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# **DIMENSION THREE**

## **Television Digital Control Surface**

### **TECHNICAL MANUAL**

 *Wheatstone Corporation*

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600 Industrial Drive, New Bern, North Carolina, USA 28562

**DIMENSION THREE Television Digital Control Surface Technical Manual**

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# Attention!

## **Federal Communications Commission (FCC) Compliance Notice: Radio Frequency Notice**

**NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



**This is a Class A product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take appropriate measures.**

This equipment must be installed and wired properly in order to assure compliance with FCC regulations.

**Caution! Any modifications not expressly approved in writing by Wheatstone could void the user's authority to operate this equipment.**

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# IMPORTANT!

## Cleaning the Acrylic Surface

An acrylic surface is a beautiful, lustrous material that is outstanding in durability and break resistance. With proper care, it will retain its attractive appearance for many years to come. This care should include precautions against scratching or contact with objects of high temperature that might mar the surface. A few simple precautions will preserve the beauty of the acrylic.

- **FIRST** be sure the surface to be cleaned is powered off.
- **NEVER** spray or pour any liquid directly onto the surface.
- **TO AVOID** scratching these surfaces, use a soft brush or cloth to gently brush away any larger dirt particles. Alternately the larger particles can be blown from the surface with the use of canned air.
- **USE** a soft, clean lint free cloth or micro fiber cloth and clean lukewarm water to clean the surface. For stubborn dirt and stains use a mild, nonabrasive soap and water mixture with the gentle cleaning cloth. Use only light pressure when cleaning. Avoid rubbing dirt or grit into the surface. Turn the cloth often and replace with a clean cloth frequently. Dry by blotting gently with a clean, dry cloth.
- **AVOID** using kleenex, paper towels, sponges or other coarse shop towels, as these materials may contain abrasives that can scratch acrylic surface.
- **DONOT USE** ketones, aromatics, esters, halogens, window cleaning sprays, alcohol, kitchen scouring compounds, or solvents (such as acetone, benzene, gasoline, carbon tetrachloride, or thinners).

**Caution!** Do not use ammonia based cleaning solutions as they can cause the surface to yellow, and become brittle and eventually cause structural damage to the acrylic surface.

***Wheatstone will not be liable for damage resulting from improper cleaning and maintenance.***



# DIMENSION THREE

## Technical Manual

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# General Information

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## General Information

### Introduction

Wheatstone's DIMENSION THREE Digital Television Audio Control Surface is exactly the control surface you need to make your show a success – day in and day out. DIMENSION THREE is the first large-format audio control surface that is so truly universal it can fit into almost any TV production environment, anywhere – whether it's a Wheatstone TDM routed studio, a MADI-equipped stadium, a remote truck, or even the newest space in studio networking based on IP connectivity. You will never run out of console with DIMENSION THREE's 16 true submixes, each of which can be mono, stereo, or 5.1 surround. There are 16 stereo AUX sends and 16 dedicated mix-minus busses, plus a Bus-Minus (N-1) / Direct output for every input channel (up to 128 in all). That's on top of the two stereo and two 5.1 surround master busses.

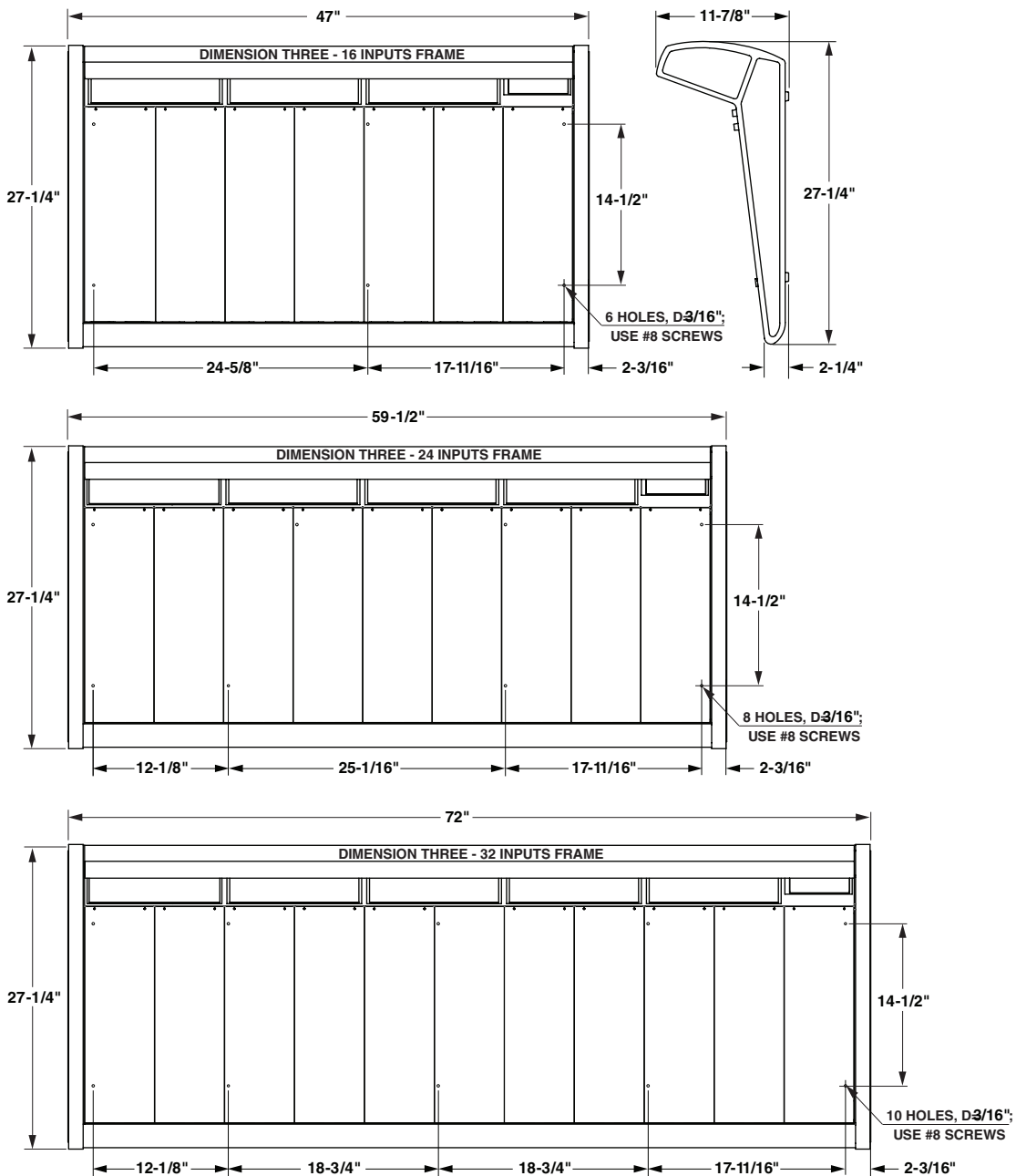
The surface is layered, so that each physical fader controls 8 sources, each of which can be mono, stereo, or full 5.1. Each fader also has a "spill" function, which allows its individual channels to spill out onto two faders for stereo and six separate faders for 5.1 sources. The control surface employs motorized faders that are recalled with Event snapshots. Each fader's alpha-numeric LED display always indicate a fader's current source to eliminate operator confusion. Two programmable soft knobs per input – can be assigned any control functions on the control surface. The DIMENSION THREE gives your operators the added convenience of four DCM/MUTE busses, and 100 Event memory locations accessed via a front panel storage and recall system that doesn't require an external computer to operate. DIMENSION THREE features Automatic microphone mixing (AutoMix), which automatically optimizes the levels of several microphones during dialogue, and Audio-Follow-Video (AFV), which allows the control surface to automatically control input channels based on the video source currently being taken. Up to 20 frames of Delay are available on any input or output fader. The control surface incorporates programmable controls for talkback and miscellaneous routing and switching functions. Digital audio processing is available on every input channel and on all major output busses (EQ, compressor/limiter, gate, high/low pass filters).

Once configured, the system operates entirely independently of external computers. Configuration is intuitive and carried out onsite by means of user-friendly graphic interfaces provided by Wheatstone XPoint router control software. The DIMENSION THREE system also takes full advantage of Wheatstone's exclusive VDip configuration software, so that studio functions (like mutes, fader and timer starts, tally, etc.) are easily accomplished right at your desktop. Once completed, all settings are retained in non-volatile storage, allowing the entire system to run independently. Wheatstone's ACI Automation Control Interface protocol is built in, providing a streamlined interface with video switchers, automation, scheduling, and hardware controllers as you require.

## Control Surface Placement

The DIMENSION THREE digital audio control surface is designed for countertop mounting. Although the rubber feet on the bottom keep the surface from being easily moved when simply placed on the counter, holes have been provided so that screws may be used to mount the surface securely to the countertop. Carefully remove the appropriate panels from the frame, screw the mainframe to the counter top, and reinstall the removed panels. The three most common frame sizes dimensions are shown in the drawings below. Larger frame sizes are available as well.

**Do not connect the DIMENSION THREE control surface to its power supply (and do not connect the power supply to the AC power line) until instructed to do so.**



# Power Supply



Front view of the PSR rackmount power supply



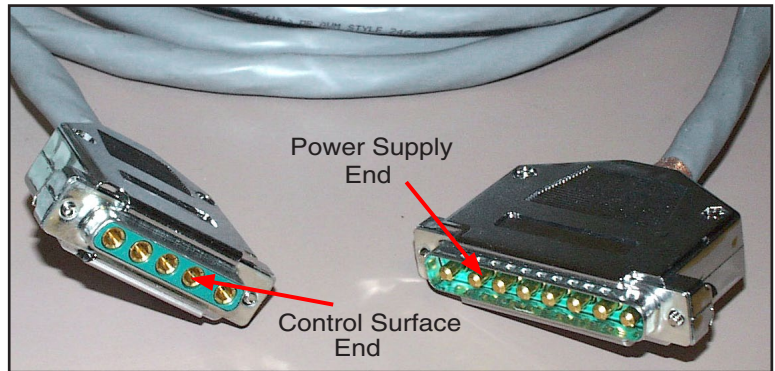
Rear view of the PSR with two SPS-400 units

The DIMENSION THREE control surface is powered by an SPS-400 power supply installed in a Wheatstone Model PSR rackmount unit. Each PSR houses up to two SPS-400 power supply units. Mount the power supply in a standard 19" equipment rack, keeping in mind that adequate ventilation is necessary to prevent heat build-up within the rack.

If failsafe redundant supplies have been ordered, you will be installing two SPS-400 units.

Note the power supplies should be mounted in an equipment rack within fifteen feet of the control surface.

Once the supply is rack-mounted, it should be connected to the control surface using the factory supplied cable. The cable has two different types of connectors on it: a 5-pin female connector that connects to the control surface's power supply connector, and an 8-pin male connector that plugs into the PSR power supply. The control surface's two power supply connectors are located at the rear of the control surface, in the middle of the meter-bridge bottom pan. If you are using one supply, connect it to one of the control surface connectors (it doesn't matter which one). If you are using the failsafe option, connect one end of a power supply cable to either control surface power connector and connect the other end of the cable to one of the two power supply connectors. Then use the other cable to connect the second power supply connector to the remaining control surface power supply connector. Connect the cable(s) first to the control surface, then to the rear of the rackmount power supply.



PS Cable Pinout

Console End 5-pin Connector Female		Power Supply End 8-pin Connector Male	
PIN		PIN	
RED 1	← +V in →	8 RED, YEL	
YEL 2	← -V in →	7 BLU, BLK	
BLU 3		6 N/C	
BLK 4		5 N/C	
N/C 5		4 N/C	
		3 N/C	
		2 N/C	
		1 N/C	

Note each power supply is fitted with a 3-wire grounded AC cord that should be plugged into a “clean” AC power source, that is, an AC source that feeds only the control room audio gear. This source should be a separate feed from those powering lighting, air-conditioning, or any other non-audio machinery. The third pin ground wire of the AC source should be tied to the central system ground point.

The power feed recommended in the text is often installed and referred to in studios as an “isolated AC ground” outlet. It is usually orange in color.

## Failsafe Dual Redundant Supply

Wheatstone failsafe power supply systems use two SPS-400 power supplies for each piece of powered equipment. Though either is capable of running a full load on its own, in failsafe operation both units run in tandem: if one fails, the other takes over, assuring uninterrupted operation.

In order for failsafe systems to perform as designed, always have BOTH power supplies powered up and connected to their associated equipment.

## Energizing

Assuming the DIMENSION THREE control surface mainframe is properly placed, and its PSR power supply (or supplies) correctly rackmounted and connected to the control surface, you may now energize the PSR rackmount power supply by plugging it into the AC mains. The control surface’s LCD displays will illuminate and individual module switches will assume factory default settings.

Note: To de-energize the control surface, unplug the rackmount power supply’s AC cord from the AC mains. *Never de-energize the control surface by disconnecting the cable that connects the control surface and power supply together.*

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**Once you have verified proper power-up, unplug the rackmount power supplies to de-energize the control surface. You may now proceed to wire up audio and control connections**

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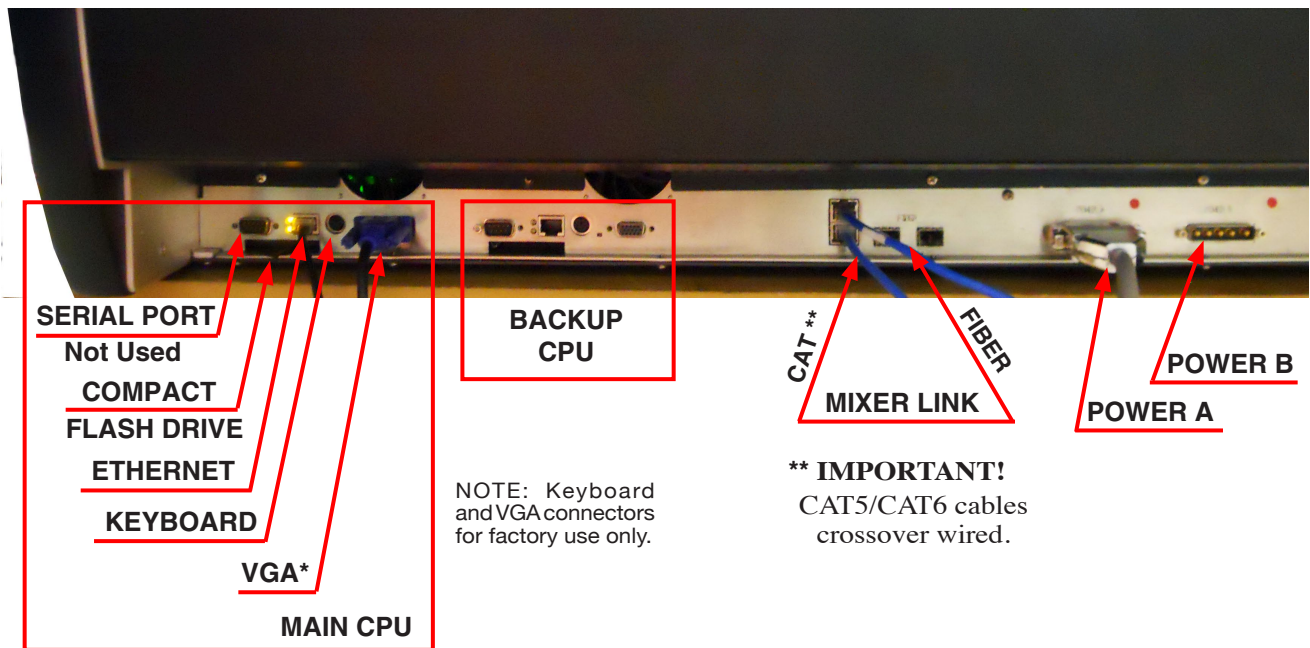
## I/O Connections

All user wiring to and from the DIMENSION THREE control surface is made via connectors located on the control surface's rear panel.

On the left rear of the frame a Main CPU's connectors: a Serial Port DB-9 connector (not used), an Ethernet RJ-45 connector, a Keyboard PS2 connector and a VGA DB-15 connector for factory use only.

MIXER LINK CAT5/CAT6 or multi-mode optical FIBER connections are made via RJ-45 or LC type optical connectors. Two 5-pin male connectors are for power supply connections.

The photo below shows connector locations.



\* 1366x768 VGA default resolution. Plugging in monitors with other resolutions will cause surface screens to draw incorrectly.

There is also a dual USB connector labeled AUDIO and USER located in the right hand end of the meterbridge facing the operator. The AUDIO port is for USB thumb drive containing audio WAV files and M3U playlists files. The USER port provides file and configuration access for future configuration software.



For all wiring pinout connections refer to Chapter 6.



## Input Panel LCD Screen



The MINI FLIP button on the DCM-D3 panel toggles the lower portion of the input channels LCD display to show EQ and dynamics curves instead of default submix and aux assigns.



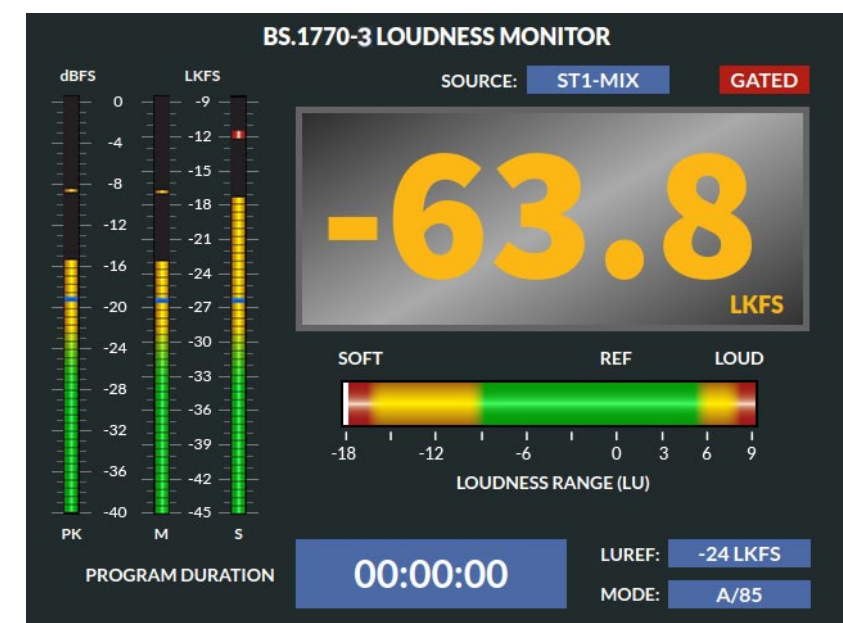
Tapping the SOURCE knob at the top of the IS-D3 panel opens a pop-up Input Sources List.



Tapping the SOURCE knob at the top of the IS-D3 panel at the Layer SETUP mode opens a pop-up Layer Channel Select List.

Press LAYER SETUP on the DCM-D3 to enter layer SETUP mode.

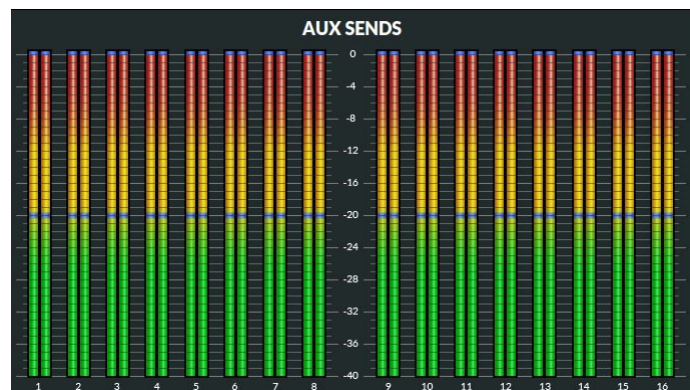
## Loudness Monitor Screen





# Master Panel LCD Screen

MXM/AUX button located on the DISPLAY section of the DCM-D3 panel toggles the standard LCD display to show metering for the 16 stereo AUX send outputs or the 16 Mix-Minus outputs.

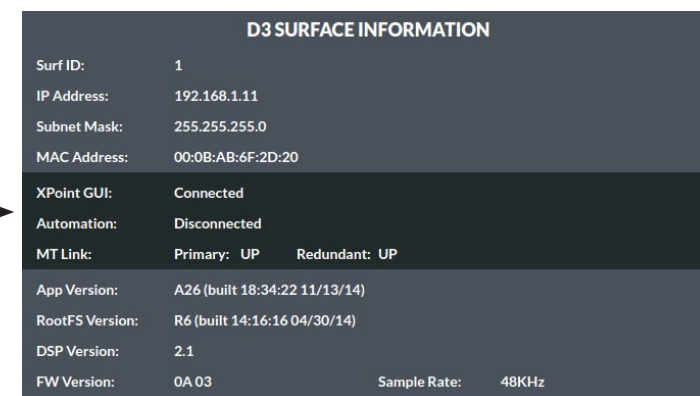


CONFIDENCE FEED STATUS					
	SOURCE	DESTINATION	SOURCE	DESTINATION	
1	MxM 1	NoDest	9	MxM 9	NoDest
2	MxM 2	NoDest	10	MxM 10	NoDest
3	MxM 3	NoDest	11	MxM 11	NoDest
4	MxM 4	NoDest	12	MxM 12	NoDest
5	MxM 5	NoDest	13	MxM 13	NoDest
6	MxM 6	NoDest	14	MxM 14	NoDest
7	MxM 7	NoDest	15	MxM 15	NoDest
8	MxM 8	NoDest	16	MxM 16	NoDest

Pressing the SET button on an input channel opens up detail view screen for any fader on the control surface.



CONF ZOOM button located on the DISPLAY section of the DCM-D3 panel zooms the confidence feed portion of the LCD display to double size.



Pressing the INFO button on the DCM-D3 panel will bring up into the lower right corner of the Master LCD screen the System Information window with technical information about the surface's software version and connection status to its companion rack MT link, Ethernet link, and automation interface.



CLIPPLAY button located on the DISPLAY section of the DCM-D3 panel switches the player into the lower right corner of the Master LCD screen.

