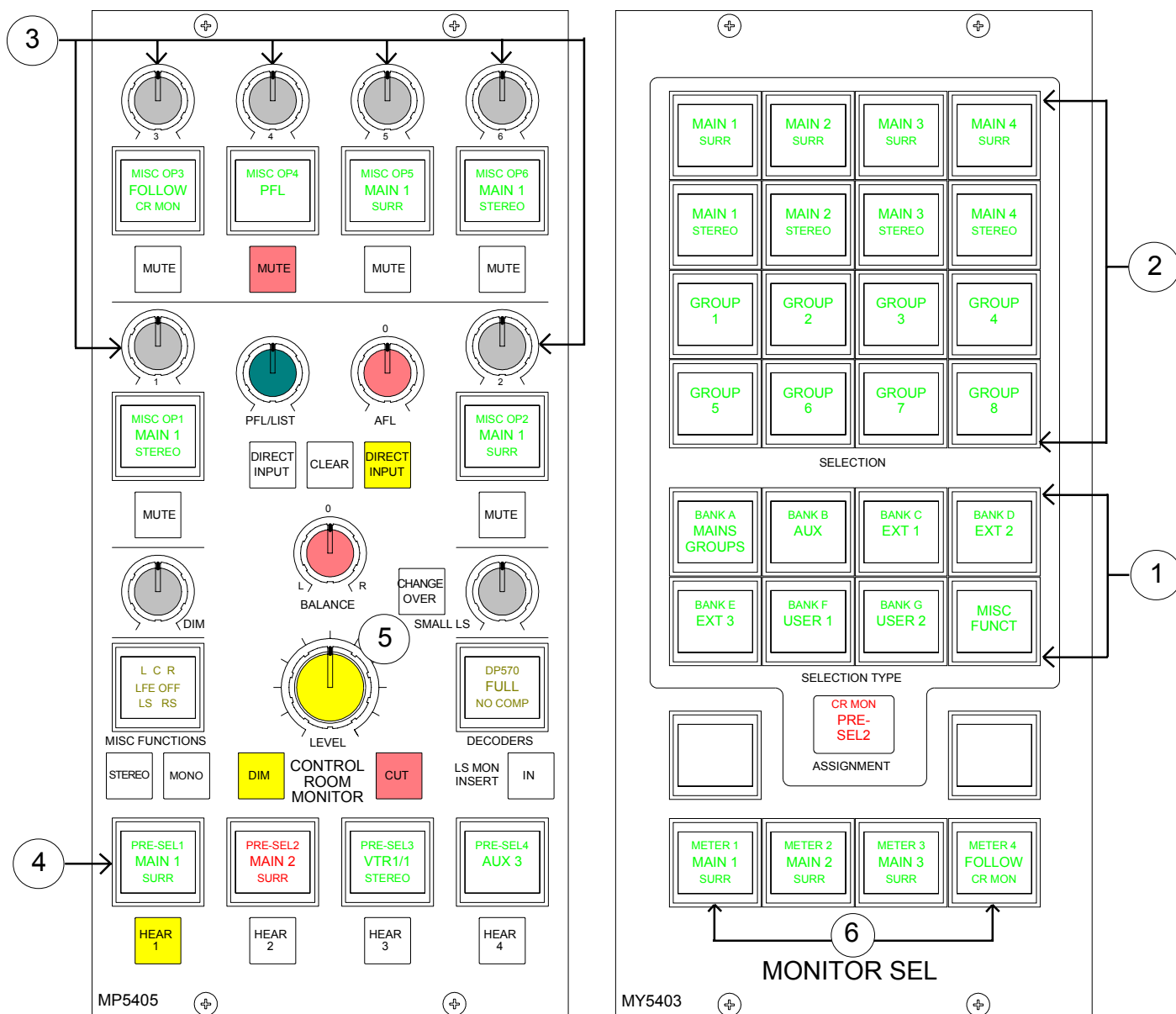
A partial memory only loads those channels or components on the control surface that were selected using the partial memory selections. A partial memory load does not affect the currently assigned fader and the A/B layer assignments.

ALPHA MONITORING SYSTEM



ASSIGNABLE MONITORING, METER SELECT AND LS CONTROL

The assignable monitor panels offer a high degree of flexibility and user-definability. Each monitor output can select the source to monitor from all the available sources, independently of the other monitor outputs. The sources are selected from a programmable set of selection buttons on the second panel. Each monitor output has a button incorporating a display, on which the currently assigned source label is shown.



(1) Selection Banks

All of the monitor sources can be grouped into 7 banks, with up to 16 sources in each bank. Banks A to G are user-definable using the Options-Mon I/P and TB screen. An eighth bank allows miscellaneous functions to be applied to the selected output, and is not editable. Pressing the bank selection button will change the 16 source selection buttons to display the sources allocated to that bank.

(2) Monitor Source Selections

There are 16 selection buttons. These can display the available monitor sources or functions allocated to the selected bank.

ASSIGNABLE MONITORING, METER SELECT AND LS CONTROL

(3) Misc Outputs

There are 6 misc outputs to which monitor sources can be assigned. Each misc output can be 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. Misc outputs 1 and 2 can be stereo, 3 stereo, or 5.1 independently. Misc outputs 3, 4, 5 and 6 are stereo only. 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.

(4) Control Room Pre-Selects

There are 4 Control Room Pre-select buttons, where monitor sources can be assigned. This allows 4 sources to be preset ready for immediate listening on the main control room loudspeakers. Two of the buttons could be used for A/B comparison, whilst the main output is always available on one of the other buttons. With a Control Room Pre-select button selected, press the required monitor source from the 7 banks of 16 monitor sources on the Monitor Selector Panel to assign the source. The source label will be displayed on the button. 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. This allows 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 the condition switching on the Options TX-REH screen.

(6) Meter Selectors 1-4

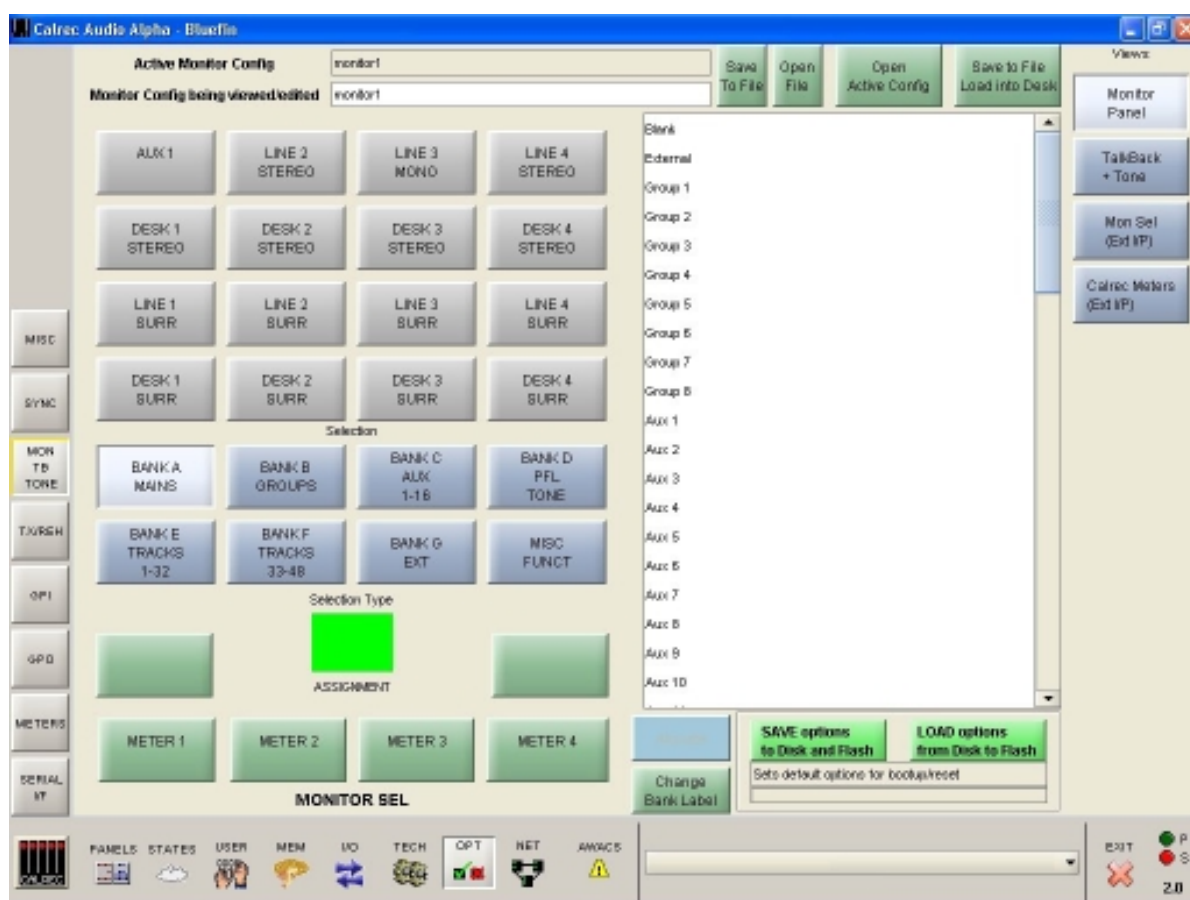
Any of the available sources can be assigned to 4 meter selectors 1, 2, 3 and 4.

Meters 1 -4 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, pressing misc functions (bank 8) allows Tone and M/S to be selected for that meter.

MONITOR SELECTION PANEL SETUP SCREEN

The screen allows all the available sources to be allocated to 7 banks of 16 selection buttons. This means that sources of the same type can be banked together for ease of access. Each external input's selection button can be given a user-definable label which will appear both on the screen and on the button's display.



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 16 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 the required 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 whether the source is 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.

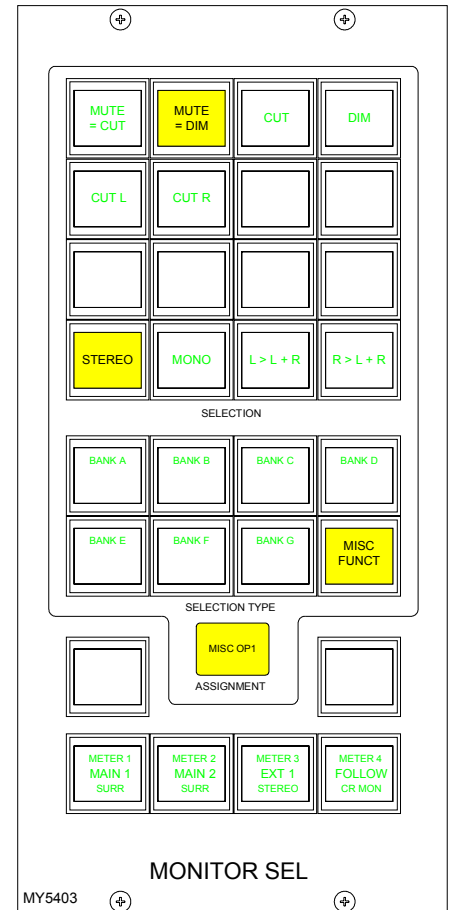
Once the user has the Assignable Monitor Panels set up as desired, the monitor configuration can be saved so that it can be recalled at a later date. Changes to the monitor configuration do not take effect on the panels until the configuration is saved, and loaded onto the console.

MISC FUNCTIONS

Misc Output Misc Functions

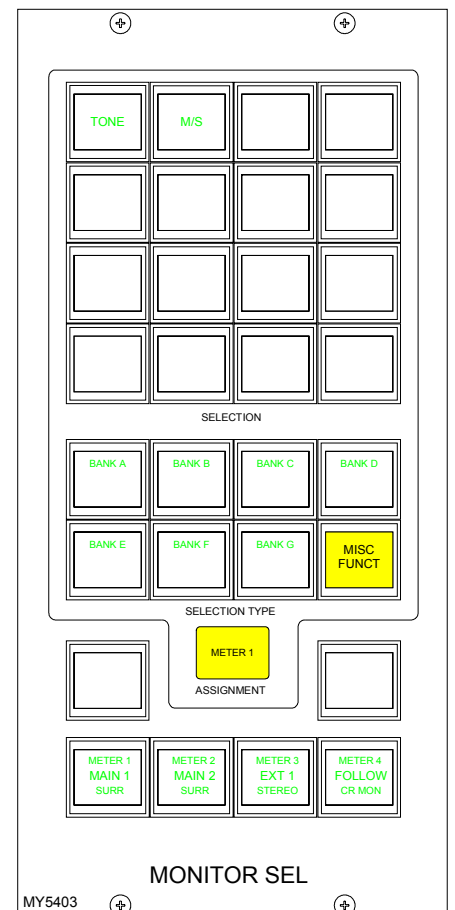
When a misc output is selected, the misc functions bank allows the following functions to be applied.

- 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.



Meter 1-4 Misc Functions

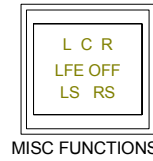
When meters 1-4 are selected, the misc functions bank allows Tone and M/S (L-R sum/difference) to be selected for that meter.



MISC FUNCTIONS

Control Room Miscellaneous Functions

The Control Room Misc Functions selection button allows listening modes to be applied to the Control Room monitor, and APFL functions to be set up. Pressing this button gives access to functions displayed on the Monitor Selections panel. The Listen Modes and APFL functions are located in two separate banks, and 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.
- 6 solo buttons allow solo monitoring of each component of a surround signal.
- 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 downmix of that source. If the source is stereo, the surround monitor buttons for that main output will have no effect.

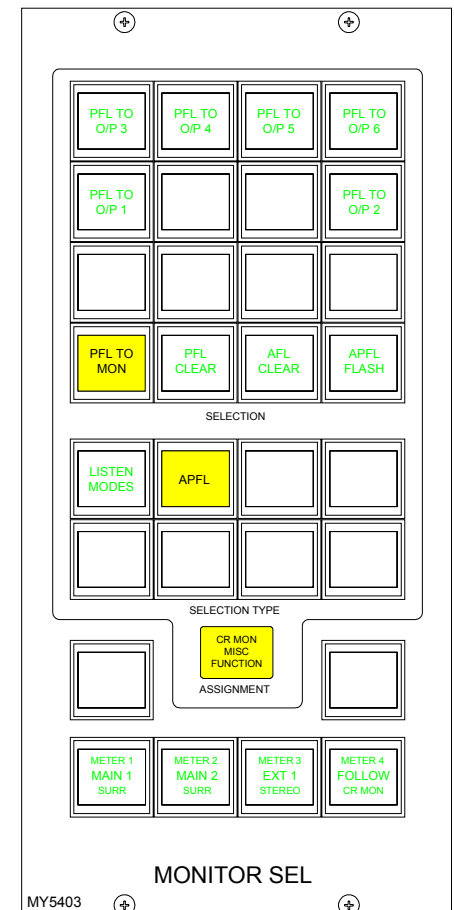
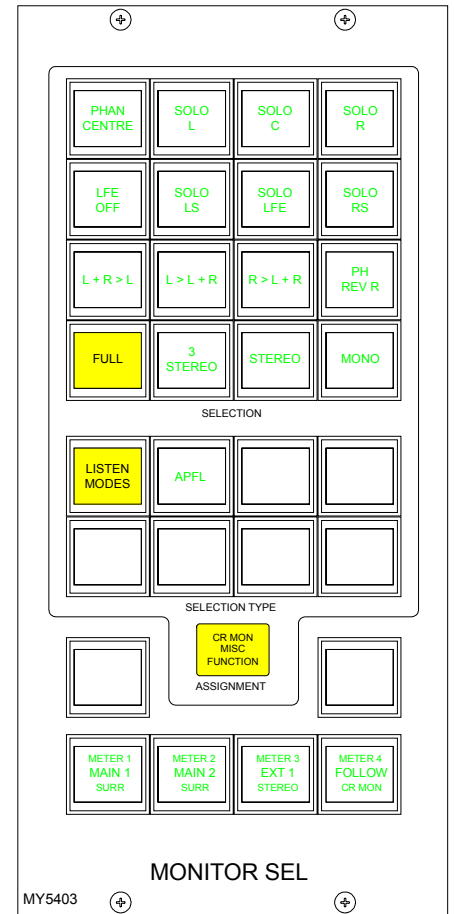
MONO feeds L, C, R, LS and RS to L and R.

