# ALPHA 100

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Whilst the Company ensures that all details in this document are correct at the time of publication, we reserve the right to alter specifications and equipment without notice. Any changes we make will be reflected in subsequent issues of this document. The latest version will be available upon request.

This publication is for International usage.

# Overview

## INTRODUCTION

The Alpha 100 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. The Alpha 100 represents a milestone in digital audio mixing console systems as it offers the reliability associated with analogue technology but with the flexibility of an all-digital system.

The Alpha 100 is the result of over 30 years experience in broadcast console design and is the third generation of Calrec consoles to feature a digital control surface and computer-aided memory system. The introduction of digitally controlled assignable systems in 1980 has allowed for their ergonomics to be continuously refined by user input and the Alpha 100 reflects this in its user interface. In contrast to many other designs, the flexibility offered by digital control has been harnessed to provide greater functionality and ease of use.

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. The Alpha 100 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

### Format

Up to 96 faders, with A and B layers of control, plus 4 dedicated main output faders.
226 equivalent channels: Up to 96 stereo or mono channels plus 34 mono channels.
Comprehensive surround panning and monitoring with optional motorised joystick.
Optional user-definable monitor selection and control panels.
User-definable metering system, with recallable meter configurations.
Flexible TFT screen-based meters with total user-configurability.
Input Delay control panel and additional screen option.
Optional I/O expansion via a wide area interface such as MADI or Hydra, Calrec's sophisticated audio networking system.

### Channel / Group Facilities

All channels have 4-band EQ, 2-band Filters, Compressor/Limiter and Expander/Gate.
All groups have Compressor and Expander/Gate.
Up to 20 auxiliary outputs which can be 20 mono or 10 stereo.
There is a pool of assignable inserts and a pool of direct outputs for channels and groups.
Pre configured inserts are assignable to any channel or group.
Direct outputs can be from pre EQ, pre fader, or post fader.
Every direct output can be a mix minus feed.
Automatic cross-fading facility, with user-definable fade out and in times.
All faders are motorised and touch-sensitive.
A centrally assigned fader allows control of any fader from the optimum listening position.

### Routing

8 stereo or mono audio groups.
Additional VCA style grouping system.
Up to 48 outputs for multi-track or general purpose feeds.
Tracks can be fed from pre EQ, pre fader, post fader or mix minus.
4 main stereo or 5.1 surround outputs with Compressors.
Simultaneous LCRS, stereo and mono outputs available from each 5.1 main output.
Every channel can route to every bus, at the same time, without restrictions.
Direct input available to group, mains, aux and mix-minus busses.

### System

On board Flash ROM memory system allows 99 full console snaphot or partial memories.
PC backup allows an unlimited number of memories.
Sophisticated GPIO facilities.
Console operates independantly 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.
Last settings fully restored on power-up or reset.
Automatic change over to hot spares for power supplies, control cards and DSP cards.
Hot plugging of every card and module.
Hot plugged cards initialise upon insertion.

## IMPORTANT CONCEPTS

### Layering

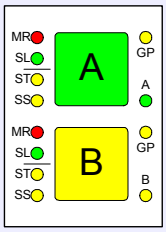
Each fader can control two independent audio signal paths, named A and B. These signal paths can be either channels or groups, although for easy reference, the faders are simply known as "Channel Faders". B signal paths are fully equipped with all the same facilities as an A path.

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 an "Assign" button (sometimes called the "Show Me" button) for each audio path. The 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 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. Calrec digital consoles are available in a number of configurations known as Audio Packs, which are a suggested complement of ports. The Audio Pack which most closely matches the requirements of the installation can be chosen, and the port quantities can be fine tuned appropriately.

## SIGNAL PATHS

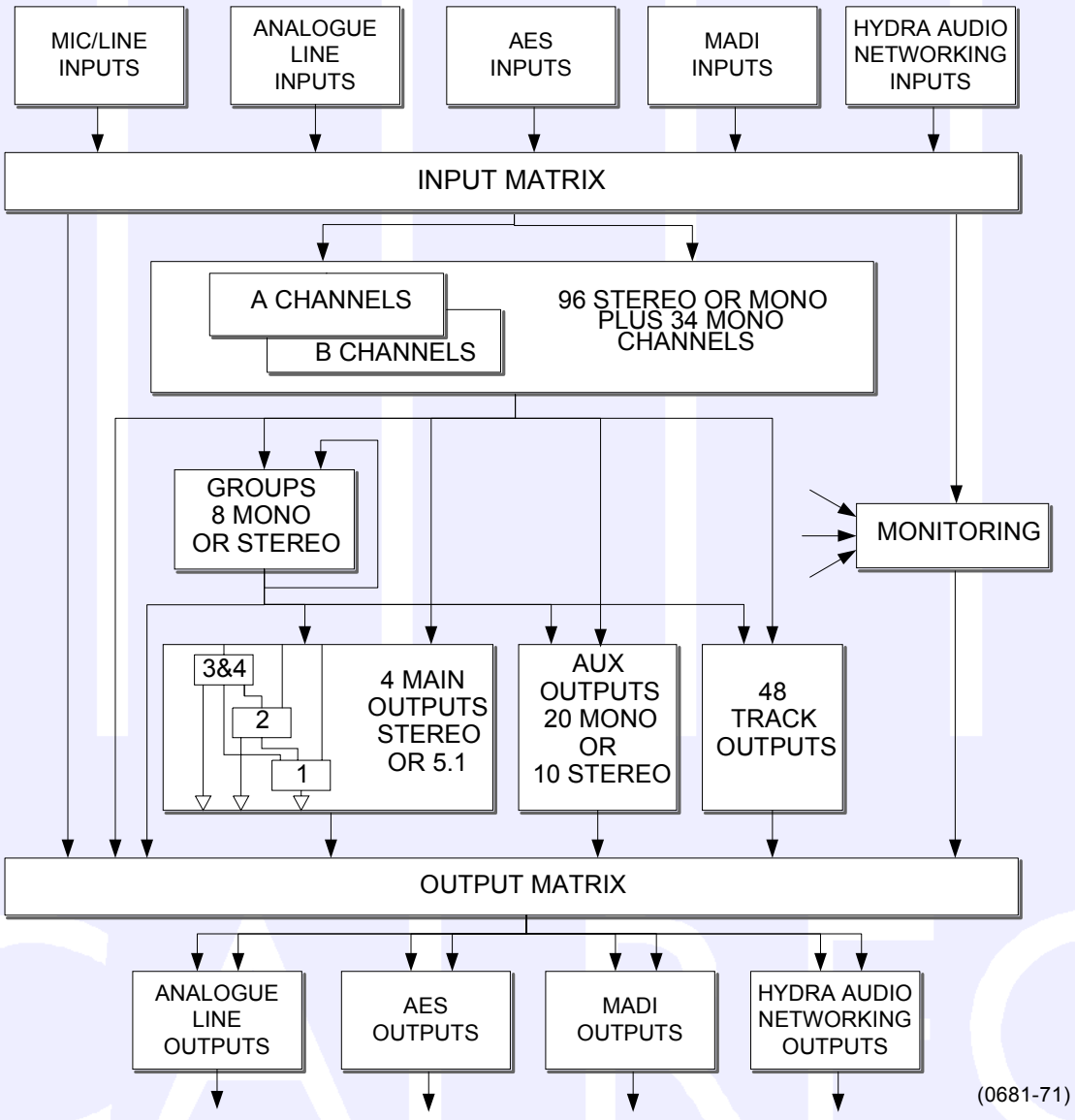
The system can have 226 equivalent channels: up to 96 stereo or mono, plus 34 mono channels.

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

The 4 main outputs can each be designated as stereo or 5.1 surround. If they are 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 bus simultaneously, the pan law to each will be correct, as though the other bus did not exist; even though the same control is used to achieve the pan.

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



## INPUTS AND OUTPUTS

There are two types of ANALOGUE INPUT CARD:

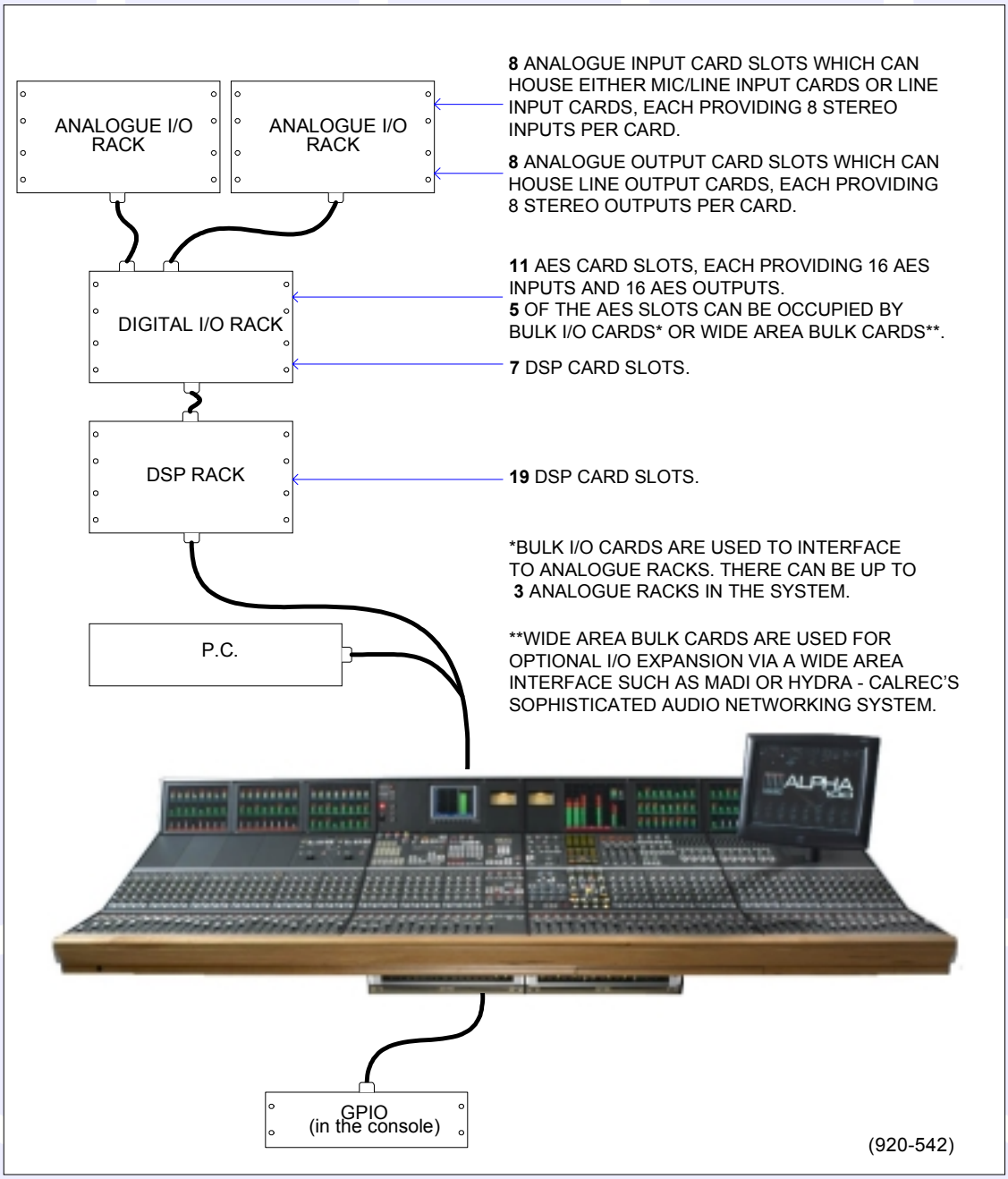
- Mic/Line input card - 8 stereo or 16 mono inputs per card.
- Line input card - 8 stereo or 16 mono inputs per card.

There is one type of ANALOGUE OUTPUT CARD:

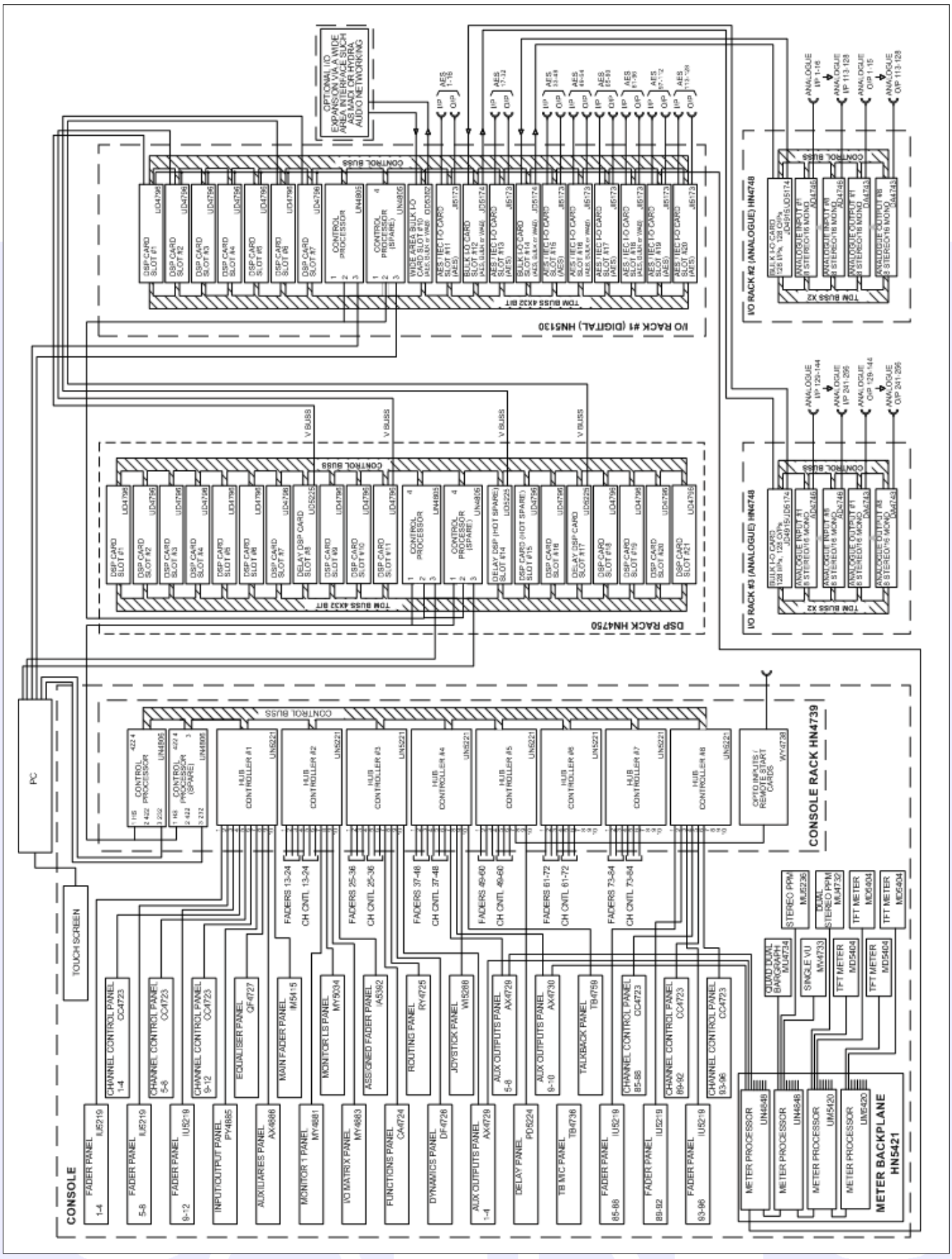
- Line output card - 8 stereo or 16 mono line outputs per card.

There is a DIGITAL (AES3) INPUT/OUTPUT CARD:

- Digital (AES3) input/output card - 16 AES inputs and 16 AES outputs per card. All inputs have switchable sample rate conversion.



## TYPICAL DIGITAL SYSTEM DIAGRAM

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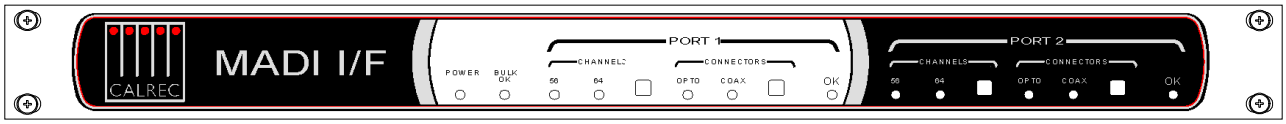
## OPTIONAL I/O EXPANSION VIA WIDE AREA INTERFACES

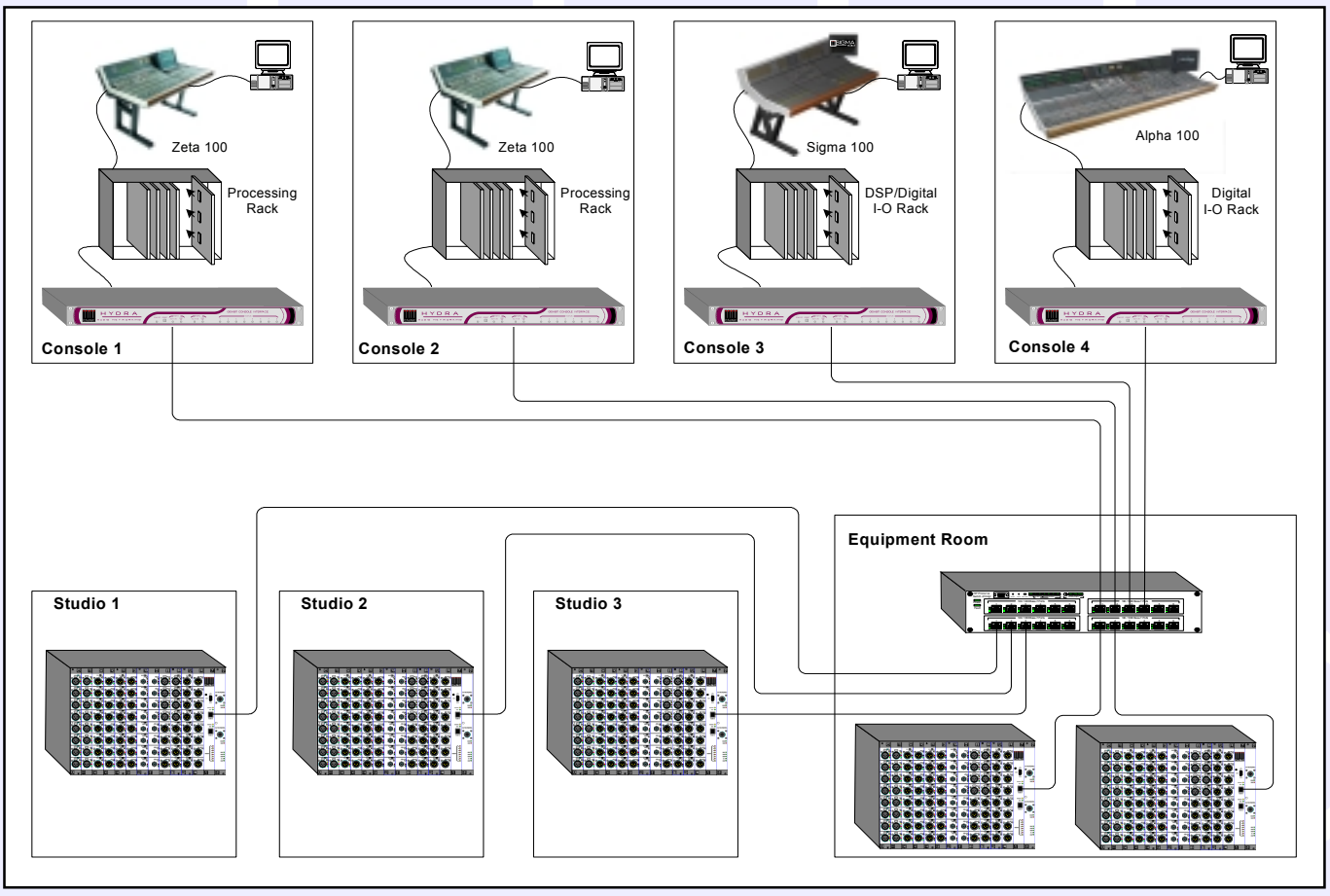
### MADI




The rack mounted MADI unit contains two independent AES10 MADI compatible interfaces, and is available as an option. The two ports are interfaced to the Alpha 100 system 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.

### HYDRA


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 destina- to the Hydra one of the AES



# 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.

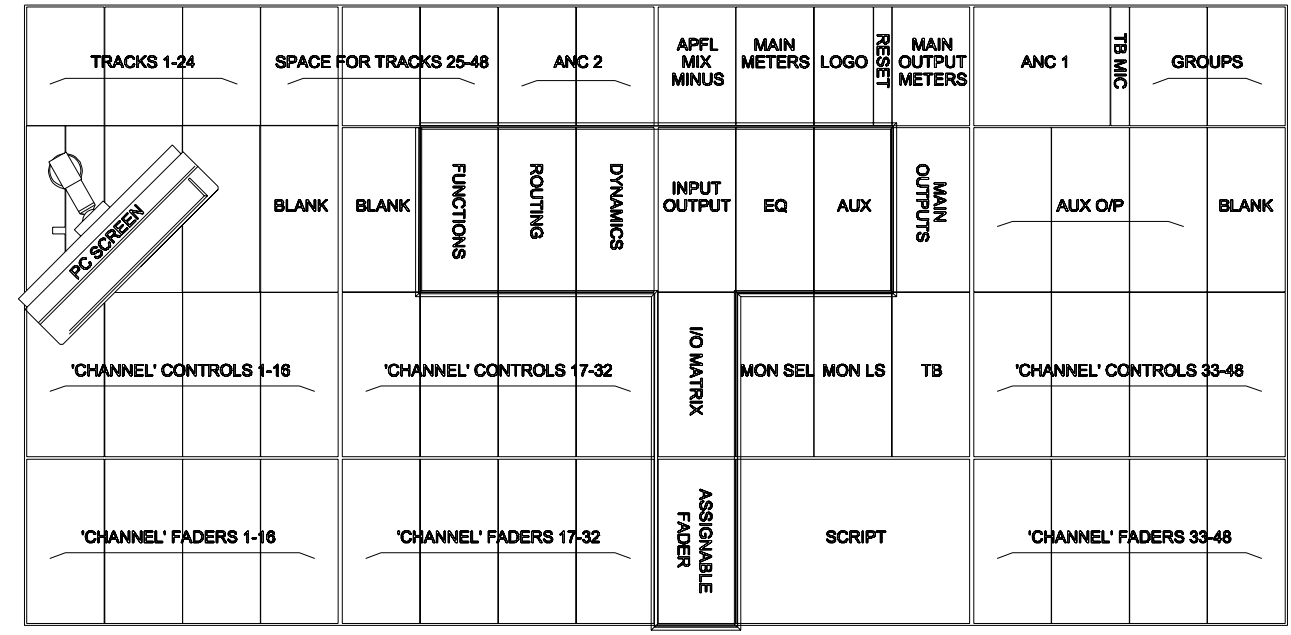
The table below shows the dimensions of the standard frame sizes available. Sections within the frame do not have to be in the order shown. For details of custom frames, with wedge sections etc, please contact Calrec.

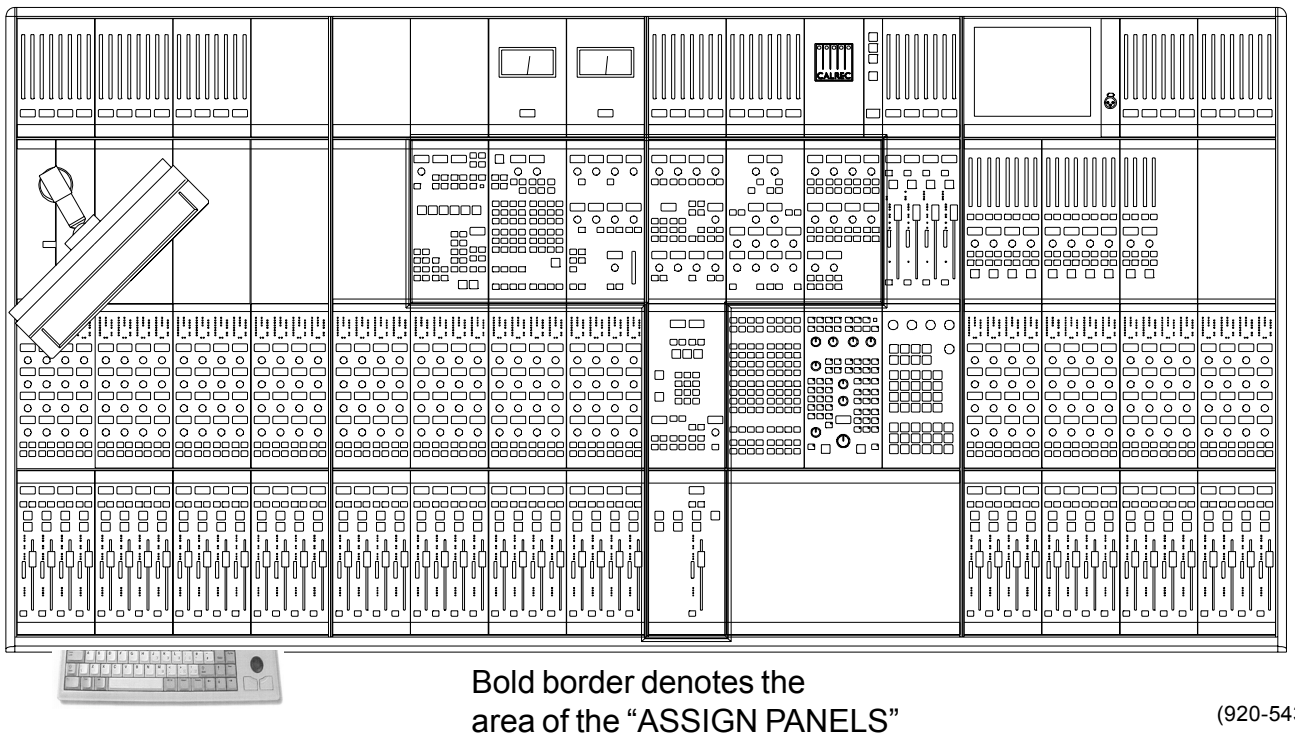
| No of Modules Wide | Frame | Length | | Depth | |
|---|---|---|---|---|---|
| | | inches | mm | inches | mm |
| 12 | 4:4:4 | 60.9 | 1547 | 43.2 | 1098 |
| 13 | 4:4:5 | 65.9 | 1672 | 43.2 | 1098 |
| 14 | 4:4:6 | 70.8 | 1797 | 43.2 | 1098 |
| 15 | 4:5:6 | 75.7 | 1922 | 43.2 | 1098 |
| 16 | 4:6:6 | 80.7 | 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. This would give more faders than the maximum number of available paths, so some B layer faders would not need to be used.

The example below shows a typical 48 fader layout.

**Key to the bottom diagram**



Bold border denotes the area of the “ASSIGN PANELS”

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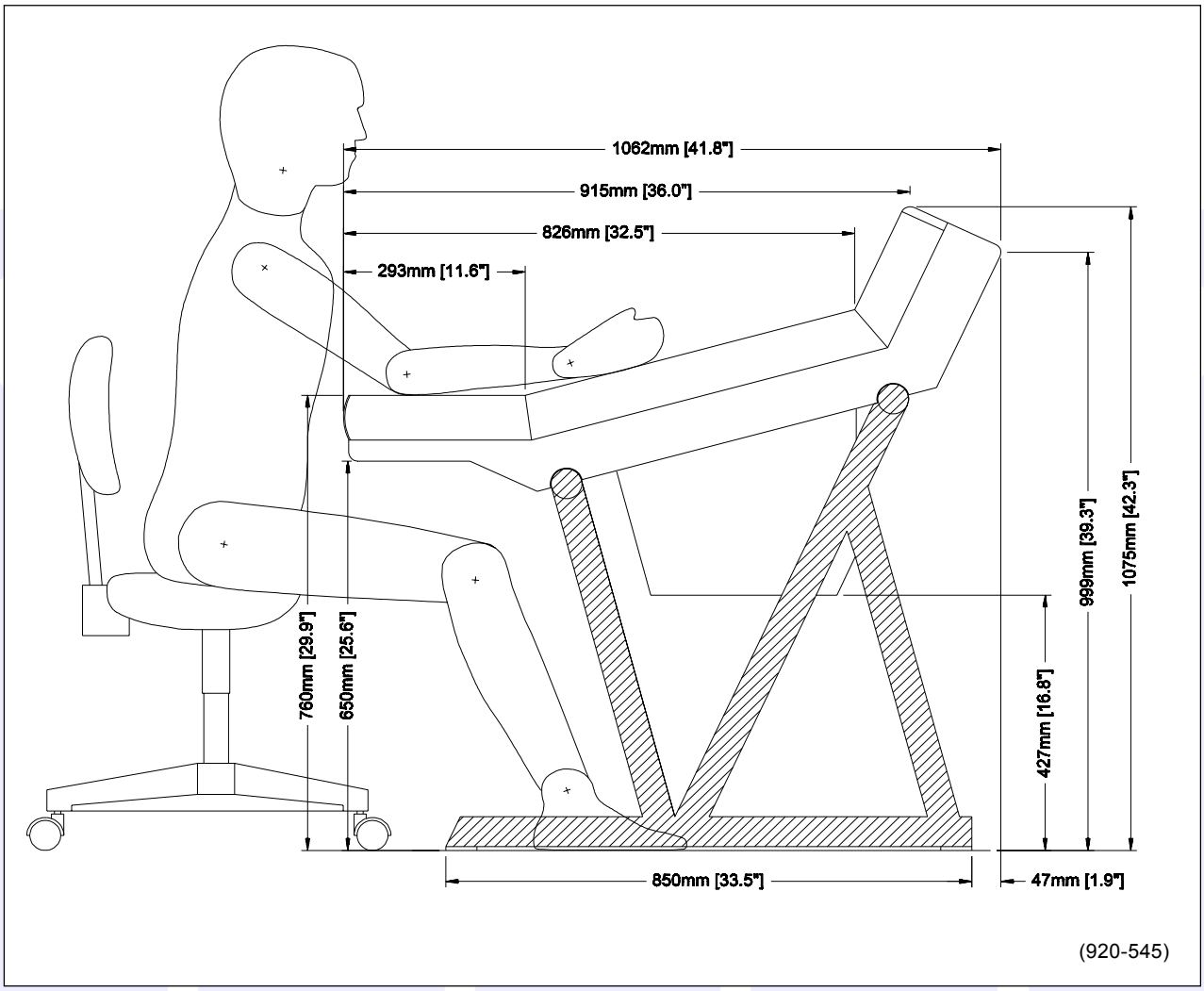
## END PROFILE

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

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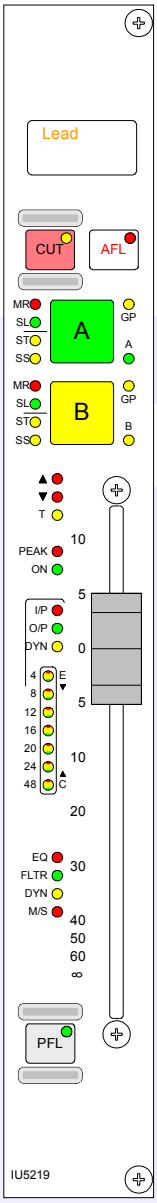
# Fader Area

## "CHANNEL" FADERS




Channel and group paths are controlled by the console's "Channel" faders. Each fader can control two independent audio signal paths, named 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 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 assign button will light up. 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. The colour of the display indicates the active path. If path A is active, the label will be green. If path B is active, the label will be amber.