# Input Panel (IS-D3)

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# Input Panel (IS-D3)

## Controls and Functions

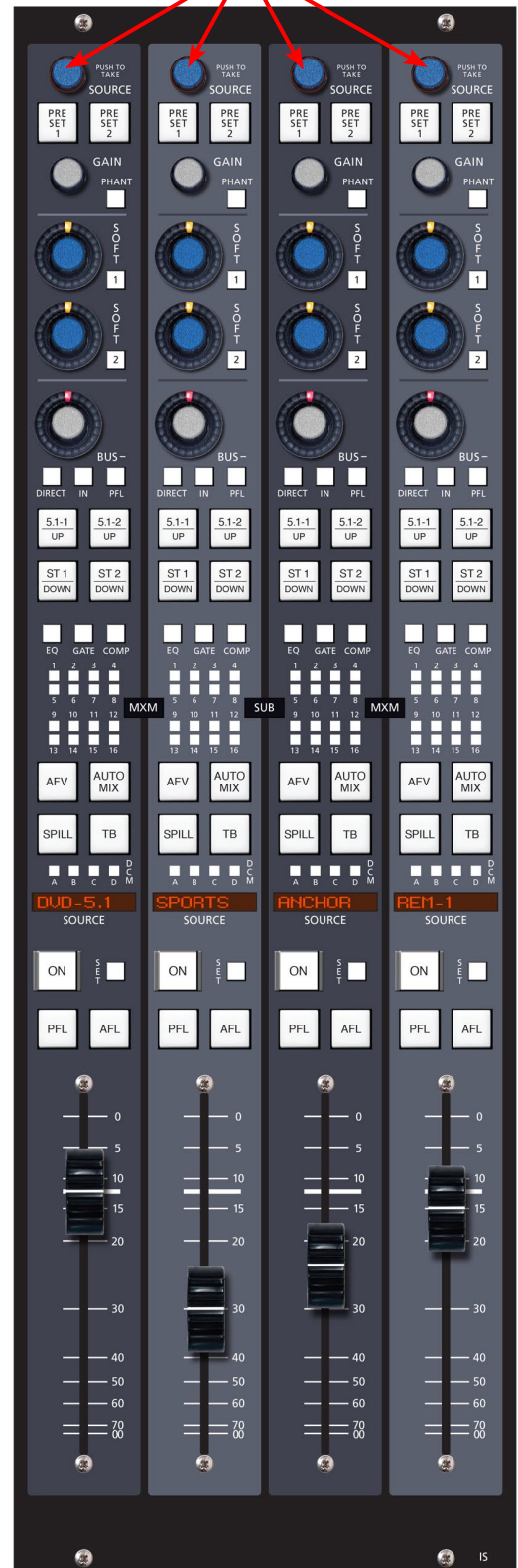
Each input panel of the DIMENSION THREE digital audio control surface has four identical strips. A dedicated LCD monitor for every eight input faders displays the currently selected DSP channel number, Preset sources, Source and Gain reduction metering, Automix status, Submix and Aux assignments, and Programmable controller values.



The MINI FLIP button on the DCM-D3 panel toggles the lower portion of the input channels LCD display to show EQ and dynamics curves instead of default submix and aux assigns.



### Source (X) Controllers



Pressing the SET button on an input channel opens up detail view screen for any fader on the control surface.



## Input Sources



DIMENSION THREE is a router based system so any input fader may access any source wired to the Wheatstone router. The D3Visibility setting in XPoint software limits what the user “sees” when they scroll through the signal list.

Select a Source for the Input fader by dobbing the SOURCE knob. A pop-up list displays all available source signals. Scroll the list until the desired source is highlighted. Signals may be grouped into folders (MICS, TechCore, etc.) by filling in the Location field for each signal name in XPoint software.

Sources may be mapped into the PRESET1 or PRESET2 button. Scroll the SOURCE knob until the desired source appears in the SOURCE window, then press and hold the PRESET1 or PRESET2 button until the switch’s LED lights. Once loaded, this source can be connected at any time by pressing the PRESET1 or PRESET2 button.

**TIP:**  
DOBBY (pronounce dah-bee) - means to quickly press and release an encoder knob.

## GAIN Control

The GAIN level control allows gain of an incoming source to be trimmed. The relative gain setting can be read from the input fader’s LCD screen or from the selected channel’s detail screen if the channel’s SET button is pressed.



**NOTE:** Gain settings are NOT saved with Events. This is to prevent accidental changes in multi surface systems.

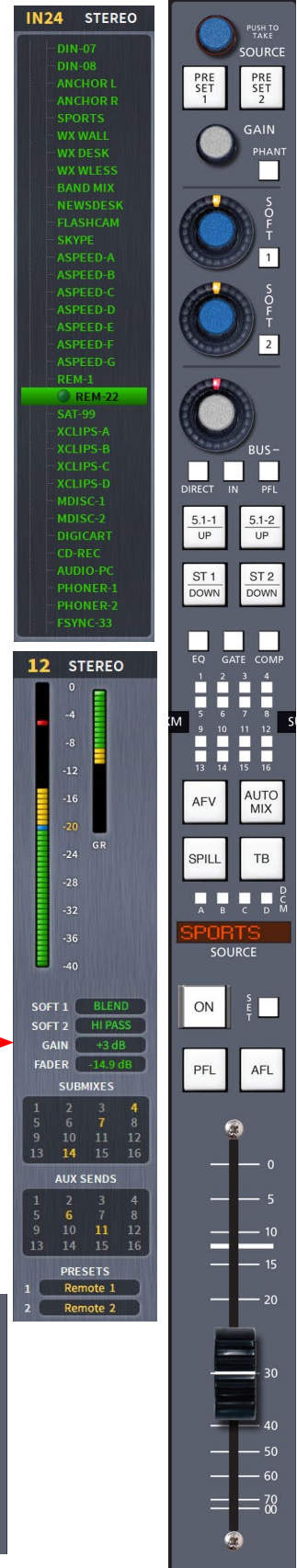
## Phantom Power

The PHANT on/off switch applies phantom voltage to any selected microphone. The phantom power attribute stays on even when the microphone is not selected on the control surface.

## SOFT

Each Input channel strip has two SOFT encoders/switches. Each bank of these “soft” controls may be mapped to control almost any input channel parameter located in the central control section. For instance, you could map the top bank of SOFT controls to be Aux Send 1. Then map the lower bank to be DELAY.

SOFT Encoder – The SOFT encoder’s behavior will change depending on which function is mapped



to it. Usually the encoder acts as a level control, turning full clockwise is maximum. For Panning or Blend the control defaults to center. Double tapping the control will reset it to its nominal position for some selected parameters.

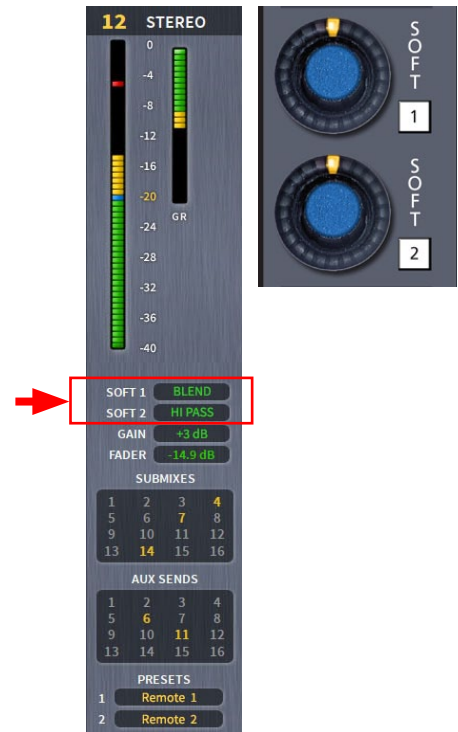
**SOFT Switch** – Each SOFT encoder is paired with a switch located just to the bottom right. The switch function depends on which parameter (Aux Send, Blend, etc.) has been mapped to the encoder. Typically the switch acts as an ON/OFF for the function.

### Mapping SOFT Functions

To map a control to a SOFT encoder bank do the following:

- Press and hold any SOFT encoder until it lights up
- Tap the knob of the function you wish to map to all the SOFT encoders in that bank. For example, the AUX 1 knob located on the DCM-D3 panel.
- Press the flashing SOFT switch next to the SOFT knob you lit up in step one.

Input fader LCD screen shows what is programmed to the SOFT encoders.

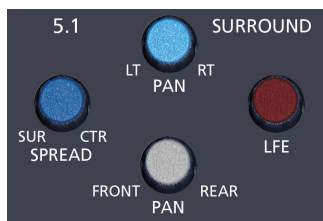


### Mode Selector Indicator

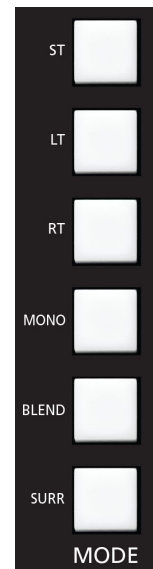
MODE selection switches in the EFS-D3 panel (see Chapter 3) enable input channels to operate in Mono, Left only, Right only, Blend, and Stereo. The switch lights up to indicate the selected mode. Channel's mode displays on the top of the input fader's LCD screen. **This feature is activated for a given channel by pressing the channel's SET button (see page 2-7).**

### Pan/Balance Knob

The PAN-LT/RT knob (5.1 SURROUND section in the EFS-D3 panel) acts as a panpot in MONO, LEFT only and RIGHT only modes, and as a balance control in STEREO mode. In BLEND, both the left and right input signals are sent to both the left and right sides of assigned stereo destinations, with the PAN-LT/RT knob acting as a mix control between the left and right inputs. **Once again, this feature is activated for a given channel by pressing the channel's SET button.** To easily set the PAN to center, you can press the control twice in rapid succession, like double-clicking a mouse button.



EFS-D3 Panel



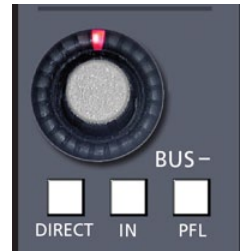
EFS-D3 Panel



## Bus Minus (BUS-) / Direct Output

Each input channel can generate its own independent mix-minus output, called BUS MINUS (BUS-); thus each anchor, each announcer, each host, each guest can have a dedicated mix-minus feed.

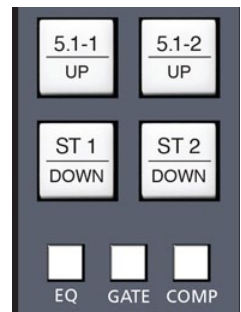
Start by assigning any desired input channels to the Bus Minus bus. This is accomplished by pressing the IN switch, which places a summed signal of those input channels onto a special dedicated mix bus. This bus now becomes available to other input channels for use in their own Bus Minus outputs. Each channel's input signal is omitted from the MIX at it's own direct output. A BUS- encoder controls the level for each of the individual IFB channel/direct outputs. A TB switch located next to SPILL lets the control surface operator talk back to that individual IFB/direct output, allowing communications between the operator and the talent receiving that mix. A PFL switch allows the operator to monitor the individual channel's Bus minus output. Use the DIRECT switch to convert the Bus Minus output into a Direct post fader/EQ output. The Direct output may be routed to any physical analog, digital, or MADI output. Press the input fader channel's SET button, then use the DESTINATION knob of the SYSTEM ROUTER section on the EFS-D3 panel to select a destination. Press TAKE next to the DESTINATION knob to complete the route.



EFS-D3 Panel

## Main Bus Assign

Buttons 5.1-1, 5.1-2, ST 1, and ST 2 assign the input channel signal to the four main busses. The buttons light up to show which busses the input channel has been assigned to. As indicated on these buttons, non-5.1 signals assigned to a 5.1 bus are automixed up to 5.1, while 5.1 signals assigned to an ST bus are automixed down to stereo.



**NOTE:** Use the EQ and Dynamics controls on the EFS-D3 and DCM-D3 panels to adjust these settings.

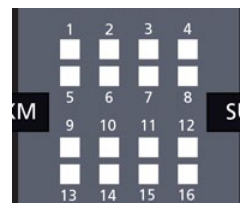
## Dynamics and EQ

Dynamics (GATE and COMP) and EQ buttons allow dynamics and EQ functions which have been set for that channel on the DCM-D3 (Chapter 5) and EFS-D3 (Chapter 3) control panels to be applied or not to the input channel. The buttons light up when input channel signal processing is active on the channel. Available Dynamics functions include compression, gating, and limiting. Available Equalizer functions include four band parametric EQ with high-pass and low-pass filters.

## MXM/SUB Indicators

These 16 indicators show which mix-minus(es) or submix(es) busses the channel has been assigned to using control switches in the MIX-MINUS ASSIGN (page 3-10) or SUBMIX ASSIGN (page 3-6) section of the EFS-D3 panel. **The MXM or SUBMIX bus assigns are accessed by means of the channel SET button.**

Switch between MXM and SUBMIX mode using the MXM/SUBS button on the DCM-D3 panel.



## AFV Button – Audio Follow Video

The AFV function allows an input channel to be automatically faded up and down when the input channel is turned ON/OFF either locally or from remote logic. The ramp time value is set globally for all faders by overpressing the DELAY knob (on the DCM-D3 panel). The ramp value is a relative setting of 0-31, with 0 being fastest and 31 being slowest. You can quickly hear the effect by manually turning an input channel ON/OFF, vary the ramp values and listen to the results.



## AUTOMIX Button

### Auto-Mix Overview

The DIMENSION THREE has an Auto-Mix control bus which any input fader may join. The basic idea of automixing is to automatically ride multiple open mic channels' gates using a host mic's level as the control. For example, if you have one host mic and four guest mics, you might set it up so the AUTOMIX switch is pressed on all four guest mics and you overpress the AUTOMIX switch on the HOST mic (LED is brighter in HOST mode).

Now when the host speaks the four guests' levels will duck. You can tailor the effect by adjusting each mic's GATE THRESHOLD (see DCM-D3 panel).

### Operation

Each input fader may be added to the Auto-Mix control bus by lighting the AUTOMIX switch. A long overpress of the AUTOMIX switch will cause the channel to become the HOST or master controller of the Auto-Mix bus.

## SPILL Button

The SPILL function lets the user spill a Stereo or 5.1 surround source out to individual faders for re-balancing purposes.

Spill two channel sources (like news packages) played back in BLEND mode to quickly re-balance editing problems with Voice over and Nat sound.

Spill 5.1 sources to re-mix or fix balancing problems like hot sub or center channels. 5.1 SPILL only works when a six channel surround source is routed to a six channel surround input fader. The surround source will spill out to the left or right depending on its physical location. Once spilled you will have six individual faders each with a single surround component: LF, RF, C, SUB, LS, RS. Adjust each component level using the individual spilled faders. Press SPILL again to exit.

## Talkback

Talkback to Bus Minus / Direct Output using this TB switch. Talkback signal can be any mic or line source in the router. Cross connect the TB mic signal to the surface's TB input signal.

## DCM (Digital Control Master) Indicators

Each channel can be assigned to any combination of the four DCM masters (DCM-D3 panel). The assigned setting is displayed in the DCM ABCD indicator group. Any channel that is assigned to a DCM will have its level controlled in a subgroup manner, much like a VCA function in an analog console. For example, all announcer voices could be on DCM A, all remotes could be assigned to DCM B, and commercial source material could be on DCM C. The channels can then be easily adjusted in groups by means of faders on the DCM-D3 panel. Furthermore, these DCMs may be used as group mutes, to cut out or in an entire bank of faders by simply toggling the appropriate MUTE switch on the DCM-D3 panel.

Channels are assigned to these DCMs in the following manner: press the channel SET button on the input fader section and then press the desired DCM ASSIGN button, located in the center of the EFS-D3 panel.

When an input is muted by a DCM master, it is as if the input fader strip's ON button was turned off. Any Studio muting and ON AIR Tally logic is turned off and mix-minus feeds are turned off.

## Source Display

The currently selected source name shows on the alphanumeric display above the ON switch. This name is the 8-character name as defined in the Wheatstone Gibraltar Router.

## Channel ON Switch

The CHANNEL ON switch turn the channel signal on and off and fires the channel ON (START)/OFF (STOP) logic. The switch LED lights to indicate the channel is on.

## SET Button

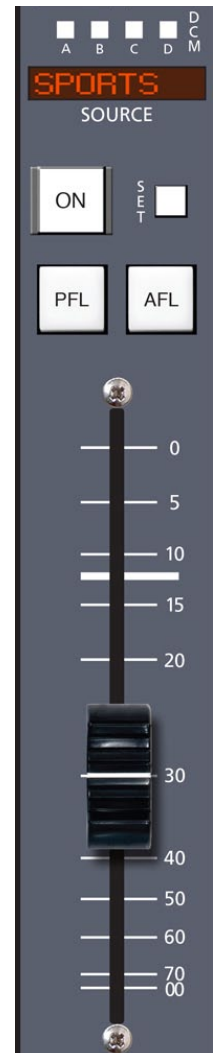
This allows the operator to access various controls and displays on the EFS-D3 and DCM-D3 panels and apply them to the selected channel. SET can access SOURCE select, GROUP, MIX-MINUS, DYNAMICS and EQ functions. To use, press the SET button and then make your appropriate section settings in other areas of the control surface. Once a SET button has been pressed, various encoders and buttons light up, and the input fader's LCD screen changes to the selected channel's detail screen which displays the current settings (EQ, MODE, DYNAMICS, AUX SENDS, etc.) **for that input channel** until a different input SET button is pressed. Or if you don't use any SET-related controls for 20 seconds, the current SET selection will time out and the SET button will go off.

## PFL – Pre Fade Listen

The PFL switch lets the control surface operator monitor the channel's pre-fader signal.

## AFL – After Fade Listen

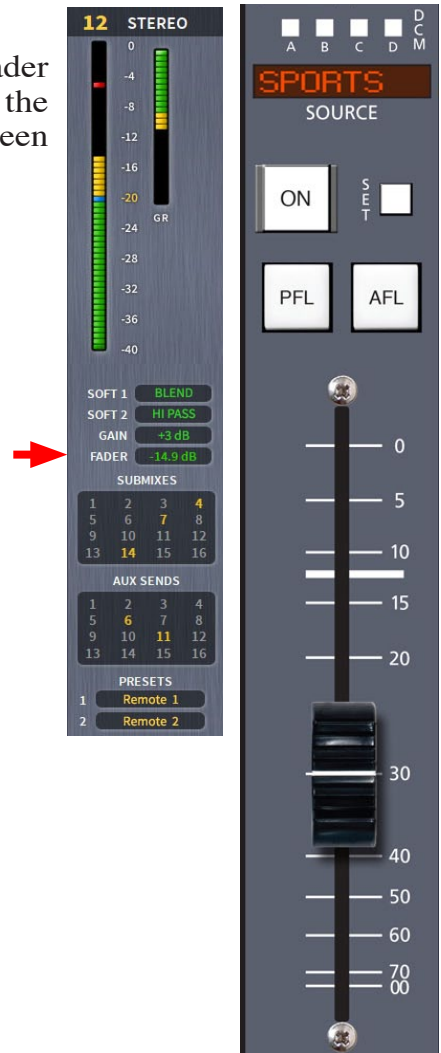
The AFL switch lets the control surface operator monitor the channel's post-fader signal.





## Fader

Channel output level is set by a long-throw motorized fader for automated level control. Fader position (in dB) shows in the input fader's LCD screen or in the selected channel's detail screen if the channel's SET button is pressed.



# Control Panel (EFS-D3)

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# Control Panel (EFS-D3)

## Controls and Functions

The DIMENSION THREE digital audio control surface is equipped with one Control panel. This panel contains monitors, bus, submix and mxm assigns, PFL, talkback, equalizer, 5.1 surround, mode, aux/mxm masters outputs, system router, events, switched meters, copy, and test tones sections.

## Monitors

There are four monitor outputs available: CONTROL ROOM, STUDIO 1, STUDIO 2, and HEADPHONE.

Each monitor has a LEVEL control, a SET button, a DIM switch, a TB button (CR monitor does not have a TB button), and a MIX display that is located on the bottom section of the EFS-D3 panel.

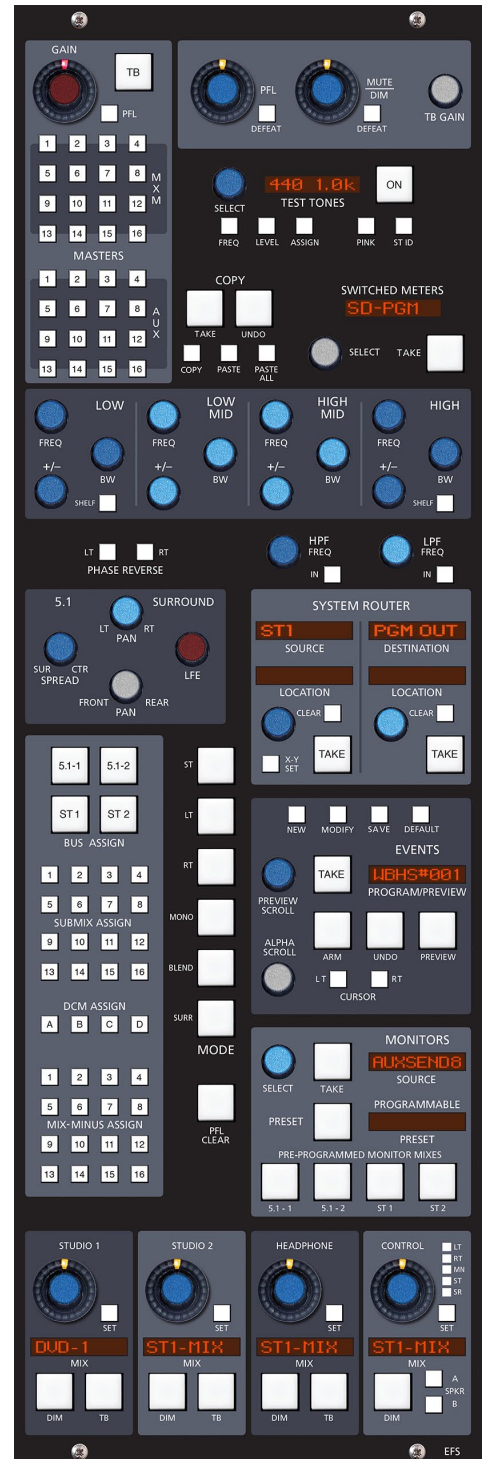
The CR monitor section also contains a mode indicator and two speaker select buttons.



