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Issue 3

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1 Introduction
Introduction

Series FOUR features:

- 24-48 ch frame sizes
- All frames include 4 full stereo input modules as standard
- Additional stereo input modules can be added
- 8 mono subgroups
- 10 Aux sends
- 8 VCA groups
- 4-band EQ with fully parametric mids on both mono and stereo inputs
- Sweepable high pass filter on mono and stereo inputs
- 16x8 matrix built in as standard
- Input metering on every channel
- VU output meterbridge as standard
- Master facilities include full Talkback routing, Aux Stereo Return, Alternate Stereo Output, Monitor Outputs and Solo control.
- Scene Control module provides snapshot automation of all input and output mutes and VCA assignments, plus Midi program change.

Mono Input (24, 32, 40, or 48 fitted)

- Mic input XLR with 48V, phase rev and RANGE switch
- Sweepable high pass filter
- Balanced insert point with in/out switch (jumperable pre/post EQ. Default=pre)
- 4-band EQ with fully parametric mids, plus bell/shelf on HF, LF bands
- 10 mono Auxes, individual Pre/post switches
- Aux 1, 2 and 3, 4 can be globally switched to work as 2 stereo auxes
- Direct output (controllable from Aux 10)
- Routing to 8 mono subgroups, plus stereo and mono busses
- Switchable LR or true-LCR panning
- 8 VCA groups, individually assignable
- 8 Mute groups, individually assignable
- Channel mute controlled by midi scene-set automation (with recessed mute safe switch on each channel)
- 10 segment pre-fade, pre-EQ input meter next to fader (jumperable post-fade)
- Solo with intercancel or additive modes (PFL, stereo AFL or SIP)
Stereo Input

- Stereo mic/line input -as mono input. (Separate gain controls for left, right)
- Sweepable high pass filter
- Balanced insert points with in/out switch (jumperable as mono input)
- 4-band EQ with fully parametric mids, plus bell/shelf on HF, LF bands
- 10 mono aux sends (Each pair has switchable feed from mono sum of L+R or stereo)
- Routing to 8 mono groups plus stereo and mono busses
- 8 VCA groups, individually assignable
- 8 mute groups, individually assignable
- Channel mute controlled by scene set automation (with recessed mute safe switch)
- 2x 5-segment pre-fade input meters next to fader (jumperable post-fade)
- Solo with intercancel or additive modes (PFL, stereo AFL or SIP)

Group/Aux output module

- 9x dual output modules to give 8 groups, 10 aux outputs and 8 matrix outputs
- 60mm group and aux output faders
- 8x100mm VCA master faders
- Routing to stereo and mono outputs for sub grouping
- Matrix outputs are fed by 8 groups, aux 1-4, L/R/M and external line inputs
- Balanced insert points for all group, aux and matrix outputs, with insert IN switches
- All outputs have automated mutes (with mute safe switches)
- Aux 1, 2 and 3, 4 modules have global switches for mono/stereo switching

Master Modules

- Stereo and mono main output faders
- Talkback and oscillator/pink noise to all output busses, plus external output
- Alternate stereo output on 60mm faders, source can be pre or post main stereo faders
- Stereo Aux return with 2-band EQ (routable to LR and mono)
- Solo mode controls and level trims
- Monitor and high-powered phones outputs
- Balanced XLR bus inputs for all output buses plus RS232 logic link, for console linking
Scene Control/Midi module

- 126 mute scenes, including ability to store and recall VCA assignment switches
- Receives and transmits midi program change and note on/off data
- External Fx programs can be changed from the console - mute recall can be disabled if required
- CPU reset switch (recessed) on front panel stops CPU and allows all console mutes to operate manually in the event of a CPU failure. (VCA subgroups are not available in this mode).

Frames

Four frame sizes are offered:

- 24 ch (The number refers to the number of mono inputs fitted as standard)
- 32 ch
- 40 ch
- 48 ch

The 32-48ch frames are configured as follows: (See 'Frame Configurations' drawing for details).

<table>
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<tr>
<td>Outputs 1-9</td>
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<td>Master</td>
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<td>Stereo Inputs 1-4</td>
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<td>Inputs 25-40</td>
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<td>Inputs 41-48</td>
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</table>

The 24ch frame is similar to the above, except that there are only 16 inputs to the left of the master section, with the remaining 8 inputs to the right of the master section and stereo inputs.

Mono inputs can be replaced by additional Stereo inputs in blocks of 4, together with the appropriate rear-con panel changes.
Warranty

1 Soundcraft is a trading division of Harman International Industries Ltd.

End User means the person who first puts the equipment into regular operation.

Dealer means the person other than Soundcraft (if any) from whom the End User purchased the Equipment, provided such a person is authorised for this purpose by Soundcraft or its accredited Distributor.

Equipment means the equipment supplied with this manual.

2 If within the period of twelve months* from the date of delivery of the Equipment to the End User it shall prove defective by reason only of faulty materials and/or workmanship to such an extent that the effectiveness and/or usability thereof is materially affected the Equipment or the defective component should be returned to the Dealer or to Soundcraft and subject to the following conditions the Dealer or Soundcraft will repair or replace the defective components. Any components replaced will become the property of Soundcraft.

3 Any Equipment or component returned will be at the risk of the End User whilst in transit (both to and from the Dealer or Soundcraft) and postage must be prepaid.

4 This warranty shall only be available if:

a) the Equipment has been properly installed in accordance with instructions contained in Soundcraft’s manual; and

b) the End User has notified Soundcraft or the Dealer within 14 days of the defect appearing; and

c) no persons other than authorised representatives of Soundcraft or the Dealer have effected any replacement of parts maintenance adjustments or repairs to the Equipment; and

d) the End User has used the Equipment only for such purposes as Soundcraft recommends, with only such operating supplies as meet Soundcraft’s specifications and otherwise in all respects in accordance Soundcraft’s recommendations.

5 Defects arising as a result of the following are not covered by this Warranty: faulty or negligent handling, chemical or electro-chemical or electrical influences, accidental damage, Acts of God, neglect, deficiency in electrical power, air-conditioning or humidity control.

6 The benefit of this Warranty may not be assigned by the End User.

7 End Users who are consumers should note their rights under this Warranty are in addition to and do not affect any other rights to which they may be entitled against the seller of the Equipment.

* 36 months, for CPS2000 Power Supply only.
Precautions and Safety Instructions

General Precautions
Avoid storing or using the mixing console in conditions of excessive heat or cold, or in positions where it is likely to be subject to vibration, dust or moisture. Do not use any liquids to clean the fascia of the unit: a soft dry brush is ideal. Use only water or ethyl alcohol to clean the trim and scribble strips. Other solvents may cause damage to paint or plastic parts.
Avoid using the console close to strong sources of electromagnetic radiation (e.g. video monitors, high-power electric cabling): this may cause degradation of the audio quality due to induced voltages in connecting leads and chassis. For the same reason, always site the power supply away from the unit.

Caution!
In all cases, refer servicing to qualified personnel.

Handling and Transport
The console is supplied in a strong crate. If it is necessary to move it any distance after installation it is recommended that this packing is used to protect it. Be sure to disconnect all cabling before moving. If the console is to be regularly moved we recommend that it is installed in a foam-lined flightcase. At all times avoid applying excessive force to any knobs, switches or connectors.

Power Supplies & Cables
Always use the power supply and cable supplied with the mixer: the use of alternative supplies may cause damage and voids the warranty; the extension of power cables may result in malfunction of the mixing console.

Warning!
Always switch the power supply off before connecting or disconnecting the mixer power cable, removing or installing modules, and servicing. In the event of an electrical storm, or large mains voltage fluctuations, immediately switch off the PSU and unplug from the mains.

Warning!
Always ensure that you use the correct PSU for your mixer. The Series FOUR is supplied with a CPS2000 power supply unit

Note: The CPS2000 may be linked to a second CPS2000 for backup in the event that one of the PSUs fail.

Signal Levels
It is important to supply the correct input levels to the console, otherwise signal to noise ratio or distortion performance may be degraded; and in extreme cases, damage to the internal circuitry may result. Likewise, on all balanced inputs avoid sources with large commonmode DC, AC or RF voltages, as these will reduce the available signal range on the inputs. Note that 0dBu = 0.775V RMS.
Refer to the Specifications section for details of input and output levels.
Mains Installation

General Wiring Procedures

To take full advantage of the excellent signal to noise ratio and low distortion of Soundcraft consoles care must be taken to ensure that incorrect installation and wiring does not degrade the performance of the desk. Hum, buzz, instability and Radio Frequency interference can usually be traced to earth loops and inferior earthing systems. In some areas, especially heavily industrial areas, the incoming mains earth will not be adequate and a separate technical earth for all the audio equipment must be supplied. However, check with your local electricity supply company to ensure that safety regulations are not infringed or negated.

The successful, hum free, installation of a system requires forethought, and the establishment of a set of ground rules, which must be consistently adhered to at all stages of installation.

Initial Wiring Considerations

- For optimum performance, it is essential for the earthing system to be clean and noise free, as all signals are referenced to this earth. A central point should be decided on for the main earth point system, and all earths should be 'star fed' from this point. It is common electrical practice to 'daisy chain' the earths to all electrical outlets but this method is unsuitable for audio installations. The preferred method is to run an individual earth wire from each outlet, back to the system star point to provide a safety earth screen reference for each piece of equipment.

- A separate earth wire should also be run from each equipment rack and area, to the star point. This may or may not be used depending on circumstances, but it is easier to install in the first place, than later when problems arise.

- The location of the star point should be a convenient, easily accessible place, preferably at the rear of the console or in the main equipment rack.

- Install separate 'clean' and 'dirty' mains outlets, wired individually back to the incoming mains distribution box. Use the 'clean' supply for all audio equipment and the 'dirty' supply for all lighting, etc. Never mix the two systems.

- If necessary, to provide sufficient isolation from mains borne interference, install an isolating transformer. This should be provided with a Faraday Shield which must be connected with earth.

- Never locate the incoming mains distribution box near audio equipment, especially tape recorders, which are very sensitive to electro-magnetic fields.

- Ensure that all equipment racks are connected to earth, via a separate wire back to the star point.

- Equipment which has unbalanced inputs and outputs may need to be isolated from the rack to prevent earth loops.

Audio Wiring

Having provided all equipment with power and earthing connections, consideration must be given to the method of providing audio interconnection and adequate screening of those interconnections. This must be done in a logical sequence to avoid problems and assist in the localisation of problem equipment.
Connect the PA system to the console outputs one at a time and check for any hum, buzz, or RFI. Only when you are satisfied with the quietness of the console and the PA system should you proceed with the next step.

- Connect stereo tape recorders, FX and foldback sends one at a time, checking and isolating any connection which degrades performance.
- Connect all other peripheral devices.
- Connect all microphone lines.

