



SX-48 **Service Manual**

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Chapter 1 - Introduction

SX-48 (Signal Exchange 48 Channels)

Fairlight's SX-48 Signal Exchange unit provides flexible I/O management of both analog and digital audio inputs and outputs and a packing density of up to 48 channels in a single 2U frame. Each standard SX-48 frame ships with a MADI I/O card to provide a multiplexed bi-directional signal flow for each 48 channel unit. Digital signals can be referenced to external AES, Word Clock or Video at any standard frame rate, including tri-level references when used in a Hi Definition production environment. If AES inputs are present, any AES input can be used as a reference for the system. The front panel LED's provide a clear indication as to the reference currently in use.

Central to the SX-48 design is the ability to flexibly configure units with any combination of up to six audio I/O cards plus one MADI I/O card in each 2U frame. These cards can provide 8 x channels of AES EBU I/O with Sample rate conversion, 8 channels of high quality analog inputs and 8 x channels of Analog outputs. Optional relay protected analog outputs are also available if these channels are required to connect to analog speakers.

Purpose of this Document

This document explains how to install, configure and test a Fairlight SX-48 audio interface box.

Warning

The SX-48 is an electrical device containing dangerous components and high voltages. Only competent service technicians should open the box, and then only after turning off the power and making sure that the unit is properly grounded.

Fitting and Changing Boards

Static Precautions

SX-48 installation may involve fitting of electronic circuit boards. Care must be taken when doing this to avoid danger to oneself and damage to the equipment.

Please take note that all Fairlight manufactured electronic modules are static sensitive and should be handled under anti-static conditions. When working on a system always ensure that you have an anti-static lead connected and that the system is connected to ground through an earth lead.

Never work on the system while powered up unless you are authorized by Fairlight to do so. As a matter of practice always touch the external chassis of the system before opening the front panel. If cards are not handled under anti-static procedures your machine may sustain damage which could either cause a complete failure or may cause intermittent crashes and subsequent system failure.

When handling cards please ensure that they are placed in anti-static bags when not in the system. For shipment purposes electronic modules should be placed in an anti-static bag and then suitably surrounded with loose packaging materials in a solid card board box. Cards shipped to Fairlight without the correct anti-static packaging will have their warranty voided. If you have any enquiries on this matter please feel free to contact your local Fairlight office or distributor.

Orientation – VERY IMPORTANT

WARNING – incorrect orientation of boards when installing can cause severe damage to the SX-48 unit. Make sure you carefully inspect the picture below before placing boards in the unit.

SX-48 Basics

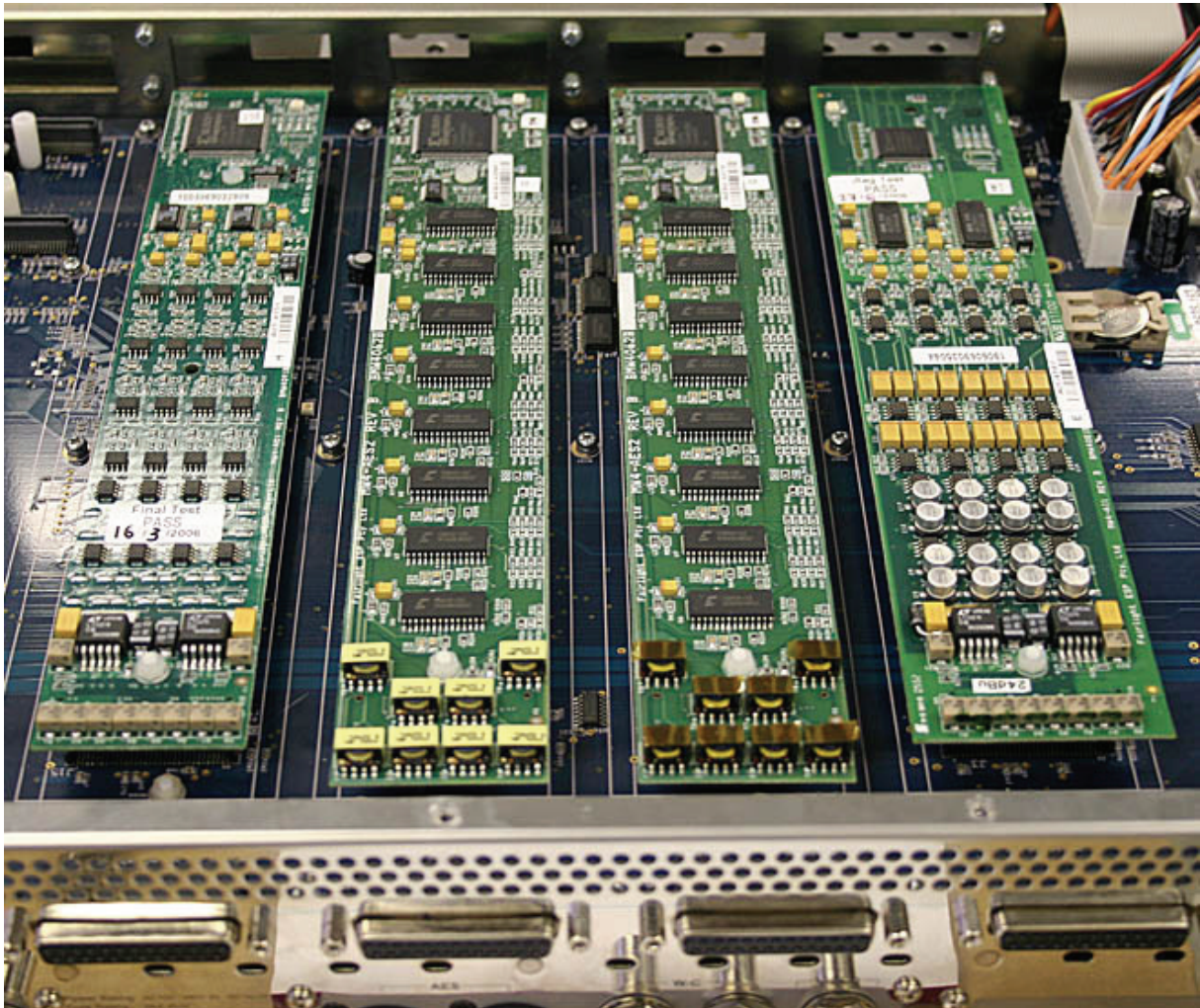
The SX-48 is a synchronized audio conversion box. It converts as follows:

