digital

three two eight



42 input, 8-Bus Digital Console with Lexicon effects

- Up to 42 Inputs at Mixdown
- 8 Bus
- 16 Mic/Line & 5 Stereo Inputs
- 16 Digital Tape Returns on ADAT Optical and TDIF formats
- All Inputs have access to 3-Band Parametric EQ, 4 Auxes, 2 Lexicon Effects Sends and 2 Dynamic Processors
- 24 Bit or better throughout
- Moving 100mm Faders
- Snapshot and Dynamic Automation capability
- Undo/Redo, Copy & Paste functions
- Solo-in-Place, AFL & PFL Solos
- Machine Control
- 2 Consoles cascadable



SPIRIT
BY SOUNDCRAFT

Spirit 328 represents a **revolution in low cost professional audio**, bringing all the functionality and sonic excellence of digital mixing to a brand new audience. With its unique **console-based interface**, 328 finally bridges the gap between analogue and digital mixers, retaining the **spontaneity and ease of use** of an analogue console yet providing all the advantages of digital, such as instant **TOTAL** recall of all digital parameters, moving fader automation and onboard Lexicon effects.

Quite simply, **Digital 328** handles like the most advanced analogue 8 bus you've ever seen with the added power of digital.

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328's E-Strip may be configured as...



...a horizontal input channel with full EQ, Aux and Pan facilities..



....or a row of 16 Auxes or FX Sends for the 16 faders below the E-Strip...



...or a set of rotary level controls for the Tape Returns.

All the Digital I/Os you need as standard

Most digital mixers don't include digital multitrack I/Os, which means that to get digital recording and mixdown you have to buy extra, expensive I/O options. In contrast, Digital 328 includes **two Tascam TDIF and two ADAT optical interfaces as standard**, allowing you to record 16 tracks entirely in the digital domain, straight out of the box. As you would expect, we've also included a pair of **AES/EBU and SP/DIF interfaces** assignable to a wide range of inputs and outputs, including group and auxiliary outs. In addition, a 3rd optical output may be used as a digital FX Send or as 8 Digital Group Outs. All in all, there are 28 Digital Outs on 328 plus 20 Digital Returns, providing enough flexibility for the most demanding applications.



42 Input/8 Bus Configuration

For a mixer with such a small footprint, Digital 328 packs an extraordinary number of inputs. 16 full spec. analogue mono mic/line channels – each with its own balanced XLR connector, dedicated insert point and access to phantom power – come as standard, along with 5 stereo inputs.

With the 16 digital tape returns on 328's **TDIF and ADAT optical interfaces,** there's a maximum of **42 inputs**. Every input is fully routable to any of the 8 groups and has access to the full complement of 328's parametric EQ, signal processing, onboard effects and auxiliaries.

As easy to use as your current analogue console

Although most digital mixers offer an amazing array of functions, it can often be a nightmare to access them.

In contrast we've designed Spirit 328 to operate like your old analogue 8-bus console and not like a computer with faders, so that you can take it out of its box and get started without even opening the manual. Unlike other digital mixers, there's **instant access** to any channel, group or master feature with one button press, and you can see that feature's status from the front panel without having to rely on an LCD display.

Access is so immediate you could even use 328 as a live console.

The key to it all is Spirit 328's unique **"E-strip"**, the lighter-coloured bank of encoders and switches that runs across the centre of the console. Simply select a channel and the E-strip immediately becomes a **"horizontal input channel"** with instant access to all that channel's EQ, aux sends, channel pan and routing. Alternatively, press any button in the rotaries section above the E-strip and the encoders change to become a channel pan, auxiliary send, or Lexicon effects send for each channel.

Select a fader bank to display mic/line input faders, tape returns faders, or group and master faders and that's it; no delving through level after level of LCD menus to find the function you want, no delays in making alterations and no need to study complicated EQ curves. With 328, everything you need is immediately accessible from the front panel of the console - giving you the freedom to let your ears decide.

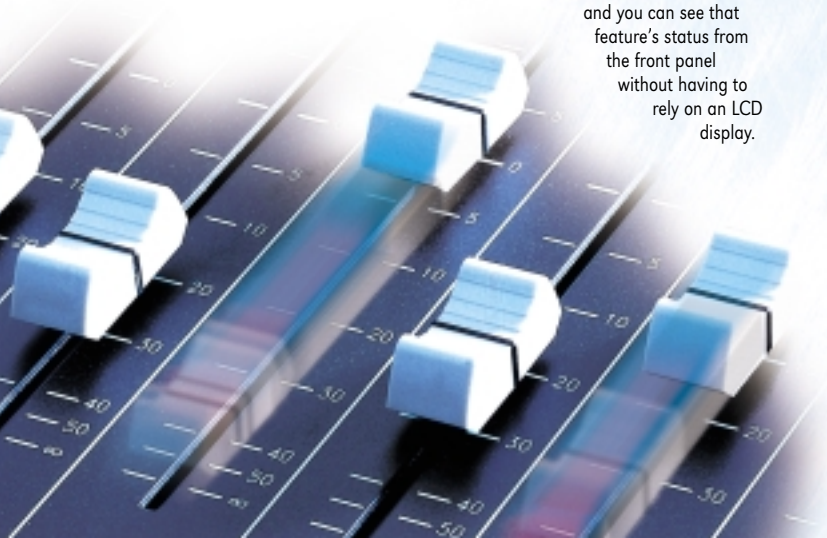
If you want the functionality of a digital console but the usability of your old analogue 8 bus, then Spirit 328 is for you.

