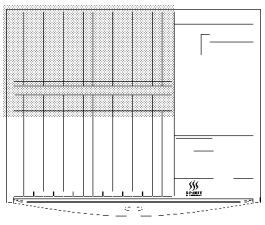
III

REFERENCE SECTION

The purpose of this Reference Section is to cover every feature found on the Spirit 324 Live digital mixer in a logical, easy to follow order.

In this Section:

1. The Inputs and Outputs	16
2. The 'E-Strip'	25
3. The SELECT panel	35
4. Stereo Inputs	40
5. FX Returns	42
6. Solo Control	43
7. AUX/FX PRE and Group Link	45
8. Cue Control Panel	47
9. Select LCD Page	51
10. The SNAPSHOT Button	53
11. The Lexicon FX Processor	56
12. Dynamics Processor	60
13. The Menu Button	70
14. MIDI Events	85
15. Mute Groups	92

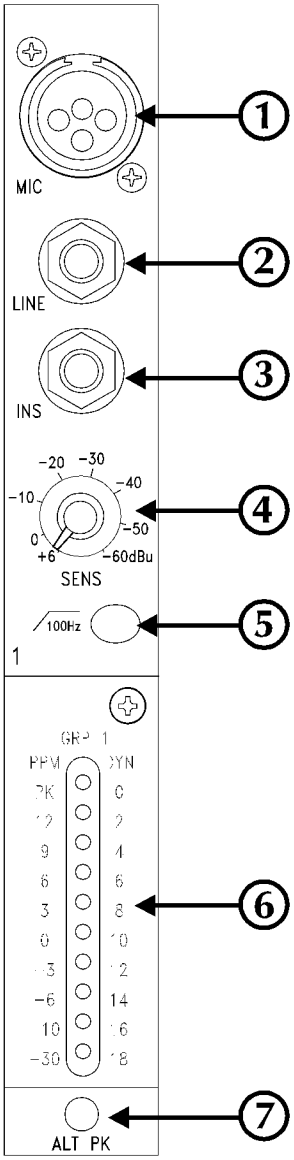


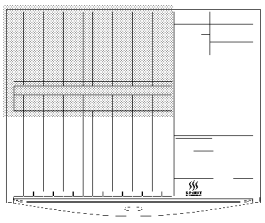
1 – THE INPUTS AND OUTPUTS

A – Inputs 1-16 (Bank A)

The 16 analogue inputs on the 324 Live offer a Microphone input, Line input, Insert point, Trim control and High Pass Filter (HPF).

After the Insert point 24 bit A/D conversion takes place, and from here on the signal is handled entirely in the digital domain until it reaches one of the output stages.





① Mic Input

The microphone input accepts XLR type connectors and is designed to accept a wide range of BALANCED or UNBALANCED signals up to +28dBu (66dB of Gain range). For optimum performance use professional balanced microphones, such as Condenser, Dynamic or Ribbon types. The 48V Phantom Power switch (adjacent to the PSU LEDs) can be used to power Condenser microphones or Direct Injection (DI) boxes if required.

! DO NOT plug microphones into the XLR 'MIC' inputs when the 48V Phantom Power button is depressed. DO NOT connect unbalanced microphones to the XLR 'MIC' inputs whilst the 48V Phantom Power is switched on. To avoid damage to the mixer or external devices DO NOT switch the 48V Phantom Power switch on or off unless the BANK A faders are DOWN.

② Line Input

The Line Input is BALANCED and accepts 3 pole ¼" (TRS) jack plugs.

Use this input for Keyboards, Drum Machines, Synthesisers, Tape Machines or Guitars.

Although the Line input is BALANCED it will accept UNBALANCED sources as well.

③ Insert Point

The insert point is UNBALANCED and is derived Pre-EQ. It allows for the connection of outboard equipment such as Compressors, Gates or Equalisers for additional signal processing. For the correct method of making up insert cables for use with the 324 Live please consult Section 5 of this manual.

A Pre-fade, Pre-EQ send of a Mic or Line source can be output from the Insert point by using a lead with the Tip and Ring shorted together so as not to interrupt the signal path.

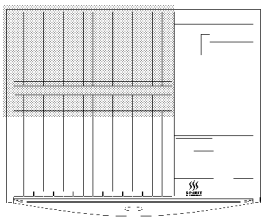
④ SENS (Pre-amp Sensitivity)

This knob sets how much of the source signal is sent to the rest of the mixer. Aim to get as much signal into the 324 Live as possible without clipping (distorting) the signal. Setting the TRIM to '0' will give unity gain for use with Line level signal sources. Because the TRIM control is analogue, its position cannot be stored with 'Snapshot' data.

The TRIM control has a wide sensitivity range to cope with both Mic and Line inputs. With either a MIC or Line input connected start with the TRIM control fully anti–clock wise (+6) and adjust the level until the red '0' LED on the Input meter lights up occasionally during the loudest sections of the music. NB – If you are unfamiliar with how to set the input level on a mixing console, read through Section II 'Getting Started Out Of The Box' in this manual for an explanation.

⑤ 100Hz High Pass filter (HPF)

Pressing this button activates a 100Hz High Pass Filter (HPF) which has a steep 18dB per octave bass rolloff characteristic. When selected the HPF will cause low frequencies below 100Hz to be reduced, and is very useful for reducing rumble on stage or popping on microphones. This function is analogue and will not be stored with 'Snapshot' data.



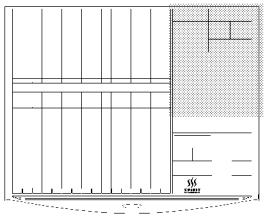
⑥ Bargraph Meters

Each input stage has a tri-colour, 10 segment, peak reading Bargraph meter. These meters can be switched globally using the 3 buttons found in the Meter Bank section to represent any of the following signals.

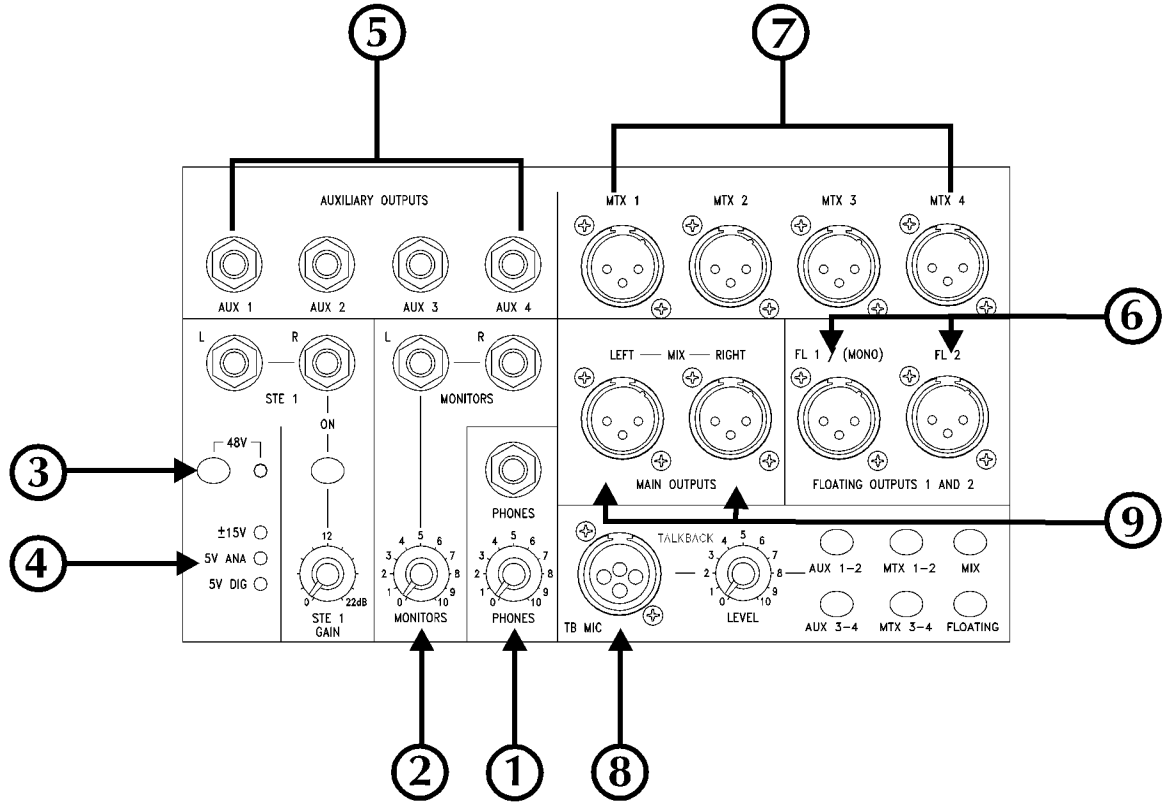
- BANK A Inputs 1-16 (Pre-fade) by pressing the METER BANK button BANK A 1-16
- BANK B Inputs 17-32 (Pre-fade) by pressing the METER BANK button BANK B 17-32
- Group Out 1-4, Aux Out 1-4 and FX Out 1-2 by pressing the METER BANK button MASTERS

⑦ ALT PK

Below the main channel meters is a row of LEDs marked "ALT PK". These illuminate to show that the above meter on the "hidden" BANK (so, when viewing BANK A on the main channel meters, the ALT PK shows BANK B and vice versa) has peaked. This is very handy when trying to track down clipping channels, as there would otherwise be a 50% chance that the peaked channel would have been invisible, but very audible.



B - Master Section Inputs and Outputs



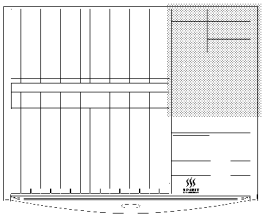
① Phones

This control adjusts the level sent to the stereo PHONES output. The PHONES will, by default, carry a copy of the audio sent to the MIX output. However, any SOLO switches will over-ride the PHONES with the SOLOed input. The PHONES output shares the same signal as the MONITOR output (see below), and as such will follow the default signal configured in (MENU / User Options / C/Rm Output) as defined in MONITORS below.

② Monitors

This control adjusts the level sent to the MONITOR outputs. This would normally be used for a small pair of monitor speakers (often a pair of self-powered speakers) for localised monitoring of the MIX or MONO outputs and SOLOing without the need for headphones. The MONITOR output shares its signal with the PHONES output.

The default source for the Monitors when a SOLO is not selected may be either the MIX (L/R) the MONO bus, Aux 1/2, Aux 3/4 or FX 1/2 as configured in the "Monitor O/P" LCD screen (MENU / User Options / Monitor O/P).



③ 48V [Phantom Power]

When this button is pressed, 48V 'Phantom Power' is provided to the Microphone inputs, for powering professional condenser microphones or Direct Injection (DI) boxes.

> ***To prevent damage to the mixer or external devices, do not connect microphones to the Mic inputs with the 48V power switched on, and only switch the 48V Power on or off when the output faders are DOWN!***

④ PSU Indicators

There are three green LEDs to monitor the status of the +/- 15V, 5V Analogue and 5V Digital power supplies. In normal operation all three LEDs should be illuminated.

⑤ Auxiliary Outputs

Four dedicated Auxiliary outputs are available on 1/4" balanced output jacks. Aux outputs are most commonly used for sending signals to external FX devices, or for sending foldback to an artist.

⑥ Floating Outputs 1 and 2 [FL1 and FL2]

The Floating outputs on 324 Live are additional assignable outputs - that is, they may derive their source from a number of possible choices.

The source for FL1 may be configured independently to that of FL2, using the "Floating O/P Set" LCD page (MENU / Floating O/P Set). Pressing ▲ or ▼ (as available) when in that page will select FL1 or 2 for editing. The choices for FL1 or FL2 source are:

- Mono
- FX1
- FX2
- Group1-4
- None (off)

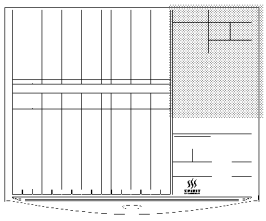
By setting FL1 and FL2 to carry FX1 and FX2 (the internal FX send busses) respectively, a full 6 analogue auxiliary outputs are available from the console - particularly useful when using a large number of external FX devices, or when running stage monitors from the 324 Live.

> ***Note that, even when FX1 or FX2 is set to send from FL1 or FL2, those signals are STILL sent to the internal FX units.***

⑦ Matrix Outputs

The Matrix outputs on 324 Live are 4 outputs that are fed by Groups 1-4, L/R and Mono at User-defined contribution levels.

The most common usage for these outputs is for sending certain parts of a mix to various speaker clusters. This may take the form of "reinforcement" clusters (e.g. a second set of speakers half way back in a hall, into which just vocals may be fed to improve intelligibility), or different rooms in a venue (such as a backstage mix, a Foyer mix, etc.).



Sends to the matrix are derived as follows:

- 1 Press MASTERS in the FADER BANK area. This will bring the Matrix master outputs onto Fader numbers 5-8, marked MTX 1-4.
- 2 To set the contributions from Groups 1-4, L/R and Mono into each of these outputs, first SELECT the desired Matrix - the Matrix INTO which the signals should be sent
- 3 The E-strip will now illuminate only those encoders that are relevant to this operation. The legending above the illuminated encoders denotes the function of each encoder. Turn the encoders to increase or decrease the contribution level from each of the busses into the Matrix. For example, turning up the encoder marked "GRP1" will send the GRP1 signal to the selected Matrix.
- 4 When complete, return to the BANK A fader bank, and continue mixing.

⑧ Talkback

Talkback is a simple method for the engineer to communicate with the performers on stage, or crew backstage (usually during rehearsal only). It may be routed to one of:

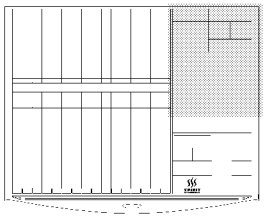
- AUX 1-2
- AUX 3-4
- MTX 1-2
- MIX

The XLR connector on the front panel has an associated level control. There is no Phantom Power for this microphone, so it will have to be a Dynamic mic.

To set the level for this Microphone, switch the channel meters to show the outputs (using the MASTERS switch in the Meter Bank panel). Press and hold the appropriate Talkback routing switch. Turn up the Level control, whilst speaking at normal conversation level into the microphone, until a comfortable level is heard in the speakers. Note that the talkback signals do not appear on the meters.

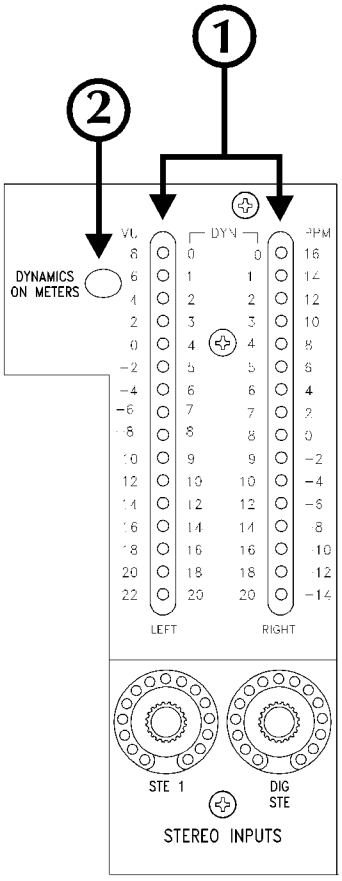
⑨ Main Outputs

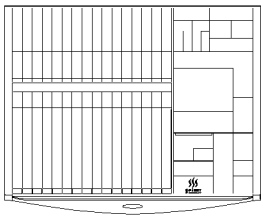
The main program output (Mix L/R) of the 324 appears at the Main Outputs. These outputs are normally connected to the amplification stage of the sound system.



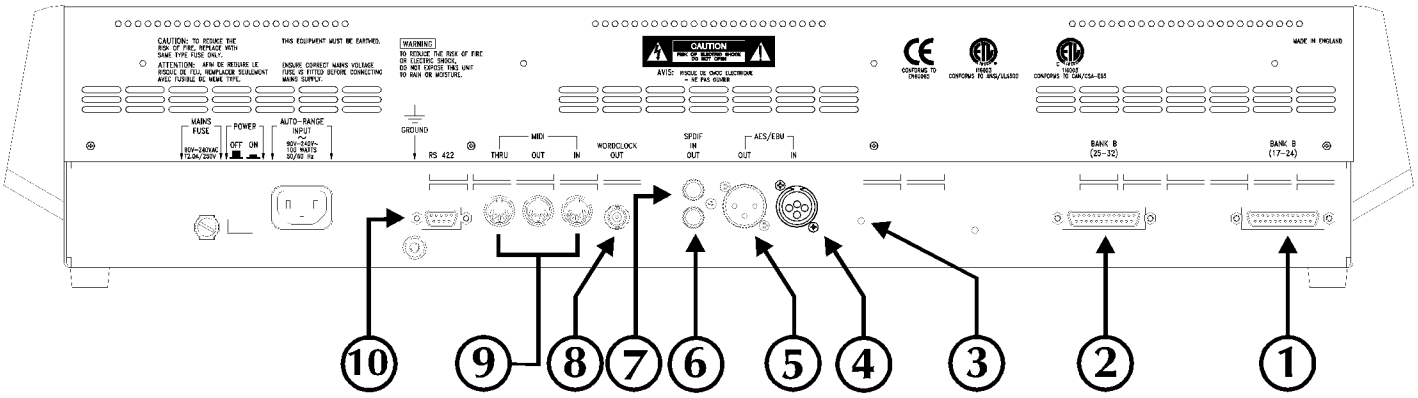
Bargraph Meters

Two 16 segment Peak reading Bargraph meters (1) normally display the Mix L/R output level. Pressing the DYNAMICS ON METERS button (2) on the left of the meters switches all console meters to read either Gain Reduction (Compressor/Limiters) or Gate Open/Close (Gates/Expanders).





C - The Rear Panel Inputs and Outputs



① Bank B (17-24)

The BANK B section on the rear of the 324 Live is a pair of 8-channel bi-directional Digital I/O interfaces for connecting to Input / Output expansion boxes or recording devices. This is offered in Tascam(tm) TDIF format. Signals connected to the first Tascam TDIF port will appear on the BANK B fader page, on faders 1 through 8.

Although this interface will most commonly be used for adding further analogue input capability to the console, it can also carry channel Direct or Group outputs. How these will appear in the analogue domain depends upon the interface unit purchased. For example, the Mic / Line expander box offers 8 balanced 1/4" jack outputs.

② Bank B (25-32)

This offers similar connectivity to the 17-24 ports above, but for a second set of 8 inputs, appearing on Faders 9-16 of BANK B.

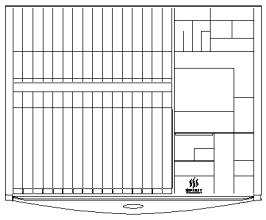
③ Software Download Switch

This hidden switch is accessed using a small implement such as a screwdriver, and is used during the process of updating software in the 324 Live.

④ AES IN

Stereo AES/EBU signals from external devices such as DAT, CD or MD players should be connected here. The destination of this input can be selected via the MENU to any of the following: - STE 1, Dig STE 2, FX return 1, FX return 2.

(See Section III-Part 13-H - AES / EBU Input Setup for setup information).



(5) AES OUT

This Stereo AES/EBU output can be selected via the MENU to derive its signal from any of the following sources: - MIX output, AUX send 1 and 2, AUX send 3 and 4 or FX send 1 and 2.

(See Section III - Part 13-J 'AES/EBU Output Setup' for setup information).

(6) S/PDIF IN

Stereo S/PDIF signals from external devices such as DAT, CD or MD players should be connected here. The destination of this input can be selected via the MENU to any of the following: - STE 1, Dig STE 2, FX return 1, FX return 2 or 2TRK.

(See Section III - Part 13-G 'SPDIF Input Setup' for setup information).

(7) S/PDIF OUT

This Stereo S/PDIF output can be selected via the MENU to derive its signal from any of the following sources: - MIX output, AUX send 1 and 2, AUX send 3 and 4 or FX send 1 and 2.

(See Section III - Part 13-I 'SPDIF Output Setup' for setup information).

! ***The digital AES/EBU and S/PDIF inputs on the 324 Live are fitted with Sample Rate Convertors. This means that they will accept and lock to digital sources regardless of their clock frequency as long as it is in the range of 30-50 kHz. It is therefore not necessary to match the clock of the external equipment to that of the 324 Live.***

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(8) WORDCLOCK OUT

This BNC connector allows synchronising of external devices to the 324 Live's own internal Wordclock, which runs at 44.1 kHz.

If you would like to know more about Wordclock and other digital information, please read through 'The Spirit Guide To Digital Mixing' booklet included with this User Guide.

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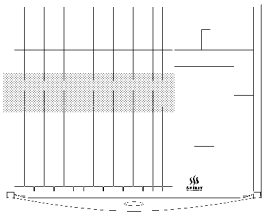
(9) MIDI IN, OUT and THRU

The MIDI IN, OUT and THRU connectors are used for the following applications:

- Synchronising recall of SNAPSHOTS to incoming MTC (MIDI Timecode).
- Transmitting and receiving Dynamic Automation data to and from a MIDI recording device.
- Saving and Loading SNAPSHOTS, FX, Dynamics and Library data to a MIDI recording device.
- Sending MIDI Control information from the 324 Live's MIDI Controllers.

(10) RS 422

The RS422 port is used for uploading software upgrades using a PC or Apple Macintosh.



2 – THE ‘E-STRIP’

OVERVIEW

Most channel strips on analogue consoles - irrespective of brand name - have pretty much the same facilities on offer, typically – parametric equalisation, Auxiliary sends, Effects sends and Pan controls.

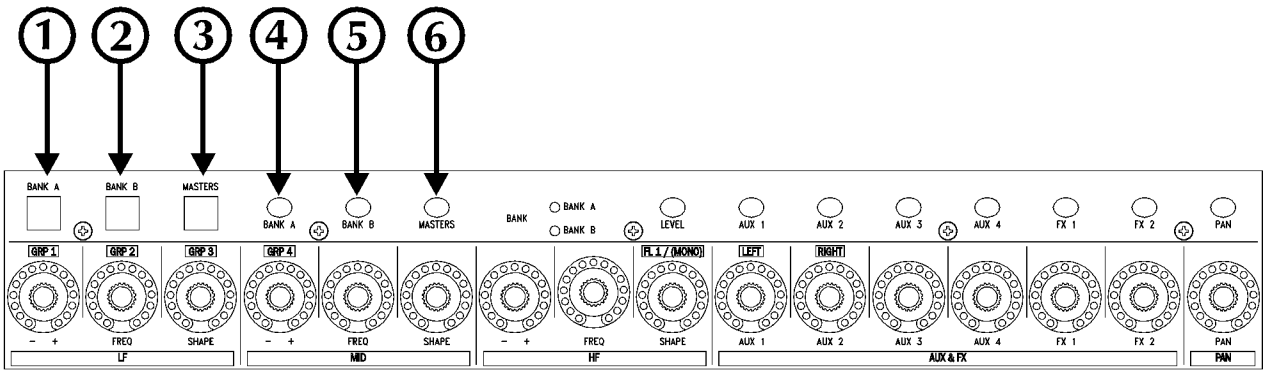
The ‘E-strip’ has 2 simple modes of operation that take the sweat out of using a digital mixer.