Analog → MADI

Analog ← MADI

AES/EBU → MADI

AES/EBU ← MADI



Adding a Board

All boards are fitted using connectors that press together. Excessive force is not required. I/O boards use white Teflon guides to locate easily.

Ensure that the Teflon posts are correctly lined up to the holes in the board, and that the connectors are correctly lined up. Check orientation against the illustration above.

Chapter 2 - System Description

Contents of Box

When you receive your SX-48, you should find the following parts in the box:

- One SX-48 chassis, pre-configured with the I/O cards you ordered.
- One IEC power cord
- One SX-48 Quick Start Manual
- One SX-48 Installation Manual (this book)
- One SX-48 CD-ROM containing software and your User Manual.

SX-48 Sub-Systems

The SX-48 consists of a number of sub-systems that are described below.

Base Unit

The Base Unit includes the metalwork chassis, the front panel, the Power Supply Unit, and the motherboard.

System Boards

Every SX-48 includes the following system boards:

MADI

The MADI board provides an industry standard interface carrying 56* channels of audio at up to 48 kHz, or 28 channels at up to 96 kHz.

*Note that only the first 48 channels can actually be used at 48 kHz, because the unit only supports that number of analog or AES digital channels.

Sync 1

The Sync 1 board provides interfaces for the following synchronization signals:

Internal (Crystal), AES digital audio, Word Clock, video (PAL or NTSC) and TSCP (Fairlight's Total Studio Connectivity Protocol).

I/O Boards

There are four types of I/O boards that can currently be fitted into the SX-48, in a variety of combinations.

AI1 – Analog Input

The AI1 board provides 8 analog inputs at +4 dBu.

AO1 – Analog Output

The AI1 board provides 8 analog outputs at +4 dBu.

AO1M – Analog Output with Speaker Protection

The AO1M board provides 8 analog outputs at +4 dBu. It also includes circuitry that prevents pops appearing at the outputs on power up and power down, and is therefore suitable for output to high power monitoring systems.

AES1 – Digital I/O

The AES1 board provides 8 inputs and 8 outputs in AES/EBU format.

AES2 – Digital I/O with SRC

The AES2 board provides 8 inputs and 8 outputs in AES/EBU format. It also includes Sample Rate Conversion circuitry, allowing signals of any sample rate to be fed to the SX-48, regardless of its nominal sampling frequency.

Board Slots

The SX-48 includes 6 slots for I/O boards. They can be filled with any combination of I/O boards desired by the owner.

Using combinations of the I/O boards, it is possible to configure the SX-48 in many different ways. For example, it is possible to have 48 digital I/Os or 48 analog inputs or 48 analog outputs or 24 analog inputs and outputs etc.

For detailed instructions on fitting boards, see the section Fitting and Changing Boards. In particular, note the section on orientation of boards, because incorrect orientation can cause severe damage to the unit.

Order of Boards

Any I/O board can go into any slot.

Each slot has 8 MAD I channels associated with it. For example, Slot 1 is connected to MAD I channels 1 to 8 (both input and output), while Slot 4 is connected MAD I channels 25 to 32.

