Zaxcom Fusion 10/12
User's Manual

Portable Multi-track Digital Audio Recorder / Mixer

Firmware Version: **7.08**

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230 West Parkway, Unit 9, Pompton Plains, NJ 07444 USA
Tel: 973-835-5000 Fax: 973-835-6633
Email: ***info@zaxcom.com*** Website: ***www.zaxcom.com***

Maintained by: Ray M. Owen, Production Sound Mixer

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Chapter 1 – Introduction

What's included with the Fusion 10

- 10 recording tracks
- CD-ROM containing a PDF User's Manual.

Options

- Effects package (EQ, notch filter, compressor and delay on each channel)
- Six channel analog output cable

What's included with the Fusion 12

- 12 recording tracks
- Effects package
- CD-ROM containing a PDF User's Manual.

Options

- Eight channel analog output cable

Fusion Common Options

- PortaBrace case
- AES (digital) input cable
- AES (digital) output cable
- Zaxcom Mix-8
- Zaxcom Mix-12
- A/C Power Supply

User Manual Conventions

Throughout this manual, the following conventions are used:

- **Toggle** – is used when the selection switches between two possible selections.
- **Cycle** – is used when the selection rotates through several different possible selections.
- **Button** – refers to an on-screen object (button).
- **Key** – refers to one of the physical objects (keys) on the front panel or a keyboard.
- (A key) **+** (B key) – Press the two keys at the same time
- **(Key Press Shortcut Sequence)** – It is necessary to move through the menu pages to get to the page where changes are to be made. The most efficient way to indicate this is through the sequence of keys/buttons to be pressed. For example: (***SHIFT*** + ***SETUP*** *keys* → ***Meters*** *button*) means to simultaneously press the ***SHIFT*** and ***SETUP*** *keys* then press the ***Meters*** *button* in the page that is displayed.
- **Cycle the power** – refers to turning power to the unit 'OFF', waiting a few seconds and then turning the power 'ON'.
- {**p.##**} – refers to the page number on which the menu page is described.
- **Default setting** – refers to the value that is loaded into the associated parameter, in the event that the ***Restore Factory Defaults*** *button* is pressed. The value is highlighted.

System Features

- 10/12 track recording on CompactFlash media. Direct-to-CompactFlash recording is one of the most reliable ways to record location audio. The Fusion recording system gives you peace of mind knowing that temperature, humidity, motion and environmental contamination have no affect on the recordings you will make to the primary drive.
- 8 analog mic/line inputs with 48V phantom power, each 10 mA max.
- 4 line inputs.
- 8 digital inputs.
- 8 digital direct outputs.
- 8 analog outputs.
- 8 hardware faders.
- Built-in 16-channel mixer.
- Mix to disk or outputs, pre- or post-fader, with or without phase inversion.
- The Fusion allows you to keep your recorded audio on the set, allowing Production to instantly reference previous recordings. Disputes with Post regarding recording issues can be cleared up immediately and extra copies of recorded audio can be produced in case of lost, damaged or stolen material.
- Record to an external FireWire drive without an additional computer.
- It can generate 4 versions of AES-31 Broadcast Wave Format files for use in Post:
  - Polyphonic – 24-bit
  - Polyphonic – 16-bit
  - Monophonic – 24-bit
  - Monophonic – 16-bit
- The Fusion offers direct Avid and ProTools compatibility. This saves a tremendous amount of time loading files for Post Production.
- Full metadata entry directly on Fusion.
- Scene, Take, Note and Roll Number metadata can be entered into the Fusion using the touch screen display, Mix-12 mixer, Cameo mixer or external keyboard. This data is contained within the audio recording and is transferred with the audio into the Avid Post Production system. All metadata can be easily edited on the Fusion to assure Post gets the correct information for each Take.
- The Fusion supports the FAT-32 disk format, so CompactFlash cards created using the Fusion are directly readable on both Macintosh and Windows computers without using third-party software drivers.
- Bit-depth: 24-bits.
- Timecode frame-rates available: 23.98, 24, 25, 29.97NDF, 29.97DF, 30NDF, 30DF.
- Sample-rates available (KB): 44.1, 47.952, 48, 48.048, 88.2, 96, 96.096, 192.
- Lightweight rugged design.
- Weight: 5 lbs (2.27 kg) without battery.
- Size, while looking at the screen (H x W x D): 4.2" x 10.8" x 8.1" (106.7 mm x 274.3 mm x 205.7 mm).
- Battery runtime: up to 6 hours on a Lithium-Ion NP1.
- Full color, backlit graphic liquid crystal display – daylight viewable.

Product Support

Download the latest **Firmware** from: http://www.zaxcom.com/support_software_updates.htm.
Download the latest **User Manual** from: http://www.zaxcom.com/support_instructional_manuals.htm.
Register your new Zaxcom Product at: http://www.zaxcom.com/support_product_registration.htm.
Submit Technical Questions at: http://www.zaxcom.com/support_submit_tech_questions.htm.
Request an **RMA #** at: http://www.zaxcom.com/support_repair_services.htm

Media / Accessory Recommendations

CompactFlash

We recommend SanDisk and Transcend cards. Don't use cards with "double write speed" features. Any modern card, 8 GB and larger, should work equally well. Do not use cards from questionable manufacturers as they will wear out quickly due to the lack of wear leveling algorithms.

If you are planning to record at 96 kHz or 192 kHz, choose a card that claims 10 MB per second SUSTAINED write speed (MAX write speed does NOT count).

Once you have the cards in hand, considering testing their ability to keep up with the recording process:

- For Sampling-rates lower than 96 kHz – record all tracks for 10 minutes with pre-record set to 10 seconds at a higher sampling-rate than you expect to use.
- For Sampling-rates 96 kHz and 192 kHz – record 6 – 8 tracks for 10 minutes with pre-record set to 10 seconds at the desired sampling-rate.

If the unit kicks out of record, the card could not keep up.

Also, after recording, check how long the ***Disk*** *icon* (on the ***Home page*** {**p.31**}) stays Red after you press the ***STOP*** *key*. It should stay Red for about 0.5 seconds as it finishes writing the last bit of data to the card. If it stays Red for 1 second or more, you will want to be careful to not go into record while it is still Red, otherwise the Fusion may become confused (nothing serious, it just may still say Stop in the ***Home page*** {**p.31**} while it's still recording with the ***REC*** *key* lit up).

FireWire Devices

We recommend Lacie drives, at the moment. From the Apple store the G-Tech Mini Drive and Smartdisk Firelite have been reported to work.

Some FireWire drives may need to have the ***FireWire Power*** *button* cycled to have them recognized. Some non-bus powered drives still require FireWire Power to be ON in order to work reliably.

Keyboards

We recommend Cherry Corp. Their PS/2 keyboard: Cherry G84-4100LCMUS-2 from www.cherycorp.com.

Getting to Know Your Fusion Recorder

The Zaxcom Fusion is a high-resolution audio mixer and recorder for reality television surround recording and ENG. Lightweight and power efficient, it replaces multiple mixers and portable recorders that are currently used to mix audio for recording to camera via RF link or hardwired cable.

Building on the Deva location recorder, the Fusion has an extensive software and hardware history based on the continuous refinement of our location recording technology.

The functions of mixing, recording and audio effects are seamlessly integrated providing features, functionality and audio quality unobtainable with separate solutions. Fusion's eight mix busses are a perfect match for the new generation of ENG cameras that record four to eight tracks of audio.

The Fusion is ideal for use with Holophone™ and SoundField™ microphones.
This section describes the Fusion's physical features and their location.

Front Panel Description

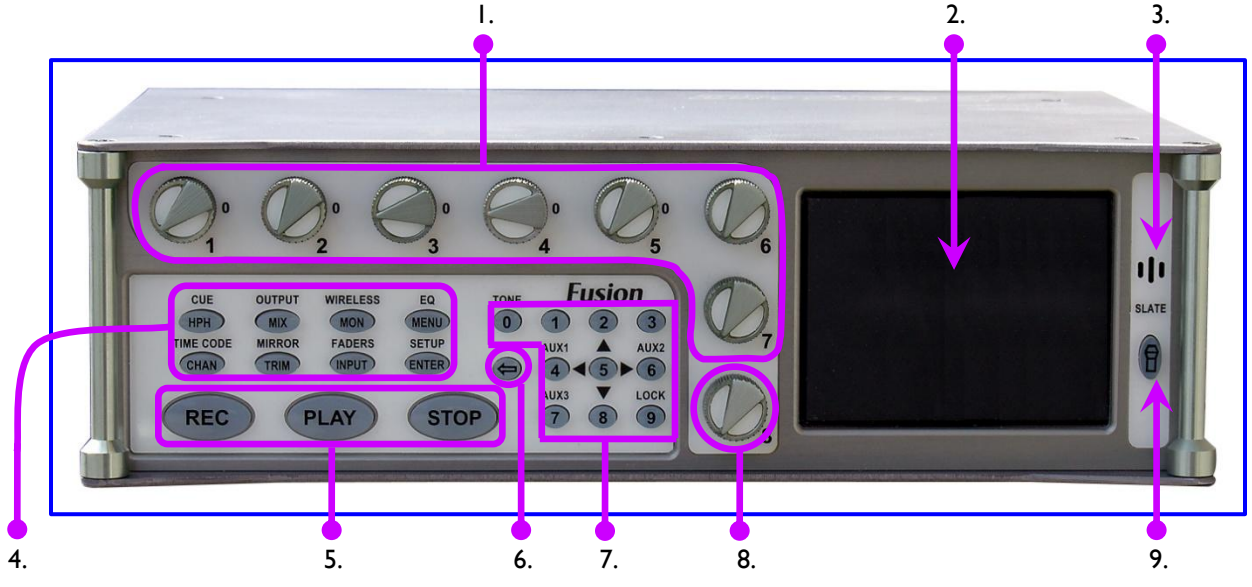


Figure 1-1 Front Panel Image

1. **Faders 1 – 7**
   These are seven dedicated hardware faders. Each can be assigned to any channel or combination of channels in your Fusion.

   NOTE: For those of you that have wanted to tighten loose faders, it takes a 1.27mm Allen wrench

2. **Color Touch Screen**
   The touch screen is the Fusion's main interface. Most selections are made and displayed using it. You can use either a PDA stylus or your finger to make selections.

3. **Slate Microphone**

4. **Function Keys**
   Each of the function keys are used for multiple tasks. The ⇦ (***SHIFT / BACKSPACE***) *key* enables the function labeled above the button. For example, the lower-right key when pressed is the ***ENTER*** *key*. However, when the ***SHIFT*** and ***ENTER*** *keys* are pressed, the ***Setup page*** {**p.53**} appears.

   - ***HPH*** (headphone) *key*
     If Fader 8 is assigned to a channel, the first press displays the ***Headphone Volume page*** {**p.125**}.
     The second press displays the ***Headphone Mix page*** {**p.69**}.
     The third press, the previously displayed page is re-displayed.
   - ***CUE (SHIFT + HPH)*** *key*
     Pressing this takes you to the ***Cue Mode page*** {**p.118**}.
   - ***MIX*** *key*
     Pressing this takes you to the ***Disk Mix page*** {**p.37**}.
   - ***OUTPUT (SHIFT + MIX)*** *key*
     Pressing this takes you to the ***Output Mix page*** {**p.41**}.

- ***MON*** (monitor) *key*
  This toggles audio monitoring between the headphone selection and the camera confidence audio from the camera connector.
- ***WIRELESS (SHIFT + MON)*** *key*
  (Reserved for the future)
- ***MENU / ESC*** *key*
  This takes you to the ***Main Menu page*** {**p.35**}.
  Also, while in a data entry field, it functions as the ***ESC*** *key* by discarding unsaved changes and closing the field
- ***EQ (SHIFT + MENU)*** *key*
  This takes you to the ***Analog Input (#) – EQ page*** {**p.86**}. (Part of the Effects package).
- ***CHAN*** (channel) *key*
  This takes you to the ***Analog Input (#) page*** {**p.82**}.
- ***TIME CODE (SHIFT + CHAN)*** *key*
  This takes you to the ***Timecode page*** {**p.50**}.
- ***TRIM*** *key*
  This takes you to the ***Analog/Digital Input Trim*** page {**p.103**}.
- ***MIRROR (SHIFT + TRIM)*** *key*
  This takes you to the ***My Fusion page*** {**p.104**}.
- ***INPUT*** *key*
  This takes you to the ***Input Configure page (Analog Inputs selected)*** {**p.80**}.
- ***FADERS (SHIFT + INPUT)*** *key*
  This takes you to the ***Faders page*** {**p.47**}.
- ***ENTER*** *key*
  This confirms data entry.
- ***SETUP (SHIFT + ENTER)*** *key*
  This takes you to the ***Setup page*** {**p.53**}.

5. **Transport Control keys**
   - ***REC*** *key* – Sets the operating mode to RECORD
   - ***PLAY*** *key* – Sets the operating mode to PLAY
   - ***STOP*** *key* – Sets the operating mode to STOP

6. ***SHIFT*** *key*
   This key is used in conjunction with the function keys to do additional tasks. For example, when used in conjunction with the #***7*** *key* (***AUX3***) provides a way to mark a false start.

7. **Numeric keypad**
   These provide an alternative means of entering numeric data such as timecode, metadata and equalization values.

8. **Headphone volume / Fader 8**
   This is the eighth fader. When it is not assigned to a channel, it controls the headphone volume. When assigned to a channel, the headphone volume can be adjusted using the ***HPH*** *key* and the ***Headphone Volume page*** {**p.125**}.

9. **Slate Mic Activation**

Left Side Description

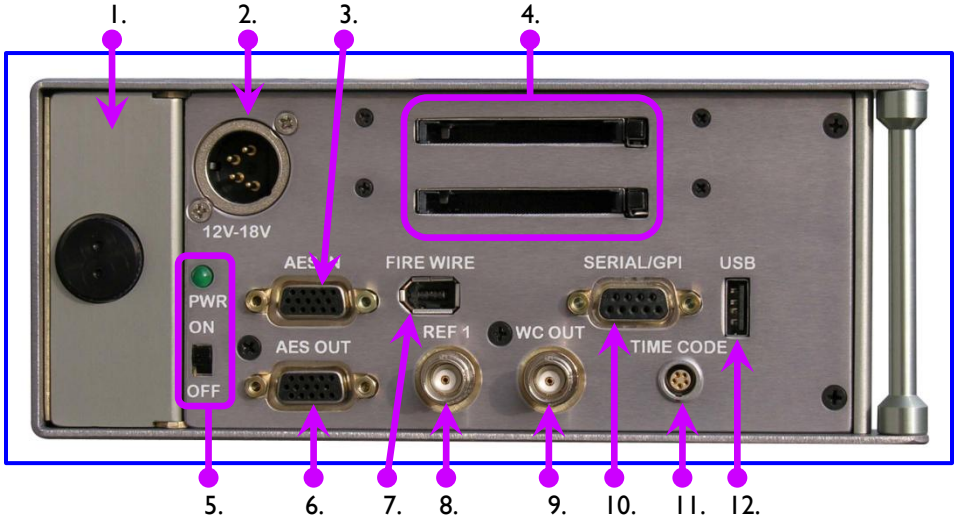


Figure 1-2 Left Side Image

1. **Battery Compartment**
   The black knob rotates clockwise to lock the battery compartment door. It will only accept an NP-1 type battery. You can use Li-Ion or NiMH batteries, as long as you observe the warnings below.

   NOTE: It is possible to insert the battery incorrectly. The only indication it is in wrong is the unit will not power up. To install the battery correctly, turn it so the contact end is facing toward the opening and the surface with the contacts is turned toward the **External Power connector**.

   NOTE: Consider once you have inserted the battery and closed the door to push the battery ejector pin on the opposite side just a bit. This will press the battery against the inside of the battery door helping to keep the door from unlatching and opening-up.

2. **External Power connector**
   Standard XLR-4M connector. (9.5 to 18 VDC @ 1A)

   WARNINGS:
   1) **Do NOT install** an internal battery with a voltage higher than 16.8 VDC.
   2) **Do NOT connect** the external power connector to a source larger than 18.0 VDC.

   Those are the **ABSOLUTE** upper limits. If you exceed either of these limits by even 0.1 VDC, you will **BLOW** the unit's power supply and require it to be sent in for maintenance. The warranty will be **VOID** if it is determined that the power supply was blown by violating either of these warnings.

3. **AES (digital) input connector**
   Connect the supplied AES input cable to this 15-pin mini sub-D connector. The cable provides four pairs of AES input.

4. **CompactFlash Media Slots**
   The top slot (Primary CF) is where all audio is initially recorded. The bottom slot (Backup CF) is where the on-board backup is mirrored.

5. **Power Switch and LED**
   When the power switch is 'ON' and power is available, the green LED illuminates.

6. **AES (digital) output connector**
   Connect the supplied AES output cable to this 15-pin mini sub-D connector. The cable provides four pairs of AES output.

7. **IEEE 1394 (FireWire) connector**
   Connect any FireWire 400 device (external HDD or CD/DVD-RAM drive) here. If required, power for the device can be turned 'ON' from the *My Fusion page* {**p.104**}.

8. **Reference I connector**
   Reserved for the future.

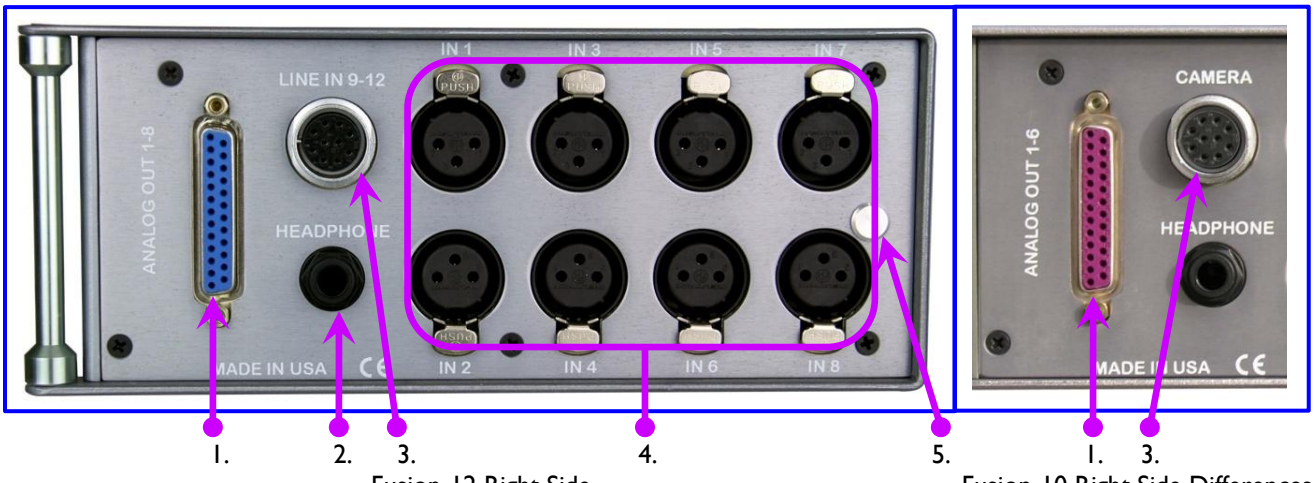
9. **Wordclock Output connector**
   Connect an external device requiring Wordclock output here.

10. **Serial / RS-422 connector**
    Connect an external control device, such as the Mix-12 mixer here.

11. **Timecode connector**
    Connect a standard 5-pin LEMO connector here. (See *Timecode Connector*, {**p.159**})

12. **USB port**
    Connect a Zaxcom approved USB keyboard here.

Right Side Description



Fusion-12 Right Side — Fusion-10 Right Side Differences

Figure 1-3 Fusion-12 & Fusion-10 Right Sides

1. **Analog Outputs 1- 8 (Fusion-12) / Analog Outputs 1 - 6 (Fusion-10)**
   25-pin connector outputs 8 (or 6) channels of line-level audio. You can select the channels assigned to these outputs from the *My Fusion page* {**p.104**}. (See *Analog Output Connector, DB-25*, {**p.158**})

2. **Headphone Output**
   1/4" stereo jack, optimal 100 ohm impedance.

3. **Line Inputs 9-12 Connector (Fusion-12) / Camera connector (Fusion-10)**
   This is a standard 10-pin Hirose connector. (See *Line Input / Camera Connector,* Hirose-10, {**p.158**}.)

   NOTE: For the Fusion-10, the two return monitor feeds are summed to mono.

4. **Mic / Line Inputs 1 through 8**
   Each balanced input is internally padded to handle either mic-level or line-level signals. The signal level is selected using the *Analog Input (#) page* {**p.82**}.

   NOTE: Lower headphone impedance results in a higher headphone output level.

5. **Battery Ejection Pin**
   This pin ejects the NP-1 battery from its compartment.

Touch Screen Interface

Fusion's full color touch screen interface is the key to ultimate functionality. It provides instant control of over 300 mixer cross-points and over 200 user parameters. It's easy to read in direct sunlight and offers a lock feature to prevent accidental operation.

Analog Inputs

Fusion incorporates eight very low noise, low distortion microphone preamps with 48V phantom power. Many Emmy® and Oscar® winning productions have been recorded with the Zaxcom preamp. The transformerless design enhances audio quality by eliminating low frequency distortion common in transformer-based microphone preamps. Each of the eight inputs can be switched between mic-level and line-level operation and feature a powerful 48V phantom power supply.

Analog Input Limiter

The Fusion's analog input limiter prevents high-level audio from clipping the A/D converter in the analog domain.

Digital Inputs

The Fusion has four AES input pairs with sample-rate conversion, allowing each input to have a different sampling-rate. This is key on location, where it's not always possible to lock external AES sources.

Mixing

Fusion can mix sixteen inputs to eight output busses and record up to twelve tracks* on the internal CompactFlash card. The mixer has infinite routing capability. Any input can be routed to any output pre-fader, post-fader, with or without the phase inverted. The Mix-12 control surface can also be used to form an all digital location recording and mixing package.

* Fusion 10 – maximum 10 tracks, Fusion 12 – maximum 12 tracks

Recording

The Fusion records to the Primary card using the Mobile Audio Recording Format II (commonly referred to as MARF). MARF was developed to be fault tolerant, ensuring that should power be lost while recording, ALL audio up to that point will be recoverable. The MARF system and its audio-centric operation have eliminated several of the reliability issues associated with FAT32 recording.

While the backup process is enabled, the audio files are Mirrored (copied) to the Secondary card, which is in standard FAT32 format. This card can be given to Post or copied to any computer.

Both the Primary and Secondary cards are CompactFlash cards. CF cards were chosen because of their immunity to extreme temperature and motion.

Camera / Stereo RF Link Connection

The Fusion connects directly to the 10-pin Hirose connector located on most cameras, providing a two-channel camera feed with a mono audio return. It can also connect to a TRX900AA transmitter with an STA100/150 Stereo Adaptor for a two-channel camera RF link with return audio and timecode transmission. All audio connections are balanced line-level, which eliminates the mic level ground loop noise common in FM wireless systems. The Fusion's camera output level is 0 dBu and is directly compatible with most cameras without the use of external amplification.

Metering

The Fusion provides metering of all input channels and output busses in four different formats, based on user preference. Channel metadata is superimposed on meters to aid in meter identification. Signal levels are color coded to aid in rapid identification of overload conditions. Touching a meter selects individual channels for PFL solo monitoring.

FireWire Port

The Fusion acts as a master to control and supply power for external FireWire HDDs and DVD-RAM drives.

RF Interference Protection

The Fusion was designed from the ground up to operate in close proximity to sensitive receivers. Wireless devices can coexist in the sound bag with the Fusion running from the same power source.

Timecode

A full-featured SMPTE timecode interface is standard. All common frame-rates and timecode sampling-rates are supported. In addition, the Fusion includes the auto-load function, allowing the unit to automatically enter Record and Stop modes based on incoming timecode. Be aware, unlike other manufacturer's equipment, the Fusion's timecode clock continues to run and maintain accurate timecode after the power is turned 'OFF'.

Input Sampling-rate Conversion

The Fusion will accept any unlocked AES signal with a sampling-rate of 44.1 to 192 kHz. The dynamic range of the sample-rate conversion is 124 dB, offering completely transparent conversion of digital audio from one sample-rate to another.

Sequence of Fusion Components

To better aid the user in using and understanding his Fusion recorder, the following list describes the Analog to Analog sequence for each component that sees your audio:

1. Input connector
2. Input Limiter
3. Input Gain
4. Analog-to-Digital Converter
5. Prefader Meter
6. Input Compressor
7. Delay Processor
8. Equalization Processor
9. Linear Fader
10. Digital Input Router
11. Disk Limiter
12. Input Meter
13. Home Meter
14. Recorder Track
15. Digital Output Router
16. Output Fader
17. Output Limiter
18. Output Meter
19. Digital-to-Analog Converter
20. Output Connector

Obviously, a digital input or output is going to follow the same sequence, bypassing the analog input or output portion (highlighted), as appropriate.

Hints on Using Your Fusion

The Fusion uses a high-resolution PDA-style touch screen to access all software functions. In most cases, you can use your finger to make selections; however, you may use any PDA stylus.

There are two ways to navigate from page to page. One is to press the ***MENU*** *key* on the front panel. The other is to touch the ***STATUS*** *button* at the top right corner of each page. The ***STATUS*** *button* indicates the Fusion's current operating mode (Stop, Play or Record).

NOTE: Touching the ***STATUS*** *button* or pressing the ***MENU*** *key* does not change the Fusion's current mode. It is safe to make either selection while recording.

Chapter 2 – Software Guide

The Fusion is a very sophisticated recording device. The heart of the system is the software used to operate the device. This chapter describes every Fusion page and the functions within each.

Boot-up Sequence page

Page purpose: This page shows the processing necessary to initialize the Fusion.

How to get here: Turn 'ON' the Fusion.

```
=== Ver: v7.08 <Dec 16 2009 16:38:18> ===
CDReadSects:55AA BlockSize=512(15872MB)
INT=0.09V EXT=12.19V FW=12.55V VCC=0.00V
Flash system init…(AudPLD=B)(MainPLD=D)
KEYPRESS = 672
Loading saved settings…
====DSP SPEED = 294.912 ====
Initializing battery backed clock…
Synchronizing clocks…
Initializing audio…
 HD S#=111708G2807B2848
 HD Model=SanDisk SDCFX3-16384
 Capacity=16.4 GB
drive test = AABB AABB AABB
-- No DVD drive –
```

Figure 2-1 Boot-up Sequence page

Page Notes

NOTE: There is a battery check during boot up. If the battery voltage is less than 9 V, the Fusion will ask if you want to continue. This is to prevent the Fusion from corrupting a folder if it reboots continuously with a dead battery.

Page Level Shortcuts

- ***MENU*** *key* – Press and hold it to pause the startup sequence until you release it, allowing you to read all of the information.

Boot Keys

Hold down one of the following keys during bootup to change the Fusion's behavior:

- ***F6*** *key* – causes the Fusion (v6.06C or later) to reconstruct corrupted folders. This should allow folders to be mirrored in a normal way.
- ***0*** *key* – forces 48 kHz mode (in v3.56 and later) (also forces Fusion to read corrupted folders).
- ***3*** *key* – may allow immediate spin-down of hard disk when Fusion is idle.
- ***8*** *key* – causes Fusion to ignore UDF formatted disks (good for dealing with partially formatted disks).
- ***9*** *key* – enables 192 kHz recording speed. This is somewhat obsolete. The current approach is to run the DSP in fast mode and enable the 192 kHz selection.
- ***STOP*** *key* – forces a factory restore to defaults.

Home page

Page purpose: This page displays the current status for the recorder and its major components.

How to get here:

- Turn the power on and let the system initialize. If another page is designated as the start page, press the ***MENU*** *key* a few times until this page appears.

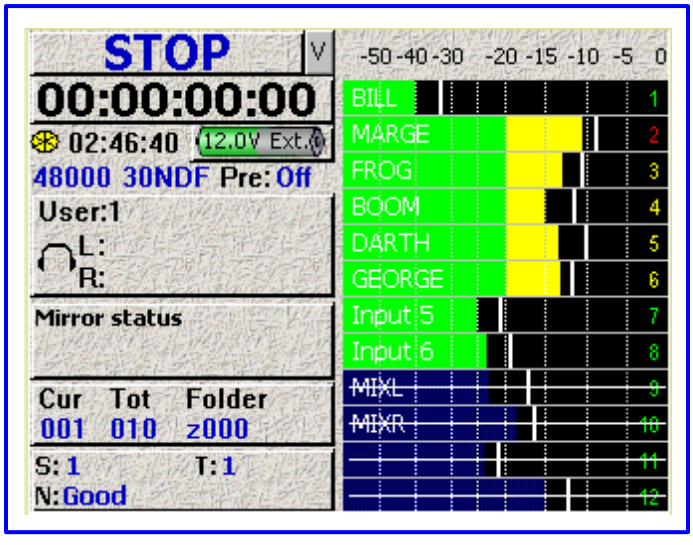


Figure 2-2 Home page

Page Notes

None

Page Level Shortcuts

Using the Fusion front panel:

- Pressing a ***Recording*** channel for about 1.5 seconds – solos that channel to the headphones, the ***Headphone*** *button* displays **SOLO**, the left and right headphone channels display the solo'd track and the other track audio bars are grayed out.
  - Pressing any other track SOLOs that track. The left and right headphone channels display the solo'd track's #.
  - Pressing the ***Headphone*** *button*, cancels the SOLO.
- ***SHIFT+7*** *keys* – marks the last Take as a False Start.
- ***SHIFT+9*** *keys* – lock/unlock the touchscreen.
- ***SHIFT*** *key****+Recording*** channel – arms/disarms the track that was touched. A disarmed track has a line through it long wise and the bar indicating the audio level changes to blue.
- ***0*** *–* ***9*** *keys* – opens the ***Enter Segment*** data entry field. (see ***Enter Segment data entry field*** {**p.32**}). Type the remainder of the number and press the ***ENTER*** *key*. Once entered, the system attempts to move to the day's recording, by the segment # entered. If the number entered is too high, the last available segment is displayed.
  - ***SHIFT/BACKSPACE*** *key* – deletes one character at the cursor and moves the cursor to the left one character.
  - ***MENU/ESC*** *key* – functions as the ***ESC*** *key* by discarding unsaved changes and closing the data entry field.
  - ***ENTER*** *key* – accepts the data, validates it and closes the data entry field.

Using the Mix-12 embedded keyboard:

- ***ESC*** *key* – same as pressing the ***MENU*** *key.*
- ***F1*** *key* – same as pressing the ***HPH*** *key.*
- ***F2*** *key* – go to the ***Disk Mix page*** {**p.37**}
- ***F3*** *key* – toggle between Mixer and Camera Return
- ***F4*** *key* – go to ***Analog Input (#) page*** {**p.82**}
- ***F5*** *key* – go to ***Analog/Digital Input Trim page*** {**p.103**}
- ***F6*** *key* – go to ***Input Configure page (Analog Inputs selected)*** {**p.80**}
- ***F7*** *key* – go to ***Meter Labels page*** {**p.63**}
- ***F8*** *key* – edit the ***Scene*** *field* in the ***Scene Take Note page*** {**p.120**}
- ***F9*** *key* – edit the ***Take*** *field* in the ***Scene Take Note page*** {**p.120**}

- ***F10*** *key* – edit the ***Note*** *field* in the ***Scene Take Note page*** {**p.120**}
- ***0 – 9*** *keys* – opens the data entry field. (see ***Enter Segment data entry field*** {**p.32**}). Type the remainder of the number and press the ***ENTER*** *key*. Once entered, the system attempts to move to the day's recording, by the segment # entered. If the number entered is too high, the last available segment is displayed.
- ***M*** *key* – toggle Mix-12 meters between prefader input level and the disk mix
- ***Arrow*** *keys* – navigation in pages
- ***CRTL*** *key* & single digit – opens the label for the associated channel for modification. Correct the existing label or enter a new one from scratch. While a meter is being edited it will not update.
  - See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):
    - ***TAB*** *key* – Accepts the data, validates it, saves & closes the current label and opens the next one in sequence for editing.
    - ***BACKSPACE*** *key* – 1) If the cursor is on the last character, it deletes the character to the left of the cursor and moves the cursor and character 1 position to the left.
      2) If the cursor is not on the first or last character, it deletes the character to the left of the cursor and shifts all characters from the cursor to the end of the text right 1 character.
      3) If the cursor is on the first character, it deletes the character at the cursor and shifts all characters from the next character to the end of the text right 1 character.

Using an attached keyboard:

- ***ESC*** *key* – same as pressing the ***MENU*** *key*.
- ***F1*** *key* – same as pressing the ***HPH*** *key*.
- ***F2*** *key* – go to the ***Disk Mix page*** {**p.37**}
- ***F3*** *key* – toggle between Mixer and Camera Return
- ***F6*** *key* – go to ***Input Configure page (Analog Inputs selected)*** {**p.80**}
- ***F7*** *key* – go to ***Meter Labels page*** {**p.63**}
- ***F8*** *key* – edit the ***Scene*** *field* in the ***Scene Take Note page*** {**p.120**}
- ***F9*** *key* – edit the ***Take*** *field* in the ***Scene Take Note page*** {**p.120**}
- ***F10*** *key* – edit the ***Note*** *field* in the ***Scene Take Note page*** {**p.120**}
- ***INS*** *key* – go to the ***Home page*** {**p.31**}
- ***0 – 9*** *keys* – opens the ***Enter Segment*** data entry field (see ***Enter Segment data entry field*** {**p.32**}). Type the remainder of the number and press the ***ENTER*** *key*. Once entered, the system attempts to move to the day's recording, by the segment # entered. If the number entered is too high, the last available segment is displayed.
- ***M*** *key* – toggle Mix-12 meters between prefader input level and the disk mix
- ***Arrow*** *keys* – navigation in pages

Enter Segment data entry field

This field only appears on top of the ***Disk*** *icon* after a number has been entered. This field is tied to the audio recording segment displayed in the ***Cur*** *field* of the ***Cur Tot Folder*** *button*

Enter Segment data entry field Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Mode Status button

(Figure 2-2 displays **STOP**)
Located at the top of the page, it displays the current operating mode (**RECORD**, **PLAY** or **STOP**). Pressing this button from here, takes you to the ***Main Menu page*** {**p.35**}. From any other page, pressing the ***STATUS*** *button* (or the ***MENU*** *key* on the front panel) takes you back one level.

NOTE: Pressing the ***STATUS*** *button* does **not** change the Fusion's operating mode. It only brings you back one page or level within a page.

View button

(Figure 2-2 displays **V**)
Cycles through four ***Home*** *page* display layouts (see ***Figure 2-24 Examples of Home page layouts*** {**p.61**}):

Timecode button

(Figure 2-2 displays 0**0:00:00:00**)
Pressing it takes you to the ***Timecode page*** {**p.50**}.

Disk icon

(Figure 2-2 displays a rotating disk with a Yellow highlight.)
It displays the current state of the mirror process.

Wheel Color	*Description*
White	Mirror process is looking for work?
Yellow	Mirror process is in standby?
Green	Mirror process is active.
Red	In record mode.

Table 2-1 Disk icon Color Code

Remaining Recording Time field

(Figure 2-2 displays **02:46:40**.)
Displays the remaining recording time based on the remaining drive space, number of tracks being recorded and the sampling-rate & bit-depth of each track.

Battery icon button

(Figure 2-2 displays **12.0V Ext.** inside of the ***Battery*** *icon* and a color bar, indicating the state of charge.)
Displays the voltage and the source (Int or Ext) at that moment. Pressing it takes you to the ***Battery Menu page*** {**p.124**}. Fusion automatically switches if it is running on an internal battery and external power, greater than 9.5 VDC, is applied. If the Fusion is running on external power **and** a battery is inserted, it will automatically switch to the internal battery when the external power drops below 9.5 VDC. When the voltage drops below the level set in the ***Battery Menu page*** {**p.124**}, the text changes from black to red.

IMPORTANT: Because of the variety of battery chemistries, the Fusion does not charge the internal battery.

Sampling-rate field

(Figure 2-2 displays **48000**)
Displays the sampling-rate used while recording.

Timecode Frame-rate field

(Figure 2-2 displays **30NDF**)
Displays the timecode frame-rate used while recording.

Pre-record Duration field

(Figure 2-2 displays **Pre: Off**)
Displays the selected pre-record duration. Fusion has a memory buffer. If pre-record is enabled and audio is coming in, Fusion will record up to 10 seconds of audio prior to when the ***REC*** *key* is pressed.

NOTE: The pre-record buffer works only with a sampling-rate of **48048** or less. If a higher rate is indicated, this field can only display **Off**.

Headphone button

(Figure 2-2 displays on its first line **User:1**)
The first line indicates which headphone mix is currently operating by type and name. If it has not been saved, **Working Preset** appears.
The second line indicates which tracks are being sent to the left headphone channel.
The third line indicates which tracks are being sent to the right headphone channel.
Pressing it takes you to the ***Headphone Mix page*** {**p.69**}.

NOTE: Individual tracks can be monitored in solo mode by touching and holding the meter display for that track.

Mirror Drive Status button

(Figure 2-2 displays **Mirror status**)
Displays the status of the internal and external mirror drives. Pressing it takes you to the ***My Fusion page*** {**p.104**}.

Cur Tot Folder button

(Figure 2-2 displays on the first line **Cur Tot Folder**)
Pressing it takes you to the ***Disk Folders page*** {**p.106**}.

Cur
Displays the index number of the current Take (either being recorded or played back).

Tot
Displays the total number of Takes in the current folder.

Folder
Displays the name of the current folder, which is the drive partition used for recording. Normally, a new partition would be set up for each Sound Roll, or each day's work. The Folder Number would then be the equivalent of the Sound Roll Number. You can also rename the folder without numbers, and that name appears on the ***Home*** *page* and the folder when mirrored to a DVD-RAM disc or external drive.

NOTE: The current firmware allows each folder to be any size up to the maximum capacity of the drive.

S: T: N: button
(Figure 2-2 displays on the first line **S:**1 **T:**1)
Displays the user entered metadata (Scene, Take, Note). Pressing it takes you to the ***Scene Take Note page*** {**p.120**}.

Audio Level meters
(Figure 2-2 displays on the right half of the page)
Up to twelve* tracks can be displayed. Unarmed tracks are displayed with a line through them. Individual tracks can be shown or hidden using the ***Number of Home Screen Meters*** *button* on the ***Meter Menu page*** {**p.61**}. Ballistics is PPM / Peak Hold. The Peak Hold Bar remains for 5 seconds. The Green number near the 0 dBFS point changes to Yellow when the Peak Hold Bar reaches -20 dBFS and changes again to Red when it reaches -10 dBFS.

* Fusion 10 – maximum 10 tracks, Fusion 12 – maximum 12 tracks

Solo Mode
You can solo any input channel by touching the meter display for the desired track. Touch the desired track for 2 seconds. The display will enter 'solo' mode. Then, touching any other track instantly solos that track. The number of the solo'd track is displayed in the ***Headphone*** *button***.** To exit 'Solo' mode touch any track for 2 seconds, touch the ***Headphone*** *button* or exit the page.

Arm/Disarm a Recording Track
Pressing the ***SHIFT*** *key* on the Fusion front panel while pressing the appropriate meter on the ***Home*** *page* arms/disarms the recording of that channel.

Main Menu page

Page purpose: This page provides access to all Fusion operating functions.

How to get here:

- (***MENU*** *key*)
- (***Status*** *button*)

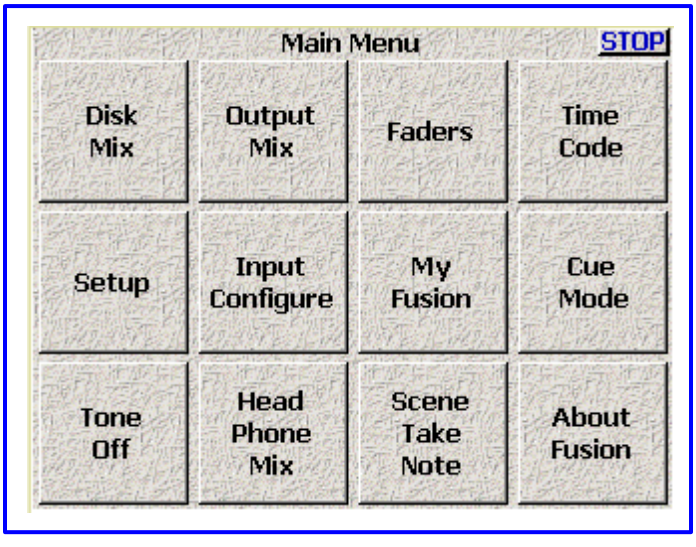


Figure 2-3 Fusion Main Menu page

Page Notes

None

Page Level Shortcuts

None

Disk Mix button

Pressing it takes you to the *Disk Mix page* {**p.37**}.

Output Mix button

Pressing it takes you to the *Output Mix page* {**p.41**}.

Faders button

Pressing it takes you to the *Faders page* {**p.47**}.

Time Code button

Pressing it takes you to the *Timecode page* {**p.50**}.

Setup button

Pressing it takes you to the *Setup page* {**p.53**}.

Input Configure button

Pressing it takes you to the *Input Configure page (Analog Inputs selected)* {**p.80**}.

My Fusion button

Pressing it takes you to the *My Fusion page* {**p.104**}.

Cue Mode button

Pressing it takes you to the *Cue Mode page* {**p.118**}.

Tone On/Off button

Pressing it toggles the Reference Tone 'ON' or 'OFF'.

Head Phone Mix button

Pressing it takes you to the *Headphone Mix page* {**p.69**}.

Scene Take Note button

Pressing it takes you to the *Scene Take Note page* {**p.120**}.

About Fusion button

Pressing it takes you to the ***About Fusion page*** {**p.122**}.

Additional Functionality

1. To activate the ***Service*** *button* in the bottom right of the ***Setup page*** {**p.53**}, enter **036** while in this page.
2. To activate the ***Debug Screen page*** {**p.128**}, enter **1967** while in this page.

Disk Mix page

Page purpose: This page routes the 8 analog inputs, 8 digital inputs, Slate Mic and the Reference Tone to the 12 recording tracks.

How to get here:

- (***MIX*** *key*)
- (***MENU*** *key* → ***Disk Mix*** *button*)

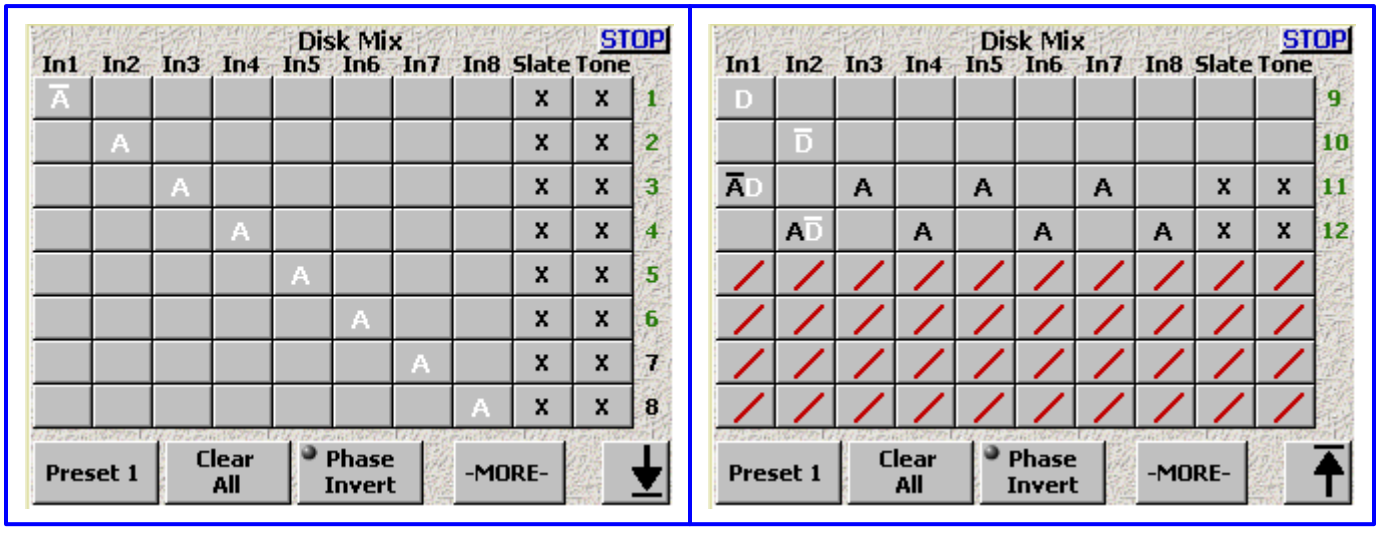


Figure 2-4 Disk Mix page – Top and Bottom pages

Page Notes

- In this page, the top line shows the 8 available input channels (In1 – In8) plus the slate mic and the tone generator. The vertical line of numbers on the right shows the 12 available recording tracks. The bottom row of buttons controls the parameters of the matrix selections.
- Figure 2-4 shows a Fusion 12 set up to record 8 analog pre-fader inputs to tracks 1 through 8, 2 digital pre-fader inputs recorded to tracks 9 and 10 and a post-fader mix to tracks 11 and 12. Analog input #1 and digital input #2 are inverted. The slate-mic and the tone generator are enabled for all tracks except 9 and 10.