By following this sequence much time and future trouble will be saved, and the result will be a quiet, stable system.

**Shielding**

Audio equipment is supplied with a variety of input and output configurations, which must be taken into consideration when deciding where the screen connections should be made. There are three sources of unwanted signal being impressed on the screen, which are as follows:

- Extraneous electrostatic or electromagnetic fields.
- Noise and interference on the earth line.
- Capacitive coupling between the screen and signal wires.

To minimise the adverse affects of the unwanted coupling to the signal wires, it is important that the screen is connected at one end only, i.e. the screen must not carry any signal current. Any signal on the wires within the screen will be capacitively coupled to the screen. This current will ultimately be returned to the source of the signal, either directly, if the screen is connected at the signal source end, or indirectly via the earthing system, if the signal is connected at the signal destination end. The indirect connection will cause an increase in high frequency cross-talk, and should be avoided wherever possible.

Therefore, in general, always connect the shield only at the signal source end. In high RF areas, the screen can also be connected to earth via a 0.01mF capacitor. This will present a short circuit at RF frequencies, thus lowering the effective shield impedance to ground. However, at low audio frequencies the reactance of the capacitor will be sufficiently high not to cause an earth loop problem.

**Points to Remember**

- In all cases, use good quality twin screened audio cable. Check for instability at the output.
- Always connect both conductors at both ends, and ensure that the screen is only connected at one end.
- Do not disconnect the mains earth from each piece of equipment. This is needed to provide both safety and screen returns to the system star point.
- Equipment which has balanced inputs and outputs may need to be electrically isolated from the equipment rack and/or other equipment, to avoid earth loops.

It is important to remember that all equipment which is connected to the mains is a potential source of hum and interference and may radiate both electrostatic or electromagnetic radiation. In addition, the mains will also act as a carrier for many forms of RF interference generated by electric motors, air-conditioning units, thyristor light dimmers etc. Unless the earth system is clean, all attempts to improve hum noise levels will be futile. In extreme cases there will be no alternative but to provide a completely separate and independent "technical earth" to replace the incoming "noisy earth". However, always consult your local electricity supply authority to ensure that safety regulations are not being infringed.
Audio Connectors

3-pole XLR
- 1: HOT (IN PHASE SIGNAL)
- 2: COLD (OUT OF PHASE SIGNAL)
- 3: GROUND (SCREEN)

1/4" Stereo Jack Plug used as balanced input/output:
All jacks except headphones
- Tip: HOT (IN PHASE SIGNAL)
- Ring: COLD (OUT OF PHASE SIGNAL)
- Sleeve: GROUND (SCREEN)

1/4" Stereo Jack Plug used for Headphones
- Tip: LEFT SIGNAL
- Ring: RIGHT SIGNAL
- Sleeve: GROUND (SCREEN)

Lamp Connectors

Pins 1 and 3 = either + or -12Vdc
Pin 4 = 0V
(depending on position in console)

MIDI Connectors

The MIDI IN signal is buffered by an opto-isolator.
Console Linking

The Series FOUR features a Console Linking System which allows a Master Series FOUR to control a Slave Series FOUR to effectively increase the number of input channels available.

The following audio busses can be linked across Series FOUR consoles:

- Left/Right & Mono, Auxes 1-10 and Groups 1-8
- Solo busses

Automation linking via RS232 is supported on software versions 1.10 and above:

- Solo bus logic
- VCA Group level control and mutes
- Mute Groups
- VCA/Mute Group Assignments
- Scene Store and Recall

Linking Analogue Busses

Audio busses are linked by connecting the bus outputs on the Slave console to the bus inputs on the Master console. The appropriate rear connector panels are shown below.

Locations of Audio Bus Inputs and Outputs

Mono, Auxes 1-10 and Groups 1-8

Main Master Rear Connection Panel

All bus connections are on XLRs except for the AFL/PFL busses which are on 1/4" jacks. An appropriate 5 Metre audio multicore cable, (Part Number: RV4110), is available from Soundcraft. All busses are balanced at +4dBu, and are injected directly onto the appropriate busses at unity gain.

To avoid overriding Master console settings, controls on the Slave console should be set as follows:

- Set all Group, Aux, Left/Right & Mono Mix and VCA Master faders to 0dB.
- Set the STE switches on the Stereo Aux Output modules to be the same as those on the master console.

To minimise shifts in ground potential, the power supplies for the two consoles should be plugged into adjacent mains outlets.
Linking Console Automation

This feature applies only to Software Versions 1.10 and above

The automation systems of two consoles can also be linked via an RS232 connection. This links the Mute Groups, VCA Groups and Scene automation systems of the consoles and provides the SOLO logic link. Connect the consoles via the rear-panel RS232 connectors using a Male-to-Male, 9-pin Null Modem cable obtainable from most computer accessory suppliers. If you need to make up your own cable, the pin-out is shown below. Alternatively a suitable RS232 cable, (Part Number: RV4111), is available from Soundcraft.

The Slave console must also be put into “Slave Mode” by activating User Setting 1 (See User Settings on page 5.8). Do this by holding down Mute Group Master 1 on the Scene Control Module during power up. If the Master and Slave consoles are connected via RS232, the 7-segment display on the Slave console will flash “SLA” once. If the consoles are not connected, the display will flash “SLA” until the consoles are connected. When a connection is made, the Slave console will inherit the current settings of the Master console. Note that the switches on the Scene Control Module of the Slave console will not respond; the automation systems of both consoles are controlled from the Master console only. Even so, the Scene Data for the Slave console remains stored in its own scene control module.

Location of RS232 automation link connector:

![RS232 Cable Wiring Diagram]

![Main Master Rear Connection Panel]

The RS232 logic linking is NOT compatible with any other console.

The Audio Linking is, of course, compatible with any other console. Simply plug the Slave console's audio outputs into the Series FOUR’s Bus/Linking inputs.
Series FOUR

3

Block Diagrams
Mono Input Module

1. SENS adjusts the sensitivity of the electronically balanced XLR input. Input sensitivity: -2dBu to -70dBu, +10dBu to -20dBu (switched range).

2. The 48V switch applies 48V phantom power to the input XLR.

3. RNG switches the input to the lower sensitivity range to allow line level signals to be used. This gives the same signal handling capability as a traditional passive pad, but without the degradation in noise performance and common-mode rejection that pad circuits cause.

4. PHASE reverses the polarity of the selected input.

5. The HPF control adjusts the frequency of the second order high-pass filter. It can be swept from 20-700Hz. The filter is immediately after the input stage. A click position at fully anti-clockwise position switches the filter out of circuit.

6. The EQ section comprises four sweepable bands, and the two mid bands are fully parametric, with adjustable Q.
   - The LF section gives 15dB of cut or boost from 30Hz-480Hz
   - The LOW MID section gives 15dB of cut or boost from 70Hz-1.5kHz
   - The HIGH MID section gives 15dB of cut or boost from 450Hz-12kHz
   - The HF section gives 15dB of cut or boost from 1kHz-20kHz

The Q of the two mid bands is adjustable between 0.5 and 3.0 with the Q rotary controls.

7. The SHLV switches change the response of the high and low-frequency bands from ‘bell’ to ‘shelving’ response when pressed.

8. The EQ section is switched in by the EQ switch.

9. The module insert point uses an electronically balanced send and return, at a nominal level of +4dBu. The signal is accessible via separate 1/4" jacks on the rear connector panel. The insert point may be set pre- or post-EQ by push-on jumpers (see ‘link options’ page 4-5). It is always pre-fader.

The insert return signal from the rear panel jack is enabled by pressing the INSERT IN switch. The insert send signal is always available at the rear panel, regardless of this switch setting.

10. Signal is sent to the Aux 1-10 busses via individual level pots for Aux 5-10, and two dual concentric pots for 1-2 and 3-4. These have 5dB of gain when fully clockwise, and are switched pre- or post-fader by the individual PRE buttons. The pre-fade signal may be sourced pre-fade and post-mute, pre-mute or pre-EQ and pre-insert, in four blocks of sends, using solder links (see “link options”).

The dual concentric sends 1-2 and 3-4 work either as four individual mono sends, or as two stereo sends, with level on the top knob and pan on the bottom. The mode is selected by a global mono/stereo switch for each of the two pairs of sends. These switches are located on the corresponding output modules.

11. The DIR switch switches Aux 10 away from its bus and connects it to the Direct Output (Electronically balanced, XLR). When DIR is not pressed, the Direct Output is fed directly with the post-fader signal. The nominal level is +4dBu.
When using Aux 10 to control the direct output, its PRE switch can be used to set a pre-fade feed for multitrack recording etc. This is normally pre fade/post mute, but can be changed to pre-mute or pre-EQ with internal links (see “link options” page 4.5).

The signal is sent to the stereo mix bus, mono bus and 8 group busses using the MIX, MNO, 1, 2, 3, 4, 5, 6, 7 and 8 switches. The PAN control, which gives 4.5dB centre drop, always operates on the STE signal, but can be switched to also control the 8 group busses in pairs (odd busses fed from left pan, even busses from right) by pressing the PAN switch. If PAN is not pressed, each group bus switch receives the post-fader signal directly.

The Mono bus is always fed directly with the post-fader signal, and is not affected by the pan pot (unless the LCR switch is pressed).

LCR Panning

The LCR switch changes the mode of the pan pot from normal (i.e. 4.5dB centre drop) to true LCR panning. True LCR panning requires that the signal is routed to both the stereo mix busses and the mono bus; in this case the mono bus is used for the centre output. When the LCR switch is engaged, the mono bus is fed from the centre point of the pan pot, and at this position of the pan pot there will be no outputs from the left or right busses.

<table>
<thead>
<tr>
<th>Pan Pot Position</th>
<th>Output from Busses</th>
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<tbody>
<tr>
<td>Left</td>
<td>0dB</td>
</tr>
<tr>
<td>Centre</td>
<td>-∞</td>
</tr>
<tr>
<td>Right</td>
<td>-∞</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th></th>
<th>C</th>
<th>R</th>
</tr>
</thead>
<tbody>
<tr>
<td>0dB</td>
<td>-∞</td>
<td>-∞</td>
</tr>
<tr>
<td>-∞</td>
<td>0dB</td>
<td>-∞</td>
</tr>
<tr>
<td>-∞</td>
<td>-∞</td>
<td>0dB</td>
</tr>
</tbody>
</table>
Fader Section

14 The electronically latching SOLO switch feeds the mono PFL and stereo AFL busses with the pre-fade, pre-mute signal and post pan signals respectively. The master AFL/PFL switch on the Master module determines which of these two signals is fed to the monitor/phones outputs.

If AUTO CANCEL is active, then any previously active SOLOs or AFLs will be cancelled. The SOLO can be remotely cleared by the SOLO CLEAR button on the master module.

