



D5 **LIVE**

DIGITAL CONSOLE

INTERCONNECTION SYSTEM SETUP & INSTALLATION MANUAL

INCLUDING QUICK START GUIDE

ISSUE E - JULY 2006

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Electrical Safety Warning

Unlike most large conventional analogue consoles, the D5 worksurface contains its own mains power supply, and a variety of internal supply units and converters. These are fully insulated and covered to meet the relevant electrical safety standards, but technicians working within the console should be aware of the presence of **mains voltage**.

Note also the rack PSU if operated removed from the chassis has heatsinks exposed that are live to **mains voltage**.

Also, D5 contains a number of back-lit flat screen displays. The illumination system of these displays uses line voltages of up to several KV, generated by high frequency DC - DC converters located close to the displays. Touching or tampering with these circuits will put a technician at risk of very damaging RF burns to the skin and/or **high voltage electric shock**.



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Setup & Installation Manual

D5 QUICK START GUIDE

If you trying to get sounds from the mixer without reading the whole installation and operating manuals,
Please at least read this page first!

CONNECTING UP.....

The Digico D5 consists of the Mixer, 2 or 3 audio interface racks and various cables. Refer to the connection diagram following.

The "Local" Rack has an approximately equal mix of XLR inputs and outputs and few AES/EBU connections on 1 module. This is used adjacent to the mixer for local inputs and outputs such as FX send/returns. It has no optical connection.

The "Stage" Rack(s) have mostly XLR mic inputs and just 8 XLR line outputs. This is for mic connections and amplifier outputs at the stage. It has 2 optical connections.

1. Connect the optical cable between console optical B to optical A of the first stage rack with 56 inputs (7 x 8 way input modules). The Optical operate in 2 directions at once, so there is only 1 cable for in and out!
2. In the larger D5-112EX, the second stage rack is connected to the first stage rack by a short optical cable from rack 1 optical B to rack 2 optical A. As shipped, the mixer and second rack should be configured to send and receive signals to this second independent rack correctly.
3. Connect 2 x BNC cables between MAD1 input/output 2 (B) on the console engine back panel and local rack MAD1 input/output Main (A). Send from the console output to the rack input and so on.

There is no need at this stage to add the optional redundant second optical ring connection, if this option has been provided.

4. Each unit has 2 mains input cables. Whilst the system is designed to be able to operate with just 1 supply switched on any one unit, **use both** mains supplies on all units to ensure all fans are working to keep the system properly cooled. Connect all mains cables to the supply. There are no adjustments, the system has auto mains sensing.

5. Switch on! The mixer will start up in exactly the same configuration as last switched off.

GETTING A BASIC AUDIO SIGNAL SETUP.....

As default, all inputs are routed to masters.

6. Connect a CD to input channels 9 & 10 (the first two sockets on the second input card) on the local rack, touch the top of channel 9 and the input routing will appear. Scroll until you find Loc Li 1-8 and touch, then scroll until you find Loc L1 and touch. Now repeat for channel 10 and assign to Loc L2, you should see signal on the meters.

The masters must now be routed to an output so go to the output screen, let's use matrix 1 for L and matrix 2 for R.

7. Touch "Matrix Inputs" along the top of the output screen. Touch the top label on Matrix 1, the routing assign will appear. Scroll down until you see "Stereo Buss" and touch. Now touch "Master L".

8. Touch the top label on Matrix 2, the routing assign will appear. Scroll down until you see "Stereo Buss" and touch. Now touch "Master R".

9. The Matrix sends must now be turned on. Touch the screen control knob on Matrix 1 and it will light up (touch to assign-touch to de-assign). Make sure the send is turned on by touching on/off switch. Look for the Matrix control panel on the extreme right of the console on the output section, there is a physical control and an on/off button plus a Matrix assign button. Once the screen matrix send is assigned, you can control the level via the physical knob, switch it on and off and maximise or minimise the screen matrix display.

10. Now turn Matrix 1 up or down and repeat for Matrix 2.

Now we have to route the Matrix outputs, so touch "Buss Outputs" along the top of the output screen.

11. Touch the label on Matrix 1 and the output routing will appear. Scroll down until you see "Stage 1-8" and touch. Now touch Stage 1.

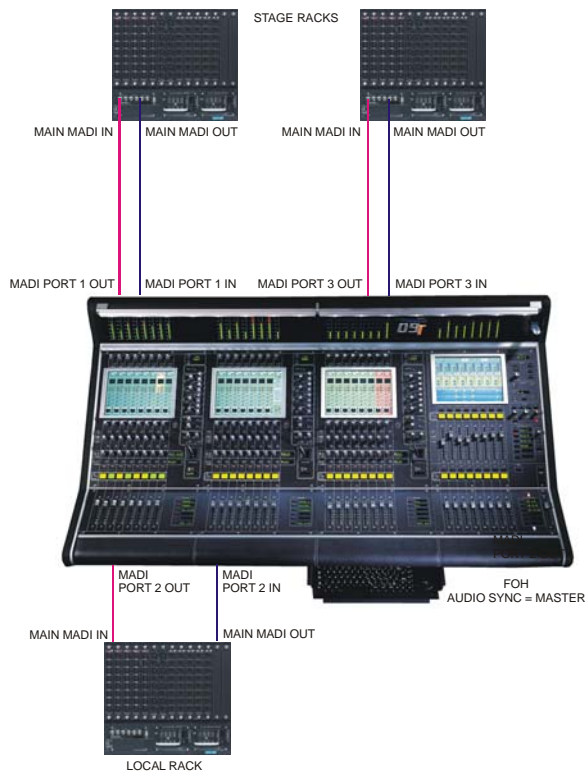
12. Touch the label on Matrix 2 and the routing will appear. Scroll down until you see "Stage 1-8" and touch. Now touch Stage 2.

You should now have the stereo buss coming out of 1 & 2 on the stage rack.

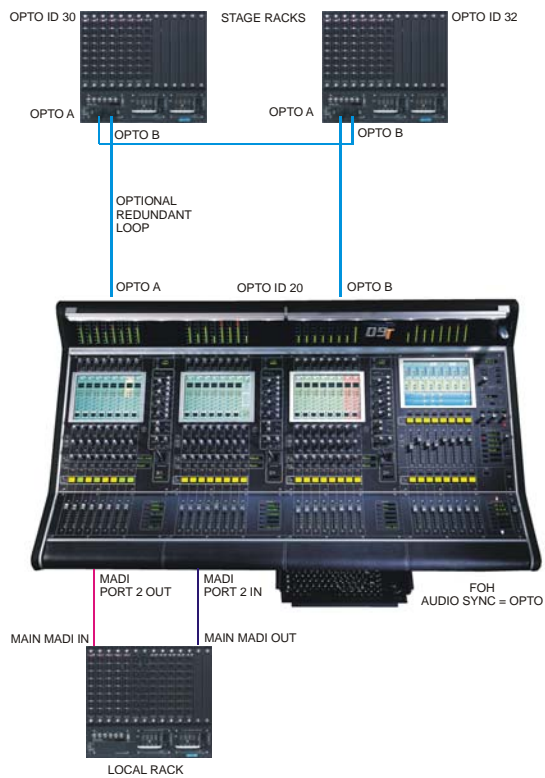
Remember, a digital console can be considered as a huge matrix and it must be told where to receive from and where to output to.

