User Manual - Getting Started

To be read in conjunction with the SD Series Software Reference

User Manual Version D for Software Versions 4.0.680+

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Digico (UK) Ltd
Unit 10
Silverglade Business Park
Leatherhead Road
Chessington
Surrey
KT9 2QL
England
Telephone: +44 (0)1372 845600
Fax: +44 (0)1372 845656
Email: sales@digiconsoles.com
WWW: http://www.digiconsoles.com

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DiGiCo

1.1 The Console

The Digico SD7 consists of a worksurface with dual redundant audio engines and a range of onboard inputs and outputs. This can be connected to multiple Input/Output Rack Units by optical fibre and/or MADI links, which carry all the audio input and output signals.

The console worksurface consists of 3 sections that can be configured to control up to 254 input/output channels, up to 36 VCAs, 128 busses and 32 Matrix Inputs and Outputs.

The left and right sections have 12 assignable faders and 12 sets of assignable on-screen channel controls, the centre section has 24 assignable faders and 2 pairs of assignable master faders.

The console's buss architecture is dynamic, and can support mono, stereo, LCR, LCRS and 5.1 configurations.

Multiple console setups can provide:

Front of House and Monitoring with shared stage racks and gain tracking.

Remote control of one console from another console or from a laptop computer.

1.2 Manual Overview

This manual provides an overview of the desk, and describes some of the basic operating principles which the user will need to understand in order to run the desk.

For full details on all SD software functionality please refer to the SD Series Software Reference Manual available for download at www.digico.biz

The following typographical convention used in this manual: An arrow bracket (>) is used to indicate a sequence of button pressing. For example, **Layout** > **Fader Banks** indicates that the
Fader Banks button is accessed by first pressing the **Layout** button.

1.3 Before You Start

There are certain general operating principles and terms that should be understood before continuing to use this manual. Please read this chapter carefully before proceeding.

1.3.1 Worksurface Layout..

Left & Right Sections

Meter View Switch   Assignable Rotary Scrollers   ALT Input Switch

Input Gain and Phase

Rotary Resolution

High and Low Pass Filters

4 Band Dynamic Parametric EQ

2nd Function

Aux Scroll

Multiband Dynamics
Thresholds & On / Off

Option/All

Channel Inserts A & B On/Off
Direct Out On/Off

Assignable Rotaries and Switches
Aux / Pan / Dynamics/FX Controls

Dedicated Aux Rotaries

Joystick
Hard Mute & Full Safe
Channel Scroll & Undo/Redo

Mute and Interactive LCD
Function Button

Layer Switch

Channel Faders

Channel Fader Banks

Centre Section

Solo 1 & 2 Controls   Phones   Video & Talkback

A/B Engine Switch

Rotary Resolution

Dynamic Automation

Snapshot Controls

Monitoring Matrix

Screen Scroll

Macros

Channel Faders/Mutes &
Graphic EQ Controls
LCD Function Buttons

Fader Flip

Channel Fader Banks &
Assignable Master Faders

Channel Faders/Mutes &
LCD Function Buttons

Channel Fader Banks &
Assignable Master Faders

DiGiCo

1.3.2 Layers and Banks ....

The SD7's worksurface is divided into Layers and Banks. Each Bank contains twelve channels, and the channels which are currently active on the control surface are defined using the **fader bank** and **bank layer** buttons to the right of the Channel Strip section's faders:

A 'bank' is a set of twelve faders, and a 'layer' contains up to six 'banks'. There are up to 3 'layers' in each section of the desk, allowing up to 216 channels to be accessible on each worksurface section.

Pressing the **bank layer** button, located above the **fader bank** buttons, toggles between layers.

To access a bank of faders within that layer, press the appropriate **fader bank** button. To switch all three sections of the console to the same bank level, press and hold one of the **fader bank** buttons.

The specific channels which are contained within each Bank is defined in the **Layout** > **Fader Banks** display. By default, the Input channels will be assigned to Layer 1 on the left and right sections of the console. The different output channels will be assigned to Layer 2 and also to the upper centre section. Control Groups will be assigned to the lower centre section. These bank assignments can be customised by the user and saved in a session at any time. Holding any bank or layer button down for a couple of seconds will switch all 3 worksurface sections to the same bank level or layer.

1.3.3 Using the Control Surface ....

There are two main ways in which all of the functions of the SD7 are accessed:

1. The touchscreen display, which can be controlled directly using a finger, or by using the keyboard and mouse
2. The physical encoders, switches and faders.

Note that when touching the screen directly, you may find it easier to use a finer point than your finger. However, in order to prevent damage to the screen, it is important that you only use devices specifically designed for touching screens (such as a pda stylus), and that you never press down hard on the screen.

A number of functions can be accessed in different ways, allowing users to operate the console using whichever interface they prefer. This manual will describe accessing on-screen functions by touching the screen directly and not by using the mouse.

All of the physical controls found in the centre section are described in full within the relevant section of the manual and many require no further introduction.

The Master screen has a row of grey buttons across the top, which are used to access a range of configuration displays. Pressing these buttons opens either a further drop-down sub-menu or a pop-up display. If a drop-down menu is opened, pressing on one of its entries will open a pop-up display. The buttons lighten to indicate that their sub-menu or pop-up display is open. A number of the buttons within each pop-up display generate further pop-ups.

Generallly, buttons within the pop-ups are coloured grey when their function is inactive, switching to a colour when their function is active. Pressing on a text box opens a numeric or QWERTY keypad which can be operated directly by pressing the screen or via the console's external keyboard.

Pop-ups are closed by pressing the box in the top right-hand corner of the pop-up, marked **CLOSE** or **CANCEL** (or by pressing **CAN** on keypad pop-ups).

To the right of the Master Panel is a single encoder marked Touch-Turn (shown below). This is used to access any rotary controls within the Master Panel. To assign the Touch-Turn encoder to a particular on-screen pot, touch the pot to be assigned. You will notice that a coloured ring appears around the on-screen pot, indicating that it is assigned to the Touch-Turn encoder. The colour of this ring is unique to that control, and is also reflected in the base of the Touch-Turn encoder, providing further indication of which pot is currently assigned to it.

1.3.4 The Assigned Channel ....

One of the channels in the Channel Strip panel is displayed in gold, indicating that it is currently the Assigned Channel. This means that it has been assigned to the worksurface controls and can be configured in detail, as described below. To Assign a channel, touch anywhere in the channel on the screen except the Aux Send area of the input channels. Alternatively, use the **ch** left and right buttons at the bottom of the channel worksurface controls to scroll through the channels in the panel:


Note that these left and right arrows are duplicated in the channel Setup and Output displays.

Note also that the Channel List display provides another method for assigning a channel to the worksurface controls.

Once a channel is Assigned, all of the controls for that channel which are not displayed within the channel strip itself can be accessed via secondary pop-ups, displayed by touching inside the relevant area of the channel. These pop-ups include controls such as input and output routing and signal processing parameters.

A number of the physical rotary encoders on the control surface can be assigned to different on-screen pots. In order to ensure that it is clear which function is assigned to which encoder, the assigned on-screen pot will have a coloured ring around it which will be reflected in the colour of the light around the base of the encoder on the control surface.
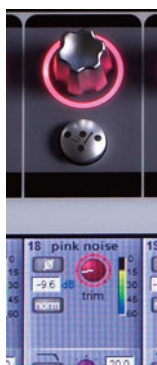
The twelve encoders and buttons immediately above the Channel Strip panel (shown above) refer to the channels with which they are aligned. These controls are concerned with the channel input, located at the top of the Channel Strip panel.

The three rows of encoders and buttons immediately below the Channel Strip also refer to the channels with which they are aligned. Normally, these control the level and on/off status of the three highlighted aux sends, but can have a number of functions assigned to them. Touching on an aux send on the screen will assign that aux and the ones immediately below it to the aux encoders. Six aux sends can be displayed in the Channel Strip panel at any one time. If more than six aux sends have been created in the session, the scroll button outside the bottom left-hand corner of the screen can be used to scroll the display through the remaining auxiliaries:

The controls to the right of the Channel Strip panel allow the Assigned channel to be adjusted:

The top half of the channel worksurface controls (down as far as the **insert a, insert b** and **direct** buttons, as shown above) control the signal processing parameters which are displayed in the pop-ups accessed by touching in the appropriate section of the active channel. The bottom half of the channel worksurface controls is concerned with output routing.

To the left of the Channel Strip panel are more channel controls: When pressed, the **2nd function** button allows access to different parameters:

1) Stereo Aux Pan and Pre/Post switching
2) Hard Mute of a channel
3) Switching of LR or LCR panning
4) Fine adjustment of Delay settings on output channels

2nd function is indicated by a green **2nd Function** display appearing in the bottom left-hand corner of the screen, as well as by the **2nd function** button lighting with a ring of green.

The **Option/All** button has 2 main functions:

1) When pressed and released, any channel that is a member of a gang will be temporarily isolated from that gang.
2) When pressed and held, any parameter that is adjusted on a single channel will also be adjusted in the same way on all of the channels in that bank

1.3.5 The Master Fader ....

By default, the lower master faders are both assigned to the master group output, which is the lowest stereo group output by default. In addition, the master faders can be assigned to the solo buss outputs. The **ASSIGN FADERS** function can be used to assign any other function to these faders.