If SIP mode is selected on the master module, the SOLO button functions as solo in place, muting all other channels.

15 The signal in the module is turned on and off by the MUTE switch, a mute group, a VCA group mute or the scene control system. The module is assigned to a mute scene by pressing the MUTE switch followed by a STORE operation on the scene control module.

16 The MUTE SAFE switch allows the module to be made safe from muting by the CPUs. It does not disable the channel mute switch itself: this always operates at all times. If the MUTE SAFE switch is enabled, the module cannot be muted by any remote method, whether it be from a VCA group mute, midi scene mute, a mute group, or as a result of soloing another channel in SIP mode.

17 Post-fader signal level is controlled by a 100mm fader.

18 A 10-segment LED bar-graph meter next to the fader normally meters the signal at the input amplifier, but can be set to meter the post fade signal by changing an internal link (see next page). The meter is made up of 9 segments of peak response metering plus a 10th segment configured as a 3-point peak detector. The latter monitors input amp o/p, EQ o/p and post fader o/p.

19 A bank of 8 VCA/MUTE ASSIGN switches with internal bi-colour LEDs is located adjacent to the fader. These switches allow the channel to be assigned to any of the 8 VCA groups and/or any of the 8 Mute Groups. To assign the channel to VCA groups, first select the 'VCA Assign mode' switch (located above the mute master switches on the Scene Control module). Then pressing the VCA/Mute Assign switches will indicate the assignments with GREEN illumination of the LED's.

To assign channels to Mute groups, first select the "MUTE Assign mode" on the Scene Control module, then press the channel assign switches. The switches will now illuminate in RED. The VCA or mute assignments can be viewed at any time by toggling the master VCA/MUTE assign mode switch on the Scene Control module.

Pressing the SAFE switch next to the Assign mode switches on the Scene Control module will lock the VCA and Mute Group settings so that accidently pressing the Assign switches will have no effect. The bi-colour LED's inside the Assign switches will continue to display the assignments when in SAFE mode.

NOTE: It is of course possible to assign channels to both VCA Groups and Mute Groups even though the assignments can only be displayed for one type of group at a time.
Link Options

Note: all links are clearly labelled on the PCB with their functions, and are easily accessible without dismantling the module.

To change a link option in most cases it will be necessary to cut the default link (zero-ohm resistor), and then create a solder bridge between the two pads of the required option. The insert jumpers are provided on removable push-on links however.

<table>
<thead>
<tr>
<th>Function</th>
<th>Options</th>
<th>Default</th>
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<tr>
<td>Insert</td>
<td>pre or post-EQ</td>
<td>J1/2/3</td>
</tr>
<tr>
<td></td>
<td>post-fader</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Remove R198 to change)</td>
<td></td>
</tr>
<tr>
<td>Input Meter Source</td>
<td>pre-EQ (input)</td>
<td>LK21</td>
</tr>
<tr>
<td></td>
<td>post-fader</td>
<td>LK22</td>
</tr>
<tr>
<td>Aux 1-4 Pre feed</td>
<td>Unmuted Pre-EQ</td>
<td>LK5</td>
</tr>
<tr>
<td></td>
<td>Muted Pre-EQ</td>
<td>LK6</td>
</tr>
<tr>
<td></td>
<td>Pre-Mute, Post-EQ</td>
<td>LK7</td>
</tr>
<tr>
<td></td>
<td>Post-Mute, Post-EQ</td>
<td>LK8</td>
</tr>
<tr>
<td>Aux 5,6</td>
<td>Unmuted Pre-EQ</td>
<td>LK9</td>
</tr>
<tr>
<td></td>
<td>Muted Pre-EQ</td>
<td>LK10</td>
</tr>
<tr>
<td></td>
<td>Pre-Mute, Post-EQ</td>
<td>LK11</td>
</tr>
<tr>
<td></td>
<td>Post-Mute, Post-EQ</td>
<td>LK12</td>
</tr>
<tr>
<td>Aux 7-9</td>
<td>Unmuted Pre-EQ</td>
<td>LK13</td>
</tr>
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<td></td>
<td>Muted Pre-EQ</td>
<td>LK14</td>
</tr>
<tr>
<td></td>
<td>Pre-Mute, Post-EQ</td>
<td>LK15</td>
</tr>
<tr>
<td></td>
<td>Post-Mute, Post-EQ</td>
<td>LK16</td>
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<tr>
<td>Aux 10</td>
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</tr>
<tr>
<td></td>
<td>Muted Pre-EQ</td>
<td>LK18</td>
</tr>
<tr>
<td></td>
<td>Pre-Mute, Post-EQ</td>
<td>LK19</td>
</tr>
<tr>
<td></td>
<td>Post-Mute, Post-EQ</td>
<td>LK20</td>
</tr>
</tbody>
</table>

Rear Connectors

INPUTS (3 pin female XLR)
- Pin 1: Ground
- Pin 2: Signal Hot
- Pin 3: Signal Cold

DIRECT OUTPUT (3 pin male XLR)
- Pin 1: Ground
- Pin 2: Signal Hot
- Pin 3: Signal Cold

INSERT SEND, INSERT RETURN (1/4" TSR Jack)
- Tip: Signal Hot
- Ring: Signal Cold
- Sleeve: Ground
Stereo Input Module

1. **SENS** dual concentric adjusts the sensitivity of left and right inputs individually. Both inputs are available on XLRs and are electronically balanced.

   XLR input sensitivity: -2dBU to -70dBU and +10dBU to -20dBU (switched range).

2. Each **48V** switch applies 48V phantom power to the appropriate input XLR.

3. Each **RNG** switch switches the appropriate XLR input to the lower sensitivity range to allow line level signals to be used.

4. **LEFT PHASE** reverses the polarity of the left channel, immediately after the input stage. (An internal link option allows the phase of both channels to be reversed by the switch).

5. The **HPF** control switches in the second order variable high-pass filter, via the end-stop click switch.

   This is a stereo filter, affecting left and right channels simultaneously. The high-pass filter can be swept from 20-700Hz.

   The filter is immediately after the input stage.

6. The **EQ** section comprises four sweepable bands, and the two mid bands are fully parametric, with adjustable Q. The EQ is ganged in stereo, but is otherwise identical to the Mono input EQ (page 4.2).

7. The EQ section is switched in by the **EQ switch**.

8. The left and right insert points use an electronically balanced send and return, at a nominal level of +4dBU. The signal is accessible via separate 1/4" jacks on the rear connector panel. The insert points may be set pre- or post-EQ by an internal switch. They are always pre-fader.

   The insert return signals (both left and right) from the rear panel jack are enabled by pressing the **INSERT IN** switch. The insert send signals are always available at the rear panel, regardless of this switch setting.

9. Signal is sent to the **Aux 1-10** busses via individual level pots for Aux 5-10, and two dual concentric pots for Aux 1-2 and 3-4.

   The sends to Aux 1 and 2 are configured in one of two ways, depending on the setting of the adjacent recessed **STE** switch (Aux 3 and 4 operate in an identical fashion).

   - When STE is not pressed, both the top and bottom of the dual concentric pot (Aux 1 and 2 respectively) are fed with a mono sum of the left and right signals in the module.
   - When STE is pressed, Aux 1 (top of pot) feeds the left module signal to the Aux 1 bus, and Aux 2 (bottom of pot) feeds the right module signal to the Aux 2 bus. This always happens regardless of the setting of the STE Global Mode switch on the Aux 1 - 2 master module.

To summarise: if you are using the Aux 1 - 2 as a stereo send on the rest of the console (i.e., you have the STE Global Mode switch enabled), then you should also press the STE button on Aux 1 - 2 on all the stereo modules.

The Aux sends 3-4 work in an identical way to 1-2 and have their own STE button. For the Aux sends 5-10, a similar system is used where normally each send pot is fed by a mono sum of the left and right channels. There is then a STE switch for each of the pairs 5,6,7,8 and 9,10 which when pressed changes the fed to odd from left, even from right.

The send pots give 5dBF gain when fully clockwise, and are switched pre-or post-fader by the individual **PRE** buttons. The pre-fade signal may be sourced either pre-fade and post mute, or pre-EQ and pre-insert, in two blocks of sends, using internal links.
The signal is sent to the stereo mix bus, mono bus and 8 group busses using the STE, MNO, 1, 2, 3, 4, 5, 6, 7 and 8 switches. The dual concentric PAN controls allow independent panning of the left and right module signals, to the stereo mix bus, or pairs of subgroups. Each pan control gives 4.5dB centre drop, and always operates on the STE signal, but can be switched to control the 8 group busses in pairs (odd busses fed from left pan, even busses from right) by pressing the PAN switch. If PAN is not pressed, each group bus switch receives the post-fader signal directly, (odd grps from left module signal, even from right). The Mono bus is always fed directly with a post-fader mono sum of left and right.

Fader Section

The electronically latching SOLO switch feeds a pre-fade, pre-mute mono sum signal or a stereo post-fade signal to the PFL and AFL busses respectively. The Global AFL/PFL switch on the Master module determines which of these two signals is fed to the monitor/phones outputs. (Unless SIP mode is selected on the master -see later).

If AUTO CANCEL is active, then any previously active SOLOs or AFLs will be cancelled. The SOLO can be remotely cleared by the SOLO CLEAR button on the master. If SIP mode is selected on the master module, the button functions as solo in place, muting all other channels.

The left and right signals in the module are turned on and off by the MUTE switch, a mute group, a VCA group mute or the scene control system. The module is assigned to a mute scene by pressing the MUTE switch followed by a STORE operation on the scene control module.

The MUTE SAFE switch allows the module to be made safe from muting by the CPU. If this switch is enabled, the module cannot be muted by any remote method, whether it be from the scene control module, a VCA group mute, a mute group or as a result of soloing another channel in SIP mode.

Note: The local MUTE switch will still operate when Mute Safe is selected, and can also be used to write mute data to the scene control system.

Post-fader signal level is controlled by a stereo 100mm fader.

Two 5-segment LED bar-graph meters next to the fader normally meter the left and right signals at the input amplifier, but they can be set to meter the post-fader signals by changing internal links (see next page). The meters have a peak type response.

A bank of 8 VCA/MUTE ASSIGN switches with internal bi-colour LEDs is located adjacent to the fader. These switches allow the channel to be assigned to any of the 8 VCA groups and/or any of the 8 Mute Groups. To assign the channel to VCA groups, first select the 'VCA Assign mode' switch (located above the mute master switches on the Scene Control module). Then pressing the VCA/Mute Assign switches will indicate the assignments with GREEN illumination of the LED’s. To assign channels to Mute groups, first select the "MUTE Assign mode” on the Scene Control module, then press the channel assign switches. The switches will now illuminate in RED. The VCA or mute assignments can be viewed at any time by toggling the master VCA/MUTE assign mode switch on the scene control module.