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

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.

### 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** | This LED is not functional |
| **A** | Path A is active |
| **B** | Path B is active |

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

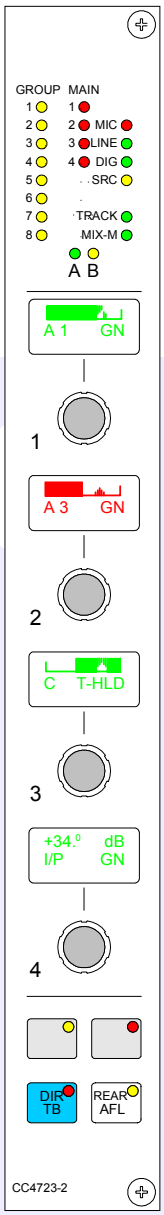
The PEAK LED will illuminate if the channel or group signal is within 3 dB of the clipping level. The ON LED illuminates when the audio level is not at the ∞ position.

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.

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

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

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

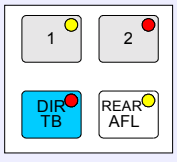
Once assigned, the four Wild controls "FLIP" with the fader providing the same function for each of the two paths. The A and B faders may also be assigned to a Wild control, in which case it will be the opposite fader which is being controlled. The colour of the Wild control display will show which fader the control is related to: Green for A, Amber for B.

### Wild Control Push-Switch Option

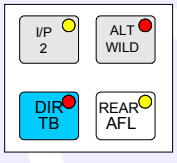
If a wild control has the Aux Send or Front Pan controls assigned to it, the user can control the ON/OFF or IN/OUT status of these controls using the Wild control push-switch. This feature is optional, so it can be enabled or disabled using the MISC screen.

### Button Options

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



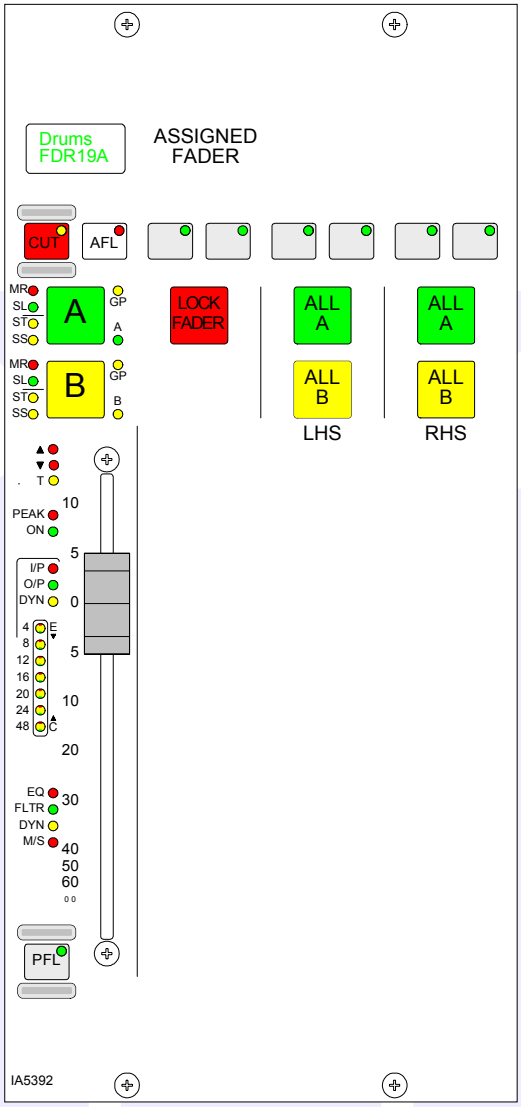

Option 1
Each channel path can select between two inputs 1 and 2. This is usually done using the Input/Output panel for the currently assigned fader. As an option, these buttons can be duplicated for each path on this panel. This can be either two buttons (shown left), or just one (shown below).




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 on the TX/REH screen.

## ASSIGNABLE FADER

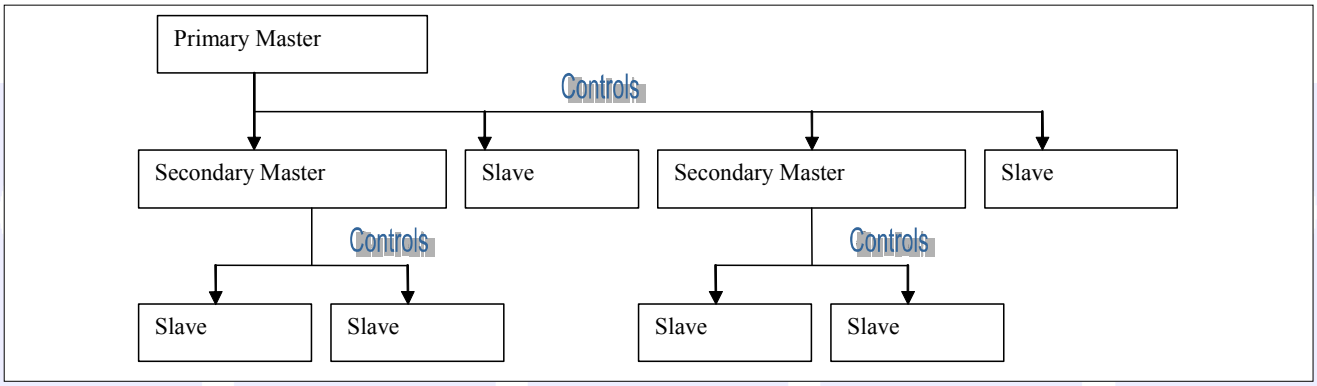



The Assignable Fader is positioned towards the centre of the console, in the optimum listening position, and works in parallel with the currently assigned channel or group fader. Alternatively, LOCK FADER allows it to be fixed to a specific path.

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

## VCA GROUPING

VCA groups allow the audio level, CUT, AFL and PFL functions of several slave faders to be controlled from one master fader. A VCA group is made or edited by holding down the Assign Button (A or B) of the fader to be master and pressing the Assign buttons of faders to be added or removed as slaves. 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 it's master is known as the primary master.




When the level of a primary master is adjusted it will change the audio level of its slaves and the levels of its secondary master's slaves by the same amount. The slave faders will not move, the Null LEDs will illuminate to indicate whether the audio is above or below the position of the fader. The CUT, AFL and PFL settings will also be applied to all 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 will also apply 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.

It is possible to create the primary or secondary group in any order. A slave can be made into a secondary master by adding slaves to it. The path on that fader will be removed from primary master and become a slave of the secondary master. If a slave added to the VCA group is already a master it will become a secondary master.

The MR and SL LED's next to the Assign buttons on the fader panel indicate the VCA group status of that fader. A secondary master fader has both the MR and SL LED lit.

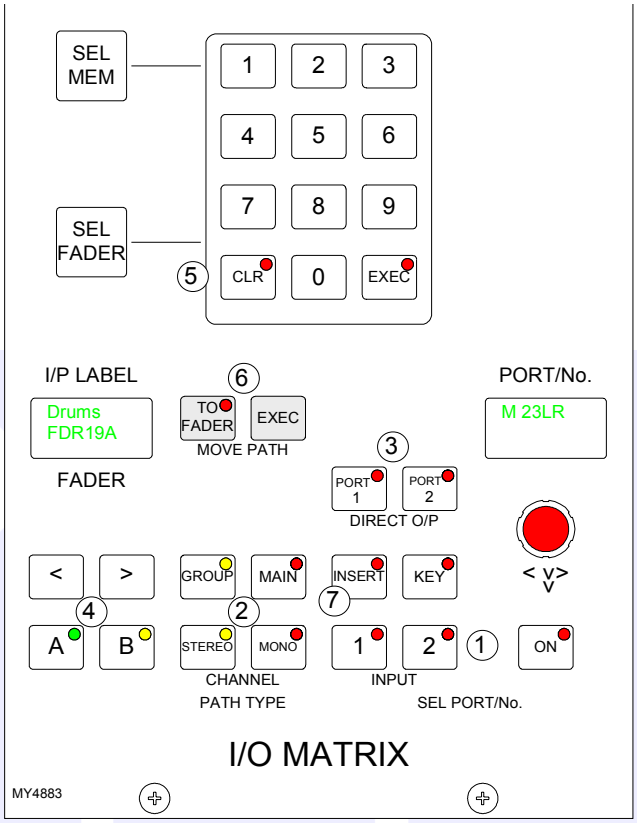
Interrogation provides a clear way of indicating VCA group assignments. Interrogation is performed by holding down the Assign button of a VCA group member. Interrogation of a Primary Master will light the Assign buttons of its primary slaves and secondary masters. Interrogation of a secondary master will light the Assign buttons of its secondary slaves, and the primary master's Assign button will flash.

The editing of VCA groups can be enabled and disabled using the PC. This provides protection against accidental changes.

# Assign Panels

## I/O MATRIX

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.




### (1) Input Port Assignment

- 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 input port, press the ON button to assign the chosen input port to the input 1 or 2.
- Pressing ON again will de-assign the port .

**Lists**
Pressing and turning the rotary control gives access to lists of other types of input port which can be set up during installation of the console. Each port can be allocated to one of a number of lists to allow I/O which is wired for similar purposes to be grouped together for selection.

It is possible to determine which lists of input ports appear for selection on the I/O Matrix panel using the Options-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, 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. The path type can also be selected using the USER-CHAN screen.

### (3) 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”.

### (4) Fader Path Selection

In addition to the Assign buttons on the fader panels (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.

**(5) 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.

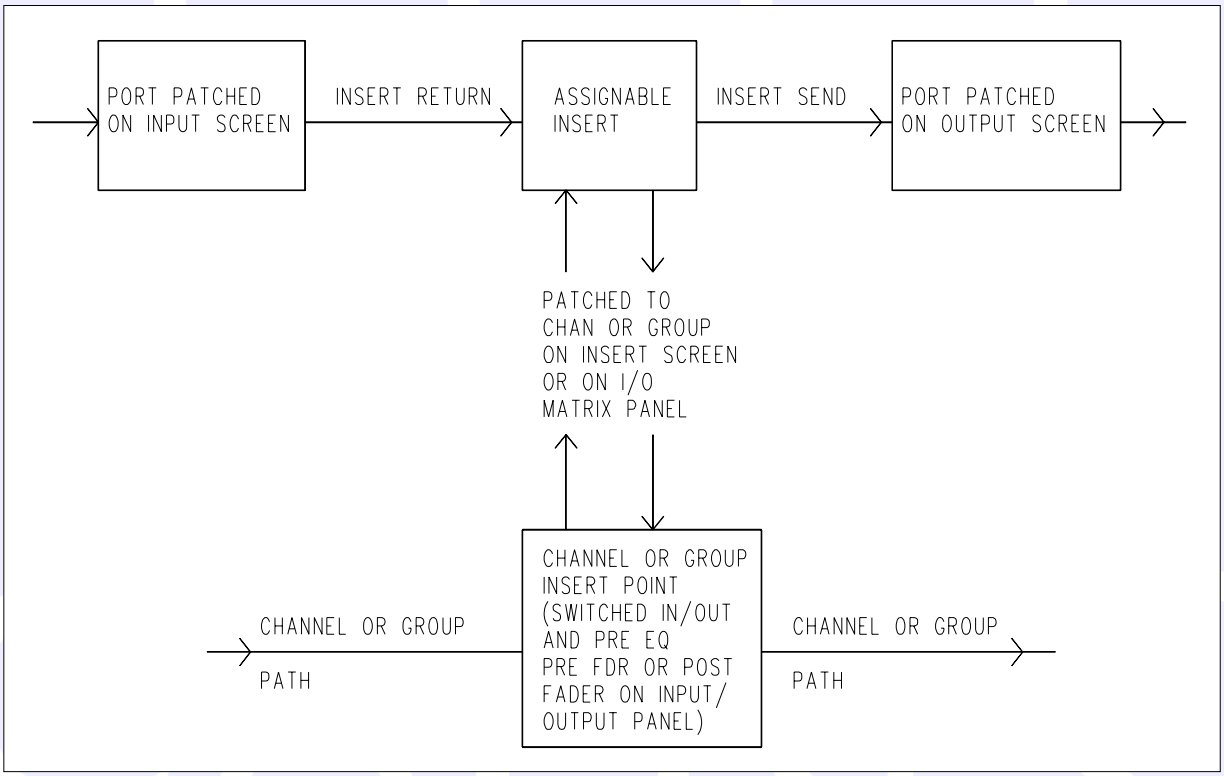
**(6) Moving Paths**
Paths can be moved or swapped from one fader to another, using the MOVE PATH buttons. To move paths, select the assign button of the path you wish to move, and press TO FADER (the assign button will flash). Then select the assign button of the destination fader, and press EXEC to move the path. This function is also available using the USER-CHAN screen.

**(7) Channel and Group Inserts**
The system provides up to 24 L-R pairs of assignable inserts which can be used in the stereo and mono channels and groups. In addition, the main outputs have their own dedicated inserts.

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.

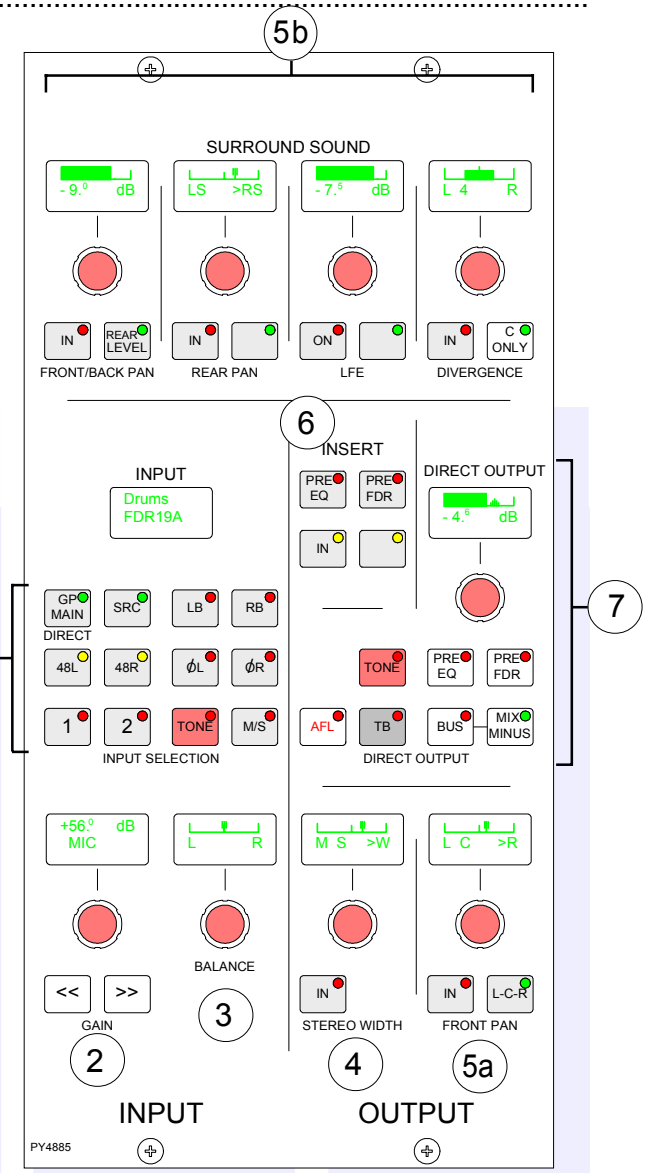
Pressing the INSERT button allows the rotary control and ON button to control assignment of inserts to channels and groups. This can also be done using the Insert screen. The insert is then patched in and out of the channel or group path using the buttons on the Input/Output panel.

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 channel 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 USER-STATE screen.

### (3) Balance Control

Operates on stereo channels only. With LB or RB selected, this control acts as an input pan control.

### (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.

### (5a & 5b) 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. Stereo and surround panning controls are strengthened with the inclusion of the optional motorised joystick panel.

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.

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 seperately. 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.

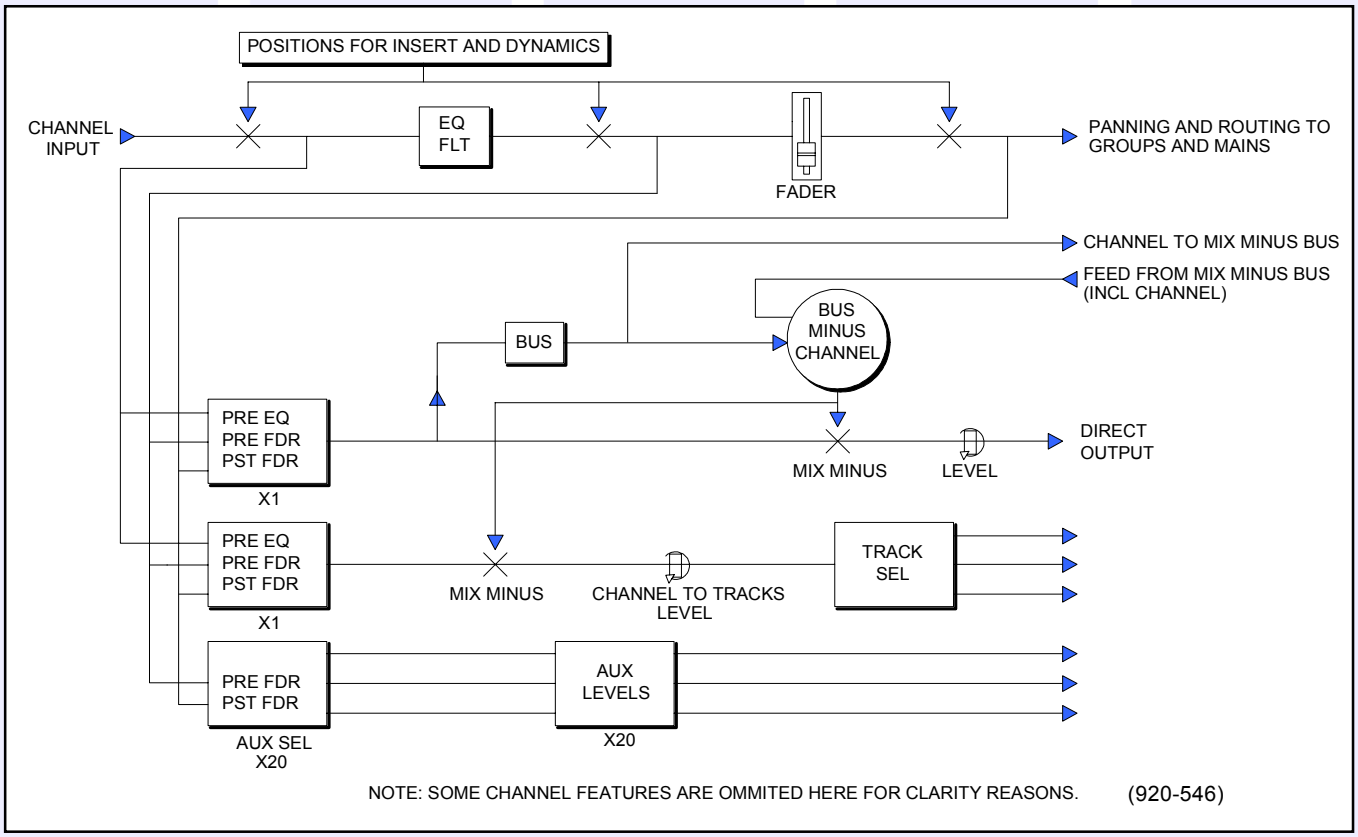
The divergence controls set an amount of the centre signal to also feed to the left and right. Divergence does not operate on stereo channels and groups. The C ONLY button connects the channel output to the centre bus only. All other panning controls are disabled. The channel is fed to both left and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

**(6) Inserts**

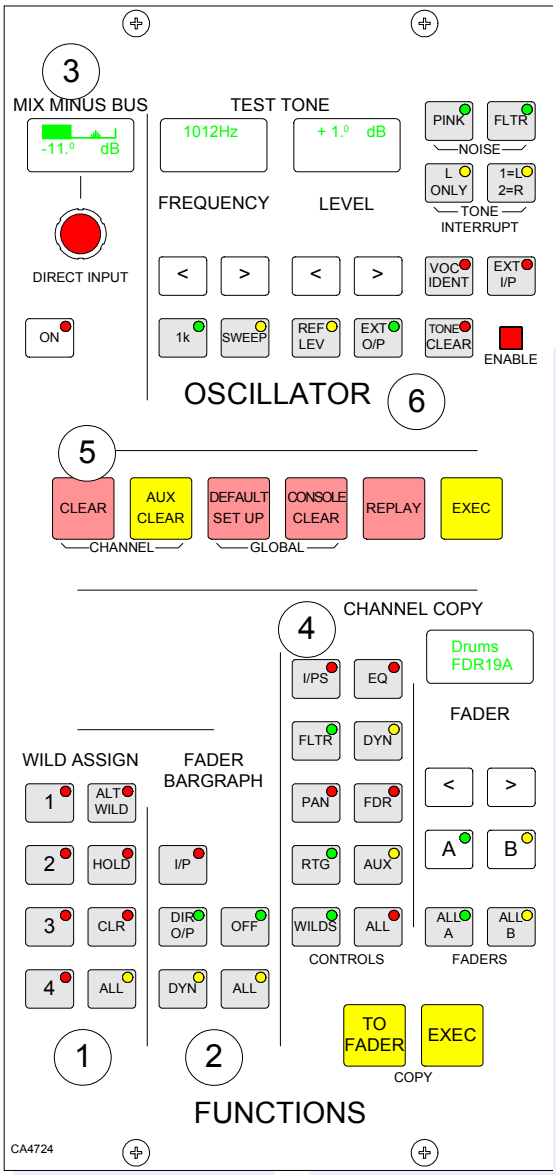
Assignable inserts can be patched in and out of the channel path, using the IN button. The buttons allow the insert to be patched post fader, pre fader or pre EQ. Assignable inserts must first be set up using the I/O Matrix or I/O screens.

**(7) Direct Output and Mix Minus**

In the direct output section, the BUS button feeds the direct output signal to the mix minus bus. The output of the mix minus bus feeds back into the channel (or group) where 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 bus apart from itself. MIX MINUS and BUS are independent buttons, so the track routing selector and the direct output can be fed with the mix minus bus, even if the channel is not feeding the bus.



## FUNCTIONS CONTROLS




### (1) Assigning Wild Controls

The Wild controls in each fader's channel control section are assigned either from this 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 it's 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 seperately to Wild controls, by holding down the required input button 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.

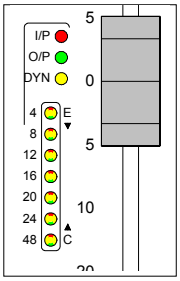
A block or region of faders can be defined by holding down HOLD and then pressing the fader assign buttons of the first and last fader path in the required region. Pushing an Assign panel rotary control will assign that control to all fader paths in the selected region.

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.

**(2) 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.

**(3) Mix Minus Bus and Direct Input**

The mix minus bus and the 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.

**(4) Channel Copy**

Nine sections of a channel or ALL together can be copied to another channel or channels using this panel. The nudge buttons (< and >), plus A and B, can select the channel to be copied by calling it to the Assign panels.

TO FADER (flashes) allows the destination/s to be chosen. Multiple destinations can be selected on the Assign Buttons, or by using the ALL A or ALL B buttons.

The nudge buttons (and the keypad on the I/O Matrix panel) can select an individual destination, which can be in addition to any multiple destinations set. Once all the destinations have been chosen, the EXEC button executes the Copy.

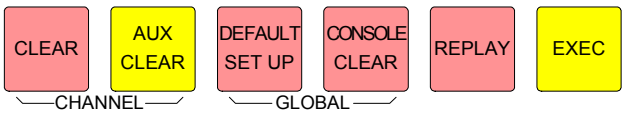
If a stereo channel's settings are copied to mono channels, only the relevant settings will be copied. Other settings on the mono channels will be reset to the cleared down state. If groups or main outputs are included in the selected destinations, they will simply be ignored.

- I/Ps copies the LB, RB, ∅L, ∅R, M/S and balance settings (only ∅ for a mono channel) 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 the EQ and filter settings including IN/OUT, Alternate and assignment (CH or Dyn) settings.
- DYN copies the dynamics settings but not whether the EQ or filters are switched in to the dynamics.
- PAN copies pan and width settings as appropriate.
- FDR copies the fader and CUT switch settings but not PFL or AFL selections. It does not copy 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.

Copy functions can also be executed using the Copy screen.

**(5) Console Functions**

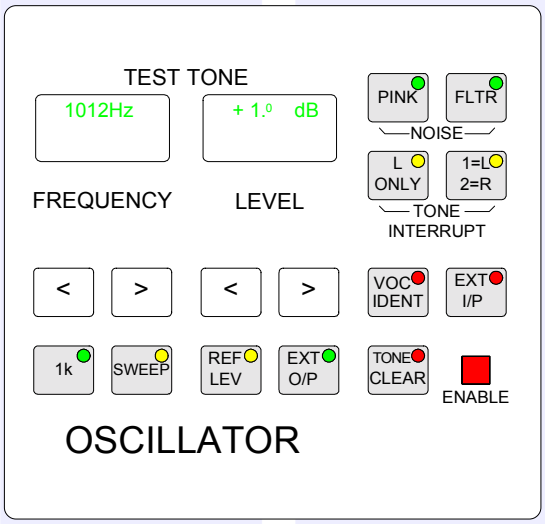
Clear, Aux Clear, Default Set-up and Console Clear flash when pressed and require the EXEC button to be pressed before the operation is carried out. It is recommended that settings are saved to memory before these functions are used. Channel Clear clears the currently assigned channel from all settings apart from the port assignment.




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.

**(6) The Oscillator**

The Oscillator controls are used to generate test tones for alignment and testing.




The frequency of the tone can be adjusted from 20Hz to 20KHz in 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.

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.

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.

EXT I/P when pressed replaces the tone with a mono or stereo 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 screens.

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

The Enable LED is lit to show that the Oscillator controls are enabled.

Oscillator controls are accompanied by a supporting screen.

## ROUTING PANEL

### (1)Routing Buttons

Routes for the selected channel can be made or removed by pressing the numbered buttons on the routing panel.

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

### (2) 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 bus will light. This button can also be used to interrogate mix minus feeds using the BUS button on the Input/Output panel.

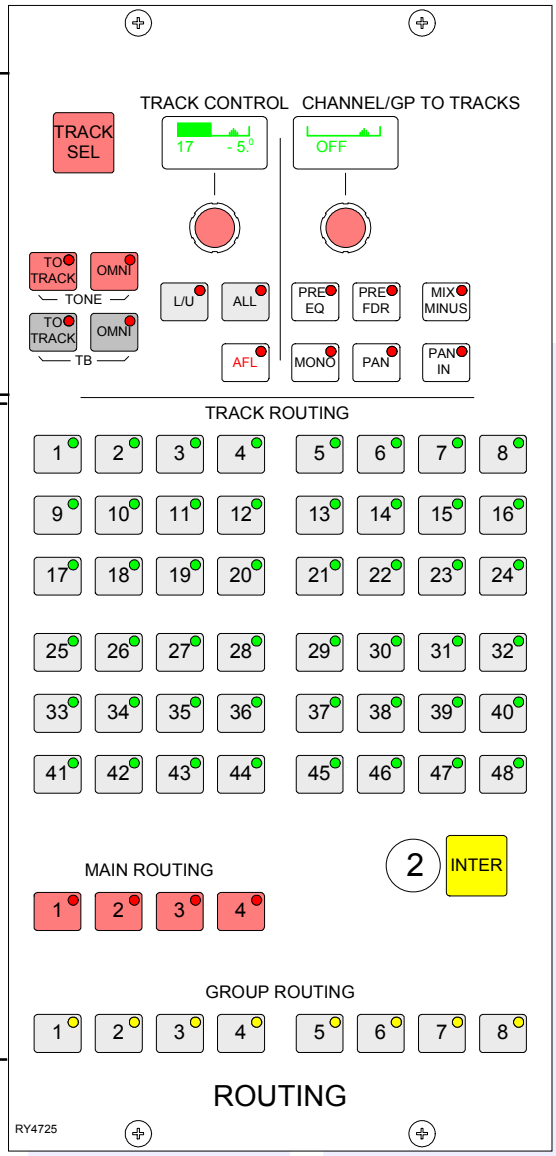
### Reverse Routing

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

### (3) Tracks (General Purpose Bus Outputs)

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

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 Mix Minus, 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. Mix Minus feeds the Mix Minus signal of the channel or group, as set up on the direct output section of the Input/Output panel, to the Track Routing selector.