Page Level Shortcuts

None

Disk Matrix buttons

Connects the Input Channel to the Recording Channel. Pressing the button cycles through the available choices, based on the setting of the ***Analog/Digital In Toggle***, ***Phase Invert*** and ***Pre-/Post-Fader*** *buttons*.

Indicator	***Description***
Black A	Analog input post-fader
Black A with Line	Analog input post-fader with signal phase inverted
White A	Analog input pre-fader
White A with Line	Analog input pre-fader with signal phase inverted
Black D	Digital input post-fader
Black D with Line	Digital input post-fader with signal phase inverted
White D	Digital input pre-fader
White D with Line	Digital input pre-fader with signal phase inverted

Table 2-2 Disk Mix Indicator Descriptions

Preset button

This button allows you to save and recall up to five saved settings. Think of each preset as a page on which to write the configuration.

To save a configuration, perform the following:

1) Move to the Preset # you want to build. Normally, the first to be built would be Preset 1.
2) If you have not previously saved anything into the preset, it will be a blank slate (pun intended). Establish all of the required items for this preset.
3) If you need to establish any additional presets, repeat steps 1 & 2 for each additional configuration.

To load a configuration once it has been saved, simply press the ***Preset*** *button* until the number displayed is the one you're expecting. At that point, examine the configuration; it will be as you had saved it. If, at any time, you need to update the configuration, inset your changes, they are automatically saved.

NOTE: The Limit column settings are not saved in a specific preset #.

Analog/Digital In Toggle button

To select either analog or digital inputs use the ***Analog/Digital In Toggle*** *button*. Selecting the button once changes it, selecting it again changes it back.

Pre-/Post-Fader button

This button allows you to choose whether each selection is pre- or post-fader. For example, you can record the microphone on one channel of the Fusion post-fader and on another pre-fader, so it is unaffected by the mix.

- Pre-Fader: "A" (analog input) or "D" (digital input) – the letter is white.
- Post-Fader: "A" or "D" – the letter is black.

-MORE- button

This button cycles the buttons that are displayed on the bottom of the page.

Clear All button

This button removes all selections and empties the contents of the current preset.

NOTE: The Limit column settings are not cleared when this button is pressed.

Phase Invert button

This button reverses phase of the selected input. A reversed phase input appears with a bar over the letter A or D.

Limiter Settings button

Pressing it takes you to the *Disk Limiter Settings page* {**p.39**}.

Limiting button

This button displays an additional column on the right used to flag which tracks have limiting enabled. With it displayed, pressing any of the boxes will turn ON limiting for that track, indicated by an "X". Pressing it again turns OFF limiting for that track. The one set of parameters under the ***Limiter Settings*** *button* is used by all of these limiters.

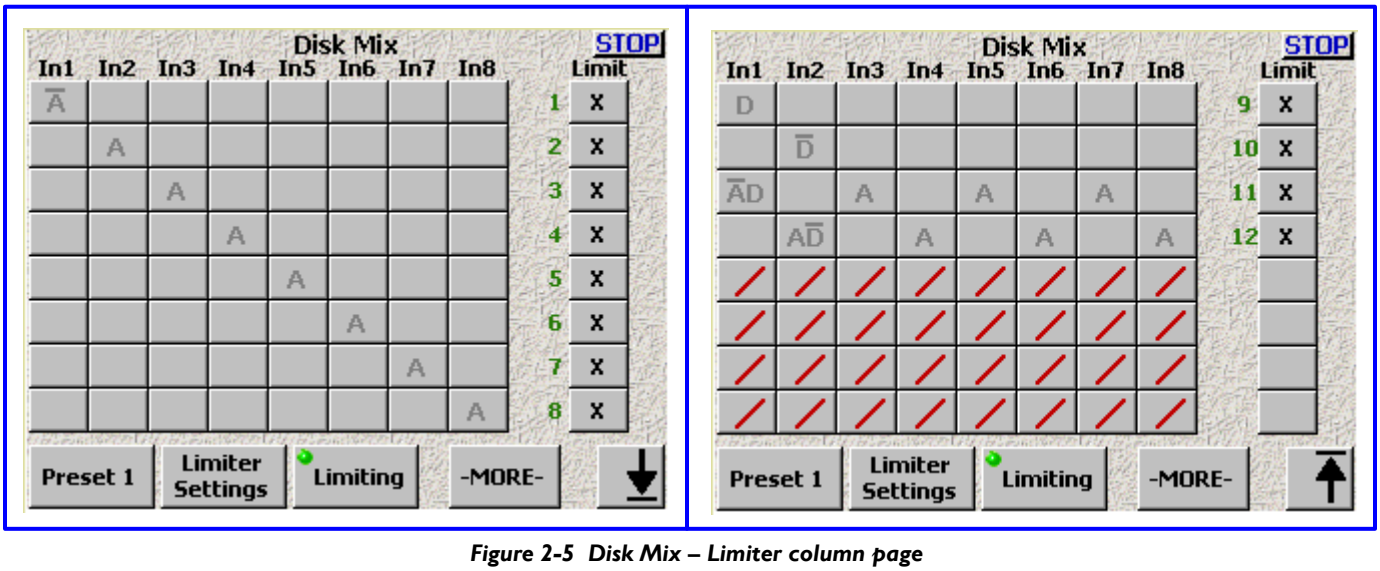


Figure 2-5 Disk Mix – Limiter column page

Up/Down Arrow button (only appears on Fusion 12)

This button toggles the display of the tracks. 1 – 8 on the first page and 9 – 12 on the last page.

Limit buttons

These buttons control which tracks will have their associated limiter enabled (indicated by an **X**).

Disk Limiter Settings page

Page purpose: The limiter prevents the input signal (analog or digital) from clipping or exceeding 0 dBFS. When the signal exceeds the threshold value, the limiter automatically reduces the input signal while it is above this limit.

How to get here:

- (***MIX*** *key* → ***Limiter Settings*** *button*)
- (***MENU*** *key* → ***Disk Mix*** *button* → ***Limiter Settings*** *button*)

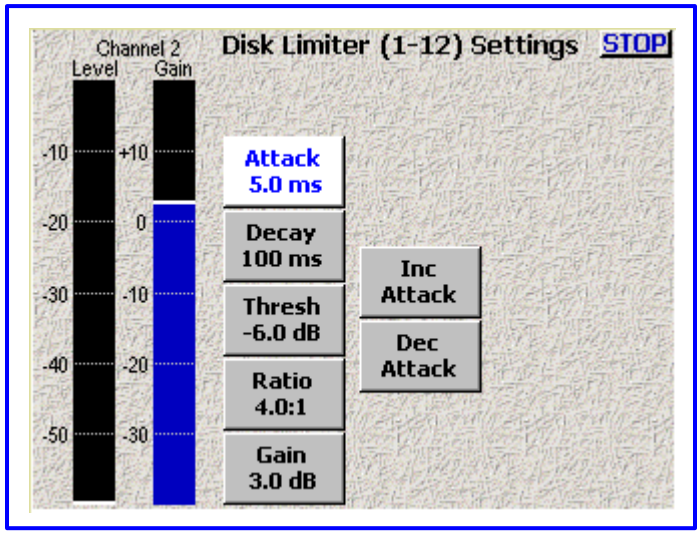


Figure 2-6 Disk Limiter Settings page

Page Notes

- See – *Effects Package and More* {**p.142**} for the theory behind using the Limiter processor.
  ** Coming Soon **
- You have three methods to change each parameter on this page:
  - Click on a parameter, it turns white. The ***Inc*** and ***Dec*** *buttons* pickup a parameter title. Pressing either button will adjust the parameter in its respective direction.
  - Click on a parameter, it turns white. Click on the now white button and a data entry field appears. Directly enter the value and press the ***ENTER*** *key*.
  - Use the ***UP*** or ***DOWN ARROW*** *key* to select the parameter button and press the ***ENTER*** *key* (on the keyboard) to open it for modification. Directly enter the value and press the ***ENTER*** *key*.
- If you enter a value that is out of the valid range, the closest value in range is applied.

Page Level Shortcuts

- ***UP/DOWN ARROW*** *keys* – navigate through the left hand column of buttons
- ***0*** *-* ***9*** *keys* – navigate to view the level of the appropriate channel (0 = 10).

Audio Level meter

Displays the current audio level for this channel. The view point for this meter is post trimmer and pre-/post-fader, based on the disk mix selection. The scale being used is dBFS.

Audio Gain meter

Displays the total gain on the channel including make-up gain. The scale being used is dB.

Attack button

(Attack Speed) Controls the amount of gain slewing which will generally slow the response to attack transients only.
(Valid range: **0.1** – **5.0** – **100.0 ms**, Value step: 0.1)

Attack button Shortcuts

See: *Common Data Entry Field Shortcuts List* {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* – 1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.

3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
4) If the cursor is on the first character, it has no effect.

Decay button

(Decay Speed) Controls the decay speed of the peak detector used by the dynamics processing.
(Valid range: **10** – **100** – **1000 ms**, Value step: 1)

Decay button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Thresh button

(Compressor Threshold) Sets the threshold above which gain reduction occurs according to the Compressor Ratio setting.
(Valid range: **-20.0 dB** – **-6.0** – **0.0 dB**, Value step: 0.1)

Thresh button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Ratio button

(Compressor Ratio) Sets the compressor ratio, i.e. 4.0:1 means for every 1 dB above the Compressor Threshold the gain will be reduced 4 dB. (Valid range: **4.0:1** – **20.0:1**, Value step: 0.1)

Ratio button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Gain button

(Make up Gain Setting) Used to compensate for the gain reduction caused by the action of the compressor.
(Valid range: **0.0** – **3.0** – **6.0 dB**, Value step: 0.1)

Gain button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Inc button

Increments the selected parameter by its step value.

Dec button

Decrements the selected parameter by its step value.

Output Mix page

Page purpose: This page routes the 8 analog inputs and 8 digital inputs directly to the outputs. The analog and digital outputs for each channel receive identical signals. This can be used to feed monitors, video recorders, Comtek transmitters, Ear Wig feeds, additional analog or digital recorders or any other device that accepts the signals.

How to get here:

- (***SHIFT + OUTPUT*** *keys*)
- (***MENU*** *key → **Output Mix** button*)

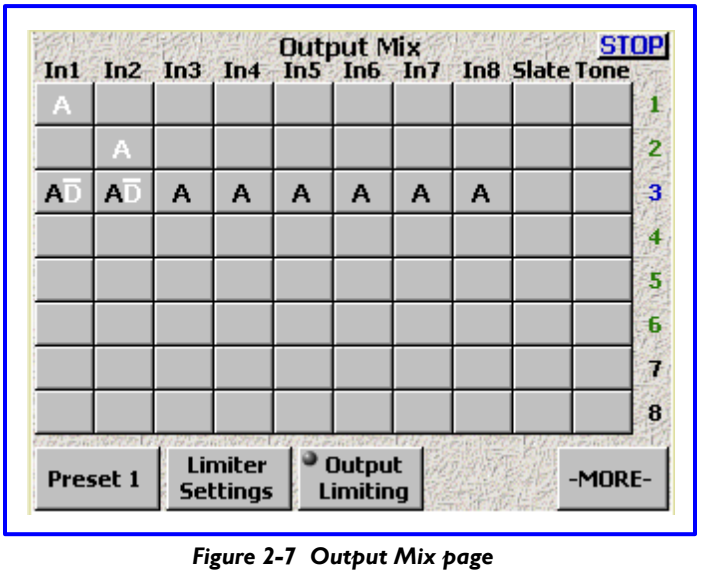


Figure 2-7 Output Mix page

Page Notes

- In this page, the top line shows the 8 available input channels (In1 – In8) plus the slate mic and the tone generator. The vertical line of numbers on the right shows the 8 available output channels. The bottom row of buttons control the parameters of the matrix selections.
- In Figure 2-7, pre-fader analog input #1 is routed to output #1 (i.e. Boom-1), pre-fader analog input #2 is routed to output #2 pre-fader (i.e. Boom-2) and the ten track mix, consisting of post-fader analog inputs 1 – 8 and pre-fader digital inputs 1 and 2, are routed to Output #3 (i.e. the Director's feed).

Page Level Shortcuts

None

Output Mix Matrix buttons

Connects the Input Channel to the appropriate Output Channel(s). Pressing the button cycles through the available choices, based on the setting of the ***Analog/Digital In Toggle***, ***Phase Invert*** and ***Pre-/Post-Fader*** *buttons*.

Indicator	*Description*
Black A	Analog input post-fader
Black A with Line	Analog input post-fader with signal phase inverted
White A	Analog input pre-fader
White A with Line	Analog input pre-fader with signal phase inverted
Black D	Digital input post-fader
Black D with Line	Digital input post-fader with signal phase inverted
White D	Digital input pre-fader
White D with Line	Digital input pre-fader with signal phase inverted

Table 2-3 Output Mix Indicator Descriptions

Preset button

This button allows you to save and recall up to five saved settings. Think of each preset as a page on which to write the configuration.

To save a configuration, perform the following:

1) Move to the Preset # you want to build. Normally, the first to be built would be Preset 1.
2) If you have not previously saved anything into the preset, it will be a blank slate (pun intended). Establish all of the required items for this preset.
3) If you need to establish any additional presets, repeat steps 1 & 2 for each additional configuration.

To load a configuration once it has been saved, simply press the ***Preset*** *button* until the number displayed is the one you're expecting. At that point, examine the configuration; it will be as you had saved it. If, at any time, you need to update the configuration, inset your changes, they are automatically saved.

NOTES: 1) The Limit column settings are not saved in a specific preset #.
2) The Output Routing settings are not saved in a specific preset #.

Analog/Digital In Toggle button

To select either analog or digital inputs use the ***Analog/Digital In Toggle*** *button*. Selecting a box once enables it, selecting it again disables it.

Pre-/Post-Fader button

This button allows you to choose whether each selection is pre- or post-fader. For example, you can record the microphone on one channel of the Fusion post-fader and on another pre-fader, so it is unaffected by the mix. (See Table 2-3)

-MORE- button

This button pages through the buttons displayed on the bottom of the page.

Clear All button

This button removes all selections and empties the page.

NOTES: 1) The Limit column settings are not cleared when this button is pressed.
2) The Output Routing settings are not cleared when this button is pressed.

Phase Invert button

This button reverses phase of the selected input. A reversed phase input appears with a bar over the letter A or D. (See Table 2-3)

Limiter Settings button

Pressing it takes you to the *Output Limiter Settings page* {**p.44**}.

Output Limiting button

This button displays an additional column on the right used to flag which tracks have limiting enabled. With it displayed, pressing any of the boxes will turn ON limiting for that track, indicated by an **X**. Pressing it again turns OFF limiting for that track. The one set of parameters under the ***Limiter Settings*** *button* is used by all of these limiters.

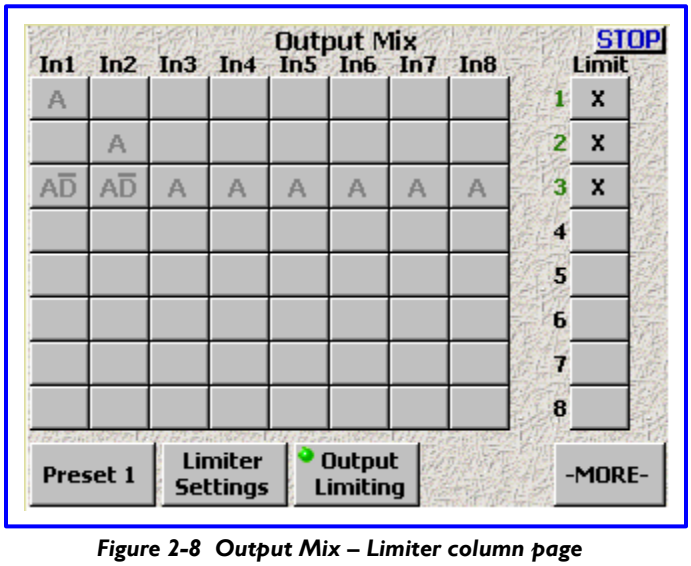


Figure 2-8 Output Mix – Limiter column page

Limiter Matrix buttons

Each Output Channel flagged with an **X** has the limiter enabled for that channel. Settings for the limiter are maintained by the ***Output Limiter Settings page*** {**p.44**}.

Routing Presets button

Pressing it takes you to the ***Output Routing Presets page*** {**p.46**}.

Output Routing button

This button displays three additional columns on the right used to flag the source of each output during Playback mode, Stop mode and Record mode. With it displayed, pressing any of the boxes will turn ON/OFF audio coming from the channel during each operation mode, indicated by a number if ON. The ***Routing Presets*** *button* displays the page that manages the underlying routing.

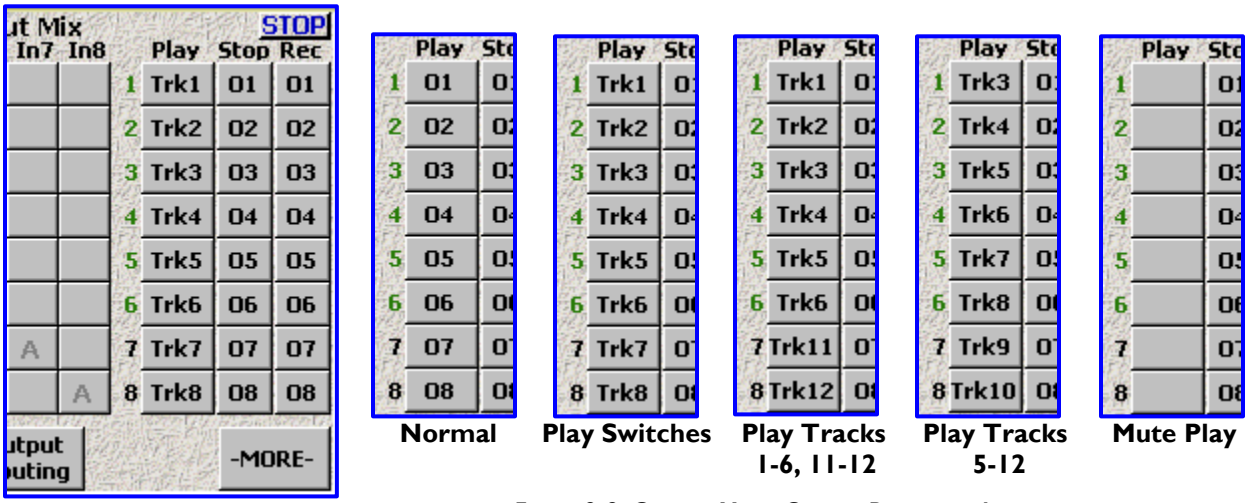


Figure 2-9 Output Mix – Output Routing columns page

NOTE: The Analog and Digital Outputs are essentially identical, with the exception that there are 6 Analog Outputs and 8 Digital Outputs. Outputs 1 through 6 are the same in both groups.

Play buttons

These indicate what will be sent to each output while the Fusion is in Play mode.

For example, if I have a Boom Operator on Output 1, and his audio is being recorded on track 1, I would set his ***Play*** *button* to **Trk1** so he will be able to hear his audio during playback.

Stop buttons

These indicate what will be sent to each output while the Fusion is in Stop mode.

For example, if I don't want to have anyone hear any audio while in Stop mode, I can clear out all of the ***Stop*** *button*s (leaving all of the ***Stop*** *button*s blank).

Rec buttons

These indicate what will be sent to each output while the Fusion is in Record mode.

For example, if I have the mix being recorded on track 3 and I want to send it to the Director and Script Supervisor on Output 3, I would set it to **03** and they will only hear the audio while we are recording a Take.

Output Limiter Settings page

Page purpose: The limiter prevents the output signal (analog or digital) from clipping or exceeding 0 dBFS. When the signal exceeds the threshold value, the limiter automatically reduces the input signal while it is above this limit.

How to get here:

- (***SHIFT + OUTPUT*** *keys* → ***Limiter Settings*** *button*)
- (***MENU*** *key* → ***Output Mix*** *button* → ***Limiter Settings*** *button*)

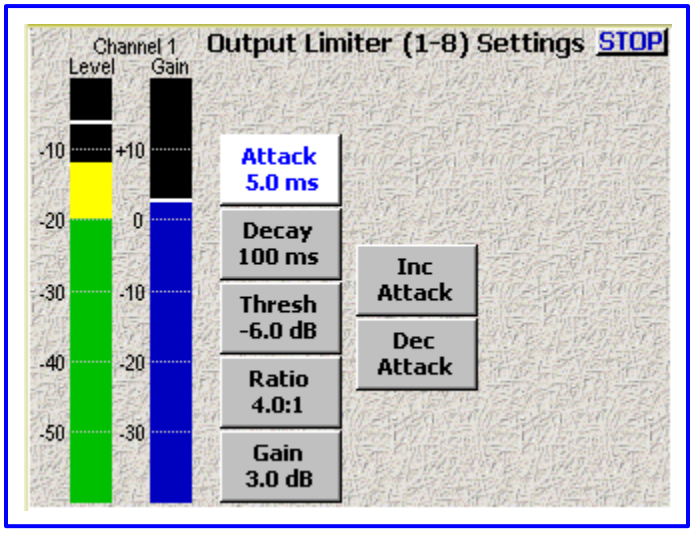


Figure 2-10 Output Limiter Settings page

Page Notes

- See – ***Effects Package and More*** {**p.142**} for the theory behind using the Limiter processor.
  ** Coming Soon **
- You have three methods to change each parameter on this page:
  - Click on a parameter, it turns white. The ***Inc*** and ***Dec*** *buttons* pickup a parameter title. Pressing either button will adjust the parameter in its respective direction.
  - Click on a parameter, it turns white. Click on the white button and a value field appears. Directly enter the value and press the ***ENTER*** *key*.
  - Use the ***UP*** or ***DOWN ARROW*** *key* to select the parameter button and press the ***ENTER*** *key* (on the keyboard) to open it for modification. Directly enter the value and press the ***ENTER*** *key*.
- If you enter a value that is out of the valid range, the closest value in range is applied.

Page Level Shortcuts

- ***UP/DOWN ARROW*** *keys* – navigate through the left hand column of buttons
- ***1 – 8*** *keys* – navigate to view the level of the appropriate channel.

Audio Level meter

Displays the current audio level for this channel. The view point for this meter is post trimmer and pre-/post-fader, based on the output mix selection. The scale is in dBFS.

Audio Gain meter

Displays the total gain on the channel including make-up gain. The scale is in dB.

Attack button

(Attack Speed) Controls the amount of gain slewing which will generally slow the response to attack transients only. (Valid range: **0.1** – **5.0** – **100.0 ms**, Value step: 0.1)

Attack button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.

4) If the cursor is on the first character, it has no effect.

Decay button

(Decay Speed) Controls the decay speed of the peak detector used by the dynamics processing. (Valid range: **10** – **100** – **1000 ms**, Value step: 1)

Decay button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Thresh button

(Compressor Threshold) Sets the threshold above which gain reduction occurs according to the Compressor Ratio setting. (Valid range: **-20.0** – **-6.0** – **0.0 dB**, Value step: 0.1)

Thresh button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Ratio button

(Compressor Ratio) Sets the compressor ratio, i.e. 4.0:1 means for every 1 dB above the Compressor Threshold the gain will be reduced 4 dB. (Valid range: **4.0:1** – **20.0:1**, Value step: 0.1)

Ratio button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Gain button

(Make up Gain Setting) Used to compensate for the gain reduction caused by the action of the compressor. (Valid range: **0.0** – **3.0** – **6.0 dB**, Value step: 0.1)

Gain button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Inc button

Increments the selected parameter by its step value.

Dec button

Decrements the selected parameter by its step value.

Output Routing Presets page

Page purpose: This page sets-up the Play column of the Output Routing section for the Output Mix.

How to get here:

- (***SHIFT + OUTPUT*** *keys* → ***Routing Presets*** *button*)
- (***MENU*** *key* → ***Output Mix*** *button* → ***Routing Presets*** *button*)

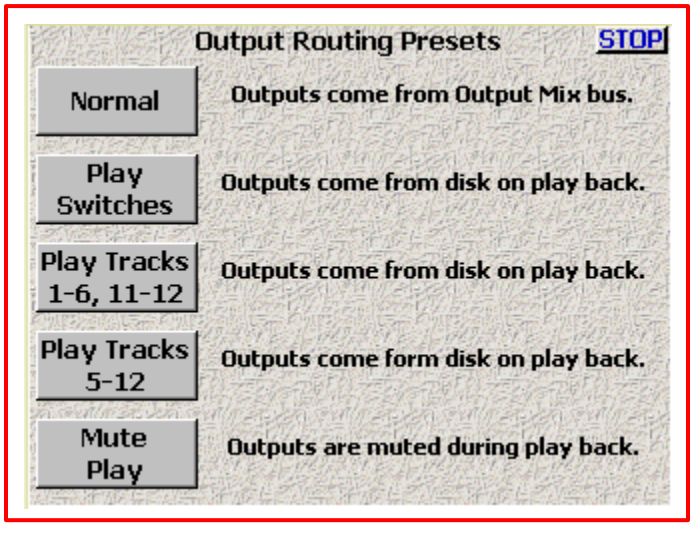


Figure 2-11 Output Routing Presets page

Page Notes

Once you have made your selection on this page, go to the previous page to see what effect your choice had.

Page Level Shortcuts

None

Normal button

Outputs come from the Output Mix bus.

Play Switches button

Outputs come from the disk on playback.

Play Tracks 1-6, 11-12 button

Outputs come from the disk on playback.

Play Tracks 5-12 button

Outputs come from the disk on playback.

Mute Play button

Outputs are muted during playback.

Faders page

Page purpose: Displays the four touch faders and allows you to assign and lock the inputs to the faders. The touch faders operate the same way the hardware faders do. You can use your finger or any PDA stylus to adjust the on-screen faders.

How to get here:

- (***SHIFT + FADERS*** *keys*)
- (***MENU*** *key* → ***Faders*** *button*)

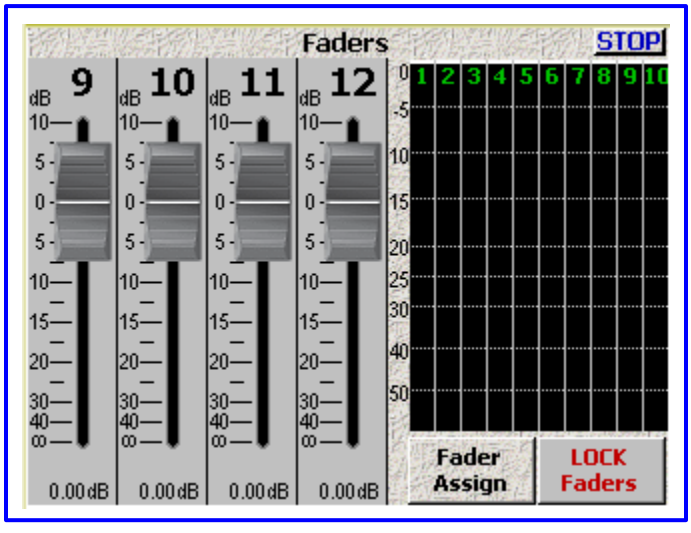


Figure 2-12 Touch Fader page

Page Notes

None

Page Level Shortcuts

None

Audio Input graphic faders

These can be assigned, just like the physical faders on the front panel. Only one can be adjusted at a time. (Valid range: **+10.0** – **0.0** – **-58.0 dB**, Value step: variable 0.25 – 1.00)

Audio Level meters

Since you can't display the ***Home page*** {**p.31**} while working with these faders, these meters show all of the tracks so you can properly manage their levels.

Solo Mode

You can solo any input channel by touching the meter display for the desired track. Touch the desired track for 2 seconds. The display will enter 'solo' mode. Then, touching any other track instantly solos that track. To exit 'Solo' mode touch any track for 2 seconds or exit the page.

Arm/Disarm a Recording Track

Pressing the ***SHIFT*** *key* on the Fusion front panel while pressing the appropriate meter on the ***Home page*** {**p.31**} arms/disarms the recording of that channel.

Fader Assign button

Pressing it takes you to the ***Hardware/Touch Fader Assign page*** {**p.48**}.

Lock Faders button

Toggles locking/unlocking the touch faders.

Hardware/Touch Fader Assign page

Page purpose: This page allows you to assign any of the 8 analog and 8 digital inputs to any or all of the 4 faders. You can assign any of the inputs to either touch or hardware faders.

How to get here:

- (***SHIFT + FADERS*** *keys* → ***Fader Assign*** *button*)
- (***MENU*** *key* → ***Faders*** *button* → ***Fader Assign*** *button*)

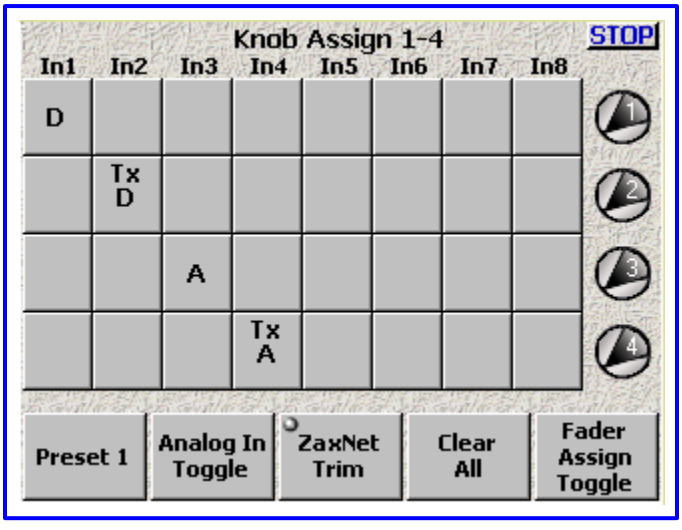


Figure 2-13 Hardware Faders Assign page

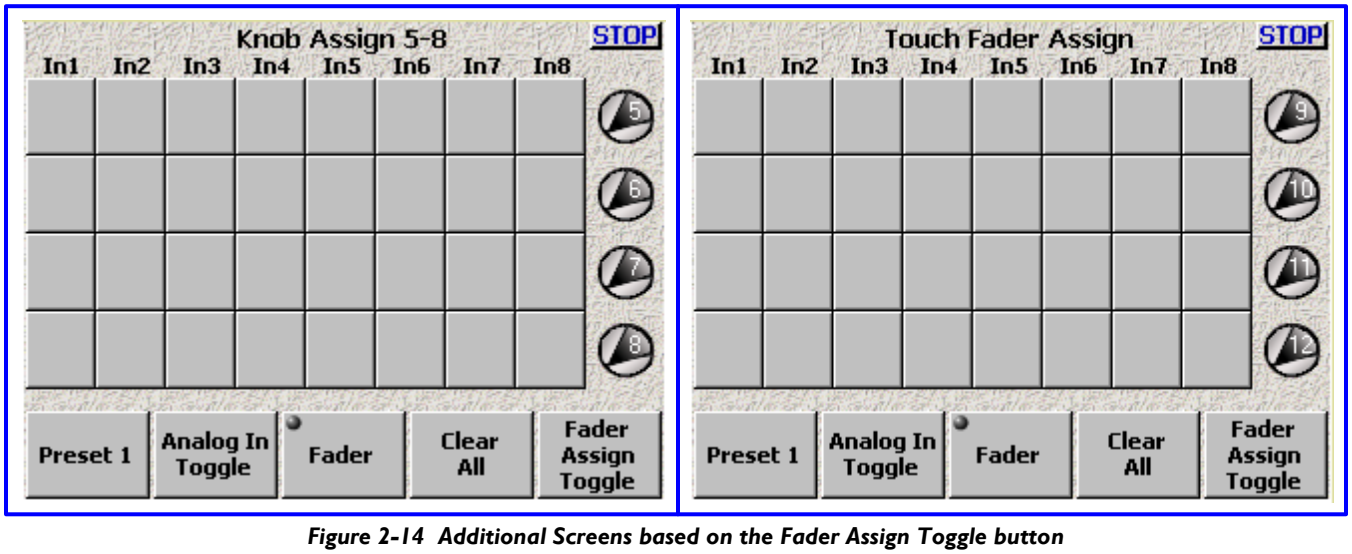


Figure 2-14 Additional Screens based on the Fader Assign Toggle button

NOTE: If you will be riding the level of an input, you should not assign it to a touch fader.

Page Notes

In this page, the top line shows the 8 available input channels (In1 – In8). The vertical line of numbers on the right shows the 12 available faders (1 – 8 are the rotary faders on the ***Front Panel Description*** {**p.24**}, 9 – 12 are the touch faders on the ***Faders page*** {**p.47**}). The bottom row of buttons controls the parameters of the matrix selections.

Indicator	*Description*
A	Analog input path, recorder's pre-amp is assigned
Tx A	Analog input path, transmitter's pre-amp is assigned
D	Digital input path, recorder's input is assigned
Tx D	Digital input path, transmitter's pre-amp is assigned

Table 2-4 Hardware Faders Indicator Descriptions

Page Level Shortcuts

None

Preset button

This button allows you to save and recall up to five saved settings. Think of each preset as a page on which to write the configuration.

To save a configuration, perform the following:

1) Move to the Preset # you want to build. Normally, the first to be built would be Preset 1.
2) If you have not previously saved anything into the preset, it will be a blank slate (pun intended). Establish all of the required items for this preset.
3) If you need to establish any additional presets, repeat steps 1 & 2 for each additional configuration.

To load a configuration once it has been saved, simply press the ***Preset*** *button* until the number displayed is the one you're expecting. At that point, examine the configuration; it will be as you had saved it. If, at any time, you need to update the configuration, inset your changes, they are automatically saved.

Analog/Digital In Toggle button

Toggles between the analog and digital inputs. You can assign any combination of digital and/or analog inputs to each fader.

Fader/ZaxNet Trim button

- **Fader** – Indicates any change made to the fader affects the Fusion's preamp for this channel.
- **ZaxNet Trim** – Indicates any change made to the fader will send a ZaxNet command to adjust the transmitter's preamp associated with this channel.

Clear All button

Clears all inputs on the page.

Fader Assign Toggle button

Cycles through several screens within the page to allow all hardware faders and touch screen faders to be assigned.

Timecode page

Page purpose: This page allows you to maintain timecode and user-bits related data.

How to get here:

- (***SHIFT + TIME CODE*** *keys*)
- (***MENU*** *key → **Time Code** button*)

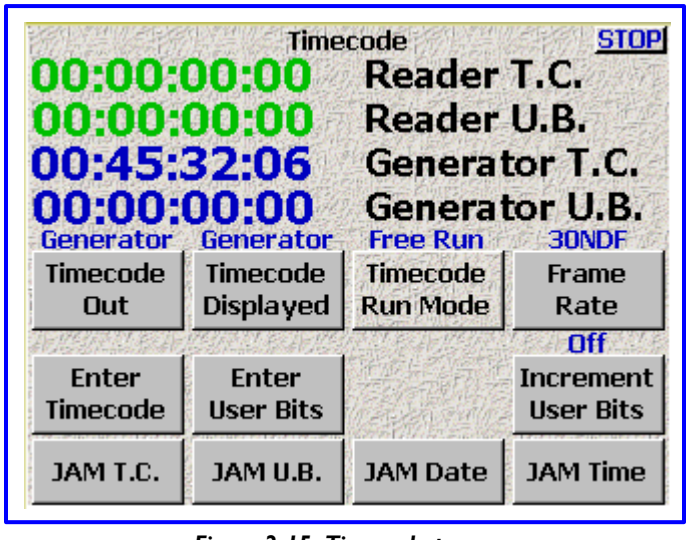


Figure 2-15 Timecode page

Page Notes

IMPORTANT: While this page is displayed, Deva/Fusion **STOPS** transmitting on ZaxNet. Once this page is closed, communications over ZaxNet resume. This allows you to jam a non-ZaxNet compatible slate.

Page Level Shortcuts

None

Running Data Display

- ***Reader T.C. field*** – This displays TC from an external source. If no external TC is present, you may temporarily see three question marks (000). These indicate that no external TC is being sensed by the Fusion. When a TC source is connected, the ***Reader T.C.*** *field* will also display the estimated frame-rate.
- ***Reader U.B. field*** – This displays any external source's user-bits, if any.
- ***Generator T.C. field*** – This displays the Fusion's locally generated TC.
- ***Generator U.B. field*** – This displays the Fusion's locally generated user-bits.

Timecode Out button

- **Generator** – TC comes from the internal generator.
- **Disk** – TC comes from the file being recorded or played-back. The ***Generator T.C.*** *field* contains:
  - While in Playback – TC at the current place in the Take.
  - While in Playback and press Stop – TC at the point where playback will re-start (by pressing ***PLAY*** *key*)
  - While in Record – TC being recorded during the Take, as it happens.
  - While in Record and press Stop – TC for the start of the last Take.

NOTE: When you have a timecode device attached (i.e. IFB100) that is forwarding timecode to recorders (i.e. TRX900) and you want to use the Auto-Load setting in the distant recorders, use **Disk** here.

Timecode Displayed button

- **Generator** – TC comes from the internal generator. The ***Generator T.C.*** *field* displays the running TC.
- **Disk** – TC comes from the file being recorded or played-back. The ***Generator T.C.*** *field* contains:
  - While in Playback – TC at the current point in the Take.
  - While in Playback and press Stop – TC at the point where playback will re-start (by pressing ***PLAY*** *key*)
  - While in Record – TC being recorded during the Take, as it happens.
  - While in Record and press Stop – TC for the start of the last Take.

- **Gen Stop** – TC comes from the primary drive or the playback source. The ***Generator T.C.*** *field* contains:
  - While in Playback – TC at the current point in the Take.
  - While in Record – TC being recorded during the Take, as it happens.
  - While in Stop – Running TC coming from the internal generator.

NOTE: When you want to see the start timecode after a Take has completed, use **Disk** here.

Timecode Run Mode button

Pressing it takes you to the *Timecode Run Mode page* {**p.52**}.

Frame Rate button

This cycles through the following timecode frame-rates: 23.98, 24, 25, 29.97NDF, 29.97DF, 30NDF and 30DF.

Enter Timecode button

Loads the timecode generator with a specified value.

Enter Timecode button Shortcuts

See: *Common Data Entry Field Shortcuts List* {**p.146**}

Enter User Bits button

Loads the user-bit store with a specified value.

Enter User-Bits button Shortcuts

See: *Common Data Entry Field Shortcuts List* {**p.146**}, with the following exception(s):

- ***F1 – F6*** *keys* – are mapped to the hex letters A – F.

Increment User Bits button

Toggles between incrementing (**On**) and not incrementing (**Off**) the user-bits. When **On**, the Fusion increments the last digit in the user-bits each time you go into Record mode.

NOTE: When incrementing is turned ON, it will increment the entire length.

JAM T.C. button

Jams the internal timecode generator from an external source.

JAM U.B. button

Jams the internal user-bits store from an external source.

JAM Date button

Jams the internal user-bits store from the Fusion's date, entered in the *Time/Date page* {**p.73**}.

JAM Time button

Jams the timecode generator from Fusion's Time-of-Day clock, entered in the *Time/Date page* {**p.73**}.

DUAL RATE TIMECODE

A feature of the Fusion allows it to sync to one timecode frame-rate and record another. For instance, you can input 23.98 timecode from an HD camera and record 29.97 timecode derived from it. The two frame-rates will be in perfect sync matching up at frame one of each second. Fusion will hold perfect timecode sync even when cycling power. Many other timecode clocks can gain or lose a frame each time power is cycled.

Timecode Run Mode page

Page purpose: This page manages the timecode generator.

How to get here:

- (***SHIFT + TIME CODE*** *keys* → ***Timecode Run Mode*** *button*)
- (***MENU*** *key* → ***Time Code*** *button* → ***Timecode Run Mode*** *button*)

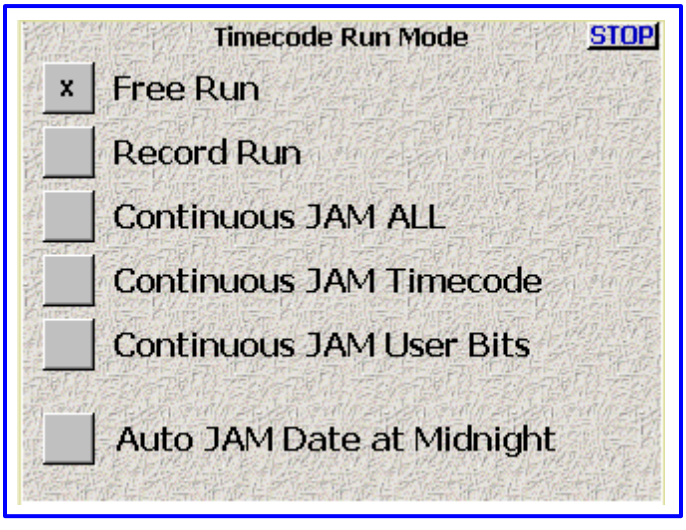


Figure 2-16 Timecode Run Mode page

Page Notes

None

Page Level Shortcuts

None

Timecode Runmode buttons

Allows selection of one of the following:

- ***Free Run*** *button* – Timecode runs continuously from either 00:00:00:00 or whatever valid timecode number you enter (you can also jam timecode from the Fusion's 'Time of Day' clock).
- ***Record Run*** *button* – Timecode starts and stops as you Record and Stop.
- ***Continuous JAM ALL*** *button* – Continuously jams timecode and user-bits from an external source.
- ***Continuous JAM Timecode*** *button* – Continuously jams only the timecode. The user-bits can be set independently.
- ***Continuous JAM User Bits*** *button* – Continuously jams the user-bits, while the timecode Free Runs independently. This mode allows a second timecode to be input as user-bits from an external source.

Auto JAM Date at Midnight button

Indicates whether or not the Fusion will automatically jam the user-bits with the date at midnight.

Default value: not selected

NOTE: If you are shooting dusk to dawn, don't enable Auto Jam Date at Midnight. This will ensure that all recorded Takes from the same production day have the same date in the user-bits.

Setup page

Page purpose: It sets the main operating parameters such as sample-rate, number of channels, sync reference, etc.

How to get here:

- (***SHIFT + SETUP*** *keys*)
- (***MENU*** *key → **Setup** button*)

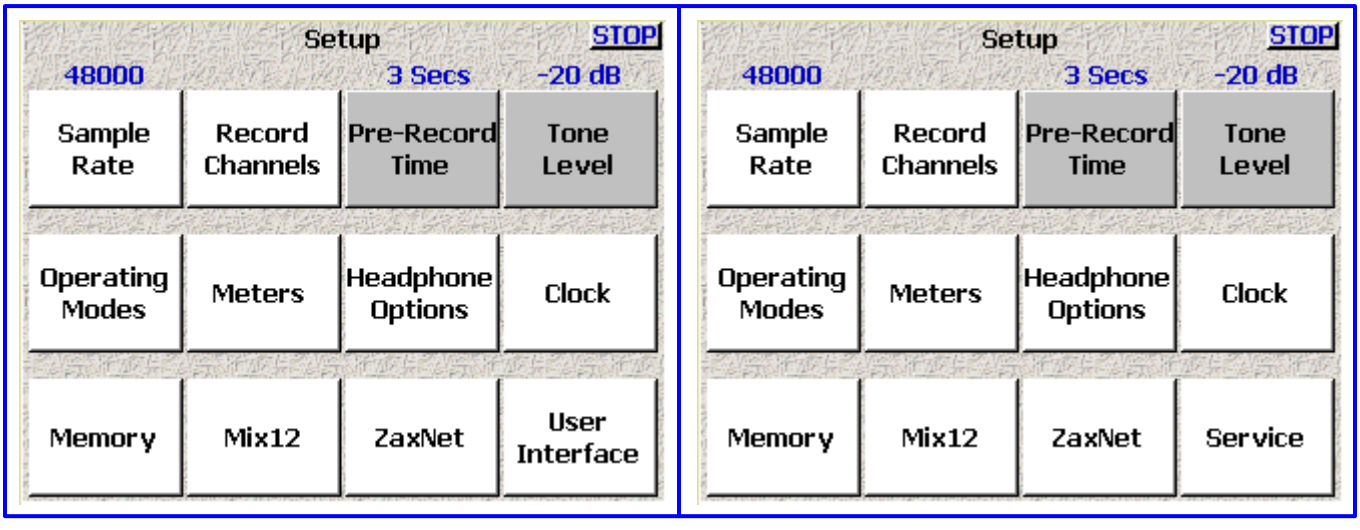


Figure 2-17 Setup page – with and without the Service button

Page Notes

None

Page Level Shortcuts

None

Sample Rate button

Pressing it takes you to the *Sample Rate page* {**p.55**}.

Record Channels button

Pressing it takes you to the *Record Track Select page* {**p.56**}.

Pre-Record Time button

Cycles between **Off**, **1 Sec**, **2 Secs**, **3 Secs**, **4 Secs**, **5 Secs**, **6 Secs**, **7 Secs**, **8 Secs**, **9 Secs** and **10 Secs**. This means that the Fusion, using a memory buffer, begins recording a set number of seconds before the ***REC*** *key* is pressed. This eliminates 'pre-roll' problems at video transfer houses, and is invaluable in documentary recording where events are not predictable.

IMPORTANT: Pre-record time is only available when recording at 48.048 kHz and below. It is disabled at higher sampling-rates.

Tone Level button

Cycles the level between **-20**, **-18**, **-16**, **-14** and **-12 dB**. The scale is in dBFS.

Operating Modes button

Pressing it takes you to the *Operating Mode page* {**p.57**}.