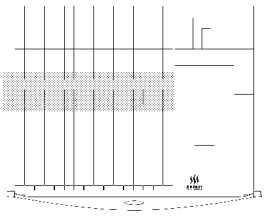
CHANNEL - ALL PARAMETERS IN A SINGLE CHANNEL STRIP

In its first mode, the ‘E-strip’ works just like a standard ‘analogue’ channel lying on its side. Pressing the ‘SELECT’ button on any BANK A Input, Bank B Input, Stereo Input or FX Return will instantly activate the ‘E-Strip’ on that channel. You now have immediate access to 3 Band Fully Parametric EQ, 4 Auxiliary Sends, 2 FX Sends and a Pan control, all operated with normal rotary “pots” as you would expect.

FUNCTION - ONE FUNCTION ACROSS ALL ENCODERS

In the other mode, the ‘E-Strip’ can be set up to function as a row of dedicated Level, Aux, FX or Pan controls for each channel. Here, instead of all parameters of a single channel, the Encoders will now show a single parameter across all channels - very handy for comparing and editing sends across a number of inputs. With this mode it is a simple task to compare, for example, the relative amount of send to AUX1 from 16 channels, to find the channel that is sending too much to a reverb send.





A- The Fader and Meter Bank

THE FADER BANKS

The three square FADER BANK buttons assign the 16 long throw motorised faders to control any one of the following four functions:

(1) Bank A

When selected (illuminated) the 16 long throw motorised faders will control the level of the signals appearing at the MIC/LINE inputs 1-16 (i.e. the analogue inputs)

(2) Bank B

When selected (illuminated) the 16 long throw motorised faders will control the level of the signals appearing at the Bank B 17-32 inputs.

(3) MASTERS

When selected (illuminated) the 16 long throw motorised faders will control the following signals:

Fader numbers 1-4	Control the level of the 4 GROUP outputs

The GROUP output level does not exceed the 0dB unity gain point i.e. no further gain occurs once the fader has passed the 0dB unity gain position.

Fader Numbers 5-8	Control the level of the 4 MATRIX outputs
Fader Number 9	Controls the level of the Mono output
Fader Numbers 10 – 13	Control the Master send level of AUX sends 1-4
Fader Numbers 14 – 15	Control the Master send level of FX sends 1-2
Fader Number 16	Controls the level of the PFL Solo bus.

No selection: When none of the FADER BANK switches are selected (illuminated), the 16 long throw motorised faders can be used as 16 MIDI controllers.

The METER BANKS

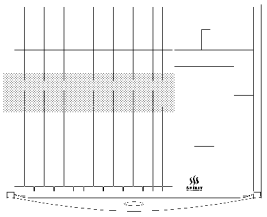
The three METER BANK buttons assign the 16 LED Bargraph meters to display any of the following signals:

(4) Bank A

When selected (illuminated) the 16 LED Bargraph meters will show the level of the signals appearing at the MIC/LINE inputs 1-16 (i.e. the analogue inputs).

(5) Bank B

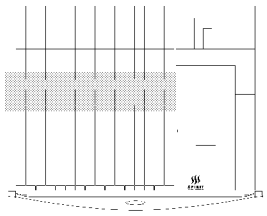
When selected (illuminated) the 16 LED Bargraph meters will show the level of the signals appearing at the Bank B inputs 17-32 (i.e. the digital inputs)



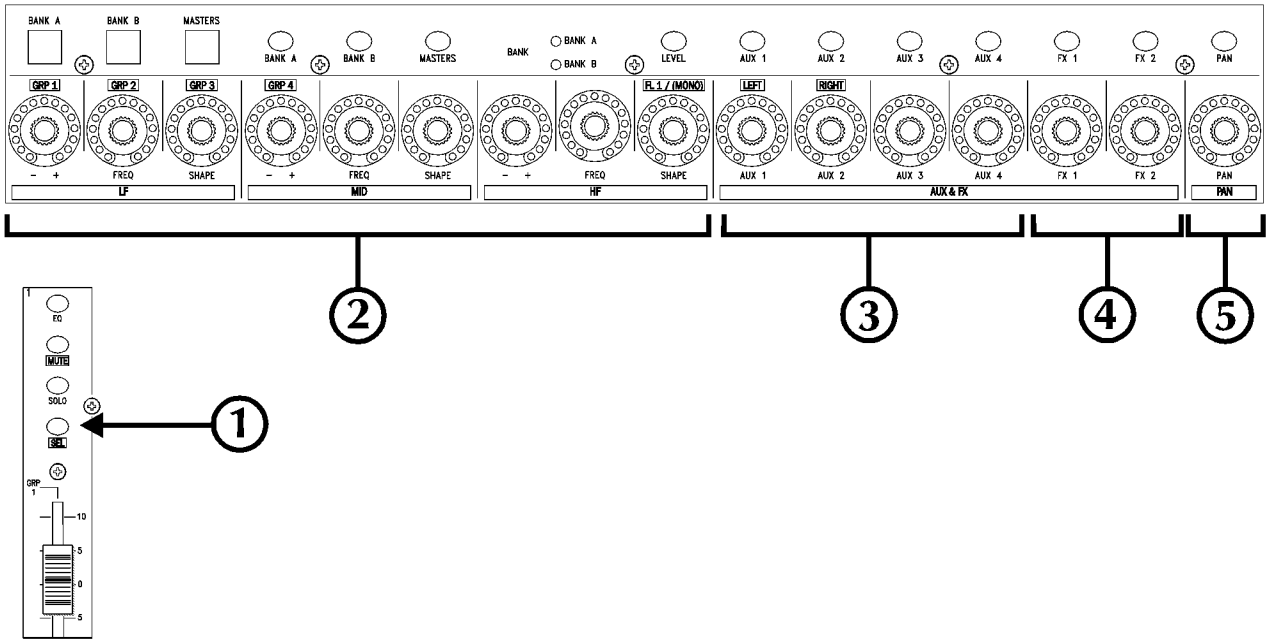
⑥ MASTERS

When selected (illuminated) the 16 LED Bargraph meters will show the level of the following signals:

Bargraph meters 1-4	Show the level of the 4 GROUP outputs
Bargraph meters 5-8	Show the level of the 4 MATRIX outputs
Bargraph meter 9	Shows the level of the MONO output
Bargraph meters 10-13	Show the Master send level of AUX sends 1-4
Bargraph meters 14-15	Show the Master send level of FX sends 1-2
Bargraph meter 16	Not used.



B - The 'E-Strip' as a Channel strip



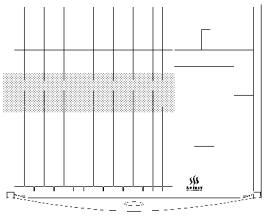
① Using the SELECT buttons

To apply the 'E-strip' to a channel, the relevant SELECT button must be pressed to activate the 'E-Strip' on that channel. SELECT buttons are found on the following Channels:

- **BANK A Inputs 1-16**
- **BANK B Inputs 17-32**
- **Stereo Inputs 1& 2**
- **FX Returns 1 & 2**

Naturally it follows then that most of the facilities found in the 'E-strip' can be applied to any of the above channels.

If none of the page switches around the LCD are pressed, the LCD display will show the parameters being adjusted by the pots on the 'E-Strip'.



② Equaliser section

Frequency Bands

The equaliser is divided into three fully parametric bands, namely - Low Frequency (LF), Mid Frequency (MID) and High Frequency (HF). Each band has a Cut and Boost control (- /+) with a range of 15 dB, a Frequency Select control (FREQ) and a Bandwidth or 'Q' control (Shape).

- Frequency Range

The Frequency ranges for each of the 3 bands are as follows:

- **LF** **40Hz to 800Hz**
- **MID** **200Hz to 8KHz**
- **HF** **1KHz to 20KHz**

Rotating the LF, MID or HF encoder knob in a clockwise direction will sweep the frequencies from the lowest value through to the highest value in each frequency band e.g. 40Hz to 800Hz for the LF band.

- Bandwidth

The Bandwidth or 'Q' control (SHAPE) has the following range:

- **LF** **(SHELVING) - 0.3 to 2.8**
- **MID** **0.3 to 2.8**
- **HF** **(SHELVING) - 0.3 to 2.8**

When rotating the SHAPE encoder knob clockwise, the LF and HF bands will begin with a SHELVING filter characteristic, which changes to a peak filter with a 'Q' range of 0.3 through to 2.8 as the SHAPE encoder is gradually rotated.

The MID band has a peak filter characteristic with a 'Q' range of 0.3 through to 2.8

③ Auxiliary Sends 1-4

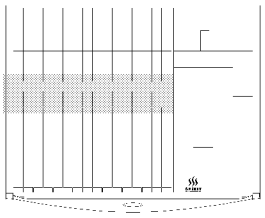
The 4 Aux Sends (AUX 1-4) provide level control of the signal in the selected channel to the Aux Outputs. The Aux sends can be switched globally to source signals either PRE or POST fader and may be configured as PRE or POST EQ when PRE FADE.

PRE/POST FADE setting of AUX 1, 2, 3 & 4

- 1 Press and hold the 'AUX/FX PRE' button.
- 2 Now look at the status of the AUX 1, 2, 3 or 4 buttons in the ROTARY CONTROLS section, whilst continuing to hold down the AUX/FX PRE button as above.
- 3 The AUX 1, 2, 3 or 4 buttons will either be selected to be PRE FADE (illuminated) or POST FADE (not illuminated).
- 4 To change the PRE/POST status of AUX 1, 2, 3 or 4, simply select or de-select the relevant button whilst holding down the AUX/FX PRE button.

When shipped the default mode is AUX 1&2 set to PRE FADE (illuminated) and AUX 3&4 set to POST FADE (not illuminated).

(See Section III-7 AUX / FX PRE and Group Link more information on Auxiliary configuration.)



④ FX Send 1 & 2

The 2 encoders labelled FX 1 and FX 2 provide separate Aux Send control to the built in Lexicon FX processors.

PRE/POST FADE setting of FX send 1 or 2

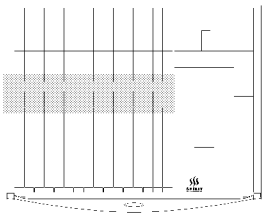
- 1 Press and hold the 'AUX/FX PRE' button.
- 2 Now look at the status of the FX 1&2 buttons in the ROTARY CONTROLS section, whilst continuing to hold down the AUX/FX PRE button as above.
- 3 The FX 1&2 buttons will either be selected to be PRE FADE (illuminated) or POST Fade (not illuminated).
- 4 To change the PRE/POST status of FX 1& 2, simply select or de-select the relevant button whilst holding down the AUX/FX PRE button.

When shipped the default setting for FX 1 and FX 2 is POST FADE.

⑤ Pan Control

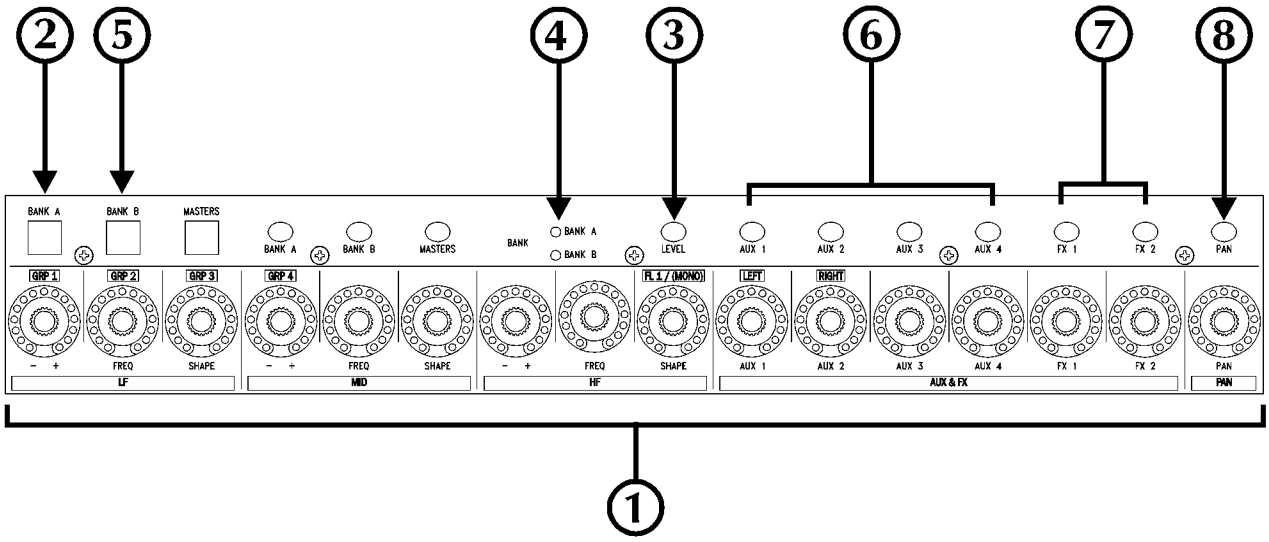
The PAN encoder knob sets the amount of the channel feeding the left and right MIX busses or Linked Group outputs allowing a signal to be moved smoothly across the stereo image.

When none of the 4 LCD page switches is selected, the LCD display will show the PAN setting numerically. Rotating the encoder knob clockwise the display will start by showing 'LEFT' meaning the signal is fully to the left and then gradually move through LFT 1-30, Centre, RGT 1-30 ending at 'RIGHT' denoting that the signal is now fully to the right. This is very useful when there is a need to match two signals symmetrically across the stereo image.



C - The 'E-Strip' as a row of controllers

The secondary mode of the 'E-Strip' allows the ROTARY CONTROLS to be set up as dedicated Level controls, Aux Sends, FX Sends or Pan controls.



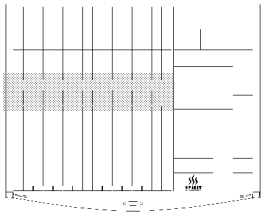
LEVEL CONTROLS

The 16 ROTARY CONTROLS (1) can be configured for use as level controls (faders) for either the BANK B 17-32 inputs or the BANK A inputs 1-16. This allows immediate access to all 32 input levels on the 324 Live.

Controlling BANK B inputs 17-32

When the BANK A (2) button in the FADER BANK is selected, the signals present at the BANK A inputs will be controlled from the 100mm long throw faders at the bottom of the mixer.

If the LEVEL button (3) in the ROTARY CONTROLS section is now selected, the 16 ROTARY CONTROLS will automatically be selected to control the level of the signals present at the BANK B 17-32 inputs. The red 'BANK' LED (4) in the ROTARY CONTROLS section will confirm that the BANK B 17-32 inputs have been selected. The green ring of LEDs surrounding the ROTARY CONTROLS will represent the fader level.



Controlling inputs to BANK A 1-16

Alternatively the ROTARY CONTROLS can be switched to control the level of the signals present at the BANK A inputs 1-16, when it is preferable to have the BANK B 17-32 inputs controlled by the 100mm long throw faders at the bottom of the mixer.

To do this select the BANK B button in (5) the FADER BANK section. This will switch the signals present at the BANK B 17-32 inputs to be controlled by the 100mm long throw faders.

If the LEVEL button (3) is selected, the ROTARY CONTROLS will now be automatically configured as level controls (faders) for the signals present at the BANK A inputs 1-16.

The red 'BANK' LED (4) in the ROTARY CONTROLS section will confirm that the BANK A inputs 1-16 have been selected. The green ring of LEDs surrounding the ROTARY CONTROLS will represent the fader level.

All 32 inputs still have instant access to the 'E-Strip' functions described in Part I above by pressing either the BANK A or BANK B buttons in the FADER BANK Section

AUXILIARY SENDS

The 16 ROTARY CONTROLS (1) can be switched to function as individual Aux Sends for each of the signals present at the 100mm long throw faders at the bottom of the mixer. This way each channel can be set up to have a dedicated Aux Send, as you would find on an analogue console.

Aux sends for BANK A inputs 1-16

Press the BANK A button (2) in the FADER BANK section. This will assign the signals present at the inputs of BANK A 1-16 to be controlled by the 100mm long throw faders at the bottom of the mixer.

By selecting any one of the AUX 1, 2, 3 or 4 buttons (6) in the ROTARY CONTROLS section, the ROTARY CONTROLS will now function as AUX sends for BANK A channels 1-16 according to the number of the AUX selected.

The green ring of LEDs surrounding the ROTARY CONTROLS will now represent the send level.

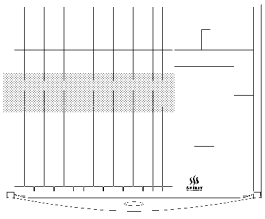
Aux sends for BANK B inputs 17-32

Press the BANK B (5) button in the FADER BANK section. This will assign the signals present at the inputs of BANK B 17-32 to be controlled by the 100mm long throw faders at the bottom of the mixer.

By selecting any one of the AUX 1, 2, 3 or 4 buttons in the ROTARY CONTROLS section, the ROTARY CONTROLS will now function as AUX sends for BANK B channels 17-32 according to the number of the AUX selected.

The green ring of LEDs surrounding the ROTARY CONTROLS will represent the audio level.

The AUX 1, 2, 3 or 4 sends can be switched to be PRE or POST Fade by pressing and holding the AUX/FX PRE button in the GROUP/AUX/FX section. Then press one of the AUX 1, 2, 3 or 4 buttons in the ROTARY CONTROLS section. If the AUX 1, 2, 3 or 4 button is illuminated the AUX is PRE FADE and if it is not illuminated the AUX is POST FADE. (See Section III-7: Aux / FX Pre and Group Link).



FX SENDS

The 16 ROTARY CONTROLS (1) can be switched to function as individual FX sends for each of the signals present at the 100mm long throw faders at the bottom of the mixer. This way each channel can be set up to have a dedicated FX send, as you would find on an analogue console.

FX sends for BANK A inputs 1-16

Press the BANK A button (2) in the FADER BANK section. This will assign the signals present at the inputs of BANK A 1-16 to be controlled by the 100mm long throw faders at the bottom of the mixer.

By selecting either the FX 1 or 2 button (7) in the ROTARY CONTROLS section, the ROTARY CONTROLS will now function as FX sends for BANK A channels 1-16 according to the number of the FX send selected.

The green ring of LEDs surrounding the ROTARY CONTROLS will represent the send level.

FX sends for BANK B inputs 17-32

Press the BANK B button (5) in the FADER BANK section. This will assign the signals present at the inputs of BANK B 17-32 to be controlled by the 100mm long throw faders at the bottom of the mixer.

By selecting either the FX 1or 2 button (7) in the ROTARY CONTROLS section, the ROTARY CONTROLS will now function as FX sends for BANK B channels 17-32 according to the number of the FX selected.

The green ring of LEDs surrounding the ROTARY CONTROLS will represent the send level.

The FX 1 and 2 sends can be switched to be PRE or POST Fade by pressing and holding the AUX/FX PRE button in the GROUP/AUX/FX section. Then press either the FX 1 or 2 button in the ROTARY CONTROLS section. If the FX 1 or 2 button is glowing red the FX send is PRE FADE and if it is unlit the FX send is POST FADE.

(See Section III-7: Aux / FX Pre and Group Link.)

Pan controls

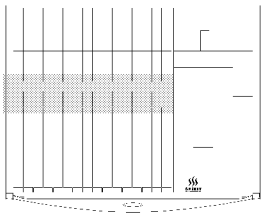
The 16 ROTARY CONTROLS (1) can be switched to function as individual PAN controls for each of the signals present at the 100mm long throw faders at the bottom of the mixer.

PAN controls for BANK A inputs 1-16

Press the BANK A (2) button in the FADER BANK section. This will assign the signals present at the inputs of BANK A 1-16 to be controlled by the 100mm long throw faders at the bottom of the mixer.

By selecting the PAN button (8) in the ROTARY CONTROLS section, the ROTARY CONTROLS will now function as PAN controls for BANK A channels 1-16.

The green ring of LEDs surrounding the ROTARY CONTROLS will represent the PAN position of the channel within the stereo image.

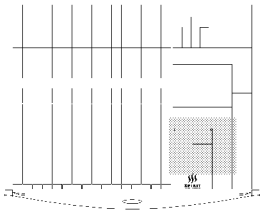


PAN controls for BANK B inputs 17-32

Press the BANK B button (5) in the FADER BANK section. This will assign the signals present at the inputs of BANK B 17-32 to be controlled by the 100mm long throw faders at the bottom of the mixer.

By selecting the PAN button (8) in the ROTARY CONTROLS section, the ROTARY CONTROLS will now function as PAN controls for BANK B channels 17-32.

The green ring of LEDs surrounding the ROTARY CONTROLS will represent the PAN position of the channel within the stereo image.



3 – THE SELECT PANEL

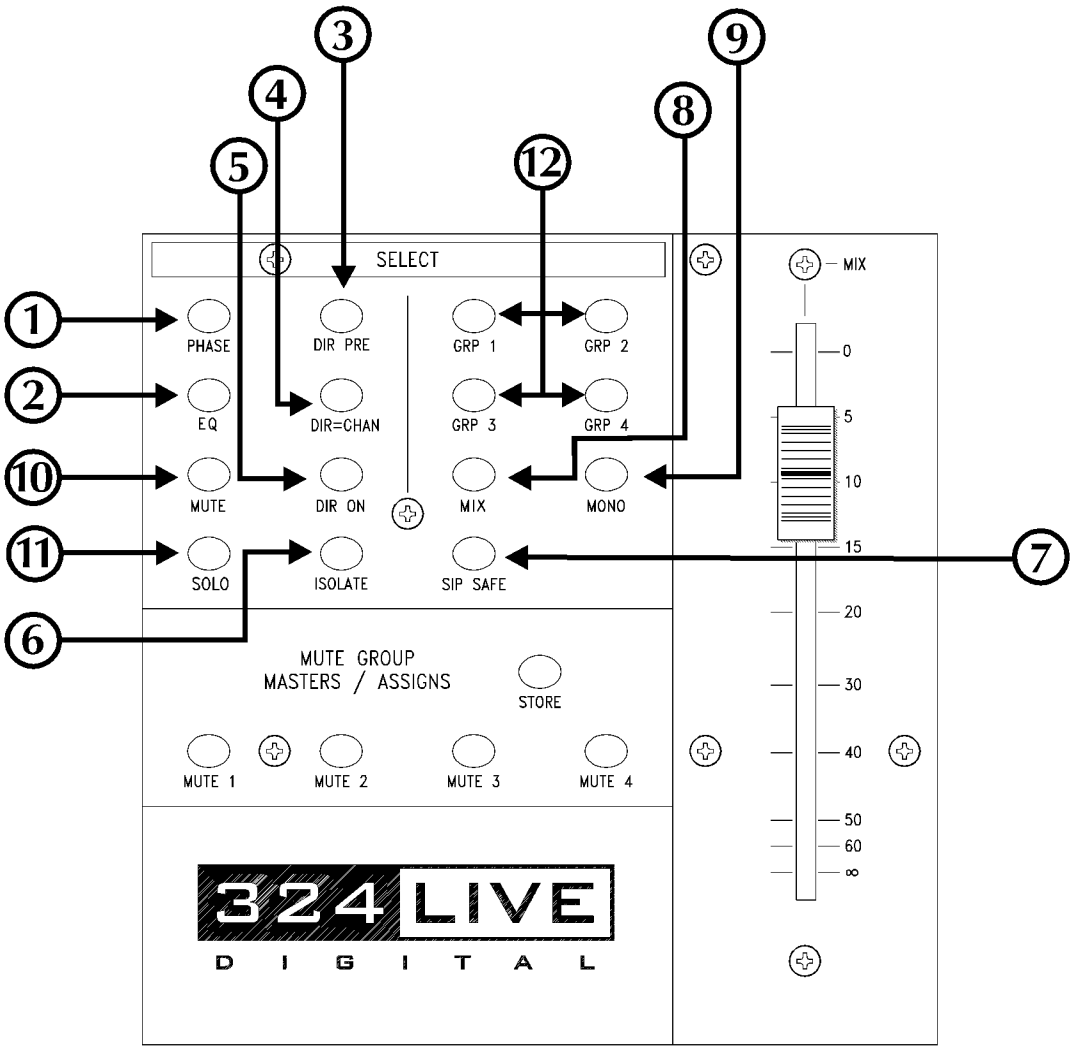
The SELECT panel on the 324 Live contains channel path switching, such as the Group Routing buttons, Phase Reverse, EQ In/Out etc.