If an AI1 is installed in Slot 1, its 8 analog inputs will connect to MAD I outputs 1 to 8, while MAD I inputs 1 to 8 will not be used.

If an AO1 is installed in Slot 1, its 8 analog outputs will connect to MAD I inputs 1 to 8, while MAD I outputs 1 to 8 will not be used.

If an AES2 is installed in Slot 1, its 8 AES/EBU inputs will connect to MAD I outputs 1 to 8, and its 8 AES/EBU outputs will connect to MAD I inputs 1 to 8.

For use in DREAM II systems, please see Running SX-48 in a DREAM II System, below.

Chapter 3 - Installation Procedure

Installation Step-by-Step

The following guide is Fairlight's recommended step-by-step procedure for installation and commissioning the SX-48.

- Step 1 Unpack
- Check the contents of the box, as outlined in the section "Contents of Box" above.
- Step 2 Install Hardware
- See "Physical Installation" below.
- Step 3 Factory Reset
- See "Factory Reset" below.
- Step 4 Check LEDs for correct functioning
- See "Check I/O Hardware Indication" below.
- Step 5 Set Sample Rate and Sync Source
- See "Sample Rate" and "Sync Source" below.
- Step 6 Test with audio

Physical Installation

Environment

The system is designed to be operated in a clean air-conditioned environment. Generally, an area comfortable for people (20°C - 21°C) should be suitable. The unit is intended for rack mounting, and it is recommended that support be given at the rear of the unit, as it is quite heavy. People installing the SX-48 should exercise caution in lifting it into place, as back injury can result from incorrect lifting technique.

The SX-48 uses fans for ventilation. Make sure that the rack unit has access for cool air to flow through the opening on the front of the SX-48 and warm air to be expelled from the back. There is no need to leave vertical spaces between SX-48 units in the rack, as long as the flow of air to and from the fans is good.

As with all computer systems, the SX-48 will operate more reliably if static generating floor coverings are avoided.

Do not fit the SX-48 into a closed environment except where ducted cool air is forced through the Unit. Do not run the unit whilst it is on or near the ground as it will accumulate dust, which may eventually cause a failure.

Please Avoid:

- Fitting the SX-48 where air circulation will be restricted
- Installing close to a heat source
- Installing in dusty or damp area
- Installing in area subject to vibration
- Installing in area with strong magnetic or electric fields

Cabling

Power

Insert power cable in Standard IEC socket at rear of unit. Its hardware switch must be turned on for unit to operate.



Multiple voltages are supported: (100V, 110V, 230V or 240V at 50 or 60 Hz)

Audio Boards

Slots are numbered from the RIGHT when viewing the unit from the rear.

SX-48 uses DB-25 connectors for audio. Each type of I/O board uses a different layout of pins for its audio signals. Please see section Pinouts below for details.

Note that cables for the Digidesign™ 192 interface are suitable for use with SX-48.

Sync

You may connect all the sync sources at the same time, and choose from time to time which one to use. The following connectors are used:

- Video Sync – BNC
- Word Clock – BNC
- AES sync – XLR
- TSCP – BNC

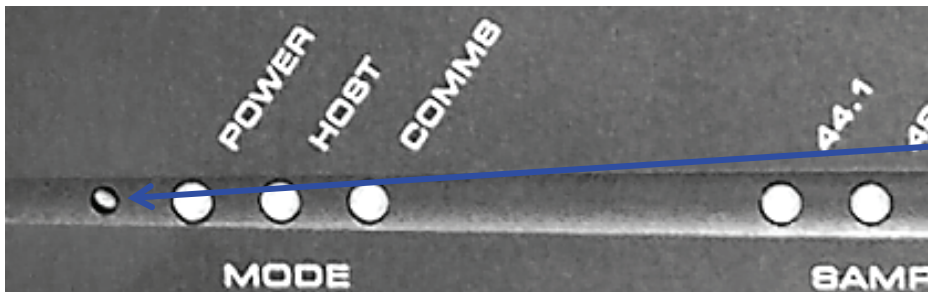
All connectors are labeled. Pinouts for these connectors can be found in Chapter 4 – Pinouts, page 15.

User Interface

The following guide explains how to get the unit running once it has been mounted in the rack, and all connections made to it.

Factory Reset

Perform a Factory Reset when FIRST commissioning the SX-48. It is rarely necessary later.



Setup button is behind this hole in the metal.