(Above notes refer to for V 2+ screen software, V1.10+ Optocore firmware)

CONNECTION WITH MADI



CONNECTION WITH OPTICAL FIBRE



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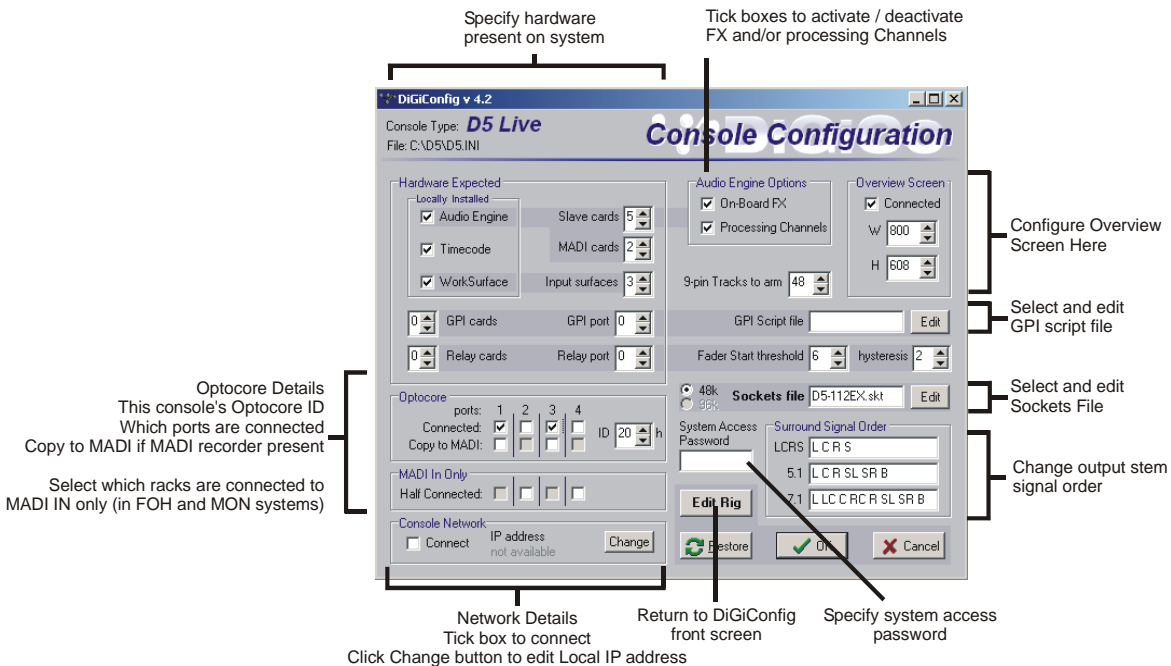
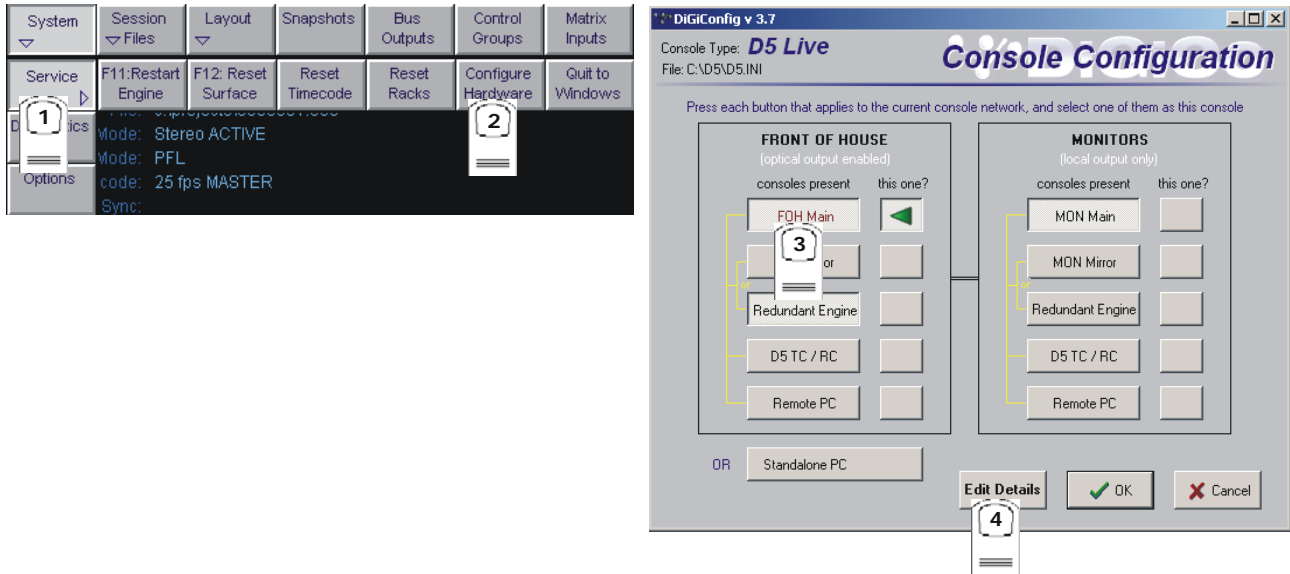
The DiGiConfig Program

The following example shows how to run the DiGiConfig program from the D5 software in order to configure you hardware:

- 1) Open the **System / Service** menu.
- 2) Press the **Configure Hardware** button, the D5 software will close and DiGiConfig will open.
- 3) Press the relevant buttons for all the consoles that you wish to configure.

The example below shows the settings for a system with a Main Front of House console and its Redundant Engine and a Monitor console. All the devices should have all of the components of the system selected but the **"THIS ONE?"** button should be selected according to which device you are setting up.

- 4) This will apply the correct configuration but the details can be further edited by pressing the **Edit Details** button.
- 5) Press **OK** to return to D5 software.



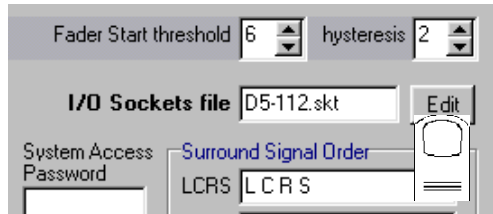
The Sockets File.....

The D5 is provided with 2 Sockets Files (D5-56EX.skt and D5-112EX.skt) that define which cards are in which position in the DiGiRacks and also allow custom names to be entered for the sockets on those racks. If the rack configuration is never changed and you do not require custom names then there is no need to change the default Sockets Files.

Note: For compatibility with other D5 systems, we suggest that the standard card configuration is not changed and the Sockets Files are not edited.

If necessary, the Sockets File can be edited by touching the **Configure Hardware** button in the **System / Service** menu - the D5 software will close and **DiGiConfig** will open. Then touch the **EDIT Configuration Details** button.

On the right of the panel the current Sockets File is indicated (**D5-112.skt** in this example). Touch the **Edit** button to view and edit its contents.



The format and syntax for the Sockets File is as follows - Any text preceded by a semicolon is a comment and will be ignored:

MADI Declarations

The first section defines the cards in the racks with 2 numbers separated by a dash. These numbers represent the Console MADI Port number and the card position in the rack.

Note: Card slots 1 to 7 are for input cards and 8 to 14 are for output cards.

The AES SRC cards are both Input and Output and must be put into the Input Section (Slots 1 to 7) of the rack with the equivalent output slot left empty.

eg. MADI 1-1 = MIC
Means MADI Port 1 - Card Slot 1 = A Microphone Input card

Port 1 is the first Stage DiGiRack with:
56 mic inputs (7 mic cards)
8 analog outputs (1 analog card)
Slots 9 - 14 are empty

Port 2 is the Local DiGiRack with:-
8 mic inputs (1 card)
32 line inputs (4 cards)
16 digital inputs & outputs (2 cards)
40 analog outputs (5 cards)
Slots 13 and 14 are empty

Port 3 is the second Stage DiGiRack with:
56 mic inputs (7 mic cards)
8 analog outputs (1 analog card)
Slots 9 - 14 are empty

These are defined as follows:

```
; Example 48kHz Sockets File for D5-112EX  
; =====
```

```
; MADI PORT DESCRIPTIONS  
; -----
```

```
MADI 1-1 = MIC  
MADI 1-2 = MIC  
MADI 1-3 = MIC  
MADI 1-4 = MIC  
MADI 1-5 = MIC  
MADI 1-6 = MIC  
MADI 1-7 = MIC
```

```
MADI 1-8 = ANALOG
```

```
MADI 2-1 = MIC  
MADI 2-2 = LINE  
MADI 2-3 = LINE  
MADI 2-4 = LINE
```

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MADI 2-5 = LINE
MADI 2-6 = AES2
MADI 2-7 = AES2

MADI 2-8 = ANALOG
MADI 2-9 = ANALOG
MADI 2-10 = ANALOG
MADI 2-11 = ANALOG
MADI 2-12 = ANALOG

MADI 3-1 = MIC
MADI 3-2 = MIC
MADI 3-3 = MIC
MADI 3-4 = MIC
MADI 3-5 = MIC
MADI 3-6 = MIC
MADI 3-7 = MIC

MADI 3-8 = ANALOG

The remaining MADI port 4 is not connected therefore:

MADI 4 = 0

Note: If another device such as hard disk recorder with MADI connections is to be used it can be connected to MADI port 4 to provide 56 inputs and outputs. In this case the above line should say:

MADI 4 = 56

Socket Descriptions

These descriptions do not need to be declared as default names will be created but if they are defined then extra parameters can be preset and custom names can be created.