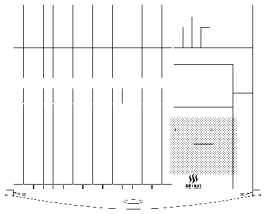
The SELECT panel becomes active when a SELECT button is pressed on any of the following channels – BANK A 1-16, BANK B 17-32, STEREO INPUT 1, DIGITAL STEREO INPUT, and FX RETURNS 1 and 2.

Remember that the functions described below can be operated in one of two ways - either:

(1) SELECT the desired channel, and press a switch in the SELECT Panel, or
(2) press and hold a switch in the SELECT Panel, at which point the SELECT switches become that function for each channel.

(See "Query mode" below for more detail on this capability.)





① PHASE button

When the PHASE button is pressed the phase of the selected channel will be reversed (inverted). This can be useful when a single channel is wired out of phase (whether intentionally or not) with other incoming signals.

This is common practice when wiring snare drums, as many operators like to put one mic above the drum, and one below, but both pointing at the drum skins. The result is that, in terms of a single wavefront caused by striking the drum, the information hitting the lower mic will be the inverse of that hitting the upper mic.

If these two were mixed together, the result would be a thinning of the sound (although this may perhaps not be undesirable in certain circumstances…). Dropping the lower mic out of phase will result in the signals from the two mics being in phase with each other, and mixing together without difficulty.

② EQ IN

The EQ IN button switches in the 3 Band Parametric Equaliser available on the BANK A 1-16, BANK B 17-32, STE 1and 2, FX 1 and 2 channels.

Pressing and holding a channel EQ switch will "flatten" the EQ - that is, return the parameters to their default values.

This can also be achieved by pressing and holding the SEL switch on the channel on which the EQ is to be flattened, then pressing the EQ switch in the Select panel. This second method is the only way of flattening the EQ on a Stereo channel.

DIRECT OUTPUTS

The outputs appearing on the TDIF ports on the rear of 324 Live may be defined as carrying either the Group 1-4 outputs (repeated 3 times, to fill the 16 direct outputs), or the Direct output from each input channel.

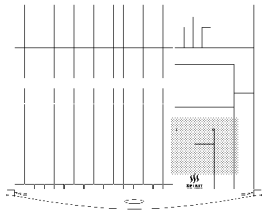
This latter mode is particularly useful when sending to a multitrack recorder, as the 16 main input channels may easily be sent to 16 corresponding tracks on a digital recording medium.

③ DIR PRE

The DIR PRE switch only applies to BANK A inputs 1-16.

When the DIR PRE switch is illuminated, the Direct output sent to the TDIF port on the rear of the console is derived PRE-fader. That is, any movements of the channel fader will have no effect on the level of the send. Note that this send is PRE-MUTE - so muting the channel will not affect the level sent to the recorder.

Note also that DIR=PRE is only relevant when DIR=CHAN is "ON", because when the Direct output is taken from the Groups, it is ALWAYS derived POST the Group master fader.



④ DIR=CHAN

This function defines the source of the TDIF Direct outputs. When DIR=CHAN is on, the signal sent to the associated TDIF output is from the channel path. When DIR=CHAN is off, the source for the associated TDIF output is one of the four Groups, depending on the number of the channel.

The channels align as shown in the table:

Input Channel Number	When DIR=CHAN is **On** TDIF Send Derived from Channel	When DIR=CHAN is **Off** TDIF Send Derived from Group	Appears at TDIF output number
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	1	5
6	6	2	6
7	7	3	7
8	8	4	8
9	9	1	9
10	10	2	10
11	11	3	11
12	12	4	12
13	13	1	13
14	14	2	14
15	15	3	15
16	16	4	16

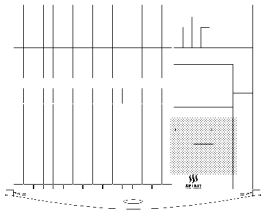
⑤ DIR ON

The DIR ON switch activates the Direct output from each channel.

⑥ ISOLATE

The Isolate switch allows fast removal of a channel from the automation system FOR RECALL ONLY. Channel parameters will still be stored when Cues are written to memory, but when a Cue is recalled to the console, any Isolated channel will be protected from the Replay.

This feature is essential in Live sound, because of the unpredictable nature of the source material and the action on stage. For example, consider a situation where a singer is using a Radio mic, and 20 Cues have been written to memory - one for each song of the evening. If the mic now slips slightly, an urgent re-EQing and level trim may be required. This is easily performed using the SELECT switch and the E-Strip. But, in the upcoming Cues, the data is still as it was stored - with none of the new updates.



However, simply pressing the ISOLATE switch for that channel will result in that microphone now being put entirely under manual control. The user may recall the Cues as expected, and the whole desk will respond except for that one Microphone channel, which may now be safely adjusted as required.

It is also possible to isolate the MIX L/R fader, MONO fader, and the two Lexicon FX units.

This is achieved by pressing and holding the ISOLATE switch ⑥ followed by FX1, FX2, MIX or MONO as required.

⑦ SIP SAFE (Solo In Place Safe)

In SOLO IN PLACE mode, when a SOLO button is selected on a channel, all channels except the SOLOed one are muted.

Any channel that has SIP SAFE selected will not mute when another channel is placed into SOLO mode.

For example, it might be useful to SOLO the lead vocal, but since this is usually heard in the House with FX, the FX returns should ideally remain active as well. By pressing the SELECT button on either FX 1 or 2 the SIP SAFE button can be selected to make sure that the FX return remains active even when another channel is put into SOLO mode. Pressing SOLO (in SIP mode) on the lead vocal will now result in everything except the vocal and its associated FX being muted.

⑧ MIX

This routes the selected channels to the MIX (L/R) outputs.

⑨ MONO

This routes the selected channels to the MONO output.

⑩ MUTE

All outputs from the channel (except Insert Sends and PRE-fade DIRect outputs) are muted when the MUTE button is selected.

There are dedicated MUTE buttons on Inputs BANK A 1-16, BANK B 17-32, GROUP 1-4, AUX MASTERS 1, 2, 3 and 4, FX MASTERS 1/2, STEREO Input 1, DIGITAL STEREO Input, and FX RETURNS 1/2.

The MUTE buttons for these channels can be switched on either from the SELECT panel or from the dedicated MUTE buttons on these channels.

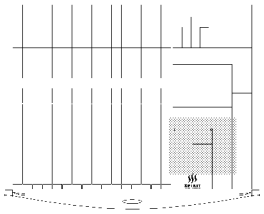
Aux Sends will always be muted - even if they have been set to operate Pre-Fade.

⑪ SOLO

The SOLO button when pressed will place the selected channel into SOLO mode according to the type of SOLO selected in the SOLO CONTROL panel.

The SOLOed signal is sent to the headphones, control room output and meters, where it replaces the selected monitor source.

The SOLO button illuminates, identifying the selected channel, and the PFL/AFL LED on the Master section of the mixer illuminates to warn that a SOLO is active.



PFL/AFL is a useful way of listening to an input signal without interrupting the main mix.

There are 3 different SOLO modes which can be selected from the SOLO CONTROL panel

- **PFL (Pre-fade listen)**
- **AFL (After Fade Listen)**
- **SIP (Solo-In-Place)**

For more information on SOLO modes please see Section 3F – 'SOLO CONTROL.'

The SOLO bus is stereo. When a mono signal is SOLOed the signal is fed in mono to both the left and right.

If the SOLO is AFL the signals are sent Post-Fade, Post Mute and Post Pan to the SOLO buss.

When SOLO is activated in SIP mode, all other inputs are muted unless they have been selected to be in SIP SAFE mode.

Auto Cancel

Although SOLO selections are usually additive, 324 can be configured such that each new SOLO will automatically cancel any previous SOLO.

Called Auto Cancel, this setting is particularly useful when troubleshooting a mix, as it makes independent selection and SOLO auditioning of a large number of channels a very fast job - helping the user quickly to identify the problem channel.

See Section III - 13 - User Options for more information

Solo Selects

Although there is usually no link between the channel SOLO and SELect switches, 324 can be set up such that SOLOing a channel results in that channel also being SELected for editing onto the E-Strip.

This has the effect of ensuring that the channel SOLO'ed for auditioning is immediately available for editing if the audition results in changes being required.

See Section III - 13 - User Options for more information

⑫ GROUP 1-4

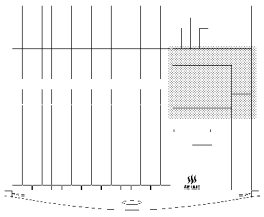
The selected channel can be routed to any of the 4 GROUP outputs by pressing the relevant GROUP button. The selected GROUP button will illuminate to show that it is active.

Channels may be routed to individual GROUPS (mono) or to pairs of GROUPS that have been Stereo linked as odd/even pairs allowing for panning across the GROUP outputs.

(See Section III-7 AUX / PRE and Group Link for more details)

Group to mix assignment

To assign a GROUP to the MIX, hold down the MIX switch, then press the GROUP routing switch for the GROUP to be routed. (The same procedure can be used for assigning a GROUP to the MONO Output).



QUERY MODE

In conjunction with the SELECT panel we have what we call 'QUERY MODE' which is a very fast way of seeing which functions are active on any of BANK A 1-16, BANK B 17-32, STEREO INPUT 1 and Dig STE or FX RETURNS 1 and 2.

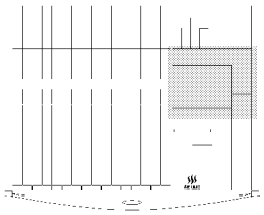
Holding down any of the buttons in the SELECT panel asks the question " in which signal path is this button active? "

The system answers the question by illuminating the SELECT buttons for those channels which are active. You may now change the status of the button in each signal path by toggling the appropriate SELECT button while still holding down the button in the SELECT panel. When you release the relevant SELECT panel button, the system returns to whatever operational mode it was in before you pressed it.

You can use the QUERY mode at any time, whatever LCD mode you may be in.

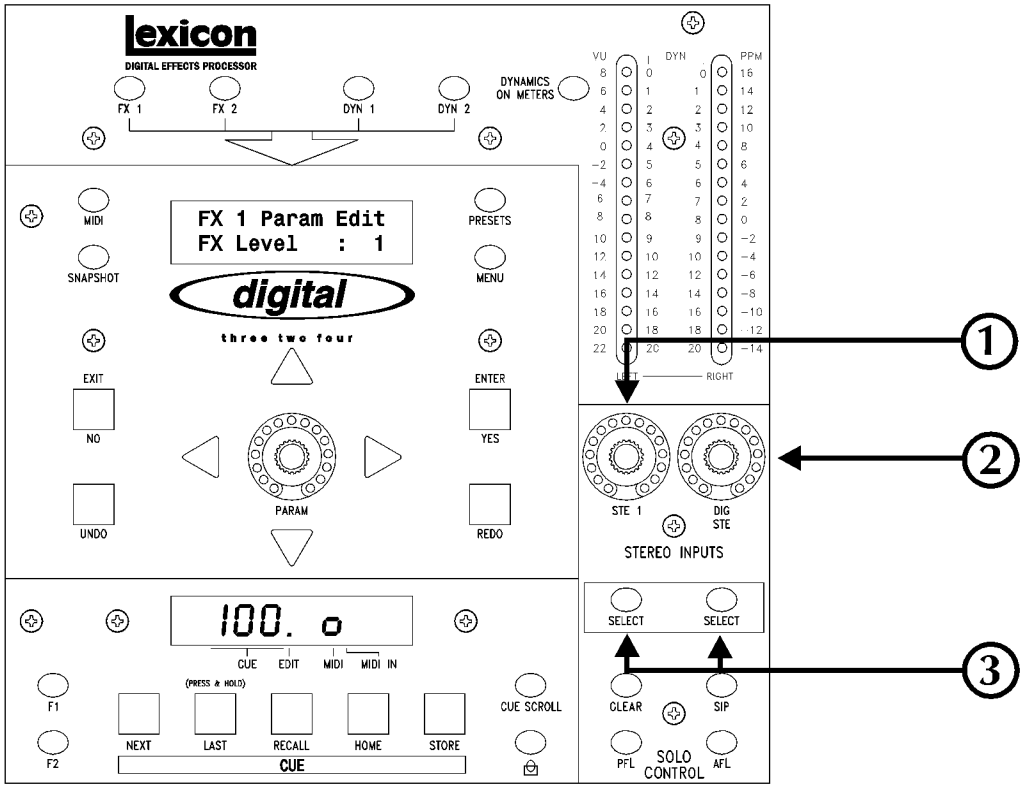
Here's an example: If you wish to see which channels are ROUTED TO MIX:

- Press and hold ROUTE TO MIX in the SELECT panel.
- The SELECT buttons illuminate on those channels which are currently ROUTED TO MIX.



4 – STEREO INPUTS

The 324 Live has two dedicated stereo inputs, STE 1 and DIG STE. These facilities can be used in different ways to provide maximum flexibility.



1 STE-1

The STE-1 ROTARY CONTROL controls the level of the signal assigned to the STE-1 Input. The green LED ring around the ROTARY CONTROL will represent the audio level.

(See section III-13 - The Menu button for information assigning a signal to the STE- 1 input).

2 DIG STE

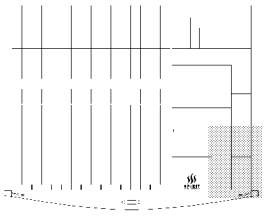
The DIG STE ROTARY controls the level of the signal assigned to the DIG STE Input. The green LED ring around the ROTARY CONTROL will represent the audio level.

(See section III-13 - The Menu buttonfor information assigning a signal to the DIG STE input).

3 SELECT Buttons

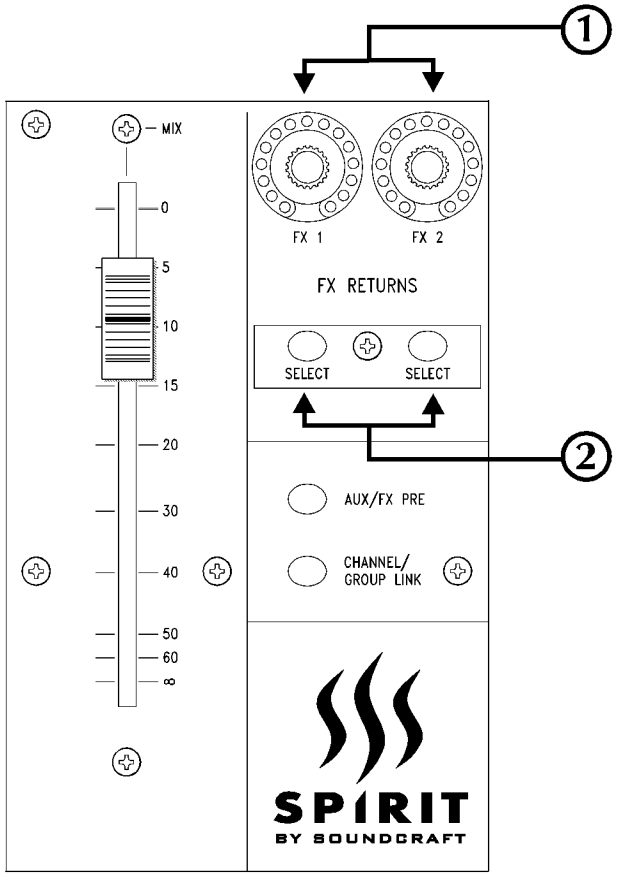
When pressed, the SELECT button activates both the 'E-Strip' and the SELECT panel for the selected stereo input.

The DIRect switches in the SELECT panel do not function when either STE-1 or DIG STE is selected, since they would serve no purpose.



5 – FX RETURNS

The 324 Live has two dedicated stereo FX returns, FX – 1 and FX – 2.



① FX-1 and FX-2 ROTARY CONTROLS

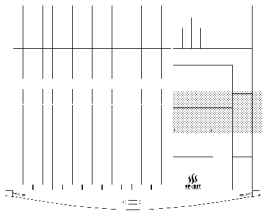
The FX-1 and FX-2 ROTARY CONTROLS control the level of the signal returning from the FX-1and FX-2 Inputs. The green LED ring around the ROTARY CONTROL will represent the audio level.

② SELECT Buttons

When pressed the SELECT button activates both the 'E-Strip' and the SELECT panel on the selected FX return.

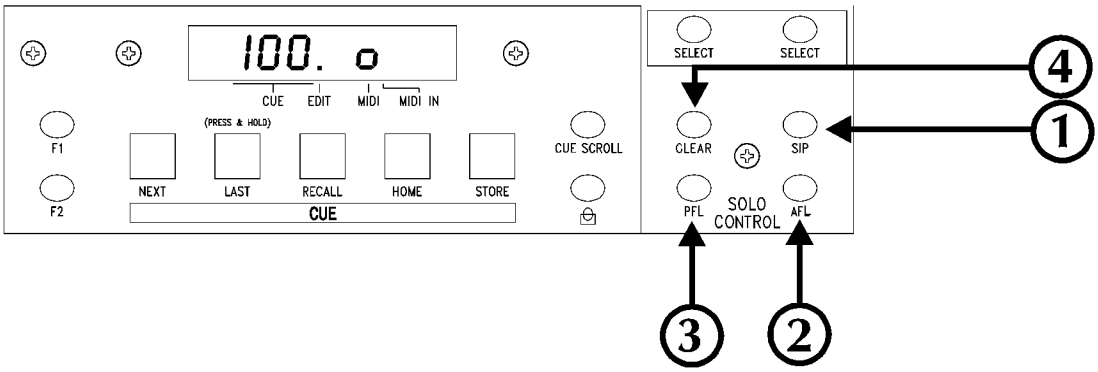
The DIR ON, DIR PRE, and GROUP buttons in the SELECT panel do not function when the SELECT panel is selected to either FX-1 or FX-2.

The FX-1 return can be routed into the FX-2 processor if required. The FX-2 return cannot, however, be routed into the FX-1 processor.



6 – SOLO CONTROL

The SOLO CONTROL panel determines the type of solo that will occur when the SOLO button is pressed on a channel. There are three types of SOLO available.



① SIP (Solo-In-Place)

When a SOLO button is pressed in this mode all other channels except for the GROUP, AUX and FX output masters will be muted.

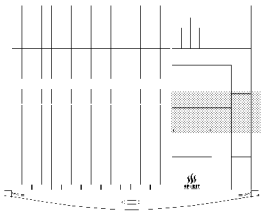
To prevent accidental selection, the activation of SIP mode requires the SIP switch to be pressed and held for 1 second.

The SOLO status of the GROUP, AUX and FX output master will be determined by the PFL or AFL buttons.

Channels can be selected to be SIP SAFE i.e. they will not mute when a SIP SOLO is selected by selecting the SIP SAFE in the SELECT panel.

② AFL (After Fade Listen)

When a SOLO button is pressed in this mode the selected channel will be SOLOed in the MONITORS and PHONES. The signal will be derived after the fader.



③ PFL (Pre Fade Listen)

When a SOLO button is pressed in this mode the selected channel will be SOLOed in the MONITORS and PHONES. The signal will be derived before the fader.

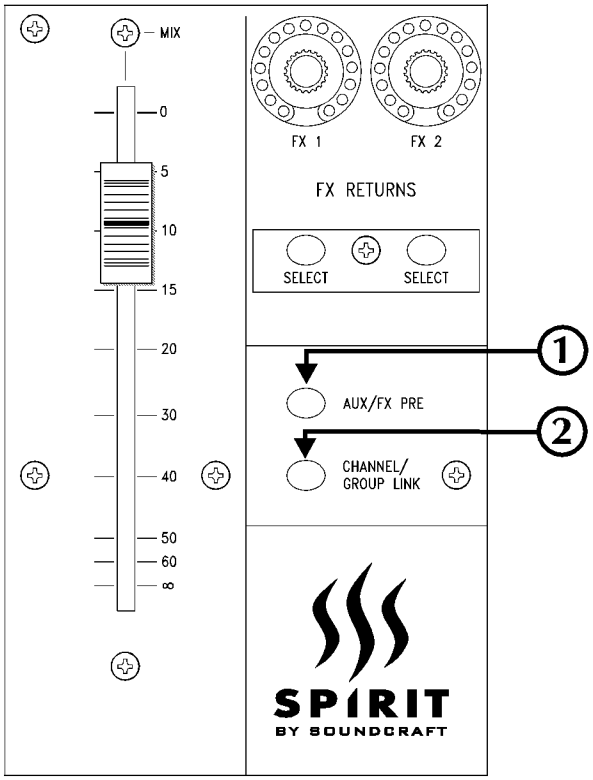
④ CLEAR Button

When any SOLO button is pressed the CLEAR button will illuminate to show that there is a SOLO active somewhere on the 324 Live. Pressing the CLEAR button will clear any selected SOLO.

The CLEAR button will give immediate indication of a 'hidden' SOLO that may be on a bank other than the one that is currently selected.

The channel solo switches may optionally trigger the associated select switch, so that the solo'ed channel is brought onto the E-strip. See section III-13 "User Options" for more information

7 - AUX/FX PRE and GROUP LINK



(1) AUX/FX PRE Button

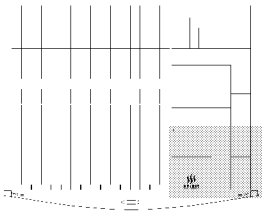
The AUX/FX PRE button is used for changing the PRE FADE/POST FADE status of the AUX 1-4 sends and the FX 1-2 sends.

When pressing and holding the AUX/FX PRE button, the AUX 1, AUX 2, AUX 3, AUX 4, FX 1 and FX 2 buttons in the ROTARY CONTROLS section can be toggled ON (Illuminated) and OFF. When illuminated, the selected AUX or FX send is set to derive its signal PRE FADER (but still POST-MUTE), and when not illuminated the AUX or FX send is set to derive its signal POST FADER.

AUX PRE-EQ

It is also possible to configure each AUX send to be derived PRE-EQ when PRE-FADE. This is most commonly used when Stage Monitors (or other artist foldback) is derived from the Aux Sends, as running adjustments to the Front-of-House channel EQ during a show will not usually be required in the artist foldback.