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 downmix 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.



MISC FUNCTIONS

Decoder Remotes

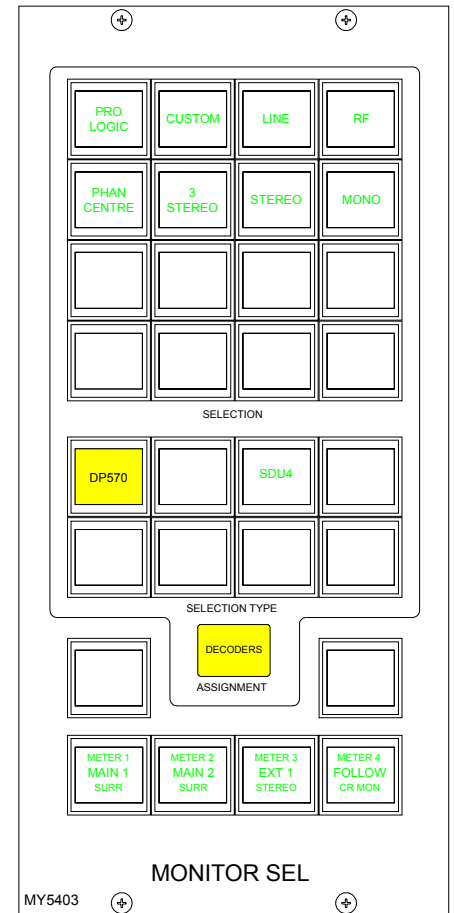
The Decoders selection button allows any decoders which are installed to be controlled. Pressing this button allows the user to select a decoder, and gives access to decoder remote functions displayed on the Monitor Selections panel. The different types of decoder are located in separate banks, and functions 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.

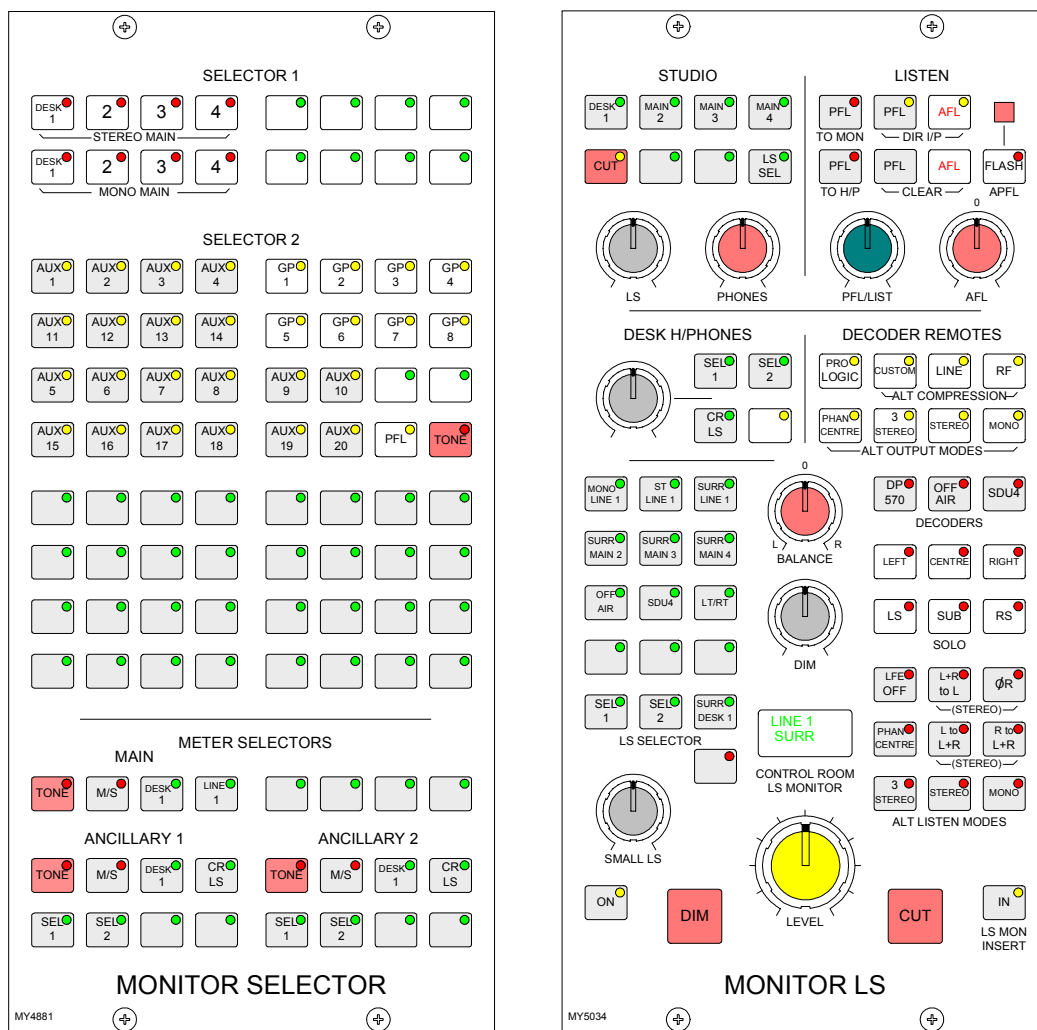
When controlling a Dolby SDU4, LT/RT decoder, only the stereo and mono output mode buttons will function.



ALTERNATIVE MONITOR SELECTOR AND LS PANELS

Traditional-style monitor selector and LS panels are also available, if preferred.

The Monitor and Meter Selectors are used to select the source to monitor, and what to display on



the meters. Selectors 1 and 2 are sub-selectors which feed the other selectors. All Selector external inputs can be mono, stereo, or 5.1. Mono inputs are fed to left and right.

Main and Ancillary Meters

The main meter is in addition to the four stereo main output meters, which display the stereo downmix of the main output, if the main is surround.

The Ancillary 1 meter would normally be used to meter the Control Room LS monitor selection, but can also be selected to Main 1 Desk, Sel 1 or 2, or 2 external inputs.

Both the main and Ancillary 1 meters have a Tone switch to send Tone directly to the meter. They can both be stereo only, surround only, or surround plus stereo, with an optional separate M/S (L-R sum/difference) meter.

The Ancillary 2 meter can be selected to meter the Control Room LS monitor selection, Main 1 Desk, Sel 1 or 2, or 2 external inputs. It is stereo only with an optional separate M/S (L-R sum/difference) meter. When metering surround signals, it displays the stereo downmix.

ALTERNATIVE MONITOR SELECTOR AND LS PANELS

LS Controls

The Small LS level control is in series with the Main LS level control. This allows 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 ON 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 on the Options - TX/REH screen.

If a surround signal is monitored on a stereo loudspeaker, a stereo downmix is created and monitored. If the loudspeaker system is surround, stereo and mono sources will be heard in stereo and mono, with no signals on the other speakers. If a main output is surround, its stereo monitor buttons will monitor the main output's stereo downmix. If a main output is stereo, the surround monitor buttons for that main output have no effect.

For Studio LS, two parallel LS outputs are provided, post the level control, with separate Mic Open cuts. Studio LS 1 can be independently either stereo, 3 stereo or 5.1. Studio LS 2 and Studio Phones are stereo only.

User-Definable Buttons

The Options-Mon I/P & TB screen is used to allocate monitor sources to the user-definable selection buttons on each panel. Buttons can only be assigned when in Technician or Supervisor mode. This allows the system to be set up prior to operation, and protects against accidental changes once the console is in use.

Alternative Listening Modes

All off indicates NORMAL (mono, stereo or surround depending on the source selected and the LS arrangement). 3 STEREO with Phan Centre ON is the same as STEREO except the LFE is optional. ØR, L+R to L, L to L+R, and R to L+R will work in any mode, but are really designed for use in stereo mode or when monitoring stereo sources. MONO feeds L, C, R, LS and RS to L and R.

AFL and PFL

AFL feeds the Control Room LS outputs (post the surround panning controls), overriding the LS SEL. PFL can also do this if PFL TO MON is selected (overrides AFL). PFL to MON can also be selected using the PFL Monitor Options on the States screen. 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. PFL from surround mains is a stereo downmix of the surround signal.

PFL to H/P feeds the PFL signal to the headphones. This is also selectable using the PFL Monitor Options on the States screen. PFL clear and AFL clear, clear any latched buttons. The APFL Flash will enable or disable the flashing of the APFL indicator on the Reset Panel.

Decoder Remotes

The DECODER REMOTE buttons control whichever Decoder is currently selected. (Other Decoders remain in their previously set state). The buttons are shown engraved for a Dolby DP570.

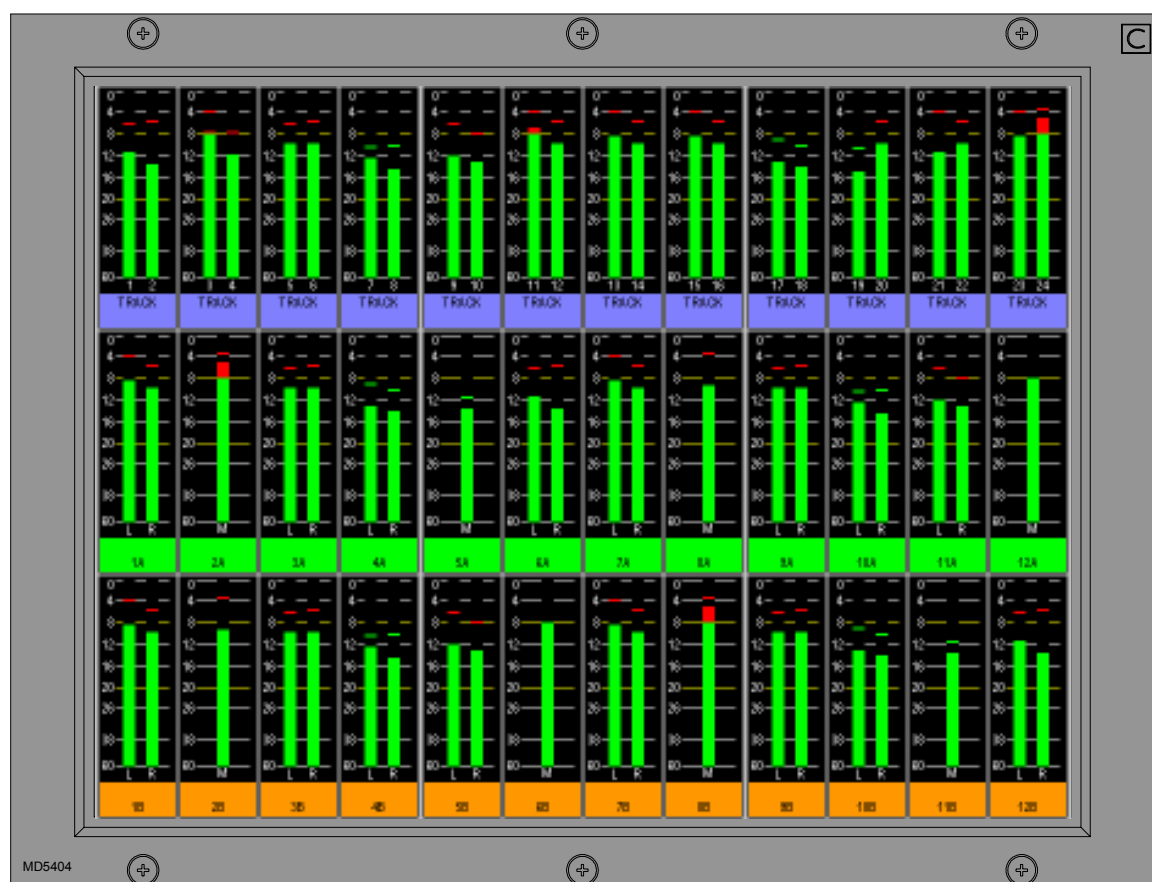
- 4 buttons for alternate output modes (all off indicates full surround).
- 3 buttons for alternate compression modes (all off = no compression no dialogue normalisation).
- 1 button for Pro Logic mode. It is assumed that the DP570 will be set, to Dolby Digital mode either in manual or auto detect mode.
- For a Dolby SDU4 LT/RT decoder, only the stereo and mono output mode buttons will function.

ALPHA METERING SYSTEM



TFT METERS

The console can have up to 16 high quality TFT screen based meters incorporated into its upstand, either instead of, or alongside the existing bargraph, moving coil VU and PPM meters. These TFT panels allow a greater density of meter functions to be displayed, and the user can dynamically change the meters and their arrangement using the Options-Meters screen.