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 bus outputs. 48 optional bargraphs can be fitted to monitor the output level.

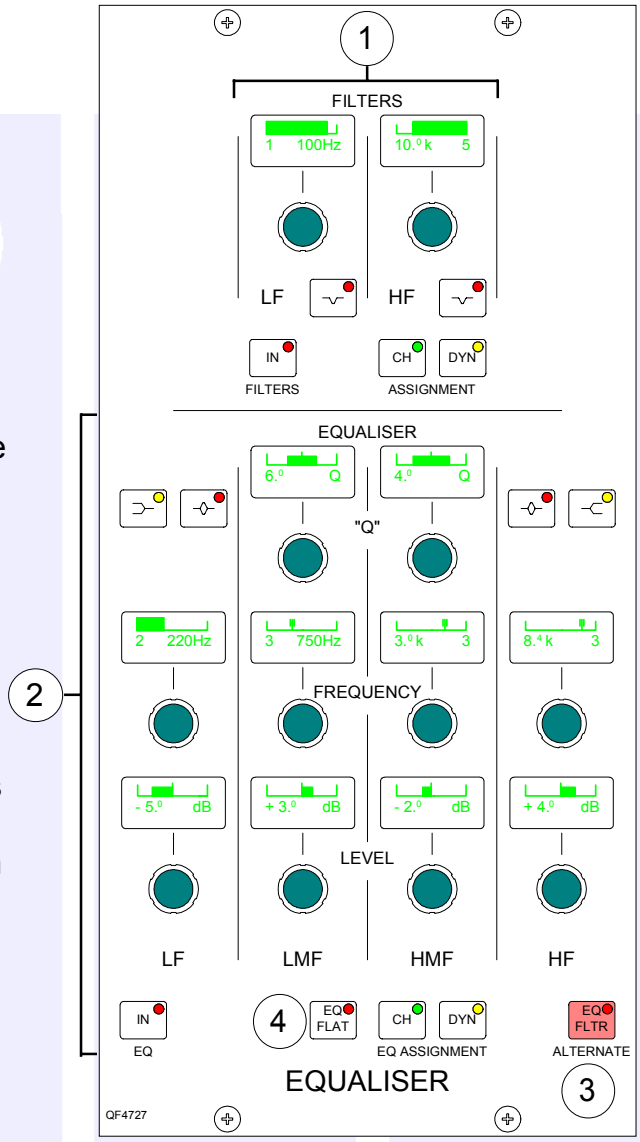
The track output being controlled is selected by the Track Sel button plus the track routing buttons 1-48. ALL makes the control a master, controlling all the tracks at once.

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

## EQ AND FILTERS

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

Once a channel has been selected by pressing it's Assign button (A or B), it's frequencies 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 ±15dB. 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.

**EQ Assignment**
The EQ and Filter sections each have two assignment buttons. The CH buttons ensure that the EQ and Filters are switched into the assigned channel's path, and the DYN buttons allow the EQ and Filters to be switched in and out of the dynamics of the assigned channel. These buttons are not mutually exclusive, EQ and Filters can either be in the channel path or the dynamics, but not both at the same time. Selecting DYN will de-select CH and vice-versa.

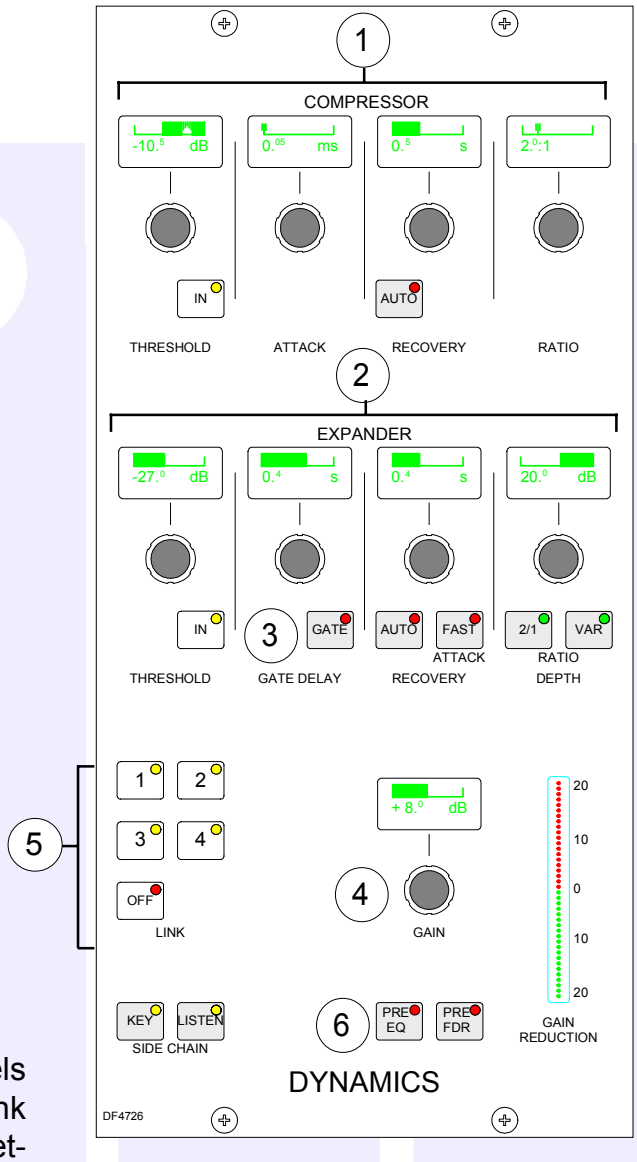
**(3) Alternate EQ**
The ALTERNATE EQ FLTR button allows switching between two complete sets of EQ and Filter controls.

**(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.

## 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.

Once a channel has been selected by pressing it's Assign button (A or B), it's dynamics 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 5ms

**(2) Expander**
Threshold 0dB 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

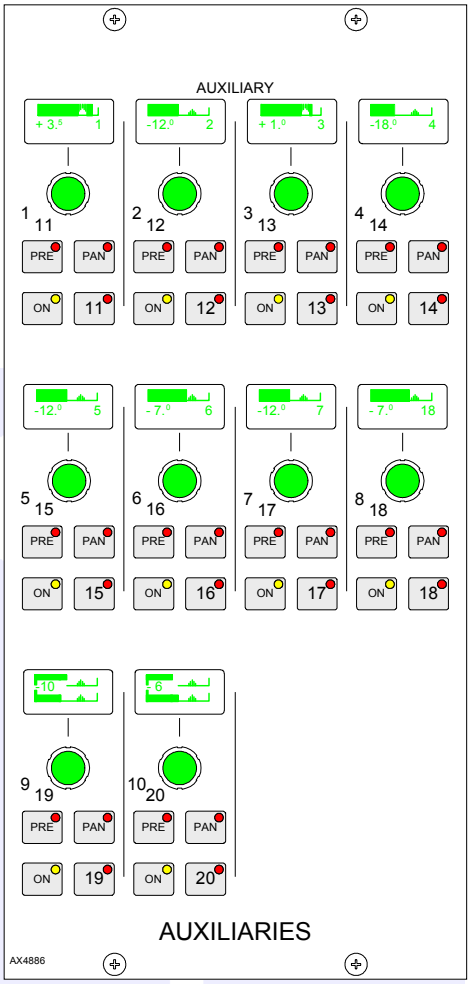
**(4) Gain**
Make up gain is adjustable from 0dB to +20dB.

**(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, for example, when 4 channels represent a 5.1 signal. With the channel selected, press 1, 2, 3 or 4 to assign the channel to the bus.

**(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.

## 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 bus. 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.

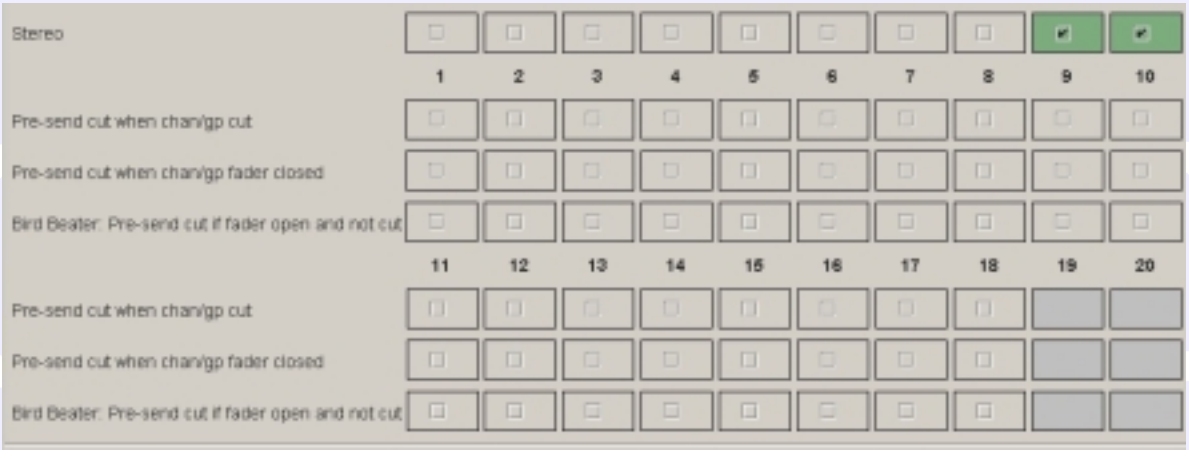
PAN makes the control into a Pan control (balance on stereo channels). Any pan offset will be shown as an offset between the two bars of the display.

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

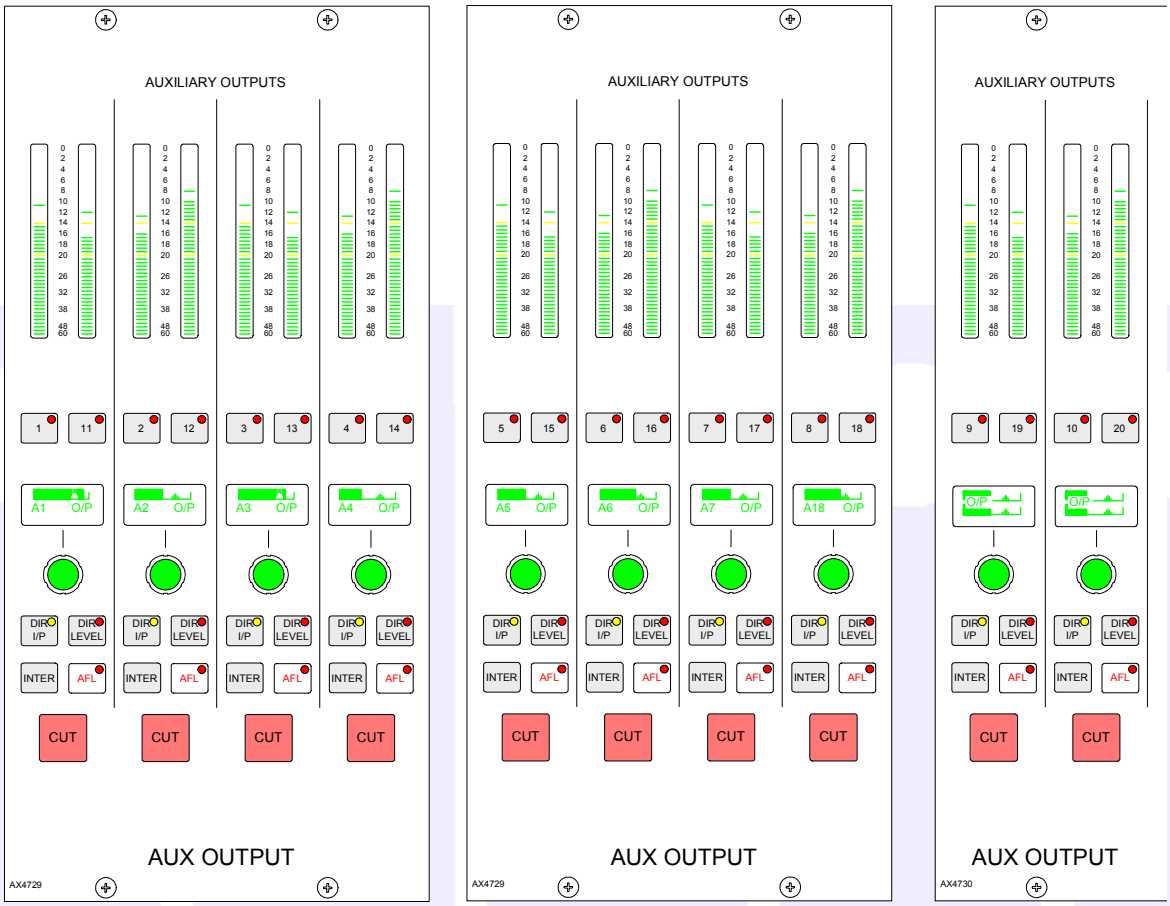
Options are available on the USER-BUSSES Screen for the pre-send to be cut :

- 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.



## AUXILIARY OUTPUT PANELS




These panels control the auxiliary outputs.

### Displays

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

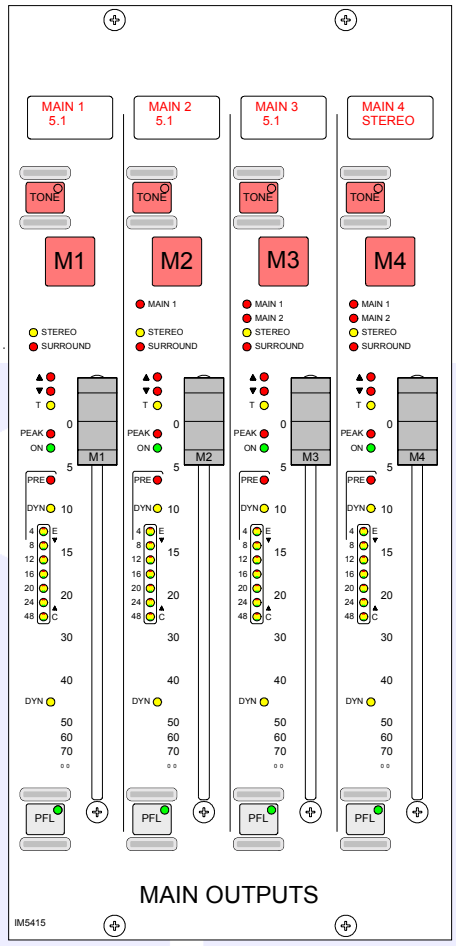
### Aux Direct Input

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

## MAIN OUTPUTS PANEL

The 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



MAIN OUTPUTS

### Surround and Stereo Main Outputs

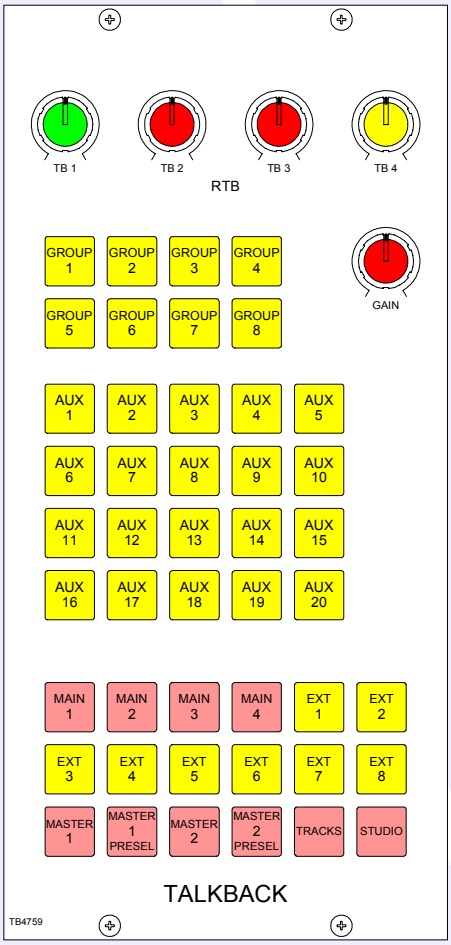
Each main output can be pre-set to be either surround or stereo. Surround mains are 5.1 plus a rear downmix to allow a simultaneous LCRS. There is also a stereo downmix and a mono downmix (potentially 10 outputs for each surround main).

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

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.

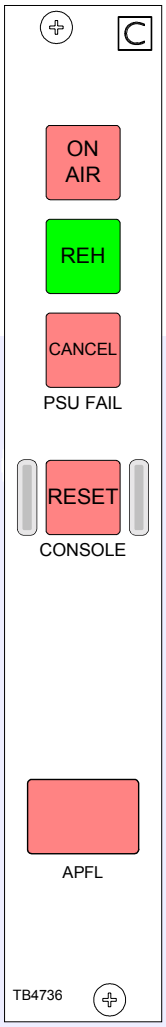
All Talkback buttons are subject to On-Air inhibits, set up on the TX/REH screen.

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 monitor module monitors the power supplies for failures, and ensures automatic changeover to the spare should there develop a fault. 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.

Because the system has many back-up features, such as automatic change over to hot spares for power supplies, control cards and DSP cards, it is possible to continue operating after errors are reported. Message history is saved to the PC's hard disk for future analysis.

### 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 independantly of the PC, rebooting or failure of the PC will affect neither the audio nor the operation of the console.

## MONITORING, METER SELECT AND LS CONTROL

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 L and R.

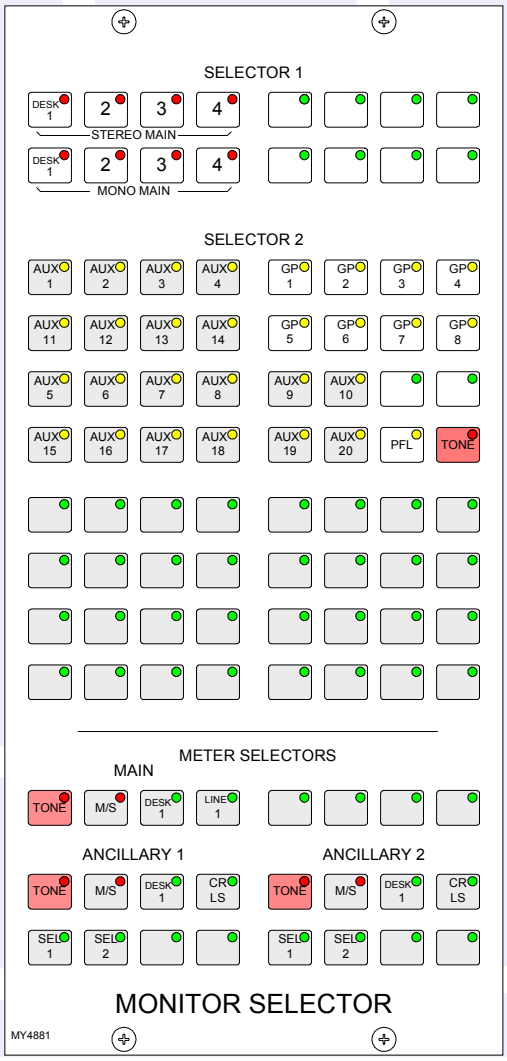
The SMALL LS level control is in series with the Main LS level control. This allows the Main LS level control to be used irrespective of which LS system is in use. The Small LS level control is used to adjust for the difference between the two sets of LS. The ON button diverts the monitor output to the small LS for near field, or domestic check, monitoring. Both main and small LS can be stereo, 3 stereo, or 5.1 independently.

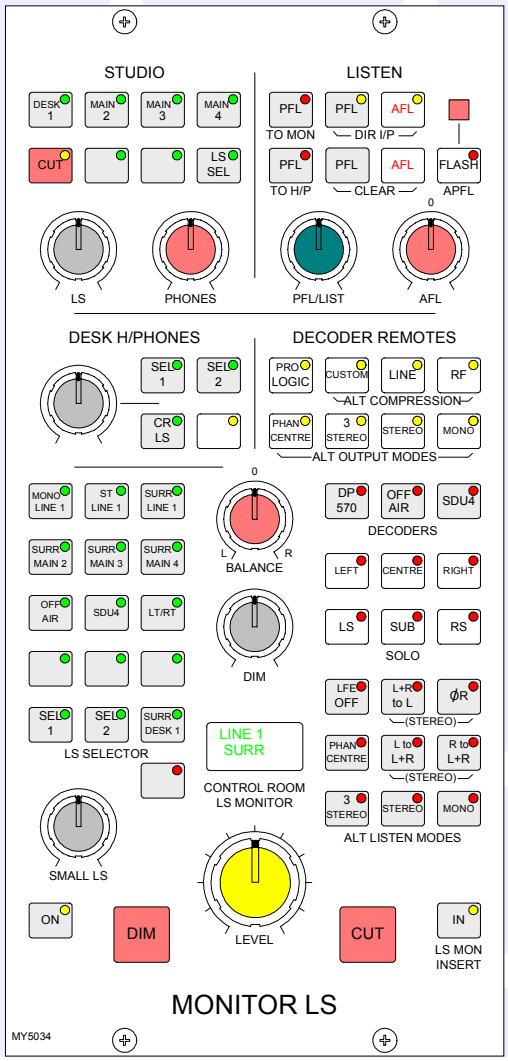
DIM, CUT and SOLO operate on both sets of loudspeakers. DIM and CUT can be externally operated. DIM can be controlled from the TB if it is set to do so using condition switching.

If a surround signal is monitored on a stereo loudspeaker or meter, a stereo downmix will be 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, the stereo monitor buttons for that main output will monitor the stereo (downmix) output of that main output. If a main output is stereo, the surround monitor buttons for that main output will have no effect.

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



**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). 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 to H/P feeds the PFL signal to the headphones.

PFL clear and AFL clear, clear any latched buttons.

PFL from surround mains is a stereo downmix of the surround signal.

**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 indicates no compression and no dialogue normalisation).
- 1 button for Pro Logic mode. It is assumed that the DP570 will be set on the unit, to Dolby Digital mode either in manual or auto detect mode.
- When controlling a Dolby SDU4, LT/RT decoder, only the stereo and mono output mode buttons will function.

**Meter Selectors**
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.

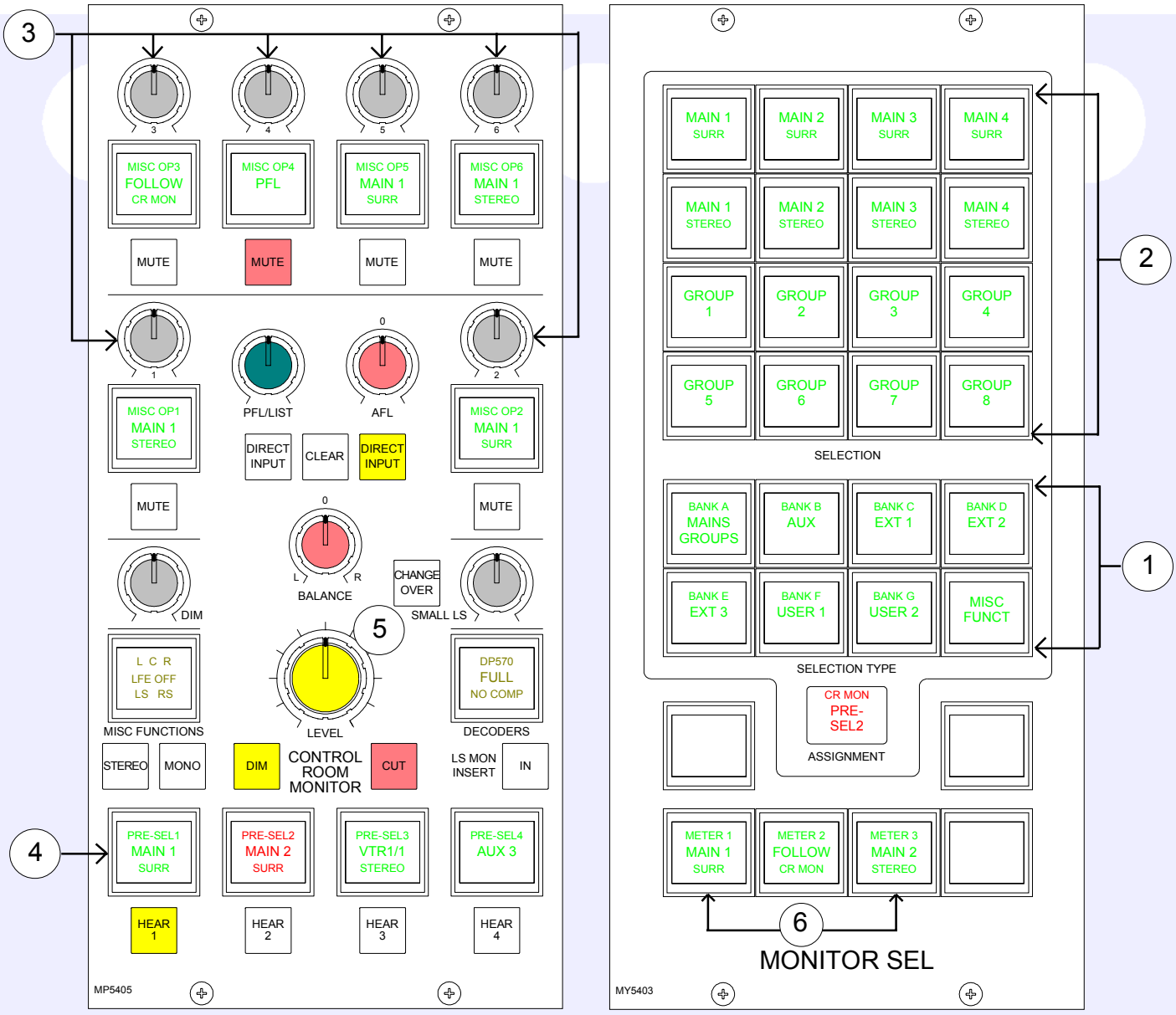
The Ancillary 1 meter would normally be used to meter the Control Room LS monitor selection, but can also be selected to Main 1 Desk, Sel 1 or 2, or 2 external inputs.

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.

## ASSIGNABLE MONITORING, METER SELECT AND LS CONTROL (OPTIONAL)

The assignable monitor panels are available as an option. As an alternative to the standard monitor panels, they offer a higher degree of flexibility and user-definability. Each monitor output can select the source to monitor from all the available sources, independantly 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.

**(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.

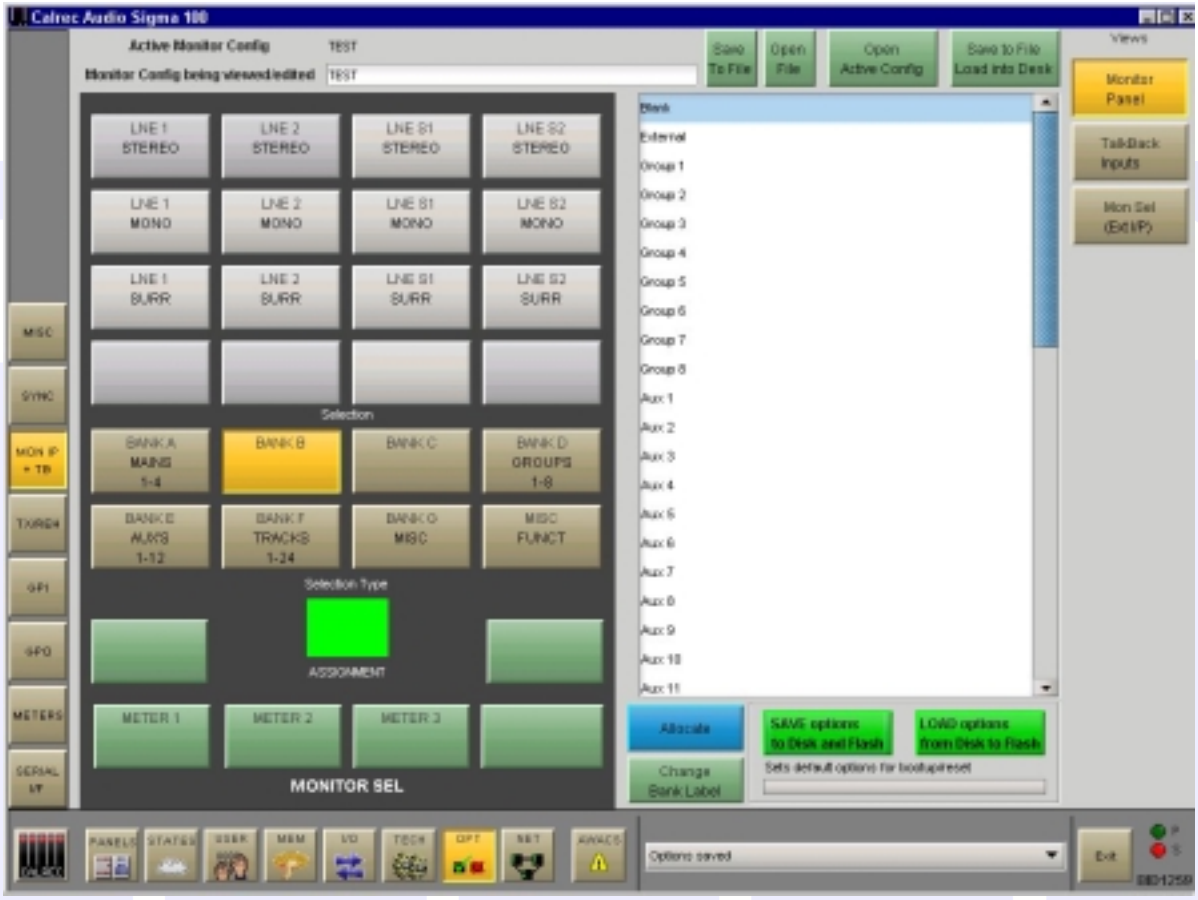
**(6) Meter Selectors 1-3**
Any of the available sources can be assigned to 3 meter selectors 1, 2 and 3.