AUX PRE/POST EQ configuration is performed in the "Aux Pre Fade" LCD page)(MENU / AUX Pre/Post EQ / Aux Pre Fade). From this page, the settings may be made independently for Aux 1-4 and FX1/ FX2. PRE-EQ sends are derived PRE-Dynamics.



The UNDO button found in the MASTER section works in conjunction with the AUX/FX PRE button. If the AUX/FX PRE is used to change the status of any of the AUX or FX sends as described above, the UNDO button will illuminate. Pressing the UNDO button will return the AUX and FX sends to the status they held within the ini tial SNAPSHOT settings. The REDO button will illuminate if the UNDO button is used and will return the status of the AUX and FX sends to where they were before the UNDO button was pressed.

② GROUP LINK Button

The GROUP LINK button has two functions.

- Linking adjacent Groups to make them function as stereo pairs i.e. 1&2, 3&4, 5&6, 7&8
- Linking adjacent Channels to deal with stereo sources i.e. 1&2 or 17&18.

Linking GROUPS

To link the GROUPS together hold down the GROUP LINK button and then press any of the GROUP 1-2, 3-4 buttons to make the GROUP function as a STEREO GROUP.

You can only link adjacent 'odd' and 'even' numbered Groups together i.e. Group 1 and 2, 3 and 4.

Linking Channels

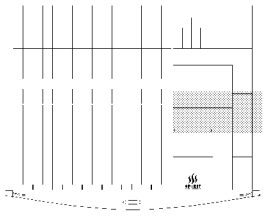
To link Channels together hold down the GROUP LINK button, and then press the SELECT button on one of the two Channels you want to link.

For example if you want to link Channels 15 and 16 press the SELECT button on either Channel 15 or 16 whilst holding down the GROUP LINK button.

It is possible to define which elements of linked channels are to be attached. This is configured in the LINK Setup LCD page (MENU / Chan Link Setup / Link Setup). The following parameters may be toggled "ON" or "OFF" for Link:

- **Fader**
- **EQ**
- **Auxes**
- **Routing**
- **Pan**

You can only link adjacent 'ODD' and 'EVEN' numbered Channels together, for example – Channel 1 & 2, 3 & 4, 5 & 6 etc.

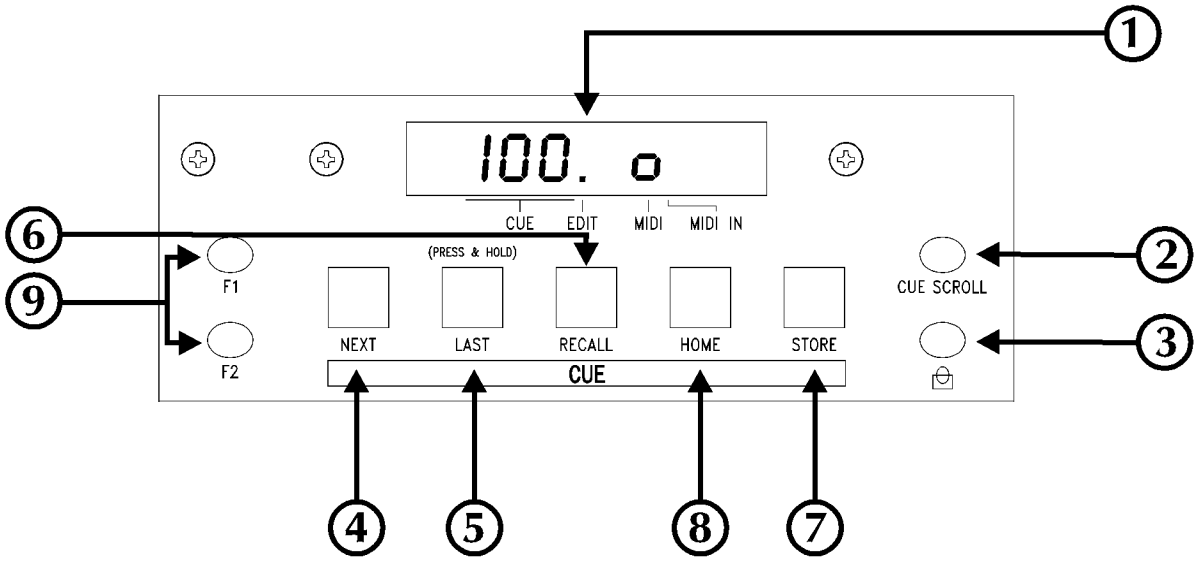


8 - Cue Control Panel

The CUE CONTROL panel contains the main navigation keys for the 324 Live's Sceneset system.

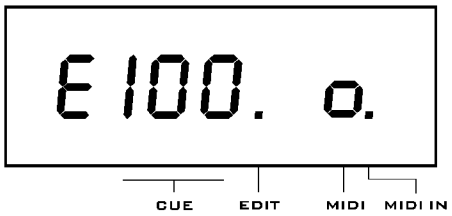
A Cue may be stored into any one of the 128 Cue memory locations, and then recalled to the console at any time using combinations of the Parameter encoder and the five large switches in the centre of the Cue Control panel.

See page 10 for information on erasing all snapshots and returning the console to its Factory Default state



① CUE NUMBER DISPLAY

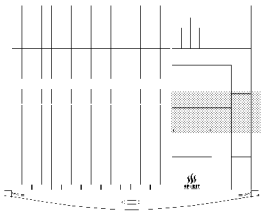
The CUE NUMBER DISPLAY window shows information pertaining to Cue Numbers.



Note that there are two main areas in this display - a 3-digit cue number, and a final character on the right hand side, which denotes the presence of programmed MIDI data. In addition to the full-size digits, both areas also have their own decimal point, or "dot".

The first section of the display shows a Cue number. This must be an integer between 1 and 100.

When using the "Param" encoder in CUE SCROLL mode, this number will respond to movements of the encoder. Turning to the right will Increment the display, turning to the left will Decrement the display. The Cue Number shown here follows some rules that are important in understanding the current state of the console:



SOLID ILLUMINATION	Denotes that the Cue number displayed was the last Cue to be replayed to the console
FLASHING	Denotes that the Cue number displayed is NOT that of the last Cue to be recalled to the console. This state is caused by using the "Param" Encoder in CUE SCROLL mode to adjust the target Cue number. The display will continue to flash until such time as a Cue is recalled, or the number is scrolled back to show the last recalled Cue

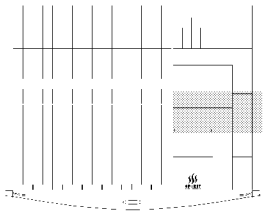
The "Edit" dot to the right of the 3-digit number is illuminated whenever a change has been made to any channel audio parameter since the last Cue was recalled. That is, immediately after a Cue recall, the display will show the 3-digit cue number only. If an audio parameter is then adjusted (e.g. an Aux send from a channel), the "Edit" dot will illuminate. Using the above illumination styles, the user can easily identify the console state with regard to the automation.

SOLID ILLUMINATION	Denotes that the Cue number displayed was the last Cue to be replayed to the console
SOLID ILLUMINATION with EDIT dot illuminated	Denotes that the Cue number displayed was the last Cue to be replayed to the console, but that a change has been made to an audio parameter of a channel, and the console state therefore no longer matches the contents of the displayed Cue number
FLASHING	Denotes that the Cue number displayed is NOT that of the last Cue to be recalled to the console. This state is caused by using the "Param" Encoder in CUE SCROLL mode to adjust the target Cue number. The display will continue to flash until such time as Cue is recalled or stored, or the number is scrolled back to show the last recalled Cue
FLASHING with EDIT dot illuminated	Denotes that the Cue number displayed is NOT that of the last Cue to be recalled to the console, and that an audio parameter has been adjusted since the last Cue was recalled.

To the right of the Cue number is the MIDI display. Each Cue in 324 Live may have associated with it up to 12 user-defined MIDI events, which will be sent from the console when that Cue is recalled.

This is very useful for triggering Program Changes on external FX units (maybe setting up a Reverb in one unit, a Delay in another, and a Flanger in a third), or even for sending NOTE ON commands to a sampler. See MIDI Events for more information.

The MIDI component of the Cue Number display consists of a single character (□). When illuminated, this denotes the presence of User-defined MIDI in the MIDI Event List for that Cue. The dot following that symbol is used to denote the presence of Incoming MIDI at the MIDI IN port. This is particularly useful when troubleshooting remote devices triggering 324 Live. The User can clearly see when valid MIDI data is arriving at the console.



(2) CUE SCROLL

The Parameter encoder (below main LCD) on 324 Live usually operates as a Data Entry medium.

However, the CUE SCROLL switch (2) turns this Encoder into a fast scroller for the Cue list.

In this mode, turning the "Param" encoder to the right will increment the Cue Number, turning to the left will Decrement the number. Note that NO CUES are RECALLED or STORED until the RECALL or STORE switches are pressed. Turning the "Param" encoder in this way is only VIEWING the list, not activating cues in any way.

(3) LOCK

The LOCK button is intended to prevent unauthorised use of the console when left unattended by the operator. LOCK is activated by pressing and holding the key.It may be released either by pressing and holding the key again, or by powering down the console then powering back up again. No passwords are required either for setting or removing lock status.

Note that since power down removes this function, the operator can never accidentally leave the console locked for another operator.

Various Lock levels are offered. The current Lockout mode is set using the LOCKOUT menu, which is under USER OPTIONS in the LCD.

DISABLED	Pressing and holding the LOCK switch will have no effect on the console, but SECURITY DISABLED will be shown in the LCD to alert the user that the switch will do nothing
FADERS	Fader movements will have no effect
SNAPSHOT	The snapshot section of the console will be inoperable and dark
FDR ONLY	Only fader movements will have an effect - all else disabled
SNP ONLY	Only the snapshot section of the console will be operable - all else disabled
ALL	Every switch, encoder and fader is deactivated, and darkened where appropriate

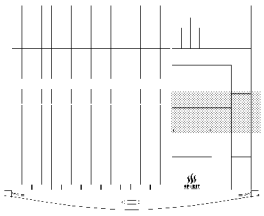
(4) NEXT switch

The NEXT switch will recall the Cue sequentially following the last recalled Cue. For example, beginning on Cue 4, pressing NEXT three times will recall Cue 5, 6 and 7 respectively. Even if the "Param" encoder is now used to adjust the displayed Cue number (such that the Cue Number display flashes), pressing NEXT again will over-ride that adjustment and recall Cue 8. Note how this compares with the RECALL switch below.

(5) LAST switch (press and hold to activate)

The LAST switch will recall the Cue sequentially preceding the last Cue recalled to the desk. For example, starting at Cue 5, pressing NEXT twice will recall Cue 6 then 7. Pressing LAST will now recall Cue 6. As a second example, starting at Cue 5, turning the "Param" encoder in SCROLL mode until Cue 7 is shown, then pressing RECALL will result in CUE 7 being recalled. Pressing LAST will now recall Cue 5.

Note that this function requires the user to press and hold the switch, so that the previous Cue is not recalled in error when attempting to step forwards through a show.



⑥ RECALL switch

The RECALL switch is used in conjunction with the Param encoder in SCROLL mode to recall Cues out of sequence. Turning the Param encoder will result in the target Cue number being incremented or decremented (depending on the direction of travel). As soon as the user scrolls away from the "current" (or rather "last recalled") Cue number, the display will flash as per the table in "Cue Number Display" above. In this state, pressing RECALL will cause the console state to be over-written by the contents of the target Cue.

⑦ STORE switch

The STORE switch is used in conjunction with the Param encoder in SCROLL mode to store the console state to Cue locations in the Cue list.

Storing a Cue is a very simple process. First, set the console up as desired - either by RECALLING a Cue which is similar, and making the required changes, or by configuring the desk manually.

When the first change is made, the dot adjacent to the Cue number will illuminate to denote that the console state does not match the displayed cue.

Once the console is in the desired state, that setup may be written to the currently displayed Cue by pressing STORE, at which point the EDIT dot will be extinguished (since the console state now matches the currently displayed Cue).

Turning the Param encoder will result in the target Cue number being incremented or decremented (depending on the direction of travel). As soon as the user scrolls away from the "current" (or rather "last recalled") Cue number, the display will flash as per the table in "Cue Number Display" above. In this state, pressing STORE will cause the target Cue to be over-written with the current desk state.

⑧ HOME switch

The HOME switch returns the Cue display to showing the current Cue number. This is very useful when the User has scrolled away using the Param encoder to check information elsewhere in the Cue list, and is suddenly required to return to the current Cue and begin operating.

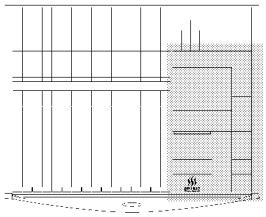
⑨ F1 and F2

These switches are navigation aids, to assist the User in accessing frequently-required pages in the LCD.

They operate on the "MARK" and "JUMP" principle. This means the User marks the desired page for each switch, then pressing that switch again at any time will result in the LCD going back to the marked page.

To MARK a page, navigate manually to the required LCD page, then press and hold either "F1" or "F2". That page will then be programmed into the "F" key, and the LCD will display a message to confirm this.

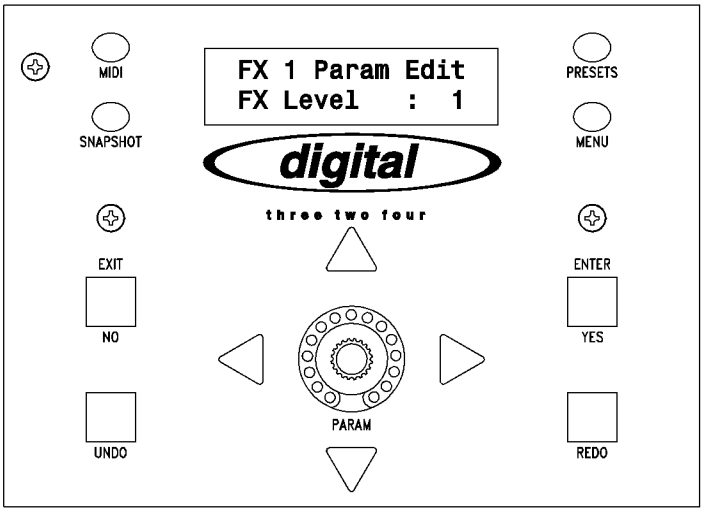
To JUMP to that page at any time, simply press and release the "F" key (be careful not to hold it again, as that will result in the current LCD page being written into that "F" key…).



9 - The Select LCD Page

There are four main LCD page switches around the LCD - MIDI, Snapshot, Presets and Menu. When none of these is illuminated (pressing the currently illuminated switch a second time will extinguish illumination), the LCD is in "SELECT" mode.

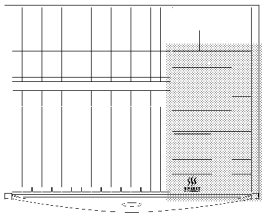
In this mode, when a SELECT button on a channel is pressed, the LCD display will show detailed information about control settings and functions for all of the ROTARY CONTROLS allowing precise adjustment of any parameter.



Example 1
If you want to set the PAN position of Channel 11 and 12 to be exactly opposite i.e. for stereo applications try the following.

- 1 Make sure that the LCD is in SELECT mode - i.e. with none of the four PAGE switches around it selected.
- 2 Press the PAN button in the ROTARY CONTROLS section.
- 3 Make sure that the BANK A switch is selected in the FADER BANK.
- 4 Adjust the ROTARY CONTROL above Channel 11 to the desired PAN setting, e.g. LFT 20 – you will see the adjustment on the LCD display.
- 5 Adjust the ROTARY CONTROL above Channel 12 to the desired PAN setting, e.g. RGT 20

You can also use the PARAM encoder and the ◄► arrow keys to adjust settings.

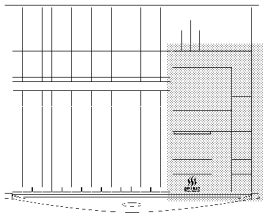


Example 2

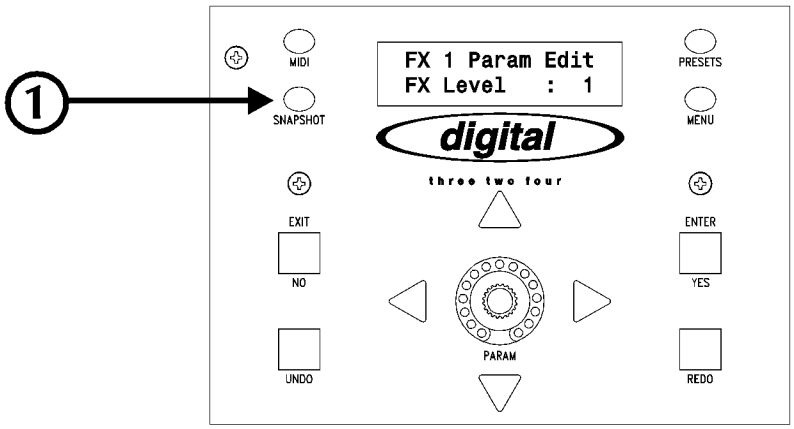
Let's assume you want to see the adjustments made to the EQ on Channel 26.

- 1 Make sure that the LCD is in SELECT mode - i.e. with none of the four PAGE switches around it selected.
- 2 Make sure that BANK B 17-32 is selected in the FADER BANK (this will give us access to Channel 26)
- 3 Press the Channel SELECT button for BANK B 26 in the SELECT panel, this will assign the 'E-Strip' to Channel 26.
- 4 Now adjust the EQ using either the LF, MID or HF EQ controls in the 'E-Strip'
- 5 On the LCD display, you will be able to see the adjustments being made to the chosen parameter.

You can also use the PARAM encoder and the ◀▶ arrow keys to adjust the EQ settings.



10 – The SNAPSHOT Button



Pressing the SNAPSHOT button (1) assigns the LCD display to show information about the desk's 100 SNAPSHOT memories.

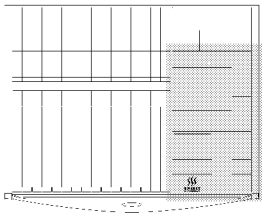
A "snapshot" is a complete image of all console main audio parameters stored to a location in memory. Up to 100 snapshots may be stored for recall at any time. Snapshots might be used to reconfigure a 324 Live in a small hall to suit a number of different users on different days of the week, or to reset the console for five different bands in a single show.

> **!** ***In addition to "Snapshots". This manual also refers to "Cues". Cues are simply snapshots recalled in sequence. The term "Cue" is used to correspond to the Theatre concept of particular actions and events occurring at a specified point in time. Either a song, an action on stage, or a particular phrase spoken can be typical examples of Cue points. As far as 324 Live is concerned, however, a "Cue" is just another name for a "Snapshot".***

Using the PARAM encoder and/or the ▲▼ arrow keys, SNAPSHOT memories can be selected for recall, storing or editing.

The SNAPSHOT button works in conjunction with the Cue Control Panel (which is described in Section III-8 , Cue Controls Panel).

Although all main Cue Storing and Recalling functions can be performed successfully without reference to the LCD (using only the Cue Display as described in the Cue Controls section), the LCD allows more detailed Cue functions to be performed. Features such as Cue naming, Cue Timecode value, Cue Write Protect and Cue MIDI Recall Arming can only be edited using the LCD.



Using SNAPSHOTS

It is possible to store all 324 Live audio parameter settings except the TRIM and HPF settings (as these are found in the analogue side of the mixer).

SNAPSHOTS can be very useful in Live Sound applications where the mixer needs to be completely reset in a short space of time, or the same settings need to be re-used over and over again.

A complete evening's worth of mixer set-ups could be stored into the 324 Live's SNAPSHOT memories and recalled simply by using the NEXT button.

For festivals, each band could be sound checked and all individual settings stored in the 324 Live for later recall - no more pieces of paper with Set-Up information scribbled on them and no time to reset the desk!

These are just a couple of the many different applications for using SNAPSHOT recall.

SNAPSHOT Memory Locations.

There are 100 SNAPSHOT memory locations in the 324 Live and each memory location can be given a Name and Timecode value. SNAPSHOTS can also have WRITE PROTECTION applied to prevent accidental overwriting of existing settings.

Storing SNAPSHOTS

Press the SNAPSHOT button – the LCD display will now show the SNAPSHOT Menu. The flashing line represents the SNAPSHOT location to which the new information will be stored.

Using either the ▲▼ arrow keys or the PARAM encoder, select an empty SNAPSHOT memory location – the flashing display will show <EMPTY>.

Press the STORE button in the Cue Control panel – the LCD display will briefly show the message 'SAVED SNAPSHOT' and confirmation of the memory location number to which the SNAPSHOT has been saved.

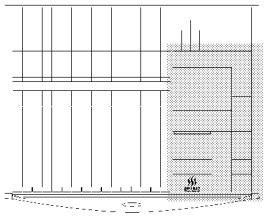
Naming a SNAPSHOT

- 1 Press the SNAPSHOT button to enter the SNAPSHOT menu.
- 2 Using either the ▲▼ arrow keys or the PARAM encoder, select the SNAPSHOT memory location number that you want to name – it will flash. (For example let's assume that it is SNAPSHOT #25).
- 3 Press the RECALL button in the Cue Control panel to recall the chosen SNAPSHOT.
- 4 Press the ENTER button to enter the edit mode.
- 5 There are four different edit modes, and the bottom line of the LCD display will default to show the last editing parameter that was used. The choices are:

  - **ID :SNAPSHOT#XX** **Used for giving the SNAPSHOT an ID name.**
  - **Time: - - : - - : - - : - -** **Used for giving the SNAPSHOT a Timecode value.**
  - **MIDI Recall: On/Off** **Used for enabling/disabling MIDI Recall of SNAPSHOTS.**
  - **Write Prot: On/Off** **Used for enabling/disabling WRITE PROTECTION of SNAP SHOTS.**

- 6 Use the ▲▼ arrow keys to step through to the ID naming page.
- 7 The LCD will now show

< SNAPSHOT#025 >
ID: SNAPSHOT#25



- 8 You may now enter a 12-character name using the ◄► arrow keys to navigate and the PARAM encoder to select the letter or number you want to use.
- 9 When you are finished, press the ENTER key to store the name.

You can use the ENTER button to edit the selected SNAPSHOT without recalling it first with the RECALL button in the Cue Control panel. (This way you can edit the NAME and/or TIME VALUE of a SNAPSHOT while another SNAPSHOT is active on the mixer).

Giving a SNAPSHOT a Timecode value.

It is often desirable to recall Cues against MIDI Time Code (MTC). To assign an MTC value to a snapshot:

- 1 Use the same procedure as above for naming SNAPSHOTS but once you are into the edit mode use the ▲▼ arrow keys to select the (Time: - - : - - : - - : - -) page.
- 2 You may now use the ◄► arrow keys to select either Hours, Minutes, Seconds or Frames, and the PARAM encoder to set the Timecode value for the SNAPSHOT.
- 3 When you are finished, press the ENTER key to store the Timecode value.