Meter configurations can be saved and recalled, so that different users can have their own preferred meter arrangements. Each meter can be mono, stereo, M/S, surround, or phase display, and 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
- Track Outputs
- External Inputs
- Auxiliary Outputs
- Meter Selectors
- Miscellaneous functions

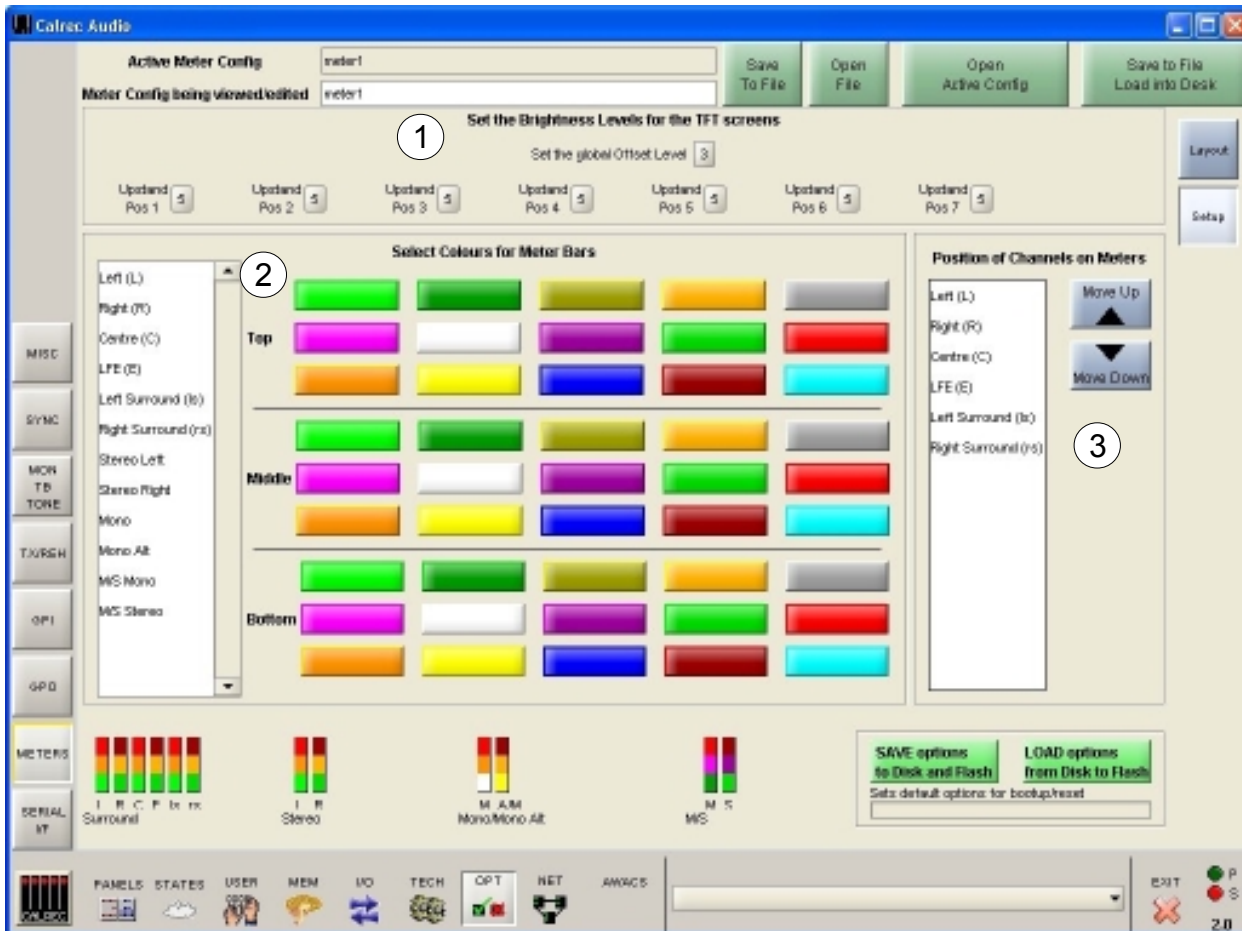
The screen layout is configured in halves, such that each half of the screen can have 4 or 6 columns, allowing 8 or 12 meter positions across the width of a TFT meter screen. Each column can then be split into up to three rows to contain meter positions which can be 1/3, 1/2, 2/3 or full height of the TFT meter panel. Therefore, Each TFT meter screen can display up to 36 meters within the space usually taken up by just two standard meter panels. When a screen is configured with 8 columns, these columns will line up with any channel or group faders positioned in that section of the console.

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

TFT Meter Setup Screen



The Setup screen contains options to set global metering settings.



(1) 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 screen in each upstand position can be adjusted from 0-9 using the selection buttons (0 is off). The global offset level will adjust the brightness of all screens from -5 to +4.

(2) Bar colours

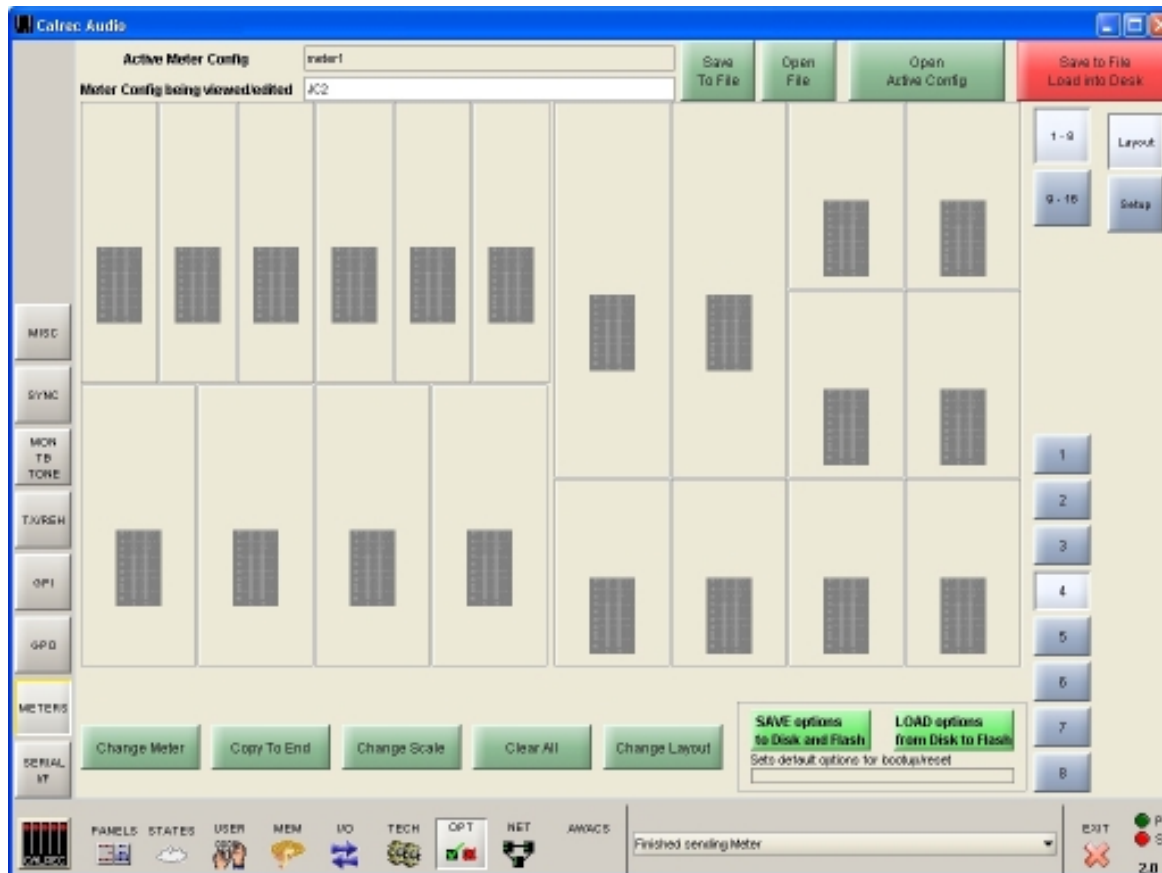
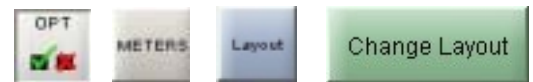
The user can select the colours to be used on the meters. The top, middle and bottom colours for each signal can be selected independently using the palette. The selected colours for each signal are shown at the bottom of the screen.

(3) 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 Up and Down buttons. The order chosen will be used for all surround meters.

TFT SCREEN LAYOUT CONFIGURATION

The user can control the layout of the rows and columns on the TFT screens. The numbered buttons allow the meter in that upstand position to be selected for set up.



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

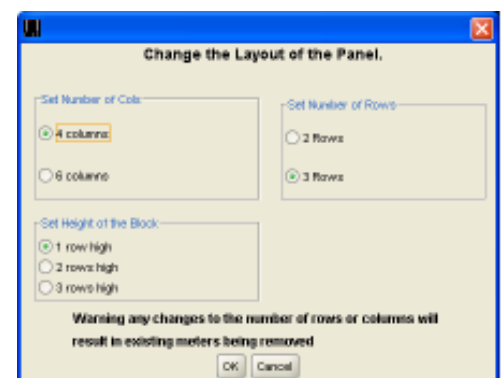
Each half of the screen can have two or three rows, and the meters within each column can be set to take up 1, 2 or 3 rows, to achieve different row heights for different columns. Changing the number of rows only affects meters in the selected meter's half of the screen.

Columns

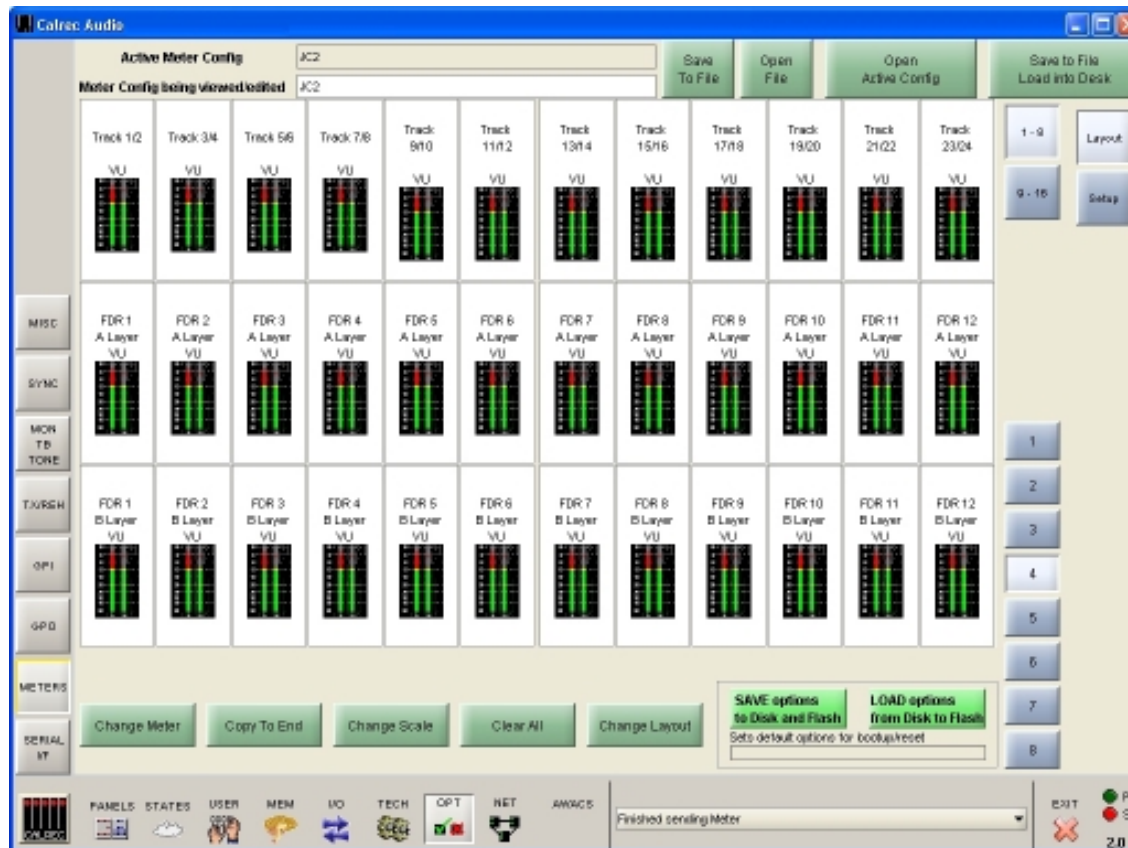
There can be 4 or 6 columns in each row across each half of the screen. As the screens are set up in halves, there can be different column widths on each side of the screen. Changing the number of columns will affect the selected meter's row only (unless the change affects meters already set on other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

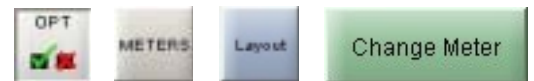


METER CONFIGURATION



Change Meter

Sources are allocated to TFT, bargraph or moving coil meters in the same way. Select a meter position (it's background will turn blue) and select CHANGE METER. A dialogue box will appear which allows the meter source to be chosen. Subsequent columns will list the available options for that source. 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 currently assigned fader path.



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.

Change Scale

Each meter can be PPM, VU or Phase. There can be up to 3 phase meters assigned in the configuration. The scale type can be selected individually for each meter or globally for all meters.

Clear All

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

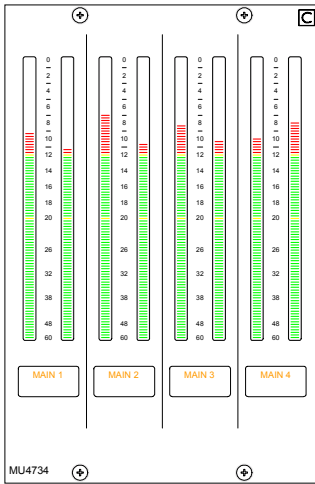
Change Layout

CHANGE LAYOUT is used to configure the layout of the TFT screen.

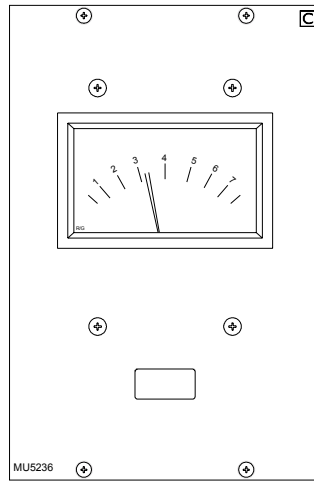
Saving and Restoring Meter Configurations

Once the user has the meters set up as desired, the configuration can be saved to the hard disk, so that it can be recalled at a later date. 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 loaded onto the console and saved.

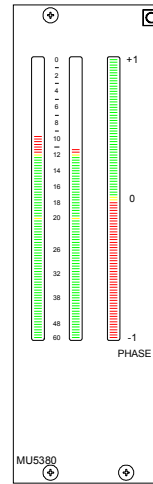
BARGRAPH AND MOVING COIL METERS



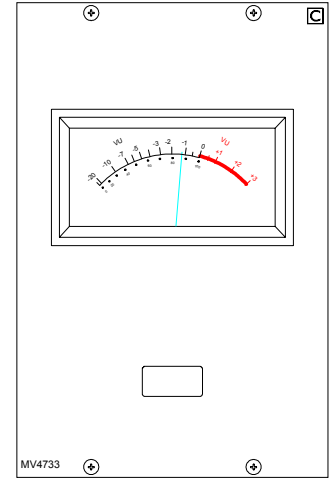
4 x Twin Bargraph



PPM Meter



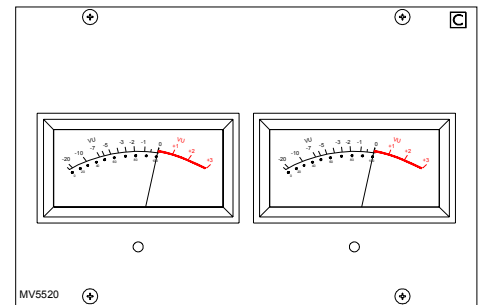
Phase Meter Bargraph
& Stereo Bargraph



VU Meter

Sources are allocated to bargraph and moving coil meters using the Options-Meters screen.