2 Onboard Lexicon Effects Units

Only 328 can offer the world's premier name in studio effects on board - **Lexicon**. Two separate effects units are included, offering a full range of reverbs, choruses, delays, and flanges, all with fully editable program and parameter settings.

Onboard Dynamics

Digital 328 includes **two mono or stereo signal processors** which can be assigned to any input, output or groups of ins or outs. Each processor provides a choice of compression, limiting and gating, as well as combinations of these effects.





Comprehensive EQ

All of 328's mic/line, tape return and stereo inputs have access to **3 bands of fully parametric EQ**, designed by British EQ guru and co-founder of Soundcraft, Graham Blyth. A man with over 5 million channels of his EQ designs in the field, Graham has brought 25 years of Soundcraft analogue EQ circuit experience to bear on Digital 328. If you want the warm, musical sound of **real British analogue EQ**, with proper low, mid and high frequency bands (rather than the low resolution 20Hz - 20kHz bands found on some consoles), look no further.

range and a massive +**28dBU of headroom**, they offer an extremely low noise floor and are virtually transparent. Spirit 328 is **24-bit throughout**, with 56-bit internal processing; your signal hits the digital domain through state-of-the-art 24-bit ADCs with 128 times oversampling, guaranteeing that it maintains its clarity, whilst 24-bit DACs on all main outputs equal this sonic integrity should you wish to return your signal to the analogue world.

Moving Fader Automation

All of Digital 328's **100mm faders** [including the master] are motorised to allow current channel, tape return, group and aux master levels to be viewed at a glance.

All Parameters Instantly Recallable

In addition to level automation, every other digital parameter of 328 is **instantly recallable**, allowing snapshots of the entire console's status to be taken. Up to 100 of these "scenes" may be stored internally and recalled either manually, against MIDI clock or against MTC or SMPTE. Alternatively, every console function has been assigned its own MIDI message allowing dynamic automation via sequencer software.

Easy to Edit - Direct from the Control Surface

The majority of 328's input and routing parameters may be edited from the control surface without resorting to the console's LCD. Settings and levels may be **copied and pasted** from one channel to another with just two button presses and, using 328s query mode, the routing or assignment status of every channel on the console may be viewed instantly simply by selecting the function (such as Group 1 or Phase Reverse) you want to question. In addition, with 328's **Undo/Redo function** located in the master section, editing is **entirely non-destructive**, allowing you to A/B test new settings with previous ones.

Grows with your needs

Two Digital 328s may be **digitally cascaded**, giving you up to 84 inputs at mixdown and 32-track digital recording capability.

Full Metering & Monitoring Options

All of the Mic/line inputs, Tape return inputs, Group and Master levels may be monitored per bank via Digital 328's 16 10-segment bargraph meters. Additionally, 328's onboard dynamics processors may be monitored using the console's master meters. Any input may be solo'd using AFL, PFL or Solo-in-Place.



Timecode & Machine Control

Digital 328 reads and writes **MTC** and reads all **SMPTE frame rates**, with a large display instantly indicating current song position. Store and locate points are accessible from the console's front panel, with 328's transport bar controlling a wide range of devices including Tascam and Alesis digital recorders.

Software Upgradeable

328's open architecture means that any functional improvements and software upgrades can be made easily available off Spirit's website. 328 Mixer Maps for popular sequencing software packages are also available free of charge.

Add-On Module Options

To meet the needs of a variety of users, there are 3 module options:

8 Channel Analogue I/O Interface

Connecting to the TDIF ports, 16 phono connectors provide 8 analogue group or direct outs and 8 analogue inputs for tape returns 17-32. Two interfaces may be connected, allowing 16 track analogue recording or access to 16 more sequenced keyboard or sampler inputs.

AES/EBU interface

4 pairs of AES/EBU connectors allow optional digital interfacing to hard disk production systems such as Pro Tools. A maximum of two interfaces may be connected.

Mic Pre-Amp Interface

Each interface provides 8 XLR mic ins with UltraMic+ preamps. Connecting two interfaces turns 328 into a 32 mic input, 8 bus mixer for PA or theatre applications.