Meters button

Pressing it takes you to the *Meter Menu page* {**p.61**}.

Headphone Options button

Pressing it takes you to the *Headphone Options page* {**p.68**}.

Clock button

Pressing it takes you to the *Time/Date page* {**p.73**}.

Memory button

Pressing it takes you to the ***Memory page*** {**p.75**}.

Mix12 button

Pressing it takes you to the ***Mix12 Setup page*** {**p.76**}.

ZaxNet button

Pressing it takes you to the ***ZaxNet Setup page*** {**p.77**}.

User Interface button

Pressing it takes you to the ***User Interface Settings page*** {**p.78**}.

Service button

Pressing it takes you to the ***Fusion Service Menu page*** {**p.127**}.

Sample Rate page

Page purpose: Selects the sampling-rate being recorded to Fusion's primary drive.

How to get here:

- (***SHIFT + SETUP*** *keys* → ***Sample Rate*** *button*)
- (***MENU*** *key* → ***Setup*** *button* → ***Sample Rate*** *button*)

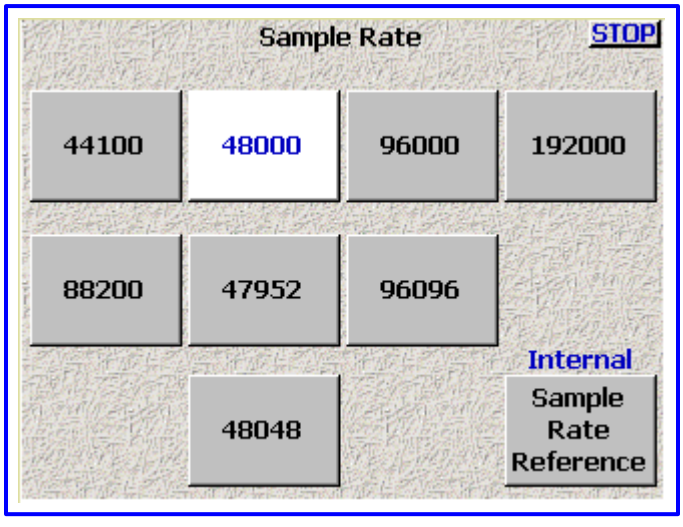


Figure 2-18 Sample Rate page

Page Notes

When using 192000, it is recommended that you do a Factory Restore Defaults to erase all possible settings that may be draining digital signal processing horsepower. If the unit does NOT boot, hold the **0** (zero) *key* while booting to force 48 kHz.

Page Level Shortcuts

None

Sample-rate buttons

NOTE: You should select the highest sampling-rate that will be used on any device.

Except for when recording at the 'pull up' or 'pull down' sampling-rates, where you can mix and match any of those sampling-rates among any of the drives, use the highest sampling-rate that will be used on any device. For example, if you want to write a FireWire DVD at 96 kHz, then this setting must be at least 96 kHz. All other sampling-rates will be extrapolated from this one. If you record at 48 kHz on the primary drive, but wish to mirror a DVD-RAM at 48.048 kHz, that is perfectly acceptable. But when using two vastly different sampling-rates, set the primary drive for the higher of those rates. Default setting: 48000

Sample Rate Reference button

- **Internal** – This locks the Fusion to its own internal reference. Select this mode when recording using the analog inputs.
- **AES 1/2** – In this mode, Fusion syncs with the timing signal being received on digital input 1 or 2. If the AES signal is lost or not present, it defaults to Internal. Make sure Fusion's sample-rate setting ALWAYS matches that of the incoming AES signal

Record Track Select page

Page purpose: This page determines which tracks will be recorded.

How to get here:

- (***SHIFT + SETUP*** *keys* → ***Record Channels*** *button*)
- (***MENU*** *key* → ***Setup*** *button* → ***Record Channels*** *button*)

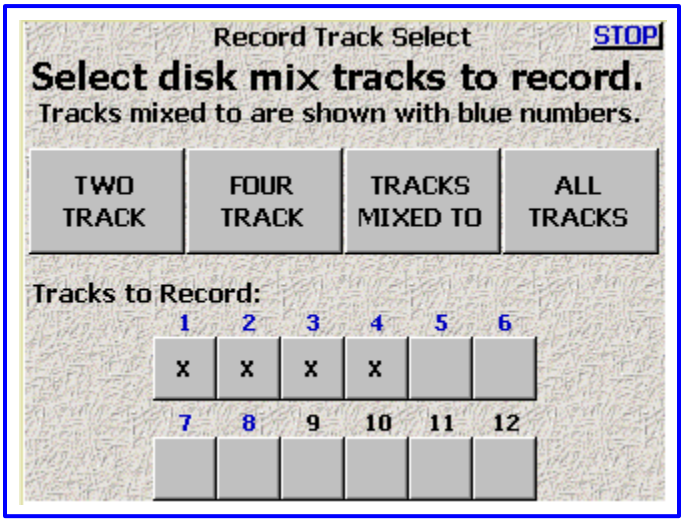


Figure 2-19 Record Track Select page

Page Notes

None

Page Level Shortcuts

None

Two Track button

This enables tracks one and two.

Four Track button

This enables tracks one through four.

Tracks Mixed To button

This automatically enables any tracks that are selected in the ***Disk Mix page*** {**p.37**}. For most uses, you can leave this setting in the **Tracks Mixed To** mode.

All Tracks button

This enables all of the available tracks. Default setting

Tracks to Record buttons

Enables each track individually.

Operating Mode page

Page purpose: This page manages several of the Fusion's operating parameters.

How to get here:

- (***SHIFT + SETUP*** *keys →* ***Operating Mode*** *button*)
- (***MENU*** *key →* ***Setup*** *button →* ***Operating Mode*** *button*)

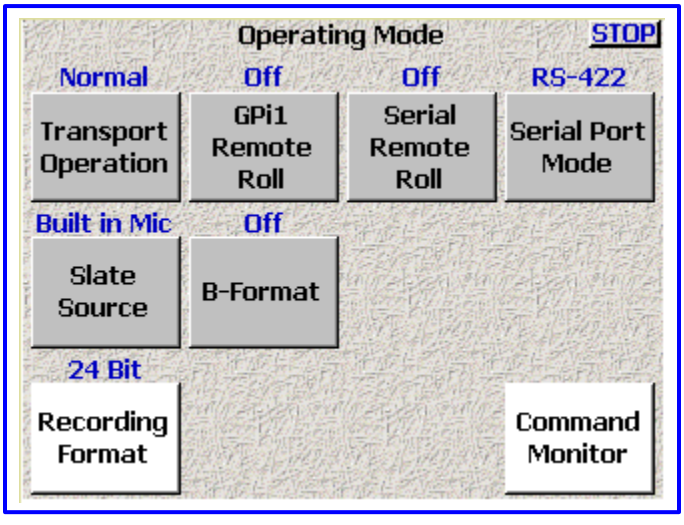


Figure 2-20 Operating Mode page

Page Notes

None

Page Level Shortcuts

None

Transport Operation button

- **Normal** – All functions are controlled by the main transport buttons.
- **Auto-load** – Fusion transport controls are locked to an external recorder such as an HD camera. When the camera goes into Record mode, the Fusion also goes into Record mode. While in "Auto-load" mode, the ***REC*** *key* blinks at regular intervals to remind you that it's in "Auto-load" mode.

IMPORTANT: Obviously, as part of the **Auto-load** selection, this requires the appropriate timecode cable from the camera that will be controlling the recording.

NOTE: As part of the **Auto-load** selection, the Fusion jams the local Reader/Generator with the incoming TC.

GPi1 Remote Roll button

Enables external transport control using a contact closure switch.

- **Off** – Normal Fusion Operating mode.
- **Rising Edge** – Places the Fusion into Record mode when the contact is opened.
- **Falling Edge** – Places the Fusion into Record mode when the contact is closed.

Serial Remote Roll button

Enables (**On**) or disables (**Off**) the remote control of the Fusion using the serial port.

Serial Port Mode button

Used in conjunction with the Serial Remote Roll, it determines the serial port protocol: **RS-232** or **RS-422**.

Slate Source button

This button toggles between the Fusion's **Built in Mic** and the **Camera In** connector as the slate source.

B-Format button

Enables (**On**) or disables (**Off**) the B-Format decoder.

Recording Format button

Pressing it takes you to the ***Recording Format page*** {**p.59**}.

Command Monitor button

Pressing it takes you to the ***Remote Command Monitor page*** {**p.60**}.

Recording Format page

Page purpose: This page determines the format of the files being recorded to the primary drive.

How to get here:

- (***SHIFT + SETUP*** *keys* → ***Operating Mode*** *button* → ***Recording Format*** *button*)
- (***MENU*** *key* → ***Setup*** *button* → ***Operating Mode*** *button* → ***Recording Format*** *button*)

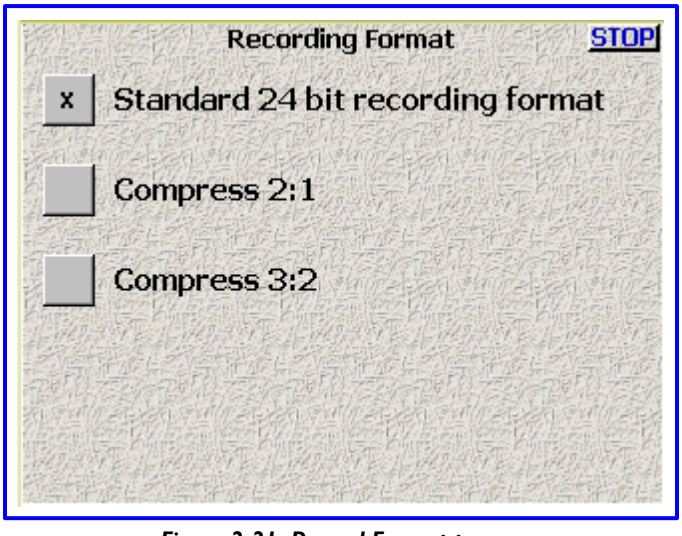


Figure 2-21 Record Format page

Page Notes

None

Page Level Shortcuts

None

Standard 24 bit recording format button

This is raw uncompressed 24-bit PCM. Default setting

Compress 2:1 button

This is a slightly lossy compression.

Compress 3:2 button

This is a virtually lossless compression.

NOTE: The compressed modes require **MORE** digital signal processing power to record and **MAY** limit the maximum number of recorded tracks.

NOTE: Standard mode is recommended whenever possible.

Remote Command Monitor page

Page purpose: This page displays communications between the Fusion and the connected Mix-8/Mix-12.

How to get here:

- (***SHIFT + SETUP*** *keys* → ***Operating Mode*** *button* → ***Command Monitor*** *button*)
- (***MENU*** *key* → ***Setup*** *button* → ***Operating Mode*** *button* → ***Command Monitor*** *button*)

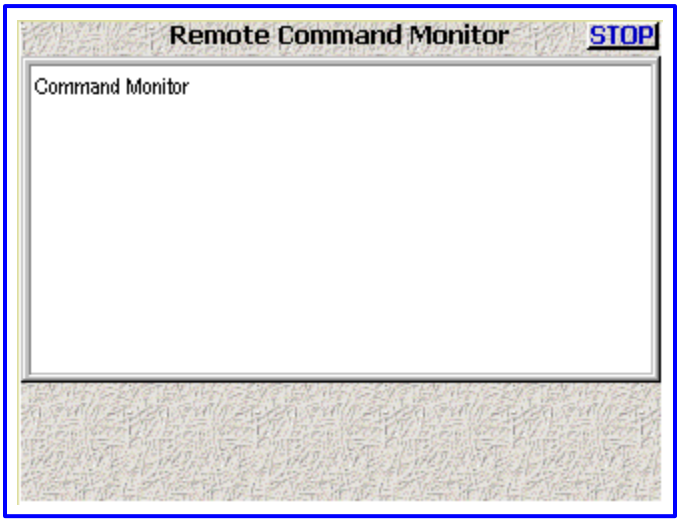


Figure 2-22 Command Monitor page

Page Notes

None

Page Level Shortcuts

None

Meter Menu page

Page purpose: This page provides metering options, which includes how many meters are shown on the Home page {p.31}, the meter's orientation and their size.

How to get here:

- (*SHIFT + SETUP keys* → ***Meters*** *button*)
- (***MENU*** *key* → ***Setup*** *button* → ***Meters*** *button*)

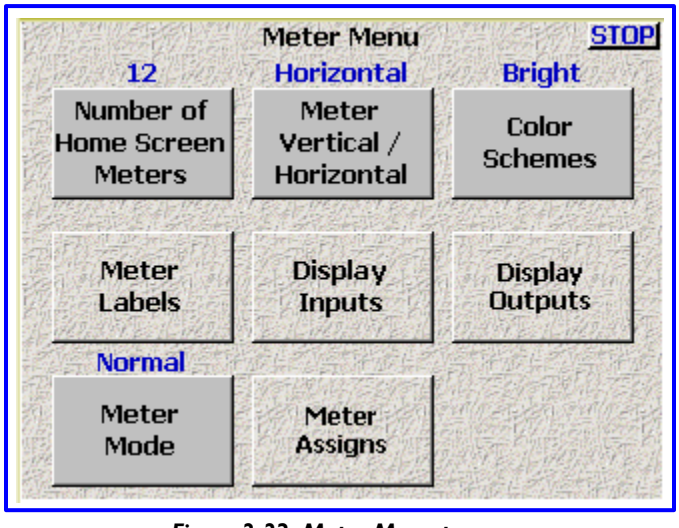


Figure 2-23 Meter Menu page

Page Notes

None

Page Level Shortcuts

None

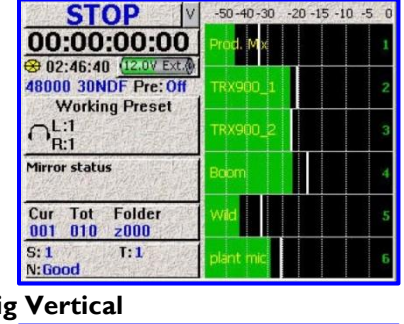
Number of Home Screen Meters button

Cycles the number of meters displayed on the Home page {p.31} between 4 and 12.
Default setting: **Max track count**

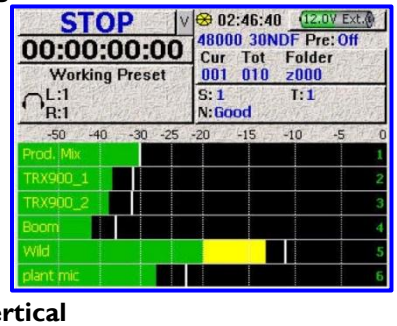
Meter Vertical / Horizontal button

Pressing it cycles the Home page {p.31} through the following layouts:

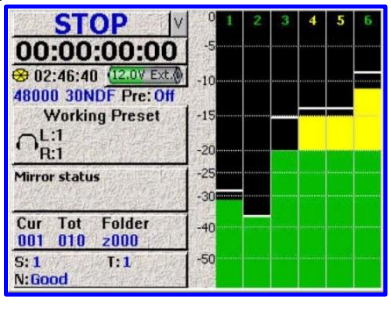
Horizontal Default setting



Big Horizontal



Big Vertical



Vertical

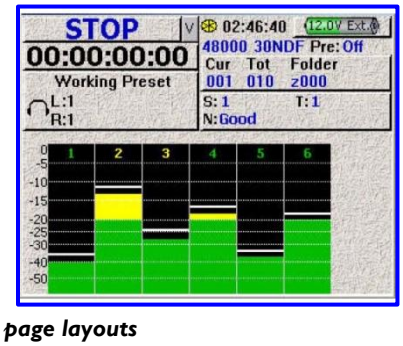


Figure 2-24 Examples of Home page layouts

NOTE: Due to space restrictions, only horizontal meters have labels.

Color Schemes button

Pressing this button changes the appearance of the Audio Level meters only. The following examples are based on the Horizontal layout, for illustration purpose:

Normal **Black & White** **Bright**

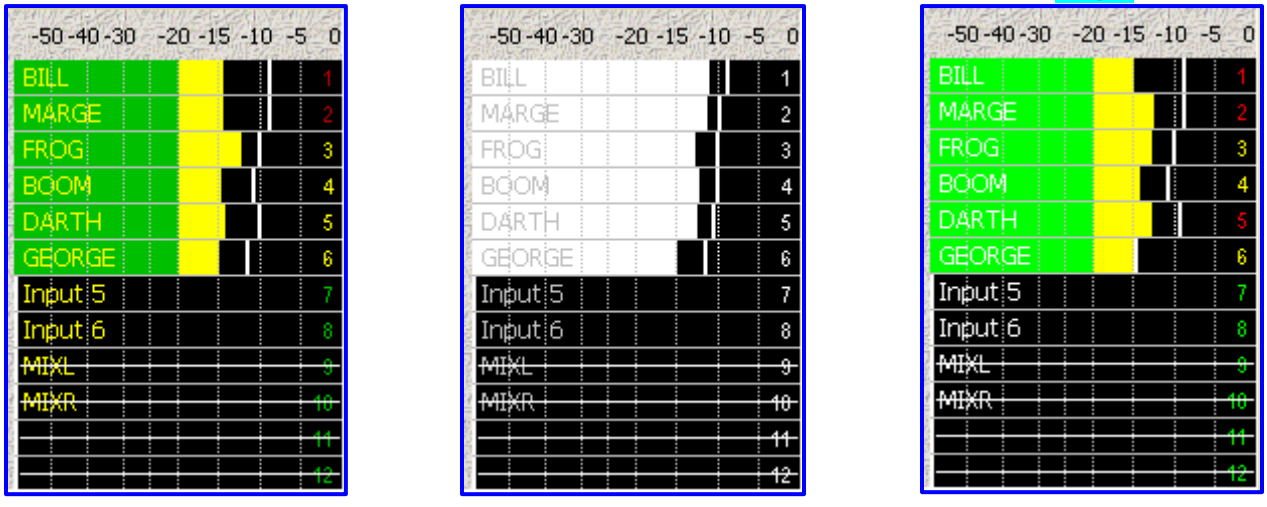


Figure 2-25 Effects of the Color Schemes button

Meter Labels button

Pressing it takes you to the *Meter Labels page* {**p.63**}.

Display Inputs button

Pressing it takes you to the *Input Meter Menu page* {**p.64**}.

Display Outputs button

Pressing it takes you to the *Output Meter Menu page* {**p.65**}.

Meter Mode button

- **Normal** – The meters operate normally.

WARNING: The following choices cause the meters to display audio that is not present. Do **NOT** select any of them while you are actively recording.

- **Demo** – Shows a continuously variable display, without any audio source
- **Show Full Scale** – Shows all tracks at full scale
- **Show 0dB** – Shows all tracks at the 0dB point (-20 dBFS)
- **Show Stepped** – Show the first six tracks in stair-step fashion. Track 1 is 0 dBFS and Track 6 is –50 dBFS.

Meter Assigns button

Pressing it takes you to the *Meter Assignments page* {**p.66**}.

Meter Labels page

Page purpose: Opens a window that allows you to enter descriptive text for any or all of the meters.

How to get here:

- (***SHIFT + SETUP*** *keys* → ***Meters*** *button* → ***Meter Labels*** *button*)
- (***MENU*** *key* → ***Setup*** *button* → ***Meters*** *button* → ***Meter Labels*** *button*)

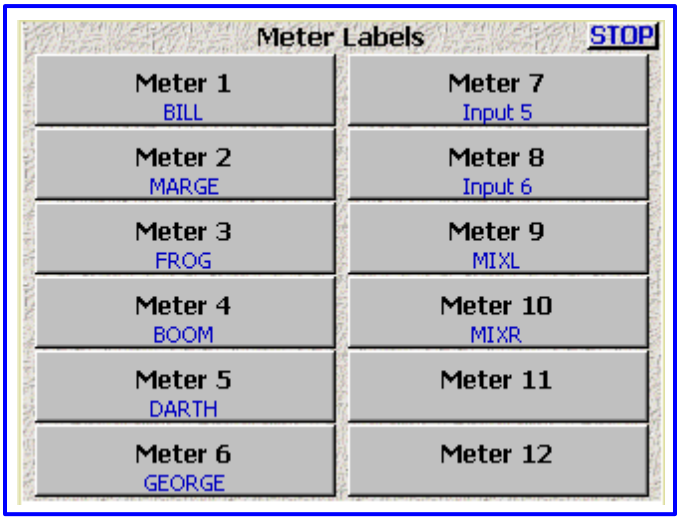


Figure 2-26 Meter Labels page

Page Notes

None

Page Level Shortcuts

- ***0 – 9*** *keys* – display the ***Keyboard page*** {**p.123**} for entry of the label text (0 = 10).

Meter Label buttons

Selecting any button displays the ***Keyboard page*** {**p.123**} for entry of the label text.
Maximum characters per label: 16 Default setting: **'Ch' & (the channel number)**

Meter Label buttons Shortcuts

See: ***Keyboard page*** {**p.123**}, with the following exception(s):

- ***TAB*** *key* – advances the data entry field to the next label in sequence.

Input Meter Menu page

Page purpose: Simultaneously displays all of the input levels.

How to get here:

- (***SHIFT + SETUP*** *keys* → ***Meters*** *button* → ***Display Inputs*** *button*)
- (***MENU*** *key* → ***Setup*** *button* → ***Meters*** *button* → ***Display Inputs*** *button*)

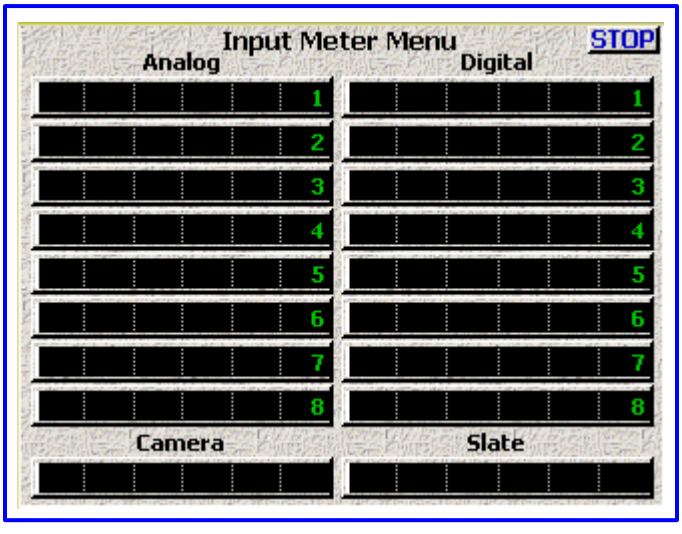


Figure 2-27 Input Meter Menu page

Page Notes

None

Page Level Shortcuts

None

Audio Level Input meters

Graphically displays the current level in each input channel.

Output Meter Menu page

Page purpose: Simultaneously displays all of the output levels.

How to get here:

- (***SHIFT + SETUP*** *keys* → ***Meters*** *button* → ***Display Outputs*** *button*)
- (***MENU*** *key* → ***Setup*** *button* → ***Meters*** *button* → ***Display Outputs*** *button*)

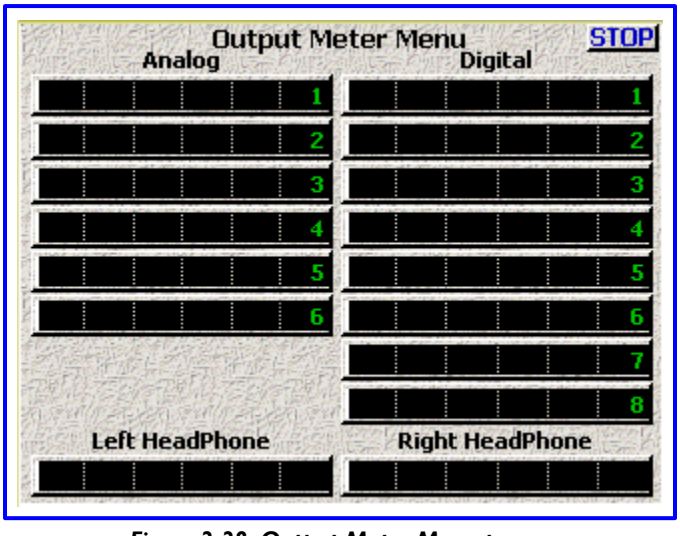


Figure 2-28 Output Meter Menu page

Page Notes

The Output Faders 1 – 4 (on the Mix-12) are after their respective meters. The end result is you will NOT see a change in output level for those channels if you adjust their faders.

WARNING: Since Outputs 1 – 4 are the way they are, their audio could be drastically different from what is indicated. **ALWAYS** turn down the levels before listening to any of them.

Page Level Shortcuts

None

Audio Level Output meters

Displays the current level of each output channel.

Meter Assignments page

Page purpose: This page displays what type of track source is assigned to each meter.

How to get here:

- (***SHIFT + SETUP*** *keys* → ***Meters*** *button* → ***Meter Assigns*** *button*)
- (***MENU*** *key* → ***Setup*** *button* → ***Meters*** *button* → ***Meter Assigns*** *button*)

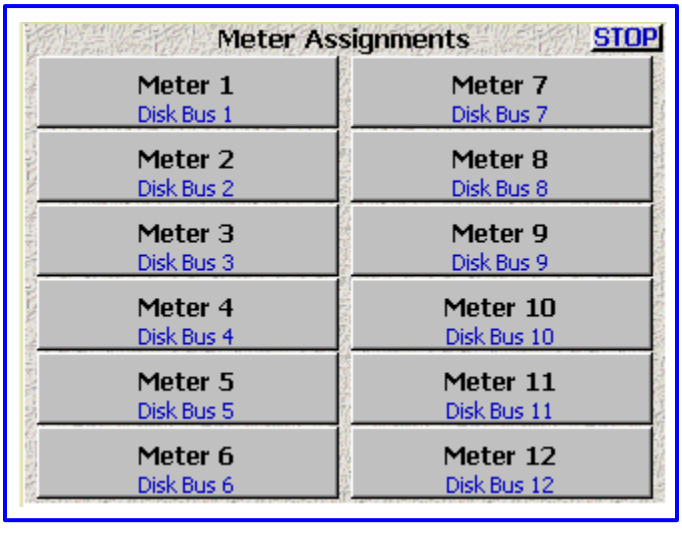


Figure 2-29 Meter Assignments page

Page Notes

None

Page Level Shortcuts

None

Meter Assignment buttons

Selecting any button displays the ***Meter (#) Assignment page*** {**p.67**} for that meter position.
Default setting: "Disk Bus" & (Meter Number)

Meter (#) Assignment page

Page purpose: This page assigns which track each meter is displaying.

How to get here:

- (***SHIFT + SETUP*** *keys* → ***Meters*** *button* → ***Meter Assigns*** *button* → ***Meter (#) Label*** *button*)
- (***MENU*** *key* → ***Setup*** *button* → ***Meters*** *button* → ***Meter Assigns*** *button* → ***Meter (#) Label*** *button*)

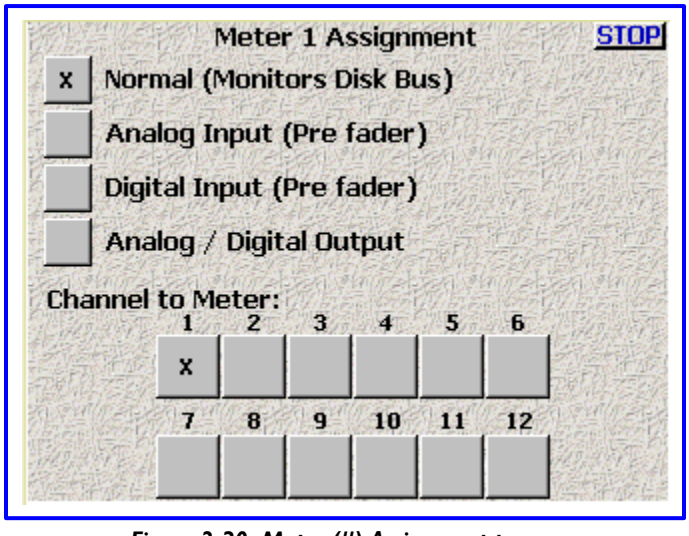


Figure 2-30 Meter (#) Assignment page

Page Notes

None

Page Level Shortcuts

None

Meter Insertion Point buttons

Select one of the following:

- ***Normal (Monitors Disk Bus)*** *button*
- ***Analog Input (Pre fader)*** *button*
- ***Digital Input (Pre fader)*** *button*
- ***Analog / Digital Output*** *button*

Channel to Meter buttons

Select one channel to be displayed on this meter. Default setting: **X** on the Channel # of the meter

Headphone Options page

Page purpose: Opens a new window providing additional options for the headphones when monitoring.

How to get here:

- (***SHIFT + SETUP*** *keys* → ***Headphone Options*** *button*)
- (***MENU*** *key* → ***Setup*** *button* → ***Headphone Options*** *button*)

Figure 2-31 Headphone Options page

Page Notes

None

Page Level Shortcuts

None

Headphone Alarm Tone button

This button toggles all audible alarms **On** or **Off**.

> **NOTE:** This setting is reset to **Off** during a power-cycle. You will need to remember to turn it back **On** once the unit is back up.

Headphone Mix button

Pressing it takes you to the ***Headphone Mix page*** {**p.69**}.

Mute Unrecorded Tracks button

When enabled (**YES**), all tracks not being recorded are muted. When disabled (**NO**), all tracks are included, except those that are disarmed.

This enables you to have multiple inputs into the Fusion still configured, but monitor only those inputs that are currently being recorded.

Headphone Mix page

Page purpose: This page routes the recorded tracks to the headphones. An audio channel can be placed in the left, right, or both headphone channels. The monitoring is E to E. You are listening to what is being recorded to the primary drive.

How to get here:

- (***HPH*** *key*)
- (***MENU*** *key* → ***Setup*** *button* → ***Headphone Options*** *button* → ***Headphone Mix*** *button*)

NOTE: Using the ***Headphone Options page*** {**p.68**}, you can toggle headphone alarm tone, or Mute Unrecorded Tracks. Also, using the ***Operating Mode page*** {**p.57**}, you enable the surround field monitor for monitoring the B format produced by the SoundField microphone.

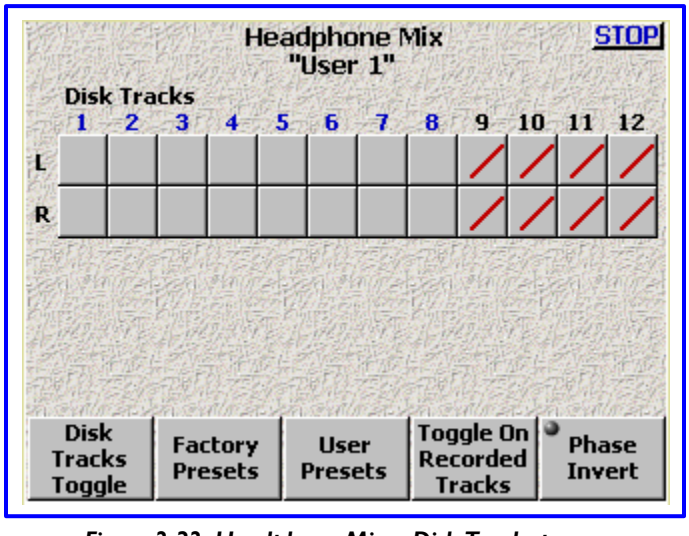


Figure 2-32 Headphone Mix – Disk Tracks page

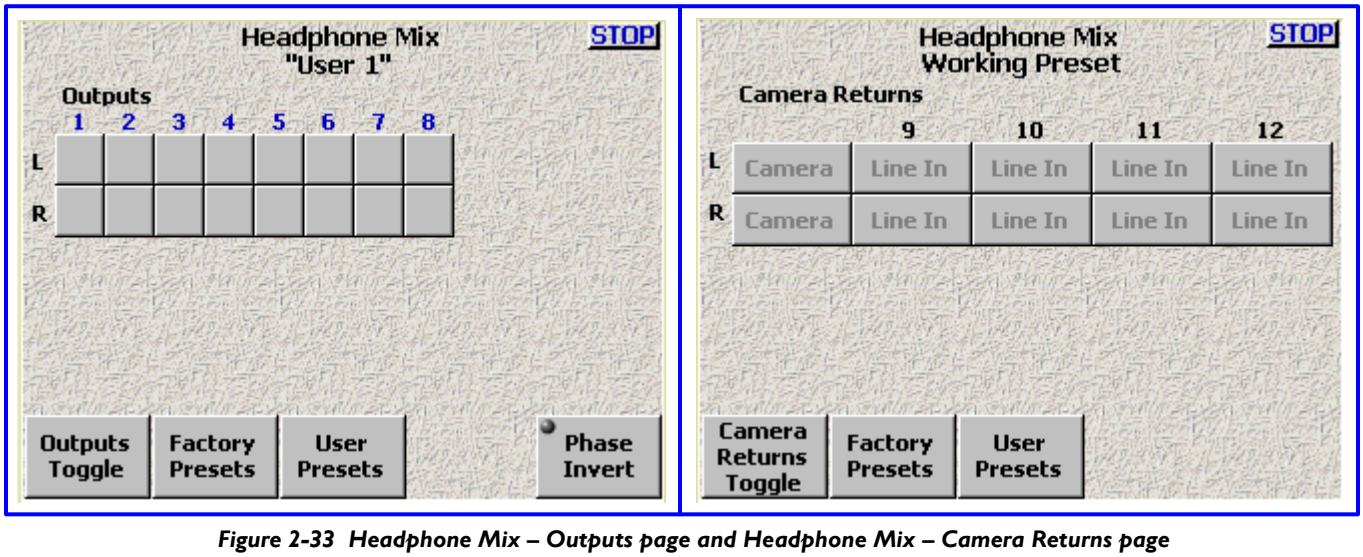


Figure 2-33 Headphone Mix – Outputs page and Headphone Mix – Camera Returns page

NOTE: The camera feed is a mono return. While there are two camera return feeds, they are internally summed to mono.

NOTE: In Fusion 10, the following limits apply. In the ***Disk Tracks*** *page*, there are 10 tracks. In the ***Camera Returns*** *page*, there is 1 camera return pair.

Page Notes

None

Page Level Shortcuts

None

Preset Loaded Name field

Appears just below the page title. Indicates which preset (User or Factory) is currently loaded. If it is not a saved preset, **Working Preset** is displayed. Default setting: Factory 2

Disk Tracks Matrix buttons

Selects which disk tracks being recorded, are to be monitored. Left (**L**) and right (**R**) *buttons* send the specific track(s) to the left and/or right ear cups.

Outputs Matrix buttons

Selects which output channels, are to be monitored. Left (**L**) and right (**R**) *buttons* send the specific track(s) to the left and/or right ear cups.

Camera Returns Matrix buttons

Selects which Camera Returns, are to be monitored. Left (**L**) and right (**R**) *buttons* send the specific track(s) to the left and/or right ear cups.

NOTE: To monitor a single channel in both the left and right headphone mix, select it in both the left and right sides.

Disk Tracks/Outputs/Camera Returns Toggle button

Cycles the view between **Disk Tracks**, **Outputs** and **Camera Returns** views.

Factory Presets button

Pressing it takes you to the ***Factory Presets page*** {**p.71**}.

User Presets button

Pressing it takes you to the ***Load/Save User Presets page*** {**p.72**}.

Toggle On Recorded Tracks button

Automatically selects all tracks that are being recorded.

Phase Invert button

Reverses the phase of the monitored channel. This does not change the phase of the recorded channel, it only reverses phase in the monitor. The selected matrix button will have a line over the **X**.

NOTE: The phase invert follows any previous phase adjustment done in the recording matrices. If you have reversed the phase for a channel, you do not have to reverse the phase here. It is already reversed.

Factory Presets page

Page purpose: Allows you to quickly access any of the 20 commonly used headphone configurations. These are pre-programmed into the Fusion and are always available.

How to get here:

- (***HPH*** *key* → ***Factory Presets*** *button*)
- (***MENU*** *key* → ***Setup*** *button* → ***Headphone Options*** *button* → ***Headphone Mix*** *button* → ***Factory Presets*** *button*)

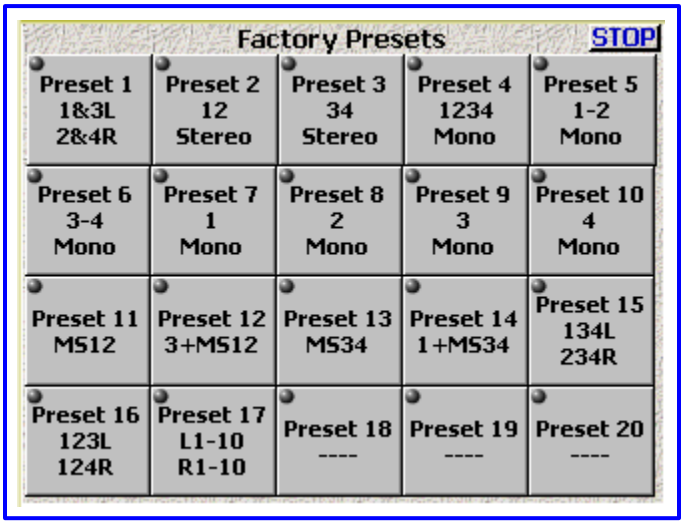


Figure 2-34 Factory Presets page

Page Notes

None

Page Level Shortcuts

None

Factory Preset buttons

Pressing any ***Preset*** *button* loads the selected headphone configuration. The LED in the selected preset turns green.

Load/Save User Presets page

Page purpose: You can set and name up to twelve user presets for headphone monitoring.

How to get here:

- (***HPH*** *key* → ***User Presets*** *button*)
- (***MENU*** *key* → ***Setup*** *button* → ***Headphone Options*** *button* → ***Headphone Mix*** *button* → ***User Presets*** *button*)

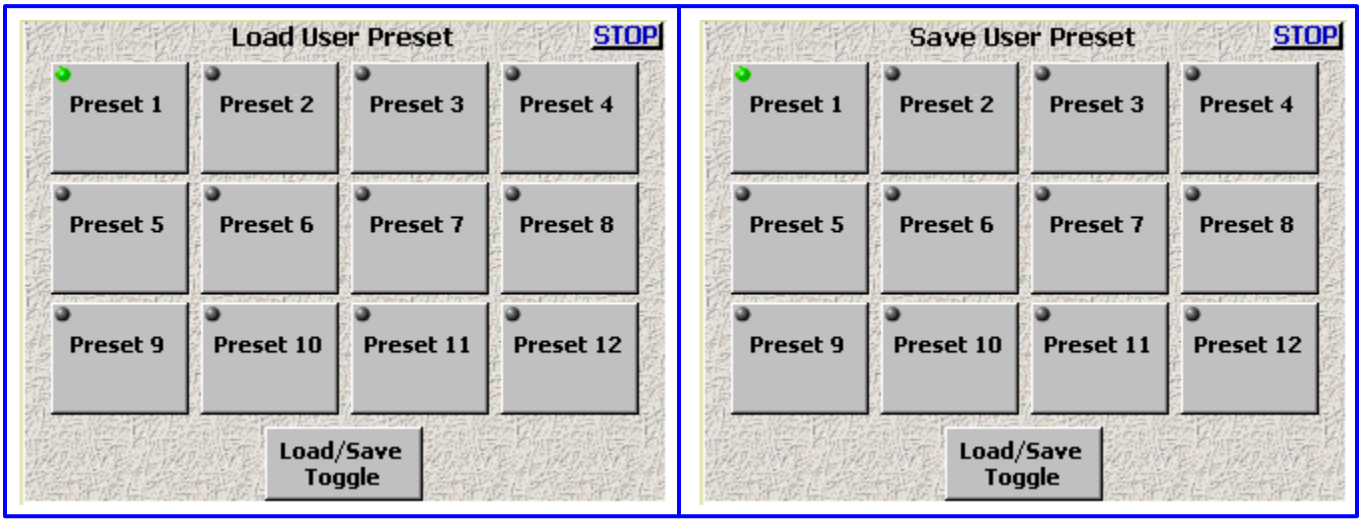


Figure 2-35 Load/Save User Presets page

Page Notes

None

Page Level Shortcuts

None

User Preset buttons

Pressing any ***Preset*** *button* saves the headphone configuration and brings up the ***Keyboard page*** {**p.123**} to enter the preset's name. The name of each preset can have a maximum of eight characters. The LED in the selected preset turns green.

Load/Save Toggle button

Toggles the function of the page between **Load** and **Save**.

Time/Date page

Page purpose: This page maintains the source for the time and date stamp placed within the metadata of each recorded track; it is also the clock that can be used to jam timecode with Time of Day.

How to get here:

- (***SHIFT + SETUP*** *keys* → ***Clock*** *button*)
- (***MENU*** *key* → ***Setup*** *button* → ***Clock*** *button*)

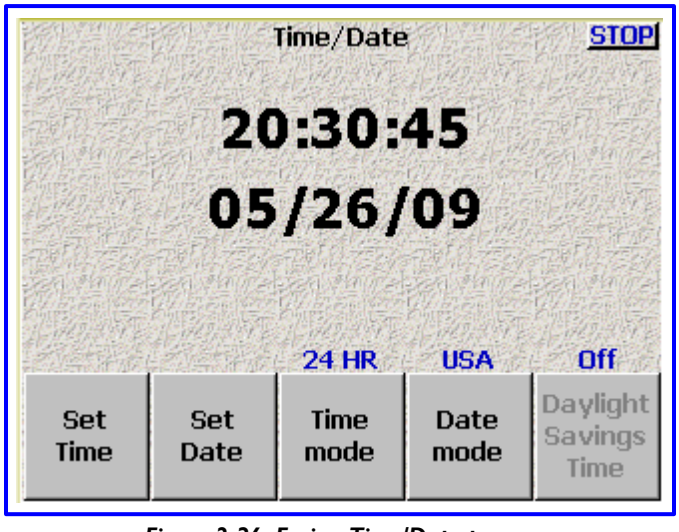


Figure 2-36 Fusion Time/Date page

Page Notes

The date and time maintained by this page is only used in the ***Timecode page*** {**p.50**} to jam the Date, Time or both.

Page Level Shortcuts

None

Time field

Displays the current time and is used to maintain it when the ***Set Time*** *button* is pressed.

Date field

Displays the current date and is used to maintain it when the ***Set Date*** *button* is pressed.

Set Time button

Opens the time field to allow changes. Use the numeric keys to enter the time and press this button again (or the ***ENTER*** *key*) to accept the new time.

Set Time button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exceptions:

- ***LEFT/RIGHT ARROW*** *keys* – do not have any effect
- ***BACKSPACE*** *key* – The cursor moves left without deleting any characters.

IMPORTANT: When you start entering a new time, the clock freezes until the ***Set Time*** *button* (or the ***ENTER*** *key*) is pressed. The clock will then continue from the value you entered.

Set Date button

Opens the ***Date*** *field* to allow changes. Use the numeric keys to enter the date and press this button again (or the ***ENTER*** *key*) to accept the new date.

Set Date button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exceptions:

- ***LEFT/RIGHT ARROW*** *keys* – do not have any effect
- ***BACKSPACE*** *key* – The cursor moves left without deleting any characters.

Time mode button

- **12 HR** – Displays the time in 12-hour format with AM/PM indication.
- **24 HR** – Displays the time in 24-hour format.

IMPORTANT: When sending time to an external device, use the **24 HR** value.

Date mode button

- **USA** – Sets the date format to (month/day/year).
- **EUROPE** – Sets the date format to (day/month/year).

IMPORTANT: When using Time-of-Day to jam Aaton devices, use the **Europe** setting.

Daylight Savings Time button

Enables/disables the automatic change in-to and out-of Daylight Savings Time.

NOTE: The ***Daylight Savings Time*** *button* is not currently implemented.

Memory page

Page purpose: While many of the configuration items on the Fusion have their own save option, so they can be recalled later, some do not. This page allows you to save and recall every setting that has been previously saved. After performing firmware updates, you will sometimes be required to press the ***Restore Factory Defaults*** *button*. The instructions for the firmware update will usually state if it is required.

How to get here:

- (***SHIFT + SETUP*** *keys* → ***Memory*** *button*)
- (***MENU*** *key* → ***Setup*** *button* → ***Memory*** *button*)

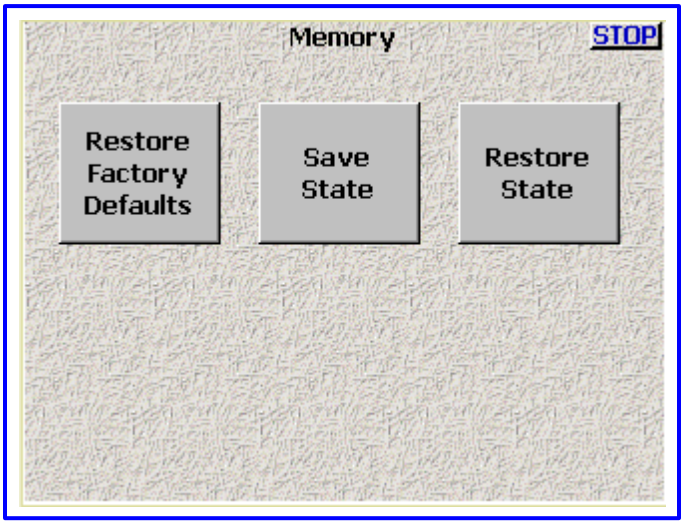


Figure 2-37 Memory page

Page Notes

None.