Enabling SNAPSHOT recall from MTC (MIDI Timecode)

- 1 Use the same procedure as above for naming SNAPSHOTS but once you are into the edit mode use the ▲▼ ◄► arrow keys to select the (MIDI Recall: On/Off) page.
- 2 You may now use the PARAM encoder to set the MIDI Recall function ON or OFF.
- 3 When you are finished, press the ENTER key to store the MIDI Recall setting.

Enabling WRITE PROTECTION for a SNAPSHOT

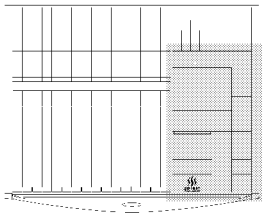
- 1 Use the same procedure as above for naming SNAPSHOTS but once you are into the edit mode use the ▲▼ arrow keys to select the (Write Prot: On/Off) page.
- 2 You may now use the PARAM encoder to set the Write Protect function On or OFF.
- 3 When you are finished, press the ENTER key to store the MIDI Recall setting.

Copying SNAPSHOTS

It is sometime desirable to copy every aspect of one Snapshot to another location in the Snapshot list. This is achieved by the next entry in the Snapshot edit list - **"Copy To"**.

- Use the same procedure as above for naming SNAPSHOTS but once you are into the edit mode use the ▲▼ arrow keys to select the ("Copy To") page. This will appear in the form **xxx:Copy To:yyy**, where **xxx** is the current Snapshot, and **yyy** is the destination snapshot.
- The PARAM encoder may now be used to set the destination Snapshot location - the location to which the current Snapshot is to be copied.
- Once the desired destination cue is selected, pressing the ENTER key will result in the destination Snapshot location being overwritten with the current Snapshot data. Pressing EXIT will return to the SNAPSHOT list without copying anything anywhere.

A good example of how useful this function can be is when organising a running order for a show. During rehearsal, build up the snapshots for each song or Cue point starting at the BOTTOM of the Snapshot list (100), and working backwards up the list.



Presuming that there are fewer than 50 snapshots in the show, it is now a simple task to copy those various songs into any order requested by the band - just copy the snapshots into the "top" 50 locations by recalling each cue in order and copying it to the required slot.

Deleting SNAPSHOTS

If your 324 Live has no <EMPTY> SNAPSHOT memories left, you can either over write existing memories (if they are not WRITE PROTECTED) or clear them.

- 1 Select the SNAPSHOT you want to delete by using the ▲▼ arrow keys or the PARAM encoder.
- 2 Press the EXIT/NO button and the LCD screen will read

  Confirm Delete?
  SNAPSHOT #XXX

- 3 Press the ENTER/YES button to delete the selected SNAPSHOT.
- 4 The LCD display will now revert to showing

  <Empty>

11 – Lexicon FX Processors

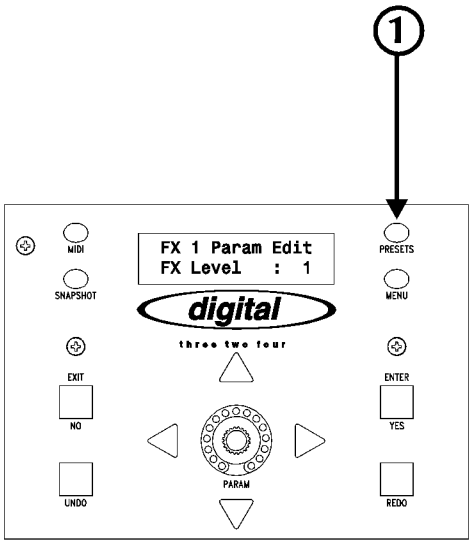
The 324 Live includes two high-quality Lexicon FX Processors which include various different FX including Hall Reverbs, Plate Reverbs, Flanger, Multi Tap Delay, Resonator, Inverse Reverb, Gate and Chorus.

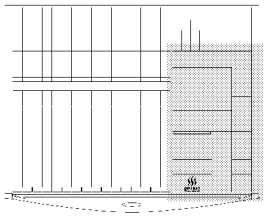
These FX processors can make a huge difference to the sound of your mixes and are essential for getting a professional sounding result.

The FX processors work in the same way as external processing units, but without the need to go through unnecessary AD/DA conversion stages to get in and out.

The FX processors are fed from the FX-1and FX-2 ROTARY CONTROLS found in the E-STRIP and the processed signals are returned to the mix by using the FX-1and FX-2 ROTARY CONTROLS in the FX RETURNS panel.

The FX-1 and FX-2 sends can be configured to be POST or PRE Fade by using the AUX/FX PRE button found in the GROUP/AUX/FX panel.





Choosing an effect from the FX 1 or FX 2 Presets menu

- 1 Press the PRESETS button (1) to enter the PRESETS Menus.
- 2 Use the ▲▼ arrow keys or the PARAM encoder to scroll through the LCD display and choose either the FX 1 Presets or FX 2 Presets Menu.
- 3 Press the ENTER/YES key once.
- 4 The LCD display will now show (Factory / User).
- 5 Use the ◀▶ arrow keys to select Factory and press the ENTER/YES button.
- 6 You will now be in the Factory Presets Menu and can scroll through the various types of effects until you find something that you like.
- 7 Once you have made a choice press the ENTER/YES button to load the effect.

Hearing the chosen effect

Now that you have successfully loaded your chosen effect you will want to apply it to a signal so that you can hear it.

- 1 Press the BANK A switch in the SELECT Panel above the Channel fader for the Channel to which you wish to apply the effect.
- 2 As a safety measure press the MASTERS button in the FADER BANK panel, and make sure that the FX 1 Master fader (Fader #14) is placed at unity gain (0dB). Then press the MASTERS button in the METER BANK so that you can see the FX 1 Send level on the FX 1 meter.
- 3 Now turn the FX 1 ROTARY CONTROL on the selected Channel and you should see signal appearing on the FX 1 output meter.
- 4 Continue to turn the ROTARY CONTROL until a reasonable level is seen on the meter (aim to have no more than the top 2 ORANGE LEDs lighting permanently, and the top RED LED flicking on occasionally with the loudest peaks in the signal).

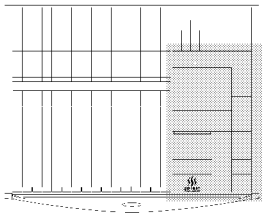
It is important that you get a good high signal level into the FX processors to attain the best signal to noise ratio.

- 5 Now gradually turn up the ROTARY CONTROL for the FX 1 return in the FX RETURN panel.
- 6 You should now hear the effect on your monitors.

! ***If you are not hearing any signal, check that the FX 1 return in the FX RETURN panel is routed to the Mix outputs. To do this press the SELECT button below the FX 1 return ROTARY CONTROL and check that the ROUTE TO MIX button is illuminated in the SELECT panel.***

Creating and Saving your own effects.

Whilst we have tried our very best to give you a range of effects suitable for most applications, it's quite possible that you might want to create a few of your own and save them for use on your own projects.



There are two ways to do this.

Using an existing Factory Preset.

- 1 Press the PRESETS button (1) to enter the PRESETS menus.
- 2 Use the ▲▼ arrow keys or the PARAM encoder to scroll through the LCD display and choose either the FX 1 Presets or FX 2 Presets menu.
- 3 Press the ENTER/YES key once.
- 4 The LCD display will now show Factory / User .
- 5 Use the ▲▼ arrow keys to select Factory and press the ENTER/YES button.
- 6 You will now be in the Factory Presets Menu and can scroll through the various types of effects until you find something that you want to use as your basic starting point.
- 7 Press ENTER/YES to load the chosen effect.
- 8 The LCD display will now show

  <FX 1 Parameter>

- 9 Use the ▲▼ arrow keys to select the parameter you want to adjust, and the PARAM encoder to adjust the chosen parameter.

Storing the new effect

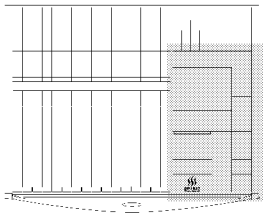
- 1 To store the new effect, press the ENTER/YES button.
- 2 The LCD display will now show
- 3 Store to User ? and 1: <Empty>.
- 4 The ENTER/YES and EXIT/NO button will flash to give you the option to store the new effect or abort the storing process.
- 5 Press the ENTER/YES key to store the new effect in the chosen User effects library. The LCD display will revert to showing <FX 1 Parameter>.

Naming the new effect

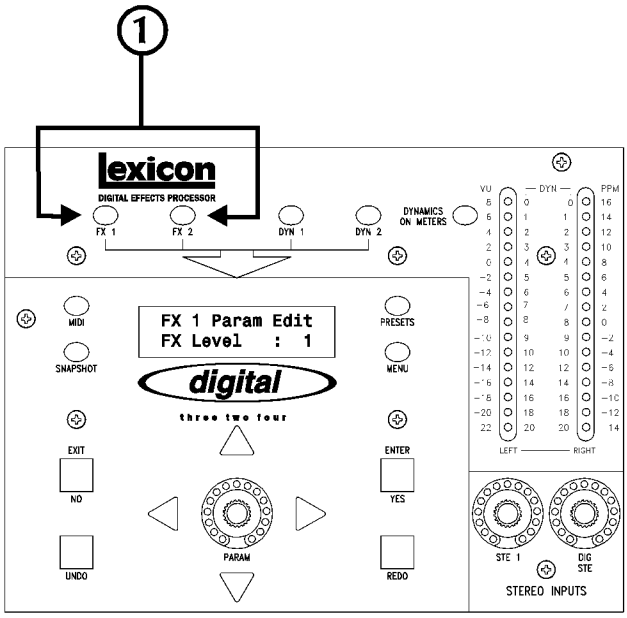
- 1 Press the PRESETS button to enter the PRESETS menus.
- 2 Use the ▲▼ arrow keys or the PARAM encoder to scroll through the LCD display and choose either the FX 1 Presets or FX 2 Presets menu.
- 3 Press the ENTER/YES key once.
- 4 The LCD display will now show: "Factory / User" .
- 5 Use the ◀▶ arrow keys to select User and press the ENTER/YES button.
- 6 Scroll through to the User library number where the new effect was stored - it will have the name of the original effect it was created from - and then press the ◀▶ arrow keys together to enter the naming mode.
- 7 The LCD display will now read

  <FX Preset # 1>
  ID : xxxxxxxxxxxx

- 8 Now use the ◀▶ arrow keys to select the character you want to change, and the PARAM encoder to select the character.
- 9 Once you are happy with your choice press the ENTER/YES button to store the new name.



THE FX1 AND FX2 BUTTONS



1 The FX1 and FX2 Buttons

The FX1 and FX2 buttons allow fast access to either of the on board Lexicon FX processors. After you have loaded an effect as described above you can use the FX1 or FX2 buttons for quick access if you need to adjust the currently loaded effect.

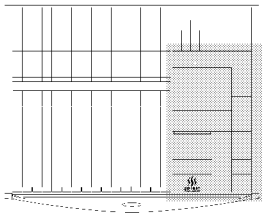
The FX1 and FX2 buttons can also be used to load one of the 8 basic FX from which all the PRESETS are derived.

To clarify what we mean by this, let's assume you know what you are doing when it comes to creating your own FX settings, and you know you want a straight forward Hall Reverb with a Reverb time of around 2.5 seconds.

You would go straight to the FX 1 or 2 Settings Menu and select the basic Hall Reverb and adjust the parameters accordingly.

On the other hand, if, like most of us, you prefer someone else to do the work for you, then great, because we have taken the basic FX blocks described above, and created a whole load of different variations for you to use.

So in this case you can now go straight to the Factory Presets in the FX 1/2 Presets Menu and simply scroll through until you find something that works for you. (You can still adjust the parameters of the Factory Presets if you want to).



12 - Dynamics Processors

Dynamics Processors are very useful tools for controlling audio signals and for correcting the kind of problems that occur during live performances and recording sessions. Think of them as the 'Swiss Army Knife' section of the 324 Live; if there's a problem on a signal regarding level or noise, this is where you go to try to sort it out.

As well as controlling and correcting problematic audio signals, you can also use the Dynamics Processors for purely creative effects as well – it's up to you.

The 324 Live's two great sounding stereo Dynamics Processors on board that can be applied to any of the following signals.

- ***BANK A channels 1- 16***
- ***BANK B Channels 17-32***
- ***STEREO INPUT or DIG STE***
- ***FX RETURN 1 or 2***
- ***MIX***

The types of Dynamics Processor programs available are:

- ***Gate***
- ***Compressor***
- ***Compressor/Gate***
- ***Limiter***
- ***Limiter/Gate***

GATE

A Gate – sometimes referred to as a 'Noise Gate' – is primarily designed to keep out unwanted noise from entering the mixing console, although it can also be used for creative purposes as well.

The Gate has a 'Threshold' setting that determines how loud a signal needs to be in order to keep the Gate open. If the signal drops below the Threshold level, the gate will close and no signal will pass through it.

This is very useful for many applications such as removing hum and crackle noise from guitar amps when they are miked up, or for avoiding spill between the microphones on a drum kit.

Let's take a more detailed look at the parameters found in the 324 Live's Gate.

SCH [Source Channel or Side Chain]

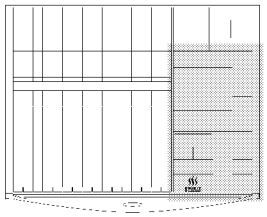
SCH determines which mono channel or pair of stereo channels will be routed ('patched') into the Gate.

The following channels can be selected using the PARAM encoder: Channels 1-32, Stereo #1 or Dig Ste, FX Return 1 or 2 and Mix.

Threshold

Threshold determines at what level the Gate will close. Any signal above the Threshold level will pass through the Gate unaffected, but any signal below the Threshold level will not be able to pass through the Gate.

The Threshold level can be adjusted using the PARAM encoder from - 60dB to 0dB.



Attack

Attack determines how quickly the gate will open once the signal rises above the Threshold level.

Attack times will sound very different depending on what type of signal is being processed. Fast Attack times work well on percussive instruments such as snare drums, but not so well on less percussive sounds. Adjust the Attack time to get the most natural result for the signal being processed.

The Attack time is adjustable from 0ms to 150ms using the PARAM encoder.

Hold

Hold determines how long the Gate remains open after the signal has fallen below the threshold level. This is useful for allowing, for example, a reverb tail on a signal that is being Gated to be heard. The Hold time is adjustable from 1ms to 500ms using the PARAM encoder.

Decay

Decay determines how quickly the Gate closes after the Hold time is complete. If the Gate closes too quickly, the end of a signal may get 'chopped' off. A longer Decay time will allow the natural decay of a signal to pass through the Gate before it shuts.

The Decay time is adjustable from 10ms to 10.0s using the PARAM encoder.

Depth

Depth determines the level to which the signal is attenuated when the gate closes. This is useful for reducing the level of the signal slightly instead of cutting it completely. A setting of –80dB would mute the signal completely whereas a setting of 0dB would have no effect at all. Any setting between these two extremes can be used to progressively reduce the signal without cutting it completely.

The Depth is adjustable from –80dB to 0dB using the PARAM encoder.

COMPRESSOR

A Compressor is designed to automatically control the level of a signal. It's a bit like having an automatic hand that can pull down a fader very quickly if a signal suddenly gets a little too loud.

The Compressor has a Threshold setting which determines what level the signal has to reach before the Compressor starts to reduce the level.

Let's take a closer look at the 324 Live's Compressor.

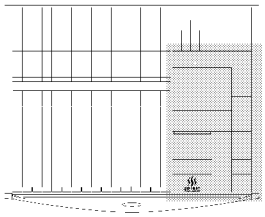
SCH [Source Channel or Side Chain]

SCH determines which mono or stereo signal will be routed ('patched') into the Compressor. The following channels can be selected using the PARAM encoder: Channels 1-32, Stereo #1 or Dig Ste, FX Return 1 or 2 and Mix.

Knee

There are two Knee settings, namely Hard Knee and Soft Knee, that can be selected using the PARAM encoder. If Hard Knee is selected the Compressor will immediately begin to operate when the Threshold level is reached.

With Soft Knee selected the Compressor will begin to work a short while before the Threshold level is reached, creating a smoother, more natural sounding transition from the uncompressed signal to a compressed one.



Threshold

Threshold determines the level at which the Compressor will begin to apply gain reduction. Signals above the Threshold level will be reduced by the amount set using the Ratio setting (see below). Signals below the Threshold level will pass through the Compressor unaffected.

The Threshold level can be adjusted using the PARAM encoder from - 60dB to 0dB.

Ratio

Ratio determines how much the signal is reduced by once it has passed the Threshold level. For a Ratio setting of 5:1, a 10dB change in input level above the threshold setting will result in a 2dB change in the output level. With a Ratio setting of 2:1 a 10dB change in input level above the threshold setting will result in a 5dB change in the output level. The higher the Ratio setting the more noticeable the compression will be.

The Ratio setting can be adjusted from 1:1 through to 8:1 using the PARAM encoder.

Attack

Attack determines the speed at which the Compressor begins to apply gain reduction to the signal after the Threshold level is passed. Fast Attack times will make the Compressor act almost instantaneously. Slow Attack times will cause the Compressor to apply gain reduction more gradually.

The Attack time can be adjusted from 1ms to 500ms using the PARAM encoder.

Release

Release determines the speed at which Compression is removed once the signal has fallen back below the Threshold level. A fast Release time will cause Compression to be removed almost instantaneously, where as a slow Release time will remove Compression gradually.

The Release time can be adjusted from 10ms to 10.0s using the PARAM encoder.

Makeup

When a signal is compressed, the levels of the louder passages are reduced causing the average level of the signal to be reduced. The Makeup control can used to bring the average level of the signal back to where it was previously.

The Makeup control can also be used to attenuate the signal if required.

The Makeup control has a range of –12dB to +12dB.

COMPRESSOR/GATE

The Compressor/Gate is quite simply a combination of a Compressor and a Gate function.

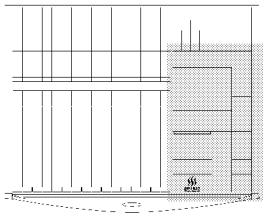
This is a very useful function for applications such as miking snare drums, where you may want to compress the snare drum - to control its dynamic - but have a Gate operating on it as well to prevent other drum sounds bleeding into the snare drum microphone.

Let's take a closer look.

SCH (Source Channel or Side Chain)

SCH determines which mono or stereo signal will be routed ('patched') into the Compressor.

The following channels can be selected using the PARAM encoder: Channels 1-32, Stereo #1 or Dig Ste, FX Return 1 or 2 and Mix.



Cp Knee

There are two Knee settings, namely Hard Knee and Soft Knee, that can be selected using the PARAM encoder. If Hard Knee is selected the Compressor will immediately begin to operate when the Threshold level is reached.

With Soft Knee selected the Compressor will begin to work a short while before the Threshold level is reached, creating a smoother, more natural sounding transition from the uncompressed signal to a compressed one.

Cp Threshold

Threshold determines the level at which the Compressor will begin to apply gain reduction. Signals above the Threshold level will be reduced by the amount set using the Ratio setting (see below).

Signals below the Threshold level will pass through the Compressor unaffected.

The Threshold level can be adjusted, using the PARAM encoder, from - 60dB to 0dB.

Cp Ratio

Ratio determines how much the signal is reduced by once it has passed the Threshold level. For a Ratio setting of 5:1, a 10dB change in input level above the threshold setting will result in a 2dB change in the output level. With a Ratio setting of 2:1 a 10dB change in input level above the threshold setting will result in a 5dB change in the output level. The higher the Ratio setting, the more noticeable the compression will be.

The Ratio setting can be adjusted from 1:1 through to 8:1 using the PARAM encoder.

Cp Attack

Attack determines the speed at which the Compressor begins to apply gain reduction to the signal after the Threshold level is passed. Fast Attack times will make the Compressor act almost instantaneously. Slow Attack times will cause the Compressor to apply gain reduction more gradually.

The Attack time can be adjusted from 1ms to 500ms using the PARAM encoder.

Cp Release

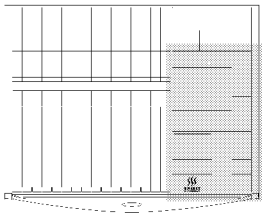
Release determines the speed at which Compression is removed once the signal has fallen back below the Threshold level. A fast Release time will cause Compression to be removed almost instantaneously, where as a slow Release time will remove Compression gradually.

The Release time can be adjusted from 10ms to 10.0s using the PARAM encoder.

Cp Makeup

When a signal is compressed, the level of louder passages is reduced causing the average level of the signal to be reduced. The Makeup control can used to bring the average level of the signal back to where it was previously.
The Makeup control can also be used to attenuate the signal if required.

The Makeup control has a range of –12dB to +12dB.



Gt Threshold

Threshold determines the level at which the Gate will close. Any signal above the Threshold level will pass through the Gate unaffected, but any signal below the Threshold level will not be able to pass through the Gate.

The Threshold level can be adjusted using the PARAM encoder from - 60dB to 0dB.

Gt Attack

Attack determines how quickly the gate will open once the signal rises above the Threshold level. Attack times will sound very different depending on what type of signal is being processed. Fast Attack times work well on percussive instruments such as snare drums, but not so well on less percussive sounds. Adjust the Attack time to get the most natural result for the signal being processed.

The Attack time is adjustable from 0ms to 150ms using the PARAM encoder.

Gt Hold

Hold determines how long the Gate remains open after the signal has fallen below the threshold level. This is useful for ensuring a reverb tail on a signal that is being Gated can be heard.

The Hold time is adjustable from 1ms to 500ms using the PARAM encoder

Gt Decay

Decay determines how quickly the Gate closes after the Hold time is complete. If the Gate closes too quickly, the end of a signal may get 'chopped' off. A longer Decay time will allow the natural decay of a signal to pass through the Gate before it shuts.

The Decay time is adjustable from 10ms to 10.0s using the PARAM encoder.

Gt Depth

Depth determines the level to which the signal is attenuated when the gate closes. This is useful for reducing the level of the signal slightly instead of cutting it completely. A setting of –80dB would mute the signal completely whereas a setting of 0dB would have no effect at all. Any setting between these two extremes can be used to progressively reduce the signal without cutting it completely.

The Depth is adjustable from –80dB to 0dB using the PARAM encoder.

LIMITER

A Limiter is very similar to a Compressor but uses a very high fixed Ratio setting.

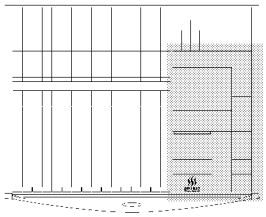
SCH (Source Channel or Side Chain)

SCH determines which mono or stereo signal will be routed ('patched') into the Limiter.

The following channels can be selected using the PARAM encoder: Channels 1-32, Stereo #1 or Dig Ste, FX Return 1 or 2 and Mix.

Knee

There are two Knee settings, namely Hard Knee and Soft Knee, that can be selected using the PARAM encoder. If Hard Knee is selected the Limiter will immediately begin to operate when the Threshold level is reached. With Soft Knee selected the Limiter will begin to work a short while before the Threshold level is reached, creating a smoother, more natural sounding transition from the unlimited signal to a Limited one.



Threshold

Threshold determines the level at which the Limiter will begin to apply gain reduction. Signals above the Threshold level will be progressively reduced back to the Threshold level. Signals below the Threshold level will pass through the Limiter unaffected.

