328 XD

328 XD

SOFTWARE v 1

USER GUIDE

ZM0254 - Issue 1.2

328 XD

SAFETY GUIDE

SAFETY SYMBOL GUIDE

For your own safety and to avoid invalidation of the warranty all text marked with these Symbols should be read carefully.

CAUTIONS
Must be followed carefully to avoid bodily injury.

WARNINGS
Must be observed to avoid damage to your equipment.

NOTES
Contain important information and useful tips on the operation of your equipment.

IMPORTANT
Please read this manual carefully before connecting your interface to the mains for the first time.

CE

with the EMC directive
89/336/EEC
and LVD 73/23/EEC
and 93/68/EEC
Environment: E1–E4
This product is approved to
safety standards:

Product Part Nos:	
M4: RW5631	EN60065 : 1994 UK/EU
M8: RW5632	UL6500 : 1996 US
M12: RW5633	CSA E65 : 1994 CAN

Inrush Current: 4 Amps Peak

For further details contact:
Harman International Industries Ltd.
Cranborne House, Cranborne Road
Potters Bar, Hertfordshire, EN6 3JN, UK

Part No. ZM0253
Issue 1

Soundcraft is a trading division of Harman International Industries Ltd. Information in this manual is subject to change without notice and does not represent a commitment on the part of the vendor. Soundcraft shall not be liable for loss or damage whatsoever arising from the use of information or any error contained in this manual.

Soundcraft

Harman International Industries Limited.
Cranborne House,
Cranborne Road,
Potters Bar,
Herts.,
EN6 3JN
UK

Tel: 01707 665000
Fax: 01707 660742

WARRANTY

1 **Soundcraft** uses trading divisions of Harman International Industries Ltd .

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

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

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

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

4 This warranty shall only be valid if:
   a) the Equipment has been properly installed in accordance with instructions contained in Soundcraft's manual; and
   b) the End User has notified Soundcraft or the Dealer within 14 days of the defect appearing; and
   c) no persons other than authorised representatives of Soundcraft or the Dealer have effected any replacement of parts maintenance adjustments or repairs to the Equipment; and
   d) the End User has used the Equipment only for such purposes as Soundcraft recommends, with only such operating supplies as meet Soundcraft's specifications and otherwise in all respects in accordance Soundcraft's recommendations.

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

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

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

IMPORTANT SAFETY INSTRUCTIONS

CAUTIONS

- To avoid the risk of fire, replace the mains fuse only with the correct type and value fuse, as marked on the rear panel.
- ATTENTION:- Afin de réduire le risque de feu remplacer seulement avec fusible de même type.
- **REPLACING MAINS FUSE**
  Switch the ON/OFF switch to the OFF position. Remove the mains lead from the connector. Use a small screwdriver to prise the fuse carrier from its location in the connector. Check the fuse and replace if necessary; also check that the voltage selection is correct for the mains supply level before switching the unit ON again.

  If the mains fuse fails repeatedly this may be because an electrical safety hazard exists. The unit must be taken out of service and referred to the Soundcraft/Spirit dealer from where the equipment was purchased.
- **THIS UNIT MUST BE EARTHED**
  Under no circumstances should the mains earth be disconnected from the mains lead.
- ATTENTION:-Cet appareil doit être branché à la terre.
- The wires in the mains lead are coloured in accordance with the following code:

  Earth: Green and Yellow (Green/Yellow - US)
  Neutral: Blue (White - US)
  Live: Brown (Black - US)

  As the colours of the wires in the mains lead may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

  The wire which is coloured Green and Yellow must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol.

  The wire which is coloured Blue must be connected to the terminal in the plug which is marked with the letter N.

  The wire which is coloured Brown must be connected to the terminal in the plug which is marked with the letter L.

  Ensure that these colour codings are followed carefully in the event of the plug being changed.
-
- This unit is capable of operating over a range of mains voltages as marked on the rear panel. It is important to ensure that the correct mains fuse is fitted before switching on the unit.

WARNINGS

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- This unit contains no user serviceable parts. Refer all servicing to a qualified service engineer, through the appropriate Soundcraft dealer.
- Do not use this apparatus near water.
- Clean only with a damp cloth.
- Do not block any of the ventilation openings. Install in accordance with the manufacturers instructions.
- Do not install near any heat sources such as radiators, heat resistors, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety when the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way such as power-supply cord or plug is damaged., liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally or has been dropped.
- It is recommended that all maintenance and service on the product should be carried out by Soundcraft or its authorised agents. Soundcraft cannot accept any liability whatsoever for any loss or damage caused by service, maintenance or repair by unauthorised personnel.

- Use only with a cart, stand, hood, bracket or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart apparatus combination to avoid injury from tip-over.

TABLE OF CONTENTS

328 XD

1

INTRODUCING THE 328XD

THE INS AND OUTS OF THE 328XD

Analogue Inputs

The Soundcraft 328XD offers 16 Mic/Line inputs, using Soundcraft's highly acclaimed UltraMic™ Pre-amps.

All Mic/Line Inputs have an insert point, analogue gain control and high pass filter and a further 5 Stereo Inputs are also available. 48V phantom power is available to all 16 microphone inputs. All of these inputs feature 24 bit 128 x oversampling A/D converters. All have full access to the revolutionary E-Strip offering 3 band fully parametric equalisation, 4 auxiliary sends, 2 internal Lexicon effects sends, a pan control and control over the compressor and noise gate available to each input.

Digital Inputs

The 16 digital input channels on the rear of the 328XD are accessed by two 8 channel TDIF or ADAT optical input connectors. There is also a dedicated AES/EBU Input, and an S/PDIF Input fitted with sample rate conversion (capable of receiving signals with sampling rate between 20kHz - 100KHz) for connecting CD, Minidisc and DAT Machines. All of these inputs have full access to the E-Strip offering 3 band fully parametric equalisation, 4 auxiliary sends, 2 internal Lexicon effects sends, a pan control and control over the dedicated compressor and noise gate available to each input.

Analogue Outputs

The 328XD offers an array of analogue outputs including MIX outputs on both balanced male XLR and unbalanced RCA phono connectors, 4 auxiliary outputs and control room outputs on balanced jacks and a headphones output with dedicated level control.

Digital Outputs

The two ADAT and TDIF ports also offer 16 digital output channels. Both TDIF outputs and both ADAT outputs are continually and simultaneously active. These can be configured to transmit either 16 Direct Outputs sourced from Mic/Line Input Channels 1-16, 2 x the 8 Group outputs, or a combination of either.

The AES/EBU and S/PDIF stereo digital outputs can output signals from any of the following sources:

MIX Out L/R	Groups 3 & 4
AUX 1 & 2	Groups 5 & 6
AUX 3 & 4	Groups 7 & 8
FX send 1 & 2	Control Room output L/R
Groups 1 & 2	

The Auxiliary Optical Output can be set to derive an 8 channel ADAT Optical format output of either the 8 Group Outputs or a combination of the MIX bus, AUX 1, 2, 3 and 4 sends and FX 1 & 2 sends. Alternatively it can be switched to transmit an S/PDIF optical signal, duplicating the signal at the coaxial S/PDIF output.

Metering

The 328XD offers full metering of all 16 analogue and 16 digital inputs as standard, eliminating the requirement for an additional meter bridge. The 16 x 10 segment bar graph meters follow BANK selection to reflect the levels of

MIC/LINE Inputs 1-16
DIGITAL Inputs 17-32
GROUP Outputs 1-8, AUX Outputs 1-4 and FX Sends 1 and 2

When the DYNAMICS ON METERBANK switch is pressed, the 16 x 10 segment bar graph meters continue to follow BANK selection but indicate the gain reduction of the internal compressors. The gain reduction of the Mix Bus and Stereo Input compressors is displayed on the Main meter bank.

Under normal operation, the stereo output meters will display the stereo Mix bus. Additionally, the stereo output meters can display the analogue or digital (AES/EBU or S/PDIF) 2-Track return inputs. When any channels are soloed in pre-fade or after fade listen modes, the solo bus will be displayed.

Faders

The 328XD's 16 100mm long throw faders work in the same way that you would expect those of analogue console to behave, although their motorized nature offers automation and position recall. If you refer to the diagram in **Appendix D - 328XD Expanded View** you will see that the number of level controls actually offered by the 328XD is far greater than 16. To combat this, the BANK SELECT switches allow you quick and easy access to the faders of a console this frame size, while keeping the physical footprint comparatively small.

There are 4 modes of operation for the channel faders according to the BANK SELECTion:

1. 1-16 — in which the faders control the level of analogue inputs 1-16
2. 17-32 — in which the faders control the level of digital inputs 17-32
3. MAINS — in which the faders control the levels of Group outputs 1-8, the main send levels of auxiliary outputs 1, 2, 3 and 4 and internal Lexicon FX sends 1 and 2 and the Solo bus
4. MIDI CONTROL — in which the 16 faders and also the 16 E-Strip encoders, 16 MUTE and 16 SOLO switches act as user definable MIDI controllers enabling the 328XD to act as a control surface for external MIDI devices

E-Strip

The E-Strip is a feature unique to Soundcraft digital consoles and the 328XD's E-strip offers the following modes of operation:

1. For quick and easy channel parameter adjustment, the E-Strip behaves just like a conventional analogue channel strip rotated through 90°. It offers control over the 3-band fully parametric equalisation, 4 auxiliary sends, 2 internal FX sends and a PAN control for all MIC/LINE and TAPE channels, Stereo Input 1 & 2 and FX Return 1 & 2.

2. Auxiliary routing and pan positioning can be viewed simultaneously and adjusted for each of the 16 channels of each BANK.

3. The E-Strip can also be configured to work as 16 dedicated Level controls for the BANK opposing the current selection (when set to 1-16 or 17-32), providing level control for all 32 input channels simultaneously.

4. The E-Strip is also used to control the parameters of the dedicated compressor and noise gate available to each input channel. A dedicated bypass switch is available for both compressor and noise gate.

5. When none of the BANK buttons are selected the 16 rotary encoders of the E-Strip, and also the 16 channel faders, and 16 MUTE and 16 SOLO switches function as user-programmable MIDI controllers.

Select Panel

The Select Panel is where the equivalent of analogue console channel strip switches are found. When the E-Strip is active for an input channel, so too is the Select Panel. Using the switches in the Select Panel, channels can be routed to or derouted from the Mix, Solo and Group buses, muted, phase inverted or have EQ flattened or switched in and out.

NOTE: MIX and GRP switches are also used as SELECT switches when accessing dynamics parameters for these buses.

Lexicon Effects Processors

The 328XD features two built in Lexicon stereo FX Processors. The algorithms include reverb, delay, chorus and flange effects. Control of the two dedicated effects return channels, FX-1 and FX-2, should be considered in the same way as that for inputs 1-32. The E-Strip can be made active for either FX Return, allowing EQ adjustment, further auxiliary and FX routing and balance control. Similarly, the Select Panel can be active for either FX Return to enable Group and Mix bus routing and Solo/Mute control, while dedicated rotary encoders allow make level adjustment simple.

Snapshot and Dynamic Automation

The 328XD offers two different types of automation - Snapshot and Dynamic, together providing maximum flexibility to the user. Complete recall of all console settings can be stored in up to 100 Snapshot memory locations for recall either directly from the console surface, against incoming or internally generated timecode, or when the appropriate MIDI message is received at the MIDI In port.

Recording automation MIDI data to a MIDI recording device allows complete automation of all the physical digital controls of the 328XD, including internal FX parameters. The dynamics parameters, analogue input gain controls and 100Hz highpass filters are not automatable.

Machine Control

The transport control section of the 328XD can be used to control a variety of external recording devices including hard disk editors, computer based audio sequencers and audio and video tape machines. The 328XD can achieve this using either MIDI Machine Control (MMC), RS-422 Sony 9-Pin control or by transmitting correctly defined MIDI Note On/Note Off messages.

Audio Quality

All analogue inputs and outputs on the 328XD have the same crystal clear 24 bit 128 x oversampling Analogue to Digital (A/D) and Digital to Analogue (D/A) converters, ensuring wide dynamic range and superb sonic performance.

The 328XD can be configured to operate at sampling rates of 44.1kHz and 48kHz.

2

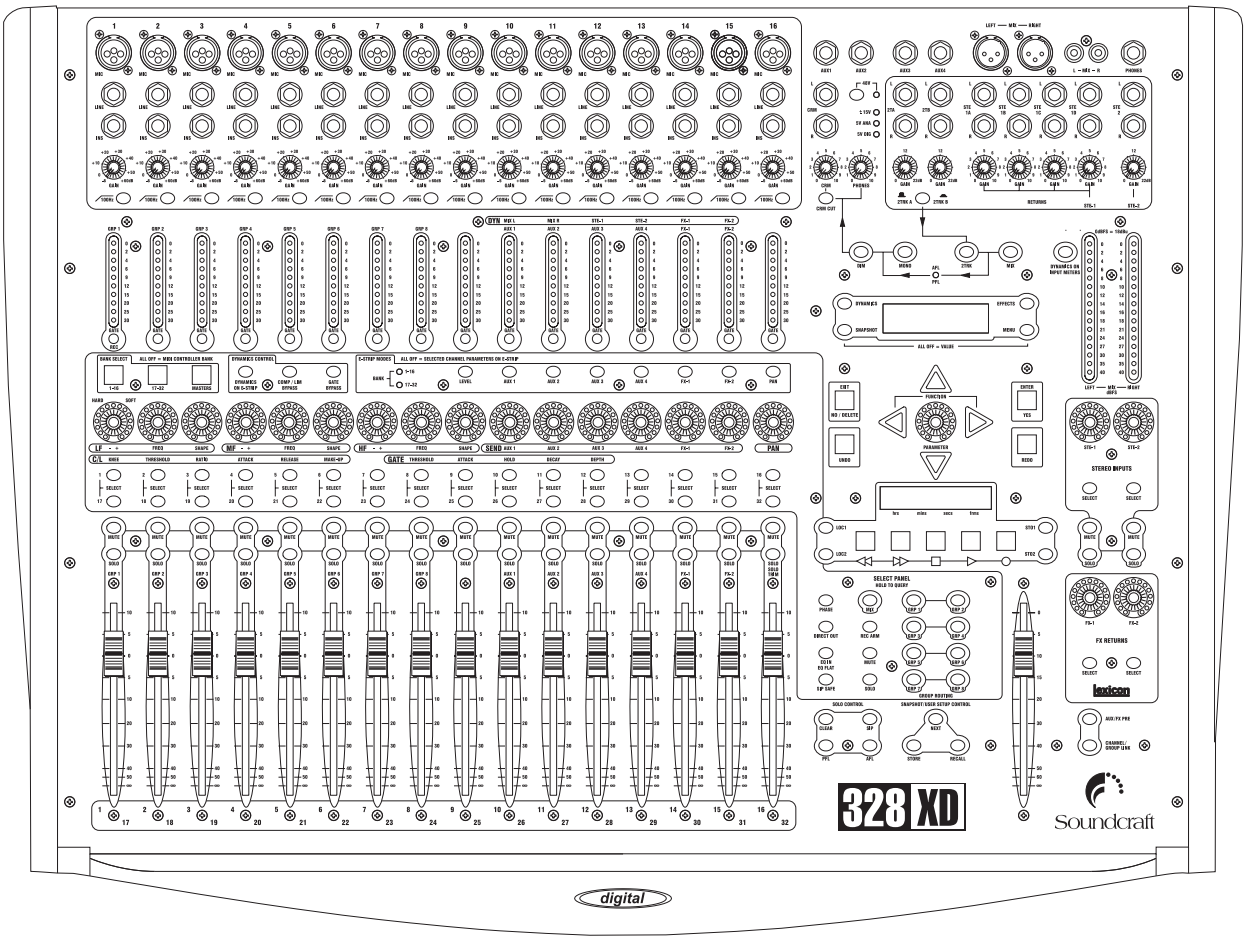
GET STARTED STRAIGHT OUT OF THE BOX

GET STARTED STRAIGHT OUT OF THE BOX

If you are one of those people who just has to 'get your hands dirty' before you read through the Reference Manual then this section is for you!

The goal of this short section is to take you quickly through the basic features of the 328XD.

We will input a signal on Channel 1, route it to the Mix outputs, add some EQ and compression, and then some reverb. Finally we will store all the settings we have made as a Snapshot.



LET'S GET STARTED

Right, so you've managed of get the 328XD out of the box. Congratulations, you've passed the first test and can now move on.

Plug the power cable into the nearest mains output (you'd be amazed how many people get this bit wrong) and switch the 328XD on with the power switch located at the back right hand side of the console next to the mains input. You will see very quickly that every switch and LED on the mixer lights up briefly. The LCD display will indicate boot progress, which should take about a minute to complete. Once boot up is complete and Mr Munch has reached the end of the LCD display, the 328XD is ready to go.

AUDIO HOOK-UP

For the purpose of this section we will assume that there is a microphone plugged into **MIC Input 1** and an amplifier with some speakers connected to the left and right Control Room (**CRM**) outputs.

OKAY LET'S MAKE SOME NOISE

Before starting, ensure that the Control Room outputs are connected to your monitoring system, that the **CRM** out level is fully down (anti-clockwise) and that the **MIX** fader is set to 0. You should also check that the **CRM CUT** switch is not activated. If the **CLEAR** switch in the Solo Control panel is illuminated, press it to ensure that no channels are soloed.

- Press the SELECT button for **Channel 1** (it should illuminate with a cool shade of green) to activate the E-Strip and Select Panel for Channel 1. Make sure that the **MIX** switch in the SELECT panel is selected.
- Pull the **Channel 1** fader fully down, and press the Channel 1 **MUTE** switch. This will prevent any chance of a sudden feedback howl, if your microphone happens to be to close to your speakers.
- Plug in a Microphone, and if it requires 48V Phantom Power, press the **48V** button .
- Make sure that the BANK SELECT switch is set to 1-16 and ensure that the **DYNAMICS ON METERBANK** switch to the left of the stereo output meters is not selected. This ensures that the faders are set to control level from analogue inputs 1-16 and the meters are set to indicate input level for analogue inputs 1-16.
- Turn the analogue GAIN control slowly until a good level is seen on the **Channel 1** input meter. As a guide, your loudest peaks should occasionally light the top red LED. This will ensure you have a good signal to noise ratio.

- Now de-select the Channel 1 MUTE button in the **SELECT PANEL** and bring up the Channel 1 fader level. You should now see level showing in the LEFT/RIGHT output meters indicating that the input signal is reaching the Mix bus.

- Once you have a good amount of level on the left/right output meters, turn up the **CRM** level control to monitor the signal in your speaker system.

Great! Let's get a little more creative...

USING THE E-STRIP FOR EQUALIZATION, PANNING AND AUXILIARY/EFFECTS ROUTING

Now that you have some audio running through the console, let's check out the E-Strip (see **Section 3B** for an in depth look at this feature).

- When you press the analogue input Channel 1 **SELECT** button, the E-Strip instantly becomes active for that channel. You now have access to the 3 band **EQ**, 4 **AUX** sends, 2 **FX** sends and the **PAN** control for Channel 1. These controls function just as you would expect those of an analogue console to function. Their current settings will remain even when you change the mode of the E-Strip.

  Ensuring that none of the four LCD mode switches are illuminated in the MAIN section will then set the LCD to display precise value adjustments for any of the controls found on the E-Strip. If one of the switches is already lit, press it again to set the LCD mode to VALUE. The LCD will then automatically follow to display whichever E-Strip parameter you adjust for whichever channel you choose to select. With the LCD in this mode, the PARAM encoder beneath the LCD display will also be automatically active for the currently or last adjusted parameter on the E-Strip.

LET'S ADD SOME COMPRESSION TO THE SIGNAL

Using the 328XD internal dynamics processors is just like working with an external dynamics processor patched into the channel's insert point, but without the need for additional cables or indeed the external processor. There is also the added bonus that the signal is kept in the digital domain at all times.

To access control of the dynamics parameters for analogue input Channel 1, ensure that the Channel 1 SELECT switch is still active, and press the DYNAMICS ON E-STRIP switch in the Dynamics Control panel. The E-Strip will indicate the current settings of the dynamics parameters available. Press the DYNAMICS switch to the upper left of the LCD display to view the parameter values numerically.

The COMP/LIM BYPASS and GATE BYPASS switches indicate the bypass status of the two stages of the dynamics processor. The factory default state is to have bypass enabled for both compressor and gate on all input channels. The switch is lit to indicate BYPASS = ON.

If enabled, disable COMP/LIM BYPASS and make the adjustments you wish to make using the rotary encoders of the E-Strip.

To observe the gain reduction levels, press the DYNAMICS ON METERBANK switch to the left of the main Mix meters. To return the meters to displaying the (post-dynamics) input levels, simply deselect the DYNAMICS ON METERBANK switch.

For more information on how to use the internal dynamics processors, consult **Section 3B Part 3**.

Use the legending above the rotary encoders to determine their function when the E-Strip is acting in Dynamics mode. Note that Encoders 7 and 13-16 are unused.

OKAY NOW FOR SOME REVERB

Similarly, the use of the 328XD's internal Lexicon effects processors avoids the use of an external processor and cables, and keeps the signal in the digital domain. Unlike the dynamics processors, however, the effects processors are not placed 'in-line', but instead they act as if connected to virtual auxiliary outputs 5 & 6. As we will see, send levels from individual channels are controlled from the E-Strip.

- Firstly press the **EFFECTS** button so that it illuminates. The LCD display will show the Lexicon effects processor related menus.
- Use the **PARAM** encoder or the ▲▼ arrow keys to select the **FX 1 Presets** menu - it will flash.
- Press the **ENTER** button. The **< FX Presets > Factory/User** menu will be displayed in the LCD display.
- Press the ENTER button again to bring up the library of preset effects. Select 1:Large Hall using either the PARAM encoder or the ▲▼ arrow keys, then press the ENTER button to load the effect parameters.

  Press the MAINS button in the BANK SELECT panel. This will switch the faders and bargraph meters to display the output levels of Groups 1 - 8, FX 1 & 2 and Auxes 1 - 4 so that we can see the level of signal being sent to FX Processor 1 from the FX 1 send of Channel 1. Ensure that the FX 1 main send fader (fader 14) is at 0dB.
- Turn the FX Return 1 level control fully down.
- Make sure that Channel 1 is still selected, and using the FX 1 encoder (encoder 14) on the E-Strip, slowly raise the FX 1 send level until you see a good amount of signal showing on the bargraph meter labeled FX 1 (meter 14).
- Now turn up the level of FX Return 1 to blend the amount of reverb you want routed to the mix bus.

It is always good practice to send as much signal as possible into the effects processors from the individual FX Sends on the channels, and have the level of the FX Return at a lower level. This way a good signal to noise ratio is achieved.

STORING THE SETTINGS IN THE SNAPSHOT MEMORY LOCATIONS

All of the adjustments we have just made, with the exception of the analogue gain adjustment, can be stored in the SNAPSHOT library for later recall.

Press the SNAPSHOT button in the Main section. This will bring up the SNAPSHOT menu in the LCD display.

- Use the ▲▼ arrow keys or the PARAM encoder to select SNAPSHOT memory location #01 or another empty location. It will flash when selected.
- In the SNAPSHOT panel press the **STORE** button.
- The LCD display will read 'Saved Snapshot!' and then revert to show SNAPSHOT #001
- To give the SNAPSHOT a name press the ENTER button. Use the ◀ ▶ cursor keys to select the character you want to change and the PARAM encoder to select the desired letter or number.

  Using the FUNCTION keys, characters can be deleted. To delete from left to right, press and hold the left cursor key and press the right cursor key once for each character to be deleted. Similarly, to delete characters from right to left, press and hold the right cursor key and then press the left cursor key once for each character to be deleted.
- Press the ENTER button to store the new name.

For more information on Snapshot parameters, refer to **Section 3G** and **Section 3J Part 5.15**.

Well that's it! You have now successfully completed a basic overview of how the 328XD operates.

Section 3 of the manual gives an in depth view of all of the functions available on the 328XD. Have fun!

3

REFERENCE SECTION

3A

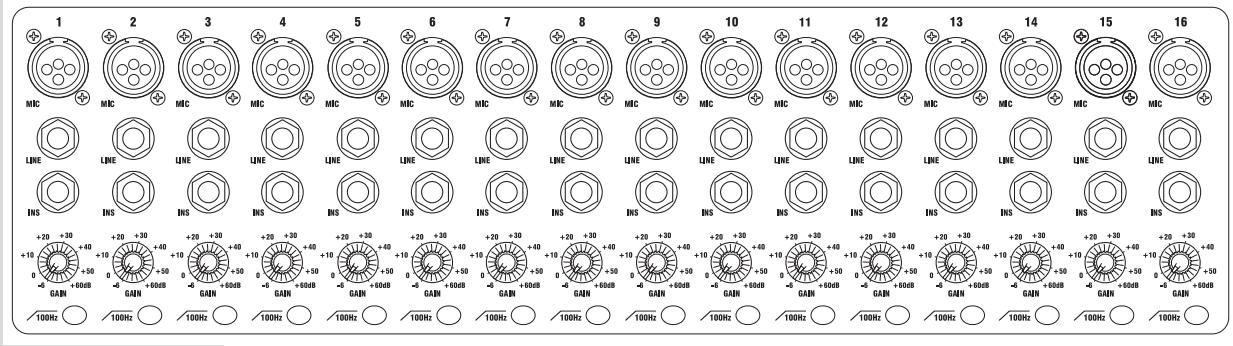
THE INPUTS AND OUTPUTS

Part 1
The Front Panel Inputs and Outputs

Analogue Inputs 1-16

The analogue input section of the 328XD comprises 16 microphone and line inputs, each with dedicated insert point, analogue gain control and high pass filter (HPF)

After the analogue signal has passed through the high pass filter stage, the analogue - digital conversion takes place. From here on the signal remains in the digital domain until converted back into the analogue domain at one of the analogue outputs.



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 a professional condenser, dynamic or ribbon microphone with a correctly balanced cable. The 48V Phantom Power switch can be used to power condenser microphones or direct injection (DI) boxes if required.

LINE INPUT

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

Use this input for keyboards, drum machines, synthesisers, samplers or guitars.

Although the Line input is balanced, it will also accept unbalanced sources as well.

For cable connection diagrams, see **Appendix E**.

INSERT POINT

The insert point is unbalanced and is derived pre-fade, pre-EQ and pre-dynamics. It allows for the connection of analogue 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 328XD please consult **Appendix E** of this User Guide.

GAIN (PRE-AMP SENSITIVITY)

This knob sets the input level of the source signal, offering adjustable GAIN between -6dBu and +60dBu. The GAIN pot should be used to get as much signal into the 328XD without clipping (distorting) the signal. Setting the GAIN pot to '0' will give unity gain for use with Line level signal sources. Because the GAIN control is analogue, its position is not stored within a Snapshot or User Setup.

100HZ HIGH PASS FILTER (HPF)

Pressing this button activates an analogue 100Hz high pass filter (HPF) which has a steep 18dB per octave bass roll off characteristic. When selected the HPF will reduce frequencies below 100Hz, and is very useful for reducing rumble on stage or popping on microphones. As the HPF is within the analogue domain, it is not stored within Snapshot or User Setup.

BARGRAPH METERS

Each input stage has a tri-colour, 10 segment, peak reading bargraph meter. These meters can be switched globally using either one of the 3 BANK SELECT switches or the DYNAMICS ON METERBANK switch to represent any of the following signals:

- Analogue inputs 1-16 (pre-fade, post-EQ, post-dynamics) by pressing the BANK SELECT 1-16 switch
- Digital inputs 17-32 (pre-fade, post-EQ, post-dynamics) by pressing the BANK SELECT 17-32 switch

DO NOT plug balanced or unbalanced microphones into the XLR MIC inputs when the 48V phantom power is active. To avoid damage to the console or to external devices DO NOT switch the 48V Phantom Power switch on or off unless the faders for analogue inputs 1-16 are DOWN. Microphones that do not require phantom power may be used with the phantom power switched on ONLY if correctly balanced cables are used. Always ensure that the microphone is connected before switching on the phantom power.

The GAIN control has a wide sensitivity range to cope with both microphone and line inputs. With either a mic or line input connected start with the GAIN control turned fully anti-clockwise (6dBu) 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 2 'Getting Started Out Of The Box' in this manual for an explanation.

Group Out 1-8, Aux Send 1-4 and FX Send 1 & 2 (post-fade, post-dynamics) by pressing the BANK SELECT MAINS switch

Gain reduction levels of the internal compressors, by pressing the DYNAMICS ON METERBANK switch. When in this mode, the BANK SELECT switches continue to operate.

REC/GATE LED (RECORD ARM/NOISE GATE LED)

The red 'REC' LED is used in conjunction with recording devices that support MIDI MACHINE CONTROL (MMC). External recording devices can be put into record from the front panel of the 328. The current status of the recording devices tracks (1-16) can be monitored using these LEDs as follows:

- When the REC/GATE LED is OFF the connected tape machine track is not in record mode
- When the LED is FLASHING the connected tape machine track is in record ready
- When the LED is ON the connected tape machine track is in record mode

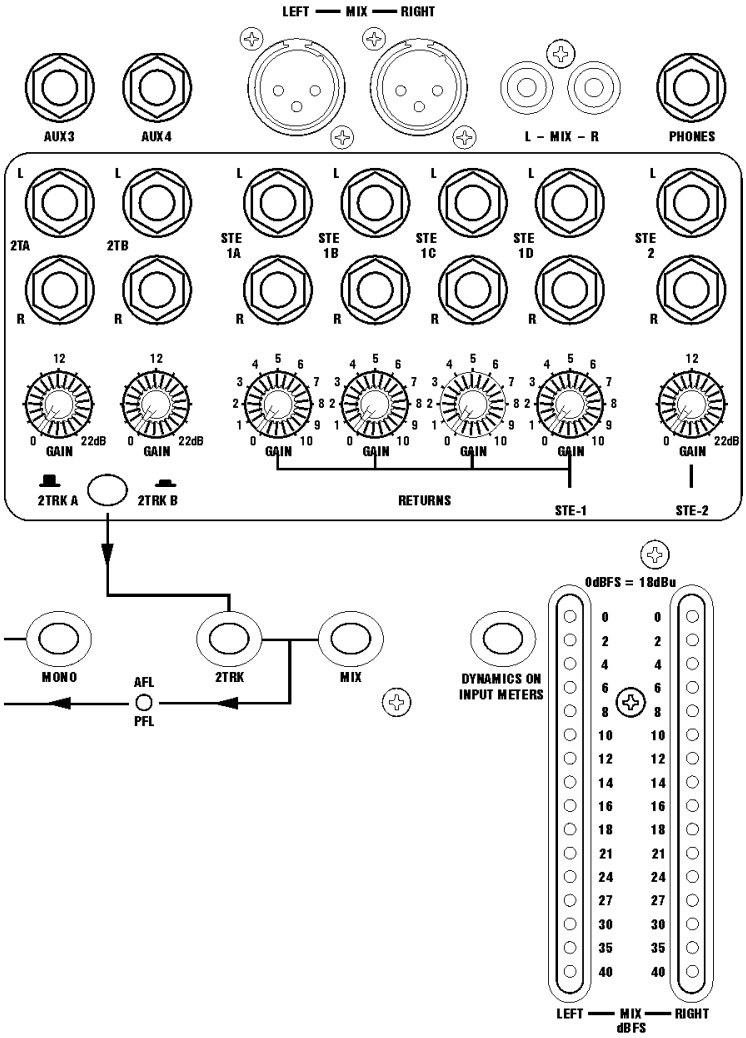
(See **'Section 3C - The SELECT Panel'** for more information)

When the DYNAMICS ON METERS switch is active, the REC/GATE LEDs indicate the open/closed state of the internal noise gates. In its 'on' state the LED indicates that the noise gate is closed, and in its 'off' state the LED indicates that the noise gate is open. For more information, see **Section 3B Part 3 - The E-Strip as a Dynamics Processor.**

Monitor Section

The Monitor section of the 328XD supplies the outputs to which the studio monitor speakers, headphones and analogue mix down machines should be connected.

Using the switches in the monitor path, you can also select the source signal you wish to monitor from the CRM and phones outputs.



2TRK

Press the 2TRK switch to feed the selected 2 track input - either analogue A or B or digital 2-Track (see **Section 3 Part 5.9** and **Section 3 Part 5.10**) to the CRM and PHONES outputs, overriding the Mix bus. The 2-Track input is the ideal input to connect your mastering device, such as a DAT machine or CD recorder, allowing you to separate the monitoring paths.

MIX

Press MIX to feed the MIX L/R signal to the CRM and PHONES outputs. This is the default state of the console. When the console is switched on, regardless of the power-down state, the MIX bus will automatically be set as the active monitor path.

AFL/PFL LED

Whenever a SOLO button is active, the AFL/PFL LED illuminates to warn that the CRM and PHONES outputs will be carrying the AFL or PFL signal instead of the normal source. To clear all SOLOed channels, press the CLEAR button in the SOLO CONTROL panel. When the console is in SIP (solo in place) mode its default state, the AFL/PFL LED will not light.

MONO

Pressing MONO sums the left and right outputs of both the CRM and PHONES outputs. This is extremely useful for checking the mono compatibility of your mixes or for phase checking etc.

DIM

Pressing this button dims the CRM and PHONES outputs by 30dB.

CRM CUT

When this button is pressed the control room output is muted. The PHONES output is unaffected.

PHONES

This control adjusts the level sent to the stereo PHONES output.

CRM

This control adjusts the level sent to the CRM (control room) output.

48V (PHANTOM POWER)

When this button is pressed, 48V phantom power is provided to the microphone input, for powering professional condenser microphones or Direct Injection (DI) boxes. The 48V LED will illuminate to indicate that phantom power is on.

NOTE: To prevent damage to the mixer or external devices, do not connect microphones to the microphone inputs with the 48V power switched on, and only switch the 48V power on or off when the output faders are DOWN! Microphones that do not require phantom power may be used with phantom power switched on if correctly balanced cables are used. Ensure that the microphone is connected before switching on the phantom power.

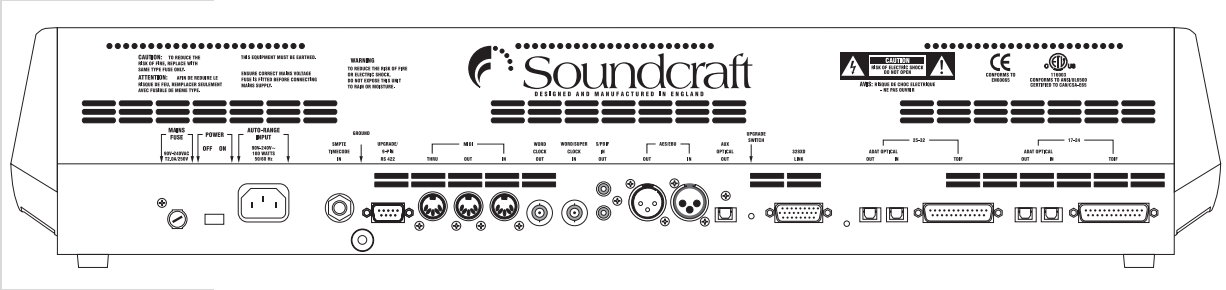
PSU INDICATORS

There are three green LEDs to monitor the status of the +/- 15V, 5V analogue and 5V digital power supplies. Under normal operating circumstances all three LEDs will be illuminated.

BARGRAPH METERS

Two 16 segment peak reading bargraph meters show the level of the selected monitor path - the output signal present at the CRM and Phones outputs. Under normal operation the reading will be of the mono or stereo Mix L/R bus, but when activated, the SOLO bus or 2TRK level will be displayed, overriding the Mix bus.

Part 2
The Rear Panel Inputs and Outputs



DIGITAL INPUTS 17-32

The 328XD offers two 8 channel bi-directional digital I/O interfaces for connecting the console to external recording devices or Soundcraft expansion units. Both Tascam TDIF and ADAT optical digital I/O formats are supported. Only the input channels of either the ADAT or TDIF input for each port may be active at any one time (see **Section 3J** - **Part 5.8 Tape Port Select** for setup information). The 8 channel outputs of both TDIF and ADAT outputs are continually and simultaneously active for both ports, however. Signals connected to either the Tascam TDIF or ADAT optical ports will be controlled by the faders of BANK SELECT 17-32.

- **TDIF (Tascam Digital Interface)**

  Connect machines or computer audio cards fitted with an 8 channel Tascam TDIF port to either of the TDIF ports on the rear of the 328XD. A Tascam specification TDIF cable is required. The cable is bi-directional and therefore carries the signals of the 8 input and 8 output channels to and from the 328XD TDIF ports.

- **ADAT Optical (Alesis Digital Audio Technology)**

  Connect machines or computer audio cards fitted with 8 channel ADAT optical input and output ports to either of the ADAT ports on the rear of the 328XD. For bidirectional transmission, an ADAT optical cable must be connected from the ADAT output of the external device to the 328XD ADAT input and an ADAT optical cable must also be connected from the ADAT output of the 328XD to the ADAT input of the external device.

The input signals present at TDIF or ADAT port 1 are controlled by the faders and related virtual channel strips of 328XD channels 17-24 and similarly the input signals present at TDIF or ADAT port 2 are controlled by the faders and related virtual channel strips of 328XD channels 25-32.

NOTE: The wordclock of devices connected to the 328XD TDIF or ADAT inputs must be correctly synchronized with the wordclock of the 328XD. This must be done in one of 3 ways: 1) by synchronizing the external device to its TDIF or ADAT input derived from the 328XD internal clock; 2) by synchronizing the 328XD clock to the ADAT output or to a wordclock, Digidesign Superclock or AES/EBU output of the external device; 3) by synchronizing both the 328XD and the external device to another host clock. For more information consult **Section 3J Part 5** and the Soundcraft Guide to Digital Mixing.

328XD LINK

The 328XD LINK port allows you to cascade two 328XDs together by using the Spirit Digital 328 or Soundcraft 328XD Link cable available from Soundcraft. All Group and Mix bussing is summed together but FX-1/FX-2 sends remain separate to each console.

Note that the 328XD cannot be linked to the earlier Spirit by Soundcraft Digital 328 console.

See **Section 5** on linked consoles for more information.

SOFTWARE DOWNLOAD SWITCH

This recessed switch should be accessed using a small, non-metallic implement, and is used during the process of updating 328XD software, as and when a new operating system becomes available. For more information see **Section 6** - **Upgrading 328XD Software.**

AUX OPTICAL OUT

The Auxiliary Optical Output may be configured to be a stereo optical S/PDIF signal to mix down to MiniDisc, for example, or a third 8 channel ADAT Optical output. When set to optical S/PDIF, the signal present at the coaxial S/PDIF output is duplicated. When used as an ADAT output, the AUX OPTICAL OUT may be configured to transmit either the 8 Group outputs or a fixed combination of the Mix bus, and Aux 1-4 and FX-1 & 2 Main Sends.

(See **Section 3J** - **Part 5.8 'Tape Port Select'** for set up information)

AES/EBU IN AND OUT

AES/EBU IN

Stereo AES/EBU signals from external devices such as DAT, CD or MiniDisc players should be connected here. The destination of this input can be routed via the MENU to any of the following:

- STE 1
- STE 2
- FX Return 1
- FX Return 2
- 2TRK

When one of these destinations is selected, the AES/EBU input signal will override the usual signal present at that input.

See **Section 3** - **Part 5.10 AES/EBU Input Setup** for setup information.

Note that the internal clocks of the 328XD and external AES/EBU devices must be correctly synchronized in order for the connection to be made. This can be done either by setting the console to act as a wordclock client device, synchronizing to the clock present at the AES/EBU or wordclock connection (if present) or by synchronizing the external AES/EBU device to the clock present in the 328XD AES/EBU output stream. See **Section 3J** - **Part 5.14 Clock Source Select** for setup information.

- **AES/EBU OUT**

  The 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
  Internal FX send 1 and 2
  Groups 1 and 2
  Groups 3 and 4
  Groups 5 and 6
  Groups 7 and 8
  Control Room output

See **Section 3J** - **Part 5.12 AES/EBU Output Setup** for setup information.

S/PDIF IN AND OUT

- **S/PDIF IN**

  Stereo S/PDIF signals from external devices such as DAT, CD or MiniDisc players should be connected here. The destination of this input can be selected via the MENU to any of the following:

  STE 1
  STE 2
  FX return 1
  FX return 2
  2TRK

  When one of these destinations is selected, the S/PDIF input signal will override the usual signal present at that input.

Note that the 328XD S/PDIF input is fitted with sample rate conversion. The internal clocks of the 328XD and external S/PDIF devices do not require to be synchronized in order for the connection to be made.

See **Section 3J** - **Part 5.9 SPDIF Input Setup** for setup information

- **S/PDIF OUT**

  The 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
  Internal FX send 1 and 2,
  Groups 1 and 2
  Groups 3 and 4
  Groups 5 and 6
  Groups 7 and 8
  Control Room output

The output signal selected will also be present at the Auxiliary Optical Output if set to S/PDIF in the Aux Optical Out menu within the Tape Port Select menu (see **Section 3J Part 5.8**).

See **Section 3J** - **Part 5.11 SPDIF Output Setup** for setup information

WORD/SUPERCLOCK IN / WORDCLOCK OUT

The BNC connectors are for synchronizing external devices to the 328XD's own internal wordclock, or for synchronizing the 328XD to an external wordclock or Digidesign Superclock source.

See **Section 3J** - **Part 5.14 Clock Source Select** for setup information.

MIDI IN, OUT AND THRU

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

- Synchronizing recall of SNAPSHOTS against incoming MTC (MIDI Timecode)
- Receiving MTC and transmitting MTC to external devices
- Transmitting and receiving MIDI Program Changes for Snapshot and User Setup recall
- Transmitting and receiving Dynamic Automation data to and from a MIDI recording device
- Sending and receiving MMC (MIDI Machine Control) messages to and from recording/playback machines
- Saving and loading SNAPSHOT and PRESET data to and from a MIDI recording device as MIDI System Exclusive information
- Sending and receiving MIDI Continuous Controller information for control of connected devices.

See **Section 3J** - **Part 5.2 User Options / Part 5.4** - **MIDI Controllers / Part 5.4 MIDI Dump Out / Part 5.6 MIDI Dump In / Section 4** - **Automation Techniques** for more information on MIDI functions.