With any of the meter buttons selected, pressing misc functions (bank 8) allows Tone and M/S to be selected for that meter. Meters 1-3 have an optional separate M/S (L-R sum/difference) meter.

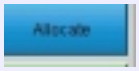
Meters 1 and 2 can be stereo only, surround only, or surround plus stereo. Meter 3 is stereo only. When metering surround signals, Meter 3 displays the stereo downmix.

## 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 soure from the list
- Select "Allocate" 

- For External source, a pop up window allows the user to enter a suitable label for the button, and allows the user to choose 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.

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

**Saving and Restoring Monitor Configurations**

Once the user has the Assignable Monitor Panels set up as desired, the monitor configuration can be given a name and saved to the PC's hard disk, so that it can be recalled at a later date. The name of the monitor configuration currently active on the control surface will be shown at the top of the screen, and the name of the monitor configuration currently being viewed/edited on the screen will be shown underneath. SAVE TO FILE will save the configuration being viewed/edited to **c:/ alpha 100/cust1/monitor** without loading it onto the console.

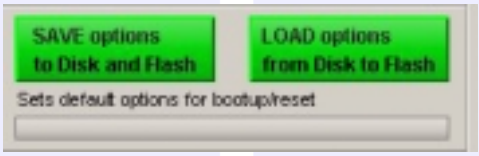

Changes to the monitor configuration being viewed/edited will not take effect until SAVE TO FILE LOAD INTO DESK is selected. Then the changes will be transmitted to the panels and saved to **C:/alpha 100/cust1/monitor**. If any changes are made to the monitor configuration, the SAVE TO FILE LOAD INTO DESK button will flash (until selected) to indicate that the changes to the monitor configuration being viewed/edited have not yet been saved and loaded onto the console.

OPEN FILE will allow a previously saved monitor configuration to be chosen. When a file is opened, the configuration will be loaded into the front end screens as "the monitor configuration being viewed or edited", it is not sent straight to the control surface. The monitor configuration can then be edited if desired and when it is ready to be used, select SAVE TO FILE LOAD INTO DESK, and the revised file will be saved and the settings sent to the control surface.

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

**Save Options to Disk and Flash**

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



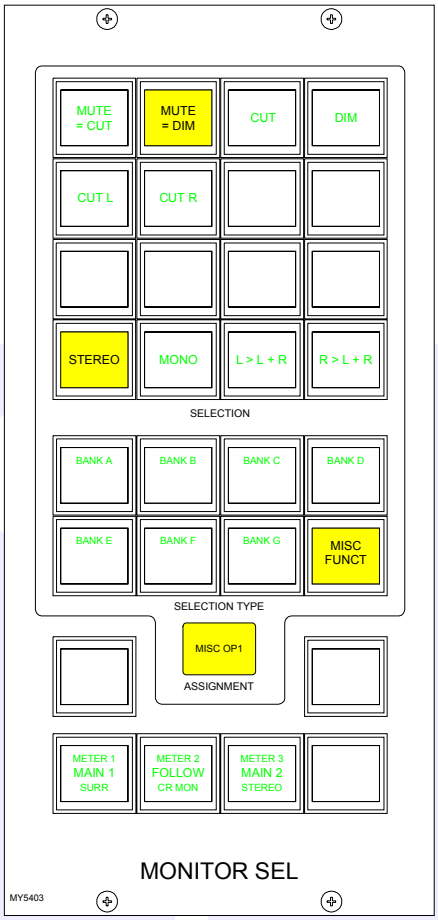

The Options screens are used to pre-set the system to the studio's required settings. These settings are not stored in the individual console memories but are saved and loaded separately using the buttons at the bottom of the screen. Although the monitor configuration itself is saved seperately, its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

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

## Misc Output Misc Functions

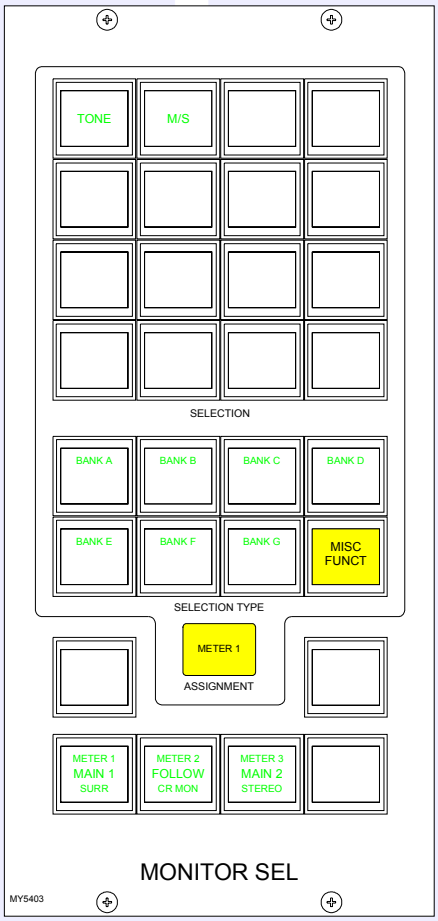
When a misc output is selected, the misc functions bank allows the following functions to be applied.

- 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.

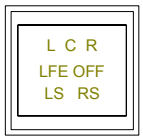



## Meter 1-3 Misc Functions

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

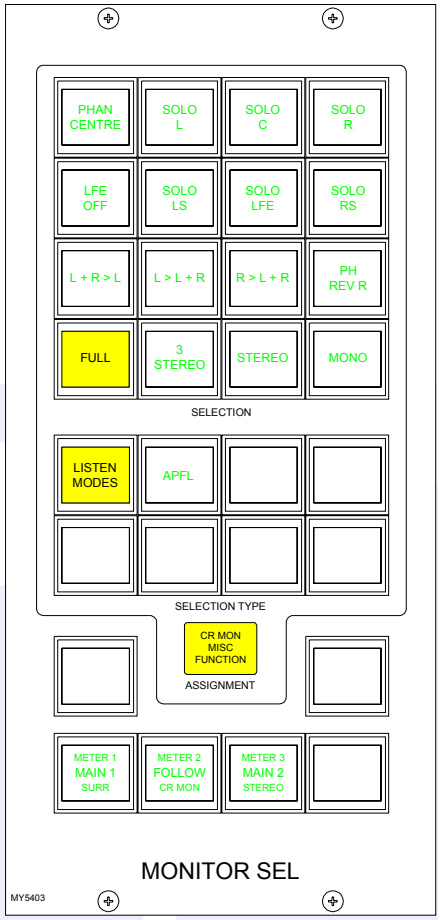


## Control Room Miscellaneous Functions



MISC 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 seperate 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

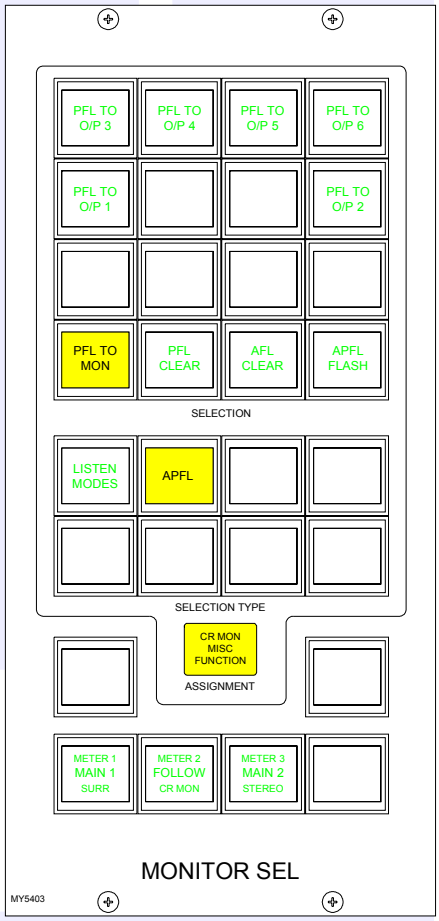
PFL to MON - Feeds the Control Room LS outputs overriding the current LS selection.

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.



## Decoder Remotes

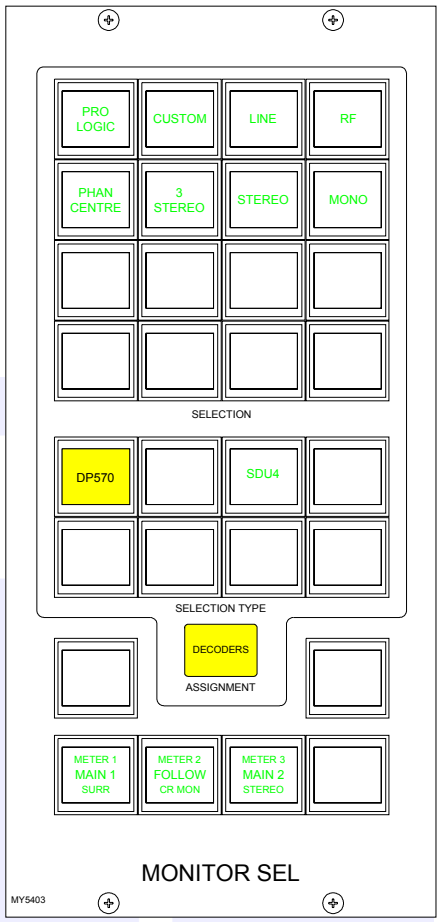
DECODERS

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 seperate banks, and functions are chosen in the same way as monitor sources.

The decoder function buttons are as follows:

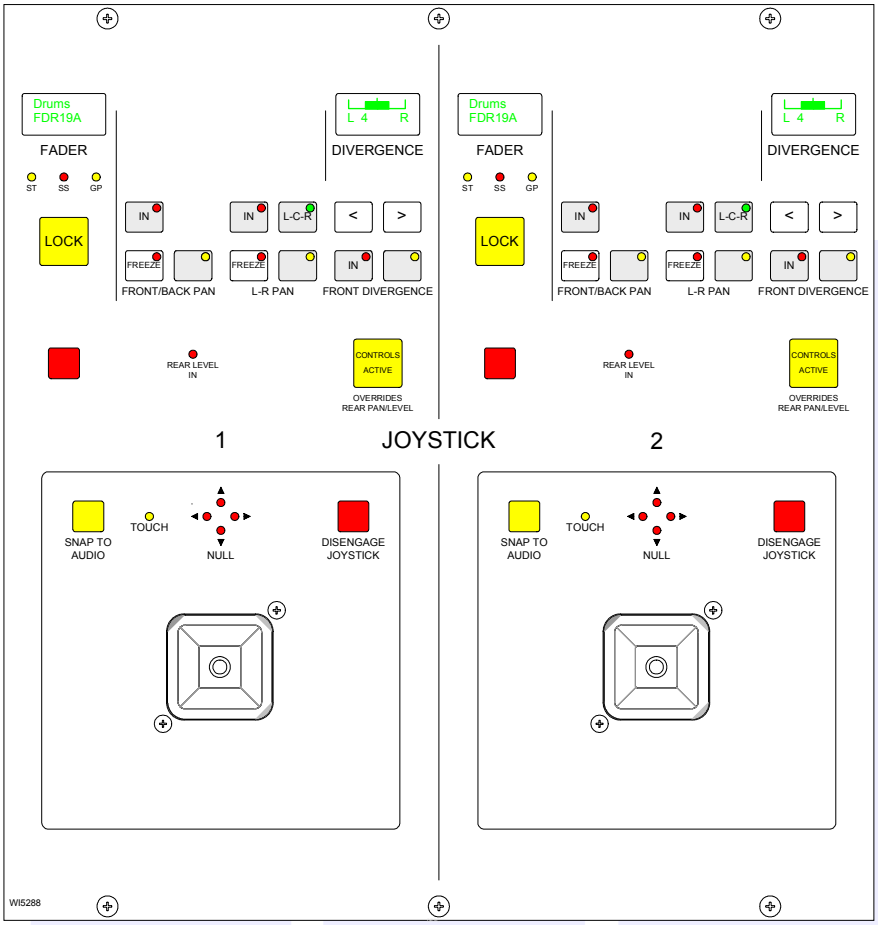
- 1 button for Pro Logic mode. When using a Dolby DP570, it is assumed that it will be set to Dolby Digital mode either in manual or auto detect mode.
- 3 buttons for Alternate Compression Modes: CUSTOM, LINE and RF. If none are selected, there will be no compression and no dialogue normalisation.
- 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.



## MOTORISED JOYSTICK PANEL (OPTIONAL)

The joystick panel is available as an option, and can be either a single joystick, or twin joysticks as shown. The joysticks allow accurate stereo and surround panning of the channel.




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.

Front/Back pan, L/R Pan and Front Divergence each have 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.

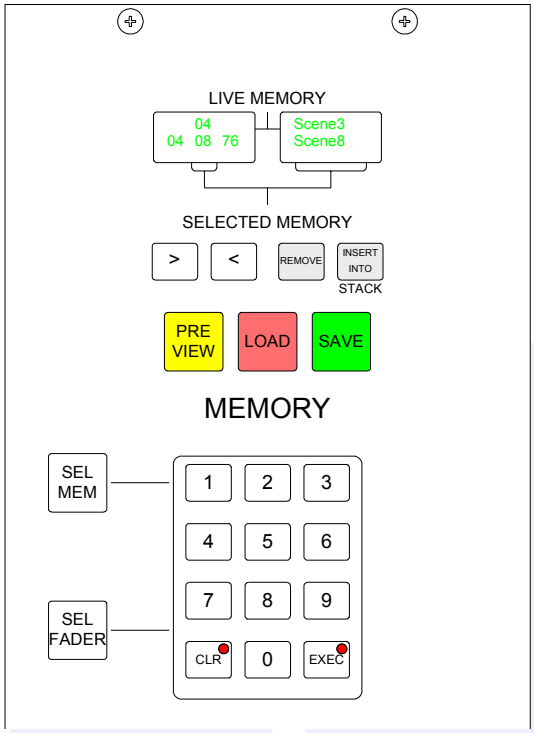
### Disengage

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

### Snap to Audio

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

## MEMORY CONTROLS




99 memories can be held in the Flash ROM for different console arrangements. In addition to this, the PC back-up can allow an unlimited number of memories, which can be called into the Flash ROM quickly and easily. Memories can be stored to removable media. This can be useful for when many different operators use the same console (for example an Outside Broadcast vehicle), or when the console is used to broadcast many different weekly productions.

### Live and Selected Memories

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

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

The buttons on this panel will affect the Selected Memory. The Selected Memory can be thought of as the "Ready" position, where the operator can place the next required memory until it is needed. Pressing LOAD will launch the Selected Memory into the Live Memory position, overriding the previous console settings.

### Choosing the Selected Memory

With SEL MEM lit, 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 chosen using the memories screen which accompanies this panel. Selecting the required memory in the Flash ROM list on the left of the memories screen will call it into the Selected Memory position.

### 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 screen.

### Saving Memories

The Save button will save 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 that 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 Memory screen. If however, you wish to simply update changes you have made to the Live Memory, it must be showing as both the Live Memory and the Selected Memory in the display. The PC can be used to change the title of the memory being saved.

### Preview Memory

When the Preview button is held down, the Selected Memory settings will be displayed on the control surface. The Assign panel displays will be 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.

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

The > and < buttons scroll through the stack. Pressing both > and < together, will reset the position so that the last number loaded is back in the central position. To add a memory to the stack, ensure it is in the Selected Memory position, and press INSERT INTO STACK.

**Memory Screen**

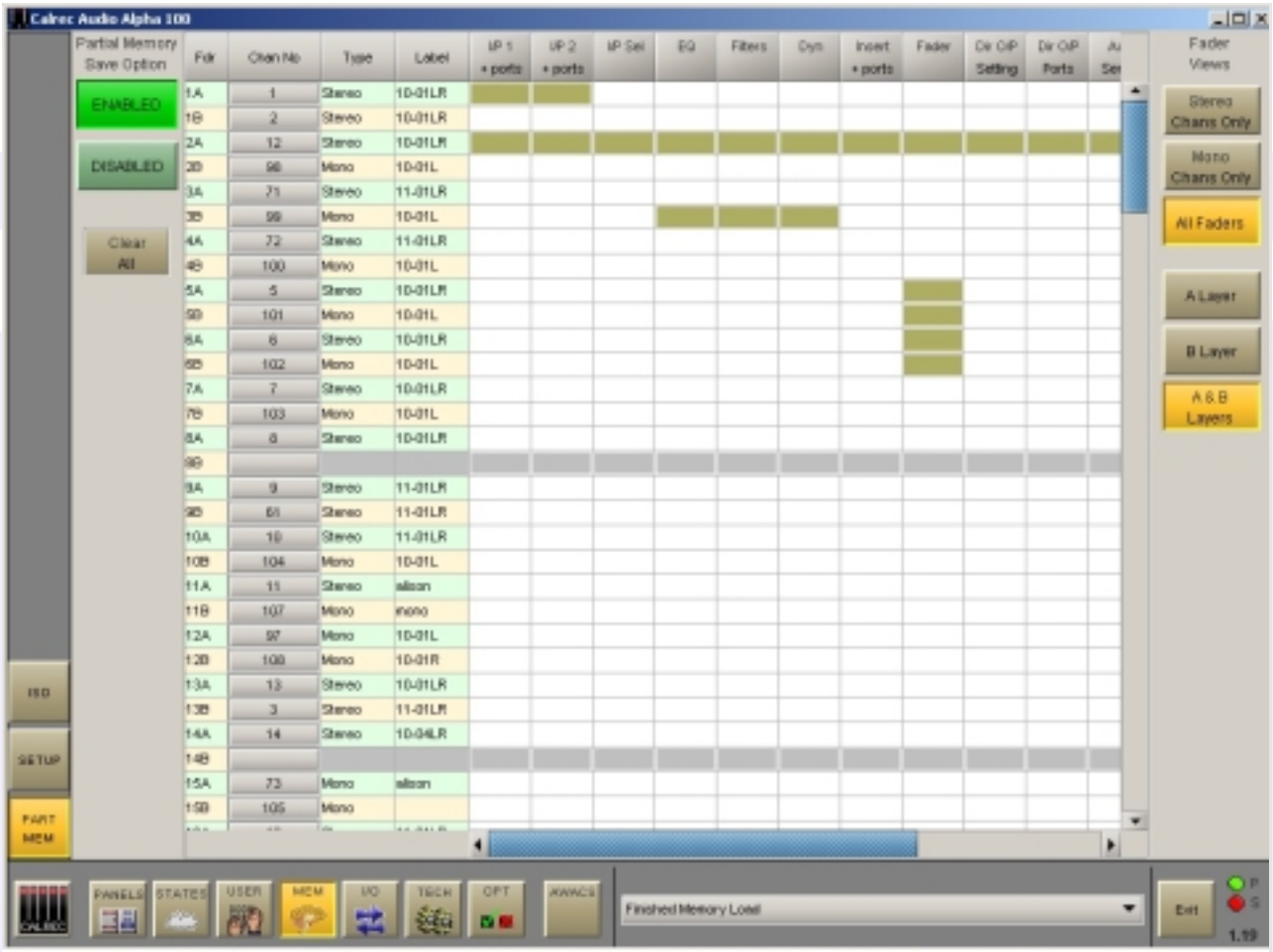
The Memory panel is accompanied by a screen which duplicates the memory functions available on this panel. It also allows management of stored memories and stacks (sessions). Memories and sessions can be backed up and recalled using the Memory screen. When a stored memory is recalled onto the console from disk, the system checks that the current desk configuration matches that of the stored memory. If there are discrepancies, a warning that the memory may not work correctly will be given.


**Memory Isolation**

Some console settings can be isolated from memory recall, so that they will not be over-written when a memory is loaded onto the console. This is done using the Isolate screen.

**Partial Memories Mode**

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.



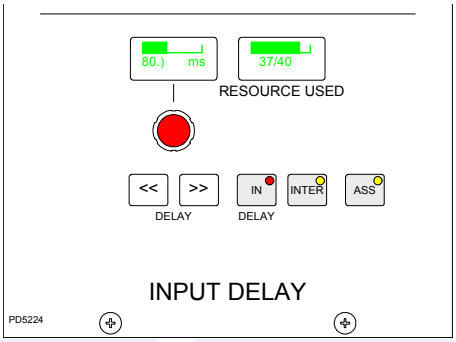

Partial Memories mode is enabled and disabled using a button on the partial memories screen. When enabled, all memory saves are partial memory saves. When disabled, all saves are full console snapshot saves. Once partial memory mode is active, the save buttons on the screen and control surface are used to save partial memories in the same way as full console snapshot 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.

## INPUT DELAY PANEL (OPTIONAL)




The Input Delay panel provides a set of delay controls in addition to those already available on the Panels-Delay screen.

These controls allow the user to apply specific amounts of delay to each channel path. There are 42 legs of delay available for channel assignment. Stereo channels use two legs. Each leg provides up to 250 ms of delay.

### Assigning delay to a path

To assign delay to an input, select its fader path by pressing it's assign button (A or B), and then press ASS on the Delay panel. 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 how many legs are already assigned.

### Switching delay IN and OUT of the path

IN switches the set value of delay in and out of the channel's path.

Delay controls can be assigned to Wild controls, so that the delay value can be adjusted from the channel control module. If the wild shaft push feature is enabled on the Options-Misc screen, pressing a wild delay control shaft will toggle the delay in and out.

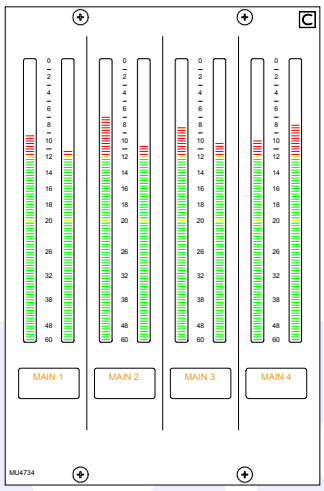
### Interrogation

Holding down the interrogate button will indicate the channels which have delay assigned by lighting their fader assign buttons.

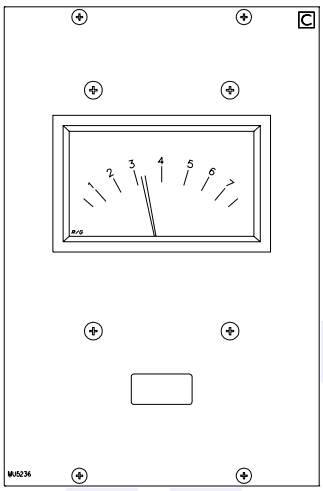
### Delay Screen

Values for delay, and delay assignment can also be adjusted using the Panels - Delay Screen. In addition there are buttons to select the display units as 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.

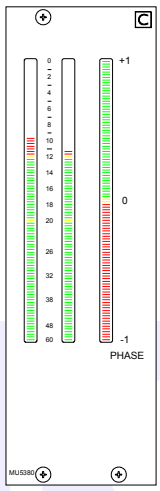
## STANDARD METERING OPTIONS



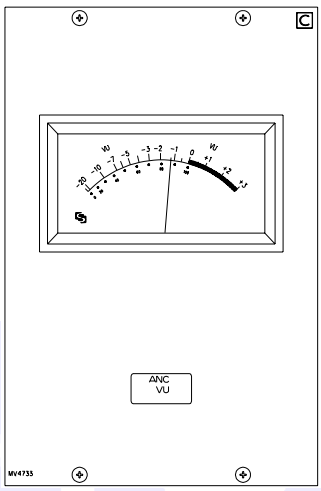

4 x Twin Bargraph



PPM Meter




Phase Meter Bargraph
& Stereo Bargraph




VU Meter

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.

The Main meters are fed from the Main meter selector which is 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 andTalkback
- 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 bus (mono)
- GROUPS: 8 stereo bargraphs for the groups. For mono groups, the left bar only will display

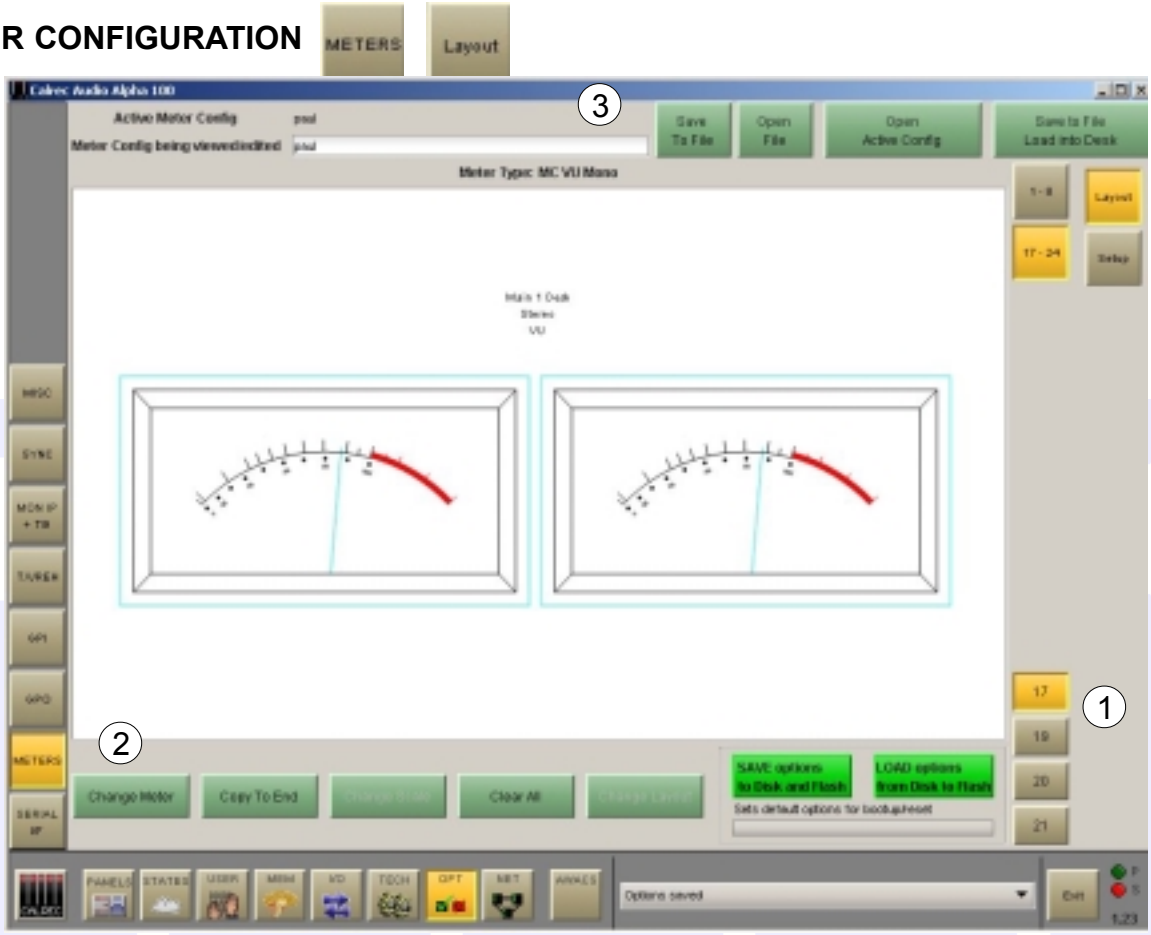
Calrec can supply either bargraphs, moving coil VU or PPM meters. (except for the Aux output meters, which are always bargraphs). All Calrec meters including moving coil types, are fed directly from the meter processor.

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.

## METER CONFIGURATION




**(1) Meter Selection**
The Set up application provides an interface with which to tell the console which meter panels occupy which position along the upstand. The numbered buttons on this screen allow the meter panel in that upstand position to be selected for set-up. Upon selection of one of the numbered buttons, the meter occupying that upstand position will be shown in the main section of the screen.

**(2) Functions**
The controls at the bottom of this screen allow the meter to be defined. The type of meter and its source can be defined using “Change Meter”. In the case of twin or multiple-way meters, “Copy To End” copies the chosen meter across the rest of the meters in the row. “Change Scale” is used to select the meter’s scale from a list, pre-defined in the Set up application. “Clear All” resets the meter, clearing all settings. “Change Layout” will only be available if the selected upstand position is occupied by a TFT meter screen, as it is used to allow the user to configure their layout (see the appendix at the end of this manual).

**(3) Saving and Restoring Meter Configurations**
Once the user has the meters set up as desired, the configuration can be saved to the PC’s hard disk, so that it can be recalled at a later date. Changes to the configuration will not take effect until “Save to File Load Into Desk” is selected. Then the changes will be transmitted to the console and saved. During editing, this button will flash (until selected) to indicate that the configuration has changed and is not yet active on the control surface. “Save to File” will save the configuration without loading it onto the console.