1.3.6 Channel Types ....

The SD7 has 4 different channel types which are laid out in banks of 12 on the console worksurface and can be identified by their colour.
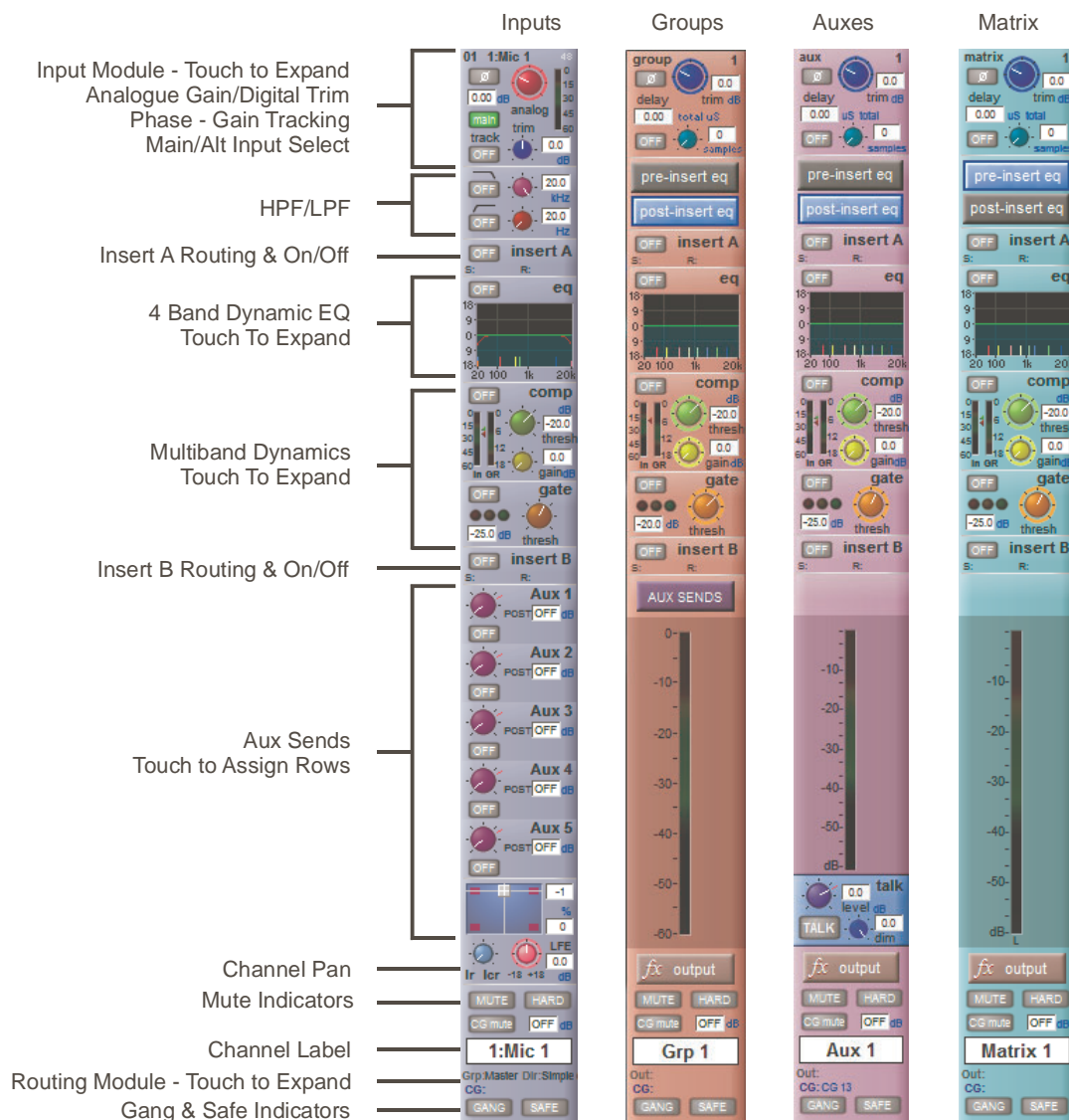
By default, the Input Channels will be assigned to Layer 1 on the left and right sections of the console.

The output channels (Groups, Auxes and Matrices) will be assigned to Layer 2 and also to the upper centre section.

Control Groups will be assigned to the lower centre section. These bank assignments can be customised by the user and saved in a session at any time.

Holding any bank or layer button down for a couple of seconds will switch all 3 worksurface sections to the same bank level or layer.

The controls on each different type of output channel are identical but an input channel has a number of additional features.

	Inputs	Groups	Auxes	Matrix
Input Module - Touch to Expand Analogue Gain/Digital Trim Phase - Gain Tracking Main/Alt Input Select				
HPF/LPF				
Insert A Routing & On/Off				
4 Band Dynamic EQ Touch To Expand				
Multiband Dynamics Touch To Expand				
Insert B Routing & On/Off				
Aux Sends Touch to Assign Rows				
Channel Pan				
Mute Indicators				
Channel Label				
Routing Module - Touch to Expand				
Gang & Safe Indicators				

1.4 Hardware Configuration

1.4.1 Connections ....

Detailed information on the various systems of connection is provided in the relevant Appendix but the following diagram provides an overview of a single console/ rack setup.

CONNECTION WITH MADI

CONNECTION WITH OPTICAL FIBRE
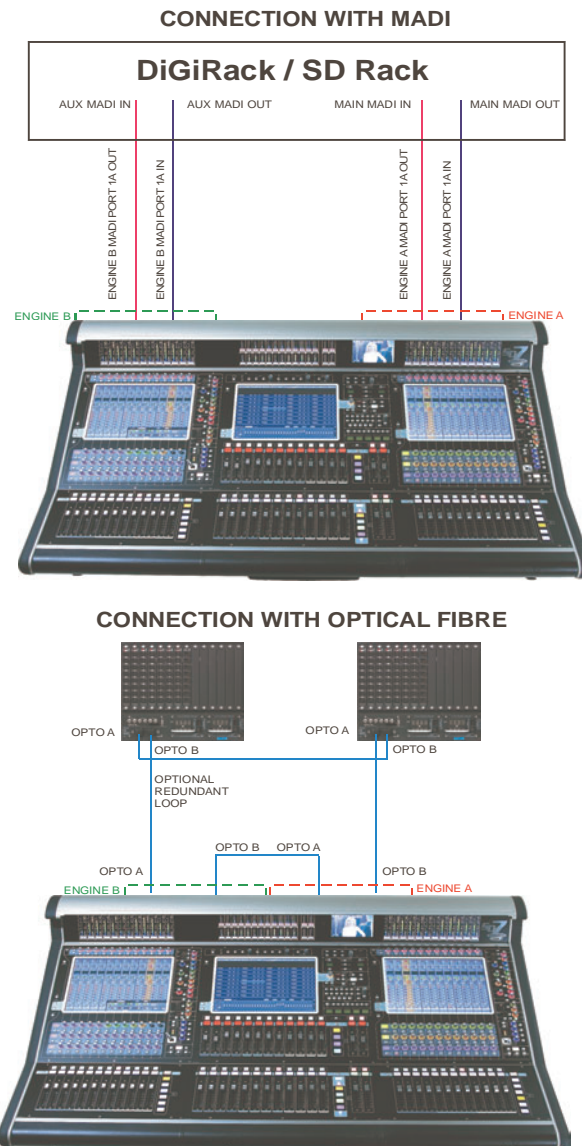
All connections should be made before switching on the console and racks.

The console and rack each have dual redundant power supplies and both should be switched on at all times. After switching on the console the software will be launched automatically and the state of the worksurface and settings should be the same as when it was last Shut Down.

To Shut Down the console press the **System>Shut Down** button and wait until you receive a message saying that it is safe to switch the power off.

The SD7 worksurface has 12 analogue I/O and 12 AES I/O on its rear panel (referred to as Local I/O) and additional I/O is supplied in the form of remote Racks which can each accommodate up to 56 inputs and 56 outputs in different formats. These racks are connected to the worksurface by either 100M high specification 75 Ohm coaxial cables fitted with BNC connectors or optical fibre. The Racks have two pairs of MADI connectors - Main MADI IN & OUT and AUX MADI IN & OUT.

In normal operation the MADI connections should be as follows (see diagram above):

Rack MAIN MADI IN connected to the console MADI 1A OUT

Rack MAIN MADI OUT connected to the console MADI 1A IN

> *Note - Optionally, a second set of MADI cables can be connected to provide MADI redundancy from the rack's AUX MADI ports to the console's MADI 1B ports*

The console's other MADI Ports can be connected to a MADI recorder (See **Audio I/O Panel** for setup details) or a second DiGiCo Rack or console.

1.5 Software Configuration

The SD7 has a default setup which means that the new user need not get involved in configuring the desk at this stage. However, here is a brief overview of how the different displays are used in putting together a session. Each of the master displays introduced below are described fully within the rest of the manual.

The **Files** > **Templates** display is used for loading pre-configured session templates.
The **Files** > **Session Structure** display is used for configuring how the console's the audio channels are to be divided between channel types, and where the format of the channels is defined
The **Session Structure** display can be used to automatically assign the channels to the worksurface. However, channels can also be manually added to the worksurface using the **Layout** > **Channel Faders** display.
The **Setup** > **Audio IO** display is used to configure the physical I/O connected to the SD7, including configuring and naming the sockets of the option cards installed in racks, and the setting of pads and phantom power.

1.5.1 Templates ....

If any templates have been created, they provide an easy starting point for sessions which are already customised to your context. To load a session template, open the **Session Templates** display by selecting the **Templates** option at the top of the **Files** menu. Now touch the template you wish to load from the list shown, and press **OK**.

1.5.2 Session Structure Overview ....

When starting a new session from scratch, it is important to decide how many of each type of channel is required. While changes to session structure can be made once a session has been started, it is best to try and set these parameters before configuring the session. The structure will set items such as the number of input channels, the number and type of aux channels, group channels and matrix channels available.

Begin by setting the sample rate and maximum buss number at the top of the panel. There are a total of 254 processing channels available, up to 128 of which can be busses (output channels). Reducing the maximum buss number (available to 96kHz sessions only) reserves a greater number of processing channels for use as input channels.

Channel resources can be split into input or output channels in almost any configuration. The default configuration is :
72 input channels (Input channel formats are defined within each channel, not within the Session Structure)
6 Mono Aux busses & 6 Stereo Aux busses
6 Mono Group busses & 6 Stereo Group busses
16 Matrix Inputs and 12 Matrix Outputs
24 Control Groups

> *Note that a Talkback channel is also assigned to the control surface, though it isn't configurable within the Session Structure and is therefore not displayed there.*

To adjust any of the channel allocations, touch on the associated channel count box, and either enter a number using the pop-up number keypad, or adjust using the assigned touchturn controller.

It is worth remembering that each output (buss) allocated also uses up one of your processing channels. So if, for example, you were to allocate the maximum amount of busses, this would leave you with less input channels available.

Clear All Buttons : When changing routing, you have the option of clearing any non-default routing or processing (EQ, dynamics etc) from the channels in the session. This is especially useful when restructuring an existing session to make a new session. The other '**clear**' buttons in the display perform similar operations.

Aux Sends and Direct Sends : By toggling the state of the **Aux Sends** and **Direct Sends** Buttons in the **Input Channels** section, it is possible to change the default operation of the Aux Sends and Direct Sends. These functions toggle between "Post Fader", "Pre-Fader" and "Pre-Mute".

Aux Order and Group Order : The Aux Order and Group Order buttons open a second window, providing you with the ability to change the order of auxes and groups. By default, mono busses come first, followed by stereo busses. The Master buss is the first stereo buss, regardless of the order you place the busses in.

Auto-Route : The Auto-route functions automatically routes consecutive inputs for input channels, and consecutive outputs for busses. For example, auto-routing 72 inputs will route the first physical input (eg 1:Mic 1) to input channel 1, the second physical input (1:Mic 2) to input channel 2… until you either run out of inputs or channels. Auto-routes are as follows :

Input Channels auto-route with physical inputs

Aux, Group and Matrix Channels auto route to physical outputs

Matrix Inputs auto-route with group outputs

NOTE : Auto-Routing can only be used in conjunction with the "Clear All" button.