The MAIN and ANCILLARY 1 meters can be stereo only, surround only, or surround plus stereo (displaying a downmix of the surround signal). There can be a separate M/S meter (fed from the same downmix). They can be PPMs, VUs, bargraphs, phase display incorporating bargraphs, or a mixture of these.



Twin VU Meter

The Main meters are fed from the Main meter selector on the Monitor Selector panel. It can select either Main 1 or 2 Desk (pre Tone and TB), Main 1 or 2 Line (which can be an external input), or Tone.

In addition to the Main and Ancillary 1 meters, a comprehensive set of optional meters are available:

- Track Bargraphs displaying the track output levels, post Tone and Talkback
- ANCILLARY 2 Meter: This is stereo only. It can be PPMs, VUs or bargraphs
- Stereo APFL or surround AFL bargraph. AFL is monitored post the channel/group panning and is in surround. The APFL meter will display the stereo downmix of these signals
- MIX MINUS: Displays signal on the mix minus buss (mono)
- GROUPS: 8 stereo bargraphs for the groups. For mono groups, the left bar only will display

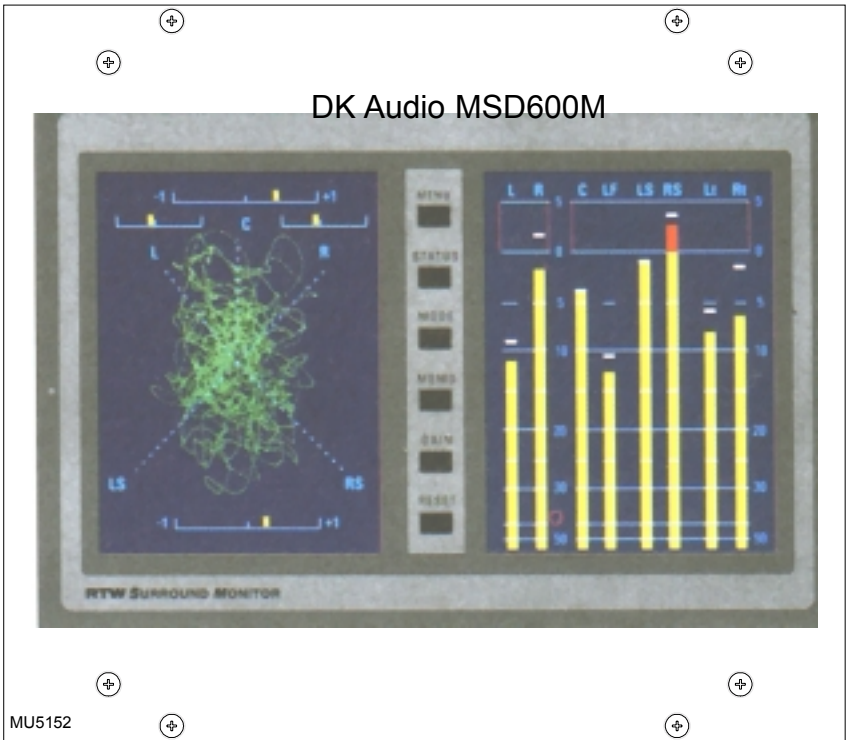
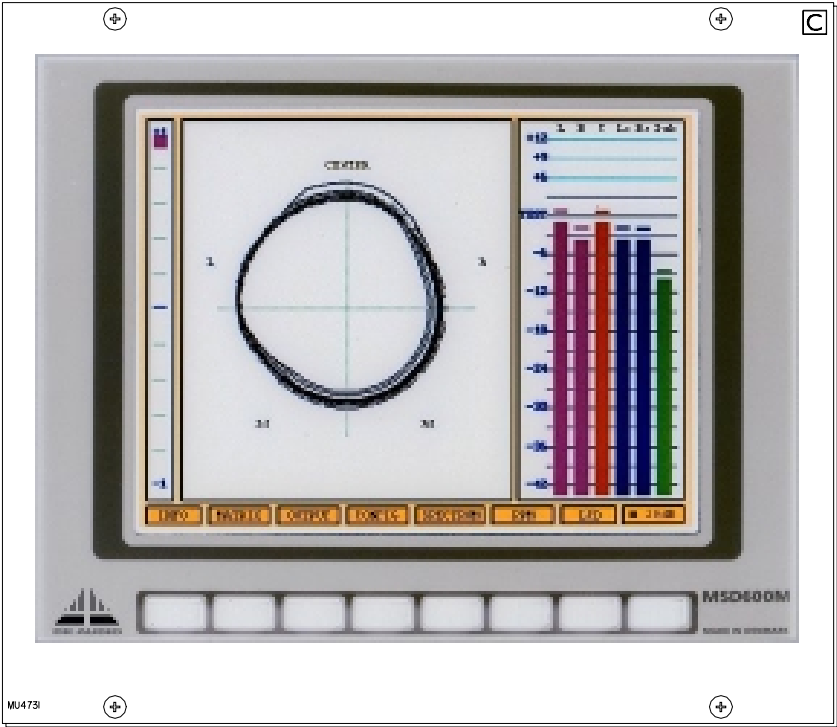
All Calrec meters including moving coil types, are fed directly from the meter processor. There are external meter outputs which allow other meters to be used.

Calrec bargraphs provide a bar which can be either VU or PPM. In addition, there can be a True Peak spot (which incorporates a long release time). Together, these allow the operator to see the level of the signal using a familiar meter and at the same time to see how close the peaks of the signal are to the digital maximum. The bargraphs can have yellow markers at specified points (to mark the “nominal” and “peak” levels). The top of the bargraph always equals full scale digital level. The scale on the bargraph is normally 0 (at the top) to -60 in dB. Other scales can be provided to special order.

The meter bridge is continental height allowing alternative European bargraph meters to be fitted. These would require audio outputs from the I/O Rack.

OPTIONAL THIRD PARTY METERING

It is possible to incorporate third party metering options into the console's upstand, this would require audio outputs from the I/O Rack.

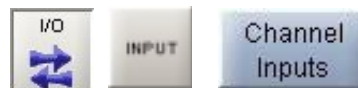


RTW 10810

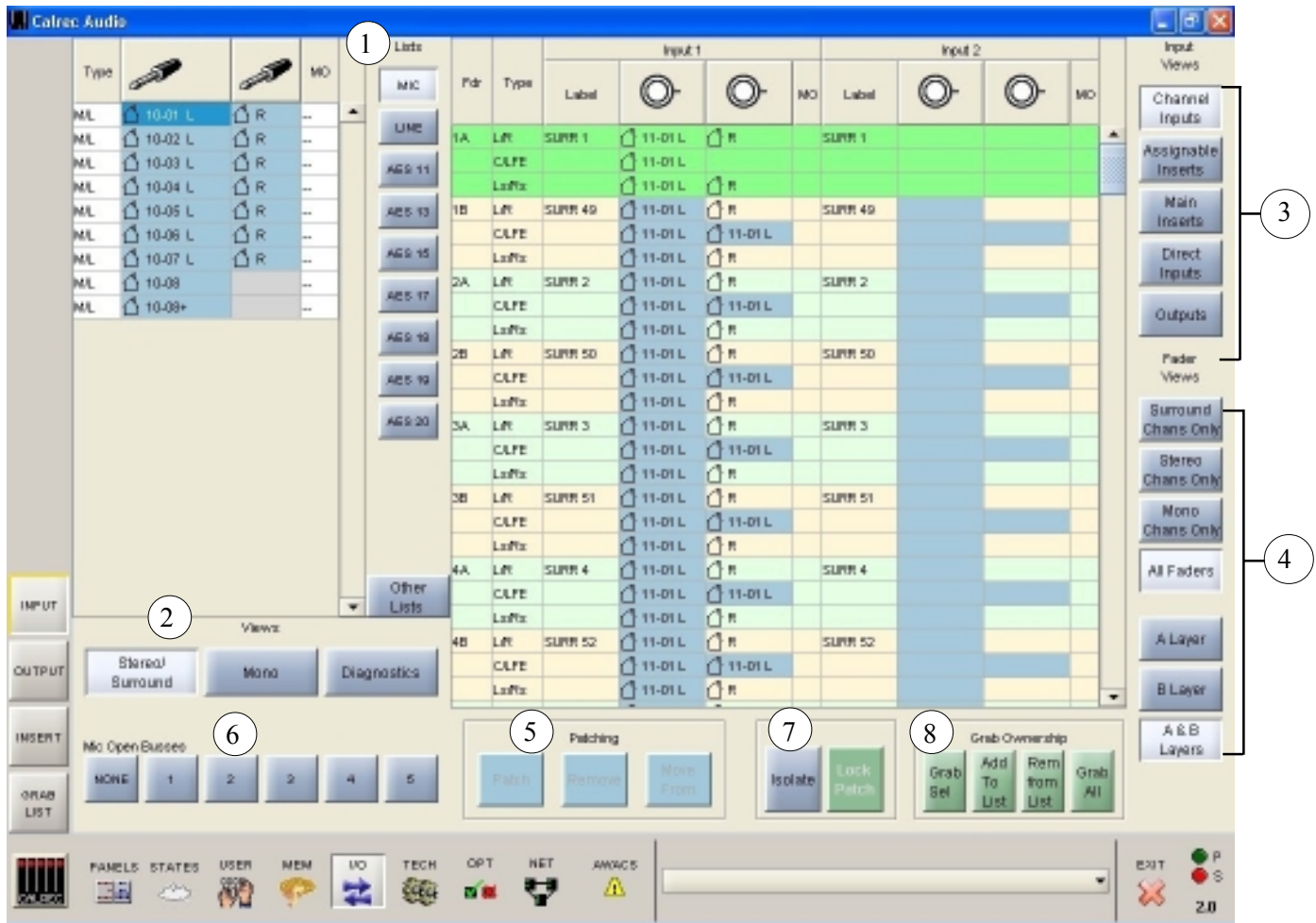
ALPHA ON-SCREEN PATCHING



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 are assigned using the I/O Matrix, but these screens provide an alternative set of controls. The screen below shows the patching for channel inputs.



(1) Source Lists

All of the available ports can be grouped into suitable lists using the Set up application. 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).

(3) Input Views




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

(4) Fader Views

It is possible to choose which set of faders are to be available on and altered by this screen.

INPUT PORTS SCREEN

(5) Patching

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

Once patches are made, they can be removed when selected by selecting REMOVE.



Connections can be moved between channel inputs when selected using the MOVE FROM button. 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

Type			NO	Lists	Fir	Type	Label (Editable)	Input 1
AES	11-01 L	R	...	MIC	1A	LR	SURR 1	11-01 L R
AES	11-02 L	R	...	LINE				
AES	11-03 L	R	...	AES 11				11-02 L R
AES	11-04 L	R	...					11-03 L R
AES	11-05 L	R	...	AES 12	1B	LR	SURR 49	11-04 L R
AES	11-06 L	R	...					11-05 L R
AES	11-07 L	R	...	AES 15				11-06 L R
AES	11-08 L	R	...					11-07 L R
AES	11-09 L	R	...	AES 17	2A	LR	SURR 2	11-08 L R
								11-09 L R

(6) Mic Open Busses

Each input port can be assigned to any of the 5 MIC OPEN busses by firstly selecting the port and then selecting the required buss. When the port 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.

If a pair of input ports 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 (5 separately cut outputs are provided, one for each buss) and/or fire a relay. These are set on the Options screens: TX/REH and GPO.

(7) 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 when a different memory is loaded. Clicking the button 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 ISOLATE screen.

(8) Grab Ownership (Only visible if Hydra Audio Networking is installed)

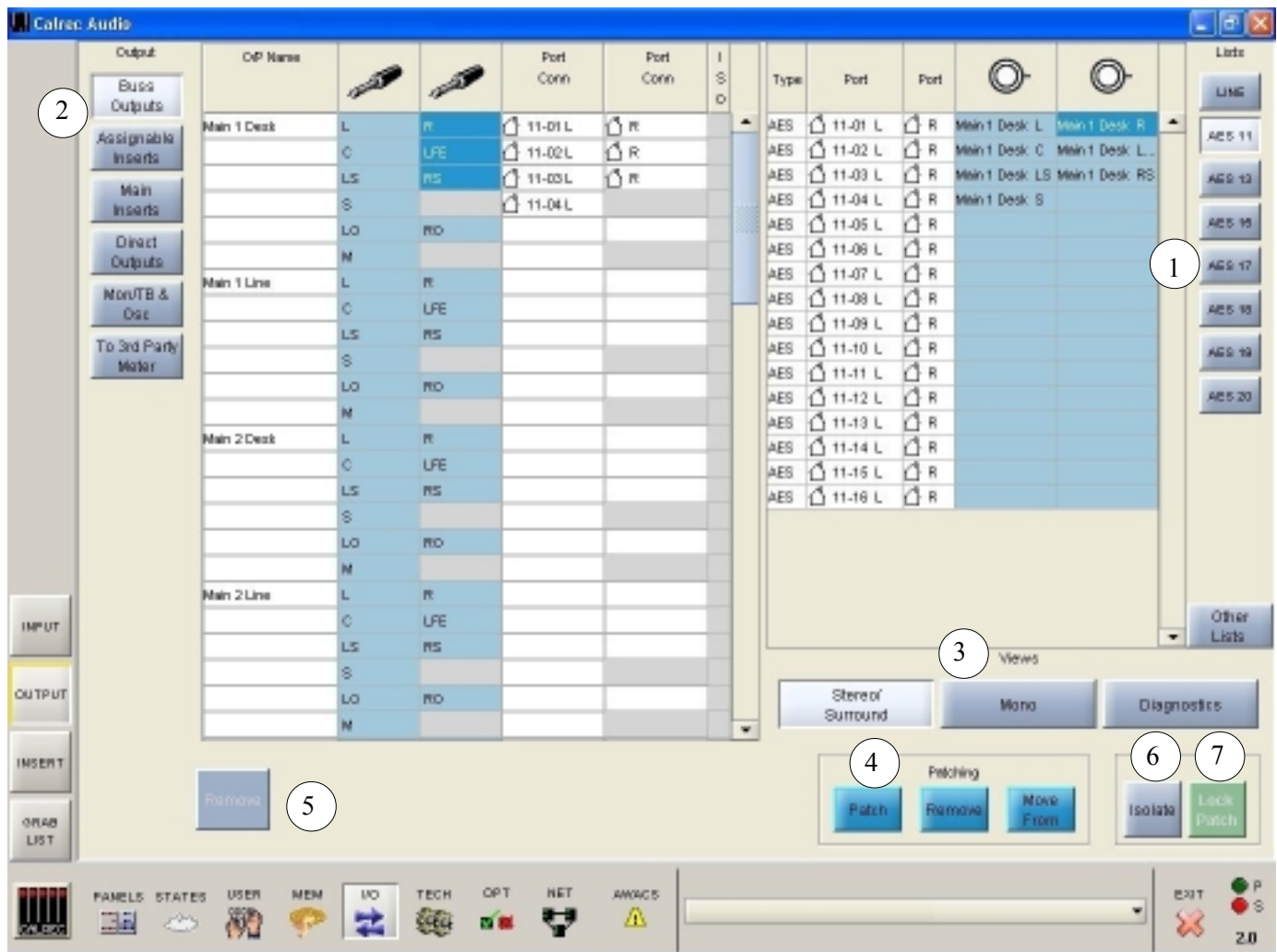
When a networked source is patched, ownership of it assigned to the console. In the case where several consoles share sources on the same network, the console that connects to the source first will be given control (ownership) over that source. Other consoles that subsequently connect the same source will not be able to control it.