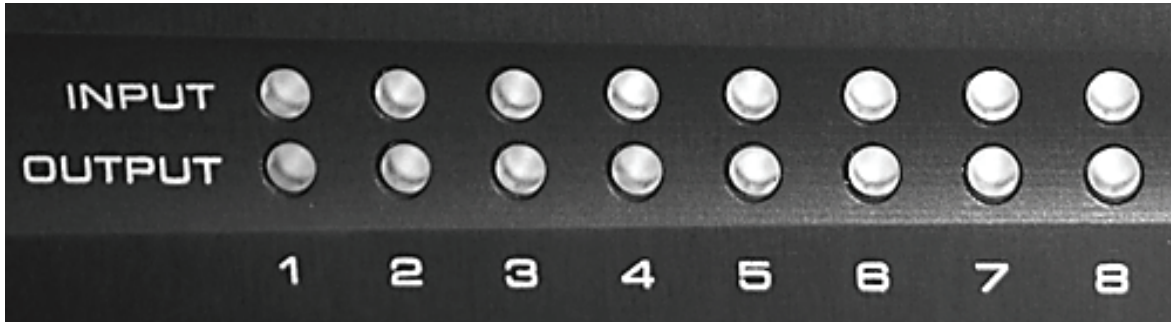
Use a screwdriver or similar tool to press and hold the Setup button while powering up the unit (at the front left). Hold it pressed for a few seconds, until LEDs on the front panel are lit.

This resets the patching and Ethernet IP address of the unit to factory standard settings.

Setup

Setup Mode is used to set both Sample Rate and Sync Source. Enter setup mode at any time when the unit is powered on, by pressing and holding the Setup button for a few seconds, until one of the Sample Rate LEDs starts to flash.

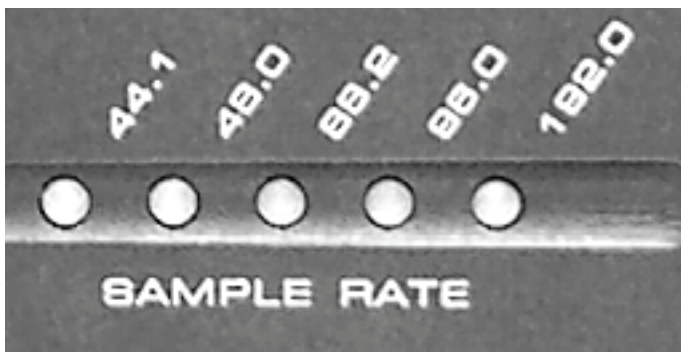
Check I/O Hardware Indication



While the SX-48 is in Setup Mode, the Input and Output LEDs show the status of the I/O boards. They can be checked as follows.

- If an input or output LED is green, it means there is an analog input or output at that position.
- If an input or output LED is orange, it means there is a digital input or output at that position.
- If an input or output LED is off, it means there is no correctly functioning input or output at that position.

Sample Rate



While the SX-48 is in Setup Mode, pressing the Setup button will cycle around the Sample Rates (not including 192 kHz). Press it repeatedly until your desired sample rate is flashing. Now press and hold the Setup button for a few seconds, until one of the Sync Source LEDs starts to flash.