Previously saved meter configurations can be re-called using “Open File”. When a file is opened, the configuration is not sent straight to the control surface. The settings can then be edited if desired and when they are ready to be used by the control surface, “Save To File Load Into Desk” is used to save the file and send the settings to the control surface.

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

## TFT METERING SYSTEM

### Introduction

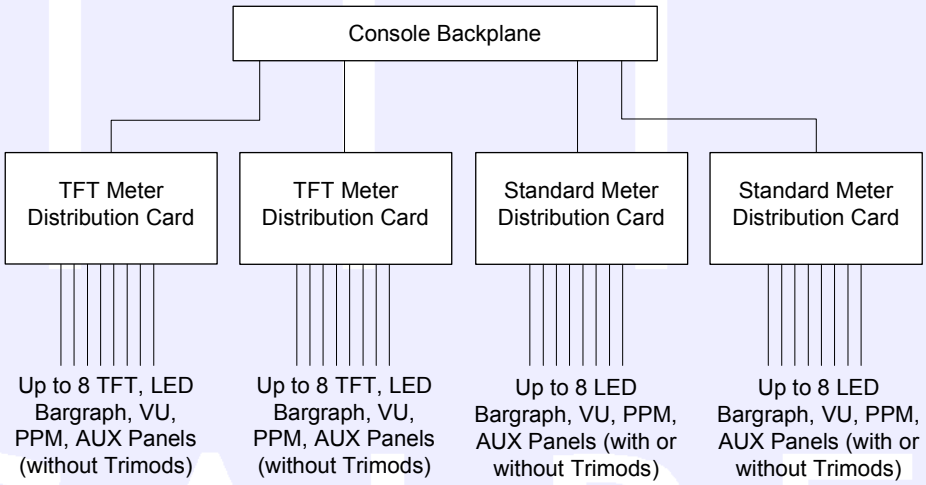
The TFT metering system allows high quality TFT screen based meters to be incorporated into the console upstand, either instead of, or alongside the existing bargraph, moving coil VU and PPM meters. These TFT panels allow a greater density of meter functions to be displayed, and the user can dynamically change the meters and their arrangement using the Front End Application. Meter configurations can be saved and recalled, so that different users can have their own preferred meter arrangements. The following functions can be metered:

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

Each meter can be:

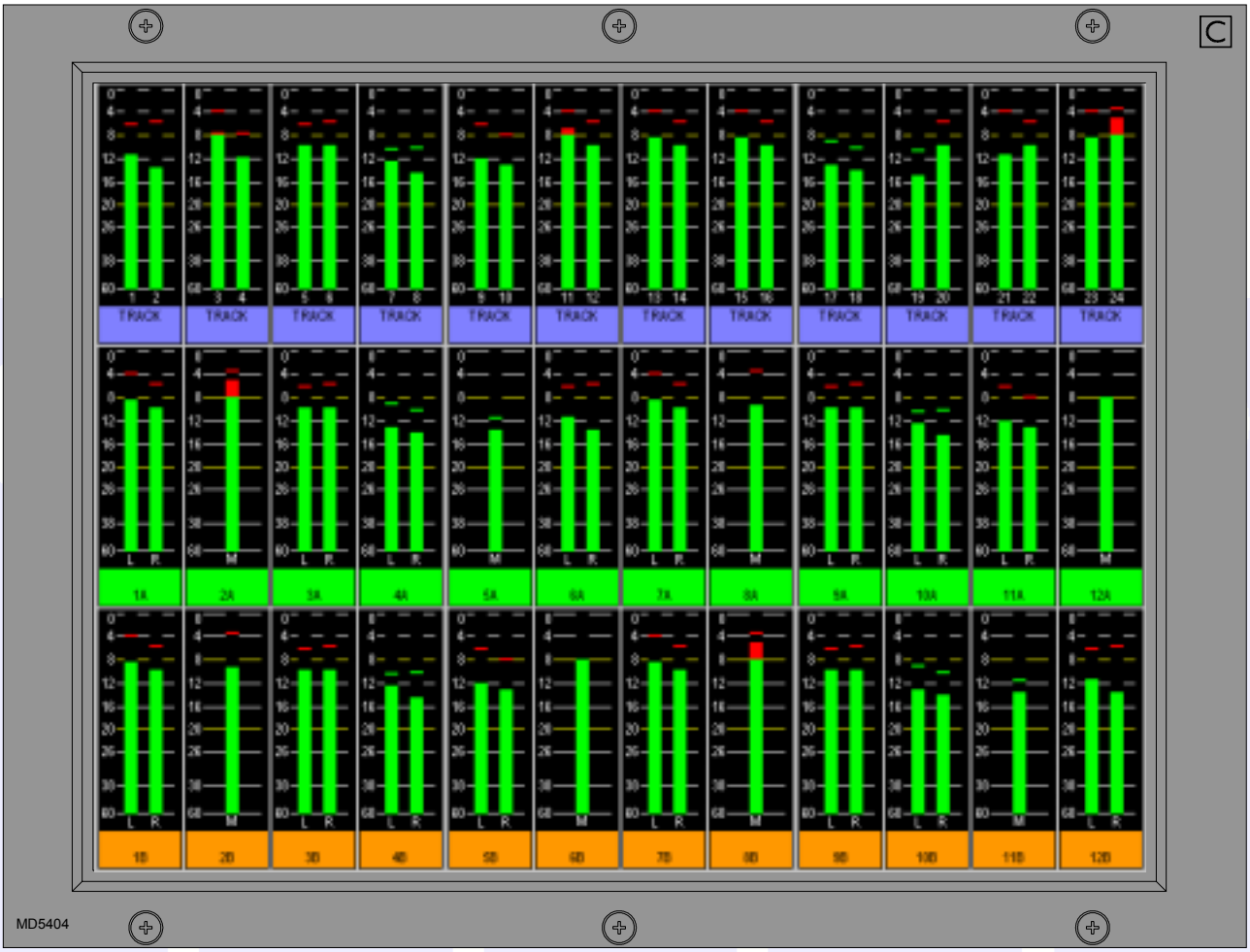
- Mono
- Stereo
- M/S (Sum and Difference of the stereo signal)
- Surround (L, R, C, LFE, LS, RS - sequence set as part of meter arrangement)
- Phase Display

A console can have a maximum of 16 TFT Meter screens. Up to two TFT meter distribution cards can be fitted, each of which can drive 8 TFT screens (or other standard meters without trimod LCD displays). To avoid a single point of failure, it is possible to spread the metering load across 2 meter distribution cards. For example, if a console had 8 TFT screens fitted, 4 could be connected to each TFT meter distribution card.




In addition to the TFT meter distribution cards, it is also possible to fit up to 2 standard meter distribution cards for connecting to current meter panels with trimod LCD displays. So, for example, in a system which had 2 TFT meter distribution cards and 2 standard meter distribution cards fitted, it would be possible to incorporate 16 TFT metering panels, and 16 standard meter panels into the system -although it is not likely that this number of standard meters would be required.

## TFT Meter Screens




The layout of the TFT meter screens can be configured by the user. 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.

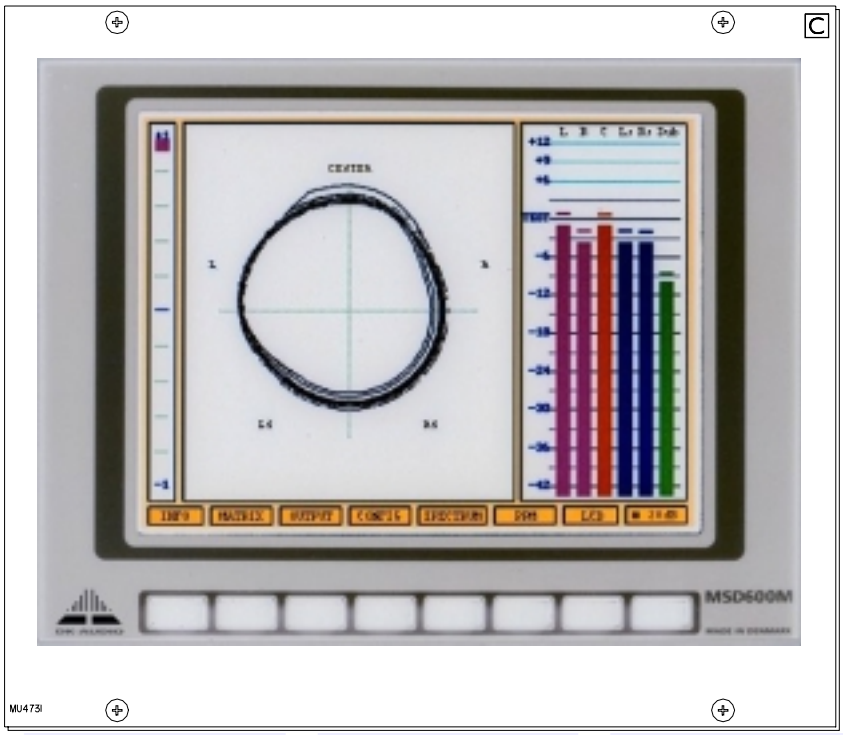
When a screen is configured with 8 columns, these columns will line up with any channel or group faders positioned in that section of the console. This can be useful when metering channel inputs or groups.

The number of meters configurable on the TFT screens is governed by the number of meter data signals available. There are 122 meter data signals available for output meters. In addition, for input meters, there is one meter data signal per audio signal. If an audio signal is metered on a TFT meter and a standard meter at the same time, it will use up two signals in the meter data stream.

See the Appendix at the end of this brochure to learn more about how the screens can be set up.

## OPTIONAL THIRD PARTY METERING

It is possible to incorporate third party metering options into the Alpha 100 design, such as the DK Audio MSD600M shown here. This would require audio outputs from the I/O Rack.

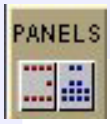


# Front End Application

## 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. There are groups for:




PANELS — Operational reproductions of the console panels for off-line work or in case of a panel failure.


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


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


MEM — Memory control screens to supplement the panel controls.


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


TECH — Entry to and control of password-protected operational modes, trouble-shooting screens.

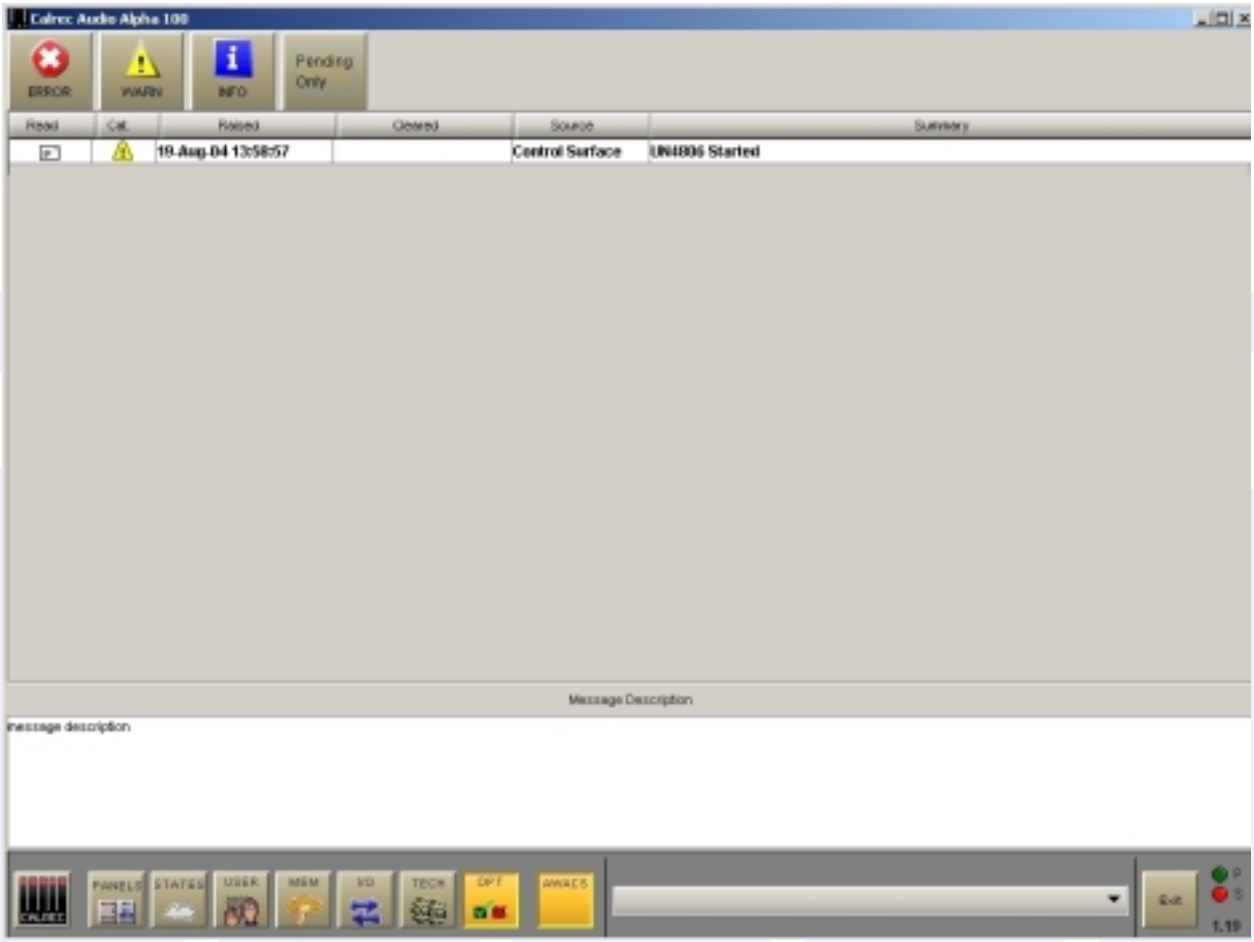

OPT — Options screens for pre-set items which are not stored with the user memories. Includes meter setup arrangement.


NET — Screens for setup and control of an audio network system These screens are only visible if Hydra audio networking is installed. Please refer to the Hydra Technical Sales Data for operation of the network.

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.


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 console's control surface can be made, and will take immediate effect).

## ERROR MESSAGES (AWACS)




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

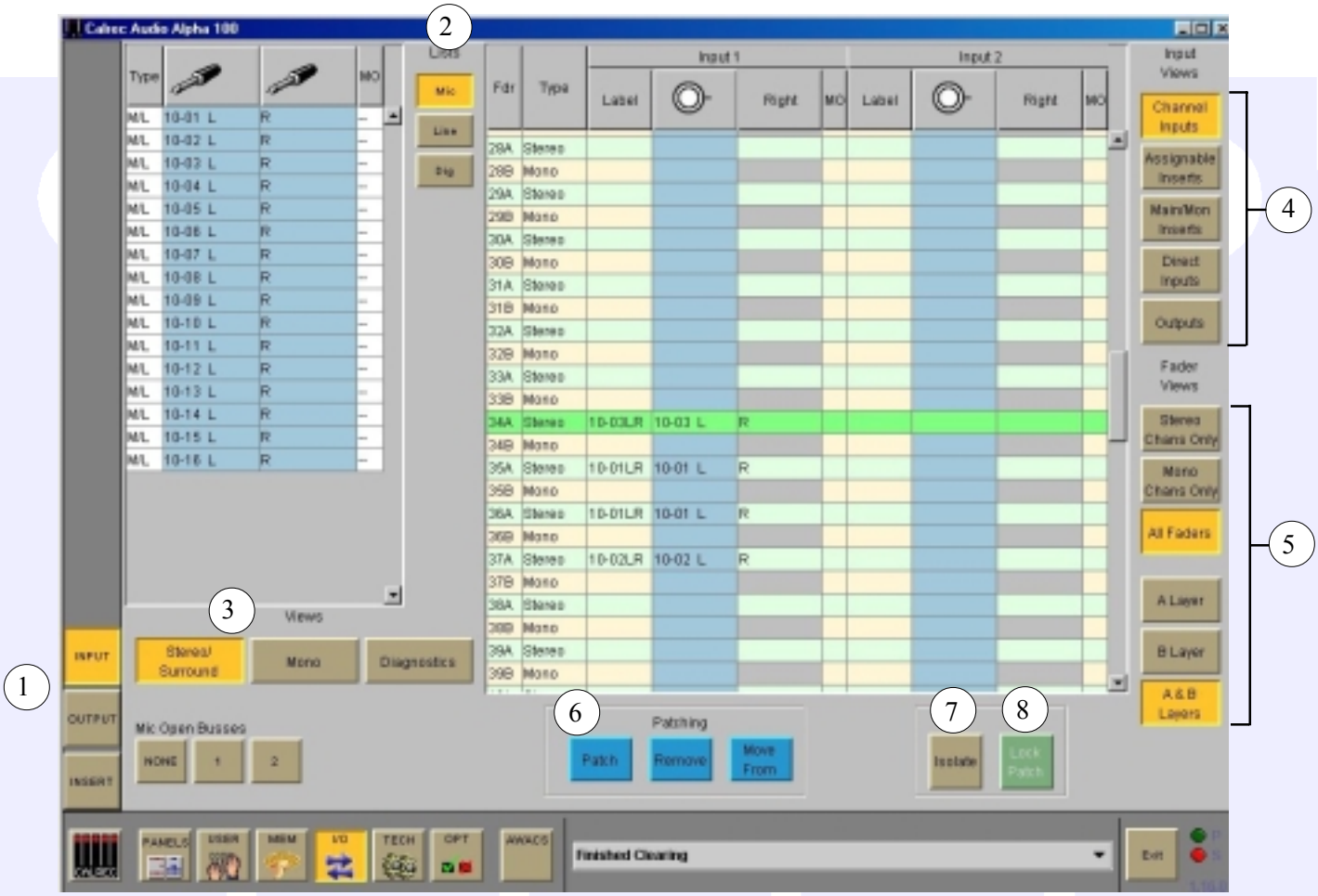

Fatal Error messages, where the system cannot recover by itself (perhaps because the back-up is already in use)

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.

## INPUT/OUTPUT PORTS SCREENS

This screen allows:

- "Patching" of input sources to channel inputs, insert returns, direct inputs or to output ports.
- "Patching" of console output signals to main, auxiliary and track output ports, insert sends and direct outputs.
- "Patching" of insert sends and returns to channels and groups.




On the control surface, ports are assigned using the I/O Matrix panel, but these screens provide an alternative set of controls. The screens automatically scroll to follow the Assign button (A and B) presses on the faders.

**(1) Input, Output or Insert**
These buttons select between three screens for input patching, output patching or insert assignment.

**(2) Source Lists**
All of the available input 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.

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

**(4) 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. Selecting a source from the source list and a channel, insert return or output, then selecting PATCH will assign that source to the channel.

**(5) Fader Views**
It is possible to choose which set of faders are to be available on and altered by this screen.

**(6) Patching**
Assignment is made by selecting a source,  and an input or output,  and selecting Patch. 


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

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

**(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 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.

**(8) Locking (only available on output ports)**
Some output ports may need to be 'locked' once they have been set up to avoid accidental removal. For this reason, Calrec provides a system of software locks 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 screen. If a lock is active, the port name will be highlighted in bright green text.

## USER-CHAN SCREEN



This screen provides alternative controls for channel functions already available on the control surface.

**(1) Selections**
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.

**(2) Path Type**
The path type can be selected either as a mono or stereo channel using the mono and stereo buttons, or as a group, using the numbered buttons. Path type selection can also be done using the I/O Matrix panel. Groups are designated as mono or stereo using the Busses screen.

**(3) Path Operations**
Paths can be moved and cleared using this screen, these controls are in addition to the I/O Matrix controls on the control surface.

**(4) Assigning Wild Controls from the USER-CHAN Screen**

The Wild controls are assigned from either 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 a fader path from the right side of the USER-CHAN screen or by pressing its Assign Button (A or B).
- Select WILD ASSIGN 1, 2, 3 or 4 on the USER-CHAN screen.
- Push one Assign panel rotary control. For example, Aux 1 Send.

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

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. Clicking on the button above HOLD will toggle between SELECT mode and REGIONS mode.

In SELECT mode, click 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.

In REGIONS mode, a block or region of faders can be defined by clicking 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.

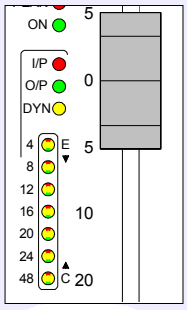
It is possible to assign the same control to Wilds 1, 2, 3 or 4 for all fader paths by selecting ALL before pushing the required Assign panel rotary control.

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

CLR will clear the selected Wild control from it’s assignment.

**(5) Fader Bargraph Assignment**

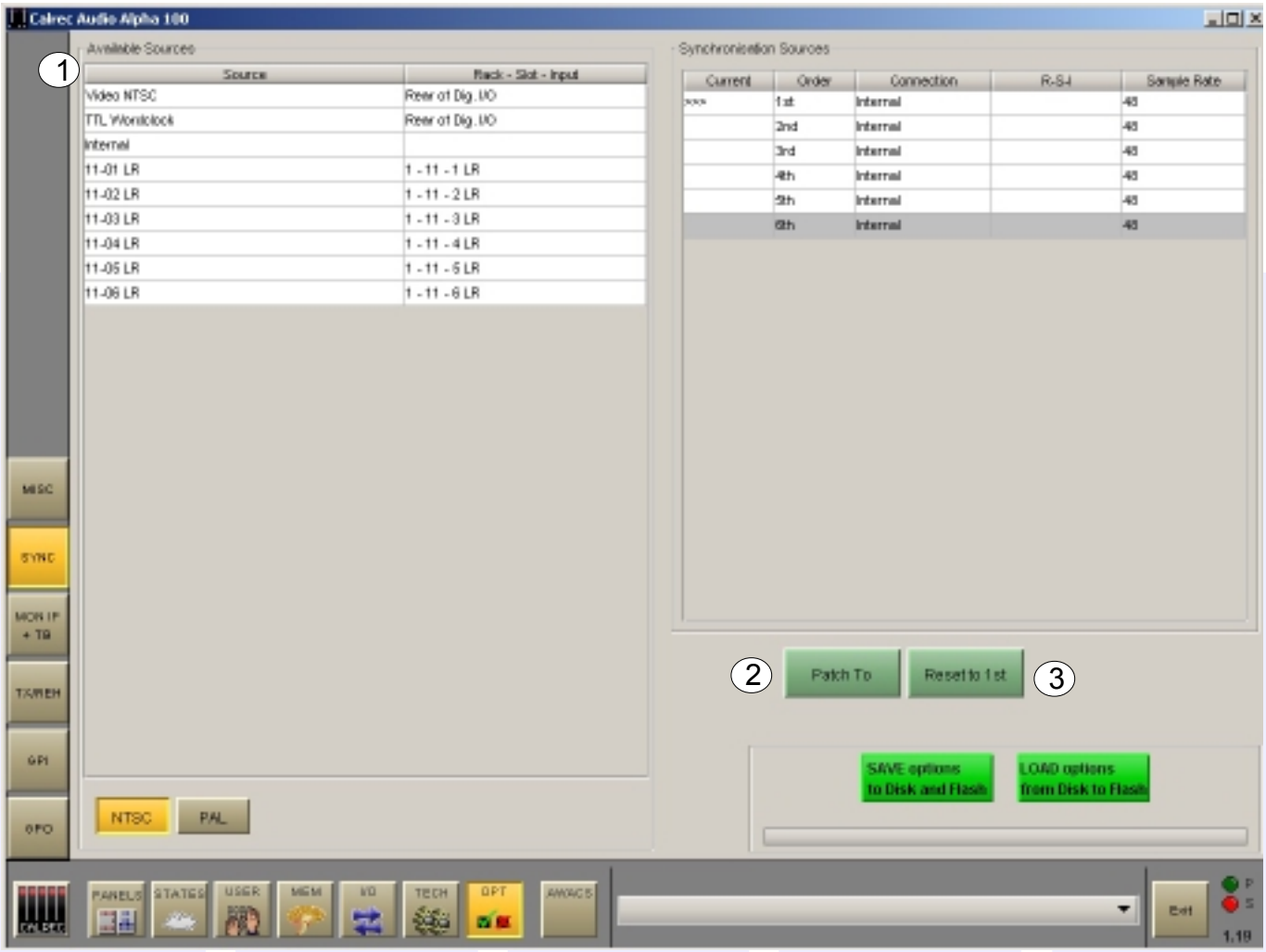
The fader bargraph can indicate the level at the channel input (post the input gain and switching and the tone switching), the channel direct output, or the gain reduction of the dynamics. Buttons I/P, DIR O/P, DYN and OFF on the USER-CHAN screen will set the function of the fader bargraph on the currently assigned fader. If ALL is pressed first (flashes) all fader bargraphs will be set to the selected functions.




Fader Bargraph assignment can also be altered using the Functions panel.

## SYNCHRONISATION SCREEN






**(1) Available Sources**

The system can be pre-set with up to five external sync sources, plus internal, such that if the 1st source fails, it will automatically switch to the 2nd, and so on. One of the external sources can be Video, (PAL or NTSC). TTL wordclock is another possible external source. Digital inputs on the console can also be used as an external source. When using a digital input or wordclock as a source, the system will tolerate a variation of up to +/- 100 Hz in the frequency of the source.

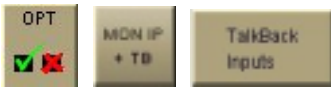
**(2) Assigning Synchronisation Sources**

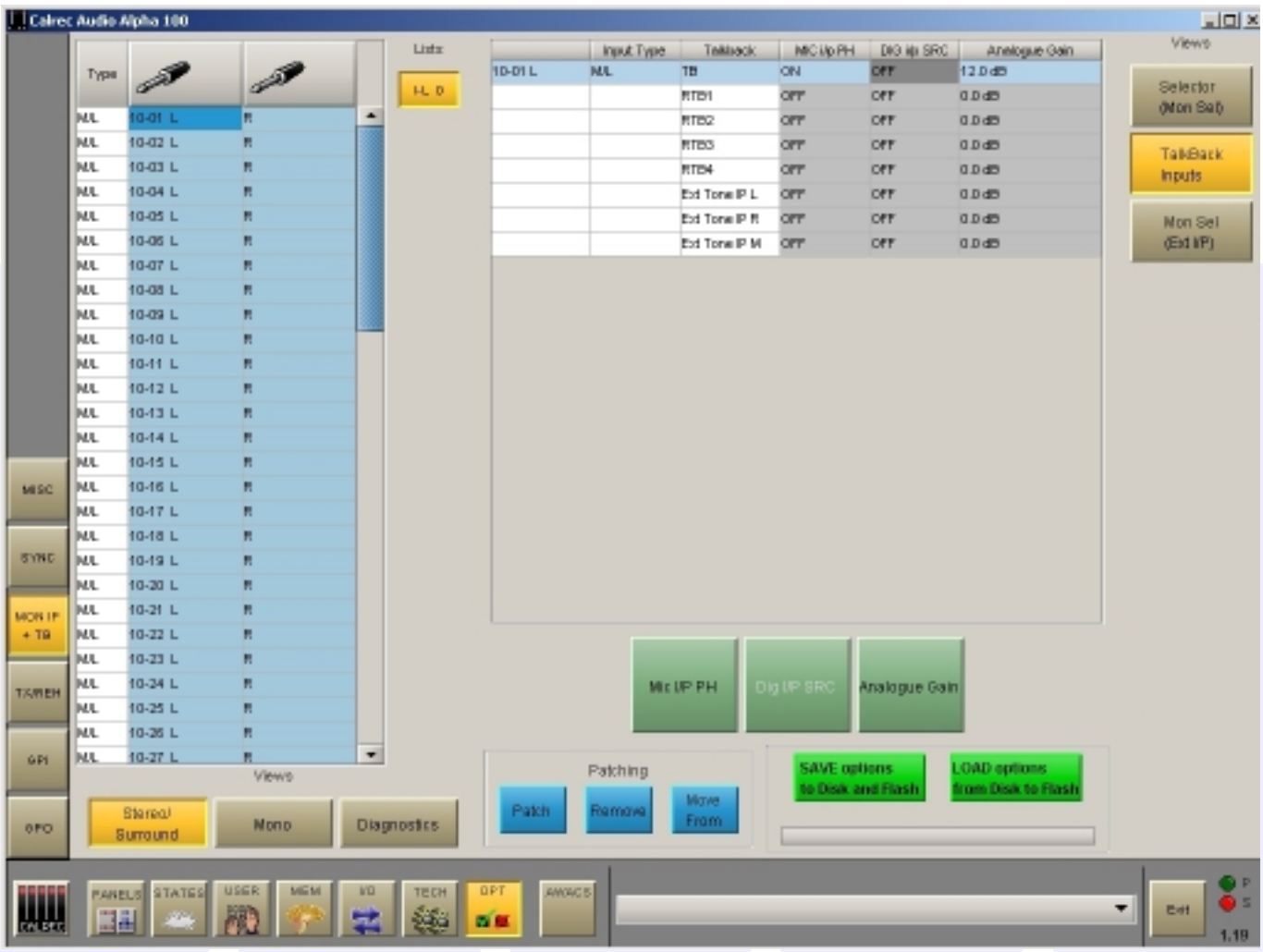
Synchronisation sources are assigned by selecting an available source from the list on the left side of the screen, then selecting one of the five places in the priority list on the right side of the screen, and selecting Patch To.