By default the inputs and outputs are defined in groups of 8 sockets but the groups can contain any number of sockets.

The names to the left of the equals sign (=) may be customised but the numbers on the right of the equals sign must be in the following format:

eg. Stage 1 = 1-1-1

User label = MADI Port Number (1 to 4) - Slot Number (1 to 14) - Socket Number (1 to 8)

Some useful parameters that can be added to the definitions of input sockets are:

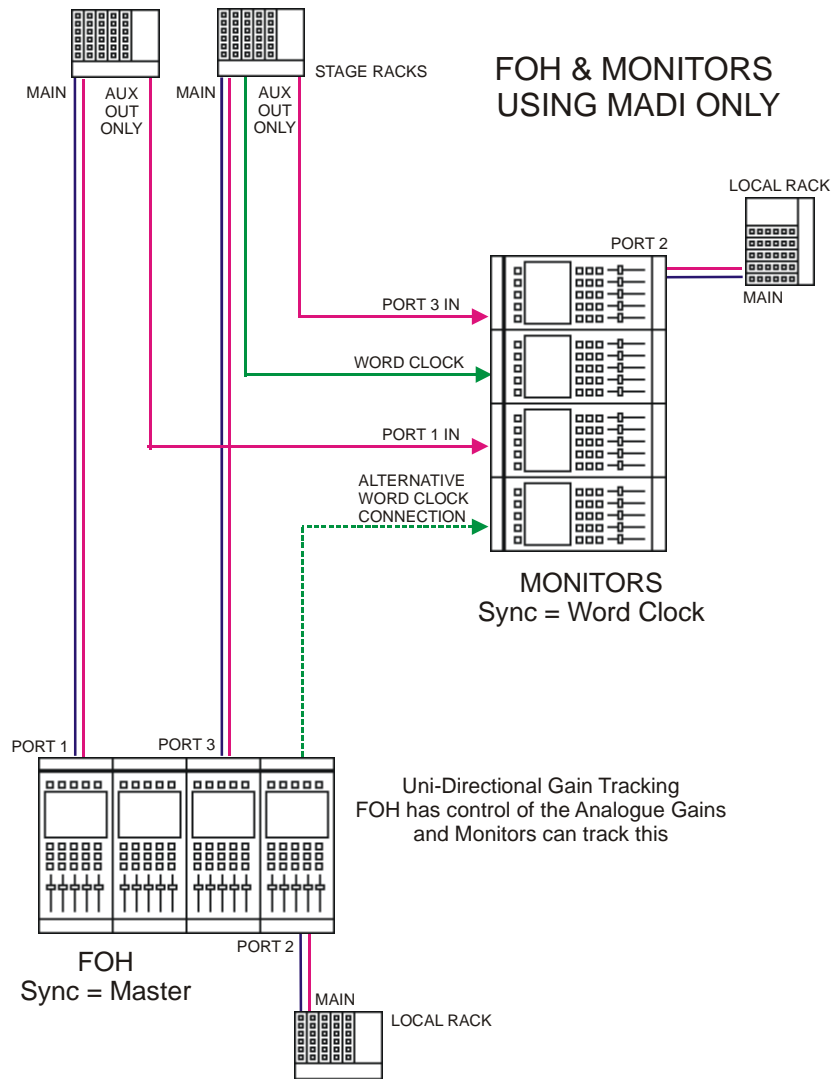
Stage 1 = 1-1-1, MIC - Indicates that this is a microphone input.
Stage 2 = 1-1-2, MIC, 48V - Provides Phantom Power to Mic input by default.

And for output sockets:

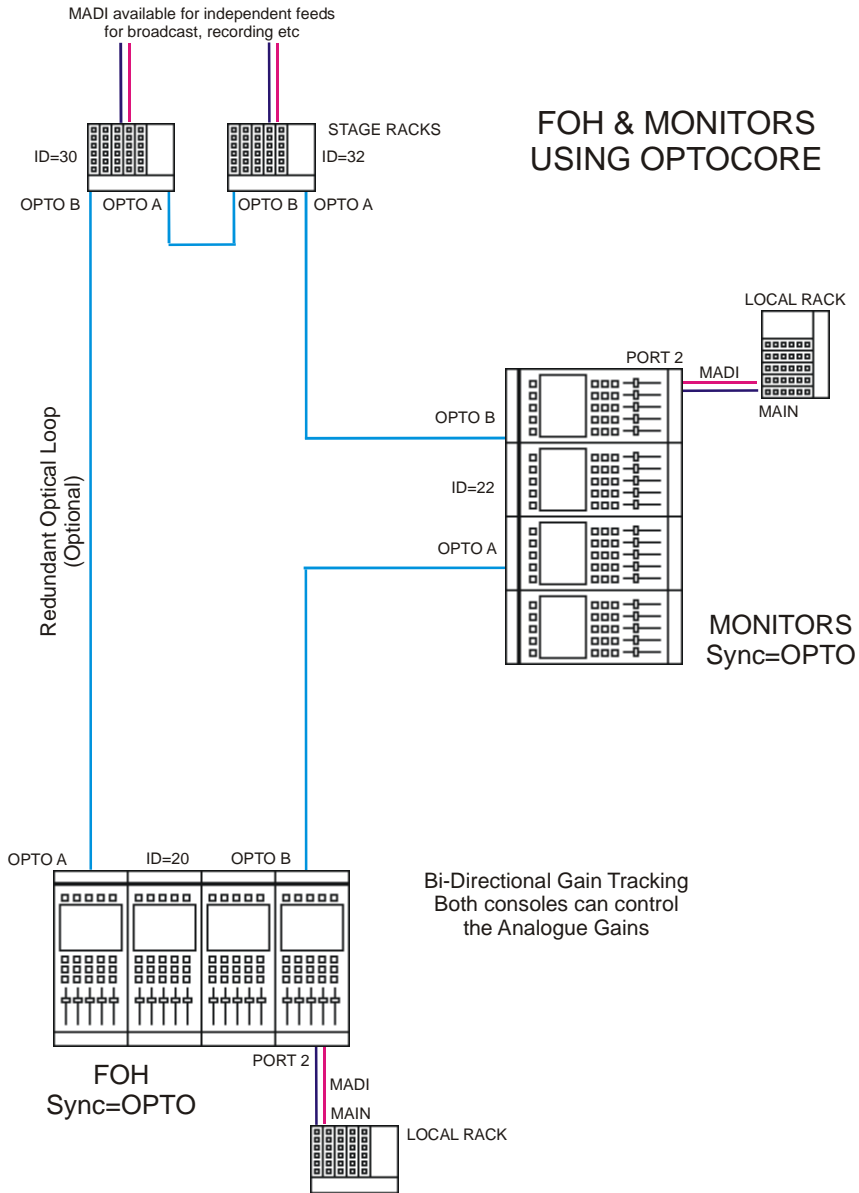
Loc L1 = 2-8-1, -10 - Analogue output has -10dB attenuation by default.
AES1 = 2-8-1, SRC 2 - Converts AES output pair (AES1 and AES 2) to 44.1Khz sample rate.

For further details and examples of Sockets Files refer to "example.skt" and "D5setup.rtf" in the C:\D5 directory

FOH and Monitors Rig Using MADI.....