Pressing the SAFE switch next to the Assign mode switches on the Scene Control module will lock the VCA and Mute Group settings so that accidently pressing the Assign switches will have no effect. The bi-colour LED’s inside the Assign switches will continue to display the assignments when in SAFE mode.

NOTE: It is of course possible to assign channels to both VCA Groups and Mute Groups even though the assignments can only be displayed for one type of group at a time.
**Link Options**

<table>
<thead>
<tr>
<th>Function</th>
<th>Options</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase switch</td>
<td>Left only LK1, LK3 fitted</td>
<td>Left only</td>
</tr>
<tr>
<td></td>
<td>Left + right LK2, LK4 fitted</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Remove R47, 48</td>
<td></td>
</tr>
<tr>
<td>Left Input Meter Source</td>
<td>Input LK21/R53</td>
<td>Input</td>
</tr>
<tr>
<td></td>
<td>Post-fade LK22 (remove R53)</td>
<td></td>
</tr>
<tr>
<td>Right Input Meter Source</td>
<td>Input LK23/R55</td>
<td>Input</td>
</tr>
<tr>
<td></td>
<td>Post-fade LK24 (remove R53)</td>
<td></td>
</tr>
<tr>
<td>Aux 1-4 Pre-feed</td>
<td>Unmuted Pre-EQ LK5, LK9</td>
<td>Post-Mute, Post-EQ</td>
</tr>
<tr>
<td></td>
<td>Muted Pre-EQ LK6, LK10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pre-Mute, Post-EQ LK7, LK11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Post-Mute, Post-EQ LK8, LK12</td>
<td></td>
</tr>
<tr>
<td>Aux 5-10 Pre-feed</td>
<td>Unmuted Pre-EQ LK13, LK17</td>
<td>Post-Mute, Post-EQ</td>
</tr>
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<td></td>
<td>Muted Pre-EQ LK14, LK18</td>
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<td>Pre-Mute, Post-EQ LK15, LK19</td>
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<td>Insert</td>
<td>Pre-EQ SW22 IN*</td>
<td>Pre-EQ</td>
</tr>
<tr>
<td></td>
<td>Post-EQ SW22 OUT*</td>
<td></td>
</tr>
</tbody>
</table>

* SW22 is located on the main module PCB, behind the Aux 1/2 send control.

**Rear Connectors**

**LEFT, RIGHT INPUTS (3 pin female XLR)**
- Pin 1  Ground
- Pin 2  Signal Hot
- Pin 3  Signal Cold

**INSERT SEND, RETURN (1/4" TSR Jack)**
- Tip    Signal Hot
- Ring   Signal Cold
- Sleeve Ground
Output Modules

Eight dual output modules are fitted to the left of the master modules in each console. Each module contains two Aux/group output sections, with two 60mm faders in the centre of the module and at the top of the module is a single Matrix output section, with input receive controls. The lower section of the module contains the VCA Master fader. A ninth output module contains the last two Aux outputs but does not have a VCA Master fader or Matrix section.

The two Aux/group sections on each individual module have identical facilities. The module functions either as a Subgroup master, or as an Aux master, depending on its position in the frame. (Red fader knobs for Subgroups; grey, green or blue for Auxes, to match the input send knob colours).

There are 4 modules used for the 8 Subgroups (Output modules 1-4) and 5 modules used for the 10 Aux masters (modules 5-9). The first two of these are fitted with a Global Mode Stereo switch (Aux 1 - 4).

Module Functions

1. The 60mm output fader controls the level of the signal fed to the output, with 10dB of gain at the top of the fader.

2. The insert point is pre-fade and uses an electronically balanced send and return, at a nominal level of +4dBu. The insert SEND and RETURN are accessible via separate 1/4” jacks on the rear connector panel. The insert return signal from the rear panel jack is enabled by pressing the INSERT IN switch. The insert send signals are always available at the rear panel, regardless of this switch setting.

The main group or aux output signal is electronically balanced and is available on a male 3-pin XLR connector on the rear panel.

3. The electronically latching SOLO switch feeds the pre or post fade output signal (depending on master PFL/AFL mode) to the monitor output and phones output.

If solo AUTO CANCEL is selected on the master module, then the SOLO will cancel any other active SOLOS. The SOLO may also be cleared with the master SOLO CLEAR function. The SOLO switch will not activate the SIP system -even if SIP is selected on the master; it will continue to switch PFL or AFL to the monitor outputs (i.e. as if SIP was not selected).

If the Global Mode STE switch is pressed, the odd and even solo switches are linked so that pressing either switch turns both on (see also next page).

4. The MUTE switch mutes the signal to the module output, stereo and mono mix busses (if selected) and any matrix feeds from the group or aux.

5. The MUTE SAFE switch prevents muting by the scene set automation.

6. The STE switch routes the post-fade output signal to the left and right stereo mix busses, via the centre-detented PAN control. This allows the group or aux bus to be used as an audio subgroup.

7. The MONO switch routes the post-fade output signal to the mono buss.

8. The LCR switch changes the Pan operation mode from normal LR to true LCR panning. (See Mono Input Module for detailed description).

9. The TB (OSC) switch routes talkback or oscillator signals from the Master Module to the Group/Aux output. This switch must be pressed in conjunction with the OSC TO OUTPUTS or TALK TO OUTPUTS switches on the Master Module.
The **GLOBAL MODE STE** switch changes the function of the Aux send pots on all the mono inputs to be either two levels (Aux 1 level on top knob, Aux 2 level on bottom knob) in Mono mode, or a stereo level on the top knob, with stereo pan on the bottom knob, in stereo mode. The switch is pressed in for stereo mode. Aux 1 & 2 and 3 & 4 can both be switched as independent pairs. It also links the SOLO switch logic as stereo pairs, as described above.

**Matrix Output Section**

Each output module contains its own separate matrix output section, providing a mix of 16 sources into a single balanced output, with a master level control. This gives a matrix configuration of 16x8.

The receive pots feed a mix of the group, mono and stereo mix, Aux 1-4 and an 'external' line level signal to a summing amplifier. The summed signal from the receive pots is fed to the insert send amplifier.

The external input signal is electronically balanced from a female XLR on the rear-conn. The sensitivity is normally +4dBu, but can be changed to -10dBV by changing internal links. The signal from the input amps is fed to the 'EXT' receive pots on the matrix section.

The insert point is pre-fade and uses an electronically balanced send and return, at a nominal level of +4dBu. The insert SEND and RETURN are accessible via separate 1/4" jacks on the rear connector panel. The insert return signal from the rear panel jack is enabled by pressing the **INSERT IN** switch. The insert send signals are always available at the rear panel, regardless of this switch setting.

The matrix output is turned on and off by the pre-fader **MUTE** switch and the scene control system. The mute is assigned to a mute scene by pressing the MUTE switch followed by a STORE operation on the Scene Control module. When the matrix output is muted by the Scene Control system, the MUTE switch **LED** is illuminated.

The **MUTE SAFE** switch prevents the matrix output from being muted by the scene set automation. It does not prevent local muting by pressing the Mute switch.

The matrix master **rotary fader** controls the level sent to the electronically balanced output stage. It has 10dB of gain at maximum. The balanced signal is fed to the matrix output connector (male XLR) on the rear conn.

The **SOLO** switch feeds both the pre-fade and post-fade signals to the PFL and AFL busses respectively. The feed to the AFL bus is the same to left and right busses. The solo switch is part of the solo clear/intercancel system, but not the SIP system (as for the group/aux solo switch). The solo signal is always pre-mute, in either PFL or AFL modes.

The **TB** switch routes the talkback or oscillator signal to the matrix output. This is injected pre the matrix master fader. The **TALK TO OUTPUTS** or **OSC TO OUTPUTS** switches must also be enabled on the Master Module for signal to pass.
### Link Options

<table>
<thead>
<tr>
<th>Function</th>
<th>Options</th>
<th>Default</th>
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<tbody>
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<td>Matrix External Input</td>
<td>-10dBV/+4dBu</td>
<td>+4dBu</td>
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<td>sensitivity</td>
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### Rear Connectors

Grp/Aux, Matrix Outputs (3 pin male XLR)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ground</td>
</tr>
<tr>
<td>2</td>
<td>Signal Hot</td>
</tr>
<tr>
<td>3</td>
<td>Signal Cold</td>
</tr>
</tbody>
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External Inputs (3 pin female XLR)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ground</td>
</tr>
<tr>
<td>2</td>
<td>Signal Hot</td>
</tr>
<tr>
<td>3</td>
<td>Signal Cold</td>
</tr>
</tbody>
</table>

Group, Aux & Matrix Insert Send, Return (1/4" TSR Jack)

<table>
<thead>
<tr>
<th>Tip</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Signal Hot</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ring</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Signal Cold</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sleeve</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ground</td>
</tr>
</tbody>
</table>
VCA System

The VCA system on the Series FOUR comprises 8 VCA Master Faders, to which any input can be assigned using the VCA Assign switches on the input fader panels. Each VCA Master Fader has an associated MUTE button.

1. The VCA Master Fader controls the fader gain of any channels which are assigned to it, from \(-\infty\) to \(+10\) dB. If multiple VCAs are assigned from a given channel, the resultant gain at the channel will be the arithmetic sum of the gain settings (in dB) of all the assigned master faders and the channel's own fader setting. For example, if a channel is assigned to VCA Groups 1, 2 and 3, the following will happen:

<table>
<thead>
<tr>
<th>Channel Fader</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>5</th>
<th>10</th>
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<tbody>
<tr>
<td>VCA 1 Fader</td>
<td>0</td>
<td>0</td>
<td>-10</td>
<td>-10</td>
<td>-10</td>
<td>-10</td>
</tr>
<tr>
<td>VCA 2 Fader</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>+10</td>
</tr>
<tr>
<td>VCA 3 Fader</td>
<td>0</td>
<td>-(\infty)</td>
<td>0</td>
<td>-10</td>
<td>-10</td>
<td>-10</td>
</tr>
<tr>
<td>Resulting Gain (dB)</td>
<td>0</td>
<td>-(\infty)</td>
<td>-10</td>
<td>-20</td>
<td>-15</td>
<td>+10</td>
</tr>
</tbody>
</table>

0 = Unity Gain
\(-\infty\) = Bottom of Fader

*Note:* The input module is limited to \(+10\) dB gain

2. The MUTE button operates as a global mute for all channels assigned to the VCA group in question. The VCA Mute has priority over any channels muted by the scene control system.

The VCA Mute switch is not automatable as part of the scene control system.

Note that the VCA mute is not the same as just pulling down the VCA Master Fader: it is a proper mute which will also mute the pre-fade sends in the input module(s).