Unparalleled Sonic Spec

Rubbish in, Rubbish out! It doesn't matter whether the console is digital or analogue – if you have poor mic preamps, your sound will be compromised. That's why 328 includes Spirit's acclaimed UltraMic+™ padless preamps, giving your input signals the cleanest, quietest start of any digital mixer on the market. **With 66dB of gain**

Input Section

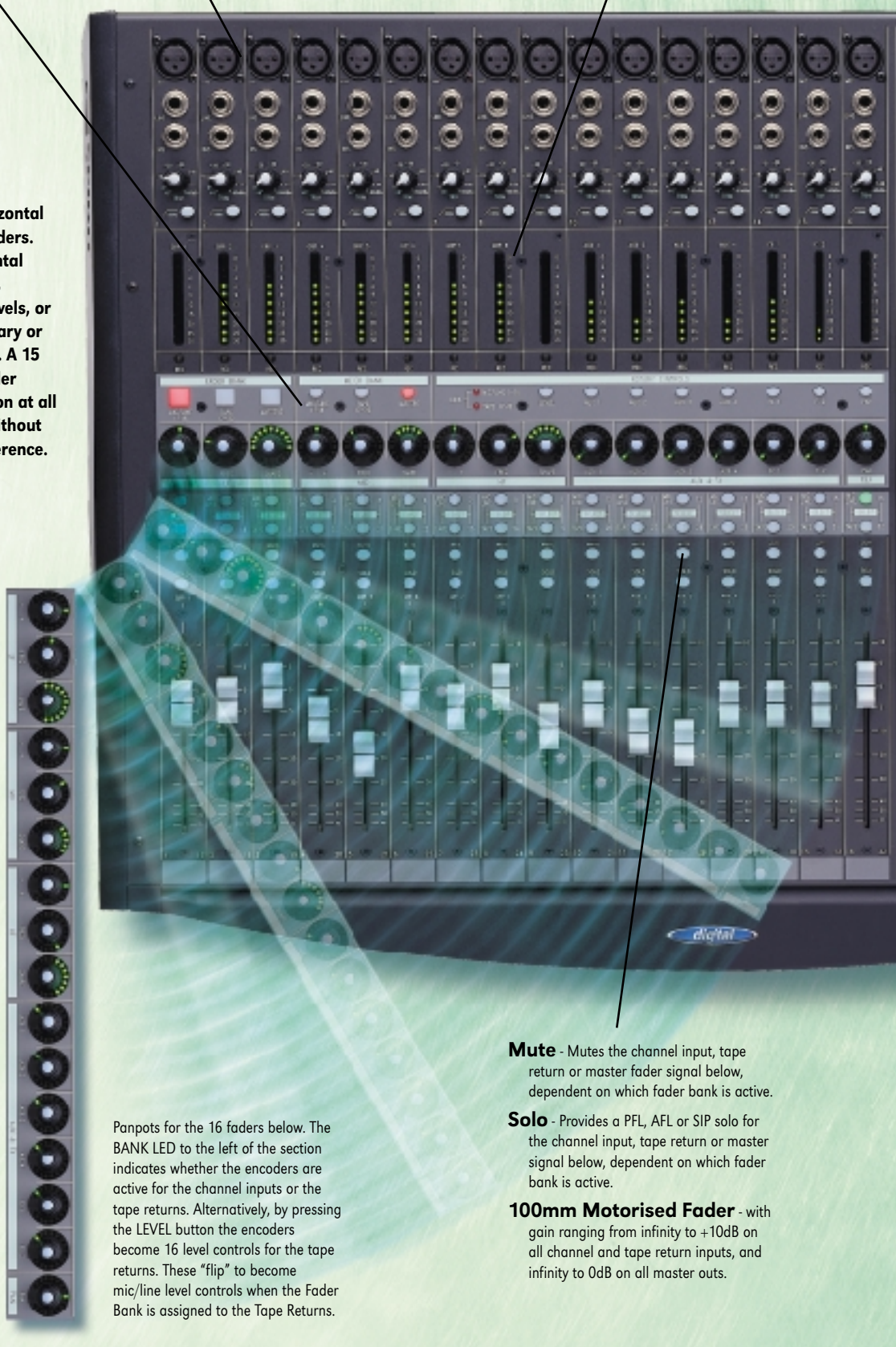
Fader Bank - 328's 16 faders are configured to provide level control for any one of three banks: You may swap between Mic/Line inputs 1-16, Tape Return inputs 17-32, and Masters (Groups 1-8, Aux 1-4 and Lexicon FX 1 and 2). This means that in 3 button presses it is possible to see level status of the entire console.

Meter Bank - Three backlit buttons allow you to select between viewing Mic/Line, Tape Return and Master levels. Alternatively, you can set the meters to follow the fader bank you have selected via 328's LCD menu.

Analogue Inputs - Every one of 328's 16 analogue input channels includes a balanced XLR connector for microphones, a balanced 1/4" jack line input for electronic instruments and a TRS insert point so you have the choice of connecting your favourite analogue or valve processor into the signal path.