Monitor sources can be selected several ways:



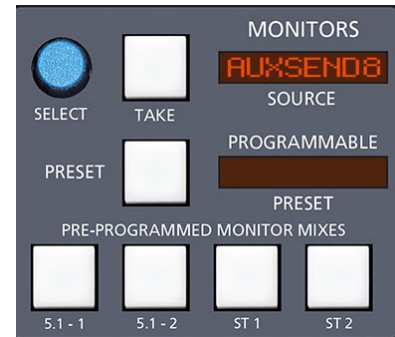
- Four PRE-PROGRAMMED MONITOR MIX switches (5.1-1, 5.1-2, ST1 and ST2) allow direct access to the main mixes most frequently monitored.
- Sources can be randomly selected with the SELECT knob and its attendant SOURCE display and TAKE button.



- A source can also be loaded as a monitor preset by first selecting it with the SELECT knob and the SOURCE display, and then holding the PRESET button down until the source shows in the PROGRAMMABLE PRESET display. That source can then be monitored by pressing the PRESET button.

To select a source for a monitor by one of the above methods, first press the SET button next to the knob for the desired monitor.

The knob controls the level of the monitor signal.



## Control Room Section

In a typical television application the control surface is located in the audio control room. Speakers in the control room allow the control surface operator to listen to the various control surface bus outputs to be assured that the control surface is performing as desired. These speakers are fed by a stereo or 5.1 signal routed from the control surface's CONTROL output. In addition to the control room output, the operator may also desire to listen to specific isolated faders via the external cue speaker.

**CR SET Button** – Lets the operator select the source to be listened to in the control room speakers.

**MIX Display** – The eight character display shows the source that is selected for monitoring in the control room.

**CONTROL Level Control** – Determines the overall loudness of the signal being monitored as it appears in the control room speakers.

**DIM Button** – Lets the operator “dim” the control room speakers (drop in level). Actual DIM level is set by the DIM encoder at the top of this panel.

**Mode Indicators** – A set of five LEDs indicates which mode, LT (left), RT (right), MN (mono), ST (stereo), or SR (surround), the CR signal is operating in (see also page 3-6).

**SPKR A, SPKR B** – These two switches are used to determine which of two outputs will be fed by the CR signal. Each feed may have its mode programmed separately (see Selecting Output Mix Destinations on page 3-13).

Any open mics in the vicinity of the DIMENSION THREE are potential sources of audio feedback via the control room speakers. To avoid this a mic channel can be set to MUTE the control room speakers when on. See the sub-heading **Speaker Muting** on page 3-5.



## Studio Section

In addition to the control room, there may be one or two studios in which one or more performers will be assembled, usually with microphones so that their voices can become part of the mix. Speakers may be provided in the studio to allow the talent to listen to the various control surface bus outputs at times that they are not actually on air. These speakers are fed from one of the control surface's stereo studio outputs.

As in the control room, the potential for feedback also exists in the studio. The talent microphones will usually provide a part of the signal that is going out over the air. If that signal is the one being monitored with the studio speakers, feedback will occur.



To prevent this, the studio mic faders are usually set to mute the studio output in the configuration software to prevent the occurrence of feedback.

**Studio SET Button** – Lets the operator select the source to be listened to in the studio.

**MIX Display** – The eight character display shows the source that is selected for monitoring in the studio.

**ST Level Control** – Determines the overall loudness of the signal being monitored as it appears in the studio speakers.

**DIM Button** – Lets the operator “dim” the studio speakers (drop in level). Actual DIM level is set by the DIM encoder at the top of this panel. Note the DIM function also affects the talkback interrupt. Note also if the studio is muted, talkback cannot be heard. However, if the studio is dimmed, talkback audio could presumably make it from the studio monitor speakers to the open studio mic.

**TB (Talkback) Button** – There may be times when the control surface operator wants to talk to one of the talent in the studio. When the TB button in the studio monitor section is pressed, a predefined signal, usually the operator’s mic, will “interrupt” the speaker feed that is normally heard in the studio.

If there is a live mic in the studio which has activated the mute feature, talkback will also be muted in the speakers.

On the top right corner of the EFS-D3 control panel is the TB GAIN master level control that sets the talkback output and the level of the talkback interrupt signal. The normal studio feed, which is interrupted by the TB signal, will fall to a level set by the DIM control.

## Speaker Muting

To activate studio speaker muting you must program the surface using the *Configure>VDip Settings* form located in the XPoint software. This is typically done at install time by the Engineering staff or a Wheatstone representative, and is detailed on the XPoint Software chapter of the *Wheatstone Gibraltar Digital Audio Network System Technical Manual*.

Each MIC input signal may be individually configured to mute any or all Studio or Headphone outputs when the fader is ON AIR.

## Headphone Section

The HEADPHONE output may be used to feed the video CR or third Studio.

**Headphone SET Button** – Lets the operator select the source to be listened to in the headphone.

**MIX Display** – The eight character display shows the source that is selected for monitoring in the headphone.

**HEADPHONE Level Control** – Determines the overall loudness of the headphone output signal.

**DIM Button** – Lets the operator “dim” the headphone output signal (drop in level). Actual DIM level is set by the DIM encoder at the top of this panel.



### TIP:

#### PFL DEFEAT

Press the STUDIO output SET button, then light the PFL DEFEAT switch at the top of the same panel to stop PFL from going to STUDIO speakers.

#### MUTE DEFEAT

Press the STUDIO output SET button, then light MUTE DEFEAT button at the top of the same panel to cancel STUDIO speaker muting.





TB (Talkback) Button – Takes the assigned TB signal and feeds it to the headphone output, allowing direct communication between the operator and talent. The normal headphone feed falls to a level set by the DIM control.

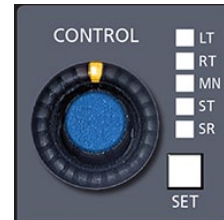
Monitor outputs are normally subject to the control surface’s muting and solo/cue interrupt circuits; however, these may be defeated by front panel switching (DEFEAT button – see page 3-8).



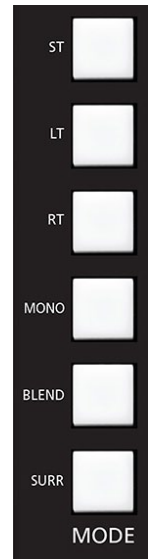
### Mode Control and Indicators

These switches and LEDs give local visual control and indication of the selected mode for the various monitors (stereo, mono, left only, right only or surround). Note that the mode status of the CR monitor can always be seen on its mode indicator LEDs next to the CR level control.

Mode may be changed in the following way: press the SET button for the desired monitor and select the allowed MODE button in the center of the panel. Similarly, the mode of an input source is selected by first pressing the SET button for the desired input channel.



Note that SURR mode requires that the CR be configured for six channel operation in software. Not all systems support this mode. Consult factory for details.



### Bus Assign Section

All bus assignment is accomplished through a bank of BUS ASSIGN switches on the EFS-D3 panel, consisting of four master assign switches and sixteen submix assign switches. The switches illuminate to indicate the assign status of the input channel or submix whose SET switch is currently active. Indicator windows on the submix section of the MFS-D3 panel show the assign status for each individual source.



Bus assignment may be made in any combination, and is accomplished by first pressing the SET button on the desired input channel (IS-D3 panel) or submix (MFS-D3) panel. The switches in the EFS-D3 panel BUS ASSIGN section illuminate to show the source’s current bus assignment. Press required switches to create the desired set of bus assigns. The local indicators on the IS-D3 or MFS-D3 panel will change to reflect the new bus assignment.

## Surround/PAN System

NOTE: The 5.1 Surround panning system is used only for those signal paths assigned to a 5.1 destination.

**Programming a Channel for Surround Sound:** Select the channel you wish to program by pressing its SET button. Assign it to the 5.1 destination by means of the BUS ASSIGN switchbank. The 5.1 SURROUND section will indicate the current settings of the encoder LT/RT, FRNT/REAR, SUR/CTR, and CTR/LFE knobs. The meterbridge display will also show a multi-color graphic representation of this system. The system can generate 5.1 signals from MONO or STEREO sources, and can modify the 5.1 signal of existing 5.1 input sources. Double-clicking any of the encoders will return that parameter to its default setting (for example, LT/RT returns to center).



**AUX SENDS**

1-16 knobs with labels: -INFdB, -5.8dB, -INFdB, -INFdB, -INFdB, -INFdB, -INFdB, -INFdB, -INFdB, -INFdB, -2dB, -8dB, -INFdB, -INFdB, -INFdB, -8dB.

**STEREO 21**

Vertical meter with GR scale from 0 to -40.

**EQUALIZATION**

Graph showing frequency response from 20 Hz to 20 kHz. Parameters: HPF 82 Hz, LO 126 Hz 0.5 oct 8.0 dB, HI/MID 2.03 kHz 1.1 oct -9.8 dB, LPF 10.6 kHz, LO/MID 750 Hz 1.0 oct 0.0 dB, HI 15.6 kHz 1.1 oct 3.7 dB.

**DYNAMICS**

Graph showing dynamics processing from -60 to 20 dB. Parameters: COMPRESSOR IN, ATTACK 29.8ms, RELEASE 150.7ms, THRESHOLD -20.0dB, RATIO 3.0:1, MAKEUP 6.0dB, GATE IN, OPEN 2.0ms, CLOSE 99.1ms, HANG 99.5ms, DEPTH 0.0dB, THRESH -35.1dB.

**SURROUND PANNING**

3D diagram showing speaker layout with a red arrow pointing to it.

**CHANNEL INFO**

EVENT: 6PM NEWS  
DCMS: A B C D  
MUTES: ST1 ST2 HDPN CR  
BUS MINUS: REMOTE 1  
DEST: TOG

**HOST**

SOFT 1 THRESHOLD  
SOFT 2 RATIO  
GAIN -23.1 dB  
FADER -23.1 dB

**SUBMIXES**

1 2 3 4  
5 6 7 8  
9 10 11 12  
13 14 15 16

**AUX SENDS**

1 2 3 4  
5 6 7 8  
9 10 11 12  
13 14 15 16

**PRESETS**

1 ANCHOR L  
2 BACKUP L

**5.1 SURROUND 1**

Vertical meter for channels: LF, RF, C, LFE, LR, RR.

**ST 1**

Vertical meter for channels: L, R.

**SWITCHED**

Vertical meter for channels: L, R.

**ST 2**

Vertical meter for channels: LF, RF, C, LFE, LR, RR.

**5.1 SURROUND 2**

Vertical meter for channels: LF, RF, C, LFE, LR, RR.

**SUBMIXES**

Vertical meter for channels 1-16.

**MIX MINUS**

Vertical meter for channels 1-16.

**CONFIDENCE FEED STATUS**

SOURCE	DEST	SOURCE	DEST		
1	MXM 1	REMOTE 1	9	MXM 9	MADI 29 L
2	MXM 2	REMOTE 2	10	MXM 10	MADI 29 R
3	MXM 3	TRAFFIC	11	MXM 11	MADI 30 L
4	MXM 4	HYBRID 1	12	MXM 12	MADI 30 R
5	MXM 5	HYBRID 2	13	MXM 13	MADI 31 L
6	MXM 6	2-WAY	14	MXM 14	MADI 31 R
7	MXM 7	IFB1	15	MXM 15	MADI 32 L
8	MXM 8	IFB2	16	MXM 16	MADI 32 R

**5.1 SURROUND 1**

3D diagram showing speaker layout with a red arrow pointing to it.



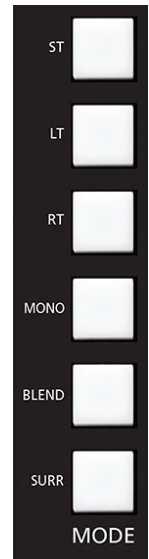
## Mode Select Section

You have already been introduced to the MODE switches earlier in this chapter, in the discussion of the monitor controls. Mode may also be set for input channels and output mixes.

To select a MODE, press the SET button of the desired channel or mix; the SET button will illuminate, and the current mode setting for that channel will be displayed on the MODE switches. MODE can be reconfigured by pressing any allowable button.

The mode selector switchbank (ST, LT, RT, MONO, BLEND, and SURR buttons) and PAN-LT/RT knob are located in the center of the Control panel. There are six available channel modes: STEREO, LEFT ONLY, RIGHT ONLY, MONO, BLEND, and SURROUND. When pressed, the switch will light up to indicate the selected mode.

The PAN-LT/RT knob acts as a panpot in MONO, LEFT ONLY and RIGHT ONLY modes, and as a balance control in STEREO mode. In BLEND mode, where both the left and right signals are sent to both the left and right sides of assigned stereo destinations, the PAN-LT/RT knob acts as a mix control between the left and right inputs. The PAN-LT/RT knob is only used with input channels, and has no effect when setting the mode of the monitor signals.



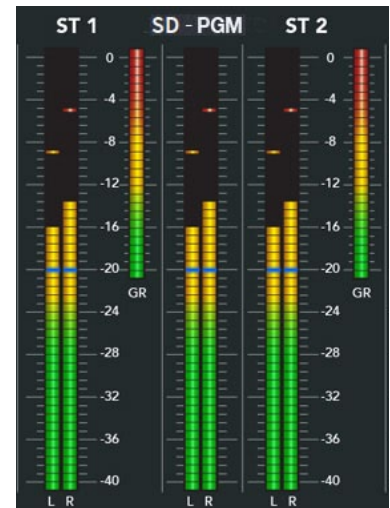
## Mute/Dim/PFL/AFL Section

The PFL master level control and DEFEAT switch are located on the top section of the EFS-D3 panel. The PFL signal is pre-fader, and is normally used to check signals. When a channel is CUEd, its pre-fader signal will appear in the external cue speaker, and the switched meter array in the master LCD display will show the level of the pre-fader signal.

The PFL level control determines the overall loudness of the cue signal.

The surface's PFL mix is usually routed to an analog output connected to an external CUE speaker. The PFL DEFEAT switch prevents PFL/AFL from interrupting a Studio or CR output. PFL DEFEAT is saved with EVENTS, be sure you have PFL DEFEAT engaged for Studio ports that feed studio speakers.

The DIM master level control and defeat switch are also located on the top of the EFS-D3 panel. Press SET on any CR, HEADPHONE, or STUDIO, then press PFL or MUTE DEFEAT to activate function. The DIM level control sets the amount of attenuation applied to a monitor signal (such as control room output) when its DIM switch is engaged, and also sets the level of the normal feed when it is interrupted by the TB signal. The dim DEFEAT switch allows for temporarily overriding the attenuation to bring all DIMmed signals back to their normal level.



**NOTE:** PFL and CR MUTE is only required when a MIC is open in the Control Room.

## Clear PFL



When any PFL/AFL button on the control surface is pressed, its light will be illuminated and should flash slowly. The PFL CLEAR button will also flash synchronously with any active PFL buttons. Any signal can be released from cue/solo by pressing its individual PFL button a second time. All PFL activated buttons can be cleared at once by pressing the PFL CLEAR button.

## AUX/MXM Masters Outputs

This section is used to adjust the master gain, select PFL, and engage the talkback for the sixteen AUX SEND and MXM mixes.

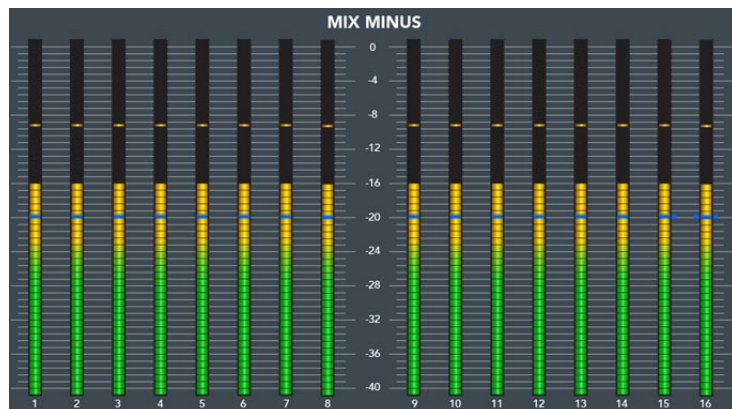
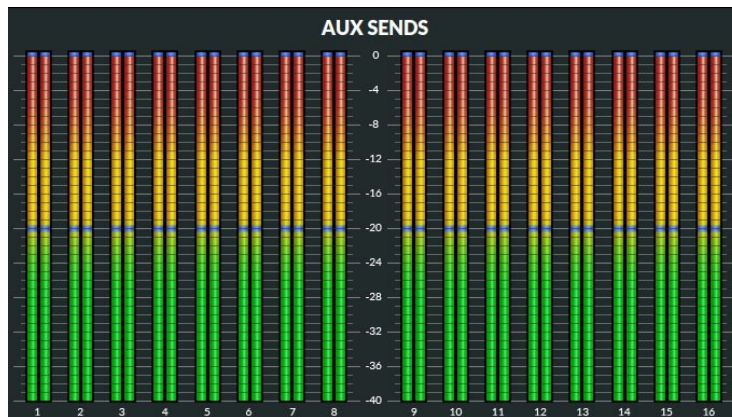
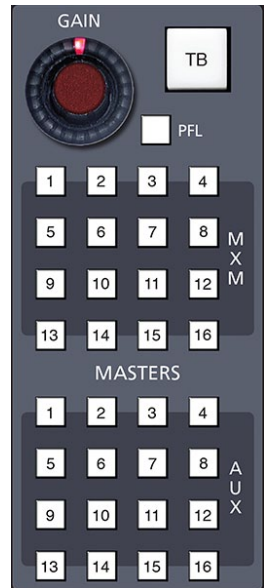
It is comprised of a shared GAIN knob, TB button and PFL switch. Additionally, there is a bank of sixteen AUX MASTERS buttons and a bank of sixteen MXM MASTERS buttons.

To set a gain, press any of the sixteen AUX MASTERS or MXM MASTERS buttons and rotate the GAIN knob.

To set a PFL, again press any of the sixteen AUX MASTER or MXM MASTER buttons and then press the PFL button.

To interrupt a signal with the TB signal, press any of the sixteen AUX MASTER or sixteen MXM MASTER buttons and then press the TB button.

The meterbridge display will show AUXSENDS or MIXMINUS metering switchable by the MXM-AUX button located on the DISPLAY section of the DCM-D3 panel.



## MIX-MINUS Assign

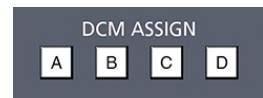
These buttons are used to control the makeup of the sixteen MIX-MINUS buses. Press the SET button on any input. If that input is assigned to feed an MXM bus, the corresponding MIX-MINUS ASSIGN switch will be lit. Pressing a MIX-MINUS ASSIGN switch will toggle that input's signal into or out of the corresponding MXM bus. Indicator windows on the input panels show the assign status for each individual source.



By default, the surface is configured so that when the MIX-MINUS ASSIGN LED is lit, the audio from that fader is *removed* from the MXM bus output. This makes it easy to see which input fader is NOT on a given MIX-MINUS output.

## DCM Assign

To assign a DCM to an input, submix or master, place the input, submix or master channel in SET mode and press any combination of the DCM ASSIGN buttons. The appropriate DCM display cluster on the inputs (IS-D3 panel), or submixes or masters (MFS-D3 panel), will be illuminated, as well as the assign buttons.



## Switched Meters Section

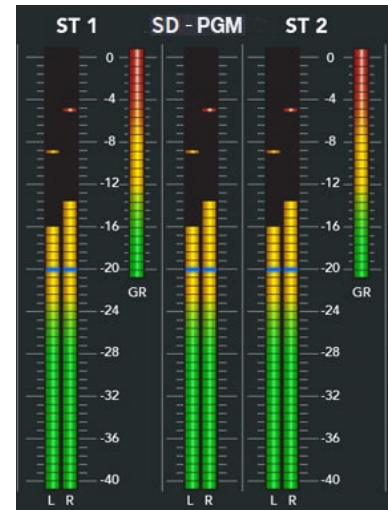
The control surface also provides a switched meter.



To select a signal to meter, rotate the SELECT encoder. Available sources will be displayed in the eight character SWITCHED METERS display. When the desired signal is displayed, press the TAKE button. The switched meter array will then display the signal level.

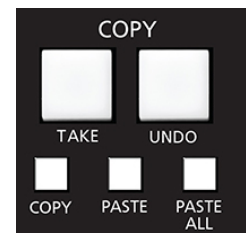
If, however, after a timeout period of 5 seconds, the TAKE button is not pressed, the array will revert back to its previous selected program. The meterbridge display will show metering for selected source.

Any time a channel PFL button is pressed, the PFL level will be temporarily shown in the switched meter display until the PFL button is deactivated.



## Copy Section

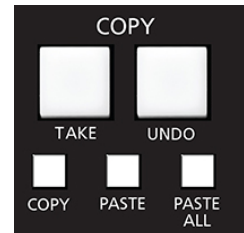
This system provides a convenient means of copying input channel settings and duplicating them to other input channels. To go into COPY MODE, press the COPY button. It will flash. Choose the desired channel to be copied by pressing its SET button (IS-D3 panel). The SET button will then flash in concert with the COPY button and the PASTE and PASTE ALL buttons will light. To go into PASTE mode, press the PASTE button. It will flash, and the COPY and PASTE ALL buttons will go out. Then press the SET button of the target module you wish to copy to. It will begin to flash in concert with the PASTE button, and the TAKE button will light.



To accomplish the copy, press the TAKE button.

Note, the copy function does not copy source assigns, destinations, presets, or input gain.