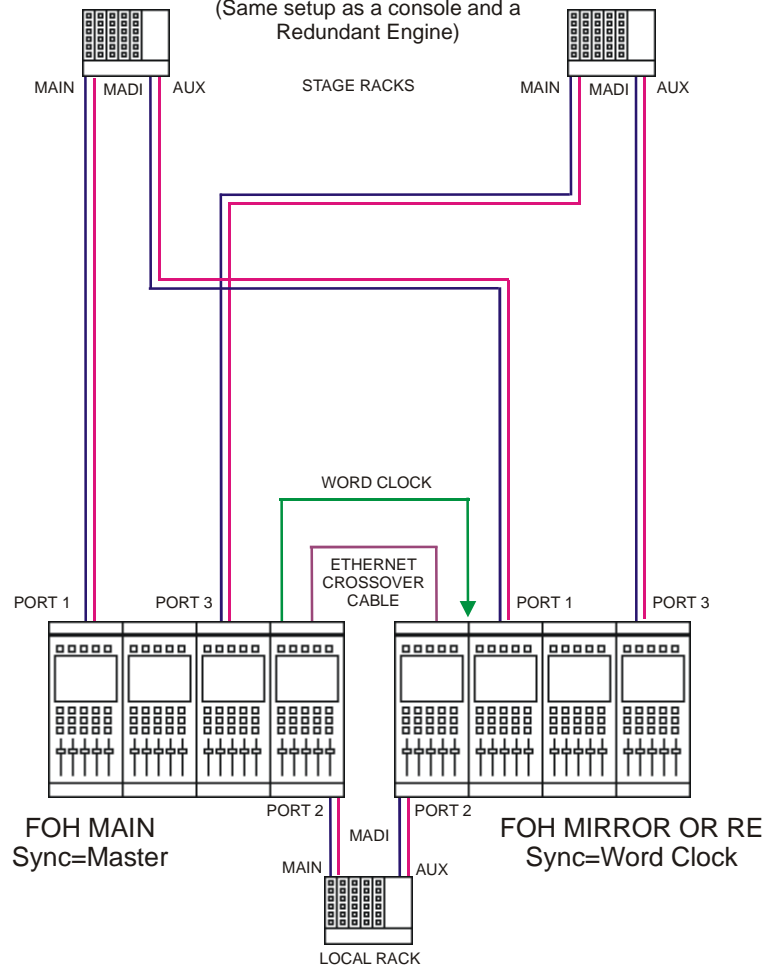


FOH and Monitors Rig Using Optocore.....

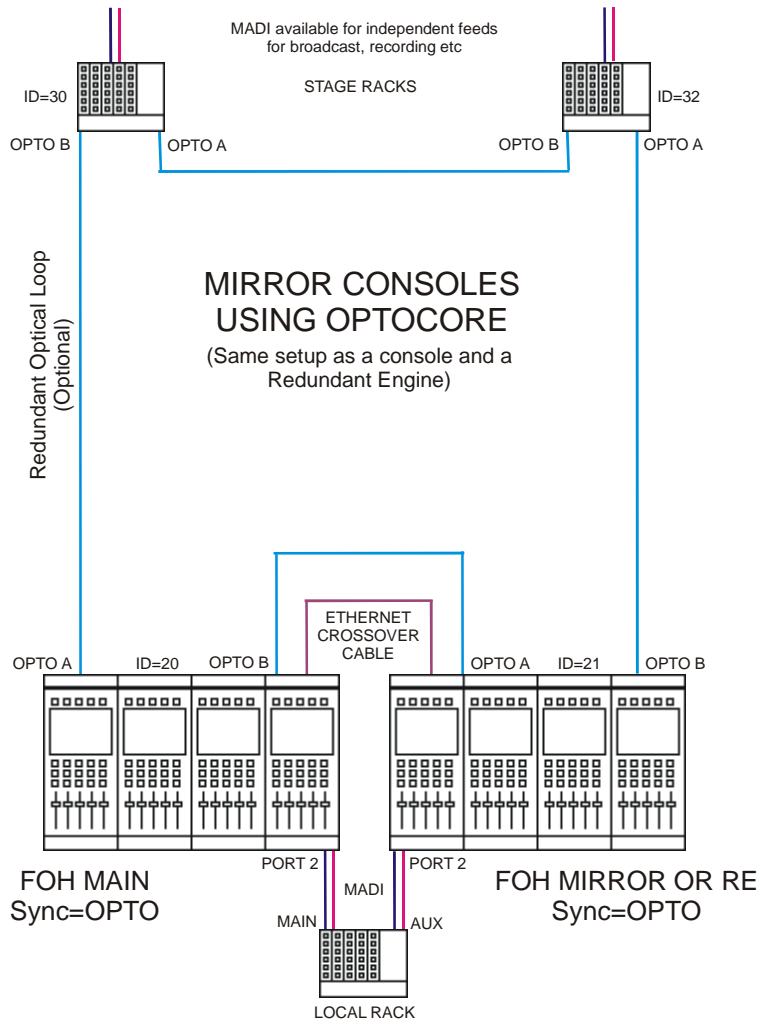


MIRROR CONSOLES USING MADI

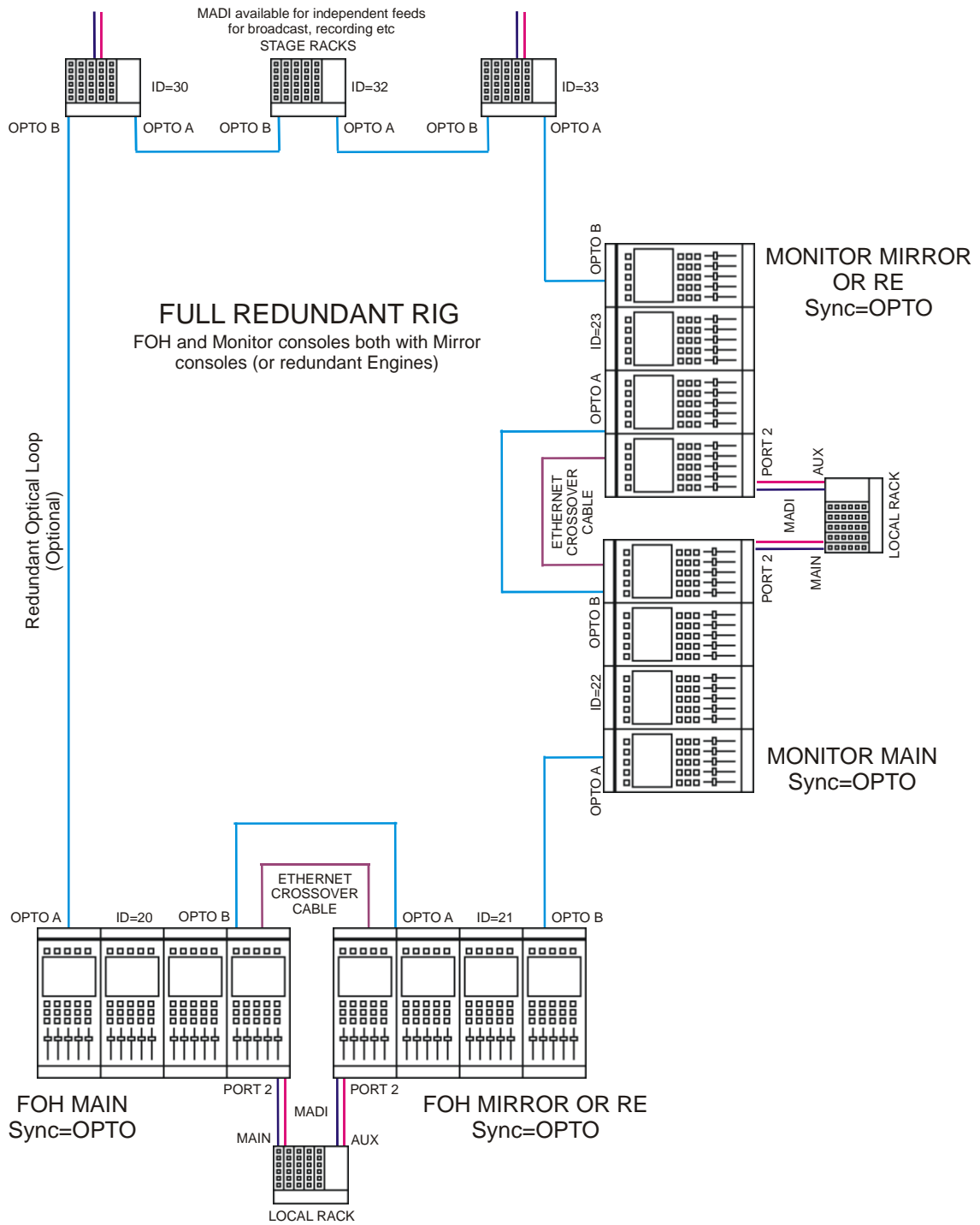
(Same setup as a console and a
Redundant Engine)



Mirror Rig Using Optocore.....