UPGRADE / 9-PIN RS 422

The UPGRADE / RS422 port is used for machine control of machines that support the Sony 9-Pin protocol and for upgrading software using an IBM compatible PC or an Apple Macintosh with serial port fitted (see **Section 6** for details on upgrading 328XD software).

SMPTE TIMECODE IN

The SMPTE output of an external source, if present and required, should be connected to the SMPTE Timecode In jack on the rear of the console. All 100 of the 328XD snapshots can be individually programmed to recall at precise, configurable frames of a running incoming SMPTE timecode source. The incoming SMPTE timecode can also be displayed on the 328XD timecode display window.

If you would like to know more about wordclock and other digital information, please consult the relevant sections of 'The Soundcraft Guide To Digital Mixing' booklet included with this manual.

MAINS INPUT

Connect the 328XD to the mains with an IEC mains cable. The switch mode power supply will operate between 90V-240V.

MAINS FUSE

The mains fuse is located behind this screw off cap. Should the fuse require replacement, please contact your Soundcraft distributor.

POWER ON/OFF SWITCH

To prevent unnecessary studio stress, note that it is best if this switch is not idly pressed while in the middle of recording a mix during the early hours of the morning. To counteract the actions of inquisitive fingers though, the console will return to the previous power down state when booted.

3B

THE E-STRIP

OVERVIEW

The E-Strip allows operation of the 328XD to feel very much like that of an analogue console.

The channel strip on most analogue consoles offers similar controls, typically parametric equalisation, auxiliary sends and pan controls.

To enable speedy navigation of the console, the E-Strip has three simple modes of operation. Whether you're burning the midnight oil in the studio, or feeling the pressure at a live gig you'll take comfort in knowing that the E-Strip will make your life a whole lot easier.

THE CHANNEL STRIP THAT'S A REAL PUSH OVER

Firstly the E-Strip works just like a standard 'analogue' channel rotated through 90°. Pressing a channel SELECT switch for any analogue input 1-16, digital input 17-32, stereo input or FX return will instantly activate the E-Strip for that channel. You now have immediate access to the 3 band fully parametric EQ, 4 auxiliary sends, 2 internal Lexicon FX sends and pan control, all operated with normal rotary pots as you would expect.

Use the white on grey legending beneath the E-Strip.

LINE 'EM UP! 1 CHANNEL 1 PAN POT

Secondly the E-Strip can be set up to function as a row of dedicated level, auxiliary or internal Lexicon FX sends or pan controls for all 16 the channels of either channels 1-16 or 17-32. In this way, the current settings for either of the 16 channel banks can be viewed simultaneously.

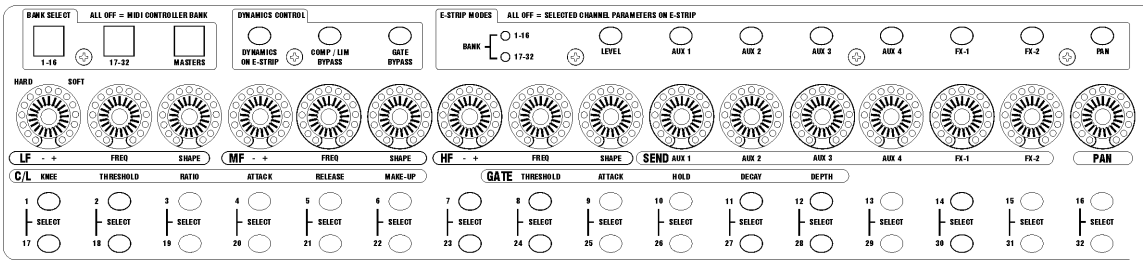
By way of an example, an analogue console will generally speaking offer a pan pot directly above the fader of that channel. In a similar way, all 16 encoders found on the E-Strip, can be switched to function as pan pots just like on an analogue console. Similarly. Auxiliary sends 1-4 and internal Lexicon FX sends 1 and 2 can be selected to appear on the E-Strip for all 16 channels of the active bank.

THE E-STRIP AS A DYNAMICS PROCESSOR

In a third mode, the E-Strip recreates the controls of a compressor/gate dynamics processor, for quick and easy dynamics processing of all 45 internal dynamics processors.

Use the black on white legending beneath the E-Strip.

Part 1
The E-Strip as a Channel strip



USING THE SELECT BUTTONS

To activate the E-Strip for a channel the relevant SELECT switch should be pressed. SELECT buttons are available for the following channels:

- Analogue Inputs 1-16
- Digital Inputs 17-32
- Stereo Inputs 1& 2
- FX Returns 1 & 2

When the E-Strip is set to display the dynamics processor controls, the MIX and GRP 1-8 switches of the Select Panel act as SELECT switches, allowing the parameters of dynamics processors for these buses to be easily adjusted.

Naturally it follows that all of the facilities found on the E-Strip can be applied to any of the above channels. Lets look at the E-Strip functions individually.

EQUALISER SECTION

Frequency Bands

The equaliser is divided into three fully parametric bands - low frequency (LF), mid frequency (MID) and high frequency (HF). Each band has a gain control (- +), a frequency select control (FREQ) and a bandwidth or 'Q' control (SHAPE).

- Gain

  The gain encoder (- +) offers a range of +/-15 dB for all three frequency bands.

- Frequency Bands

  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 FREQ encoder knob in a clock wise 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.

With the LCD display in VALUE mode (all switches off), it will display the parameters numerically as they are adjusted by the E-Strip encoders . The PARAM encoder and left and right cursor keys in the main section can also be used to select and adjust parameters.

- **Bandwidth**

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

LF	SHELVING/ - 0.35 to 2.8
MID	0.35 to 2.8
HF	SHELVING/ - 0.35 to 2.8

NOTE: When rotating the SHAPE encoder knob clockwise from its extreme counterclockwise position, the LF and HF bands will begin with a SHELVING filter characteristic, which changes to a peak filter with a 'Q' range of 0.35 through to 2.8 as the SHAPE encoder is gradually rotated.

The MID band has a peak filter characteristic with a 'Q' range of 0.35 through to 2.8

The LCD can be put into SELECT mode to display precise values of any EQ adjustment (see Section 3J Part 1).

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. All Aux sends are POST EQ.

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

- Press and hold the 'AUX/FX PRE' button located at the bottom right hand corner of the console.
- 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.
- The AUX 1, 2, 3 or 4 buttons will either be selected to be PRE FADE (illuminated) or POST Fade (not illuminated).
- 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.

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

With the LCD display in VALUE mode (all switches off), individual send levels of the selected auxiliary send will be displayed numerically, within the range -60dB to 0dB.

FX SEND 1 & 2

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

PRE/POST FADE SETTING OF FX SENDS 1 AND 2

- Press and hold the 'AUX/FX PRE' button.
- Now look at the status of the FX-1 & FX-2 buttons in the ROTARY CONTROLS section, whilst continuing to hold down the AUX/FX PRE button.
- The FX-1 & FX-2 buttons will either be selected to be PRE FADE (illuminated) or POST Fade (not illuminated).

- To change the PRE/POST status of FX-1 & FX-2, simply select or de-select the relevant button whilst holding down the AUX/FX PRE button.

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

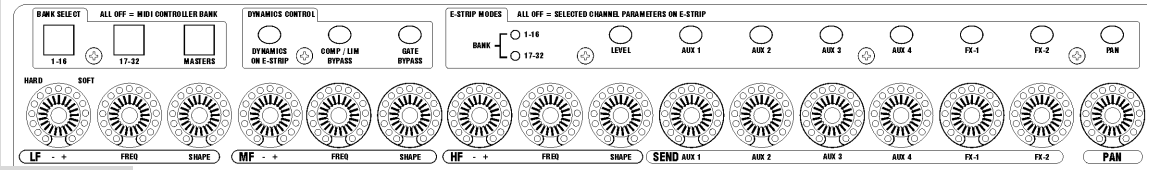
PAN CONTROL

The PAN encoder knob sets the amount of the channel feeding the left and right MIX busses or linked (stereo) Groups allowing a signal to be moved smoothly across the stereo image.

With the LCD display in VALUE mode (all switches off), it will display the PAN setting numerically. When encoder is rotated fully anti-clockwise the display will show LEFT, indicating that the signal is panned hard left. Gradually moving the encoder clockwise will move the display through LFT 1-30, Centre, RGT 1-30, ending at RIGHT denoting that the signal is now panned fully to the right. This is very useful when there is a need to match two signals symmetrically across the stereo image.

Part 2
The E-Strip as a row of controls

The second mode of the E-Strip sets the encoders as dedicated level controls, auxiliary sends, internal Lexicon FX Sends or pan controls.



LEVEL CONTROLS

The 16 encoders can be configured for use as level controls for either digital input channels 17-32 or analogue input channels 1-16. In this mode, the encoders control the level of the opposing fader bank, enabling immediate access to all 32 inputs on the 328XD, which can be useful in both recording and live applications.

With the LCD in VALUE mode (all switches off), it will display the parameters numerically as they are adjusted on the E-Strip.

- **Controlling Digital Inputs 17-32**

  When BANK SELECT 1-16 is selected, the signals present at analogue input channels 1-16 will be controlled from the 100mm long throw faders at the bottom of the console.

  If the LEVEL button in the ROTARY CONTROLS section is now selected, the 16 E-Strip encoders are set to control the level of the signals present at digital inputs 17-32. The red 'BANK' LED in the ROTARY CONTROLS section will confirm that channels 17-32 are selected. The green ring of LEDs surrounding the ROTARY CONTROLS represents the fader levels of BANK 17-32.

  The LCD can be put into VALUE mode to view precise values for any level adjustments (see **Section 3J Part 1**).

- **Controlling Analogue Inputs 1-16**

  To control the levels of analogue input channels 1-16 with the encoders, BANK SELECT 17-32 should be selected. As above, if LEVEL has been selected as the mode of ROTARY CONTROLS operation, the encoders will now act as level controls for the opposing bank, here channels 1-16.

AUXILIARY SENDS

The 16 E-Strip encoders can be switched to function as individual auxiliary send controls for each of the signals present at the 100mm long throw faders. In this way each of the auxiliary send levels of the 16 currently selected channels can be easily seen and adjusted.

- **AUX Sends for analogue inputs 1-16**

  Press the BANK SELECT 1-16 button so that it is illuminated and the 16 faders are set to control the signals present at the 16 analogue inputs.

By selecting any one of the AUX 1, 2, 3 or 4 switches in the ROTARY CONTROLS section, the 16 encoders of the E-Strip are set to control send levels to the relevant main auxiliary output bus.

The green ring of LEDs surrounding the ROTARY CONTROLS represents the audio send level.

The LCD can be put into VALUE mode to view precise values for any level adjustments (see **Section 3J Part 1**).

- **AUX Sends for Digital Inputs 17-32**

  By pressing the BANK SELECT 17-32 switch so that it is illuminated, control of individual auxiliary sends for input channels 17-32 is as input channels 1-16, as detailed above.

NOTE: 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. If the AUX 1, 2, 3 or 4 button in the ROTARY CONTROLS panel is illuminated the Auxiliary Send is PRE-Fade, and if it is not illuminated the Auxiliary Send is POST-Fade (see **Section 3B Part 1**).

FX SENDS

The 16 E-Strip encoders can be switched to function as individual internal Lexicon FX send controls for each of the signals present at the 100mm long throw faders. In this way each of the FX send levels of the 16 currently selected channels can be easily seen and adjusted.

- **FX Sends for Analogue Inputs 1-16**

  Press the BANK SELECT 1-16 button so that it is illuminated and the 16 faders are set to control the signals present at the 16 analogue inputs.

  By selecting either of the FX-1 or FX-2 switches in the ROTARY CONTROLS section, the 16 encoders of the E-Strip are set to control send levels to the relevant main Lexicon FX send bus.

  The green ring of LEDs surrounding the ROTARY CONTROLS represents the audio send level.

  The LCD can be put into VALUE mode to view precise values for any level adjustments (see **Section 3J Part 1**).

- **FX Sends for Digital Inputs 17-32**

  By pressing the BANK SELECT 17-32 switch so that it is illuminated, control of individual internal Lexicon FX sends for input channels 17-32 is as input channels 1-16, as detailed above.

NOTE: The FX-1 and FX-2 sends can be switched to be PRE or POST-Fade by pressing and holding the AUX/FX PRE button. If the FX-1 or FX-2 button in the ROTARY CONTROLS panel is illuminated the FX Send is PRE-Fade, and if it is not illuminated the FX Send is POST-Fade.

PAN CONTROLS

The 16 E-Strip encoders can be switched to function as individual pan position controls for each of the signals present at the 100mm long throw faders. In this way each of the pan positions of the 16 currently selected channels can be easily seen and adjusted.

- **PAN controls for Analogue Inputs 1-16**

  Press the BANK SELECT 1-16 button so that it is illuminated and the 16 faders are set to control the signals present at the 16 analogue inputs.

  By selecting the PAN switch in the ROTARY CONTROLS section, the 16 encoders of the E-Strip are set to control the pan positions.

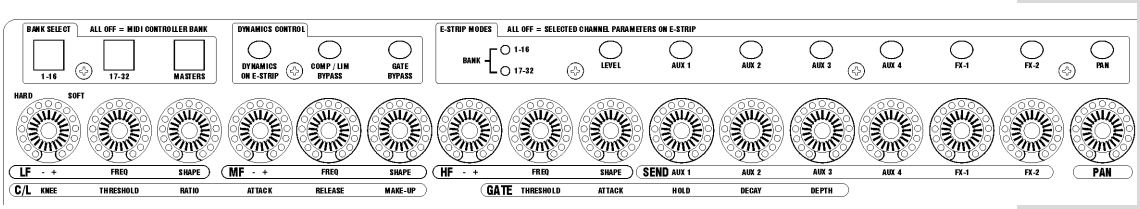
  The green ring of LEDs surrounding the ROTARY CONTROLS represents the pan position of each channel within the stereo image.

  The LCD can be put into VALUE mode to view pan position adjustments numerically (see **Section 3J Part 1**).

- **PAN controls for Digital Inputs 17-32**

  By pressing the BANK SELECT 17-32 switch so that it is illuminated, control of individual pan poisitions for input channels 17-32 is as input channels 1-16, as detailed above.

Part 3
The E-Strip as a Dynamics Processor



Dynamics Processor Overview

Each of the 328XD's 32 input channels, STE-1 and STE-2, FX Return 1 and FX Return 2, Group outputs and Mix Bus offers a compressor/gate dynamics processor. Where applicable, the dynamics processors act pre-EQ.

Descriptions of the compressor / limiter and noise gate stages of the 328XD dynamics processors are below.

Compressor / Limiter

A compressor is designed to control the level of a signal automatically. You could think of it as having an invisible hand that will automatically pull down a fader very quickly if a signal suddenly gets a little too loud.

Threshold

The compressor / limiter threshold setting determines the level in dB which the input signal level must reach in order for the compressor / limiter to begin to apply gain reduction. Signals above the threshold level will be attenuated according to the ratio setting (see below). When the signal drops below the threshold level, it will pass through the compressor / limiter stage of the dynamics processor unaffected.

The 328XD dynamics processors allow the threshold level to be set between - 60dB to 0dB.

Knee

The knee setting can be set to either a hard or soft setting. With a hard knee setting selected, the compressor / limiter will begin to operate immediately the input signal reaches the threshold level.

With soft knee selected the compressor / limiter will begin to have an effect on the input signal slightly before the threshold level is reached, generating a smoother, more natural sounding transition from the uncompressed to compressed signal.

Ratio and the Compressor as a Limiter

The ratio setting determines by how much the signal is reduced once the level is greater than that set as the threshold. For a ratio setting of 5:1, an increase of the input signal by 10dB above the threshold setting will result in the output level being attenuated by 10 - (10 ÷ 5 : 8dB. Similarly, with a ratio setting of 2:1, a 10dB increase in input level above the threshold setting will result in the output level being attenuated by 10 - (10 ÷ 2) = 5dB. The higher the ratio setting, the more noticeable the compression effect will be.

The 328XD dynamics processors allow the compression ratio to be set from 1:1 through to 15:1. A setting of infinty:1 can also be set, at which point the compressor acts as a limiter.

Attack

The attack setting determines the time taken for the compressor / limiter to apply full gain reduction to the signal (as set by the ratio, above) after the input signal raises above the threshold. Fast attack time settings cause the compressor to act almost instantly. Slow attack times instruct the compressor to apply gain reduction more gradually.

The attack time of the 328XD compressors can be adjusted from 480µs to 500ms.

Release

The release setting determines the time taken for the compressor / limiter to stop applying the level attenuation once the input signal has sunk below the threshold again. A fast release time setting instructs the compressor to stop taking effect almost instantaneously, whereas a slow release time removes the compression effect more gradually.

The release time of the 328XD compressors can be adjusted from 11.0ms to 11.0s.

Makeup

When a signal is compressed, the louder passages are of course reduced in level, causing the peak level of the signal to be reduced. The makeup control can be used to return the compressor output signal to its previous maximum level.

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

The makeup control of the 328XD compressors have a range of -12dB to +12dB.

Noise Gate

The primary use of a noise gate is to mute moments of unwanted low level noise in an input signal, although it can also be used for creative purposes.

When a noise gate allows the input signal through, it is referred to as being 'open'. When a noise gate mutes the input signal it is referred to as being 'closed'. This terminology is similar to that used in describing a gate designed to prevent cows from escaping, although more is offered in the way of editable control.

The controls of the noise gate available to each input channel are described below.

Threshold

The threshold setting determines the level in dB at which the input signal must be in order for the noise gate to open and allow the signal fully through, so that gain reduction can be applied to moments of an input signal that fall beneath the threshold.

The 328XD dynamics processor noise gate threshold can be adjusted from -60dB to 0dB.

Attack

The attack, hold and decay settings (see below) together govern the level of the signal through time.

The attack time determines how quickly the noise gate will open once the signal rises above the set 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 328XD noise gate attack time is adjustable from 260µs to 140ms.

Hold

The hold time determines how long the noise gate remains open after the signal has fallen below the threshold level. A longer hold time should be used to allow a reverb tail on a gated signal to be heard, for example.

The 328XD noise gate offers a hold time adjustable from 480µs to 500ms.

Decay

During the decay stage, the level of the signal will fade to the value specified in the depth setting (see below). The decay time setting determines how quickly the fade will take after the hold time has passed.

Note that if the noise gate closes too quickly, the end of a signal may feel 'chopped' off (think of the cows...). A longer decay time will allow the natural decay of a signal to pass through the gate before it shuts.

The 328XD decay time is adjustable from 11.0ms to 11.0s.

Depth

The depth setting determines the level which the input signal is attenuated by when the noise gate is closed. A higher setting (towards 0dB) can be used to reduce the level of the signal slightly instead of cutting it completely. A setting of -80dB has the effect of muting the signal completely. A setting between the two extremes can be used to reduce the signal progressively without cutting it completely.

The 328XD noise gate depth is adjustable from -80dB to 0dB.

The Compressor/Limiter and Noise Gate together

In practice, an input signal is processed firstly by the compressor and then the noise gate, as illustrated below, but with the compressor makeup gain taking effect post-noise gate.

Using the Dynamics Processors

The 328XD offers full control over the parameters of the dynamics processors available to the input and output channels using the encoders of the E-Strip. To put the E-Strip into dynamics mode, press (wait for it...) the DYNAMICS ON E-STRIP switch above E-strip encoder 4. Encoders 1-6 now represent the controls of the compressor / limiter, while the noise gate is controlled with encoders 8-12. Encoders 7 and 13-16 are unused. The black on white legending below the encoders indicates the encoders' functionality when in this mode.

With the use of the DYNAMICS ON METERBANK switch, the 16 input meters can be quickly and easily set to display the compressor gain reduction levels and noise gate open/closed status for each of BANK SELECT 1-16, 17-32 and MAINS.

Both the compressor/limiter and noise gate have a dedicated BYPASS On/Off switch and by default both bypass switches are set to ON. The switch is lit to indicate BYPASS=ON.

Dynamics On E-Strip

To edit a channel's dynamics processor, press the DYNAMICS ON E-STRIP switch located in the Dynamics Control panel on the E-Strip so that it is illuminated. All encoder LEDs will be unlit. Now SELECT the input channel to which you wish apply some dynamics processing. The SELECT switch for the chosen channel will light. The E-Strip encoders are now set to control the channel's dynamic processor.

Note that by pressing the SELECT switches for Stereo Inputs 1 and 2 and FX Returns 1 and 2 the E-Strip can be used to edit the dynamics processors for these channels.

Functionality of the encoders when in DYNAMICS ON E-STRIP mode is as follows:

Encoder	Processor Stage	Parameter
1	Compressor / Limiter	Knee Type
2	Compressor / Limiter	Threshold
3	Compressor / Limiter	Ratio
4	Compressor / Limiter	Attack
5	Compressor / Limiter	Release
6	Compressor / Limiter	Makup
7	No function	
8	Noise gate	Threshold
9	Noise gate	Attack
10	Noise gate	Hold
11	Noise gate	Decay
12	Noise gate	Depth
13	No function	
14	No function	
15	No function	
16	No function	

Refer to the black on white legending below the E-Strip for encoder functionality when in DYNAMICS ON E-STRIP mode.

Note that encoder 1, which represents the compressor knee switch, should be turned anti-clockwise for a hard knee setting and clockwise for a soft knee setting. The hard knee setting is represented with lit encoder LEDs to the left of centre and the soft knee setting is represented with lit encoder LEDs to the right of centre.

Simply adjust the parameters of the dynamics processor as you wish, using the active encoders.

To adjust a dynamics processor for another channel / bus, simply SELECT the new channel. The E-Strip will instantly reset to indicate the current parameter settings of the newly selected channel.

To return the E-Strip to its previous mode of operation, simply deselect the DYNAMICS ON E-STRIP switch.

Note that with DYNAMICS ON E-STRIP active and with the LCD display in SELECT mode,the cursor keys can be used to navigate through channel properties such as EQ, using the PARAM encoder to make adjustments.

Dynamics on the Mix and Group buses

Note that, while in DYNAMICS ON E-STRIP mode, the MIX and GRP 1-8 switches located in the Select Panel act as the SELECT switches for these buses. To adjust the parameters of the dynamics processor for the Mix, press the DYNAMICS ON E-STRIP switch so that it is lit and press the MIX switch in the Select Panel - it will light, indicating that the E-Strip dynamics processor controls are currently active for the Mix bus. To adjust the parameters of the dynamics processor for Group output 1, press the DYNAMICS ON E-STRIP switch so that it is lit and press the GRP 1 switch in the Select Panel. It will light, indicating that the E-Strip dynamics processor controls are now active for Group output 1. Similarly, press the GRP 2-8 switches to adjust the parameters of the corresponding dynamics processors.

Operation for all other Select Panel switches is as normal when in DYNAMICS ON E-STRIP mode (see **Section 3C**).

Bypass

The compressor / limiter and noise gate stages of the dynamics processors can also be bypassed (disabled) individually. To bypass a dynamics processor stage for any of input channels 1-32, simply SELECT the relevant channel whether in DYNAMICS ON E-STRIP mode or under normal E-Strip operation. The COMP/LIM BYPASS and GATE BYPASS switches located in the Dynamics Control panel will indicate the current state of the processor. With the switch lit, the processor stage is bypassed (off) and when unlit the processor is active. To enable or disable bypass for either dynamics processor stage, simply press the relevant switch. The factory default state for both bypass switches is ON (lit).

To enable or disable bypass for either the compressor / limiter or noise gate of Groups 1-8 or the Mix bus, DYNAMICS ON E-STRIP must first be the active E-Strip mode. The relevant output can then be selected by pressing the MIX or GRP 1-8 switches in the Select Panel, so that the E-Strip and bypass switches become active for that channel. Enable or disable bypass by pressing the relevant switch in the Dynamics Control panel.

Note that when not in DYNAMICS ON E-STRIP mode, the compressor and gate bypass switches can be independently held to indicate the bypass status of all channels. Bypass can also be enabled / disabled for multiple channels in this way. For example, to check which channels have bypass activated for their associated compressors, while not in Dynamics On E-Strip mode, press and hold the COMP/LIM BYPASS switch. The relevant channel SELECT LEDs will light to indicate that the compressor bypass is active for that channel. While continuing to hold the COMP/LIM BYPASS switch, hit the SELECT switches for the channels for which you wish to change the COMP/LIM BYPASS state.

Dynamics On LCD

Pressing the DYNAMICS switch to the left of the LCD will put the display into a mode allowing you to view adjustments made to any dynamics processor control as a precise value. While in DYNAMICS ON E-STRIP mode, press the DYNAMICS switch. The LCD will now automatically jump to display whichever dynamics parameter you adjust, for whichever channel you have selected.

With the LCD in DYNAMICS mode, the PARAM encoder beneath the LCD will also assume the functionality of whichever dynamics parameter you are currently adjusting or last adjusted. The ◀ and ▶ cursor keys also allow navigation through the processor controls as they appear on the E-Strip.

Note that the LCD and PARAM encoder can also be put into DYNAMICS mode to make adjustments to the dynamics processor even when the E-Strip is not in DYNAMICS ON E-STRIP mode. The cursor keys allow navigation and the PARAM encoder allows parameter adjustment.

Linked dynamics processors

For linked channels and Groups, the dynamics processors can also be linked (see **Section 3J Part 5.18** for more information on stereo linking input channels and Groups). If 2 adjacent input channels or 2 adjacent Group outputs have been linked to form stereo

pairs, adjustments made to the dynamics processor parameters for either the odd or even channel or Group will adjust the parameters of the linked channel. By default, control of dynamics processor parameters is linked for linked channels, but the option can be disabled in the Chan Link Setup menu.

Note that, with dynamics set to 'on' in the Chan Link Setup menu, linking adjacent channels will link the dynamics processors immediately, copying the current dynamics parameters of the odd channel to the even channel. To disable this feature and read more about channel / group linking, refer to **Section 3J Part 5.18**.

Similarly, the parameter values of one dynamics processor can be copied to that of another input channel. See **Section 3J Part 5.17** for more information.

Dynamics On Input Meters

The effect of the noise gates and compressors can be monitored visually on the 16 bargraph input meters. By pressing the DYNAMICS ON INPUT METERS switch, all 16 input meters switch to reflect the gain reduction for all channels which have the compressor active. Three banks of compressor gain reduction meters can be accessed using the BANK SELECT switches.

The three banks reflect gain reduction of the following:

Input channels 1-16	accessed with the BANK SELECT 1-16 switch
Input channels 17-32	accessed with the BANK SELECT 17-32 switch
Group outputs 1-8, Stereo Inputs 1/2, FX returns 1/2, Mix	accessed with the BANK SELECT Mains switch

When monitoring the gain reduction of the Group outputs, Stereo Inputs 1 and 2 and the Mix bus, by pressing the BANK SELECT Mains switch, the meters indicate the following signals:

Gain reduction meters 1-8	Group outputs 1-8
Gain reduction meters 10, 11	Mix bus L/R*
Gain reduction meters 12, 13	Stereo Inputs 1 and 2*
Gain reduction meters 14, 15	FX Returns 1 and 2*

* Refer to the black on white legending above meters 10-15.

The REC ARM / GATE LEDs immediately beneath the 16 meters indicate the noise gate open / closed status so that when the noise gate is open, the LED is off and when closed, the LED is on.

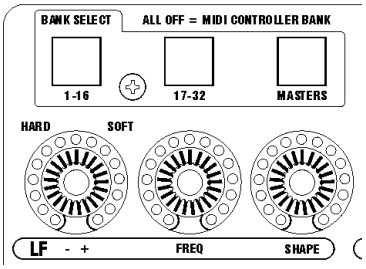
The main stereo output meters continue to indicate the output level of the selected monitor path.

To return the meters to their normal signal level monitoring, press the DYNAMICS ON INPUT METERS switch again so that it is unlit. The REC ARM / GATE LEDs will also return to displaying remote record arm status.

Note that it is not necessary for the E-Strip to be in DYNAMICS ON E-STRIP mode to access the DYNAMICS ON INPUT METERS switch, enabling you to see a channel's compression gain reduction or gate open / closed status while adjusting the EQ, for example.

Pressing and holding the DYNAMICS ON INPUT METERS switch will display the level meters of the Main Bank for the duration of the hold.

Part 4
The FADER BANKS



The three square BANK SELECT switches assign the 16 long throw motorised faders, MUTE and SOLO switches to control the channels of the following banks. The signals represented on the 16 Meters follow the BANK SELECT selection.

- **1-16** : When selected, the 16 long throw motorised faders control the level of the signals present at Analogue Inputs 1-16.

  The 16 MUTE and 16 SOLO switches take effect on Analogue Inputs 1-16.

  The 16 Meters represent the Pre-Fade, Post-EQ and Post-Dynamics signal levels.

- **17-32** : When selected, the 16 long throw motorised faders control the level of the signals present at Digital Inputs 17-32 (i.e. the digital TDIF or ADAT inputs).

  The 16 MUTE and 16 SOLO switches take effect on Digital Inputs 17-32.

  The 16 Meters represent the Pre-Fade, Post-EQ and Post-Dynamics signal levels.

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

  - **Faders 1-8** Group Output 1-8 levels
  - **Fader 9** Not used
  - **Faders 10-13** AUX 1-4 Main send levels
  - **Faders 14-15** FX 1 & FX 2 Main send levels
  - **Fader 16** Solo bus level

Similarly, the MUTE and SOLO switches become active only for Group Outputs 1-8, Aux 1-4 Main sends and FX-1 & FX-2 Main Sends.

The 16 Meters will represent the appropriate post-fade signal levels.

NOTE: The faders of the MAINS BANK SELECT do not exceed 0dB unity gain - no further gain is achieved if the fader travels above the 0dB unity gain position.

- **ALL OFF = MIDI CONTROLLER BANK** : By pressing the currently illuminated BANK SELECT switch, the 16 long throw motorised faders, the 16 ROTARY ENCODERS, the 16 MUTE and the 16 SOLO switches act as 64 user definable MIDI controllers (for more information see **Section 3J Part 5.3**).

  When in this mode, the 16 Meters continue to represent the signal levels of the previously selected bank, as above.

NOTE: The Meter Bank can also be set to display the gain reduction levels of the internal compressors by pressing the DYNAMICS ON METERBANK switch. When this is activated, the faders continue to operate in the selected mode, but the Meters display the gain reduction levels of the internal compressors for the active Bank. When the BANK SELECT selection is altered while in this mode, the Meters will continue to display the Compressor gain reduction levels, but for whichever bank is subsequently selected. To return to input meter level display, deselect the DYNAMICS ON METERBANK switch.

When viewing gain reduction of the MAINS BANK SELECT, refer to the black on white legending above meters 10 - 15.

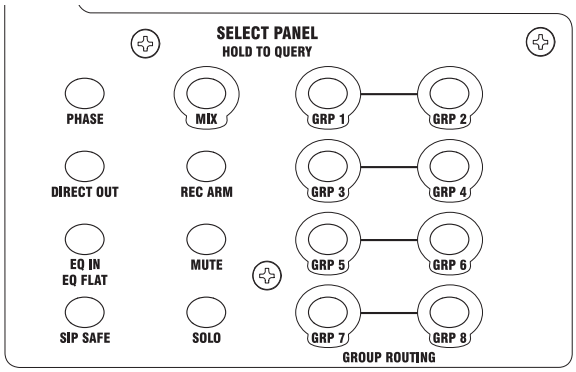
3C

THE SELECT PANEL

OVERVIEW

The 328XD SELECT PANEL is where you will find the rest of the controls you would expect to find on the channel strip of an analogue mixer such as the Group Routing buttons, Phase Reverse, EQ In/Out etc.

The Select Panel becomes active when a SELECT switch is pressed for any of Analogue Inputs 1-16, Digital Inputs 17-32, Stereo Inputs 1 and 2 or FX Returns 1 and 2.



Let's look a little closer at how the SELECT PANEL works.

PHASE

When the PHASE button is pressed the phase of the selected channel will be reversed/ inverted.

This can be useful when a signal arriving at the mixer input is out of phase with an adjacent channel causing attenuation or other unwanted effects due to phase cancellation. Reversing the phase of one of the channels will correct this.

Note that when the PHASE switch is activated for STE-1 or STE-2, the phase of the left side of the stereo signal will be inverted.

DIRECT OUT

The DIRECT OUT button can be accessed only when the SELECT switch is active for any channels of BANK SELECT 1-16.

When pressed the selected channel is put into DIRECT OUT mode. So what does this mean?

This is a very useful feature that allows the output of the selected channel to be routed directly to the corresponding ADAT and TDIF outputs on the rear of the console.

For example let's assume we have two ADATs connected to Digital Outputs 17-24 and 25-32 in order to record Analogue Inputs 1-16 post-fade.

When DIRECT OUT is active for an analogue input channel, the signal is transmitted directly to the corresponding ADAT output channel. Consequently, Analogue Input channels 1-8

are transmitted directly to the 8 input channels of the first ADAT recorder, and Analogue Input channels 9-16 are transmitted to the 8 input channels of the second ADAT recorder. This allows all 16 MIC/LINE channels to be recorded simultaneously. The same would be true if two Tascam DTRS machines were connected to the TDIF ports.

The direct signal that is transmitted in this mode can be set to be pre or post-fade and pre-EQ. For a detailed description of how this is configured please consult **Section 3J Part 5.1**.

Channels can still be monitored via the control room outputs and stereo outputs whilst in this mode.

When DIRECT OUT is disabled for an analogue input channel, instead the corresponding Group output is transmitted on that Digital Output channel (see table below). With DIRECT OUT disabled for all channels of BANK SELECT 1-16, the Digital Outputs are configured so that Groups 1-8 are output on both Digital Output channels 17-24 and 25-32. In this way, the 8 channel ADAT and TDIF outputs can be configured to be a combination of Group outputs and direct sends from the channels of BANK SELECT 1-16.

Channel with DIRECT OUT disabled	Group Output
1, 9	1
2, 10	2
3, 11	3
4, 12	4
5, 13	5
6, 14	6
7, 15	7
8, 16	8

As DIRECT OUT is only available to channels of BANK SELECT 1-16, under normal operation only the analogue input channels can be assigned directly to the tape send channels. With one or both Flip Banks enabled, however, (see **Section 3J Part 5.2** for more information) the Digital Inputs 17-32 can also be routed directly post-fade to the tape outputs. As the TDIF and ADAT outputs are both continuously active, regardless of which is set as the input port, you can easily dub from two ADAT machines to two TDIF machines or vice versa.

EQ IN / EQ FLAT

With the SELECT switch active for an input channel, illuminating the EQ IN button will enable the 3 Band Parametric Equaliser available on the MIC/LINE 1-16, TAPE 17-32, STE 1and 2, FX 1 and 2 channels. When switched OFF, EQ is bypassed for the channel, regardless of any current or future adjustments.

To flatten the EQ settings for a channel, press and hold the relevant channel SELECT switch and press the EQ FLAT switch in the SELECT PANEL once. It will illuminate to indicate that the EQ has been reset.

SIP SAFE (SOLO IN PLACE SAFE)

When Solo In Place (SIP) is not active in the SOLO CONTROL panel (see **Section 3F**), the

Mix Bus at the MIX L/R Outputs is left unaffected when a channel is soloed. Instead the Mix Bus at the CRM and PHONES outputs is replaced with the Solo Bus, the level of which is controlled by Fader 16 of the MAINS BANK SELECT.

With SIP Solo mode active, the default state, when a SOLO switch is activated for a channel, all other channels are automatically muted from the Mix Bus, leaving only the soloed channel(s) routed to the Mix, which remains present at the CRM and PHONES outputs. You can observe this by putting the console into SIP Solo mode and soloing any input channel - the MUTE switch for all channels without SIP SAFE active will become active.

The SIP SAFE switch functions to prevent the automatic MUTE activating for any channel with SIP SAFE active in the SELECT panel. Consequently, when another channel is soloed in place, selected SIP SAFE channels will be unaffected.

By way of an example, this can be useful when you wish to SOLO the lead vocalist but do not want the vocal FX to be muted. Pressing the FX-1 or FX-2 SELECT switch will enable you to activate SIP SAFE. The FX return then remains routed to the Mix Bus when the vocalist's channel is soloed in place.

By default STE-1, STE-2, FX-1 and FX-2 are all set to SIP Safe active.

MIX

The MIX switch enables you to select which input channels are routed to the MIX L/R Outputs and which are not.

While pressing and holding the MIX switch, the groups can be routed to the mix bus by selecting the relevant GRP switch(es).

Note that this switch acts as a SELECT switch for the Mix bus when in DYNAMICS ON E-STRIP mode (see **Section 3B Part 3**).

REC ARM (RECORD ARM)

Use of the RECORD ARM switch enables the remote arming of a track on the corresponding channel of a connected recording device. This switch is used in conjunction with SELECT switches 1-16 only.

NOTE: The Tape Mach Setup menu (see **Section 3J Part 5**) must be configured correctly for a connected tape machine in order for the REC ARM function to work correctly.

To REC ARM a track on an external recording device:

- Firstly make sure that the recording device is setup to receive MMC (MIDI Machine Control) or Sony 9-pin control, depending on the connection you have made. See **Section 3J - Part 5.13 Tape Machine Setup** for more detail.
- Using Query Mode operation (see page 52), hold down the REC ARM button and press the SELECT 1-16 button(s) for the corresponding track number(s) you wish to arm. The REC LED above the chosen channel number will flash. When the remote recording device is put into record either directly or from the 328XD Transport Controls, the REC ARM LED will remain illuminated.

- To disable REC ARM for a track which has been enabled, press and hold the REC ARM switch and deselect the required SELECT switch(es). The REC ARM LED will be unlit.

NOTE: When the Meter Bank is set to display the gain reduction levels of the compressors (see **Section 3B Part 4**), the Record Arm LEDs indicate the Noise Gate Open/Closed status. To return the LEDs to indicate the Record Arm status, deselect the DYNAMICS ON METERBANK switch.

MUTE

The sends to the Mix Bus, Groups 1-8 and post-fade Aux/FX Sends are muted when the MUTE button is activated for a channel.

Although there are dedicated MUTE buttons for the BANK SELECT channels 1-16, 17-32 and MAINS and also for STEREO INPUTS 1 and 2, the MUTE switch in the SELECT panel must be used to mute FX Return 1 or 2.

NOTE: AUX and FX Sends from an input channel will be muted only if the AUX and FX Sends are globally set to operate post-fade (see **Section 3H**). An AUX or FX Send set to pre-fade will allow the signal of a muted input channel to continue to route to the Main Aux or FX Send bus.

SOLO

When pressed, the SOLO button illuminates and places the selected channel into SOLO mode according to the type of SOLO selected in the SOLO CONTROL panel. When the console is not in Solo In Place solo mode, the PFL/AFL LED on the Main section of the mixer illuminates to warn when a SOLO is active.

SOLO IN PLACE (SIP) ACTIVE

When the default solo mode, Solo In Place (SIP), is active (see **Section 3F**) and a SOLO switch is activated for a channel, all other channels are automatically muted from the Mix Bus. Only the soloed channel(s) stays routed to the Mix, which remains present at the CRM and PHONES outputs.

SOLO IN PLACE INACTIVE: PFL (PRE-FADE LISTEN) / AFL (AFTER-FADE LISTEN)

With Solo In Place (SIP) solo mode inactive, the signal of a soloed channel is transmitted to the stereo Solo Bus, the level of which is controlled by fader 16 of the MAINS BANK SELECT. When as a channel is soloed while in this mode, the Solo Bus is transmitted to the CRM and PHONES output and is displayed on the main stereo output meters. The Mix Bus at the MIX L/R outputs remains unaffected.

Use the AFL and PFL switches in the SOLO CONTROL panel to determine whether the Solo Bus is derived post-fade (AFL) or pre-fade (PFL). Selecting AFL will cancel a PFL selection, and vice versa. When AFL is selected, soloed channels are transmitted to the stereo Solo Bus post-fade, Post-Mute, Post-Dynamics, Post-EQ and Post-Pan. When PFL is selected, soloed channels are transmitted to the stereo Solo Bus pre-fade, pre-Mute, past - Dynamics, post-EQ and pre-Pan.

PFL/AFL is a useful way of listening discretely to an input signal with out interrupting the main Mix Bus transmitted at the MIX L/R Outputs.

NOTE: For more information on SOLO modes please see **Section 3F** - **'SOLO CONTROL'**. See also the Solo options available in the User Options menu (**Section 3J Part 5.2**).

GRP 1 - GRP 8

A selected channel can be routed to any of the 8 Group outputs by pressing the relevant GRP 1 - GRP 8 button.

The selected GRP button will illuminate to show that routing is active.

Channels may be routed to individual, mono Groups or to Stereo Groups that have been linked as odd/even pairs. When a channel is routed to a linked Group output, both linked GRP switches will illuminate. The pan positioning is maintained.

(See **Section 3H** - **Group/Aux/ FX** for more details)

Note that these switches act as SELECT switches for the relevant Group buses when in DYNAMICS ON E-STRIP mode (see **Section 3B Part 3**).

Query Mode

All switches of the SELECT Panel can operate in Query Mode, which allows a quick and easy way of viewing and altering current console configuration. By pressing and holding any of the buttons in the SELECT panel, the console displays the status of that switch for all channels on the console, by illuminating the relevant SELECT switches.

While continuing to hold the switch, the status of the channels may be altered by switching on or off the channels' SELECT switches. Releasing the SELECT Panel switch operating in Query Mode will return the console to normal operation, maintaining any alterations made during Query Mode.

As an example, if you wish to see which channels are routed to MIX:

- Press and hold MIX in the SELECT panel
- The SELECT buttons illuminate on those channels which are currently routed to MIX.
- Group outputs 1-8 can also then be routed to the MIX bus using the GRP1-8 switches.

NOTE: The MIX and GRP 1-8 switches can still be used in Query mode for their normal functions when in DYNAMICS ON E-STRIP mode (see **Section 3B Part 3**).

Besides the switches of the SELECT Panel, a number of other surface switches can operate in Query Mode.