In circumstances when the ownership needs to be overridden, the grab buttons allow the console to grab ownership of the 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 screen.

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. The screen below shows the patching for buss outputs.



(1) Output Port Lists

All of the available ports can be grouped into suitable lists using the Set up application. 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).

(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). They will then be displayed in the main section of this screen.


OUTPUT PORTS SCREEN

(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 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 - a technician may assign the mixing console's Main 1 output signal 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 system of software locks is provided to protect critical parts of each configuration. The console can be in one of three modes, "User", "Technician" and "Supervisor". 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.

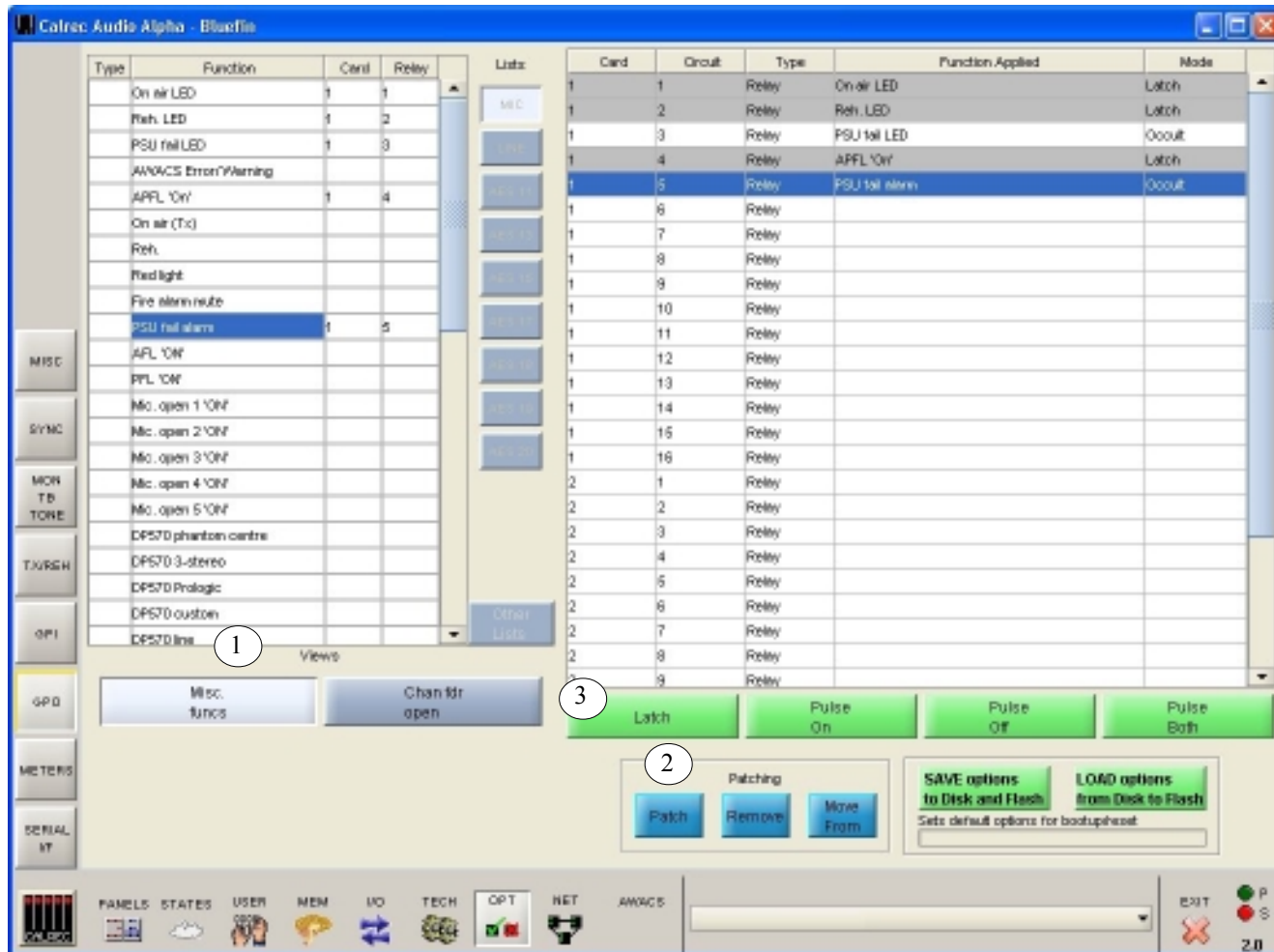
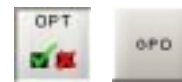
To lock an output port assignment, select an output port which has a source assigned to it, and select the LOCK PATCH button.

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, otherwise the text will be shown in black.

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!"

ALPHA OTHER INTERFACES





(1) “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.

(2) 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.

(3) 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.

GENERAL PURPOSE INPUTS



Card	Opto	Sig. Req.	Console Function Connected	Type	Function	Card	Opto	Sig. Req.
1	1	Latch	Ext. 'ON AIR' signal	AES	11-01 L	2	1	Latch
1	2	Latch	Ext. 'MIX' signal	AES	11-01 R	2	1	Latch
1	3	Latch	CR LS cut	AES	11-02 L	2	1	Latch
1	4			AES	11-02 R	2	1	Latch
1	5			AES	11-03 L	2	1	Latch
1	6			AES	11-03 R	2	1	Latch
1	7			AES	11-04 L	2	1	Latch
1	8			AES	11-04 R	2	1	Latch
		Latch	11-05 R CHANNEL CUT	AES	11-05 L	2	1	Latch
		Latch	11-05 L CHANNEL CUT	AES	11-05 R	2	1	Latch
		Latch	11-04 R CHANNEL CUT	AES	11-06 L			Latch
		Latch	11-04 L CHANNEL CUT	AES	11-06 R			Latch
2	1	Latch	11-03 R CHANNEL CUT	AES	11-07 L			Latch
		Latch	11-03 L CHANNEL CUT	AES	11-07 R			Latch
		Latch	11-02 R CHANNEL CUT	AES	11-08 L			Latch
		Latch	11-02 L CHANNEL CUT	AES	11-08 R			Latch
		Latch	11-01 R CHANNEL CUT	AES	11-09 L			Latch
		Latch	11-01 L CHANNEL CUT	AES	11-09 R			Latch
2	2			AES	11-10 L			Latch
2	3			AES	11-10 R			Latch
2	4			AES	11-11 L			Latch
2	5			AES	11-11 R			Latch
2	6			AES	11-12 L			Latch
2	7							
2	8							

Views: Misc. Functions, Channel Cut, Auto Fade

Buttons: Patch, Remove, Move From, Opto Locking, SAVE options to Disk and Flash, LOAD options from Disk to Flash

(1) “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, the opto-isolated inputs can be assigned to auto-faders to allow automatic cross-fading.

(2) GPI Patching

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.

SERIAL INTERFACE

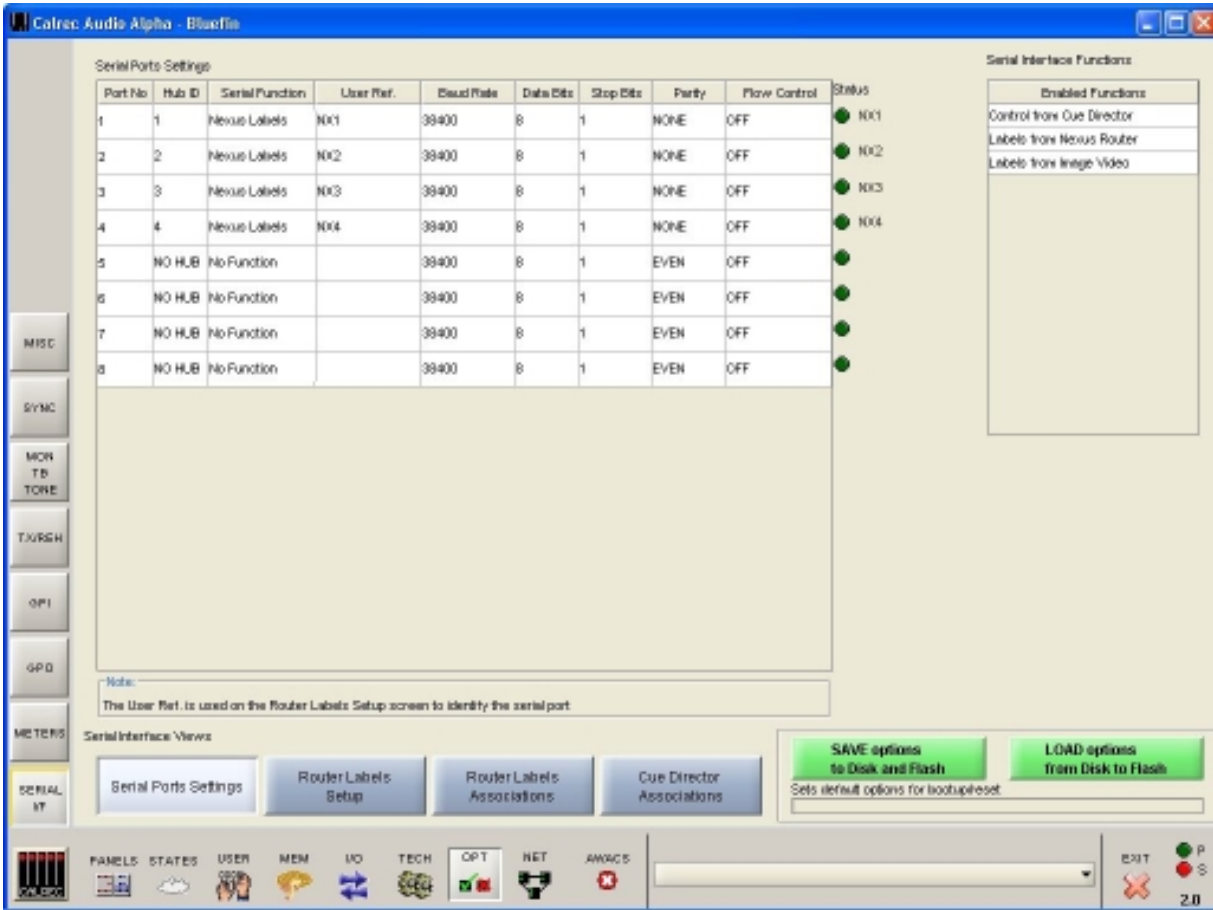
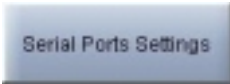


The system currently supports the following serial interfaces:

- Cue Director
- Nexus Router
- TSI Image Video 1000

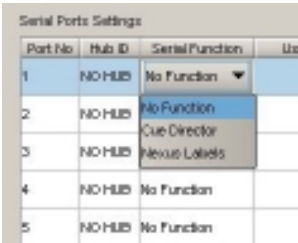
Serial port setup and label associations are made using the Options-Serial I/F screens.

Serial Port Settings Screen



The console can have up to 8 hub cards, each of which can have 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 each serial interface port, by allocating a function to each from the Serial Function column. Only the serial functions which are enabled for the console will be available for selection.

The Hub ID number is also selectable from a drop down list. The ability to change the Hub ID number is useful for the situation where two routers are connected to the console, sending the same information. If one router or serial port fails the serial function can be moved from one hub to another.



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.

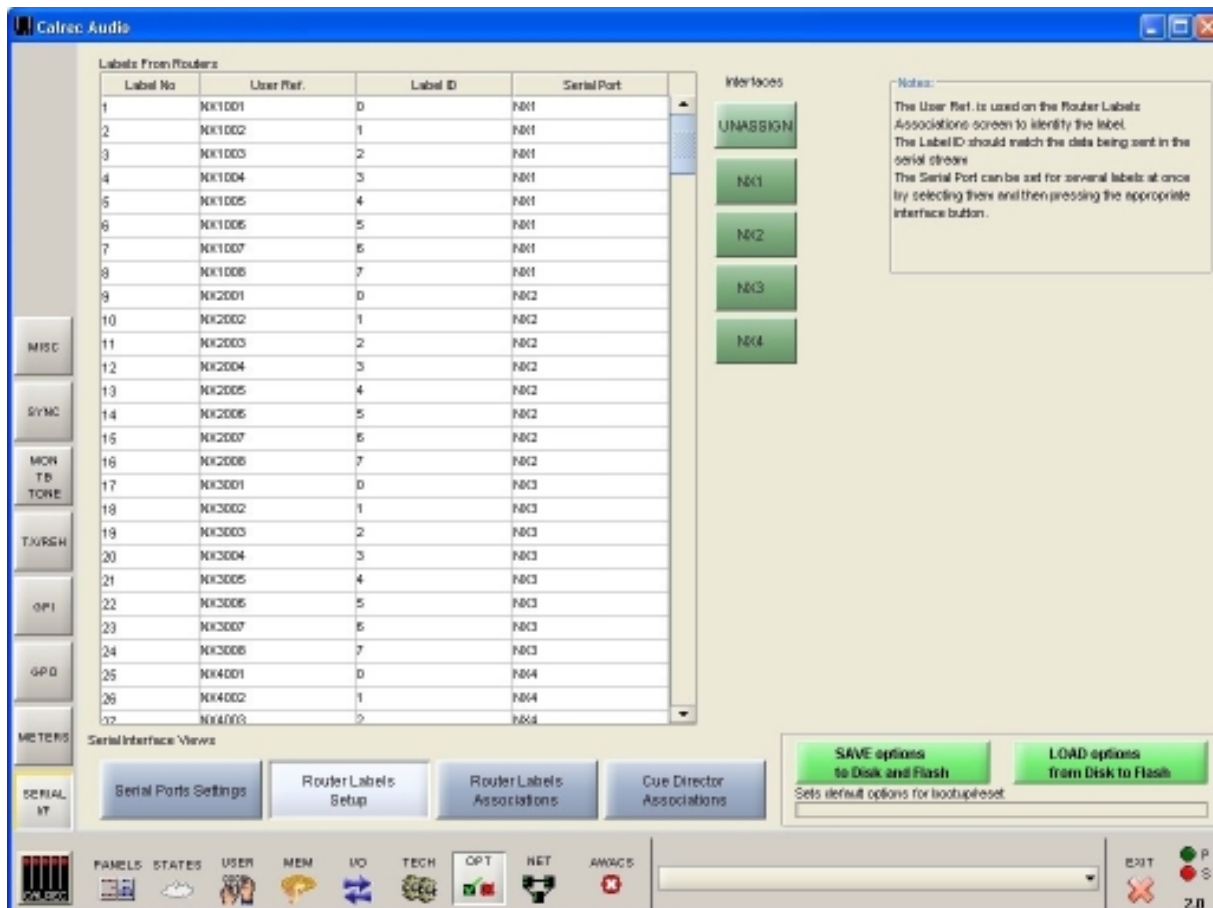
SERIAL INTERFACE

Router Label Setup Screen



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.