The UNDO button is used to undo a TAKE copy. Simply press UNDO and then TAKE to return the modified channel to its pre-TAKE status. There is only one level of UNDO. If you do a copy operation, then do another copy operation, then press UNDO to go back to the status before the last copy, pressing UNDO again will have no effect.



## Copy Multiples

It is possible to take a bank of channels and duplicate it to another channel bank of equal number. Press the COPY button, then press the desired SET buttons on the source bank. The COPY button and the source bank SET buttons will flash in concert. Then press the PASTE button, which will begin flashing; press the desired target channel SET buttons, which will flash in concert with the PASTE button. To execute, press the TAKE button.

This function can be used to copy the settings from any number of channels to an equal size group of channels. The channels in each group do not have to be consecutive, and channels within a group can be a mixture from each PAGE if desired. There can even be overlap; for example, you can choose to copy from channels 1, 2, and 3 to channels 2, 4, and 5. After this copy, channels 1 and 3 would not have changed, channel 2 would be set as channel 1 had been, channel 4 would be set as channel 2 had been, and channel 5 would be set as channel 3 had been.

When selecting channels for the COPY and PASTE sets, the order in which you press the buttons matters. For example, if you selected, in order, channels 1, 2, 4 and 3 for COPY, and then selected, in order, channels 5, 7, 6, and 8 for PASTE, the end result would be that channel 5 would have channel 1 settings, channel 6 would have channel 4 settings, channel 7 would have channel 2 settings, and channel 8 would have channel 3 settings. Not that this is something you would necessarily want to do, but that's what would happen. To reiterate, order matters when selecting the COPY and PASTE sets.

If the size of the COPY and PASTE groups are different, TAKE will not effect the change, except for the special case of Copy One and Paste Many, described next.

## To Copy One and Paste Many

Press the COPY button, and then the desired source channel SET button; both will flash in concert. Then press the PASTE button and the target channel SET buttons, which will flash in concert with the PASTE button. To execute, press the TAKE button.

## To Copy One To All

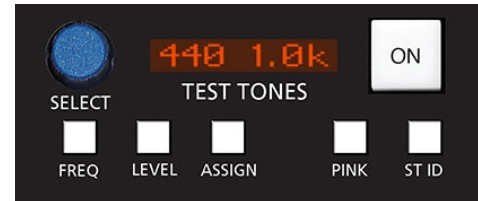
Press the COPY button, and then the desired source channel SET button; both will flash in concert. Then press PASTE ALL, which will commence flashing. To execute the global paste, press TAKE.

NOTE: If the TAKE button is not pressed within a timeout period of 10 seconds, the entire copy/paste operation will cancel out.



## Test Tones Oscillator

The TEST TONES section, located on the top of the EFS-D3 panel, provides adjustable frequency test signals, a pink noise source, and a stereo ID source. Test Tones may be routed



### Controls

**FREQ** – Selects single frequency mode. Use the encoder to select a audio test tone in the from 20Hz to 20 kHz range.

**LEVEL** – Switches the encoder to adjust the level as displayed in the TEST TONES display.

**ASSIGN** – Used in tandem with any Output SET switch to route the tone to the desired master bus output. Once assigned, turn oscillator ON to interrupt the assigned output with tone. See ROUTING section below for an example.

**PINK** – Selects the Pink Noise generator. Pink noise spectral density is inversely proportional to frequency, resulting in a decrease in power as the frequency increases. The ear perceives pink noise as flat across the audible bandwidth. Use this signal with a RTA (real Time Analyzer) to evaluate and equalize room response.

**ST ID** – Selects the Stereo ID tone; 440Hz appears on the left, 1kHz on the right channel. This is useful for signal tracing channel inversions in plant wiring and external gear.

**ON** – Turns the test tone source ON and interrupts the outputs of any master output the oscillator is assigned to.

**ENCODER** – The encoder knob operates as both a frequency select and a level control knob. Encoder function follows the FREQ or LEVEL button selection.

### Routing Test Tones

Test Tones may be routed to any master output, sub, aux send, mix-minus or monitor output.

- Select a Destination SET button (e.g. 5.1, ST1, AUX3, etc.)
- Press the ASSIGN button in the TEST TONES section.
- Press the TEST TONE ON switch to interrupt the assigned output with tone.

## System Router Section

This section provides a means of selecting sources for input channels and destinations for output mixes.

### Selecting Input Channel Sources

The operator designates the desired input channel by pressing its SET button in the Input section. Its current input source is shown in the SOURCE display and the location of that source shown in the LOCATION display (assuming that a location has been assigned - see the XPoint chapter of the Wheatstone Gibraltar manual for details). Input channel meterbridge LCD displays will mirror that same information. A different input source may be chosen by rotating the



SOURCE knob. When displaying the current source the CLEAR button lights; when displaying any other source the TAKE button lights. When the desired source is shown in the SOURCE display, pressing the TAKE button will execute the take command on the downstroke, and the new input will be shown in the SOURCE display and in the meterbridge LCD display. This function operates the same as the SOURCE knob on the input panels. To remove the input source from the input channel and leave nothing connected, press the CLEAR button. The connection will be broken and the display will show “NO SOURCE”.

## Selecting Output Mix Destinations

When a SET button on an output mix channel (i.e., any of the auxes, monitors, or MXM masters) is pressed, its most current destination will be shown in the DESTINATION display, and the location of that destination will be shown in the LOCATION display. A mix is capable of being sent to one or many outputs. To see all the destinations that the mix feeds, rotate the DESTINATION knob. If the mix feeds the displayed destination the CLEAR button will light; if the mix doesn't feed the displayed destination the TAKE button will light. You may also “dobby” the DESTINATION knob to step through all of the currently routed destinations.

**EXAMPLE:** An example might be a MXM feed routed to several listeners participating in the program, or an AUD bus routed to multiple recording devices.

### TIP:

The CR monitor SPKR A and SPKR B buttons act as SET buttons to program the SPKR A and SPKR B destination(s) separately.

### TIP:

DOBBY (pronounce dah-bee) - means to quickly press and release an encoder knob.

## Changing Output Mix Destinations

Rotate the DESTINATION knob until the desired destination is shown in the DESTINATION display. If the operator wishes to add the destination shown, press the TAKE button to execute the command and the new destination will become the current destination, shown in available displays elsewhere on the control surface. Disallowed destinations (established in the configuration software) will not be shown.

## Removing Output Mix Destinations

Press the mix channel's SET button, rotate the DESTINATION selector knob, and the TAKE and CLEAR buttons will indicate which destinations are currently being fed by the mix (see above). When the required destination to be deleted is shown in the DESTINATION display, press the CLEAR button.



## X-Y SET Button

Pressing the X-Y SET button allows the source and destination controls to act as a standard X-Y type router controller for making connections between sources and destinations that are not associated with the control surface.

## Event Controller Section

This section provides a means for storage and retrieval of control surface settings, and naming those settings as “events.” In this manner complete configuration and setting information that is used repeatedly (for example, morning show) can be saved and recalled. Up to 100 different events can be stored.

### Storing an Event

When an event is stored, all of the control surface’s current settings are saved and will be recalled when that event is executed through the TAKE command. To create a new event from current control surface settings, hit the NEW button, and then hit the SAVE button. To overwrite an existing event with the current settings, turn the PREVIEW SCROLL knob until the desired event is displayed in the PROGRAM/PREVIEW window, then quickly press MODIFY, then SAVE.



### Taking an Event

Rotate the PREVIEW SCROLL encoder until the desired event is shown in the PROGRAM/PREVIEW display. To prevent accidental takes, the ARM button must be pressed to arm the function. The TAKE button will now flash indicating that the panel is ready to act on a take. Then press the TAKE button to execute the EVENT.

### Undoing an Event

To recover from a premature or erroneous EVENT take, press the ARM and UNDO buttons. This will return the system to its status prior to the last take, with the last program event being once again the current program event, and the last preview event (the one just taken) becoming the preview event once again. There is only one level of undo. If undo has been done and a subsequent take has not been done, pressing the UNDO button again will do nothing.

### Modifying the Currently Selected Event

It is presumed an event has already been executed on the control surface. Modifications to that event can be accomplished by simply adjusting the controls and switches as desired and then pressing the MODIFY button, then the SAVE button. In this way the modified event will overwrite the old event setting and be saved, with the same name, in its place.

### Deleting an Event

Rotate the PREVIEW SCROLL encoder until the Event to be deleted is shown in the PROGRAM/PREVIEW display. Press the Modify button, then press the PREVIEW SCROLL knob; the display will ask “DELETE?” Press the TAKE button to delete the previously displayed Event. Do nothing and Delete mode will time out after approximately 7 seconds. *Deleted Events may NOT be restored.*

## Previewing an Event

Rotate the PREVIEW SCROLL encoder and available EVENT names will be shown in the 8-character PROGRAM/PREVIEW display. When the desired event is shown in the display, press the ARM button, then press the PREVIEW button. This will cause the entire control surface to display all settings associated with that event, without disturbing the current operative event. The preview status will be indicated by illumination of the PREVIEW button and flashing of all source and destination displays, to remind the operator that these would be the intended settings when the change is made. Pressing the PREVIEW button a second time will cancel the preview. *It should be noted that no audio signals are changed in any way by the preview feature.*



## Event Default Button

This control allows rapid access to a default or home control surface setting. Push it, and the TAKE button in the Preview section will flash. Hit the TAKE button and the default setting will be executed.

## Establishing the Default Setting

This setting would normally be set only once. For example, it may be desirable to have all controls set to zero, or everything programmed to typical nominal settings. To establish the default setting, adjust all the control surface controls to their desired settings, press the MODIFY button and then the DEFAULT button. The default setting is stored.

## Naming an Event

When events are saved, they receive a default event designation number. This way events can be saved quickly without having to name them. However, an event may be custom named when saved, or at a later time. To rename the displayed event, press the ALPHA SCROLL knob. The CURSOR LT and CURSOR RT buttons will light and the cursor, indicated by a flashing character, will be at the beginning of the name. Also, the SAVE button will begin to flash. At any time you can use CURSOR LT and CURSOR RT to move to a character you want to change. Once the cursor is at the desired character, rotate the ALPHA SCROLL encoder until the desired new character is displayed. Once all desired characters have been changed, simply press SAVE to save your changes. The event is stored with the desired name. At any time you can cancel the name edit by pressing the ALPHA SCROLL knob. Also, if you stop making name changes but fail to press the SAVE button, the name edit process will automatically cancel after a delay of several seconds.

## Control Modes

The DIMENSION THREE control surface is operated in one of three modes. In Administrator mode access is allowed to all surface functions. In User mode a limited set of user functions is allowed. The set of functions allowed in User mode is set independently for each console using the XPoint software (see the Bridge Router manual for details). The third mode, Guest, blocks out MXM level, MXM assign, Event takes, and visibility changes from being controlled by the surface.



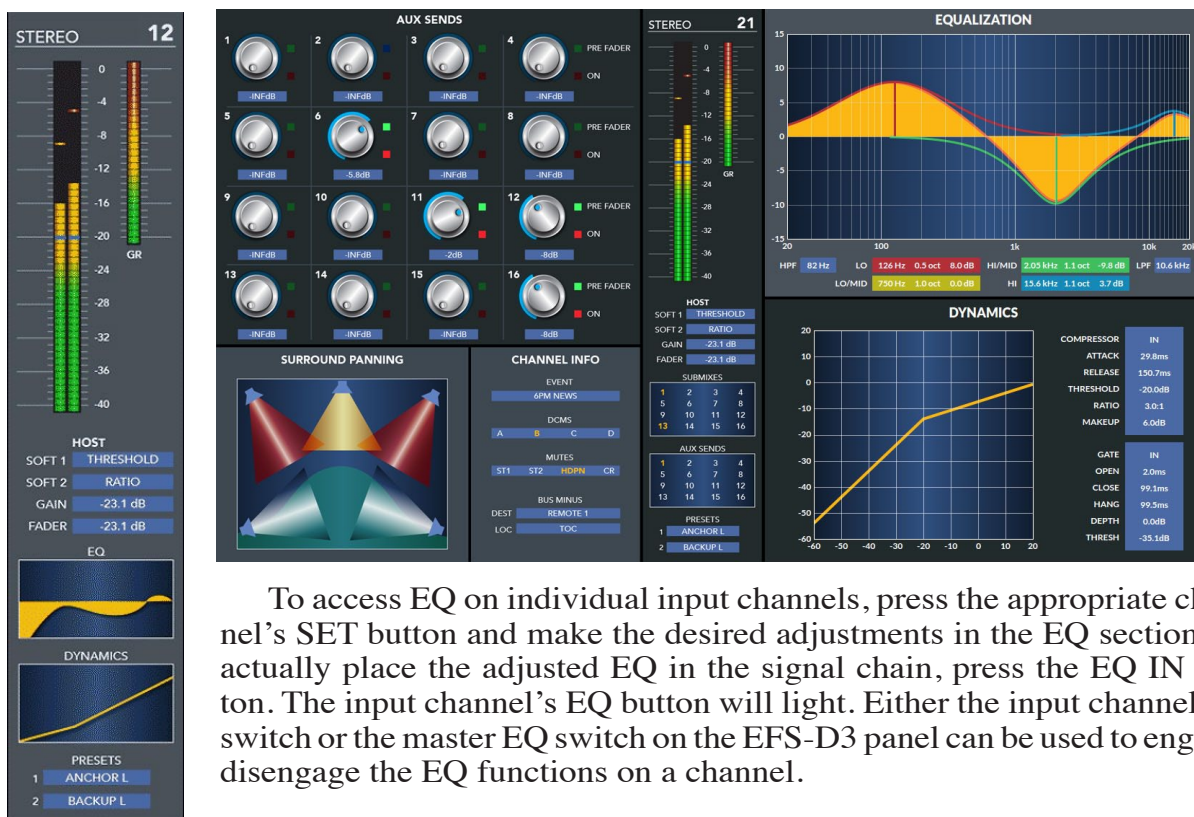
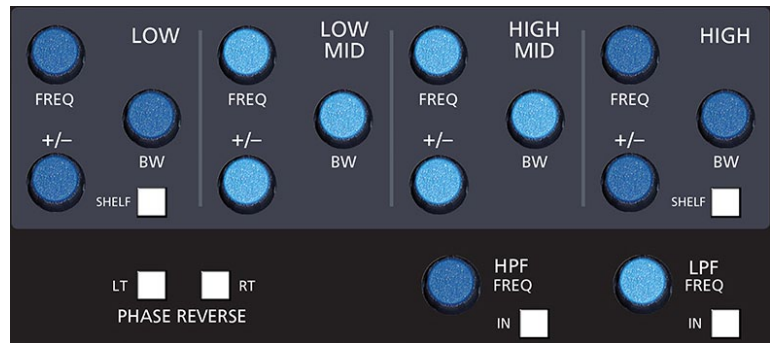
To change the control mode, begin by pressing and holding the PREVIEW SCROLL knob until the display reads “Admin” and the TAKE button lights (if the surface is currently in Admin mode the ARM button will also light). Turn PREVIEW SCROLL until the desired new mode (Admin, User, or Guest) is showing in the display and press TAKE. Turn PREVIEW SCROLL again to select the first digit of the password. Default passwords, which may be changed in XPoint, are “1234” for Admin, “2222” for User, and “0000” for Guest. After dialing up the first character of the password, press TAKE. Then dial up the second digit. Continue this procedure until the four characters have been entered. Upon pressing TAKE after entering the fourth character, the display will read “Okay...” if you were successful and “Sorry...” if you were not. When finished, turn PREVIEW SCROLL until the display reads “<<Exit” and press TAKE to finish the mode select operation.

The ARM button lights as you select the mode that the surface is currently in. If you press TAKE when displaying the current mode, the display will switch to “Okay...” and you will not need to enter the password. If you stop partway through the procedure, the mode selection process will time out after about 15 seconds.

Once a given control mode is selected for a surface, that setting will persist through a power cycle or surface reset.

## EQ Section

The EQ section consists of a bank of knobs and various associated switches. The EQ system consists of a four-band parametric EQ with low band and high band PEAK/SHELF switching, plus variable frequency high and low pass filters. As any of the controls are adjusted, a real time graphic display is presented on the LCD monitor panel showing the resulting frequency response curves.



To access EQ on individual input channels, press the appropriate channel's SET button and make the desired adjustments in the EQ section. To actually place the adjusted EQ in the signal chain, press the EQ IN button. The input channel's EQ button will light. Either the input channel EQ switch or the master EQ switch on the EFS-D3 panel can be used to engage/disengage the EQ functions on a channel.

## High-Pass Filter

This is a 24dB/octave variable high-pass filter with Butterworth characteristics, tunable between 16.1Hz and 500Hz, and with a separate in/out switch ("HPF" switch). The relatively high order of filter is necessary to allow definite and decisive removal of unwanted low-frequency artifacts (air-conditioning rumble, line hum, traffic or footstep impacts) with minimal effect on the required program.

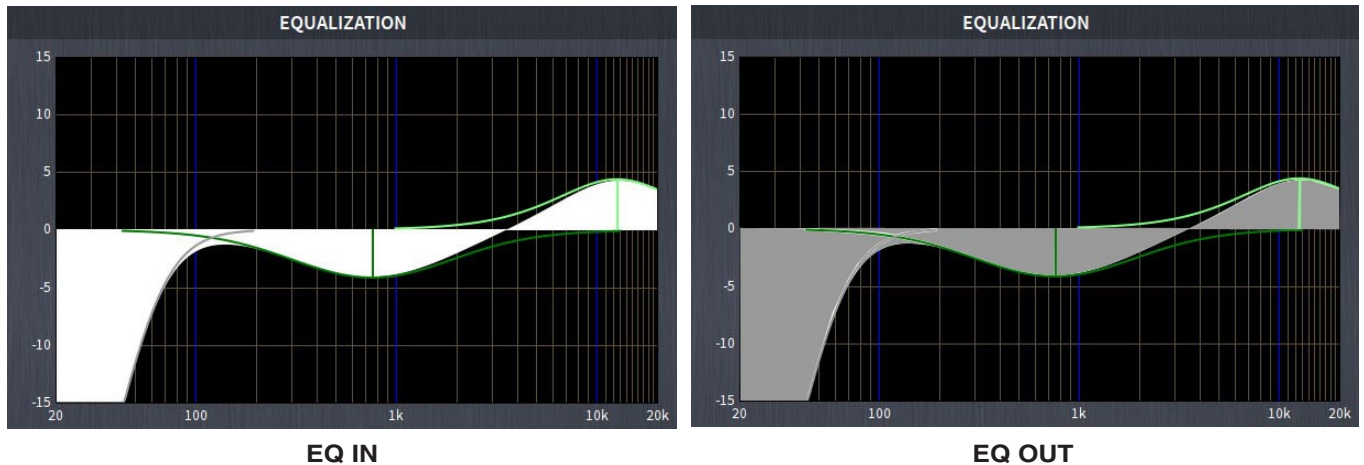
Note: Butterworth Filters typically yield excellent flatness, no ripple in the pass band, and a rounded amplitude response near the cutoff frequency.

## Low-Pass Filter

This is a 24dB/octave variable low-pass filter with Butterworth characteristics, tunable between 1kHz and 20.2kHz. This filter is used to remove unwanted high frequency artifacts (noise, squeaks, etc.) with minimal effect on the required program.

## Equalizer

This consists of four bands of parametric control used for modifying the sonic qualities of a signal. Each band has +/-14dB of BOOST/CUT capabilities (+/- knob), sweepable center frequency over the range of 16.1Hz to 20.2kHz, and with a filter “Q” or sharpness [BW (Band Width) knob] sweepable between 0.3 and 5.0 octaves. The LOW and HIGH bands also have a shelving function. The composite effect of any EQ adjustments, as well as text describing the equalizer settings, are shown on the LCD screen.



## Phase

A pair of switches, one for left and one for right, are provided to cause the reversal of absolute phase of the signal path.

# Master Panel (MFS-D3)

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# Master Panel (MFS-D3)

## Controls and Functions

The DIMENSION THREE digital audio control surface is equipped with one MASTER panel. This panel houses four master program outputs and eight submixes outputs.

### Master Program Outputs

#### Mix Destination 5.1 Surround

NOTE: There are four different mix destinations: 5.1-1 Surround, 5.1-2 Surround, Stereo 1 (ST1), and Stereo 2 (ST2). For descriptive purposes we will be discussing the controls for one section only, 5.1-1 Surround, with occasional references to other sections. Control descriptions for one section also apply to identical controls at the other three destinations on the MFS-D3 panel.