The complete list is below:

PHASE	MIX
DIRECT OUT	REC ARM
EQ IN	MUTE
SIP SAFE	SOLO
AUX/FX PRE	CHANNEL/GROUP LINK
COMP/LIM BYPASS	GATE BYPASS
GRP 1 - GRP 8	DYNAMICS ON INPUT METERS

By pressing and holding any of the above switches, the state of the console can be quickly seen and altered.

The DYNAMICS ON INPUT METERS switch can be used in Query Mode. When active, querying this switch will show the Main meter levels for the duration of the hold.

3D

STEREO INPUTS

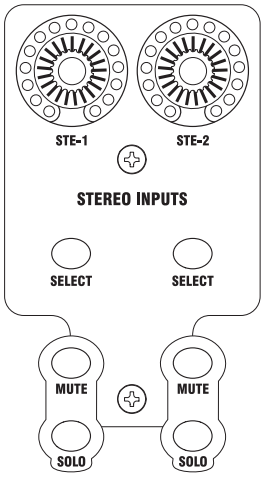
OVERVIEW

STEREO INPUTS 1 AND 2

The 328XD has two dedicated stereo inputs - STE-1 and STE-2. While STE-2 is a single stereo input, STE-1 submixes 4 balanced analogue stereo inputs in the analogue domain and feeds the output into 1 digital signal path, making STE-1 input suitable for the returns from FX units connected to the 328XD's 4 auxiliary outputs.

A mono signal can be connected to the stereo inputs if the left analogue input is used.

NOTE: The analogue inputs can also be overridden by the S/PDIF and AES/EBU inputs (see **Section 3J Part 5.9**) or the internal oscillator (see **Section 3J Part 5.10**).



STE-1 AND STE-2 ROTARY CONTROLS

The STE-1 and STE-2 rotary encoders control the level of the signal assigned to the STE-1 and STE-2 Inputs. The green LED ring around the encoder represents the level. To view the level numerically, the LCD display can be put into VALUE mode.

SELECT BUTTON

When pressed, the SELECT button activates both the E-Strip (see **Section 3B**) and the SELECT PANEL (see **Section 3C**) for the selected stereo input.

Note that channel Dynamics are also available to Stereo channels 1 and 2.

When activated, the PHASE switch within the SELECT PANEL will invert the phase of the left side of the Stereo input.

The DIRECT OUT and REC ARM buttons in the SELECT panel do not function when the SELECT PANEL is active for either STE-1 or STE-2.

MUTE BUTTON

The MUTE button mutes the signal present in the STE-1 or STE-2 input.

SOLO BUTTON

The SOLO button places the selected STE-1 or STE-2 input into solo mode. The solo status will follow the selection that has been made in the SOLO CONTROL panel (see **Section 3F**).

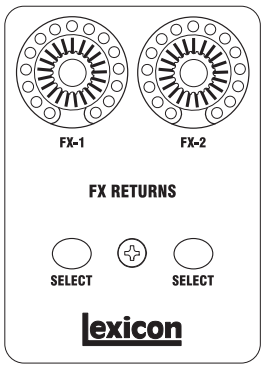
3E

FX RETURNS

OVERVIEW

The returns from the two internal Lexicon FX units are controlled by the two dedicated FX Returns - FX-1 and FX-2.

Note that the FX Returns can also be overridden by the S/PDIF and AES/EBU inputs (see **Section 3J Part 5.9**) or the internal oscillator (see **Section 3J Part 5.10**).



FX-1 AND FX-2 ROTARY CONTROLS

The FX-1 and FX-2 rotary encoders control the level of the signal assigned to the FX-1 and FX-2 Returns. Under normal operation this will be the return signals from the internal effects units, but the S/PDIF and AES/EBU inputs and internal Oscillator can be set to override these signals. The green LED ring around the encoder represents the level. To view the level numerically, the LCD display can be put into VALUE mode.

SELECT BUTTON

When pressed, the SELECT button activates both the E-Strip (see **Section 3B**) and the SELECT PANEL (see **Section 3C**) for the selected FX Return.

The internal FX Returns do not have dedicated SOLO or MUTE switches similar to those offered by the Stereo Inputs. Instead the switches in the SELECT PANEL must be used.

To route the FX Return channels to the Group outputs, with the Select PANEL active for the relevant FX Return channel, select the required GRP 1-8 switches. Note that the Group outputs should be stereo linked in order to maintain the stereo image of the FX returns at the Group output.

The DIRECT OUT, REC ARM and PHASE buttons in the SELECT PANEL do not function when the SELECT PANEL is active for either FX-1 or FX-2.

CASCADING FX

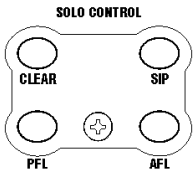
The FX-1 Return can be routed into the FX-2 processor if a serial FX routing is required. The FX-2 return cannot be routed into the FX-1 processor. The LEDs around the FX-1 and FX-2 Encoders on the E-STRIP are not illuminated to indicate this.

3F

SOLO CONTROL

OVERVIEW

The SOLO CONTROL panel should be used to configure how the Solo Bus and soloed channels behave. There are three types of solo available - Solo In Place (SIP), After-fade Listen (AFL) and Pre-fade Listen (PFL). Definitions of the modes are below.



SIP (SOLO-IN-PLACE)

With SIP Solo mode active, when a SOLO switch is activated for a channel, all other channels are automatically muted from the Mix Bus, leaving only the soloed channel(s) routed to the Mix, which remains present at the CRM and PHONES outputs. You can observe this by putting the console into SIP Solo mode and soloing any input channel - the MUTE switch for all channels without SIP SAFE active in the SELECT PANEL will become active. The Group Outputs and AUX 1-4 and FX-1 and FX-2 Main Sends remain unaffected. The Solo status of the Group Outputs, AUX and FX output main is determined by the status of the PFL or AFL buttons.

Channels can be selected to be SIP SAFE by selecting the SIP SAFE in the SELECT PANEL.

The SOLO TRIM fader (fader 16 of the MAINS BANK SELECT) is inoperative when in SIP Solo mode.

Solo In Place is the default solo mode.

AFL (AFTER FADE LISTEN)

When a SOLO button is pressed in this mode the Solo Bus will replace the Mix Bus at the CRM and PHONES outputs. The signal is derived Post-Fade, Post-EQ and Post-Dynamics but Pre-Pan position.

Selecting AFL mode will disable the illuminated PFL switch.

PFL (PRE FADE LISTEN)

When a SOLO button is pressed in this mode the Solo Bus will replace the Mix Bus at the CRM and PHONES outputs. The signal will be derived Pre-Fade, Post-EQ, Post-Dynamics and Pre-Pan position.

Selecting PFL mode will disable the illuminated AFL switch.

CLEAR BUTTON

The CLEAR button in the SOLO CONTROL panel illuminates whenever a SOLO switch is active somewhere on the 328XD. Pressing the CLEAR button clears any active SOLO switches, regardless of the selected solo mode.

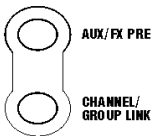
When illuminated, the Solo CLEAR switch can be used to to provide immediate indication of a 'hidden' SOLO which may be active on bank other than that which is currently selected.

3G

AUX/FX PRE AND CHANNEL/GROUP LINK SWITCHES

AUX/FX PRE

The AUX/FX PRE button is used to switch the pre/post-fade status of auxiliary sends 1-4 and internal Lexicon FX sends 1 & 2.



By holding down the AUX/FX PRE button the AUX 1, AUX 2, AUX 3, AUX 4, FX-1and FX-2 buttons in the ROTARY CONTROLS panel can be toggled ON (illuminated) and OFF.

Alternatively, put the E-Strip into FX-1 send mode, for example (see **Section 3B Part 2**) and toggle the AUX/FX PRE switch. It will light to indicate that the send is pre-fade.

When set to be pre-fade, the selected auxiliary or FX send will derive its signal pre-fade, post-dynamics, post-EQ and post-pan position.

When set to be post-fade, the selected auxiliary or FX send will derive its signal post-fade, post-dynamics, post-EQ and post-pan position.

CHANNEL/GROUP LINK

The CHANNEL/GROUP LINK button has two functions.

- to link adjacent Group output faders - linked Group outputs act as stereo pairs.
- to link adjacent input channels for the purpose of dealing with stereo sources.

LINKING GROUPS

To link adjacent Group faders, hold down the CHANNEL/GROUP LINK switch in Query Mode and then select the relevant GRP switch in the SELECT Panel. When linked, Groups function as true stereo Groups. Channels routed to linked Group outputs maintain their pan positioning.

Note that Group output faders can only be linked in an odd to even configuration: 1-2, 3-4, 5-6 & 7-8.

LINKING CHANNELS

To link adjacent input channels, hold down the CHANNEL/GROUP LINK switch in Query Mode and then press the relevant channel SELECT switch to link it to its partner channel.

Alternatively, SELECT the channel and press the CHANNEL/GROUP LINK switch. It will light to indicate that the channel is linked.

For example if you wish to link input channels 15 and 16, press and hold the CHANNEL/GROUP LINK switch and press the SELECT button of either channel 15 or 16.

The current settings of the odd channel will always be copied to the even channel, regardless of which SELECT switch is pressed.

For more information on linking channels, in particular which channel parameters are linked and which remain unlinked, see **Section 3J Part 5**.

NOTE: Channels can only be linked in an odd to even configuration: 1-2, 3-4, ... 31-32

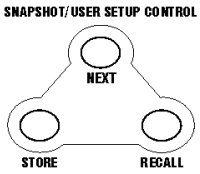
3H

SNAPSHOT CONTROL

OVERVIEW

The switches within the SNAPSHOT CONTROL panel enable the storage and recall of Snapshots to and from the 100 available memory locations. All front panel settings, with the exception of the analogue GAIN control, Highpass Filter and solo status and settings, can be stored within a Snapshot for recall at a later stage.

Note that the FX and dynamics parameters and MIDI Controller ID and Channel settings (see **Section 3J Part 5.3**) are also stored and recalled at Snapshot level.



STORE

Pressing the STORE button will store any changes made to the current Snapshot over the current Snapshot or to another selected empty Snapshot memory location. The displayed Timecode reference is always stored with the snapshot. Use the LCD in SNAPSHOT mode to select the snapshot location to which the Snapshot will be stored.

Note that Snapshots can be write-protected in order to avoid accidentally overwriting (see **Section 3J Part 2.6**).

RECALL

The RECALL switch enables quick and easy recall of any stored Snapshot. Use the LCD in SNAPSHOT mode to select the stored Snapshot to be recalled. Pressing RECALL will return all console surface parameters including fader positions to the values at which they were set when the Snapshot was stored.

NEXT

When pressed, the NEXT button will increment the current Snapshot location by a value of one. If a Snapshot is stored in the next location, it will also be automatically recalled. By way of example, if the last recalled Snapshot was 'SNAPSHOT#15', pressing the NEXT button will instantly recall 'SNAPSHOT#16'.

Use of the NEXT button enables quick successive Snapshot setup. If you have a number of consecutive empty Snapshot locations, store into the first empty slot. Pressing NEXT will move to the next empty location allowing you to store a subsequent Snapshot without having to refer to the LCD to alter the location.

Please refer to **Section 3J Part 2** for an in depth look at Snapshots.

SNAPSHOT SCOPE

The following parameters are stored within a Snapshot:

Channels 17-32, Stereo Inputs 1/2, FX Returns 1/2:

Fader positions
All EQ parameters
Aux 1-4 / FX 1, 2 send levels
Pan
Phase
Mix bus routing
Group 1-8 routing
Direct Out
Rec Arm
EQ In
Mute
SIP Safe
Channel link status
Compressor / Limiter bypass
Noise Gate bypass
All Dynamics parameters

Groups 1-8:

Fader positions
Mix bus routing
Mute
Group link status
Compressor / Limiter bypass
Noise Gate bypass
All Dynamics parameters

Aux 1-4, FX 1, 2 Main Sends:

Fader positions
Mute

Mix Bus:

Fader position
Compressor / Limiter bypass
Noise Gate bypass
All Dynamics parameters

MIDI Controller Bank:

All fader positions
All E-Strip encoder positions
All 'Mute' switches
All 'Solo' switches

MENU:

MIDI Controller assignments

EFFECTS:

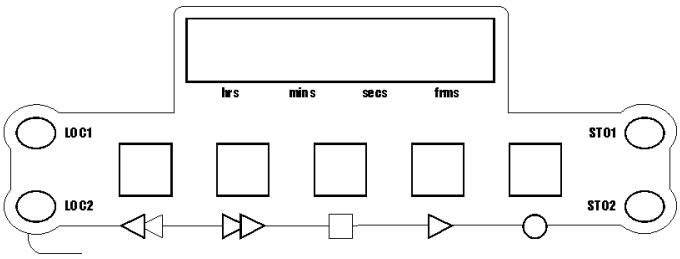
Effect 1 algorithm
All associated Effect 1 parameter values
Effect 2 algorithm
All associated Effect 2 parameter values

NOTE: Solo switch status, Solo mode (AFL/PFL) and position of the Solo trim fader are not stored and recalled at Snapshot level. In addition, monitor path and DYNAMICS ON METERS switch statuses are not stored.

31

TRANSPORT CONTROL

OVERVIEW



The Transport Control panel should be used in conjunction with the Tape Mach Setup menu for configuration of the Transport Control switches (see **Section 3J Part 5.13**).

The buttons of the Transport Control panel can be used for controlling external recording devices connected to the MIDI or 9-PIN RS422 ports.

TIMECODE DISPLAY

Depending on the Tape Mach Setup menu configuration, the 328XD Timecode Display window will read either the 328XD's own internal Timecode value, or the Timecode value from external MIDI Timecode (MTC) or SMPTE / Longitudinal Timecode (LTC) source. The Timecode value is represented in Hours, Minutes, Seconds and Frames.

STO1

The STO1 button is used for allocating a time location point to the LOC1 button. When the STO1 button is pressed the current time displayed in the Timecode Display, whether stopped or running, will be stored to the LOC1 button. The LOC1 switch can then be used to recall the timecode address internally and externally (see LOC1 below).

STO2

Likewise, the STO2 button is used for allocating a time location point to the LOC2 button. When the STO2 button is pressed the current time displayed in the Timecode Display, whether stopped or running, will be stored to the LOC2 button. The LOC2 switch can then be used to recall the timecode address internally and externally (see LOC2 below).

TRANSPORT CONTROLS

If the configuration of the Tape Mach Setup menu is correct, the Transport switches will transmit the required message(s) from the MIDI Out or 9-PIN RS422 port to a connected external device, instructing it to begin playback for example. Alternatively, when the console is set to act as a synchronized Timecode device, the switches will simply take control of the 328's own internal Timecode generator, allowing external devices to follow. For more information on the Tape Mach Setup menu, consult **Section 3J Part 5.13**.

The Transport Controls can also be configured to transmit MIDI Note On messages from the MIDI Out port to trigger the Transport Controls of connected MIDI sequencers. For more information on configuring the Transport Controls to transmit MIDI Note On messages, consult **Section 3J Part 5.13**.

LOC1

When the LOC1 button is pressed, a 'locate' message is transmitted from the MIDI Out and RS 422 ports to a connected recording device requesting it to locate to the assigned Timecode Address (see **Section 3J Part 5.13**). The Timecode Display will also indicate the LOC1 Timecode address.

LOC2

When the LOC2 button is pressed, a 'locate' message is transmitted from the MIDI Out and RS 422 ports to a connected recording device requesting it to locate to the assigned Timecode Address (see **Section 3J Part 5.13**). The Timecode Display will also indicate the LOC2 Timecode address.

3J

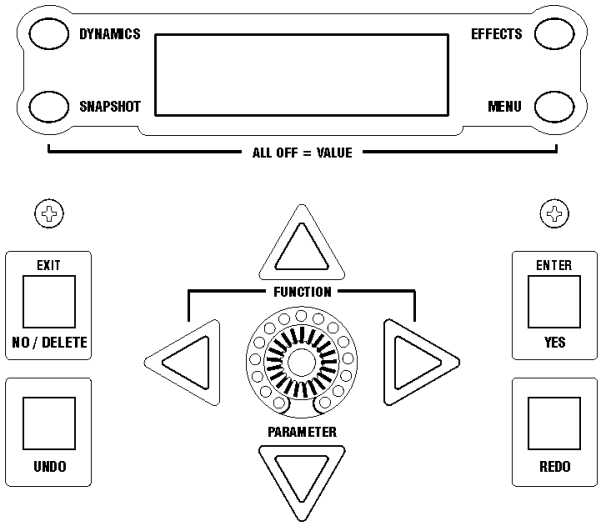
THE MAIN SECTION

OVERVIEW

The Main Section includes the LCD display and its associated switches, the PARAM encoder control and the ▲▼ ◀ ▶ arrow keys.

The Main Section is used primarily for 328XD configuration so it is recommended that you take a good look through this section of the manual.

Part 1 - VALUE
Part 2 - SNAPSHOT
Part 3 - EFFECTS
Part 4 - DYNAMICS
Part 5 - MENU
Part 6 - FUNCTION KEYS
Part 7 - UNDO/REDO



Part 1
VALUE LCD Mode

The first LCD mode that we will look at is accessed when all four mode switches surrounding the LCD are disabled. If one of the SNAPSHOT, EFFECTS, DYNAMICS or MENU switches is currently illuminated, press it to put the LCD into VALUE mode.

The LCD display will now show precise parameter value adjustments for all E-Strip rotary encoders, regardless of E-Strip mode, allowing for precise control.

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.

- Ensure all four LCD mode switches are off - press the currently illuminated switch to achieve this and to enter VALUE mode
- Press the PAN button in the ROTARY CONTROLS section

```
C 1:Channel #01
Pan: CENTRE
```

- The LCD will display

or similar, depending on which input channel is currently selected

- Make sure that the BANK SELECT 1-16 button is selected in the BANK SELECT panel
- Adjust the encoder above Channel 11 to the desired PAN setting, e.g. LFT 20 - you will see the adjustment on the LCD display
- Adjust the encoder above Channel 12 to the desired PAN setting, e.g. RGT 20

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

EXAMPLE 2

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

- Ensure all four LCD mode switches are off - press the currently illuminated switch to achieve this and enter VALUE mode
- Make sure that BANK SELECT 17-32 is selected in the BANK SELECT panel
- Press the SELECT button for Channel 26 to assign the E-Strip to Channel 26
- Now adjust the EQ using either the LF, MID or HF EQ controls in the E-Strip
- On the LCD display, you will be able to see the adjustments being made to the chosen parameter.

```
C 1:Channel #01
LF   0.0:   81:00.7
```

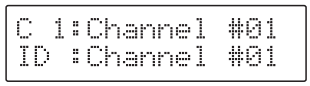
NOTE: You can also use the PARAM encoder and the ◀ ▶ arrow keys to adjust the EQ settings.

CHANNEL NAMING

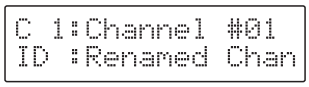
While the LCD is in VALUE mode, individual channels can be named for storing as part of a User Setup. This is useful for remembering how different sources were connected to the 328XD in the absence of a track sheet.

The following channels can be renamed - Analogue Inputs 1-16, Digital Inputs 17-32, STE-1, STE-2, FX-1 and FX-2.

- Ensure all four LCD mode switches are Off. Press the currently illuminated switch to enter VALUE mode
- Press the SELECT button for the channel you wish to name/rename. The currently selected channel should be listed in the top line of the LCD display
- Press ENTER. The bottom line of the LCD display will show



- Use the ◀ ▶ arrow keys to select the character you want to change and the PARAM encoder to select the appropriate number or letter.



- When complete press ENTER to store the new name or EXIT to abort.

NOTE: Channel names are not stored with a Snapshot and so will be common to any Snapshot recalled. To save different channel name setups, the User Setup library must be used.

Characters can be deleted in the following ways:

- To delete the selected character and move the cursor one character to the right, press and hold the ◀ cursor key and press the ▶ cursor key once for each character to be deleted
- To delete the selected character and move the cursor one character to the left, press and hold the ▶ cursor key and press the ◀ cursor key once for each character to be deleted

Part 2
SNAPSHOT LCD Mode

Pressing the SNAPSHOT button assigns the LCD to display the list of the 328XD's 100 filled or empty SNAPSHOT memory locations enabling selection for recall, storing or editing.

The SNAPSHOT button works in conjunction with the SNAPSHOT CONTROL panel. For more information on the SNAPSHOT CONTROL panel, consult **Section 3G**.

When the SNAPSHOT button is pressed and the LCD enters Snapshot Mode, the PARAM encoder or the ▲▼ cursor keys should be used to choose the desired Snapshot memory location. The STORE, RECALL and NEXT buttons in the SNAPSHOT CONTROL panel are used for the following purpose:

- STORE - Stores current mixer settings to the Snapshot memory location currently highlighted in the LCD display
- RECALL - Recalls the Snapshot stored at the memory location currently highlighted in the LCD display
- NEXT - Recalls the Snapshot stored in the memory location immediately subsequent to the Snapshot previously recalled. For example, if SNAPSHOT 13 was the previously recalled Snapshot, pressing the NEXT button will instantly recall SNAPSHOT 14. If the Snapshot location is empty, the display will highlight the next slot but will not recall any data.

The LCD does not need to be put into SNAPSHOT mode in order to store and recall Snapshots. With the LCD in this mode, however, accidentally overwriting an existing Snapshot or recalling an incorrect Snapshot can be easily prevented.

Each of the 328XD's 100 Snapshot memory locations can be named and allocated a Timecode address. Snapshots can also be write protected to prevent accidental overwriting of existing settings.

2.1 - USING SNAPSHOTS

The ability to store Snapshots of all of the 328XD settings except analogue GAIN and 100Hz HPF settings, is extremely beneficial both to recording and live sound applications.

- **Recording**

  During mixdown, Snapshots can function as a few 'extra hands' allowing you to mute or un-mute Channels, change Fader positions, FX settings or EQ settings etc. using Snapshot recall either against incoming Timecode or with appropriate incoming MIDI Program Change messages. In this way, precise changes can be programmed to occur at the same time, every time.

  A typical example would be muting the lead vocal in places where the vocalist is not singing, to remove headphone spill.

  A full explanation of SNAPSHOT automation using Timecode and MIDI Program Changes is found in **Section 4 Part 1**.

- **Live Sound**

  Snapshots can be very useful in Live Sound applications when the console needs to be completely reset in a short space of time, or when the same settings need to be reused over and over again.

  A complete evening's worth of console setups could be stored into the 328XD's Snapshot memories and recalled simply using the NEXT button in the SNAPSHOT CONTROL Panel.

  For festivals, each band can be sound checked and all individual settings stored in the 328XD for later recall - no more need to decipher illegible setup information with no time to reset the console!

2.2 - STORING SNAPSHOTS

- Press the SNAPSHOT button - the LCD display will now show the list of currently stored Snapshots and remaining available memory locations. A flashing <Empty> indicates a vacant location to which new information can be stored

```
1:<Empty>
2:<Empty>
```

If you have a number of consecutive empty Snapshot locations - press NEXT to prepare the next location in which to store the next Snapshot.

- Using either the ▲▼ cursor keys or the PARAM encoder, select an empty Snapshot memory location

- Press the STORE button in the SNAPSHOT CONTROL panel - the LCD display will briefly show the message 'SAVED SNAPSHOT' and confirm the memory location to which the Snapshot has been saved

```
Saved Snapshot !
1:SNAPSHOT#001
```

- Once the confirmation message has cleared, the stored Snapshot will be visible in the Snapshot list

```
1:SNAPSHOT#001
2:<Empty>
```

NOTE: The Snapshot list does not need to be active in the LCD to use the switches in the SNAPSHOT CONTROL Panel- the STORE, RECALL and NEXT switches are continually active. In order to prevent overwriting previously stored data, however, the Snapshot list should be used to verify the location to which the Snapshot will be stored.

2.3 - NAMING A SNAPSHOT

- Press the SNAPSHOT button to enter the list of stored / empty Snapshot memory locations

- Using either the ▲▼ cursor keys or the PARAM encoder, highlight the Snapshot you wish to name or rename

- Press ENTER to enter Snapshot edit mode

- Snapshot edit mode offers a number of menu pages, indicated on the lower line of the LCD:

- Use the ▲▼ cursor keys to step through to the ID naming page
- The LCD will now display:

```
< SNAPSHOT#001 >
ID :SNAPSHOT#001
```

- You may now enter a 12-character name using the ◀ ▶ cursor keys to select the cursor position and the PARAM encoder to adjust the character
- When you are finished, press ENTER to store the name

2.4 - ASSIGNING A TIMECODE ADDRESS TO A SNAPSHOT

MANUALLY

- Press the SNAPSHOT button to enter the list of stored / empty Snapshot memory locations
- Using either the ▲▼ cursor keys or the PARAM encoder, highlight the Snapshot to which you wish to allocate a Timecode address
- Press ENTER to enter Snapshot edit mode
- Use the ▲▼ cursor keys to step through to the Timecode address page

```
< SNAPSHOT#001 >
Time:--:--:--:--
```

- Use the ◀ ▶ cursor keys to select Hours, Minutes, Seconds or Frames, and the PARAM encoder to set the Timecode value for the Snapshot
- When you are finished, press ENTER to store the Timecode value

A Snapshot does not require to be recalled before being renamed

AUTOMATICALLY / ON THE FLY

- Whilst the Timecode display is running - either from the internal Timecode generator or synchronized to an external MTC or LTC source - press the STORE button in the SNAPSHOT CONTROL panel.
- The current Timecode address will be stored to the active Snapshot memory location at the point when the STORE button was pressed. To make an adjustment to the automatically stored Timecode address, follow the manual procedure above.

2.5 - ENABLING SNAPSHOT RECALL FROM MIDI PROGRAM CHANGES

Individual Snapshots can be configured to be recalled when an appropriate MIDI Program Change message is received at the 328XD MIDI In port. See **Section 3J Part 5.2** and **Section 4 Part 1** for more information.

- Press the SNAPSHOT button to enter the list of stored / empty Snapshot memory locations

Pressing the ◀ and ▶ FUNCTION keys simultaneously while this page is active in the LCD will reset the assigned Timecode value to --:--:--:-.

- Using either the ▲▼ cursor keys or the PARAM encoder, highlight the Snapshot for which you wish to enable/disable MIDI Program Change recall
- Press ENTER to enter Snapshot edit mode

```
< SNAPSHOT#001 >
MIDI Recall: ON
```

- Use the ▲▼ cursor keys to select the MIDI Recall configuration page:
- Use the PARAM encoder to set the MIDI Recall function ON or OFF
- When you are finished, press ENTER to store the MIDI Recall setting

Snapshots are recalled against the following MIDI Program Changes:

Snapshot Number	MIDI Program Change
1	0 (00H)
2	1 (01H)
...	...
99	98 (62H)
100	99 (63H)

NOTE: The MIDI RECALL switch in the Snapshot Setup menu must be set to ON in order to recall snapshots with remote MIDI Program Change messages (see **Section 3J Part 5.15**).

NOTE: Recalling a Snapshot with MIDI RECALL set to ON will also transmit the associated MIDI Program Change (see above) from the MIDI Out port, enabling you to record Snapshot recall into a MIDI sequencer.

2.6 - ENABLING WRITE PROTECTION FOR A SNAPSHOT

- Press the SNAPSHOT button to enter the list of stored / empty Snapshot memory locations
- Using either the ▲▼ cursor keys or the PARAM encoder, highlight the Snapshot for which you wish to enable/disable write protection
- Press ENTER to enter Snapshot edit mode
- Use the ▲▼ cursor keys to select the Write Prot page:

```
< SNAPSHOT#001 >
Write Prot:  OFF
```

- Use the PARAM encoder to set the Write Protect function ON or OFF
- When you are finished, press ENTER to store the Write Protect setting

When Write Protect is enabled for a Snapshot, attempting to store to that location will display a confirmation message on the LCD. Press ENTER/YES to confirm the Snapshot store or EXIT/NO to cancel.

2.7 - COPYING SNAPSHOTS

A stored Snapshot can easily be copied from one location to another if you wish to reorder a list of current Snapshots or create backup copies.

- Press the SNAPSHOT button to enter the list of stored / empty Snapshot memory locations
- Using either the ▲▼ cursor keys or the PARAM encoder, highlight the stored Snapshot which you wish to copied
- Press ENTER to enter Snapshot edit mode
- Use the ▲▼ cursor keys to select the Snapshot Copy page:

```
< SNAPSHOT#001 >
  1:Copy To:   1
```

- Use the PARAM encoder to select the Snapshot location to which you wish to copy the source Snapshot. The destination Snapshot location will default to the Snapshot location which is being copied
- Press ENTER to copy the Snapshot. If you have previously named the Snapshot, the name will also be copied

NOTE: If you select a location which already contains a stored Snapshot, it will be overwritten without prompt.

2.8 - DELETING SNAPSHOTS

If your 328XD has no remaining <Empty> Snapshot memory locations, you can either overwrite existing stored Snapshots or erase them. A confirmation prompt will be displayed on the LCD when you attempt to overwrite a Snapshot with write protect enabled. Press ENTER/YES to confirm the write or EXIT/NO to abort.

- While viewing the list of Snapshots, select the Snapshot you wish to delete by using the ▲▼ cursor keys or the PARAM encoder
- Press DELETE and the LCD screen will display:

```
Confirm Delete ?
SNAPSHOT#001
```

- Press ENTER/YES to delete the selected Snapshot
- The LCD display will now indicate that the Snapshot memory location is again <EMPTY>

NOTE: For further information regarding global Snapshot setup, please refer to **Section 3J Part 5.15**

Some sequencers can be set to display MIDI Program Change 00 (00H) as Program Change 001 and so on up to displaying Program Change 127 (F7H) as 128. This can be useful for correctly interpreting the relationship between Program Change / Snapshot memories.

Part 3
EFFECTS LCD MODE

Overview

The two 328XD Lexicon FX Processors algorithms include Hall, Plate, Gate and Inverse Reverbs, Flanger, Multi Tap Delay, Resonator, and Chorus effects.

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

Using the FX processors is similar to the way in which you would use external processing units connected to the auxiliary outputs of the console, but eliminating the need to pass the signal through A/D and D/A conversion stages.

The FX processors are fed on a per-channel basis from the FX-1 and FX-2 send Rotary Encoders of the E-Strip when in channel SELECT mode, and the processed signals returned to the Mix or Group Buses by using the dedicated FX-1 and FX-2 Return level encoders and SELECT switches/SELECT PANEL. The main FX send levels which can be used to adjust the global input level to each FX unit are controlled with faders 14 and 15 of the Main BANK SELECT.

The FX-1 and FX-2 sends can be configured to be Post or Pre-Fade using the AUX/FX PRE switch located in the GROUP/AUX/FX panel (see **Section 3H**).

100 User Preset locations are offered to which effect settings can be stored for later recall.

THE FX MENUS

To access the 4 main FX Menus from the LCD, press the EFFECTS button.

The ▲▼ cursor keys and the PARAM encoder can now be used to scroll through the 4 FX Menus shown on the LCD display, as follows:

FX 1 PRESETS
FX 2 PRESETS
FX 1 SETTINGS
FX 2 SETTINGS

THE DIFFERENCE

The FX SETTINGS Menu is where the 8 basic FX blocks reside, from which all of the variations found in the FX PRESETS Menus are built.

These 8 basic FX blocks are made up of the following FX - **Hall Reverb, Plate Reverb, Flanger, Multi Tap Delay, Resonator, Inverse Reverb, Gate** and **Chorus**.

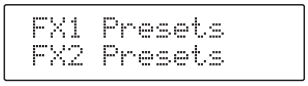
If you know you need a straightforward Hall Reverb with a Reverb time of around 2.5 seconds, use the FX 1 or 2 Settings Menu, select the basic Hall Reverb algorithm and adjust the parameters accordingly.

If you wish to use a Factory Preset, use the FX 1/2 Presets Menu, select Factory, and simply scroll through until you find something that works for you. Once the Factory Preset has been loaded, the parameters can still be adjusted.

CHOOSING THE EFFECT FROM THE FX 1 OR FX 2 PRESETS MENU

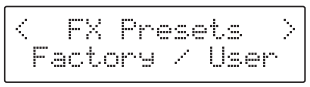
Press the EFFECTS button to enter the Effects Menus.

Use the ▲▼ cursor keys or the PARAM encoder to scroll through the LCD display and choose either the FX 1 Presets or FX 2 Presets Menu.



Press ENTER.

The LCD display will now show:



Use the ◀ ▶ cursor keys to select 'Factory' and press ENTER again.

The LCD will display the list of Factory Presets so that you can scroll through the effects until you find a Preset that appears suitable.

Once you have made a choice press the ENTER button to load the effect into the FX Settings menu.

NOTE: Selecting a Factory or User Preset loads the parameters into the relevant FX 1/2 Settings menu. Having pressed ENTER to load a preset, the LCD will automatically change to display the FX Settings menu, with the parameters of the selected Preset loaded.

AUDITIONING THE CHOSEN EFFECT

Now that you have successfully loaded your chosen effect you will want to apply it to an input signal to hear it.

Press the SELECT switch for the Channel to which you wish to apply the loaded effect.

As a safety measure press the MAINS button in the BANK SELECT panel, and ensure that the FX-1 Main fader, Fader 14, is placed at unity gain (0dB).

Now turn the FX-1 send encoder, active for the selected channel on the E-Strip. Signal will appear on the FX-1 Main Send meter, Meter 14.

Continue to turn the FX-1 send encoder until a reasonable level is seen on the FX 1 Main Send meter. To achieve a good signal to noise ratio, aim to have no more than the top 2 orange LEDs lighting permanently, the top red LED flicking on occasionally with the loudest peaks in the signal.

Now gradually turn up the level encoder for FX-1 Return.

You should now hear the effect on your monitors.

NOTE: If you do not hear any signal, check that FX-1 Return is routed to the Mix Bus.

To do this press the SELECT button below the FX-1 Return level encoder and check that the MIX switch is illuminated in the SELECT panel. Check also that the MUTE switch is not lit.

CREATING AND SAVING YOUR OWN EFFECTS

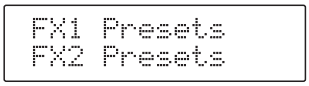
Whilst we have tried our very best to give you a range of effects suitable for most applications, it's quite possible that you might want to create a few of your own and save them for use on your own projects.

There are two ways to do this:

USING AN EXISTING FACTORY PRESET

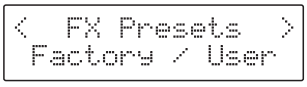
Press the EFFECTS button to enter the Effects menus.

Use the ▲▼ cursor keys or the PARAM encoder to scroll through the menus displayed in the LCD and choose either the FX 1 Presets or FX 2 Presets menu.



Press ENTER once.

The LCD will now display:



Use the ◀ ▶ cursor keys to select 'Factory' and press the ENTER button.

You will now be looking at the list of Factory Presets and can scroll through the preset effect names until you find something suitable to use as your basic starting point.

Press ENTER to load the chosen effect.

The LCD display will now show the parameters available, having loaded the parameters into the appropriate FX Settings menu.

NOTE: When an FX Preset is loaded, the settings stored within it are loaded directly into the FX Settings menu, which the LCD automatically changes to display.

Use the ▲▼ cursor keys to select the parameter you wish to adjust, and the PARAM encoder to adjust the value.

STORING THE NEW EFFECT

To store the new effect, while viewing the FX Settings menu in the LCD, press ENTER.

Use the PARAM encoder to select one of the 100 destinations for the FX User Preset. Unused locations will be labeled <Emtpy>.

```
Store To User ?
  1:<Empty>
```

Press ENTER to store the new effect in the chosen User effects library. The LCD display will prompt you to name the effect:

```
<FX Preset #  1>
ID :FX PRES 001
```

Using the ◀ ▶ cursor keys, select the character(s) you wish to change, and the PARAM encoder to adjust.

Characters can be deleted in the following ways:

- To delete the selected character and move the cursor one character to the right, press and hold the ◀ cursor key and press the ▶ cursor key once for each character to be deleted
- To delete the selected character and move the cursor one character to the left, press and hold the ◀ cursor key and press the ▶ cursor key once for each character to be deleted

Once you are happy with your choice press ENTER to store the new name or EXIT to abort.

To rename the preset at a later date, highlight the chosen preset within the FX 1 or FX 2 User Presets menu and press the ◀ and ▶ FUNCTION keys simultaneously. Renaming is done as above.

CREATING A NEW EFFECT FROM THE FX 1 AND 2 SETTINGS MENU

Press the FX button to enter the FX menus.

Use the ▲▼ cursor keys or the PARAM encoder to scroll through the LCD display and choose either the FX 1 Settings or FX 2 Settings menu, depending on which Lexicon FX unit you wish to edit.

Press the ENTER/YES key once.

The LCD display will now show **<FX Algorithm>** and one of the following default effects - **Hall Reverb, Plate Reverb, Flanger, Multi Tap Delay, Resonator, Inverse Reverb, Gate and Chorus**.

Use the ▲▼ cursor keys to select the default effect that you would like to use as a starting point.

Press ENTER/YES to load the chosen effect.

The LCD display will now show the parameters available.

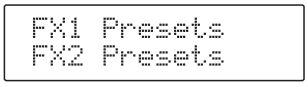
Use the ▲▼ cursor keys to select the parameter you want to adjust, and the PARAM encoder to adjust the chosen parameter.

The effect should be stored in the same manner as described above.

DELETING FX PRESETS

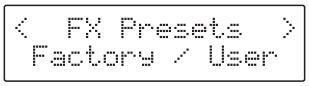
Press the EFFECTS button to enter the FX menus.

Use the ▲▼ cursor keys or the PARAM encoder to scroll through the LCD display and choose either the FX 1 Presets or FX 2 Presets menu, depending on which Lexicon FX unit you wish to edit.



Press ENTER.

The LCD will display:



Use the ▶ cursor key to select 'User'.

Press the ENTER again.

With the PARAM encoder, select the FX Preset you wish to delete.

Press DELETE.

The LCD will prompt you to confirm the delete.

Press YES to confirm or press NO to abort.

The LCD will return to displaying the list of stored User FX Presets.

NOTE: FX 1 and FX 2 Settings menus are stored and recalled within a Snapshot.

FX PRESET LIST

The list of Factory Presets available to both Lexicon effects unit 1 and 2 is as follows:

Program no.	Effect name	Effect algorithm
1	Large Hall	Hall Reverb
2	Vocal Hall	
3	Piano Hall	
4	Music Club	
5	Guitar Stage	
6	Small Room	
7	Inverse	Inverse Reverb
8	Gate	Gate
9	Rich Plate	Plate Reverb
10	Drum Plate	
11	Vocal Plate	
12	Flanger	Flanger
13	Chorus	Chorus
14	Canyon	
15	Multi Tap	Multi Tap Delay
16	Resonate	Resonator
17	Small Hall	Hall Reverb
18	Dark Hall	
19	Bright Hall	
20	Big Hall	
21	Mid Reverb	
22	Long Reverb	
23	Huge Reverb	
24	Tight	
25	Small Room 1	
26	Small Room 2	
27	Small Room 3	
28	Medium Rm 1	
29	Medium Rm 2	
30	Large Rm 1	
31	Large Rm 2	
32	Small Plate	Plate Reverb
33	Plate	
34	Plate 15	
35	Guitar Plate	
36	Drum Plate	
37	Gold Plate	
38	Guild Plate	
39	Vocal Plate	
40	Rusty Plate	
41	Dark Plate	
42	Bright Plate	
43	Church	
44	Long Plate	
45	Diff Plate	
46	Big Plate	
47	Bottom Plate	
48	Solo Plate	
49	Echo Plate	
50	Deep End	
51	Small Gate	Gate
52	Short Gate	
53	Med Gate 1	
54	Med Gate 2	
55	Large Gate	

FX PRESET LIST CONTINUED

56	Gate 1	Gate
57	Gate Slap	
58	Bright Gate	
59	Slap Gate	
60	Spring Chor	
61	Mega Gate	
62	Snare & Tom	
63	Metal Gate	
64	Elvis Gate	
65	Inverse 1	Inverse Reverb
66	Deverse	
67	Rev Repeat	
68	Ski Slope	
69	Talk Flange	Flanger
70	Full Chorus	
71	Slap Flange	
72	Sisi Echoes	
73	Resonate 2	Resonator
74	Edge 1	
75	Open Harp	
76	Rich Room	
77	Delay 1	Chorus
78	Slap It!	
79	Long Chorus	
80	Long Delay	
81	Delay 280ms	
82	Delay 450ms	
83	Antr Chorus	
84	Chorus Too	
85	Chorus Dble	
86	Slap Chorus	
87	Chorus Delay	
88	Thru Ringer	
89	Thick Chorus	
90	Swing Delay	
91	Long Echoes	
92	6 Vocal Chor	
93	Vocal Chorus	
94	MAT Chorus	
95	Chorus Slap	
96	Kick Slap	
97	Long Chorus	
98	Slap Chorus	
99	Sheen Chorus	
100	Booty Bass	

THE EFFECT ALGORITHMS - A DESCRIPTION

HALL REVERB

This is Lexicon's famous hall reverb, used to create spaces as large as a concert hall, or as intimate as a small club.

The clean reverberation of the Hall algorithm is designed to add spaciousness, while leaving the source material unchanged. In addition to general instrumental and vocal applications, the Hall algorithm is a good choice for giving separately recorded tracks the sense of belonging to the same performance.

Generally, you should set the Size control first to establish the dimensions of the space you are trying to create - or start with a preset of a similar room size. The remaining parameters will determine the character of the space.

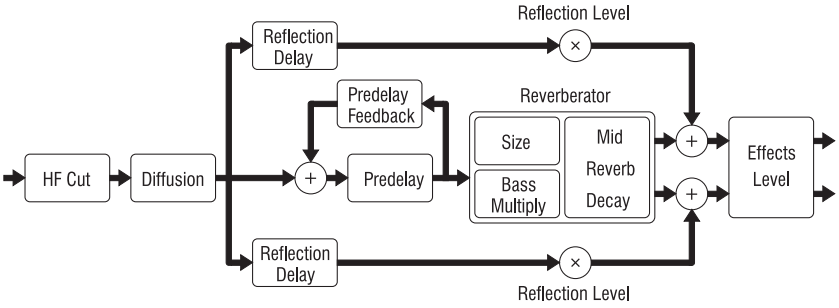
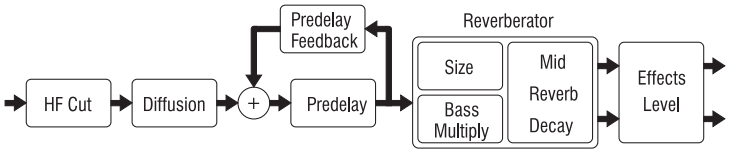


PLATE REVERB

This algorithm gives you all of the sonic traits of a metal plate reverberator.