Sync Source

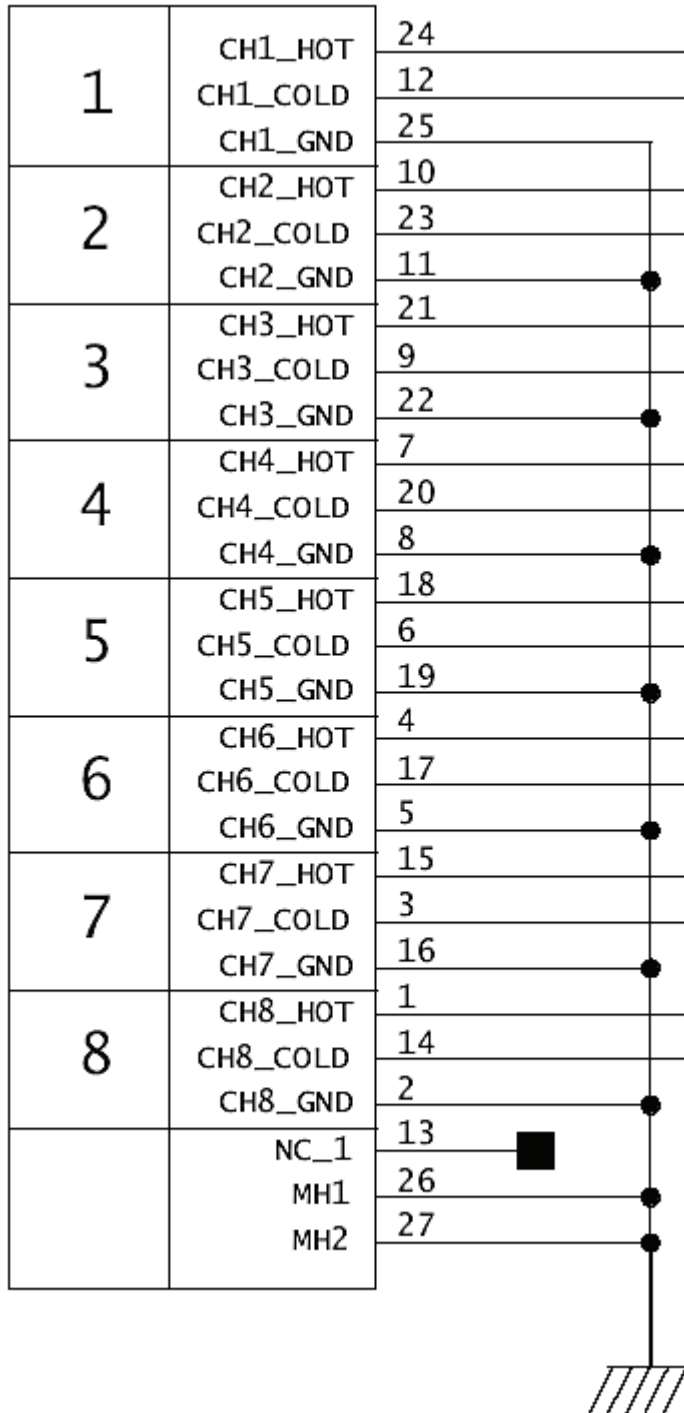


Pressing the Setup button will now cycle around the Sync Sources. Press it repeatedly until your desired Sync Source is flashing. Now hold the Setup button for a few seconds until all LED flashing stops.

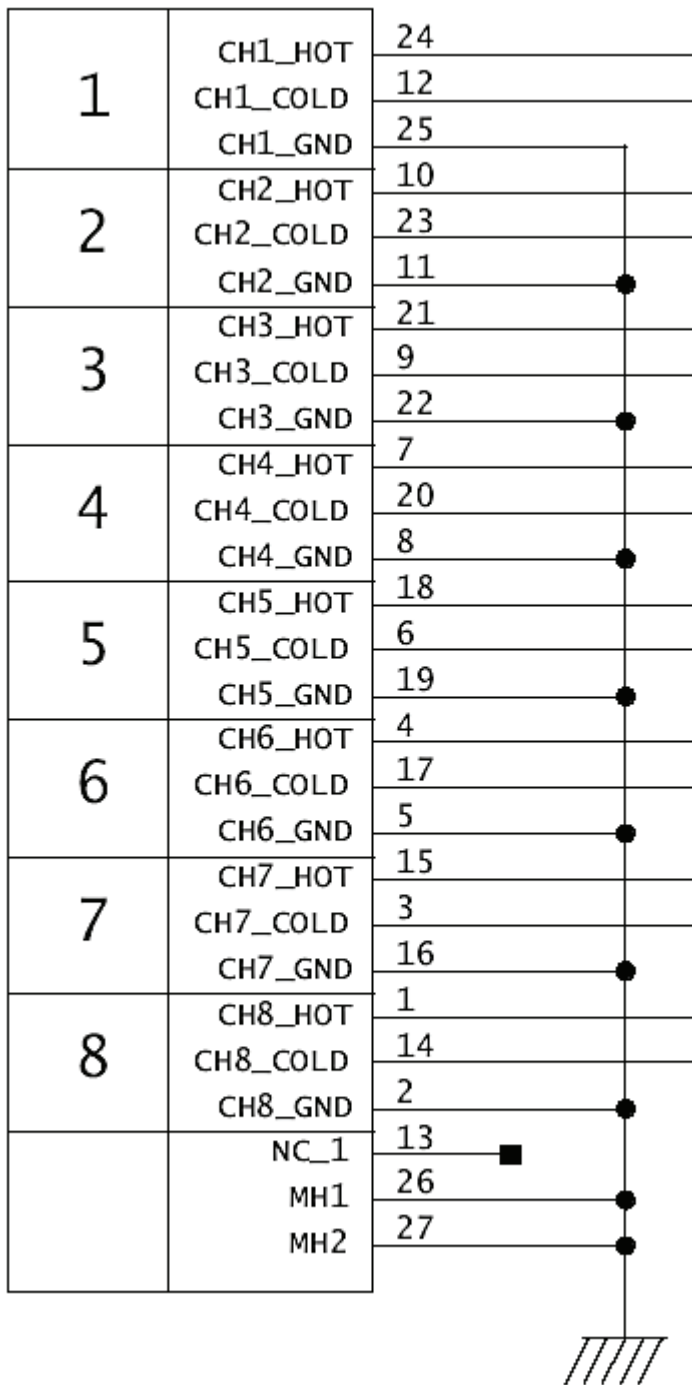
The unit now exits Setup Mode, and is ready for use.