Input Gain Section - Digital 328 benefits from Spirit's trademarked UltraMic+ preamps. These offer 28dBU of headroom and 66dB of gain range without the need for a pad. A steep 18dB per Octave High Pass Filter follows the gain control allowing you to minimise low frequency muddiness.

Meters - 10 segment peak reading LED meters allow you to see channel input, tape return or master levels in an instant. Each meter is also "peak hold" giving you clearer identification of signals that may potentially digitally "clip". The "rec" LED below flashes when a channel has been armed for recording to a multitrack device.



The E-strip

The key to 328's operation is this horizontal row of 16 multifunctional rotary Encoders. These may operate as either a horizontal "channel strip" for any selected input, indicating its EQ, Pan and Auxiliary levels, or as a single function row of Pan, Auxiliary or Level controls for inputs 1-16 or 17-32. A 15 segment LED ring around every encoder provides visual indication of its position at all times, meaning you can edit swiftly without having to rely on LCD displays for reference.

Select - Pressing any Channel or Tape Return select switch activates the E-Strip for that input, giving you full access to its EQ, Auxiliary Sends, internal Effects and Pan, as a horizontal channel strip. This strip offers the same facilities for every channel, tape return or stereo input on the console:

3 band fully parametric EQ - HF – Sweeping/shelving 1kHz-20kHz ±15dB, Q = 0.3-3.0, Mid – Sweeping 200Hz-8kHz ±15dB, Q = 0.3-3.0 LF – Sweeping/shelving 40Hz-800Hz ±15dB, Q = 0.3-3.0

4 External Post-EQ Auxes - Individually configurable pre/post fader from the master section. The Aux outputs may be analogue or digital, selectable from either the AES/EBU outs, the SPDIF outs or the third ADAT optical out.

2 Internal Post-EQ Lexicon Effects Sends - Selectable pre-/post-fader from the master section.

1 Pan Control - (Balance Control for the Stereo Inputs).

All channel settings may be **COPIED AND PASTED** from one channel to another by holding down the SELECT button of the channel you want to be copied whilst selecting the destination channel by pressing its SELECT switch.

Rotary Controls - Pressing any one of the backlit buttons in this section changes the function of the E-Strip from being a horizontal Input Channel to a row of Aux Sends, FX Sends or

Panpots for the 16 faders below. The BANK LED to the left of the section indicates whether the encoders are active for the channel inputs or the tape returns. Alternatively, by pressing the LEVEL button the encoders become 16 level controls for the tape returns. These "flip" to become mic/line level controls when the Fader Bank is assigned to the Tape Returns.

Mute - Mutes the channel input, tape return or master fader signal below, dependent on which fader bank is active.

Solo - Provides a PFL, AFL or SIP solo for the channel input, tape return or master signal below, dependent on which fader bank is active.

100mm Motorised Fader - with gain ranging from infinity to +10dB on all channel and tape return inputs, and infinity to 0dB on all master outs.

Group/Master Section

Control Room/Phones - 328's monitor outputs are on two 1/4" jacks, with a separate 1/4" jack available for headphones. Two separate gain controls allow you to control monitor output and headphone output levels individually. In addition, the control output may be cut entirely, dimmed by 6dB, or switched to be a mono signal if required.

2 Track Returns - Two analogue 2 Track Returns are available as pairs of impedance-balanced 1/4" jacks, allowing you to switch between two master recordings at final mixdown using the 2TK A/B button.

Auxiliary Outputs - 4 impedance-balanced 1/4" jacks which may be used as analogue effects sends, or as monitor or foldback sends.

Phantom Power - Providing global +48V Phantom Power for Condenser Microphones. The adjacent LED lights when +48V is active.

Power Indication LEDs - All three LEDs light to indicate that 328 has powered up correctly.

Mix Outs - Two pairs of analogue mix outs are available either as balanced male XLRs or as unbalanced RCA phonos.



Mix Meters - Two 15 segment LED meters show either Mix output levels or, if the DYN button is pressed, gain reduction levels for Dynamics 1 and 2.

Stereo Inputs - Two stereo inputs are available. Stereo 1 is configured as a 4 into 2 stereo submixer, accessed by 4 pairs of balanced 1/4" jacks. Stereo 2 is a straight stereo input accessed by a pair of balanced 1/4" jacks. Each Input has its own analogue gain control with Ste 1 and 2 master levels governed by two rotary controls below the master meters. Selecting either master gives it access to all EQ and auxiliary facilities via the E-strip. Either master may also be soloed or muted and routed to the groups or mix.

FX Returns - Two internal Effects Returns are provided on encoders for use with the onboard Lexicon Effects units. Selecting either gives them access to the E-Strip, allowing you to apply 3-band parametric EQ, or any of the 4 auxiliary sends. They may also be routed to any group or mix.

Group/Aux/FX - Holding down the Aux/FX Pre Button allows you to select any aux or FX bus to be pre- or post-fader via the aux buttons in the rotaries section, whilst any group my be assigned to mix by holding down the Group to Mix Button.