Plate effects are designed to be heard as part of the music, enhancing and thickening the source material.

In this algorithm the Size parameter sets the rate of the build-up of diffusion after the initial period (set by Diffusion), and acts as a main control for decay. Because of this link, you should set Size before adjusting other parameters.

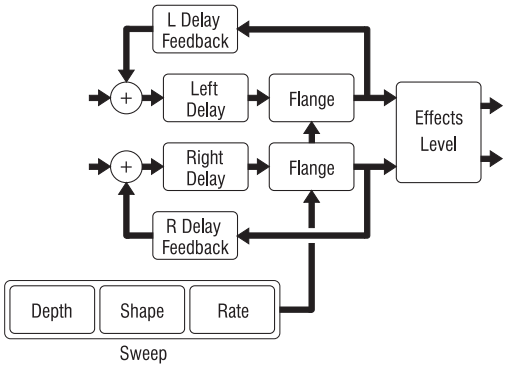


FLANGER

This algorithm produces stereo flanging with two flangers that can be used to create different effects from left and right outputs.

Individual delays of as much as 1 second are provided with separate feedback controls for each delay, as well as rate and shape controls for the flange. The flanging effect is altered by recirculating the delays with the feedback controls. Larger amounts of feedback cause exaggerated 'deep' flanges.

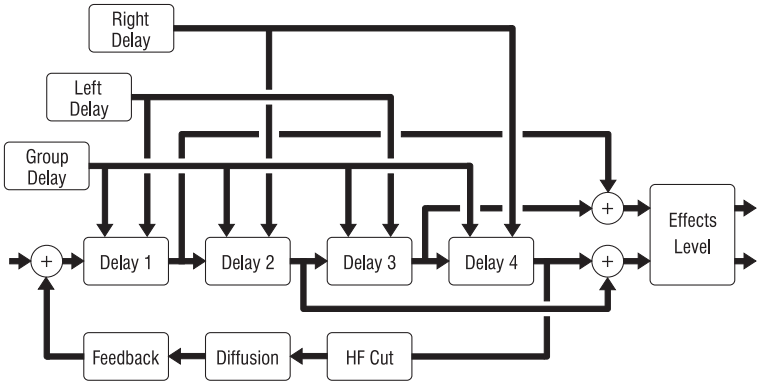
The Negative Feedback parameter simultaneously controls both Left Delay Feedback and Right Delay Feedback, overriding previously set relations between them. This control applies slightly more feedback to the left channel than to the right.



MULTI TAP DELAY

This algorithm is a 4 tap bouncing delay, with the bounce going back and forth between left and right outputs.

The Group Delay parameters allow you to individually vary the left and right delay pairs. Simple equalization is provided in the feedback loop.

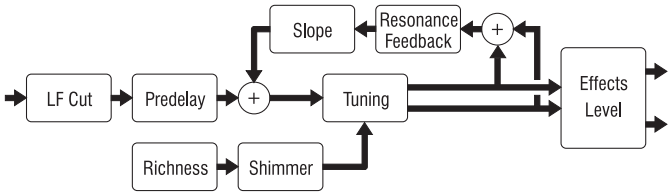


RESONATOR

This algorithm simulates the acoustic effects of multi-stringed instruments. A series of resonators tuned to a chromatic scale are provided with controls for tuning and damping.

Suggested applications for this algorithm include enhancing synthetic instruments and amplified strings. Caution is advised in using this algorithm with voice (especially spoken) and percussion.

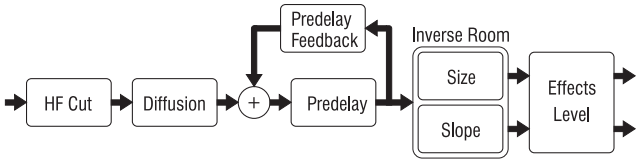
The Tuning parameter tunes all 12 resonators over a range of more than an octave to match the tuning of your instrument. Predelay spaces out the onset of the resonators to produce a strumming effect. The Low Frequency Cutoff parameter filters the input audio to reduce boominess for low tunings. Resonance Feedback affects the lowest pitch resonator. The other resonators are set based on this value and the value of Slope. Shimmer affects the period of resonator detuning. This parameter is factory preset to change one resonator about every 0.5 seconds. RIchness sets the amount of periodic detuning. Slope controls timbre.



INVERSE REVERB

Inverse Reverb is similar to gated reverb except that the reverberation envelope is sharply tilted to provide a long rising attack followed by a sharp cutoff.

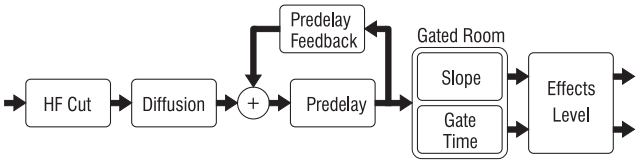
This algorithm is an excellent choice for percussion and the controls allow you to set up anything from a subtle thickening or enhancement to a solid wall of reverb. Size adjusts the perceived length of the inverse effect. As this parameter changes both time and density, it subtly affects the timbre.



GATE

This algorithm provides a very dense field with a sudden cutoff, rather than the smoothly decaying envelope normally associated with reverberation. This is effective on many types of material, including percussion.

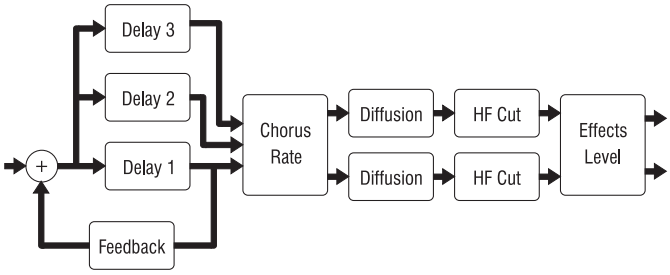
The Slope parameter defines the shape of the reverberation envelope, increasing the steepness as the value is raised. A digital delay with recirculation, simple equalization, diffusion and the gated reverb are all simultaneously available. Gate Time adjusts the received length of the gated sound, and subtly changes the timbre.



CHORUS

This algorithm is a 6 voice stereo chorus with both chorusing and delay effects. It lets you create single, recirculating echo effects and slap echoes or make use of long delay times (1.5 seconds).

This algorithm has three separate delay pairs. Feedback routes the audio back to Delay 1, as well as feeding Delays 2 and 3. All three of the delay pairs are sent to the Rate control which adjusts the overall amount of random chorus generation.


Delay 3
Delay 2
Delay 1
Feedback
Chorus Rate
Diffusion
Diffusion
HF Cut
HF Cut
Effects Level

Part 4
DYNAMICS LCD Mode

NOTE: Refer also to **Section 3B Part 3** for detailed information on editing a channel's dynamics processor.

DYNAMICS LCD mode is similar to the VALUE mode outlined in **Section 3I Part 1**, enabling you to view adjustments made to the E-Strip dynamics parameters numerically on the LCD.

Press the DYNAMICS switch so that it is illuminated and put the E-Strip into dynamics mode for any channel (see **Section 3B Part 3**).

By adjusting any dynamics parameter now on the E-Strip you will notice that the LCD jumps to illustrate the precise value numerically. For example, with the LCD in DYNAMICS mode, when configuring the noise gate threshold level with E-Strip encoder 8, the precise settings will be displayed in dB as you make the adjustment, for example:

Part 5
MENU LCD Mode

Overview

The 328XD menu pages allow configuration of Digital I/O, MIDI setup, Snapshots and User Setups.

There are 19 Menu pages, accessed by pressing the MENU switch:

- 328XD Info
- User Options
- MIDI Controllers
- MIDI Ctl Presets
- MIDI Dump Out
- MIDI Dump In
- Tape Trim Setup
- Tape Port Select
- SPDIF I/P Setup
- AES/EBU I/P Set.
- SPDIF O/P Setup
- AES/EBU O/P Set.
- Tape Mach Setup
- Clock Source Sel
- Snapshot Setup
- Automation Setup
- Chan Copy Setup
- Chan Link Setup
- User Setups

The Menus

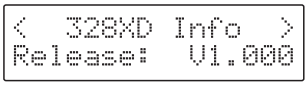
Use either the ▲▼ cursor keys or the PARAM encoder to select the Menu page you wish to use and then press ENTER to edit the chosen menu.

5.1 - 328XD INFO

This menu provides information about the software and hardware installed in the 328XD.

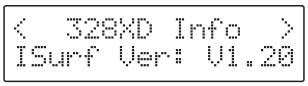
Navigate the 328XD Info menu with the ▲▼ cursor keys.

- **Release:** the software version installed.

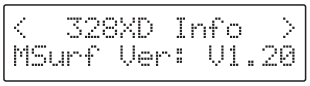


- **Build:** build number of the installed software.

- **ISurf:** Digital 328XD Input Surface software version.



- **MSurf:** Digital 328XD Main Surface software version.



The latest software revision is available for download from the Soundcraft website.

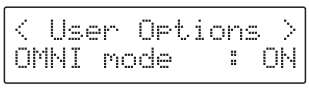
5.2 - USER OPTIONS

Press ENTER to open the User Options menu, and then use the ▲▼ cursor keys to select the parameter(s) you wish to adjust, and the PARAM encoder to change the settings.

- **MIDI Channel**

This sets the MIDI Channel on which the 328XD transmits and receives MIDI Program Change messages FOR SNAPSHOT AUTOMATION ONLY (see **Section 4 Part 1**). Other MIDI commands transmitted or received by the 328XD such as automation data, MIDI Timecode or MMC commands are unaffected by this setting.

- **OMNI mode**



This setting allows the 328XD either to receive or not to receive MIDI Program Changes on all 16 MIDI Channels FOR SNAPSHOT AUTOMATION ONLY. As above, other MIDI commands transmitted or received by the 328XD such as automation data, MIDI timecode or MMC commands are unaffected by this setting.

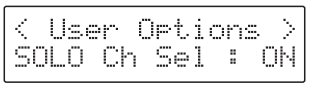
Set OMNI mode to ON if you wish 328XD Snapshot recall to respond to incoming MIDI Program Changes on all 16 MIDI channels. Set OMNI Mode to OFF if you wish the 328XD to respond only to the MIDI channel selected in the above menu.

Note that when a Snapshot with MIDI Recall set to ON is recalled manually, MIDI Program Changes are transmitted on the MIDI Channel setting in the menu above, regardless of the OMNI mode setting. For more information see **Section 3J Part 2**.

- **Device ID**

When requesting data dumps from a remote source with MIDI System Exclusive messages, the 328XD device ID must be set correctly. By default this is set to ID 1 and for most purposes is best left at this value. If you use linked consoles, the device IDs should be set differently, however, so that the remote device is able to send System Exclusive commands to each desk individually. The Device ID can be set to any value between 1 and 127. Note that the Device ID is stored within a User Setup and is retained on power down.

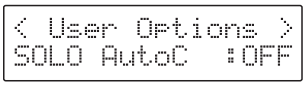
- **SOLO Ch Sel** SOLO follows channel SELECT



When set to ON, this useful setting instructs the channel SELECT switch and consequently the E-Strip and Select Panel to become active for a channel when it is soloed. When set to OFF, soloing a channel will not automatically SELECT the channel.

This setting is stored as part of a User Setup, and is stored on power down.

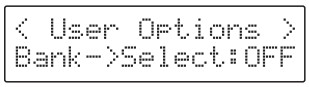
- **SOLO AutoC** SOLO AutoCancel



When set to ON, soloing a channel will deselect SOLO for any other currently soloed channels. When set to OFF, any number of channels can be soloed simultaneously.

This setting is stored as part of a User Setup, and is stored on power down.

- **Bank->Select: ON/OFF** (SELECT follows Fader Bank selection: ON/OFF)



By default this setting is set to OFF, so that selecting a different BANK does not affect which channel is selected. By setting this to ON, the console will have a memory of which SELECT switch is active for BANK SELECT 1-16 and BANK SELECT 17-32. When returning to the opposing BANK, the channel SELECTed when last in that BANK will return to being be the active SELECTed channel.

As an example, set Bank->Select to ON. Press BANK SELECT 1-16, and press the channel SELECT switch for Analogue Input channel 16. Then press BANK SELECT 17-32 and press the channel SELECT switch for Digital Input channel 17. The SELECTed channel will then follow any BANK SELECT adjustment made.

Note that the Bank->Select is stored as part of a user setup and is stored on power down.

- **SYSEX Rx**

Besides the MIDI data required for automation of the console, the 328XD can also

respond to MIDI System Exclusive (Sysex) data transmitted from a computer based software editor package, for example, to increase control possibilities.

The 328XD menu functions which can be controlled via Sysex are:

MIDI DUMP OUT — enabling the remote source to request a MIDI dump from the console (see **Section 3J Part 5.5**)

CLOCK SOURCE SEL — enabling the remote source to alter the 328XD clock source / internal sampling rate (see **Section 3J Part 5.14**)

AUTOMATION — enabling the remote source to configure the 328XD automation mode and enable / disable automation (see **Section 3J Part 5.16, Section 4**)

AES/EBU SETUP — enabling the remote source to configure the AES/EBU input and output routing (see **Section 3J Part 5.10 / 5.12**)

S/PDIF SETUP — enabling the remote source to configure the S/PDIF input and output routing (see **Section 3J Part 5.9 / 5.11**)

AUX OPTICAL OUT — enabling the remote source to configure the signal transmitted from the Auxiliary Optical Output (see **Section 3J Part 5.8**)

In addition, the 328XD also has predefined Sysex strings to allow a suitable connected software package to instruct the desk to return its set Sysex Device ID, recall the Factory Default settings and dump the current values of all the 328XD's automatable parameters.

With the SYSEX Rx switch set to ON, when any of the above Sysex instructions is received at the 328XD MIDI In port, the console will automatically respond as requested. With the SYSEX Rx switch set to OFF, all incoming Sysex requests are ignored.

The default setting is SYSEX Rx: ON.

Note that SYSEX Rx is stored as part of a user setup and is stored on power down.

For more information on the MIDI System Exclusive implementation of the console, consult **Appendix A3**.

- **SYSEX Tx**

In the following circumstances, the 328XD can be set to transmit MIDI System Exclusive strings to inform a connected computer based editor that configuration of the console has been altered manually:

CLOCK SOURCE SEL — enabling the remote source to be aware that the 328XD wordclock source has altered (see **Section 3J Part 5.14**)

CLOCK LOSS — enabling the remote source to learn that the current 328XD external clock source is no longer valid (see **Section 3J Part 5.14**)

AUTOMATION SETUP	enabling the remote source to know that the automation mode has been altered locally (see **Section 3J Part 5.16, Section 4**)
AES/EBU SETUP	enabling the remote source to know of an AES/EBU input / output routing change (see **Section 3J Part 5.10 / 5.12**)
S/PDIF SETUP	enabling the remote source to know of an S/PDIF input / output routing change (see **Section 3J Part 5.9 / 5.11**)
AUX OPTICAL OUT	enabling the remote source to learn of a change made to the Auxiliary Optical Output configuration (see **Section 3J Part 5.8**)

With the SYSEX Tx switch set to ON, Sysex instructions will be transmitted from the 328XD MIDI Out port when configuration is changed locally. With the SYSEX Tx switch set to OFF, no Sysex data is transmitted.

The default setting is SYSEX Tx: ON.

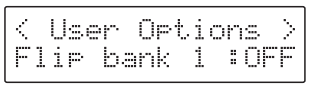
Note that MIDI System Exclusive dumps may still be initiated from the MIDI Dump Out menu regardless of the state of the SYSEX Tx switch (see **Section 3J Part 5.5**).

Note that for true bi-directional communication with a computer based 328XD editor, both the SYSEX Tx and SYSEX Rx switches should be enabled. It is not necessary to enable either of these switches to dynamically automate the 328XD via MIDI, however.

Note that SYSEX Tx is stored as part of a User Setup and is stored on power down.

For more information on the MIDI System Exclusive implementation of the console, consult **Appendix A3**.

- **Flip Bank 1**



This setting allows the controls of BANK SELECT 1-16 channels 1-8 to be 'flipped' with the controls of BANK SELECT 17-32 channels 17-24.

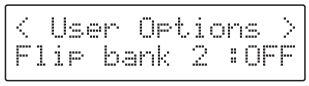
When Flip Bank 1 is set to 'ON' and the BANK SELECT 1-16 switch is selected, faders 1-8 and their associated SELECT switches control Digital Inputs 17-24 and not Analogue Inputs 1-8 as would be the case under normal operation. Control of Analogue Inputs 1-8 is then accessed from faders 1-8 and the associated SELECT switches of BANK SELECT 17-32,.

It is important to note that when Flip Bank 1 is set to ON, the DIRECT OUT setting remains active for channel SELECT switches 1-8 of BANK SELECT 1-16. In this way, Digital Inputs 17-24 can be routed directly to Digital Outputs 17-24. As the TDIF and ADAT outputs are simultaneously active regardless of the input setting in the Tape Port Select menu (see **Section 3J Part 5.8**), in this way 8 ADAT channels can be easily dubbed onto 8 TDIF channels or vice versa. With both Flip Bank 1 and Flip Bank 2 active (see below), a 16channel digital transfer can be made.

To configure this for Digital Channels 17-24, set Flip Bank 1 to ON, and activate DIRECT OUT for channels 1-8 of BANK SELECT 1-16. Digital Inputs 17-24 are now routed directly post-fade to both ADAT and TDIF Digital Outputs 17-24.

Note that Flip Bank 1 is stored as part of a User Setup and is stored on power down.

- **Flip Bank 2**



This setting allows the controls of BANK SELECT 1-16 channels 9-16 to be 'flipped' with the controls of BANK SELECT 17-32 channels 25-32.

Operation is as Flip Bank 1 (above) but instead for analogue channels 9-16 and digital input channels 24-32.

Note that Flip Bank 2 is stored as part of a User Setup and is stored on power down.

- **Direct**

The 16 digital direct output channels accessible from the TDIF ports and ADAT output ports can be globally set to be pre-EQ, pre-fade or post-fade sends. Three settings are available:

PRE EQ: direct sends derived PRE-EQ, PRE-COMPRESSION and PRE-FADE

PRE FADE: direct sends derived POST-EQ, POST-COMPRESSION and PRE-FADE

POST FADE: direct sends derived POST-EQ, POST-COMPRESSION and POST-FADE

The default setting is POST FADE.

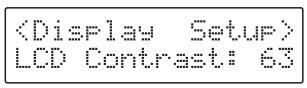
The digital inputs can also be routed in two blocks of 8 channels to the direct output channels. To configure this, see the sections on Flip Banks 1 and 2 on the previous page.

Note that the DIRECT OUT switch must be enabled for an analogue input channel in order for the digital output channel to transmit the direct send. When disabled, Group outputs are transmitted (see Section 3C for more information). The settings above affect the input channel direct sends only and do not affect any digital Group outputs.

Note that Direct is stored as part of a user Setup and is stored on power down.

- **LCD Contrast**

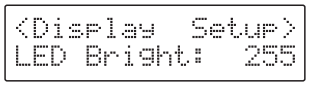
The contrast of the 328XD's main LCD display can be altered to allow it to be read easily from different operating angles. Use the PARAM encoder to set the LCD Contrast value between 0 and 63.



Note that this setting is stored within a User Setup and on power down.

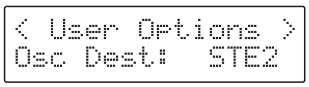
- **LED Brightness**

  The brightness of all LEDs on the surface of the 328XD, including illuminated switches and meters, can be altered. Use the PARAM encoder to set the value to between 0 (off) and 255 (full). The default setting is 255.

  Note that this setting is stored within a User Setup and on power down.

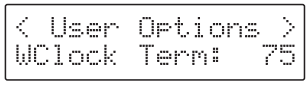
- **Osc Dest**

  The 328XD has an in built Oscillator which can be assigned to a number of different destinations for calibration purposes.

  The destination choices are **NOWHERE** (default), **STE-1**, **STE-2**, **FX-1** and **FX-2**, provided that the S/PDIF or AES/EBU input has not already been routed to the destination. In this event only the available destinations will be displayed. Routing the Oscillator to a Stereo Input will override the analogue signal present and routing the oscillator to a FX Return channel will override the FX Return signal.

- **WClock Term**

  Wordclock termination can be enabled with this software switch. Use the PARAM encoder to select between 75 to enable and NONE to disable wordclock termination. The default setting is NONE.

  Note that WClock term is stored as part of a User Setup and is stored on power down.

- **Phase**

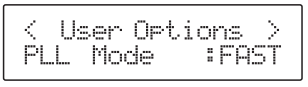
  The Phase setting allows the user to adjust the phase relationship between the internal clock and the clock transmitted at the BNC wordclock output, to compensate for some older Tape Machines which require a different setting.

  Under normal circumstances, the Phase setting should be left to the default setting of 382 (labeled DA88/V4). The setting of 380 (DA88/OLD) must be used for Tascam DA88 machines with a system board of version 1-3.

  For any other connected non-Tascam tape machine or computer audio card, the default setting of DA88/V4 should be used.

  Note that Phase is stored as part of a User Setup and is also stored on power down.

- **PLL Mode**

  This menu enables the configuration of how the 328XD's internal Phase Locked Loop (PLL) locks to external clocks from BNC or AES/EBU sources (see **Section 3J Part 5.14**).

Use the PARAM encoder to select between SLOW and FAST PLL modes. The default mode is the fast PLL. The PLL mode should be left set to the fast setting when connecting the 328XD into most setups.

Some configurations, in particular those involving older equipment, may require the PLL Mode to be set to the slow setting in order for the 328XD to correct jitter related problems. The jitter rejection is good, but changes in sample frequency due to jitter will be tracked more slowly than when the 328XD is operating in the fast PLL mode. If you experience clicks in the audio output stream of digitally connected devices, try setting the PLL mode to SLOW.

Note that PLL mode is stored as part of a User Setup and is stored on power down.

5.3 - MIDI CONTROLLERS

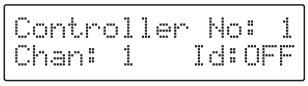
A fourth bank can be accessed by pressing whichever BANK SELECT switch is currently illuminated. This puts the console into MIDI Controller mode, in which the 16 faders, the 16 rotary encoders of the E-Strip and the 16 Mute and 16 Solo switches act as 64 user definable, automatable MIDI Controllers. Each physical control can be assigned a specific MIDI Continuous Controller number and MIDI Channel - the faders and encoders have a fixed range of 0-127 and the switches a fixed range of 0-1.

Note that this bank is for remote control of external MIDI devices such as the audio mixer within software sequencer packages only and is not to be confused with configuration of internal 328XD parameters. For detailed information on automation of the internal 328XD parameters, consult **Section 3J Part 5.16** and **Section 4** of the User Guide. The MIDI Controller Bank can also be automated. For more information, consult **Section 3J Part 5.16**.

Configuration of the controllers is carried out using the MIDI Controllers menu. Once defined, the assigned MIDI Control Changes can be stored to one of 64 MIDI Controller Presets for recall at a later stage.

Setting MIDI Controller parameters

Press ENTER to enter the MIDI Controllers menu pages.



The LCD display will show the following 3 parameters:

- **Controller No: 1-64**

  Select the physical controller to be defined using the ▲▼ cursor keys.

  Controllers 1-16 are the 16 Faders
  Controllers 17-32 are the 16 rotary encoders of the E-Strip
  Controllers 33-48 are the 16 Solo switches
  Controllers 49-64 are the 16 Mute switches

- **Chan: 1-16**

  Enter the MIDI channel on which the selected physical control is to transmit the Continuous Controller, selected using the ◀ ▶ cursor keys to highlight and the PARAM encoder to adjust.

- **ID: OFF - 127**

  Enter the number of the MIDI Continuous Controller number which the physical control is to transmit, selected using the ◀ ▶ cursor keys to highlight and the PARAM encoder to adjust.

Storing and naming MIDI Controller Setups

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

- Press ENTER while in the MIDI Controllers page.
- Both the YES and NO buttons will flash.
- The LCD will display:

```
Store To Preset?
  1:<Empty>
```

- Use the ▲▼ cursor keys or the PARAM encoder to select the MIDI Controller Preset library location number you wish to use, and then press YES to save the settings or NO to abort and return to the MIDI Controllers menu.

When confirming the store process, you will be prompted to enter a name for the MIDI Controller Preset.

The LCD display will read:

```
<MIDI Preset  1>
ID :MIDI PRES 01
```

Now use the ◀ ▶ cursor keys to select the character you want to change, and the PARAM encoder to select the character.

Characters can be deleted in the following ways:

- To delete the selected character and move the cursor one character to the right, press and hold the ◀ cursor key and press the ▶ cursor key once for each character to be deleted
- To delete the selected character and move the cursor one character to the left, press and hold the ▶ cursor key and press the ◀ cursor key once for each character to be deleted

Once you are happy with your choice press ENTER to store the new name or NO to abort.

To rename the preset at a later date you must highlight the preset within the MIDI Ctl Presets menu and press the ◀ and ▶ FUNCTION cursor keys simultaneously. Naming is done in the same way.

The current values of all 64 MIDI Controllers can be transmitted by pressing the ◀ and ▶ function keys simultaneously while the LCD is in the MIDI Controllers menu

5.4 - MIDI CTL PRESETS

There are 64 MIDI Controller Preset library locations that can be used for storing custom MIDI Controller setups. The MIDI Ctl Presets menu enables you to select from the list of 64 locations a previously stored preset for recall or editing. MIDI Controller Presets can also be downloaded from the Soundcraft website and loaded into the console via a MIDI System Exclusive dump. Once loaded, they will be accessible from the MIDI Ctl Presets menu.

Recalling MIDI Controller Presets

Highlight the MIDI Ctl Presets menu and press ENTER to enter the MIDI Controller Presets menu page.

Use the ▲▼ cursor keys or the PARAM encoder to select the Preset you wish to recall.

Press ENTER to recall the chosen Preset. The MIDI Controller Preset will now be loaded into the MIDI Controllers menu, which the LCD will automatically display.

To make any alterations or to rename and store the Preset to a different location, see the section above, MIDI Controllers.

5.5 - MIDI DUMP OUT

Two types of MIDI dump can be made from the 328XD,as MIDI System Exclusive data or MIDI Continuous Controller data.

System Exclusive Dumps:

Stored Snapshots, User Setups and all Presets can be dumped from the 328XD MIDI Out port as MIDI System Exclusive data to be recorded and stored externally on a MIDI data filer or within a MIDI sequencer package. Once recorded on the remote source, using the MIDI Dump In menu (see below) the presets can be restored to the 328XD.

Continuous Controller Dumps:

Alternatively, all 328XD automatable parameters or any defined MIDI Controllers within the MIDI Controller Bank can also be dumped as a list of Continuous Controller values. To restore these dumps to the 328XD, ensure that the console is in the correct automation mode (see **Section 3J Part 5.16**) simply playback the recorded data.

The following dumps can be selected:

- **All Data** transmits a dump of all Snapshots/User Setups and all MIDI Controller, Dynamics and FX Presets in a single sysex dump
- **All Snaps** transmits a sysex dump of all stored Snapshots
- **One Snap** transmits a single selected Snapshot as sysex data
- **FX Presets** transmits all stored FX Presets as sysex data
- **Ctl Presets** transmits all stored MIDI Controller Presets as sysex data
- **One Preset** transmits a single selected FX, Dynamics or MIDI Controller Preset as sysex data
- **Controllers** transmits the current values of the faders, encoders and switches of the MIDI Controller bank as MIDI Continuous Controller data
- **Automation** transmits all current values of all 328XD automatable objects as MIDI Continuous Controller data

NOTE: Only the stored FX User Presets can be dumped from the console as sysex data, and not the Factory Presets.

NOTE: All dump types can berequested from the console via MIDI System Exclusive messages. For more information consult **Appendix A3**.

Let's look at them individually.

Press ENTER to enter the MIDI Dump Out menu page.

Use the PARAM encoder to scroll through the different dump types

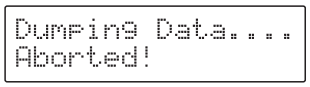
All Data

Executing this dump will transmit all data currently stored within the 328XD as MIDI System Exclusive data from the 328XD MIDI Out port.

Select the All Data dump and press ENTER to start the dump.

When complete the LCD display will show:

To abort press EXIT. The LCD display will read:



Note that when this dump is returned to the console, the Snapshot and Preset locations will be restored. Any locations to which you have stored Snapshots or Presets since the dump out was made will be overwritten on returning the dump to the console. Empty locations within the dump will not overwrite Snapshot or Preset locations.

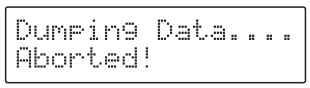
All Snaps

Executing this dump will dump all Snapshots currently stored within the 328XD as MIDI System Exclusive data from the MIDI Out port.

Select the All Snaps dump and press ENTER to start the dumping process.

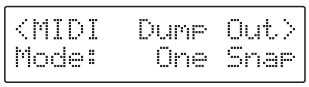
When complete the LCD display will show:

To abort press EXIT. The LCD display will read:



Note that when this dump is returned to the console, the Snapshot locations will be restored. Any locations to which you have stored Snapshots since the dump out was made will be overwritten on returning the dump to the console. Empty locations within the dump will not overwrite Snapshot locations.

One Snap



A single Snapshot can be selected to be dumped as MIDI System Exclusive data from the MIDI Out port.

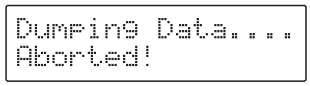
Select the One Snap dump with the PARAM encoder and press the ▼ cursor key once to view the list of currently stored Snapshots.

Use the ▲▼ cursor keys or the PARAM encoder to select the Snapshot you wish to dump. To return to the MIDI Dump Out menu, simply scroll to the top of the list.

Press ENTER to start the dumping process.

When complete the LCD display will show:

To abort press EXIT. The LCD display will read:



Note that when this dump is returned to the console, the location to which the Snapshot should be stored will be prompted for on the LCD.

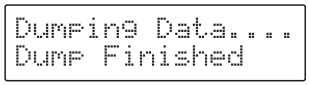
FX Presets

All stored Lexicon FX Presets can be dumped as MIDI System Exclusive data from the MIDI Out port.

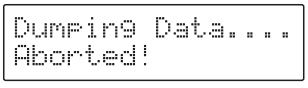
Executing this dump will transmit all FX Presets currently stored within the 328XD as System Exclusive data from the 328XD MIDI Out port. All Preset locations are stored within the dump so that dumping the data back to the console will restore the FX Presets to their original location.

Select the FX Presets dump and press ENTER to start the dumping process.

When complete the LCD display will show:



To abort press EXIT. The LCD display will read:



Note that when this dump is returned to the console, the location to which the FX Preset should be stored will be prompted for on the LCD.

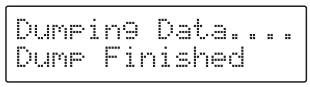
Ctl Presets

All stored MIDI Controller Presets can be dumped as MIDI System Exclusive data from the MIDI Out port.

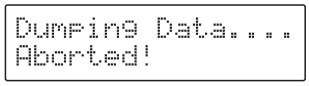
Executing this dump will transmit all MIDI Controller Presets currently stored within the 328XD as System Exclusive data from the 328XD MIDI Out port. All Preset locations are stored within the dump so that dumping the data back to the console will restore the FX Presets to their original location.

Select the Ctl Presets dump and press ENTER to start the dumping process.

When complete the LCD display will show:

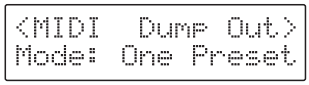


To abort press EXIT. The LCD display will read:



Note that when this dump is returned to the console, the MIDI Controller Preset locations will be restored. Any locations to which you have stored MIDI Controller Presets since the dump out was made will be overwritten on returning the dump to the console. Empty locations within the dump will not overwrite MIDI Controller Preset locations.

One Preset



A single stored FX, Dynamics or MIDI Controller Preset can be selected to be dumped as MIDI System Exclusive data from the MIDI Out port.

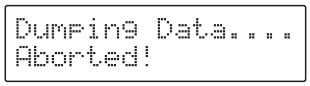
Select the One Preset dump with the PARAM encoder and press the ▼ cursor key once to view the list of currently stored Presets.

Use the ▲▼ cursor keys or the PARAM encoder to select the Preset you wish to dump. To return to the MIDI Dump Out menu, simply scroll to the top of the list.

Press ENTER to start the dumping process.

When complete the LCD display will show:

To abort press EXIT. The LCD display will read:



Note that when this dump is returned to the console, the location to which the MIDI Controller Preset should be stored will be prompted for on the LCD.

Controllers

All assigned IDs and values of the MIDI Controller bank can be transmitted as a string of MIDI Continuous Controller values to be recorded into a sequencer or to synchronize a connected MIDI device.

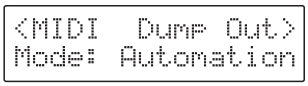
Select the Controllers dump with the PARAM encoder and press ENTER to start the dump.

When complete, the LCD will return to the dump out screen.

The Controllers dump cannot be aborted.

To dump the parameters accurately, the MIDI Controllers should not be adjusted while the dump is in progress.

Automation



All of the 328XDs internal automatable parameters can be transmitted as a string of MIDI Continuous Controller values.

This dump is particularly useful to make at the beginning of a 328XD automation track within a MIDI sequencer. It has the same effect as transmitting a MIDI Program Change to the console to recall a Snapshot, synchronizing the 328XD with the beginning of the track. The advantage of the Automation dump over a Snapshot recall is that the dumped data can be continually adjusted within the appropriate sequencer editing pages. To interpret the MIDI Continuous Controller values of a recorded Automation dump, refer to the MIDI automation specifications at the back of this manual.

Select the Controllers dump with the PARAM encoder and press ENTER to start the dump.

The Automation dump takes about 20 seconds to complete and cannot be aborted.

To dump the parameters accurately, the console surface parameters and FX Settings should not be adjusted while the dump is in progress.

5.6 - MIDI DUMP IN

Previously dumped MIDI System Exclusive data can be dumped back into the 328XD from a MIDI device via the 328XD MIDI In port.

NOTE: It is not necessary to set the console to receive a MIDI Dump In when transmitting a previously dumped Automation or Controllers dump back to the console (see **Section 3J Part 5.5**). It is, however, necessary to set the automation mode correctly (see **Section 3J Part 5.16**).

Highlight the MIDI Dump In menu and press ENTER.

The LCD display will now read:

Start playback of the MIDI device to start the dumping process. The 328XD will interpret which dump is being played back to the desk.

The dumps for All Data, All Snaps, FX Preset, and MIDI Preset, retain the locations to which they were stored when dumped out. On returning the dump to the console, Snapshots, Setups and Presets will be written to their associated locations, overwriting any subsequently stored data. Locations which contain new data but were left empty when the dump was made will not be overwritten when the dump is restored to the console.

Having loaded a dump of a single Preset, Snapshot or User Setup back into the console, a prompt message will appear requesting the location to which information needs to be stored. Select the required memory location with the PARAM encoder and press YES to confirm.

The MIDI Dump In process can be aborted at any time by pressing EXIT. The LCD will display:

```
Waiting For Data
Aborted!
```

Press EXIT again to return to the main Menu pages.

5.7 - TAPE TRIM SETUP

The Tape Trim Setup menu allows the level of the 16 Tape inputs to be boosted or cut individually or globally.

Global Adjustment

Highlight the Tape Trim Setup menu and press ENTER.

The LCD display will show:

```
<Tape Trim Set.>
Set All Trims ?
```

Both the YES and the NO keys will flash.

To set all of the Tape Trims globally press YES.

The LCD will display the current Global offset to the Tape Trims. By default this is set to +0.0dB.

NOTE: On entering the Global Tape Trim Setup menu, the offset value will be destructively written to the individual Tape Trim settings (see below). If you wish to preserve the Tape Trim setting for any channel(s) but adjust others, you should use the individual Tape Trim settings to configure.

The LCD will now display:

```
<Tape Trim Set.>
Global:    0.0dB
```

You can now use the PARAM encoder to adjust the input level of the Tape inputs. The level can be adjusted from -12dB to +6dB.

Once you have set the levels to your satisfaction press EXIT to exit the menu.

Individual Adjustment

Highlight the Tape Trim Setup menu and press ENTER.

The LCD display will show:

```
<Tape Trim Set.>
Set All Trims ?
```

Both the YES and the NO keys will flash.

To set the Tape Trims individually press the NO button.

The LCD display will now read:

```
<Tape Trim Set.>
CH17:    + 6.0dB
```

You can now use the ▲▼ cursor keys to select the Tape channel you want to adjust the input level on (Ch 17 - 32) and the PARAM encoder to adjust the level.

The level can be adjusted from -12dB to +6dB.

Once you have set the levels to your satisfaction press EXIT to exit the menu.

NOTE: Tape trim levels are not copied with a Channel Copy (See **Section 3J Part 5.17**).

5.8 - TAPE PORT SELECT

Both ADAT and TDIF outputs for Digital Outputs 17-24 and 25-32 are permanently active, but each 8 channel input can only be active for either TDIF or ADAT. The Tape Port Select menu is where this option is configured.

The Auxiliary Optical Output can be set to derive an 8 channel ADAT Optical format output from either the 8 Group Outputs or from a combination of the MIX bus, AUX 1, 2, 3 and 4 sends and FX 1 & 2 sends. Alternatively it can be switched to transmit an S/PDIF signal, duplicating the signal at the coaxial S/PDIF output.

Configuring TAPE 17-24 (8 TRK A), TAPE 25-32 (8TRK B) and AUX OPTICAL.

Highlight the Tape Port Select menu and press ENTER.

Use the ▲▼ cursor keys to select the ADAT/TDIF input selection page for Digital Input channels 17-24

Use the PARAM encoder to select either ADAT or TDIF to match the input device to be connected.

Use the ▼ cursor key to set the input and output Wordlength for Digital Input channels 17-24

The Wordlength can be set to 16, 20 or 24 bit. The output is dithered for selections of 16 and 20 bit and undithered when set to 24 bit.

Use the PARAM encoder to select the appropriate Wordlength for the device that is being connected.

Use the ▼ cursor key to select the next page to set the Sample Rate Flag for Digital Input channels 17-24. This page is only available if TDIF has been selected as the active input port in the ADAT/TDIF select page. If ADAT has been selected, the page is not displayed. The Sample Rate Flag must be set to the same sample rate at which the 328XD is operating, whether set to internal or external clock. To check this setting, enter the Clock Source Sel menu (See **Section 3J Part 5.14**).

Use the PARAM encoder to set the Sample Rate.

Use the ▲▼ cursor keys to select the ADAT/TDIF input selection page for Digital Input channels 25-32

Use the PARAM encoder to select either ADAT or TDIF to match the device to be connected.

Use the ▼ cursor key to set the input and output wordlength for Digital Input channels 25-32

The wordlength can be set to 16, 20 or 24 bit. The output is dithered for selections of 16 and 20 bit and undithered when set to 24 bit.

Use the PARAM encoder to select the appropriate wordlength for the device that is being connected.

Use the ▼ cursor key to select the next page to set the Sample Rate Flag for Digital Input channels 25-32. This page is only available if TDIF has been selected as the active input port in the ADAT/TDIF select page. If ADAT has been selected, the page is not displayed. The Sample Rate Flag must be set to the same sample rate at which the 328XD is operating, whether set to internal or external clock. To check this setting, enter the Clock Source Sel menu.

Use the PARAM encoder to set the sample rate.

Use the ▼ cursor key to set the signal transmitted from the Auxiliary Optical output

Use the PARAM encoder to select between:

- **Aux/Mix**

  The 328XD's 4 Aux sends, 2 FX sends and Mix L, R will be sent to the Aux Optical Out for connecting to external equipment that uses ADAT Optical inputs. The channels are mapped in the following way:

Aux ADAT Output Channel	Signal
1	Mix Bus Left
2	Mix Bus Right
3	Aux Send 1
4	Aux Send 2
5	Aux Send 3
6	Aux Send 4
7	FX Send 1
8	FX Send 2

- **Group**

  Group outputs 1-8 will be sent to the Aux Optical Out for connecting to external equipment that uses ADAT Optical inputs.

The ADAT format output is a 24 bit undithered signal.

Use the ▼ cursor to navigate to menus allowing configuration of wordlength (16, 20, 24 bit) and dither on/off. Note that this option is only available when using the Auxilliary Optical Output in ADAT format (Aux/Mix or Group).

- **S/PDIF**

  When selected, the signal configured to be transmitted from the coaxial S/PDIF output (see **Section 3J Part 5.11**) is duplicated at the Aux Optical Out in optical S/PDIF format. This S/PDIF format output follows all the configuration options as set in the SPDIF O/P Setup menu including wordlength and Sample Rate Flag settings.

5.9 - SPDIF I/P SETUP

The coaxial S/PDIF digital stereo input can be routed to a number of different control destinations.

Highlight the SPDIF I/P Setup menu and press ENTER

```
< SPDIF  Input >
Route To:  STE 1
```

Use the PARAM encoder to select one of the following destinations:

- **NOWHERE** The S/PDIF digital stereo input is not routed
- **STE 1** The S/PDIF digital stereo input is routed to the STE-1 input
- **STE 2** The S/PDIF digital stereo input is routed to the STE-2 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
- **2TRK** The S/PDIF digital stereo input is routed to the 2 Track input

Note that the AES/EBU input and Internal Oscillator can also be routed to the above destinations. If either of these signals has been routed already, the destination will not appear in the list.

Routing the S/PDIF input to a Stereo Input or to the 2TRK input will override the analogue signal present. Similarly, routing the S/PDIF input to an FX Return will override the FX Return signal.

The 328XD S/PDIF Input is fitted with Sample Rate Conversion and is capable of rectifying signals with sampling rate between 20kHz - 100kHz. Consequently the wordclock of a device connected to the 328XD S/PDIF Input need not be synchronized with the 328XD wordclock.