The VCA assignments (but not input or VCA master fader level) are stored as part of the scene control system, and you can choose whether or not these assignments are recalled or not, when a scene is recalled. (See VCA's, Mute Groups & Scene Control Section).
Master Module

The double-width Master module is situated to the immediate right of the last Output module (Aux 9/10), and contains the stereo mix output, alternate stereo mix output, mono mix output, a noise or sine wave test oscillator, internal/external talkback functions, monitor outputs and Solo controls, Stereo Aux return, Littlite dimmer and PSU status indicator LEDs.

Main Outputs

1. The Stereo Mix Left and Right signals are controlled by the **STE MASTER L** and **R** Faders on the fader panel. There is 10 dB of gain at the top of the faders.

The left and right outputs are electronically balanced and appear on male XLR connectors on the rear panel.

The peak-response LED bargraph meters at the top of the Master module permanently meter the Stereo Mix signals.

The left and right insert points are pre-fade using an electronically balanced send and return, at a nominal level of +4 dBu. The send and return appear on separate 1/4” jacks on the rear panel.

2. The mono mix bus output is electronically balanced and appears on a male XLR connector on the rear panel. The signal level to the mono output is controlled by the 100mm **Mono fader** which is located on the fader panel below the Master module. The fader has 10 dB gain at the top.

The mono insert point is pre-mono fader and uses an electronically balanced send and return. The send and return appear on separate 1/4” jacks on the rear panel.
Master Module

Alternate Outputs

1. The ALT STE output is an additional stereo output derived from the main stereo outputs, controlled by the ALT STE 60mm faders. The outputs appear on electronically balanced male XLRs on the rear panel.

2. The source of the ALT STE outputs is selected by the PRE switch either pre or post the main stereo output faders.

3. The MONO switch sums the stereo mix to mono and feeds it to both left and right ALT STE outputs.

Monitor and Headphones Outputs

4. The Monitor Outputs and Headphones output share a common signal source and are controlled by the MNTR VOL and PHONES level controls repectively. The monitor outputs are via Left and Right balanced XLRs on the rear panel.

The monitor outputs are designed to feed an engineer's wedge, or pair of wedges, to allow monitoring of the stereo mix and/or any active solo signals.

5. The SUM L+R switch sums both left and right channels together and feeds them to both outputs.

6. The phones output sockets are two parallel stereo 1/4" jacks: one is mounted in a recessed hole below the Aux 9,10 master faders, the second parallel jack is fitted to the rear panel.

NOTE: Please exercise caution when first using a particular set of headphones. Turn the volume down before feeding any signals to the phones.

7. The signal source for these outputs is selected using three Monitor Source switches:

   - The STE switch routes the post-fade stereo mix signal to the monitor outputs.
   - The MONO switch routes the post-fade mono mix signal to both left and right monitor outputs.
   - The 2TK switch routes the pre-fade Stereo Aux Return signal to the monitor outputs. This is designed to allow monitoring of a two-track recorder without having to route it to the main busses.

Normally, any PFL/AFL operation will automatically override the stereo or mono mix signal. If STE, MONO or 2TK are not selected, the monitors receive PFL/AFL signals only (i.e. the monitors will be silent unless a solo is active).
Stereo Aux Return

The Stereo Aux Return left and right inputs, are electronically balanced, from 1/4” jacks on the rear connector panel. The facilities are as follows:

8 The EQ section comprises stereo shelving high and low bands. The HF control gives +/-15dB of cut or boost at 12kHz. The LF control gives +/-15dB of cut or boost at 60Hz. The EQ can be switched in and out with the EQ switch.

9 The post-EQ signal is sent to the stereo Aux Ret LEVEL control, which has 10dB of gain at maximum.

10 The STE switch routes the Aux Return signal to the main left and right mix busses.

The MONO switch routes a mono sum of the Aux Return signal to the mono bus.

11 The MUTE button turns the signal on and off, and can also be controlled from the Scene Control module in the same way as the other mutes.

12 The MUTE SAFE switch prevents the Aux return from being cut by either the Scene control system or solo-in-place system.

13 The SOLO switch switches the pre-fade, post EQ aux return signal (sum L+R) onto the PFL bus and the stereo post fade, pre-mute signal onto the AFL busses. The solo is treated as an input solo in terms of priority. Whether the PFL or Stereo AFL signal is heard on the phones/monitors will depend on the setting of the global PFL/AFL mode switch.

Solo System

The solo system works in one of three modes: PFL, stereo AFL and SIP (solo-in-place). The selected mode applies to the whole console.

PFL and AFL are non-destructive modes, where the soloed signal is switched onto separate PFL or stereo AFL busses, and the monitor/phones and master meters are automatically switched over to receive the signal on these busses when a logic signal is detected from the soloed module. (The normal monitor source - stereo or mono mix - is overridden).

Either AFL or PFL can be selected by the user for these non-destructive modes, by means of a global mode switch.

Solo-in-place is a destructive mode, where the soloed channel sends a logic signal to the solo mute bus which then mutes all other channels, thus leaving only the soloed channel in the main outputs. Soloing another channel or switching on its mute safe switch, will unmute that channel. SIP mode selection takes priority over AFL or PFL modes.

SIP is only applicable from inputs - any output channel soloed while the console is in SIP mode will appear as a PFL or AFL on the monitors.

SIP mode is known as a “destructive” solo because it works by actually muting channels, so it cannot be used during a performance. The SOLO IN PLACE mode switch is therefore protected by a “press and hold for 2 seconds” style switch to minimise the chance of accidental operation.

14 The MASTER MODE PFL/AFL switch switches the whole console between mono PFL and stereo AFL.

15 The SIP mode is selected by pressing the protected “press and hold” SOLO IN PLACE switch.

Note: The Group/Aux and matrix output AFLs will not trigger the solo in place system, but will continue to be audible on the monitor/phones outputs, even if SIP mode is selected.
16 The PFL TRIM and AFL TRIM controls give +/-15dB of gain adjustment to the mono PFL and stereo AFL signals fed to the Monitor/phones outputs. The trims do not affect the meter readings of the solo signals, only the volume heard at the monitor/phones outputs.

17 The SOLO CLEAR button lights when any solo switch on the console is active - pressing it will clear a PFL or AFL or SIP.

18 When AUTO CANCEL is activated by the ON button, any solo switch will cancel any currently active solo, so only one channel can be active at once. The current solo signal (pre-trim for PFL/AFL) is metered by the L/R VU meters - see "Meterbridge", on page 4.20.

19 The INPUT PRIORITY button activates a mode where any currently active output solo will be remembered so that if an input solo is temporarily engaged (for example, to quickly listen to a problem on an input channel) it will override the output solo until it is released, whereupon the original output solo will be heard again.

SOLO SYSTEM - Summary of Operation

<table>
<thead>
<tr>
<th>Mode</th>
<th>Autocancel Button</th>
<th>Input Priority Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>OFF</td>
<td>OFF</td>
<td>All outputs and input solos are additive</td>
</tr>
<tr>
<td>Autocancel</td>
<td>ON</td>
<td>OFF</td>
<td>All solos autocancel, no distinction between output and input.</td>
</tr>
<tr>
<td>Input Priority</td>
<td>OFF</td>
<td>ON</td>
<td>If an output is left soloed, soloing an input will temporarily override the output but will return to it when input is unsoloed.</td>
</tr>
<tr>
<td>Input/Output</td>
<td>ON</td>
<td>ON</td>
<td>Combination of previous two: works as input priority, but also with auto-cancelling between groups of outputs and groups of inputs.</td>
</tr>
</tbody>
</table>

Talkback

The talkback system allows communication by the operator to all group, aux, stereo and mono busses, and to and from an external console. This can be using the Soundcraft proprietary intercom, or Clearcom® compatible 3-wire systems.

20 The T/B LEVEL pot controls the level of the talkback input, from a 3-pin XLR on the master module front panel (duplicated on rear panel). The sensitivity of the input is variable between -20dBu and -50dBu.
The -30dB switch introduces a 30dB pad into the mic input: this is for use with line level signals from an external test tone or noise generator, for example.

The +48V switch applies phantom power to the talkback input sockets.

The TALK TO EXT button initiates talkback to either the monitor console using the Soundcraft proprietary 'Blythphone' system, or Clearcom® compatible intercom. The talkback mic signal is switched to the EXT OUT XLR, with a +15V DC common-mode voltage to signal the Monitor console (SM12/16/20/24/FIVE Monitor) that talkback is occurring. An internal jumper disables the common-mode DC voltage, to allow use with non-Soundcraft desks. If a 15V common-mode voltage is detected on the TB IN XLR, indicating talkback from the monitor console, then the TB IN signal is switched to the 'phones output, dimming the existing signal by 15dB.

The TALK TO EXT button has either a momentary or a latching operation, depending on how the switch is pressed. If the switch is pressed and released very quickly (less than 0.5 sec) it will latch on, allowing permanent communication. If momentary operation is required, the button can be pressed and held in while talking. Upon release of the button it will automatically switch off.

The TALK TO OUTPUTS ON button switches on talkback to the internal busses, via the TB+OSC Routing switches. These switches are shared with the oscillator routing, and allow the Talkback and Oscillator internal destination to be preset. Note that the TB + OSC switch for the main Stereo and Mono outputs is located on the Master Module above the TB level control. The other TB + OSC switches are located on the corresponding output module. (Group, Aux and Matrix).

The CLEARCOM® CALL button functions only if a Clearcom®-compatible intercom is connected, and is a momentary switch which when pressed signals to the other station to attract their attention. When a call signal is received from a remote station, the CALL switch illuminates, and the console lamps will flash to attract attention.

When using Clearcom®-compatible talkback, the TALK TO EXT switch is pressed to both talk and listen to the remote station. The signal is sent and received on the Clearcom® link by means of the console Talkback mic and headphones output.

Oscillator

The oscillator produces a sine wave with frequency variable between 63Hz and 1kHz by the FREQ pot. The X10 button increases the frequency up to 630Hz and 10kHz.

The SRC button switches the signal from sine wave to pink noise.

The oscillator signal is enabled to the TB+Osc routing switches (on the Group/Aux modules) by the OSC TO OUTPUTS ON switch, and to its own rear panel output with the OSC TO XLR O/P ON switch. The oscillator output is balanced at a nominal level of +4dBu, on a male XLR connector on the rear connector panel.

The TB to STE + M button routes the oscillator and talkback to the main stereo and mono mix busses, if the appropriate OSC or TALK TO OUTPUTS switch is also pressed.

The LEVEL pot adjusts the level of the oscillator from OFF to +20dBu.
PSU Status Indicators

The three PSU Status Indicator LEDs show that the PSU rails +48v, +/-17v and +5V logic rail are working.

Lamp Dimmer

Three 4-pin XLR sockets are provided on the console for connecting Littlite or similar 12V gooseneck lamps. (One socket in each end cheek and one at the top of the Master module). These are designed for straight-type XLR lamps. The LAMP DIMMER control varies the brightness of all three lamps.