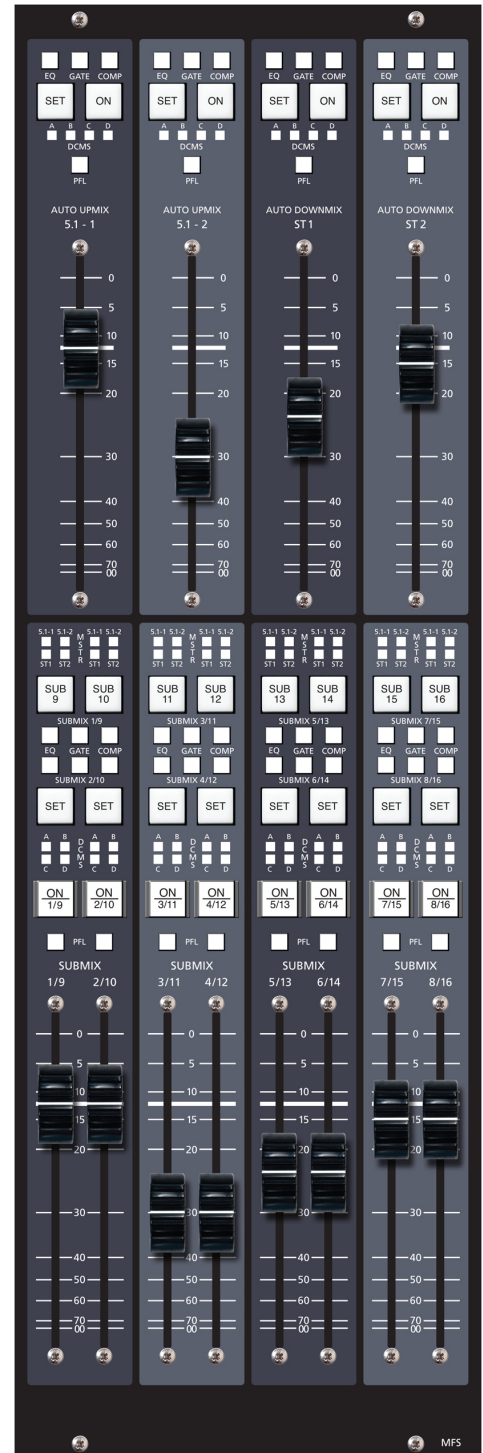
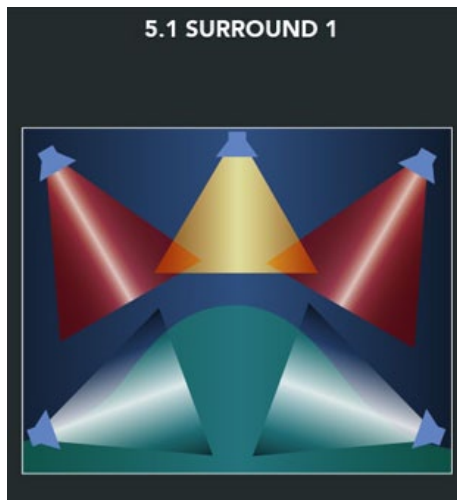
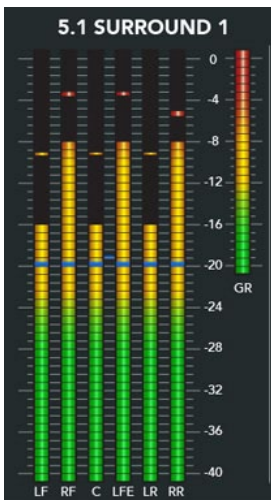


EFS-D3 Panel

Input channels are assigned to the 5.1-1 Surround master by means of BUS ASSIGN button “5.1-1” (BUS ASSIGN section on the EFS-D3 panel). Mono input sources would pan between the left front and right front. Stereo inputs would route to left front/right front.



mono and stereo inputs may be processed into 5.1-1 Surround signals by means of the 5.1-1 SURROUND section on the EFS-D3 panel. 5.1-1 input sources would preferably route to the SURROUND output unmodified. Groups may also be routed to the masters (including the 5.1-1).



## Master Mix Routing

Master Mix outputs may be routed using the SYSTEM ROUTER control section on the EFS-D3 panel.

To route a Master Mix output:

- Press SET on the desired master output.
- Scroll the DESTINATION knob to select output.
- Press TAKE.
- To see where the mix is routed to, dooby the DESTINATION knob to step through the list of routes.
- Press the CLEAR switch to remove the route.



EFS-D3 Panel

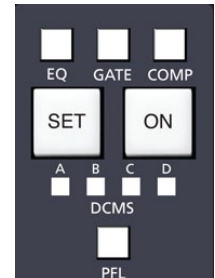
The SYSTEM ROUTER controls act like an electronic patch bay. By pressing SET on any mix bus output, you are selecting the electronic patch cable “source” signal. You can now spin the SYSTEM ROUTER’s DESTINATION knob to select the physical destination you would like to send the mix to.

**TIP:**

DOBBY (pronounce dah-bee) - means to quickly press and release an encoder knob.

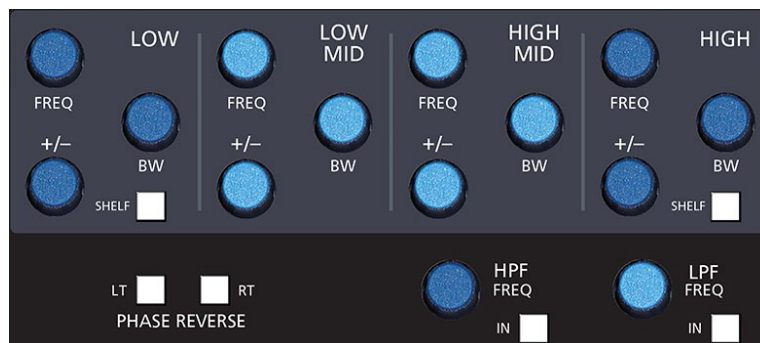
## Channel Master ON/OFF

The ON switch turns the channel signal ON; pressing it again turns the channel signal OFF. The switch LED lights to indicate the channel is ON.

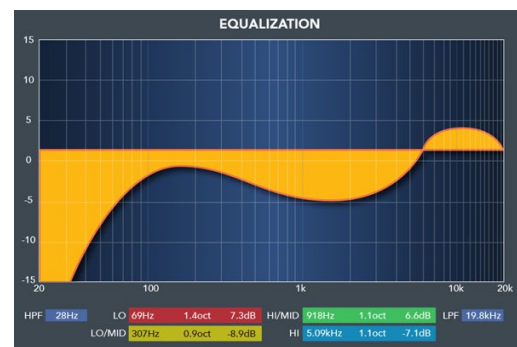


## EQ

This switch inserts EQ functions that have been preset by the operator in the EQ section of the EFS-D3 panel. When any knob of the EQ section is rotated, the LCD displays a graphical representation of the EQ settings.



EFS-D3 Panel



## GATE

This switch inserts dynamic functions that have been preset by the operator in the DCM-D3 panel. When any knob is rotated, the display automatically shows the proper setting units and parameters for the active knob. The display settings (and the settings themselves) change as the knob is rotated.

The dynamics settings are also shown graphically on the LCD screen.



DCM-D3 Panel

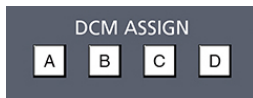
## COMP

This switch inserts compressor functions that have been preset by the operator in the DCM-D3 panel. When any knob is rotated, the display automatically shows the proper setting units and parameters for the active knob. The display settings (and the settings themselves) change as the knob is rotated.

The dynamics settings are also shown graphically on the LCD screen.

## DCM Master Displays

Each channel can be assigned to any combination of the four DCM masters (EFS-D3 panel). The assigned setting is displayed by the four indicators of the DCMS display group. Channels are assigned to these DCMs by pressing the channel SET button and then pressing the desired DCM ASSIGN button(s) (EFS-D3 panel).



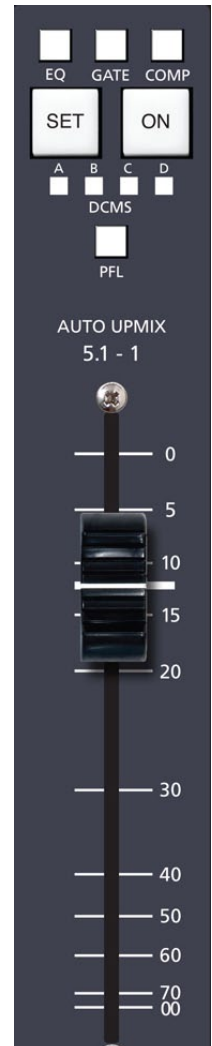
EFS-D3 Panel

## PFL – Pre Fade Listen

This switch lets the control surface operator monitor the master's pre-fader signal.

## Master Faders

These linear controls set the levels of the master channels.



## Submixes Output

Generally the sixteen audio submixes would operate in stereo mode. They may be mixed to two duplicate mono channels by means of the channel SET button and mode buttons in the MODE section of the EFS-D3 panel. The current mode will be shown by the LED indicators in the MODE buttons.



## Output Destinations, Submix 1 Example

Output destinations are selected by pressing the SET button. The DESTINATION display



EFS-D3 Panel



(EFS-D3 panel) will show the most *recent* output destination assigned. It should be noted, however, that a mix channel can go to multiple destinations, and for this reason the list of destinations (up to four, with ellipsis indication if more than four) that channel is assigned to is displayed in the LCD display when that channel's SET button is active. If the mix is not assigned anywhere the display will show "NoDest".

As you rotate the DESTINATION knob in the EFS-D3 panel the names of allowable destinations will appear in the DESTINATION display. If SUBMIX 1 is not currently routed to the displayed output, the TAKE button will be lit; if SUBMIX 1 is currently routed to the displayed output, the CLEAR button will be lit. Press the TAKE button when lit to add the currently displayed output as a SUBMIX 1 destination, or press the CLEAR button when lit to delete that output as a SUBMIX 1 destination. You can also "dobby" the DESTINATION knob to step through all of the currently routed destinations.

**TIP:**  
DOBBY (pronounce dah-bee)  
- means to quickly press and release an encoder knob.

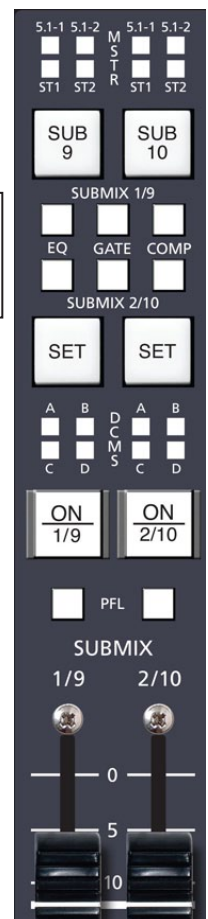
Destinations for the remaining master outputs are handled in a like manner.

## Submixes Output Display

Each submix can be assigned to any of the four main (5.1-1, 5.1-2, ST1, ST2) output buses in the center section of the EFS-D3 panel. The assigned setting is displayed by the four indicators of the MSTR display group.

## SUB Button

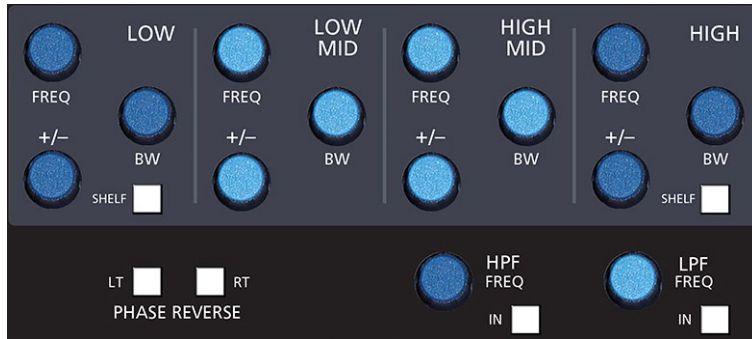
The DIMENSION THREE has eight physical sets of controls. In order to accommodate the sixteen submix outputs, the controls are shared and group into two pages. When the SUB switch is off, submixes 1-8 are active. When the SUB switch is lit, submixes 9-16 are active. You may page submixes individually using the SUB switches. You may also page all groups at once using the PAGE SUBS button located on the DCM-D3 panel. Audio settings for the submixes are always active even if you have "paged" to the opposite layer.



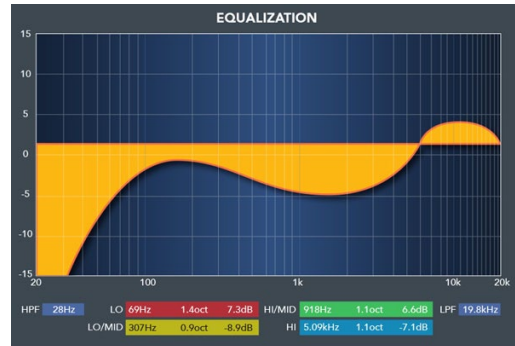


## EQ

This switch inserts EQ functions that have been preset by the operator in the EQ section of the EFS-D3 panel. When any knob of the EQ section is rotated, the LCD displays a graphical representation of the EQ settings.



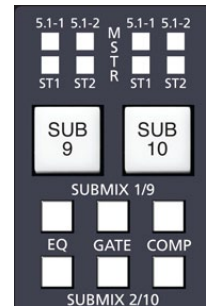
EFS-D3 Panel



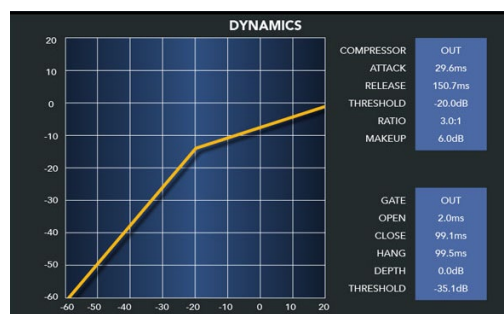
## GATE

This switch inserts dynamic functions that have been preset by the operator in the DCM-D3 panel. When any knob is rotated, the display automatically shows the proper setting units and parameters for the active knob. The display settings (and the settings themselves) change as the knob is rotated.

The dynamics settings are also shown graphically on the LCD screen.



DCM-D3 Panel



## COMP

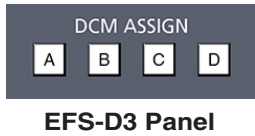
This switch inserts compressor functions that have been preset by the operator in the DCM-D3 panel. When any knob is rotated, the display automatically shows the proper setting units and parameters for the active knob. The display settings (and the settings themselves) change as the knob is rotated.

The dynamics settings are also shown graphically on the LCD screen.



## DCM Submix Displays

Each submix channel can be assigned to any combination of the four DCM masters (EFS-D3 panel). The assigned setting is displayed by the four indicators of the DCMS display group. Channels are assigned to these DCMs by pressing the submixes's SET button and then pressing the desired DCM ASSIGN button(s), located in the EFS-D3 panel.



## ON Switch

The ON switch turns each submix channel signal ON, pressing it again turns the submix channel signal OFF. The switch LED lights when the group is ON. Note that there are sixteen groups divided into Two PAGES. Submixes 1-8 are controlled while the SUB# switch is OFF. Submixes 9-16 are controlled while the SUB# switch is lit on a particular submix.

## PFL - Pre Fade Listen

This switch lets the control surface operator monitor the submix's pre-fader signal.

## Submix Faders

These linear controls set the output levels of the submix channels.



# Dynamics Processing Control Panel (DCM-D3)

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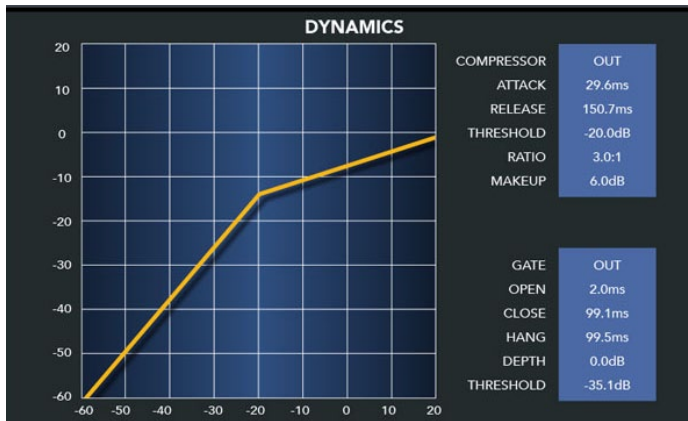
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# Dynamics Processing Control Panel (DCM-D3)

## Controls and Functions

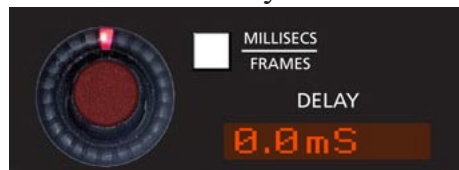
The DCM-D3 panel provides gate, compression and limiting functions for individual input channels. These sections can be accessed by means of the SET buttons on the desired input channels. As you turn the knobs in these sections, the LED display shows the current settings of that knob for the channel currently in SET mode. The knobs may be pressed to obtain a display reading without actually turning them. Any current settings of the active channel will also be graphically shown in real time on the LCD display.

This panel also contains the AUX, MXM confidence feed section, the audio delay section, the talkback preselects section, the display buttons, the programmable buttons, and the DCM section.



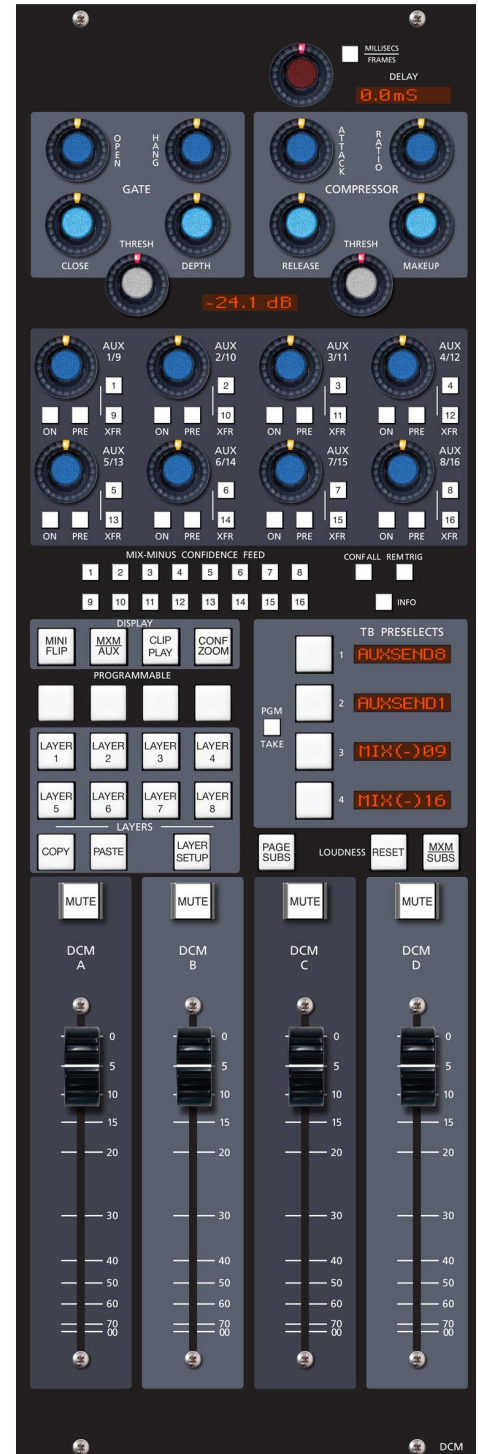
## Audio Delay

Audio delay is shown in the DELAY display. Delay is accomplished for inputs, submixes, master mixes, aux sends and mix-minuses by means of activating their corresponding SET button and simply dialing in the audio delay. Delay may be set in milliseconds (0.0 to 667.5) or frames (0.0 to 20.0 in 0.5 frame steps)



by means of the MILLI SECS/FRAMES button.

Delay settings are vitally important, permitting audio time delay adjustments to allow for video processor delays or satellite-to-terrestrial link audio/video timing discrepancies.





## Gate

The Gate section contains a noise gate, useful for reducing sounds below a certain threshold.

## Threshold

The THRESH control determines the signal level at which the gate operates. This level be anywhere between -60.0dB and +10.0dB. This setting will determine the minimum available setting of the Compressor THRESH knob; the Compressor THRESH cannot be set lower then the Gate THRESH.

## Open and Close

The OPEN knob determines how quickly the gate opens to allow signal passage once the threshold is reached. It can be set anywhere in the range of 0.1mS to 330.0mS. The gate CLOSE time is adjustable over the same range.

## Depth

The DEPTH knob sets the amount of attenuation given to signals below the Gate THRESH setting, and can be adjusted to be between 0dB and 60.0dB.

The HANG knob determines how long the gate will stay open after the signal falls below the Gate THRESH level before it begins to close, and can be adjusted between 50.0mS and 3.0 Seconds.

## Compressor/Limiter

The compressor algorithm used in the DIMENSION THREE control surface is designed to:

- allow smooth, inaudible, and unobtrusive level control on uneven sources;
- be able to act as a peak limiter for inadvertent overload control;
- enable deep effects if required.

The DCM-D3 panel Compressor section is a compound of many diverse dynamics elements.

The level detector is a pseudo-RMS averaging type with its own symmetrical-in-time attack-and-release characteristic adjustable between 0.1mS and 330mS (ATTACK control). At the slower end of its range, by itself it achieves a nouveau-classic “dbx” style syllabic-rate level control. As the time-constant is shortened, it becomes progressively shorter in relation to the lower audio frequencies themselves; the effect is to turn the



detector into more of a peak-level detector, necessary for limiting or wilder effects. A secondary effect at intermediate to fast attack-times is that low frequencies are peak sensed while high frequencies are average sensed, resulting in an effective high-frequency bias (up to as much as 6dB differential) which helps to mitigate the detrimental limiting effect of the resulting audio seeming “bottom heavy” normal to most compressors.

While the overall gain-reduction scheme is “feed-forward,” the heart of the detector stage itself is a feedback limiter; this allows for this carefully-contrived loosely-damped servo-loop to permit far more interesting dynamic effects.

The compressor is “soft-knee,” meaning the compression ratio increases slowly with increasing applied level, greatly easing the sonic transition into full compression; it helps avoid the “snatching” and “pumping” at threshold that many “hard-knee” dynamics units exhibit.

A full range of controls is available over the compressor’s behavior:



## Threshold

The THRESH knob sets the level at which the compressor is fully into compression of whatever ratio is set. This can be set anywhere in the range of -30.0 to + 10.0dB.

## Attack

This control determines how quickly (between nominally 0.1mS and 330mS) the compressor reacts to signals. Faster attack times result in “tighter” and more obvious control; longer attack times lend themselves well to gentler automatic volume control.

## Ratio

This control determines how much the compressor’s gain is reduced in relation to the applied signal. For instance, if the ratio is set at 3:1 and the input level above threshold changes by 12dB, the output level will changed by 4dB. Normal usage is between approximately 2:1 and 4:1; anything greater than, say, 7:1 may be considered “limiting.” The ratio can be set anywhere from 1.0 : 1 to 20.0 : 1.

## Release

This knob determines the nominal time the compressor takes to recover after excitation (between 50.0mS and 3.0 Seconds). Short release times make for more intense, denser, obvious processing; longer release times are better suited to automatic gain control.

## Makeup Gain

When fairly deep compression is invoked (large gain reduction) it can be necessary to increase the compressor’s output level back up to nominal system signal level; up to 20dB of output gain is available to allow this.