The Threshold level can be adjusted using, the PARAM encoder, from - 60dB to 0dB.

Attack

Attack determines the speed at which the Limiter begins to apply gain reduction to the signal after the Threshold level is passed. Fast Attack times will make the Limiter act almost instantaneously. Slow Attack times will cause the Limiter to apply gain reduction more gradually.

The Attack time can be adjusted from 1ms to 500ms using the PARAM encoder.

Release

Release determines the speed at which Limiting is removed once the signal has fallen back below the Threshold level. A fast Release time will cause Limiting to be removed almost instantaneously, where as a slow Release time will remove Limiting gradually.

The Release time can be adjusted from 10ms to 10.0s using the PARAM encoder.

Makeup

When a signal is Limited, the louder passages are reduced causing the average level of the signal to be reduced. The Makeup control can used to bring the average level of the signal back to where it was previously. The Makeup control can also be used to attenuate the signal if required.

The Makeup control has a range of –12dB to +12dB.

LIMITER/GATE

The Limiter/Gate is quite simply a combination of a Limiter and a Gate function.

SCH (Source Channel or Side Chain)

SCH determines which mono or stereo signal will be routed ('patched') into the Limiter.
The following channels can be selected using the PARAM encoder: Channels 1-32, Stereo #1 or Dig Ste, FX Return 1 or 2 and Mix.

Lm Knee

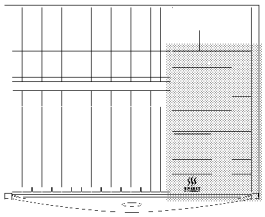
There are two Knee settings namely Hard Knee and Soft Knee that can be selected using the PARAM encoder. If Hard Knee is selected the Limiter will immediately begin to operate when the Threshold level is reached.

With Soft Knee selected the Limiter will begin to work a short while before the Threshold level is reached, creating a smoother, more natural sounding transition from the un-Limited signal to a Limited one.

Lm Threshold

Threshold determines the level at which the Limiter will begin to apply gain reduction. Signals above the Threshold level will be progressively reduced back to the Threshold level. Signals below the Threshold level will pass through the Limiter unaffected.

The Threshold level can be adjusted using the PARAM encoder from - 60dB to 0dB.



Lm Attack

Attack determines the speed at which the Limiter begins to apply gain reduction to the signal after the Threshold level is passed. Fast Attack times will make the Limiter act almost instantaneously. Slow Attack times will cause the Limiter to apply gain reduction more gradually.

The Attack time can be adjusted from 1ms to 500ms using the PARAM encoder.

Lm Release

Release determines the speed at which Limiting is removed once the signal has fallen back below the Threshold level. A fast Release time will cause Limiting to be removed almost instantaneously, where as a slow Release time will remove Limiting gradually.

The Release time can be adjusted from 10ms to 10.0s using the PARAM encoder.

Lm Makeup

When a signal is Limited, the louder passages are reduced causing the average level of the signal to be reduced. The Makeup control can used to bring the average level of the signal back to where it was previously.

The Makeup control can also be used to attenuate the signal if required.

The Makeup control has a range of –12dB to +12dB.

Lm Threshold

Threshold determines at what level the Gate will close. Any signal above the Threshold level will pass through the Gate unaffected, but any signal below the Threshold level will not be able to pass through the Gate.

The Threshold level can be adjusted using the PARAM encoder from - 60dB to 0dB.

Lm Attack

Attack determines how quickly the gate will open once the signal rises above the Threshold level. Attack times will sound very different depending on what type of signal is being processed. Fast Attack times work well on percussive instruments such as snare drums, but not so well on less percussive sounds. Adjust the Attack time to get the most natural result for the signal being processed.

The Attack time is adjustable from 0ms to 150ms using the PARAM encoder.

Gt Hold

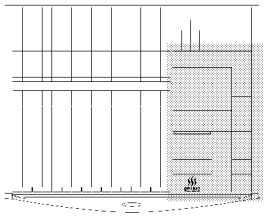
Hold determines how long the Gate remains open after the signal has fallen below the threshold level.

The Hold time is adjustable from 1ms to 500ms using the PARAM encoder

Gt Decay

Decay determines how quickly the Gate closes after the Hold time is complete. If the Gate closes too quickly the end of a signal may get 'chopped' off. A longer Decay time will allow the natural decay of a signal to pass through the Gate before it shuts.

The Decay time is adjustable from 10ms to 10.0s using the PARAM encoder.



Gt Depth

Depth determines the level to which the signal is attenuated when the gate closes. This is useful for reducing the level of the signal slightly instead of cutting it completely. A setting of –80dB would mute the signal completely whereas a setting of 0dB would have no effect at all. Any setting between these two extremes can be used to progressively reduce the signal without cutting it completely.

The Depth is adjustable from –80dB to 0dB using the PARAM encoder.

USING THE DYNAMICS PROCESSORS

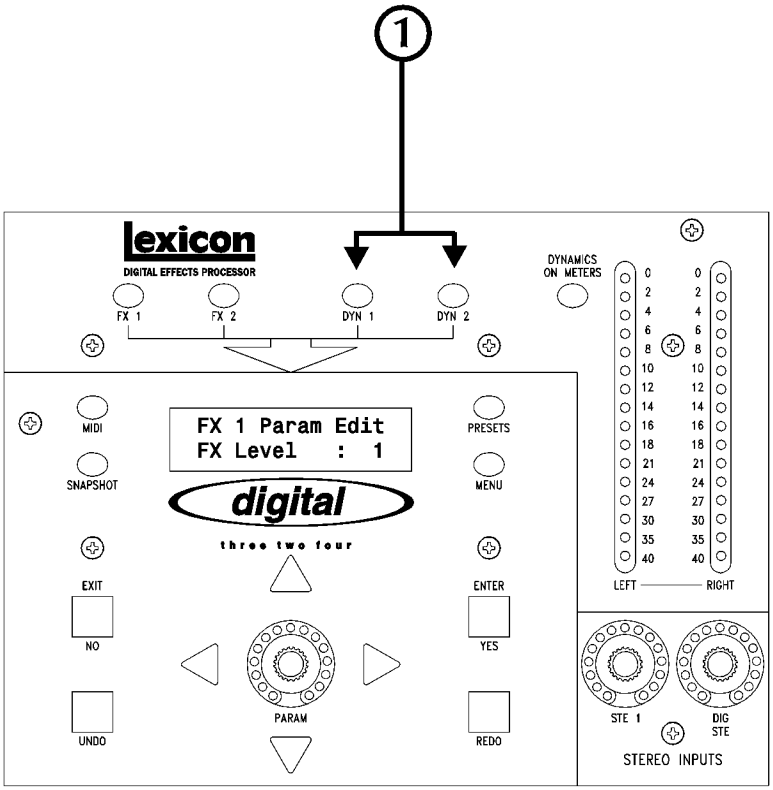
The Dynamics Processors found on the 324 Live are very useful for both corrective and creative purposes.

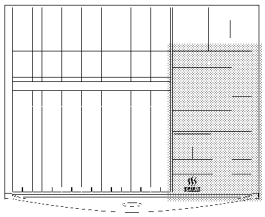
The SCH parameter has two functions.

In most applications you will select a Channel to be processed using the SCH parameter (e.g. Channel 3 - Bass Guitar), and the output of the chosen Dynamics Processor will automatically be routed back to the same channel. This is the same as using an insert cable on the channel of an analogue console, which loops the signal to and from an outboard Dynamics Processor.

Alternatively the SCH parameter can be derived from one channel (e.g Channel 3 - Bass Guitar) but the output of the Dynamics Processor can be applied to a different channel.

ASSIGNING THE DYNAMICS PROCESSORS





In this example we will apply a Compressor to Channel 5.

- 1 Press either the DYN 1 or DYN 2 buttons
- 2 The LCD display now shows **< DP 1 Algorithm or DP1 BYPASS >** and the currently active Dynamics Processor (Gate, Compressor, Compressor/Gate, Limiter, Limiter.)
- 3 Pressing the ◄► arrow keys together will toggle the * Bypass * function on and off. This determines whether the currently selected Dynamics Processor is active or bypassed.
- 4 Use the ▲▼ arrow keys or the PARAM encoder to scroll through the LCD display and choose the Compressor. (The list of choices is **Gate, Compressor, Compressor/Gate, Limiter and Limiter/Gate.)**
- 5 Press the ENTER/YES button to load the Compressor.
- 6 The LCD display will now show **<DP 1 Compressor>** and the current parameter will be listed beneath.
- 7 Use the ▲▼ arrow keys to select the SCH: **Channel # XX** parameter.
- 8 Now use the PARAM encoder to select **Channel # 05** and press the **ENTER/YES** button to store your choice. (The choices available are: **Channels # 01-32, Stereo # 1** or **Dig Ste, FX Return # 1** or **2** and **Mix)**
- 9 Use the ▲▼ arrow keys to step through the different Compressor parameters (described in detail above) and the PARAM encoder to adjust the selected parameter.
- 10 To view Gain Reduction or Gate Open/Close press the **DYNAMICS ON METERS** button (to the top left of the main stereo output meters) and the meters will now show either Gain Reduction or Gate Open/Close for DYN 1 and DYN 2 respectively.

Gain Reduction will be shown as a descending dB reading.

Gate Open/Close is represented by the uppermost LED on the output meters (RED) illuminating to show that the Gate is closed.

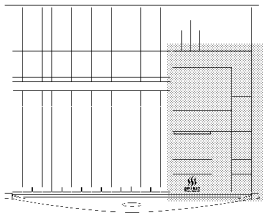
- 11 Press and hold the **DYNAMICS ON METERS** button (Query mode) to check that the Compressor has been automatically assigned back to BANK A Channel 5. The green select button in the SELECT panel below the E-Strip should be illuminated.

While the DYNAMICS ON METERS button is held down (Query Mode), other Channels may be selected using their SELECT buttons, to be assigned to the output of the Compressor.

Saving a Dynamics Processor to the DYN 1 or 2 Presets libraries

Once you have followed the above procedure for loading and editing a Compressor you may well want to store the settings for recall at a later stage.

The DYN 1 Presets and DYN 2 Presets libraries are the same i.e. when a Dynamics Processor is saved it will automatically be saved to both libraries.



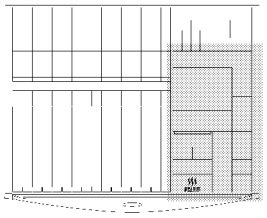
- 1 Follow the above procedure to get to the Menu where the Compressor's parameters can be adjusted (You can only save the Compressor's settings from this Menu.)
- 2 Once you are happy with the adjustments you have made to the Compressor and are ready to store them, press the ENTER/YES button.
- 3 The ENTER/YES and the EXIT/NO button will begin to flash.
- 4 The LCD display will read Store To Preset? and the library number will be displayed below this.
- 5 You can now use the ▲▼ arrow keys or the PARAM encoder to select a library number (1 - 64)
- 6 Now press ENTER/YES to store, or EXIT/NO to revert back to the parameter menu.

Naming the Dynamics Processor Presets

- 1 Press the PRESETS button.
- 2 Use the ▲▼ arrow keys or the PARAM encoder to select the DYN 1 or DYN 2 Presets menu.
- 3 Press the ENTER/YES button to enter the chosen DYN Presets menu.
- 4 Use the ▲▼ arrow keys or the PARAM encoder to select the Dynamics Preset you want to rename. It will flash to show that it is ready for editing.
- 5 Press the ◀▶ arrow keys together and the LCD display will change to <Dyn Preset # 1> with the chosen preset displayed beneath.
- 6 You can now use the ◀▶ arrow keys to select the character you wish to change and the PARAM encoder to select the letter or number you wish to change it to.
- 7 When you have finished renaming the Preset, press the ENTER/YES button to store the new name.

Deleting the Dynamics Processor Presets

- 1 Press the PRESETS button.
- 2 Use the ▲▼ arrow keys or the PARAM encoder to select the DYN 1 or DYN 2 Presets menu.
- 3 Press the ENTER/YES button to enter the chosen DYN Presets menu.
- 4 Use the ▲▼ arrow keys or the PARAM encoder to select the Dynamics Preset you want to delete. It will flash to show that it is ready for editing.
- 5 Press the EXIT/NO button and the LCD display will show 'Confirm Delete' and the chosen Preset.
- 6 Press ENTER/YES to delete or EXIT/NO to abort.

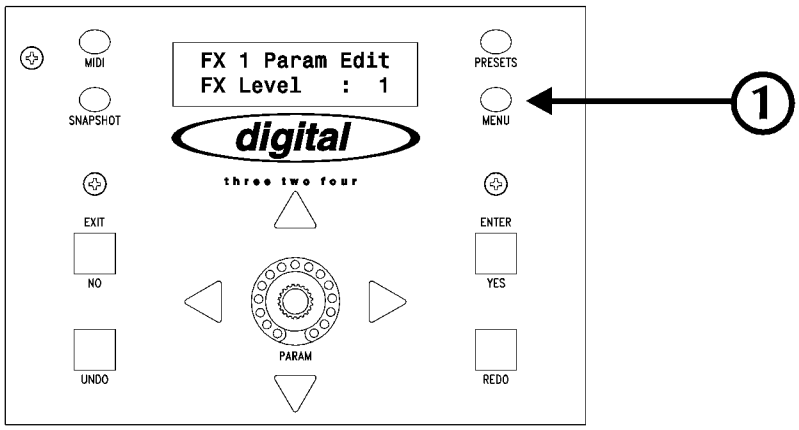


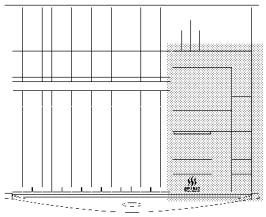
13 - The 'Menu' Button

The Menu section on 324 Live gives access to setup and configuration information. Once these settings have been tailored to your environment, access to these parameters should only rarely be required.

There are 18 Top-level menu pages that are as follows:

- **A - Software Info**
- **B - User Options**
- **C - MIDI Dump Out**
- **D - MIDI Dump In**
- **E - Bank B Trim Setup**
- **F - Bank B Setup**
- **G - SPDIF I/P Setup**
- **H - AES/EBU I/P Set.**
- **I - SPDIF O/P Setup**
- **J - AES/EBU O/P Set.**
- **K - Floating Output Setup**
- **L - Aux Pre/Post EQ**
- **M - Snapshot Setup**
- **N - Mute Group Setup**
- **O - Automation Setup**
- **P - Chan Copy Setup**
- **Q - Chan Link Setup**
- **R - User Setups**





THE MENUS

Press the Menu button (1) to enter the Menu pages

Use either the ▲▼ arrow keys or the PARAM encoder to select the Menu page you want to enter and then press the ENTER/YES button to enter the chosen page.

A - SOFTWARE INFORMATION

This page will tell you what software version your 324 Live is currently running.

The latest Software is always available for downloading from the Spirit Web site, at: http://www.spiritbysoundcraft.com

There are two further pages reachable by using the ▲▼ arrow keys but these are for factory service purposes only so don't worry about them!

B - USER OPTIONS

Press the ENTER/YES button and then use the ▲▼ arrow keys to select the page you want to adjust and the PARAM encoder to change the settings.

MIDI Channel

This sets the MIDI Channel Number on which the 324 Live transmits and receives MIDI data.

OMNI mode : ON/OFF

This setting allows the 324 Live to receive data on all 16 of its MIDI Channels. If this parameter is set to "OFF", 324 Live will only respond to incoming MIDI received on the Channel defined in MIDI Channel above.

SOLO Ch Sel

The SOLO and SELect switches associated with each channel on 324 Live will usually operate completely independently - that is, pressing one will have no effect upon the other.

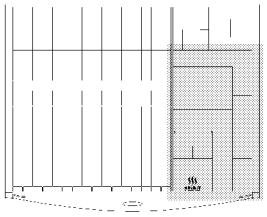
However, for certain operators it may be desirable that the SOLO switch automatically forces operation of the SELect switch. This has the effect of ensuring that the channel being auditioned in the Headphones / Monitors is also the channel visible on the E-strip.

Turning the SOLO Ch Sel parameter to "**ON**" will result in the SELect switch for any given channel automatically tracking the SOLO switch.

Note that this link is only one-way. The SOLO switch will trigger the SELect for that channel, but the SELect will not SOLO the channel. The user is still therefore free to keep a chosen channel or mix in the Headphones / Monitors while editing parameters on a different channel if desired.

SOLO AutoC

The SOLO switches on 324 will usually operate in an "additive" mode, so each new SOLO selection will be added to the first, and channels will remain SOLO'ed unless the operator defeats the SOLO switch.



However, by switching the "SOLO AutoC" (SOLO Auto Cancel) parameter to "**ON**", the console will only allow one channel SOLO to be active at any given time - effectively automatically switching off any active SOLO when a new SOLO selection is made.

This is particularly useful when troubleshooting a mix, as it makes independent selection and SOLO auditioning of a large number of channels a very quick job - helping the user quickly to identify the problem channel.

Osc Src.

The 324 Live has an integrated 1kHz Oscillator which can be assigned to a number of different destinations for calibration purposes.

The destination choices are NOWHERE, STE-1, Dig Ste, FX-1 and FX-2.

> ***!*** ***If you want to send the Oscillator tone to the Group outputs, first assign the Oscillator to one of the two Stereo Inputs (STE-1or Dig Ste) and then route the Stereo Input to the Group Outputs.***

Lockout

324 Live allows the operator to protect the console surface from unauthorised tampering, by pressing and holding the lock key.

(See Section III-8 - Cue Control Panel for more detail on this feature).

The options are: Disabled, Faders, Snapshots, Not Faders, Not Snapshots, or all.

Monitor O/P

This configures the default state for the Monitor outputs. The Monitor Outputs will normally follow any SOLO selection, but when no SOLOs are active, the source will be the selection made here. The options are MIX, MONO, Aux 1/2, Aux 3/4, FX 1/2.

Main Meter

The Main Meter parameter defines the response characteristic, or "ballistic", of the Main (Mix) meters.

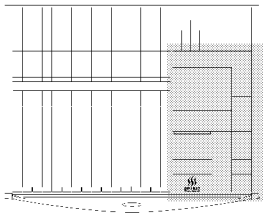
From this LCD page the Mix meter may be configured to have either a Peak (Default) or VU ballistic.

Meter Follow ON/OFF

The 16 channel meters above the faders on 324 Live may be assigned to show either the 16 Analogue inputs, the 16 Digital inputs, or the Main Outputs.

Switching this function 'ON' will cause the METER BANK buttons to follow the selection made with the FADER BANK buttons.

The METER BANK selection can still be overridden by pressing any of the local METER BANK buttons, but the next selection made with the FADER BANK buttons will over-ride that setting again.



C - MIDI DUMP OUT

Various settings from the 324 Live can be stored externally on MIDI data filers or MIDI sequencer packages. The following settings can be 'Dumped'.

- **All Data**
- **All Scenes**
- **One Scene**
- **Lexi Preset**
- **Dyn Preset**
- **MIDI Preset**
- **One Preset**

Let's look at them individually.

- 1 Press the ENTER/YES button to enter the MIDI Dump Out menu page.
- 2 Use the PARAM encoder to scroll through the different dumping choices.

All Data

All data currently stored within the 324 Live will be dumped to an external MIDI device.

- 1 Press ENTER/YES to start the dumping process.
- 2 When complete the LCD display will show **'Dumping Data ..... Dump Finished'.**
- 3 To abort press the EXIT/NO key, the LCD display will read **'Dumping Data..... Aborted!'**

All Scenes

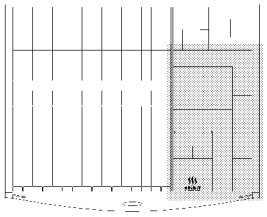
All Snapshots (scenes) currently stored within the 324 Live will be dumped to an external MIDI device.

- 1 Press ENTER/YES to start the dumping process.
- 2 When complete the LCD display will show **'Dumping Data ..... Dump Finished'.**
- 3 To abort press the EXIT/NO key, the LCD display will read **'Dumping Data..... Aborted!'**

One Scene

A single Snapshot (scene) can be select to be dumped to an external MIDI device.

- 1 Press the ▼ arrow key once to enter the Snapshot menu.
- 2 Use the ▲▼ arrow keys and the PARAM encoder to select the Snapshot you want to dump.
- 3 Press the ENTER/YES button to start the dumping process.
- 4 When complete the LCD display will show **'Dumping Data ..... Dump Finished'.**.



Lexi Preset

The Lexicon FX Presets can be dumped to an external MIDI device.

- 1 Press the ENTER/YES button to start the dumping process.
- 2 When complete the LCD display will show **'Dumping Data ..... Dump Finished'.**

Dyn Preset

The Dynamics Presets can be dumped to an external MIDI device.

- 1 Press the ENTER/YES button to start the dumping process.
- 2 When complete the LCD display will show **'Dumping Data ..... Dump Finished'.**

MIDI Preset

The MIDI Controller Presets can be dumped to an external MIDI device.

- 1 Press the ENTER/YES button to start the dumping process.
- 2 When complete the LCD display will show **'Dumping Data ..... Dump Finished'.**

One Preset

A single preset from the Lexicon FX Presets, Dynamics Processors Presets or MIDI Controller Presets can be dumped to an external MIDI device.

- 1 Press the ▼ arrow key once to enter the presets menu.
- 2 Use the PARAM encoder to scroll the presets that have been stored in the 324 Live. The stored presets are prioritized in the following order:

  Lexicon FX Presets

  Dynamic Processor Presets

  MIDI Controller Presets

- 3 Once you have reached the Preset you want to dump, press the ENTER/YES button to start the dumping process.
- 4 When complete the LCD display will show **'Dumping Data ..... Dump Finished'.**

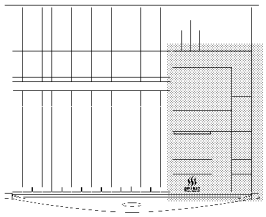
D - MIDI DUMP IN

MIDI data can be dumped (loaded) into the 324 Live from a MIDI device, Press the ENTER/YES button to activate this function.

- 1 The LCD display will now read **'Waiting For Data'**
- 2 Start playback of the MIDI device to start the dumping process.

E - BANK B TRIM SETUP

The BANK B Setup page allows the level of the BANK B inputs to be boosted or cut individually or globally.



Global Adjustment

- 1 Press the ENTER/YES button to enter the BANK B Trim Setup page
- 2 The LCD display will show **<BANK B Trim Set.>** and **Set All Trims?**
- 3 Both the ENTER/YES and the EXIT/NO buttons will flash.
- 4 To set all of the BANK B Trims globally press the ENTER/YES button.
- 5 The LCD display will now read **<BANK B Trim Set.>** and **Global: +/- XXdB**
- 6 You can now use the PARAM encoder to adjust the input level of the BANK B inputs. The level can be adjusted from –12dB to +6dB.
- 7 Once you have set the levels to your satisfaction press the EXIT/NO button to exit the menu.