Page Level Shortcuts

None

Restore Factory Defaults button

Resets all settings to the factory original.

NOTE: Not all firmware updates require you to press the ***Restore Factory Defaults*** *button*. Information with the new firmware will indicate if it is necessary.

Save State button

Saves your current settings for future recall.
No … this does not save everything that is not saved otherwise. One example: ***Headphone Alarm Tone*** *button*

Restore State button

Restores your personal settings.

Mix12 Setup page

Page purpose: Enables the use of the Mix-12 with the Fusion and sets a few operating parameters.

How to get here:

- (***SHIFT + SETUP*** *keys* → ***Mix12*** *button*)
- (***MENU*** *key* → ***Setup*** *button* → ***Mix12*** *button*)

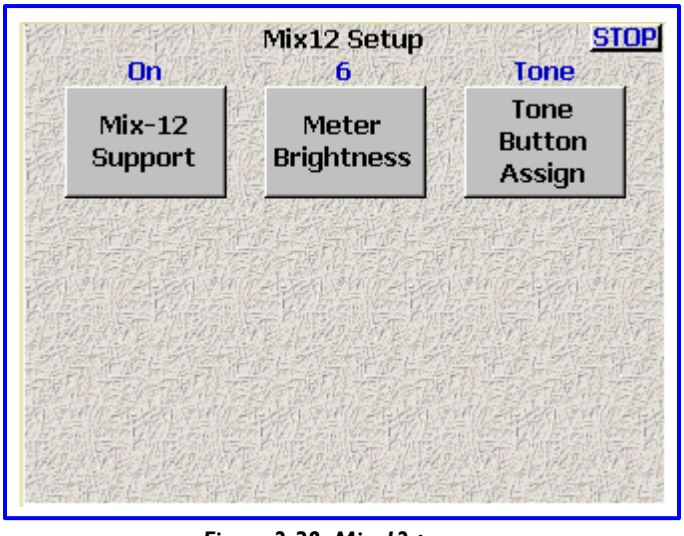


Figure 2-38 Mix-12 page

Page Notes

None

Page Level Shortcuts

None

Mix-12 Support button

When turned **On**, tells the Fusion software that a Mix-12 is connected and to start communicating with it.
Default setting: **Off**

NOTE: After turning **On** Mix-12 support, you need to cycle the Fusion's power.

Meter Brightness button

This sets the LED brightness on the Mix-12 console. The brightness can be set from **1** (dimmest) to **8** (brightest).

Tone Button Assign button

Sets the action of the ***TONE*** *key* on the Mix-12 console. The options are:

- **Tone** – Leaves the ***TONE*** *key* assigned to the tone function
- **Home** – Assigns the ***TONE*** *key* to go to the ***Home page*** {**p.31**}.
- **Escape** – Assigns the ***TONE*** *key* to go back one page on the Fusion.
- **Play** – Assigns the ***TONE*** *key* to Play
- **Unassigned** – Disables the ***TONE*** *key*

ZaxNet Setup page

Page purpose: Enables the use of ZaxNet and sets a few operating parameters.

How to get here:

- (***SHIFT + SETUP*** *keys* → ***ZaxNet*** *button*)
- (***MENU*** *key* → ***Setup*** *button* → ***ZaxNet*** *button*)

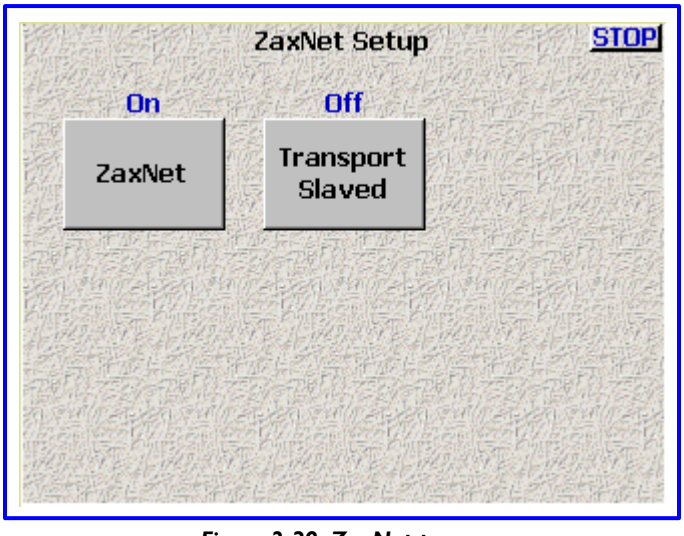


Figure 2-39 ZaxNet page

Page Notes

None

Page Level Shortcuts

None

ZaxNet button

When turned **On**, tells the Fusion software to enable ZaxNet functionality and to start communicating with it. Default setting: **Off**

NOTE: After turning **On** Mix-12 support, you need to cycle the Fusion's power.

Transport Slaved button

When set to **On**, the appropriate Start/Stop Record commands are sent on ZaxNet to control each transmitter's recorder in sync with the Fusion starting and stopping recording. Default setting: **Off**

NOTE: Having the ***Transport Slaved*** *button* turned **ON** precludes the possibility of recording Talent when they are not in a Take.

IMPORTANT: In order for this button to function, it is necessary to also have the ***ZaxNet button*** set to **On**.

User Interface Settings page

Page purpose: This page allows you to configure some of the Fusion's operations.

How to get here:

- (***SHIFT + SETUP*** *keys* → ***User Interface*** *button*)
- (***MENU*** *key* → ***Setup*** *button* → ***User Interface*** *button*)

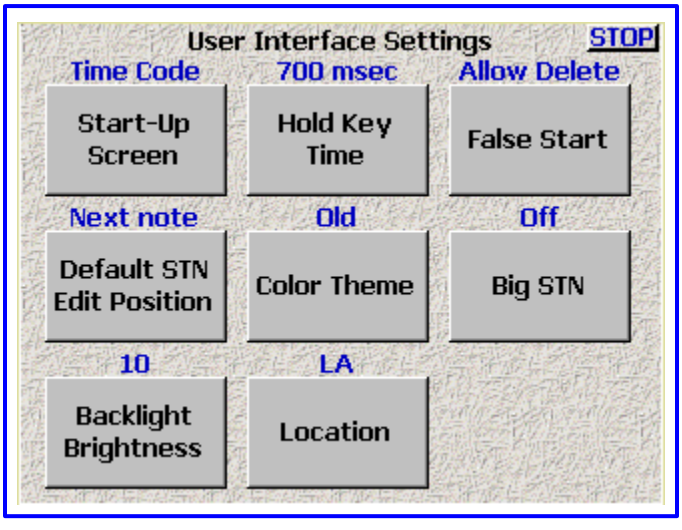


Figure 2-40 User Interface Settings page

Page Notes

None

Page Level Shortcuts

None

Start-Up Screen button

Allows you to select the first page you see after the Fusion has been powered up:

- **Home Screen** – See: ***Home page*** {**p.31**}
- **Cue Screen** – See: ***Cue Mode page*** {**p.118**}
- **Main Menu** – See: ***Main Menu page*** {**p.35**}
- **My Fusion** – See: ***My Fusion page*** {**p.104**}
- **Time Code** – See: ***Timecode page*** {**p.50**}

Hold Key Time button

Allows you to set the amount of delay before the Fusion keys repeat a character. Available values are: **Off**, **100 msec**, **200 msec**, **300 msec**, **400 msec**, **500 msec**, **600 msec**, **700 msec**, **800 msec**, **900 msec**, **1 secs**, **2 secs**. If Off is selected, each individual key press will result in only action being taken, irrespective of the time the button is pressed. Default setting: **250 msec**

NOTE: Pressing and holding the ***MENU*** *key* when in any page eventually takes you back to the ***Home page*** {**p.31**}. When setting this button, press and hold the ***MENU*** *key* to evaluate the Hold Key Time setting.

False Start button

- **Allow Delete** – Displays the ***Delete it*** *button* on the False Start dialog.
- **No delete** – Hides the ***Delete it*** *button* on the False Start dialog.

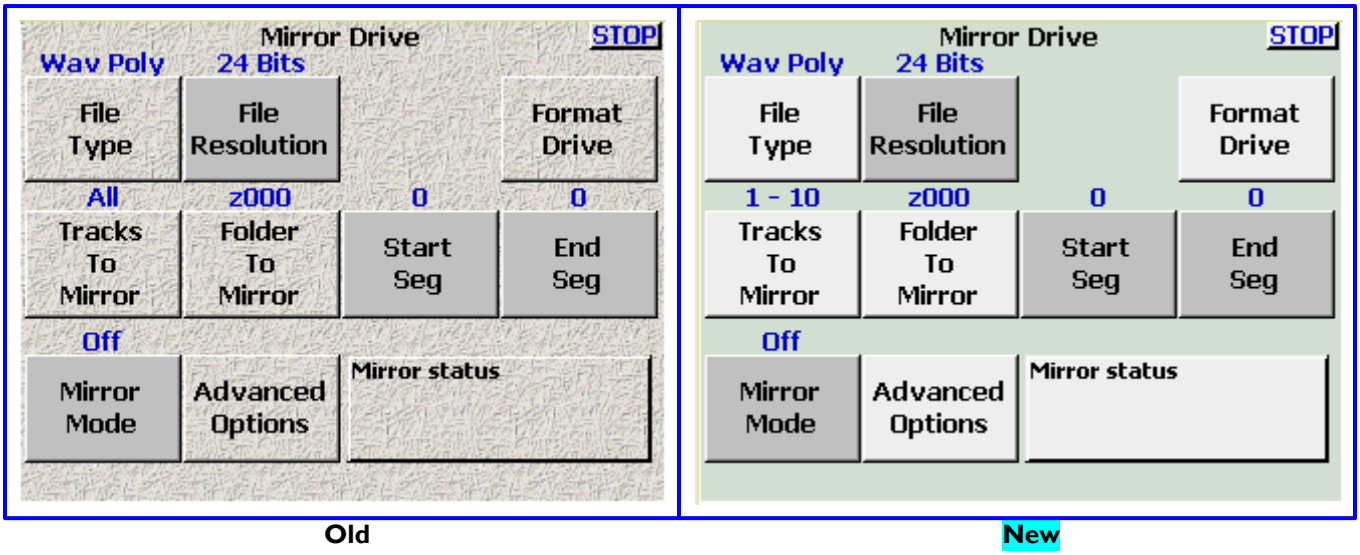
Alters the capability of the ***False Start dialog*** {**p.126**}. The end result is whether or not the operator can, as part of the ***False Start dialog***, delete the false start now or has to take care of it later. It could be that Post wants to receive all false starts. If so, selecting **No delete** aids you in meeting this requirement.

Default STN Edit Position button

- **Current note** – Opens the current audio recording's metadata (i.e. Scene, Take, Note) for editing.
- **Next note** – Opens the metadata that will be used during the next recording.

Color Theme button

Pressing this button toggles between the old and new color themes. The new color theme makes most buttons and some backgrounds have more of a white color to them.



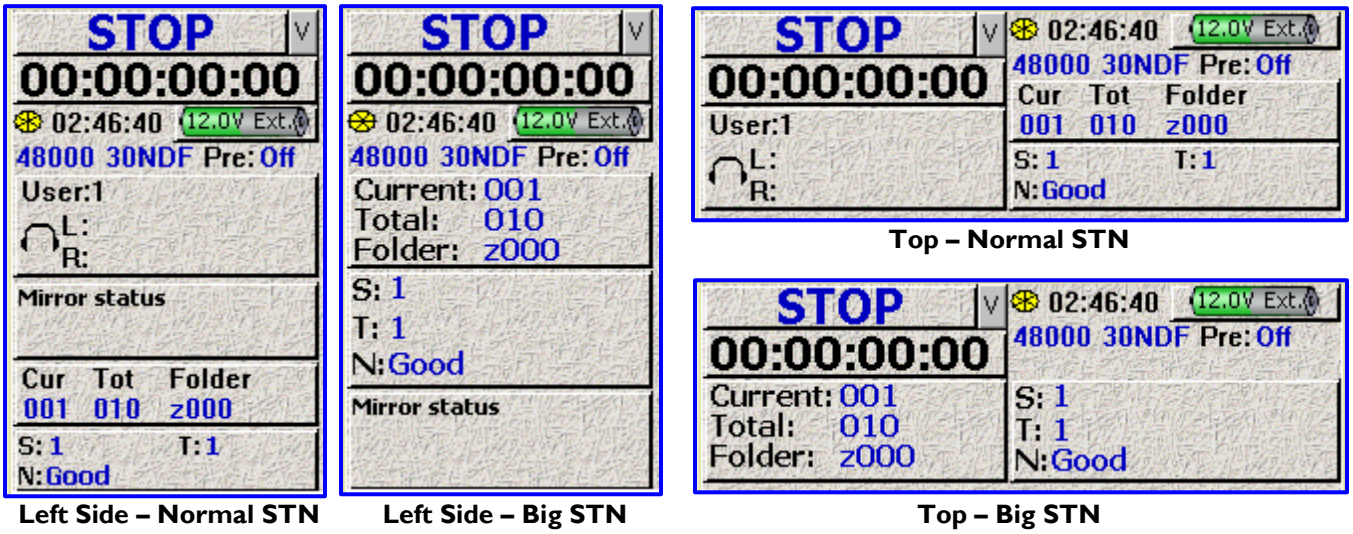
Old **New**

Figure 2-41 Effects of the Color Theme button

NOTE: You must restart your Fusion for color theme changes to take effect.

Big STN button

This button only affects the metadata portion of the *Home page* {**p.31**}. It toggles between **Off** (Normal STN) and **On** (Big STN). STN stands for (Scene, Take and Note. When the Big STN option is enabled, the text of the folder name, current segment number and total number of segments are also enlarged and the ***Headphone*** *button* is removed.



Left Side – Normal STN **Left Side – Big STN** **Top – Normal STN** **Top – Big STN**

Figure 2-42 Effects of the Big STN button

Backlight Brightness button

It controls the Fusion's backlight intensity and cycles between **1** and **10**. In the old LCD module, 1 is darkest and 10 is brightest. In the new high intensity LCD module, 1 is the brightest and 10 is the darkest. Default setting: **10**

Location button

- **USA** – Metadata viewed as Scene, Take, Note
- **Europe** – N/A
- **UK** – Metadata viewed as Slate, Take, Note
- **LA** – N/A

Input Configure page (Analog Inputs selected)

Page purpose: It sets the parameters of the analog inputs. This includes Mic/Line Level, Highpass Filtering, Mic Powering, Gain Trim and Digital Delay.

How to get here:

- (***INPUT*** *key*)
- (***MENU*** *key* → ***Input Configure*** *button*)

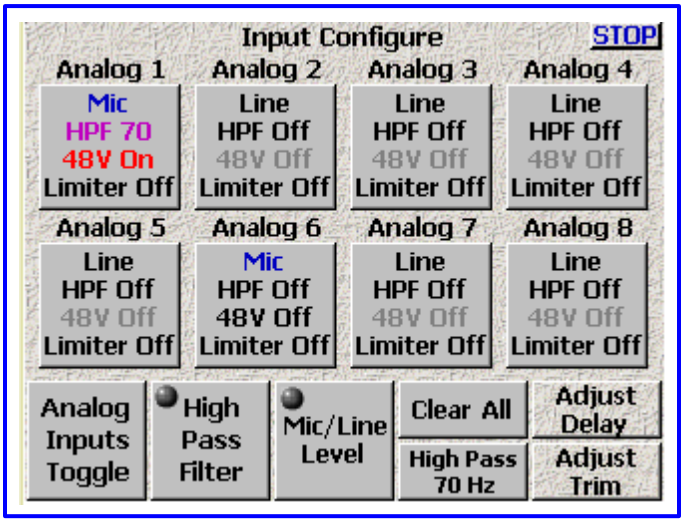


Figure 2-43 Input Configure page (Analog Inputs selected)

Page Notes

- See ***– Effects Package and More*** {**p.142**} for the theory behind using the High Pass Filter.
  ** Coming Soon **

Page Level Shortcuts

- ***1 – 8*** *keys* – equivalent to pressing the appropriate ***Channel*** *button*, changes to the ***Analog Input (#) page*** {**p.82**} for the selected channel.

Analog Channel buttons

Pressing it takes you to the ***Analog Input (#) page*** {**p.82**}.
Default settings: Line level, HPF Off, 48V Off, Limiter Off

Analog/Digital/Line Lvl Inputs Toggle button

Toggles this page between the ***Input Configure page (Analog Inputs selected)*** {**p.80**}, Input ***Configure page (Digital Inputs selected)*** {**p.90**} and ***Input Configure page (Line Lvl Inputs selected)*** {**p.100**}.

High Pass Filter button

Each analog input can have a highpass filter applied to it. You can enable a highpass filter for both line- and mic-level inputs.

Enabling the Highpass Filter

1. Press the ***High Pass Filter*** *button*
   The button's LED indicator flashes green while it is active.
2. Set the Highpass Frequency.
   Setting and changing the Highpass Frequency is outlined in the ***High Pass Hz button*** {**p.81**}.
3. Press the ***Channel*** *button* to apply the highpass filter settings.
   The HPF indicator changes to purple with the highpass frequency indicated.
4. Repeat Step 3 for each channel you want to change.
5. Once the last channel has been changed, press the ***High Pass Filter*** *button* again or the ***ENTER*** *key*.
   The LED stops flashing.

NOTE: You can set different frequencies for each channel, simply repeat steps 2 and 3 for each frequency.

Mic/Line Level button

To set the Mic/Line input gain, press the ***Mic/Line Level*** *button*, then select the individual Input Channels. **MIC** appears in **DARK BLUE**. **LINE** appears in **BLACK**.

Clear All button

This button provides a convenient way to clear all the settings, and resets this page back to the factory default settings.

Adjust Delay button

Pressing it takes you to the ***Analog/Digital Input Delay page*** {**p.101**}.

High Pass Hz button

To set the Highpass Frequency, do the following:

1. Press the ***High Pass Hz*** *button*
   You are prompted to enter the highpass frequency in Hz.
2. Use the numeric keys to enter the frequency.
   The valid range is **30** to **240 Hz**. Default setting: **70 Hz**
   Any value outside this range is placed near the closest valid number within this range.
3. Press ***High Pass Hz*** *button* or the ***ENTER*** *key* to finish entering the Cutoff Frequency.

High Pass (#) Hz button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Adjust Trim button

Pressing it takes you to the ***Analog/Digital Input Trim page*** {**p.103**}.

Analog Input (#) page

Page purpose: This page maintains several parameters for each analog input channel.

How to get here:

- (***INPUT*** *key* → ***Channel*** *button*)
- (***MENU*** *key* → ***Input Configure*** *button* → ***Channel*** *button*)

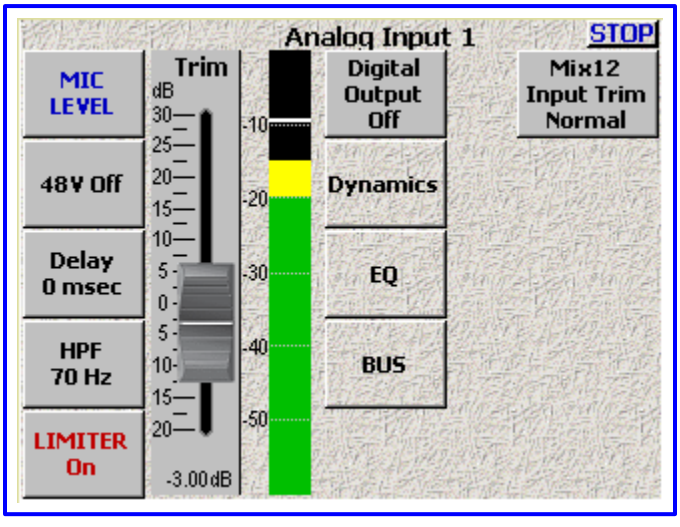


Figure 2-44 Analog Input (#) page

Page Notes

- See ***– Effects Package and More*** {**p.142**} for the theory behind using the Delay processor.
  ** Coming Soon **

Page Level Shortcuts

- ***1 – 8*** *keys* – the same as clicking on analog channel buttons 1 – 8.
- ***D*** *key* – goes to the ***Analog Input (#) – Dynamics page*** {**p.84**} for the current channel.
- ***E*** *key* – goes to the ***Analog Input (#) – EQ page*** {**p.86**} for the current channel. This functions the same as the ***EQ*** *key* on the Mix-12.
- ***B*** *key* – goes to the ***Analog Input (#) – BUS page*** {**p.89**} for the current channel. This functions the same as the ***BUS*** *key* on the Mix-12.

Mic/Line Level button

Toggles this channel's level between **LINE LEVEL** and **MIC LEVEL**.

48V Off/On button

Phantom power works in cooperation with the Mic/Line Level settings. If you have a channel set to Line-Level, you can't turn **On** that channel's phantom power.

NOTE: If you change a channel from microphone input (Mic) to line input (Line), the phantom power for that channel is turned 'OFF' and the ***48V On*** *button* is changed to ***48V Off***.

Setting Phantom Power

To turn 'ON' 48V phantom power, select the ***'48V Off*** *button*. When phantom power is enabled,***'48V Off*** changes to '***48V On***'.

Delay button

Enter a value for the amount of delay for this input.

- Unit = **msec** – (Valid range: **0** – **40**, Value step: 1)
- Unit = **samples** – (Valid range: **0** – **1920**, Value step: 1)

Delay button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

HPF button

Enter a value for the cutoff frequency for the high-pass filter for this input.

- **Off**
- (Valid range: **30 – 240 Hz**, Value step: 1)

HPF button Shortcuts

See: *Common Data Entry Field Shortcuts List* {**p.146**}

Limiter On / Off button

Toggles the limiter for this channel **On** or **Off**. This limiter cannot be adjusted.

Input Trimmer graphic fader

Sets the pre-amp level for this channel to optimize this channel's performance. If you look at the bottom of the fader background, you'll see the numeric representation of the slider's position, within 0.25 dB. This makes it easy to repeat a setting, if necessary. (Valid range: **-20** – **0** – **+30 dB**, Value step: 0.25)

NOTE: The scale is **NOT** dBFS and it is **NOT** dBu. It is a purely relative comparison to the input value arriving at the fader.

Audio Level meter

Displays the current audio level for this channel. The view point for this meter is post trimmer and pre-fader. The scale is dBFS.

Digital Output button

Enables (**On**)/Disables (**Off**) the digital output for this channel.

Dynamics button

Pressing it takes you to the *Analog Input (#) – Dynamics page* {**p.84**}.

EQ button

Pressing it takes you to the *Analog Input (#) – EQ page* {**p.86**}.

NOTE: The ***Dynamics*** and ***EQ*** *buttons* will **NOT** function if the Effects Package has not been enabled. (The Effects Package is included with the Fusion 12 and is a purchasable option with the Fusion 10.)
The Effects Package is also enabled with each of the control surfaces (Mix-8, Mix-12). Once the Fusion 10 has recognized that one of the control surfaces is powered-up and attached (< 3 secs), it is possible to disconnect the control surface for over-the-shoulder work. Be aware that as soon as you re-start the Fusion, it will not enable the Effects Package unless one of the control surfaces is again connected to re-enable it.

BUS button

Pressing it takes you to the *Analog Input (#) – BUS page* {**p.89**}.

Mix12 Input Trim button

- **Normal** – Indicates any changes made to this channel's Mix-12 Input Trim knob will affect the Fusion's preamp for this channel.
- **Tx ZaxNet** – Indicates any changes made to this channel's Mix-12 Input Trim knob will send a ZaxNet command to adjust this channel's transmitter preamp.

Analog Input (#) – Dynamics page

Page purpose: Requires **EFFECTS PACKAGE** – This page maintains the compressor for each analog input channel.

How to get here:

- (***INPUT*** *key* → ***Channel*** *button* → ***Dynamics*** *button*)
- (***MENU*** *key* → ***Input Configure*** *button* → ***Channel*** *button* → ***Dynamics*** *button*)

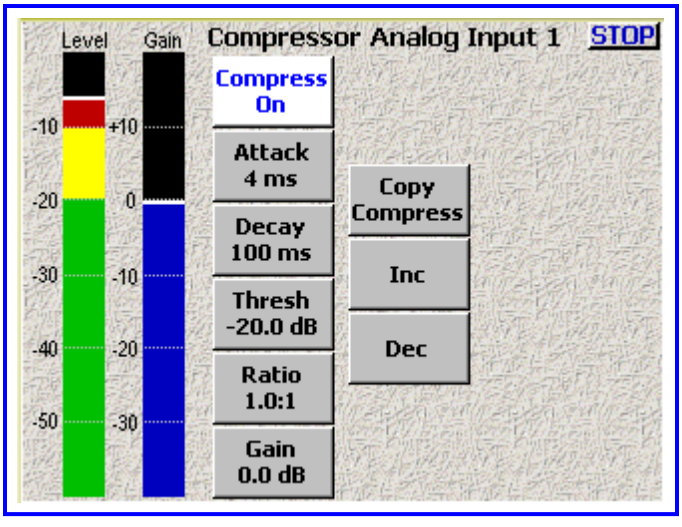


Figure 2-45 Analog Input (#) - Dynamics page

Page Notes

- See – *Effects Package and More* {**p.142**} for the theory behind using the Compressor processor.
  ** Coming Soon **
- You have two methods to change each parameter on this page:
  - Click on a parameter, it turns white. The ***Inc*** and ***Dec*** *buttons* pickup a parameter title. Pressing either button will adjust the parameter in its respective direction.
  - Click on a parameter, it turns white. Click on the now white button and a data entry field appears. Directly enter the value and press the ***ENTER*** *key*.

Page Level Shortcuts

- ***1 – 8*** *keys* – the same as clicking on analog channel buttons 1 – 8.
- ***ENTER*** *key* – toggles the compressor on/off
- ***UP ARROW / 2 and DOWN ARROW / 8*** *keys* – cycles through the compressor buttons.

Input Level meter

Displays the current audio level for this channel. The scale is dBFS.

Input Gain meter

Displays the total gain on the channel including make-up gain. The scale is dB.

Compress button

Enables (**On**) / disables (**Off**) the compressor for this channel. When this button is highlighted, pressing the ***ENTER*** *key* toggles the setting.

Attack button

(Attack Speed) Controls the amount of gain slewing which will generally slow the response to attack transients only. (Valid range: **1 – 4 – 100 ms**, Value step: 1)

Attack button Shortcuts

Clicking the button the first time selects it. This allows the value to be modified by the ***Inc*** and ***Dec*** *buttons*.

Clicking it a second time opens it for direct access.
See: *Common Data Entry Field Shortcuts List* {**p.146**}

Decay button

(Decay Speed) Controls the decay speed of the peak detector used by the dynamics processing.
(Valid range: **50 – 100 – 1000 ms**, Value step: 1)

Decay button Shortcuts

Clicking the button the first time selects it. This allows the value to be modified by the ***Inc*** and ***Dec*** *buttons*.

Clicking it a second time opens it for direct access.
See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Thresh button

(Compressor Threshold) Sets the threshold above which gain reduction occurs according to the Compressor Ratio setting. (Valid range: **-60.0** – **-20.0** – **0.0 dB**, Value step: 0.1)

Thresh button Shortcuts

Clicking the button the first time selects it. This allows the value to be modified by the ***Inc*** and ***Dec*** *buttons*.

Clicking it a second time opens it for direct access.
See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* – 1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Ratio button

(Compressor Ratio) Sets the compressor ratio, i.e. 4.0:1 means for every 1 dB above the Compressor Threshold the gain will be reduced 4 dB. (Valid range: **1.0:1** – **20.0:1**, Value step: 0.1)

Ratio button Shortcuts

Clicking the button the first time selects it. This allows the value to be modified by the ***Inc*** and ***Dec*** *buttons*.

Clicking it a second time opens it for direct access.
See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Gain button

(Make up Gain Setting) Used to compensate for the gain reduction caused by the action of the compressor. (Valid range: **0.0** – **20.0 dB**, Value step: 0.1)

Gain button Shortcuts

Clicking the button the first time selects it. This allows the value to be modified by the ***Inc*** and ***Dec*** *buttons*.

Clicking it a second time opens it for direct access.
See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* – 1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Copy Compress button

This is used to save you time and copy all compressor settings to the current channel from another specified channel. To copy the settings from one compressor to another, perform the following:

- Go to the channel you want to copy the settings to.
- Press the ***Copy Compress*** *button*.
  (A data entry field is displayed.)
- Using the keypad, enter the channel that you want to copy the compression settings from and press the ***ENTER*** *key*. (The settings are copied and the page is updated.)
- Repeat 1 thru 3 for each additional channel you want to copy settings to.

Inc button

Increments the selected parameter by its step value.

Dec button

Decrements the selected parameter by its step value.

Analog Input (#) – EQ page

Page purpose: Requires **EFFECTS PACKAGE** – This page maintains the EQ settings for each analog input channel.

How to get here:

- (***INPUT*** *key* → ***Channel*** *button* → ***EQ*** *button*)
- (***MENU*** *key* → ***Input Configure*** *button* → ***Channel*** *button* → ***EQ*** *button*)

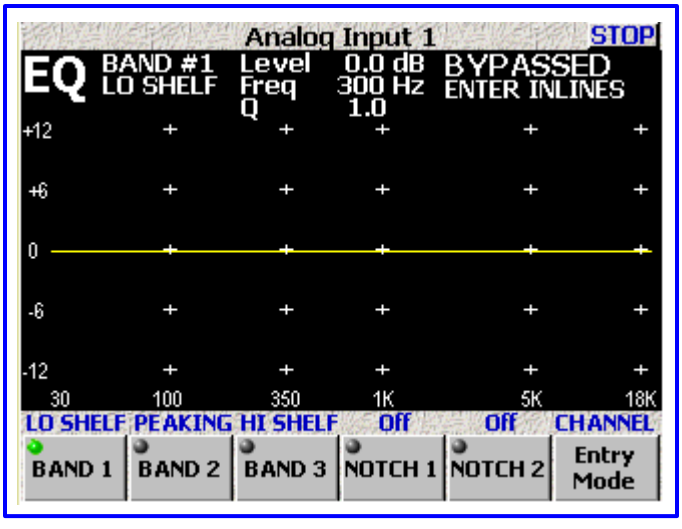


Figure 2-46 Analog Input (#) - EQ page

Page Notes

- See *– Effects Package and More* {**p.142**} for the theory behind using the Equalization processor.
  ** Coming Soon **
- While in this page with the ***Entry Mode*** *button* set to **CHANNEL**, pressing a number (1 – 8) causes the appropriate Analog channel EQ to be displayed.
- Once the parameters for a band/notch have been entered, press the ***ENTER*** *key*. The status indicator (upper right corner), changes to **INLINE**, meaning that it is now active. If you press ***ENTER*** once again, the status indicator changes back to **BYPASSED**, meaning that it is now inactive.
- Default settings:
  - Band #1 – Type: **Lo Shelf**, Level: **0.0 dB**, Freq: **300 Hz**, Q: **1.0**
  - Band #2 – Type: **Peaking**, Level: **0.0 dB**, Freq: **2000 Hz**, Q: **1.0**
  - Band #3 – Type: **Hi Shelf**, Level: **0.0 dB**, Freq: **5000 Hz**, Q: **1.0**
  - Notch #1 – Type: **Off**, Level: **-96.0 dB**, Freq: **60 Hz**, Q: **9.9**
  - Notch #2 – Type: **Off**, Level: **-96.0 dB**, Freq: **120 Hz**, Q: **9.9**

EQ page Level Shortcuts

- ***ENTER*** *key* – alternately enables (inline) and disables (bypassed) ALL EQ settings for the current channel. When a channel's EQ has been bypassed, the settings are still maintained until they are specifically modified.
- ***RIGHT ARROW*** *key* – advances to the next filter band (note the green light in the buttons on the bottom of the page).
- ***LEFT ARROW*** *key* – advances to the previous filter band.
- ***UP ARROW*** *key* – changes the current band's filter type:
  - Band 1 – 3 are band filters selectable as **Lo Shelf**, **Hi Shelf**, **Peaking** or **Off**.
  - Notch 1 & 2 are notch filters selectable as **Off** or **On**.
- ***U*** *key* – resets the ***Level*** *field* of all bands of the current channel to unity (**0.0**), effectively negating them.
- ***L*** *key* – changes focus to the ***Level*** *field*.
- ***F*** *key* – changes focus to the ***Frequency*** *field*.
- ***Q*** *key* – changes focus to the ***Q*** *field*.
- ***E*** *key* – advances to the ***EQ Memory*** *page*.
- ***R*** *key* – resets the ***Level***, ***Frequency*** and ***Q*** *fields*
- ***BACKSPACE*** *key* – advances to the ***EQ Memory*** *page*.

While the ***Entry Mode*** *button* is set to 'LVL/FREQ', the following keys are active:

- ***2*** *key* – adds 0.4 to the ***Level*** *field*.
- ***8*** *key* – subtracts 0.4 from the ***Level*** *field*.
- ***6*** *key* – adds 200 to the ***Frequency*** *field*.
- ***4*** *key* – subtracts 200 from the ***Frequency*** *field*.

EQ Memory page Shortcuts

- ***1*** *–* ***5*** *keys* – pressing one of them loads/saves (depending on the mode) the respective memory.
- ***E*** *key* – exits the ***EQ*** *page* and returns to the ***Analog Input (#) page*** {**p.82**} for this channel.
- ***BACKSPACE*** *key* – returns to the ***EQ*** *page*.

Band/Notch (#) field

Indicates which band/notch of the current equalization filter is currently being displayed

Level field

Establishes/stores the level used by the associated band.
(Valid range: **-24.0** – **+24.0 dB**, Value step: 0.1)

Level field Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Bypassed/Inline flag

Displays the status of the associated equalization filter, **Bypassed** or **Inline**.

Band Type flag

Displays the current band's type, as selected by the ***Band*** or ***Notch*** *button*

Frequency field

Establishes/stores the frequency used by the associated band.
(Valid range: **30** – **20000 Hz**, Value step: 1)

Frequency field Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Q field

Establishes/stores the Q factor used by the associated band.
(Valid range: **0.5** – **9.9**, Value step: 0.1)

Q field Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Equalization graph

Displays, in graphic format, the result of all components of the associated equalization filter.

Band buttons

Cycles through the type of band to be applied to that band:

- **Off** – turns off the current band
- **LO SHELF** – sets the current band to a Low Shelf filter
- **HI SHELF** – sets the current band to a High Shelf filter
- **PEAKING** – sets the current band to a Peaking filter.

Notch buttons

Toggles the notch filter **On** or **Off**.

Entry Mode button

Cycles through the following list to select which element of the band/notch is to be modified:

- **CHANNEL** – causes the appropriate EQ channel to be displayed.
- **LVL/FREQ** – the following keys are active:
  - ***2*** *key* – adds **0.4** to the ***Level*** *field*.
  - ***8*** *key* – subtracts **0.4** from the ***Level*** *field*.
  - ***6*** *key* – adds the step value to the ***Frequency*** *field*, based on the frequency range:
    - 30 to 350 – Step: **5**
    - 380 to 1000 – Step: **20**
    - 1000 to 1100 – Step: **100**
    - 1100 to 1700 – Step: **200**
    - 1700 to 2100 – Step: **100**
    - 2100 to 3300 – Step: **200**
    - 3300 to 4100 – Step: **100**
    - 4100 to 5100 – Step: **200**
    - 5100 to 5400 – Step: **300**
    - 5400 to 6600 – Step: **400**
    - 6600 to 8200 – Step: **200**
    - 8200 to 13000 – Step: **400**
    - 13000 to 16400 – Step: **200**
    - 16400 to 20000 – Step: **400**
  - ***4*** *key* – subtracts the step value to the ***Frequency*** *field*, based on the frequency range:
    - 30 to 340 – Step: **5**
    - 340 to 900 – Step: **20**
    - 900 to 4800 – Step: **100**
    - 4800 to 20000 – Step: **200**
- **LVL** – causes changes to be applied to the ***Level*** *field*
- **FREQ** – causes changes to be applied to the ***Frequency*** *field*.
- **Q** – causes changes to be applied to the ***Q*** *field*

Analog Input (#) – BUS page

Page purpose: This page maintains the BUS settings for each analog recording track.

How to get here:

- (***INPUT*** *key* → ***Channel*** *button* → ***BUS*** *button*)
- (***MENU*** *key* → ***Input Configure*** *button* → ***Channel*** *button* → ***BUS*** *button*)

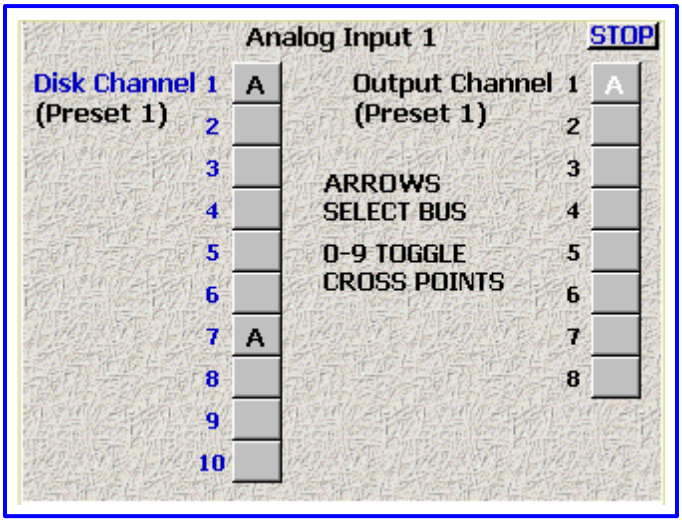


Figure 2-47 Analog Input (#) - BUS page

Page Notes

- The indicator's meaning:

Indicator	*Description*
Black A	Analog input post-fader
Black A with Line	Analog input post-fader with signal phase inverted
White A	Analog input pre-fader
White A with Line	Analog input pre-fader with signal phase inverted

Table 2-5 Analog Input (#) BUS Indicator Descriptions

Page Level Shortcuts

- ***LEFT/RIGHT ARROW*** *keys* – select which bus (Disk Channel vs. Output Channel)
- ***1*** *–* ***9*** and ***0*** *keys* – cycles cross-points
- ***E*** *key* – exits the ***BUS*** *page* and returns to the ***Analog Input (#) page*** {**p.82**} for this channel

Disk Channel buttons

Assigns the associated input to one or more of the recorder's tracks.

Output Channel buttons

Assigns the associated input directly to one or more of the output channels.

Input Configure page (Digital Inputs selected)

Page purpose: This page maintains the parameters for the digital inputs. This includes Highpass Filtering, Gain Trim and Digital Delay.

How to get here:

- (***INPUT*** *key* → ***Analog Inputs Toggle*** *button* {=*Digital*})
- (***MENU*** *key* → ***Input Configure*** *button* → ***Analog Inputs Toggle*** *button* {=*Digital*})

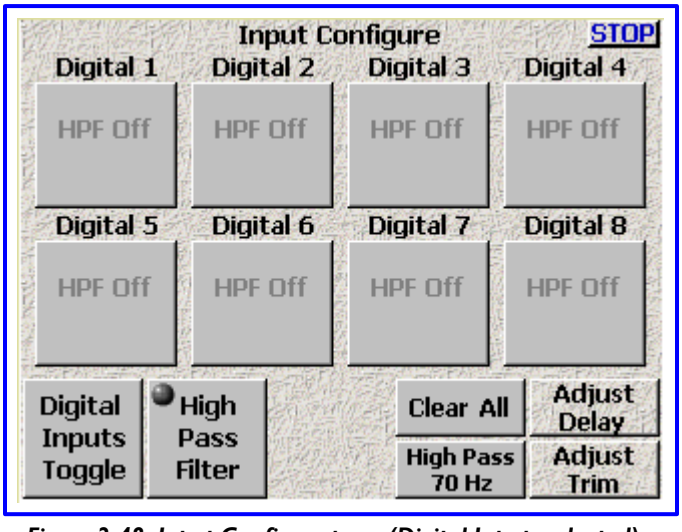


Figure 2-48 Input Configure page (Digital Inputs selected)

Page Notes

- See ***– Effects Package and More*** {**p.142**} for the theory behind using the High Pass Filter.
  ** Coming Soon **

Page Level Shortcuts

- ***1 – 8*** *keys* – equivalent to pressing the appropriate ***Channel*** *button*, changes to the ***Analog Input (#) page*** {**p.82**} for the selected channel.

Digital Channel buttons

Pressing it takes you to the ***Digital Input (#) page*** {**p.92**}. Default settings: HPF Off

Analog/Digital/Line Lvl Inputs Toggle button

Toggles this page between the ***Input Configure page (Analog Inputs selected)*** {**p.80**}, Input ***Configure page (Digital Inputs selected)*** {**p.90**} and ***Input Configure page (Line Lvl Inputs selected)*** {**p.100**}.

High Pass Filter button

Each digital input can have a highpass filter applied to it.

Enabling the Highpass Filter

1. Press the ***High Pass Filter*** *button*
   The button's LED indicator flashes green when pressed.
2. Set the Highpass Frequency.
   Setting and changing the Highpass Frequency is outlined in the ***High Pass Hz button*** {**p.91**}.
3. Press the ***Channel*** *button* to apply the highpass filter settings.
   The HPF indicator changes to purple with the highpass frequency indicated.
4. Repeat Step 3 for all channels, to enable the highpass filter.
5. Once the last channel has been changed, press the ***High Pass Filter*** *button* again or the ***ENTER*** *key*.
   The LED stops flashing.

NOTE: You can set different frequencies for each channel, simply repeat steps 2 and 3 for each frequency.

Clear All button

This button provides a convenient way to clear all the settings, and resets this page back to the factory default settings.

Adjust Delay button

Pressing it takes you to the ***Analog/Digital Input Delay page*** {**p.101**}.

High Pass Hz button

To set the Highpass Frequency, perform the following:

1. Press the ***High Pass Hz*** *button*
   You are prompted to enter the highpass frequency in Hz.
2. Use the numeric keys to enter the frequency.
   The valid range is **30** – **70** – **240 Hz**.
3. Press ***High Pass Hz*** *button*
   This sets the frequency.

High Pass button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Adjust Trim button

Pressing it takes you to the ***Analog/Digital Input Trim page*** {**p.103**}.

Digital Input (#) page

Page purpose: This page maintains several parameters for each digital input channel.

How to get here:

- (***INPUT*** *key* → ***Analog Inputs Toggle*** *button* {=*Digital*} → ***Channel*** *button*)
- (***MENU*** *key* → ***Input Configure*** *button* → ***Analog Inputs Toggle*** *button* {=*Digital*} → ***Channel*** *button*)

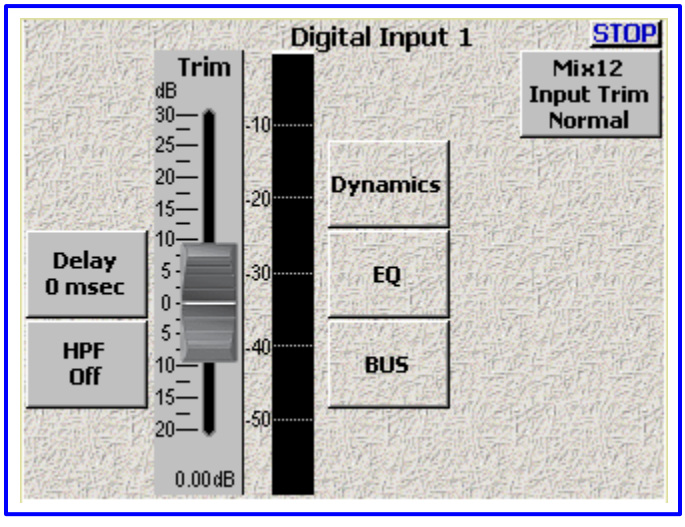


Figure 2-49 Digital Input (#) page

Page Notes

- See ***– Effects Package and More*** {**p.142**} for the theory behind using the Delay processor.
  ** Coming Soon **

Page Level Shortcuts

- ***1 – 8*** *keys* – the same as clicking on analog channel buttons 1 – 8.
- ***D*** *key* – goes to the ***Digital Input (#) – Dynamics page*** {**p.94**} for the current channel.
- ***E*** *key* – goes to the ***Digital Input (#) – EQ page*** {**p.96**} for the current channel. This functions the same as the ***EQ*** *key* on the Mix-12.
- ***B*** *key* – goes to the ***Digital Input (#) – BUS page*** {**p.99**} for the current channel. This functions the same as the ***BUS*** *key* on the Mix-12.

Delay button

Enter a value for the amount of delay for this input.
(Valid range: **0** – **40 ms**, Value step: 1)

Delay button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

HPF button

Enter a value for the cutoff frequency for the high-pass filter for this input.

- **Off**
- (Valid range: **30** – **240 Hz**, Value step: 1)

HPF button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Input Trimmer graphic fader

Sets the pre-amp level for this channel to optimize this channel's performance. If you look at the bottom of the fader background, you'll see the numeric representation of the slider's position, within 0.25 dB. This makes it easy to repeat a setting, if necessary. (Valid range: **-20** – **0** – **+30 dB**, Value step: 0.25)

NOTE: The scale is **NOT** dBFS and it is **NOT** dBu. It is a purely relative comparison to the input value arriving at the fader.

Input Level meter

Displays the current audio level for this channel. The view point for this meter is post trimmer and pre-fader. The scale is dBFS.

Dynamics button

Pressing it takes you to the *Digital Input (#) – Dynamics page* {**p.94**}.