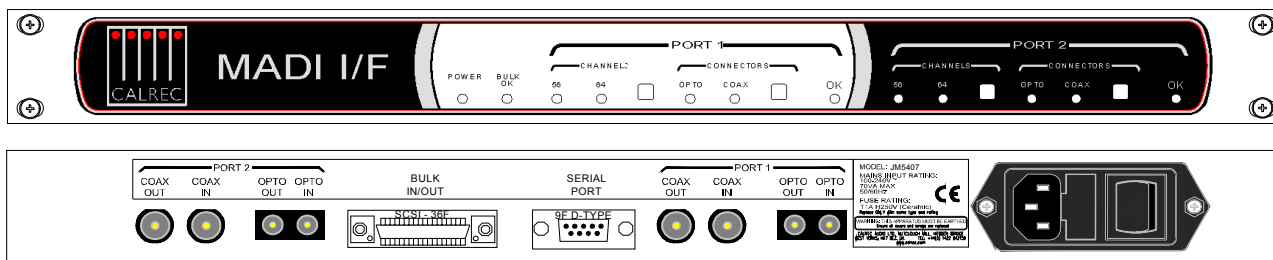
The console can support up to 256 Router labels. This screen allows the link between messages from the router to be associated with one of the console's 256 labels.



There are buttons next to the table, for each serial port function previously set up on the Serial Port Settings screen. To associate labels with a serial port interface, select the label, or region of labels, and select the required 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.



The rack mounted MADI Interface unit contains two independent, AES10 MADI compatible interfaces, and is available as an option.

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

There is no Sample Rate Conversion available on MADI inputs or outputs therefore, all the equipment connected via MADI must be synchronised to the same source as the console.

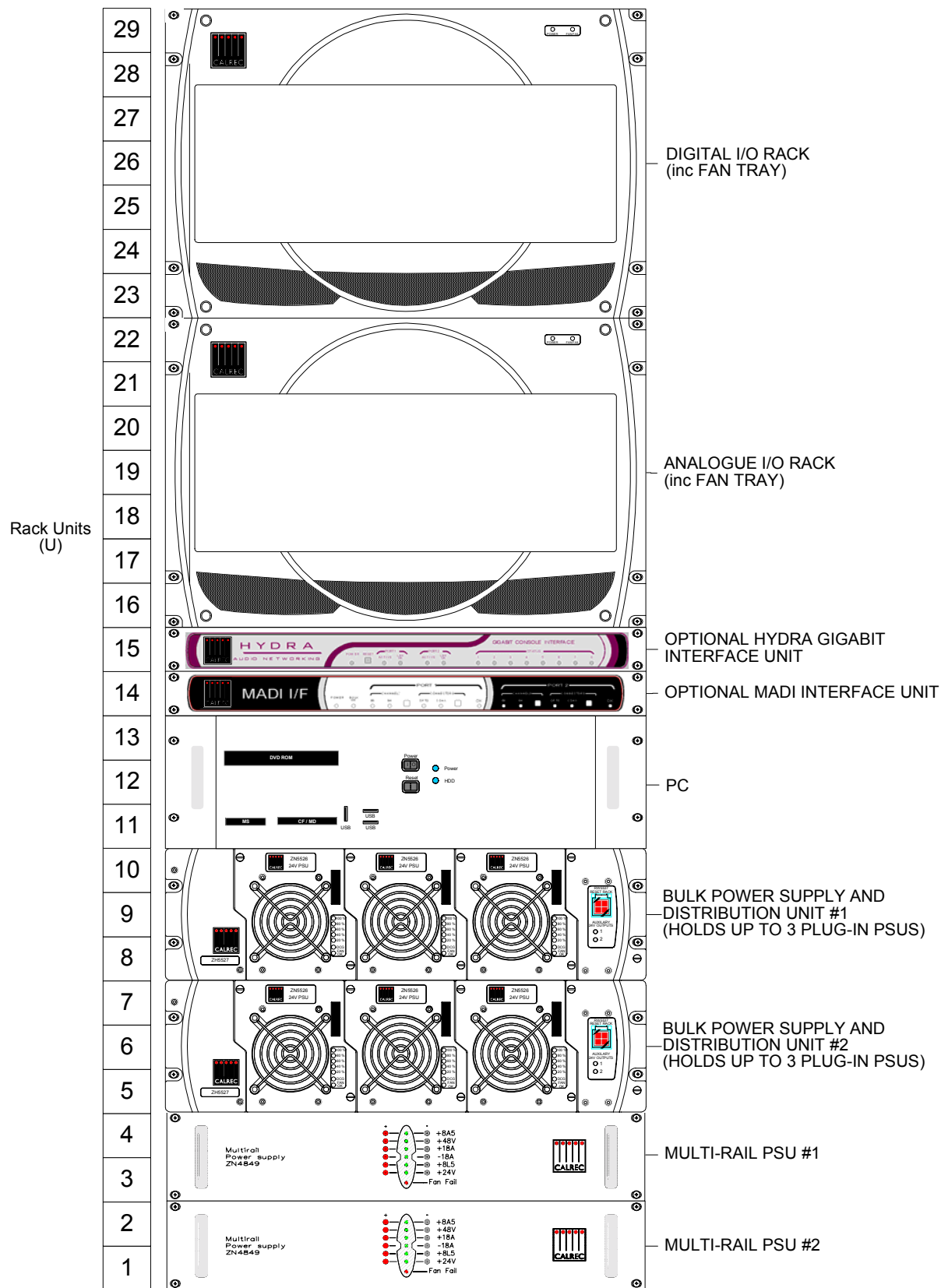
The unit can be either mains powered or DC powered.

ALPHA TECHNICAL INFORMATION



TYPICAL RACK LAYOUT

Equipment can be mounted in separate enclosures. Please refer to the cable lengths table before planning this.



(0681-100)

RACK SPECIFICATIONS

It is recommended that all equipment over 8Kg (17.5 lbs) in weight, or over 150mm (6 inches) deep is mounted into equipment bays. Equipment can be mounted in separate enclosures. Please refer to the cable lengths table before planning this.

Each I/O rack has a fan tray built into it, which incorporates a baffle such that warm air is sucked up out of the rack and out through the rear of the fan tray. A vent in the front of the fan tray allows ambient air to enter. The baffle deflects this air up into the rack above.

Items	Height	Approx depth (incl. mating cons)		Approx weight	
		inches	mm	lbs	kgs
Digital I/O Rack (fully populated)	7U	18.1	460	49.5	22.5
Analogue I/O Rack (fully populated)	7U	18.1	460	53.3	24.2
Bulk Power Supply and Distribution Rack with one PSU	3U	18.5	470	19.6	8.9
Additional PSU for Bulk PSU Rack	-	-	-	7.7	3.5
Multi-Rail PSU*	2U	18.1	460	22.1	10.0
Additional Multi-Rail PSU Hot spare	2U	18.1	460	22.1	10.0
PC*	3U	23.7	600	27	12.2
MADI Unit	1U	11.9	300	7	3.2
Hydra Gigabit Interface Unit	1U	10.4	265	6	2.7

* Note: Units have handles protruding approx 1.3" (32mm) from the surface of the front panel.

MAXIMUM CABLE LENGTHS

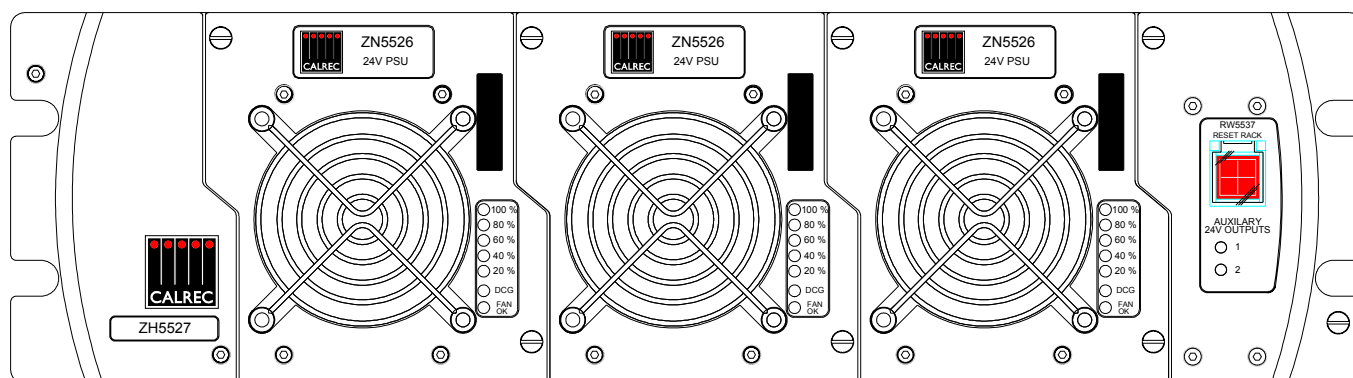
Cables		Maximum Length	
From	To	Feet	Metres
Control Surface (up to 84 faders)	Control Surface Bulk PSU	100.0	30.0
Control Surface (88-92 faders) **	Control Surface Bulk PSU	72.6	22.0
Control Surface (96 faders) **	Control Surface Bulk PSU	33.0	10.0
Control Surface	PC	500.0	150.0
Control Surface *	Digital I/O Rack *	100.0	30.0
PC	Digital I/O Rack	100.0	30.0
Digital I/O Rack	Racks Bulk PSU	100.0	30.0
Digital I/O Rack	Analogue I/O Rack	33.0	10.0
Digital I/O Rack	BNC I/O Interface Panel	16.5	5
Digital I/O Rack	XLR I/O Interface Panel	6.5	2
Analogue I/O Rack	Analogue I/O Interface Panel (EDAC)	9.8	3
Analogue I/O Rack	Multi-Rail PSU	33.0	10.0
Multi-Rail PSU	Other Multi-Rail PSU	1.3	0.4
MADI Unit	Digital I/O Rack	16.5	5
Hydra Unit	Digital I/O Rack	16.5	5

* Optionally, extenders can be supplied to provide console data connections up to 150 metres (500 feet).

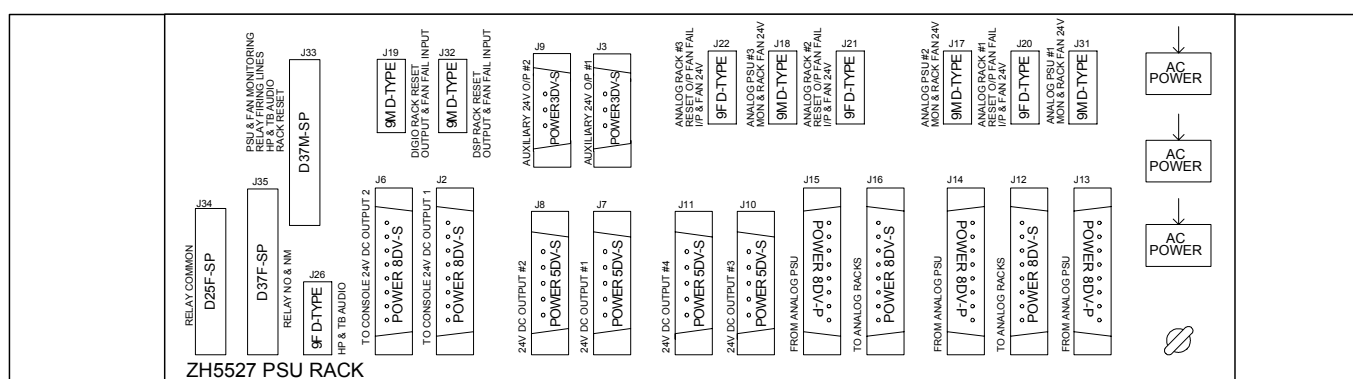
** For consoles with 88 faders or more, an extra Bulk Power Supply and Distribution Rack with at least one plug-in PSU is required to achieve a distance of 30 metres between the console and its power system.

BULK POWER SUPPLY AND DISTRIBUTION UNIT

Front



Rear



This 3U rack can hold up to 3 identical plug-in power supply units. Each unit has separate AC power inputs via IEC 950 filtered inlets at the rear of the rack. The DC outputs are combined on the backplane. The maximum output power from each plug-in unit is 600W. The units can be “hot swapped” providing there is enough output power remaining to drive the load. Each unit has a bargraph to indicate the output power demand. Two 24V Auxiliary outputs are provided via resettable 10A current trips with LED status indication on the front panel. These could be used for a MADI interface unit or a Hydra networking interface unit for example. A typical system would have two of these racks, one to provide power to the console control surface and another to provide power to the Digital I/O Rack. The number of plug-in PSU’s required in the rack is dependant upon the size of the system, the distance between console and rack, and the “hot spare” requirement.

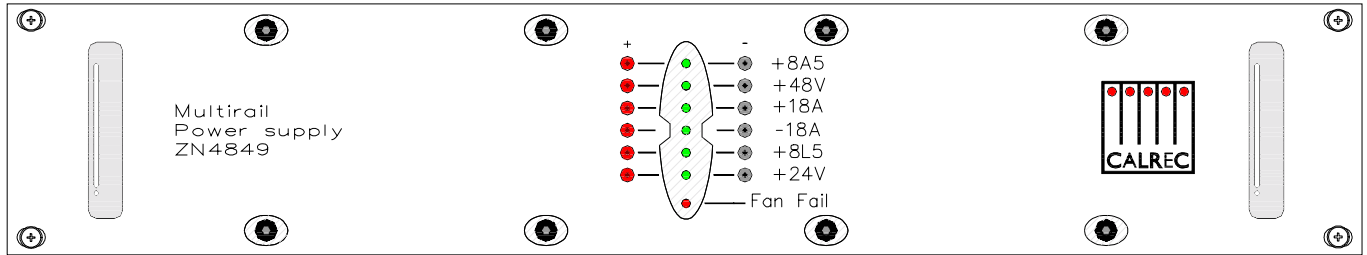
The rack is fan cooled with fans mounted in the front of each PSU. The warm air is directed out of the sides of the rack. **To ensure proper cooling, there must be a minimum clearance of two inches (50mm) from the fans and side air outlets. The maximum operating ambient temperature is 35°C.**

In addition to supplying the console and digital rack components of the system with power, the Bulk Power Supply and Distribution Unit gathers and distributes the multiple rails (from external power units) required for any analogue I/O cards. All the system power rails and fan speed monitoring is gathered here before being sent to the console. Should a fault occur, a warning light will flash on the console and a diagnostic message will appear on the front end AWACS (Automatic Warning And Correction System) screen.