**(3) Reset to 1st**

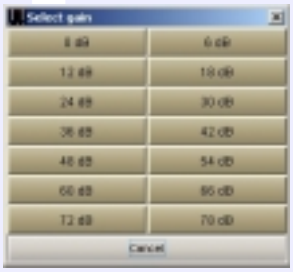
If the system is running on any of the selections 2 to 6, because the lower numbered ones have failed, and the 1st source is repaired, the system can be RESET TO 1ST during any convenient off-air period.

## MONITOR I/P & TB SCREEN - TALKBACK INPUT PORTS VIEW



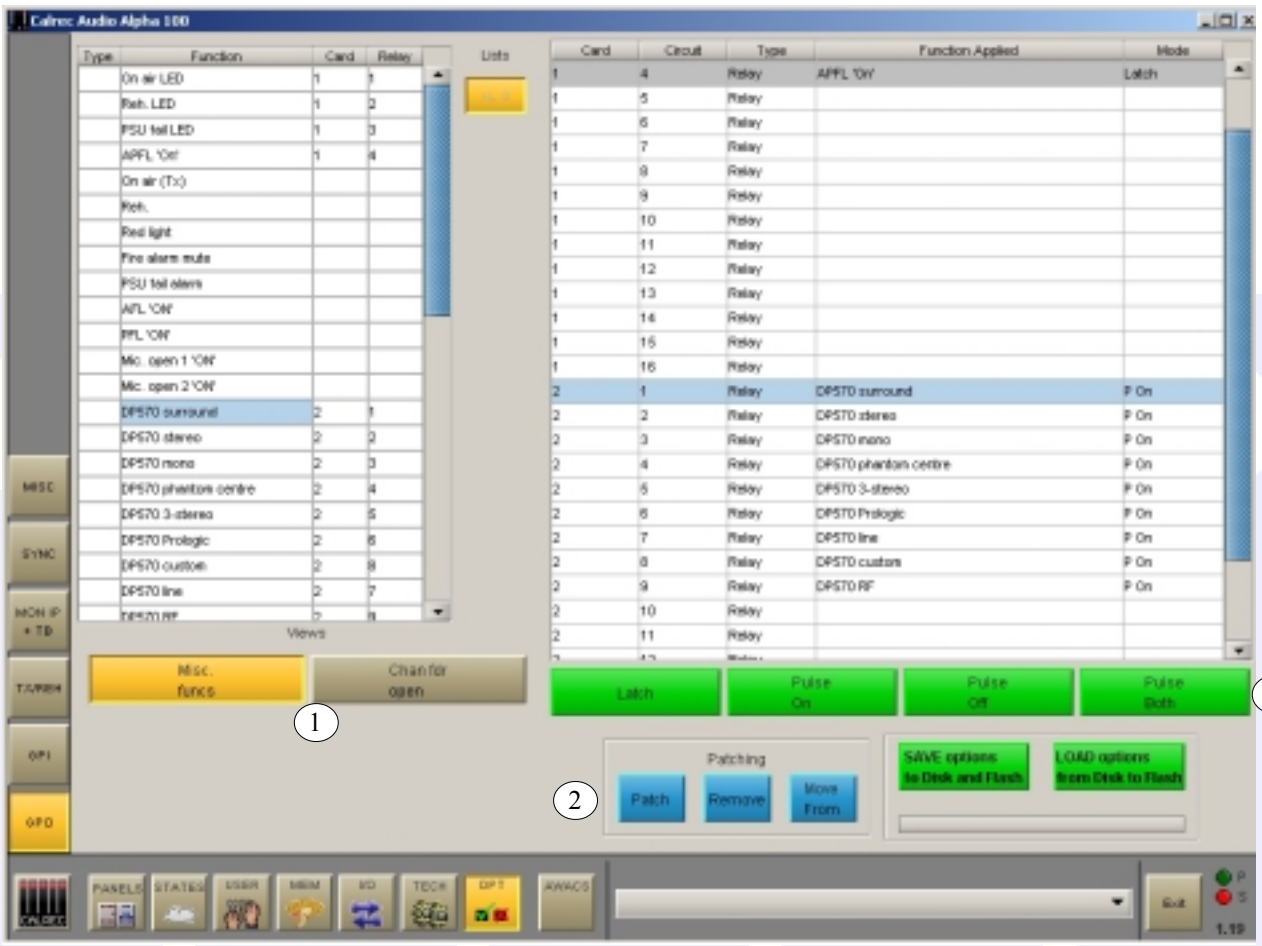




The input sources for Talkback and Reverse Talkback can be patched here in the same way that channel inputs are patched. Talkback input ports can be any kind of port.




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

## GENERAL PURPOSE OUTPUTS SCREEN




### (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.

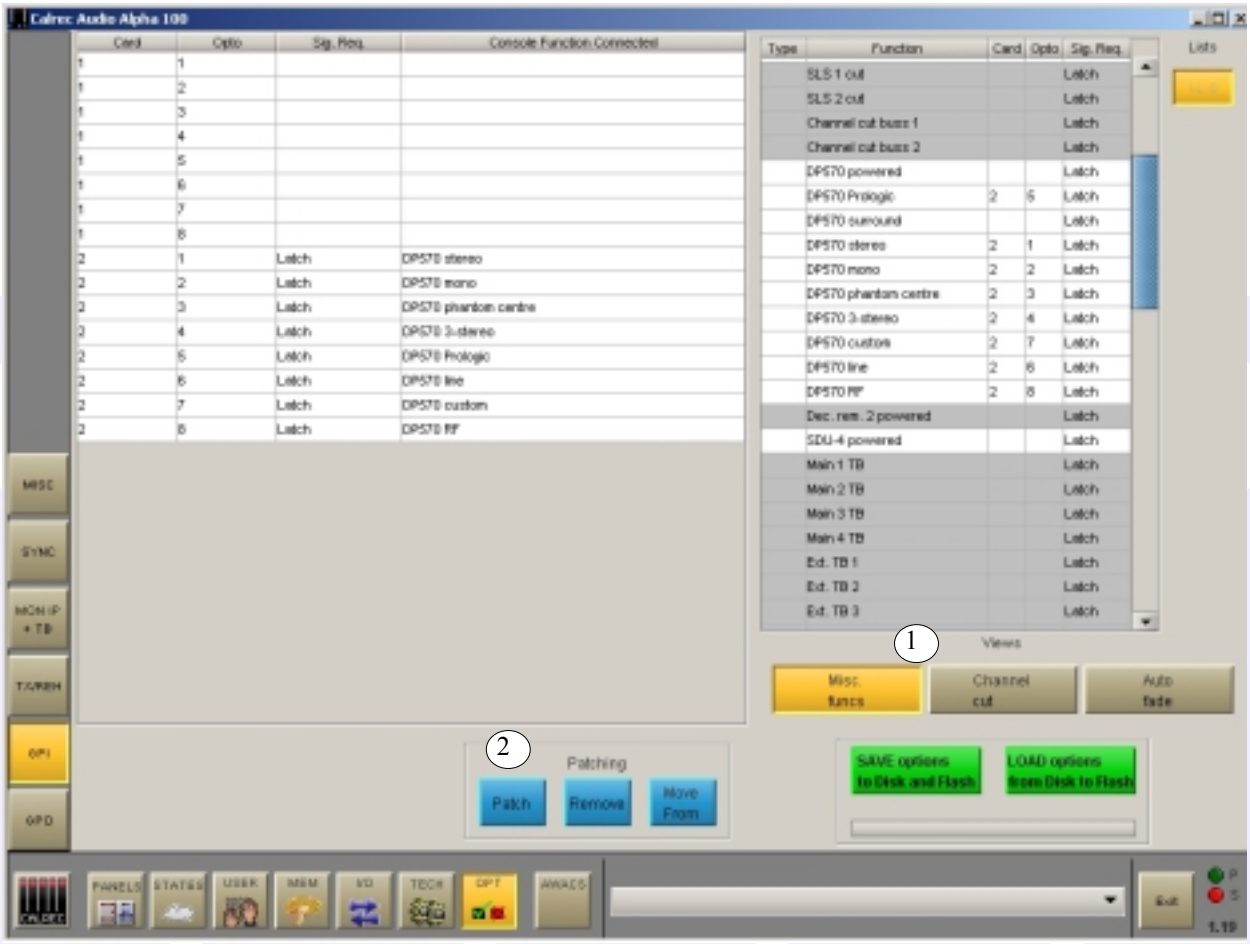
### (3) Latch or Pulse

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 : | The relay is set to pulse when the function is activated. |
| Pulse Off : | The relay is set to pulse when the function is de-activated. |
| Pulse Both : | The relay is set to pulse once when the function is activated, and again when the function is de-activated. |

## GENERAL PURPOSE INPUTS SCREEN






**(1) "Misc Functions", "Channel Cut" or "Auto-Fade"**

The opto-isolated general purpose inputs can be assigned to various console functions (with "Misc Functions" selected), or they can be set to cut channels (with 'Channel Cut' selected). With "Auto Fade" selected, the opto-isolated inputs can be assigned to auto-faders to allow automatic cross-fading (see next page).

**(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.

## 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.

### Assignable Auto-Faders

32 assignable “auto-faders” are provided. Each auto-fader provides the ability for one path to be faded up to and down from the current fader level.

Each auto-fader can be assigned to any one opto input. An auto-fader without an assigned opto will remain inactive, its operation will have no effect on the audio but it may still be assigned to a path. The association of the auto-faders to opto inputs is stored in the Options file.

Any single channel/group path may be assigned to an auto-fader. The association of channel/ group paths to auto-faders will be stored in the console memories.

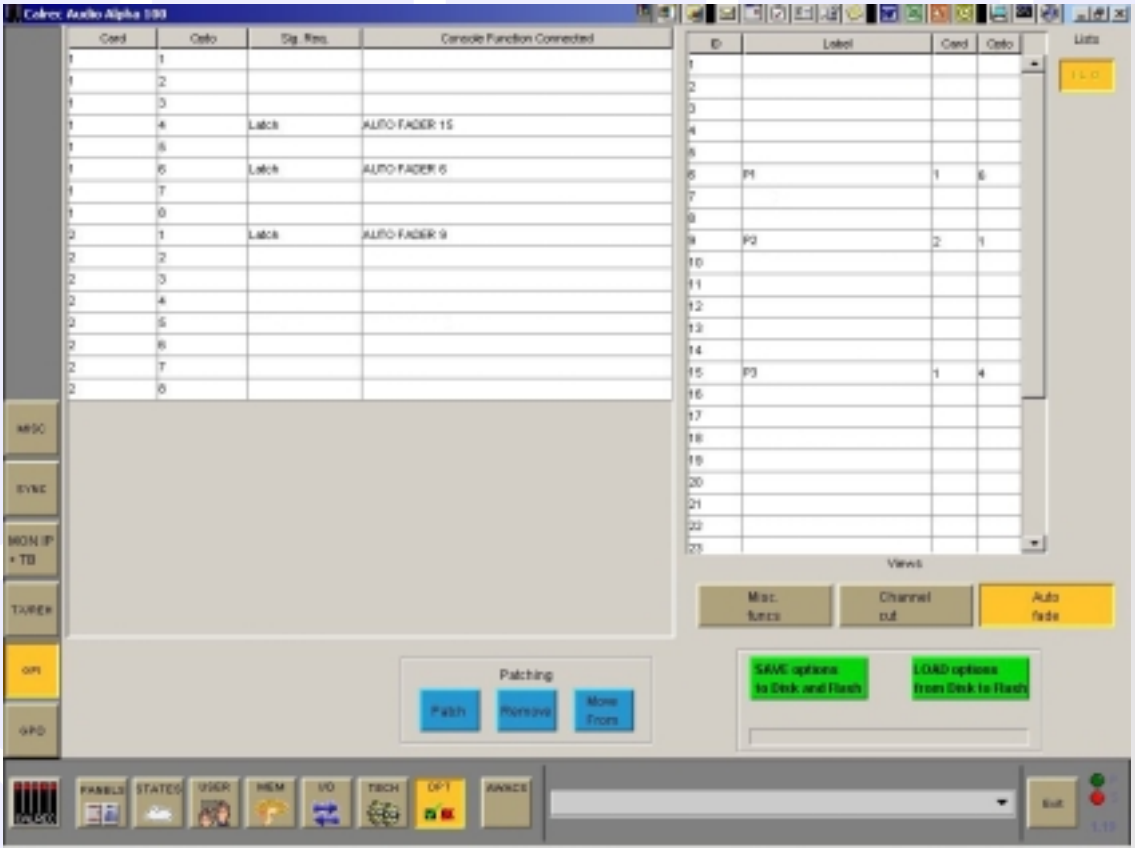
### Operation

Once an autofader has been assigned to an opto input, and has a channel or group path assigned, it is possible to automatically fade in or out the assigned channel or group fader under the control of the assigned opto input. When the opto input is fired, the path connected to the opto will be automatically faded in to the current fader level (after taking into account any VCA fader adjustment). When the opto is not fired, the fader connected to the opto will be automatically faded out.

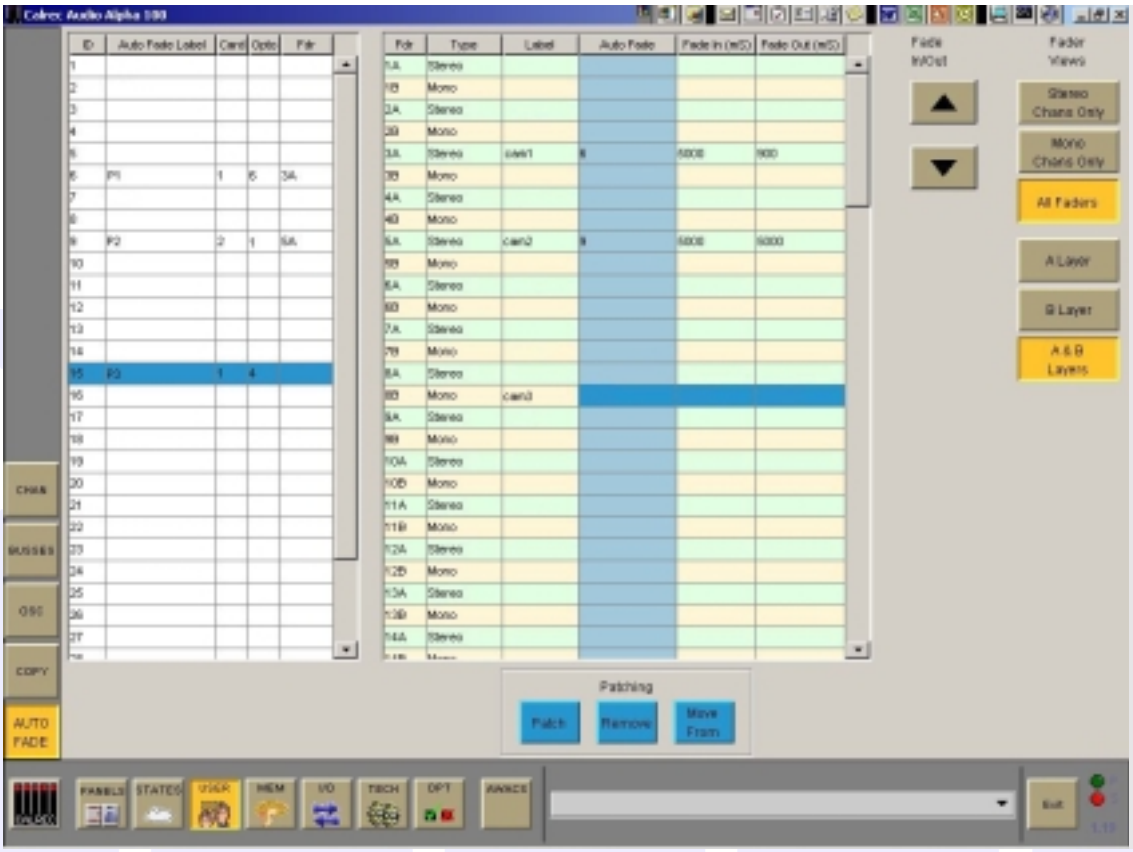
### Options Screen


Optos are assigned to auto-faders using the Options-GPI screen below. To assign an opto to an auto-fader, select an Opto from the available list on the left, and an auto-fader from the auto-fader list on the right, and then select "Patch".

Each autofader has a 6 character user editable label.



## Auto-Fade Screen




The User-Auto Fade screen is used to allow assignment of each auto-fader to a channel/group fader. A list of auto-faders is on the left hand side of the screen, and shows auto-fader number, auto-fader label, assigned Opto card and circuit, and assigned fader number.

Only faders with valid channel or group paths will be available for assignment although other faders may be displayed.

### Fade In/Out Times

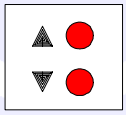
The nudge buttons allow fade in/out time adjustment for each auto-fader assignment. The fade in and out times of each auto-fader are individually selectable. The range for both parameters are 10 ms to 5secs, as follows:

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

The fade in and fade out times are stored in the console memories.

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

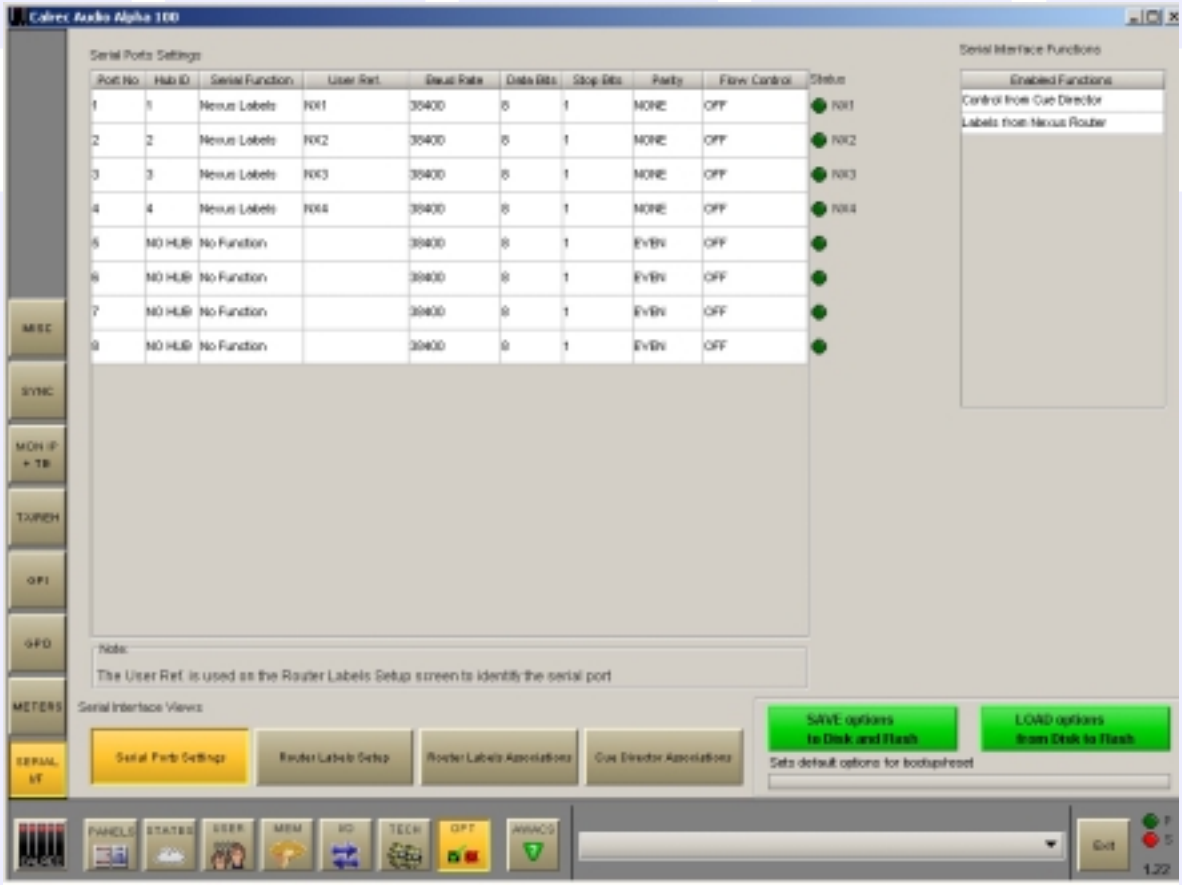
Indication of an auto-fade is provided by illuminating the down NULL LED on the fader strip when the fader is or is currently being faded out.

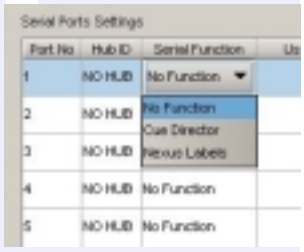


## ROUTER LABELS

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 isconnected 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. 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. This allows up to 8 Routers 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, selected from a drop down box in the Serial Function column. Only the serial functions which are enabled for the console will be available for selection.

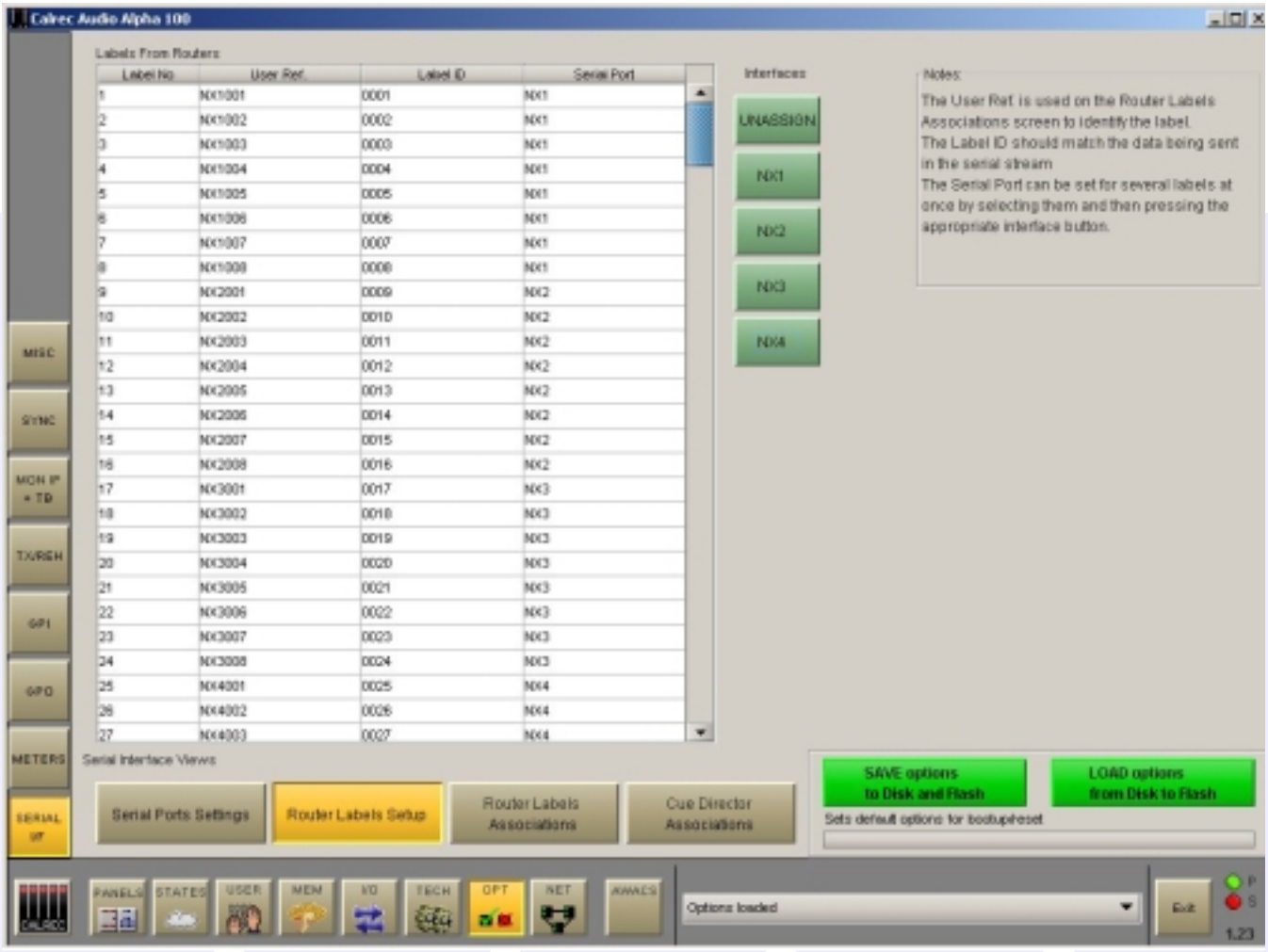
The Hub ID number is also selectable from a drop down list. The ability to change the Hub ID number is useful for the situation where two routers are connected to the console, sending the same information. If one router or serial port fails the serial function can be moved from one hub to another.

The function can be given a friendly name by typing up to six characters in the User Reference column.

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

**Router Label Setup Screen**

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.

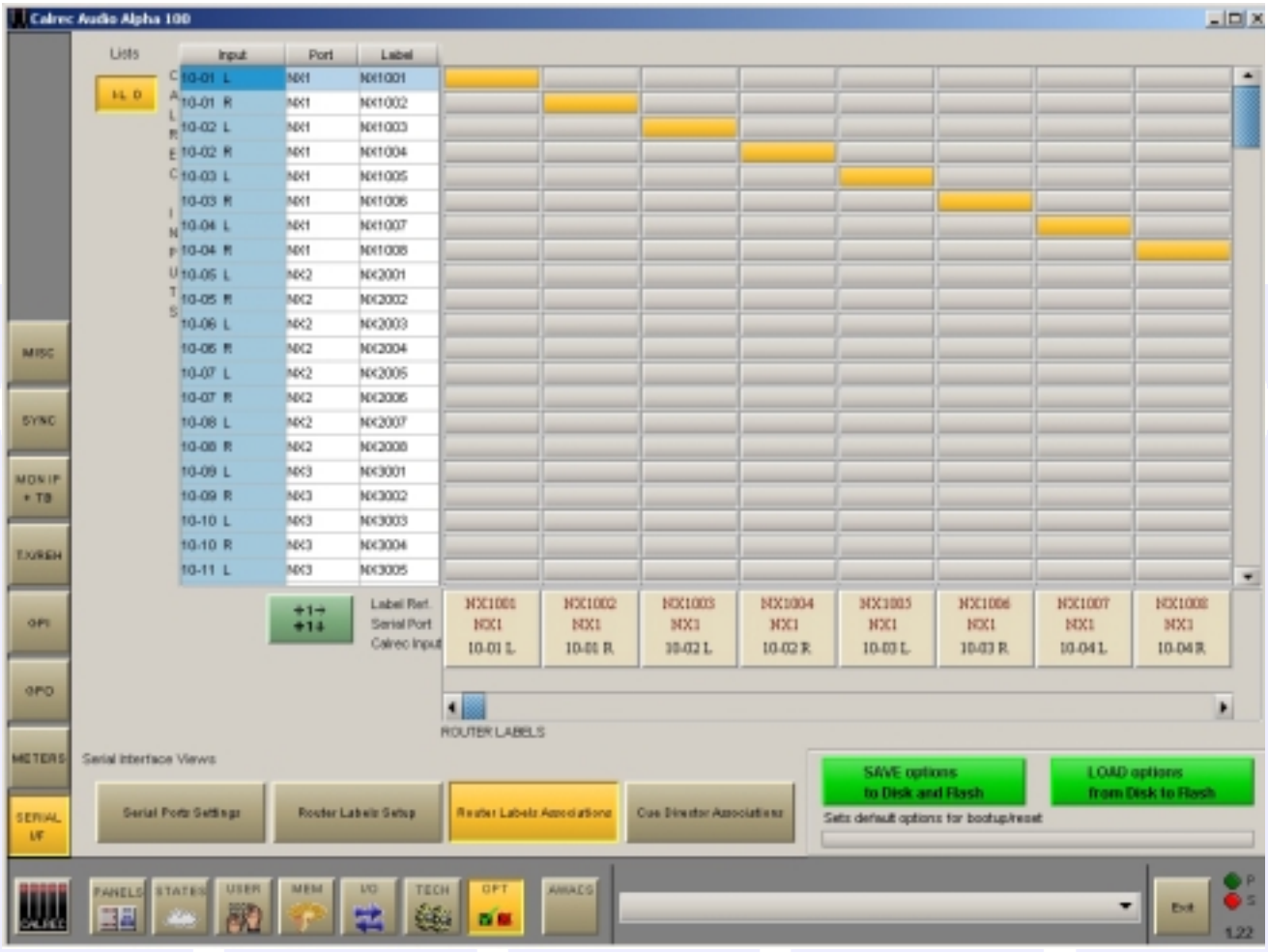



There are buttons next to the table, for each serial port function previously set up on the Serial Port Settings screen. To associate labels with a serial port interface, select the label, or region of labels, and select the required serial port function button. The serial port column tells the user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

## Router Label Association Screen




This screen allows each of the defined labels to be associated with one of the console's input ports. The input ports are shown down the left hand side of the screen, and the Router labels are shown along the bottom of the screen. This forms a grid, and associations are made by selecting the intersecting cell between input port and router label. Each leg of the input ports is always presented as if it were a mono port.