EQ button

Pressing it takes you to the *Digital Input (#) – EQ page* {**p.96**}.

NOTE: The ***Dynamics*** and ***EQ*** *buttons* will **NOT** function if the Effects Package has not been enabled. (The Effects Package is included with the Fusion 12 and is a purchasable option with the Fusion 10.)
The Effects Package is also enabled with each of the control surfaces (Mix-8, Mix-12). Once the Fusion 10 has recognized that one of the control surfaces is powered-up and attached (< 3 secs), it is possible to disconnect the control surface for over-the-shoulder work. Be aware that as soon as you re-start the Fusion, it will not enable the Effects Package unless one of the control surfaces is again connected to re-enable it.

BUS button

Pressing it takes you to the *Digital Input (#) – BUS page* {**p.99**}.

Mix12 Input Trim button

- **Normal** – Indicates any changes made to this channel's Mix-12 Input Trim knob will affect Zaxcom's preamp for this channel.
- **Tx ZaxNet** – Indicates any changes made to this channel's Mix-12 Input Trim knob will send a ZaxNet command to adjust this channel's transmitter pre-amp.

Digital Input (#) – Dynamics page

Page purpose: Requires **EFFECTS PACKAGE** – This page maintains the compressor for each digital input channel.

How to get here:

- (***INPUT*** *key* → ***Analog Inputs Toggle*** *button* {=*Digital*} → ***Channel*** *button* → ***Dynamics*** *button*)
- (***MENU*** *key* → ***Input Configure*** *button* → ***Analog Inputs Toggle*** *button* {=*Digital*} → ***Channel*** *button* → ***Dynamics*** *button*)

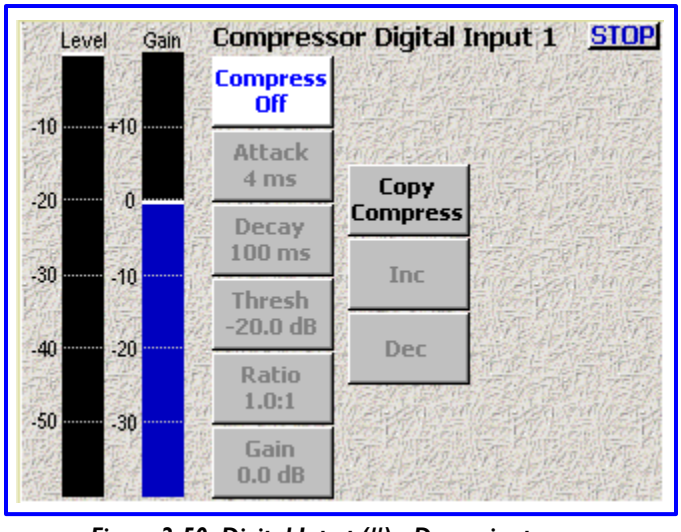


Figure 2-50 Digital Input (#) - Dynamics page

Page Notes

- See – *Effects Package and More* {**p.142**} for the theory behind using the Compressor processor.
  ** Coming Soon **
- You have two methods to change each parameter on this page:
  - Click on a parameter, it turns white. The ***Inc*** and ***Dec*** *buttons* pickup a parameter title. Pressing either button will adjust the parameter in its respective direction.
  - Click on a parameter, it turns white. Click on the now white button and a data entry field appears. Directly enter the value and press the ***ENTER*** *key*.

Page Level Shortcuts

- ***ENTER*** *key* – toggles the compressor on/off
- ***UP ARROW / 2 and DOWN ARROW / 8*** *keys* – cycles through the compressor buttons.

Input Level meter

Displays the current audio level for this channel. The scale is dBFS.

Input Gain meter

Displays the total gain on the channel including make-up gain. The scale is dB.

Compress button

Enables (**On**) / disables (**Off**) the compressor for this channel. When this button is highlighted, pressing the ***ENTER*** *key* toggles the setting.

Attack button

(Attack Speed) Controls the amount of gain slewing which will generally slow the response to attack transients only. (Valid range: **1** – **4** – **100 ms**, Value step: 1)

Attack button Shortcuts

Clicking the button the first time selects it. This allows the value to be modified by the ***Inc*** and ***Dec*** *buttons*.

Clicking it a second time opens it for direct access.
See: *Common Data Entry Field Shortcuts List* {**p.146**}

Decay button

(Decay Speed) Controls the decay speed of the peak detector used by the dynamics processing.
(Valid range: **50** – **100** – **1000 ms**, Value step: 1)

Decay button Shortcuts

Clicking the button the first time selects it. This allows the value to be modified by the ***Inc*** and ***Dec*** *buttons*.

Clicking it a second time opens it for direct access.
See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Thresh button

(Compressor Threshold) Sets the threshold above which gain reduction occurs according to the Compressor Ratio setting. (Valid range: **-60.0** – **-20.0** – **0.0 dB**, Value step: 0.1)

Thresh button Shortcuts

Clicking the button the first time selects it. This allows the value to be modified by the ***Inc*** and ***Dec*** *buttons*.

Clicking it a second time opens it for direct access.
See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* – 1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Ratio button

(Compressor Ratio) Sets the compressor ratio, i.e. 4.0:1 means for every 1 dB above the Compressor Threshold the gain will be reduced 4 dB. (Valid range: **1.0:1** – **20.0:1**, Value step: 0.1)

Ratio button Shortcuts

Clicking the button the first time selects it. This allows the value to be modified by the ***Inc*** and ***Dec*** *buttons*.

Clicking it a second time opens it for direct access.
See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Gain button

(Make up Gain Setting) Used to compensate for the gain reduction caused by the action of the compressor. (Valid range: **0.0** – **20.0 dB**, Value step: 0.1)

Gain button Shortcuts

Clicking the button the first time selects it. This allows the value to be modified by the ***Inc*** and ***Dec*** *buttons*.

Clicking it a second time opens it for direct access.
See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* – 1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Copy Compress button

This is used to save you time and copy all compressor values to the current channel from another specified channel. To copy the settings from one compressor to another, perform the following:

- Go to the channel you want to copy the settings to.
- Press the ***Copy Compress*** *button*.
  (A data entry field is displayed.)
- Using the keypad, enter the channel that you want to copy the compression settings from and press the ***ENTER*** *key*. (The settings are copied and the page is updated.)
- Repeat 1 thru 3 for each additional channel you want to copy settings to.

Inc button

Increments the selected parameter by its step value.

Dec button

Decrements the selected parameter by its step value.

Digital Input (#) – EQ page

Page purpose: Requires **EFFECTS PACKAGE** – This page maintains the EQ settings for each digital input channel.

How to get here:

- (***INPUT*** *key* → ***Analog Inputs Toggle*** *button* {=*Digital*} → ***Channel*** *button* → ***EQ*** *button*)
- (***MENU*** *key* → ***Input Configure*** *button* → ***Analog Inputs Toggle*** *button* {=*Digital*} → ***Channel*** *button* → ***EQ*** *button*)

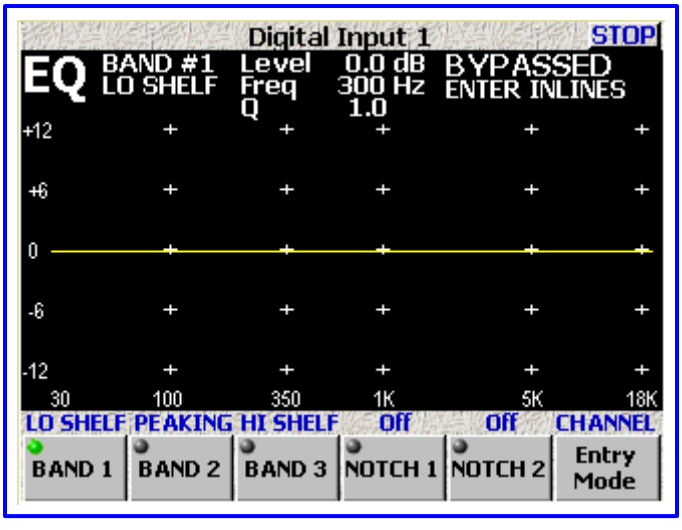


Figure 2-51 Digital Input (#) - EQ page

Page Notes

- See ***– Effects Package and More*** {**p.142**} for the theory behind using the Equalization processor.
  ** Coming Soon **
- While in this page with the ***Entry Mode*** *button* set to **CHANNEL**, pressing a number (1 – 8) causes the appropriate Analog channel EQ to be displayed.
- Once the parameters for a band/notch have been entered, press the ***ENTER*** *key*. The status indicator (upper right corner), changes to **INLINE**, meaning that it is now active. If you press ***ENTER*** once again, the status indicator changes back to **BYPASSED**, meaning that it is now inactive.
- Default settings:
  - Band #1 – Type: **Lo Shelf**, Level: **0.0 dB**, Freq: **300 Hz**, Q: **1.0**
  - Band #2 – Type: **Peaking**, Level: **0.0 dB**, Freq: **2000 Hz**, Q: **1.0**
  - Band #3 – Type: **Hi Shelf**, Level: **0.0 dB**, Freq: **5000 Hz**, Q: **1.0**
  - Notch #1 – Type: **Off**, Level: **-96.0 dB**, Freq: **60 Hz**, Q: **9.9**
  - Notch #2 – Type: **Off**, Level: **-96.0 dB**, Freq: **120 Hz**, Q: **9.9**

EQ page Level Shortcuts

- ***ENTER*** *key* – alternately enables (inline) and disables (bypassed) ALL EQ settings for the current channel. When a channel's EQ has been bypassed, the settings are still maintained until they are specifically modified.
- ***RIGHT ARROW*** *key* – advances to the next filter band (note the green light in the buttons on the bottom of the page).
- ***LEFT ARROW*** *key* – moves to the previous filter band.
- ***UP ARROW*** *key* – changes the current band's filter type:
  - Band 1 – 3 are band filters selectable as **Lo Shelf**, **Hi Shelf**, **Peaking** or **Off**.
  - Notch 1 & 2 are notch filters selectable as **Off** or **On**.
- ***U*** *key* – resets the ***Level*** *field* of all bands of the current channel to unity (**0.0**), effectively negating them.
- ***L*** *key* – changes focus to the ***Level*** *field*.
- ***F*** *key* – changes focus to the ***Frequency*** *field*.
- ***Q*** *key* – changes focus to the ***Q*** *field*.
- ***E*** *key* – advances to the ***EQ Memory*** *page*.
- ***R*** *key* – resets the ***Level***, ***Frequency*** and ***Q*** *fields*
- ***BACKSPACE*** *key* – advances to the ***EQ Memory*** *page*.

EQ Memory page Shortcuts

- ***1*** *thru* ***5*** *keys* – loads/saves (depending on the mode) in the respective memory.
- ***E*** *key* – exits the ***EQ*** *page* and returns to the ***Digital Input (#) page*** {**p.92**} for this channel.
- ***BACKSPACE*** *key* – returns to the ***EQ*** *page*.

Band/Notch (#) field

Indicates which band/notch filter of the current channel is currently being displayed

Level field

Establishes/stores the level used by the associated band.
(Valid range: **-24.0** – **+24.0 dB**, Value step: **0.1**)

Level field Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Bypassed/Inline flag

Displays the status of the associated equalization filter, **Bypassed** or **Inline**.

Band Type flag

Displays the current band's type, as selected by the ***Band*** or ***Notch*** *button*.

Frequency field

Establishes/stores the frequency used by the associated band.
(Valid range: **20** – **20000 Hz**, Value step: **1**)

Frequency field Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Q field

Establishes/stores the Q factor used by the associated band.
(Valid range: **0.5** – **9.9**, Value step: **0.1**)

Q field Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Equalization graph

Displays, in graphic format, the result of all equalization components on the channel.

Band buttons

Cycles through the type of band to be applied to that band:

- **Off** – Turns off the current band
- **LO SHELF** – Sets the current band to a Low Shelf filter
- **HI SHELF** – sets the current band to a High Shelf filter
- **PEAKING** – sets the current band to a Peaking filter.

Notch buttons

Toggles the notch filter **On** or **Off**.

Entry Mode button

Cycles through the following list to select which element of the band/notch is to be modified:

- **CHANNEL** – Causes the appropriate EQ channel to be displayed.
- **LVL/FREQ** – The following keys are active:
  - **2** *key* – adds **0.4** to the ***Level*** *field*.
  - **8** *key* – subtracts **0.4** from the ***Level*** *field*.
  - ***6*** *key* – adds the step value to the ***Frequency*** *field*, based on the frequency range:
    - 30 to 350 – Step: **5**
    - 380 to 1000 – Step: **20**
    - 1000 to 1100 – Step: **100**
    - 1100 to 1700 – Step: **200**
    - 1700 to 2100 – Step: **100**
    - 2100 to 3300 – Step: **200**
    - 3300 to 4100 – Step: **100**
    - 4100 to 5100 – Step: **200**
    - 5100 to 5400 – Step: **300**
    - 5400 to 6600 – Step: **400**
    - 6600 to 8200 – Step: **200**
    - 8200 to 13000 – Step: **400**
    - 13000 to 16400 – Step: **200**
    - 16400 to 20000 – Step: **400**
  - ***4*** *key* – subtracts the step value to the ***Frequency*** *field*, based on the frequency range:
    - 30 to 340 – Step: **5**
    - 340 to 900 – Step: **20**
    - 900 to 4800 – Step: **100**
    - 4800 to 20000 – Step: **200**
- **LVL** – Causes changes to be applied to the ***Level*** *field*
- **FREQ** – Causes changes to be applied to the ***Frequency*** *field*.
- **Q** – Causes changes to be applied to the ***Q*** *field*

Digital Input (#) – BUS page

Page purpose: This page maintains the BUS settings for each digital recording track.

How to get here:

- (***INPUT*** *key* → ***Analog Inputs Toggle*** *button* {=*Digital*} → ***Channel*** *button* → ***BUS*** *button*)
- (***MENU*** *key* → ***Input Configure*** *button* → ***Analog Inputs Toggle*** *button* {=*Digital*} → ***Channel*** *button* → ***BUS*** *button*)

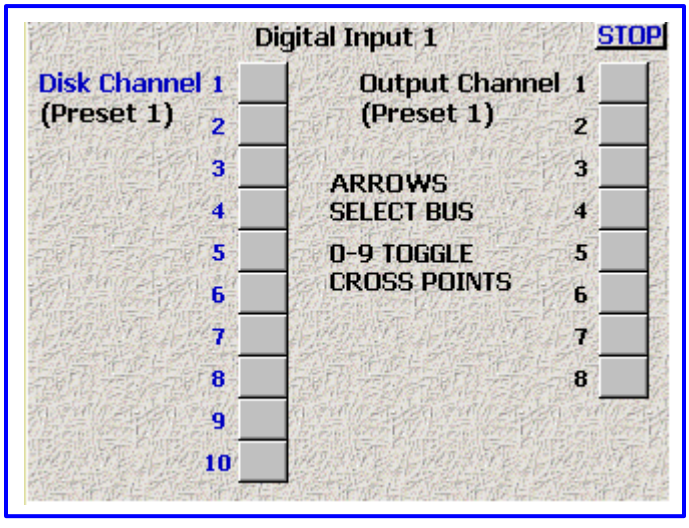


Figure 2-52 Digital Input (#) - BUS page

Page Notes

- The indicator's meaning:

Indicator	*Description*
Black D	Digital input post-fader
Black D with Line	Digital input post-fader with signal phase inverted
White D	Digital input pre-fader
White D with Line	Digital input pre-fader with signal phase inverted

Table 2-6 Digital Input (#) BUS Indicator Descriptions

Page Level Shortcuts

- ***LEFT/RIGHT ARROW*** *keys* – select which bus (Disk Channel vs. Output Channel)
- ***1 – 9*** and ***0*** *keys* – cycles cross-points
- ***E*** *key* – exits the ***BUS*** *page* and returns to the ***Digital Input (#) page*** {**p.92**} for this channel

Disk Channel buttons

Assigns the associated input to one or more of the recorder's tracks.

Output Channel buttons

Assigns the associated input directly to one or more of the output channels.

Input Configure page (Line Lvl Inputs selected)

Page purpose: Requires **FUSION-12** - It sets the parameters of the line-level inputs.

How to get here:

- (***INPUT*** *key* **> *Analog Inputs Toggle*** *button* {=*Line Lvl*})
- (***MENU*** *key* **> *Input Configure*** *button* **> *Analog Inputs Toggle*** *button* {=*Line Lvl*})

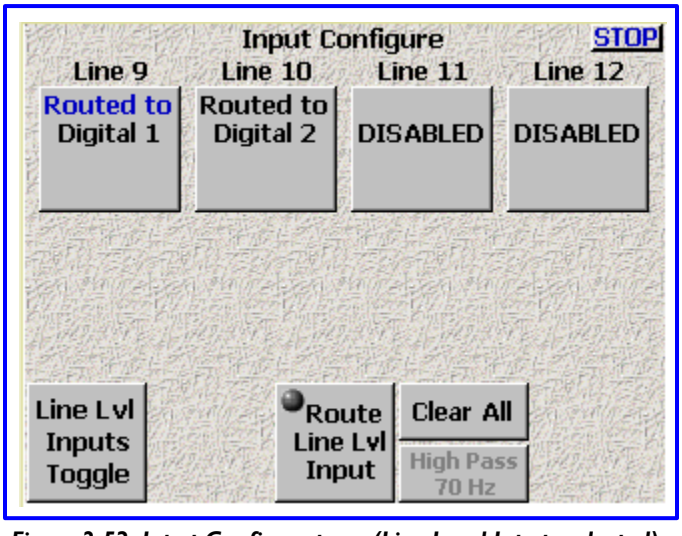


Figure 2-53 Input Configure page (Line Level Inputs selected)

Page Notes

None

Page Level Shortcuts

- ***1*** *–* ***8*** *keys* – the same as clicking on analog channel buttons 1 – 8.

Line Level Channel buttons

Pressing it re-routes a Line-Level Input to the appropriate Digital Input, but only after the ***Route Line Lvl Input*** *button* has been pressed. Default settings: DISABLED

NOTE: Since pressing this button routes each line-level input to the appropriate digital input, you will need to use the associated digital filtering and effects package for those inputs.

Analog/Digital/Line Lvl Inputs Toggle button

Toggles this page between the ***Input Configure page (Analog Inputs selected)*** {**p.80**}, Input ***Configure page (Digital Inputs selected)*** {**p.90**} and ***Input Configure page (Line Lvl Inputs selected)*** {**p.100**}.

Route Line Lvl Input button

Pressing this button allows routing line 9 thru 12 to the appropriate digital channel.

Clear All button

This button provides a convenient way to clear all the settings, and resets this page back to the factory default settings.

Analog/Digital Input Delay page

Page purpose: This page allows you to set a digital delay for any of the analog or digital inputs.

How to get here:

Analog

- (***INPUT*** *key* → ***Adjust Delay*** *button*)
- (***MENU*** *key* → ***Input Configure*** *button* → ***Adjust Delay*** *button*)

Digital

- (***INPUT*** *key* → ***Analog Inputs Toggle*** *button* {=*Digital*} → ***Adjust Delay*** *button*)
- (***MENU*** *key* → ***Input Configure*** *button* → ***Analog Inputs Toggle*** *button* {=*Digital*} → ***Adjust Delay*** *button*)

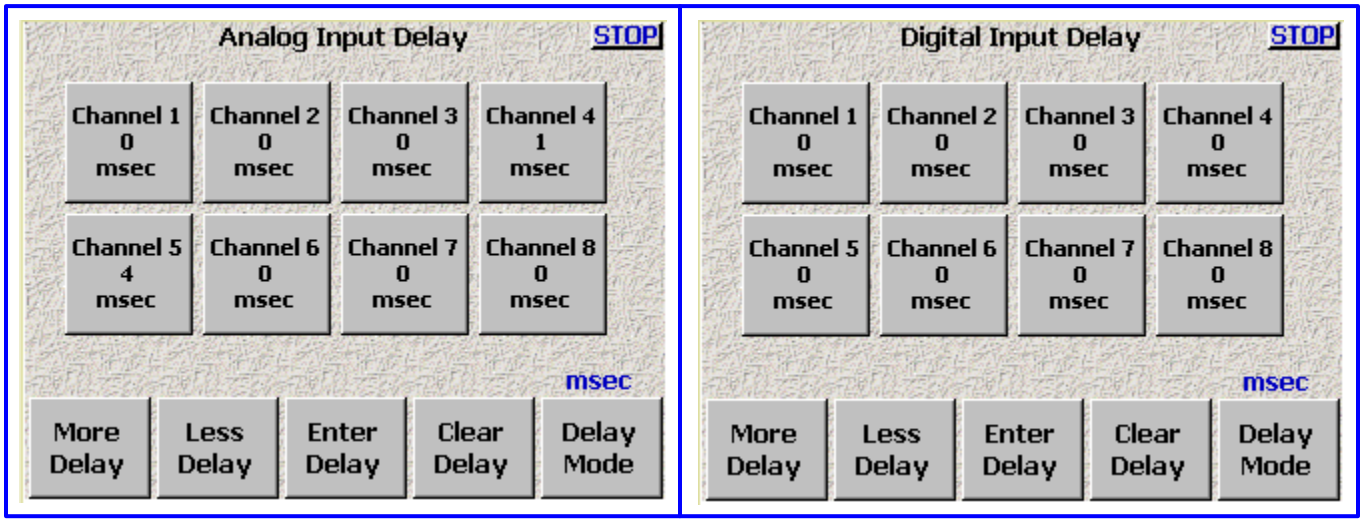


Figure 2-54 Analog/Digital Input Delay page

Page Notes

- See – *Effects Package and More* {**p.142**} for the theory behind using the Delay processor.

** Coming Soon **

Page Level Shortcuts

0 *–* ***9*** *keys* – opens the data entry field for the currently selected (highlighted) button (see ***Enter Delay*** *button* ***Shortcuts***). Type the remainder of the number and press the ***ENTER*** *key*.

Channel buttons

- Unit = **msec** – (Valid range: **0** – **40**, Value step: 1)
- Unit = **samples** – **Valid range** based on **Sampling-rate**

0 – 1764	44100
0 – 1919	47952
0 – 1920	48000
0 – 1922	48048
0 – 3528	88200
0 – 3840	96000
0 – 3844	96096
0 – 7680	192000

More Delay button

Increments the selected parameter by its step value.

Less Delay button

Decrements the selected parameter by its step value.

Enter Delay button

Directly enter the value and press the ***ENTER*** *key*.

Enter Delay button Shortcuts

See: *Common Data Entry Field Shortcuts List* {**p.146**}

Clear Delay button

Resets all of the channels to zero at one time.

Delay Mode button

Toggles between **msec** and **samples**.

> **NOTE:** It is not possible to have the channels' delay values in different units (**msec** and **samples**). If you enter a value on one of the buttons and change the unit, the previously entered value(s) will be rounded (up or down) to fit the new unit. So, pick one of the units and stick with it!

Adjusting the Delay

1. Press the ***Channel*** *button* for the channel you want to adjust.
   The button changes to white indicating it is the selected channel.
2. Press either ***More Delay***, ***Less Delay*** or ***Enter Delay***.
3. Repeat steps 1 & 2 until all channels have been adjusted.

> **NOTE:** When using radio microphones, which have an inherent 0 to 8 ms delay, you can minimize phasing anomalies between digital and analog equipment by adding the appropriate delay to the analog inputs.

Analog/Digital Input Trim page

Page purpose: This page allows you to individually adjust the gain on each of the 8 analog inputs and the camera return input.

How to get here:

Analog

- (***INPUT*** *key* → ***Adjust Trim*** *button*)
- (***MENU*** *key* → ***Input Configure*** *button* → ***Adjust Trim*** *button*)

Digital

- (***INPUT*** *key* → ***Analog Inputs Toggle*** *button* {=*Digital*} → ***Adjust Trim*** *button*)
- (***MENU*** *key* → ***Input Configure*** *button* → ***Analog Inputs Toggle*** *button* {=*Digital*} → ***Adjust Trim*** *button*)

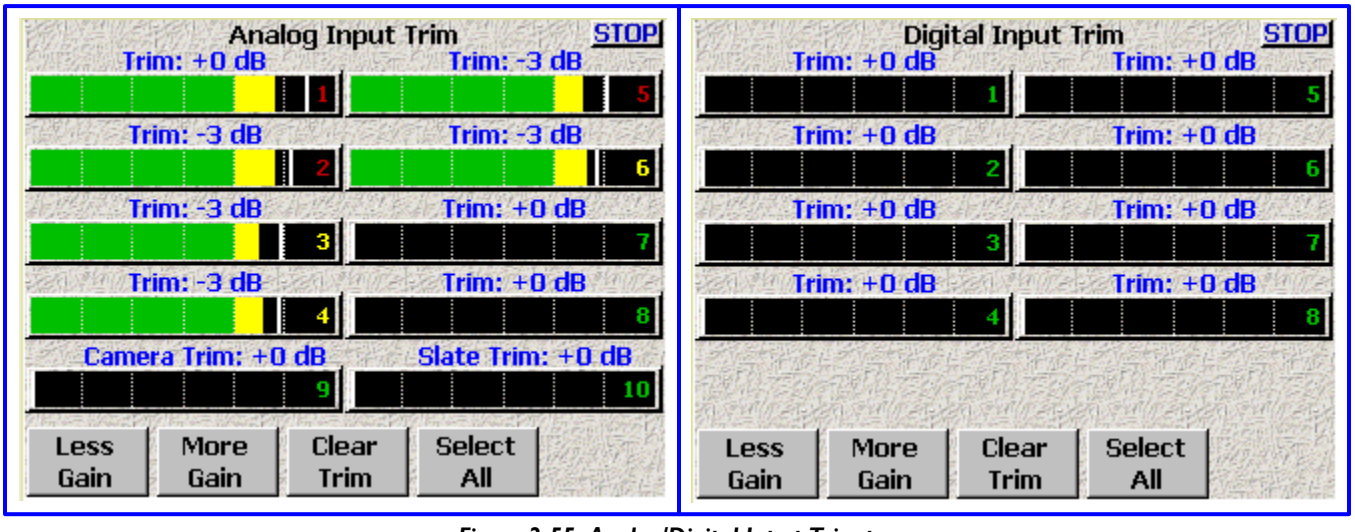


Figure 2-55 Analog/Digital Input Trim page

Page Notes

None

Page Level Shortcuts

None

Input Trim fields

Displays the current Trimmer value and by clicking on it allows you to change the value with the ***Less Gain*** or ***More Gain*** *buttons.* (Valid range: **-20** – **0** – **+30 dB**, Value step: 1)

Input Level meters

Allow you to see graphically how the signals compare to each other. The scale is in dB.

Less Gain button

Decrements the selected parameter by its step value.

More Gain button

Increments the selected parameter by its step value.

Clear Trim button

Clears all the entered trims.

Select All button

This selects all of the channels to make changes to all at the same time.

Adjusting the Trim

1. Press the ***Channel*** *button* for the channel you want to adjust.
   The Trim value for the channel turns Blue indicating it is the selected channel.
2. Press either ***More Gain*** or ***Less Gain***.
3. Repeat steps 1 & 2 until all channels have been adjusted.

My Fusion page

Page purpose: It sets the parameters for all the recording devices, including the primary drive, the internal backup drive and any external FireWire drives.

How to get here:

- (***MENU*** *key* → ***My Fusion*** *button*)

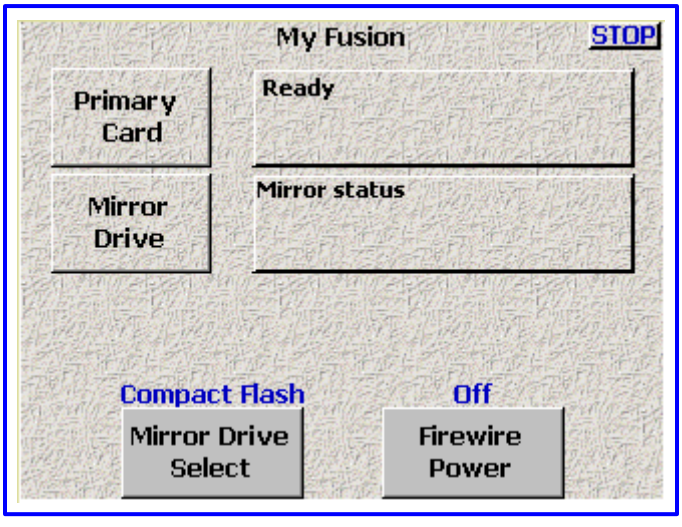


Figure 2-56 My Fusion page

Page Notes

- The selections for the CompactFlash drive or the external FireWire drives allow you to set options independently of the primary drive settings. You can set different options for all of the drives. You can use an external FireWire drive.
- Mirroring is done simultaneously onto the internal backup drive. Eight tracks can be mirrored to it in real time at 24-bit resolution with a 48 kHz sampling-rate.

Page Level Shortcuts

None

Primary Card button

Pressing it takes you to the ***Primary Card Utilities page*** {**p.105**}.

Primary Card Status button

It displays the current status of the Primary Card.

Mirror Drive button

Pressing it takes you to the ***Mirror Drive page*** {**p.111**}.

Mirror Drive Status button

It displays the current status of the Mirror Drive.

Mirror Drive Select button

Toggles between **Compact Flash** and **Firewire**.

Firewire Power button

Toggles between **On** and **Off**.

Primary Card Utilities page

Page purpose: This page provides options for managing folders and files on the primary drive.

How to get here:

- (***MENU*** *key* → ***My Fusion*** *button* → ***Primary Card*** *button*)

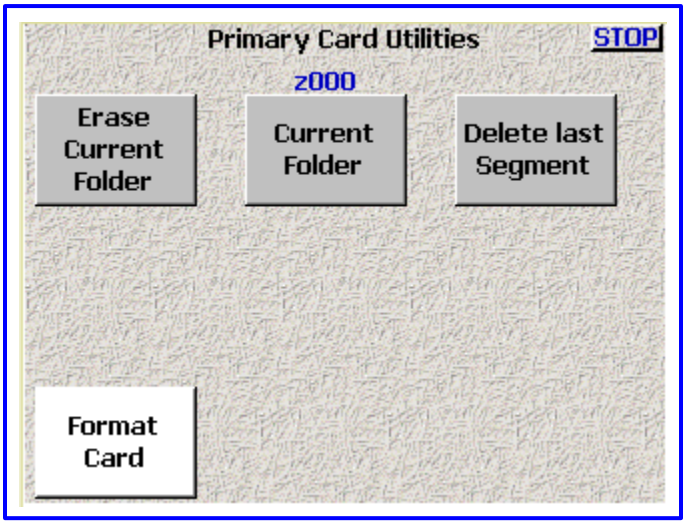


Figure 2-57 Primary Card Utilities page

Page Notes

None

Page Level Shortcuts

None

Erase Current Folder button

Pressing this button both erases and formats the currently selected folder. Once you press it, a confirmation dialog box appears. This helps prevent the accidental deletion of material.

Current Folder button

Pressing it takes you to the ***Disk Folders page*** {**p.106**}.

Delete Last Segment button

Erases the previous segment. Once you press it, a confirmation dialog box appears.

Format Drive button

Pressing it takes you to the ***Format Menu Warning page*** {**p.109**}.

Disk Folders page

Page purpose: Lists all of the folders on the primary drive and allows you to manage all folders /directories on it.

How to get here:

- (***MENU*** *key* → ***My Fusion*** *button* → ***Primary Card*** *button* → ***Current Folder*** *button*)

WARNING: Do not change folders while mirroring is turned 'ON'. Doing so can cause the mirroring process to skip files or cause the Fusion to stop responding.

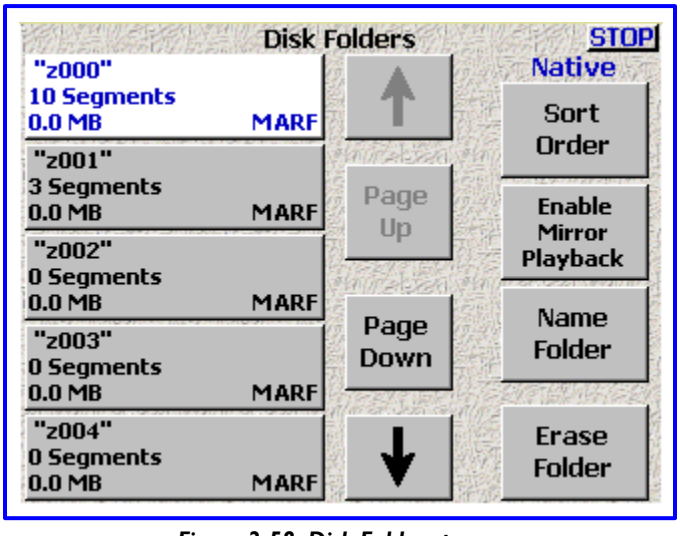


Figure 2-58 Disk Folders page

Page Notes

None

Page Level Shortcuts

None

Folder buttons

Pressing it once while it is not highlighted selects it as the destination folder for audio files recorded from then on.

Pressing it while it is highlighted takes you to the ***Folder ID Contents page*** {**p.108**}, and displays its contents.

Each ***Folder*** *button* contains information about the contents of the respective folder, including: name of the folder, number of segments in the folder, total size of all Segments, and its file format (always **MARF**).

In most cases, folder numbers are equivalent to your sound roll numbers.

Up Arrow button

Navigate up through the list of folders, one folder at a time.

Sort Order button

- **Native** – Sorted by the sequence it was created.
- **By Name** – Sorted by the name.

Page Up button

Navigate up through the list of folders, five folders at a time.

Mirror Playback button

If the Fusion has a BACKUP CF card installed, this enables you to playback mirrored data from it.
Default setting: disabled.

IMPORTANT: This playback feature is limited and is only for periodic checking of files. Playback from an external drive may not be able to keep up with the playback data rate and may stop after several seconds of playback if the data buffer underruns.

Page Down button

Navigate down through the list of folders, five folders at a time.

Name Folder button

Opens a text entry page so you can apply an alphanumeric name to the current folder. This name will usually be the sound roll number. This is currently limited to 8 characters. At the same time that the folder in the Primary Card is renamed, it is also renamed in the mirror drive.

Name Folder button Shortcuts

See: Keyboard page {p.123}.

Down Arrow button

Navigate down through the list of folders, one folder at a time.

Erase Folder button

Pressing this button both erases and formats the currently selected folder. Once you press it, a confirmation dialog appears. This helps prevent the accidental deletion of material.

When it comes time to delete folders, you can sort by date to easily select the oldest folder for deletion.

Folder ID Contents page

Page purpose: This page displays and maintains data for each Take.

How to get here:

- (***MENU*** *key* → ***My Fusion*** *button* → ***Primary Card*** *button* → ***Current Folder*** *button* → ***Folder*** *button*)

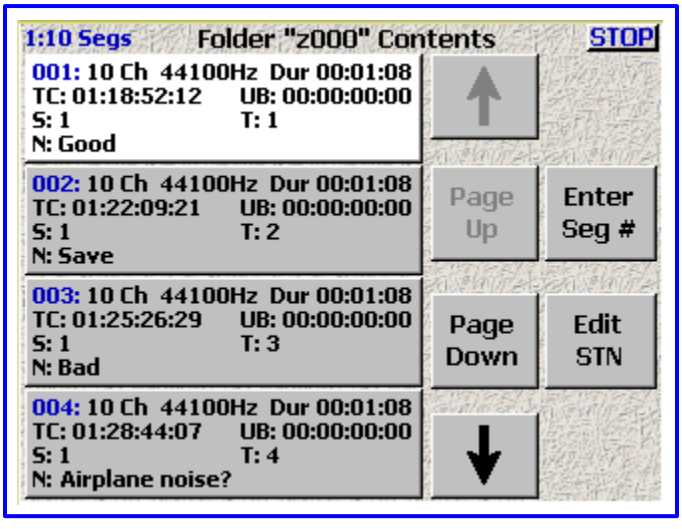


Figure 2-59 Folder ID Contents page

Page Notes

None

Page Level Shortcuts

None

Segment of Segments field

Displays the current segment # and the total number of segments in the current folder. If the current segment # is larger than the total, the data will be applied to the next take, when recording starts.

Take buttons

Pressing it while it is not highlighted, highlights it

Pressing it while it is highlighted, takes you to the *Scene Take Note page* {**p.120**} for that file.

Each ***Take*** *button* contains information about the contents of each file, including: the file ID (segment #), number of recorded tracks, sampling-rate, duration, timecode start, user-bits, Scene, Take and Note.

Up Arrow button

Navigate up through the list of files, one file at a time.

Page Up button

Navigate up through the list of files, four files at a time.

Enter Seg # button

Navigate directly to a specified audio Take (segment).

Enter Seg # button Shortcuts

See: *Common Data Entry Field Shortcuts List* {**p.146**}

Page Down button

Navigate down through the list of files, four files at a time.

Edit STN (Scene, Take, Note) button

Pressing this button takes you to the *Scene Take Note page* {**p.120**}.

Down Arrow button

Navigate down through the list of files, one file at a time.

Format Menu Warning page

Page purpose: This page is the final safety check to prevent accidentally erasing and reformatting the primary drive, preparing it to accept data.

How to get here:

- (***MENU*** *key* → ***My Fusion*** *button* → ***Primary Card*** *button* → ***Format Card*** *button*)

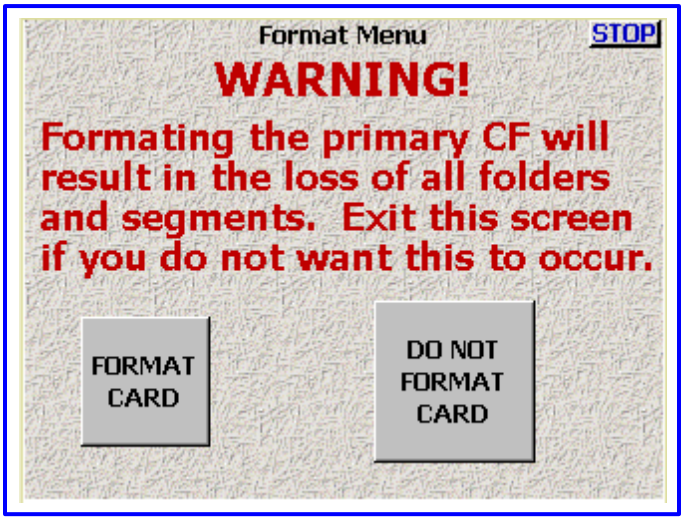


Figure 2-60 Format Menu Warning page

Page Notes

None

Page Level Shortcuts

None

Format Card button

Pressing this button takes you to the ***Formatting dialog box*** {**p.110**}.

Do Not Format Card button

Pressing it takes you back to the ***Primary Card Utilities page*** {**p.105**}.

Formatting dialog box

Page purpose: Performs the Erase and Format process for the primary drive.

How to get here:

- (***MENU*** *key* → ***My Fusion*** *button* → ***Primary Card*** *button* → ***Format Card*** *button* → ***Format Card*** *button*)

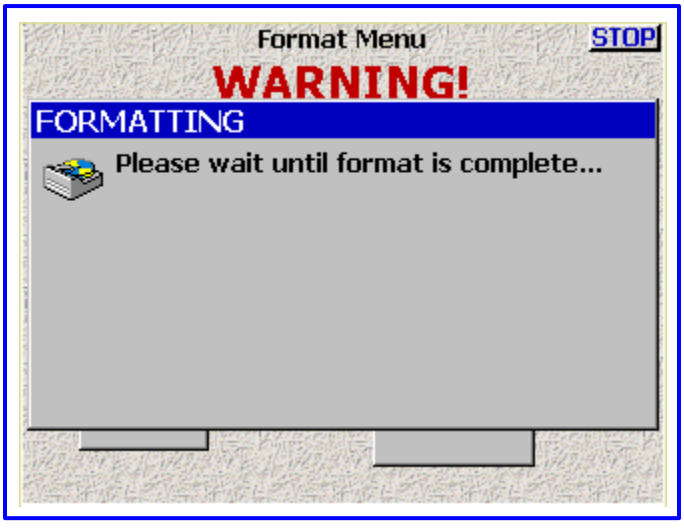


Figure 2-61 Formatting dialog box on top of Format Menu Warning page

Page Notes

The following is an example of what is displayed in the ***FORMATTING*** dialog. Be aware that this will change based on the size of the media being formatted:

```
Formatting Internal Disk
Mounting Internal Disk
 BytesPerSector=512 SectorsPerCluster=64
Counting Free Clusters…
10%  20%  30%  40%  50%  60%  70%  80%  90%  100%   489345 Free
Clusters
Creating ZDIR.ZZZ
Creating/INTHD/ZFILES/ZBLK0000.ZAX
            ..........
Creating/INTHD/ZFILES/ZBLK0013.ZAX
Creating final wrapper file  </INTHD/ZFILES/ZBLK014.ZAX>
Copying FAT…
Erasing Folder z001
    ..........
Erasing Folder z127
WrDimg2Disk folder[1] Seg 000
Format is complete.  RE-START Fusion NOW
```

Page Level Shortcuts

None

Mirror Drive page

Page purpose: This page sets the options for mirroring data from the primary drive onto other media through the FireWire port or the internal BACKUP CF drive.

How to get here:

- (***SHIFT* + *MIRROR*** *keys*)
- (***MENU*** *key* → ***My Fusion*** *button* → ***Mirror Drive*** *button*)

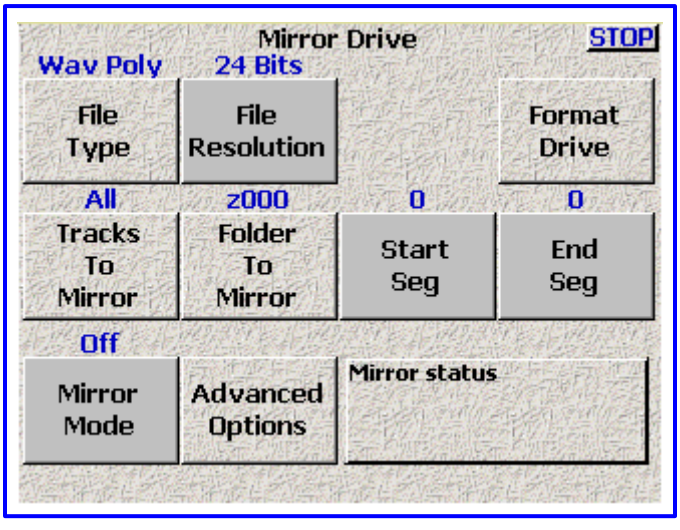


Figure 2-62 Mirror Drive page

Page Notes

None

Page Level Shortcuts

- Typing a number opens a ***Segment Number*** *field* (see ***Start Seg*** *button*). Type the remainder of the number and press the ***ENTER*** *key*. Once entered, the system enters it as the ***Start Seg*** *button*'s data.
- Typing a second number opens a second ***Segment Number*** *field* (see ***End Seg*** *button*). Type the remainder of the number and press the ***ENTER*** *key*. Once entered, the system enters it as the ***End Seg*** *button*'s data.

File Type button

Pressing it takes you to the *Mirror File Type page* {**p.113**}. Default setting: **Wav Poly**

File Resolution button

- **24 Bits** – the mirror copy is 24 bits.
- **16 Bits** – the mirror copy is 16 bits.

Format Drive button

Pressing it takes you to the *Format Mirror Drive page* {**p.114**}.

Tracks to Mirror button

Pressing it takes you to the *Tracks to Mirror page* {**p.115**}. Default setting: **All**

Folder to Mirror button

Pressing it takes you to the *Mirror Folders page* {**p.116**}.

Start Seg button

Allows you to select the first segment to mirror. This setting is automatically updated when a disc is inserted. If the Fusion sees segment 5 is already on the disc the Start Seg is set to 6.

Start Seg field Shortcuts

See: *Common Data Entry Field Shortcuts List* {**p.146**}

NOTE: A quick method to ensure your disc is readable is to eject and re-insert your mirrored disc after you are finished mirroring. Then check that the Fusion recognizes the format and the ***Start Seg*** *field* is set to 1 past the last recorded segment.

End Seg button

Allows you to select the last segment to mirror. In most cases, the End Seg can be left at **999**.

End Seg field Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Mirror Mode button

Enables/disables the 'Mirroring' process, which writes the audio to the selected mirror device. Once it is turned On, it immediately starts the mirror process.

- **Off** – Disables the mirror process.
- **On-NORMAL** – Enables the mirror process, but only while not recording.
- **On-CONTIN.** – (continuous) Enables the mirror process. If adequate resources are available, it will continue while recording the audio.

IMPORTANT: You must set the mirroring parameters before you turn **On** mirroring. **Do not** change folders while mirroring is turned **On**. Doing so can cause the mirroring process to skip files or cause the Fusion to stop responding.

IMPORTANT: You must turn **Off** mirroring to change any of the parameters. When the mirror process is active, all other buttons are disabled until the mirroring process has completed.

Advanced Options button

Pressing it takes you to the ***Advanced Mirror Options page*** {**p.117**}.

Mirror Drive Status button

This button functions in two ways:

- It displays the current status of the Mirror Drive and the Mirror process.
- When pressed, you are returned to the ***My Fusion page*** {**p.104**}.

Mirror File Type page

Page purpose: This page maintains the file format to be used for the audio files mirrored to the backup device.