Fully Redundant Concert Rig.....



Introduction

Welcome to the Digico D5 Installation and connection manual. This manual is provided for purchasers of the D5, in order to help their installation and connection of their new console.

Digico hope that this manual answers all the questions which may be asked by system designers and installers, but should there be any issues unresolved for your particular installation, the local distributor or the factory will be pleased to assist.

In general the installation of a D5 presents no problems which are significantly different from those of any other large format live sound console when used exclusively for analogue systems and when used in digital systems, is not significantly different from other digital consoles.



System Description

The Digico D5 console consists of a Worksurface, and from 1 to 4 Input/Output Rack Units

All the console's audio inputs and outputs are connected to the Rack units, and each Rack units is connected to the Worksurface via a pair of digital MADI links in either coaxial or within an Optocore optical format. Each pair can carry up to 56 audio inputs and outputs.

There are 2 or 4 pairs of MADI connectors available on the Worksurface rear panel, including 2 bidirectional optical MADI connectors allowing the connection of up to 3 Rack units and an alternative madi connection. This gives a total capacity of 224 input and output sockets. However, the console is only able to assign up to 64 or 128 audio channels (dependent on version), so not all the channels in a 4-madi system can be used simultaneously.

Each Rack module contains input and output cards, which allow the same Rack unit to connect to different types of analogue and digital audio devices.

As well as connecting the Worksurface MADI links to Rack Units, you can also connect them directly to any other MADI equipped device, such as a digital multitrack recorder.

The Worksurface

The D5 Worksurface is in many ways very similar to any large analogue mixing console. One key difference, however, is that no analogue signals are connected directly to the worksurface - all analogue I/O is via the Rack units. The Worksurface rear panel does include a number of signal connectors, but these should be used only for synchronisation, not for audio I/O.

The Worksurface is supplied in one chassis size, for 24 input + 16 master section faders.

Console Power Supply and Cooling

Unlike most analogue consoles, the D5 Worksurface is powered directly from the mains, with no external supply unit. The internal mains supplies are highly efficient and require no forced cooling, which means that the Worksurface is silent in operation. However, it is important that convection airflow to the finned heatsinks on the rear of the Worksurface are not restricted in any way. This heatsink normally runs at around 25C above ambient temperature, and will be hot to the touch, though not hazardous. Note there are 2 x IEC mains inlets for the dual redundant supplies.

Worksurface Connections

Apart from headphones and remote talkback, no audio is connected to the worksurface. Sync and control connections are detailed later in this manual.

Headphone Connections

There are 2 parallel headphone connectors with a 1/4" (6.3mm) stereo jack at each end of the console under the armrest. These will drive down to 8 ohm loads, but note there is considerable power/voltage available at low impedance. External volume limiting should be provided where required by local regulations.

Keyboard.....

The Worksurface unit includes a small computer keyboard with integral trackerball. This is fitted to a slide-out tray which is set into the bottom of the console.

Lighting.....

The worksurface includes an innovative illumination system comprising a series of white LED's in an adjustable fully shaded fitting along the full length of the meterbridge. The brightness is adjustable by an on screen control. There is no need or provision for additional lighting in normal applications.

Interface Rack Units and Modules

Audio signals are connected to the console via Rack Units. Each Rack Unit is a 19-inch chassis with a control panel at the bottom. Above this panel are 14 card slots, each of which can accept a Rack Module.

Each Rack is a standard 19" wide, and 9U (353mm) high. The units are 365mm deep, excluding connectors.

Rack Power Supply, Cooling

Rack Units have their own mains power connections, 2 x IEC mains inputs per rack, for the dual redundant supplies. The Rack should NOT be operated with only 1 supply under normal conditions as there is only 1 fan operating. At least 1U (45mm) of space should be left above and below the rack unit to allow ventilation, and to prevent heat transfer from adjacent equipment.

Rack Earthing

The analogue earthing requirements of the Rack unit is similar to those of a conventional large analogue console. All analogue inputs and outputs are balanced and symmetrical, but not floating, because of their transformerless design. Installers should use good earthing practice, as with any large audio installation. Digico can provide copies of AES papers on this subject upon request.

Rack Control Panel Connections

The Rack Unit control panel provides connectors as follows:

MADI MAIN (A) IN & OUT (2 x BNC)

MADI AUXILIARY (B) IN & OUT (2 x BNC)

OPTOCORE® A IN/OUT (HMA Optical) (stage rack only)

OPTOCORE® B IN/OUT (HMA Optical) (stage rack only)

WORD SYNC IN & OUT (2 x BNC)

The **MADI IN and OUT** connections carry audio to/from the Worksurface. There are 2 sets, MAIN and AUX (A & B). The Coax and Optical (where fitted) are effectively in parallel. A or B are selected in software. Only 1 MADI input connection can be active at 1 time, however both outputs are always active.

The **Word Clock Out** socket can be used to synchronise other digital devices in the system to the console.

The **Word Clock In** socket can be used to synchronise the rack system in special stand alone mode. It can also be used to sync an Optocore connected system from an external Word Clock source. The rack automatically detects and uses the Word Clock as a master sync for the whole system. Individual consoles should be set to Optocore sync in this situation.

The **LED indicator** on the panel shows the condition of the Rack Unit's power supplies, whether the unit is synchronised and information of the Rack Status via the 4 buttons and a simple menu system.

Input / Output Slots

Above the panel, the Rack Unit has seven Input and seven Output slots. Each of these slots can be filled with a different Rack Module, providing an I/O system which is configured according to D5 model.

Rack Modules

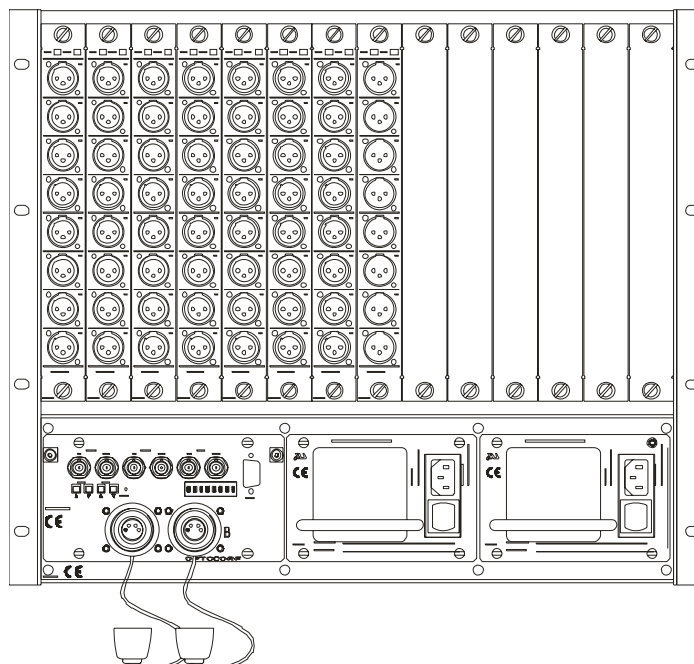
There are different Rack Modules for interfacing to different digital and analogue devices. Each Rack Module carries eight channels of audio.

Rack Module Inputs and Outputs

The modules fall into two broad groups - those which carry only inputs or outputs, and those which carry both input and output signals. Output modules must be installed in Output slots, while Input and I/O modules must be installed in Input slots.

Example Installation.....

This shows the standard "Stage 1" rack, with 56 Mic inputs and 8 line outputs.



Rack Module Connections

Audio connections to the Rack Modules are made using appropriate connectors for the type of module. See the Connector Tables for a list of the different connectors used in the Rack Modules.

MADI Cabling Considerations

The MADI (Multichannel Audio Digital Interface) standard was devised to operate using standard video coaxial cable installations. For short cable runs of up to 5m, any good quality video cable should be sufficient. The absolute maximum length of a MADI cable connection between the Worksurface and a Rack Unit is 50m.

MADI uses 75ohm cable. 50ohm cable such as that used for computer networks is not acceptable.