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

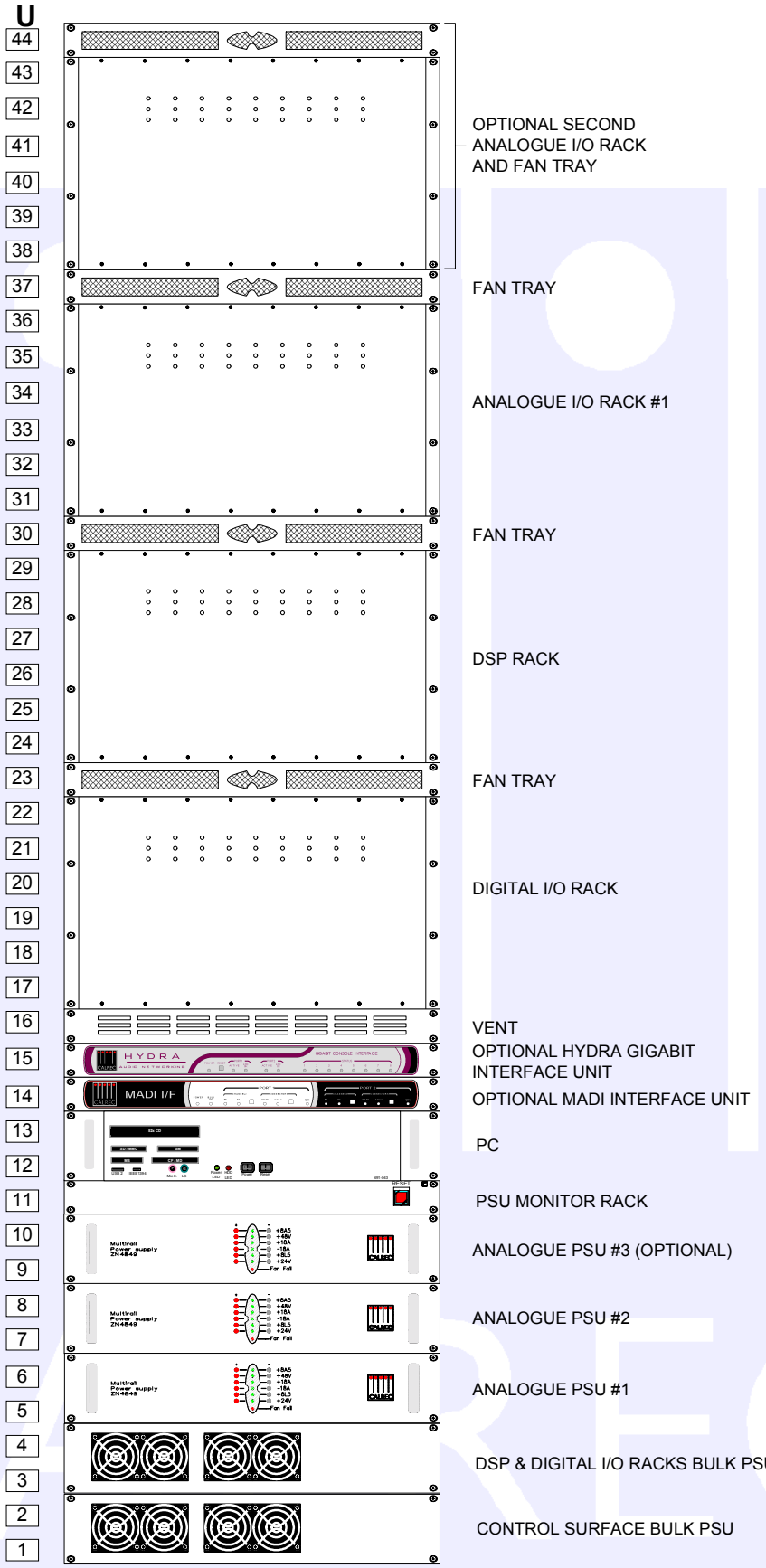
Once an input port is associated with a Router label, the labels will be visible on the fader label column on the I/O - Input screen on whichever channel the port is patched. If a new fader label is entered on the I/O - Input screen, it overrides the router label. The router label will also be displayed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

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

# Technical Information

## TYPICAL RACK LAYOUT

Equipment can be mounted in separate enclosures. Please refer to the cable lengths table before planning this. The PSU monitor rack can be mounted on the rear of the equipment bay if preferred.




(0681-68)

## 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 which offer mechanical supports under each of the units. This will allow units to be supported as they slide forward during removal for maintenance purposes.

Equipment can be mounted in separate enclosures. Please refer to the cable lengths table before planning this. The PSU monitor rack can be mounted on the rear of the equipment bay if desired.

Each audio rack (DSP, Digital I/O, and Analogue) is supplied with a 1U low noise fan tray which should be positioned immediately above the rack. The fan tray 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.
The bottom rack should have a 1U vent beneath it to allow ambient air to enter. It should also not be positioned above any equipment producing significant heat.

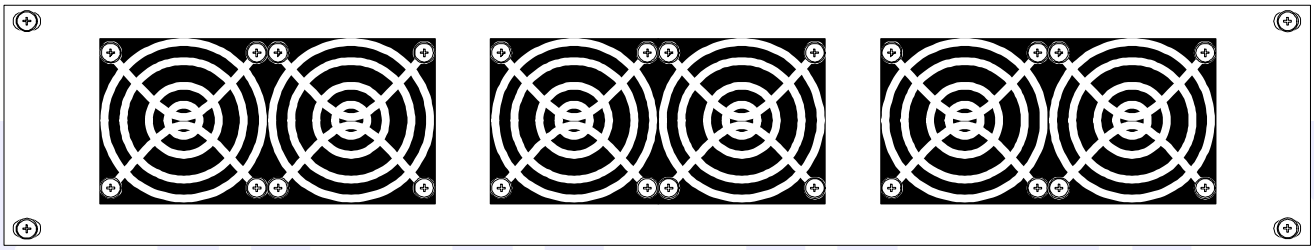
| Items | Height | Approx depth (incl. mating cons) | | Approx weight | | Approx Power Output (W) (full load) | Approx AC Power (VA) (full load) |
|---|---|---|---|---|---|---|---|
| | | inches | mm | lbs | kgs | | |
| DSP Rack (with cards for an average size system) | 6U | 18.9 | 480 | 26.0 | 11.8 | - | - |
| DSP Rack (with cards for the largest system) | " | " | " | 38.4 | 17.4 | - | - |
| Digital I/O Rack (with cards for an average system) | 6U | 18.1 | 460 | 29.8 | 13.5 | - | - |
| Digital I/O Rack (with cards for the largest system) | " | " | " | 42.6 | 19.3 | - | - |
| Analogue I/O (1/2 full) | 6U | 18.1 | 460 | 26.0 | 11.8 | - | - |
| Analogue I/O (full) | " | " | " | 35.7 | 16.2 | - | - |
| Bulk PSU rack with one PSU* | 2U | 18.5 | 470 | 17.4 | 7.9 | 1000 | 1250 |
| Extra PSU for Bulk rack | - | - | - | 7.3 | 3.3 | 1000 | 1250 |
| Analogue racks PSU* | 2U | 18.1 | 460 | 22.1 | 10.0 | 440 | 660 |
| Power for Hot spare (any type) | - | - | - | - | - | No extra | Less than 5% extra |
| Fan Tray | 1U | 19.7 | 500 | 6.6 | 3.0 | - | - |
| PSU Monitor box | 1U | 6.7 | 170 | 4.4 | 2.0 | - | - |
| PC* | 2U | 23.7 | 600 | 27 | 12.2 | - | 360 |
| MADI Unit | 1U | 11.9 | 300 | 6.6 | 3 | - | - |
| Hydra Gigabit Interface Unit | 1U | 10.4 | 265 | 5.5 | 2.6 | - | - |

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

## POWER SUPPLIES

All power supply units (PSUs) are rack mounting and are separate from the units they power, except for the PC which has its power supply built in. Diode feeding allows supplies of the same type to be paralelled together.

### Bulk Power Supply Rack (Powers Control Surface and DSP/Digital I/O Rack)



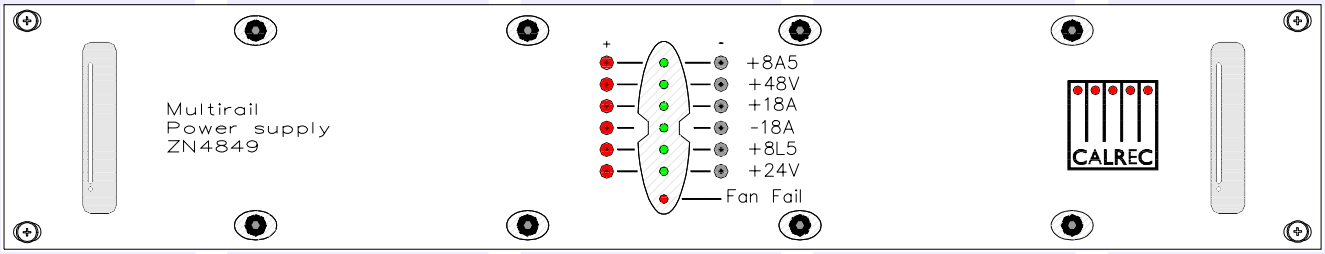
The Bulk PSU Rack is a 2U rack which can hold up to three identical 24V 1kW plug-in PSU's. The rack has separate AC power inputs and DC outputs for each of the three PSU's. Any one PSU can be removed from the rack without disturbing the operation of the others in the rack. The number of PSU's required in the rack is dependant upon the size of the system, the distance between console and rack, and the "hot spare" requirement. The DSP Rack and Digital I/O Rack are powered as one unit from one of these 2U racks. The Control Surface is separately powered from another of these 2U racks. The rack is fan cooled with fans mounted in the front of each PSU. The warm air is directed out of the rear of the rack.

### Fan Noise (dB SPL A-Weighted)

The following measurements were taken on axis at 1 metre from the dominant noise source:

| Bulk PSU Rack | |
|---|---|
| 1 x 24V 1kW PSU | 49dBA |
| 2 x 24V 1kW PSU | 52dBA |
| 3 x 24V 1kW PSU | 54dBA |

### Multi-Rail PSU (Powers Analogue I/O Racks)




Analogue I/O Racks use a 2U Multi-Rail PSU. The number required will depend on the type of installation. Generally, one Multi-Rail PSU is required for one Analogue I/O Rack, and two for two or three fully populated Analogue I/O Racks. An additional Multi-Rail PSU can serve as the hot spare for several analogue I/O racks, provided they are housed together. 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 also 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 further minimise noise. A noise measurement of 29dBA was taken on axis at 1 metre from the dominant noise source.

### PSU Monitoring and Distribution Unit

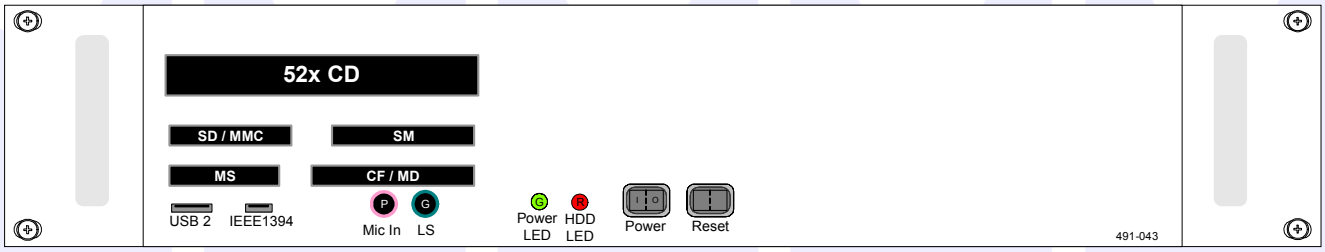
The Power Monitoring and Distribution unit monitors the power supplies for failures, and ensures "hot" changeover to the spare should a fault develop. The Reset button reboots the racks only, the control surface is unaffected.

## PC INFORMATION

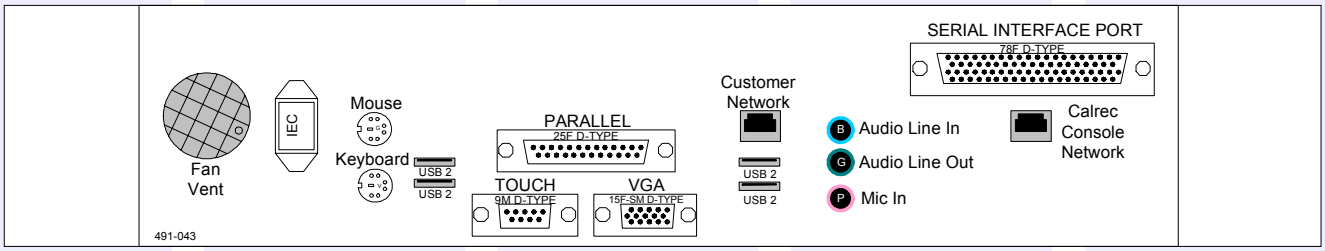
Failure of the console's PC does not prevent continued operation of the control surface or the audio.

| | |
|---|---|
| **Operating System** | Windows 2000 |
| **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 Antywhere |

Front




Rear




### Remote Access

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

### Network Ports

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.

### Software Supplied

An OEM PC Operating System license is supplied with each console, and the operating system software is pre-installed. The console software is also pre-installed, and supplied on a CD-ROM.

### 3rd Party Software

Calrec recommends that the PC is regarded as an integral control device for the console, and not as a general purpose PC. If 3rd party software is installed on the PC, care must always be taken to ensure that it does not interfere with the normal performance of the PC. The installation of inappropriate software on the PC may invalidate the console warranty.

## INTERFACE CONNECTOR PANELS

### AES Interface Connector Panels

AES inputs and outputs may be connected directly to the Alpha 100's Digital I/O rack using 36 way SCSI mating 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).

### Analogue Interface Connector Panels

Analogue inputs and outputs may be connected directly to the Alpha 100's Analogue I/O rack using 36 way SCSI mating 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 analogue I/O, 8 x 38 way or 12 x 38 way EDAC connector 2U panels are available in the following styles:

- Mic/Line Inputs - 4 pairs per EDAC
- Line Only Inputs - 8 pairs per EDAC
- Line Outputs - 8 pairs per EDAC

## MAXIMUM CABLE LENGTHS

| Cables | | Maximum Length | |
|---|---|---|---|
| From | To | Feet | Metres |
| Control surface | Control Surface Bulk PSUs | 100.0 | 30.0 |
| Control surface | PC | 500.0 | 150.0 |
| Control surface * | DSP & Digital I/O Racks * | 100.0 | 30.0 |
| PC | DSP & Digital I/O Racks | 100.0 | 30.0 |
| DSP Rack | Digital I/O Rack | 1.3 | 0.4 |
| DSP & Digital I/O Racks | Racks Bulk PSUs | 100.0 | 30.0 |
| Digital I/O Rack | Analogue I/O Racks | 33.0 | 10.0 |
| Digital I/O Rack | Digital I/O Interface Panels (BNC/XLR) | 9.8 | 3 |
| Analogue I/O Rack | Analogue I/O Interface Panels (EDAC) | 9.8 | 3 |
| Analogue I/O Rack | Multi-Rail PSU | 33.0 | 10.0 |
| Multi-Rail PSU | Other Multi-Rail PSU's | 1.3 | 0.4 |
| MADI Unit | Digital I/O rack | 16.5 | 5 |
| Hydra Unit | Digital I/O Rack | 16.5 | 5 |

Power monitor rack cables are limited by other cable lengths.

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

## ENVIRONMENTAL CONSIDERATIONS

Temperature range:
Operating 0ºC to +30ºC, in the immediate environment
Non-operating -20ºC to +60ºC.

Relative humidity:
Operating 25% to 80% non condensing.
Non-operating 0% to 90% non condensing.

Altitude:
Operating: Up to 2,000 metres (6500ft). (This is the limit to which the safety tests are valid).
Non-operating: Up to 15,000 metres (49,000ft).

## SYSTEM SPECIFICATION

| DIGITAL INPUTS | |
|---|---|
| Formats Supported | AES/EBU (AES3) 24-bit<br>Also suitable for use with SPDIF (IEC958 Type 2) signals |
| Interface | 110 Ohm transformer balanced, 5V Pk-Pk<br>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<br>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<br>10k Ohms for Line gains |
| Sensitivity | +18 / -78dB on Mic/Line Input Card<br>+18/-24dB on Line Only Input Card. |
| Equivalent Input Noise | -126dB (150 Ohm source) |
| Distortion | -1dBFS @ 1kHz - Better than 0.003%<br>-20dBFS @ 1kHz - Better than 0.006%<br>-60dBFS @ 1kHz - Better than 0.3% |
| Frequency Response | 20Hz to 20kHz +/- 0.5dB on Mic/Line Input Card<br>20Hz to 20kHz +/- 0.25dB on Line Only Input Card |

| 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%<br>-20dBFS @ 1kHz - Better than 0.003%<br>-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<br>Internal Crystal Reference<br>TTL Wordclock (48kHz +/- 100Hz)<br>AES/EBU Digital Input (48kHz +/- 100Hz) |

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.

# Appendix - TFT Metering System

## TFT METERING SYSTEM

### Introduction

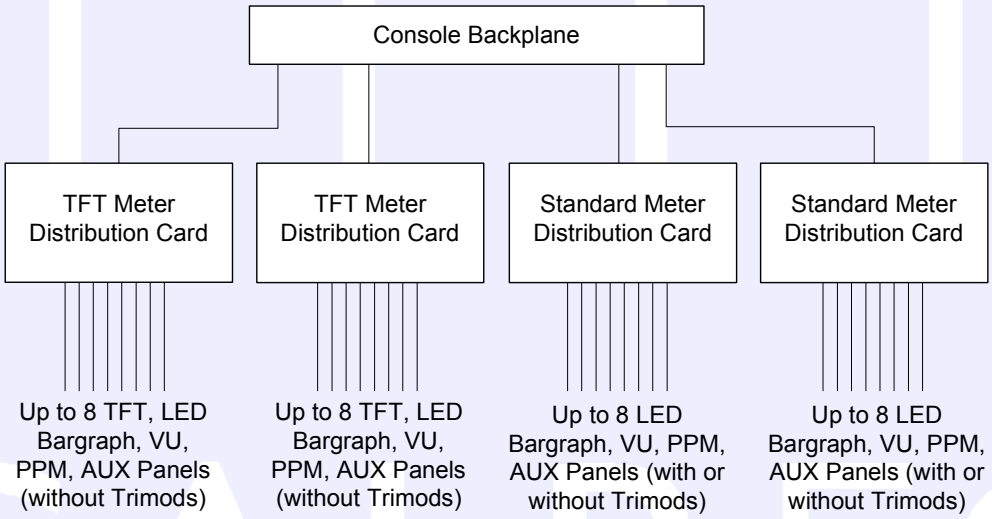
The TFT metering system allows high quality TFT screen based meters to be incorporated into the console upstand, either instead of, or alongside the existing bargraph, moving coil VU and PPM meters. These TFT panels allow a greater density of meter functions to be displayed, and the user can dynamically change the meters and their arrangement using the Front End Application. Meter configurations can be saved and recalled, so that different users can have their own preferred meter arrangements. The following functions can be metered:

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

Each meter can be:

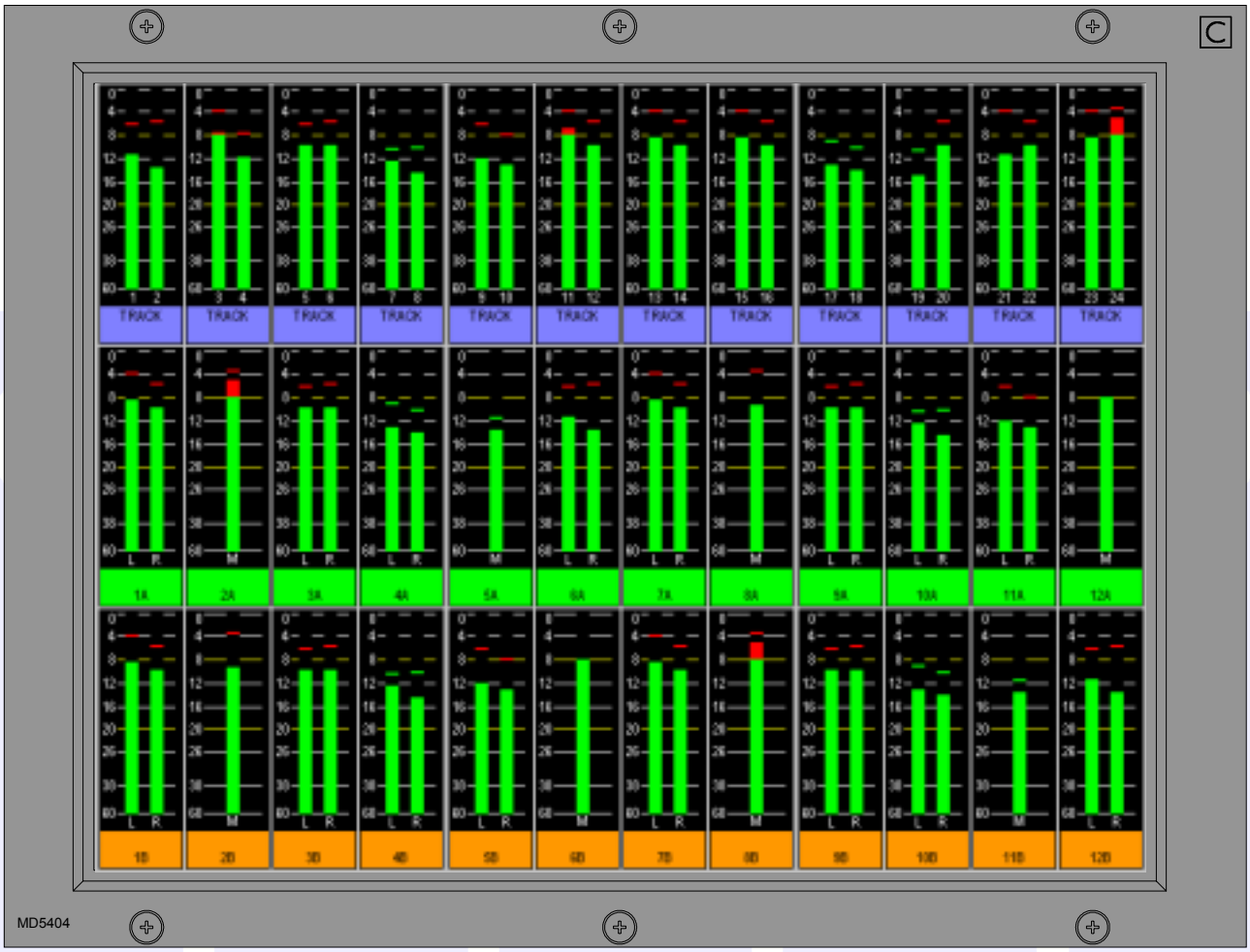
- Mono
- Stereo
- M/S (Sum and Difference of the stereo signal)
- Surround (L, R, C, LFE, LS, RS - sequence set as part of meter arrangement)
- Phase Display

A console can have a maximum of 16 TFT Meter screens. Up to two TFT meter distribution cards can be fitted, each of which can drive 8 TFT screens (or other standard meters without trimod LCD displays). To avoid a single point of failure, it is possible to spread the metering load across 2 meter distribution cards. For example, if a console had 8 TFT screens fitted, 4 could be connected to each TFT meter distribution card.




In addition to the TFT meter distribution cards, it is also possible to fit up to 2 standard meter distribution cards for connecting to current meter panels with trimod LCD displays. So, for example, in a system which had 2 TFT meter distribution cards and 2 standard meter distribution cards fitted, it would be possible to incorporate 16 TFT metering panels, and 16 standard meter panels into the system -although it is not likely that this number of standard meters would be required.

## TFT Meter Screens




The layout of the TFT meter screens can be configured by the user. 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.

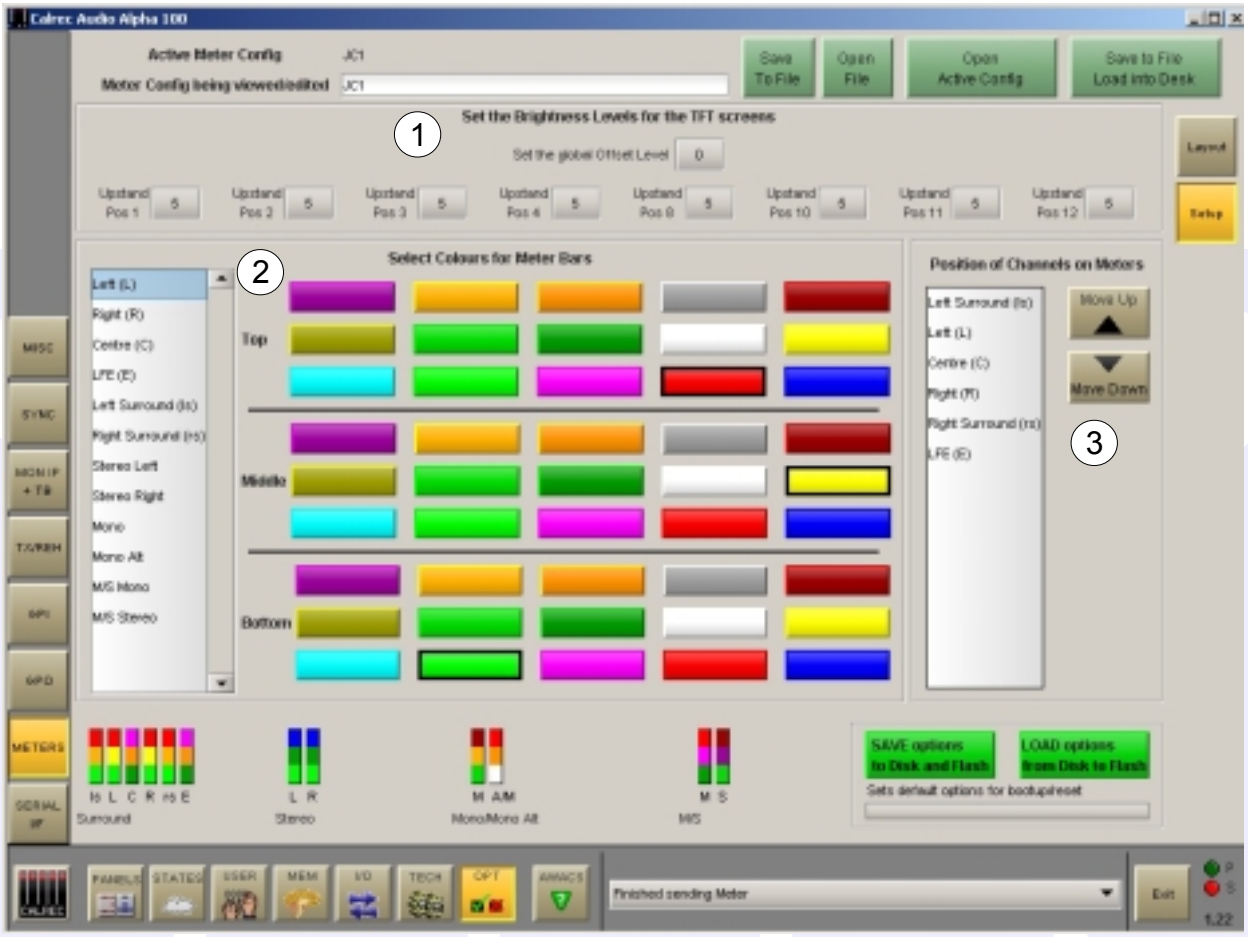
When a screeen is configured with 8 columns, these columns will line up with any channel or group faders positioned in that section of the console. This can be useful when metering channel inputs or groups.

The number of meters configurable on the TFT screens is governed by the number of meter data signals available. There are 122 meter data signals available for output meters. In addition, for input meters, there is one meter data signal per audio signal. If an audio signal is metered on a TFT meter and a standard meter at the same time, it will use up two signals in the meter data stream.

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

### (2) Bar colours

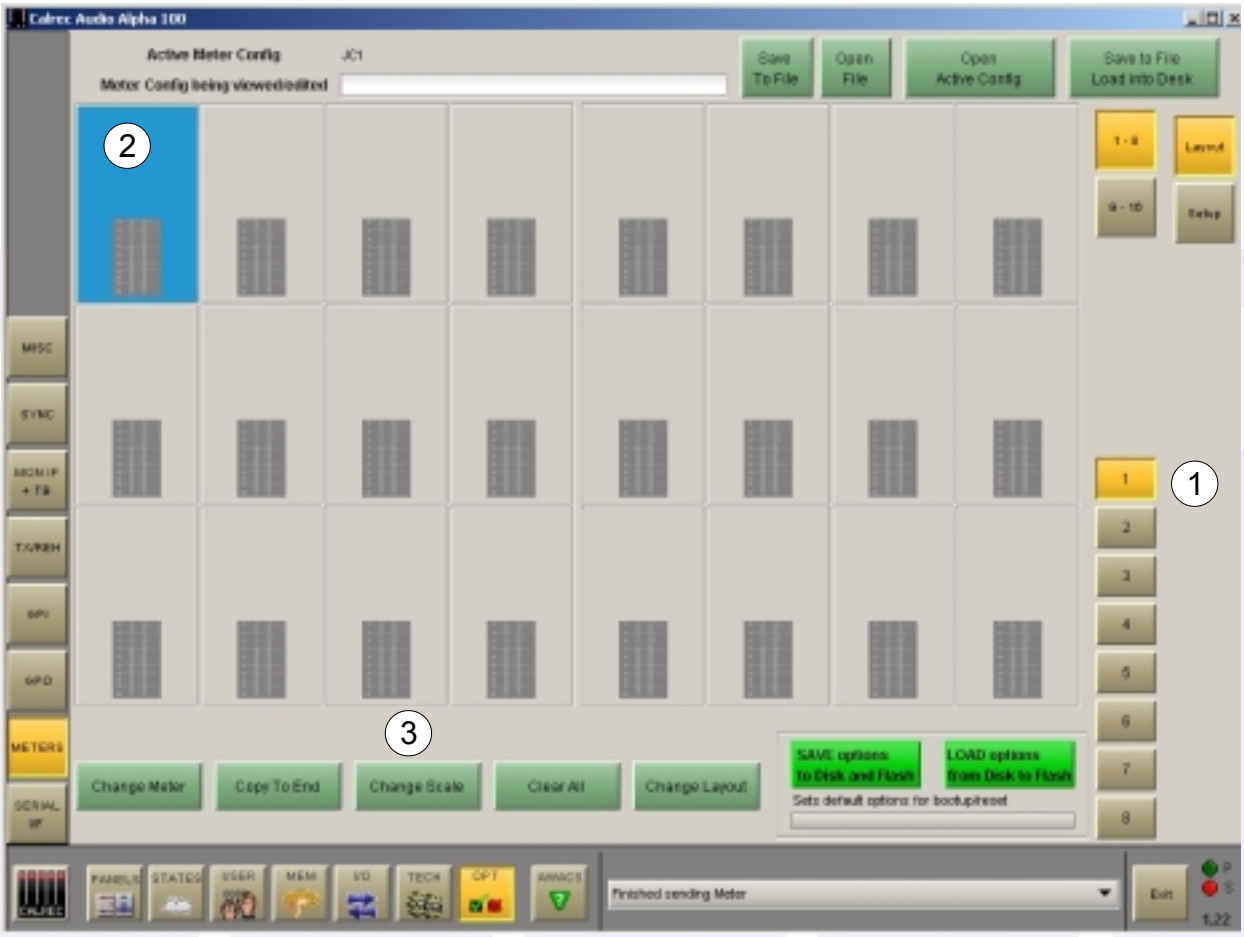
The user can select the colours to be used on the meters. The top/middle/bottom colours for each signal can be selected independently. Select the signal from the list, then select the colours from the pallette. The selected colours for each signal are shown at the bottom of the screen.