How to get here:

- (***SHIFT + MIRROR*** *keys* → ***File Type*** *button*)
- (***MENU*** *key* → ***My Fusion*** *button* → ***Mirror Drive*** *button* → ***File Type*** *button*)

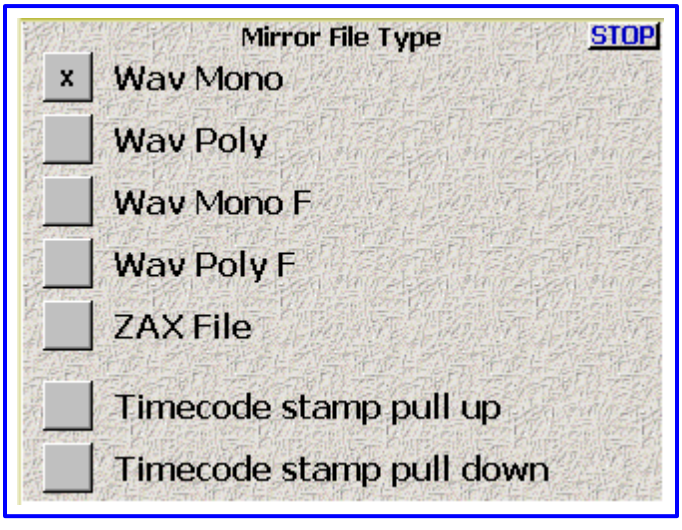


Figure 2-63 Mirror File Type page

Page Notes

None

Page Level Shortcuts

None

File Type buttons

Select the file type to be written to the mirrored device:

- ***Wav Mono*** *button* – (BWF-M) This creates a separate WAV file for each track recorded. When using this option with UDF formatted DVD-RAM discs, the files and discs may not be readable on Mac OS computers.
- ***Wav Poly*** *button* – (BWF-P) This creates a single file combining all the tracks recorded.
- ***Wav Mono F*** *button* – This format is a custom format to ensure recorded audio will playback correctly on Fostex DV40 equipment.
- ***Wav Poly F*** *button* – This format is a single file combining all the tracks recorded with the custom changes necessary to playback correctly on a Fostex DV40.

NOTE: The Wav Poly F mode always stamps the WAV file at 48000 Hz even if the file was recorded at 48048 Hz. Selecting this mode when recording at 48000 Hz has no effect.

- ***ZAX File*** *button* – This format is a custom non-lossy format. Creates .ZAX files, which require the use of Zaxcom's ZAX File Utility to convert to standard broadcast wave or MP3 files.

Pull Up/Down buttons

Select one of these only if the timecode on the mirrored files needs to be pulled up or down:

- ***Timecode stamp pull up*** *button* – Pulls up timecode on mirrored audio. This option is used in conjunction with the file type.
- ***Timecode stamp pull down*** *button* – Pulls down timecode on mirrored audio. This option is used in conjunction with the file type.

Default setting: neither selected

Format Mirror Drive page

Page purpose: This page warns the operator before s/he formats the mirror drive.

How to get here:

- (***SHIFT + MIRROR*** *keys* → ***Format Drive*** *button*)
- (***MENU*** *key* → ***My Fusion*** *button* → ***Mirror Drive*** *button* → ***Format Drive*** *button*)

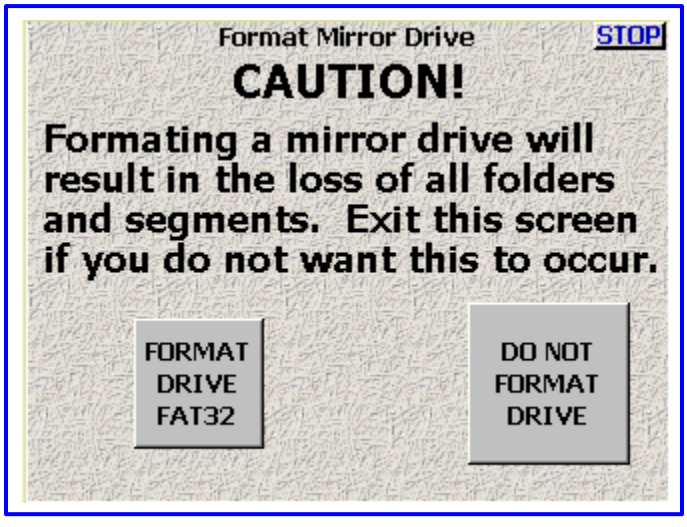


Figure 2-64 Format Mirror Drive page

Page Notes

None

Page Level Shortcuts

None

Format Drive FAT32 button

A dialog box appears to verify that you really do want to format the drive. Once you have answered yes, it wipes and reformats the mirror drive. Once this is started, it takes you back to the ***Mirror Drive page*** {**p.111**}. The ***Drive Status*** *button* there displays the process of formatting the drive

Do Not Format Drive button

Pressing it takes you back to the ***Mirror Drive page*** {**p.111**}.

IMPORTANT: DVD-RAM discs come pre-formatted as UDF 2.0. While Fusion can write to these discs, many computers cannot read UDF2.0 discs. Always format discs using the Erase function in Fusion before using them. The Fusion displays "Non-Fusion" in the ***Mirror Drive Status*** *button* when the Fusion sees a disc that it did not format.

Tracks to Mirror page

Page purpose: This page maintains which tracks are to be written to the mirror drive.

How to get here:

- (***SHIFT + MIRROR*** *keys* → ***Tracks to Mirror*** *button*)
- (***MENU*** *key* → ***My Fusion*** *button* → ***Mirror Drive*** *button* → ***Tracks to Mirror*** *button*)

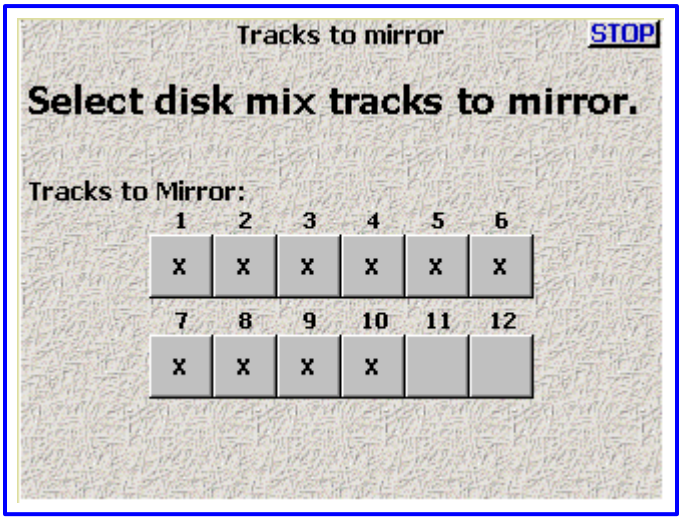


Figure 2-65 Tracks to Mirror page

Page Notes

If you have an audio Take with 3 tracks and you have all 12 tracks marked to mirror, the mirror will only create 3 tracks in the mirror copy. The lesson to take away from this: Always set this page to mirror all of the tracks.

Page Level Shortcuts

None

Tracks to Mirror buttons

Selects the tracks you wish to mirror. Default setting: all tracks

Mirror Folders page

Page purpose: Selects which folder you want to mirror.

How to get here:

- (***SHIFT + MIRROR*** *keys* → ***Folder to Mirror*** *button*)
- (***MENU*** *key* → ***My Fusion*** *button* → ***Mirror Drive*** *button* → ***Folder to Mirror*** *button*)

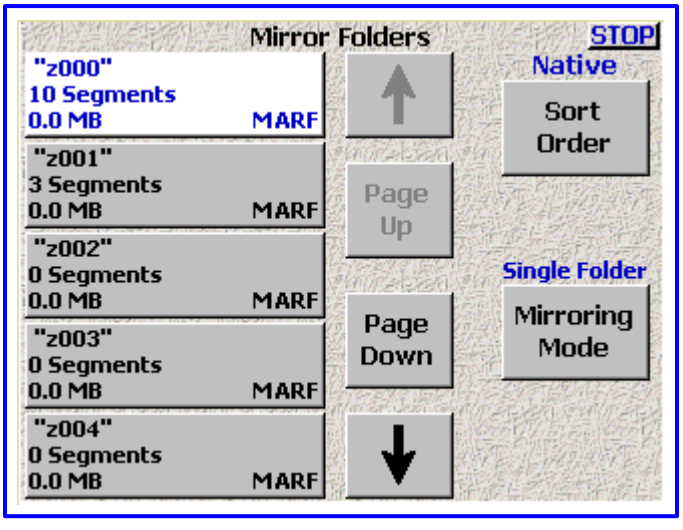


Figure 2-66 Mirror Folders page

Page Notes

None

Page Level Shortcuts

None

Folder buttons

Clicking on one of the folders, highlighting it, identifies it as the folder to mirror, or the folder to start mirroring.

Each ***Folder*** *button* contains information about the contents of each folder, including: name of the folder, number of segments in the folder, total size of all Segments, and its file format (always **MARF**).

In most cases, folder numbers are equivalent to your sound roll numbers.

Up Arrow button

Navigate up through the list of folders, one folder at a time.

Sort Order button

- **Native** – Sorted by the sequence it was created.
- **By Name** – Sorted by the name.

Page Up button

Navigate up through the list of folders, five folders at a time.

Page Down button

Navigate down through the list of folders, five folders at a time.

Mirroring Mode button

- **Single Folder** – Tells the system to mirror (copy) the one identified folder.
- **All Folders** – Tells the system to mirror all folders that have not been previously mirrored.

Down Arrow button

Navigate down through the list of folders, one folder at a time.

Advanced Mirror Options page

Page purpose: This page maintains the timecode offset and to create the Sound Report on the mirror drive.

How to get here:

- (***SHIFT + MIRROR*** *keys* → ***Advanced Options*** *button*)
- (***MENU*** *key* → ***My Fusion*** *button* → ***Mirror Drive*** *button* → ***Advanced Options*** *button*)

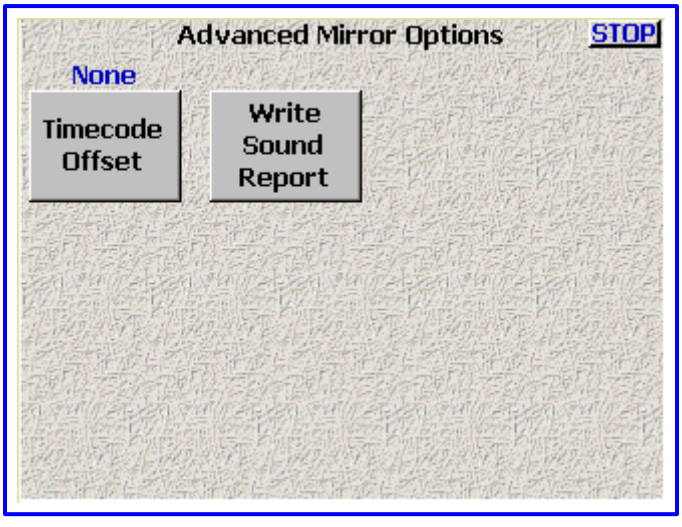


Figure 2-67 Advanced Mirror Options page

Page Notes

None

Page Level Shortcuts

None

Timecode Offset button

Opens up a dialog to accept the offset value.

- **None** (0)
- (Valid range: **-200 – +200 ms**, Value step: 1

NOTE: to enter a minus sign (–) press the zero key first, then the remainder of the number.

Write Sound Report button

Creates a sound report on the mirror drive. Once it has completed, **Done** is displayed.

Cue Mode page

Page purpose: This is the main playback page. It has two main uses:

1) To playback a Take for purposes of reviewing it for usability.
2) To playback a Take to answer a question for another Take.
3) To playback a Take from a wireless that had a "Hit", to re-record it.
4) To playback a Take for the purpose of re-mixing it.

To that end, you can select a Take by segment (index) number, timecode or to just Fast Forward or Fast Reverse. When you playback on Fusion you do not have to re-cue to where you where recording. You can hit record at anytime without fear of erasing a previously recorded Take.

How to get here:

- (***SHIFT + CUE*** *keys*)
- (***MENU*** *key* → ***Cue Mode*** *button*)

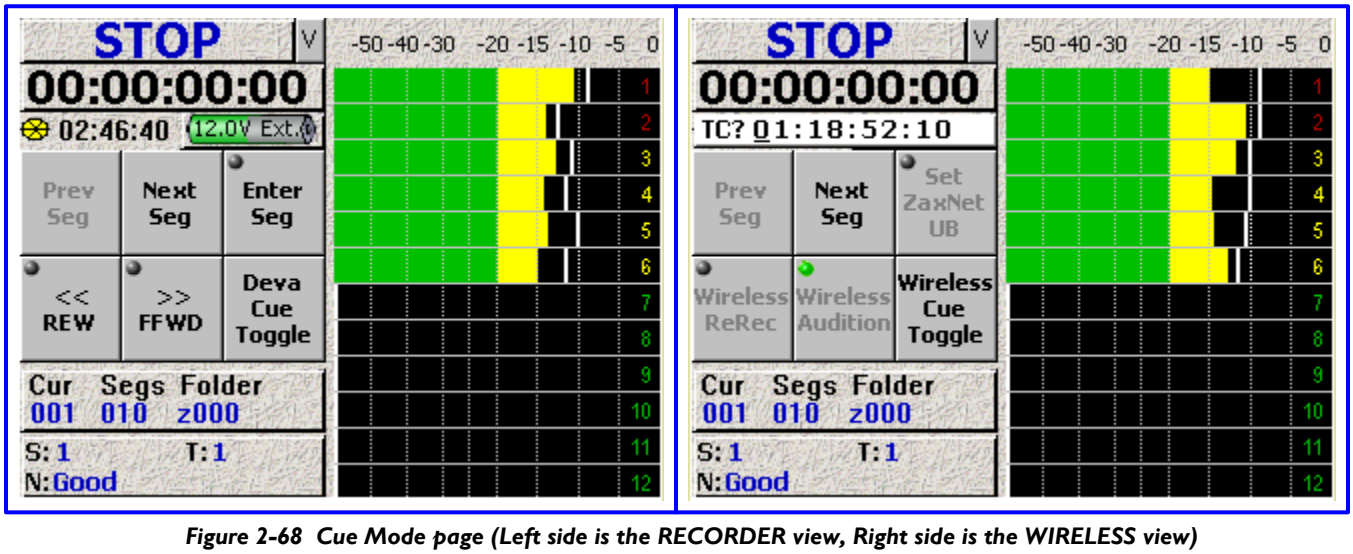


Figure 2-68 Cue Mode page (Left side is the RECORDER view, Right side is the WIRELESS view)

Page Notes

None

Page Level Shortcuts

- ***0 – 9*** *keys* – opens the ***Enter Segment*** data entry field (see ***Enter Segment data entry field***). Type the remainder of the number and press the ***ENTER*** *key*. Once entered, the system attempts to move to the day's recording, by the segment # entered. If the number entered is too high, the last available segment is displayed.

Enter Segment data entry field

This field only appears on top of the ***Disk*** *icon* after a number has been entered. This field is tied to the audio recording segment displayed in the ***Cur*** *field* of the ***Cur Tot Folder*** *button*

Enter Segment data entry field Shortcuts

See: *Common Data Entry Field Shortcuts List* {**p.146**}

Mode Status button

(Figure 2-68 displays **STOP**)
See the *Mode Status button* {**p.32**}.

View button

(Figure 2-68 displays **V**)
See the *View button* {**p.32**}.

Timecode button

(Figure 2-68 displays **00:00:00:00**)
Displays the timecode for the tracks being played. Pressing it takes you to the *Timecode page* {**p.50**} which has the current timecode.

Disk icon

(Figure 2-68 displays a spoked wheel with a Yellow highlight.)
See the *Disk icon* {**p.33**}.

Remaining Recording Time field

(Figure 2-68 displays **02:46:40**.)
See the *Remaining Recording Time field* {**p.33**}.

Battery icon button

(Figure 2-68 displays **12.0V Ext.** inside of the ***Battery*** *icon* and a color bar, indicating the state of charge.)
See the *Battery icon button* {**p.33**}.

Prev Seg button

Navigates to the next previous segment.

Next Seg button

Navigates to the next later segment.

Enter Seg button

Opens a window to directly enter a segment number.

<< REW button

For each click on the button, it moves backward @ 4 seconds and starts playing the Take forward.

>> FFWD button

For each click on the button, it moves forward @ 4 seconds and starts playing the Take.

Cue Toggle button

- **Deva Cue Toggle** – allows access to the Fusion's audio.
- **Wireless Cue Toggle** – allows access to the wireless audio.

Set ZaxNet UB button

Sets the User-bits that are broadcast with the ZaxNet timecode signal. This needs to be a unique value for the day, because it is one of the attributes (including starting timecode) used to locate the correct audio for Wireless Audition and Wireless Re-record.

Wireless ReRec button

Causes each transmitter to playback the audio for the selected segment and starts the Fusion's recorder to re-record the audio. Playback and recording does not stop at the end of the current segment; it will continue until you press the ***STOP*** *key* or the last recorded segment finishes.

Wireless Audition button

Replays the audio from each transmitter, for the currently selected segment without going into record.

Cur Tot Folder button

(Figure 2-68 displays on the first line **Cur Tot Folder**)
See the *Cur Tot Folder button*{**p.33**}.

S: T: N: button

(Figure 2-68 displays on the first line **S:1 T:7**)
See the *S: T: N: button* {**p.33**}.

Audio Level meters

(Figure 2-68 displays on the right half of the page)
See the *Audio Level meters* {**p.34**}.

Scene Take Note page

Page purpose: This page maintains the metadata associated with each Take.

How to get here:

- (***MENU*** *key* → ***Scene Take Note*** *button*)

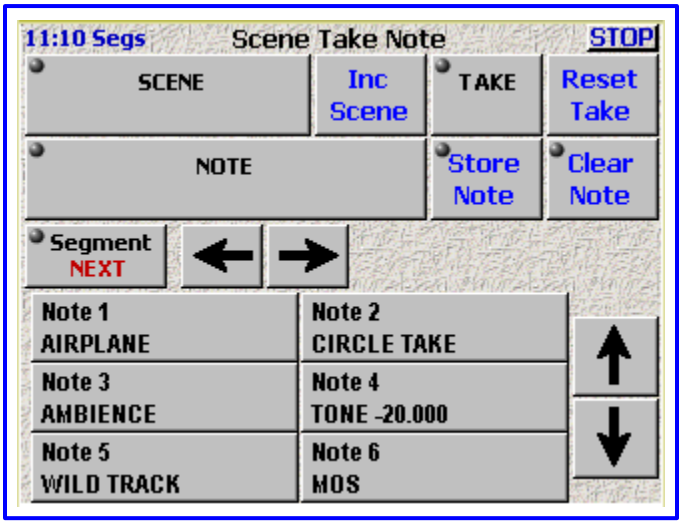


Figure 2-69 Scene Take Note page

Page Notes

- While in any field on this page, if you discover you don't want to commit the change you just made to the current field, press the ***MENU*** *key* or the ***ESC*** *key*.
- The Scene's Info continues from one Take to the next Take, until changed.
- The Take # is incremented from one Take to the next Take, until it is changed or reset, then it will automatically increment from the new starting point.
- The Note's info does not automatically continue from one Take to the next Take.

Page Level Shortcuts

- ***0 – 9*** *keys* – opens the ***Enter Segment*** data entry field (see ***Enter Segment data entry field***). Type the remainder of the number and press the ***ENTER*** *key*. Once entered, the system attempts to move to the day's recording, by the segment # entered. If the number entered is too high, the segment **NEXT** is displayed.
- ***LEFT/RIGHT ARROW*** *keys* – navigates from the current recording segment to the previous/next segment.
- ***UP/DOWN ARROW*** *keys* – scrolls up/down through the stored notes in the bottom of the screen.
- ***CTRL*** *key* + single digit number – inserts the stored note associated with the number into the current ***Note*** *field*.
- ***CTRL*** *key* + ***SHIFT*** *key* + two digit # – inserts the stored note associated with the number into the current ***Note*** *field*.
- ***ALT*** *key* + single digit number – stores the current ***Note*** *field* into the specified stored note.
- ***ALT*** *key* + ***SHIFT*** *key* + two digit # – stores the current ***Note*** *field* into the specified stored note.
- ***F8*** *key* – opens the ***Scene*** *field*
- ***F9*** *key* – opens the ***Take*** *field*.
- ***F10*** *key* – opens the ***Note*** *field*

Enter Segment data entry field

This field only appears on top of the ***Disk icon*** after a number has been entered. This field is tied to the first number in the ***Segment of Segments*** *field* and the ***Segment*** *button*.

Enter Segment data entry field Shortcuts

See: *Common Data Entry Field Shortcuts List* {**p.146**}

Segment of Segments field

Displays the current segment # and the total number of segments in the current folder. If the current segment # is larger than the total, the data will be applied to the next take, when recording starts.

Scene button

Pressing this button takes you to the ***Keyboard page*** {**p.123**} for **Enter Scene**. You can enter up to 12 alphanumeric characters.

Scene button Shortcuts

See: ***Keyboard page*** {**p.123**}, with the following exception(s):

- ***TAB*** *key* – jumps to the ***Take*** *field* for data entry

Inc Scene button

Increments the Scene number by one. It will even increment a letter (upper or lower case) to the next letter in the same case.

Take button

Pressing this button takes you to the ***Keyboard page*** {**p.123**} for **Enter Take**. You can enter up to 6 alphanumeric characters.

Take button Shortcuts

See: ***Keyboard page*** {**p.123**}, with the following exception(s):

- ***TAB*** *key* – jumps to the ***Note*** *field* for data entry

Reset Take button

Resets the Take # to 1.

Note button

Pressing this button takes you to the ***Keyboard page*** {**p.123**} for **Enter Note**. You can enter up to 20 alphanumeric characters.

Note button Shortcuts

See: ***Keyboard page*** {**p.123**}, with the following exception(s):

- ***TAB*** *key* – jumps to the ***Scene*** *field* for data entry

Store Note button

Allows you to store custom notes. To store a note do the following:

1. Press the ***Note*** *button* to open the ***Keyboard page*** {**p.123**} for **Enter Note**.
2. Press the ***Store Note*** *button*.
3. Press the ***Note (#)*** *button* where you want to store the note.

Stored notes can be used in any segment and folder.

Clear Note button

Allows you to clear any custom notes. You cannot clear any of the default notes stored in ***Note 1 – Note 8***.

Segment button

Allows you to select any existing segment to update the metadata. This data can be edited at any time. In order to update the metadata after the fact it must be stored on re-writeable media, i.e. DVD-RAM, HDD, etc. If segment **NEXT** is selected, the data will be applied to the next take, when recording starts.

Segment button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Left Arrow button

Navigates to the previous segment.

Right Arrow button

Navigates to the next available segment.

Stored Note buttons

Pressing one of these, places the note into the segment's Note metadata. There are 20 ***Stored Note*** *buttons* to hold the most common notes, instead of manually retyping them each time.

Up Arrow button

Scroll up through the stored notes.

Down Arrow button

Scroll down through the stored notes.

About Fusion page

Page purpose: This page displays the current hardware and software information, including: currently installed firmware version, serial number, options installed (Mix-12, EQ, etc.), total number of hours the unit has been powered up, hardware revision and memory information.

How to get here:

- (***MENU*** *key* → ***About Fusion*** *button*)

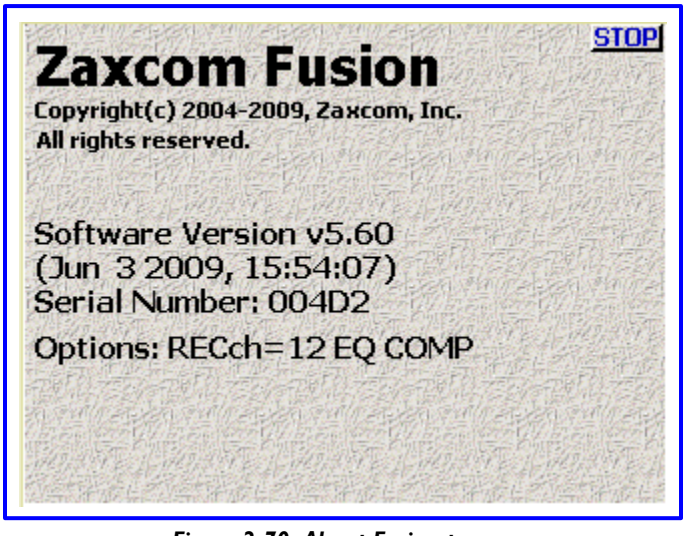


Figure 2-70 About Fusion page

Page Notes

- On the **Options:** line, **RECch =** is followed by the number of available recording channels.
  - If you see **EQ**, equalization is enabled.
  - If you see **COMP**, compression is enabled.
- The **Serial Number:** line is the same as on the Zaxcom sticker located next to the USB connector on the left side. This number also appears in the Sound report and each audio file. Why? you ask. If you are running 2 or more recorders on a show and one of them has a problem, this will tell you which unit it was. Also, If your unit is ever stolen and the files are turned in, Post facilities and personnel can be notified of the theft and be on the lookout for the serial number.
- The **Total power on time:** line (not shown above) indicates how many hours and minutes the unit has been running. This value can NOT be reset.
- The **Hardware Revision:** line (not shown above) indicates which version of hardware is installed. *
- The **Memory used:** line (not shown above) indicates how much memory is being used. *
- The **Largest free block:** line (not shown above) displays the size of the largest single block of memory currently available. *

* You may be asked for this info as part of an error report.

Page Level Shortcuts

None

Keyboard page

Page purpose: This page makes it easier to enter alphanumeric data for those data fields requiring it.

How to get here: Any field that requires alphanumeric data entry.

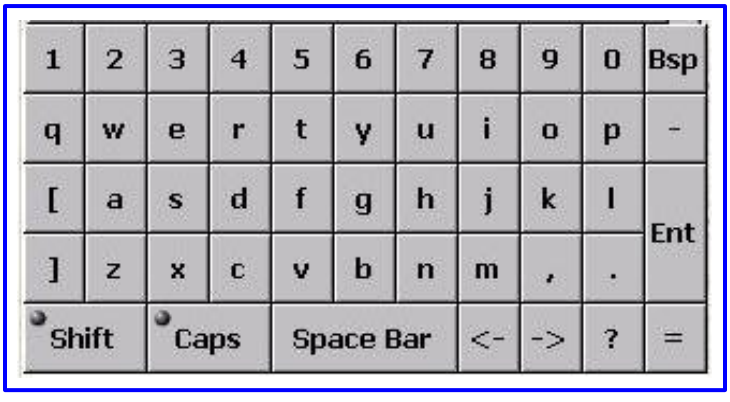


Figure 2-71 Generic Keyboard page

Page Notes

This page appears and overlaps the bottom portion of the screen for which the user wishes to enter data. Immediately above this is displayed a dialog box that describes what data is expected and a textbox to accept those characters.

If you press the ***Bsp*** (backspace) *button*, one character is removed from the typing area.

If you press the ***Shift*** *button*, the first character typed after that is capitalized and the remaining characters are not.

If you press the ***Caps*** *button*, all characters subsequently typed are capitalized until the ***Caps*** *button* is pressed again.

When you have finished typing, press the ***Ent*** (Enter) *button* or the ***ENTER*** *key* to accept the data. That closes this page and returns to the previous page.

Page Level Shortcuts

- ***HOME*** *key* – moves the cursor to the first character in the field.
- ***END*** *key* – moves the cursor to the last character in the field.
- ***LEFT/RIGHT ARROW*** *keys* – move the cursor left/right.
- ***ESC*** *key* – discards unsaved changes and closes the data entry field.
- ***DEL*** *key* – deletes the character at the cursor and left shifts all characters on the right side of the cursor.
- ***INS*** *key* – moves the cursor to the first character in the field.
- ***ENTER*** *key* – accepts the data, validates it and closes the data entry field.
- ***TAB*** *key* – same as ***ENTER*** *key*
- ***BACKSPACE*** *key* –
  1) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  2) If the cursor is not on the first or last character, it deletes the character to the left of the cursor, moves the cursor to the left one character and left shifts the characters on the right of the deleted character by one character.
  3) If the cursor is on the first character, it deletes the character at the cursor and moves the characters right of the cursor to the left one character.

Battery Menu page

Page purpose: This page maintains the alert voltage and a profile of the battery discharge over time.

How to get here:

- (***Home*** *page* → ***BATTERY*** *icon button*)

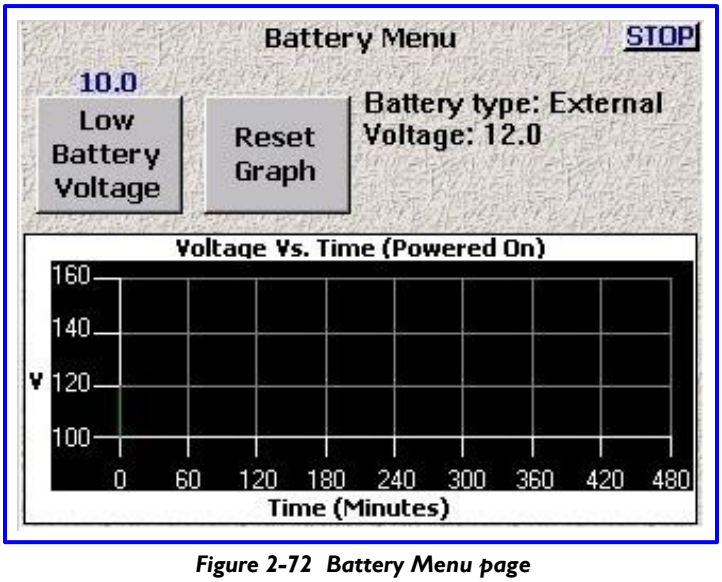


Figure 2-72 Battery Menu page

Page Notes

None

Page Level Shortcuts

None

Low Battery Voltage button

Adjusts the threshold voltage level. Once the voltage drops below the specified level, the battery voltage text in the ***Battery*** *icon* changes from black to red.
(Valid range: **10.0** – **13.5**, Value step: 0.1)

Low Battery Voltage button Shortcuts

Clicking the button the first time selects it. This allows the value to be modified by the ***Inc*** and ***Dec*** *buttons*.

Clicking it a second time opens it for direct access.
See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* – 1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Reset Graph button

Clears any data previously displayed in the graph.

Battery Type field

Indicates where the power is coming from, **Internal** or **External**.

Voltage field

Displays the current real-time voltage coming from the power source.

Voltage vs. Time graph

Displays, in graphic form, the progression over time of the voltage of the power source.

Headphone Volume page

Page purpose: This page appears when Fader 8 has been assigned to a track.

How to get here:

- (***HPH*** *button*)

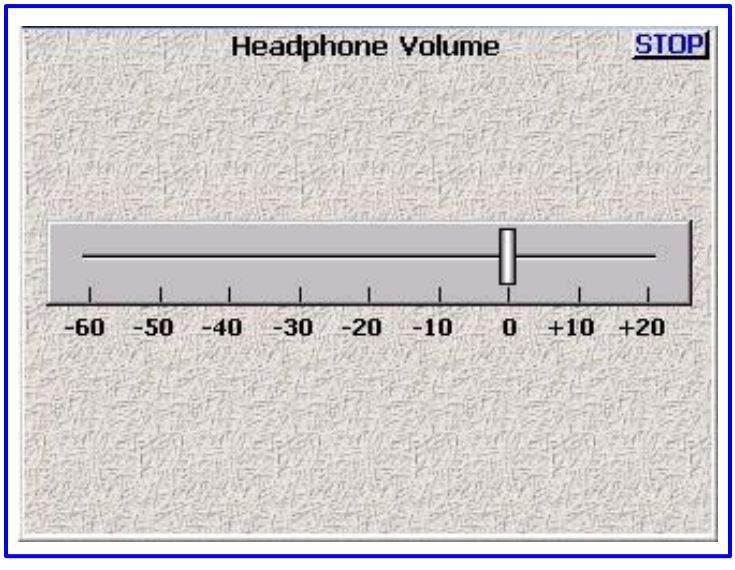


Figure 2-73 Headphone Volume page

Page Notes

As long as the level is being adjusted, this page will continue to be displayed. As soon as the adjustments stop, or were never done, a 3.5 second timer starts counting down. When it reaches zero, this page is closed.

Page Level Shortcuts

- ***LEFT ARROW*** *key* – decreases the headphone volume by **~4 dB**.
- ***UP ARROW*** *key* – decreases the headphone volume by **~4 dB**.
- ***RIGHT ARROW*** *key* – increases the headphone volume by **~4 dB**.
- ***DOWN ARROW*** *key* – increases the headphone volume by **~4 dB**.

Headphone Linear graphic fader

Used to adjust the headphone audio level in lieu of Fader 8. The scale is in dB.

False Start dialog

Page purpose: This dialog appears over the ***Home page*** {**p.31**} and gives the operator the ability to mark a Take as a False Start or just delete it.

How to get here:

- (***Home*** *page* → Front panel ***SHIFT*** *key* + ***7*** *key*)

This Picture is not yet available

Figure 2-74 False Start dialog on top of Home page

Page Notes

None

Page Level Shortcuts

None

Folder field

Displays the Folder name containing this Take.

Segment field

Displays the Segment # for this Take.

Duration field

Displays the length of this Take. Format is HH:MM:SS.

Scene field

Displays the Scene ID for this Take.

Take field

Displays the Take # for this Take.

Mark it button

When pressed:

1) copies the current Take # to the next Take.
2) adds an **X** to the end of the current Take #.
3) replaces the contents of this Take's Note metadata with **FALSE START**.

Cancel button

When pressed, closes the False Start dialog.

Delete it button

When pressed:

1) copies the current Take # to the next Take.
2) deletes the current Take.

IMPORTANT: Deleting segments or folders causes the drive to become fragmented. It is not recommended that you delete anything from the drive (unless it's a FORMAT operation) to insure the drive remains linear to insure maximum performance.

Fusion Service Menu page

Page purpose: This page allows new software to be installed and allows the owner/operator to make changes to Fusion's functionality.

How to get here:

- (***MENU*** *key* → Type **036** → ***Setup*** *button* → ***Service*** *button*)
- (***Status*** *button* → Type **036** → ***Setup*** *button* → ***Service*** *button*)

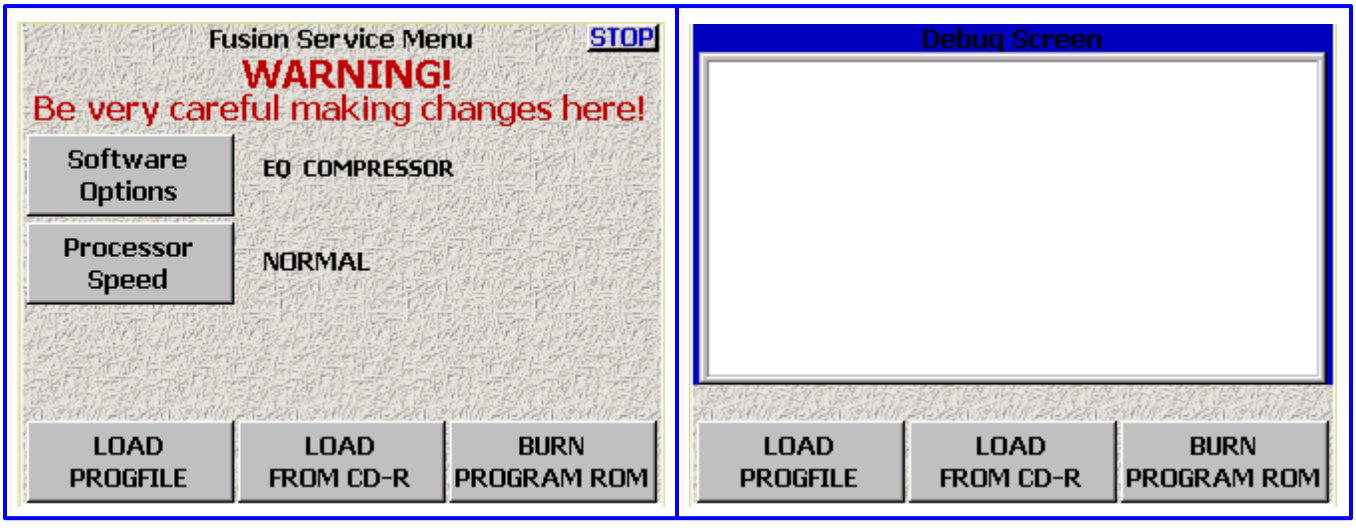


Figure 2-75 Fusion Service Menu page and with Debug Screen page Overlay

Page Notes

None

Page Level Shortcuts

None

Software Options button

This allows the purchasable options to be enabled in the field, instead of having to send the Unit into Zaxcom.

Processor Speed button

- **Normal** – Runs the processor at 245.76 MHz.
- **High** – Runs the processor at 294.912 MHz.

This allows the owner/operator to change the operating speed of the processor. (These processor speeds are based on the software and hardware configuration used to create this User Manual. YMMV!)

NOTE: High – Increases the mirroring process performance by 20%.

Load ProgFile button

See the ***Upgrading the Firmware in Each Unit*** section {**p.160**}.

Load From CD-R button

See the ***Upgrading the Firmware in Each Unit*** section {**p.160**}.

Burn Program ROM

See the ***Upgrading the Firmware in Each Unit*** section {**p.160**}.

Debug Screen page

Page purpose: It allows you to upgrade the firmware and perform some basic diagnostic routines.

How to get here:

- (***MENU*** *key* → Type **1967**)
- (***Status*** *button* → Type **1967**)

This Picture is not yet available

Figure 2-76 Debug Screen page

CAUTION: Once you are finished working in the 1967 mode, You **SHOULD** reboot the machine or it may become **UNSTABLE**.

Page Notes

None

Page Level Shortcuts

- ***TRIM*** then ***0*** – Undefined
- ***TRIM*** then ***1*** – Restart the Fusion. This can help some FireWire drives mount properly.
- ***TRIM*** then ***2*** – Copy currently memorized program onto a FireWire disk. The file is called FusionProgFile.bin.
- ***TRIM*** then ***3*** – Copy currently running program onto the primary drive.
- ***TRIM*** then ***4*** – **NEW** – Import settings (INI files) FROM Mirror Disk.
- ***TRIM*** then ***5*** – **NEW** – Export settings TO Mirror Disk (and print debug info).
- ***TRIM*** then ***6*** – Copy FusionProgFile.bin from FireWire disk into temp memory.
- ***TRIM*** then ***7*** – Copy FusionProgFile.bin from CD or DVD-R (in any format).
- ***TRIM*** then ***8*** – Unsupported feature.
- ***TRIM*** then ***9*** – Burns the currently memorized program into ROM.

*B and *P Diagnostic Flags

On very rare occasions a *B or *P may appear either during the recording process or mirroring process. Both diagnostic flags continue to display until the unit is powered 'OFF'. If either of these diagnostic flags occurs, you should contact Zaxcom's technical support department.

NOTE: The ***B Flag** and ***P Flag** appear in the ***Mirror Drive Status*** *button.*

*B Flag

The *B Flag is a minor problem and means the Fusion hit a breakpoint instruction. This happens when the Fusion comes across an error it does not know how to handle.

*P Flag

The *P Flag is a serious problem and usually occurs if the FireWire drive is unplugged in the middle of an access. If this flag is displayed, REBOOT IMMEDIATELY.

Chapter 3 – ZaxNet Usage

ZaxNet setup

ZaxNet only requires a hardware connection from the timecode output of the Deva/Fusion to the timecode input of the IFB100 transmitter. The IFB transmitter must be set to a unique Group ID that matches the Group ID in the wireless transmitters.

Each wireless transmitter in the ZaxNet system must have a unique Unit ID. The Unit ID associates the transmitter with the matching input on the recorder that the receiver for that transmitter is connected to. For example, a receiver that is listening to a transmitter with ID code #4 will be connected to analog input number 4 on the recorder and will be controlled by fader #4 on a Mix-12 or Mix-8. The recorder's analog inputs use Unit IDs 1 – 8 and digital inputs use Unit IDs 9 – 16. If a Deva-16 or Fusion-12 is used, line inputs 1 – 4 use Unit IDs 9 – 12.

The transmitter's Group ID must match the IFB100's Group ID. See the Wireless User Manual for the Group ID and Unit ID parameters.

Each wireless transmitter must have a MiniSD card installed and must have the recording option enabled for the ZaxNet system to control the recorder that is integrated into the transmitter.

Transmitter gain setup

The microphone pre-amp gain of the TRX series transmitters can be remotely controlled from either the recorder's faders or from the trimmers on the Mix-12 or Mix-8.

To control the wireless gain from the trimmers on the Mix-12 or Mix-8, enter the ***Input Configure page (Analog Inputs selected)*** {**p.80**} and select one of the analog or digital channels. The ***Mix-12 Input Trim*** *button* selects whether the trimmer on the mixer controls the transmitter input gain (**Tx ZaxNet**) or the Deva/Fusion pre-amp for the channel (**Normal**):

- **Tx ZaxNet** – the on-screen graphic trimmer in the ***Analog Input (#) page*** {**p.82**} controls the recorder's pre-amp for the associated channel, the Mix-12 trimmer for the channel controls the transmitter's pre-amp for the channel and the Mix-12 linear fader controls the channel's contribution to the recording channel's level.
- **Normal** – ZaxNet is not enabled for this channel and the wireless kit associated with it, if any.

To control the transmitter's pre-amp gain from the recorder's faders, select the ***Faders page*** {**p.47**}. Then select the ***Fader Assign*** *button*. Press the ***Fader*** *button* to change it to **ZaxNet Trim**. Pressing a cross-point will route the transmitter's pre-amp gain to the hardware fader on the recorder. Any hardware fader can control any of the transmitters. Multiple transmitters can be assigned to a single pot. Master faders are not allowed in this mode.

A transmitter cannot be assigned to a recorder's fader and a Mix-12/Mix-8 fader at the same time. The last assignment will automatically disable the assignment from the other device.

If the transmitter gain is under remote control it cannot be controlled locally until the wireless transmitter is out of range of the IFB signal, the IFB signal is shut down or the recorder is on the ***Timecode page*** {**p.50**}.

ZaxNet enable

The ZaxNet signal is embedded in the timecode output of the recorder. Enabling ZaxNet starts the commands flowing to the IFB transmitter through its timecode input.

On the ***Setup page*** {**p.53**} is the ***ZaxNet*** *button*. In that menu is the ***ZaxNet ON/OFF*** *button*. Turn ON ZaxNet to enable the system.

Slaved/Non-slaved operation.

On the ***ZaxNet Setup page*** {**p.77**} is the ***Transport Slaved*** *button*. If the wireless recorder's transport is slaved to the Deva/Fusion, the wireless record / stop function will be in sync with the Deva/Fusion. This is desirable if Actor privacy is the most important concern. If the wireless transport is not slaved to the Deva/Fusion, the wireless will be in record mode all of the time. This is the safest way to use ZaxNet as the wireless will back up the audio even if the Deva/Fusion does not go into record. If the system is not slaved, the IFB transmitter must be used to restart wireless recording if the wireless is required to replay audio. If the slave mode is enabled, the wireless will go into record each time the Deva/Fusion goes into record.

Note that the IFB100's ***Pacifier*** *page* has 4 transport modes selectable by the ***UP*** or ***DOWN*** *key*: PLAY, STOP, REC and "----". The "----" mode allows the TRX and/or Deva to adjust the transport mode in whatever way might be appropriate. Otherwise the IFB will try to force a specific transport mode. When forcing the units to go back

into record after a ZaxNet playback operation, pressing the ***UP*** *key* forces the units into record while pressing the ***DOWN*** *key* restores the IFB to its default state of "----".

Wireless Audition & Wireless Re-Record

Each wireless transmitter will replay from its memory card, based on the timecode and user-bits recorded with the Take. Be sure to change the user-bits each day so that the audio files do not contain the same user-bits on different days.

When a segment is cued in the ***Cue Mode page*** {**p.118**}, the timecode and user-bits are automatically transferred to the wireless cue buffer so the wireless system knows where to locate the audio on the wireless memory card.

The ***Cue Mode*** *page* contains the ***Cue Toggle*** *button*. Pressing this button opens the ***Cue Mode page*** {**p.118**}.

The ***Wireless Cue*** *page* is used to replay the audio from the wireless system (Wireless Audition) and to re-broadcast and re-record the audio stored on the wireless transmitters (Wireless Re-Record).

If timecode and user-bits are manually entered in the ***Wireless Cue*** *page*, the wireless will cue to the exact location entered, provided the timecode location exists in the available audio files. This direct entry of timecode and user-bits will remain active until a segment is entered in the ***Cue Mode*** *page*.

Pressing the ***Wireless Audition*** *button* in the ***Wireless Cue*** *page* will cause each transmitter to replay the audio in its memory card. The audio will replay in sync from all of the transmitters that were used during the original recording. The recorder's ***STOP*** *key* must be pressed to manually stop the playback from the transmitters. The transmitters will continue to play into the next segment until the end of the last segment available is reached.

Pressing the ***Wireless Re-Record*** *button* in the ***Wireless Cue*** *page* will cause each transmitter to playback the audio in its memory card. The Deva/Fusion will go into record mode and will re-record the tracks as if they were being recorded live. A note in the new file will be automatically generated to indicate the timecode offset that should be entered into the telecine controller in Post to play the re-recorded file.