The bandwidth of a MADI signal is such that care must be exercised when installing long cable runs. In general, for maximum length cable runs, a high performance video cable such as RG59/U cable should be used. If in doubt about the suitability of a particular cable type, a sample of the correct length can be tested with the system prior to installation to prove its suitability.

The MADI signal should NEVER be routed via video distribution amplifier or switching arrangements, and any form of plug and socket patching of MADI signals should be avoided if at all possible. There should be NO common earth connection with other systems (including video) made via the sleeves of MADI cables.

Synchronisation Connections

When the D5 is used with only analogue signals connected to both inputs and outputs synchronisation does not need to be considered. In this case the mixer is run from its own internal master or Optocore clock.

There are, in fact, two separate synchronisation systems which use different connections - the Sample Word Clock (or Digital Sync) and the Timecode system (not usually used for conventional live sound applications).

The issues surrounding synchronisation in a digital system are complex, and do not fall within the scope of this manual, but this section gives a basic description of the console's different sync inputs and outputs.

Timecode Connections

(not Normally used on the D5 for conventional Live use)

The console cannot be slaved to external timecode but it can generate it's own timecode outputs via the software Snapshot/Timing panel. All timecode connections are made via the Worksurface rear panel, which has input and output connections for LTC (SMPTE), MIDI timecode, and Sony 9-pin (RS422). The MIDI and 9-pin systems also provide Machine Control inputs and outputs.

Connections.....**Worksurface Rear Panel**

Function	Connector	Comments
MADI Audio I/O	Female BNC	2 or 4 Pairs of I/O
Optocore	HMA	2 Bidirectional dual connector
RS-422 Machine Control	Female D-9	Sony P2 Protocol
LTC Time Code In	FXLR	Balanced, Pin 2 Hot
LTC Time Code Out	MXLR	Unbalanced, Pin 2 Hot
MIDI In/Out/Thru	5 pin DIN	MMC, MTC
AES/EBU Input	Female XLR	Sync input ONLY
AES/EBU Output	Male XLR	Null signal sync output ONLY
Word Clock Input	BNC	External clock input
Word Clock Output	BNC	Clock output follows console (5Vp-p)
Video Clock Input	BNC	House video sync
External Monitors	15 pin HD D	Overview, adjustable resolution Ideally use 1280 x 1024 SVGA
	15 pin HD D x 4	Duplicate internal screens Standard 640 x 480 VGA output
External Talkback Mic	9-pin D Female	See separate page
Modem	RJ11	See separate page
Network	RJ45	Ethernet compatible (Not implemented for general use)
Mains Power	IEC power x 2	Dual redundant supplies. 250VA (faders idle) 300 (all faders active) 90V-260V 50-60Hz auto sense

Requires 2 separate mains connections. Mixer will operate on only 1 supply. Supply units can be switched off, removed and replaced whilst the other is use (hot swappable)

I/O Rack Control Panel

Function	Connector	Comments
MADI I/O	BNC socket	2 Pairs of I/O to Console
Optocore	HMA	2 Bidirectional dual connector
Word Clock Out	BNC socket	48/44.1 KHz 5V p-p
Word Clock In	BNC socket	48/44.1 KHz 5V p-p max
Mains Power	IEC power x 2	Dual redundant supplies. Stage rack 175VA run FOH rack 175VA run 90V-260V 50-60Hz auto sense

Requires 2 separate mains connections. Rack will operate on only 1 supply for short periods. Supply units can be switched off, removed and replaced whilst the other is use (hot swappable)

I/O Rack Audio Connections

The number and type of Rack Modules in each type of rack varies according to requirements. See Standard Configuration details elsewhere.

Function	Connector	Comments
Analogue Line Inputs	8 x XLR female	8 Channels per card, electronic balanced, Pin 2 Hot
Analogue Mic Inputs	8 x XLR female	8 Channels per card, electronic balanced, Pin 2 Hot

These modules look identical except for Mic or Line ID label on the panel.

Analogue Line Output 8 x XLR male 8 channels per card, electronic balanced, Pin 2 Hot

NOTE: Analogue cards are either input or output and these must be fitted in the correct side of the rack.

AES/EBU Input / Output* 8x XLR 4 Female (input) + 4 Male (Output) floating balanced

TDIF, ADAT, AVIOM and ETHERSOUND modules are optionally available to special order. The console is also compatible with Optocore's own audio racks. Contact your dealer or the factory for information.

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Connecting Optocore® Redundant Optical Audio Data System.....

For basic connections to the optical cables between the mixer and 1 or 2 racks, refer to the Quick Start section.

It should be noted that all coax MADi connections remain available for use (with the 50m / 160' cable length limitation) and can be considered a backup to the optical system, if required.

The Optocore® system used in Digico mixers is a high speed digital audio data system that allows multiple interface racks to be connected "daisy chain" along a single optical system.

The HMA battlefield cable and connectors system is a dual in/out (2 lens) bayonet style connector. 2 multichannel audio signals, 1 input 1 output, are carried on each single plug, so there is only 1 connection required per rack. The system actually carries many more than the single rack capacity of 56 channels in and out. By using an "address" setting on each rack equipped with optical connectors, 1 optical signal can be sent to several racks, with each rack taking and sending signals independently. All units on the Mixer system have 2 bi-directional connectors, allowing the optical cable to come from the mixer to the first rack, then out to the second and so on. All optical connectors are interchangeable, therefore the order of cables and connectors in use does not matter. The system will always work.

Redundant Optical Operation.....

A key feature of this system is that, optionally, the Optocore interface provides the ability to have a dual redundant optical path, so that the system will continue to operate unaffected in the event of a complete cable or connector break. This system combined with HMA ensure the utmost reliability, even in the event of a cable being destroyed.

The final rack in the daisy chain can be connected back to the mixer with an extra (optionally supplied) cable. This forms a complete "ring" of data flowing in both directions. In the event of a cable break, the data will continue to flow on the remaining part of the ring without interruption.

Adjusting Settings in a Multiple Rack System.....

The madi interface on the Rack has a "menu" type programming and setting system using 2 pairs of up/down buttons, page and data, and an LED display.

The Menu is a series of "pages". Use the page ^ and v keys to navigate the pages. This is fully documented in a separate Technical Note. DO NOT be tempted to change ANY other setting without good reason and then only after studying the detailed notes. It is possible to make the rack unusable in a normal system by accident!

The display will show the page item and the data associated with it. The data ^ and v keys are used to change the displayed setting, where this is possible.

The default display is the primary system status and active sync input. Typically this will read OK:RxA

The LED readout will default to the primary status display, from any previous setting and the buttons will go to a "locked" mode, where the buttons are disabled, to prevent tampering.

Pressing any button in this state causes dDEC/INC to display.

This is a prompt to unlock (data - Decrement + Increment)

Press both data ^ and v buttons together to release the menu system.

Next press the page up (or down as required) button to show: OptID=30 (or some other number) this sets the Optocore ID. Use the data up or down button to set the correct number.

The stage rack 1 is normally set for ID=30, stage rack 2 (used on dual rack systems) is normally set for ID=32. Note Mixer is normally set to ID=20 (set in the mixer software), do not use this in a rack.

Care of the optical cable system.....

Whilst the system is very robust, like all connector systems it should be treated with care, the show depends on it!

The HMA connector is a precision machined device containing 2 lenses and an 1/2 turn bayonet style screw locking device. Because it is an in/out connection, a plug will fit into a socket in 1 direction only.

All connectors have captive dust covers. These MUST be fitted to the exposed connector any time the connector is not in use. This is to prevent dust landing on the lenses and to give mechanical protection to these expensive devices.

The cable is 2 separate "light pipes" in 1 very strong lightweight outer jacket. The armour just inside the surface of the jacket itself is nearly impossible to cut by hand with any sort of blade or pull apart except with the aid of machines. However the glass strands inside can be broken by hard hits or tight bending (like any type of glass!).

Typical optical cable breaks do not have the cable broken right through and it may look OK externally. Typical causes of optical cable breakage are being run over by a wheel in a rail (such as sliding doors used in loading bays) or by trapping in heavy tight fitting door, such as used in recording studios. Very tight bends caused by pulling a cable very tight with a knot tied in it can also cause the light pipe to break.