Chapter 4 - Pinouts

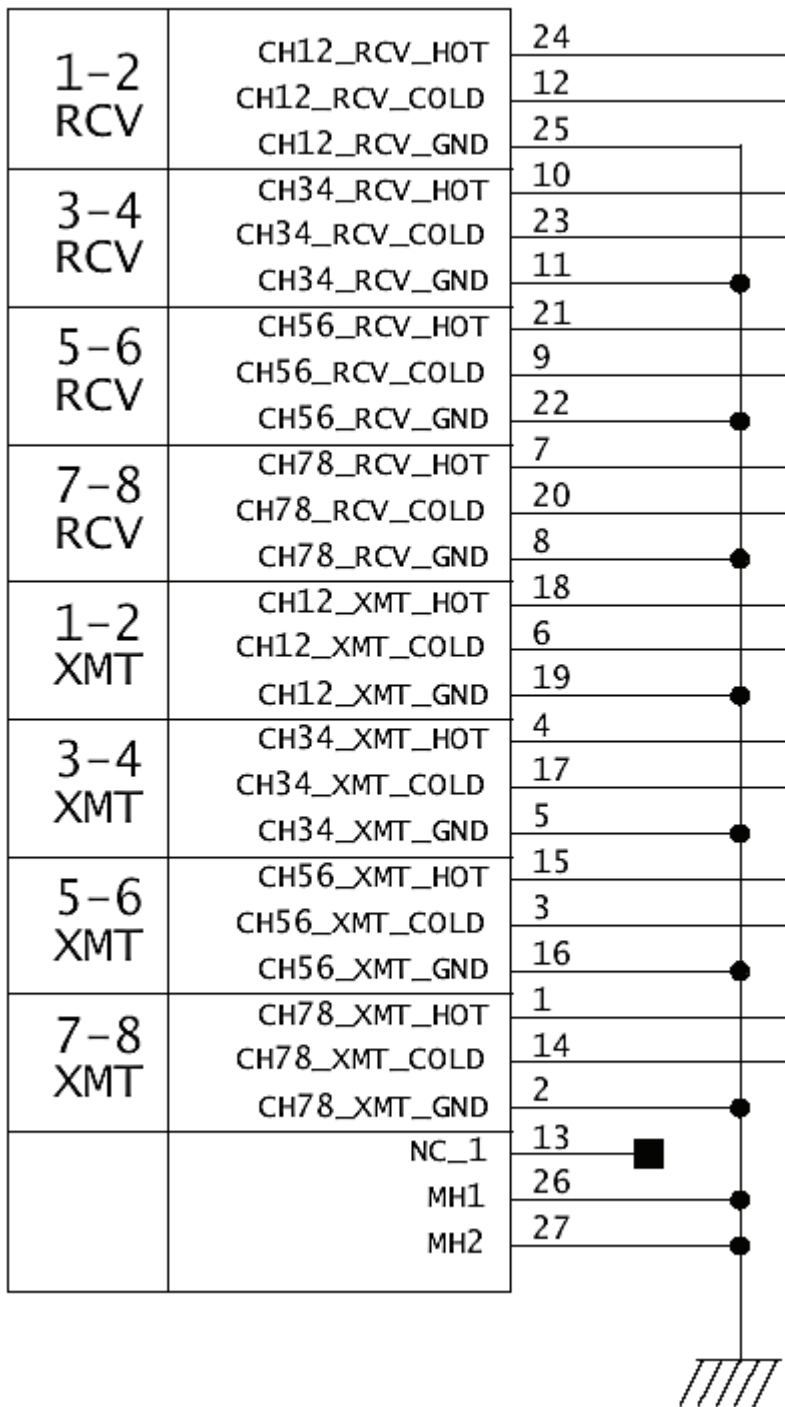
Analog Inputs



Analog Outputs



AES Inputs and Outputs



Chapter 5 - SX-48 in a DREAM II System

Sync

Primary sync for a DREAM II system is provided by an SX-20 sync and I/O box. This is shipped as a standard component with DREAM II systems. Adding an SX-48 increases the number of I/O channels.

It is important to synchronise SX-48 with DREAM II, to ensure clean audio transmission through the system. This is achieved by connecting the same primary sync source to both the SX-20 and the SX-48. For example, if a video house sync is being used, it should be connected to both boxes, and both boxes should have video selected as the sync source.

Audio Connection

SX-48 is used with DREAM II as follows:

- Analog Input → MAD I → DREAM II
- DREAM II → MAD I → Analog Output
- AES/EBU Input → MAD I → DREAM II
- DREAM II → MAD I → AES/EBU Output

The MAD I connectors on the rear of the SX-48 are used to transmit up to 48 channels between it and the DREAM II system. Use MAD I cables to connect to the BNC connectors on the rear of the CC-1 card installed in the DREAM II host PC.

Connect MAD I Out on the CC-1 to MAD I In on SX-48.

Connect MAD I In on the CC-1 to MAD I Out on SX-48.