The audio will replay in sync from all of the transmitters that were used during the original recording. The recorder's ***STOP*** *key* must be pressed to manually stop the playback from the transmitters and to stop the Re-Record process on the recorder. The transmitters will continue to play into the next segment and the recorder will continue to record until the end of the last segment is reached.

Chapter 4 – Setting Up the Power and Audio Connections

This section describes how to connect external mic- and line-level devices, and enter the proper settings to make these connections work.

NOTE: If you aren't sure how to get to the menu pages mentioned in the remainder of this user manual, refer back to the reference in chapter 2. There, you will find the sequence key/button presses to get to it in the section **How to get here:**.

The Fusion has factory default settings that allow the operator to power it up and immediately start recording. When you do, it takes ~ 14 seconds to initialize and start recording. One of the defaults causes the ***Home page*** {**p.31**} to appear once the Fusion has finished its startup sequence. This can be changed with the ***User Interface Settings page*** {**p.78**}.

Power

The Fusion can be connected to an A/C power supply. An internal or external battery can be used where A/C power is not available.

Internal Batteries

The Fusion uses a single NP-1 style battery. All chemistries are supported, including the newer Lithium-Ions. See the ***Left Side Description*** {**p.26**} for the Battery Compartment's location and power source warnings.

IMPORTANT: The Fusion does not charge an installed NP-1 battery while running from external power.

External Power

The Fusion can use external power, connected to the XLR-4M, as long as it supplies the proper voltage (9.5 to 18 VDC). See the ***Left Side Description*** {**p.26**} for the External Power connector's location and power source warnings.

Whenever the power input connector has an adequate power source connected, it is the source of power for the Fusion.

NOTE: If you need to run on battery power for an extended period of time, and need to record during this time, connect an external battery to Fusion when the internal battery is low. When an external power source is used, the Fusion automatically switches to this power source. This enables you to continue recording while you swap out the internal battery.

Battery Display

The ***Home page*** {**p.31**} displays the source of power and voltage.

When the voltage of any internal or external power source drops below the user defined level, the battery indicator changes to red. When the power source voltage drops below 9.5 volts, the unit shuts down.

IMPORTANT: When the unit shuts itself 'OFF' due to power loss or insufficient power, the audio tracks are left in the "open" state. When it is turned back 'ON', it automatically scans for those files and closes them. This process can take several minutes to complete. Nothing can be done until this process has completed.

Battery Chemistry

When using newer chemistry batteries, such as Lithium-Ion, you must be aware of their unique power curve. Up until the point where these batteries are exhausted, they show a full-charge. When using this type of battery, it is best to test how long it normally takes for the battery to discharge fully, and use this time as your guide along with the battery meter.

Setting the Battery Threshold

The ***Battery Menu page*** {**p.124**} is accessed by pressing the battery indicator on the ***Home page*** {**p.31**}.

The graph shown in the page displays its voltage and duration of use. The curve is unique for each battery type (Li-Ion, NiMH). To change the threshold when the battery indicator, on the ***Home page*** {**p.31**}, changes to red, perform the following:

1. Press the ***Low Battery Voltage*** *button*.
2. Using the numeric keys, enter the new threshold voltage.
3. Either press the ***Low Battery Voltage*** *button* again, or press the ***ENTER*** *key* on the keypad.

4. Press the ***STOP*** *button* to return to the ***Home page*** {**p.31**}.

Time and Date

The Fusion has a clock and date store. It is accessed through the ***Time/Date page*** {**p.73**}.

Enter the current time using the ***Set Time*** *button*. Unless there is a really good reason to the contrary, insure that the ***Time Mode*** *button* is set to **24 HR**.

Unless you are syncing with Aaton equipment, insure that the ***Date Mode*** *button* is set to **USA**. Enter the current date using the ***Set Date*** *button*. If the ***Date Mode*** *button* has **USA**, the sequence to enter is month/day/year. If it has **EUROPE**, the sequence is day/month/year.

Analog/Digital Audio Inputs

The Fusion supports both analog and digital audio inputs. The right side of the Fusion has eight analog XLR inputs. The AES digital input connector is on the left side of the Fusion and requires the optional breakout cable.

Each of the eight analog inputs can be used with a mic- or line-level signal. See the ***Right Side Description*** {**p.27**} for the location of these connectors.

The Fusion has an optional AES input cable, with a DB-15 connector. This cable connects to the left side of the Fusion. See the ***Left Side Description*** {**p.26**} for the location of this connector.

The DB-15 connector fans out to four separate XLR style inputs. Each input is a stereo pair (Input 1,2; Input 3,4; Input 5,6; Input 7,8). You can use any combination of these inputs with your Fusion. The input number is written on each cable. You can assign these inputs to any channel or combinations of channels.

A breakout cable can be purchased from Zaxcom as an option, or through many retailers. A wiring diagram for the connector is provided in this manual if you want to manufacture your own breakout cable (see Chapter 9).

CAUTION: Prior to connecting any analog input to the Fusion, you should ensure the mic/line input connectors are setup correctly in the ***Input Configure page (Analog Inputs selected)*** {**p.80**}. When connecting microphones, you should always connect them with the Fusion powered down (turned OFF).

The ***Input Configure page (Analog Inputs selected)*** {**p.80**} and its child menus contain settings to independently:

- set each input's signal level (Mic/Line) (Analog Only)
- enable each input's phantom power (Analog Only)
- enable and adjust each input's highpass filter (Analog/Digital)
- enable and adjust each input's delay time (Analog/Digital)
- adjust each input's trim (Analog/Digital)
- enable each input's limiter (Analog Only)
- enable and adjust each inputs compression settings (Analog/Digital)
- enable and adjust each input's equalization settings (Analog/Digital)
- assign output routing for each input (Analog/Digital)

Pressing the ***STOP*** *button* in the upper-right corner or ***MENU*** *key* brings you back to the ***Main Menu page*** {**p.35**}.

Pressing any of the ***Channel*** *buttons*, displays the ***Analog Input (#) page*** {**p.82**} for that channel. All functions for a single input channel can be adjusted from within the ***Input (#)*** *page*.

Switching Between Mic- and Line-Level Input (Analog Only)

To toggle a channel between Mic-level and Line-level, perform the following, on the ***Input Configure page (Analog Inputs selected)*** {**p.80**}:

1. Press the ***Mic/Line Level*** *button* on the page. The LED on it flashes green indicating it's active.
2. Press the ***Channel*** *button* for the channel you want to change. It displays the current mic-/line-level setting.
3. Repeat #2 for each additional channel you want to change.
4. Once the last channel has been changed, press the ***Mic/Line Level*** *button* again. The LED stops flashing.

Enabling the High Pass Filter (Analog/Digital)

Setting the High Pass Filter value

To set the Highpass Frequency, perform the following, on the ***Input Configure page (Analog Inputs selected)*** {**p.80**}:

1. Press the ***High Pass (#) Hz*** *button*. You are prompted to enter the highpass frequency in Hz.
2. Enter the frequency using the numeric keys. The valid frequency range is **30 Hz** to **240 Hz**. Any value outside this range is placed near the closest valid number within this range.
3. Press ***High Pass (#) Hz*** *button* or the ***ENTER*** *key* to finish entering the Cutoff Frequency.

NOTE: The Cutoff Frequency value last entered is used as the default value for the next Cutoff Frequency.

Setting the High Pass Filter Frequency on Multiple Channels

To copy the Cutoff Frequency from part #1 to the appropriate channels, perform the following on the ***Input Configure page (Analog Inputs selected)*** {**p.80**}:

1. Press the ***High Pass Filter*** *button*. The button's LED indicator flashes green while it is active.
2. Press the ***Channel*** *button* for the channel to which you want the highpass filter applied. The HPF indicator on the button changes to the selected Cutoff Frequency.
3. Repeat #2 for each channel you want to change.
4. Once the last channel has been changed, press the ***High Pass Filter*** *button* again. The LED stops flashing.

NOTE: To disable the highpass filter, press the ***High Pass Filter*** *button* on the ***Input Configure page (Analog Inputs selected)*** {**p.80**}, and then press the channel(s) you want to disable.

Enabling 48 VDC Phantom Power (Analog Only)

Some microphones require external power to operate. The Fusion supplies the full power and current allowed by the phantom power specification (48 VDC up to 1.0 A). The Fusion does not supply 12T power, which is required by some older microphones. If you use microphones requiring 12T power, check with your local audio dealer for phantom to 12T power converters.

To enable phantom power, perform the following:

1. Press the ***Channel*** *button* on the ***Input Configure page (Analog Inputs selected)*** {**p.80**}. The ***Analog Input (#) page*** {**p.82**} for that channel appears.
2. Press the ***48V Off*** *button*. The text turns red and changes to **48V On** indicating it is active.

IMPORTANT: To protect equipment from damage, the Fusion does not allow you to apply power to any channel set as a line-level input.

Adjusting the Trim (Analog/Digital)

There are two ways to adjust the input trim on channels. If you have multiple inputs, the ***Analog/Digital Input Trim page*** {**p.103**} allows you adjust all of them from a single page. However, if you are making individual adjustments to channels, the trim can be adjusted using the on-screen fader in the ***Analog Input (#) page*** {**p.82**}.

Adjusting the Trim using the Analog/Digital Input Trim page

1. Press the ***Adjust Trim*** *button* on the ***Input Configure page (Analog Inputs selected)*** {**p.80**}. The ***Analog/Digital Input Trim page*** {**p.103**} appears.
2. Press the meter for the channel you want to adjust. When a channel is activated, **Trim: ?? dB** changes to **Trim: ?? dB**.
3. Press the ***Less Gain*** or ***More Gain*** *button* to adjust the selected channel(s).
4. Repeat steps 2 and 3 for each additional channel, as appropriate.

All Trim settings can be reset to **0 dB** by pressing the ***Clear Trim*** *button*. A dialog appears after pressing the ***Clear Trim*** *button* requesting confirmation that you want to clear all of the trim settings.

NOTE: If all channels are going to be set at the same level, you can save time by changing them at the same time. Press **Select All.** Any change made to the level is applied simultaneously to all of the channels.

Pressing either the ***STOP*** *button* in the upper-right corner of the page or using the ***MENU*** *key* exits the ***Analog/Digital Input Trim page*** {**p.103**} and returns you to the ***Input Configure page (Analog Inputs selected)*** {**p.80**}.

Adjusting Individual Trim Levels Using the Input (#) page

1. Press the individual ***Channel*** *button* on the ***Input Configure page (Analog Inputs selected)*** {**p.80**}. The ***Analog Input (#) page*** {**p.82**} for that channel appears.
2. Slide the graphic fader to the desired position.

Adjusting the Delay (Analog/Digital)

The delay in the Fusion provides a way to monitor various input sources that may come into the Fusion at slightly different times. For example, wireless microphones typically require 0 to 8 ms of delay to avoid phasing associated with mixing wired and wireless sources to a common mix track. The delay does not affect the input signals actual timecode; it simply allows the signal to align with other sources mixed with it. Both analog and digital inputs can have a delay added to them.

There are two ways to adjust the delay on channels. If you have multiple inputs, the ***Analog/Digital Input Delay page*** {**p.101**} allows you to adjust all channels from a single page. However, if you are making individual adjustments to channels, the delay can be adjusted using the ***Delay ?? msec*** *button* in the ***Analog Input (#) page*** {**p.82**}.

Adjusting the Delay Using the Input Delay page

1. Press the ***Adjust Delay*** *button* on the ***Input Configure page (Analog Inputs selected)*** {**p.80**}. The ***Analog/Digital Input Delay page*** {**p.101**} appears.
2. Press the ***Channel*** *button* for the channel that requires a delay. The button changes to white.
3. Press the ***More Delay*** *button* to add delay. If Delay has been added to a channel, the ***Less Delay*** *button* is active and can be used to reduce the amount of delay. A maximum of 40 ms of delay can be added to each channel.
4. Repeat Steps 2 and 3 for additional channel(s).

As an alternative to pressing the ***More Delay*** or ***Less Delay*** *buttons*, you can press the ***Enter Delay*** *button* and manually enter the delay using the keypad.

Pressing the ***STOP*** *button* in the upper-right corner of the page or using the ***MENU*** *key* exits the ***Analog/Digital Input Delay page*** {**p.101**} and brings you back to the ***Input Configure page (Analog Inputs selected)*** {**p.80**}.

Adjusting the Delay Using the Input (#) page

1. Press the individual ***Channel*** *button* on the ***Input Configure page (Analog Inputs selected)*** {**p.80**}. The ***Analog Input (#) page*** {**p.82**} for that channel appears.
2. Press the ***Delay ?? msec*** *button*. A dialog appears requesting the amount of delay.
3. Enter the amount of delay using the numeric keys.
4. Press the ***ENTER*** *key* to complete entering the delay amount.

Pressing either the ***STOP*** *button* in the upper-right corner of the page or the ***MENU*** *key* exits the ***Analog Input (#) page*** {**p.82**} and returns you to the ***Input Configure page (Analog Inputs selected)*** {**p.80**}.

Analog Audio Outputs

The Fusion has an optional analog output cable, with a DB-25 connector. This cable connects to the right side of the Fusion. See the ***Right Side Description*** {**p.27**} for the location of this connector.

The DB-25 connector fans out to six separate XLR outputs. A breakout cable can be purchased from Zaxcom as an option, or through many retailers. A wiring diagram is also provided in this manual if you want to manufacture your own breakout cable (see ***– Equipment Specifications,*** {**p.154**}).

The six outputs can be assigned from any combination of channels.

Digital Audio Outputs

The Fusion has an optional AES output cable, with a DB-15 connector. This cable connects to the left side of the Fusion; see the ***Left Side Description*** {**p.26**} for the location of this connector.

The DB-15 connector fans out to four separate XLR style outputs. Each output is a stereo pair (Output 1,2; Output 3,4; Output 5,6; Output 7,8). You can use any combination of these outputs with your Fusion. The output channel number is written on each cable. You can assign these outputs to any channel or combination of channels.

A breakout cable can be purchased from Zaxcom as an option, or through many retailers. A wiring diagram for the connector is provided in this manual if you want to manufacture your own breakout cable (see ***– Connector Pinouts*** {**p.157**}).

The eight outputs can be assigned from any combination of channels.

Camera Connector

The Camera Output connector is located on the right side of the Fusion. It is a 10-pin Hirose connector. Only output channels 5 and 6 are available through it.

Break out cables are available from retailers. A wiring diagram for the connector is provided in this manual if you want to manufacture your own camera cable (see – *Connector Pinouts* {**p.157**}).

A return input from the camera headphone output is available using the camera connector. When used, the audio from the camera can be monitored using the Fusion. The return channels on the camera cable are summed into a mono feed.

Assigning Inputs and Outputs to Tracks

The flexibility of the Fusion is highlighted in the way it handles the routing. Routing on the Fusion allows you to assign any combination of inputs to any combination of channels and outputs. This section describes how to assign both inputs and outputs.

Assigning Inputs to Recording Tracks

A single digital or analog input can be assigned to any number of recording tracks, including sharing the same recording channel, using the *Disk Mix page* {**p.37**}.

The top line shows the 8 available input channels (In1 – In8) plus the slate mic and the tone generator. The vertical line of numbers on the right shows the 12 available recording tracks. The bottom row of buttons controls the parameters of the matrix selections.

Each track's input can be pre- or post-fader, with or without the phase being inverted. This can be done for both analog and digital signals. Since there are many options, some of the following steps can be skipped.

To assign an input to a track, perform the following:

1. Press the ***Analog/Digital In Toggle*** *button* to select the input source you are assigning.
   The button changes indicating which input is currently active.
2. Press the ***Pre-/Post-Fader*** *button* to select what type of signal you want recorded.
   The button changes to indicate what is selected. Pre-fader inputs are not affected by any changes made using the linear faders, however all EQ, Trim and delay settings for that track are used.
3. Press the button in the matrix, at the intersection of the input channel and output track, where you want to record that specific input.
4. To invert any of the input's phase, perform the following:
   a. Press the ***Phase Invert*** *button* to invert the input's phase.
      The LED changes to green when Phase Invert is active.
   b. Press the ***Matrix*** *button* for each signal you want to phase invert. The button now includes an overscore character. You can invert the signal on one or both of the digital and analog inputs.
   c. Once you have finished inverting the phase on tracks, press the ***Phase Invert*** *button* again.
      The LED turns OFF to indicate it has been disabled.

Setting the Number of Tracks Recorded

Once the routing is assigned, you use the *Record Track Select page* {**p.56**} to enable which tracks are recorded.

Any track that has an input assigned to it, displays the track number in **blue**, in the bottom half of the page. You can record any combination of tracks; however, you must have at least one track enabled for recording. Four buttons are available which enable you to quickly setup the number of tracks recorded.

Perform the following to enable tracks for recording:

1. Press the button below each track that has a blue track number.
   An **X** is placed in the button indicating it is enabled for recording.
2. Once a track is enabled for recording, pressing the button again disables recording of that track.

NOTE: Pressing the ***SHIFT*** *key*, then pressing the appropriate meter on the *Home page* {**p.31**} toggles the recording of that track. This is also known as arming the track.

Set the Sampling-rate for Recorded Tracks

Go to the *Sample Rate page* {**p.55**} and press the button with the desired sample-rate.

NOTE: After changing the sampling-rate, timecode may need to be re-jammed.

Assign Inputs to Output Channels

The ***Output Mix page*** {**p.41**} makes assigning the audio inputs to output channels, identical to assigning audio inputs to recording channels. They use the same style matrix and have all the same settings.

Like the ***Disk Mix page*** {**p.37**}, any combination of signals can be assigned to a vast number of output possibilities.

Overview of Input Signals

The ***Input Meter Menu page*** {**p.64**} provides a quick overview of all input signals. Because of the flexibility of the routing, you may run into situations where you need to try to determine if a signal is actually coming into the Fusion on a particular input.

Overview of Output Signals

The ***Output Meter Menu page*** {**p.65**} provides a quick overview of all output signals. Because of the flexibility of the routing, you may run into situations where you need to try to determine if a signal is actually going out of the Fusion on a particular output.

Chapter 5 – Settings for Recording

Once the input cables are connected, there are many setup decisions to be made. In the previous section, the basic settings for the input and output channels were explained. This section describes recording settings.

NOTE: There is no one way to setup a Fusion correctly, nor do any of the settings described here have to be done in any certain order.

Storing the Data

The size of the CompactFlash card determines how much data can be stored.

Selecting a partition

Go to the *Disk Folders page* {**p.106**} to indicate which folder will be used to store the audio files. By clicking on one of the folders, and indicated by it turning white, all audio will be sent to that one folder.

While there, if you don't like the folder name, you can press the ***Name Folder*** *button* to change it. You have eight characters available. One option is to use the date of recording (i.e. YYYYMMDD format).

Setting the Pre-record Duration

From the point the Fusion is powered up, it is always processing data. Any sound coming in from any input is always being processed. When pre-record time is enabled, the signal is held in a buffer with a length specified by you until you press the ***REC*** *key*. At that time, all audio in the buffer is stored in the current Take. Once that is done, the audio coming from each of the inputs is stored in the current Take until the ***STOP*** *key* is pressed.

IMPORTANT: In order to use the pre-record functionality, you must have previously selected **48048** or lower in the *Sample Rate page* {**p.55**}.

To adjust the pre-record time, go to the *Setup page* {**p.53**} and press the ***Pre-Record Time*** *button*. Every time you press the button it increments by 1 second, starting at OFF (0 seconds) and going up to 10 seconds.

NOTE: The pre-record buffer is discarded after any of the following settings are changed:

- Sample Rate Reference
- Sampling-rate
- Timecode
- User-bits
- Frame-rate

Set the Tone Level and Destinations

The Fusion provides a calibrated tone level, which can be placed on any output channel or recorded track. This tone level is used to calibrate cameras to the audio sent from the Fusion, and Post Production facilities to ensure all levels are correct.

To adjust the tone level, go to the *Setup page* {**p.53**} and press the ***Tone Level*** *button*. Every time you press the button it increments by 2 dB, starting at -20 dB and going up to -12 dB.

Set the Tone output

Once the tone's level has been selected, you have to tell Fusion where the tone will be used. Unless you set a record track or output channel, tone is being generated, but not used.

Setting the tone on the recording track and output channel are identical. Perform the following to set the track or channel:

1. Open the *Disk Mix page* {**p.37**} or *Output Mix page* {**p.41**}.
2. On the far right column (Tone), press the ***matrix*** *button* next to the record track or output channel you want to receive tone. An **X** appears in the button you pressed.

Enable the Tone

Tone is enabled by pressing the ***SHIFT*** *key* (⇦) followed by the ***TONE*** *key*. To disable Tone, repeat the sequence again.

Home page Meters

You can display up to twelve meters (ten on Fusion 10) on the *Home page* {**p.31**}. Each of these meters can be labeled. The label information is stored in the audio file's metadata.

Set the Number of Meters

IMPORTANT: Make sure to have every armed channel displayed on the ***Home page*** {**p.31**}. It is possible, but not a good idea, to record and mix tracks without displaying its meter.

To adjust the number of meters, go to the ***Meter Menu page*** {**p.61**} and press the ***Number of Home Screen Meters*** *button*. Every time you press the button, it increments by 1 starting at 4.

Set the Meter Labels

Meter labels do more than just provide an easy reference of what is on each track when meters are displayed horizontally. This information is saved in the audio file's metadata, it can be used in automated sound reports and is available to Post Production to identify each track. You have 16 characters available.

To change the meter labels, go to the ***Meter Labels page*** {**p.63**} and press one of the ***Meter*** *buttons*. Once pressed, that track's label is opened with the ***Keyboard page*** {**p.123**}, allowing the efficient entry of the label.

NOTE: Use a PDA stylus, external keyboard or the Mix-12 with its built-in keyboard to increase the accuracy and speed of entering labels.

Change the Meter's Appearance

There are several adjustments that can be made to the Fusion meters, including their brightness and orientation on the ***Home page*** {**p.31**}.

Change the Meter Orientation

The orientation can be changed from two different places. If you want to see the new layout as it is selected, use the ***V*** (view) *button*. Otherwise, use the ***Meter Vertical / Horizontal*** *button* on the ***Meter Menu page*** {**p.61**}. Pressing either button produces exactly the same results, in the same sequence.

Meter Color Schemes

The color scheme can be changed by the pressing the ***Color Theme*** *button* on the ***User Interface Settings page*** {**p.78**}. The Bright and Black & White settings are designed for use in full sunlight. Both allow you to see and use the touch screen when viewing conditions are less than ideal.

Screen Backlight Brightness

The brightness of the screen can be changed by pressing the ***Backlight Brightness*** *button* on the ***User Interface Settings page*** {**p.78**}.

Monitoring with Headphones

One of the strengths of the Fusion is its flexibility in routing, which is evident in the input, output and recording options. This flexibility is extended to the headphone monitoring area as well. Many common headphone-monitoring options come preset from Zaxcom. You can add up to 12 custom presets in addition to the factory presets. Also, you can build a headphone monitoring configuration on-the-fly without saving it, as well as temporarily monitor a single channel. The headphone audio you are listening to is what is being recorded onto the primary drive. Checksum Error Correction ensures that what is being sent to the primary drive is being recorded there.

There are two shortcuts to getting to the ***Headphone Mix page*** {**p.69**}:

- Press the ***HPH*** *key*.
- Press the ***Headphone*** *button* on the ***Home page*** {**p.31**}.

Both of these immediately bring you to the ***Headphone Mix page*** {**p.69**}, as long as Fader #8 is not assigned to a track.

Fader #8

Fader #8 serves two purposes on the Fusion. When no track is assigned to it, it functions as the headphone volume control. However, when a track is assigned to it, it functions as a normal fader. To adjust the headphone volume when fader #8 is assigned, the ***Headphone Volume page*** {**p.125**} is used.

To adjust the headphone volume with fader 8 assigned perform the following:

1. Press the ***HPH*** *key* on the front panel.
2. Use the on-screen fader to adjust the volume.

Load a Factory Preset

To load a factory preset, perform the following:

1. Display the **Headphone Mix page** {**p.69**} by pressing the ***HPH*** *key* on the front panel, the ***Headphone*** *button* on the **Home page** {**p.31**}, or the ***Head Phone Mix*** *button* on the **Main Menu page** {**p.35**}.
2. Press the ***Factory Presets*** *button* on the **Headphone Mix page** {**p.69**}.
3. Press the appropriate ***Preset*** *button* on the **Factory Presets page** {**p.71**}.

Build Your Own Headphone Mix (Working Preset)

On this page, all armed tracks have blue numbers and all disarmed tracks have black numbers and a red slash through the button.

To build your own headphone mix, perform the following:

- Press the button in the left or right headphone output to assign that headphone output channel. An **X** is placed in the button.

Invert Phase

If for some reason, you need to invert the phase on a channel (M/S monitoring, etc), use the ***Phase Invert*** *button* on the appropriate channel(s). The Fusion displays a bar on top of the X, indicating the channel's phase is inverted.

IMPORTANT: Invert Phase only inverts the **playback** phase; it does not affect the recorded audio in any way.

Retaining Your Headphone Mix with a User Preset

In a lot of cases once you have setup monitoring options, you don't need to change them that often. But once changed, the Fusion allows you to restore those settings with the press of a button. When stored, these become known as User Presets.

Storing the Mix in a User Preset

You can have up to 12 presets. To store a preset, perform the following:

1. Press the ***User Presets*** *button* on the **Headphone Mix page** {**p.69**}.
2. Press the ***Load/Save Toggle*** *button* at the bottom to change the title to "Save User Preset"
3. Press any unassigned ***Preset*** *button* on the **Load/Save User Presets page** {**p.72**}. (The **Keyboard page** {**p.123**} is displayed to aid in entering the preset button's name.)
4. Enter the name (maximum 8 characters.) and press the ***ENTER*** *key*.

NOTE: The preset name does not immediately appear on the button. However, the next time you go into the **Load/Save User Presets page** {**p.72**}, the name will appear on the button.

5. Press the ***MENU*** *key* to return to the **Headphone Mix page** {**p.69**}. (The preset # and the name you entered appear below the page title.)

The User Preset number and the user entered name also appear on the **Home page** {**p.31**} in the ***Headphone*** *button*.

Loading a Mix Saved in a User Preset

To load a preset, perform the following:

1. Press the ***Headphone*** *button* on the **Home page** {**p.31**}. (The **Headphone Mix page** {**p.69**} is displayed)
2. Press the ***User Preset***s *button*. (The **Load/Save User Presets page** {**p.72**} is displayed.)
3. Press the ***Preset*** *button* with the preset you want to use. (The LED in the upper left corner turns green.)
4. Press and hold the ***MENU*** *key* until you return to the **Home page** {**p.31**}.

Camera Input

To switch between listening to the mix and the camera return, press the ***F3*** *key* on the keyboard at any time.

NOTE: The Camera Input on the Fusion internally sums the camera mix to mono. This summing occurs only on the return audio, not audio sent to the camera.

Timecode page

Settings for the ***Timecode page*** {**p.50**} are project specific. What follows should be considered with a grain of salt!

Timecode Displayed on the Home page

If you need to see the timecode for the start of each Take, for example to log it on a sound report, set the ***Timecode Displayed*** *button* to **Disk**.

If you want to see the current running timecode while in Stop, set the ***Timecode Displayed*** *button* to **Gen Stop**.

Timecode Output

If you just need to send running timecode to another device, set the ***Timecode Out*** *button* to **Generator**.

If you want to control another timecode device with an Auto-Load capability, set the ***Timecode Out*** *button* to **Disk**.

Entering User-bit Data

There are a few themes for entering User-bits, usually determined by what Post wants. Some follow:

- Load the shooting date (e.g. MM:DD:YY:xx, MM:DD:xx:xx) {x = doesn't matter or zero}
- Load the shooting date with the Take # (MM:DD:00:00)
- Load the Take # (00:00:00:00)

If you are storing the date (either MM:DD:YY:xx or DD:MM:YY:xx format) in the user-bits, consider setting the ***Auto Jam Date at Midnight*** *button* on the ***Timecode Run Mode page*** {**p.52**}.

If you want to load some version of the date, assuming the date/time clock is accurate, press the ***JAM Date*** *button*. This will jam the user-bits with the current MM:DD:YY:00. If you want to remove the year bits, press the ***Enter User Bits*** *button* and make the necessary change. A side effect of this is the timecode generator will be jammed with the current real-time clock.

If you want to load **00:00:00:00** at the start of the shoot and you don't have an external clock connected, press the ***JAM U.B.*** *button*. Since there is no user-bit source to jam with, it will load the UB storage with **00:00:00:00**.

To have the user-bits count the Takes, press the ***Increment User Bits*** *button* to change it from **Off** to **On**.

Entering Timecode

Generally, your primary soundcart recorder will be the Master Clock for the set and your timecode will be counting in Free-Run mode, so be sure to set the Timecode Run Mode to **Free Run**.

There are a couple of common themes for entering timecode:

- Enter local real-time – this allows your timecode to indicate when Takes where actually shot.
  - Assuming the local date/time clock is accurate, press the ***JAM Time*** *button*. This will tell the Fusion to Jam the TC generator with the current clock time and count from there.
- Enter **00:00:00:00** at the start of the workday – this allows you to see how long you have been working today.
  - If you don't have an external clock connected, press the ***JAM T.C.*** *button*. Since there is no TC source to jam with, it will load the TC generator with **00:00:00:00** and count from there.
  - If you do have an external clock connected, press the ***Enter Timecode*** *button*, enter **00:00:00:00** and press the ***ENTER*** *key*.

Frame-rate

To enter a frame, press the ***Frame Rate*** *button* until the desired value is displayed.

Chapter 6 – Effects Package and More

This chapter is in development.

To All Owners / Operators / Prospective Owners / Prospective Operators,

I apologize for not having this chapter ready.

Because of the improvements brought with this revised user manual, it was deemed more important to release it as is and to include it when it has been completed.

Ray M. Owen

Chapter 7 – Quickstart Guide

This chapter is in development.

Chapter 8 – Shortcut Keys

Attached Keyboard Shortcuts

Attached Keyboard Shortcuts			
Key	**Effect in STOP mode**	**Effect in RECORD mode**	**Effect in PLAY mode**
ESC	Same as the ***MENU*** *key*	Same as the ***MENU*** *key*	Same as the ***MENU*** *key*
F1	Same as the ***HPH*** *key*	Same as the ***HPH*** *key*	Same as the ***HPH*** *key*
F2	Go to the **Disk Mix** *page*	Go to the **Disk Mix** *page*	
F3	Toggle between Mixer and Camera Return	Toggle between Mixer and Camera Return	Toggle between Mixer and Camera Return
F4			
F5			
F6	Go to the **Input Configure** *page*	Go to the **Input Configure** *page*	Go to the **Input Configure** *page*
F7	Go to the **Meter Labels** *page*	Go to the **Meter Labels** *page*	Go to the **Meter Labels** *page*
F8	Edit the ***Scene*** *field* in the **Scene Take Note** *page*	Edit the ***Scene*** *field* in the **Scene Take Note** *page*	Edit the ***Scene*** *field* in the **Scene Take Note** *page*
F9	Edit the ***Take*** *field* in the **Scene Take Note** *page*	Edit the ***Take*** *field* in the **Scene Take Note** *page*	Edit the ***Take*** *field* in the **Scene Take Note** *page*
F10	Edit the ***Note*** *field* in the **Scene Take Note** *page*	Edit the ***Note*** *field* in the **Scene Take Note** *page*	Edit the ***Note*** *field* in the **Scene Take Note** *page*
F11			
F12			
Arrows	Navigation in pages	Navigation in pages	Navigation in pages
M	Toggle Mix-12 meters between the prefader input level and the disk mix	Toggle Mix-12 meters between the prefader input level and the disk mix	Toggle Mix-12 meters between the prefader input level and the disk mix
INS	Go to the **Home** *page*	Go to the **Home** *page*	Go to the **Home** *page*

Table 8-1 Attached Keyboard Shortcuts

Mix-12 Embedded Keyboard Shortcuts

Mix-12 Embedded Keyboard Shortcuts			
Key	**Effect in STOP mode**	**Effect in RECORD mode**	**Effect in PLAY mode**
ESC	Same as the ***MENU*** *key*	Same as the ***MENU*** *key*	Same as the ***MENU*** *key*
F1	Same as the ***HPH*** *key*	Same as the ***HPH*** *key*	Same as the ***HPH*** *key*
F2	Go to the **Disk Mix** *page*	Go to the **Disk Mix** *page*	
F3	Toggle between Mixer and Camera Return	Toggle between Mixer and Camera Return	Toggle between Mixer and Camera Return
F4	Go to the **Analog Input 1** *page*	Go to the **Analog Input 1** *page*	Go to the **Analog Input 1** *page*
F5	Go to the **Analog Input Trim** *page*	Go to the **Analog Input Trim** *page*	Go to the **Analog Input Trim** *page*
F6	Go to the **Input Configure** *page*	Go to the **Input Configure** *page*	Go to the **Input Configure** *page*
F7	Go to the **Meter Labels** *page*	Go to the **Meter Labels** *page*	Go to the **Meter Labels** *page*
F8	Edit the ***Scene*** *field* in the **Scene Take Note** *page*	Edit the ***Scene*** *field* in the **Scene Take Note** *page*	Edit the ***Scene*** *field* in the **Scene Take Note** *page*
F9	Edit the ***Take*** *field* in the **Scene Take Note** *page*	Edit the ***Take*** *field* in the **Scene Take Note** *page*	Edit the ***Take*** *field* in the **Scene Take Note** *page*
F10	Edit the ***Note*** *field* in the **Scene Take Note** *page*	Edit the ***Note*** *field* in the **Scene Take Note** *page*	Edit the ***Note*** *field* in the **Scene Take Note** *page*
Arrows	Navigation in screens	Navigation in screens	Navigation in screens
M	Toggle Mix-12 meters between the prefader input level and the disk mix	Toggle Mix-12 meters between the prefader input level and the disk mix	Toggle Mix-12 meters between the prefader input level and the disk mix

Table 8-2 Mix-12 Embedded Keyboard Shortcuts

CAUTION: Since the ***F3*** key is ALWAYS available, it is possible to accidentally press it and then wonder why you have no audio in your headphones. If you should suddenly lose headphone audio, **FIRST** check the ***F3*** key.

Front Panel Shortcuts

Front Panel Shortcuts			
Key	**Effect in STOP mode**	**Effect in RECORD mode**	**Effect in PLAY mode**
SHIFT ***+ 7***	Mark the last Take as a False Start		
SHIFT ***+ 9***	Lock/Unlock the touch screen. Also, can press ***MENU*** *key* to unlock.	Lock/Unlock the touch screen. Also, can press ***MENU*** *key* to unlock.	Lock/Unlock the touch screen. Also, can press ***MENU*** *key* to unlock.

Table 8-3 Front Panel Shortcuts

CAUTION: Be very careful to mark a Take as a **False Start** only once. If you should mark it more than once, each additional marking will cause that number of following Takes to also be marked as a **False Start**.
For example: If you mark the last Take as a False Start 3 times, that Take and the following 2 Takes will all be marked as **False Starts**.

Common Data Entry Field Shortcuts List

Keyboard Keys

- ***HOME*** *key* – moves the cursor to the first character in the field.
- ***END*** *key* – moves the cursor to the last character in the field.
- ***LEFT/RIGHT ARROW*** *keys* – move the cursor left/right.
- ***ESC*** *key* – discards unsaved changes and closes the data entry field.
- ***DEL*** *key* – deletes the character at the cursor and left shifts all characters on the right side of the cursor.
- ***INS*** *key* – moves the cursor to the first character in the field.
- ***ENTER*** *key* – accepts the data, validates it and closes the data entry field.
- ***TAB*** *key* – same as ***ENTER*** *key*
- ***BACKSPACE*** *key* – 1) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  2) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  3) If the cursor is on the first character, it has no effect.

Front Panel Keys

- ***SHIFT/BACKSPACE*** *key* – deletes one character at the cursor and moves the cursor to the left one character.
- ***MENU/ESC*** *key* – functions as the ***ESC*** *key* by discarding unsaved changes and closing the data entry field.
- ***ENTER*** *key* – accepts the data, validates it and closes the data entry field.

Boot-up Shortcuts

Page Level Shortcuts

- ***MENU*** *key* – Press and hold it to pause the startup sequence until you release it, allowing you to read all of the information.

Boot Keys

Hold down one of the following keys during bootup to change the Fusion's behavior:

- ***F6*** *key* – causes the Fusion (v6.06C or later) to reconstruct corrupted folders. This should allow folders to be mirrored in a normal way.
- ***0*** *key* – forces 48 kHz mode (in v3.56 and later) (also forces Fusion to read corrupted folders).
- ***3*** *key* – may allow immediate spin-down of hard disk when Fusion is idle.
- ***8*** *key* – causes Fusion to ignore UDF formatted disks (good for dealing with partially formatted disks).
- ***9*** *key* – enables 192 kHz recording speed. This is somewhat obsolete. The current approach is to run the DSP in fast mode and enable the 192 kHz selection.
- ***STOP*** *key* – forces a factory restore to defaults.

Home page Shortcuts

Using the Fusion front panel:

- Pressing a ***Recording*** channel for about 1.5 seconds – solos that channel to the headphones, the ***Headphone*** *button* displays **SOLO**, the left and right headphone channels display the solo'd track and the other track audio bars are grayed out.
  - Pressing any other track SOLOs that track. The left and right headphone channels display the solo'd track's #.
  - Pressing the ***Headphone*** *button*, cancels the SOLO.
- ***SHIFT+7*** *keys* – marks the last Take as a False Start.
- ***SHIFT+9*** *keys* – lock/unlock the touchscreen.
- ***SHIFT*** *key****+Recording*** channel – arms/disarms the track that was touched. A disarmed track has a line through it long wise and the bar indicating the audio level changes to blue.
- ***0*** *–* ***9*** *keys* – opens the ***Enter Segment*** data entry field. Type the remainder of the number and press the ***ENTER*** *key*. Once entered, the system attempts to move to the day's recording, by the segment # entered. If the number entered is too high, the last available segment is displayed.

- ○ ***SHIFT/BACKSPACE*** *key* – deletes one character at the cursor and moves the cursor to the left one character.
- ○ ***MENU/ESC*** *key* – functions as the ***ESC*** *key* by discarding unsaved changes and closing the data entry field.
- ○ ***ENTER*** *key* – accepts the data, validates it and closes the data entry field.

Using the Mix-12 embedded keyboard:

- ***ESC*** *key* – same as pressing the ***MENU*** *key.*
- ***F1*** *key* – same as pressing the ***HPH*** *key.*
- ***F2*** *key* – go to the ***Disk Mix page*** {**p.37**}
- ***F3*** *key* – toggle between Mixer and Camera Return
- ***F4*** *key* – go to ***Analog Input (#) page*** {**p.82**}
- ***F5*** *key* – go to ***Analog/Digital Input Trim page*** {**p.103**}
- ***F6*** *key* – go to ***Input Configure page (Analog Inputs selected)*** {**p.80**}
- ***F7*** *key* – go to ***Meter Labels page*** {**p.63**}
- ***F8*** *key* – edit the ***Scene*** *field* in the ***Scene Take Note page*** {**p.120**}
- ***F9*** *key* – edit the ***Take*** *field* in the ***Scene Take Note page*** {**p.120**}
- ***F10*** *key* – edit the ***Note*** *field* in the ***Scene Take Note page*** {**p.120**}
- ***0 – 9*** *keys* – opens the data entry field. Type the remainder of the number and press the ***ENTER*** *key*. Once entered, the system attempts to move to the day's recording, by the segment # entered. If the number entered is too high, the last available segment is displayed.
- ***M*** *key* – toggle Mix-12 meters between prefader input level and the disk mix
- ***Arrow*** *keys* – navigation in pages
- ***CRTL*** *key* & single digit – opens the label for the associated channel for modification. Correct the existing label or enter a new one from scratch. While a meter is being edited it will not update.
  - ○ See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):
    - ▪ ***TAB*** *key* – Accepts the data, validates it, saves & closes the current label and opens the next one in sequence for editing.
    - ▪ ***BACKSPACE*** *key* – 1) If the cursor is on the last character, it deletes the character to the left of the cursor and moves the cursor and character 1 position to the left.
      2) If the cursor is not on the first or last character, it deletes the character to the left of the cursor and shifts all characters from the cursor to the end of the text right 1 character.
      3) If the cursor is on the first character, it deletes the character at the cursor and shifts all characters from the next character to the end of the text right 1 character.

Using an attached keyboard:

- ***ESC*** *key* – same as pressing the ***MENU*** *key.*
- ***F1*** *key* – same as pressing the ***HPH*** *key.*
- ***F2*** *key* – go to the ***Disk Mix page*** {**p.37**}
- ***F3*** *key* – toggle between Mixer and Camera Return
- ***F6*** *key* – go to ***Input Configure page (Analog Inputs selected)*** {**p.80**}
- ***F7*** *key* – go to ***Meter Labels page*** {**p.63**}
- ***F8*** *key* – edit the ***Scene*** *field* in the ***Scene Take Note page*** {**p.120**}
- ***F9*** *key* – edit the ***Take*** *field* in the ***Scene Take Note page*** {**p.120**}
- ***F10*** *key* – edit the ***Note*** *field* in the ***Scene Take Note page*** {**p.120**}
- ***INS*** *key* – go to the ***Home page*** {**p.31**}
- ***0 – 9*** *keys* – opens the ***Enter Segment*** data entry field. Type the remainder of the number and press the ***ENTER*** *key*. Once entered, the system attempts to move to the day's recording, by the segment # entered. If the number entered is too high, the last available segment is displayed.
  - ○ See: ***Common Data Entry Field Shortcuts List*** {**p.146**}
- ***M*** *key* – toggle Mix-12 meters between prefader input level and the disk mix
- ***Arrow*** *keys* – navigation in pages

Disk Limiter Settings page Shortcuts

- ***UP/DOWN ARROW*** *keys* – navigate through the left hand column of buttons
- ***0 – 9*** *keys* – navigate to view the level of the appropriate channel (0 = 10).

Output Limiter Settings page Shortcuts

- ***UP/DOWN ARROW*** *keys* – navigate through the left hand column of buttons
- ***1 – 8*** *keys* – navigate to view the level of the appropriate channel.

Attack button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Decay button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Thresh button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Ratio button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Gain button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Timecode page Shortcuts

Enter Timecode button Shortcuts

- See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Enter User Bits button Shortcuts

- ***0 – 9***, ***A – F*** *keys* – keys to enter data.
- See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):
  - **F1 – F6** *keys* – are mapped to the hex letters A – F.

Meter Labels page Shortcuts

- ***0 – 9*** *keys* – displays the ***Keyboard page*** {**p.123**} for entry of the label text.

Meter Label buttons Shortcuts

- See: ***Common Keyboard page Shortcuts*** {**p.152**}, with the following exception(s):
  - ***TAB*** *key* – advances the data entry field to the next label in sequence.

Time/Date page Shortcuts

Set Time button Shortcuts

See: Common Data Entry Field Shortcuts List {p.146}, with the following exceptions:

- ***LEFT/RIGHT ARROW*** *keys* – do not have any effect
- ***BACKSPACE*** *key* – The cursor moves left without deleting any characters.

Set Date button Shortcuts

See: Common Data Entry Field Shortcuts List {p.146}, with the following exceptions:

- ***LEFT/RIGHT ARROW*** *keys* – do not have any effect
- ***BACKSPACE*** *key* – The cursor moves left without deleting any characters.

Input Configure page Shortcuts

- ***1 – 8*** *keys* – equivalent to pressing the appropriate ***Channel*** *button*, changes to the Analog Input (#) page {p.82} for the selected channel.

High Pass (#) Hz button Shortcuts

See: Common Data Entry Field Shortcuts List {p.146}

(Analog/Digital/LineLvl) Input # page Shortcuts

- ***1 – 8*** *keys* – the same as clicking on analog channel buttons 1 – 8.
- ***D*** *key* – goes to the Analog Input (#) – Dynamics page {p.84} for the current channel.
- ***E*** *key* – goes to the Analog Input (#) – EQ page {p.86} for the current channel. This functions the same as the ***EQ*** *key* on the Mix-12.
- ***B*** *key* – goes to the Analog Input (#) – BUS page {p.89} for the current channel. This functions the same as the ***BUS*** *key* on the Mix-12.

Delay button Shortcuts

See: Common Data Entry Field Shortcuts List {p.146}

HPF button Shortcuts

See: Common Data Entry Field Shortcuts List {p.146}

Analog Input (#) – Dynamics page Shortcuts

- ***1 – 8*** *keys* – the same as clicking on analog channel buttons 1 – 8.
- ***ENTER*** *key* – toggles the compressor on/off
- ***UP/DOWN ARROW*** *keys* – cycles through the compressor buttons.

Attack button Shortcuts

Clicking the button the first time selects it. This allows the value to be modified by the ***Inc*** and ***Dec*** *buttons*. Clicking it a second time opens it for direct access.

See: Common Data Entry Field Shortcuts List {p.146}

Decay button Shortcuts

Clicking the button the first time selects it. This allows the value to be modified by the ***Inc*** and ***Dec*** *buttons*. Clicking it a second time opens it for direct access.

See: Common Data Entry Field Shortcuts List {p.146}

Thresh button Shortcuts

Clicking the button the first time selects it. This allows the value to be modified by the ***Inc*** and ***Dec*** *buttons*. Clicking it a second time opens it for direct access.