100mm Motorised Fader - Controls the mix output signal.

Transport Bar - 328 reads all SMPTE frame rates and reads and writes MTC with a large display showing your timecode position. You may control a wide range of multitrack recording devices via the transport bar below, with two store and locate points, allowing you to move between different locations in your song.

LCD Section

The LCD section takes care of offline editing and desk configuration procedures, as well as providing access to the console's snapshot facility and dynamics and effects sections, Any one of 4 modes may be selected:

Select - When SELECT is active, the LCD display indicates levels and assignments for the E-Strip encoder you are altering, for example aux send level in dB, EQ frequency points in Hz and kHz, or EQ cut/boost in dB. In this way, the LCD provides an accurate numeric reference in addition to the encoder's LED ring position.





Snapshot - accessing SNAPSHOT allows you to select any of 328's 100 snapshots for recall or editing. Each snapshot may be named and given its own timecode position in this menu. Every desk parameter except channel gain and HPF filter assignments may be stored, including effects and dynamics settings.

Dyn/FX - Entering DYN/FX allows you to assign either of 328's two floating dynamics processors to a channel, group or master signal, select the type of dynamic processor you want and edit its parameters. A choice of compression, limiting and gating is possible along with various combinations of these effects.



This section also allows you to select and edit an effect from one of 328's internal Lexicon Effects units. 128 factory presets are available from each along with 128 user definable locations. Selections include reverbs, plates, choruses, delays and gates. Up to 10 parameters are editable for each effect.



Menu - Allows you to select desk set-up functions such as wordclock source, digital sampling rate, multitrack tape machine select, dynamic or snapshot automation options, digital tape trim levels and MIDI dump of snapshot and effects settings.

Function/Cursor Keys - Four arrow keys and a rotary control allow you to navigate the LCD screen.

Undo/Redo - Allows you to Undo (and Redo) any edits made to a selected input, returning it to its original status when it was first selected. In this way you can A/B test an EQ'd signal or perform channel diagnostics with just one button press.

Enter/Exit - these buttons allow you to get into and out of the LCD menus.

Snapshots - Pressing STORE allows you to save 328's current status as one of 100 scenes. These scenes may then be selected via the LCD display and recalled via the RECALL switch. NEXT allows you to scroll through and recall the scenes manually from 1-100 in a theatre or install application.

Solo Control - Allows you to select between SIP, PFL or AFL solos, with Clear also available for SIP.

Select - Works in conjunction with any input SELECT switch to provide swift and intuitive routing and assignment. From here any selected mic/line or tape return input may be routed to the 8 groups or Mix, or alternatively phase reversed, SIP safed, record armed, muted, solo'd, be selected as a direct out feed or have its EQ bypassed. You can instantly assign multiple channels to any select function too, simply by holding down that function switch and pressing SELECT for the channels you wish to be active.

Rear Panel Connections & Functions

Power On/Off Switch

Mains Supply Connector - 328 has an internal power supply, so all you need to do is connect it to the mains.

Mains Fuse Ground

Timecode Input - A 1/4" jack allows 328's snapshots and timecode display to lock to an external timecode source.

RS422 Port - For downloading software upgrades off Spirit's website into 328 via a PC. This port is also used for machine control and synchronisation of machines supporting the Sony 9-pin protocol.