The unit also includes a front-mounted reset button for the Digital I/O rack.

MULTI-RAIL PSU

Front



Rear



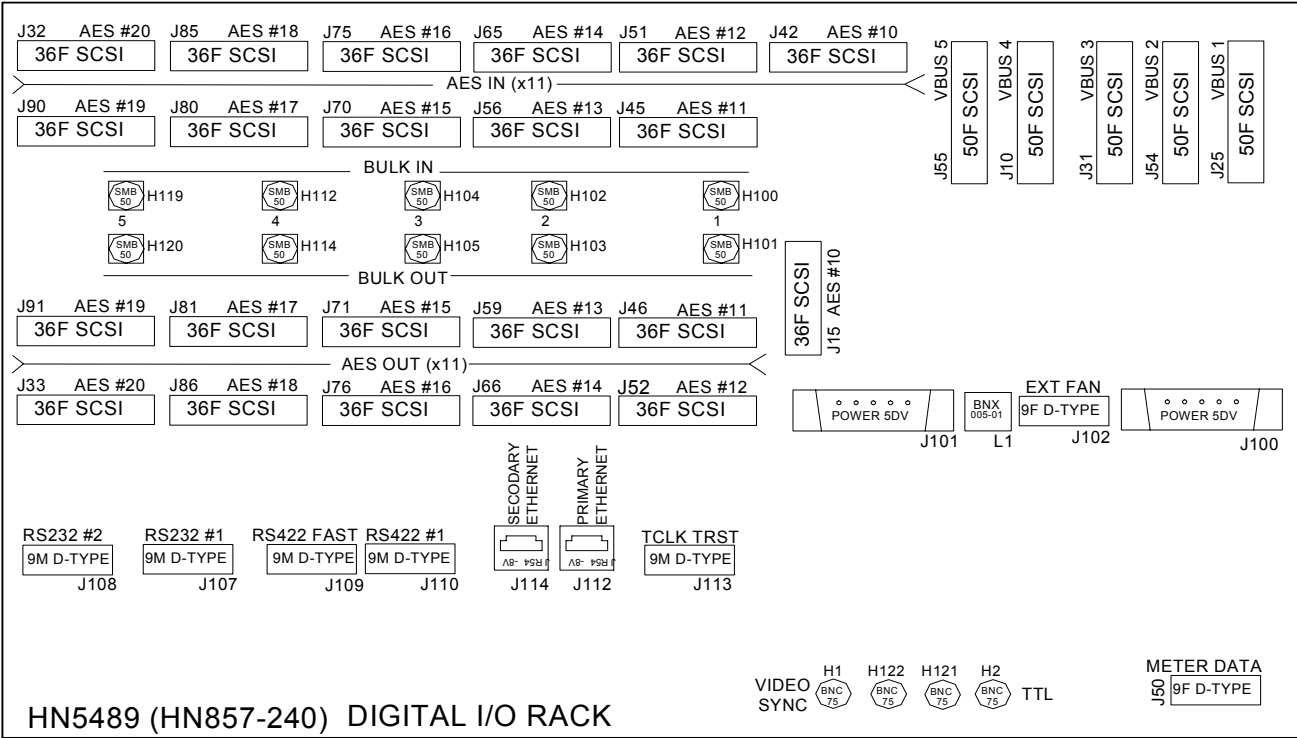
A 2U multi-rail PSU is used to power the Analogue I/O racks. A typical system with 2 Analogue I/O racks would have two of these multi-rail power supply units, plus a third unit acting as a “hot spare” providing redundancy, in case one of the other units fail. If racks are housed in different locations, each may require a hot spare. This is dependant upon the cable lengths involved. All hot spares are optional.

The Multi-Rail PSU is fan cooled but uses a very low noise fan, drawing air from side to side through the PSU instead of in from the front, to minimise noise. The Multi-Rail PSU’s are fitted with rear flanges to allow the rear of the PSU to be bolted to the studio equipment bay. Should any of the fans slow down or stop, or any voltage rail fall outside specified limits, a PSU Fail signal will be sent to the console and PC to warn the operator of a problem.

These units are monitored via the bulk power supply and distribution unit. Should a fault occur, the hot spare would automatically take over from the primary unit, the PSU Fail Indicator on the Broadcast Facilities panel would begin to flash and a message would be sent to the control surface via AWACS.

AES INPUTS AND OUTPUTS

All AES inputs and outputs are provided on 36 way female SCSI-style connectors on the rear of the Digital I/O Rack (16 AES pairs of inputs or outputs per connector).



The Digital I/O Rack can house up to 11 AES I/O cards, each of which provides 16 AES inputs and 16 AES outputs. The cards are inserted into slots 10-20 within the rack.

Each slot has dedicated input and output connectors on the rear of the rack, to which the system's AES inputs and outputs are connected. These connectors are used only when an AES I/O card occupies the slot.

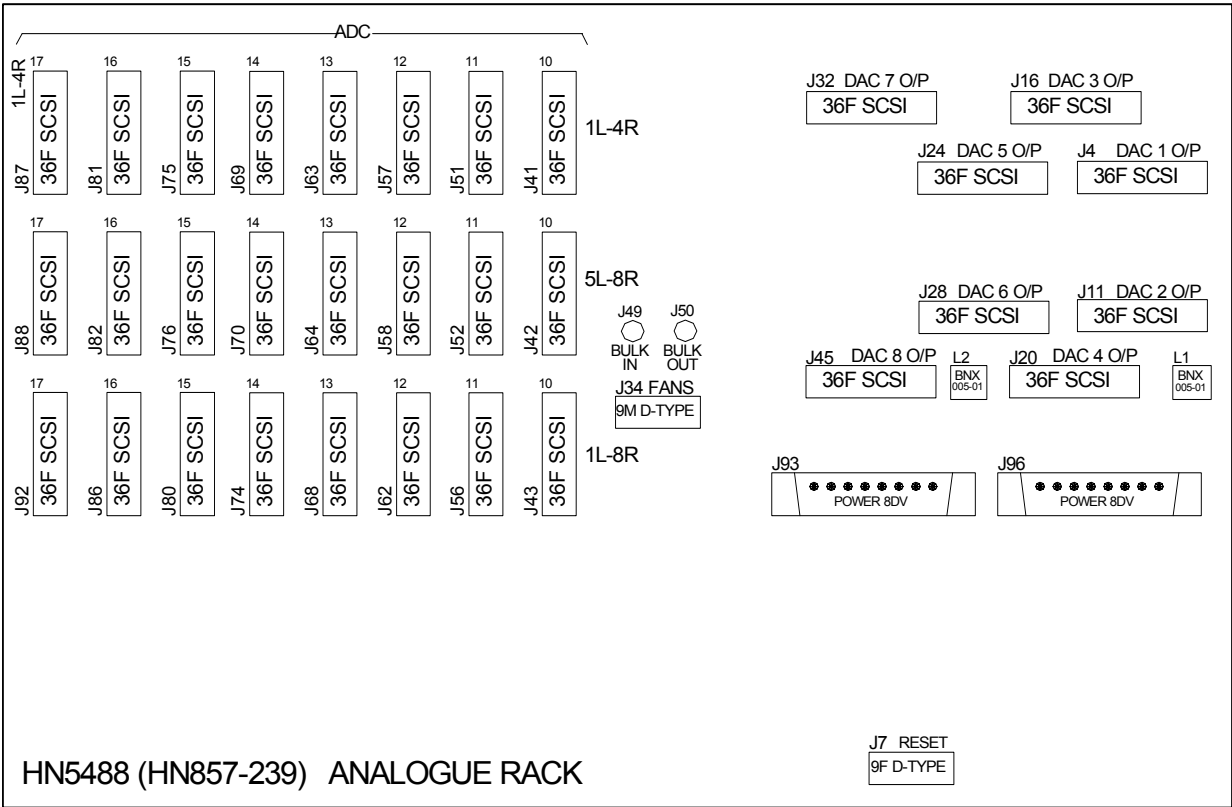
Of the 11 AES slots available, up to 5 can be occupied by bulk I/O cards which are used to interface to analogue I/O racks. If a slot is occupied by a bulk I/O card, then the AES I/O connectors belonging to that slot are left unused, and the SMB connectors for bulk I/O are used to connect to the analogue I/O racks.

Up to 8 of the 11 slots can be occupied by wide area bulk I/O (WAB) cards which are used for wide area interfaces such as MAD1 or Hydra. If a slot is occupied by a WAB I/O card, then the AES I/O connectors on the rear of the Digital I/O Rack belonging to that slot are used to connect to the wide area interface.

Digital I/O Rack Slot Arrangement					
Slot No	Compatible Card	AES Input Connector	AES Output Connector	Bulk Input Connector	Bulk Output Connector
1-7	DSP (ONLY 2 NEEDED - 1 PLUS HOT SPARE)	-	-	-	-
8-9	RACK PROCESSOR	-	-	-	-
10	AES, BULK OR WAB	J42	J15	H100	H101
11	AES OR WAB	J45	J46	-	-
12	AES, BULK OR WAB	J51	J52	H102	H103
13	AES OR WAB	J58	J59	-	-
14	AES, BULK OR WAB	J65	J66	H104	H105
15	AES OR WAB	J70	J71	-	-
16	AES, BULK OR WAB	J75	J76	H112	H114
17	AES	J80	J81	-	-
18	AES, BULK OR WAB	J85	J86	H119	H120
19	AES	J90	J91	-	-
20	AES	J32	J33	-	-

ANALOGUE INPUTS AND OUTPUTS

All analogue inputs and outputs are provided on 36 way female SCSI-style connectors on the rear of the Analogue I/O Racks.



ADC Card Slots and Connectors

Each analogue I/O Rack can house up to 8 mic/line or line input (ADC) cards, each of which provides 8 stereo inputs. The cards are inserted into the slots within the rack, these are numbered 1-8. Each slot has 2 dedicated input connectors on the rear of the rack, to which the system's analogue inputs are connected. Each of the input connectors provides connections for 4 stereo inputs.

ADC SLOT	MIC/LINE INPUTS 1-8 CONNECTOR	MIC/LINE INPUTS 9-16 CONNECTOR
1	J41	J42
2	J51	J52
3	J57	J58
4	J63	J64
5	J69	J70
6	J75	J76
7	J81	J82
8	J87	J88

DAC SLOT	LINE OUTPUTS 1-16 CONNECTOR
1	J4
2	J11
3	J16
4	J20
5	J24
6	J28
7	J32
8	J45

DAC Card Slots and Connectors

Each analogue I/O Rack can house up to 8 line output (DAC) cards, each of which provides 8 stereo outputs. The cards are inserted into the slots within the rack, these are numbered 1-8. Each slot has a dedicated output connector on the rear of the rack, which provide connections for the system's analogue outputs. Each of the output connectors provides connections for 8 stereo outputs.

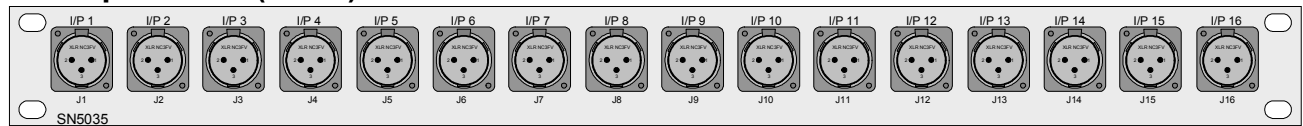
Each analogue I/O rack is connected to the digital I/O rack via the BULK IN and BULK OUT connectors J49 and J50.

BNC AND XLR INTERFACE CONNECTOR PANELS

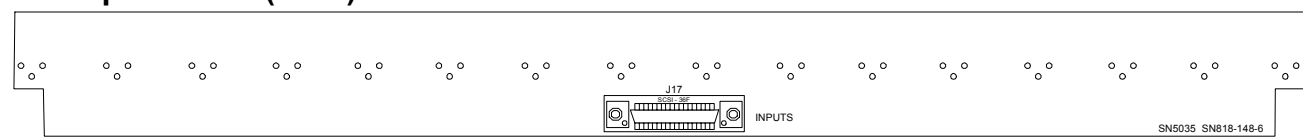
Audio inputs and outputs may be connected directly to the system’s analogue and digital I/O racks using 36 way SCSI-style connectors. Optionally, break out connector panels and cabling can be provided. Ideally, interface panels should be fitted within 3m (9.8ft) of the backplane they connect to.

For digital inputs and outputs, interface panels can be either XLR (16 male or female on a 1U panel) or BNC (32 on a 1U panel).

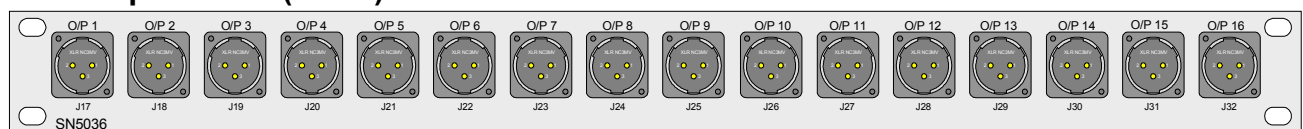
XLR Input Panel (Front)



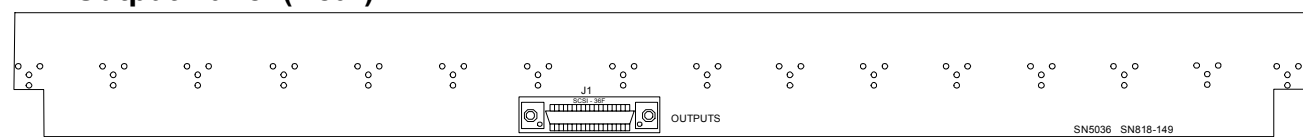
XLR Input Panel (Rear)



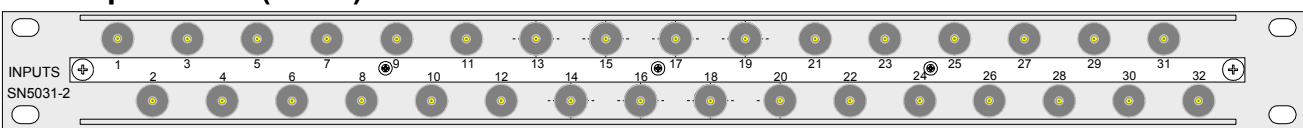
XLR Output Panel (Front)



XLR Output Panel (Rear)



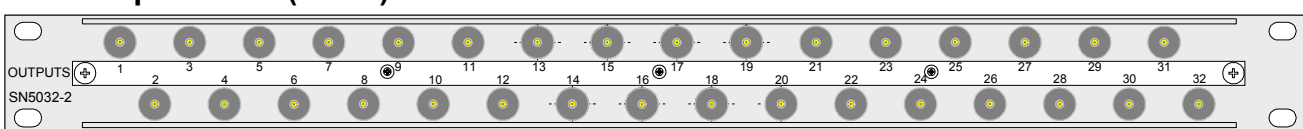
BNC Input Panel (Front)