Rebuild Banks : When changing the number of allocated channels in any section (input channels, busses etc), you can restructure the session without rebuilding banks, meaning that any additional channels you have allocated will not be "placed" on the worksurface, and need to be manually assigned to faders. If however, you restructure a session with **Rebuild Banks** (either **Horizontally** or **Vertically**) enabled, the worksurface will be built with all channels available on the worksurface in a default layout. Rebuilding horizontally will result in input channels being spread accross the top layer of both sides of the console, using as many banks as required, with output channels being assigned to Layer 2. Rebuilding vertically will result in input channels being assigned to Layer 1 on the left side of the console, and output channels to Layer 1 on the right.

1.5.3 Audio I/O Overview ....

The Audio I/O window is used to configure the physical I/O connected to the SD7, including configuring and naming the sockets of the option cards installed in racks, and the setting of Pads and phantom power.

Local I/O : The SD7 provides local audio I/O via 3 cards installed in the rear of the console. These operate independently of connected racks, providing additional audio I/O.

To access the SD7 Audio I/O Setup Touch "Setup" on the Master Screen, followed by "Audio I/O"

The Audio I/O window that opens is divided up into the following sections:
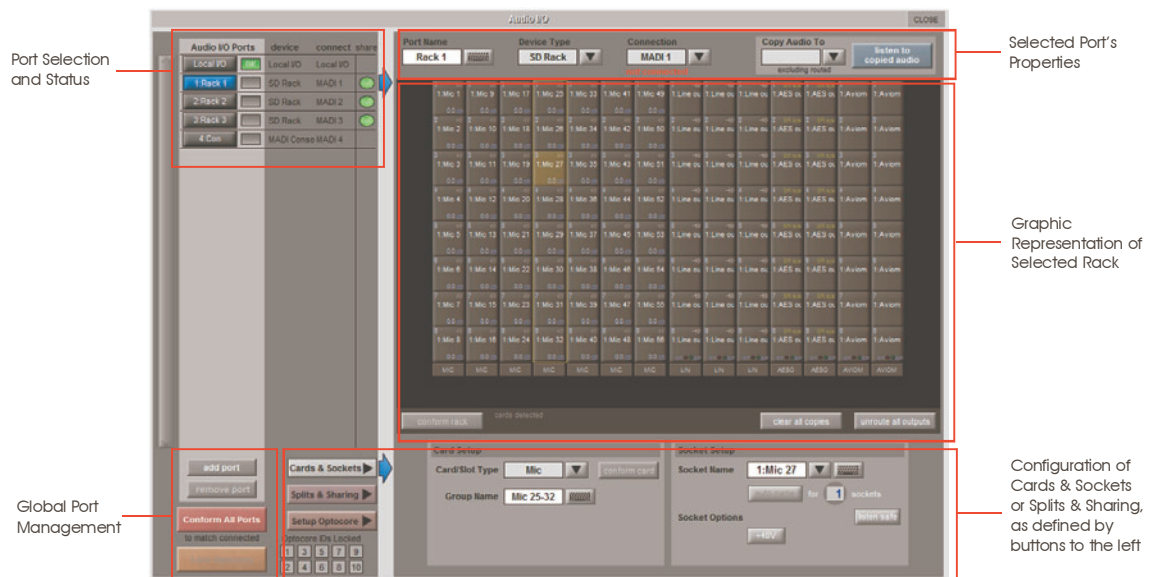
The top-left corner of the window shows the ports. Each port relates to an available physical audio connection (Local IO, IO Rack, or MADI Port). Ports can be added and removed using the buttons towards the bottom-left corner of the window.

The top-right area contains the controls relating to specific ports. When a port is selected, this section changes to reflect the status of the selected port, and allows its configuration to be changed as required.

Most of the right-hand section of the panel consists of a graphical representation of the rack configuration connected to the selected port. Depending on the port selected, the graphic will change, showing the available physical I/O. Each small "square" on the image represents a single physical audio connection or socket, with these arranged in columns or rows, representing I/O cards in racks, or the local I/O on the back of the console.

The section below the graphical rack picture allows configuration of either the cards or slots and sockets (including custom naming, phantom power and pad selection), or card splits and control sharing. The **Cards & Sockets** and **Splits & Sharing** buttons define which elements are displayed for configuration.

The local I/O configuration is fixed, so no hardware changes are possible. You can, however, change the Port Name, the Group Names (relating to name of each physical card) and the Socket Names (the name of each physical connector on a card).

1.5.4 Opto V220 (DiGiRacks) and Opto V221 (SD Racks) ....

SD Series consoles can operate with either one of two different Optocore firmware versions - V220 and V221.

V220 is compatible with DiGiRacks and MiNiRacks and cannot be used with SD Racks or DRacks.

V221 is compatible with SD Racks, SD MiNiRacks, NaNoRacks and DRacks, and cannot be used with DiGiRacks and MiNiRacks.

Note: Any type of rack can be used with an SD Series console if it is connected with Coaxial BNC MADI irrespective of the Optocore version that the console is using.

Sessions that have been created using Optocore connected DiGiRacks and MiNiRacks can be used with SD Racks and DRacks but a procedure must be followed to acheive this.

Sessions created using Optocore connected SD Racks and DRacks can also be used with DiGiRacks and MiNiRacks but this also involves a "conversion" procedure.

Note: For detailed information on Optocore system setup please refer to the user manual appendix - DiGiCo Optocore V221 - For SD Rack Optocore Operation

1.5.5 Automatic Conforming ....

Once all hardware is connected, go to System/Diagnostics/Optocore. This will list all connected Optocore devices either SDeng (console engines) to SDrack (SD Rack or D Rack) by ID. If any expected devices are not listed, please check all physical connections, Optocore ID's and Fibre Speeds. Once all devices are present, close the Diagnostics panel.

Irrespective of the type of rack being used, the system needs to be conformed. This involves the console checking the type of racks connected and their I/O capability

There are three levels of automatic conforming:

- globally, using the red Conform All Ports button in the bottom left of the window;

- on a rack-by-rack basis, using the **conform rack** button just below the rack view section of the window;

- on a card-by-card basis, by selecting a socket from the card in the graphical display and using the **conform card** button next to the Card/Slot type button selector in the lower section of the window. (Note that the **Cards & Sockets** button towards the bottom-left should be selected)

Pressing any of these buttons will correctly select the card types for the range in question. Once complete, all of the Card Labels beneath each slot should turn green.

1.5.6 Network & Mirroring ....

The SD7 console is fitted with two separate Engines, and as such, offers built in redundancy. In order to take advantage of this redundancy, you need to verify the console networking is working, and synchronise your session between the two Engines.

Before the Engines can be mirrored, you should ensure that a standard cross-over network (Ethernet) cable is connected between the two Engines. Without this connection, the two Engines will not "talk" to each other.

To open the Network window, touch the **Network** button at the top of the Master Screen.
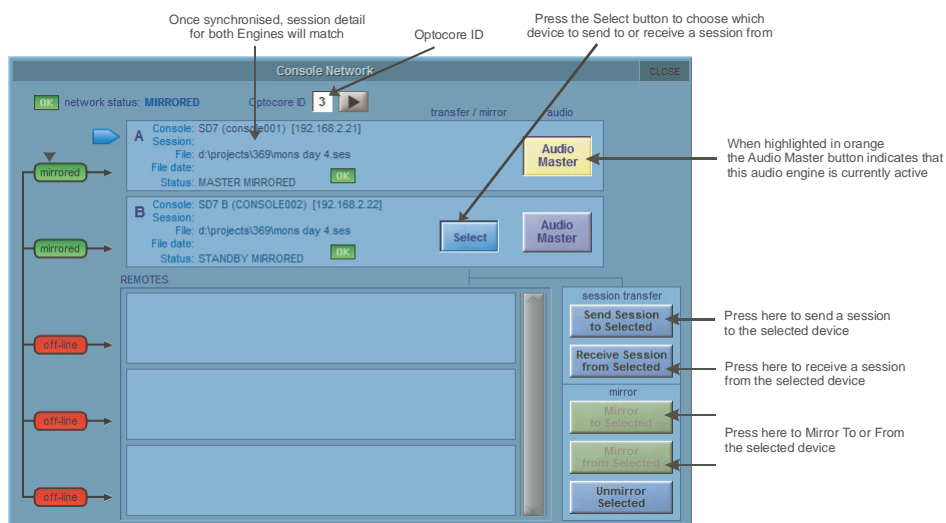
As mentioned earlier in this chapter, if your console is equipped with Optocore connections, please check the Optocore IDs of the engines before proceeding. Each console engine should have a unique Opto ID within the system

The Optocore ID is set at the top of the on screen Network panel and should be as follows:

For Optocore V220:

First console A Engine = OPTO ID 0 - This engine can output to Optocore racks

First console B Engine = OPTO ID 1 - This engine can output to Optocore racks

Second console A Engine = OPTO ID 2 - This engine cannot output to Optocore racks

Second console B Engine = OPTO ID 3 - This engine cannot output to Optocore racks

For Optocore V221:

SD7 console engines are numbered in pairs eg 1&2 or 3&4 and up to 5 pairs (5 x SD7 consoles) can be connected at the same time.

Consoles with single engines should be numbered either 1, 3, 5, 7, or 9.

Mirroring for the first time

The **ENGINE A/B** switch at the top of the centre worksurface will switch the entire worksurface from one engine's control computer to another. It will not (by default) switch the audio processing from one engine to the other. This is achieved by pressing the relevant **Audio Master** button in the network window on either engine. When the button is orange, the engine is active.

There is an option in **OPTIONS/SURFACE** tab that enables the switching of both control computer and audio mastership at the same time with the worksurface ENGINE A/B switch. When first configuring the system, we do not recommend running in this mode

If the consoles are connected together, but do not see each other, then you may need to enable Networking.

There is an option in the **OPTIONS/SESSION** tab to **ENABLE CONSOLE NETWORK** (YES/NO). This must be set to YES on both Engines. After doing this, shutdown and restart both engines and when the sessions are loaded go to the NETWORK window and you should see yellow OK lights against Engine A and Engine B. This indicates that the network has connected the two engines but they are not yet mirrored.

In order to mirror the two Engines, they need to be running the same session. The way to achieve this is to load the session into the A Engine, then transfer it to the B Engine using the Network panel buttons as follows:

1. Ensure you are switched to the A Engine.
2. Load your session into Engine A
3. Open the Network panel
4. Press the **Select** button for Engine B and then press the **Send Session To** button.

This will copy your current Engine A session and load it into the B Engine. Once this is done, the Engine B detail section will change to reflect the new loaded session. You can also check that this process is complete by switching the worksurface to the receiving engine (using the A/B switch) and waiting for the progress bar to indicate that the session has finished building.

You can now press the **Mirror To Selected** button. The Mirror displays will turn green, and the console is now mirrored. Audio Mastership can be switched between Engine A and Engine B using the **Audio Master** button and, assuming that the racks are correctly connected, you will not hear the switch of between the two Engines.

1.5.7 Single SD Console System ....

On an SD7, save your session, then open the Network panel, send the session to the second console engine and then mirror the two engines.