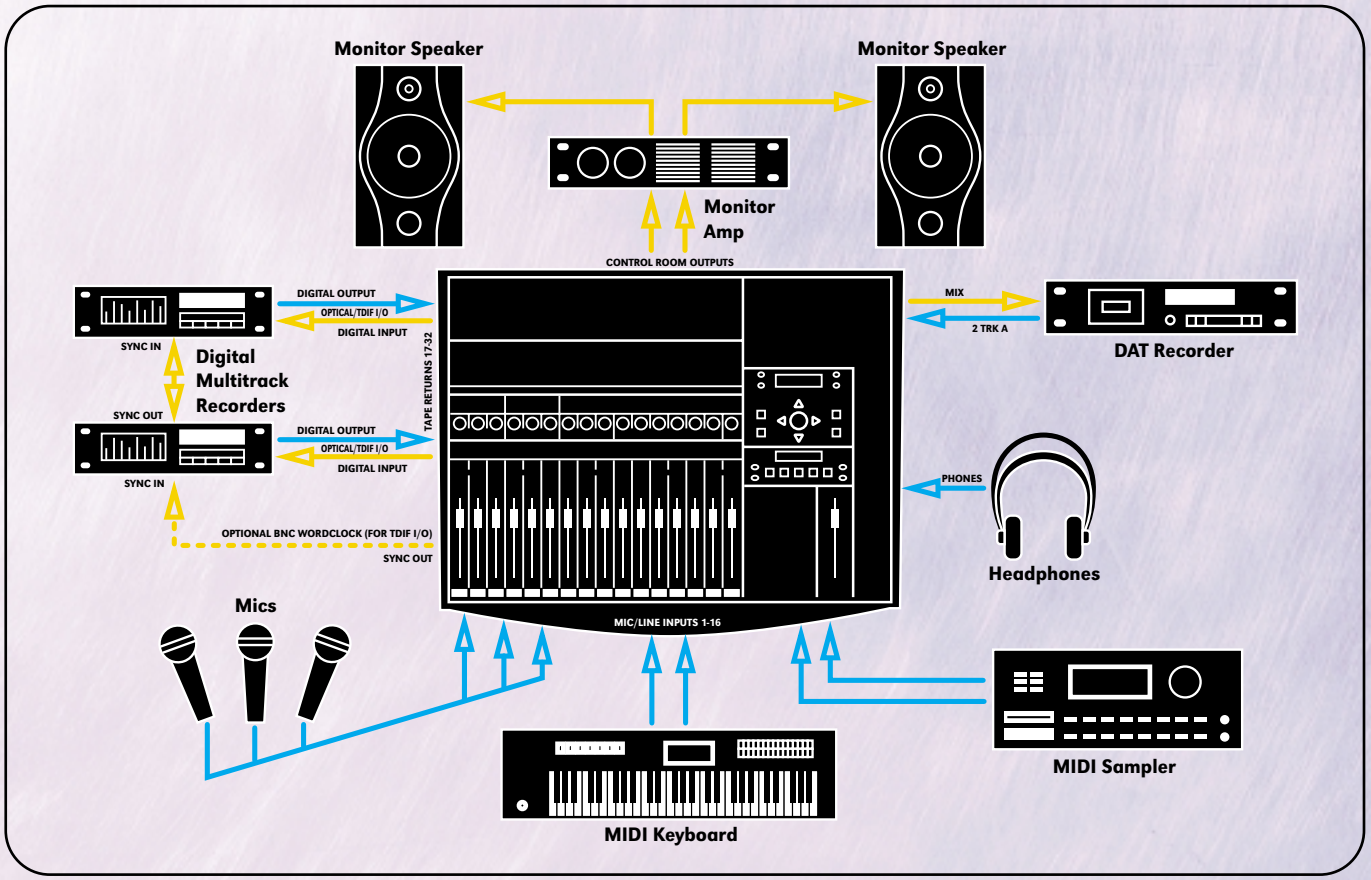
MIDI Ports - For synching to external equipment or for sending and receiving dynamic automation messages to and from a sequencer package, MMC messages to and from a tape machine, and dumping 328 snapshot and effects setting data to a MIDI device.

Wordclock I/O - Two BNC connectors for synchronising 328's data with external digital devices.

SPDIF Digital I/O - A floating Digital Stereo Input and Output which may be assigned to replace a variety of different analogue connections via the menu function. Options include: Stereo Inputs 1 or 2, Aux Outs 1, 2, 3 or 4, the Mix Outs and Tape Returns.



Recording



AES/EBU Digital I/O - Another floating Digital Stereo Input and Output with the same configuration options as the SPDIF I/O.

Auxiliary Optical Out - The 3rd ADAT optical output may be configured as a digital auxiliary output for an effects unit, replacing any one of the 4 analogue aux outs. Alternatively, it may be configured as 8 digital group outputs.

Link - Allows you to cascade two 328s together with the right hand console acting as the master. All group and mix bussing is summed in this case but console dynamics and internal effects remain separate.

ADAT Digital Optical I/O - Two ADAT optical I/O interfaces allow you to record to and replay from any ADAT compatible device entirely in the digital domain. Up to 16 digital sends and returns are supported.

Tascam TDIF Digital I/O - Two TDIF connectors allow you to record and playback up 16 tracks digitally to and from a Tascam multitrack device.

Options

Mac or PC Download Cable - to download 328 software upgrades from Spirit's website.

Cascade Cable - Allowing you to link two Digital 328s together.

Add-On Modules

3 different types of module may be connected to 328 via its 2 TDIF ports, providing a choice of format conversions.