Press EXIT to return to the main menu pages.

5.10 - AES/EBU I/P SETUP

Similarly, the AES/EBU digital stereo input can be routed to a number of different destinations.

Highlight the AES/EBU I/P Setup menu and press the ENTER

Use the PARAM encoder to select one of the following destinations:

- **NOWHERE** The AES/EBU digital stereo input is not routed
- **STE 1** The AES/EBU digital stereo input is routed to the STE-1 input
- **STE 2** The AES/EBU digital stereo input is routed to the STE-2 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
- **2TRK** The AES/EBU digital stereo input is routed to the 2 Track input

Note that the S/PDIF input and Internal Oscillator can also be routed to the above destinations. If one of these signals has been routed already, the destination will not appear in the list.

Routing the AES/EBU input to a Stereo Input or to the 2TRK input will override the analogue signal present. Similarly, routing the AES/EBU input to an FX Return will override the FX Return signal.

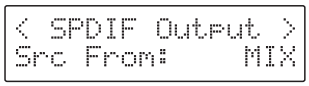
NOTE: The AES/EBU input device should be connected and correctly synchronized to the same wordclock source as the 328XD BEFORE SELECTING THE DESTINATION CHANNEL. If the 328XD is set to operate on its Internal clock, for example, the AES/EBU device must be set to sync to the 328XD. Under normal circumstances, this will be done by connecting the 328XD AES/EBU output to the AES/EBU input of the external device which must be set to lock to the clock present at its AES/EBU input. Most CD players and DAT recorders cannot be synchronized to an external clock source when in play mode. Consequently, in this situation the 328XD should be set to synchronize to the wordclock present at its AES/EBU input.

Press EXIT/NO to return to the main menu pages.

5.11 - SPDIF O/P SETUP

The coaxial S/PDIF digital stereo output on the back of the 328XD can be set to derive its signal from a number of different sources.

Highlight the SPDIF O/P Setup menu and press ENTER.



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

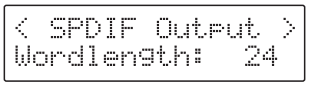
- **NOWHERE** The S/PDIF digital stereo output signal is sourced from nowhere
- **MIX** The S/PDIF digital stereo output signal is sourced from the stereo MIX output
- **AUX 1/2** The S/PDIF digital stereo output signal is sourced from the output of AUX sends 1/2

- **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
- **GRP1/2** The S/PDIF digital stereo output signal is sourced from Group outputs 1and 2
- **GRP3/4** The S/PDIF digital stereo output signal is sourced from Group outputs 3 and 4
- **GRP5/6** The S/PDIF digital stereo output signal is sourced from Group outputs 5 and 6
- **GRP7/8** The S/PDIF digital stereo output signal is sourced from Group outputs 7 and 8
- **CRM** The S/PDIF digital stereo output signal is sourced from the Control Room Output

Wordclock is transmitted within the audio stream from the S/PDIF output. If you connect the S/PDIF output to a device that requires to be synchronized, you should ensure that this is done. Check your equipment documentation for more information. When NOWHERE is selected, wordclock is still transmitted at the S/PDIF output, ensuring that connected devices do not lose sync.

Use the ▼ cursor key to check the wordlength of the S/PDIF output stream.

Using the PARAM encoder, the S/PDIF output wordlength can be set to 16, 20 or 24 bit. The output is dithered for selections of 16 and 20 bit and undithered when set to 24 bit. You should ensure that this is set to the wordlength that the external device requires.



Use the ▼ cursor key to check the Status Bits of the S/PDIF output stream.

The Status Bits pages allow configuration of two flags within the S/PDIF stream that must be set correctly to allow a receiving device to interpret its incoming S/PDIF signal.

Under normal circumstances, if the 328XD is set to Internal Wordclock, the Status bits should remain at the default setting of AUTO.

If the 328XD is set to sync to an external wordclock source, you must either check that the S/PDIF output stream Status Bits are set manually, or set the External Sample rate correctly in the Clock Source Sel menu (See **Section 3J Part 5.14**). To set the flags manually, select Status Bits: MAN with the PARAM encoder.

Press the ▼ cursor key to set the status bits of the S/PDIF output stream.

The Status Bits pages allow configuration of two flags within the S/PDIF stream that must be set correctly to allow a receiving device to interpret the incoming S/PDIF signal.

Under normal circumstances, if the 328XD is set to Internal Wordclock (see **Section 3J Part 5.14**), the Status bits should remain at the default setting of AUTO.

If the 328XD is set to sync to an external wordclock source, you should check that the S/PDIF output stream Status Bits are set correctly. To set the flags manually, select Status Bits: MAN with the PARAM encoder. You will now be able to access the Status Bit menu pages by pressing the ▼ cursor key.

The Sample Rate Flag must be set to the same sample rate at which the 328XD is operating. The options are 44.1kHz, 48kHz and UNDF (Undefined).

```
< SPDIF Output >
S/Rate Flag: 48k
```

If the 328XD is set to synchronize to external wordclock at a frequency of 48kHz, you must set the S/PDIF Output Sample Rate Flag to 48kHz. A setting of Undefined can be selected if the external S/PDIF device requires it. Consult the documentation for your S/PDIF device for more information.

Note that when the Status Bits setting is set to AUTO, and the 328XD is set to synchronize to an external clock source, the External Sample Rate settings should be checked. From this the S/PDIF output sample rate flag will be determined. See **Section 3J Part 5.14**).

Press the ▼ cursor key to set the Pro Flag.

The S/PDIF output can be configured to transmit an AES/EBU format signal, although mechanically the connections remain S/PDIF specification.

```
< SPDIF Output >
Pro Flag:   OFF
```

To transmit an AES/EBU format signal from the coaxial S/PDIF output, set the Pro Flag to ON with the PARAM encoder. If the signal is to remain in the S/PDIF format, ensure that the Pro Flag is set to OFF.

Press EXIT to leave the S/PDIF O/P menu.

NOTE: If S/PDIF has been set to be the signal present at the Aux Optical Out port, the signal will be configured by the settings made in the SPDIF O/P Setup menu.

5.12 - AES/EBU O/P SETUP

The AES/EBU digital stereo output on the back of the 328XD can be set to derive its signal from a number of different sources.

Highlight the AES/EBU O/P menu and press ENTER.

```
<AES/EBU Output>
Src From: GRP1/2
```

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

- **NOWHERE** The AES/EBU digital stereo output signal is sourced from nowhere.
- **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 the output of AUX sends 1/2.

- **AUX 3/4** The AES/EBU digital stereo output signal is sourced from the output of AUX sends 3/4.
- **FX 1/2** The AES/EBU digital stereo output signal is sourced from the output of FX sends 1/2.
- **GRP1/2** The AES/EBU digital stereo output signal is sourced from Group out puts 1and 2.
- **GRP3/4** The AES/EBU digital stereo output signal is sourced from Group out puts 3 and 4.
- **GRP5/6** The AES/EBU digital stereo output signal is sourced from Group out puts 5 and 6.
- **GRP7/8** The AES/EBU digital stereo output signal is sourced from Group out puts 7 and 8.
- **CRM** The AES/EBU digital stereo output signal is sourced from the Control Room Output.

Wordclock is transmitted along with the audio stream from the AES/EBU output. If you connect the AES/EBU output to a device that requires to be synchronized, you should ensure that this is done. Check your equipment documentation for more information. When NOWHERE is selected, wordclock is still transmitted at the AES/EBU output, ensuring that connected devices do not lose sync.

Use the ▼ cursor key to check the wordlength of the AES/EBU output stream.

Using the PARAM encoder, the AES/EBU output wordlength can be set to 16, 20 or 24 bit. The output is dithered for selections of 16 and 20 bit and undithered when set to 24 bit. You should ensure that this is set to the wordlength that the external device requires.

Press the ▼ cursor key to set the status bits of the AES/EBU output stream.

The Status Bits pages allow configuration of two flags within the AES/EBU stream that must be set correctly to allow a receiving device to interpret incoming AES/EBU signal.

Under normal circumstances, if the 328XD is set to Internal Wordclock (see **Section 3J Part 5.14**), the Status bits should remain at the default setting of AUTO.

If the 328XD is set to sync to an external wordclock source, you must either check that the AES/EBU output stream Status Bits are set manually, or set the External Sample Rate correctly in the Clock Source Sel menu (See Section 3J Part 5.14). To set the flags manually, select Status Bits: MAN with the PARAM encoder. You will now be able to access the Status Bit menu pages by pressing the ▼ cursor key.

The Sample Rate Flag must be set to the same sample rate at which the 328XD is operating. The options are 32kHz, 44.1kHz, 48kHz and UNDF (Undefined).

If the 328XD is set to synchronize to external wordclock at a frequency of 48kHz, you must set the AES/EBU Output Sample Rate Flag to 48kHz. A setting of Undefined can be selected if the external AES/EBU device requires it. Consult the documentation for your AES/EBU device for more information.

Note that when the Status Bits setting is set to AUTO, and the 328XD is set to synchronize to an external clock source, the External Sample Rate setting should be checked from this the AES/EBU output sample rate flag will be determined. (See **Section 3J Part 5.14**).

Press the ▼ cursor key to set the Pro Flag.

The AES/EBU output can be configured to transmit an S/PDIF format signal, although mechanically the connections remain AES/EBU specification.

To transmit an S/PDIF format signal from the AES/EBU output, set the Pro Flag to OFF with the PARAM encoder. If the signal is to remain in the AES/EBU format, ensure that the Pro Flag is set to ON.

Press EXIT to leave the AES/EBU O/P menu.

5.13 - TAPE MACH SETUP

The 328XD's Transport Control section can be used to control the transport of external recording devices using both the MMC (MIDI Machine Control) or RS 422 (Sony 9-Pin) protocols.

Highlight the Tape Mach Setup menu and press ENTER.

You can now use the ▲▼ cursor keys or the PARAM encoder to scroll through the LCD display and choose any of the following pages:

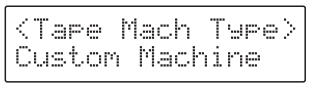
- **Custom Machine**
- **MMC Closed Loop**
- **Alesis A12**
- **Alesis BRC**
- **Tascam DTRS**
- **Tascam MMC-38**
- **Fostex D Series**
- **Fostex G Series**
- **Fostex RD8**
- **Fostex EX Series**
- **Sony 9 Pin**
- **EMU Darwin**

Nine preset Tape Machine types are listed which are generated from a configuration of the Custom Machine selection, but compensate for any deviation from the MMC standard specification. If your machine is not listed, you should select either MMC Closed Loop or Custom Machine for MMC control, or Sony 9 Pin. Unless you wish to employ remote transport control of a connected tape machine or wish the 328XD to display timecode, it is

not necessary to configure this menu in order for the 328XD to operate with digital tape machines.

CUSTOM MACHINE

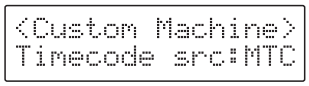
If your Tape Machine is not listed, or you wish to use the 328XD Transport Controls with a computer based software sequencer package, you should select Custom Machine with the PARAM encoder.



The Custom Machine option allows configuration of the following sub menus:

- **Timecode Source:** MIDI Timecode or Longitudinal Timecode (SMPTE)
- **Status:** Timecode Host or Client
- **MIDI:** MIDI Note On / MIDI Machine Control / None
- **Frame Rate:** Timecode Frame Rate
- **Loc 1/2:** LOCATE 1 and LOCATE 2 timecode setting
- **Off:** Timecode offset

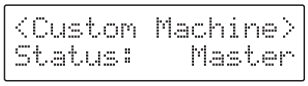
Timecode Source



When configured as a Timecode Client, the 328XD timecode display can show either MTC (MIDI Timecode) received at the MIDI In port or LTC/SMPTE received at the SMPTE In port. If your external device offers a MTC or LTC output, connect the correct cables and set the menu accordingly with the PARAM encoder. If your external device offers both MTC and LTC outputs, the choice of which to use is yours. If you are using the MIDI In port to receive automation data also, however, it may be wiser to use the LTC input to receive timecode.

Press the ▼ cursor key to set the Timecode Host/Client status.

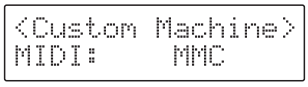
Status



The 328XD internal Timecode generator can be set to transmit MIDI Timecode from the MIDI Out port by configuring it as a Host Timecode device. If you wish the 328XD to generate MIDI Timecode, set the Status to HOST with the PARAM encoder. If you wish the 328XD to sync to incoming LTC or MTC as defined in the Timecode Source menu (see above), set the Timecode Status menu to CLIENT with the PARAM encoder. Set the Status to CLIENT if you do not wish to use Timecode.

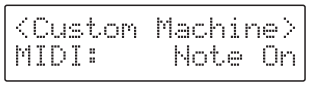
Press the ▼ cursor key to configure the MIDI setup.

MIDI



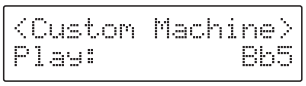
The 328XD Transport Controls can be set to transmit either MIDI Machine Control commands or MIDI Note On commands. If your external device is set to receive MMC commands, use the PARAM encoder to select MMC.

If you are using the 328XD in conjunction with a computer based software sequencer package that will respond to MIDI Note On transport messages, Note On can be selected with the PARAM encoder.



Setting the 328XD Transport controls to Note On enables you to configure a Note On message for each of the transport controls. Nine extra submenu pages are revealed by pressing the ▼ cursor key. Use the ▲▼ cursor keys to navigate between these submenus.

For each control, Note On commands with MIDI note numbers ranging from C-2 - G8 (MIDI Note numbers 00-127, 00H-7FH) can be selected.



By default the transport controls are set to:

Command	Displayed MIDI Note	MIDI Note Number
Play	Bb5	94 (5EH)
Stop	B5	95 (5FH)
Record	A5	93 (5DH)
Rewind	G5	91 (5BH)
Fast Forward	G#5	92 (5CH)
Locate 1	F6	102 (66H)
Locate 2	F#6	103 (67H)
Shift Key	C6	96 (60H)

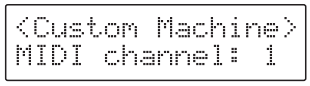
The Shift Key is required by some sequencer packages.

When defined, the associated Shift Key Note On command is transmitted immediately before the Note On command assigned to each transport control. This allows the sequencer to distinguish between a MIDI Note On received from an attached MIDI keyboard and the transport command transmitted by the 328XD. The Shift Key can also be set to OFF, if not required.

You should consult your sequencer manual to configure the sequencer to respond to the note numbers that you have programmed.

In addition, the LOC1 and LOC2 switches can be set to transmit predefined MIDI System Exclusive messages, enabling remote switching of the active fader bank within Digidesign ProTools. Set Loc 1 to 'PTL +1' and Loc 2 to 'PTL -1' to enable this. When using the 328XD MIDI Controller Bank, the LOC1 and LOC2 switches can then be used to select which set of ProTools faders is controlled by the 328XD. Consult the downloadable 328XD ProTools guide for further information.

The ninth MIDI Note On menu selects the MIDI channel on which the MIDI Note On messages are to be transmitted.



Press the ▼ cursor key to set the Timecode Frame Rate.

Frame Rate

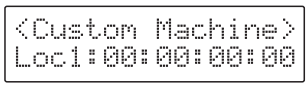
The timecode frame rate must be set to comply with the frame rate to which the remote device is also set, regardless of Timecode Host/Client status. Use the PARAM encoder to set this.

The Frame Rate can be set to 24, 25, 30 drop or 30 non-drop frames/second.

The default setting is 25fps.

Press the ▼ cursor key to set Locate point 1.

Loc 1

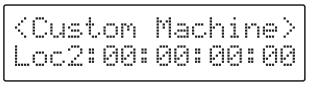


When the LOC1 switch is pressed, it will transmit a single timecode reference point as a single MIDI Timecode frame, so that an attached tape recorder or MIDI sequencer can respond and locate to that point. By default this is set to a value of 00:00:00:00. Use the ◀ and ▶ cursor keys to navigate and the PARAM encoder to adjust as required.

Note that the timecode reference point will not be transmitted when the transport controls are set to MIDI Note On.

Press the ▼ cursor key to set Locate point 2.

Loc 2



When the LOC2 switch is pressed, it will transmit a single timecode reference point as a single MIDI Timecode frame, so that an attached tape recorder or MIDI sequencer can respond and locate to that point. By default this is set to a value of 00:00:00:00. Use the ◀ and ▶ cursor keys to navigate and the PARAM encoder to adjust as required.

Note that the timecode reference point will not be transmitted when the transport controls are set to MIDI Note On.

Press the ▼ cursor key to set the Timecode Offset value.

Off

An offset, definable to the frame, can be applied to the displayed Timecode, if required. The offset can be positive (adds to the Timecode display) or negative (subtracts from the Timecode display).

To configure the offset, use the ◀ and ▶ cursor keys to navigate between +/-, hours, minutes, seconds and frames and the PARAM encoder.

When an offset has been applied, Snapshots stored while Timecode is running in the display will be assigned a Timecode address with the offset applied (see Section 3J - Part 2).

Pressing the ◀ and ▶ FUNCTION keys while this page is active in the LCD will reset the Locate 1 Timecode address to 00:00:00:00.

Pressing the ◀ and ▶ FUNCTION keys while this page is active in the LCD will reset the Locate 2 Timecode address to 00:00:00:00.

Pressing the ◀ and ▶ FUNCTION keys while this page is active in the LCD will reset the Timecode Offset value to + 00:00:00:00.

With Loc to Snap set to ON (see **Section 3J** - **Part 2.5**), when a Snapshot is recalled, the transmitted Timecode address will have the offset applied.

When STO1 or STO2 are pressed with the Timecode display running (se **Section 3J** - **Part 2.5**), the Locate point will be stored with the offset applied.

Press the EXIT to return to the main **Tape Mach Setup** menu

MMC Closed Loop

To configure the 328XD for use with a standard MMC capable device, MMC Closed Loop should be selected as the Tape Machine Type.

```
<Tape Mach Type>
MMC Closed Loop
```

The console automatically acts as a Timecode Client device, but transmits MMC comands to the Timecode Host device. MIDI cables must be connected both ways between the 328XD and Tape Machine. After the 328XD has transmitted an MMC command, it will wait until it receives an 'MMC command received' message from the connected Tape Machine before fully illuminating the pressed transport control.

Timecode Source

```
MMC Closed Loop
Timecode Src:MTC
```

When configured as a Timecode Client, the 328XD Timecode Display can show either MTC (MIDI Timecode) received at the MIDI In port or LTC/SMPTE received at the SMPTE In port. If your external device offers a MTC or LTC output, connect the correct cables and set the menu accordingly with the PARAM encoder.

Press the ▼ cursor key to set the Timecode Frame Rate.

Frame Rate

```
MMC Closed Loop
Frame Rate: 24
```

The Timecode frame rate must be set to comply with the frame rate to which the remote device is set, regardless of Timecode Host/Client status. Use the PARAM encoder to adjust.

The Frame Rate can be set to 24, 25, 30 drop or 30 non-drop frames/second.

Press the ▼ cursor key to set Locate point 1.

Loc1

```
MMC Closed Loop
Loc1:00:00:00:00
```

When the LOC1 switch is pressed, it will transmit a single timecode reference point as a single MIDI Timecode frame, so that an attached tape recorder can respond and locate to that point. By default this is set to a value of 00:00:00:00. Use the ◀ and ▶ cursor keys to navigate and the PARAM encoder to adjust as required.

Note that the timecode reference point will not be transmitted when the transport controls are set to MIDI NOTE ON.

Pressing the ◀ and ▶ FUNCTION keys while this page is active in the LCD will reset the Locate 1 Timecode address to 00:00:00:00.

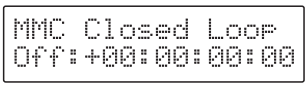
Press the ▼ cursor key to set Locate point 2.

Loc2

When the LOC2 switch is pressed, it will transmit a single timecode reference point as a single MIDI Timecode frame, so that an attached tape recorder can respond and locate to that point. By default this is set to a value of 00:00:00:00. Use the ◀ and ▶ cursor keys to navigate and the PARAM encoder to adjust as required.

Press the ▼ cursor key to set the Timecode Offset value.

Off



An offset, definable to the frame, can be applied to the displayed Timecode, if required. The offset can be positive (adds to the Timecode display) or negative (subtracts from the Timecode display).

To configure the offset, use the ◀ and ▶ cursor keys to navigate between +/-, hours, minutes, seconds and frames and the PARAM encoder to adjust.

When an offset has been applied, Snapshots stored while Timecode is running in the display will be assigned a Timecode address with the offset applied (see **Section 3J - Part 2**).

With Loc to Snap set to ON (see **Section 3J - Part 2.5**), when a Snapshot is recalled, the transmitted Timecode address will have the offset applied.

When STO1 or STO2 are pressed with the Timecode display running (se **Section 3J - Part 2.5**), the Locate point will be stored with the offset applied.

Press EXIT to return to the main **Tape Mach Setup** menu.

ALESIS AI2

The Transport Control section of the 328XD can be easily configured to control the transport of an Alesis ADAT in conjunction with the Alesis AI2 synchronizer, which provides MIDI to Alesis ADAT Sync conversion enabling the ADAT to interpret MMC commands from the 328XD.

Press ENTER to enter the **Alesis AI-2** setup page.

Consult the MMC Closed Loop section on page 120 for a description of the parameters available.

Press EXIT to return to the main **Tape Mach Setup** menu or use the ▲ and ▼ cursor keys to configure timecode and locate options, as described in the MMC Closed Loop section above.

Pressing the ◀ and ▶ FUNCTION keys while this page is active in the LCD will reset the Locate 2 Timecode address to 00:00:00:00.

Pressing the ◀ and ▶ FUNCTION keys while this page is active in the LCD will reset the Timecode Offset value to +00:00:00:00.

ALESIS BRC

The Transport Control section of the 328XD can be easily configured to control the transport of an Alesis ADAT in conjunction with the Alesis BRC, which provides MIDI to Alesis ADAT sync conversion enabling the ADAT to interpret MMC commands from the 328XD.

Press ENTER to enter the **Alesis BRC** setup page.

Consult the MMC Closed Loop section on page 120 for a description of the parameters available.

Press EXIT to return to the main **Tape Mach Setup** menu or use the ▲ and ▼ cursor keys to configure timecode and locate options, as described in the MMC Closed Loop section above.

TASCAM DTRS

The Transport Control section of the 328XD can be easily configured to control the transport of a Tascam DA7HR, DA88, DA98 or DA98HR DTRS machine.

Press ENTER to enter the **Tascam DTRS** setup page.

NOTE: In order to receive MMC (MIDI Machine Control) commands from the 328XD a DA88 must be fitted with an SY-88 Synchronization board.

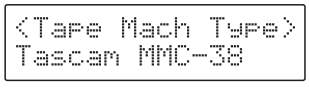
Consult the MMC Closed Loop section on page 120 for a description of the parameters available.

Press EXIT to return to the main **Tape Mach Setup** menu or use the ▲ and ▼ cursor keys to configure timecode and locate options, as described in the MMC Closed Loop section above.

TASCAM MMC-38

The Transport Control section of the 328XD can be easily configured to control the transport of a Tascam DA38 machine with the MMC-38 expansion unit connected.

Press ENTER button to enter the **Tascam MMC-38** setup page.



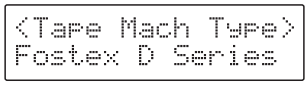
Consult the MMC Closed Loop section on page 120 for a description of the parameters available.

Press EXIT to return to the main **Tape Mach Setup** menu or use the ▲ and ▼ cursor keys to configure timecode and locate options, as described in the MMC Closed Loop section above.

FOSTEX D SERIES

The Transport Control section of the 328XD can be used to control the transport of a Fostex D80, D90, D108, D160, D160 v2, D824 or D1624 hard disk recorder.

Press ENTER to enter the **Fostex D Series** setup page.



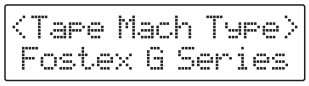
Consult the MMC Closed Loop section on page 120 for a description of the parameters available.

Press EXIT to return to the main **Tape Mach Setup** menu or use the ▲ and ▼ cursor keys to configure timecode and locate options, as described in the MMC Closed Loop section above.

FOSTEX G SERIES

The Transport Control section of the 328XD can be easily configured to control the transport of a Fostex G16 or G24 tape machine in conjunction with the appropriate MMC interface, which provides the MIDI Interface for the G16 or G24 allowing it to receive MMC commands from the 328XD.

Press ENTER button to enter the **Fostex G Series** setup page.



Consult the MMC Closed Loop section on page 120 for a description of the parameters available.

Press EXIT to return to the main **Tape Mach Setup** menu or use the ▲ and ▼ cursor keys to configure timecode and locate options, as described in the MMC Closed Loop section above.

FOSTEX RD8

The Transport Control section of the 328XD can be easily configured to control the transport of a Fostex RD8.

Press ENTER button to enter the **Fostex RD8** setup page.

Consult the MMC Closed Loop section on page 120 for a description of the parameters available.

Press EXIT to return to the main **Tape Mach Setup** menu or use the ▲ and ▼ cursor keys to configure timecode and locate options, as described in the MMC Closed Loop section above.

FOSTEX EX SERIES

The Transport Control section of the 328XD can be easily configured to control the transport of a Fostex EX Series recording machine.

Press ENTER to enter the **Fostex EX Series** setup page.

Consult the MMC Closed Loop section on page 120 for a description of the parameters available.

Press EXIT to return to the main **Tape Mach Setup** menu or use the ▲ and ▼ cursor keys to configure timecode and locate options, as described in the MMC Closed Loop section above.

SONY 9 PIN

The Transport Control section of the 328XD can be easily configured to control the transport of machines conforming to the Sony 9 Pin (RS 422) protocol.

Press ENTER to enter the **Sony 9 Pin** setup page.

Consult the MMC Closed Loop section above for a description of the parameters available.

Press EXIT to return to the main **Tape Mach Setup** menu or use the ▲ and ▼ cursor keys to configure timecode and locate options, as described in the MMC Closed Loop section above.

EMU DARWIN

The Transport Control section of the 328XD can be easily configured to control an EMU Darwin recorder.

Press ENTER to enter the **EMU Darwin** setup page.

Consult the MMC Closed Loop section on page 120 for a description of the parameters available.

Press EXIT to return to the main **Tape Mach Setup** menu or use the ▲ and ▼ cursor keys to configure timecode and locate options, as described in the MMC Closed Loop section above.

5.14 - CLOCK SOURCE SELECT

It is essential that the correct Wordclock source is chosen when linking the 328XD with other digital audio devices.

Highlight the Clock Source Select menu and press ENTER.

Use the PARAM encoder to select the Clock source, the choices are as follows:

- **Internal: 48 kHz**
- **Internal: 44.1 kHz**
- **External: WClock** (Wordclock)

- **External: AES/EBU**
- **External: SClock** (Digidesign Superclock)
- **External: ADAT 1**
- **External: ADAT 2**

NOTE: As the 328XD coaxial S/PDIF input is fitted with Sample Rate Conversion, it is not possible or necessary to synchronize the 328XD internal clock with an external S/PDIF source.

When set to Internal clock at a frequency of either 44.1kHz, or 48kHz, ALL digital devices connected must be set to synchronize to this clock. Consult the documentation supplied with your other devices for additional configuration information.

The 328XD should be set to synchronize to an External clock option if an external source is set to be the clock host for the system.

The 328XD can be set to synchronize to Digidesign Superclock (256 x Wordclock), if present at the BNC wordclock input.

The 328XD can also be set to synchronize to the AES/EBU and ADAT 1 and 2 inputs.

The S/PDIF input cannot be used as a clock source as it is fitted with a sample rate converter.

Press the ▼ cursor key to set the External Sample Rate setting.

If the 328XD is set to sync to an External clock source, and wordclock is lost, a warning message indicating this will be displayed on the LCD. The 328XD can revert to Internal clock, but in order to try to limit problems caused as a result of the loss, the sample frequency to which the console will revert can be set. Set the External Sample Rate to 44.1kHz or 48kHz with the PARAM encoder.

When the 328XD is acting as a wordclock client, it is important to set the External Sample Rate here to ensure that other console settings are calculated correctly.

Press the ▼ cursor key to set how the console will react to a loss of wordclock.

When external wordclock is lost, the 328XD can be set either to revert to Internal Clock at the sample rate defined above (INTERNAL) or wait for a stable clock to return at the client input (SEARCH). In SEARCH mode, the 328XD will revert to the Default Internal clock at the set frequency but will automatically sync to the external source when it returns.

Set the On Loss mode to Internal or Search with the PARAM encoder.

Press EXIT to return to the main menu pages.

Note to Tascam DA88 users.

If you are using DA88 machines it is important that you establish which system boards are installed. There are two different Phase settings used on the TDIF interface of the DA88 depending on their generation, and it is important that the 328XD is set up correctly to the same Phase settings otherwise the audio data may be corrupted. The Phase setting is found in the User Options menu (see **Section 3J Part 5.2**).

For DA88s with system board version 4, a setting of 382 (DA88/V4) should be set.

For DA88s with system board version 1, 2 or 3, a setting of 380 (DA88/OLD) should be used.

A combination of two DA88s of version 4 or a combination of DA88s of versions 1, 2 or 3 should not present problems if the clock phase is set correctly in the User Options menu.

NOTE: A DA88 version 4 model CANNOT be used with TDIF connections to the 328XD simultaneously with a DA88 version 1, 2 or 3. You should contact your Tascam distributor if you wish to upgrade the older machine.

5.15 - SNAPSHOT SETUP

The Snapshot Setup menu controls the settings for 328XD Snapshots.

Highlight the Snapshot Setup menu and press ENTER.

Use the ▲▼ cursor keys to access the following pages.

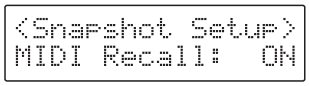
- **MIDI Recall**
- **Write Protect**
- **Snap to Time**
- **Loc to Snap**
- **Sort by Time**

MIDI Recall

The Snapshot Setup MIDI Recall ON/OFF switch does not function as a global 'enable MIDI recall of stored snapshots' switch. Instead, when set to ON, a subsequently stored snapshot will be saved with MIDI Recall by assigned MIDI Program Change enabled. When MIDI Recall is set to OFF, subsequently stored snapshots will be saved with MIDI Recall by assigned MIDI Program Change disabled. This setting also affects whether a User Setup is stored with MIDI Recall ON or OFF (see **Section 3J Part 5.19**).

For more information on recall of Snapshots from MIDI Program Change messages, consult **Section 4 Part 1**.

Use the PARAM encoder to set MIDI Recall by assigned MIDI Program Change to ON or OFF.



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

Press the ▼ cursor key to set the Write Protect parameters.

Write Protect

In the same way as the Snapshot Setup MIDI Recall switch described above, when set to ON the Write Protect function only has effect on subsequently stored Snapshots.

For more information on how a Snapshot operates when Write Protect is enabled see **Section 3G**.

Using the PARAM encoder set Snapshot Write Protect to ON or OFF, as required.

Press the ▼ cursor key to set how Snapshots respond to Timecode.

Snap to Time

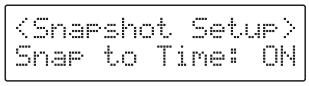
This function allows Snapshots to be recalled against incoming MTC/LTC or internally generated Timecode.

Unlike the MIDI Recall and Write Protect settings, 'Snap to Time' is a global setting and takes effect immediately when set to ON.

If Snap to Time is set to ON, Snapshots that have been assigned a Timecode address will be recalled against incoming MTC or LTC Timecode. See **Section 3G** for more information about assigning Timecode addresses to Snapshots. In this way, incoming Timecode from a Tape Machine can trigger the recall of Snapshots stored within the 328XD, enabling Timecode Snapshot automation.

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

Use the PARAM encoder to switch Snap to Time ON or OFF, as required.



Press the ▼ cursor key to set the Loc to Snap option.

Loc to Snap

With this function switched ON, when a Snapshot is manually recalled using the RECALL button in the SNAPSHOT CONTROL panel, the associated Timecode address (if set) will be transmitted as an MMC command from the MIDI Out port. In this way a connected Tape Machine can automatically locate to the point in a recording with which the Snapshot is associated.

See **Section 3G** for more information about assigning Timecode addresses to Snapshots.

Use the PARAM encoder to set Loc to Snap ON or OFF.

Press the ▼ cursor key to set how the Snapshot list is displayed.

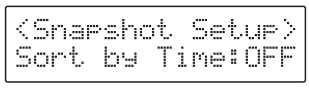
Sort by Time

If this function is set to ON the currently stored Snapshots will be arranged in ascending order according to their respective associated timecode values (if set), and not according to their numerical positions.

Switching this function to OFF will return the list of currently stored Snapshots to being displayed by their previous numerical positions.

Press the SNAPSHOT button so that the LCD displays the list of Snapshots to see the effect of this setting.

Use the PARAM encoder to set Sort by Time to On or OFF, as required.



Press EXIT to return to the main menu.

Viewing Snapshots by assigned timecode address is particularly useful when wishing to automate Snapshots against incoming or internally generated timecode. For more information on timecode based Snapshot automation see **Section 4 Part 1**.

5.16 - AUTOMATION SETUP

NOTE: Please refer to **Section 4** - **Automation Techniques** for more detailed information.

This menu configures how the 328XD sends and receives Dynamic Automation MIDI data for recording to and playback from a MIDI recording device, allowing full automation of every setting on the console.

Another automation mode offered by the 328XD is automation of the MIDI Controller Bank, a fourth bank offering control of audio sequencer mixers and other external MIDI devices from the 328XD. This bank has no control of internal 328XD parameters. Please note that it is important to separate in your mind this bank from the 328XD 1-16, 17-32 and Main Banks. For more information on the MIDI Controller Bank, see **Section 3J Part 5.3**.

Press ENTER to enter the Automation Setup menu.

There are two pages in the Automation setup menu which can be selected between using the ▲▼ cursor keys:

MIDI Dynauto
Mode

The READ ONLY, WRITE ONLY, UPDATE and READ/WRITE automation modes allow for automation of the 328XD's internal parameters, such as fader levels, pan positions, EQ settings, routing and Dynamics and FX parameters.

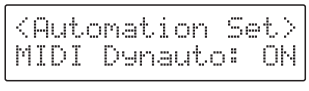
When in the CONTROLLER automation mode, automation of all 'internal' parameters is disabled and the user definable MIDI Controller Bank becomes an automatable surface. This mode can be used if you wish to configure the 328XD's MIDI Controller Bank to be an automatable control surface for a sequencer package.

MIDI Dynauto

When MIDI Dynauto is set to ON, the 328XD will respond to and transmit MIDI automation data, as set in the Mode menu (see next page)

When set to OFF the 328XD will not transmit or respond to incoming MIDI automation data, regardless of the Automation Mode set on next page.

Use the PARAM encoder to set MIDI Dynauto to ON or OFF.



Press ▼ cursor key to set the Automation Mode.

Mode

Use the PARAM encoder to select the different modes:

- **READ ONLY** (328XD internal parameter automation mode)

In READ ONLY mode the 328XD will respond to incoming automation data being sent from a MIDI recording device, but will not transmit any automation data from the MIDI Out port.

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 (328XD internal parameter automation mode)**

In WRITE ONLY mode the 328XD will only transmit automation data from the MIDI Out port. It will not respond to automation data coming back form 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 328XD.

- **UPDATE (328XD internal parameter automation mode)**

UPDATE mode sets all controls to act as in READ ONLY mode, described above. Adjusting any console control will instantly put that control individually into WRITE ONLY mode (see above), ignoring any incoming MIDI automation data specific to it. Any unadjusted parameters continue to respond to incoming MIDI data at the MIDI In port.

Any adjusted controls will not enter a 'read' state mode until READ ONLY or READ/WRITE mode is reselected.

While UPDATE mode is selected, the data received at the MIDI In port is duplicated at the MIDI Out port, although data relating to 'updated' controls is replaced with the new automation data. In this way, UPDATE mode allows on the fly alteration of previously recorded MIDI data.

As incoming data is merged with the outgoing data, to avoid any duplication of data any section of an automation take that is updated should be deleted and replaced with the updated automation pass.

NOTE: When in UPDATE mode you should not attempt to grab a fader and adjust it when the motor is on. Instead you should put the E-Strip into LEVEL mode and automate using the rotary encoders.

- **READ/WRITE (328XD internal parameter automation mode)**

Selecting READ/WRITE will put the console into a true bi-directional automation mode.

When the LCD is in VALUE mode, pressing the ◀ and ▶ FUNCTION keys simultaneously will toggle the automation mode between READ ONLY and READ/WRITE. As 328XD automation employs the use of a number of MIDI Continuous Controllers, you should be careful not to alter the setup of any other connected MIDI equipment by moving a 328XD fader, for example. Having recorded an automation take in READ/WRITE mode into a sequencer, you can put the desk quickly and easily back into READ ONLY mode to ensure that MIDI data is received but not transmitted.

Automation data is transmitted from the MIDI Out port and the console is set to respond to data received at the MIDI In port.

- CONTROLLER **(328XD MIDI Controller Bank automation mode)**

Select CONTROLLER mode if you wish to disable automation of 328XD 'internal' parameters and instead enable automation of the MIDI Controller Bank for bi-directional communication with the audio mixer within a software sequencer package, for example.

Use the PARAM encoder to set the Automation Mode and press EXIT/NO to return to the main menu.

5.17 - CHAN 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.

Highlight the Channel Copy Setup menu and press ENTER.

The following pages can be accessed using the ▲▼ cursor keys, and selected ON/OFF using the PARAM encoder.

- **Fader** Fader position copy status (default ON)
- **EQ :** EQ settings copy status (default ON)
- **Aux/FX** Aux send 1-4 and FX send 1-2 settings copy status (default ON)
- **Group/Mix** Group and MIX routing selection copy status (default ON)
- **Dynamics** Dynamics settings copy status (default OFF)
- **Pan & Phase** Pan position and phase status copy status (default OFF)

Note that Tape Trims are not copied with Channel Copy (See **Section 3J Part 5.7**).

Copying Channels

As an example lets 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.

- Press the MENU button and using the ▲▼ cursor keys or the PARAM encoder, select the **Chan Copy Setup** menu.
- Press ENTER and use the ▲▼ cursor keys select the channel settings and the PARAM encoder to set them to ON (will be copied) or OFF (will not be copied).

- Hold down the channel SELECT button for Analogue Input Channel 5 (backing vocalist 1).
- Now press the channel SELECT buttons for the channels to which you wish to copy the settings i.e. Analogue Input Channel 6, 7 and 8 (backing vocalists 2, 3 and 4)

While still holding the source channel SELECT switch, you can deselect copied channels to return them to their previous, uncopied state. Once the SELECT switch for the source channel has been released, however, channel parameters are copied destructively.

Pressing UNDO will clear a Channel Copy.

Press EXIT to return to the main menu.

5.18 - CHAN LINK SETUP

The Channel Link Setup menu is used to configure which channel settings will be duplicated when linking two channels together. This mode is most commonly used for creating stereo pairs of channels.

NOTE: 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 numbered (left hand) channel.

NOTE: Alterations made to the Chan Link Setup menu will have effect only on subsequently linked channels.

Highlight the Channel Link Setup menu and press ENTER.

The following pages can be accessed using the ▲▼ cursor keys, and selected ON/OFF using the PARAM encoder.

- **Fader** Fader position link status (default ON)
- **EQ** EQ settings link status (default ON)
- **Aux/FX** Aux send 1-4 and FX send 1-2 settings link status (default ON)
- **Group/Mix** Group and MIX routing selection link status (default ON)
- **Dynamics** Dynamics settings link status (default ON)
- **Pan & Phase** Pan position and phase status link status (default OFF)

Linking Channels

As an example lets assume we want to link two over head microphones on a drum kit, 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.

- Press and hold the CHANNEL/GROUP LINK button and then press the channel SELECT button for either Analogue Input Channel 1 or Channel 2.
- Now release the channel SELECT and CHANNEL/GROUP LINK switches. The parameters set in the Chan Link Setup menu will now be linked for Analogue Input Channels 1 and 2. Adjusting a parameter on one of the linked channels will automatically adjust the same parameter to the same value for the other channel.

Note that the current parameter settings of the odd channel which are set to be linked (see below) will be instantly copied to the even channel of the stereo linked pair.

To configure which channel parameters will be linked, press the MENU button and using the ▲▼ cursor keys or the PARAM encoder, select the **Chan Link Setup** menu.

Press ENTER and use the ▲▼ cursor keys to select the channel settings and the PARAM encoder to set them to ON (will be copied) or OFF (will not be copied).

```
<  Link Setup  >
Link Fader  : ON
```

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

NOTE: When faders are linked, you should move only one of the pair simultaneously. The 'client' fader will follow. Any determinable lag in the client fader is not pre sent at audio level.

Press EXIT to return to the main menu.

5.19 - USER SETUPS

The 328XD has 27 User Setup memory locations. A User Setup is similar to a Snapshot in that it stores console parameters, although the User Setup will also store the majority of menu settings. Recall of a User Setup will therefore restore all aspects of the console at the point it was stored, including Wordclock and Tape Port configuration. 26 User Setup locations can be stored to, User Setup #27 being the non-erasable Factory Default settings. Recalling the Factory Default settings from this menu has the same function of the soft reset available on boot up (see **Section 3J Part 6**).

Unlike Snapshots, a User Setup cannot be assigned a Timecode address for recall against Timecode or for transmitting a locate point to a Tape Machine on recall. Write Protect is always enabled.

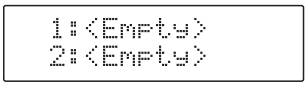
User Setups 1-26 can be recalled remotely with the use of MIDI Program Changes.

The On Loss and Default settings found in the Clock Source Select menu are not stored in a User Setup.

Storing User Setups

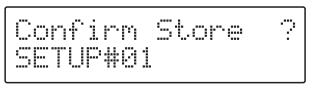
User Setups are stored with the Snapshot STORE button when the User Setups menu is active in the LCD. It is consequently not possible to store to a Snapshot location when the LCD is displaying the list of User Setups.