Go to Setup/Audio I/O. Press the Setup Optocore button and the Single Console button will be shown with a bright red background. Press this button, press Yes at the confirmation stage and the console will create ports for all connected racks, allocate all output cards to your console and create the Optocore map. The system is now ready to use.

Audio I/O Panel
Optocore Setup
Single Console
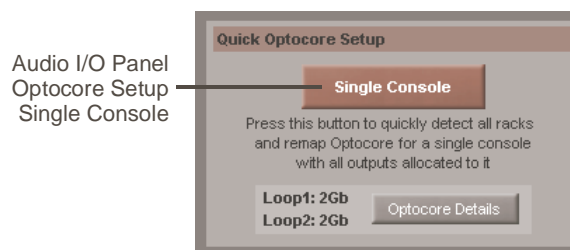
1.5.8 Manual Conforming of Racks...

With a Rack selected in the left hand port selection list, the window will look something like the image below, depending on the cards installed in the connected rack. The graphic shows the 14 available cards/slots, 7 input & 7 output.
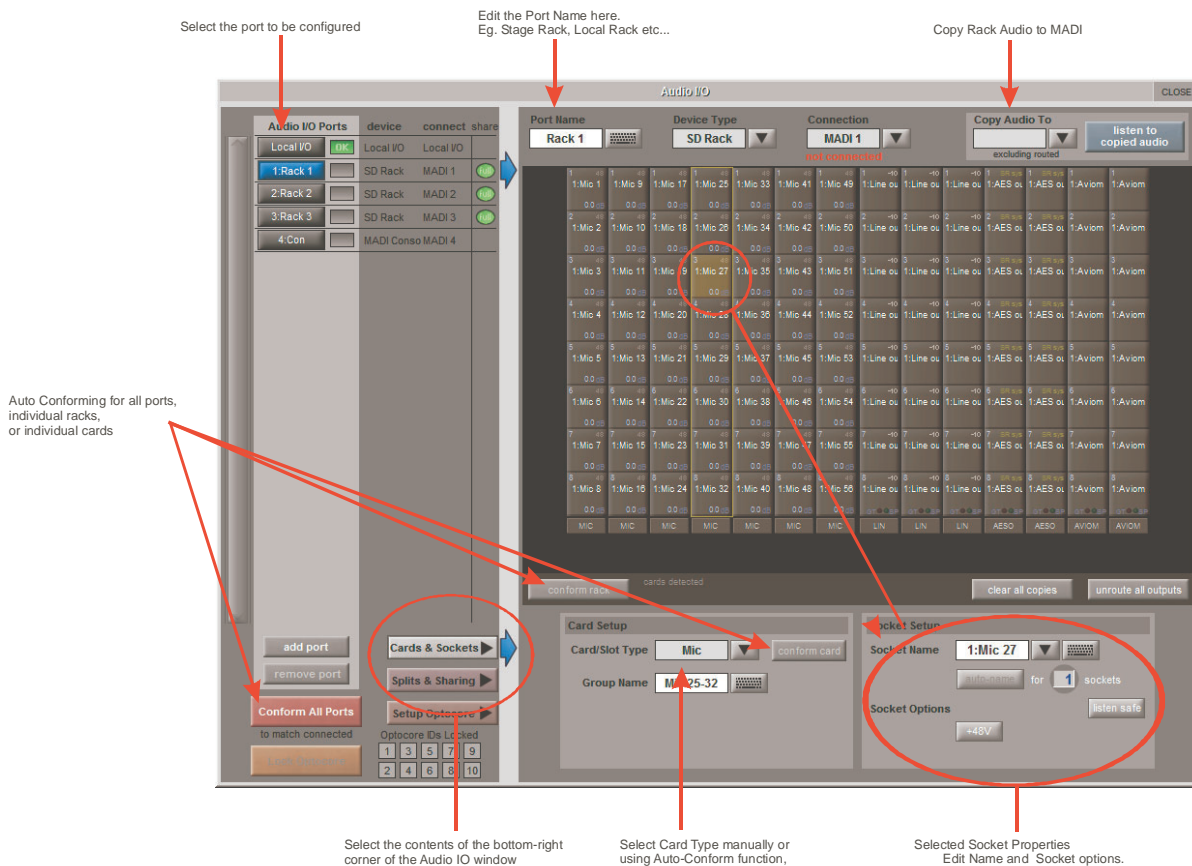
In order to use the rack, the on-screen contents of the rack must match the cards physically installed in the rack connected. This is normally acheived by pressing the **Conform All Ports** button but can also be acheived manually if necessary.

Select each card (column) and manually select the appropriate card in the Card/Slot Type drop down menu in the lower section of the window (displayed when the **Cards & Sockets** button towards the bottom-left is selected). Once the correct card type is selected, the Label at the bottom the selected card will turn green, indicating the card type matches the card installed in the rack. If the Card Type name is Red, then there is a mismatch, and the error should be corrected by selecting the correct card type.

Copying Audio and Listening to Copied Audio (MADI Recorder Setup)

Audio from a Rack can be copied to the MADI Port Output by selecting the incoming Port in the Ports list and using the **Copy Audio To** drop down menu. For example, if you want to copy the Rack Audio Inputs to a recorder connected over MADI, select **Rack 1** in the ports list and then select **MADI** from the **Copy Audio To** drop down menu. The 56 inputs on Rack 1 will be copied to the SD7 MADI output.

In addition, by connecting the recorder's MADI Output to the SD7 MADI Input, the playback can be monitored in the same channels as the original source material. Just press the **Listen To Copied Audio** button to monitor playback and press it again to return to monitoring the live sources from the rack.

Standard MADI Connections

If you have a standard MADI connection (not a DiGiCo Rack) to your SD7, you can set the console to display the MADI with generic signal names, i.e. MADI 1, MADI 2.. etc. through to MADI 56 (or 64) instead of the usual rack style names. The naming does not affect the signal, but makes routing signals easier.

Unrouting All Outputs

All outputs to the selected port can be unrouted at once by pressing the **unroute all outputs** button below the cards graphic and selecting **yes** in the warning pop-up which appears. "Copied" audio is not unrouted by this action.

Note that this will cancel all routing created in the channel screens and cannot be undone.

DiGiCo

1.5.9 Rack Sharing ....

In a multi-console system where Racks are connected with MADI and shared between two DiGiCo Consoles, only one of the consoles can take control of the rack, with respect to Gain, Phantom Power and Pads. To overcome this, it is possible to place the SD7 into one of 3 states of operation:

Isolate : The SD7 will not communicate with the rack and therefore any adjustment of input gain or +48V switch will have no effect on the rack settings

Receive Only : The SD7 will receive the rack's existing settings but will not be able to control the gain etc on the racks.

Full Control : The SD7 will send its settings to the racks and change them accordingly.

Sharing is configured in the **Rack Sharing** area, found in bottom right-hand corner of the window when the **Splits & Sharing** button is selected:

These three states can be set on a per-rack basis (right column), or globally for all shared racks (left column).

1.5.10 Assigning Faders to the Worksurface ....

If, after a Session Restructure, you find that newly created channels do not appear on the worksurface, open the **Layout/Channel List** panel on the Master screen and you will see a full list of all input and output channels that are present in the session.

To assign channels to the worksurface, select a bank and press the **LCD Function** button.

Then press the LCD button labelled **Assign Faders** to enter that mode and press each of the LCD buttons for the channels that you wish to assign.

Now press the first channel that you wish to assign on the **Layout/Channel Faders** list on the Master screen.

Consecutive channels will be assigned to the worksurface for each LCD button that is in Assign mode.

Now press the LCD Function button again and return to the standard mode by pressing the LCD button labelled **Solo**

Note that column widths can be adjusted by dragging their borders within the title row. To return all columns to their default widths, press RESET WIDTHS, in the top left-hand corner of the window.

Press LCD Function button
then Assign Faders

Press LCD button(s)
for Assignment

Open
Layout/Channel Faders
Click down arrow
to expand list

Touch first channel
to assign

DiGiCo

1.6 Saving and Loading Sessions

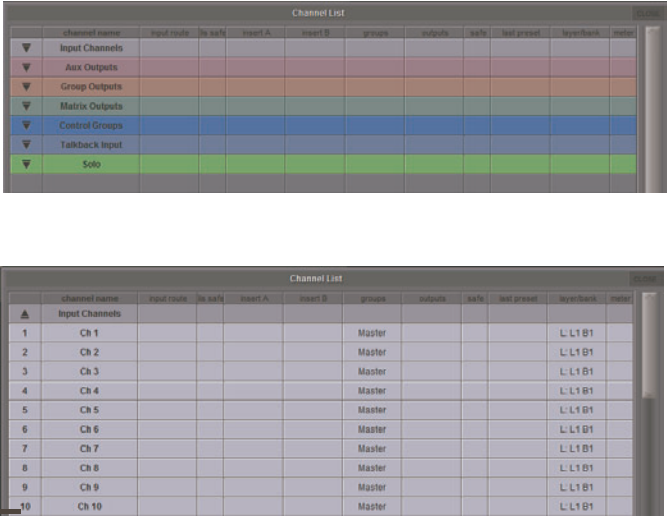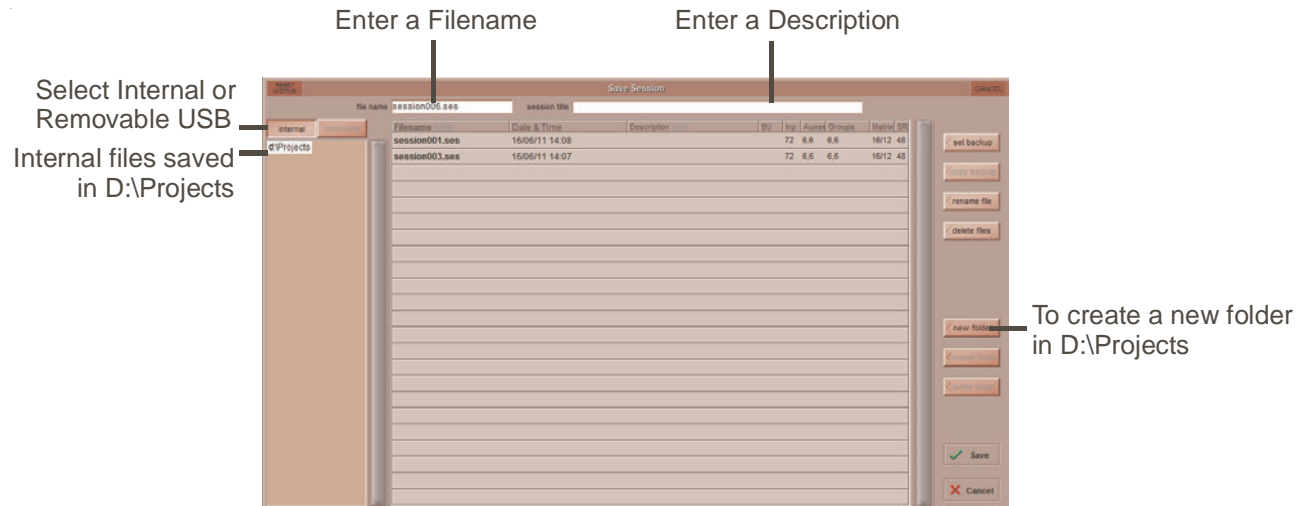### 1.6.1 Save As New File ....