The lamps can be flashed to indicate a remote call signal on a Clearcom®-compatible intercom system if the intercom is looped through the connector on the rear of the console.

Link Options

<table>
<thead>
<tr>
<th>Function</th>
<th>Options</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>15Vdc on TB OUT (for Soundcraft Intercom)</td>
<td>Enabled/Disabled</td>
<td>Enabled</td>
</tr>
<tr>
<td>Matrix feed from L/R/Mono Outputs</td>
<td>Pre/Post Fader</td>
<td>Post Fader</td>
</tr>
<tr>
<td>LED bargraph meter Source</td>
<td>Mix LR/Follow Mntr Outs</td>
<td>Mix LR</td>
</tr>
</tbody>
</table>
Rear Connectors

Stereo L/R, ALT STE L/R, Mono, MNTR L/R, Osc, Ext TB Outputs (3 pin male XLR)
Pin 1  Ground
Pin 2  Signal Hot
Pin 3  Signal Cold

TB MIC, EXT TB IN, Stereo L/R, Mono bus Inputs (3 pin female XLR)
Pin 1  Ground
Pin 2  Signal Hot
Pin 3  Signal Cold

Stereo L/R and Mono Insert Sends, Insert Returns, Aux Ret L/R Inputs, PFL/AFL
bus Inputs/Outputs (1/4" TSR jack)
Tip  Signal Hot
Ring  Signal Cold
Sleeve  Ground

Phones Output (parallel connected to 1/4" TSR jack on front panel)
Tip  Left
Ring  Right
Sleeve  Ground
**Meterbridge**

**Master Meters**

Two moving-coil VU meters (LEFT and RIGHT) in the overbridge read the output of the monitor switching (pre-monitor level pot), which may be stereo mix, mono mix, Aux Ret (2TK) or PFL/AFL signals.

A third meter (MONO) continuously monitors the post-fade mono bus output level. These are accurately calibrated so that the meters effectively read the true output level from the stereo and mono outputs.

**All metering on the console is calibrated to 0VU = +4dBu output.**

Peak LED's are fitted to each VU meter; they illuminate when the output signal reaches 3dB below clipping.

**Group, Aux and Matrix Meters**

A bank of 10 moving-coil VU meters (1 - 10) in the overbridge can be switched, via the 3 source select buttons, to read either the 8 Group outputs, the 10 Aux outputs or the 8 Matrix outputs. The console powers-up set to read the 8 Group outputs. The meters are switched in banks, i.e. you can only meter all of the groups, all of the Auxes or all of the Matrix outputs. Where there are less than 10 outputs the remaining meters are unused.

Peak LED's are fitted to each VU meter; they illuminate when the output signal reaches 3dB below clipping.
Rear Connector Panels
5 VCA’s, Mute Groups and Scene Control

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
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<td>Introduction</td>
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</tr>
<tr>
<td>Automation Controls</td>
<td>5.3</td>
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<tr>
<td>Mute &amp; VCA Groups</td>
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<td>User Settings</td>
<td>5.8</td>
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<td>Applications with User Settings</td>
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<td>Hard Reset</td>
<td>5.8</td>
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<tr>
<td>MIDI System Exclusive Dump</td>
<td>5.9</td>
</tr>
</tbody>
</table>
Introduction

The Series FOUR Automation system comprises the following main functions:

Scene Automation

This allows the status of all the input and output Mute switches, and VCA Assigns to be stored. Up to 126 Scenes can be stored internally.

Mute & VCA Grouping System

The Grouping System works independently of the Scene & MIDI Automation. The Mute Groups allow multiple input channel mutes to be controlled from a Mute Master switch. Similarly the VCA Master Mutes control the Mutes associated with the VCA Masters.

MIDI Automation

The integration of MIDI Automation further extends the power of the Scene Automation, because MIDI Program Changes can be sent out automatically as a Scene is selected, and these can be used to select patches on outboard FX devices, etc. The console will also respond to incoming Program Change messages, so the console can be stepped through its Scenes by remote control, or automatically via a MIDI sequencer if necessary.

The MIDI capabilities also include sending and receiving MIDI Note On and Off messages from each Mute switch, so that muting a channel will send a Note Off command and unmuting it will send a Note On. Conversely incoming Note message can be used to control the console mutes.

The Scenes and Mute Group settings can also be archived using a MIDI System Exclusive Dump.
Automation Controls

Scene Control Module

The following functions deal with the Scene Automation and assigning VCA and Mute Groups.

1. **Scene Display**
   This displays a Scene number from 1 to 126. The display will flash if the displayed Scene number is not the last recalled Scene. The Scene number is changed using the Up/Down keys. The display will also show the software version number during automation boot up.

2. **Store**
   Press this key to store a snapshot of the Mutes and the VCA Assign settings into the Scene memory shown in the display. The display will flash YES, NO, <scene number>. Press the Up(Yes) key to confirm the Store operation, or Down(No) key to cancel the operation.

3. **Up/Down**
   Use these keys to increment or decrement the Scene number displayed. Holding down one of keys for more than a second causes the number to scroll up or down at an increasing rate. Pressing Up or Down while holding down the Recall key will increment or decrement the Scene number and Recall it. These keys are always dimly illuminated.

4. **Recall**
   Pressing this key recalls the Scene number shown in the display. This updates the console’s Mutes and/or VCA Assigns. A MIDI Program Change message can also be transmitted. The Mute, VCA or MIDI recalls can be disabled by changing the User Settings, see Page 5.8.

The following functions deal with the VCA & Mute Group part of the Automation:

5. **VCA Input Assign Mode**
   Pressing this switch will display the VCA Assign settings on the Input module VCA/Mute Assign LEDs. If the Assign Safe switch isn’t pressed, the VCA/Mute Assign keys on the Input modules can be used to assign Input channels to VCA Masters. The VCA/Mute Assign LEDs will turn green to show that an Input channel is a member of a VCA Master.

6. **Mute Input Assign Mode**
   Pressing this switch will display the Mute Group settings on the Input Module VCA/Mute Assign LEDs. If the Assign Safe switch isn’t pressed, the VCA/Mute Assign keys on the Input modules can be used to assign Input channels to Mute Groups. The VCA/Mute Assign LED will turn red to show that an Input channel is a member of a Mute Group Master.

7. **Assign Safe**
   Pressing this switch will disable any changes to the VCA or Mute Group members using the VCA/Mute Assign keys on the Input Modules. VCA & Mute Group settings can still be viewed though and VCA Group faders and Mute Group Masters will operate as normal.

8. **Mute Group Masters**
   These 8 keys are used to turn the Mute Groups on & off. (During automation boot-up, holding down these keys will change the User Settings. See Page 5.8).
VCA/Mute Hard Bypass

In the unlikely event of an automation problem, pressing this switch will turn off the entire automation system. The console will operate a normal except that Scenes, Mute & VCA Groups, and Solo-in-Place functions won’t operate. The switch is latching so the console can be held in bypass mode if necessary.

Releasing the switch will re-boot the Automation system. During reboot the Automation system will perform system tests and display the software version number. This takes about 10 seconds after which the console will display Scene number 1. Note that the Mutes on the console won’t change when the Automation is rebooted.

Mute & Safe Switches

Every Mono & Stereo Input, Group, Aux and Matrix Output channels on the console have an automated Mute switch 1 with an associated Safe switch 2. The Mute switch will always operate even when the automation is bypassed. A Mute status can be changed by the automation system using Scenes (either manually or via MIDI), Mute Groups, VCA Masters or via MIDI Note messages. However if a Mute’s Safe switch is pressed the Mute cannot be changed by the automation.

Mute & VCA Group Assign Switches

On every Mono & Stereo Input channel are 8 VCA/Mute Assign switches with Red/Green colour LEDs 3.

If the Mute Input Assign Mode switch is pressed on the Scene Control module, pressing the Assign switches will assign Input channels to the Mute Groups. If a channel is a member of a Mute Group the Assign switch will be illuminated in Red.

If the VCA Input Assign Mode switch is pressed on the Scene Control module, pressing the Assign switches will assign Input channels to the VCA Groups. If a channel is a member of a VCA Group the Assign switch will be illuminated in Green.

If the Assign Safe switch is pressed on the automation master module, the Assign switches will have no affect. The Assign settings can only be viewed (Mute Group in Red, VCA Groups in Green) and not changed.

Note. The VCA/Mute Assign switches don’t operate if the automation system is bypassed.
Mute & VCA Groups

VCA Groups

The Series FOUR has 8 VCA Groups available. VCA Groups allow you to control several Input Channel levels using a single master fader. Input channels may be assigned to any or all of the VCA Masters. Each VCA Master fader has a VCA Master Mute which will mute any channels assigned to the VCA Group. The VCA Assign settings are saved when the power is turned off.

Note: Unlike Scenes, which affect all Mutes on the console, VCA Master Mutes will only affect the Mutes on channels assigned to the VCA Masters.

Setting Up VCA Groups

- Press the VCA Assign Mode switch on the Scene Control module.
- Make sure that the Assign Safe key is not pressed.
- Press Assign 1 switch on a couple of Input channels. This assigns the channels as Slaves of VCA Master 1. Note that the Assign switches will illuminate in Green indicating VCA Group assignment.
- The Input channel levels are now controlled by VCA Master Fader 1. If the VCA Master is set at +5dB then 5dB will be added to the input fader levels of all of the Slaves.
- Pressing the VCA Master Mute will also activate the Mutes on the Slave channels.

VCA Assigns in Scenes

When Scenes are saved, the current VCA Assign settings are also stored. However, when Scenes are recalled the VCA Assign settings will NOT change to those stored in the Scene if:

- VCA Assign recall is disabled (default) in the User Settings - see Page 5.8
  or
- The Assign Safe key is pressed on the Scene Control module

In all other cases, VCA Assign settings will be restored when Scenes are recalled.

Mute Groups

The Series FOUR has 8 Mute Groups available. Mute Groups allow you to Mute several Input Channels using a single Mute Master. The Mute Group Assign and Mute Group Master settings are saved when the power is turned off.

Note. Unlike Scenes, which affect all Mutes on the console, Mute Group Masters will only affect the Mutes on channels assigned to them.

Setting Up Mute Groups

- Press the Mute Assign Mode switch on the Scene Control module.
- Make sure that the Assign Safe key is not pressed.
- Press Assign 1 switch on a couple of Input channels. Note that the Assign switches will illuminate in Red indicating Mute Group assignment.
- The channel Mutes are now controlled by Mute Group Master 1.

Checking VCA and Mute Group Assignments

Once assigned, VCA and Mute Groups assignments can be viewed by pressing the VCA or Mute Assign Mode switches on the Scene Control module. Note that you can only view each type of assignment at a time, but the colour coding of the Input Assignment switches means that its clear which mode you are in.
**Scenes**

The Series Four automation has 126 Scene memories available for storing console Mute switch settings and VCA Assign settings.