- Press the MENU button.
- Use the ▲▼ cursor keys or the PARAM encoder to scroll through the MENU options until you reach User Setups.
- Press ENTER to enter the User Setups library.
- Use the ▲▼ cursor keys or the PARAM encoder to select an empty library location.



- Press the STORE button in the SNAPSHOT CONTROL panel to store the User Setup.

If you are overwriting a User Setup, the LCD will display a prompt for confirmation.



Press YES to confirm.

Recalling User Setups

User Setups are recalled with the Snapshot RECALL button when the User Setups menu is active in the LCD. Snapshot recall is consequently disabled when the LCD is displaying the list of User Setups.

- Press the MENU button.
- Use the ▲▼ cursor keys or the PARAM encoder to scroll through the MENU options until you reach User Setups.
- Press ENTER to enter the User Setups library.
- Use the ▲▼ cursor keys or the PARAM encoder to select a User Setup that you would like to recall.

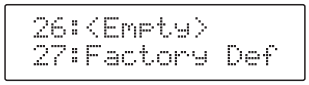
Press the RECALL button in the SNAPSHOTS panel to recall the User Setup. The LCD will indicate that the User Setup has been recalled.

If MIDI Recall is set to ON for the User Setup, the appropriate MIDI Program Change message will be transmitted from the MIDI Out port when the User Setup is recalled manually.

Recalling the Factory Default settings

When recalled, User Setup #27 will restore the console to its Factory Default configuration, without deleting any stored Snapshots, Presets or User Setups. Recalling the Factory Default settings in this way is identical to the soft reset on booting (see **Section 3J Part 6**). Returning the console to its factory default state by recalling User Setup #27 will not erase currently stored Snapshots, User Setups or Presets.

- Press the MENU button.
- Use the ▲▼ cursor keys or the PARAM encoder to scroll through the MENU options until you reach User Setups.
- Press ENTER to enter the User Setups library.
- Use the ▲▼ cursor keys or the PARAM encoder to select User Setup #27: Factory Defaults.



Press the RECALL button in the SNAPSHOTS panel to recall the Factory Default settings.

The LCD will indicate that the User Setup has been recalled.

A MIDI Program Change is not transmitted from the MIDI Out port when User Setup #27: Factory Defaults is recalled manually. Similarly User Setup #27 cannot be remotely recalled from a MIDI Program Change message received at the MIDI In port. Instead a MIDI Syatem Exclusive message may be used (see **Appendix A-3**).

Naming User Setups

- Press the MENU button.
- Use the ▲▼ cursor keys or the PARAM encoder to scroll through the MENU options until you reach User Setups.
- Press ENTER.

- Use the ▲▼ cursor keys or the PARAM encoder to select a User Setup that you would like to name.
- Press the ENTER button and the LCD display will read

```
 SETUP#01
ID :SETUP#01
```

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

Characters can be deleted in the following ways:

- To delete the selected character and move the cursor one character to the right, press and hold the ◀ cursor key and press the ▶ cursor key once for each character to be deleted.
- To delete the selected character and move the cursor one character to the left, press and hold the ▶ cursor key and press the ◀ cursor key once for each character to be deleted.

Enabling User Setup MIDI Recall

User Setup locations are assigned MIDI Program Changes as follows:

User Setup No.	MIDI Program Change
1	100 (64H)
2	101 (65H)
...	...
25	124 (7CH)
26	125 (7DH)
27	Not recallable

With MIDI Recall set to ON, the User Setup will transmit the MIDI Program Change from the MIDI Out port when manually recalled. The User Setup can also be remotely recalled when its associated MIDI Program Change is received at the MIDI In port.

To set MIDI Recall ON or OFF for a User Setup,

- Press the MENU button.
- Use the ▲▼ cursor keys or the PARAM encoder to scroll through the MENU options until you reach User Setups.
- Press ENTER to enter the User Setups library.
- Use the ▲▼ cursor keys or the PARAM encoder to select the User Setup and press ENTER to edit the parameters.
- Use the ▲▼ cursor keys to select the MIDI Recall page:

```
 SETUP#01
MIDI Recall: ON
```

- Use the PARAM encoder to set MIDI Recall to ON or OFF

NOTE: User Setup #27, the Factory Default Settings can be recalled with an appropriate MIDI System Exclusive message (See **Appendix A3**).

User Setup Scope

In addition to the parameters stored within a Snapshot (see Section 3C) the following menu based settings are stored within a User Setup:

User Options menu:

MIDI Channel
OMNI Mode status
Device ID
Sysex Rx status
Sysex Tx status
Solo Channel Select status
Solo AutoCancel status
Bank -> Select status
Flip Bank 1 status
Flip Bank 2 status
PLL Mode
Wordclock Term
Phase
Direct Out mode
LCD Contrast
LED Brightness
Oscillator Destination

Tape Port Select menu:

Bank source (channels 17-24)
Wordlength (channels 17-24)
S/Rate Flag (channels 17-24)
Bank source (channels 25-32)
Wordlength (channels 25-32)
S/Rate Flag (channels 25-32)
Auxiliary Optical Output source
Auxiliary Optical Output wordlength

S/PDIF Input setup menu:

S/PDIF Input destination

AES/EBU Input setup menu:

AES/EBU Input destination

S/PDIF Output setup menu:

S/PDIF Output source
S/PDIF Output wordlength
S/PDIF Output status bits

AES/EBU Output setup menu:

AES/EBU Output source
AES/EBU Output wordlength
AES/EBU Output status bits

Tape machine setup:

Tape Machine Type
Timecode Source
Timecode status
MIDI Mode
MIDI Note On commands
Timecode Frame Rate
Locate 1 Timecode address
Locate 2 Timecode address
Offset value

Clock Source Select:

Clock source
External Sample Rate
Clock loss action

Snapshot Setup:

MIDI Recall status
Write Protect status
Snapshot to Time status
Locate to Snap status
Sort by Time status

Automation Setup:

MIDI Dynauto status
Automation mode

Channel Copy Setup:

Copy Fader status
Copy EQ status
Copy Auxes status
Copy Group / Mix routing status
Copy Dynamics status
Copy Pan & Phase status

Channel Link Setup:

Link Fader status
Link EQ status
Link Auxes status
Link Group / Mix routing status
Link Dynamics status
Link Pan & Phase status

The above settings are also retained at power down.

NOTE: As with Snapshots, Solo switch status, Solo mode (AFL/PFL) and position of the Solo trim fader are not stored and recalled at User Setup level. In addition, monitor path, DYNAMICS ON METERS, DYNAMICS ON E-STRIP, and BANK STRIP switch statuses are not stored.

PART 6
FUNCTION KEYS

The ◀ and ▶ cursor keys when pressed together act as function keys, the purpose of which is governed by the active LCD mode.

Value

With the LCD in VALUE mode, using the FUNCTION keys will toggle the automation mode between READ ONLY and READ/WRITE. The LCD will indicate momentarily that the automation mode has changed. For more information on automation modes, see Section 4.

Snapshot

Using the FUNCTION keys while viewing the Snapshot list will return the selected Snapshot to the last recalled.

Using the FUNCTION keys while viewing a Snapshot's assigned timecode address will reset the value to 00:00:00:00.

Snapshot List

When the LCD is displaying the list of stored Snapshots, pressing the ◀ and ▶ Function keys will return the list to highlight the last recalled Snapshot.

Tape Mach Setup

When adjusting the Loc 1 or Loc 2 and Offset settings located in the Tape Mach Setup menu, press the ◀ and ▶ FUNCTION keys to return the setting to a timecode value of 00:00:00:00. For more information on the Tape Mach Setup menu, consult Section 3J Part 5.13.

MIDI Controllers

When the LCD displays the MIDI Controllers menu, pressing the ◀ and ▶ Function keys will instigate a dump of all the values for currently set controllers from the MIDI Out port.

Recalling Factory Default Settings

While holding the FUNCTION keys during the boot process of the 328XD, a full factory reset can be made, returning the console to its original state and erasing all stored Snapshots, User Setups and Presets. Note that holding the ◀ ▶ FUNCTION keys and the ▲▼ cursor keys also during the console boot process will restore the desk to its Factory Default state, but leaving all stored Snapshots, User Setups and Presets intact.

PART 7
UNDO / REDO

The UNDO and REDO keys can be used to correct any adjustments or perhaps to make an A/B comparison between two different settings.

Adjustment to any parameter stored within a Snapshot (see **Section 3J Part 2** for the full list of parameters) will light the UNDO switch. Pressing UNDO will then restore the console parameters to the previous state and the REDO switch will light instead. If you are making an A/B comparison, you could then press the REDO switch to restore the console to the state it was in before UNDO was pressed.

Note that while the REDO switch is lit, any further parameter adjustment will reset the undo buffer. The UNDO switch will then light again to indicate this.

The undo buffer will also be reset by the following:

- Pressing any SELECT switch
- Pressing any E-STRIP MODE switch
- Entering DYNAMICS ON E-STRIP mode
- Exiting DYNAMICS ON E-STRIP mode
- Entering / leaving Bank Select 1-16
- Entering / leaving Bank Select 17-32
- Entering / leaving Main Bank Select
- Entering / leaving MIDI Controller Bank
- Copying channels
- Recalling a Snapshot
- Recalling a User Setup
- Recalling the Factory Defaults
- Rebooting the 328XD

In addition, as the MIDI Controller menu settings are stored within and recalled as part of a Snapshot, while in the MIDI Controllers menu, the UNDO and REDO switches may be used.

4

AUTOMATION TECHNIQUES

Part 1
328XD Snapshot and Dynamic Automation

The 328XD is capable of both Snapshot Automation and Dynamic Automation. Snapshot Automation can be carried out either by the recall of Snapshots against Timecode or by transmitting appropriate MIDI Program Change messages to the console. Dynamic Automation allows adjustments of any automatable 328XD parameter to be recorded and played back from any MIDI sequencer.

Snapshot Automation

RECALLING SNAPSHOTS AGAINST TIMECODE

Each Snapshot can be allocated a Timecode Address. For details on the different ways in which this can be done, see **Section 3J Part 2**. When the 328XD is configured to receive incoming Timecode or is generating timecode internally, the console can be set to recall Snapshots with an assigned Timecode Address. When the Timecode Display passes through the relevant frame the Snapshot will be recalled. In this way, the console can be automated without the need for a MIDI sequencer.

To set SNAP TO TIME globally for subsequently stored Snapshots refer to **Section 3J Part 5.15**. Alternatively, if you have already created Snapshots to which you wish to allocate Timecode Addresses refer to **Section 3J Part 2**. To view the list of stored Snapshots by assigned Timecode Address refer to **Section 3J Part 5.15**.

Once you have configured stored Snapshots with Timecode Addresses, set up the console to receive incoming SMPTE or MIDI Timecode from your Tape Machine (see **Section 3J Part 5.13**). Press Play on the 328XD Transport Controls or on the remote Tape Machine to run the 328XD Timecode Display. When a frame to which a Snapshot is assigned is passed, the console will automatically recall the Snapshot.

RECALLING SNAPSHOTS WITH MIDI PROGRAM CHANGE MESSAGES

Snapshot locations 1-100 and User Setup locations 1-26 are configured with predefined MIDI Program Change messages. In the same way that a MIDI keyboard patch can be remotely recalled from a MIDI sequencer, a 328XD Snapshot or User Setup can be recalled.

NOTE: Snapshot recall via MIDI Program Changes does not require MIDI Dynauto to be switched On (see **Section 3J Part 5.16**).

The MIDI Program Changes against which Snapshots and User Setups are recalled are defined as follows:

Snapshot / User Setup	MIDI Program Change
Snapshot #1	0 (00H)
Snapshot #2	1 (01H)
...	...
Snapshot #99	98 (62H)
Snapshot #100	99 (63H)
User Setup #1	100 (64H)
User Setup #2	101 (65H)
...	...
User Setup #25	124 (7CH)
User Setup #26	125 (7DH)

The MIDI Channel on which Program Changes must be received is specified on the MIDI Channel page of the User Options menu (see **Section 3J Part 5.2**). If OMNI mode is set to ON, any MIDI Program Change received at the 328XD MIDI In port will instruct the console to recall the corresponding Snapshot or User Setup, regardless of the MIDI Channel on which it was transmitted.

In practice, Snapshot automation with MIDI Program Change messages can be carried out in one of two ways. Either MIDI Program Changes can be written into the sequencer or manually recalled Snapshots can be recorded into the sequencer on the fly as the sequence is played back.

In both instances, prepare and store Snapshots that are appropriate to specific points of a MIDI sequence. To insert MIDI Program Changes manually into the sequence, consult your sequencer documentation and the table above. For example, if you wished to recall stored Snapshot #5, firstly ensure that MIDI Recall is set to ON for that Snapshot (see **Section 3J Part 2**). Next insert MIDI Program Change 4 (04H) into a 328XD MIDI track at the point at which you wish the Snapshot to be recalled. As the sequence plays through that point, the MIDI Program Change will be transmitted to the 328XD, which will recall Snapshot #5.

NOTE: Some sequencers can be set to refer to MIDI Program Changes 0-127 as 1-128. If your sequencer is capable of this, it can be helpful when programming MIDI Program Changes into the sequencer for recall of 328XD Snapshots and User Setups. Consult your sequencer documentation for more information.

The second method of Snapshot automation makes use of the MIDI Program Change transmitted from the 328XD MIDI Out port when the corresponding Snapshot is recalled manually from the console surface. In the same way as a MIDI keyboard is used to input notes into the sequencer, so can the 328XD be used to input relevant MIDI Program Change information. Connect the 328XD MIDI Out to the MIDI In of the sequencer, set a 328XD MIDI track to record and manually recall the Snapshots as the track passes. On replay of the track, the MIDI Program Changes will be retransmitted to the 328XD, remotely recalling the Snapshots.

NOTE: The appropriate MIDI Program Change message is always transmitted from the 328XD MIDI Out port when a Snapshot is recalled, regardless of the MIDI Recall On/Off state.

Dynamic Automation

The 328XD's automatable parameters are listed in Appendix 1. By referring to the table, you will see that each parameter is assigned a specific, predefined MIDI Continuous Controller on a specific MIDI channel. Due to the large number of automatable parameters, all available 16 MIDI Channels are employed. If a Write mode is selected in the Automation Setup menu (see **Section 3J Part 5.16**), adjusting an automatable parameter will transmit the appropriate values of the corresponding MIDI Continuous Controller from the MIDI Out port. This enables any automation movements to be recorded into a MIDI sequencer. When a Read mode is selected in the Automation Setup menu, reception of relevant Continuous Controller values at the MIDI In port will instruct the 328XD to automate the corresponding parameter accordingly.

Refer also to **Section 3J Part 5.16** for more information on the automation modes.

READ/WRITE AUTOMATION MODE

In practice, READ/WRITE mode allows bi-directional communication with the host sequencer. Automation data is transmitted from the MIDI Out port while data received at the MIDI In port is interpreted by the console. For simple dynamic automation, READ/WRITE mode can be used without the need to change modes.

READ ONLY AUTOMATION MODE

To read previously recorded automation data from the sequencer without transmitting data, READ ONLY mode should be selected. It is advisable to put the console into this mode when you have data recorded but wish to work on other sections of your MIDI sequence. This practice will prevent MIDI data from being transmitted from the console 'thru' the sequencer to a connected synthesiser, for example. Employing standard MIDI Continuous Controller messages means that other connected MIDI equipment may be altered by adjusting a 328XD parameter, which can result in unintended patch editing! Putting the console into READ ONLY automation mode will avoid this.

WRITE ONLY AUTOMATION MODE

You may wish to record a number of automation passes over the same section of a track, so that you can audition each individually and decide upon the best take. If possible, put the sequencer into a looped record mode, during which it will create an additional track each time the loop is begun. WRITE ONLY mode prevents the previously recorded passes from interfering with the next looped pass. Once a number of passes have been made, the console should be put into a Read mode to audition each pass in turn.

UPDATE AUTOMATION MODE

The fourth automation mode allows previously recorded automation data to be adjusted without the need to delve into the sequencer's editing pages to adjust Continuous Controller values. UPDATE mode acts as READ ONLY mode until an automatable parameter is adjusted on the console. The adjusted parameter(s) will then immediately enter WRITE ONLY mode until READ ONLY or READ/WRITE is reselected. The remainder of the console's automatable parameters will remain in READ ONLY mode until adjusted.

To use UPDATE mode, isolate the region of the automation track which requires updating and create a new 328XD MIDI track. Arm this track and put the sequencer into record. Make any adjustments as required. Due to the motorised nature of the 328XD faders, if you need to adjust fader automation, the E-Strip encoders should be used in Level mode.

Once the automation update has been made, you must delete the section of previously recorded data which has been replaced. When set to UPDATE mode, the 328XD merges the incoming data with the outgoing data. The new pass will therefore contain both the old data and the new replaced data. To avoid transmitting conflicting automation data, only the new pass should be played back to the console.

FURTHER AUTOMATION TIPS

You must ensure that MIDI Thru is disabled for at least the 328XD MIDI port within your sequencer. Unlike MIDI synthesisers, the console cannot be put into a Local Off mode due to the way in which the motorized faders adjust the audio levels directly within the console.

Manually record a Snapshot recall or program into the sequencer the appropriate MIDI Program Change at the beginning of the MIDI sequence so that the console is synchronized at the start of the track. Alternatively the Automation MIDI dump can be used to transmit Continuous Controller values for all automatable parameters.

Set the sequencer to follow or 'chase' Continuous Controller values. In this way, picking up from the middle of an automation track will transmit the last recorded value for any automated parameters, synchronizing the console with the track.

The editing features of many sequencers allow Continuous Controller data to be edited or drawn. For a smooth fade, for example, you can consult the table in Appendix 1 and draw the required Continuous Controller into the sequencer. Playback of this data will then automate the required 328XD parameter.

Ensure that the sequencer is set not to transmit a Continuous Controller reset message on Stop - this will prevent unwanted messages being transmitted to the console which would otherwise respond to the zero value received.

Pressing the ◀ and ▶ FUNCTION keys simultaneously while the LCD is in VALUE mode will switch automation mode between READ ONLY and READ/WRITE.

Note that while Compressor/limiter and gate BYPASS switches are automatable, other dynamics parameters are not.

Part 2
Quick Start Guides

Emagic Logic Audio 4

The 328XD is capable of the following functions when used in conjunction with Emagic Logic Audio version 4.x.

- Full recording and editing of 328XD dynamic automation data across multiple tracks
- Bi-directional communication with any programmed 328XD environment objects
- Bi-directional control of the Logic Audio mixer from the 328XD MIDI Controller bank
- Transport control and timecode display
- Control of compatible VST Plugin parameters from the 328XD MIDI Controller bank
- Control of compatible VST Instrument parameters from the 328XD MIDI Controller bank
- Remote request of 328XD MIDI Dumps from within Logic

NOTE: Logic Audio Environment layer must be correctly programmed or imported to enable these functions. For more information on the Environment, the documentation supplied with Logic Audio should be consulted.

For the configurations below, it is assumed that you have a working knowledge of Logic Audio for Mac or PC.

AUTOMATING THE 328XD WITH LOGIC AUDIO

Firstly ensure that 328XD MIDI Dynauto is set to ON and that the console is in READ/WRITE automation mode.

Launch Logic Audio.

Open the Environment window and create a new 328XD layer. On this layer create a new Instrument (not a Multi Instrument). In the Object Parameters window, label the new instrument 'Digital 328XD', set the MIDI Out port correctly and set it to transmit on all MIDI channels.

Open the Options | Settings | MIDI Settings window and set the 'Instrument with no MIDI Thru function' to the 328XD instrument. If you have additional devices that require MIDI Thru to be disabled, such as a second 328XD, you should download the Linked 328XD MIDI Thru Off Environment layer from the Soundcraft website and follow the instructions.

Ensure that the 328XD MIDI In port is cabled to the Sequencer Input object.

Return to the Arrange window within Logic.

Set a track to the 328XD instrument you have just created and click on Record on the Logic transport control to begin recording.

Record and play back an automation pass. Refer to **Section 4 - Automation Techniques** for more information.

For further automation passes, create additional 328XD tracks within Logic.

CONTROLLING THE LOGIC AUDIO MIXER FROM THE 328XD

Set the 328XD MIDI Controllers as follows (see **Section 3J Part 5.3**):

Controller Number	328XD Controller	MIDI Channel	Continuous Controller ID
1	Fader 1	1	7
2	Fader 2	2	7
...	...	...	...
16	Fader 16	16	7
17	Encoder 1	1	10
18	Encoder 2	2	10
...	...	...	...
32	Encoder 16	16	10
33	Solo 1	1	3
34	Solo 2	2	3
...	...	...	...
48	Solo 16	16	3
49	Mute 1	1	9
50	Mute 2	2	9
...	...	...	...
64	Mute 16	16	9

The MIDI Controller Preset and Environment layer provide bi-directional control of the fader, pan controls, mute and solo for Audio Objects 1-16 from the 328XD MIDI Controller bank. If you wish to alter which audio faders are controlled, you must have a working knowledge of the Logic Environment.

CONTROLLING LOGIC TRANSPORT CONTROLS FROM THE 328XD

Within the Logic Environment, ensure that the 328XD MIDI input port is connected to the Sequencer Input object.

The 328XD Tape Machine Setup should be configured to transmit MIDI Note On commands from the Transport Controls (see **Section 3J Part 5.13**).

Open the Options | Settings | Key Commands window within Logic.

Highlight the Record key command and click the Learn MIDI button. Press Record on the 328XD Transport Controls.

Do the same for Play, Stop, Rewind, Forward, Goto Left Locator and Goto Right Locator.

Disable the Learn MIDI button and click MIDI Remote.

TRANSMITTING MIDI TIMECODE TO THE 328XD

Ensure that the 328XD is set to respond to incoming MIDI Timecode (see **Section 3J Part 5.13**).

Open the Options | Settings | Synchronization Settings window and click the MIDI tab.

In the Transmit MTC MIDI Port settings menu, set the MIDI Out port to which the 328XD is connected and check the box to enable.

The MIDI Notes assigned to the 328XD Transport Controls do not have to be assigned to Logic Transport Controls. You could, for example, set the Loc1 switch to open the Matrix Editor within Logic.

Steinberg Cubase VST 5

The 328XD console is capable of the following functions when used in conjunction with Steinberg Cubase VST.

- Full recording and editing of 328XD dynamic automation data across multiple tracks
- Control of the 328XD from a suitable Cubase Mixer Map
- Bi-directional control of the VST mixer from the 328XD MIDI Controller bank
- Transport control and timecode display
- Control of compatible VST Plugin parameters from the 328XD MIDI Controller bank
- Control of compatible VST Instrument parameters from the 328XD MIDI Controller bank

NOTE: A Cubase VST Mixer Map must be correctly programmed or loaded to enable this function. For more information on the Mixer Maps, the documentation supplied with Cubase VST should be consulted.

For the configurations below, it is assumed that you have a working knowledge of Cubase VST.

AUTOMATING THE 328XD WITH CUBASE VST

Firstly ensure that 328XD MIDI Dynauto is set to ON and that the console is in READ/WRITE automation mode.

Launch Cubase VST.

Open a song, and create a new MIDI track.

Go to Options | MIDI Setup | System and uncheck the MIDI Thru Enabled box.

In the Track Inspector set the track output to the 328XD MIDI Port, and set the track to output on "any" MIDI Channel. This method will ensure the data recorded is sent out on the correct channel.

Go to Options | MIDI Setup | System and under the 'Input From' section click the pull down window and ensure your 328XD MIDI Input port is ticked.

Click on Record on the Cubase VST transport control to begin recording. Now make your automation moves.

Record and play back an automation pass. Refer to **Section 4 Part 1** for more information.

For further automation passes, create additional 328XD tracks within Cubase VST.

CONTROLLING CUBASE VST FROM THE 328XD

Download the Cubase VST 328XD MIDI Controller Preset from the Soundcraft website and follow the instructions.

The MIDI Controller Preset provides bi-directional control of the fader, pan controls, mute and solo for Cubase VST Audio Channels 1-16, 17-32, 33-48, 49-64 from the 328XD

MIDI Controller bank. If you are using linked consoles you can have the client also controlling the VST Mixer. Using the Generic Remote you can also setup the 328XD MIDI Controller bank to control VST Channel EQ In/Out, EQ Gain, EQ Frequency, EQ Quality, FX Send Levels and much more. Please refer to Steinberg Cubase VST documentation for more information.

CONTROLLING CUBASE TRANSPORT CONTROLS FROM THE 328XD

Within Cubase, go to Edit | Preferences | Key Commands and select the 'Transport' tab. Ensure Remote Active and Remote Key are both ticked and that Remote Key is set to "C6"

On the 328XD go to the Tape Mach Setup menu, and configure the 328XD to transmit Note On commands from the Transport Controls (see Section 3J Part 5.13)

TRANSMITTING MIDI TIMECODE TO THE 328XD

Ensure that the 328XD is set to respond to incoming MIDI Timecode (see **Section 3J Part 5.13**).

Within Cubase, go to Options | Synchronisation and ensure that the Frame rate matches the Frame rate set on the 328XD.

Open the pull down menu labeled 'MIDI Timecode' and ensure the 328XD MIDI port is ticked. This will tell Cubase VST to send MIDI Timecode to the 328XD.

MOTU Digital Performer 2.7

The 328XD console is capable of the following functions when used in conjunction with Digital Performer version 2.7 or later.

Full recording and editing of 328XD dynamic automation data across multiple tracks
Bi-directional communication with any pre-programmed 328XD objects
Control of Digital Performer's Mixing Board from the 328XD MIDI Controller bank
Transport control and timecode display
Remote request of 328XD MIDI Dumps from within Digital Performer

A Digital Performer Custom Console for the 328XD is available for download from the Soundcraft website. It offers control of several 328XD parameters and may be a useful tool for productions.

For the configurations below, it is assumed that you have a working knowledge of Digital Performer, FreeMIDI, and the Macintosh environment.

AUTOMATING THE 328XD WITH DIGITAL PERFORMER

Verify that 328XD MIDI Dynauto is set to ON and that the console is in READ/WRITE automation mode. Also make sure that MIDI In and Out connections are made between the 328XD and a MIDI interface.

Launch FreeMIDI and create a 'New' device. Name this device "Digital 328XD" and set parameters as follows:

Transmit Channels 1-16	Receives MTC
Receive Channels 1-16	Transmits MTC
Controller	Transmits MMC

Save this FreeMIDI setup and exit FreeMIDI.

Launch Digital Performer.

Disable MIDI Patch Thru under the Basics Menu. If this is not set, MIDI feedback will result, preventing smooth fader movement.

In the Tracks window in Digital Performer, create a new MIDI track and set its output to 'Digital 328XD-1'. Click on Record in the transport control to begin recording.

Record and play back an automation pass. Refer to **Section 4 - Automation Techniques** for more information. Also, refer to the **328XD Automation Specification** to match automation parameters to the correct MIDI channels.

For further automation passes, create additional 328XD tracks within Digital Performer.

CONTROLLING DIGITAL PERFORMER FROM THE 328XD

Download the Digital Performer MIDI Controller Preset for the 328XD from the Soundcraft website. Dump the file into the 328XD according to the attached instructions - or set the 328XD MIDI Controllers as follows (see **Section 3J Part 5.3**):

Controller Number	328XD Controller	MIDI Channel	Continuous Controller ID
1	Fader 1	1	1
2	Fader 2	1	2
...	...	...	...
16	Fader 16	1	16
17	Encoder 1	1	17
18	Encoder 2	1	18
...	...	...	...
32	Encoder 16	1	32

Next, go to the Mixing Board page within Digital Performer. In the Mixing Board sub-menu, select 'Attach MIDI Controller'.

Immediately click on a desired fader or pan control in Digital Performer - the control will become surrounded with a red 'frame' indicating that it is set to receive a Continuous Controller ID.

Put the console into MIDI Controller bank, and move the desired fader. If you inadvertently move a fader while in a mode other than MIDI Controller mode, you may not achieve satisfactory results.

If your settings are correct, the red 'frame' in Digital Performer will turn light green, indicating that the controller has been successfully attached.

To add more controllers, immediately repeat the above steps.

To end and confirm choices, click on any other window, or hit ENTER on your computer keyboard.

CONTROLLING DIGITAL PERFORMER TRANSPORT CONTROLS FROM THE 328XD

Due to the nature of Transport Control Settings and Digital Performer, please refer to the Digital Performer Setup Guide for a detailed explanation. It can be downloaded from the Soundcraft website.

TRANSMITTING MIDI TIMECODE TO THE 328XD

Ensure that the 328XD is set to respond to incoming MIDI Timecode (see **Section 3J Part 5.13**).

Under the Basics Menu in Digital Performer, select 'Transmit Sync'. MIDI Time Code will now be routed to the 328XD.

USING THE DIGITAL PERFORMER CUSTOM CONSOLE

At this time, only certain parameters work well for two-way communication. These are included in the Custom Console marked "328XD Two-Way". A separate Custom Console is included for every parameter on the console, and is marked "328XD One-Way". The one-way console is to be used to send commands only to the 328XD from Digital Performer.

Simply launch the Custom Console window in Digital Performer. If the FreeMIDI and Digital Performer connections have been properly made, operation should be enabled.

Cakewalk Pro Audio 9, Sonar

The 328XD console is capable of the following functions when used in conjunction with Cakewalk Pro Audio 9 or Sonar.

- Full recording and editing of 328XD dynamic automation data across multiple tracks
- Bi-directional communication with correctly programmed Cakewalk StudioWare Panels
- Transport control and timecode display
- Remote request of 328XD MIDI Dumps from within Sysex Manager

NOTE: **A Cakewalk StudioWare Panel and the Sysex Manager must be correctly** programmed or imported to enable these functions. For more information on StudioWare Panels and the Sysex Manager, the documentation supplied with Cakewalk Pro Audio or Sonar should be consulted.

For the configurations below, it is assumed that you have a working knowledge of Cakewalk Pro Audio 9 or Sonar.

AUTOMATING THE 328XD WITH CAKEWALK PRO AUDIO AND SONAR

Firstly ensure that 328XD MIDI Dynauto is set to ON and that the console is in READ/WRITE automation mode.

Launch Cakewalk Pro Audio or Sonar.

Open the Options | Project Options window and select the MIDI Input tab. Set Echo Mode (MIDI Thru) function to OFF when automating the 328XD.

NOTE: Echo Mode should be set to ON and the 328XD Automation Mode set to READ ONLY when recording MIDI data from remote MIDI input device such as a MIDI keyboard.

Ensure that the 328XD MIDI In port is active in the Options | MIDI Devices window.

Set a track to the 328XD MIDI Out port and click Record on Cakewalk Sonar transport control to begin recording.

Record and play back an automation pass. Refer to **Section 4 - Automation Techniques** for more information.

For further automation passes, create additional 328XD tracks within Cakewalk Pro Audio.

Digidesign Pro Tools 5

The 328XD console is capable of the following functions when used in conjunction with Pro Tools.

- Full recording and editing of 328XD dynamic automation data across multiple tracks
- Control of the Pro Tools mixer from the 328XD MIDI Controller bank
- Transport control and timecode display
- Control of compatible TDM Plugin parameters from the 328XD MIDI Controller bank
- Control of all five Aux sends in a TDM system from the 328XD MIDI Controller bank

For the configurations below, it is assumed that you have a working knowledge of Pro Tools, OMS, and the Macintosh.

Automating the 328XD with Pro Tools

Verify that 328XD MIDI Dynauto is set to ON and that the console is in READ/WRITE automation mode. Also make sure that MIDI In and Out connections are made between the 328XD and a MIDI interface.

Launch OMS and create two 'New' devices. For the first device select "Soundcraft - 328XD" and set parameters as follows:

Is Controller
Is Multitimbral
Transmit Channels 1-16
Receive Channels 1-16
Receives MTC
Transmits MTC
Receives MMC
Transmits MMC
Device ID 1

Name the second device "Unused 328XD" and select the same properties as above. You will need to create this unused device even if you do not have a second 328XD. For more details, download the Pro Tools setup guide from our website.

Save this OMS setup and exit OMS.

Launch Pro Tools.

Disable MIDI Patch Thru under the MIDI menu. Otherwise MIDI feedback will result, preventing smooth fader movement.

Enable the 328XD as a valid Input Device under the MIDI Menu within Pro Tools.

In the Edit window in Pro Tools, create a new MIDI track and set its output to 'Digital 328XD-1'. Click on Record in the transport control to begin recording.

Record and play back an automation pass. Refer to **Section 4 - Automation Techniques** for more information. Also, refer to the **328XD Automation Specification** to match automation parameters to the correct MIDI channels.

For further automation passes, create additional 328XD tracks within Pro Tools.

CONTROLLING PRO TOOLS FROM THE 328XD

Set the 328XD MIDI Controllers as follows (see **Section 3J Part 5.3**)

Controller Number	328XD Controller	MIDI Channel	Continuous Controller ID
1	Fader 1	15	1
2	Fader 2	15	2
...	...	...	...
8	Fader 8	15	8
9	Fader 9	16	1
10	Fader 10	16	2
...	...	...	...
16	Fader 16	16	8
17	Encoder 1	15	9
18	Encoder 2	15	10
...	...	...	...
24	Encoder 8	15	16
25	Encoder 9	16	9
26	Encoder 10	16	10
...	...	...	...
32	Encoder 16	16	16

Next, in Pro Tools, go to the Setups | Peripherals | MIDI Controllers Menu. Select 'PC-1600' for the first two MIDI Controller personalities.

On the first personality, enable control from the 328XD, channel 15. Send the output to 328XD channel 15.

On the second, enable control from the 328XD, channel 16. Send the output to the 'Unused 328XD' device.

When you are finished, exit this menu - control is now enabled.

If you experience trouble, check your connections and retry. Refer to the Soundcraft/Pro Tools Setup Guide on our website for more detailed setup information.

FADER BANK SHIFTING, PLUG-IN AND AUX SEND CONTROL

NOTE: Only TDM systems can take advantage of Plug-in and Aux send control

On the 328XD under Tape Machine Setup, choose 'Custom Machine' and set it as follows:

Timecode src:	MTC
Status:	Client
MIDI:	Note On
Play:	E -2
Stop:	Eb -2
Record:	F -2
Rewind:	C -1
FF:	C# -1
Locate 1:	PTL+
Locate 2:	PTL -
Shift Key:	OFF
MIDI Channel:	15
Frame Rate:	30

With these settings, pressing LOC1 moves forward between Fader & Pan control, Plug-in control, Fader and Aux 1 send, Fader and Aux 2 send, Fader and Aux 3 send, Fader and Aux 4 send, Fader and Aux 5 send, and back again. LOC2 moves backwards between these settings.

Rewind and Fast Forward buttons become 'bank shift' controls. Pressing Fast Forward on the 328XD moves channel banks to the right 16 at a time. Rewind moves them to the left 16 at a time.

NOTE: Play, Record and Stop Commands only work while Plug-In control is activated. Using the MMC panel on the 328XD in 'Note On' mode disables MMC transmission from the 328XD, but timecode display will still be active. Refer to our Setup Guide for Pro Tools for more information.

This MIDI Controller Preset provides one-way communication for most controls in Pro Tools. If you wish to alter which channels are controlled, you must have a working knowledge of the Pro Tools environment.

NOTE: Take care when using MIDI Controllers or 328XD automation with synthesizers or other MIDI equipment, as MIDI Controllers routed to these objects may cause unwanted effects. It is a safe practice to leave MIDI Dynauto OFF and keep MIDI objects out of Record until they are needed.

CONTROLLING PRO TOOLS TRANSPORT CONTROLS FROM THE 328XD

Due to the nature of Transport Control Settings and Pro Tools, please refer to the Pro Tools Setup Guide for a detailed explanation. Download it from the Soundcraft website.

TRANSMITTING MIDI TIMECODE TO THE 328XD

Ensure that the 328XD is set to respond to incoming MIDI Timecode (see **Section 3J Part 5.13**).

Under the Session Setup Window in Pro Tools, check 'MTC To Port' and select the 328XD as the device. MIDI Time Code will now be routed to the 328XD.

Soundscape Console Manager 1.3

The 328XD console can be used as a remote control surface for Soundscape Console Manager for Soundscape SSHDR, R.Ed and Mixtreme software packages.

Console Manager 1.3 allows the system to be set up in one of 2 ways:

☐ 'Open Loop', in which the 328XD MIDI Controller bank controls the first 16 Faders and Pan controls within the Soundscape mixer
☐ 'Closed Loop' in which the 328XD both controls and is controlled by the 16 Faders, Pan controls, Solo and Mute switches within the Soundscape mixer

For the configurations below, it is assumed that you have a working knowledge of the Soundscape editing software and Console Manager.

CONFIGURING CONSOLE MANAGER / SOUNDSCAPE EDITING SOFTWARE

Open Console Manager and add a MIDI Device. Select the MIDI Input and Output ports to which the 328XD is connected. name the Device appropriately.

Select the required Console Interface from the list of possible interfaces:

Soundcraft 328XD Closed Loop Interface
Soundcraft 328XD Open Loop Interface

For the selected interface, set the MIDI Device, as configured above.

Check the box next to the installed interface. The MIDI Device should activate.

Start the Soundscape SSHDR, R.Ed or Mixtreme Software.

Within the SSHDR and R.Ed software packages, select

Settings | Preferences | Connect to Console Manager.

Within the Mixtreme software package, select

Settings | Connect to Console Manager.

CONFIGURING THE 328XD FOR THE OPEN LOOP INTERFACE

Set the 328XD MIDI Controllers as follows (see Section 3J Part 5.3):

Controller Number	328XD Controller	MIDI Channel	Continuous Controller ID
1	Fader 1	1	7
2	Fader 2	2	7
...	...	...	...
16	Fader 16	16	7
17	Encoder 1	1	10
18	Encoder 2	2	10
...	...	...	...
32	Encoder 16	16	10

When using the 328XD Open Loop Interface, the faders and pan pots of the Soundscape mixer will appear red until the 328XD fader/encoder passes through the value to which they are set. Once the 328XD MIDI fader/encoder has passed through this value, the Console Manager object will follow the 328XD control. If a Console manager object is then moved with the mouse, the object will appear red again until the 328XD controller passes through the new value. This prevents the controls within the Soundscape from jumping to new values.

CONFIGURING THE 328XD FOR THE CLOSED LOOP INTERFACE

Set the 328XD MIDI Controllers as follows (see **Section 3J Part 5.3**):

Controller Number	328XD Controller	MIDI Channel	Continuous Controller ID
1	Fader 1	1	7
2	Fader 2	2	7
...	...	...	...
16	Fader 16	16	7
17	Encoder 1	1	10
18	Encoder 2	2	10
...	...	...	...
32	Encoder 16	16	10
33	Solo 1	1	16
34	Solo 2	2	16
...	...	...	...
48	Solo 16	16	16
49	Mute 1	1	17
50	Mute 2	2	17
...	...	...	...
64	Mute 16	16	17

Note that to enable the Closed Loop Interface, the 328XD Automation Mode must be set to Controllers. Enter the Automation Setup menu, set MIDI Dynauto to ON and set the mode to Controllers (see **Section 3J Part 5.16**).

When using the 328XD Closed Loop Interface, the communication is bi-directional. Moving a 328XD controller will control the corresponding Soundscape Mixer object and vice versa.

5

LINKED CONSOLES

USING TWO LINKED 328XD CONSOLES

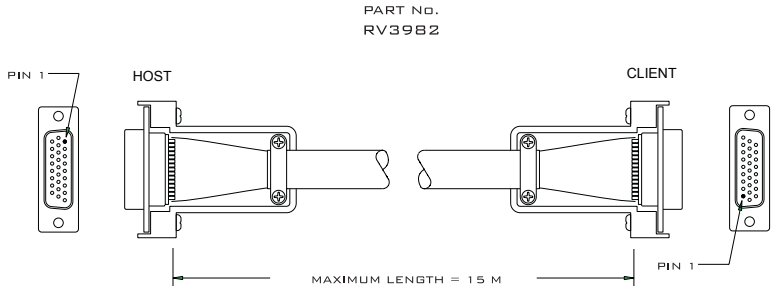
Two 328XD consoles can be linked with a 328XD Link cable, to expand your system to a 32 fader console.

How to link two 328XD consoles

The procedure to link two 328XD consoles together is very simple - we have removed the need to install additional boards by fitting the 328XD LINK port to the rear of the console as standard. A special cable is available from your Soundcraft dealer (part number RV3982) which should be connected to the 328XD LINK port on both of the linked consoles.

When two consoles are linked, a choice needs to be made - which console is going to be the Host? Rather than having to delve into an elaborate menu to set each console to Host or Client mode, the cable itself defines which console is the Host and which is the Client. When you fit the cable for the first time, all you must decide is which of your two consoles will be the Host. Connect the end of the cable labeled "Host" to the 328XD LINK port of that console. The other end (not surprisingly labeled "Client") should be connected to the other console.

For information regarding the link cable pin-outs please see the diagram below:



WIRE LIST			
FROM HOST	COLOUR	TO CLIENT	SIGNAL DESCR.
PIN 1	WHT/BRN	PIN 9	CAS M->S
PIN 2	BRN/WHT	PIN 8	
PIN 3	WHT/BLU	PIN 3	GRP CASC
PIN 4	BLU/WHT	PIN 4	
PIN 5	DRAINWIRE	PIN 5	SHIELD GND
PIN 6	ORG/BLK	PIN 6	GRP FEED
PIN 7	BLK/ORG	PIN 7	
PIN 8	BLU/BLK	PIN 2	CAS S->M
PIN 9	BLK/BLU	PIN 1	
PIN 10	PNK/GRY	PIN 18	SYNC M->S
PIN 11	GRY/PNK	PIN 17	
PIN 12	---	PIN 13	UNUSED
PIN 13	WHT/GRN	PIN 16	GND
PIN 14	GRN/WHT	PIN 15	
PIN 15	PNK/BRN	PIN 14	GND
PIN 16	BRN/PNK	PIN 12	
PIN 17	WHT/ORG	PIN 11	SYNC S->M
PIN 18	ORG/WHT	PIN 10	
PIN 19	PNK/GRN	PIN 26	CK256 M->S
PIN 20	GRN/PNK	PIN 25	
PIN 21	PNK/ORG	PIN 21	BUS CASC
PIN 22	ORG/PNK	PIN 22	
PIN 23	---	PIN 23	UNUSED
PIN 24	---	PIN 24	
PIN 25	WHT/GRY	PIN 20	CK256 S->M
PIN 26	GRY/WHT	PIN 19	

Boot the consoles simultaneously. The Host 328XD will momentarily display a 'Client Attached' message when boot up is complete.