When you change the configuration of a session you should save it to the console's flash drive under a new filename.

If the Save Session panel has not appeared automatically after a session restructure then touch the **Files** button on the Master screen and then press **Save As New File.**

Select the destination drive (Internal or Removable) and file path and then enter a new file name and description for the file - then press the **Save** button.

Note: If you touch a session name on the existing list, this name will automatically be selected as the new file name and touching Save will overwrite the old file.

Enter a Filename   Enter a Description

Select Internal or
Removable USB

Internal files saved
in D:\Projects

To create a new folder
in D:\Projects

Note that column widths can be adjusted by dragging their borders within the title row. To return all columns to their default widths, press RESET WIDTHS, in the top left-hand corner of the window.

1.6.2 Save Session ....

This button which is found above the **Save As New File** button will save the existing session in the same location and under the same file name as it was previously saved or loaded from. It therefore serves as a "**Quick Save**" option to update an existing session.

Remember that this function will overwrite your last saved version.

If you wish to save the session under a new name use the **Files** menu button and select **Save As New File** (See above).

1.6.3 Load Session ....

To load a previously saved session:

Touch the **Files** button on the Master screen and then press **Load Session.**

Select the source drive (Internal or Removable) and the required file from the list - then press the **Load** button.

Select a File   File Details

Select Internal or
Removable USB

Internal files saved
in D:\Projects
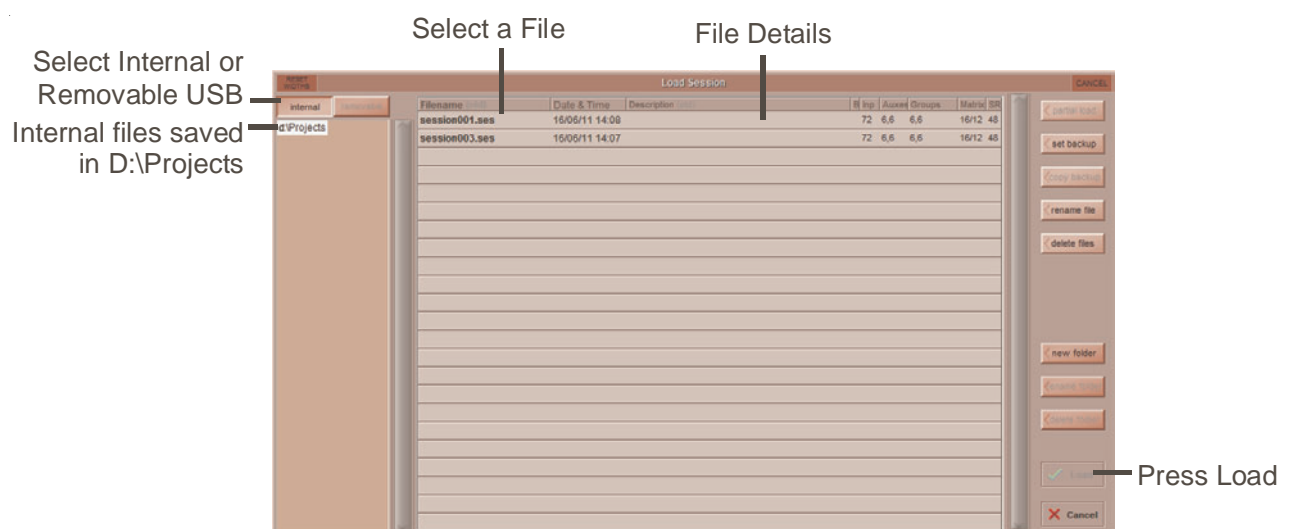
Press Load

1.7 Audio Sync

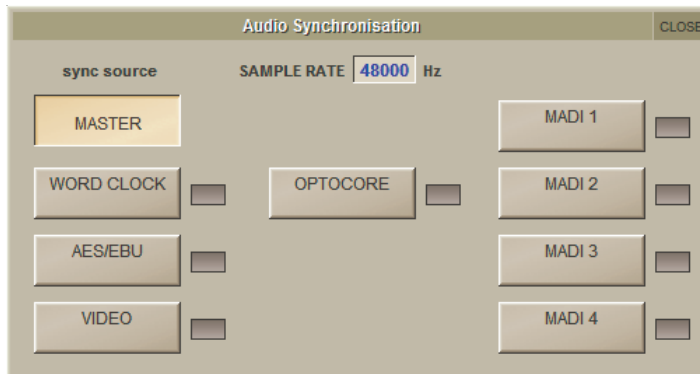To access the **Audio Sync** Panel, touch the **Setup** Menu button, followed by **Audio Sync**. The following window will open…


The SD7 will operate at Sample Rates of either 48000Hz (48kHz) or 96000Hz (96kHz), as configured in the **Session Structure** panel.

By default, it is set to clock internally but the standard Audio Sync method is Optocore when the entire system uses the device with the lowest Optocore ID (usually ID1) as its sync source.

This setting is saved within the session file so if any console(s) are connected to racks with optical fibre then all console engines should be set to Optocore as their sync source.

Example Clocking from Optocore @ 96kHz
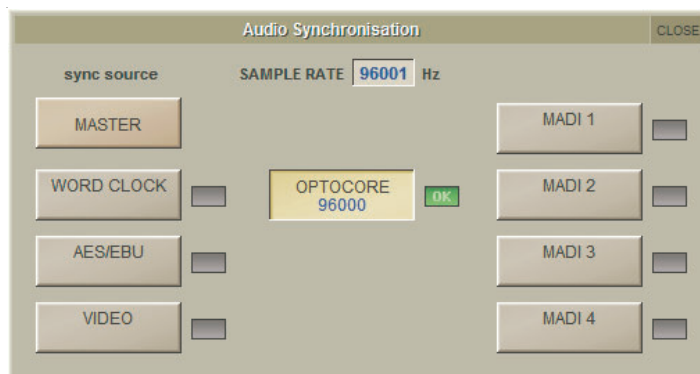
There are also times when the SD7 needs to be clocked externally. The Audio Sync panel allows you to control external synchronisation.

The SD7 will clock from the following sources : Word Clock, AES/EBU, Video Reference, MADI & Optocore

In this situation one Optocore device should be set to clock to the external source and all other Optocore devices should be set to sync to Optocore.

> *Note : When a valid clock is detected on an external sync input, the corresponding Green OK box will light, even if that input is not selected as the clock source for the SD7.*

1.8 Routing Basics

1.8.1 Selecting Inputs & Outputs ....

All channel input, output, insert send and insert return routing is done via routing displays, accessed via the dark grey routing buttons in the channel **Setup** and **Output** displays (shown below for an Input channel's input).

> *Note that multi-channel signals are routed individually, and then collected together as a "Multi Channel" as described in the SD Software Reference Manual*

To access Channel Input Setup, touch the top of an input channel display on the touchscreen.
To access Channel Output Setup, touch the bottom of any channel type's display on the touchscreen.

It is also possible to configure channel input and output routing directly from the **Channels List** display: Activate the **Edit** button at the base of the display, then touch the input route box for a channel. A standard Setup display will then appear, from which a Routing display can be opened. Inserts and Outputs can also be routed from this dispaly by touching in the appropriate column.
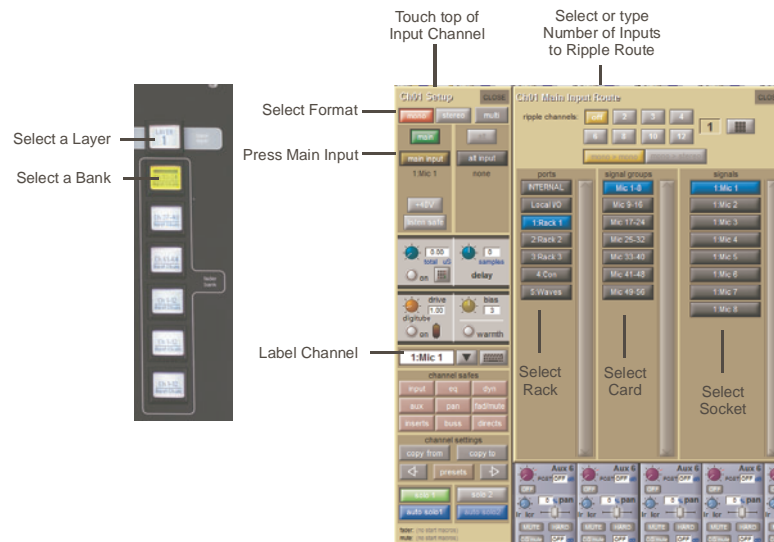
Within each display, there are three columns containing three levels of routing selection:
-   The left-hand column contains the available **ports** within which the desired input or output might be located;
-   The middle column, **signal groups**, then shows the available groups of inputs or outputs within that port;
-   The right-hand column, **signals**, then displays the individual inputs or outputs available within that signal group.

The boxes in each column are lit blue to indicate that they are currently selected. If there is already a routing assigned within the display, the **port** and **signal group** columns containing the current assignment will be half-lit.

Each output can only have one channel routed to it. The outputs that are currently in use by another channel display in blue text. If you attempt to route a different channel to an output which is already in use, a confirmation box appears, indicating which channel is already using it, and warning that continuing with the action will cause the old channel to be unrouted from this output. Press **Yes** to proceed, **No** to cancel.

> *Note that when routing direct outs from Input channels or outputs from output channels, any number of available signals can be selected. A new route selection will therefore be added to previous selections in these cases. However, inputs, insert sends and insert returns can only route to/from one signal (in the case of mono channels) or two signals (in the case of stereo channels). A new route selection will therefore result in the previous selection being lost for inputs and insert sends and returns.*

For stereo channels, left and right routes are presumed to be consecutive: When routing stereo signals, select the left route, and the next signal in the list will be automatically selected as the right route. If the last signal in a signal group or port is selected as the left route, the first signal in the following signal group or port will selected as the right route.

For input and insert return routing, the **INTERNAL** port provides the following signal groups:

Misc: The oscillator, white and pink noise generators.
Graphic EQs: The outputs of the SD7's internal graphic EQ's.
Effects: The outputs of any effects sends that have been created
Channels: The direct outputs from the other input channels
Groups: The outputs of the group busses
Auxes: The outputs of the auxiliary busses
Matrix: The outputs of the matrix busses.

> *Note: The outputs for the channel being routed are locked out of the signal list*

Note also that the console views all routes as a single list. Therefore, if the left signal is connected to the last signal in a port, the right signal, will be automatically connected to the first signal of the next port, regardless of port type.