## AUX Sends

There are a total of 16 AUXs available in the DIMENSION THREE control surface. A level control, on/off push-button, and pre-fader/post-fader switch are provided for each pair of the 16 AUX sends.

We will begin by explaining the operation for AUX 1/9. The same discussion can be applied to any of the eight AUXs pair.

Two XFR switches (1 and 9), determine whether the channel feeds AUX 1 or AUX 9.



Any surface input channel can feed AUX 1. To do so, press the SET button on the input channel of the IS-D3 panel, then press the ON button for AUX 1. If the button is already lit when you press the channel SET button, then that channel is already feeding AUX 1.

Channels normally feed the AUX a post fader signal that follows the channel’s ON button (post on).

PRE ON – Any AUX send bus may be configured to be PRE ON in the surface’s *Options.txt* file. See Appendix 1 of this manual for details.

The channel can be made to feed a constant signal level to the AUX regardless of its fader position by pressing the PRE FDR button (PRE). PRE ON and PRE FDR can be used in any combination.

You can set the level of each channel feeding AUX 1 independently. The AUX 1 control affects the signal level to AUX 1 of the channel that currently has its SET button lit. Thus you can generate a mix to AUX 1 from several channels if desired.

Once you have the desired channel(s) feeding AUX 1 send, you can adjust the output level of AUX 1 by using the AUX 1 MASTER, the knob labeled “1” in the MASTERS area. The actual destination that AUX 1 is routed to is assigned by first pressing the AUX 1 SET button, then dialing up the desired destination on the DESTINATION knob on the EFS-D3 panel and pressing the associated TAKE button.



EFS-D3 Panel



EFS-D3 Panel

AUX 1 can be mono or stereo.

Press the AUX 1 button, then press the appropriate MODE button on the EFS-D3 panel. If AUX 1 is in STEREO mode, and if the selected channel is in STEREO mode as well, the AUX 1 control will act as a BAL control if it is pressed down while being turned. If the selected channel is in MONO, the pressed action

of AUX 1 is as a PAN. NOTE that surround sends are not created. A surround source will send the LF-RF signals to a stereo AUX.

## MXM Confidence Feed

Confidence audio is a known audio source, such as your station’s master control program signal, that is automatically routed to Mix Minus destinations whenever the production audio control room is not ON-AIR. The idea is that remote truck engineers and talent will be able to confirm audio connectivity to the audio feed originating back at the station, and monitor commercial breaks without the need for audio operator intervention.

The Confidence audio signal is usually routed to all 16 MXM outputs when the production/ audio CR is offline. When Master Control “takes” Production Control audio, the confidence audio



is switched OFF and the normal Mix Minus audio is then sent to devices connected to the audio console’s mix minus destinations.

## Confidence All and Remote Trigger Switches

The CONF ALL and REM TRIG switches are used together to control the behavior of the system.

- CONF ALL – This toggle switch flips the audio source feeding all 16 Mix Minus destinations between local MXM busses when OFF, to Confidence audio when ON.
- REM TRIG – When activated, this switch enables remote control of the CONF ALL switch via a contact closure from a Master Control switcher. Disable remote control by turning this OFF.
- A bank of sixteen buttons allows for individual override of confidence feed audio to any of the 16 MXM outputs. This is useful when recording an offline interview, etc.

## Making It All Work

For the system to work you have to do three things:

- Route any audio source (i.e WXYZ AIR) to the surface’s Confidence Feed destination. You can now manually test this using the CONF ALL switch while listening to or metering the MXM outputs.
- Create a physical logic Input in the Destination column of XPoint that is connected to a relay output on your master control switcher. See *Wheatstone Gibraltar Digital Audio Network System* Technical Manual, LIO-2001 chapter, for logic signal creation details.
- Cross connect the surface’s “Confidence ALL” LED logic signal to this newly created logic Destination. This is always the last DxCONF4 source signal of your mixer’s signal set.

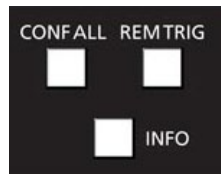
## Routing Confidence Feed Audio

It is easiest to route confidence audio in XPoint, alternately you can route from the surface’s XY Controller. Locate the surface’s confidence feed Destination signal in XPoint. Its name will be in the form of “DxCFDx”. Then simply cross connect the desired confidence audio Source.

Select the CONF ZOOM button to gain a view of the Master LCD panel to verify the MXM audio routing. This switch is located above the layer buttons.

### Info Button

Pressing the INFO button will bring up the System Information window on the LCD display with technical information about the surface's software version and connection status to its companion rack MT link, Ethernet link, and automation interface. Press the INFO button again to revert the display to the previous screen.



D3 SURFACE INFORMATION	
Surf ID:	1
IP Address:	192.168.1.11
Subnet Mask:	255.255.255.0
MAC Address:	00:0B:AB:6F:2D:20
XPoint GUI:	Connected
Automation:	Disconnected
MT Link:	Primary: UP Redundant: UP
App Version:	A26 (built 18:34:22 11/13/14)
RootFS Version:	R6 (built 14:16:16 04/30/14)
DSP Version:	2.1
FW Version:	0A 03
Sample Rate:	48KHz

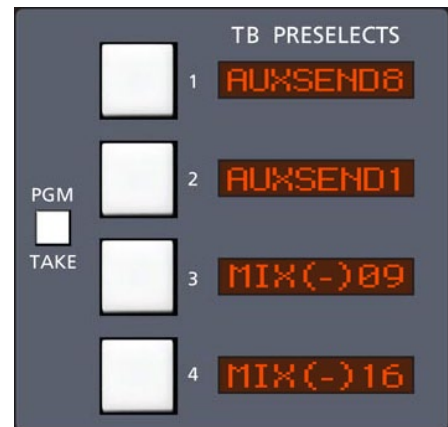
### Talkback Preselects

These four switches may be programmed to interrupt any control surface mix output with talkback. Once a specific output has been programmed into the preselector, the talkback signal can be sent to that output at any time by pressing the corresponding switch.

Each individual TB button is programmed as follows: press the PGM TAKE button (this button will light), then press the TB button you want to program (the TB button and its associated display will flash). Then rotate the SELECT knob (programmable section on the EFS-D3 panel) and available destinations will be shown in the SOURCE display. When the desired channel is shown, press the TAKE button located next to the SELECT knob (EFS-D3 panel), and the appropriate TB PRESELECTS display will then match what is shown in the SOURCE display on the EFS-D3 panel. Repeat this procedure for each of the four TB buttons. The procedure will time out after about 5 seconds if you fail to complete one of the steps.

When EVENTS are stored, the four TB preselects are displayed at the time of the EVENT SAVE action and can be recalled with that EVENT.

CONFIDENCE FEED STATUS			
SOURCE	DEST	SOURCE	DEST
1 MXM 1	REMOTE 1	9 MXM 9	MADI 29 L
2 MXM 2	REMOTE 2	10 MXM 10	MADI 29 R
3 MXM 3	TRAFFIC	11 MXM 11	MADI 30 L
4 MXM 4	HYBRID 1	12 MXM 12	MADI 30 R
5 MXM 5	HYBRID 2	13 MXM 13	MADI 31 L
6 MXM 6	2-WAY	14 MXM 14	MADI 31 R
7 MXM 7	IFB1	15 MXM 15	MADI 32 L
8 MXM 8	IFB2	16 MXM 16	MADI 32 R



DCM-D3 Panel

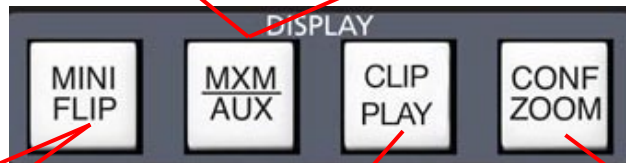
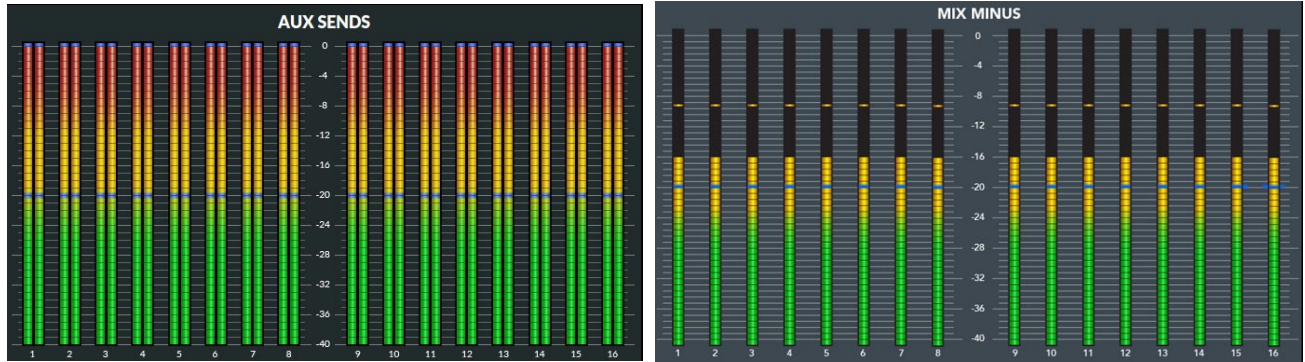


EFS-D3 Panel

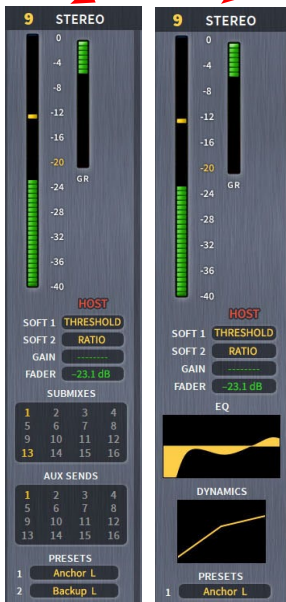


## Display Buttons

These switches control the display modes for the LCD monitor.



MXM/AUX – Toggles the standard LCD display to show metering for the 16 stereo AUX send outputs or the 16 Mix-Minus outputs.



CLIP PLAY – switches the player into the lower right corner of the Master LCD screen.

Refer to pages 5-12 to 5-14 for the Audio Clip Player description.

CONFIDENCE FEED STATUS					
SOURCE	DEST	SOURCE	DEST		
1	MXM 1	REMOTE 1	9	MXM 9	MADI 29 L
2	MXM 2	REMOTE 2	10	MXM 10	MADI 29 R
3	MXM 3	TRAFFIC	11	MXM 11	MADI 30 L
4	MXM 4	HYBRID 1	12	MXM 12	MADI 30 R
5	MXM 5	HYBRID 2	13	MXM 13	MADI 31 L
6	MXM 6	2-WAY	14	MXM 14	MADI 31 R
7	MXM 7	IFB1	15	MXM 15	MADI 32 L
8	MXM 8	IFB2	16	MXM 16	MADI 32 R

CONF ZOOM – Zooms the confidence feed portion of the LCD display to double size.

MINI FLIP – Toggles the lower portion of input channels LCD display to show EQ and dynamics curves instead of default submix and AUX send assigns.



## Programmable Buttons

These (4) momentary switches and indicating LEDs are designed for user accessible external functions (GPIs). With these switches the user can fire Salvos or make a temporary crosspoint without having to wire any physical logic ports. These switches may also be mapped to control physical Logic card output ports, and the LEDs on the PROGRAMMABLE buttons may also be lit by a remote device connected to a Logic card input port. See the *Wheatstone Gibraltar Digital Audio Network System* manual for details.



## Layers

A DIMENSION THREE Gibraltar mixing system can have up to one-hundred twenty-eight 5.1 input faders. Building a console layer is the process of mapping input DSP processing channels to physical faders and then saving the layout to one of the eight available Layer memory locations. Once layers are stored, they may be freely recalled or edited at any time from the dedicated Layer control buttons. There are 8 dedicated layer locations. Note that all 8 layers are stored with the surface snapshot Event recall system. That means you have access to 8 layers in 100 Events for a total of 800 layer combinations!

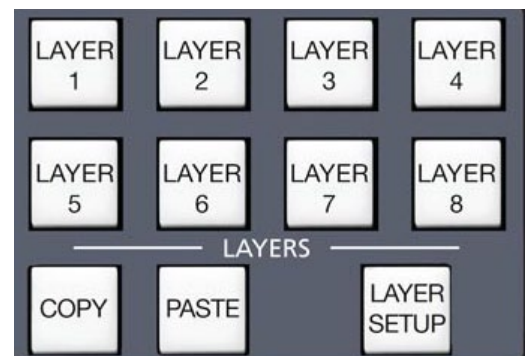
Building a Layer is easy. Simply enter Layer Setup mode and use the SOURCES knob at the top of each input strip to select the desired Input channel, Subgroup, Aux Send or Mix-Minus Master channel you would like to map to the fader. Once you have completed the layout, simply exit LAYER SETUP mode to save the Layer to memory. To Edit a layer simply enter LAYER SETUP mode, make the desired changes and then exit.

The DIMENSION THREE ships with multiple Layers pre-configured for easy access to all Input DSP channels right out of the box.

## Configuring Layers

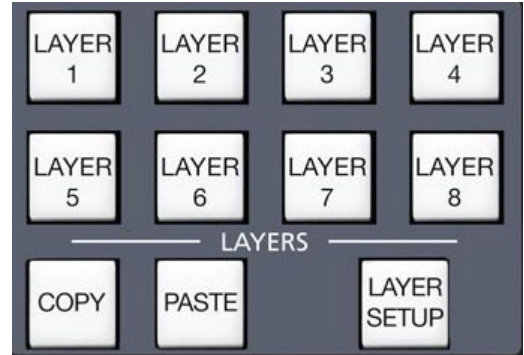
To configure a Layer use the LAYERs control buttons located on the center of the panel. Follow the basic process below to create a layer.

- Press LAYER SETUP
- Select LAYER 1 through 8
- Tap the SOURCE knob at top of any input fader – opens Signal List
- Scroll pop-up Signal List to select any input DSP or master signal.
- Tap SOURCES knob to route selected signal.
- Repeat for remaining faders.
- Press LAYER SETUP at any time to Save and Exit.
- If you wish to store the layer configuration with the Event, use the Event Modify-Save buttons to update your surface snapshot. (See *Event Controller Section*, Chapter 3, page 3-14)



### Layer Setup Details

1. Press LAYER SETUP to enter layer SETUP mode. LAYER SETUP LED is lit steady, the previously selected layer (LAYER 1-LAYER 8) LED is flashing.
2. Once in SETUP mode, begin editing the currently selected layer, or press another Layer select button to choose another layer to be edited. The selected Layer switch flashes and SETUP is lit steady.
3. Tap the SOURCE knob at the top of the Input panel to open a pop-up Signal List. Select the desired Input DSP, Submix, Aux or Mix-minus Master, push knob once to Take. Repeat for other faders as required. The desired EQ's/Mixes are stored to the layer as you assign them. Signal List – DSP channels will be listed with both a DSP channel number, Source Signal name (Mic-01, Anchor-R, etc.), and the Signal width (Stereo or 5.1). This allows users to easily identify which stereo and 5.1 DSP channels are currently assigned. The list is continuous with heading labels for each color coded category; Input, Aux, MXM, Groups.
4. Press any other Layer select switch (LAYER 1 - LAYER 8); its DSP map is recalled and its LED begins flashing. Assign desired signals as required.
5. Save/Exit programming – Press the SETUP switch at any time to exit programming.



## Layer COPY - PASTE

Enter SETUP mode – Press LAYER SETUP.

Select layer to copy LAYER1-LAYER8, SETUP is lit steady as before.

Press COPY; COPY is lit, PASTE flashes. (Press COPY to cancel).

Select layer(s) to paste to, LAYER1-LAYER8, selected Layer(s) also flashes.

Press PASTE, layer is copied to new memory location(s), the LED of the source layer is lit steady.

Press COPY to exit Copy mode, and continue editing layers.

Press the SETUP switch to exit programming mode.

## Layer Options

The LAYER SETUP button may be configured to automatically time out after 30 seconds. Refer to the *Options.txt* file configuration in the Appendix 1 of this manual for details. Default is 30 sec timeout. Pressing Setup while it is flashing or lit steady always exits programming mode.

## Audio Clip Player

The DIMENSION THREE surface features a built in audio file player called Clip Player. The player uses Soft knobs and switches on the input fader strip to navigate Playlist and Track titles and also to manually Cue and Play selected tracks. The Clip Player may be configured to start the selected track from the Input channel ON switch or by moving the fader up. The player automatically reads in Playlist files stored in the .m3u format. Clip Player supports playback of uncompressed, stereo/mono, 16/24bit, 44.1kHz/48kHz WAV files. Audio files stored on USB memory are automatically loaded for playback once connected to the AUDIO USB port built in the DIMENSION THREE meterbridge.



The Clip Player signal appears as a stereo Source signal and may be mapped to any input fader. Once assigned, the input strip's Soft 1 and 2 knobs are used for control.

All clip player settings are saved as part of the snapshot Event. The currently selected Track will load with the selected Event (recall 5PM news event, the “open” music track is already loaded.) The Clip Player may also be controlled over an Ethernet network via Wheatstone's ACI (Automation Control Interface). All functions are supported.



All devices in the system must be set to the same sample rate!

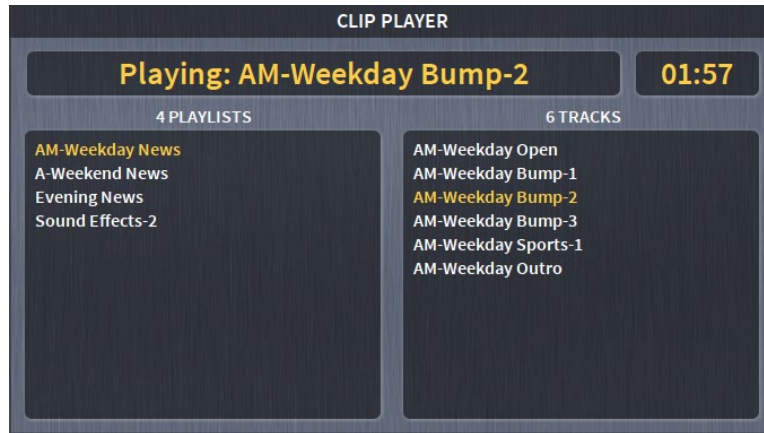
## Open Clip Play Screen

Locate the CLIP PLAY button in the DISPLAY section of this panel to show the CLIP PLAY screen. Insert a USB drive with audio tracks and playlists. Once open you should see a Playlist and Track window.



## Clip Player Control

The Clip Player signal appears as a stereo Source signal called “ClipPlay” and may be mapped to any input fader. Once assigned to an input fader, the input strip’s Soft 1&2 knobs are used for control. A dedicated CLIP PLAY switch located on the DCM-D3 panel switches the player into the lower right corner of the Master LCD screen.



Assign the input SOURCE signal called ClipPlay to any input fader. Once assigned to an input fader strip you get the following controls:

- Soft knob 1: Playlist Select, scroll through available \*.m3u formatted playlist files; Tap knob to select a playlist.
- Soft switch 1: Single press not used, 2 sec over-press disables Auto Advance of cuts in playlist. Auto Advance status is indicated on player screen.
- Soft knob2: Track Select, scroll through current playlist tracks; track is highlighted as you scroll. Tap to select track.
- Soft switch 2: Single press toggles Play - Stop; 2 sec over-press stops clip and cues track to beginning.

## Track Start Control

The Clip Player may be configured to start a track from the input fader ON switch, Fader up, or from the Soft Switch 2 only. Default is from the input fader ON switch.

Use ON switch of clip-player input channel to select Start Mode: “None - ON Sw - Fader Up” options in the Clip Player screen.

- Press and hold ON switch of clip-player channel to enter “Start Mode” selection entry, ON switch flashes medium.
- Single press to step through “Start Mode” selections.
- Press and hold selects mode and exits.

Notes:

- If “None” is selected, user must use the Soft switch 1 to start clip.
- If Fader Up is selected, either fader up or ON switch starts clip.
- Soft switch 1 always starts track regardless of the Start Mode setting.
- Stop of track is done from Soft Switch 1 or by selecting another track while current track is playing.



## Sample Playlist File

Clip Player playlist files are simple text files saved with a .m3u extension. Note the format may include comments by starting the line with the # symbol. Start each new line with the path to the track followed by the track filename

```

Filename: AM-Weekday News.m3u

# AM Weekday playlist for D3 Clip Player - (this is a user comment).
am_weekday/AM-Weekday Open.wav
am_weekday/AM-Weekday Bump-1.wav
am_weekday/AM-Weekday Weather-1
am_weekday/AM-Weekday Bump-2.wav
am_weekday/AM-Weekday Bump-3.wav
am_weekday/AM-Weekday Sports-1.wav
am_weekday/AM-Weekday Weather-2
am_weekday/AM-Weekday Outro.wav
    
```

In the sample playlist file above:  
 am\_weekday/ #points to the folder "am\_weekday" on the USB drive.  
 AM-Weekday Open.wav #points to the full track name.

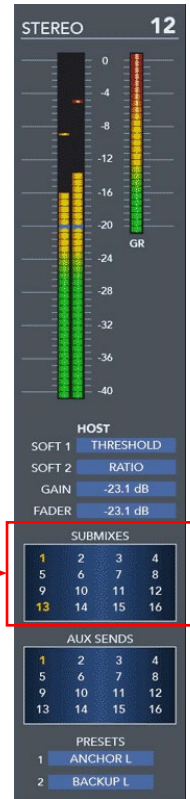


## Page Subs Button

The PAGE SUBS button, when pressed, places all submasters into page if any of them are not in page, or takes all subsets out of page if they are all currently in page.

## MXM/Subs Button

This button toggles the lower portion of the input channels LCD display to show status of SUBMIXES or MIX MINUS. →



## BS.1770-3 Loudness Monitor

The implementation of the CALM Act in December 2012 has focused the attention of broadcasters in the U.S on taming the audio levels at various stages of the on-air signal chain.

The Loudness Monitor provides a flexible tool which audio operators may use to track the apparent loudness of the program material mixed on the console and delivered for recording or broadcast. Logging functions allow the engineering staff to verify and document audio levels leaving the control surface over specific periods of time.