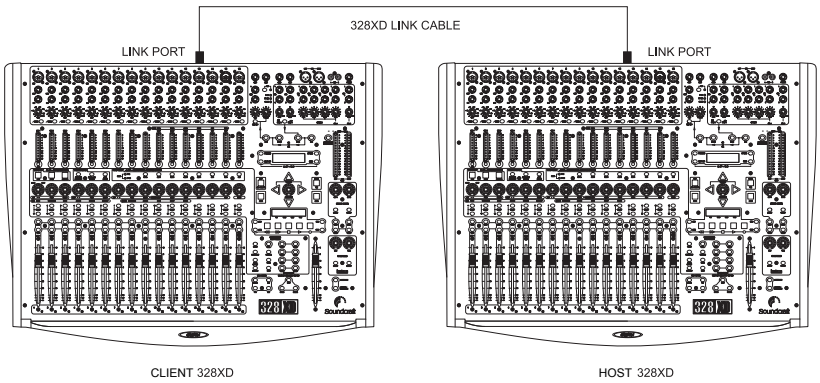
Link cables are supplied from Soundcraft in 3m lengths

Linked Outputs

When two consoles are linked the Host console outputs below carry signals routed from the Client console:

Aux Send 1, 2, 3 & 4

Group Outputs 1-8



Linked Features

When two consoles are linked the following features are linked:

SELECT PANEL QUERY MODE

When any Select Panel switch is put into Query mode (see **Section 3C**), both Host and Client channel SELECT switches will light to indicate channels with active parameters. While holding the Select Panel switch, the SELECT switches of both Host and Client 328XD may be pressed. Additionally the Compressor/limiter and gate Bypass switching can be used in Query Mode across linked desks.

Note that the EQ FLAT function is not available across linked consoles.

SOLO CLEAR

Whenever any channel (or multiple channels) is in SOLO mode, the SOLO CLEAR button on both Host and Client consoles will light. All channels which are in SOLO mode can then be taken out of SOLO mode by pressing the lit SOLO CLEAR button on either the Host or the Client console. Operating SOLO CLEAR on one console will automatically de-select SOLO CLEAR on the other console.

FADER BANK SWITCHING

When switching between fader banks using the BANK SELECT switches above the E-Strip the Client will automatically follow any selection made on the Host.

For example, if both consoles are set to BANK SELECT 1-16, and the BANK SELECT 17-32 switch is selected on the Host console, the Client desk will also switch to BANK SELECT 17-32. When different banks need to be monitored on each console the Host console

bank should be selected first. Bank switching on the Client console will not be followed by the Host, allowing a different bank to be active on the Client console.

GROUP/CHANNEL LINKING

The linking of Input Channels or Groups can be initiated from either the Host or the Client console. Pressing and holding the CHANNEL/GROUP LINK button at the lower right hand side of either the Host or the Client console will allow you to see which Input Channels/ Groups are currently linked. Linked Groups are indicated by lit adjacent GRP switches.

For more detailed information see **Section 3H**.

AUX/FX PRE

This switch operates in a similar way to the CHANNEL/GROUP LINK switch described above. Aux 1, 2, 3, 4, FX-1 & FX-2 sends can be globally (per-console) set to send from the specific channel Pre or Post-Fade by pressing and holding the AUX/FX PRE button on either the Host or the Client console. While holding the switch, using the Aux 1, 2, 3, 4, FX-1 & FX-2 switches above the E-Strip, both Host and Client consoles will indicate which are Pre-Fade (button lit) and which are Post-Fade (unlit). While holding down the AUX/FX PRE button you can also change the status of the AUX or FX sends by pressing the associated button above the E-Strip.

Effects

When two consoles are linked, both Lexicon Effects processors remain individually active for the Host and Client, so that you have four Lexicon effects processors at your disposal.

This allows for console specific use of both types of processing. You should note that an effects processor cannot be fed from input channels on the other, linked console.

Digital Inputs & Outputs on the **Client** console

When two consoles are linked the following points should be noted regarding the digital inputs and outputs of the Client console:

AES/EBU INPUT

The AES/EBU Input operates in the same way as the Host console.

S/PDIF INPUT

The S/PDIF Input operates in the same way as the Host console.

AES/EBU OUTPUT

The AES/EBU Output of the Host 328XD can be set to output the following :

AUX 1&2, AUX 3&4, FX 1&2, GRP 1&2, GRP 3&4, GRP 5&6, GRP 7&8, and CRM.

When configuring the AES/EBU Output for the Host console, all output selections carry the appropriate signals from the Host console, mixed with the relevant audio data from the Client console. Signals transmitted from the AES/EBU output of the Client console, however, are partial mixes of data input to the Client console only, unmixed with audio from the Host console. You may select from the following outputs:

AUX 1&2, AUX 3&4, GRP 1&2, GRP 3&4, GRP 5&6, GRP 7&8.

S/PDIF OUTPUT

The S/PDIF Output of the Host 328XD can be set to output the following :

AUX 1&2, AUX 3&4, FX 1&2, GRP 1&2, GRP 3&4, GRP 5&6, GRP 7&8, and CRM.

When configuring the S/PDIF Output for the Host console, all output selections carry the appropriate signals from the Host console, mixed with the relevant audio data from the Client console. Signals transmitted from the S/PDIF output of the Client console, however, are partial mixes of data input to the Client console only, unmixed with audio from the Host console. You may select from the following outputs:

AUX 1&2, AUX 3&4, GRP 1&2, GRP 3&4, GRP 5&6, GRP 7&8.

ADAT INPUTS

The ADAT Inputs operate in the same way as on the Host or an unlinked console.

TDIF INPUTS

The TDIF Inputs operate in the same way as on the Host or an unlinked console.

ADAT OUTPUTS

The ADAT Outputs operate in the same way as on the Host or an unlinked console, transmitting the Group outputs when DIRECT OUT is disabled. The Group output signals transmit mixed audio data from both the Host and Client consoles.

TDIF OUTPUTS

The TDIF Outputs operate in the same way as on the Host or an unlinked console, transmitting the Group outputs when DIRECT OUT is disabled. The Group output transmit mixed audio data from both the Host and Client consoles.

AUX OPTICAL OUTPUT

In ADAT format this can be set to transmit either the Group outputs 1-8, or the following combination: MIXL, MIXR, AUX1, AUX2, AUX3, AUX4, FX-1 and FX-2 (see **Section 3J Part 5.8** for more information). When the port is configured to transmit the Groups from the Client console they signal is set 6dB low. When the port is configured to transmit AUX/MIX audio data, the MIXL, MIXR, AUX1, AUX2, AUX3 and AUX4 outputs are partial mixes and contain audio data from the Client console only. FX-1 and FX-2 will send the local FX sends from the Client console. Additionally, the AUX Optical Output can be set to transmit the signal present at the coaxial S/PDIF output.

The ADAT and TDIF ports of both the Host and Client console transmit the same audio data simultaneously. The input of both consoles must be set by the user in the Tape Port Select Menu (see **Section 3J Part 5.8** for more information). This increases the flexibility of a complex studio system by allowing dual 32-channel recording to ADAT and TDIF compliant devices.

Menu changes on the Client console

See Section 3J for more information on 328XD menu pages.

When two consoles are linked the following points should be noted regarding the menu structure:

328XD INFO

Unaltered.

USER OPTIONS

The DEVICE ID must be set differently from the Host console setting. When initiating a MIDI Dump from a remote source, the consoles are individually identifiable.

The following menu pages are not in the Client console User Options menu as control is global and initiated from the Host console.

MIDI Channel
OMNI Mode
Solo Ch Sel (Channel Select follows SOLO)
Solo AutoC (Solo Auto Cancel)
Bank->Select (Channel Select moves with Bank Select)

MIDI CONTROLLERS

This menu page is unaltered from that displayed by the Host or an unlinked console, however it must be noted that the MIDI Controller bank of the Client console operates independently from that of the Host console.

MIDI CTL PRESETS

This menu page is unaltered from that displayed by the Host or an unlinked console, however it must be noted that the MIDI Controller bank of the Client console operates independently from that of the Host console. If you need to transfer a MIDI Controller Preset from the Host console to the Client console or vice versa, this should be done using the MIDI Dump In/Out feature see Section 3J Part 5.5 and Section 3J Part 5.6)

MIDI DUMP OUT

Unaltered.

MIDI DUMP IN

Unaltered.

TAPE TRIM SETUP

Unaltered.

TAPE PORT SELECT

Unaltered.

SPDIF I/P SETUP

Unaltered. Please refer to the previous section for details of the digital outputs.

AES/EBU I/P SET

Unaltered. Please refer to the previous section for details of the digital outputs.

SPDIF O/P SETUP

CRM is not an available option for a Client 328XD. The remainder of the menu is left unaltered.

AES/EBU O/P SET

CRM is not an available option for a Client 328XD. The remainder of the menu is left unaltered.

TAPE MACH SETUP

This menu does not exist on the Client console as the Host console handles all transport-related commands.

CLOCK SOURCE SEL

This menu does not exist on the Client console as the Host console sends the wordclock from the Host console via the Link Cable for both internal and external clock sources.

SNAPSHOT SETUP

This menu does not exist on the Client console - the Host console should be used for configuration of all global Snapshot parameters.

CH COPY SETUP

This menu does not exist on the Client console - the Host console should be used for configuration of all global Channel Copy parameters. Please also note that it is possible to copy channel settings from the Host console to the Client or vice versa.

CH LINK SETUP

This menu does not exist on the Client console - the Host console should be used for configuration of all global Channel Linking related parameters.

USER SETUPS

This menu does not exist on the Client console - the Host console should be used for configuration of all global User Setup parameters.

Connections & Parameters on the Client console

ANALOGUE AUDIO CONNECTIONS

When two 328XD consoles are linked, the following analogue audio connections contain partial mixes (i.e. audio data from just the Client console inputs) only:

AUX1, AUX2, AUX3, AUX4, MIX L (XLR and Phono), MIX R (XLR and Phono), CRM L and CRM R.

When two 328XD consoles are linked, the two track inputs 2TRK A and 2TRK B on the Client console are redundant.

DATA CONNECTIONS

When two 328XD consoles are linked, the Client RS-422 Port and the Timecode In jack are not used - the Host console should be used to facilitate transport control.

When two 328XD consoles are linked the following Client console parameters are redundant:

CONTROL ROOM MONITORING

DIM, MONO, 2TRK and MIX. These are controlled by the Host console.

SNAPSHOT CONTROL

The LCD display cannot be put into SNAPSHOT mode and the SNAPSHOT CONTROL panel is redundant. Snapshot control is carried out from the Host console.

TRANSPORT PANEL

LOC1/2, REW, FF, STOP, PLAY, REC, STO1/2 & the Timecode Display, as these functions must be activated from the Host console.

SOLO CONTROL PANEL

AFL, PFL and SIP do not function on the Client console - they must be controlled globally from the Host console.

MAIN METERS

The Main Meters (GRP 1-8, Aux and FX Main send meters) are not displayed on the Client 328XD. Likewise dynamics gain reduction meters are displayed only for Stereo Inputs 1 and 2 and FX Returns 1 and 2 when viewing Main Dynamics meters.

DYNAMICS

Dynamics are available to all input channels and FX Return channels on a Client console but not Group or Mix buses.

CLOCK LOSS WARNINGS

Messages to warn of clock loss are displayed on the Host 328XD LCD display only.

MIDI Management of Linked consoles

When two consoles are linked, it is recommended that you do the following:

MIDI DEVICE ID

Set up each console to have a different MIDI Device ID - this will ensure that a MIDI dump request is initiated from an external source, the correct console responds with the Dump Out data.

DUMPING SNAPSHOT DATA

Although the Snapshots for both Host and Client consoles are stored and recalled by operation from the Host console surface, they are held in individual memory areas within each console. Therefore when backing up any data (Snapshots, MIDI Controller Setups, FX Presets or User Setups) you must dump the data from both the Host and the Client consoles independently. When restoring the data using MIDI Dump In, you should always confirm that the data is for the correct console (Host or Client).

DYNAMIC AUTOMATION

The 328XD is capable of having every parameter dynamically automated by MIDI Continuous Controller data. Please remember when working with linked consoles the dynamic automation is console dependent. To record dynamic automation you must connect a MIDI cable from each console and select the desired input within your sequencer software. When playing back previously recorded automation data, ensure the data is sent to the console from which it was recorded.

6

SOFTWARE UPGRADE

UPGRADING 328XD SOFTWARE

328XD software can be upgraded from an Apple Macintosh or IBM compatible PC running Microsoft Windows 3.1, 9x, 2000,XP or Me. The instructions below should be followed carefully.

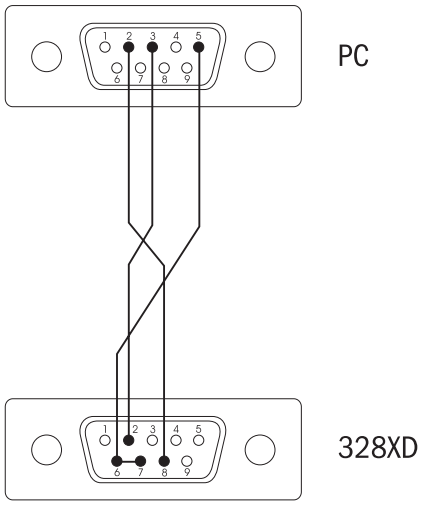
Data backup

All stored 328XD data should be backed up before upgrading to a new version of software. The MIDI Dump Out procedure outlined in **Section 3J Part 5.5** should be followed. To store data to a single MIDI System Exclusive file, the All Data dump should be made.

Upgrading from an IBM compatible PC

Make the connection between an available PC COM port and the 328XD RS-422 port with the 9 pin female - female D-Type PC Upgrade Cable supplied with the console. A cable can be purchased from your Soundcraft dealer if required. Alternatively, if you wish to wire up a cable yourself, consult the pin-out diagram. The sleeved end of a supplied cable should be connected to the PC COM port.

NOTE: A standard 9 pin D-Type serial cable cannot be used to upgrade 328XD software.



Viewed from solder side

Switch off the 328XD and enter Upgrade Mode by switching in the software download switch, located between the Link Port and Auxiliary Optical Output on the rear of the console.

Boot the PC

NOTE: If the downloaded software is in compressed .zip format, extract the .abs software before beginning the upgrade procedure.

UPGRADING FROM WINDOWS 3.1

From Windows 3.1, launch the Terminal program, usually located in the Accessories group.

Ensure that the settings are as below:

- Bits per sec: 115200
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: None

Switch on the 328XD. The console will now boot into Upgrade Mode, in which all of the console LEDs will remain illuminated.

The software upgrade menu should appear in the Terminal window. The steps below should now be followed:

- Press 'X' on the computer keyboard as prompted in the Terminal window:

  'x' for XMODEM (1K) transfer

- Open the 'Transfer' menu and select 'Send Binary File'
- Select the 1K XModem transfer protocol
- Select the .abs 328XD software file in the filename field from its location on the hard or floppy disk drive
- Click 'Send'

A transmission window will appear, a progress bar indicating when software transfer is underway.

NOTE: The console may time-out before the software has been sent from the host PC. If this is the case, power the console off and on. The menu will reappear in the Terminal window. Repeat the steps above.

- When the transfer is complete, press 'P' on the computer keyboard as prompted in the Terminal window:

  Press 'p' to program flash

- Wait for the flash to be programmed. Do not switch off the console during this process
- Disengage the recessed download switch when prompted by the message in the Terminal window:

  Now - turn the download switch off!

- The message 'Digital 328XD running' will appear in the Terminal window and the console will boot with the new software installed. Once the console has booted, a confirmation message will be displayed on the 328XD LCD:

- Exit the Terminal program. You will be prompted to save the settings. Enter '328XDupgrd' or similar.

UPGRADING FROM WINDOWS 9X, ME, NT, XP, 2000

Launch the Hyperterminal program, usually located in Start|Programs|Accessories.

- When prompted, enter a filename such as '328XD Upgrade' or similar.
- Click 'OK'.
- The 'Phone Number' window will appear. Set the 'Connect using' dialogue to 'Direct to Com 1' or 'Direct to Com 2', depending on the connection you have made.
- Click 'OK'
- The Com port properties window will appear

Ensure that the port properties are configured as below and click 'OK'

- Bits per sec: 115200
- Data bits: 8
- Parity: None
- Stop bits: 1
- Flow control: None

Switch on the 328XD. The console will now boot into Upgrade Mode, in which all of the console LEDs will remain illuminated.

The software upgrade menu should appear in the Hyperterminal window. The steps below should now be followed:

- Press 'X' on the computer keyboard as prompted in the Hyperterminal window:

'x' for XMODEM (1K) transfer

- Open the 'Transfer' menu and select 'Send File'
- Select the 1K XModem transfer protocol
- By clicking 'Browse', select the .abs 328XD software file in the filename field from its location on the hard or floppy disk drive
- Click 'Send'

A transmission window will appear, a progress bar indicating when software transfer is underway.

NOTE: The console may time-out before the software has been sent from the host PC. If this is the case, power the console off and on. The menu will reappear in the Hyperterminal window. Repeat the steps above.

- When the transfer is complete, press 'P' on the computer keyboard as prompted in the Hyperterminal window:

Press 'p' to program flash

- Wait for the flash to be programmed. Do not switch off the console during this process

- Disengage the recessed download switch when prompted by the message in the Hyperterminal window:

  Now - turn the download switch off!

- The message 'Digital 328XD running' will appear in the Hyperterminal window and the console will boot with the new software installed. Once the console has booted, a confirmation message will be displayed on the 328XD LCD:

- Exit the Hyperterminal program. You will be prompted to save the settings. Click 'OK' to store the configuration.

Upgrading from an Apple Macintosh

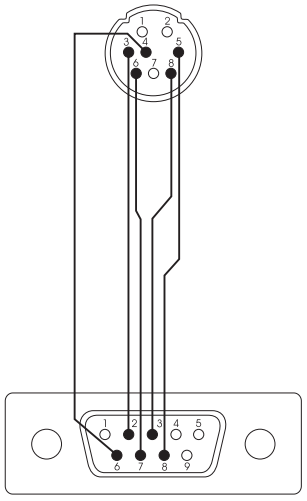
Unlike Terminal or Hyperterminal for Windows, the transfer software is not included with MacOS. You will need to locate and install a copy of ZTerm software. A download of this software is available from the Soundcraft website.

Make the connection between the Macintosh Modem port and the 328XD RS-422 port. Do not use the Macintosh Printer port. A 328XD Apple Macintosh upgrade cable can be purchased from your Soundcraft dealer if required. Alternatively, if you wish to wire up a cable yourself, consult the pin-out diagram.

NOTE: A standard serial to 9 pin D-Type serial cable cannot be used to upgrade 328XD software.

NOTE: Blue G3 and G4 Apple Macintosh computers do not possess a serial modem port. You should consult your Macintosh dealer about how to upgrade your machine to include the serial port.

Switch off the 328XD and enter Upgrade Mode by switching in the software download switch, located between the Link Port and Auxiliary Optical Output on the rear of the



Mac

328XD

Viewed from solder side

console.

Boot the computer.

NOTE: If the downloaded software is in compressed .zip format, extract the .abs software before beginning the upgrade procedure.

Before you begin to upgrade the console, disable AppleTalk and any Fax software you have installed on the Macintosh.

Launch the ZTerm program.

- From the 'Settings' menu, select 'Connection'
- The terminal settings dialogue will open. Configure this as below:

Service Name:	328XD Download
Phone Number:	leave blank
Pre-dial init:	leave blank
Account:	leave blank
Password:	leave blank
Data Rate:	115200
Data Bits:	8
Parity:	None
Stop Bits:	1
Local Echo:	leave unchecked
Xon/Xoff:	leave unchecked
Hardware Handshake:	leave unchecked

- Click 'OK'.
- From the 'Settings' menu, select 'Transfer Options'
- Configure the 'Transfer Options' dialogue window as below:

Send:	Xmodem 1k...
Receive:	Xmodem

All other fields should be left unaltered

- Click 'OK'
- From the 'Settings' menu, select 'Modem Preferences'
- Check that it is set as follows:

Serial Port:	Modem Port

All other fields should be left unaltered

- Click 'OK'

Switch on the 328XD. The console will now boot into Upgrade Mode, in which all of the console LEDs will remain illuminated.

The software upgrade menu should appear in the ZTerm window. The steps below should now be followed:

- Press 'X' on the computer keyboard as prompted in the ZTerm window:

'x' for XMODEM (1K) transfer

- Open the 'File' menu and select 'Send Xmodem-1k'
- When prompted select the .abs 328XD software file in the filename field from its location on the hard or floppy disk drive
- Click 'Open'

A transmission window will appear, a progress bar indicating when software transfer is underway.

NOTE: The console may time-out before the software has been sent from the host Macintosh. If this is the case, power the console off and on. The menu will reappear in the ZTerm window. Repeat the steps above.

- When the transfer is complete, press 'P' on the computer keyboard as prompted in the ZTerm window:

Press 'p' to program flash

- Wait for the flash to be programmed. Do not switch off the console during this process
- Disengage the recessed download switch when prompted by the message in the ZTerm window:

Now - turn the download switch off!

- The message 'Digital 328XD running' will appear in the ZTerm window and the console will boot with the new software installed. Once the console has booted, a confirmation message will be displayed on the 328XD LCD:
- Exit the ZTerm program. You will be prompted to save the settings. Click 'Yes' to store the configuration. When you next start ZTerm, the configuration will have been memorized.

7

TROUBLESHOOTING

Symptom	Possible Cause
I have pops and clicks in my audio	Check the quality of cable Use only TASCAM TDIF Cables and only premium quality ADAT Optical cables. Use only an RG-59 BNC Cable. Make sure that the sample rate is the same for all units. Double check Sample Rate settings in AES/EBU or S/PDIF Output pages Ensure that the wordclock of all connected devices is correctly synchronized.
Using 2 TASCAM Machines, my audio is distorted	Ensure that the phase setting is correct in the User Options menu (see **Section 3J Part 5.2**) Ensure that any connected Tascam DA-88s are both version 4 or both version 1-3.
Why can't I get synth/sampler to communicate with the 328 using the ADAT output on my keyboard?	Ensure that the wordclock of the external device is correctly synchronized.
No signal to digitally connected DAT or CD Recorder	When using a Consumer DAT or CD recorder with the S/PDIF or AES/EBU outputs of the desk, the Pro Flag option should be switched off in the SPDIF O/P and AES/EBU O/P menu. Check Sample Rate settings in AES/EBU or S/PDIF Output pages - make sure they are the same as the rest of the system.
No signal at Digital AES/EBU or S/PDIF input	Make sure signal is routed to a Stereo Input or FX Return. By default, digital input is routed to "NOWHERE".
No signal using Group Outputs	Make sure that Tape Send Direct (T.SND DIR) is disabled.
There is no signal from an external analogue source at STE-1 or STE-2	Make sure that S/PDIF or AES input is not routed to the STE position.
No signal routed to the Effects	Make sure that the Master FX Sends are at optimum level. Verify that the FX returns are routed to Mix and not muted.
No signal from a selected input or tape track	Make sure that ROUTE TO MIX is enabled. Check SOLO and MUTE assignments. Make sure that you are monitoring the MIX and not the 2-TRK input.
My solo level is too loud	In the Master Fader Bank, check that the Solo Trim fader (fader 16) is set to the required level.
The 328XD is sending MIDI information even though nothing is active on the console	MTC request information is being transmitted. Check the console status in the Tape Mach Setup menu.
Channel 9 is always down in the Master Fader Bank	This is normal. The ninth fader has no assignment.
I have continuous digital noise on the mix bus	Check that the S/PDIF, AES/EBU and ADAT inputs are not routed to mix with nothing connected.
My console will not boot - all LED's remain lit	Check that the console is not in Software Upgrade Mode
SIP solo does not mute all other channels	Check that SIP Safe is not activated for the other channels
Channel Linking/Copying does not link or copy all channel parameters	Check that the Channel Link and Channel Copy menus are set correctly

8

APPENDIX

A - MIDI IMPLEMENTATION

Appendix A-1
MIDI Implementation Chart

Soundcraft
Model 328XD

MIDI Implementation Chart

Date: 08.10.00
Version 1.00

Function		Transmitted	Recognised	Remarks
Basic Channel	Default	1	1	*1
	Changed	1-16	1-16	
Mode	Default	x	x	*2
	Messages	x	x	
	Altered	**********		
Note Number	:True voice	0-127 **********	x	*3
Velocity	Note ON	x	x	
	Note OFF	x	x	
After-touch	:Key	x	x	
	:Channel	x	x	
Pitch Bender		x	x	
Control Change	0-127	o	o	*4
Program Change	:True Number	0-125 1-100, 1-26	0-125	*5
System Exclusive		o	o	
MIDI Timecode		o	o	
MIDI Machine Control		o	o	
System Common	:Song pos	x	x	
	:Song sel	x	x	
	:Tune	x	x	
System Realtime	:Clock	x	x	
	:Commands	x	x	
Aux Messages	:Local ON/OFF	x	x	
	:All Notes OFF	x	x	
	:Active Sense	x	x	
	:Reset	x	x	
Notes		*1 : Channel used for snapshot recall when OMNI OFF *2 : Default state is OMNI ON. POLY/MONO ignored *3 : NOTE ON transmitted by transport controls *4 : See dynamic automation data charts *5 : 0-99 : Snapshot recall 1-100 100-125 : User Setup recall 1-26		

Mode 1 : OMNI ON, POLY
Mode 3 : OMNI OFF, POLY

Mode 2 : OMNI ON, MONO o : YES
Mode 3 : OMNI OFF, MONO x : NO

Appendix A-2
MIDI Automation Specifications

The tables below outline the MIDI Channels, Continuous Controller Id's and associated ranges of the automatable parameters of the 328XD.

TABLE 1: SURFACE CONTROLS

MIDI Channel	CC# ID	Function	328 Channel	Range
1	0	Level	Mix	0-127 (00H-7FH)
	1-32		Channels 1-32	
	33, 34		Stereo 1, 2	
	35, 36		FX Return 1, 2	
	37-44		Groups 1-8	
	45-48		Aux Master 1-4	
	49, 50		FX Master 1, 2	
	65-96	Mute	Channels 1-32	0-1 (00H-01H)
	97, 98		Stereo 1, 2	
	99, 100		FX Return 1, 2	
	101-108		Groups 1-8	
	109-112		Aux Master 1-4	
	113, 114		FX Master 1, 2	
2	1-32	Pan	Channels 1-32	0-64 (00H-40H)
	33, 34		Stereo 1, 2	
	35, 36		FX Return 1, 2	
	65-96	Route to Mix	Channels 1-32	0-1 (00H-01H)
	97, 98		Stereo 1, 2	
	99, 100		FX Return 1, 2	
	101-108		Groups 1-8	
3	1-32	Aux 1 Send	Channels 1-32	0-71 (00H-47H)
	33, 34		Stereo 1, 2	
	35, 36		FX Return 1, 2	
	41-72	Aux 2 Send	Channels 1-32	0-71 (00H-47H)
	73, 74		Stereo 1, 2	
	75, 76		FX Return 1, 2	
	81-112	FX 1 Send	Channels 1-32	0-71 (00H-47H)
	113, 114		Stereo 1, 2	
	115, 116		FX Return 1, 2	
4	1-32	Aux 3 Send	Channels 1-32	0-71 (00H-47H)
	33, 34		Stereo 1, 2	
	35, 36		FX Return 1, 2	
	41-72	Aux 4 Send	Channels 1-32	0-71 (00H-47H)
	73, 74		Stereo 1, 2	
	75, 76		FX Return 1, 2	
	81-112	FX 2 Send	Channels 1-32	0-127 (00H-7FH)
	113, 114		Stereo 1, 2	
	115, 116		FX Return 1, 2	
	117-120	Pre/Post	Aux Send 1-4	0-1 (00H-01H)
	121, 122		FX Send 1, 2	
5	1-32	EQ Lo Gain	Channels 1-32	0-62 (00H-3EH)
	33, 34		Stereo 1, 2	
	35, 36		FX Return 1, 2	
	41-72	EQ Lo Freq	Channels 1-32	0-51 (00H-33H)
	73, 74		Stereo 1, 2	
	75, 76		FX Return 1, 2	
	81-112	EQ Lo Q	Channels 1-32	3-59 (03H-3BH)
	113, 114		Stereo 1, 2	
	115, 116		FX Return 1, 2	
6	1-32	EQ Mid Gain	Channels 1-32	0-62 (00H-3EH)
	33, 34		Stereo 1, 2	
	35, 36		FX Return 1, 2	

TABLE 1: SURFACE CONTROLS CONTINUED

MIDI Channel	CC# ID	Function	328 Channel	Range
6	41-72	EQ Mid Freq	Channels 1-32	0-63 (00H-3FH)
	73, 74		Stereo 1, 2	
	75, 76		FX Return 1, 2	
	81-112	EQ Mid Q	Channels 1-32	7-55 (07H-37H)
	113, 114		Stereo 1, 2	
	115, 116		FX Return 1, 2	
7	1-32	EQ Hi Gain	Channels 1-32	0-62 (00H-3EH)
	33, 34		Stereo 1, 2	
	35, 36		FX Return 1, 2	
	41-72	EQ Hi Freq	Channels 1-32	0-51 (00H-33H)
	73, 74		Stereo 1, 2	
	75, 76		FX Return 1, 2	
	81-112	EQ Hi Q	Channels 1-32	3-59 (03H-3BH)
	113, 114		Stereo 1, 2	
	115, 116		FX Return 1, 2	
8	1-32	Route Gp 1	Channels 1-32	0-1 (00H-01H)
	33, 34		Stereo 1, 2	
	35, 36		FX Return 1, 2	
	65-96	Route Gp 2	Channels 1-32	0-1 (00H-01H)
	97, 98		Stereo 1, 2	
	99, 100		FX Return 1, 2	
9	1-32	Route Gp 3	Channels 1-32	0-1 (00H-01H)
	33, 34		Stereo 1, 2	
	35, 36		FX Return 1, 2	
	65-96	Route Gp 4	Channels 1-32	0-1 (00H-01H)
	97, 98		Stereo 1, 2	
	99, 100		FX Return 1, 2	
10	1-32	Route Gp 5	Channels 1-32	0-1 (00H-01H)
	33, 34		Stereo 1, 2	
	35, 36		FX Return 1, 2	
	65-96	Route Gp 6	Channels 1-32	0-1 (00H-01H)
	97, 98		Stereo 1, 2	
	99, 100		FX Return 1, 2	
11	1-32	Route Gp 7	Channels 1-32	0-1 (00H-01H)
	33, 34		Stereo 1, 2	
	35, 36		FX Return 1, 2	
	65-96	Route Gp 8	Channels 1-32	0-1 (00H-01H)
	97, 98		Stereo 1, 2	
	99, 100		FX Return 1, 2	
	101-116	Direct Out	Channels 1-16	0-1 (00H-01H)
13	0	Compressor Bypass	Mix	0-1 (00H-01H)
	1-32		Channels 1-32	
	33, 34		Stereo 1, 2	
	35, 36		FX Return 1, 2	
	37-44		Groups 1-8	
	64	Gate Bypass	Mix	0-1 (00H-01H)
	65-96		Channels 1-32	
	97, 98		Stereo 1, 2	
	99, 100		FX Return 1, 2	
	101-108		Groups 1-8	
14	0	Clear Solo		0-1 (00H-01H)
	1-32	Solo	Channels 1-32	0-1 (00H-01H)
	33, 34		Stereo 1, 2	
	35, 36		FX Return 1, 2	
	37-44		Groups 1-8	
	45-48		Aux Master 1-4	
	49, 50		FX Master 1, 2	
	65-96	SIP Safe	Channels 1-32	0-1 (00H-01H)
	97, 98		Stereo 1, 2	
	99, 100		FX 1, 2	
	101-116	Record Arm	Channels 1-16	0-1 (00H-01H)
15	1-32	Channel Link	Channels 1-32	0-1 (00H-01H)
	37-44		Groups 1-8	
	65-96	Phase	Channels 1-32	0-1 (00H-01H)
	97-98		Stereo 1, 2	
	101-116	Tape Trim	Tape Channels 17-32	1-75 (01H-4BH)
16	1-32	EQ In/Out	Channels 1-32	0-1 (00H-01H)
	33, 34		Stereo 1, 2	
	35, 36		FX 1, 2	

TABLE 2: INTERNAL FX AND DYNAMICS MENUS

MIDI Channel	CC# ID	FX / Dynamics Processor	Parameter	Range
12	0	FX Unit 1	Algorithm	1-8 (01H-08H) *1
	1		FX Level	0-127 (00H-7FH)
	2		Mid Decay	3-63 (03H-3FH)
	3		Bass Multiply	3-67 (03H-43H)
	4		HF Cutoff	3-63 (03H-3FH)
	5		Size	3-63 (03H-3FH)
	6		Predelay	0-127 (00H-7FH)
	7		Predelay FB	0-127 (00H-7FH)
	8		Diffusion	0-127 (00H-7FH)
	9		Reflect Level	0-127 (00H-7FH)
	10		Reflect Delay	0-127 (00H-7FH)
	11		Negative FB	0-127 (00H-7FH)
	12		Flanger Depth	0-127 (00H-7FH)
	13		R Delay FB	0-127 (00H-7FH)
	14		R Delay Time	0-127 (00H-7FH)
	15		L Delay FB	0-127 (00H-7FH)
	16		L Delay Time	0-127 (00H-7FH)
	17		Shape	3-31 (03H-1FH)
	18		Chorus Rate	3-62 (03H-3FH)
	19		Group Delay	0-127 (00H-7FH)
	20		Resonance FB	1-127 (01H-7FH)
	21		Resonance Tuning	0-127 (00H-7FH)
	22		LF Cutoff	0-127 (00H-7FH)
	23		Shimmer	3-62 (03H-3FH)
	24		Richness	3-62 (03H-3FH)
	25		Slope	1-62 (01H-3FH)
	26		Inverse Size	1-62 (01H-3FH)
	27		Gate Time	1-62 (01H-3FH)
	28		Gate Slope	1-62 (01H-3FH)
	29		Chorus FB	0-127 (00H-7FH)
	30		Delay 1	0-119 (00H-77H)
	31		Delay 2 Spread	0-127 (00H-7FH)
	32		Delay 3 Spread	0-127 (00H-7FH)
	64	FX Unit 2	Algorithm	1-8 (01H-08H) *1
	65		FX Level	0-127 (00H-7FH)
	66		Mid Decay	3-63 (03H-3FH)
	67		Bass Multiply	3-67 (03H-43H)
	68		HF Cutoff	3-63 (03H-3FH)
	69		Size	3-63 (03H-3FH)
	70		Predelay	0-127 (00H-7FH)
	71		Predelay FB	0-127 (00H-7FH)
	72		Diffusion	0-127 (00H-7FH)
	73		Reflect Level	0-127 (00H-7FH)
	74		Reflect Delay	0-127 (00H-7FH)
	75		Negative FB	0-127 (00H-7FH)
	76		Flanger Depth	0-127 (00H-7FH)
	77		R Delay FB	0-127 (00H-7FH)
	78		R Delay Time	0-127 (00H-7FH)
	79		L Delay FB	0-127 (00H-7FH)
	80		L Delay Time	0-127 (00H-7FH)
	81		Shape	3-31 (03H-1FH)
	82		Chorus Rate	3-62 (03H-3FH)
	83		Group Delay	0-127 (00H-7FH)
	84		Resonance FB	1-127 (01H-7FH)
	85		Resonance Tuning	0-127 (00H-7FH)
	86		LF Cutoff	0-127 (00H-7FH)
	87		Shimmer	3-62 (03H-3FH)
	88		Richness	3-62 (03H-3FH)
	89		Slope	1-62 (01H-3FH)
	90		Inverse Size	1-62 (01H-3FH)
	91		Gate Time	1-62 (01H-3FH)
	92		Gate Slope	1-62 (01H-3FH)
	93		Chorus FB	0-127 (00H-7FH)
	94		Delay 1	0-120 (00H-77H)
	95		Delay 2 Spread	0-127 (00H-7FH)
	96		Delay 3 Spread	0-127 (00H-7FH)

*1 The FX algorithms relate to the Continuous Controller values as follows:

1	Hall Reverb	5	Resonator
2	Plate Reverb	6	Inverse Reverb
3	Flanger	7	Gate
4	Multi Tap Delay	8	Chorus

Appendix A-3 System Exclusive Implementation

DIGITAL 328XD SYSTEM EXCLUSIVE FORMAT

IMPLEMENTATION OUTLINE

Device ID request To allow a remote source to instruct any connected console(s) to return their set MIDI System Exclusive Device ID, enabling the remote source to communicate with the console(s) correctly

Bulk Dump Request	To allow a remote source to instruct the console to dump requested locations of user stored memory (Snapshots / User Setups / Presets)
Controller Dump Request	To allow a remote source to instruct the console to dump automation data / MIDI controller fader settings as MIDI controller values
Clock Source Configuration	To allow a remote source to instruct the console to switch wordclock source To provide a warning to a remote source when external clock sync is lost
Automation Setup	To allow a remote source to enable / disable automation
Automation Mode	To allow a remote source to set the automation mode
AES/EBU Setup	To allow a remote source to set the AES/EBU input and output routing
S/PDIF Setup	To allow a remote source to set the S/PDIF input and output routing
Auxiliary Optical Output	To allow a remote source to configure the auxiliary optical output source
Factory Default Recall	To allow a remote source to return a console to the state in which it left the factory, retaining any stored Effects or MIDI Controller Presets, Snapshots and User Setups

328XD SYSTEM EXCLUSIVE HEADER DEFINITION

The 328XD system exclusive message format is:

Exclusive status:	F0H
Manufacturer ID:	39H
Model ID:	03H
Device ID (dev):	01H - 7FH
Specific instructions (see below)	...
EOX:	F7H

A remote request to the console is defined as: F0H, 39H, 03H, dev, **00H**, ... , F7H

The response from the 328XD to a request or Local control from the 328XD is defined as: F0H, 39H, 03H, dev, **01H**, ... , F7H

Byte 6 of the sysex string determines the following:

01H:	Bulk Dump Request
02H:	Controller DumpRequest
03H:	Clock Source Configuration
04H:	Automation Setup
05H:	AES/EBU Setup
06H:	S/PDIF Setup
07H:	Auxiliary Optical Output

Special case request messages include:

Device ID request:	Byte 4 omitted
Factory Default recall:	11H inserted after byte 2 (Soundcraft manufacturer ID)

The user definable device ID (1-127 / 01H-7FH) setting is in the 328XD User Options menu. A device ID of 1-127 is selectable.

A remote request will be deemed invalid by the 328XD if the request cannot be performed or is out of range. Appropriate validity responses are transmitted by the console from the MIDI Out port, as defined in the Specific Instructions section below.

SPECIFIC INSTRUCTIONS

DEVICE ID REQUEST

Purpose: To request the setting of the 328XD MIDI System Exclusive Device ID

Remote request: F0H, 39H, 03H, 00H, F7H [328XD Rx]

328XD Response: F0H, 39H, 03H, aa, F7H [328XD Tx]

aa = 01H - 7FH Device ID 1-127

BULK DUMP REQUEST

Purpose: To request a snapshot / setup / preset to be dumped from the 328XD

Remote request: F0H, 39H, 03H, dev, 00H, aa, bb, cc, F7H [328XD Rx]

aa = 01H MIDI System Exclusive dump request

bb = 00H - 08H Type of memory (Table 1)

cc = 00H - 7DH Memory location (Table 1)

Table 1

bb	Type of memory	cc
00H	All data	xxH
01H	All Snapshots / User Setups	xxH
02H	One Snapshot / User Setup	00H-7DH (1-126)
03H	All Lexicon presets	xxH
04H	Not used *	
05H	All MIDI controller presets	XxH
06H	One Lexicon preset	00H-64H (1-100)
07H	Not used *	
08H	One MIDI controller preset	00H-3FH (1-64)

328XD Response: F0H, 39H, 03H, dev, 01H, aa, bb, cc, dd, F7H [328XD Tx]

aa = 01H MIDI System Exclusive dump request received

bb = 00H - 08H Type of memory (Table 1)

cc = 00H - 7DH Memory location (Table 1)

dd = 00H - 01H Invalid / valid request

FOLLOWED IMMEDIATELY BY MIDI SYSTEM EXCLUSIVE DUMP AS REQUESTED

A System Exclusive dump request message will be deemed invalid if the location requested is empty (see Table 1)

*1: A request for these unused memory locations will return an invalid request message

CONTROLLER DUMP REQUEST

Purpose: To request a dump of all automatable parameters' associated MIDI CC values

Remote request: F0H, 39H, 03H, dev, 00H, aa, bb, F7H [328XD Rx]

aa = 02H — MIDI dump of automatable parameters' MIDI CC values request

bb = 00H - 01H — Automation data / MIDI controller bank values

328XD Response: F0H, 39H, 03H, dev, 01H, aa, bb, F7H [328XD Tx]

aa = 02H — MIDI dump of automatable parameters' MIDI CC values request received

bb = 00H - 01H — Automation data / MIDI controller bank values

FOLLOWED IMMEDIATELY BY DUMP OF AUTOMATABLE PARAMETERS' / MIDI CONTROLLERS' ASSOCIATED MIDI CONTINUOUS CONTROLLER VALUES AS REQUESTED

CLOCK SOURCE CONFIGURATION

Purpose: To configure the 328XD Clock Source Sel menu from a remote source

Remote request: F0H, 39H, 03H, dev, 00H, aa, bb, F7 [328XD Rx]

aa = 03H — Set clock source

bb = 00H-06H — Clock source (Table 2)

Table 2

bb	Clock source
00H	Internal: 48kHz
01H	internal: 44.1kHx
02H	External: Wordclock
03H	External: AES/EBU
04H	External: Superclock
05H	External: ADAT 1
06H	External: ADAT 2

328XD Response: F0H, 39H, 03H, dev, 01H, aa, bb, cc, F7H [328XD Tx]

aa = 03H — Set clock source request received

bb = 00H-06H — Clock source (Table 2)

cc = 00H-01H — Valid / invalid request

A System Exclusive dump request message will be deemed invalid if the console determines that the requested clock source is not present. In this instance, the 328XD will transmit a valid clock source message for the internal sample rate to which the console has reverted immediately after the invalid clock string.