For output and insert send routing, the **INTERNAL** port provides access to the inputs of the SD7's Graphic EQ's, and the inputs to any effects that have been created.

The **0:Local I/O** port contains a list of the inputs or outputs found directly on the SD7's back panel.

The **Rack** ports contain all of the inputs or outputs available within the remote I/O racks, as defined in the **Audio I/O** display

Once a route has been selected, its name will appear below the routing button in the **Setup** or **Outputs** display.

Whenever a route is created, metering and additional controls are made available below the routing button. These controls are dependent on the type of route created, and are described in detail within Chapter 2 where necessary:

Local input routed to an input or insert return: a **Line** or **Mic** selector.

Line input routed to an input or insert return: an analogue gain control.

Mic pre-amp routed to a mono input: an analogue gain control and a **48V** button for remote control of rack functions.

Mic pre-amp routed to a stereo input: an analogue gain control and a **48V** button for remote control of rack functions.

Mic pre-amp routed to an insert return: an analogue gain control, a **48V** button and a phase reverse button.

Output routed to a console output: a **-10db** pad (rack out only), **on** button for switching the send on and off, gain trim and send point selector which toggles the place within the channel from which the direct output is fed:

        pre-F Pre-fader,

        post   Post-fader

        pre-M Pre-mute (and pre-fader)

Insert send routed to a console output: a **-10db** pad (rack out only), **on** button for switching the send on and off, and trim.

Insert send routed to a graphic EQ: an **on** button for switching the send on and off

Output routed to a graphic EQ: no additional control.

Buttons become ringed in either red or green to indicate that they are on.

1.8.2 Ripple Channels ....

The **ripple channels** function, located at the top of the route display, allows consecutive channel routes to follow the routing of the current display incrementally. For example, Channels 1 to 8 direct outputs can be routed to Rack 1 > Line outs 1 to 8 respectively by routing Channel 1's direct out to Rack 1 > Line out 1 and allowing the **ripple channels** function to route Channels 2-8 automatically.

The number of channels to be rippled is defined either by selecting the appropriate grey numbered button, or by selecting the keyboard button to the right of the numbered buttons, typing the required number of channels (8 in the example above) into the numeric keypad which appears, and pressing **OK**. Once you have configured the **ripple channels** function, any routing action will also effect the appropriate number of channels above the channel being routed.

The **ripple channels** function treats stereo channels as two channels. In other words, if Channel 2 in the above example is stereo, the **ripple channels** function will route Channel 1 to Line out 1, Channel 2 Left and Right to Line outs 2 and 3, Channel 3 to Line out 4 etc.

1.8.3 Channel Names...

The black and white text box in the **Setup** display is used for naming the channel. Channel names are displayed in the scribble strip at the bottom of the screen. By default, the channel is given the same name as the selected input signal.

Note that if no input signal is selected, the scribble strip simply displays the channel number, prefixed by **ch** for Input channels, and prefixed by **Aux**, **Grp** or **Matrix** in the case of output channels.

The following notes are specific to naming channels:

The **Next** button moves the entire **Setup** display to the next channel.

At the very top of the channel, the channel number and input signal name are displayed for Input channels, and the channel type and number are displayed for output channels. These labels remain unchanged, regardless of any channel naming.

For Input channels, note that if the channel input signal is changed once a channel has been manually named, the channel name will no longer follow the input signal name. To reactivate the automatic channel naming function, clear the name and re-select the channel input.

Note also that the channel Output display also provides access to this channel naming facility.

Channels can also be named directly in the **Channel List** display (in the **Layout** menu). Open the display, activate the **Edit** function below the list, and expand the required channel type list by touching its row. Touching the **channel name** column for any channel in the list will cause a keyboard pop-up to appear, where a name can be typed in the usual way.

1.9 Channel Processing

1.9.1 Dynamic EQ ....

The EQ section comprises four user-configurable parametric filters with Dynamic Control and a pair of swept High-pass and Low-pass filters.

The EQ is accessed by touching the on screen display to **Assign** the channel (**the colour changes to yellow**) and then using the controls on the right hand side of the input module.

When a control is adjusted the expanded view seen below appears on the screen. This view can be seen at any time by touching the EQ response graph on the screen.

> *NOTE: If the expanded view does not appear when a control is adjusted open the Options panel and set the Auto Expand EQ option to Yes*

Each band's response can have one of two characters – precision and classic. These can be switched for all bands using the **precision** and **classic** buttons, or on individual bands using the 2nd function of the **bell/hishelf** buttons.

To access the Dynamic control, touch the left arrow symbol on any EQ band.

Touching the normal EQ response graph will show an expanded view in a separate panel.

The order of EQ and Dynamics in the channel signal path can be changed using the worksurface button at the bottom of the EQ section.

HPF/LPF

4 Bands

Dynamic EQ Controls

Order of EQ and Dyamics

EQ Presets
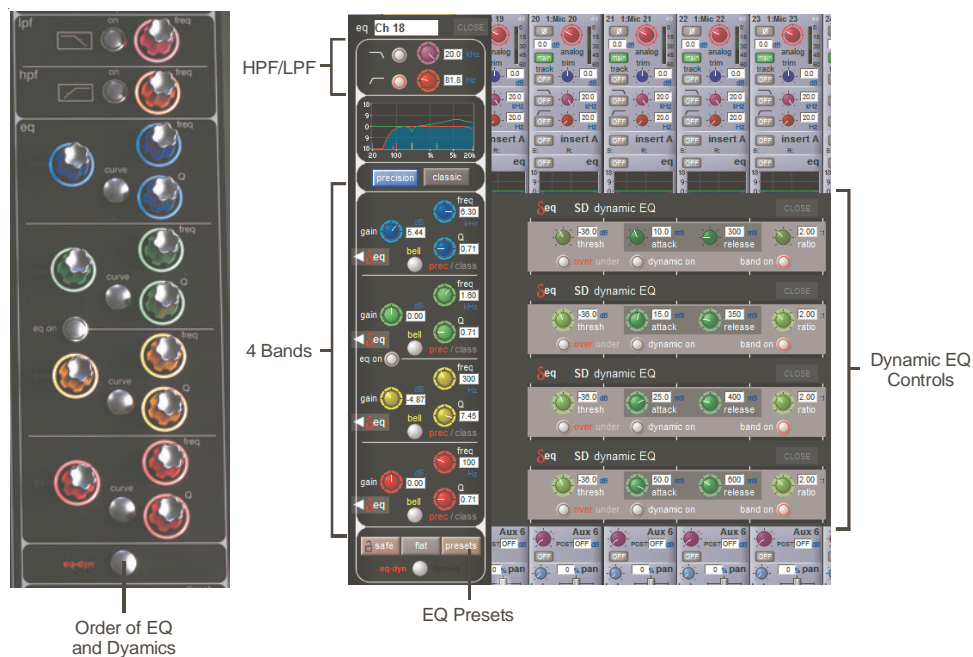
> *Note: The four band EQ and each of the filters have their own in/out switches.*
> *The type of filter used by each band can be changed by successive presses of the Curve button for that band.*

1.9.2 Multiband Dynamics ....

The dynamics are accessed by touching the words **Comp** or **Gate** just below the EQ graph on screen to open the dynamics panel.

There are two dynamics modules, the first of which can function as a simple compressor, a 3 way multiband compressor, or a de-esser, according to the **comp/multi/desser** button to its left. The second (lower) module can function as a gate, a ducker or a compressor with an external sidechain, according to the **gate/duck/comp** button to its left.

The worksurface controls beneath the screen control the various parameters. Touching the **Close** button in the top right corner of the panel will close it.

Dedicated **Threshold, Gain** controls and **In/Out** switches can be found on the right hand side of that section's worksurface. These can control the Assigned channel's dynamics whether the on screen dynamics panel is open or not.
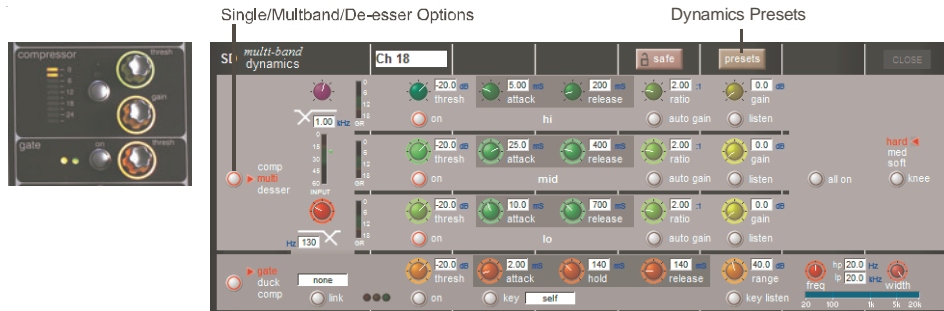
The **Assignable encoders and switches** beneath the screen can be assigned to any of the main dynamics controls. Hold the **Assign Switch** button on the left of the input section and touch the dynamics control required on the screen. The selected control is shown by the **Status Display.**

Click on the **dynamics mode select** button on the left of the display to access the 3 dynamics bands

Each band includes all of the parameters as those found in the single band compressor. The link function remains available for the whole compressor, and is not assigned to any band. The bands can be switched on individually using the **on** buttons in the left-hand side of each band, or together using the **all on** button to the display's right.

The crossover frequency between bands is controlled using the purple and red pots to the left of the **hi** and **lo** bands. Each crossover has a range of 20Hz to 20kHz, and the crossover frequencies are displayed below each pot. Each band can be auditioned by pressing the **listen** button below each **gain** pot which solo's that band to the mix (not the solo buss), in effect temporarily switching off the other bands.

Pressing **multi-band** again returns the compressor to single-band.

The channel strip's compressor threshold and gain controls adjustment all three bands' controls, maintaining any relative offsets. The individual controls are mapped to the assignable rotaries below the screen.

Note: Beyond the link function, the single and multi-band compressors have completely separate settings: No settings are copied between them, and the settings of each remain unchanged when the other is active.

1.9.3 Auxiliaries ....

The auxiliaries can be accessed by touching the auxiliary row on screen or using the **Screen Scroll** buttons on the left of the worksurface

Using either of these methods, the highlighted auxiliaries on the input screen will change. The rotary controls and switches beneath the screen are used as auxiliary sends, pans (with 2nd Function ON), On/Off and pre/post switches (with 2nd Function ON).