Individual Adjustment

- 1 Press the ENTER/YES button to enter the BANK B Trim Setup page
- 2 The LCD display will show **<BANK B Trim Set.>** and **Set All Trims?**
- 3 Both the ENTER/YES and the EXIT/NO buttons will flash.
- 4 To set the BANK B Trims individually press the EXIT/NO button.
- 5 The LCD display will now read **<BANK B Trim Set.>** and **CH XX: +/- XXdB**
- 6 You can now use the ▲▼ arrow keys to select the BANK B channel for which you want to adjust the input level (Ch 17 – 32), and the PARAM encoder will adjust the level.
- 7 The level can be adjusted from –12dB to +6dB.
- 8 Once you have set the levels to your satisfaction press the EXIT/NO button to exit the menu.

F - BANK B SETUP

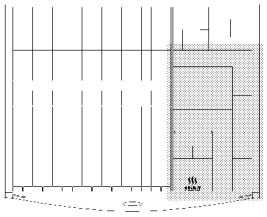
- 1 The 324 Live has two sets of digital inputs and outputs on its back panel - BANK B 17-24 and BANK B 25-32.
- 2 The BANK B Setup page allows the digital Wordlength of these ports to be adjusted to match the connected device.

< BANK B 17-24 >
Wordlength: 16/20/24

- 3 Use the PARAM encoder to select the appropriate Wordlength for the device that is being connected.
- 4 Use the arrow key to select the next page which is used to set the digital Wordlength for BANK B channels 25-32 (8 TRK B)

< BANK B 25-32 >
Wordlength: 16/20/24

- 5 Use the PARAM encoder to select the appropriate wordlength for the device that is being connected.
- 6 To check the Phase of the Wordclock to be sent, press the ▼ arrow key.



Note to Tascam DA88 users.
If you are using DA 88 machines it is important that you establish which system boards are installed in the machines. There are two different Phase settings used on the TDIF interface of the DA88 depending on their age, and it is important that the 324 Live is setup correctly to the same Phase settings otherwise the audio might be corrupted. The Phase setting is found in the Clock Source Select menu.

- 7 The LCD display will show

  <Wordclock Src>
  Phase : XXXX

- 8 The Phase range is from 0 – 511.
- 9 Setting the Phase for later DA88s using V4 System boards.
- 10 Later model DA88s use V4 system boards and the Phase setting on the 324 Live should be set to:

  <Wordclock Src>
  Phase : DA88/V4

This Phase setting value is actually 382.

- 11 Setting the Phase for older DA88s using non-V4 System boards.
- 12 If you are using Pre-V4 system boards in your DA88s then the Phase setting on the 324 Live should be set to:

  <Wordclock Src>
  Phase : DA88/OLD

This Phase setting value is actually 380.

It is not possible to use a combination of DA88s with different version system boards fitted. If you are unsure of which system board is fitted to your machine please contact your nearest Tascam dealer.

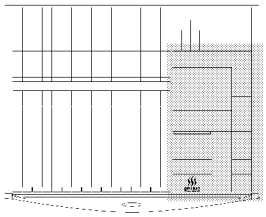
G - S/PDIF I/P SETUP

The S/PDIF digital stereo input on the back of the 324 Live can be assigned to a number of different destinations.

- 1 Press the ENTER/YES button to enter the SPDIF I/P setup page
- 2 Use the PARAM encoder to select one of the following destinations:

NOWHERE	**The S/PDIF digital stereo input is routed nowhere**
STE – 1	**The S/PDIF digital stereo input is routed to the STE – 1 input**
Dig Ste	**The S/PDIF digital stereo input is routed to the Dig Ste input**
FX – 1	**The S/PDIF digital stereo input is routed to the FX – 1 Return**
FX – 2	**The S/PDIF digital stereo input is routed to the FX – 2 Return**

- 3 Press EXIT/NO to return to the main menu once you have made your choice.



H - AES/EBU I/P SETUP

The AES/EBU digital stereo input on the back of the 324 Live can be assigned to a number of different destinations.

- 1 Press the ENTER/YES button to enter the AES/EBU I/P setup page
- 2 Use the PARAM encoder to select one of the following destinations:

NOWHERE	**The AES/EBU digital stereo input is routed nowhere**
STE – 1	**The AES/EBU digital stereo input is routed to the STE – 1 input**
Dig Ste	**The AES/EBU digital stereo input is routed to the Dig Ste input**
FX – 1	**The AES/EBU digital stereo input is routed to the FX – 1 Return**
FX – 2	**The AES/EBU digital stereo input is routed to the FX – 2 Return**

- 3 Press EXIT/NO to return to the main menu once you have made your choice.

I - S/PDIF O/P SETUP

- 1 The S/PDIF digital stereo output on the back of the 324 Live can source its signal from a number of different destinations.

  Press the ENTER/YES button to enter the SPDIF O/P page.

- 2 Use the PARAM encoder to select one of the following sources.

NOWHERE	**The S/PDIF digital stereo output signal is inactive**
MIX	**The S/PDIF digital stereo output signal is sourced from the stereo MIX output**
AUX 1/2	**The S/PDIF digital stereo output signal is sourced from the output of AUX sends 1/2**
AUX 3/4	**The S/PDIF digital stereo output signal is sourced from the output of AUX sends 3/4**
FX 1/2	**The S/PDIF digital stereo output signal is sourced from the output of FX sends 1/2**

- 3 Press EXIT/NO to return to the main menu once you have made your choice.

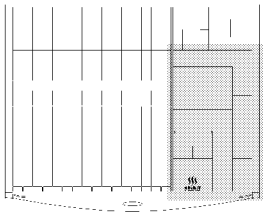
J - AES/EBU O/P SETUP

The AES/EBU digital stereo output on the back of the 324 Live may derive its signal from a number of different sources.

- 1 Press the ENTER/YES button to enter the AES/EBU O/P page.
- 2 Use the PARAM encoder to select one of the following sources:

NOWHERE	**The AES/EBU digital stereo output signal is inactive**
MIX	**The AES/EBU digital stereo output signal is sourced from the stereo MIX output.**
AUX 1/2	**The AES/EBU digital stereo output signal is sourced from AUX sends 1/2.**
AUX 3/4	**The AES/EBU digital stereo output signal is sourced from AUX sends 3/4.**
FX 1/2	**The AES/EBU digital stereo output signal is sourced from FX sends 1/2.**

- 3 Press EXIT/NO to return to the main menu once you have made your choice.



K - FLOATING O/P SETUP

The two Floating Outputs (FL1 / FL2) appear on the main audio output section of 324 Live. They may derive their signal from any one of a number of sources.

- 1 Press the ENTER/YES button to enter the Floating O/P page.
- 2 You can now use the ▲▼ arrow keys to select the Floating Output to be adjusted.
- 3 Once the desired Output is selected, use the PARAM encoder to select one of the following sources.

MONO	**The Floating output derives its source from the Mono buss (post fader)**
FX 1	**The Floating output derives its source from the FX 1 buss (post fader)**
FX 2	**The Floating output derives its source from the FX 2 buss (post fader)**
GROUP 1	**The Floating output derives its source from the Group 1 buss (post fader)**
GROUP 2	**The Floating output derives its source from the Group 2 buss (post fader)**
GROUP 3	**The Floating output derives its source from the Group 3 buss (post fader)**
GROUP 4	**The Floating output derives its source from the Group 4 buss (post fader)**
NONE	**The Floating output is disabled**

L - AUX PRE/POST EQ

In addition to the configuration of each Aux send as PRE or POST channel fader, it is also possible to define whether a PRE-fade Aux send should derive its signal PRE or POST channel EQ.

- 1 Press ENTER / YES to access the AUX assignment page.
- 2 Use the ▲▼ arrow keys to access the required Aux send.
- 3 Use the parameter encoder to define whether that Aux send should derive its PRE-fade signal PRE or POST EQ.
- 4 See III-7 - AUX/FX PRE and GROUP LINK for more information on this feature.

M - SNAPSHOT SETUP

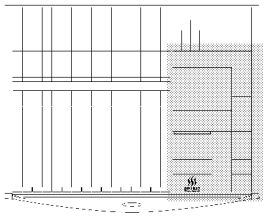
The Snapshot Setup menu allows access to details of each Snapshot in 324 Live.

- 1 Press the ENTER/YES button to enter the Snapshot Setup menu.
- 2 Use the ▲▼ arrow keys to access the following pages.

MIDI Recall:	**ON/OFF**
Write Protect:	**ON/OFF**
Snap to Time :	**ON/OFF**
Sort by Time :	**ON/OFF**

MIDI Recall ON/OFF

Use the PARAM encoder to select ON/OFF.



MIDI Recall ON allows snapshots to be recalled from an external MIDI device as Program Changes.

The MIDI channel is set in the User Options menu (see above).

If MIDI Recall OFF is selected the 324 Live will ignore Program Change messages being sent to it.

This function is not to be confused with Snapshots being recalled against MTC (MIDI Timecode). For a full explanation of this function see the 'Snap to Time' function below.

Write Protect ON/OFF

This function allow Snapshots to be 'Write' protected to prevent accidental overwriting with new data. If the STORE button in the SNAPSHOTS panel is pressed and a 'Write' protected snapshot is already active the LCD display will show 'Confirm Store?' and the EXIT/NO and ENTER/YES buttons will flash.

Press ENTER/YES to overwrite the existing Snapshot or EXIT/NO to abort.

Snap to Time: ON/OFF

This function allows Snapshots to be recalled against incoming MTC (MIDI Timecode).

If 'Snap to Time' is selected to 'ON', Snapshots that have been given a Timecode address (See below) will be recalled against incoming MTC.

If 'OFF' is selected then Snapshots with pre-programmed Timecode addresses will not be recalled against incoming Timecode.

Sort by Time: ON/OFF

If this function is set to 'ON' then the currently stored Snapshots will be arranged in chronological order according to their respective preset timecode values (if they have been given one) and not according to their original numerical positions.

Switching this function 'OFF' again will return the currently stored Snapshots to their previous numerical positions.

Frame Rate

This parameter defines the expected Frame Rate of the incoming MIDI Time Code (MTC) arriving from an external device at the 324's MIDI IN port.

This should be set to match the MTC Frame Rate setting of the external device.

PCH Transmit

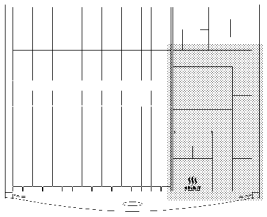
Whenever a Snapshot is recalled, 324 will usually send a "1:1" Program Change on the MIDI channel defined in "**User Options / MIDI Channel**".

"1:1" here means that there is a fixed relationship between the Snapshot number recalled and the MIDI Program Change message sent as a result. So, Snapshot 1 will send Program Change 0, Snapshot 5 will send Program Change 4, and so on.

This means that the console can easily be "synchronised" Snapshot for Snapshot with an external MIDI device, such as a MIDI-equipped Lighting console, or a Show Control system.

However, in certain cases (particularly when using the MIDI Event List heavily), this may not be desirable. The PCH Transmit function defines whether or not this "1:1" Program Change will be sent per Snapshot.

The default setting is "**ON**".



N - MUTE GROUP SETUP

Using these pages, the user may define how the MUTE Groups in 324 Live interact with the Automation system.

- 1 Press ENTER / YES to enter the MUTE Group Setup pages.
- 2 Use the ▲▼ arrow keys to access the following pages:
- 3 Priority (Mutes / Scenes) Defines whether Mutes or Scenes have priority
- 4 Mute/Scenes (OFF / ON) Defines whether or not MUTE Groups are recalled with Cues

Please see III-15 - MUTE Groups for more information on these features.

O - AUTOMATION SETUP

- 1 Press the ENTER/YES button to enter the Automation Setup menu.
- 2 There are two pages in the Automation setup menu which are selected using the ▲▼ arrow keys:

  MIDI Dynauto: ON/OFF
  Mode: READ ONLY, WRITE ONLY, UPDATE and READ/WRITE

MIDI DYNAUTO: ON/OFF

Use the PARAM encoder to select this function to be ON or OFF.

This function enables the 324 Live to send and receive Dynamic Automation when connected to a MIDI recording device, allowing full automation of every setting on the mixer.

Mode: READ ONLY, WRITE ONLY, UPDATE and READ/WRITE

Use the PARAM encoder to select the different modes.

READ ONLY

In READ ONLY mode the 324 Live will respond to incoming automation data being sent from a MIDI recording device, but will not be able to transmit any automation data back to a MIDI recorder.

This mode is useful for playing back an automated mix for final mix down without the danger of any new data being accidentally recorded.

WRITE ONLY

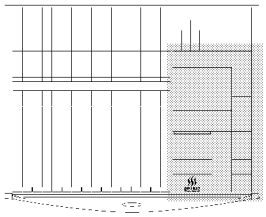
In WRITE ONLY mode the 324 Live is only able to transmit automation data to a MIDI recording device. It will not respond to automation data coming back from a MIDI recording device.

This mode is useful for applications where more than one version of the same event might need to be recorded for later comparison e.g. the stereo 'fade-out' at the end of a song. A number of different 'takes' of the stereo fade-out could be quickly recorded to separate tracks of a MIDI recorder without any prerecorded versions being sent back to the 324 Live.

UPDATE

In UPDATE mode the 324 Live receives automation data from a MIDI recording device as it would in READ ONLY mode, except as soon as any controls on the mixer are changed, those controls will be switched into WRITE mode and the new data sent to the MIDI recording device.

This mode is used when a specific part of an automated mix needs to be updated (changed).



READ/WRITE

In READ/WRITE mode information can be transmitted to a MIDI recording device whilst other information is being transmitted back to the 324 Live.

This mode is different from UPDATE mode in that it is used for recording events that have not already been recorded i.e. the first pass. In order to record a fader move on a channel, one would initially use WRITE ONLY mode or READ/WRITE mode, but to edit or change an existing fader move one would use UPDATE mode.

There is a fast method of toggling between READ MODE and READ/WRITE MODE. From the SELECT page of the LCD (none of the four "page" switches selected), press the left and right arrow keys simultaneously. This can be very useful when doing multiple record passes into a sequencer auditioning the results.

P - CHAN COPY SETUP [CHANNEL COPY SETUP]

The Channel Copy Setup menu is used to set up which channel settings will be duplicated when copying settings from one channel to another.

- 1 Press the ENTER/YES button to enter the Channel Copy Setup menu.
- 2 The following pages can be accessed using the ▲▼ arrow keys, and selected ON/OFF using the PARAM encoder.

Copy Fader : ON/OFF	**Fader position will be copied**
Copy EQ : ON/OFF	**EQ settings will be copied**
Copy Auxes: ON/OFF	**Aux send 1-4 and FX send 1-2 settings are copied.**
Copy Routing : ON/OFF	**Routing selection is copied**
Copy Pan+Phase: ON/OFF	**Pan position and Phase status are copied.**

Copying Channels

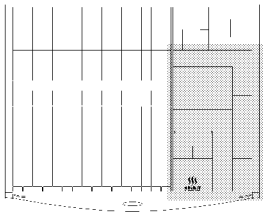
As an example, let's assume we want to copy the settings we have made to a backing vocalist on Channel 5 to three other backing vocalists on Channels 6, 7 and 8.

- 1 Press the MENU button and using the ▲▼ arrow keys or the PARAM encoder, select the Chan Copy Setup menu.
- 2 Press the ENTER/YES button and use the ▲▼ arrow keys and the PARAM encoder to select the channel settings you want to copy.
- 3 Hold down the SELECT button on BANK A Channel 5 (backing vocalist 1).
- 4 Now press the SELECT buttons on the channels you want to copy the settings to i.e. BANK A Channel 6, 7 and 8 (backing vocalists 2, 3 and 4)

Q - CHAN LINK SETUP [CHANNEL LINK SETUP]

The Channel Link Setup menu is used to set up which channel settings will be duplicated when linking two channels together. This mode is most commonly used for creating 'Stereo Pairs' of channels.

Only adjacent ODD/EVEN numbered channels can be linked i.e. 1&2, 3&4, 5&6 etc. Settings will always be copied from the ODD (left hand) numbered channel.



- 1 Press the ENTER/YES button to enter the Channel Link Setup menu.
- 2 The following pages can be accessed using the ▲▼ arrow keys, and selected ON/OFF using the PARAM encoder.

Link Fader : ON/OFF	**Fader position will be linked**
Link EQ : ON/OFF	**EQ settings will be linked**
Link Auxes: ON/OFF	**Aux send 1-4 and FX send 1-2 settings are linked.**
Link Routing : ON/OFF	**Routing selection is linked.**
Link Pan+Phase: ON/OFF	**Pan position and Phase status are linked.**

Linking Channels

Once you have selected which settings you want to link from one channel to another you'll probably want to know how to make the link.

As an example, lets assume we want to copy the settings we have made to a left side overhead microphone on a drum kit to the right side overhead microphone and link them so that they operate as a stereo pair.

We will assume that the left side overhead microphone is on Channel 1 and the right side over head microphone on Channel 2.

- 1 Press the MENU button and using the ▲▼ arrow keys or the PARAM encoder, select the Chan Link Setup menu.
- 2 Press the ENTER/YES button and use the ▲▼ arrow keys and the PARAM encoder to select the channel settings you want to copy.
- 3 Hold down GROUP LINK, then press the SELECT switch for either Channel 1 or Channel 2.
- 4 Now release the GROUP LINK button. Channels 1 and 2 are now linked.

Generally, when linking adjacent channels to make a stereo pair, it is preferable to leave the 'Link Pan' setting OFF to maintain the stereo position of the 2 channels that are being linked.

R - USER SETUPS

There are 27 User Setup memory locations where complete setups of all mixer functions can be stored.

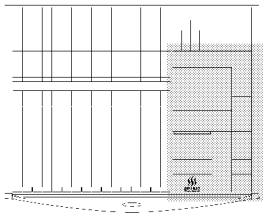
User Setups can be Stored, Recalled (manually or by MIDI Program Change) and Named.

User Setups differ from Snapshots in that as well as storing all mixer settings, they also store the MENU settings like Clock Source, Automation Setup etc. allowing the 324 Live to be quickly re-configured for use in different environments.

Storing User Setups

User Setups are stored in the same way as Snapshots:

- 1 Press the MENU button.
- 2 Use the ▲▼ arrow keys or the PARAM encoder to scroll through the MENU options until you reach 'User Setups'.



- 3 Press ENTER/YES to enter the 'User Setups' library.
- 4 Use the ▲▼ arrow keys or the PARAM encoder to select an empty library location.
- 5 Press the STORE button in the CUE panel to store the User Setup.

Recalling User Setups manually

User Setups are recalled by using the CUE RECALL button:

- 1 Press the MENU button.
- 2 Use the ▲▼ arrow keys or the PARAM encoder to scroll through the MENU options until you reach 'User Setups'.
- 3 Press ENTER/YES to enter the 'User Setups' library.
- 4 Use the ▲▼ arrow keys or the PARAM encoder to select a User Setup that you would like to recall.
- 5 Press the RECALL button in the CUE panel to store the User Setup.

Storing a User Setup as a MIDI Program Change

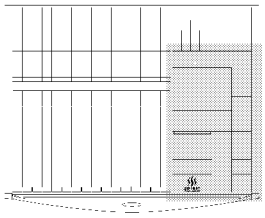
- 1 User Setups can be stored as MIDI Program Changes to a MIDI recording device:
- 2 Press the MENU button.
- 3 Use the ▲▼ arrow keys or the PARAM encoder to scroll through the MENU options until you reach 'User Setups'.
- 4 Press ENTER/YES to enter the 'User Setups' library.
- 5 Use the ▲▼ arrow keys or the PARAM encoder to select a User Setup that you would like to store to a MIDI recording device. The selected User Setup will flash.
- 6 Put the MIDI recorder into record mode and press the RECALL button in the CUE panel at the appropriate time to recall the selected User Setup. As the User Setup is recalled it will also be recorded as Program change information in the MIDI recording device.

Recalling a User Setup from a MIDI recording device

User Setups can be recalled from a MIDI recording device if selected to MIDI Recall: ON in the User Setup menu.

- 1 Press the MENU button.
- 2 Use the ▲▼ arrow keys or the PARAM encoder to scroll through the MENU options until you reach 'User Setups'.
- 3 Press ENTER/YES to enter the 'User Setups' library.
- 4 Use the ▲▼ arrow keys or the PARAM encoder to select a User Setup that you would like to recall from a MIDI recording device. The selected User Setup will flash.
- 5 Press the ENTER/YES button.
- 6 The LCD display will show

< SETUP # XX >
ID : XXXXXXXX or MIDI Recall : ON/OFF



- 7 Use the ▲▼ arrow keys to select MIDI Recall : ON/OFF
- 8 Use the PARAM encoder to select MIDI Recall : ON
- 9 Press the ENTER/YES button to store this setting.
- 10 The selected User Setup can now be recalled using a MIDI Program change from an external MIDI recording device.

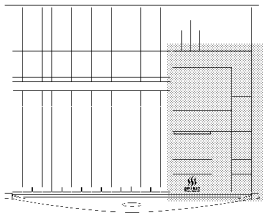
Naming User Setups.

Press the MENU button.

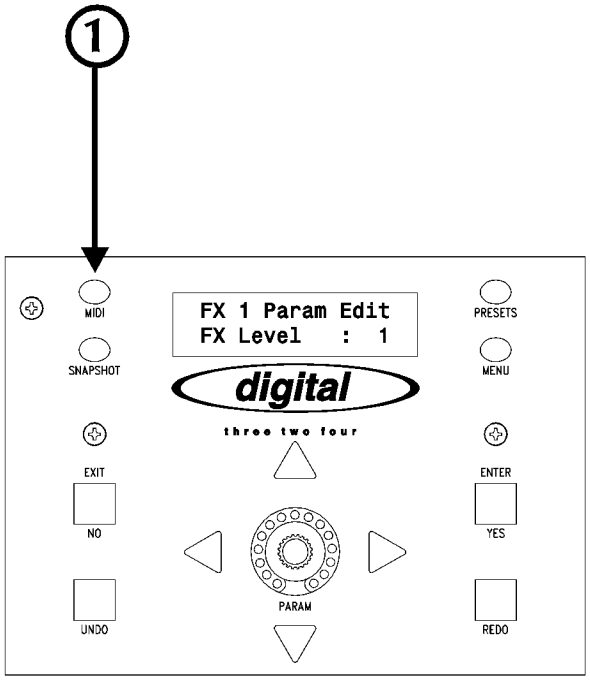
- 1 Use the ▲▼ arrow keys or the PARAM encoder to scroll through the MENU options until you reach 'User Setups'.
- 2 Press ENTER/YES to enter the 'User Setups' library.
- 3 Use the ▲▼ arrow keys or the PARAM encoder to select a User Setup that you would like to name.
- 4 Press the ENTER/YES button and the LCD display will read

< SETUP # XX >
ID : XXXXXXXXXX

- 5 You may now use the ◀▶ arrow keys to select the character you want to change, and the PARAM encoder to choose a letter or number.
- 6 When you have finished naming the User Setup press the ENTER/YES button to store the new name.



14 - MIDI Events



A BRIEF INTRODUCTION TO MIDI

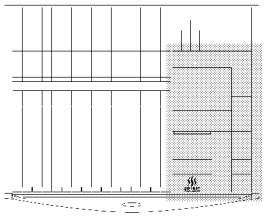
(Please note that many books have been written on the subject of MIDI, and it is beyond the scope of this document to go into depth on this topic. Please refer to a MIDI guide for more information).

MIDI is a simple, widely-supported serial control protocol that allows units from a variety of manufacturers to control each other via some basic commands.