BNC Input Panel (Rear)



BNC Output Panel (Front)



BNC Output Panel (Rear)



EDAC INTERFACE CONNECTOR PANELS

8 or 12 way EDAC connector 2U panels are available to interface analogue I/O in one of the following styles:

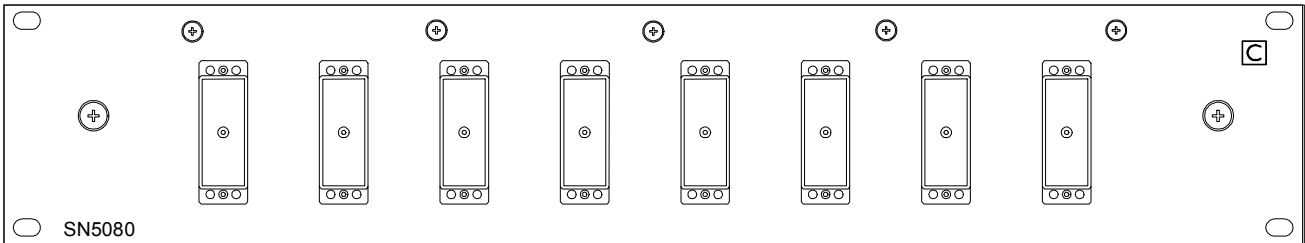
Interface	Style 1	Style 2
Mic/Line or Line Inputs	4 pairs per EDAC	6 pairs per EDAC
Line Only Inputs	8 pairs per EDAC	6 pairs per EDAC
Line Outputs	8 pairs per EDAC	6 pairs per EDAC

The choice of style will depend on the installation requirements. Limiting factors to be considered are:

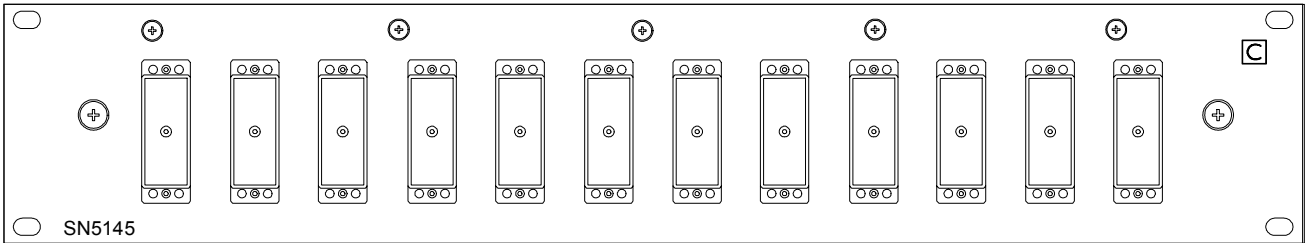
- The number of connections available in the external cabling
- Restricted amount of interface space available within 3m(9.8ft) of the backplane.

The different styles are achieved using interface cards which attach to the rear of the 2U panels to provide different combinations of SCSI-style connectors per EDAC (Except in the case of mic/line inputs where a custom cable is provided).

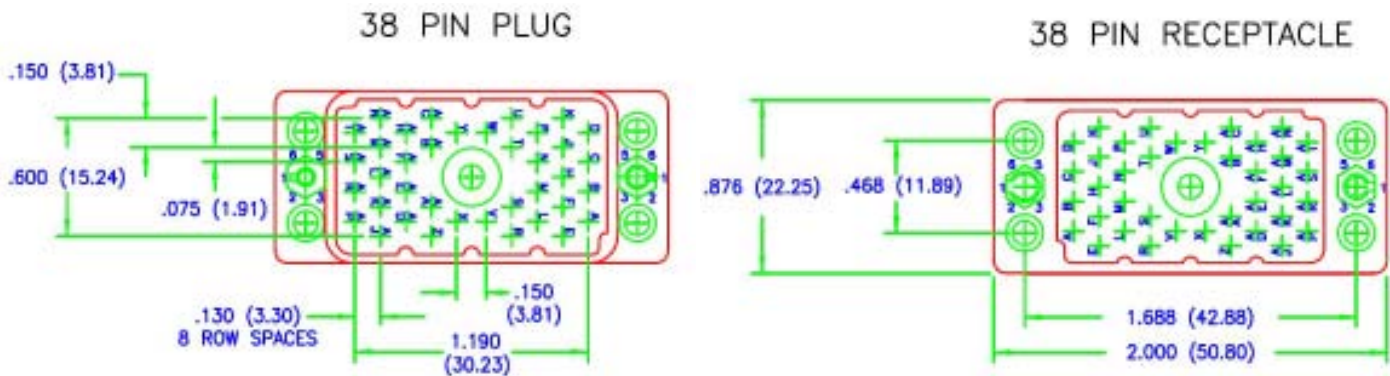
8X38W EDAC PANEL



12X38W EDAC PANEL



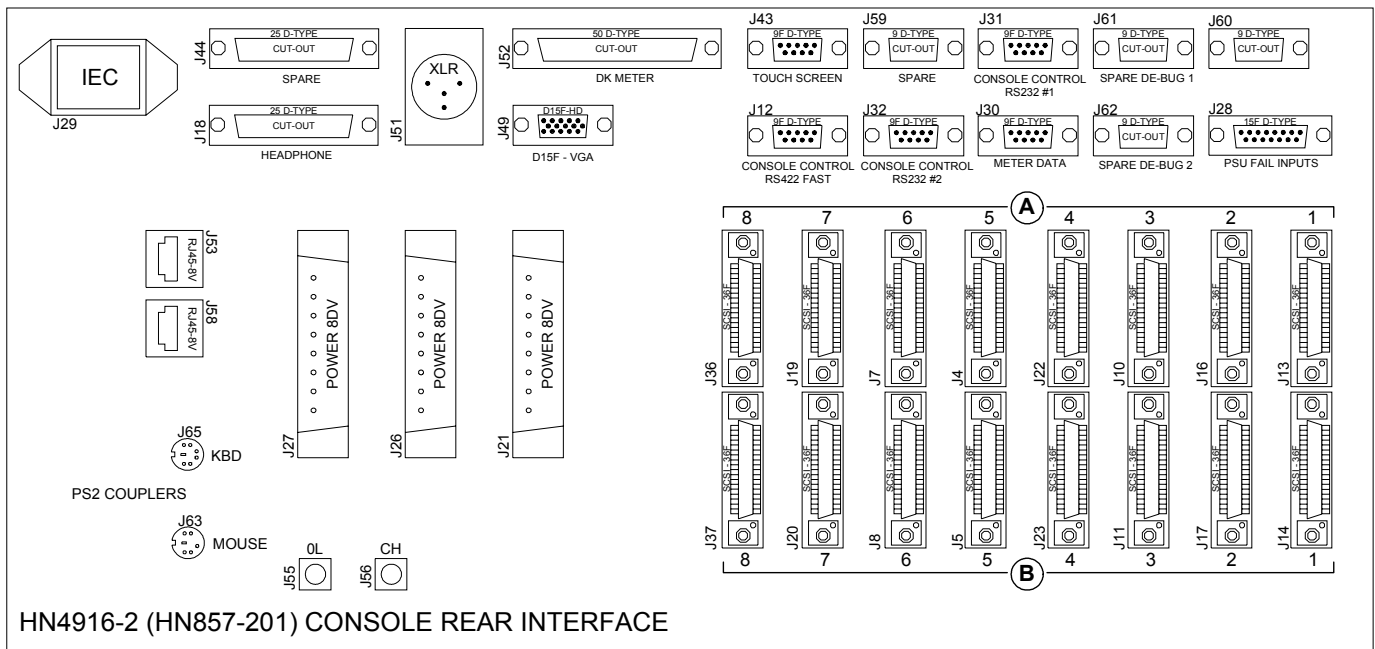
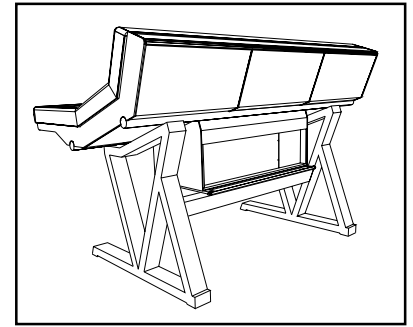
The connectors on these panels are 38 pin, male panel-mounted EDAC connectors (38MP-plug). Therefore, cables interfacing to these panels need 38 pin, female cabling connectors (38FC-receptacle).



GPIO CONNECTIONS

Connections to the general purpose inputs and outputs are provided on 36 way female SCSI-style connectors on the rear of the console. Up to 8 cards can be fitted, each of which can provide up to 16 general purpose outputs and 8 general purpose inputs.

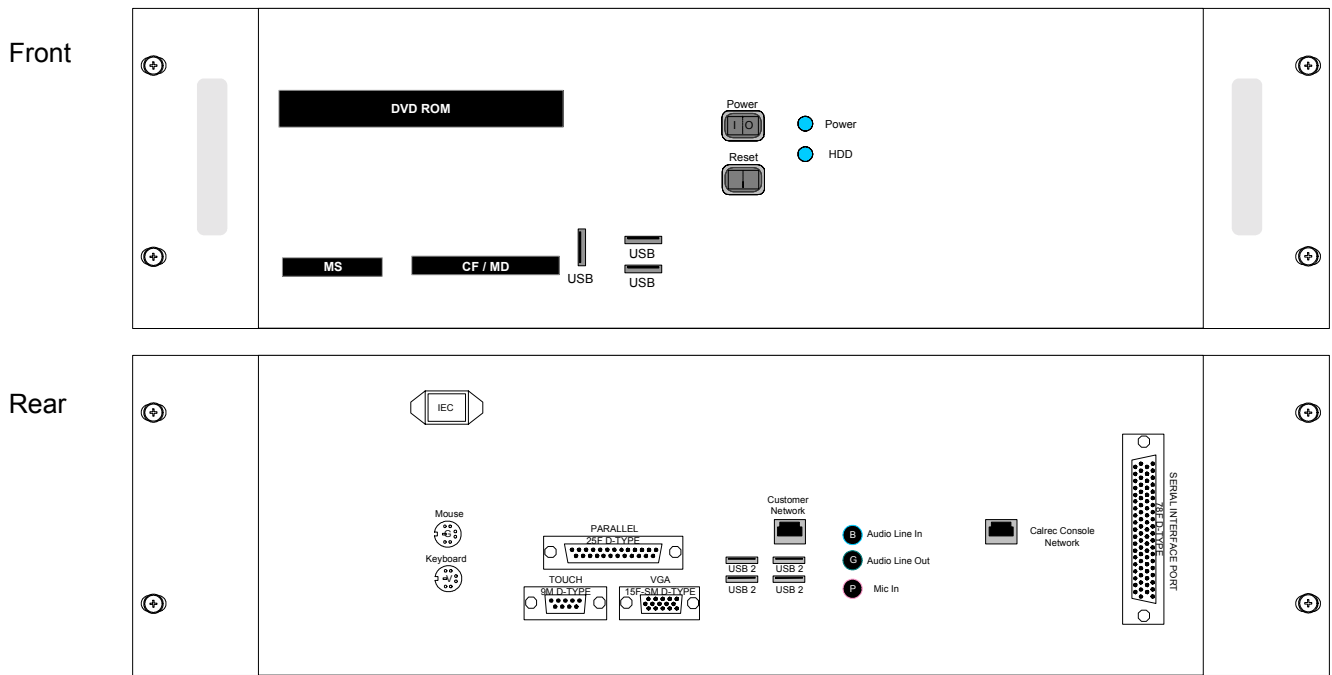
* Note that on GPIO card 1, outputs 1 - 4 are not available, as they are used for TX, RX, PSU Fail and APFL facilities.



Relay Output Specification : 100mA maximum switch current, 30V maximum voltage.

Opto Input Specification : DC - 5 to 50 volts, positive or negative,
AC - 5 to 50 volts peak, 50-60Hz.

PC INFORMATION



There are USB connectors on both the front and the rear of the PC to allow 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.

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. A second 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.

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.

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.

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.

Operating System	Windows XP
CPU	Intel Celeron Processor (2GHz+)
RAM	256 MB DDR RAM
HDD	40GB
CD ROM	52x
Network Ports	2 x 10/100
Card Slots	Compact Flash/Microdrive, SmartMedia, Memory Stick, Secure Digital/Multimedia Card
USB 2 Ports	4 (Rear of Unit), 1 (Front of Unit)
IEEE1394 Port	1 (Front of Unit)
Additional Hardware	8 Port Serial Card
Additional Software	PC Anywhere

SYSTEM SPECIFICATION

DIGITAL INPUTS	
Formats Supported	AES/EBU (AES3) 24-bit 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	
Formats Supported	AES/EBU (AES3) 24-bit
Interface	110 Ohm transformer balanced 4V Pk-Pk (nominal) into 110 Ohm load 75 Ohm unbalanced 1V Pk-Pk (nominal) into 75 Ohm load (BNC)
ANALOGUE INPUTS	
Analogue - Digital Conversion	24-Bit
Input	Electronically Balanced
Input Impedance	>1k Ohms for Mic gains 10k Ohms for Line gains
Sensitivity	+18 / -78dB on Mic/Line Input Card +18/-24dB on Line Only Input Card.
Equivalent Input Noise	-126dB (150 Ohm source)
Distortion	-1dBFS @ 1kHz - Better than 0.003% -20dBFS @ 1kHz - Better than 0.006% -60dBFS @ 1kHz - Better than 0.3%
Frequency Response	20Hz to 20kHz +/- 0.5dB on Mic/Line Input Card 20Hz to 20kHz +/- 0.25dB on Line Only Input Card
Input CMR (Common Mode Rejection)	>70 dB (Typical 80dB) on Line Inputs >75 dB (Typical 85dB) on Mic Inputs
ANALOGUE OUTPUTS	
Digital - Analogue Conversion	24-Bit
Output Balance	Electronically Balanced, 20Hz to 20kHz, Better than -35dB, typically -45dB
Output Impedance	<40 Ohms
Distortion	-1dBFS @ 1kHz - Better than 0.006% -20dBFS @ 1kHz - Better than 0.003% -60dBFS @ 1kHz - Better than 0.3%
Frequency Response	20Hz to 20kHz +/- 0.25dB

- Analogue input for 0dBFS can be pre-set globally to +28, +24, +22, +20, +18 or +15 dBu
- Pre-fader headroom on analogue inputs is adjustable globally from +24 to +36dB in 2dB steps
- Analogue output for 0dBFS Matches input setting into >1kOhms (+24dBu max into 600 Ohms)

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 0.005%
Frequency Response (Analogue Input to Output)	20Hz to 20kHz +/- 0.5dB
SYNCHRONISATION	
48kHz synchronisation	NTSC/PAL Video Internal Crystal Reference TTL Wordclock (48kHz) AES/EBU Digital Input (48kHz)

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.

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)

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

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