It should be noted that the optical cable is not repairable on site. It is best considered that it is not repairable at all, and treated with due care. In general it is not considered economic to repair broken optical cables.

Repair and making of these cables is a highly skilled job requiring specialised tools and materials. Because the lenses are bonded with an optical glue, the internal parts of connectors cannot be re-used. It is not possible to "splice" broken cable sections without using a connector to terminate the broken ends of the glass strands. The usual fix for a break near a cable end is to shorten the cable past the break and fit a new plug. A break in the middle leads to 2 cables half the length with 2 new plugs or just scrapping the cable.

Checking the Optical cables.....

Note that the data transmission system uses IR laser light sources and is scattered light system. This means the data signal cannot be seen, unlike Toslink cables used for CD players for example. This means looking at cable connected to a live source will not show if the signal is getting through. As with all laser sources users should not look directly into the end of cable with the other end end connected

To test the integrity of a Stratos HMA cable, use a regular light source (torch/flashlight or table light) at one end and see if the light emerges from both lenses at the other end. Because the cables uses lenses, this will normally appear as the light is quite distant down a tunnel. Which in a way it is!

SETTING UP EXTERNAL DISPLAY MONITORS.....

The Mixer is provided with outputs for 5 external PC monitors. These are standard SVGA analogue 15 pin HD Dee connectors. 4 outputs are simply repeaters (parallel) outputs of the internal screens. These are for display only, not touch screen control operation. The 5th screen is the system overview screen. This a special purpose screen, set up from the mixer system to display information useful to the operator.

Most operators will wish to connect a monitor to the overview output. Typically this is set up to show the operation of all input channels simultaneously, which cannot be seen continuously on the mixer itself. If other screens are shown on external monitors, most typically the master screen is output to a large screen to show lists of pre-sets and other master set-up displays in a large easy to read manner.

Connecting external screens.....

Mixer repeater screens are fixed at 640 x 480 VGA format. This is a exact copy of the internal digital screen and cannot be changed. Simply connect any modern SVGA monitor to the required output socket and place this in a convenient position, usually above the mixer.

The overview output has adjustable resolution. This is shipped set to 1024 x 760 as this suits the majority of modern monitors for "plug-in and go" use. This offers the possibility to display more information, including all 96 input channels.

However it is recommended that, if available, a 1280 x 1024 XVGA monitor is used to allow the maximum capabilities of the overview to be used. This change is pre-set in mixer set-up files and is not assessable from the mixer operating screens.

The change the resolution requires changes to internal set up files of the embedded control computer and this should only be done by a technician familiar with PC software set-up operations. See setup notes following.

Note about LCD Monitors.....

In Digico's experience, if a modern LCD monitor (as opposed to conventional CRT based units) is used at a resolution below its specified design figure, this may actually prove not to work correctly. Typical problems are poor vertical edge definition and shimmering of the picture. This does not usually affect CRT screens run below maximum resolution. There is no adjustment in the mixer to correct this, and the only solution is to try a different screen.

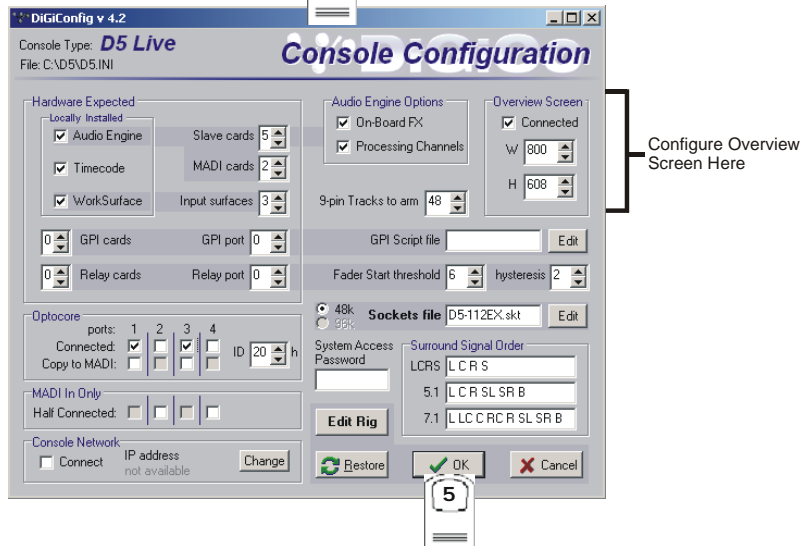
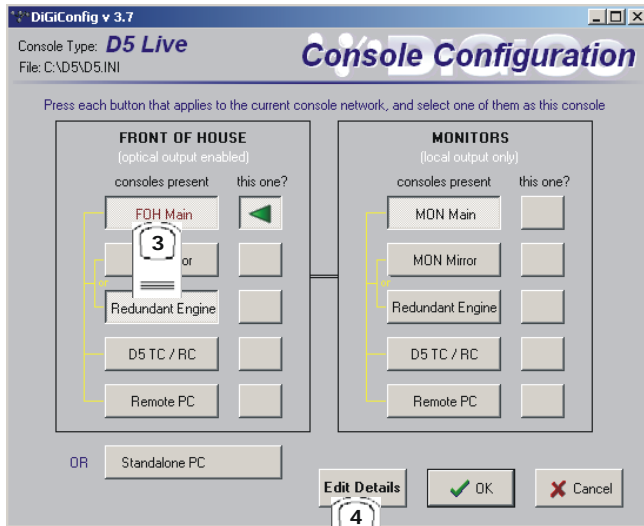
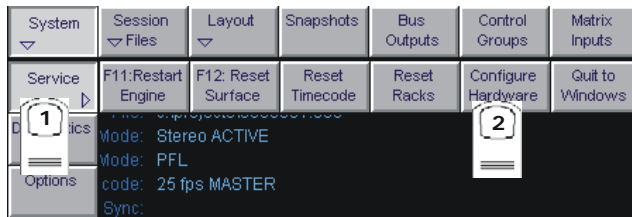
This may be relevant in touring systems where operators may wish to borrow a monitor. If in doubt, use a CRT unit. The ideal is to carry known good monitor(s) with the mixer.

Changing the Overview Screen set-up.....

The change the overview screen resolution:

Setup & Installation Manual

- 1) Open the **System / Service** menu.
- 2) Press the **Configure Hardware** button, the D5 software will close and DiGiConfig will open.
- 3) Press the **This** radio button to select the console that you are working on.
- 4) Press the **Edit Details** button. The Overview Screen resolution is adjusted in the top right corner of the screen.
- 5) Press **OK** to return to D5 software.



Important Note for Installers

D5 is a large format product of considerable complexity and is subject to constant revision and changes to improve performance and the manufacturing process.

As a result, the product as delivered may vary in small ways from the details in this manual. Any specification which is critical for a user's application should be confirmed with Digico at the time of ordering. If there is the slightest question that might significantly affect the installation of the D5 in its new home, please ask!

Possible examples include critical dimensions with respect to custom-made furniture and fitments, or fitting details in relation to a vehicle in mobile studio applications.

External Talkback Connection

In addition to the internal microphone, the console is provided with a 9-pin socket for connecting an external Talkback microphone. The microphone input is balanced, and the socket also has a pair of pins which are used to preset the analogue amplifier gain. Use a male cable connector.

Pin	Function
1	Mic +
2	Mic Ground
3	Gain A
4	Ground
5	nc
6	Mic -
7	Ground
8	Gain B
9	nc

You must set the gain range for the microphone by wiring a resistor between pins 3 and 8 - the gain can be fine-trimmed within the console's Talkback control screen. The resistor should be wired within the 9-pin connector itself, as the microphone signal runs through it. Example resistor values are shown below.

Resistor (Pins 3-8)	Gain
Short Circuit	50dB
100 Ohm	40dB
330 Ohm	30dB
1K Ohm	20dB

Phantom Power supply (+12V) is available on this connection by setting an internal jumper on the TB PCB. You can use an electret microphone if higher sensitivity is required than a dynamic can provide.

Paint Finishes & Colours

For the purposes of matching furniture and other surrounding equipment in a permanent installation, the following paint specifications are used in the D5.