The most common types of MIDI event are:

Program Changes -

Most modern digital audio equipment allows the user to store various device settings (such as reverb parameters, console status, or a sound in a synth) into different memory locations in the unit. These memory locations, often called "patches", may then be recalled either manually, or via MIDI Program Change. MIDI allows up to 128 Program Changes, numbered 0-127, which may be mapped onto the required patches in a receiving device. Using MIDI, it is therefore possible for a Mixing Console, for example, to recall an FX Patch in a reverb device so that the reverb is correct for a particular song.



Note ON/OFF -

Note control was originally developed to ease intercommunication between keyboard-equipped synthesisers. It allows key presses on one keyboard to be sent to the sound generation capabilities of another device, effectively simulating direct keyboard input on the second device (i.e. playing the sounds of one synthesiser via the keyboard of another).

This is of particular use when triggering sounds in samplers - digital recorders with note-based replay -, as each sound recorded into a sampler may be assigned to a key (or "note number"), then triggered over MIDI. So, a sound effect can now be triggered by sending a Note ON message to the sampler at the appropriate moment. A corresponding NOTE OFF is also needed to terminate the sound.

MIDI ON 324 LIVE

324 Live offers comprehensive MIDI control capabilities.

In addition to the simple "send a Program Change per cue" , it is possible to define a MIDI Event List for each Cue. The MIDI Event list may contain up to 12 MIDI events, which will be sent immediately upon recall of the Cue.

The available options for MIDI Events are:

NOTE ON	**(with associated Note Number, Channel Number, Velocity, and Duration)**
NOTE OFF	**(with associated Note Number, Channel Number, and Velocity)**
PROGRAM CHANGE	**(with associated PG CH Number and Channel Number)**

324 will, by default, send out a "Program Change per Cue". That is, Program Change values 0-126 will be sent out when cues 1-127 (100 snapshots plus 27 User Setups) are recalled.The Program Change will be sent on the Global MIDI Channel (as defined in: MENU / User Options / MIDI Channel).

This "AUTOMATIC" Program Change can be suppressed using the PCH TRANSMIT page in the Snapshot Setup menu (MENU/SNAPSHOT SETUP/PCH TRANSMIT).

BUILDING A MIDI EVENT LIST [MEL]

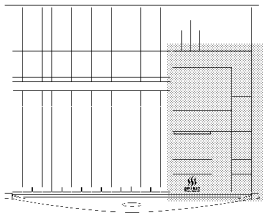
The MIDI configuration on 324 Live is accessed via the LCD. Pressing the MIDI button (1) to the left of the LCD will bring up the MIDI menu, which then offers:

MIDI Controllers
MIDI Events
MIDI Scope

In this case, we want to access MIDI Events, so press the ▼ key to hilight MIDI Events, then press ENTER/YES to access the Events page.

A list of the 12 event "slots" is now presented, which, unless edits have previously been made, will show "Empty" in all 12 slots.

To add a MIDI Event, scroll to the required slot (usually the first "Empty" slot), and press YES/ ENTER. The LCD will now show "MIDI Event x", where x is the number of the event being edited. The first part of the event definition is the Type.



Select one of:

NOTE ON
NOTE OFF
PROGRAM CHANGE

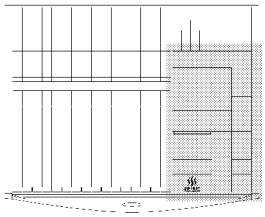
Once this is selected, the Event will be entered into the list with default parameters. To edit these parameters, press "ENTER/YES". Details of the Event will now be shown, and the user may scroll through:

Page	Comments	Parameter Range
TYPE	The type of event to be configured	OFF, NOTE ON, NOTE OFF, PROGRAM CHANGE
MIDI CHANNEL	The channel on which the Event is to be sent	1-16
NOTE NUMBER (notes only)	The Note number to be generated	0-127
PROGRAM NUMBER (PG CH only)	The Program Change number to be generated	0-127
NOTE NUMBER (notes only)	The Note number to be generated	0-127
VELOCITY (notes only)	The Velocity of the note to be generated	0-127
TIMEOUT (notes only)	The duration of the note - i.e. the time before a corresponding NOTE OFF is automatically sent	OFF-255 seconds (in 1 second increments)

When the required changes have been made, press MENU twice to escape to the top level screen.

IMPORTANT NOTE - no changes to the MEL will be permanently stored until the Cue is STORED again. So, if the MEL can be discarded, simply RECALL the Cue as it was. If it should be kept, STORE the Cue as usual.

Once the MEL has been stored to the Cue, a small symbol (▢) will appear next to the Cue number in the Cue Display to denote that the Cue contains some MIDI.



NOTES AND SLOTS

When triggering Sound FX, it can be useful to "hold" notes for a long period, whilst triggering some others over the top. For example, a looping sound effect of crowd noise might be punctuated with the occasional car horn or police siren.

This is achieved on 324 by programming a long timeout period for the "background" effect in one cue, then programming appropriate NOTE ON messages for the overlaid messages in subsequent cues. A background effect could, for example, be held for 20 seconds, and the "incidental" effects recalled after 5 and 10 seconds respectively.
324 is quite happy to "hold" notes over multiple cues, but care should be taken in choosing a slot for such notes. The rule is that the console cannot play more than one NOTE message from the SAME slot at any given time.

So, programming the above example, it might seem appropriate to put a 20 second held NOTE in Slot 1 for Cue 1, then trigger an incidental NOTE from Slot 1 in Cue 2 and Slot 1 in Cue 3, thus:

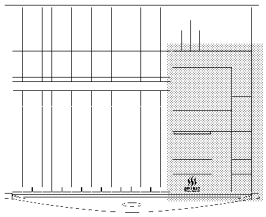
	Cue 1	Cue 2	Cue 3
Slot 1	NOTE 10 secs	Note 5 secs	Note 5 secs
Slot 2	No Event	No Event	No Event
Slot 3	No Event	No Event	No Event

However, since each slot can only play one note at once, the result is that any notes held when a cue is recalled are cut off by the new NOTE messages in that cue. So the background effect would be "replaced" by the incidental effect in Cue 2, the Cue 2 incidental effect would be "replaced" by the incidental effect in Cue 3, and so on.

The solution is to use different slots, thus:

	Cue 1	Cue 2	Cue 3
Slot 1	NOTE 10 secs	No Event	No Event
Slot 2	No Event	Note 5 secs	No Event
Slot 3	No Event	No Event	Note 5 secs

Now the notes do not "overlap" in their slots, and will hold for the duration programmed in the "Timeout" parameter.



MIDI Controllers

The 324 Live has 16 assignable MIDI controllers which are controlled from the 16 Channel faders and become active when selected from the FADER BANK section. The MIDI controllers become active when all 3 buttons in the FADER BANK section are not illuminated.

MIDI Controller set-ups can be stored for recall at a later stage.

Setting MIDI Controller parameters.

Press the MIDI button (1) (to the left of the LCD) to enter the MIDI page. Press ▲ or ▼ as required until MIDI Controllers flashes. Press ENTER / YES.

The LCD display shows the following 3 parameters.

- **Controller No: 1-16**

  Selected using the ▲▼ arrow keys (1-16 Faders).

- **Chan: 1-16**

  MIDI channel number selected using the ▲▼ arrow keys and the PARAM encoder.

- **ID: OFF 127**

  MIDI Controller ID number selected using the ▲▼ arrow keys and the PARAM encoder.

Storing MIDI Controller Set-Ups

Once you have set up your MIDI Controllers you can store the settings as a Preset for later recall.

- Press the ENTER/YES button while in the MIDI Controllers page.
- Both the ENTER/YES and EXIT/NO buttons will flash.
- Use the ▲▼ arrow keys and the PARAM encoder to select the Preset library location number you wish to use, and then press the ENTER/YES button to save the settings or the EXIT/NO button to abort the saving process.

MIDI Ctl Presets

There are 64 MIDI Controller Preset library locations that can be used for storing custom MIDI Controller set-ups.

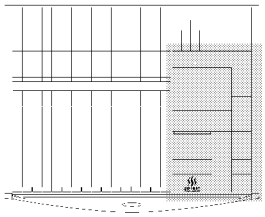
The MIDI Controller set-ups are stored as described above in the MIDI Controllers section.

Recalling MIDI Controller set-ups.

- 1 Press the "PRESETS" button and use the ▲▼ arrow keys to select "MIDI PRESETS".
- 2 Press the "ENTER/YES " button to enter the MIDI Controller Presets menu page.
- 3 Use the ▲▼ arrow keys and the PARAM encoder to select the Preset you wish to recall.
- 4 Press the ENTER/YES button to recall the chosen Preset.

Naming a MIDI Controller Preset

- 1 Press the "PRESETES" button and use the ▲▼ arrow keys to select "MIDI PRESETS".
- 2 Press the ENTER/YES button to enter the MIDI Controller Presets menu page.



- 3 Use the ▲▼ arrow keys and the PARAM encoder to select the Preset you wish to rename.
- 4 Press the ◄► arrow keys together to enter the naming page.
- 5 Now use the ▲▼ arrow keys to locate the character you want to change and the PARAM encoder to select the letter or number you want to use.
- 6 When the new name is complete press the ENTER/YES button to save it.

Deleting a MIDI Controller Preset

- 1 Press the "PRESETS" button and use the ▲▼ arrow keys to select "MIDI PRESETS".
- 2 Press the ENTER/YES button to enter the MIDI Controller Presets menu page.
- 3 Use the ▲▼ arrow keys and the PARAM encoder to select the Preset you wish to delete.
- 4 Press the EXIT/NO button and the LCD display will read 'Confirm Delete?' and will show the selected Preset.
- 5 Press ENTER/YES to delete or EXIT/NO to abort.

MIDI Dump Out

Various settings from the 324 Live can be stored externally on MIDI data filers or MIDI sequencer packages. The following settings can be 'Dumped'.

All Data
All Scenes
One Scene
Lexi Preset
Dyn Preset
MIDI Preset
One Preset

Let's look at them individually.

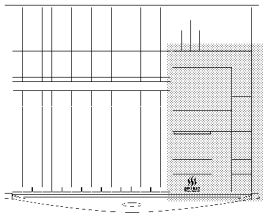
- 1 Press the menu button and use the ▲▼ arrow keys to select "MIDI DUMP OUT".
- 2 Press the ENTER/YES button to enter the MIDI Dump Out menu page.
- 3 Use the PARAM encoder to scroll through the different dumping choices.

All Data

- 1 All data currently stored within the 324 Live will be dumped to an external MIDI device.
- 2 Press ENTER/YES to start the dumping process.
- 3 When complete the LCD display will show **'Dumping Data ..... Dump Finished'.**.
- 4 To abort press the EXIT/NO key, the LCD display will read **'Dumping Data..... Aborted!'**

All Snaps

- 1 All Snapshots (scenes) currently stored within the 324 Live will be dumped to an external MIDI device.
- 2 Press ENTER/YES to start the dumping process.



- 3 When complete the LCD display will show **'Dumping Data ..... Dump Finished'.**.
- 4 To abort press the EXIT/NO key, the LCD display will read **'Dumping Data.....Aborted!'**

One Snap

- 1 A single Snapshot (CUES) can be select to be dumped to an external MIDI device.
- 2 Press the ▼ arrow key once to enter the Snapshot menu.
- 3 Use the ▲▼ arrow keys and the PARAM encoder to select the Snapshot you want to dump.
- 4 Press the ENTER/YES button to start the dumping process.
- 5 When complete the LCD display will show **'Dumping Data ..... Dump Finished'.**.

Lexi Preset

- 1 The Lexicon FX Presets can be dumped to an external MIDI device.
- 2 Press the ENTER/YES button to start the dumping process.
- 3 When complete the LCD display will show **'Dumping Data ..... Dump Finished'.**.

Dyn Preset

- 1 The Dynamics Presets can be dumped to an external MIDI device.
- 2 Press the ENTER/YES button to start the dumping process.
- 3 When complete the LCD display will show **'Dumping Data ..... Dump Finished'.**

MIDI Preset

- 1 The MIDI Controller Presets can be dumped to an external MIDI device.
- 2 Press the ENTER/YES button to start the dumping process.
- 3 When complete the LCD display will show **'Dumping Data ..... Dump Finished'.**

One Preset

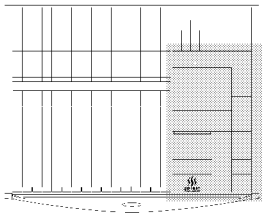
A single preset from the Lexicon FX Presets, Dynamics Processors Presets or MIDI Controller Presets can be dumped to an external MIDI device.

- 1 Press the ▼ arrow key once to enter the presets menu.
- 2 Use the PARAM encoder to scroll the presets that have been stored in the 324 Live. The stored presets are prioritized in the following order:

Lexicon FX Presets
Dynamic Processor Preset

MIDI Controller Presets

- 1 Once you have reached the Preset you want to dump, press the ENTER/YES button to start the dumping process.
- 2 When complete the LCD display will show **'Dumping Data ..... Dump Finished'.**



MIDI DUMP IN

MIDI data can be dumped (loaded) into the 324 Live from a MIDI device

- 1 Press the menu button and use the ▲▼ arrow keys to select "MIDI DUMP OUT".
- 2 Press the ENTER/YES button to activate this function.
- 3 The LCD display will now read 'Waiting For Data'
- 4 Start playback of the MIDI device to start the dumping process.

MIDI Scope

The third item on the MIDI menu page is MIDI Scope.

Using the MIDI Scope parameter, it is possible to define how much of the console's MIDI capability is to be recalled when snapshots are replayed.

There are two elements to MIDI Scope:

Send Events ON / OFF
Send Faders ON / OFF

Send Events

This parameter defines whether or not the data in the MIDI Event list is to be sent out from the console when a snapshot is replayed.

Although this will usually be left as Send Events **"ON"**, it can sometimes be useful to suppress outgoing MIDI Notes and Program Changes for a brief period of "offline" programming. For example, during a rehearsal period on-stage that does not require the console to be used for mixing, the operator can run "silently" through cues containing MIDI and modify them or create new cues without actually triggering the external Sound FX on Samplers.

Note that disabling this parameter will also suppress the "audition" note sent from the console when the "ENTER" key is pressed during NOTE ON edits.

Send Faders

This parameter defines how the MIDI Continuous Controller Fader Bank will respond to Snapshot recall.

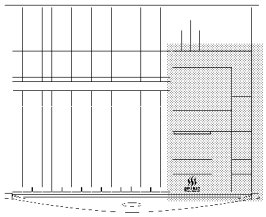
Usually set to Send Faders **"ON"**, 324 will recall with each Snapshot the *assignment* of Continuous Controller to each fader, the *position* of that fader and therefore the *value* of the assigned controller will also be sent to the MIDI port.

It may be preferable, however, simply to consider the MIDI Fader Bank to be a "manual" set of faders that can be used at leisure to adjust a remote device during an evening, regardless of any snapshot activity.

If this is the case, setting Send Faders to **"OFF"** will result in the position of the faders no longer being recalled, and therefore *no* MIDI *value* being sent to the MIDI port.

Note, however, that the assignment of Continuous Controller to each fader is still recalled with each snapshot, so the device being controlled may still be varied from Snapshot to Snapshot if required.

The default setting for both Send Events and Send Faders is **"ON"**.

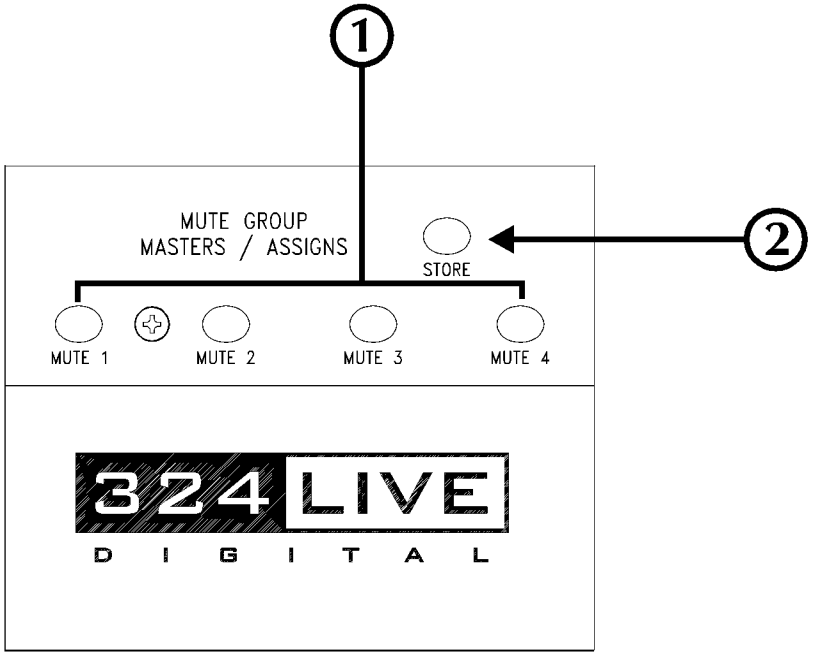


15 - MUTE Groups

MUTE Groups offer a fast way of Muting with a single button press a number of pre-defined channels. 324 Live offers 4 MUTE Groups. Any channel may belong to any or all of the four Mute Groups.

When a Mute Master switch is pressed, it is equivalent to pressing the MUTE switch on all channels assigned to be members of that MUTE Group.

This is particularly useful during rehearsal periods, when trying to identify problem areas in a mix, or when handling a large number of radio mics with performers frequently leaving or entering the stage. It might be appropriate, for example, to put the whole band into MUTE Group 1, the Radio mics onto MUTE Group 2, the FX returns onto MUTE Group 3, and the Matrix outputs onto MUTE Group 4. The operator now has a number of single switch presses which will remove or add certain elements of the mix, and can easily listen to Radio Mics, Radios plus Band, Radios with FX, Radios without FX, and so on.



① Mute Master Switch (1-4)

② Mute Group Store Switch

TO ASSIGN CHANNELS TO A MUTE GROUP:

The easy way:

- 1 Press and hold the appropriate MUTE Group Master switch. The console will go into Query mode. The SELECT switches will now show the status of each channel, with illumination of the SELECT switch denoting that channel is already a member of that MUTE Group.
- 2 Pressing the SELECT switch on any channel (including FX returns and outputs) will now toggle that channel into or out of the MUTE Group.

The other way:

Manually Mute all the channels required to be a member of the MUTE Group.

- 1 Press STORE in the MUTE Group panel. All the MUTE Group Master LEDs will be extin-- guished
- 2 Press the MUTE Group Master switch into which the muted channels are to be stored.

The limitation of the latter method is that the channels HAVE to be muted before they may join a MUTE Group. Obviously this could be inconvenient in the middle of a rehearsal, so the former method is preferred in most cases.

MUTE GROUPS AND AUTOMATION

The Automation system on 324 Live can interact with Mute Groups in one of two ways:

MUTE Groups follow Snapshots
MUTE Groups do not follow Snapshots

The desired mode may be set via the MUTE Group Setup page in the LCD (MENU / MUTE Group Setup / Mute/Snaps) - the choice is simply "ON" (for Mutes follow Snapshots), or "OFF" (for MUTE Groups do not Follow Snapshots).

Follow Snaps "OFF"

When MUTE Groups are set to Follow scenes "OFF", the contents of each MUTE Group, once set up, will remain intact until manually reconfigured, regardless of any data stored in the automation system. Bear in mind that this calls into effect some addition Rules when recalling scenes - see REPLAY RULES below.

This mode is handy when rehearsing and programming, as the user is free to mess about with MUTE Groups as the rehearsal requires, but importantly none of those MUTE Group changes will be over-written or undone when moving from Cue to Cue.

It is also a good idea to run the console in this mode as a precaution when operating a show (unless, of course, MUTE Groups are specifically required to recall per Cue) to ensure that erroneous MUTE Group settings from an earlier rehearsal are not accidentally recalled to the desk right in the middle of the show. Remember that the MUTE Master and all channel assignments to that Master are recalled in Mute/Snaps "ON" mode, and this could result in a large proportion of the desk being muted in error.

Mute/Snaps "ON"

When MUTE Groups are set to follow scenes, the contents and status of MUTE Groups will be stored in and recalled by the Automation system. Note that this Automation includes not only whether the MUTE Master switch is open or muted, but also the ASSIGNMENT OF CHANNELS to each of the MUTE Groups.

This mode is useful when MUTE Groups are to be employed as part of Live mixing, rather than rehearsals. For example, in a Musical Theatre production, let us imagine that the performers are required to dance in the middle (non-vocal) section of various songs, and that costume noise through Radios increases wildly. To combat this, MUTE Group 1 could be reassigned in the appropiate scenes to contain the Radio mics of the backing vocals (different people for each song). It is then an easy task to Mute all backing singers at any point by Muting MUTE Group Master 1.

A more conventional example would be 4 bands coming on stage in an evening - it would be desirable to create different MUTE Groups for each band. This is easily achieved using one or more Cues for each band. Let us presume that MUTE Group 1 will contain Guitars, MUTE Group 2 Vocals, and so on. Simply program the MUTE Groups as required while one band is on stage, STORE the Cue, then repeat the process for the next band, STORING into a different Cue. Come the show that night, recall the scene for each band as required, then use the MUTE masters to MUTE all Guitars and Vocals while the band is setting up and, when ready to play, opening those channels is as simple as a couple of MUTE Master presses to release the MUTEs.

Replay Rules

These Rules only apply when the console is set up such that MUTE Groups Follow Scenes is "OFF" (see above). When the console Automation replays a scene, it replays MUTE Groups and channel MUTE settings in one of two ways, according to the MUTE GRP Priority function (MENU / Mute Grp Setup / Priority).

Snaps Priority

When Priority is set to "Snaps", the state of the channel MUTEs stored in the Cues will over-ride that of the Manual Mute Group Assignments.

So, for example, let us presume that Channel 5 is in MUTE Group 1, is currently open (unmuted), but is MUTED in an upcoming Cue - Cue 2.

Muting the MUTE Group 1 Master will result in Channel 5 being muted, as it is a member of MUTE Group 1. However, recalling Cue 2 will result in Channel 5 being unmuted, since the data stored in the Cue (Channel 5 unmuted) takes priority over the current MUTE Group assignment.

This setting can prove useful when running the show with Manual MUTE Groups, as any MUTE Groups channel muting set up in rehearsal, or left active from a previous song, are over-written by the Cue data upon recall - this ensures the desk is in the correct "Cue" state at the start of the next song and all required channels are definitely open.

Mutes Priority

When Priority is set to "Mutes", the state of the MUTE Group Master will over-ride that of the Cue data. So, for the above example, if MUTE Group 1 is unmuted, recalling Cue 2 will result in Channel 5 remaining unmuted. However, if MUTE Group 1 is muted, and Channel 5 is therefore also muted, recalling Cue 2 will NOT now unmute Channel 5, as the MUTE Group has priority.

This mode can be useful when using MUTE groups as Radio Mic "safe" switching during rehearsal - assign all radios to a MUTE Group. When Radios are not required (e.g. breaks, instrumentals, Director's notes, etc.), hit the appropiate Mute Master MUTE safe. The operator may still now recall cues, and edit audio parameters, but the Radios will remain muted.