There are also 4 dedicated encoders and switches on the right of the worksurface that can be assigned to 4 auxiliary sends per channel. The assignment can be scrolled up or down in steps of 4.
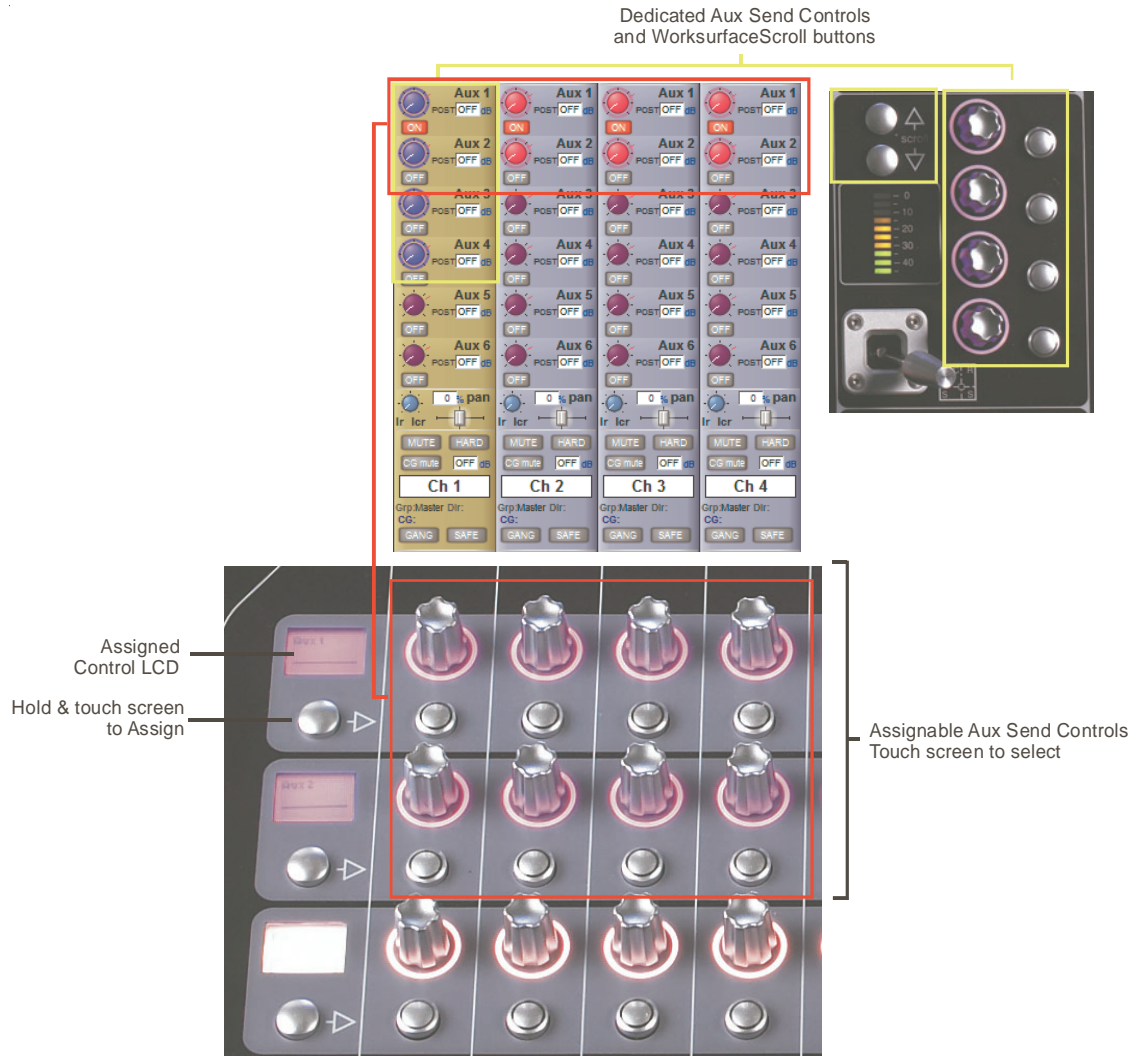
It is also possible to show all of the aux sends for a channel in a single display and assign them to the 36 rotaries beneath the screen. This is done by assigning the required channel to the aux controls (the assigned auxes will be displayed in dark purple with a dark purple surround) then touching one of the assigned auxes. The layout of the display indicates which encoder each aux is assigned to; if there are more that 36 sends, the assignments becomes scrollable using the **Screen Scroll** function.
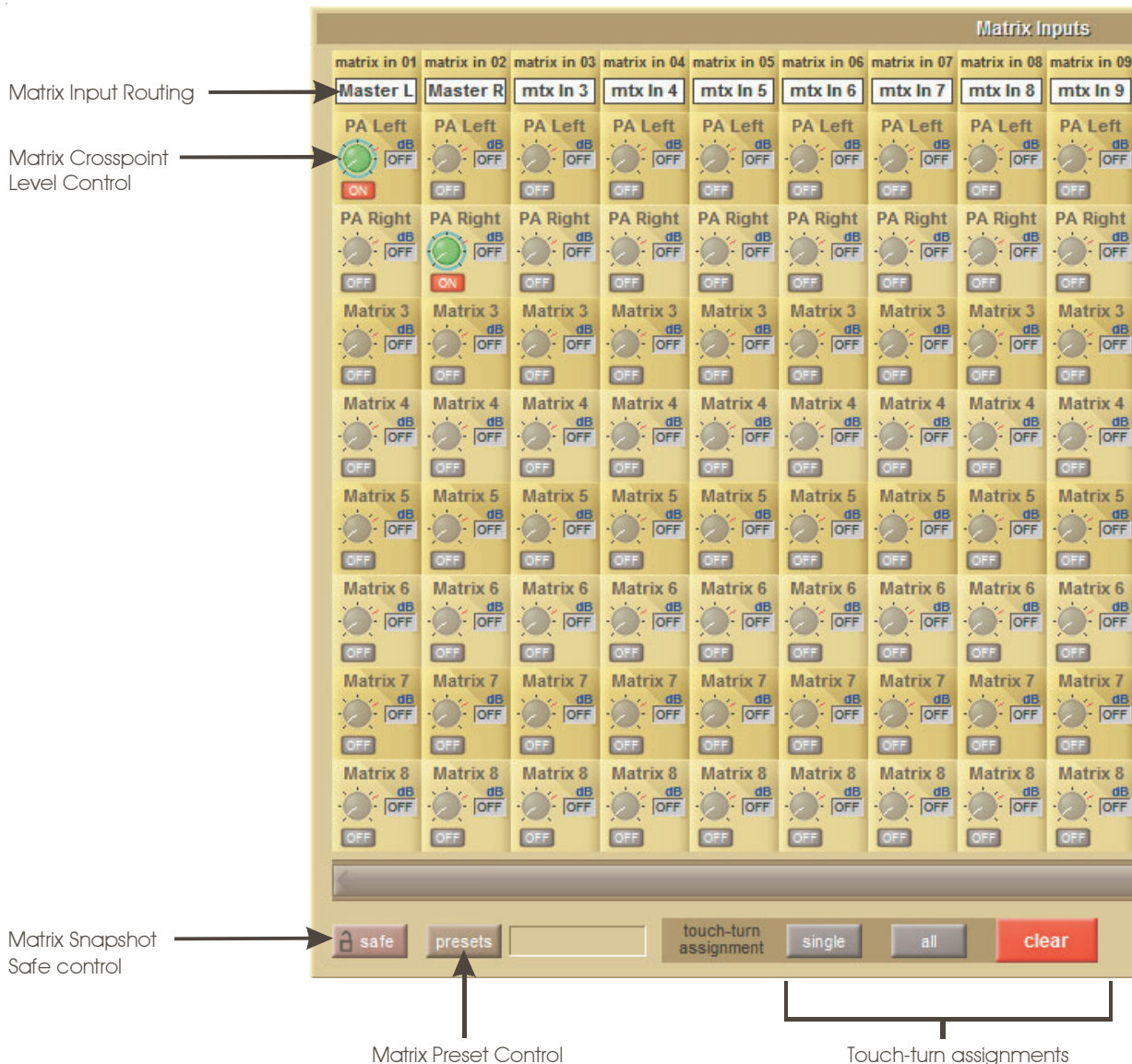

Once you have adjusted the auxes in this display, you need to close it manually before opening any other channel detail display.

1.10 The Matrix

To open the Matrix Inputs panel, touch the **Matrix** button on the Master Screen Menu. The window that opens allow you to route inputs to the Matrix Output Channels, and set the Matrix crosspoint levels.

To route an input, touch the top of the appropriate Matrix column. This opens a standard SD7 input routing page.

Matrix Input Routing

Matrix Crosspoint
Level Control

Matrix Snapshot
Safe control

Matrix Preset Control   Touch-turn assignments

The example above has the Master Stereo Buss routed to the inputs of Matrix 1 and Matrix 2 (Labelled as **PA Left** & **PA Right**). By adjusting the crosspoint levels, you can change how much of each side of the Master buss is fed to these Matrix Channels.

There are three modes of level adjustment: multi, single and all.

Multi (active when no other mode is selected): Touch one or more level "knob" on screen, then adjust using the Touchturn control.

Single : Touch any level "knob" and adjust. Touching another "knob" will deselect the first.

All : All "knobs" are adjusted at the same time.

When adjusting more than one crosspoint, their relative levels are maintained.

The **clear** button cancels all active Touchturn assignments.

1.11 Control Groups

Any number of input channels and output channels can be connected to one or more of the 36 possible Control Groups. They can then all be operated from a single worksurface control. Changes to the Control Group fader, mute or solo or controls will affect all channels connected to the group.

There are 2 methods to set up Control Groups:

1) Press the **LCD Function** button on the CG fader bank followed by the **JOIN CG** button;

Press the channel select button for the CG that you want to use;

Press the channel select buttons for each of the channels to be included in the CG;

Deselect the **JOIN CG** button:

Press LCD Function Button then JOIN CG

Select Control Group to join

Press Channel LCD Buttons to assign members
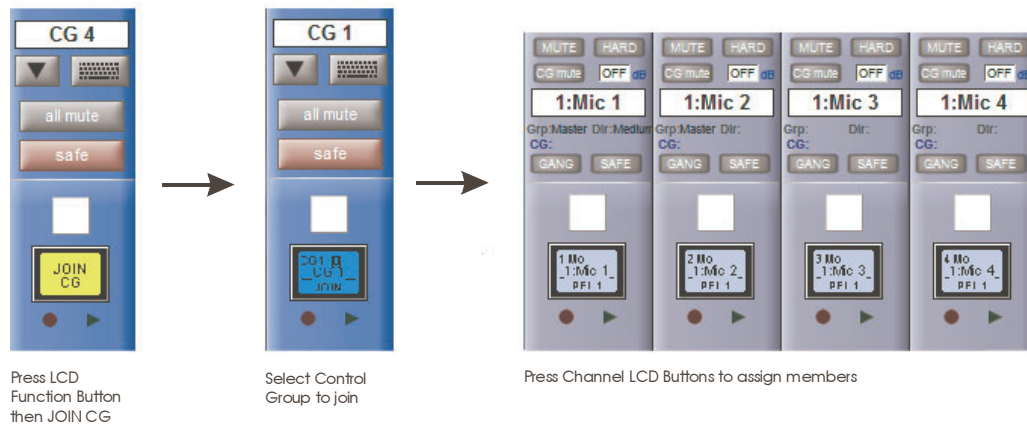
2) Press the on screen **JOIN/LEAVE** button for the required CG channel;