## The Multi-channel Loudness Algorithm

The Loudness Monitor uses the multi-channel loudness measurement algorithm specified in the ITU recommendation document ITU-R BS.1770-3 (03/2011). The algorithm



calculates weighted measurement values for subjective loudness as it is perceived over time. Extensive testing has shown a strong correlation between subjective listening and objective measurements.

The four stage processing chain applies a K weighting filter which accounts for “acoustic effects of the head” followed by a mean square calculation for each channel. The results are summed with surround channels weighted slightly higher to compensate for psychoacoustic effects. The LFE subwoofer channel is not currently included in the measurement and is a focus of continuing work. A final gating stage prevents silence and momentary low levels from adversely affecting the results.

## Units and References

The following units and references are used in scale markings and meter configuration. Note that the ITU specified LKFS units and the EBU specified LUFS units are synonymous and the values are numerically identical.

- dBFS – Decibels full scale referenced to a maximum output level of 0dBFS (+24dBu analog)
- LKFS – Loudness (K) weighted, Full Scale
- LUFS – Loudness Units Full Scale, K weighted
- 0dBFS = 0 LKFS = 0LUFS, -24dBFS = -24LKFS = -24LUFS
- AT/85 Reference level: -24LKFS
- EBU Reference level: -23LKFS

Loudness Range Reference Level:

- AT/85 mode: -24LKFS = 0 LU
- EBU Mode: -23LUFS = 0 LU
- USER Mode: Custom, can be set to the station’s “dialnorm” metadata value in dB.

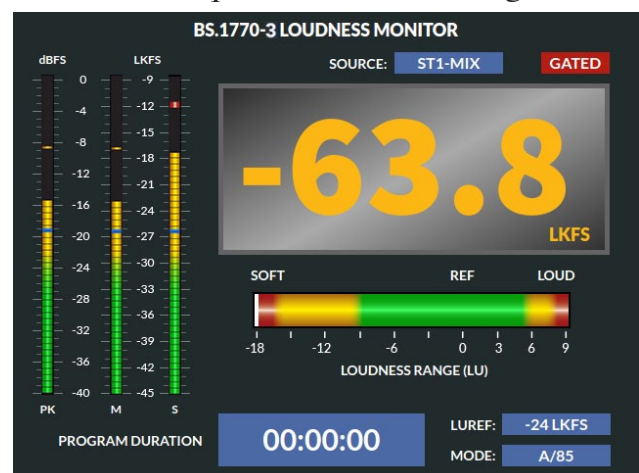
Reference Documents

- ITU-R BS.1770-3 Algorithms to measure audio program loudness and true peak audio level
- AT/85:2011 ATSC Recommended Practice: Techniques for Establishing and Maintaining Audio Loudness for Digital Television.
- EBU-TECH 3341 Loudness Metering: EBU Mode metering to supplement loudness normalization in accordance with EBU R128.

## Meter Components

### Audio Source

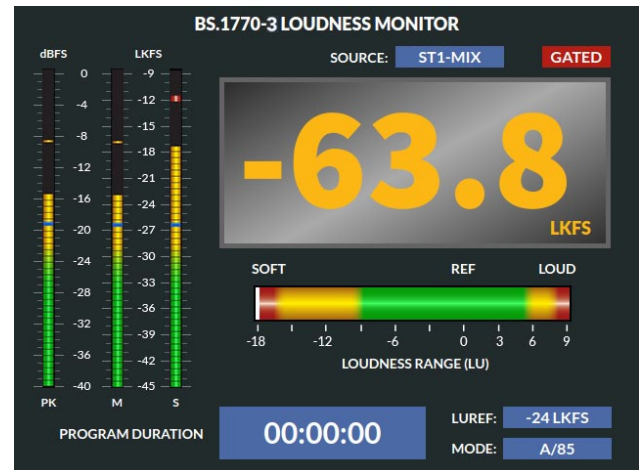
The audio source feeding the Loudness Monitor is user selectable. You may route any mono, stereo, or 5.1 surround source



available in the router to the control surface's D<sub>x</sub>LKFS destination. This flexibility allows for monitoring of any analog, AES digital, MADI, or SDI source as well as any surface mix bus output, de-modulated program sources, pre-recorded programming, etc.

### Bargraphs

- Peak Program (PK) – Sample peak meter displays highest peak from any meter channel.
- (M)omentary Loudness – K weighted loudness measured in a 400mSec sliding window.
- (S)hort Term Loudness – K weighted loudness measured in a 3Sec sliding window.



### Integrated Loudness

This large format three digit readout displays the integrated K weighted loudness of the program material. The default integration time is 10 seconds and can be set to 3 seconds in the surface's Options file – see options section page 5-18. The units are displayed as LKFS in AT/85 mode and LUFs in EBU mode. ***Operators must understand that this value is integrated over time and does not instantaneously react to fader moves.*** Operators should use the (M)omentary bargraph meter for in-hand level adjustments as riding fader levels from the Integrated digits will result in over or under compensation in output level as they “chase” the target value.

### Gating

The DSP algorithm for measuring loudness incorporates a two-stage gating mechanism that “pauses” integration during silent or momentarily soft passages in program material. The absolute and relative thresholds are applied in accordance with the BS.1770-3 specification to eliminate skewing of the measured result from program material lower than an absolute value of -70LKFS or a relative value of -10LU as measured in a sliding window.

### Loudness Range

The loudness range bar provides a way for an operator to see where the program has been and alerts the user to loudness levels that are too soft or loud. The range bar follows the long term integrated loudness value displayed in the main three digit display. The loudness range provides a +9 to -18 LU window with the “zero” centered on the currently selected 0 LU reference. Loudness “history,” the measured loudness level over time, is displayed as a solid white bar in the center. History tracking begins when the timer starts and is cleared when the timer is reset.

### Program Duration Timer

The program duration timer is provided to co-ordinate the capture, display, and logging of program loudness for a specific period of time – such as a live newscast or pre-recorded program.

The LOUDNESS-RESET switch controls the Program Duration Timer. Press the switch to begin a period of measurement. Pressing the switch again pauses integration and displays GATED on the meter. Press and Hold the switch for 3 sec to reset the timer.

## Operation

To repeat: Operators must understand that the large digit value is *integrated over time* and does not instantaneously react to fader moves. Operators should use the (M)omentary bargraph meter for in-hand level adjustments as riding fader levels from the Integrated digits will result in over or under compensation in output level as they “chase” the target value. When drawing a comparison to the primary mix bus VU meters, a good rule of thumb is to target a -4dB average level on the main mix meters (-24dBFS).

## Logic Control

The Program Duration timer may be controlled from an external contact closure. For convenience, the timer has been designed to work off the existing contact closure for the Confidence Feed input. This allows the integrated loudness level to be automatically gated whenever master control goes to a break and resume when you return to live programming.

This feature may be disabled by turning off the REM TRIG switch in the Confidence Feed section of the surface or with the surface’s Options file – see Options section page 5-18.

## Using External Control

To enable control make sure the REM TRIG switch is lit in the Confidence Feed section of the surface. Make sure the timer is reset BEFORE the show begins and the timer will automatically begin measurement and logging when master control takes the control room to air.

## Logging

Loudness monitor values are logged to a text file using the Xpoint software. Each entry is date and time stamped and provides the measured loudness level, program duration timer value, and logic control state transitions.

To access the log go to the main screen of Xpoint and click on the Loudness Status Log button at the bottom of the screen. The following is a sample of the log:

```
INFO :06 Nov 2012, 05:11:13, -24.0 LKFS, 00:00:00
INFO :06 Nov 2012, 05:11:13, Timer - Started, 00:00:00
INFO :06 Nov 2012, 05:11:14, -24.5 LKFS, 00:00:00
INFO :06 Nov 2012, 05:11:15, -25.3 LKFS, 00:00:01
INFO :06 Nov 2012, 05:11:16, -26.3 LKFS, 00:00:02
INFO :06 Nov 2012, 05:11:17, -27.0 LKFS, 00:00:03
INFO :06 Nov 2012, 05:11:18, -26.8 LKFS, 00:00:04
INFO :06 Nov 2012, 05:11:19, -27.0 LKFS, 00:00:05
INFO :06 Nov 2012, 05:11:20, -26.8 LKFS, 00:00:06
INFO :06 Nov 2012, 05:11:21, -26.8 LKFS, 00:00:07
INFO :06 Nov 2012, 05:11:22, -26.8 LKFS, 00:00:08
INFO :06 Nov 2012, 05:11:23, -26.8 LKFS, 00:00:09
INFO :06 Nov 2012, 05:11:24, -26.8 LKFS, 00:00:10
INFO :06 Nov 2012, 05:11:25, -26.8 LKFS, 00:00:11
```

```

INFO :06 Nov 2012, 05:11:26, -26.8 LKFS, 00:00:12
INFO :06 Nov 2012, 05:11:27, -26.8 LKFS, 00:00:13
INFO :06 Nov 2012, 05:11:28, -26.3 LKFS, 00:00:14
INFO :06 Nov 2012, 05:11:28, Timer - Paused by LIO, 00:00:14
INFO :06 Nov 2012, 05:11:33, Timer - Started by LIO, 00:00:14
INFO :06 Nov 2012, 05:11:34, -26.3 LKFS, 00:00:15
INFO :06 Nov 2012, 05:11:35, -26.3 LKFS, 00:00:16
INFO :06 Nov 2012, 05:11:36, -26.3 LKFS, 00:00:17
INFO :06 Nov 2012, 05:11:37, -26.3 LKFS, 00:00:18
INFO :06 Nov 2012, 05:11:38, -26.3 LKFS, 00:00:19

```

## Options Settings

The following options may be set by FTPing to the surface and editing the surface's options text file, then re-booting the console. The file is in the surface's root directory and is called Dx\_OPTS.TXT; note the "x" in Dx is the D series model number, D1, D3, D32, D8, D20, etc.

```

BS1770_BAR:0
// Syntax: BS1770_DIGITS:?
// Whether to use 10s or 30s integration for the loudness digit display
// ? 1 = 30s, 0 = 10s
BS1770_DIGITS:0
// Syntax: GATE_TIMER:?
// Whether to use the CONFALL logic input to trigger pause/restart of timer
// ? 1 = enable, 0 = disable
GATE_TIMER:1
// Syntax: LUMODE:?
// Which mode to user for loudness integration and display
// ? 0 = AT/85, 1 = EBU, 2 = User (custom)
LUMODE:0
// Syntax: LUREF:?
// Value to use as loudness reference (only used when LUMODE is USER)
// ? Any value between -36 and -1
LUREF:-24
// Syntax: LUNITS:?
// Units to use for loudness readout
// ? 1 = LUFS, 0 = LKFS
LUNITS:0

```

## Mute Groups

The MUTE switch for each DCM provides a rapid way to mute a group of signals. Any signals that are assigned to a DCM will be muted when the MUTE switch is on.

## Fader

The DCM will reduce the levels of all signals assigned to that DCM as it is lowered. When the DCM fader is brought all the way down, any Input or Output faders assigned to the DCM will mute.





# Host CPU (HC-D2)

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All devices in the system must be set to the same sample rate!

# Host Controller (HC-D2)

## Overview

The host controller card used in the DIMENSION THREE incorporates a PC/104 computer mounted in the frame. The host computer utilizes RAM, a flash disk (which emulates a standard IDE hard drive) and an Ethernet port. There is no hard disk drive. Keyboard, floppy controller and video ports are for factory use only.

The purpose of the host controller is to control the operation of the DIMENSION THREE control surface. The HC-D2 communicates to the XPoint Configuration PC via TCP/IP over Ethernet through a standard ethernet hub or switch. It also communicates to the Gibraltar Router system via a redundant, crossover wired mixer link connections.

Hardware and software configuration, as well as real time crosspoint information, is saved in non-volatile storage on the HC-D2 card and is restored at power up or reset. This configuration information provides details to the host application running on the HC-D2, such as the specific audio hardware available and serial port allocation. The HC-D2 host controller card can be fitted with an optional 2nd PC/104 computer for redundancy.

## HC-D2 BIOS Settings/Format

BIOS Setup and formatting of the Host CPU is completed prior to the testing of your DIMENSION THREE control surface at the Wheatstone factory. There are no user adjustable settings.

## Ethernet IP Addressing

The Wheatstone DIMENSION THREE control surface ships with the host controller IP address set to 192.168.1.11 (Backup CPU is 192.168.1.12). Stand-alone systems (not interfaced to a station's existing network) require no IP address changes. A Web Server interface allows IP address editing from a standard Web Browser.

## Ethernet Interface Wiring

The surface's 100BaseT Ethernet interfaces are connected to your Ethernet network hub or switch via a straight (pin to pin) CAT-5/CAT6 cable. Typical CAT-5/CAT6 cable pinouts are included in the "Hook-Ups" section near the end of this chapter. These connections are for communicating with the configuration computer; a separate ethernet connection must be provided for each CPU on the control surface.

## Mixer Link Wiring

Mixer Links are similar to a 100BaseT interface but are **NOT** Ethernet and use a proprietary protocol on the wire. These RJ-45 (or optical) connections provide the control link between the control surface and the Gibraltar Router system. All settings and commands generated on the control surface pass through this link. Special CAT-5/CAT6 cables wired in “crossover” fashion are used for this link. These cables connect the RJ-45 jacks on the control surface to the matching RJ-45 jack on the Gibraltar Router system. Please note that, in a typical system, there will be many RJ-45 jacks in the Gibraltar Router, and for proper operation, the control surface **must** be connected to the specific RJ-45 jacks defined for it in the system configuration.

## Internal Programming Options

All internal programming options are made via PCB mounted dipswitches.

### Switch Settings

#### SW1 - SW4 - CAT5/CAT6 vs. Fiber & Transceiver Select

These slide switches can be used to select the CAT-5/CAT6 or fiber optic mixer link connection.

To set MIXER LINK 1 for CAT-5/CAT6 connection, slide switches SW2 - TX and SW4 - RX to the up position (toward the surface’s rear). Sliding these switches down selects fiber optic connection for transceiver 1.

To set MIXER LINK 2 for CAT-5/CAT6 connection, slide switches SW1 - TX and SW3 - RX to the up position (toward the surface’s rear). Sliding these switches down selects fiber optic connection for transceiver 2.

Note that the setting of these switches and SW7 pos 4 (see below) must be made to the same selection. The Mixer Link is either CAT-5/CAT6 or FIBER.

#### SW5 - Master Failover

This switch can be used to force takeover by the backup CPU if the main CPU has failed and automatic failover has not been accomplished.

#### SW6 - CPU Reset

This switch can be used to reset the host controller’s main CPU without powering down the system. If the system is running from the backup CPU this switch will NOT cause the main CPU to take over again. To do that you must recycle the surface power.

#### SW7 Position 1 - Sample Rate

This dipswitch position must be set to agree with the sample rate of the system. The switch is ON for a sample rate of 44.1kHz and OFF for a sample rate of 48kHz.



All devices in the system must be set to the same sample rate!

#### SW7 Position 2 - Redundant CPU

To enable automatic failover from the main CPU to the backup CPU this switch position must be ON.

**SW7 Position 3 - Not Used**

This dipswitch position is reserved for future use.

**SW7 Position 4 - CAT5/CAT6 vs. Fiber**

The mixer link can be connected via CAT-5/CAT6 cable or fiber optic cable. Set position 4 of SW7 ON if you are using CAT-5/CAT6 or OFF if you are using fiber. Note that switches SW1 - SW4 must also be set to agree with the SW7 position 4 setting.

**SW8 - Not Used****Hook-Ups**

All user wiring to and from the host controller is made via I/O connectors located on the control surface rear. There are two RJ-45 Ethernet connectors. CAT-5/CAT6 or multi-mode optical fiber Mixer Link connections are made via RJ-45 or LC type optical connectors. The pinout drawing on page 6-7 shows all wiring connections at a glance.

**“ETH A” RJ-45 – Main Ethernet Connector**

PIN 1 – TXD +  
 PIN 2 – TXD -  
 PIN 3 – RXD +  
 PIN 4 – N/C  
 PIN 5 – N/C  
 PIN 6 – RXD -  
 PIN 7 – LN LED  
 PIN 8 – LK LED

**“ETH B” RJ-45 – Optional Redundant Computer Ethernet Connector**

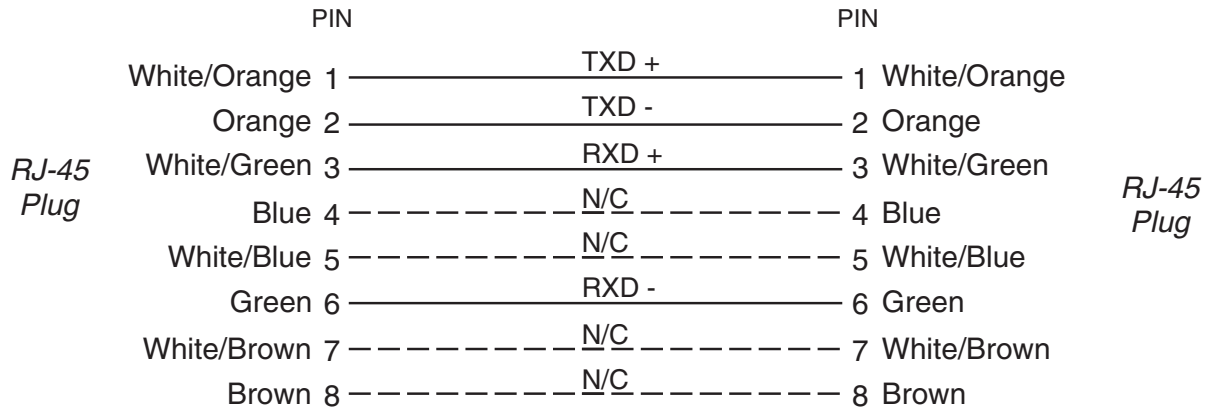
PIN 1 – TXD +  
 PIN 2 – TXD -  
 PIN 3 – RXD +  
 PIN 4 – N/C  
 PIN 5 – N/C  
 PIN 6 – RXD -  
 PIN 7 – LN LED  
 PIN 8 – LK LED

**“CAT5” RJ-45 – Mixer Link Connector**

Pin 1 – TXD +  
 Pin 2 – TXD -  
 Pin 3 – RXD +  
 Pin 4 – N/C  
 Pin 5 – N/C  
 Pin 6 – RXD -  
 Pin 7 – N/C  
 Pin 8 – N/C

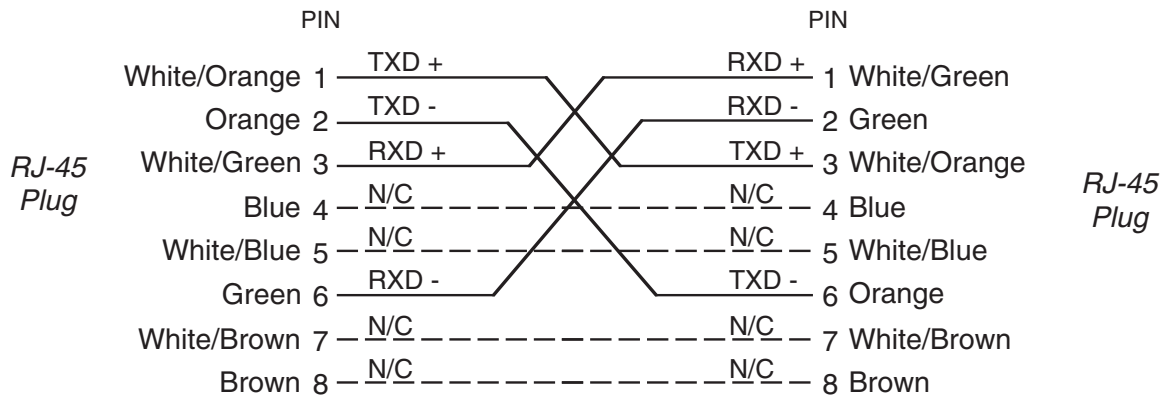


## TYPICAL STRAIGHT-THROUGH CABLE



Used for connecting the host controller to your network hub.

## TYPICAL CROSSOVER CABLE



Used for MIXER LINK connector.

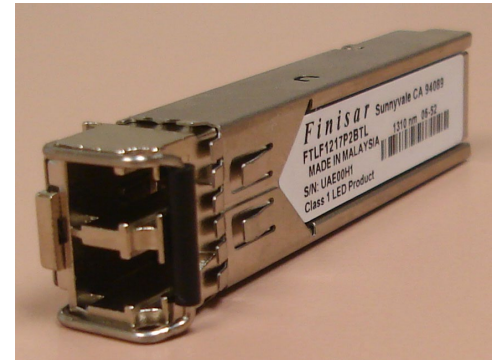
## Optical Fiber Interface

The DIMENSION THREE control surface supports an optional fiber connection to the Gibraltar Router. The DIMENSION THREE surface uses an SFP module interface with integral LC connectors. Note that the QOT-2001 rear panel on the Gibraltar Router uses SC connectors, so a patch cable fitted with LC connectors on one end and SC connectors on the other end is required.



## Optical Transceiver

Optical Transceivers convert physical signals from electrical to optical (and vice-versa) in a network and couple the optical signals into (and out of) optical fiber. Small form factor pluggable (SFP) transceivers, used in the DIMENSION THREE surface, are designed to be hot-swappable in industry standard cages and connectors (for easy field repair), and offer high speed and physical compactness.