### (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.

## Layout Screen 


The user can (with some rules) control the layout of the screens.

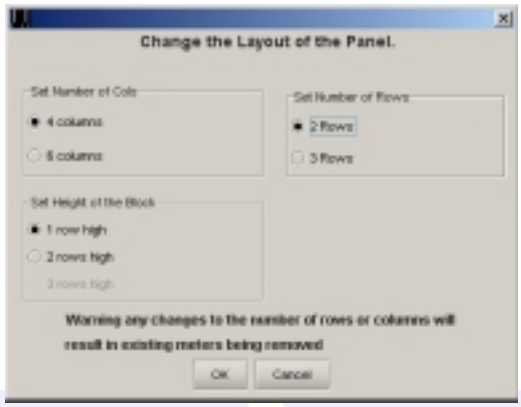



**(1) Meter Selection**
The Set-up Application provides an interface with which to tell the console which meter panels occupy which position along the upstand. The numbered buttons on the above front end screen allow the meter panel in that upstand position to be selected for set-up.

**(2) Meter Layout**
The selected meter will be shown in the main section of the screen, where the meter positions will be greyed out until the user defines the type of meter to show in that position. Before the meters are defined, it is a good idea to define the layout of the rows and columns on the screen. Some of the meter positions can be left unused.

**(3) Functions**
The controls at the bottom of this screen allow changes to the meter to be made. The layout of the graphs to be displayed on the screen can be arranged using CHANGE LAYOUT. The type of meter and it's source can be defined using CHANGE METER. The scale can be set using CHANGE SCALE. COPY TO END copies the selected meter across the rest of the meters in the row. CLEAR ALL resets the meter arrangement, clearing all settings.

## CHANGING TFT SCREEN LAYOUT




Select a meter (it's background will turn blue) and select CHANGE LAYOUT. A dialogue box will appear to allow the number of columns and rows in the selected meter's half of the screen to be chosen.

The selected meter's height is also determined here. The meter's height can span the rows available in the column.

### Rows

The number of rows within the selcted meter's column can be selected here. 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 will affect meters in the selected meter's half of the TFT meter screen only.

### Columns

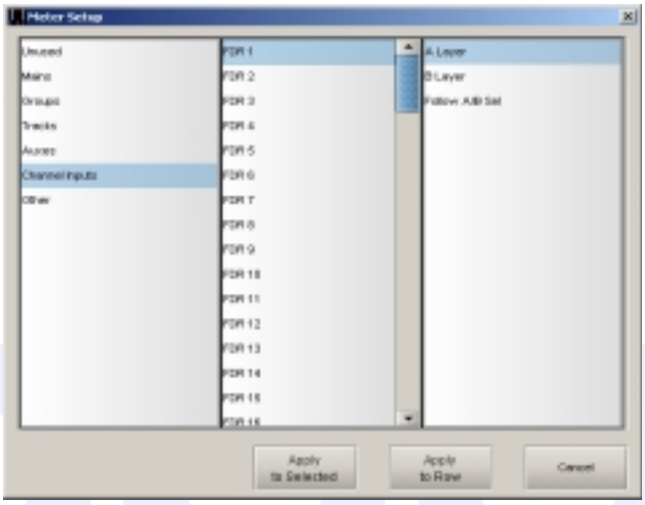
There can be either 4 or 6 columns in each row across each half of the screen. As the screens are set up in halves, this means that there can be different column widths on each side of one screen. Changing the number of columns will affect meters on the selected meter's row only (Unless the change affects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

### Block Height

In a column with 2 rows, selecting 1 row high makes the meter take up one 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 just one row (1/3 of the 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 it within its column. Selecting 3 rows high makes the meter the full height of the column it occupies.

## CHANGE METER



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. Select the required source to monitor, from Mains, Groups, Auxes, Channel Inputs or Other. The following columns will list the available options for that source. When all options are selected, APPLY TO SELECTED will apply the source to the selected meter position only. APPLY TO ROW will apply that source to the selected meter position, and subsequent sources in the list will be applied to all the meter positions to the right of the selected meter position in the row, until the row is full, or you run out of sources in the list.

### Channel Inputs

When selecting a channel input 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 path selection (A or B) for that fader number.

### Change Scale

Each bargraph can be PPM, VU or Phase. There can be up to 3 phase meters assigned in the configuration, after all three have been assigned the option will no longer be available. The scale type can be selected on either an individual basis or an "apply to all". This applies for both standard and TFT meters. Scales available to the user are set in the Set-up Application from a list which is longer than the system is capable of.

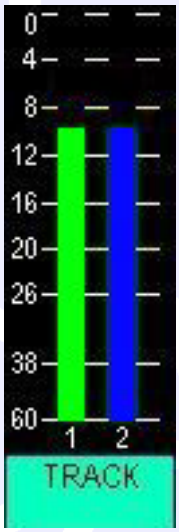
## Meter Options

The table below shows the options available for display.

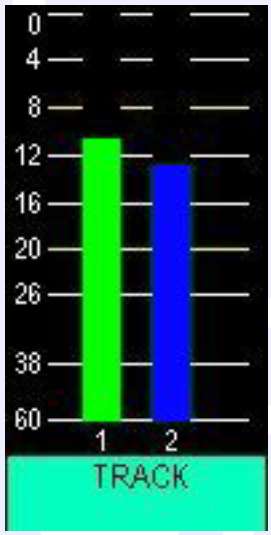
| Source | Option 1 | Option 2 |
|---|---|---|
| **Unused** | | |
| **Mains** | Mains 1-4 Desk<br>Mains 1-4 Line<br>Mains 1-4 Pre<br>Mains 1-4 | Stereo or Surround, Stereo (Lo Ro), M/S, Stereo Phase<br>Stereo or Surround, Stereo (Lo Ro), M/S, Stereo Phase<br>Stereo (Lo Ro), M/S, Stereo Phase<br>Stereo or Surround, Stereo (Lo Ro), M/S, Stereo Phase |
| **Groups** | Groups 1-8 | Mono or Stereo, Phase |
| **Tracks** | 1-48 | Tracks 1/2 - pairs or in fours |
| **Auxes** | Aux 1-20 | Aux 1/11, Aux 2/12 etc |
| **Channel Inputs** | FDR 1-96 | A Layer, B-Layer, Follow A/B Sel |
| **Other** | Main Meter Sel<br>ANC 1 Mtr Sel<br>ANC 2 Mtr Sel<br>PFL<br>AFL<br>APFL<br>CRLS<br>Mix Minus<br>External | Surround, Stereo (Lo Ro), M/S, Stereo Phase<br>Surround, Stereo (Lo Ro), M/S, Stereo Phase<br>Stereo (Lo Ro), M/S, Stereo Phase<br>Stereo, M/S, Stereo Phase<br>Surround<br>Stereo, M/S, Stereo Phase<br>Surround, Stereo (Lo Ro), M/S, Stereo Phase<br>Mono<br>Stereo, M/S, Stereo Phase |

## Tracks

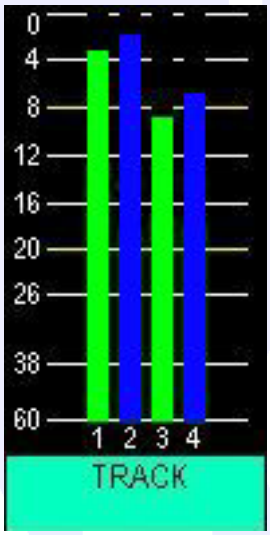
2 Tracks can be displayed in any single meter position. However, if the meter position occupies a column which is 1/8 of the screen width (that half of the screen being set to 4 columns wide), then 4 tracks can be displayed allowing the track metering to occupy a smaller space. When selecting Tracks to meter, the first available options column allows two tracks to be selected for display in that meter position. The next available options column will then allow selection of the next two tracks (provided that the selected meter position is 1/8 screen width). If selected, all four tracks will be displayed within that meter position. It is useful to change the colours for pairs of mono meters such as tracks, so that the left of the pair is a different colour to the right.




**1/12 wide meter, displaying 2 tracks**




**1/8 wide meter, displaying 2 tracks**




**1/8 wide meter, displaying 4 tracks**

## SAVING AND RESTORING METER CONFIGURATIONS

Once the user has the meters set up as desired, the configuration can be saved to the PC's hard disk, so that it can be recalled at a later date. A configuration consists of the values set on the SETUP screen and the layouts designed on the LAYOUT screen. The configuration currently active on the control surface will be shown at the top of the Setup and Layout screens, and the configuration currently being viewed/edited on the screens will be shown underneath.

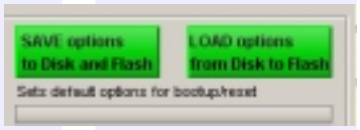

**Save to File, Load into Desk**
Changes to the configuration being viewed/edited will not take effect until SAVE TO FILE LOAD INTO DESK is selected. Then the changes will be transmitted to the console and saved to **C:/ alpha 100/cust1/meter**. If any changes are made to the configuration, the SAVE TO FILE LOAD INTO DESK button will flash (until selected) to indicate that the changes to the configuration being viewed/edited have not yet been saved and loaded onto the console.

**Open File**
Open File will allow a previously saved meter configuration to be chosen. When a file is opened, the configuration will be loaded into the front end screens as "the meter configuration being viewed or edited", it is not sent straight to the control surface. The settings can then be edited if desired and when they are ready to be used by the control surface select SAVE TO FILE LOAD INTO DESK, and the revised file will be saved and the settings sent to the control surface.

**Save to File**
Save to File will save the configuration being viewed/edited to **c:/alpha 100/cust1/meter** without loading it onto the console.

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

**Save Options to Disk and Flash**

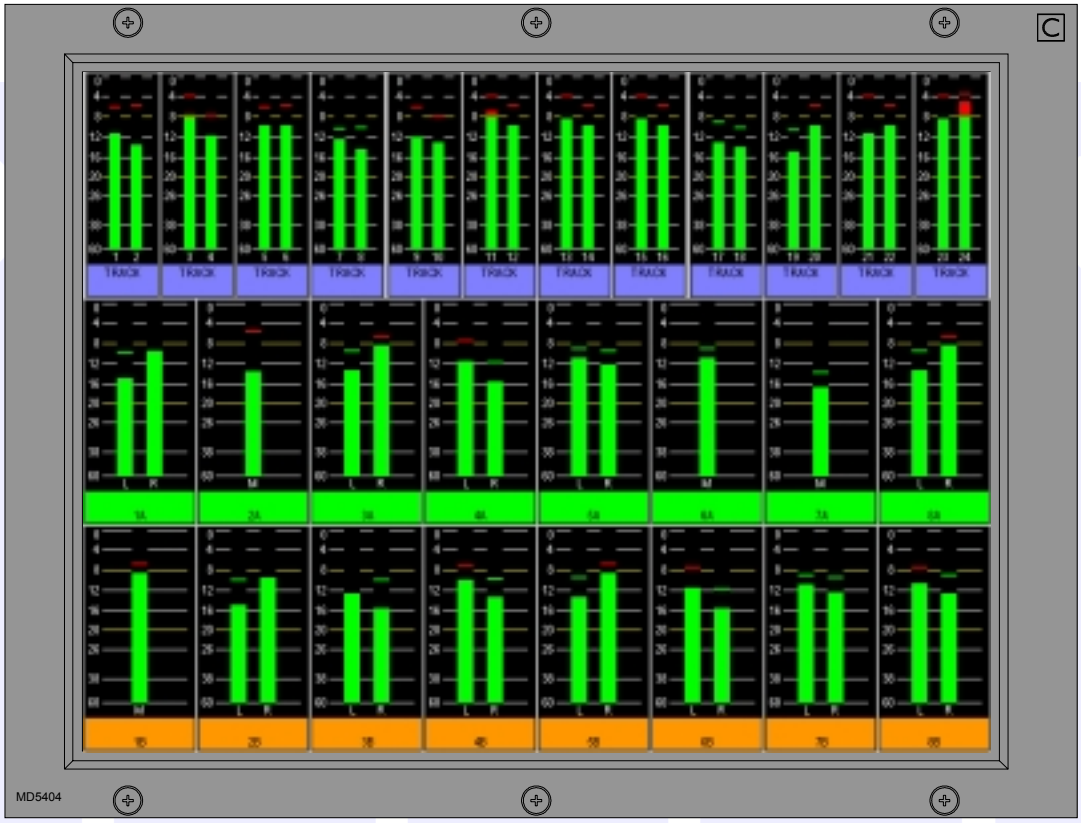


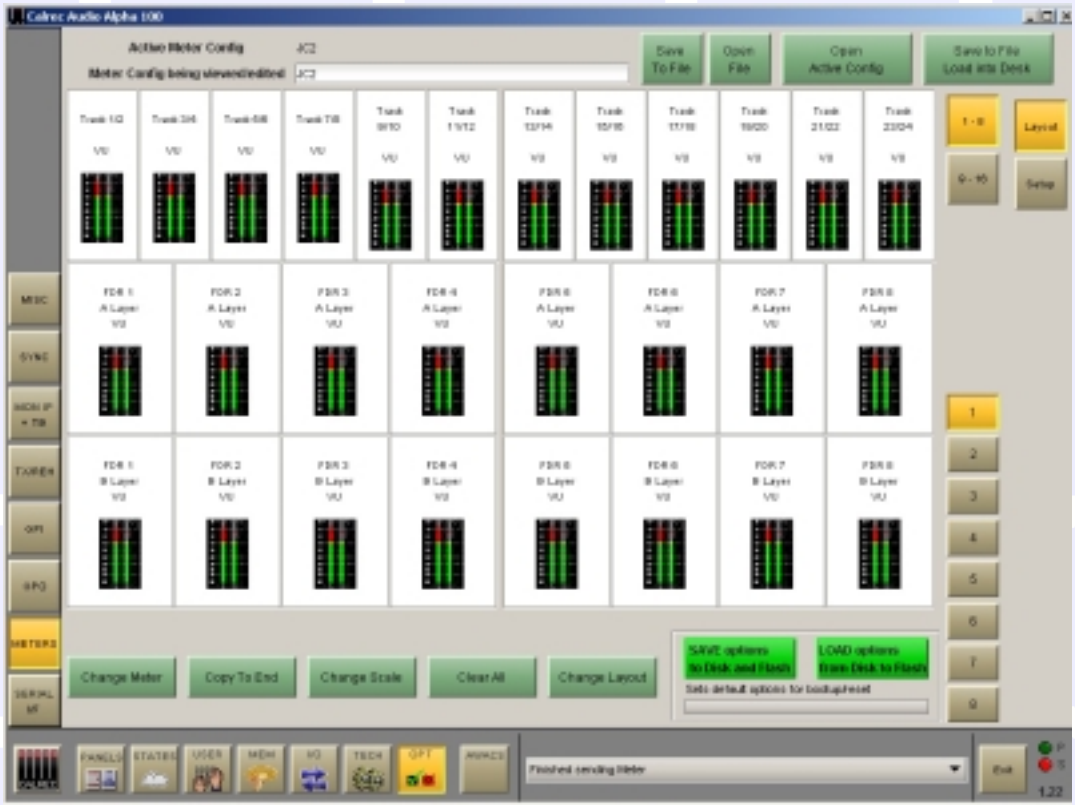

As the meter setup screens are part of the options set of screens, it is important to save the options to disk and flash once the meter arrangement is set up. The Options screens are used to pre-set the system to the studio's required settings. These settings are not stored in the individual console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

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

## TFT CONFIGURATION EXAMPLES

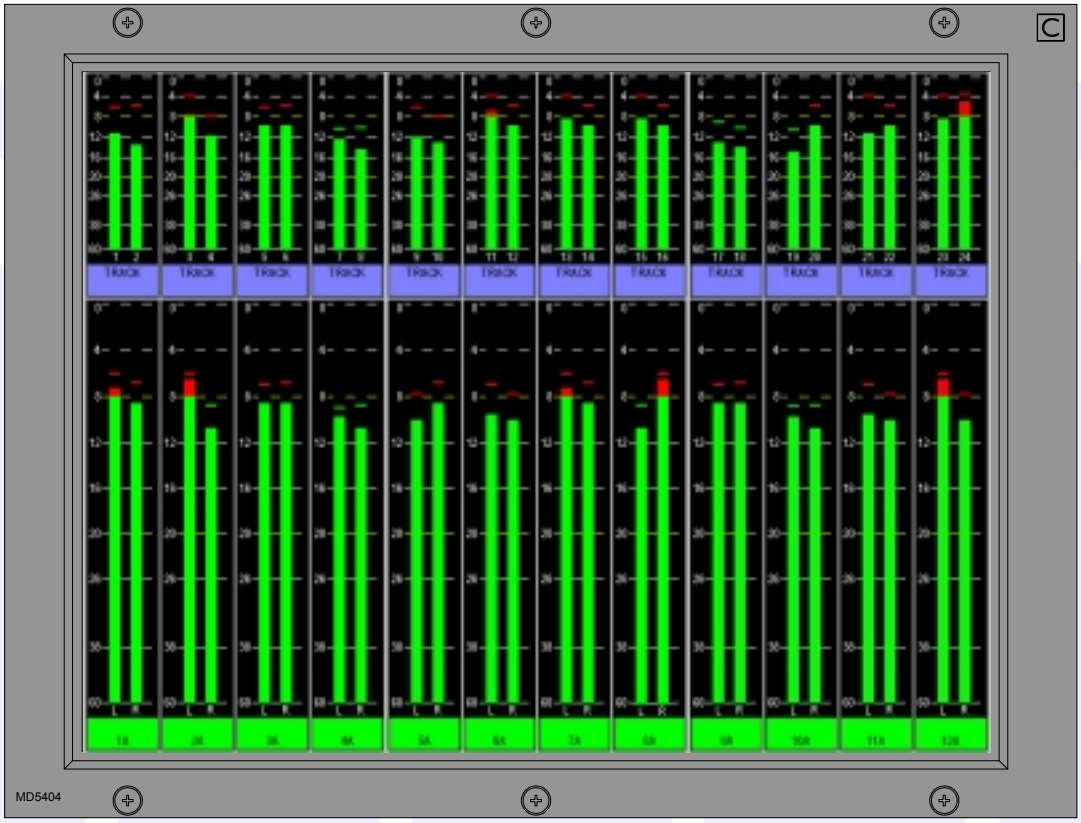
In the example below, the TFT meter screen has been split up into three rows. The top row has been spllit up into 12 meter positions to house the tracks, and the middle and bottom rows have been split up onto 8 meter positions across, to house the channel inputs for the A and B paths respectively. When there are 8 meter positions on a row across the width of a TFT screen, the meter positions will line up with the faders occupying that section of the console.

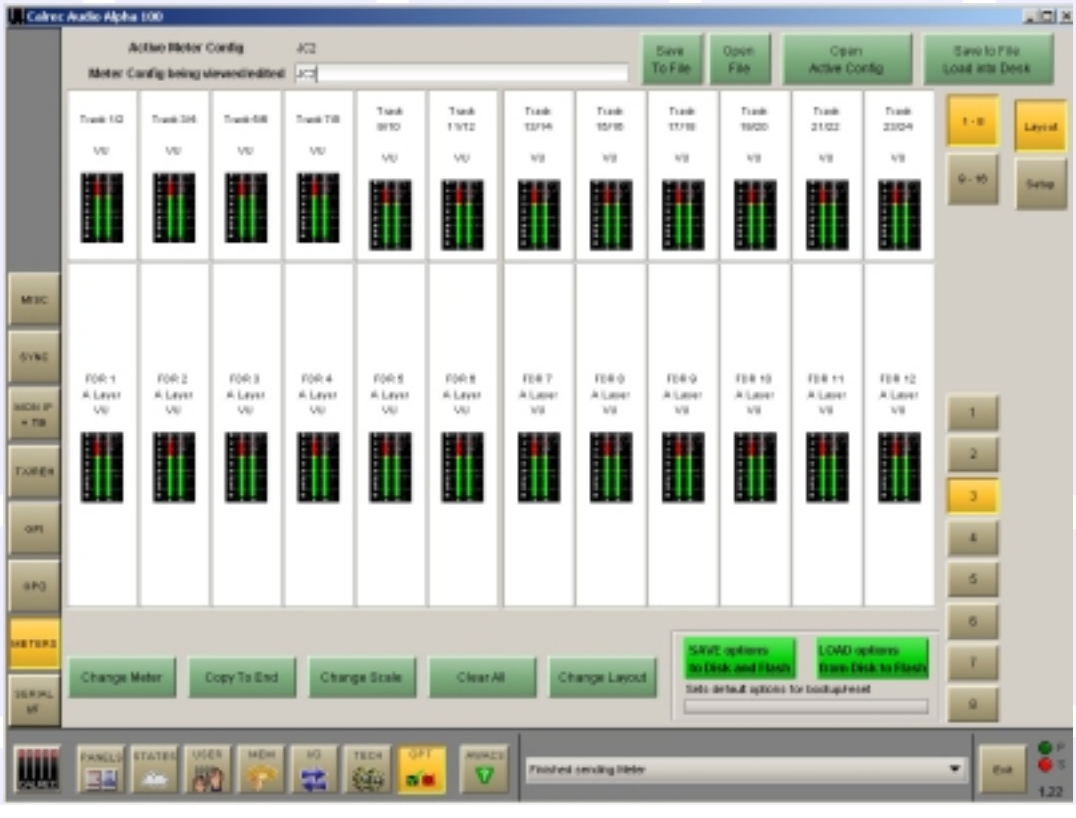


## TFT Configuration Examples

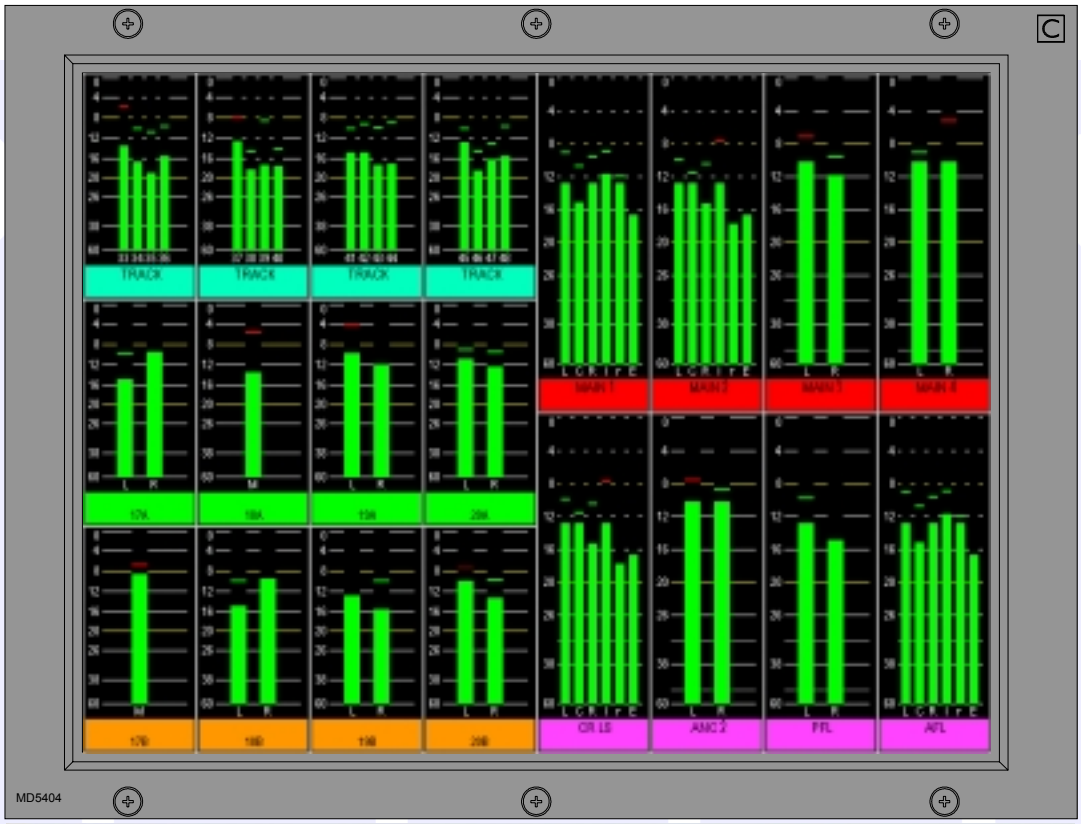
In the example below, the TFT meter screen has been split up into two rows with 12 meter positions across each row. The top row takes up 1/3 of the height of the screen, and is occupied by tracks. The bottom row takes up 2/3 of the height of the screen, and is occupied by A path channel inputs.

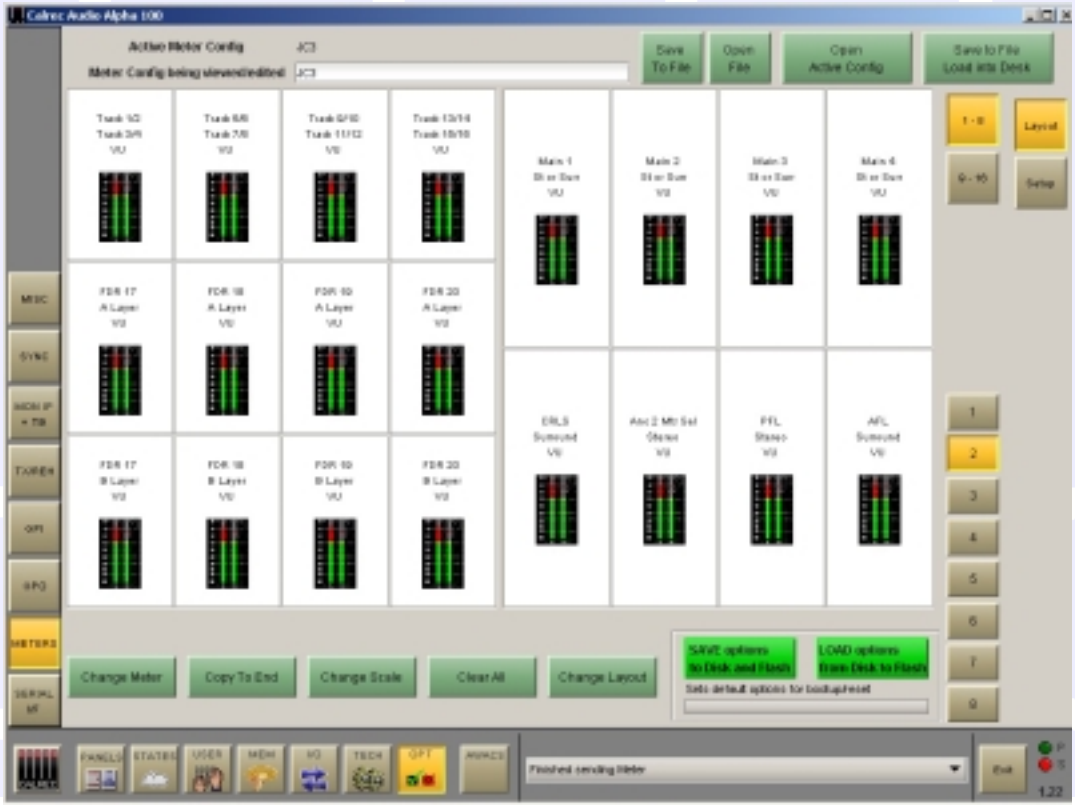


## TFT Configuration Examples

In the example below, the TFT meter screen has different row sizes on each half. In the first half, the top row houses graphs showing four tracks, allowing 16 tracks across half of the screen. The middle and bottom rows display channel inputs for A and B paths respectively. The second half of the screen's height. Across the top half are the Main output meters, and the bottom half displays CRLS, Ancillary 2, PFL and AFL.



**NOTES**




(926-041 Iss.16)