THE 328XD WILL ALSO TRANSMIT THE RELEVANT RESPONSE STRING WHEN THE SETTING IS ALTERS MANUALLY FROM WITHIN THE CONSOLE MENU

AUTOMATION SETUP

Purpose: To enable / disable automation from a remote source

Remote Request: F0H, 39H, 03H, dev, 00H, aa, bb, cc, F7H [328XD Rx]

aa = 04H Set automation configuration

bb = 00H Automation enable / disable

cc = 00H - 01H Dynauto Off / On

328XD Response: F0H, 39H, 03H, dev, 01H, aa, bb, cc, dd, F7H [328XD Tx]

aa = 04H Set automation configuration request received

bb = 00H Automation enable / disable

cc = 00H - 01H Dynauto Off / On

dd = 00H - 01H Valid / invalid request

THE 328XD WILL ALSO TRANSMIT THE RELEVANT RESPONSE STRING WHEN THE SETTING IS ALTERS MANUALLY FROM WITHIN THE CONSOLE MENU

AUTOMATION MODE

Purpose: To configure the automation mode from a remote source

Remote Request: F0H, 39H, 03H, dev, 00h, aa, bb, cc, F7H [328XD Rx]

aa = 04H Set automation configuration

bb = 01H Automation mode

cc = 00H - 04H Set automation mode (Table 3)

Table 3

bb	Automation Mode
00H	Read only
01H	Write only
02H	Update
03H	Read/Write
04H	Controller

328XD Response: F0H, 39H, 03H, dev, 01H, aa, bb, cc, dd, F7H [328XD Tx]

aa = 04H Set automation configuration request received

bb = 01H Automation mode

cc = 00H -04H Automation mode set (Table 3)

dd = 00H - 01H Valid / invalid request

THE 328XD WILL ALSO TRANSMIT THE RELEVANT RESPONSE STRING WHEN THE SETTING IS ALTERED MANUALLY FROM WITHIN THE CONSOLE MENU

AES/EBU SETUP

Purpose: To set the AES/EBU input and output configuration from a remote source

Remote Request: F0H, 39H, 03H, dev, 00H, aa, bb, cc, F7H [328XD Rx]

aa = 05H Set AES/EBU configuration

bb = 00H - 01H Set input / output

cc = 00H - 09H Destination / source (Table 4)

Table 4

bb	cc	Destination / Source
	00H	NOWHERE
	01H	STE 1
00H	02H	STE 2
	03H	FX 1
	04H	FX 2
	05H	2TRK
	00H	NOWHERE
	01H	MIX
	02H	AUX 1/2
	03H	AUX 3/4
01H	04H	FX 1/2
	05H	GRP 1/2
	06H	GRP 3/4
	07H	GRP 5/6
	08H	GRP 7/8
	09H	C/RM

328XD Response: F0H, 39H, 03H, dev, 01H, aa, bb, cc, dd, F7H [328XD Tx]

aa = 05H Set AES/EBU configuration request received

bb = 00H - 01H Input / output

cc = 00H - 09H Destination / source (Table 4)

dd = 00H - 01H Valid / invalid request

AN INVALID REQUEST WILL BE TRANSMITTED IF THE REQUESTED DESTINATION IS UNAVAILABLE

THE 328XD WILL ALSO TRANSMIT THE RELEVANT VALID RESPONSE STRING WHEN THE SETTING IS ALTERED MANUALLY FROM WITHIN THE CONSOLE MENU

S/PDIF SETUP

Purpose: To configure the S/PDIF input and output configuration from a remote source

Remote Request: F0H 39H, 03H, dev, 00H, aa, bb, cc, F7H [328XD Rx]

aa = 06H Set S/PDIF configuration

bb = 00H - 01H Set input / output

cc = 00H - 09H Destination / source (Table 5)

Table 5

bb	cc	Destination / Source
	00H	NOWHERE
	01H	STE 1
00H	02H	STE 2
	03H	FX 1
	04H	FX 2
	05H	2TRK
	00H	NOWHERE
	01H	MIX
	02H	AUX 1/2
	03H	AUX 3/4
01H	04H	FX 1/2
	05H	GRP 1/2
	06H	GRP 3/4
	07H	GRP 5/6
	08H	GRP 7/8
	09H	C/RM

328XD Response: F0H, 39H, 03H, dev, 01H, aa, bb, cc, dd, F7H [328XD Tx]

aa = 06H Set S/PDIF configuration request received

bb = 00H - 01H Input / output

cc = 00H - 09H Destination / source (Table 5)

dd = 00H - 01H Valid / invalid request

AN INVALID REQUEST WILL BE TRANSMITTED IF THE REQUESTED DESTINATION IS UNAVAILABLE

THE 328XD WILL ALSO TRANSMIT THE RELEVANT VALID RESPONSE STRING WHEN THE SETTING IS ALTERED MANUALLY FROM WITHIN THE CONSOLE MENU

AUXILIARY OPTICAL OUTPUT

Purpose: To configure the auxiliary optical output from a remote source

Remote Request: F0H, 39H, 03H, dev, 00H, aa, bb, F7H [328XD Rx]

aa = 07H Set auxiliary optical output

bb = 00H - 02H Set output source: 00H: AUX/MIX
01H: GROUP
02H: S/PDIF

328XD Response: F0H, 39H, 03H, dev, 01H, aa, bb, cc, F7H [328XD Tx]

aa = 07H Set auxiliary optical output request received

bb = 00H - 02H Output source set: 00H: AUX/MIX
01H: GROUP
02H: S/PDIF

cc = 00H - 01H Valid / invalid request

THE 328XD WILL ALSO TRANSMIT THE RELEVANT RESPONSE STRING WHEN THE SETTING IS ALTERED MANUALLY FROM WITHIN THE CONSOLE MENU

FACTORY DEFAULT RECALL

Purpose: To enable a remote source to reset the console to its factory default settings

Remote Request: F0H, 39H, 03H, dev, 00H, aa, F7H [328XD Rx]

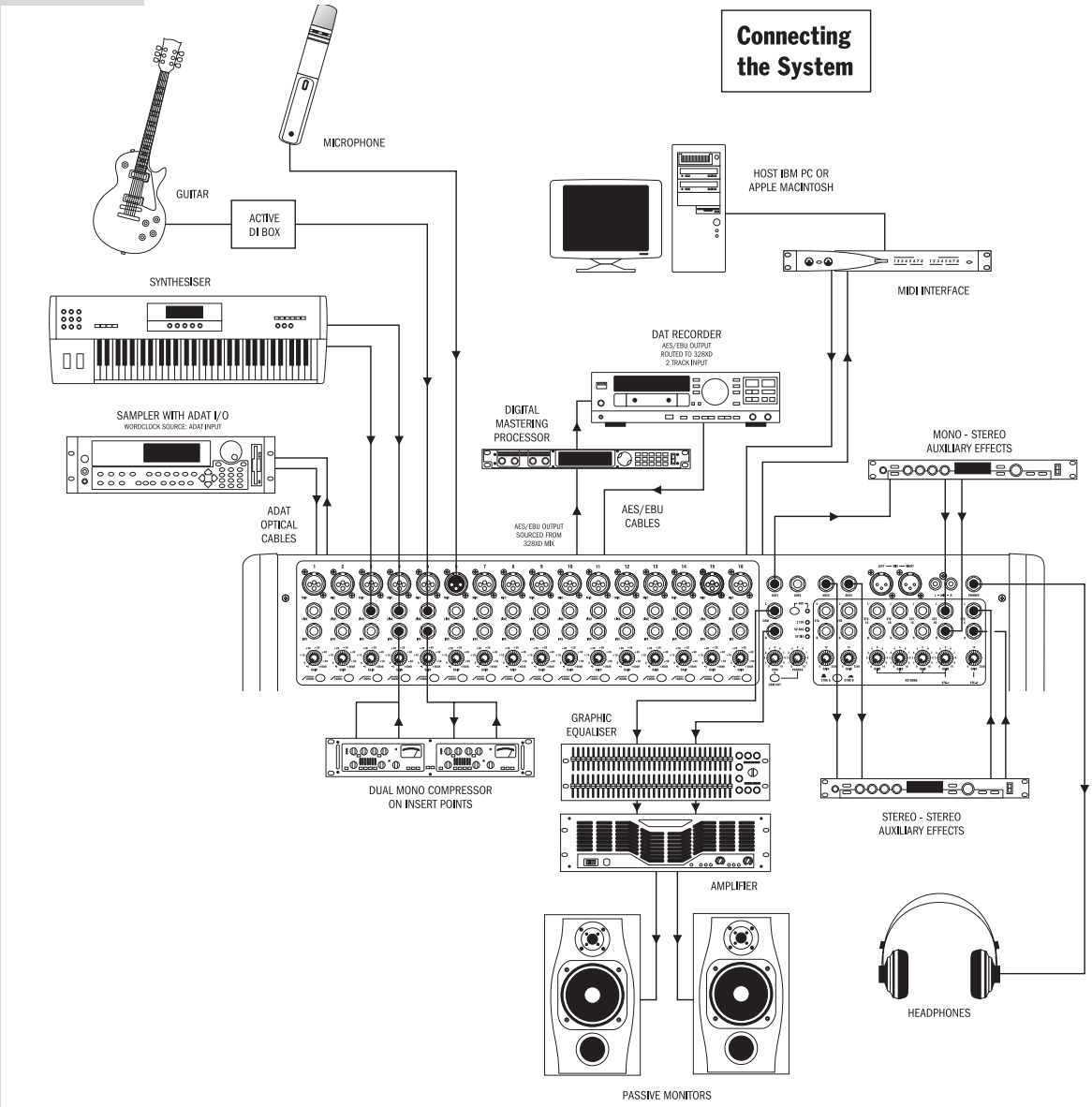
aa = 08H Recall Factory Default settings

328XD Response: F0H, 39H, 03H, dev, 01H, aa, F7H [328XD Tx]

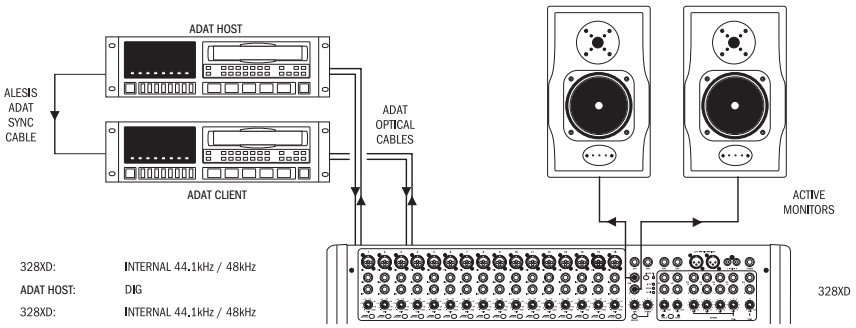
aa = 08H Factory Default settings recalled

THE 328XD WILL NOT TRANSMIT THE RELEVANT RESPONSE STRING WHEN THE FACTORY DEFAULT SETTINGS ARE RESTORED TO THE CONSOLE BY RECALLING USER SETUP 27

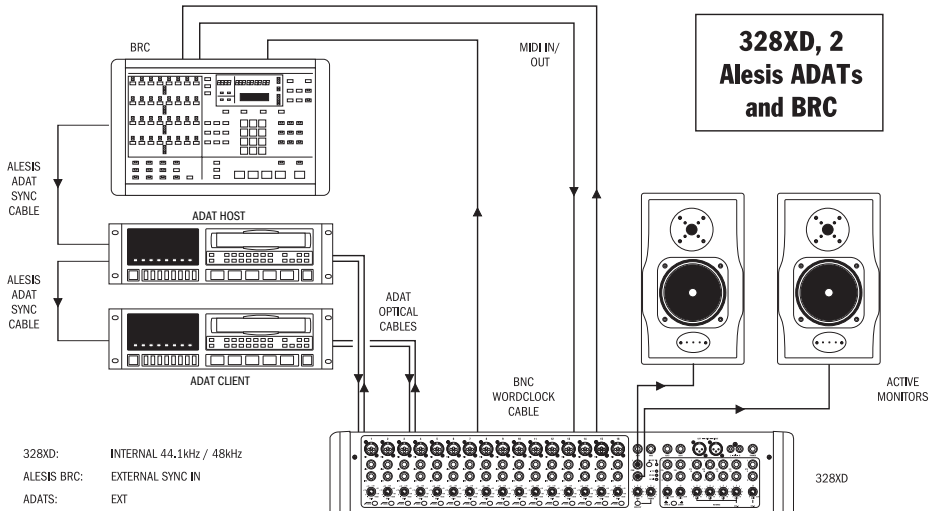
B - CONNECTION DIAGRAMS

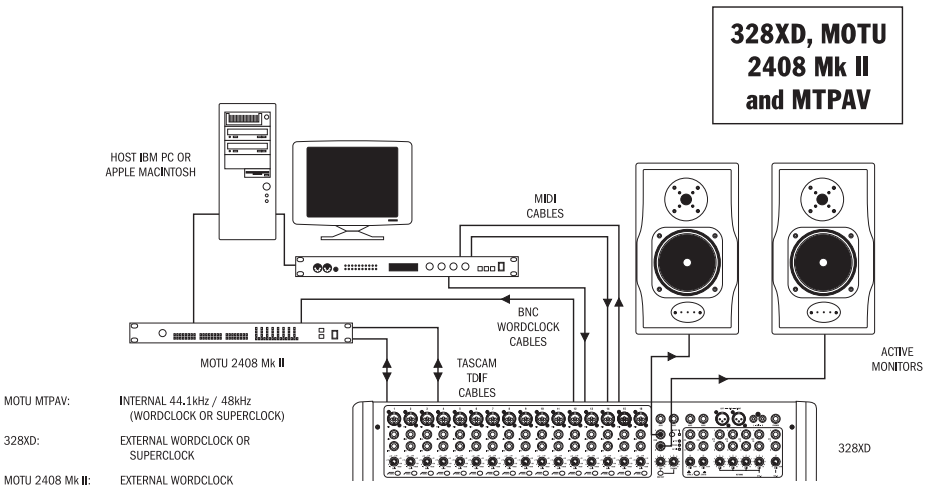


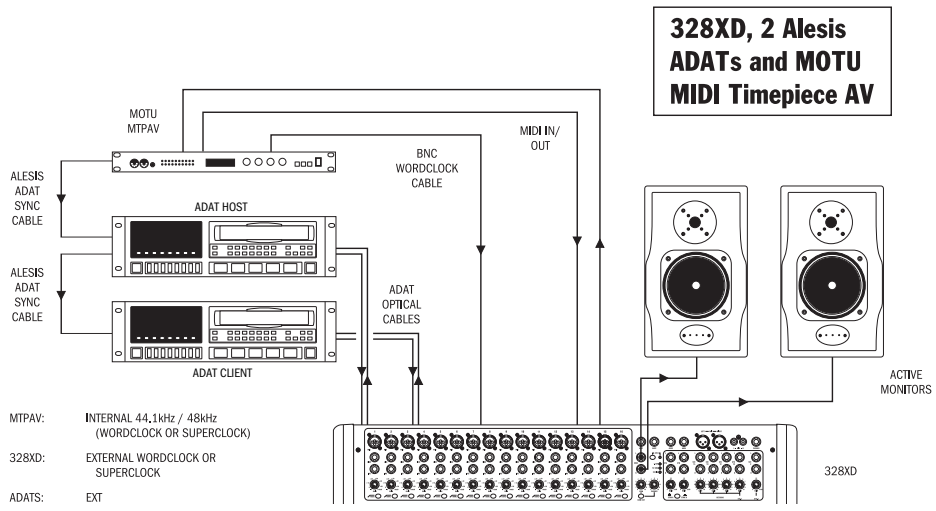
328XD and 2 Alesis ADATs



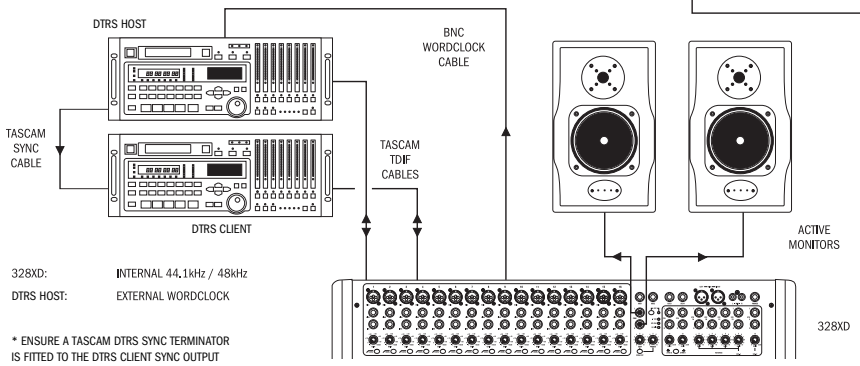
328XD, 2 Alesis ADATs and BRC



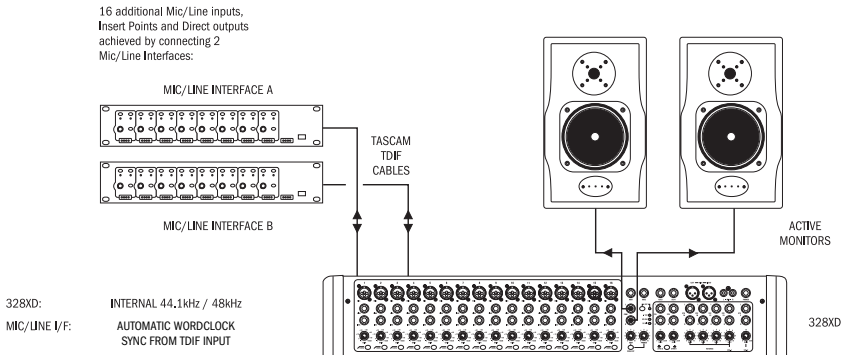

328XD, MOTU 2408 Mk II and MTPAV
HOST IBM PC OR APPLE MACINTOSH
MIDI CABLES
BNC WORDCLOCK CABLES
MOTU 2408 Mk II
TASCAM TDIF CABLES
ACTIVE MONITORS
328XD
MOTU MTPAV: INTERNAL 44.1kHz / 48kHz (WORDCLOCK OR SUPERCLOCK)
328XD: EXTERNAL WORDCLOCK OR SUPERCLOCK
MOTU 2408 Mk II: EXTERNAL WORDCLOCK


328XD, 2 Alesis ADATs and MOTU MIDI Timepiece AV
MOTU MTPAV
MIDI IN/ OUT
BNC WORDCLOCK CABLE
ALESIS ADAT SYNC CABLE
ADAT HOST
ALESIS ADAT SYNC CABLE
ADAT OPTICAL CABLES
ADAT CLIENT
ACTIVE MONITORS
328XD
MTPAV: INTERNAL 44.1kHz / 48kHz (WORDCLOCK OR SUPERCLOCK)
328XD: EXTERNAL WORDCLOCK OR SUPERCLOCK
ADATS: EXT

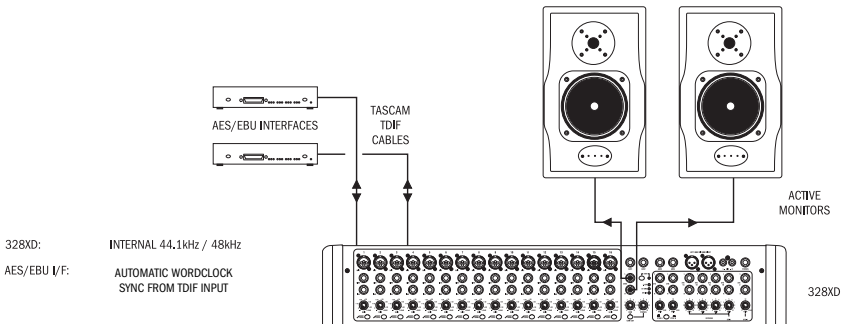
328XD and 2 Tascam DTRS Machines



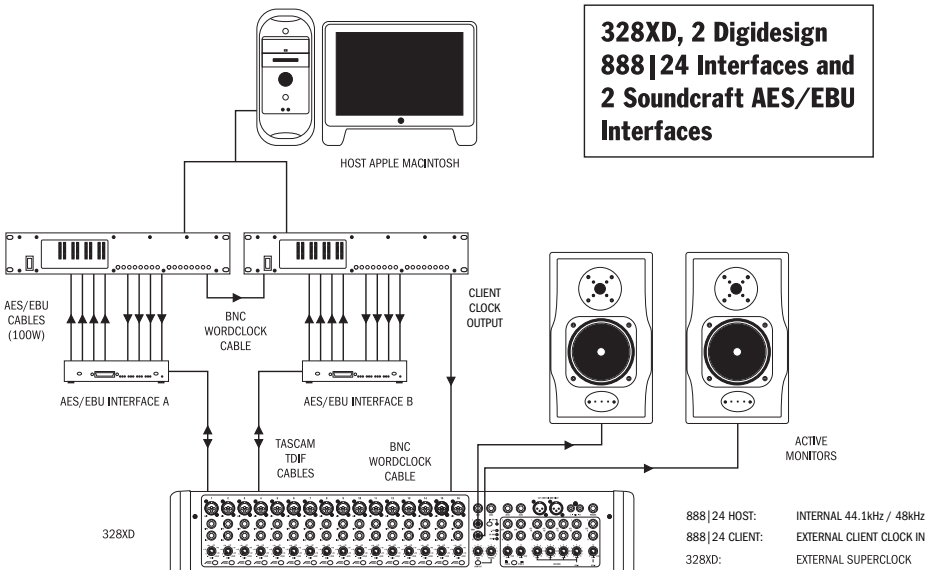
328XD and 2 Soundcraft Mic/Line Interfaces



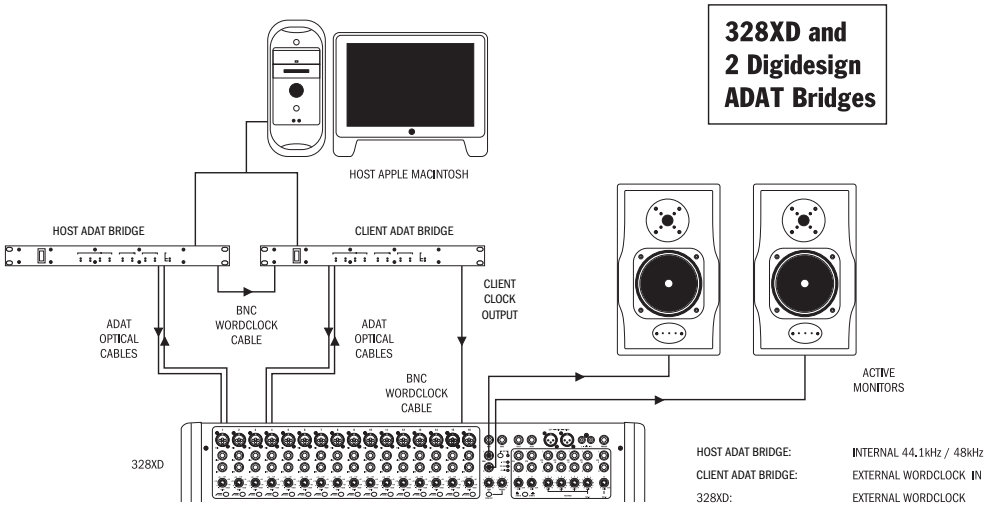
328XD and 2 Soundcraft AES/EBU Interfaces



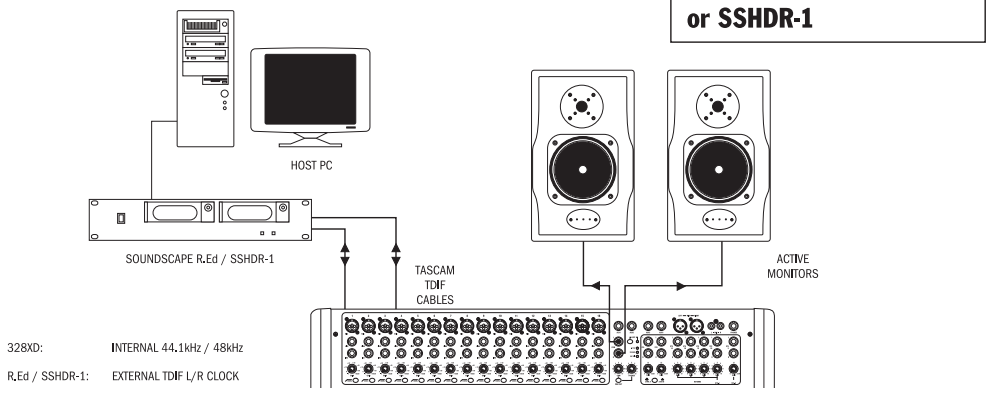
328XD, 2 Digidesign 888|24 Interfaces and 2 Soundcraft AES/EBU Interfaces

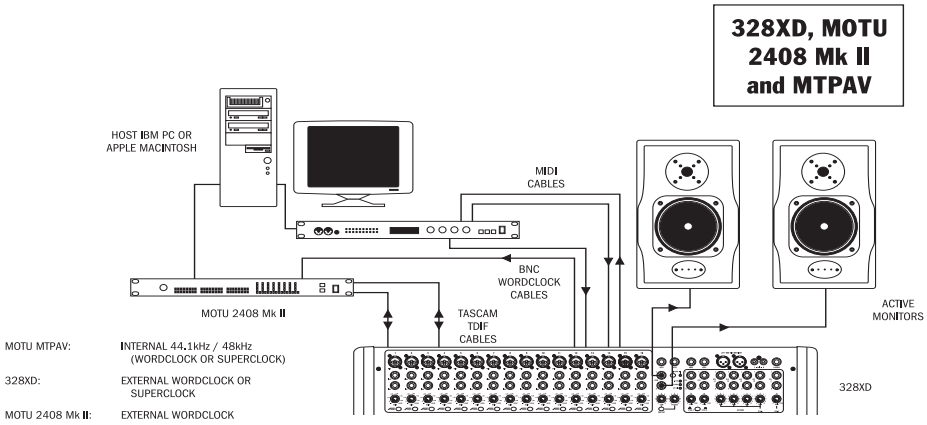


328XD and 2 Digidesign ADAT Bridges

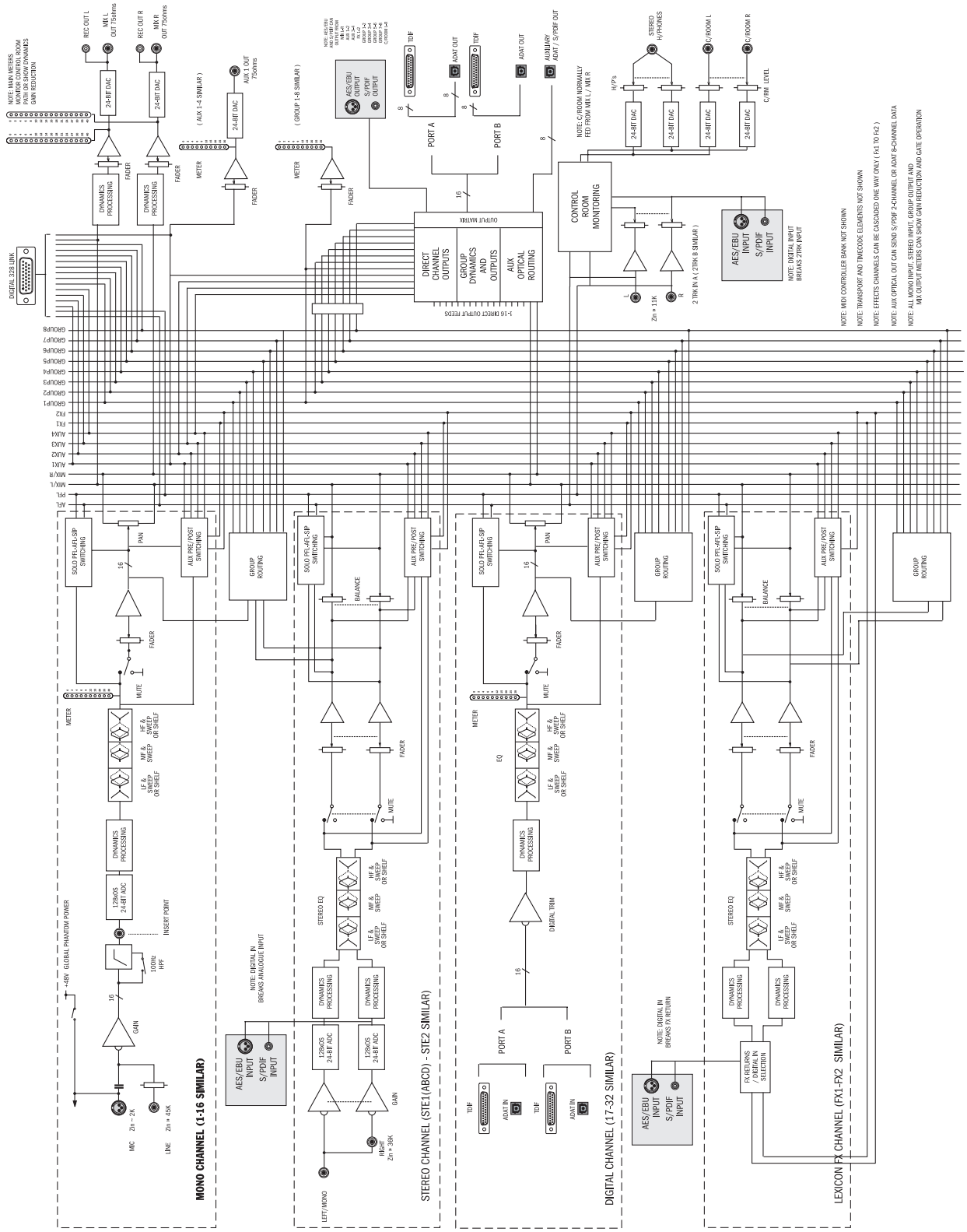


328XD and Soundscape R.Ed or SSHDR-1



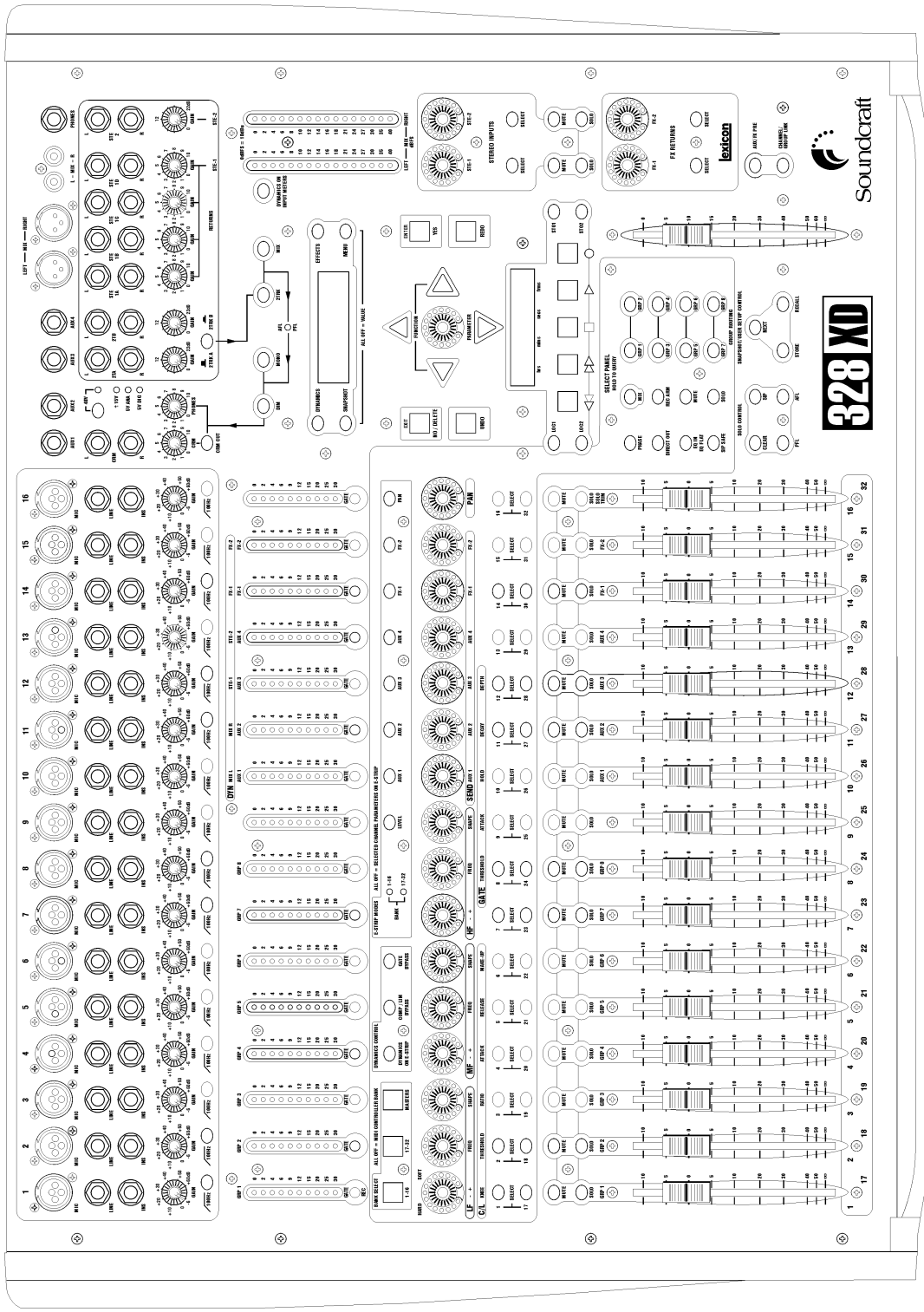

328XD, MOTU
2408 Mk II
and MTPAV
HOST IBM PC OR
APPLE MACINTOSH
MIDI
CABLES
BNC
WORDCLOCK
CABLES
ACTIVE
MONITORS
MOTU 2408 Mk II
TASCAM
TDIF
CABLES
328XD
MOTU MTPAV: INTERNAL 44.1kHz / 48kHz (WORDCLOCK OR SUPERCLOCK)
328XD: EXTERNAL WORDCLOCK OR SUPERCLOCK
MOTU 2408 Mk II: EXTERNAL WORDCLOCK

C - SIGNAL FLOW DIAGRAM



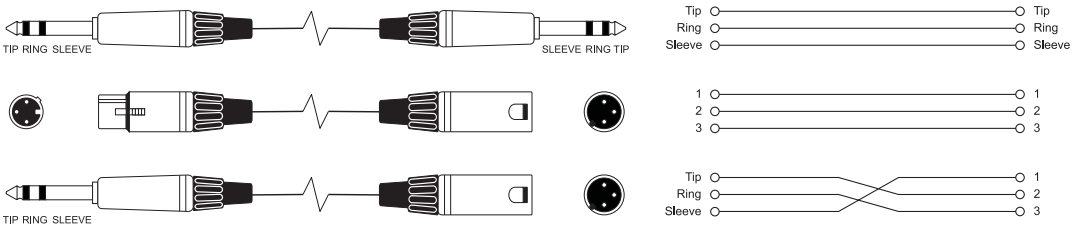
D - 328XD EXPANDED SURFACE DIAGRAM

Below is an analogue representation of the 328XD showing how much Power and Flexibility you have at your command only a fingertip away.

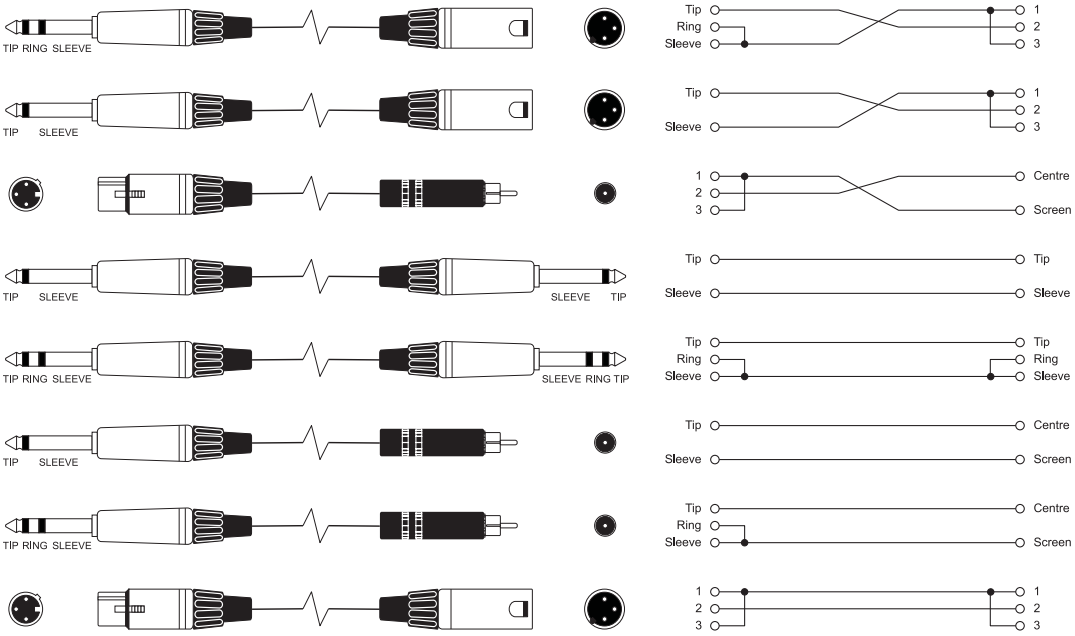


E - CABLE CONNECTION DIAGRAMS

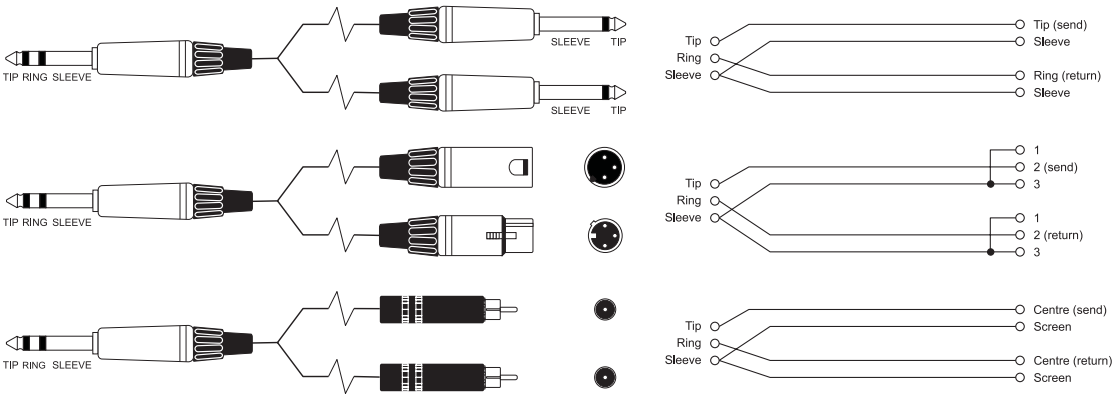
Balanced - Line Inputs, Mix L & R Outputs, Stereo Inputs, Auxiliary Outputs



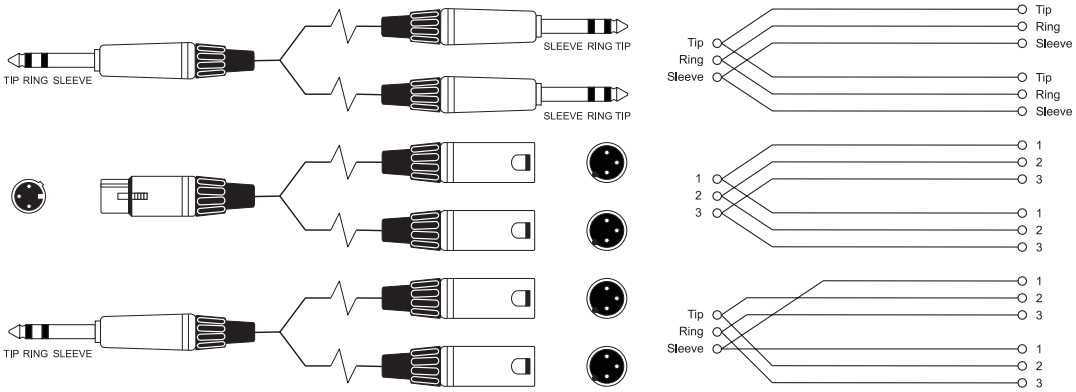
Unbalanced - Direct Output, Monitor Output, Stereo Return Inputs



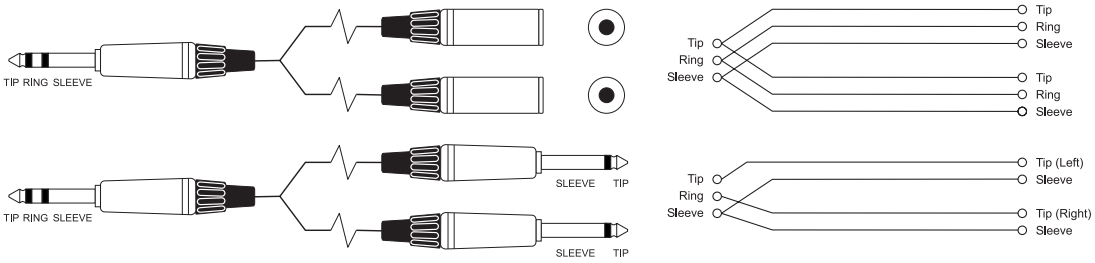
Insert Cables - Mono Inserts



'Y' Cables (Balanced) Where used … Aux, Mix outputs



Headphone Separator Note: for every doubling of headphones the load impedance is halved. Do not go below 200R.



'Y' Cables (Unbalanced)