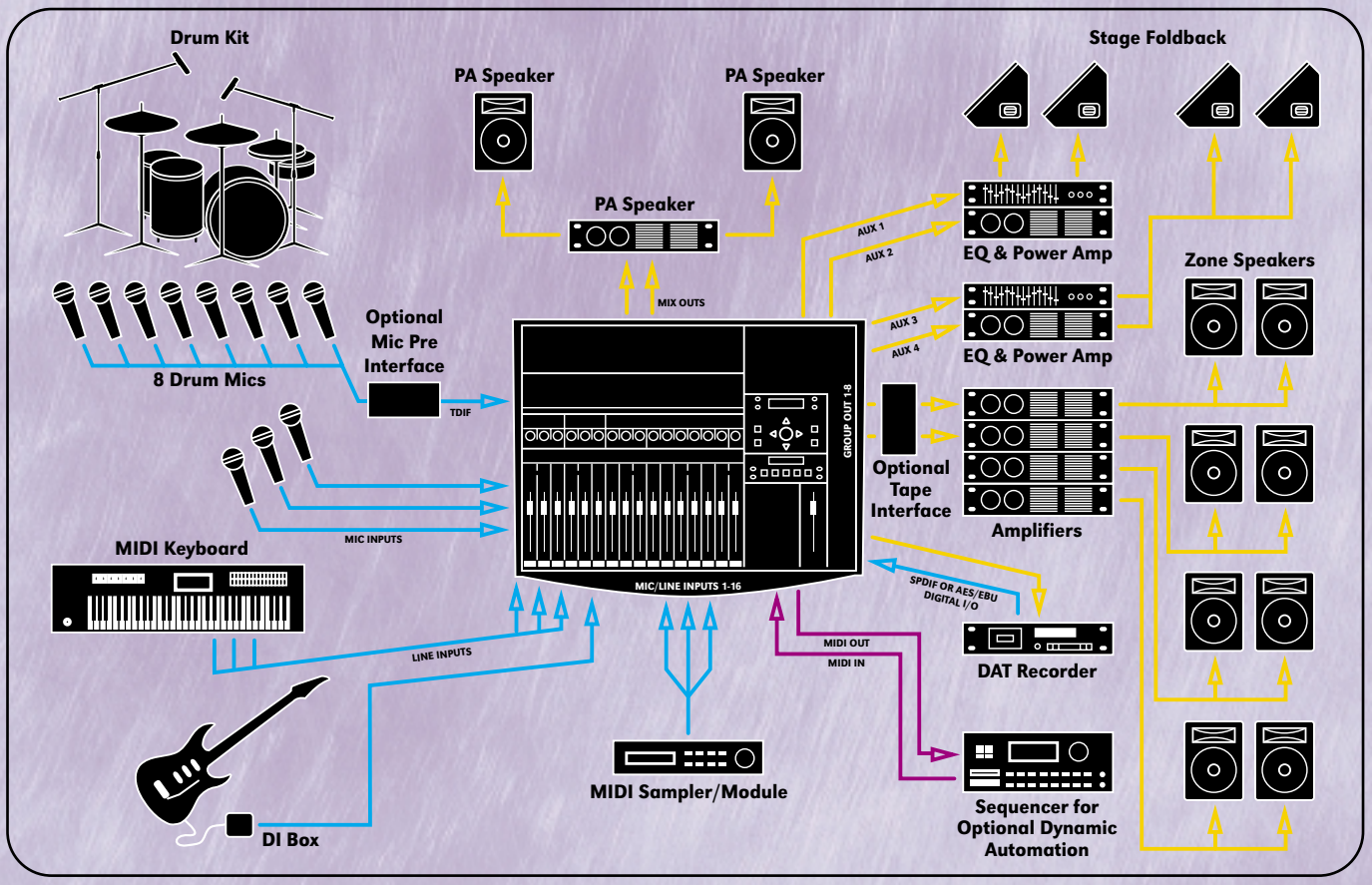
Analogue Tape Interface - TDIF to 8 analogue phono ins and outs, converting your tape sends and returns to the analogue domain.

AES/EBU Interface - TDIF to 4 XLR inputs and 4 XLR outputs allowing 8 digital sends and returns in the AES/EBU format.