See: Common Data Entry Field Shortcuts List {p.146}, with the following exception(s):

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Ratio button Shortcuts

Clicking the button the first time selects it. This allows the value to be modified by the ***Inc*** and ***Dec*** *buttons*. Clicking it a second time opens it for direct access.
See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Gain button Shortcuts

Clicking the button the first time selects it. This allows the value to be modified by the ***Inc*** and ***Dec*** *buttons*. Clicking it a second time opens it for direct access.
See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

(Analog/Digital) Input (#) – EQ page Shortcuts

- ***ENTER*** *key* – alternately enables (inline) and disables (bypassed) ALL EQ settings for the current channel. When a channel's EQ has been bypassed, the settings are still maintained until they are specifically modified.
- ***RIGHT ARROW*** *key* – advances to the next filter band (note the green light in the buttons on the bottom of the page).
- ***LEFT ARROW*** *key* – advances to the previous filter band.
- ***UP ARROW*** *key* – changes the current band's filter type:
  - Band 1 – 3 are band filters selectable as Lo Shelf, Hi Shelf, Peaking or Off.
  - Notch 1 & 2 are notch filters selectable as Off or On.
- ***U*** *key* – resets the ***Level*** *field* of all bands of the current channel to unity (0.0), effectively negating them.
- ***L*** *key* – changes focus to the ***Level*** *field*.
- ***F*** *key* – changes focus to the ***Frequency*** *field*.
- ***Q*** *key* – changes focus to the ***Q*** *field*.
- ***E*** *key* – advances to the ***EQ Memory*** *page*.
- ***R*** *key* – resets the ***Level***, ***Frequency*** and ***Q*** *fields*
- ***BACKSPACE*** *key* – advances to the ***EQ Memory*** *page*

While the ***Entry Mode*** *button* is set to 'LVL/FREQ', the following keys are active:

- ***2*** *key* – adds 0.4 to the ***Level*** *field*.
- ***8*** *key* – subtracts 0.4 from the ***Level*** *field*.
- ***6*** *key* – adds 200 to the ***Frequency*** *field*.
- ***4*** *key* – subtracts 200 from the ***Frequency*** *field*.

Level field Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Frequency field Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Q field Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

EQ Memory page Shortcuts

- ***1** – **5** keys* – pressing one of them loads/saves (depending on the mode) the respective memory.
- ***E** key* – exits the ***EQ** page* and returns to the ***Analog Input (#) page*** {**p.82**} for this channel.
- ***BACKSPACE** key* – returns to the ***EQ** page*.

(Analog/Digital) Input # – BUS page Shortcuts

- ***LEFT/RIGHT ARROW** keys* – select which bus (Disk Channel vs. Output Channel)
- ***1** – **9** and **0** keys* – cycles cross-points
- ***E** key* – exits the ***BUS** page* and returns to the ***Analog Input (#) page*** {**p.82**} for this channel

(Analog/Digital) Input Delay page Shortcuts

0** – **9** keys* – opens the data entry field for the currently selected (highlighted) button (see ***Enter Delay** button **Shortcuts). Type the remainder of the number.

Enter Delay button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Disk Folders page Shortcuts

None

Name Folder button Shortcuts

See: ***Common Keyboard page Shortcuts*** {**p.152**}

Folder ID Contents page Shortcuts

None

Enter Seg # button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Mirror Drive page Shortcuts

- Typing a number opens a ***Segment Number** field*. Once entered, the system enters it as the ***START SEG** button*'s data.
- Typing a second number opens a second ***Segment Number** field*. Once entered, the system enters it as the ***END SEG** button*'s data.

Start Seg field Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

End Seg field Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Cue Mode page Shortcuts

- Typing a number opens an ***Enter Segment?** field*. Once entered, the system attempts to move to the segment # entered. If the number entered is too high, the last available segment is displayed.

Enter Segment data entry field Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Scene Take Note page Shortcuts

- ***0** – **9** keys* – opens the ***Enter Segment*** data entry field (see ***Enter Segment data entry field***). Type the remainder of the number and press the ***ENTER** key*. Once entered, the system attempts to move to the day's recording, by the segment # entered. If the number entered is too high, the segment **NEXT** is displayed.
- ***LEFT/RIGHT ARROW** keys* – navigates from the current recording segment to the previous/next segment.
- ***UP/DOWN ARROW** keys* – scrolls up/down through the stored notes in the bottom of the screen.
- ***CTRL** key* + single digit number – inserts the stored note associated with the number into the current ***Note** field*.

- ***CTRL*** *key* + ***SHIFT*** *key* + two digit # – inserts the stored note associated with the number into the current ***Note*** *field*.
- ***ALT*** *key* & single digit number – stores the current ***Note*** *field* into the specified stored note.
- ***ALT*** *key* & ***SHIFT*** *key* & two digit number – stores the current ***Note*** *field* into the specified stored note.
- ***F8*** *key* – opens the ***Scene*** *field*
- ***F9*** *key* – opens the ***Take*** *field*.
- ***F10*** *key* – opens the ***Note*** *field*

Enter Segment? field Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Scene button Shortcuts

See: ***Common Keyboard page Shortcuts*** {**p.152**}, with the following exception(s):

- ***TAB*** *key* – jumps to the ***Take*** *field* for data entry

Take button Shortcuts

See: ***Common Keyboard page Shortcuts*** {**p.152**}, with the following exception(s):

- ***TAB*** *key* – jumps to the ***Note*** *field* for data entry

Note button Shortcuts

See: ***Common Keyboard page Shortcuts*** {**p.152**}, with the following exception(s):

- ***TAB*** *key* – jumps to the ***Scene*** *field* for data entry

Segment button Shortcuts

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}

Common Keyboard page Shortcuts

- ***HOME*** *key* – moves the cursor to the first character in the field.
- ***END*** *key* – moves the cursor to the last character in the field.
- ***LEFT/RIGHT ARROW*** *keys* – move the cursor left/right.
- ***ESC*** *key* – discards unsaved changes and closes the data entry field.
- ***DEL*** *key* – deletes the character at the cursor and left shifts all characters on the right side of the cursor.
- ***INS*** *key* – moves the cursor to the first character in the field.
- ***ENTER*** *key* – accepts the data, validates it and closes the data entry field.
- ***TAB*** *key* – same as ***ENTER*** *key*
- ***BACKSPACE*** *key* –
  1) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  2) If the cursor is not on the first or last character, it deletes the character to the left of the cursor, moves the cursor to the left one character and left shifts the characters on the right of the deleted character by one character.
  3) If the cursor is on the first character, it deletes the character at the cursor and moves the characters right of the cursor to the left one character.

Battery Menu page Shortcuts

None

Low Battery Voltage button Shortcuts

Clicking the button the first time selects it. This allows the value to be modified by the ***Inc*** and ***Dec*** *buttons*. Clicking it a second time opens it for direct access.

See: ***Common Data Entry Field Shortcuts List*** {**p.146**}, with the following exception(s):

- ***BACKSPACE*** *key* –
  1) The first time the backspace is pressed it enters a decimal point.
  2) If the cursor is on the last character, it deletes the character at the cursor and moves the cursor left one character.
  3) If the cursor is not on the first or last character, it moves the cursor left one position, without deleting the character.
  4) If the cursor is on the first character, it has no effect.

Headphone Volume page Shortcuts

- ***LEFT ARROW*** *key* – decreases the headphone volume by **~4 dB**.
- ***UP ARROW*** *key* – decreases the headphone volume by **~4 dB**.

- ***RIGHT ARROW*** *key* – increases the headphone volume by **~4 dB**.
- ***DOWN ARROW*** *key* – increases the headphone volume by **~4 dB**.

Debug Screen (1967) page Shortcuts

Here is a summary of the ***F5*** (called TRIM on Fusion) commands available in the ***Debug Screen page*** {**p.128**}:

- ***TRIM*** then ***0*** – Undefined
- ***TRIM*** then ***1*** – Restart the Fusion. This can help some FireWire drives mount properly.
- ***TRIM*** then ***2*** – Copy currently memorized program onto a FireWire disk. The file is called FusionProgFile.bin.
- ***TRIM*** then ***3*** – Copy currently running program onto the primary drive.
- ***TRIM*** then ***4*** – **NEW** – Import settings (INI files) FROM Mirror Disk.
- ***TRIM*** then ***5*** – **NEW** – Export settings TO Mirror Disk (and print debug info).
- ***TRIM*** then ***6*** – Copy FusionProgFile.bin from FireWire disk into temp memory.
- ***TRIM*** then ***7*** – Copy FusionProgFile.bin from CD or DVD-R (in any format).
- ***TRIM*** then ***8*** – Unsupported feature.
- ***TRIM*** then ***9*** – Burns the currently memorized program into ROM.

Chapter 9 – Equipment Specifications

NOTE: All specifications in this chapter are subject to change without notice.

Hardware Based Properties

Analog Inputs

Channel Count (Fusion-10)	8 Mic/Line
Channel Count (Fusion-12)	8 Mic/Line + 4 Line
Connector	
Mic/Line	XLR-3F
Line	10-pin Hirose
Input Range	
Mic-level	–56 dBu to –26 dBu
Line-level	–10 dBu to +8 dBu
Mic Power (on Mic input only)	48 VDC phantom (each 10 mA max)
Impedance	
Mic-Level	10 k ohms
Line-Level	4 k ohms
ADC Bit-depth	24
ADC Dynamic Range	117 dB
Clipping Level	+28 dBu
Frequency Response	20 Hz to 22 kHz (@ 48 kHz sampling-rate)
THD + Noise	0.001%

Digital Inputs

Channel Count	8
Connector	mini DB-15
Sample-rate Converters	4 pairs

Analog Outputs

Channel Count	8 balanced
Connector	DB-25
Output Level	0 dBu at –20 dBFS
Clipping Level	+20 dBu
DAC Bit-depth	24
DAC Dynamic Range	112 dB
Impedance	600 ohms

Digital Outputs

Channel Count	8
Connector	mini DB-15

Output Common Items

Source	Mix/Direct (selectable)

Headphones

Connector	1 x 1/4" stereo jack
Dynamic Range	112 dB
Impedance	100 ohms (optimal)
Built-in Soundfield Decoder	Yes
Built-in M/S Decoder	Yes

Other Connectors

External Storage	1 x FireWire 400, 6 wire socket
External Storage Power	1.5 watts
Keyboard	1 x USB, Type A socket (for Zaxcom recommended keyboards)
Wordclock Output	1 x BNC-F

Serial/RS-422	1 x DB-9
Timecode	1 x LEMO-5F
External Power	1 x XLR-4M
Camera Audio	1 x Hirose-10F

Recording

Internal Storage	2 x CompactFlash

Timecode Reader/Generator

Clock Accuracy	1.54 PPM (1 frame out in 6 hours)

Power

Internal	NP-1, 10 to 16.8 VDC
External	10 to 18 VDC @ .7 A

Misc

Internal Slate Mic	Yes
Compatible w/ Mix-8/Mix-12	Yes

Physical

Operating Environment	
Temp Range	-20 to +60C
Size (H x W x D)	3.2" x 10.6" x 7.7"
(while looking at screen)	
Weight (w/o battery)	5 lbs

Controls

On Front

Faders	8 x rotary
Transport	3 x keys (REC, PLAY, STOP)
Multi-function	8 x keys
Number entry	10 x keys (numeric keys)
Slate mic	1 x key
LCD screen	1 x touch screen
Shift/Backspace	1 x key

On Left Side

Power	1 x slide switch

Software Based Properties

Internal Mixer

Mixer Cross-points	16 in / 24 out (pre-fader, post-fader, phase inversion)
Internal Processing	32-bit floating point DSP

Effects (Optional)

Input Compressor	**(A x 8, D x 8)**
Type	Soft Knee
Attack	1 to 100 ms
Decay	50 to 1000 ms
Threshold	–60.0 to 0.0 dB
Ratio	1.0:1 to 20.0:1
Make-up Gain	0.0 to 20.0 dB
Input Band Filter	**(A x 8, D x 8)**
Bands	3
Types	LO SHELF, HI SHELF, PEAKING
Level	-24.0 to +24.0 dB
Freq Range	30 Hz to 20 kHz
Q	0.5 to 9.9
Input Notch Filter	**(A x 8, D x 8)**

Bands	2
Level	–24.0 to +24.0 dB
Freq Range	30 Hz to 20 kHz
Q	0.5 to 9.9

Effects (Included)

Disk Limiter (Fusion-10)	**(x 10)**
Disk Limiter (Fusion-12)	**(x 12)**
Attack	0.1 to 100.0 ms
Decay	10 to 1000 ms
Threshold	–20.0 to 0.0 dB
Ratio	4.0:1 to 20.0:1
Make-up Gain	0.0 to 6.0 dB
Input Highpass Filter	**(A x 8, D x 8)**
Freq. Range	Off or 30 to 240 Hz
Input Delay	**(A x 8, D x 8)**
Time Range	0 to 60 ms
Input Limiter	**(A x 8, D x 8)**
(parameters fixed)	Yes, No
Output Limiter	**(x 8)**
Attack	0.1 to 100.0 ms
Decay	10 to 1000 ms
Threshold	–20.0 to 0.0 dB
Ratio	4.0:1 to 20.0:1
Make-up Gain	0.0 to 6.0 dB

Recording

Track Count (Fusion-10)	10
Track Count (Fusion-12)	12
Bit-depth	
Primary	24
Mirror(s)	16 / 24
Sampling-rates (kHz)	44.1, 47.952, 48, 48.048, 88.2, 96, 96.096, 192*
Head Room	12 to 20 dB
Drive Format	
Int. Slot -1	MARF (Mobile Audio Recording Format) II
Int. Slot -2	FAT32
Ext. Device	FAT32
File Formats	
Int. Slot 1	.ZAX
Int. Slot 2	BWF-M, BWF-P
Ext. Device	BWF-M, BWF-P
Dual Disk Recording	Yes
Max Pre-record (secs)	10 seconds (48.048 kHz and below)

* Up to 6 tracks max

Timecode Reader/Generator

Timecode Type	SMPTE
Timecode Frame-rates	23.98, 24, 25, 29.97NDF, 29.97DF, 30NDF, 30DF

Chapter 10 – Connector Pinouts

This section provides the pinouts for the connectors on the Fusion. The mating cable connector part number is also provided for the less common connectors.

NOTE: All of the diagrams in this chapter show the solder side of each connector.

Power Connector

The Power Connector on the Fusion is a standard 4-pin XLR connector (A4F) available at most electronics stores. The Fusion requires a power source of 9.5 to 18 VDC @ 1 A.

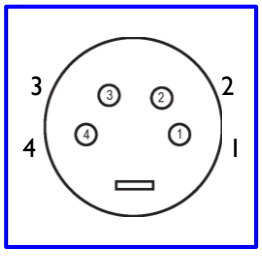


Figure 10-1 XLR-4F Power Connector Pin Numbering

Pin	Description
1	Ground
2	Ground
3	Output: +12 VDC
4	Input: 9.5 to 18 VDC (+)

Table 10-1 XLR-4F Pin Description

Audio Input/Output Connectors, XLR-3

When building an analog cable, use balanced XLR cable.

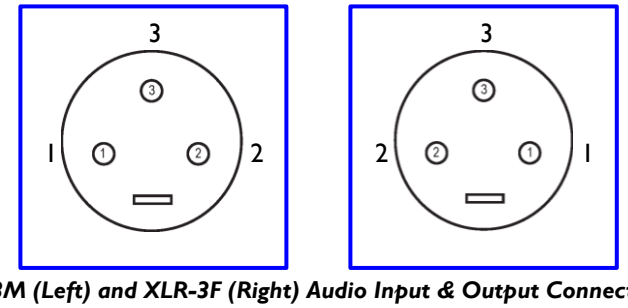


Figure 10-2 XLR-3M (Left) and XLR-3F (Right) Audio Input & Output Connector Pin Numbering

Pin	Description	Pin	Description	Pin	Description
1	Ground (**X**)	2	(+) / Hot (**L**)	3	(–) / Cold (**R**)

Table 10-2 XLR-3 Pin Description

Analog Output Connector, DB-25

This is a standard DB-25 connector available at most electronics part stores. Channel 8 is unbalanced.

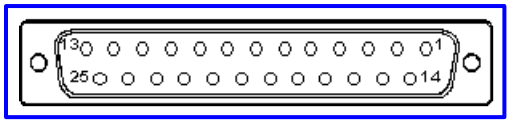


Figure 10-3 DB-25M Analog Output Connector Pin Numbering

Pin	DESC	Pin	DESC	Pin	DESC
1	Ch1,Pin2	10	Ch5, Pin3	19	NC
2	Ch1, Pin1	11	Ch6, Pin2	20	Ch4, Pin1
3	Ch4, Pin3	12	Ch5, Pin1	21	Ch3, Pin3
4	Ch5, Pin2	13	NC	22	Ch4, Pin2
5	Ch3, Pin1	14	Ch2, Pin3	23	Ch7, Pin1 Ch8, Pin1 Ch8, Pin3
6	NC	15	Ch3, Pin2	24	Ch7, Pin2
7	Ch1, Pin3	16	Ch2, Pin1	25	Ch8, Pin2
8	Ch2, Pin2	17	Ch6, Pin3		
9	Ch6, Pin1	18	Ch7, Pin3		

Pinouts for Fusion-12

Pin	DESC	Pin	DESC	Pin	DESC
1	Ch1,Pin2	10	Ch5, Pin3	19	Grd
2	Grd	11	Ch6, Pin2	20	Grd
3	Ch4, Pin3	12	Grd	21	Ch3, Pin3
4	Ch5, Pin2	13	Grd	22	Ch4, Pin2
5	Grd	14	Ch2, Pin3	23	Grd
6	Grd	15	Ch3, Pin2	24	Grd
7	Ch1, Pin3	16	Grd	25	Grd
8	Ch2, Pin2	17	Ch6, Pin3		
9	Grd	18	Grd		

Pinouts for Fusion-10

Table 10-3 DB-25M Pin Description

Line Input / Camera Connector, Hirose-10

On the Fusion, a Hirose 10-pin connector is provided as a camera output and a camera return into the Fusion recorder. Balanced analog outputs channels 5 and 6 are on pins 1-4. Camera returns 1 and 2 on pins 5 and 7 are summed to mono in the Fusion. (Connector P/N: HR10A-10J-10P)

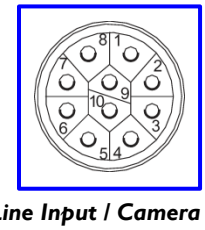


Figure 10-4 Hirose-10M Line Input / Camera Connector Pin Numbering

Pin	DESC
1	Ch09 (Ch1), Pin2
2	Ch09 (Ch1), Pin3
3	Ch10 (Ch2), Pin2
4	Ch10 (Ch2), Pin3
5	Ch09 (Ch1), Pin1 Ch10 (Ch2), Pin1
6	Ch11 (Ch3), Pin2
7	Ch11 (Ch3), Pin3
8	Ch12 (Ch4), Pin2
9	Ch12 (Ch4), Pin3
10	Ch11 (Ch3), Pin1 Ch12 (Ch4), Pin1

Fusion-12

Pin	DESC	Notes
1	Ch05, Pin2	
2	Ch05, Pin3	
3	Ch06, Pin2	
4	Ch06, Pin3	
5	Camera return 1	Summed to mono with camera return 2
6	NC or +12v	optional 12v
7	Camera return 2	Summed to mono with camera return 1
8	NC or TC	optional TC
9	NC or Grd	
10	NC or Grd	

Fusion-10

Table 10-4 Hirose-10 Pin Description

Timecode Connector

The timecode connector on the Fusion is a 5-pin LEMO connector. The cable end p/n is: FGG.0B.305.CLAD42Z. The "42" is the cable diameter, this can be adjusted, within limits. Visit: http://intra.lemo.ch/WD140AWP/WD140Awp.exe/CONNECT/PartSearch?p1=partNumber and explore the possibilities.

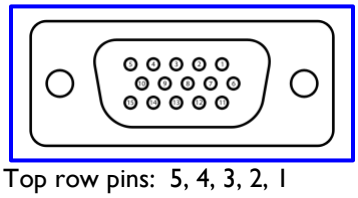
Figure 10-5 LEMO-5M Timecode Connector Pin Numbering

Pin	DESC
1	Grd
2	TC In
3	NC
4	NC
5	TC Out

Table 10-5 LEMO-5M Pin Description

AES Digital Input / Output Connectors

The Fusion uses a mini DB-15 (AKA: DE-15) connector for the AES (digital) input and output connectors.



Top row pins: 5, 4, 3, 2, 1
Middle row pins: 10, 9, 8, 7, 6
Bottom row pins: 15, 14, 13, 12, 11

Figure 10-6 Mini DB-15M Input and Output Connector Pin Numbering

Pin	DESC	Pin	DESC
1	Ch3/4, Pin2	9	Ch7/8, Pin1
2	Ch1/2, Pin2	10	Ch5/6, Pin1
3	NC	11	Ch3/4, Pin3
4	Ch7/8, Pin2	12	Ch1/2, Pin3
5	Ch5/6, Pin2	13	NC
6	Ch3/4, Pin1	14	Ch7/8, Pin3
7	Ch1/2, Pin1	15	Ch5/6, Pin3
8	NC		

Table 10-6 Mini DB-15M Pin Description

Chapter 11 – Firmware Information

Firmware

Each Fusion is shipped with the latest firmware version installed. As newer firmware becomes available, it can be downloaded from the Zaxcom website (***http://zaxcom.com/software_up dates.htm***).

Each time a unit is powered up, the firmware version number is displayed briefly on the LCD screen.

Advantages to Upgrading the Firmware

By upgrading the software, the range and feature set have and will continue to dramatically increase over time. Zaxcom has a reputation for constantly adding additional features and user suggestions during the product's lifetime. This ensures that your digital recorder will perform better and better, the longer you own it.

Upgrading the Firmware in Each Unit

(Greg: could you see if this is correct? Have I left anything out?)

Use the steps listed to update the firmware on your Fusion. . The program file is always named DevaProgFile.bin. The procedure for upgrading the firmware places it first into temporary DRAM, and then flashes it to the ROM. This is the safest way to upgrade the firmware since you will always be able to boot the Fusion should something go wrong during the firmware update process

1. Download the updated Firmware
2. Depending on which media you will be using, perform one of the following:
    a. For CD-R, DVD-R or DVD-RAM – Burn the firmware to it
    b. For a hard disk drive – Save a copy of the firmware to the root folder.
    c. For the Compact Flash card
        i. Using the Fusion's Mirror Slot, format a spare SD card
        ii. In the SD adapter on your PC, save the firmware to the Compact Flash card
3. Depending on which media you will be using, perform one of the following:
    a. For an external FireWire device:
        i. Connect the FireWire device to the Fusion's FireWire port (CD-R / DVD-R / DVD-RAM / ext HDD).
        ii. Power-up the Fusion.
        iii. Go to the ***My Fusion page*** {**p.104**}.
        iv. In the ***Firewire Power*** *button*, select **On**
        v. If necessary, insert the FireWire media you created in step 2.
        vi. Go to the ***Mirror Drive page*** {**p.111**}.
        vii. In the ***Mirror Mode*** *button*, select **Off**
        viii. If necessary perform the following:
            1. Go to the ***My Fusion page*** {**p.104**}.
            2. In the ***Mirror Drive Select*** *button*, select **Firewire**
            3. When the system displays the dialog: "Do you want to restart now? Yes or No", answer **Yes**
            4. The system reboots
    b. For the Compact Flash Mirror drive:
        i. Insert the card you loaded in step 2.
        ii. Go to the ***Mirror Drive page*** {**p.111**}.
        iii. In the ***Mirror Mode*** *button*, select **Off.**
        iv. If necessary perform the following:
            1. Go to the ***My Fusion page*** {**p.104**}.
            2. In the ***Mirror Drive Select*** *button*, select **Compact Flash**
            3. When the system displays a dialog asking: "Do you want to restart now? Yes or No", answer **Yes**
            4. The system reboots

4. Perform the following to install the new firmware:

   a. Go to the ***Main Menu page*** {**p.35**}.
   b. Enter **036** using the numeric keys.
   c. Go to the ***Setup page*** {**p.53**}.
   d. Press the ***Service*** *button* (the ***Fusion Service Menu page*** {**p.127**} is displayed)
   e. Depending on what media you are using to install the software (basically whether or not its format is recognized), perform one of the following:

      i. If the format is unrecognized (CD-R or DVD-R), press the ***Load From CD-R*** *button*
      ii. If the format is recognized (hard disk drive, SD media or DVD-RAM), press the ***Load Progfile*** *button*

   f. The ***Debug Screen page*** {**p.128**} is displayed and the following appears on it. The process takes about 5 seconds:

```
Starting ReadDevaProgramFile
opened Deva prog file
imported 5MB at 2545kB/sec Version String:
DateTimeVer:mmm dd yyyy
hh:mm:ss
v1.23L
Calculating Checksum…size=0x00500000 Vs: <6><8>
DevaProgFile.bln is now in temporary memory
```

   The last line indicates that the firmware was successfully installed in temporary memory.

   g. Press the ***Burn Program ROM*** *button*
   h. The ***Debug Screen*** *page* is cleared and the following appears on it. The process takes a little over three minutes:

```
... BurnBigROM() ...
 Erasing 81 ROM sectors (5308kB)
.........................
Writing Deva Program to ROM
.........................................
 ReadBackTest:Checking BootROM...
BURN-ROM task finished **TURN POWER OFF NOW**
```

IMPORTANT: Do not power down the Fusion until the page indicates that you can.

   i. Cycle the power to run on the newly installed firmware.
   (You have successfully completed the installation … HAVE FUN with the new version!!!)

Significant Change Reminders

Folder Recovery Operation

Boot up while pressing the F6 key (***INPUT*** *key*). Once the system has settled down, go to the folder that was recovered and press the ***REC*** *key*, wait 5 seconds and press the ***STOP*** *key*. This causes the recovered data to be written to the drive.

Saving and restoring Fusion's configuration INI files

Starting in version 5.14 an Export Settings feature was added to allow Users to save and restore all their settings to or from any (FAT32 formatted) mirror disk.

To save the current configuration settings to a CompactFlash card:

1. Turn **Off** mirroring and insert a formatted mirror disk or card.
2. Go to the ***Main Menu page*** {**p.35**} and type **1967** to open the ***Debug Screen page*** {**p.128**}.
3. Press the ***TRIM*** *key* then the ***5*** *key*. This will copy your configuration memory files to the mirror disk.

To load configuration settings from a CompactFlash card:

1. Turn **Off** mirroring and insert a mirror disk or card containing the INI files to be loaded.
2. Go to the ***Main Menu page*** {**p.35**} and type **1967** to open the ***Debug Screen page*** {**p.128**}.
3. Press the ***TRIM*** *key* then the ***4*** *key*. This will load the INI files into the unit's configuration memory.

New Processor speed selection feature

DSP boards labeled REVB in the ***About Fusion page*** {**p.122**} might not be able to run reliably at the high processor speed.

Type **036** in the ***Main Menu page*** {**p.35**} and go to the ***Fusion Service Menu page*** {**p.127**}.
There is a new ***Processor Speed*** *button*. If the processor speed is set to **HIGH**, the ***192000*** *button* in the ***Sample Rate page*** {**p.55**} should remain enabled. If not, the ***9*** *key* must be held during power up in order to allow 192 kHz recording.

The higher speed will increase the mirroring speed by about 20% and will allow the user to enable more effects before the screen becomes sluggish.

NOTE: Older Fusions may NOT run reliability at the higher processor speed.

To use the Simultaneous mirror feature:

Go to the ***Mirror Drive page*** {**p.111**} and change the ***Mirror Mode*** *button* to **On-CONTIN.** to enable the continuous mirror mode. Fusion will mirror the currently selected mirror folder while in record (not during playback). When mirroring more than 8 tracks at 48 kHz, Fusion may slowly fall behind the mirror process and may take a few minutes to catch up after the recording stops.

To use the "Mirror All Folders" feature:

Erase your mirror drive (FireWire hard drive) and then select a starting folder in the ***Mirror Folders page*** {**p.116**}. Press the ***Mirroring Mode*** *button* to select **All Folders**. Then go back to the ***Mirror Drive page*** {**p.111**} and change the ***Mirror Mode*** *button* to **On-NORMAL** to start mirroring. The Fusion will mirror starting at the currently selected mirror folder and will mirror all folders until the end of the disk. Fusion will over-write any matching segments that are already on the mirror disk.

Know Firmware Issues

NOTE: Turn 'OFF' all effects before switching to a higher sampling-rate. If you want to use 192 kHz mode, then you should perform a factory restore defaults to insure all effects are turned 'OFF'.
When changing from 192 kHz to 48 kHz sample-rate, select 96 kHz first as an intermediate step to prevent a possible freeze. Holding the ***0*** *key* while booting will force the Fusion back into 48 kHz mode.

NOTE: Mirror Disk Playback must not be enabled while mirror mode is on. Doing so will cause the unit to appear to be in playback when it is not. The ***Play*** *key* may not update properly until the current page is exited.

NOTE: Playback from a DVD-RAM disk or FireWire drive often will not be fast enough to sustain the Fusion's playback buffer. This will often result in only partial playback of a file. Press the ***STOP*** *key* periodically to allow the playback buffer to fill back up.

WARNING: If you install software versions lower than z3.55 onto a Fusion, the internal DVD drive and CF card slot will not function. This may make it difficult to install a newer version.

NOTE: As of V4.00, you must select the folder to mirror. Fusion will no longer assume that you want to mirror the current RECORD folder. You may also change the RECORD folder without affecting the currently mirroring folder.

Firmware History

V7.08 2009-12-16 **ZAXNET BETA VERSION**

Ver #	Ver Date	
	Changed	Moved ZaxNet button to the left to avoid changes during touch screen malfunction

V7.05 UNKNOWN

Ver #	Ver Date	
	Fixed	Aux Line input trim 1 – 4 which were not being updated after a power cycle
	Changed	Allow over-clocked (by 10%) DSP speed (320MHz) when the #2 key is held during boot-up
	Fixed	Battery screen index
	Fixed	Meter label entry screen tab bug
	Changed	Properly update limiter crosspoint display
	Fixed	decimal point entry in battery meter screen (use backspace key)

V7.03 UNKNOWN

Ver #	Ver Date	
	Fixed	Was not properly saving the trim mode on digital inputs.

V6.08K UNKNOWN

Ver #	Ver Date	
	Changed	No longer send ZaxNet commands if the Timecode screen is being displayed (for non ZaxNet compatible slates).

V6.08F UNKNOWN

Ver #	Ver Date	
	Added	Low battery warning on boot up (9.0 volts).

V6.06C UNKNOWN

Ver #	Ver Date	
	Added	F6 (INPUT key on Fusion) boot key: causes a folder recovery operation.
		NOTE: the recovered folder info is NOT written to the drive unless a recording is made in that folder!

V6.03U 2009-06-26

Ver #	Ver Date	
	Changed	Better free space left on mirror disk indicator on Mirror Drive Status button

V6.02U 2009-06-25

Ver #	Ver Date	
	Changed	potential bug in GUI that could cause a crash
	Added	free space left on mirror disk indicator on Mirror Drive Status button (FAT32 disks only)

V6.00U 2009-06-16

Ver #	Ver Date	
	Changed	FireWire library to check for the corrupted sector that Sam Hecht drive creates
		NOTE: should fix the need to format DVD-RAM disk twice bug related to the Sam Hecht drive

v5.99U 2009-03-14

Ver #	Ver Date	
	Added	output routing features
	Changed	the saving of some EQ settings
	Changed	digital HPF (was not filtering the digital inputs)
	Changed	memory leaks in DiskMix, OutputMix and Headphone pages

==========

v5.65U 2009-03-06

Ver #	Ver Date	
	Changed	Automatic Take increment to prevent loss if STN metadata
	Changed	Deva16 with mirroring more than 14 mono WAV files at a time
	Added	fix to allow mirroring to continue even after an audio error (from 5.44O)
	Changed	Brightness Default setting after a Factory Restore Defaults

==========

v5.64U 2009-02-25

Ver #	Ver Date	
	Changed	Fusion 12 only having 10 tracks
	Changed	problem with turning OFF mirror mode with UDF formatted disks NOTE: UDF disks cannot mirror in continuous mode
	Changed	Attempted to fix default brightness problem (defaults to lowest brightness setting)
	Changed	Addressed ERASE_5_ERR and F32_LinkC1_WARN during format of internal disk
	Added	re-try for link cluster warning
	Added	Warning if format internal disk had a problem with a link cluster

==========

v5.62U 2009-02-10

Ver #	Ver Date	
	Changed	Compressor's Decay and Attack settings (Not restored after power cycle)
	Changed	Format Drive so it makes wrapper files that can be copied on a PC
	Added	Extra two optical meters on Home page
	Changed	Minor EQ changes
	Changed	Allow metering of analog/digital inputs/outputs on Home and Cue pages
	Removed	extraneous soloing of post-fader analog and digital channels
	Changed	Mix12 communications and recognition. Only look for Mix12 when the Mix12 switch is ON
	Deleted	keyboard wake-up fix to prevent sluggishness when the keyboard is unexpectedly removed
	Added	option codes for the Fusion 10
	Changed	WAV metadata name to always be "Deva5" instead of "Deva" to prevent the Fostex DV824 from misrepresenting the timecode (48k, 29.97)
	Added	free upgrade for all Fusion 8 to 10 ch
	Changed	Headphone preset crash partial
	Changed	Limiters latching up after PLAY (96 kHz horsepower performance may be degraded)
	Changed	Mix8 checksum bug (faders on mix8 would not work)
	Changed	Fusion12 code (major crash bug fix)
	Added	New LCD switch (hold the "4" key during boot to toggle the display type)

==========

v5.44O 2008-12-28

Ver #	Ver Date	
------ This is a special rolled back version ------		
	Changed	Format Drive page (was not printing any format status)

==========

v5.44N 2008-12-23

Ver #	Ver Date	
------ This is a special rolled back version ------		
	Changed	Allow bad audio to mirror completely instead of failing and deleting the WAV file
	Changed	modify 5.44L to increase mirroring speed

==========

v5.44l 2008-12-21

Ver #	Ver Date	
------ This is a special rolled back version ------		
	Changed	MAX OPEN FILES to fix mirroring of 16 channel MONO files
	Disabled	all 1967/rs-232 print commands unless the 1967 page is visible to prevent random crashes

==========

v5.44j 2008-12-11

Ver #	Ver Date	
------ This is a special rolled back version ------		
	Added	Fusion 10 upgrade for Fusion 8 channel owners
	Added	fix for MARF wrapper file creation (FORMAT INTERNAL DISK). Allows proper copying of files of the primary media to a PC or MAC.

==========

v5.44h 2008-12-06

Ver #	Ver Date	
------ This is a special rolled back version ------		
	Fixed	compressor attack and decay settings not being remembered
	Fixed	prevent compressors from saturating after pressing PLAY then STOP

==========

v5.44f 2008-12-03

Ver #	Ver Date	
------ This is a special rolled back version ------		
	Fixed	Mix-8 audio output bug

==========

v5.43w 2008-11-24

Ver # Ver Date

------ This is a special rolled back version ------

Fixed Mix8 audio output bug

==========

v5.43y 2008-11-12

Ver # Ver Date

------ This is a special rolled back version ------

Bug Fix DV824 timecode problem. Metadata now says "Deva5" instead of "Deva".

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v5.43z 2008-11-11

Ver # Ver Date

------ This is a special rolled back version ------

Bug Fix DV824 timecode problem. Metadata now says "Deva5" instead of "Deva".

Bug Fix PS2 keyboard no longer slows down Deva when unplugged

Bug Fix MARF wrapper file creation (FORMAT INTERNAL DISK)

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v5.43u 2008-07-18

Ver # Ver Date

Fixed Compressor seizing up after PLAYBACK with pre-record set to zero seconds

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v5.42u 2008-07-11

Ver # Ver Date

Changed Remapped STN function keys to F8 thru F10

Added headphone monitor for output mix feature

Fixed soft fader disappearing bug (for Deva 4's and 5's)

Fixed GUI crash when using portable LaCie DVD-RAM drive

Fixed problem with clipped audio when recording in ZaxFile mode

Fixed No loner allow mirroring when no tracks are enabled

Added "Skipped segment" message when no mirror tracks are enabled for the that file

Changed Enhanced decimal point handling in EQ page

Fixed bug that could cause instability after using Trim page

Added User Selectable FAST processor speed setting in Service page

(To get to the Service page type 036 in the Main Menu page to make the Service button appear at the bottom of the Setup page)

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v5.39u 2008-07-07 **BETA**

Ver # Ver Date Category

Fixed Mirror Drive Status button in Mirror page: status froze after Format Disk

Changed how a failed mirror disk format behaves

Fixed input limiter problem when using a lot of trim gain (makeup gain)

Changed increased input limiter Decay speed

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v5.38u 2008-06-24 **BETA**

Ver # Ver Date Category

Bug Fix When recording compressed files, segs could exceed 2GB

Changed Reduced auto file size limit when recording compressed files

Changed allow fast DSP speed when compression is 'ON'

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v5.36u 2008-06-20 **BETA**

Ver # Ver Date Category

Fixed some more screen grey out issues

Changed Longer folder name support (8 chars instead of 4)

Fixed FireWire freeze when powering 'OFF' LaCie Rugged Drive

Deleted feature which prevented RECORD when disk is busy

Changed Reduced hold-time requirements when locking the touch screen

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v5.33u 2008-06-16 **EXPERIMENTAL**

Ver # Ver Date Category

Experimental: Devas and Fusions can now record **compressed Zax files**.
(See Setup :: Operating Mode :: Record Format) The options are 2:3 and 2:1 compression ratios. 2:1 compression is a little bit lossy but should not be noticeable. 3:2 is virtually loss-less.

ZaxFile compression uses a little more DSP power while recording and may limit the number of record tracks at 96 kHz and 192 kHz sampling-rates. If the user interface gets sluggish you are running out of processing power. Turn 'OFF' all unnecessary effects and cross-points to improve performance.

If your unit seems consistently sluggish try a Factory Restore Defaults in "Setup :: Memory" to insure all un-needed features are turned 'OFF'.

Besides using more processing power, when ZaxFile compression is used you should not notice anything different with the way the unit behaves, you should just see more recording time.

Warning: the PC recovery software currently cannot recover compressed files, so a corrupted hard disk may not be recoverable until this feature is added to the PC recovery software. The PC/MAC ZaxFile conversion software is being worked on now.

Added Compressed ZaxFile Record format in Operating Mode page

Fixed	muted ZaxFile Playback
Fixed	problem with old Deva4's turning into 4 track recorders
Fixed	Mirror problem with compressed ZaxFiles

v5.30u 2008-06-13

Ver #	Ver Date
Fixed	input limiter seize bug
Fixed	PS2 Keyboard problem when pressing two keys together
Fixed	Mix12 disk and output limiter support
Changed	Allow changing of limiters while in record
Changed	allow EQ settings to be changed while in record
Fixed	disk limiters and output limiters
Fixed	display grey-out problem when in Mix12 pages
Fixed	Deva / Fusion text in some pages
Fixed	user entry bug with entering integer values
Fixed	crash when changing meter labels with PS2keyboard on Deva16

v5.27u 2008-06-09

Ver #	Ver Date
Added	PS2 scan code reset to MENU key press (Press the MENU key to reset PS2 Keyboard)

v5.25u 2008-05-30

Ver #	Ver Date
Changed	Output Mix is now changeable while in Record
Added	RestartDeva button to Mirror Drive change dialog box
Changed	Slower DSP speed by default
Added	check so stuck STOP key won't reset to factory defaults on power up
Added	Delay entry mode in Samples instead of milliseconds
Changed	EQ entry to allow jumping to channels in EQ page
Deleted	the text "channel" in some places
Changed	Autoload mode was not being saved on power down
Fixed	False Start bug when incrementing User Bits
Changed	Boot Loader
Fixed	the "Hold MENU_KEY to Boot From Hard Disk" feature

v5.23u 2008-05-21

Ver #	Ver Date
Added	force keyboard power 'ON' when present

v5.22u 2008-05-19

Ver #	Ver Date
Fixed	corrupt mirror disk when disk is over-filled
Deleted	text telling user to use F5, 1 to restart after burning new firmware

v5.20u 2008-05-16

Ver #	Ver Date
Added	prevent RECORD and PLAY when disk is recovering from a RECORD event

v5.19u UNKNOWN

Ver #	Ver Date
Fixed	Playback bug

v5.18u UNKNOWN

Ver #	Ver Date
Fixed	Record Buffer under-run warning (blink record key)
Changed	HARD_DISK_ERROR to HARD_DISK_TOO_SLOW
Changed	switching to prevent crash on 192 kHz to 48 kHz transition

v5.17u 2008-05-03

Ver #	Ver Date
Added	note to use F5, 1 when requesting a Deva restart (IGNORE THIS NOTE)

v5.16u UNKNOWN

Ver #	Ver Date
Fixed	missing Deva4 case in MachineInfo init

v5.12u 2008-04-22

Ver #	Ver Date
Bug Fix	Input Trim meter freeze

v5.10u 2008-03-26

Ver #	Ver Date
Fixed	serious FREE_RUN timecode offset when pre-record is 'ON' (bug was introduced in v4.22u)

v5.04u UNKNOWN

Ver # **Ver Date**

Fixed slight timecode inaccuracy with TC pull-up switch

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v5.02u UNKNOWN

Ver # **Ver Date**

Fixed Direct Outs feature

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Chapter 12 – Zaxcom Warranty Policy and Limitations

Zaxcom Inc. values your business and always attempts to provide you with the very best service.

No limited warranty is provided by Zaxcom unless your Zaxcom Fusion ("Product") was purchased from an authorized distributer or authorized reseller. Distributers may sell Products to resellers who then sell Products to end users. Please see below for warranty information or obtaining service. No warranty service is provided unless the product is returned to Zaxcom Inc. or a Zaxcom dealer in the region where the Product was first shipped by Zaxcom.

Warranty Policy

Zaxcom Fusion carries a Standard Warranty Period of one (1) year.

NOTE: The warranty period commences from the date of delivery from the Zaxcom dealer or reseller to the end user.

There are no warranties which extend beyond the face of the Zaxcom limited warranty. Zaxcom disclaims all other warranties, express or implied, regarding the Products, including any implied warranties of merchantability, fitness for a particular purpose or non-infringement. In the United States, some laws do not allow the exclusion of the implied warranties.

Return Material Authorization (RMA)

No Product may be returned directly to Zaxcom without first contacting Zaxcom for a Return Material Authorization ("RMA") number. If it is determined that the Product may be defective, you will be given an RMA number and instructions for Product return. An unauthorized return, i.e. one for which an RMA number has not been issued, will be returned to you at your expense. Authorized returns are to be shipped prepaid and insured to the address on the RMA in an approved shipping container. Your original box and packaging materials should be kept for storing or shipping your Product. To request an RMA, please visit the Zaxcom Repair Services page (***http://www.zaxcom.com/support_repair_services.htm***) and complete the form. You will receive an email or telephone call with the RMA #. Please write the RMA# on the front of the package. If you don't have internet access, you may request an RMA # by telephone. Zaxcom will return the warranty repair via 2nd day UPS or FedEx at their discretion. If overnight service is required, a FedEx or UPS account number must be provided to Zaxcom to cover shipping expenses.

Warranty Limitations

Zaxcom's limited warranty provides that, subject to the following limitations, each Product will be free from defects in material and workmanship and will conform to Zaxcom's specification for the particular Product.

Limitation of Remedies

Your exclusive remedy for any defective Product is limited to the repair or replacement of the defective Product.

Zaxcom may elect which remedy or combination of remedies to provide in its sole discretion. Zaxcom shall have a reasonable time after determining that a defective Product exists to repair or replace a defective Product. Zaxcom's replacement Product under its limited warranty will be manufactured from new and serviceable used parts. Zaxcom's warranty applies to repaired or replaced Products for the balance of the applicable period of the original warranty or thirty days from the date of shipment of a repaired or replaced Product, whichever is longer.

Limitation of Damages

Zaxcom's entire liability for any defective Product shall, in no event, exceed the purchase price for the defective Product. This limitation applies even if Zaxcom cannot or does not repair or replace any defective Product and your exclusive remedy fails of its essential purpose.

No Consequential or Other Damages

Zaxcom has no liability for general, consequential, incidental or special damages. These include loss of recorded data, the cost of recovery of lost data, lost profits and the cost of the installation or removal of any Products, the installation of replacement Products, and any inspection, testing or redesign caused by any defect or by the repair or replacement of Products arising from a defect in any Product.

In the United States, some states do not allow exclusion or limitation of incidental or consequential damages, so the limitations above may not apply to you. This warranty gives you specific legal rights and you may also have other rights, which vary from state to state.

Your Use of the Product

Zaxcom will have no liability for any Product returned if Zaxcom determines that:

- The Product was stolen.
- The asserted defect:
  1. Is not present,
  2. Cannot reasonably be fixed because of damage occurring when the Product is in the possession of someone other than Zaxcom, or
  3. Is attributable to misuse, water damage, improper installation, alteration, including removing or obliterating labels and opening or removing external covers (unless authorized to do so by Zaxcom or an authorized Service Center), accident or mishandling while in the possession of someone other than Zaxcom.
- The Product was not sold to you as new.
- Non Zaxcom supplied parts and/or modifications were installed.

Additional Limitations on Warranty

Zaxcom's warranty does not cover products, which have been received improperly packaged, altered or physically abused.