Optical Transceiver

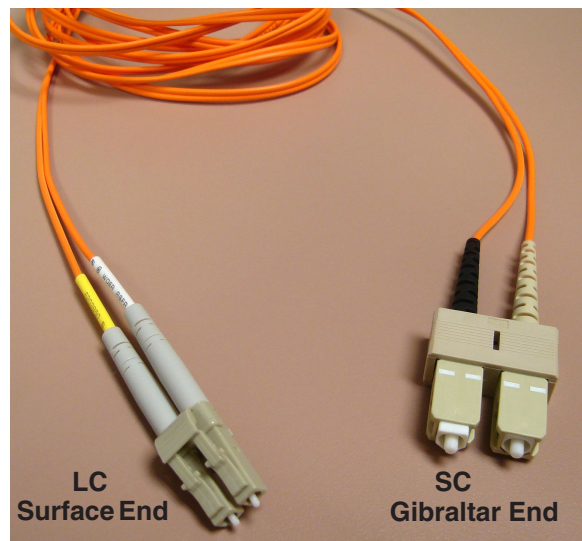
## Connector Types

The high-density *LC* (Lucent connector) *Duplex* connector has a tabbed locking mechanism similar to what you would find on a phone jack. This enables secure connectivity and easy removal.

The *SC* (subscription channel) *Duplex* connector is a low insertion loss connector using a push/pull locking mechanism.

## Optical Fiber Cable

The SC-LC optical fiber cable required in this application is a multimode duplex fiber optic patch cable with a core/cladding size *62.5/125 micron* suitable for low-to-moderate-speed data links ( $\leq 100$ Mbps). The Fiber Instrument Sales, Inc. part number X2YLM3FISC may be used to reference the physical characteristics of the required cable assembly. The full-duplex nature of the audio network interface requires one fiber for transmit, and one for receive; hence dual zip cables are recommended.



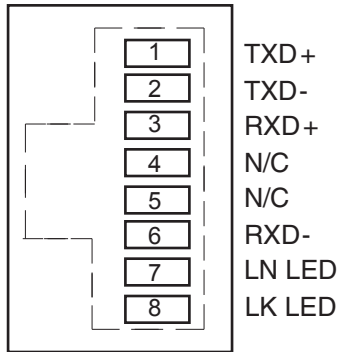
Optical Fiber Cable

Optical fiber cables are manufactured with a variety of jacket materials, which directly affect cable cost, including Thermoplastic Elastomer (TPE), Kynar® and Teflon® FEP. Physical properties of the jacket material determine a cable's resistance to abrasions, flame retardancy, etc. *Check local codes to be sure the cable you plan on using is compliant in your application.*

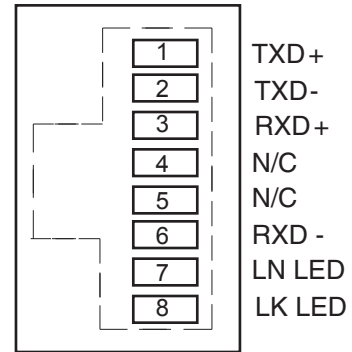
## HC-D2 Host Controller I/O Connections

### Ethernet Connections

"A" Main Ethernet  
Connector  
(RJ-45)

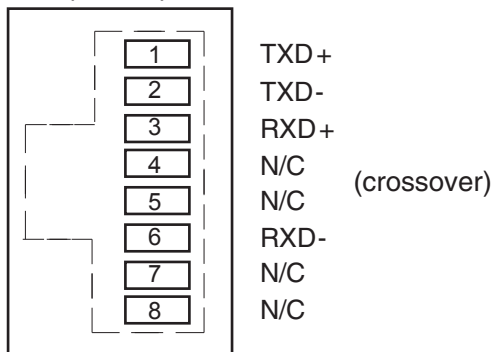


"B" Optional Redundant Computer  
Ethernet Connector  
(RJ-45)



### Mixer Link Connections

CAT5  
Connector  
(RJ-45)



Optional Optical  
FIBER  
(LC Connector)



# Appendices

## Appendix 1

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# Appendix 1

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# Options Text File

## Introduction

There are a number of operational features on the DIMENSION THREE surface that are controlled by the contents of the Options Text File (D3\_OPTS.TXT) that resides on the surface's flash drive. In order to configure these features it is necessary to modify this file.

## Modifying The Options Text File

There are several steps involved in modifying the file:

1. Establish an FTP (File Transfer Protocol) session with the surface. This is best done using an FTP program with a graphical interface, such as FTP Surfer by Whisper Technology. You will set up an anonymous session using the following information:

Name: something useful, assuming you will save the setup

Address: use the IP address of the surface

User name: knockknock

Password: whosthere

2. When the FTP session connects you will see a list of files and folders that are on the surface. One of those files is the Options Text file, named as specified above. Drag this file over to your PC's desktop so you can save a copy.
3. Make any required changes to the copy of the file on your desktop, according to the information in the following sections, then save the file and drag its icon back to the FTP window to send the modified file back to the surface.
4. Once the modified file is on the surface, wait a full minute to be sure that the file has actually been written to the surface's flash memory. Then close the FTP session.
5. Reboot the surface for the changes to take effect.
6. If the surface has a backup CPU you should also save the same modified file to the backup CPU, which needs to be accessed by a separate FTP session using its IP address. You can wait to reboot the surface until you have sent the modified file to both surfaces; in this way you need only reboot the surface once.

## A Simple Example From The File

As a simple example let's look at the MUTE\_METHOD option. Scroll through the Options Text File (or look at the sample file listing at the end of this Appendix) until you see the following three lines of code:

```
// Syntax: MUTE_METHOD:?  
// ? 0 (default) = ON button, 1 = ON AIR.  
MUTE_METHOD:0
```

The first line describes the syntax for this option. It starts with two slashes, which are interpreted as the start of a comment line. Comment lines are made for **us** to read, and the surface CPU ignores them. This line shows that the syntax for the option is the keyword MUTE\_METHOD followed by a colon (:) followed by some character, as represented by the '?' character.

The next line indicates that the '?' can be replaced by a '0' (a zero, not the letter O) if a muting channel being ON will trigger the mute, or a '1' if the muting channel must be both ON and assigned to a main bus (thus making it ON AIR) before it will trigger the mute. This specific example shows that the default setting is '0' for this option. Please note that this may or may not be the case for your particular surface, as the default option is subject to change. The **idea** of how to use the file remains true.

The third line is not a comment; this is the line the surface CPU actually reads from the file. This line, as shown, sets the muting method to ON (channel must be ON to activate a mute, but need not be ON AIR). If this is not the desired operation, this line must be edited. Change the '0' to a '1' and the muting method will change so that a channel is required to be ON AIR before it will activate a mute. As indicated in the instructions above for modifying the file, the actual change to operation will not happen until the surface has been rebooted and has read the modified file.

The edited line must follow the established syntax precisely or the surface may not behave as expected.

## A Second Example

As a second example, let's look at something a little more involved. Once again, scroll through the Options Text File to find the following code (please note that some surfaces may have a different number of code lines in this section; the following is just for the purposes of example):

```
// Syntax: SPARE#:?
// # is the spare button number (1 - 12)
// ? is the mode (default = 2)...
// 0 = None, Button presses are ignored, LED controlled by DIO
// 1 = Toggle, Button state toggles on each press, LED controlled by Surface
// 2 = Momentary, Button is active when held down, LED controlled by Surface
// 3 = Momentary, Button is active when held down, LED controlled by DIO
// 4 = Automation, Button & LED are controlled by automation interface
// 5 = Preset Select, Button selects pre-configured preset, LED controlled by
Surface
SPARE1:2
SPARE2:2
SPARE3:2
SPARE4:2
SPARE5:2
SPARE6:2
SPARE7:2
SPARE8:2
SPARE9:2
SPARE10:2
SPARE11:2
SPARE12:2
```

Once again, our first line is a comment line that shows the syntax used for this particular option. In this case there are several code lines, each one referring to a different spare (or programmable) button. Thus the '#' in the example syntax is replaced with a number on the actual code line to indicate which of the spare buttons that particular code line refers to. This fact is described on the second comment line.

The third comment line explains that a number indicating button mode will be used in place of the '?' on each actual code line.

The next few comment lines explain the possible modes that the spare buttons can operate in. You may have fewer or greater modes available depending on the surface model and vintage. In any event you can select the same or a different mode from the available modes for each programmable button on the surface.



## An Example File - Complete

The following listing shows a typical Options Text File for the surface type covered by this manual. Your actual Options Text File may be somewhat different, depending on vintage, but the general ideas involved in editing the file will apply.

```
// -----
// -----
// MIX MINUS OPTIONS
// -----
// Syntax: MM#:?
// # is the mix minus bus number (1 - 8)
// ? is the mode (default = 0)...
// 0 = Post Fader, Post ON (default mode)
// 1 = Pre Fader, Post ON
// 2 = Post Fader, Pre ON
// 3 = Pre Fader, Pre ON
MM1:0
MM2:0
MM3:0
MM4:0
MM5:0
MM6:0
MM7:0
MM8:0
MM9:0
MM10:0
MM11:0
MM12:0
MM13:0
MM14:0
MM15:0
MM16:0
// -----
// AUX BUS OPTIONS
// -----
// Syntax: MM#:?
// # is the mix minus bus number (1 - 8)
// ? is the mode (default = 0)...
// 0 = Post ON (default mode)
// 1 = Pre ON
AUX1:0
AUX2:0
AUX3:0
AUX4:0
AUX5:0
AUX6:0
AUX7:0
AUX8:0
AUX9:0
AUX10:0
AUX11:0
```

```

AUX12:0
AUX13:0
AUX14:0
AUX15:0
AUX16:0
// -----
// SPARE OPTIONS
// -----
// Syntax: SPARE#:?
// # is the spare button number (1 - 12)
// ? is the mode (default = 2)...
// 0 = None, Button presses are ignored, LED controlled by DIO
// 1 = Toggle, Button state toggles on each press, LED controlled by Surface
// 2 = Momentary, Button is active when held down, LED controlled by Surface
// 3 = Momentary, Button is active when held down, LED controlled by DIO
// 4 = Automation, Button & LED are controlled by automation interface
// 5 = Preset Select, Button selects pre-configured preset, LED controlled by Surface
SPARE1:2
SPARE2:2
SPARE3:2
SPARE4:2
// -----
// MISC OPTIONS
// -----
// Syntax: SET_TIMEOUT:?
// ? 1 (default) = 20 sec set button timeout enabled, 0 = no timeout.
SET_TIMEOUT:1
// Syntax: INFO_TIMEOUT:?
// ? 20 (default) = Number of seconds before programmable control info times out
// ?          -1 = No timeout
PGM_CTL_DISPLAY_TIMEOUT:20
// Syntax: ALPHA_SORT:?
// ? 1 (default) = XY controller alpha sorting enabled, 0 = no sort.
ALPHA_SORT:1
// Syntax: ONE_VIS:?
// ? 1 = one visibility for all presets, 0 (default) visibility stored for each preset.
ONE_VIS:1
// Syntax: XCHAN_VIS_DISABLE:?
// ? 0 = do not allow X visibility disable, 1 (default) allow X visibility disable.
XCHAN_VIS_DISABLE:1
// Syntax: ONE_VDIP:?
// ? 1 = one vdip config for all presets, 0 (default) vdip config stored for each preset.
ONE_VDIP:1
// Syntax: VU_RANGE:?
// ? 0 (default) = -20 to 20db, 1 = -40 to 20db.
VU_RANGE:0
// Syntax: MUTE_METHOD:?
// ? 0 (default) = ON button, 1 = ON AIR.
MUTE_METHOD:0
// Syntax: HDW_LOGGER:?
// ? 1 = use hardware logger, 0 (default) no hardware logger.
HDW_LOGGER:0

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// Syntax: CLOCK_24HR:?
// ? 0 (default) = 12 hour clock, 1 = 24 hour clock.
CLOCK_24HR:0
// Syntax: MXM_BY_SIGNAL:?
// ? 0 = (default) MxM assigns stored by fader, 1 change MxM assigns as sources change.
MXM_BY_SIGNAL:0
// Syntax: SURROUND_UNFOLD:?
// ? 0 = disable surround unfold
// ? 1 = (default) enable surround unfold
SURROUND_UNFOLD:1
// Syntax: DCM_MUTE_LEVEL:?
// ? INF or -80 to -6 = (-60 default) dB level considered
// muted for DCM assign LED indication.
DCM_MUTE_LEVEL:-60
// Syntax: FRAME_RATE:?
// ? 60 (default) = 60 Hz (NTSC), 50 = 50 Hz (PAL).
FRAME_RATE:60
// Syntax: ACI_DISABLE_MSS:?
// ? 0 (default) = send machine start/stop DIOs whenever input channels go on/off.
// 1 = supress machine start/stop DIOs when input channels on/off via ACI.
// 2 = supress machine start/stop DIOs when input channels on/off via remote on/off DIO.
// 3 = supress machine start/stop DIOs when input channels on/off via ACI and/or DIO.
ACI_DISABLE_MSS:0
// Syntax: USE_0DB_MIC_GAIN:?
// ? 0 = (default) Mic gain cards are +20 -> +80dB. 1 = 0->10, 30.5->80dB
USE_0DB_MIC_GAIN:0
// Syntax: SWAP_MT_LINKS:?
// ? 0 = (default) normal, 1 = swap primary/backup connections
SWAP_MT_LINKS:0
// Syntax: FORCE_PRESET_DESTS:?
// ? 0 = (default) When preset is recalled, do not disconnect destinations that were not
// connected when preset was saved.
// ? 1 = When preset is recalled, disconnect any destinations that were not
// connected when preset was saved.
// NOTE: This option only affects signals connected to the control surface.
FORCE_PRESET_DESTS:0
// Syntax: FADER_MONITOR_PARAMS:p,n,r
// ? p = Fader monitor period in seconds (0 to disable)
// ? n = Maximum # of fader commmands allowed in period p (per fader)
// ? r = Recovery time in seconds (fader motors will be disabled for this long
FADER_MONITOR_PARAMS:0,20,45
// Syntax: MOTORIZED_FADERS:?
// Tells the software if the surface has motorized faders
// ? 0 = no, 1 = yes
MOTORIZED_FADERS:1
// Syntax: AUTOMIX_THRESHOLD:?
// Gate value used to consider an input "ON"
// ? 0 - 255
AUTOMIX_THRESHOLD:144
// Syntax: AUTOMIX_DIM_DB:?
// dB to DIM automix members when prioty channel is active
// ? 0.0 - 80.0

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AUTOMIX_DIM_DB:40.0
// Syntax: AFV_FADE_RATE:?
// Rate from fastest to slowest for AFV fading
// ? 0 - 31
AFV_FADE_RATE:10
// Syntax: BS1770_BAR:?
// Whether to use 3 sec or 10 sec integration for the loudness bar display
// ? 1 = 3s, 0 = 10s
BS1770_BAR:0
// Syntax: BS1770_DIGITS:?
// Whether to use 3 sec or 10 sec integration for the loudness digit display
// ? 1 = 3s, 0 = 10s
BS1770_DIGITS:0
// Syntax: GATE_TIMER:?
// Whether to use the CONFALL logic input to trigger pause/restart of timer
// ? 1 = enable, 0 = disable
GATE_TIMER:1
// Syntax: LUMODE:?
// Which mode to user for loudness integration and display
// ? 0 = AT/85, 1 = EBU, 2 = User (custom)
LUMODE:0
// Syntax: LUREF:?
// Value to use as loudness reference (only used when LUMODE is USER)
// ? Any value between -36 and -1
LUREF:-24
// Syntax: LUNITS:?
// Units to use for loudness readout
// ? 1 = LUFS, 0 = LKFS
LUNITS:0
// Syntax: MXM_CENTRIC:?
// Whether to make the indicators on the input panels show MXM or submix assignments
// ? 1 = MXM, 0 = Submix
MXM_CENTRIC:1
// Syntax: SPILL_MODE:?
// Whether to use the DCM faders when surround spill is activated
// ? 0 = Spill onto Inputs, 1 = Spill onto DCMs, 2 = Spill onto both
SPILL_MODE:0

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## Appendix 2

### Contents

Replacement Parts List.....	A-11
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For the most part there are no user-replaceable parts in the DIMENSION THREE control surface. Exceptions are those controls and components that in the course of normal use may need maintenance (i.e., faders, pots, switches, etc.). A complete list of available components is shown on the next page. Contact Wheatstone technical support for further information.

Wheatstone Corporation (600 Industrial Drive, New Bern, North Carolina, USA 28562) may be reached by phone at 252-638-7000, fax 252-637-1285, email “techsupport@wheatstone.com”.



## REPLACEMENT PARTS - DIMENSION THREE CONTROL SURFACE

COMPONENT	DESCRIPTION	WS P/N
IS-D3 PANEL	COMPLETE INPUT PANEL	010400
EFS-D3 PANEL	COMPLETE CONTROL PANEL	010401
DCM-D3 PANEL	COMPLETE DYNAMICS CONTROL PANEL	010402
MFS-D3 PANEL	COMPLETE MASTER PANEL	010403
IS-D3 LOADED CARD	INPUT PANEL LOADED CARD ASSEMBLY	010450
EFS-D3 LOADED CARD	CONTROL PANEL LOADED CARD ASSEMBLY	010451
DCM-D3 LOADED CARD	DYNAMICS CONTROL PANEL LOADED CARD ASSEMBLY	010452
MFS-D1 LOADED CARD	MASTER PANEL LOADED CARD ASSEMBLY	006653
IQ-9M LOADED CARD	IQ LOADED CARD ASSEMBLY	005273
IQO-D1 LOADED CARD	IQ LOADED CARD ASSEMBLY	006659
EI-5.1 LOADED CARD	ENCODER LOADED CARD ASSEMBLY	005030
HC-D3 LOADED CARD	HOST CONTROLLER LOADED CARD ASSEMBLY	010470
VUT1-D3 LOADED CARD	LOADED CARD ASSEMBLY	010471
VUT2-D3 LOADED CARD	LOADED CARD ASSEMBLY	010472
VC5-5 LOADED CARD	LOADED CARD ASSEMBLY	005274
BP-9 LOADED CARD	LOADED CARD ASSEMBLY	005272
BPR-9 LOADED CARD	LOADED CARD ASSEMBLY	005278
PWI-5.1 LOADED CARD	LOADED CARD ASSEMBLY	007232
PSR POWER RACK UNIT	RACK UNIT FOR SPS POWER SUPPLIES	007232
SPS-400	POWER SUPPLY UNIT FOR USE IN PSR RACK	007233
SPS/PWI POWER CABLE	SPS DB TO CONTROL SURFACE PWI POWER CABLE	007261
REPLACEMENT FADER ASSEMBLY	WIRED MOTORIZED FADER	005297
FADER KNOB	BLACK FADER KNOB, 11MM FOR 3000 SERIES FADER	520001
SWITCH	SINGLE POLE MOMENTARY SWITCH W/RED LED	510106
SWITCH	SINGLE POLE MOMENTARY SWITCH W/YELLOW LED	510296
SWITCH	SINGLE POLE MOMENTARY SWITCH W/GREEN LED	510297
NKK SWITCH	JB15 SWITCH W/BRIGHTER GREEN LED AND SILICON GASKET	510289
NKK SWITCH	JB15 SWITCH W/BRIGHTER RED LED AND SILICON GASKET	510290
NKK SWITCH	JB15 SWITCH W/BRIGHTER YELLOW LED AND SILICON GASKET	510291
SWITCH CAP	WHITE SWITCH CAP	530004

**REPLACEMENT PARTS - DIMENSION THREE CONTROL SURFACE**

<b>COMPONENT</b>	<b>DESCRIPTION</b>	<b>WS P/N</b>
ENCODER KNOB	11MM BLACK PUSH-ON KNOB	<i>520105</i>
ENCODER LIGHT PIPE	24 SEGMENT LIGHT PIPE FOR DTVM ENCODER	<i>520104</i>
ENCODER CAP	PLAIN BLUE CAP FOR 11MM COLLET KNOB	<i>530291</i>
ENCODER CAP	PLAIN GRAY CAP FOR 11MM COLLET KNOB	<i>530293</i>
ENCODER CAP	PLAIN PALE BLUE CAP FOR 11MM COLLET KNOB	<i>530296</i>
ENCODER CAP	PLAIN BURGUNDY CAP FOR 11MM COLLET KNOB	<i>530315</i>
LUMA BUTTON	WHITE LUMA BUTTON	<i>530274</i>
DISPLAY	4 SEGMENT ORANGE ALPHA NUMERIC DISPLAY	<i>610023</i>
FLAT RIBBON CABLE	40 CONDUCTOR FLAT RIBBON CABLE	<i>150204</i>
POWER CONNECTOR	5 POSITION RECEPTACLE HOUSING	<i>200113</i>
POWER SOCKET	40 AMP SOLDER CUP POWER SOCKET	<i>200118</i>
POWER CABLE PLUG	40 AMP SOLDER CUP POWER PLUG	<i>200119</i>
POWER CABLE PLUG	8 POSITION PLUG HOUSING	<i>200122</i>
POWER CABLE HOOD	DB-25 SOLID METAL HOOD	<i>200120</i>
POWER CABLE HOOD	DB-37 POWER CABLE HOOD	<i>200123</i>
CONNECTOR COVER	COVER FOR DB-25 CONNECTOR	<i>200126</i>
PLUG	3 PIN .098" PLUG FOR #26 AWG	<i>230028</i>
PLUG	4 PIN .098" PLUG FOR #26 AWG	<i>230029</i>
PLUG	5 PIN .098" PLUG FOR #26 AWG	<i>230030</i>
PLUG RIBBON	40 PIN RIBBON PLUG	<i>250053</i>
SOCKET	20 PIN DIL SOCKET	<i>250057</i>
HEADER	3 PIN .098" HEADER	<i>250062</i>
HEADER	5 PIN .098" HEADER	<i>250064</i>
FAN	60 x 60 x 10MM 5V 3000RPM 12.4CFM DC FAN	<i>840028</i>
LCD SCREEN	13.3" LAPTOP LCD SCREEN	<i>940126</i>
LCD SCREEN	6.5" LAPTOP LCD SCREEN	<i>940127</i>
CPU CABLE	D3 LVDS CABLE 6.5" 20 CKT FOR CPU	<i>940128</i>
DISPLAY CABLE	D3 LCEDI CABLE 2" 40 CKT FOR LARGE DISPLAY	<i>940129</i>
DISPLAY CABLE	D2 LVDS CABLE 3" 20 CKT FOR SMALL DISPLAY	<i>940131</i>
MANUAL	OWNER'S MANUAL	<i>010499</i>