**Storing Scenes**

- First dial up the Scene number that you want to store into in the display using the Up/Down switches.
- Press the Store switch on the Scene Control module. The display will flash Yes, No, (Scene number).
- To Save the Scene press the Up/Yes switch. The automation will store the Mute and VCA Assign settings into the Scene displayed. This overwrites whatever was previously stored in that Scene.
- To cancel the operation (without overwriting the existing Scene) press the Down/No switch.

**Recalling Scenes**

- First dial up the Scene number that you want to recall into in the display using the Up/Down switches. If the Scene number displayed isn’t the last Scene recalled, the number in the display will flash.
- Press the Recall switch. This will recall the Mute Switch settings and VCA assignment settings stored in the displayed Scene number. Recalling a Scene will also transmit a MIDI Program Change message.

Note: What happens when you recall a Scene can be customised by using the User Settings - (see Page 5.8). The available options affect the recall of Mutes (Default **ON**), VCA Assigns (Default **OFF**) and transmission of MIDI Program Change messages (Default **ON**).

- Recalling Mutes in a Scene will change the status of every Mute to that stored in the Scene unless the Mute’s Safe switch is pressed.
- Recalling VCA Assigns in a Scene will change the VCA Assign status on every Input Channel to that stored in the Scene unless the Assign Safe switch is pressed on the Automation master module.
- Recalling Scene 1 will transmit MIDI Program Change message 0 on MIDI channel 16, recalling Scene 2 will transmit MIDI Program Change message 1, etc.

Note: Unlike Mute & VCA Groups, which only affect Mutes that assigned to them, Scenes will affect all Mutes on the console.

**Recalling Scenes with MIDI**

Scenes can be recalled from a remote device using MIDI Program Change messages. When a Program Change message is received a Scene will be recalled exactly as if the Recall switch were pressed. The User Settings will apply. Program Change number 0 (on MIDI channel 16) will recall Scene 1, Program Change number 1 will recall Scene 2, and so on.
MIDI

The automation system allows the channel Mutes to be controlled using MIDI Note messages or Scenes to be recalled using MIDI Program Change messages. Conversely changing Mutes will transmit MIDI Note messages and recalling Scenes can transmit MIDI Program Change messages.

**MIDI Mutes - Sampler Mode**

This mode is typically used for triggering samples from a MIDI controlled Sampler. Turning a Mute to Off will transmit a MIDI Note On message (on MIDI channel 16), turning a Mute to On will transmit a MIDI Note Off message. The following is transmitted:

- **Mute OFF:** `<9Fh> <mute channel> <velocity>`
- **Mute ON:** `<8Fh> <mute channel> <velocity>`

where `<velocity>` is always 7Fh. The `<mute channel>` number mapping to console channels is shown in Table 1. Similarly console Mutes can be changed if MIDI Note On & Off messages are received in Sampler mode (unless they are Safe). Sampler mode is the default mode. The alternative mode, Sequencer Mode, can be selected using the User Settings (see Page 5.8).

**MIDI Mutes - Sequencer Mode**

In this mode, if a Mute changes status, a MIDI Note On message will be transmitted on MIDI channel 16. The Note velocity is used to denote a Mute On or Mute Off. The message transmitted is:

- `<9Fh> <mute channel> <velocity>`

where `<velocity>` is 00h if the Mute is Off, and 7Fh if the Mute is On. The `<mute channel>` number mapping to console channels is shown in Table 1. Similarly console Mutes can be changed if MIDI Note On messages are received in Sequencer mode (unless they are Safe). In this case:

  - if `<velocity>` is 00h the Mute will turn Off.
  - if `<velocity>` is from 01h to 7Fh the Mute will turn On.

Sequencer mode can be used to dynamically automate the console’s Mutes by recording the Mute changes into a MIDI sequencer, and then playing them back. (This cannot be done in Sampler mode because most sequencer packages do not respond to Note Off messages unless they are directly preceded by a corresponding Note On).

**Program Changes**

MIDI Program messages are transmitted (on MIDI Channel 16) when Scenes are recalled (unless this has been disabled with the User Settings). Conversely the desk will recall Scenes on reception of MIDI Program Change messages on MIDI Channel 16. Program Change number 0 will recall Scene 1, Program Change number 1 will recall Scene 2, etc.

**Table 1 - Console Mutes to MIDI Note Numbers**

<table>
<thead>
<tr>
<th>MIDI Note</th>
<th>24+4 Console</th>
<th>32+4 Console</th>
<th>40+4 Console</th>
<th>48+4 Console</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-7</td>
<td>Mono Input 1-8</td>
<td>Mono Input 1-8</td>
<td>Mono Input 1-8</td>
<td>Mono Input 1-8</td>
</tr>
<tr>
<td>8-15</td>
<td>Mono Input 1-8</td>
<td>Mono Input 9-16</td>
<td>Mono Input 9-16</td>
<td>Mono Input 9-16</td>
</tr>
<tr>
<td>16-23</td>
<td>Mono Input 9-16</td>
<td>Mono Input 17-24</td>
<td>Mono Input 17-24</td>
<td>Mono Input 17-24</td>
</tr>
<tr>
<td>24-31</td>
<td>Mono Input 17-24</td>
<td>Mono Input 25-32</td>
<td>Mono Input 25-32</td>
<td>Mono Input 25-32</td>
</tr>
<tr>
<td>40-47</td>
<td>Mono Input 33-40</td>
<td>Mono Input 41-48</td>
<td>Mono Input 41-48</td>
<td>Mono Input 41-48</td>
</tr>
<tr>
<td>48-55</td>
<td>Matrix Master 1-8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56-63</td>
<td>Group 1-8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64-71</td>
<td>Aux 1-8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>72-79</td>
<td>Aux 9 &amp; 10, Aux Return, (unused), Stereo Input 1-4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Series FOUR VCA's, Mute Groups & Scene Control 5.7
User Settings

The automation functions can be customised using User Settings described below. These are configured when the automation boots-up by holding down the Mute Group Master switches on the automation master module. If any User Settings are On, the Mute Group Master LEDs will illuminate during boot-up. If the automation detects any Mute Group Master keys pressed during boot-up it will toggle the User Setting associated with that Mute Group Master switch. By default all User Settings are Off. The User Settings are:

<table>
<thead>
<tr>
<th>Mute Group Master</th>
<th>LED Off</th>
<th>LED On</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Master Console</td>
<td>Slave Console</td>
</tr>
<tr>
<td>2</td>
<td>VCA Assign Green LEDs</td>
<td>VCA Assign Red LEDs</td>
</tr>
<tr>
<td>3</td>
<td>Unused</td>
<td>Unused</td>
</tr>
<tr>
<td>4</td>
<td>MIDI Mutes Sampler Mode</td>
<td>MIDI Mutes Sequence Mode</td>
</tr>
<tr>
<td>5</td>
<td>Scene Recall VCA Assign OFF</td>
<td>Scene Recall VCA Assign ON</td>
</tr>
<tr>
<td>6</td>
<td>Scene Recall Mutes ON</td>
<td>Scene Recall Mutes OFF</td>
</tr>
<tr>
<td>7</td>
<td>Scene Recall Transmit MIDI Tx Program Change ON</td>
<td>Scene Recall Transmit MIDI Tx Program Change OFF</td>
</tr>
<tr>
<td>8</td>
<td>Scene recall Auto-Increment OFF</td>
<td>Scene recall Auto-Increment ON</td>
</tr>
</tbody>
</table>

Applications with User Settings:

- When linking the automation of two Series FOUR consoles together, one must be defined as the MASTER and the other as the SLAVE - see page 2.8.
- VCA Assign LEDs are normally coloured green, but if the console is being used outside in strong daylight, the illumination colour can be changed to Red, improving visibility.
- Sampler mode is useful if you have a sound effect on a sampler which needs to be triggered at a certain point in a performance. Unmuting the input channel to which the sampler is connected will send a Note On message, triggering the sound effect. If the effect is a continuous loop, muting the channel again will send a Note Off message, stopping the sample playback.
- Scene Recall with VCA Assigns can be used in a theatrical situation if there is a requirement for more than 8 VCA groups. The VCA groups can be reassigned on scene changes as the show progresses, so for example, VCA1 can start in Scene 1 controlling inputs 1-5, but in Scene 2 it can be reassigned to control inputs 10-12.
- Scene Recall with Mutes Off is a way of turning the Scene Control module into a MIDI FX remote controller. In this mode, Recalling a Scene will send out a MIDI program change message, but will have no effect on the console Mutes, or any other console parameters. (Ensure that VCA Assign recall is also turned off).
- Scene Recall Auto Increment mode allows the scene number to automatically increment by 1, each time the recall key is pressed, effectively turning the recall key into a NEXT key. The Up and Down arrow keys can still be used to access out-of-sequence numbers if required.
- Scene Recall with MIDI Prog Change OFF may occasionally be of use if it necessary to stop the sending of Program changes when Scenes are recalled.

Hard Reset

The automation system can be reset to its factory default settings (all Scenes empty, all Mute & VCA Groups unassigned) by performing a Hard Reset. To do this hold down the Store & Recall switches on the automation master module while the automation boots-up. The display will display ‘Hr’ for about 15 seconds while the internal memory settings are reset.

5.8 Series FOUR VCA's, Mute Groups & Scene Control
MIDI System Exclusive Dump

The console’s Scene and Mute Group settings can be archived to an external storage device such as a sequencer or MIDI data filer using a MIDI System Exclusive Dump.

**Dump Out**

To dump the console’s settings to an external device, simultaneously press the RECALL, VCA ASSIGN and MUTE ASSIGN switches on the Scene Control Module. The console will then transmit its settings in a series of System Exclusive data packets. The seven segment display will show “do” while this is occurring.

A Dump Out can also be requested remotely by sending the following Dump Request Message to the console’s MIDI In port.

(hex) F0 39 01 01 00 7F 00 47 F7

Note that the above message will work for all software versions of 1.10 or above.

**Dump In**

To restore any archived dumps, simply transmit the data back to the console. If the console detects valid System Exclusive packets, the data will be written to the internal memory. The seven segment display will show “di” during a Dump In. A System Exclusive packet is deemed valid if it conforms to the following format.

**System Exclusive Format**

The general format is as follows:

F0h <header> <data payload> <checksum> F7h

<header> consists of:

- <Soundcraft ID> 39h (always)
- <Product ID> 01h (e.g. Series TWO is 00h)
- <Software Version Major> i.e. 02h (example: 2 in V2.01)
- <Software Version H> i.e. 00h (example: 0 in V2.01)
- <Software Version L> i.e. 01h (example: 1 in V2.01)
- <Packet ID LSB> 00h - 7Dh (Scenes 1 - 126)
- 7Eh (Mute Groups)
- 7Fh (Dump Request)
- <Packet ID MSB> 00h (always)

The Software Version bytes are always transmitted during a MIDI data Dump Out, indicating the version of the software installed in the console. During a MIDI data Dump In, these bytes may be set to any value - i.e. the values are ignored, so long as the bytes are actually present.