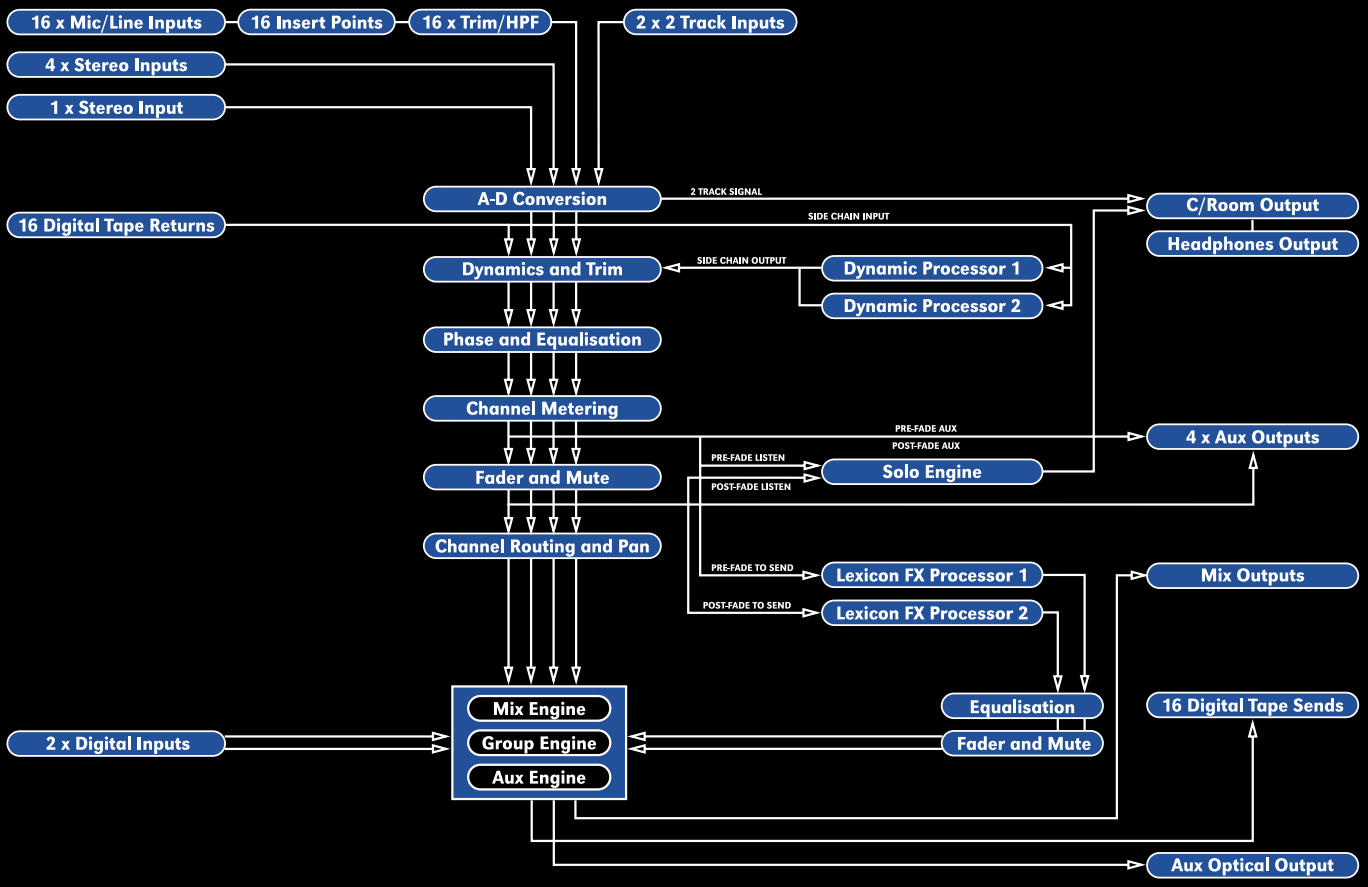
Mic Preamp Interface - TDIF to 8 XLR inputs with insert, gain control, High Pass Filter and Phase switches, plus 8 outputs on 1/4" jacks. Two of these modules allow 328 to be used as a 32 mic pre/8/2 install console.



Installation



Signal Flow Diagram



Frequency Response	
@4dB into 600Ω (20Hz to 20kHz - Rel 1kHz)	+0/-0.5dB
Dynamic Range	
Digital Input to Mix Output	115dB
Mic Input to Mix Output	108dB
Stereo Input to Mix Output	108dB
Total Harmonic Distortion	
Mic In to Mix Out, 1kHz @ 30dB gain, +14dBu output	<0.005%
Hum & Noise	
Mic Equivalent Input Noise	-127dBu (150Ω source)
Residual Output Noise (measured RMS over 20Hz-22kHz bandwidth)	
Mix Output with Mix Fader down	-90dBu
Mix Output with Mix Fader @ Unity and all Input Channel Faders down	-90dBu
Mix Output with Mix Fader @ Unity and 32 Input Channel routed with faders @ Unity, Pans centred	-78dBu
Common Mode Rejection Ratio	
Typical with max gain @ 1kHz	>80dB
Typical with any gain @ 50Hz	>70dB

Crosstalk	
Between Adjacent Input Channels	>95dB
Fader Attenuation	>95dB
Channel Mute Attenuation	>95dB
Pan Isolation	>88dB
Sampling Frequency	
Internal	44.1kHz/48kHz
External	40kHz-50kHz
Analogue to Digital Conversion	
Mic/Line Inputs	24-bit, 128 x oversampling
Stereo Inputs	24-bit, 128 x oversampling
2 Track Inputs	24-bit, 128 x oversampling
Digital to Analogue Conversion	
Mix Outputs	24-bit, 128 x oversampling
Control Room Outputs	24-bit, 128 x oversampling
Aux Outputs	24-bit, 128 x oversampling
Internal Processing	24-bit, 56-bit bussing

Signal Latency	
Channel Input to Mix Output @ 44.1kHz	<2.5ms
Channel Input to Mix Output @ 48kHz	<2.5ms
Faders	
Type	100mm motorised and stabilised
Resolution	128 steps over 100mm range
Digital Output Dither	
	wordlength 16, 20, 24-bit (on/off)
Power Consumption	
	150W
Weight	
	14.4kg / 32lb unpacked
Dimensions	
	160H x 715W x 537D mm
	6.3H x 28.2W x 21.2D inches

E&OE. Spirit by Soundcraft™ reserves the right to alter specifications without prior notice.

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