CC-1 Card showing:

MADI Out

MADI In

To connect more SX-48s, add a CMI MAD I extension board to the DREAM II host PC.

Order of Channels

DREAM II sees all channels to and from the SX-48 as MADI channels, regardless of which audio interface cards are installed.

When patching SX-48 inputs to Tracks or Live Feeds, always choose MADI as the type of input. Similarly when patching physical outputs.

Naming Channels

If it is difficult to remember which MADI channels correspond with analog inputs, outputs and so on, you may wish to name the I/O channels. This can be done once and kept for all following sessions.

For example, if an AI1 is installed in Slot 1, DREAM II's MADI inputs 1 to 8 could conveniently be named SX-48 AI1 to SX-48 AI8 or something similar, while MADI outputs 1 to 8 could be named NC (not connected).

To name channels, open the following file: C:\Program Files\Fairlight\FMC\Data\I-O config.TXT

By default, this file contains naming for your SX-20 inputs and outputs. Directions for how to name channels are contained in the header of the file. Here are specific instructions for naming SX-48 channels.

Step 1 Find the line starting with IO_CONFIG,3

This line tells the system how many MADI channels it should display. By default there are zero inputs and zero outputs (before you connected the SX-48 or any other MADI device), so it reads IO_CONFIG,3,0,0.

Step 2 Edit the line, changing the zeros to 56, if you have one SX-48, or multiples of 56 if you have more than one.

So if you have a single SX-48, the line would read IO_CONFIG,3,56,56.

If you have two SX-48s, the line would read IO_CONFIG,3,112,112, and so on.

NOTE! Each BNC MADI pair can address 56 MADI channels.

However, each SX48 can only address the first 48 Input and Output channels of that 56 MADI channel stream.

THEREFORE, the last 8 Input AND Output channels (MADI 49 – 56) should be BLANK!

Step 3 For the first channel, insert a line like the following: INPUT,3,1,Name

This means: MADI Input number 1, Name.... For Name you can put anything up to 11 characters including numbers, for example "SX-48 AI1"

Step 4 Add another line for the next channel, looking like this: INPUT,3,2,Name

Step 5 Add lines for all your other channels

Remember that some channels are outputs, so the line should look like OUTPUT,3,number,name

Also remember that many channels do not exist

Control via Ethernet

Setting the sample rate in your DREAM II system will automatically change the SAX-48's sample rate, if they are connected via Ethernet.

To do this, connect the SX-48 to your Ethernet hub using a standard networking cable. Your DREAM II system will automatically find the SX-48 and send commands to it, as long as the network is correctly set up.

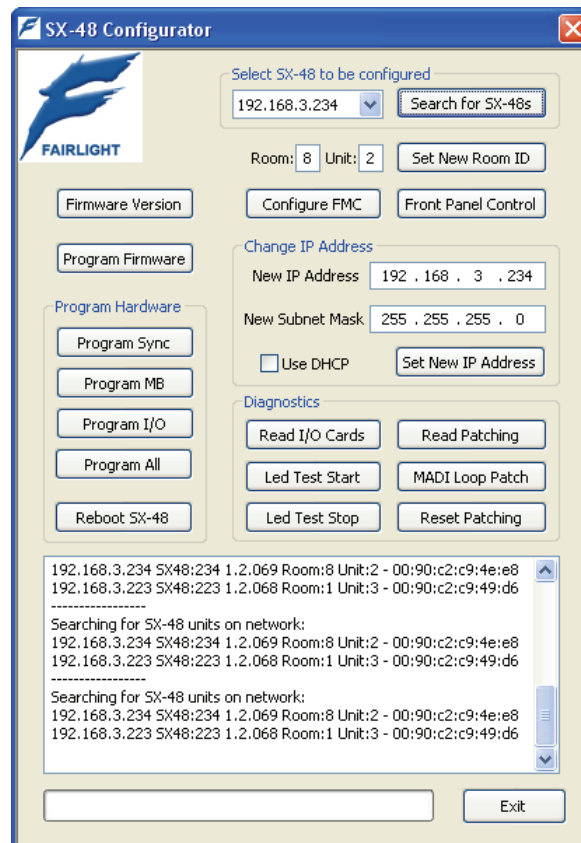
Chapter 6 - The SX-48 Configurator

An easy to use graphical interface is available in order to configure and administrate the SX-48.

This application is available here:

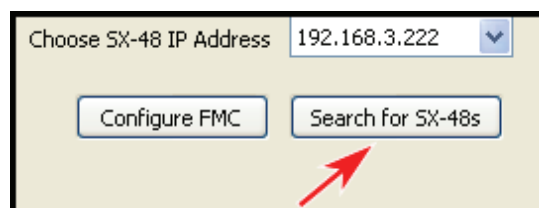
Start → All Programs → Fairlight → FMC → FMC Utils → SX48 Configurator

Please read this section completely before you attempt to use the SX-48 configurator.