Press the channel select buttons for each of the channels that you want to make members of the CG;

Release the **JOIN/LEAVE** button:

List of members

Press Join/Leave button on required CG channel

Press Channel LCD buttons to assign members
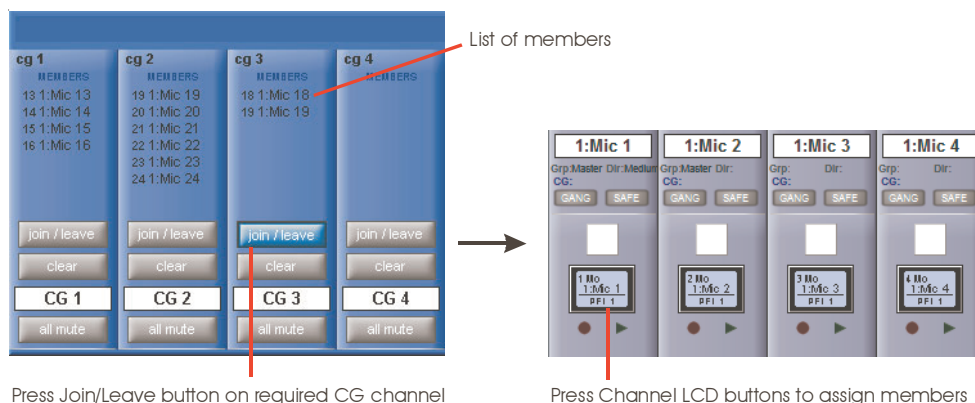
A list of all the connected channels and their names is displayed above each Control Group display.

You can also clear all the channels from a Control Group by pressing **Clear**.

When a channel is a member of a Control Group, its own controls can still be adjusted independently of the other Group members. Adjustments to fader levels are transmitted to the Group members as dB changes, so that a level increase of 2dB on the Group fader will increase all the member levels by 2dB, irrespective of the relative levels of the individual channel faders.

CG Mutes are treated as "in series" where a channel is a member of more than one group. All CG mutes must be off for a channel to be unmuted; any CG muted always mutes all of its members.

If a channel is CG muted by single or multiple CGs, the worksurface channel mute button will override all CG mutes for that channel. The channel will not however be removed from CG membership so if the relevant CG is muted again, the channel will also be muted.
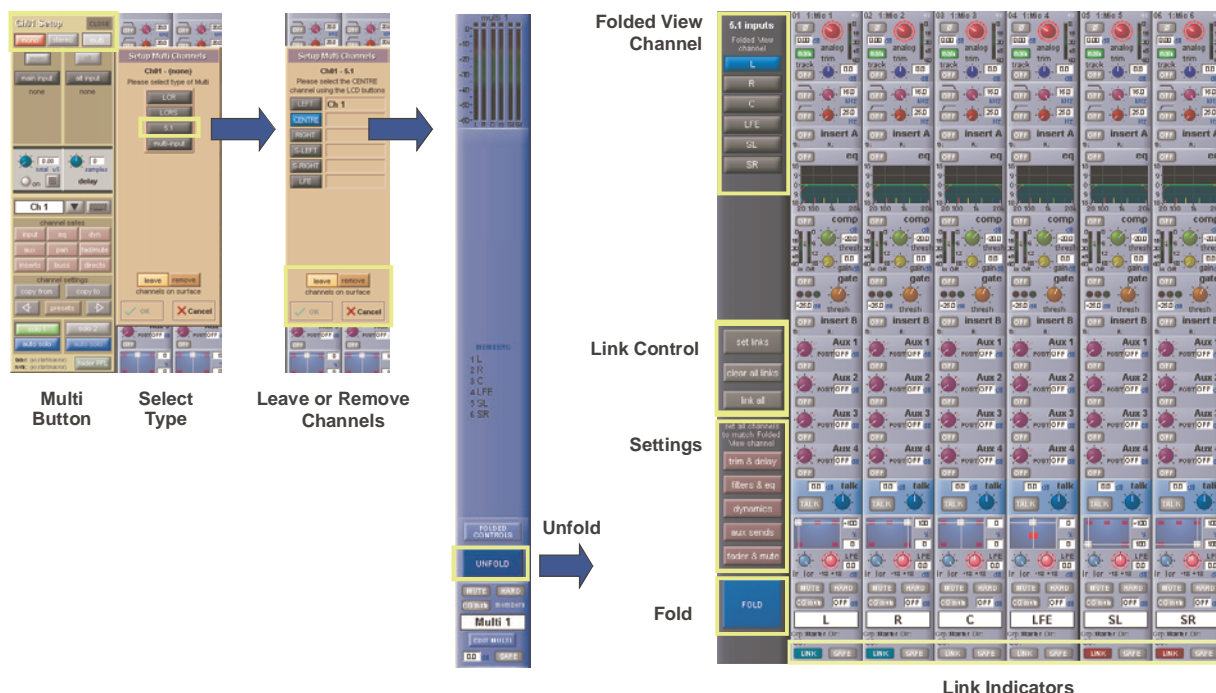
1.12 Multi-channel formats

If you are working in Surround, or using another multi-channel format, you can create LCR, LCRS and 5.1 busses in the Session Structure window described in Section 1.5.1.

Multi-channel inputs are controlled by routing each component througha mono channel and then linking those channels via a 'Multi' channel. To start with, use the normal input and output routing procedures to route each component through a channel. Then open the Setup display for the first component, and select **Multi** at the top, to open the **Setup Multi Channels** display. Select the format – **LCR, LCRS, 5.1** or **multi-input** (which allows you up to 11 components) – and then press the LCD buttons for the remaining component channels, working down the displayed list in order. Channel names will appear against each component. Each channel can then be left on the worksurface or removed using the buttons towards the base of the display. Finally, touch **OK** to close the display to link the channels together.

> *Note that you can also create Multis on a blank layer by selecting the Create Multi LCD function on the Layer you wish to use, then pressing the LCD button for the required channel strip.*

The included channels are shown in the Multi channel strip. Touching the **Folded Controls** button allows you to control which channel elements are displayed in the folded channel strip – each element affects all linked components.

If the **Unfold** button in the Multi or in a multi-channel buss channel strip is pressed, the component channels will be displayed, and more detailed configuration can be made.

> *See the SD Series Software Reference Manual for more information on Multi Channel formats*

1.13 Solo Setup

The SD7 Solo panel is accessed from a button at the top of the Master Screen. Some of the controls on this panel are duplicated on the worksurface, immediately above the Master Screen.

There are two solo busses and each solo button on the console can be independently assigned to use Solo1, Solo2 or Solo 1+2. Therefore, if the console was being used for Stage monitors, the first solo buss could feed "In-Ear" monitors, and the second solo buss could feed a wedge.
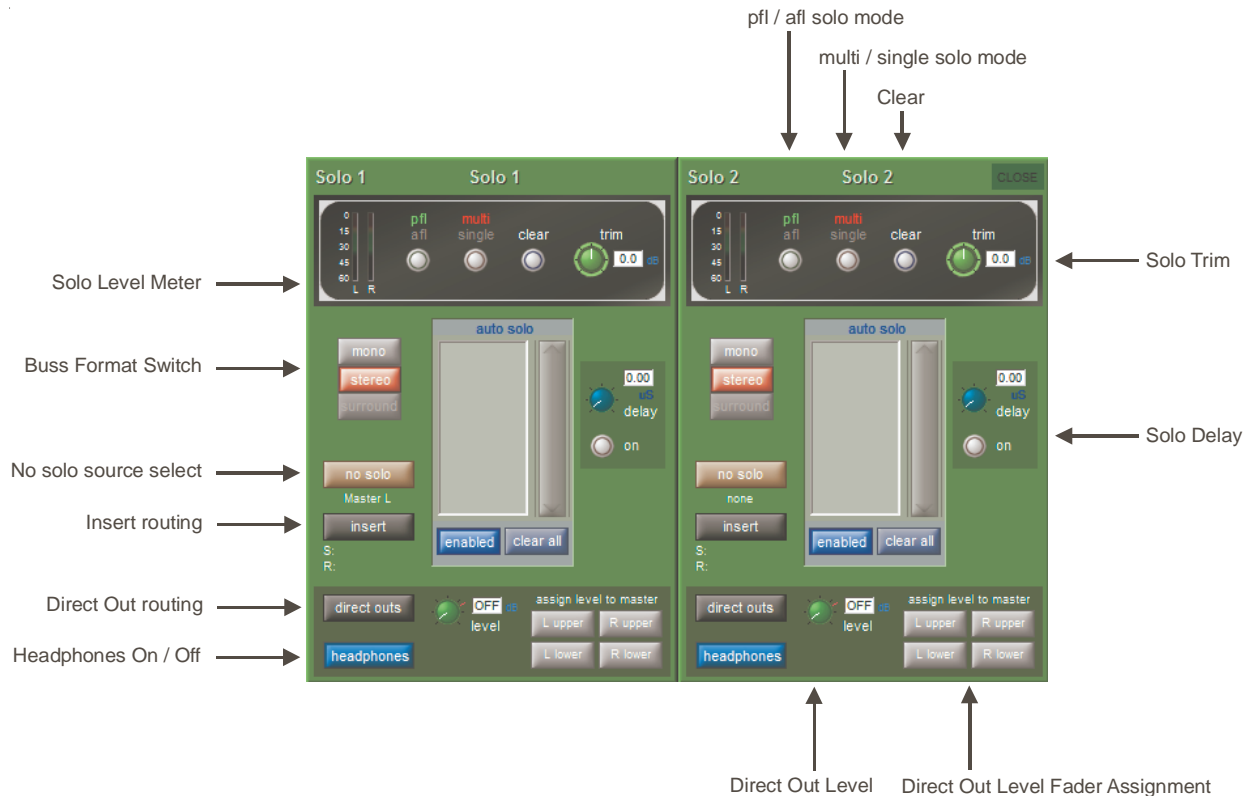
The following functions are available independently for each solo buss :

- **Mono** / **Stereo** / **Surround** Switch
- **No Solo** source routing: The source for solo buss when no channel is in solo mode.
    Note that the No Solo source does not show on Solo meters
- **Insert** Point with both internal and external routing capability
- **Direct Out** routing (eg. for feeding a wedge)
- Assignment of Direct Out level control to master fader or speaker volume pot
- **afl** or **pfl** mode
- **single** or **multi** solo mode
- **Delay**
- Level **Trim**
- **Auto solo** mode: If a channel is set to **Auto Solo**, it will automatically solo when another channel is soloed. The **Auto Solo** function of each solo buss can be enabled and disabled as required.
- **Solo meters** can be displayed on the Master or Overview screen by pressing the **floating meters** button below the solo **delay** area in either side of the **Solo** panel.