<data payload>

This consists of E’PROM data from the Scene or Mute groups, converted into 7-bit length bytes.

There is no data if the packet ID is a Dump Request.

Scene data = 80 bytes, converted into 7-bit length bytes.

Since any byte where its MSB is set to a “1” is treated as a “Status Byte” in accordance with the MIDI Standard, a 7-bit length data byte has the MSB stripped off and replaced by a 0. Every 7th byte is then followed by another 7-bit byte which contains all the MSBs which were removed. The data payload is, therefore, always sent in multiples of 8 byte (7+1) packets.

<checksum>

This is made up of an Exclusive OR (XOR) of all bytes following F0h up to the checksum byte.

There is still a checksum if the Packet ID is a Dump Request.
## Series FOUR Typical Specifications

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Outputs</th>
<th>Console Linking Inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Module</strong></td>
<td><strong>Signal</strong></td>
<td><strong>Conn.</strong></td>
</tr>
<tr>
<td>Mono Input</td>
<td>Input</td>
<td>Female XLR</td>
</tr>
<tr>
<td>Stereo Input</td>
<td>STE IN (Left &amp; Right)</td>
<td>Female XLR</td>
</tr>
<tr>
<td>Matrix</td>
<td>Ext. In</td>
<td>Female XLR</td>
</tr>
<tr>
<td>Master</td>
<td>TB Mic I/P</td>
<td>Female XLR</td>
</tr>
<tr>
<td>Master</td>
<td>EXT TB I/P</td>
<td>Female XLR</td>
</tr>
<tr>
<td>Master</td>
<td>Aux Returns (L &amp; R)</td>
<td>TRS (1/4&quot; Jack)</td>
</tr>
<tr>
<td>Mono Input</td>
<td>Channel Snd &amp; Ret</td>
<td>TRS (1/4&quot; Jack)</td>
</tr>
<tr>
<td>Stereo Input (L&amp;R)</td>
<td>Channel Snd &amp; Ret</td>
<td>TRS (1/4&quot; Jack)</td>
</tr>
<tr>
<td>Matrix</td>
<td>Matrix Snd &amp; Ret</td>
<td>TRS (1/4&quot; Jack)</td>
</tr>
<tr>
<td>Group/Aux Master</td>
<td>Group/Aux Snd &amp; Ret</td>
<td>TRS (1/4&quot; Jack)</td>
</tr>
<tr>
<td>Output Master</td>
<td>Main Mono, L &amp; R Snd &amp; Ret</td>
<td>TRS (1/4&quot; Jack)</td>
</tr>
<tr>
<td>Mono Input</td>
<td>Direct Output</td>
<td>Male XLR</td>
</tr>
<tr>
<td>Matrix</td>
<td>Matrix Output</td>
<td>Male XLR</td>
</tr>
<tr>
<td>Group Master</td>
<td>Group Output</td>
<td>Male XLR</td>
</tr>
<tr>
<td>Aux Master</td>
<td>Aux Output</td>
<td>Male XLR</td>
</tr>
<tr>
<td>Output Master</td>
<td>Ext TB Output</td>
<td>Male XLR</td>
</tr>
<tr>
<td>Output Master</td>
<td>Oscillator Output</td>
<td>Male XLR</td>
</tr>
<tr>
<td>Output Master</td>
<td>Headphones Output</td>
<td>TRS (1/4&quot; Jack)</td>
</tr>
<tr>
<td>Console Linking Inputs</td>
<td>All Inputs</td>
<td>Female XLR</td>
</tr>
</tbody>
</table>
## Series FOUR Typical Specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency Response</strong></td>
<td>XLR input to any output: +0/-0.5dB, 20Hz - 20kHz</td>
</tr>
<tr>
<td><strong>T.H.D. and Noise</strong></td>
<td>All measurements at +4dBu: &lt;0.004% @ 1kHz</td>
</tr>
<tr>
<td></td>
<td>XLR In to Direct Out: &lt;0.02% @ 10kHz</td>
</tr>
<tr>
<td></td>
<td>XLR In to Mix Out: &lt;0.005% @ 1kHz</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mic Input E.I.N.</strong></td>
<td>22Hz - 22kHz bandwidth, unweighted: &lt;-127.5dBu (200Ω source)</td>
</tr>
<tr>
<td><strong>Residual Noise</strong></td>
<td>Mix Output; no inputs routed, Mix fader @ 0dB: -90dBu</td>
</tr>
<tr>
<td><strong>Bus Noise</strong></td>
<td>Mix Output; 48 channels routed, input faders @ -∞, Mix fader 0dB: &lt;-84dBu</td>
</tr>
<tr>
<td></td>
<td>Grp Output; 48 channels routed, input faders @ -∞, Grp fader 0dB: &lt;-82dBu</td>
</tr>
<tr>
<td><strong>Crosstalk</strong></td>
<td>1kHz, +20dBu input signals</td>
</tr>
<tr>
<td></td>
<td>Input Channel muting: 100dB</td>
</tr>
<tr>
<td></td>
<td>Input fader cutoff: 100dB</td>
</tr>
<tr>
<td></td>
<td>Input pan pot isolation: 85dB</td>
</tr>
<tr>
<td></td>
<td>Mix routing isolation: 100dB</td>
</tr>
<tr>
<td></td>
<td>Group routing isolation: 100dB</td>
</tr>
<tr>
<td></td>
<td>Group-group crosstalk: 90dB</td>
</tr>
<tr>
<td></td>
<td>Group-Mix crosstalk: 90 dB</td>
</tr>
<tr>
<td></td>
<td>Mix-group crosstalk: 90 dB</td>
</tr>
<tr>
<td><strong>CMRR</strong></td>
<td>Mono Input: -60 dB @ 1kHz</td>
</tr>
<tr>
<td><strong>Oscillator</strong></td>
<td>63Hz to 10kHz/Pink Noise, variable level.</td>
</tr>
<tr>
<td><strong>HP Filter (Mono Input)</strong></td>
<td>20-700Hz, 12dB/octave.</td>
</tr>
<tr>
<td><strong>EQ (Mono Input)</strong></td>
<td>HF: 1k-20kHz, +/-15dB, Q = 0.5 - 3.0, or shelf</td>
</tr>
<tr>
<td></td>
<td>Hi-Mid: 500 - 8kHz, +/-15dB, Q = 0.5 - 3.0</td>
</tr>
<tr>
<td></td>
<td>Lo-Mid: 70 - 1.5kHz, +/-15dB, Q = 0.5 - 3.0</td>
</tr>
<tr>
<td></td>
<td>LF: 30 - 480Hz, +/-15dB, Q = 0.5 - 3.0, or shelf</td>
</tr>
<tr>
<td><strong>Metering</strong></td>
<td>Overbridge: 10 VU Meters monitoring Group/Aux/Matrix</td>
</tr>
<tr>
<td></td>
<td>+ 3 VU Meters monitoring Left Mix/AFL/PFL, Right Mix/AFL/PFL &amp; Mono (centre) Mix</td>
</tr>
<tr>
<td></td>
<td>Each meter has a peak LED set to 3db below clipping.</td>
</tr>
<tr>
<td></td>
<td>Mono Input: 9-LED bargraph + Peak LED</td>
</tr>
<tr>
<td></td>
<td>Stereo Input: 2 x 4-LED bargraph + Peak LED</td>
</tr>
<tr>
<td><strong>Power Consumption</strong></td>
<td>48 Ch Console: each 17V rail takes 11.9A (nominal)(measured with Littittes connected) the 8V rail takes 0.8 A (nominal).</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>24 Ch - 68kg (150lbs), 32 Ch - 91kg (200lbs), 40 Ch - 106kg (233lbs), 48Ch - 121kg (266lbs).</td>
</tr>
<tr>
<td><strong>Operating Conditions</strong></td>
<td>Temperature Range: -10°C to +30°C</td>
</tr>
<tr>
<td></td>
<td>Relative Humidity: 0% to 80%</td>
</tr>
</tbody>
</table>
## MIDI Implementation Chart

<table>
<thead>
<tr>
<th>Function</th>
<th>Transmitted</th>
<th>Recognised</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic Channel</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Default</td>
<td>16</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Changed</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>Mode</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Default</td>
<td>MODE 3</td>
<td>MODE 3</td>
<td></td>
</tr>
<tr>
<td>Messages</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Altered</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>Note Number:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>True Voice</td>
<td>0-79</td>
<td>0-79</td>
<td>See Note 1</td>
</tr>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>Velocity</strong></td>
<td></td>
<td></td>
<td>See Note 2</td>
</tr>
<tr>
<td>Note On</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Note Off</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>After Touch</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keys</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Chs</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>Pitch Bend</strong></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>Control Change</strong></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>Program Change</strong></td>
<td></td>
<td></td>
<td>See Note 3</td>
</tr>
<tr>
<td>True#</td>
<td>0 - 125</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>System Exclusive</strong></td>
<td></td>
<td></td>
<td>See Note 4</td>
</tr>
<tr>
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<td>0</td>
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<tr>
<td><strong>System Common</strong></td>
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<tr>
<td>Song Position</td>
<td>X</td>
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<tr>
<td>Song Select</td>
<td>X</td>
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<tr>
<td>Tune</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td><strong>System Real Time</strong></td>
<td></td>
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<tr>
<td>Clock</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Command</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td><strong>Aux Messages</strong></td>
<td></td>
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</tr>
<tr>
<td>Local On/Off</td>
<td>X</td>
<td>X</td>
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</tr>
<tr>
<td>All Notes Off</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Active Sense</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Reset</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

### Notes
- **Note 1. Note Numbers**
  - See the accompanying charts
- **Note 2. Sampler Mode (default)**
  - Note On, velocity = 127 (channel not muted)
  - Note Off, velocity = 127 (channel muted)
- **Note 3. Program Change**
  - When scenes 1 - 128 are recalled, Program Change Numbers 0 - 125 are transmitted
  - When Program Change Numbers 0 - 125 are received, scenes 1 - 128 are recalled
- **Note 4. System Exclusive Format**
  - See page 5.6

### Mode
- **Mode 1:** OMNI ON, POLY
- **Mode 2:** OMNI ON, MONO
- **Mode 3:** OMNI OFF, POLY
- **Mode 4:** OMNI OFF, MONO

<table>
<thead>
<tr>
<th>Mode</th>
<th>O: Yes</th>
<th>X: No</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMNI ON, POLY</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>OMNI ON, MONO</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>OMNI OFF, POLY</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>OMNI OFF, MONO</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>