The **Worksurface Panels**, rack face panels and audio In/Out modules are painted using metallic "sparkle" effect dark grey by Cromadex, code V6000

The **Chassis Frame and End Cheeks** are painted in a standard Automotive paint, Citroen "Pearl Grey" metallic, using a deep spatter finish laquer coat.

The **Armrest** is black matt finish leather.

COMBINED GENERAL PURPOSE INPUT/OUTPUT + MIDI OPTION (GPIO CARD).....

EXTERNAL CONNECTIONS

This card replaces the 2 individual 16 way input and output options (GPI and GPO or "fader start").

It combines 16 GPI and 16 GPO with 1 MIDI in-out-thru port in addition to the midi port already provided on the mixer.

The connections are on a single high density series D connector, with 62 pins (this uses a standard 37 Way D sized shell)

Two tables follow arranged by pin number and function.

Connection Notes

GPO Relay outputs are SPST make connects. These are floating on connections A and B.

Contact are rated 0.5A 100V dc (max 10W)

GPI inputs are logic (non isolated) requiring a make to 0V (earth). These have internal pull-up 22K to +5V. A simple single pole switch or relay (make to 0V) will trigger the input.

The +5V present is fused internally for logic level use only.

MIDI connections are to published midi standards.

Programming

See separate notes relevant to the mixer model in use for programming information. GPO's are programmed in the sockets file, GPI's in a separate script file declared in the hardware configuration and written separately.

If the card is not declared in the hardware configuration, a worksurface error will result. This is normal the first time the system is operated with the new card in place, until the system configuration is amended to include this card.

Note that declarations referring to GPI and GPO ports are set equal for a combi card which the system will then recognise as such. There are no separate declarations for a combi card.

e.g

GPI port = 5

GPO port = 5

When using the digiconfig hardware edit details program, the GPI and GPO will default to different ports, and must be manually changed to be equal (on the port used to connect the hardware).

Note that a GPI script file should be declared in the configuration page. If this is not yet present, a "file not found" error message will appear until it is written.

NOTE: GPI and GPO column list equivalent conversion/connection to older type P14639 GPO and GPI PCB's

Sorted by pin					Sorted by function				
Pin	Function	Note	GPO	GPI	Function	Pin	Note	GPO	GPI
1	GPO 13A			28	+5V	49			
2	GPO 12A			26	+5V	50			
3	GPO 11A			24	0V	51			COM*
4	GPO 10A			22	0V	52			
5	GPO 09A			20	0V	53			
6	GPO 08A			16	0V	54			
7	GPO 07A			14	0V	55	Midi (out)		DIN 2
8	GPO 06A			12	0V	58	Midi (thru)		DIN 2
9	GPO 05A			10	GPI 01	21		3	
10	GPO 04A			8	GPI 02	42		42	
11	GPO 03A			6	GPI 03	20		7	
12	GPO 02A			4	GPI 04	41		41	
13	GPO 01A			2	GPI 05	19		11	
14	GPI 15		33		GPI 06	40		13	
15	GPI 13		29		GPI 07	18		15	
16	GPI 11		25		GPI 08	39		17	
17	GPI 09		21		GPI 09	17		21	
18	GPI 07		15		GPI 10	38		23	
19	GPI 05		11		GPI 11	16		25	
20	GPI 03		7		GPI 12	37		27	
21	GPI 01		3		GPI 13	15		29	
22	GPO 13B			29	GPI 14	36		29	
23	GPO 12B			27	GPI 15	14		33	
24	GPO 11B			25	GPI 16	35		35	
25	GPO 10B			23	GPO 01A	13			2
26	GPO 09B			21	GPO 01B	34			3
27	GPO 08B			17	GPO 02A	12			4
28	GPO 07B			15	GPO 02B	33			5
29	GPO 06B			13	GPO 03A	11			6
30	GPO 05B			11	GPO 03B	32			7
31	GPO 04B			9	GPO 04A	10			8
32	GPO 03B			7	GPO 04B	31			9
33	GPO 02B			5	GPO 05A	9			10
34	GPO 01B			3	GPO 05B	30			11
35	GPI 16		35		GPO 06A	8			12
36	GPI 14		29		GPO 06B	29			13
37	GPI 12		27		GPO 07A	7			14
38	GPI 10		23		GPO 07B	28			15
39	GPI 08		17		GPO 08A	6			16
40	GPI 06		13		GPO 08B	27			17
41	GPI 04		41		GPO 09A	5			20
42	GPI 02		42		GPO 09B	26			21
43	GPO 14A			30	GPO 10A	4			22
44	GPO 14B			31	GPO 10B	25			23
45	GPO A15			32	GPO 11A	3			24
46	GPO B15			33	GPO 11B	24			25
47	GPO 16A			34	GPO 12A	2			26
48	GPO 16B			35	GPO 12B	23			27
49	+5V				GPO 13A	1			28
50	+5V				GPO 13B	22			29
51	0V		DIN		GPO 14A	43			30
52	0V				GPO 14B	44			31
53	0V				GPO 16A	47			34
54	0V				GPO 16B	48			35
55	0V Midi (out)		DIN	2	GPO A15	45			32
56	MIDI OUT-		DIN	5	GPO B15	46			33
57	MIDI OUT+		DIN	4	MIDI IN-		61		DIN 5
58	0V Midi (thru)		DIN	2	MIDI IN+	62		DIN	4
59	MIDI THRU-		DIN	5	MIDI OUT-	56		DIN	5
60	MIDI THRU+		DIN	4	MIDI OUT+	57		DIN	4
61	MIDI IN-			DIN 5	MIDI THRU-		59		DIN 5
62	MIDI IN+		DIN	4	MIDI THRU+	60		DIN	4

Setup & Installation Manual

Hardware Configurations

1) D5 Live 56 – 56 mic lines from stage

Surface

1 x 64 channel surface

Racks

Local rack – 8 mic/line in/32 line in/40 line out/16 AES EBU

Stage rack - 56 mic in/8 line out

1 x 150mtr optical drum

2) D5 Live 56EX – 56 mic lines from stage

Surface

1 x EX Surface

Mode a) 96 channel surface + 32 channels of F/X + 32 mix output channels with E/Q – Dynamics – Delay

Mode b) 128 channel surface **and choice of** 32 channels of F/X or 32 mix output channels with E/Q – Dynamics – Delay

Racks

Local rack – 8 mic/line in/32 line in/40 line out/16 AES EBU

Stage rack - 56 mic in/8 line out

1 x 150mtr optical drum

3) D5 Live 112EX – 112 mic lines from stage

Surface

1 x EX Surface

Mode a) 96 channel surface + 32 channels of F/X + 32 mix output channels with E/Q – Dynamics – Delay

Mode b) 128 channel surface **and choice of** 32 channels of F/X or 32 mix output channels with E/Q – Dynamics – Delay

Racks

Local rack – 8 mic/line in/32 line in/40 line out/16 AES EBU

Stage rack 1 - 56 mic in/8 line out

Stage rack 2 - 56 mic in/8 line out

1 x Optical link

1 x 150mtr optical drum

4) D5 FMX System – 112 mic lines from stage

Package

2 x D5 56EX Packages - 112 mic lines from stage

1 x extra 150mts Optic Cable on Drum – 1 x Optical link

Complete Specification: -

2 x D5 Surfaces – 112 mic lines from stage

Mode a) 96 channel surface + 32 channels of F/X + 32 mix output channels with E/Q – Dynamics – Delay

Mode b) 128 channel surface **and choice of** 32 channels of F/X or 32 mix output channels with E/Q – Dynamics – Delay

Racks

FOH local rack – 8 mic/line in/32 line in/40 line out/16 AES EBU

MON local rack – 8 mic/line in/32 line in/40 line out/16 AES EBU

Stage rack 1 - 56 mic in/8 line out

Stage rack 2 – 56 mic in/8 line out

1 x Optical link

3 x 150mtr optical drum

Worksurface.Shipping and Packaging

The Worksurface is delivered in its own flight case with 19" interface units and optical cable drums packed separately. Dimensions when packed:

Worksurface road case 1.60 x 0.64 x 1.16 m

Rack carton (original factory shipping only)

0.64 x 0.72 x 0.71m

Optical cable drum (original factory shipping only) - 0.35 x 0.35 x 0.50 m

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