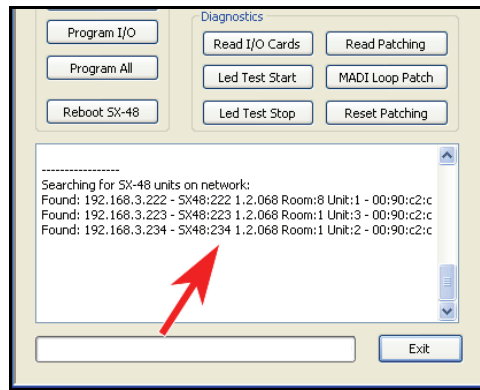


All files used by the SX-48 Configurator are installed by default with any new Dream II or Xynergi software release.

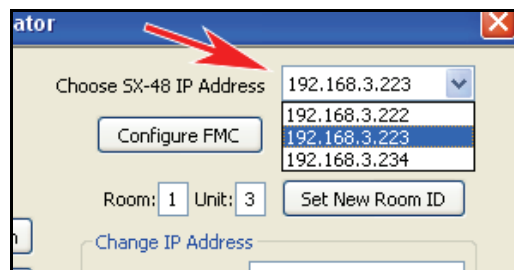
Search for SX-48s



By Clicking on this button, you will automatically see all SX-48s available on the network. This will include both the IP address and MAC address of each unit.

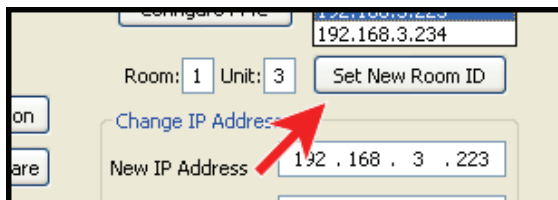


Please note that once these SX-48 units are scanned and recognized, all of these units will now also be available for individual selection in the following drop-down window:

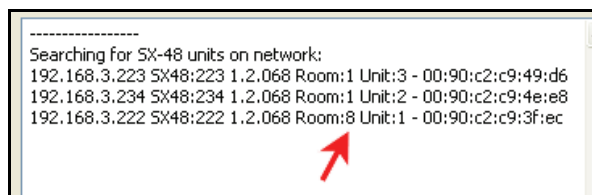


Room and Unit ID

You can set a fixed "Room" number and "Unit" identifier to each SX-48 unit by choosing a particular unit from the drop-down window. Setting the Room number and Unit number, then simply click on the <Set New Room ID> button. The "Room" ID accepts any single alphanumeric character, number or letter.



This information will also appear in the information window along with the IP and MAC address.



Setting a new IP address

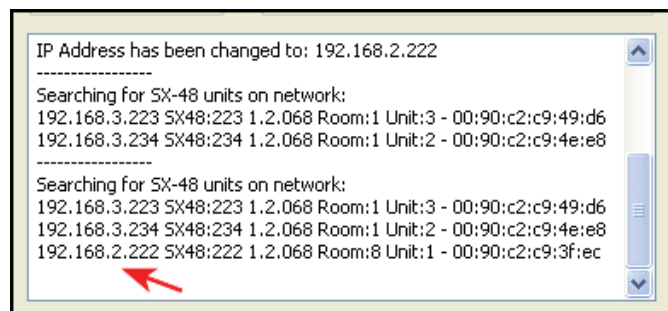
To set a new IP address for a particular unit, simply choose a unit (once again), from the drop down window. Setup your new IP address and Subnet mask. Then click on the <Set New IP address> Button.



Please note that it is not a requirement to have a “sequential” IP address for the SX-48 units installed. You can even set up individual Subnet masks.

This gives flexibility when integrating into larger networks. You must be able to communicate with any SX-48 using the proper network subnet. You can even change the IP address of an SX-48 which is currently on the wrong subnet.

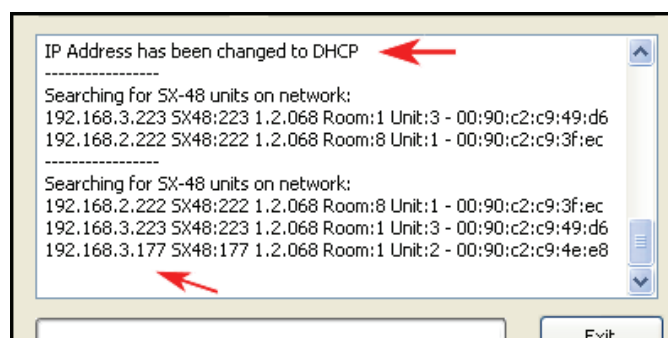
For example a new unit or a defaulted unit set to 192.168.3.253 can be plugged in to a new network and the IP changed to match without any other intervention.



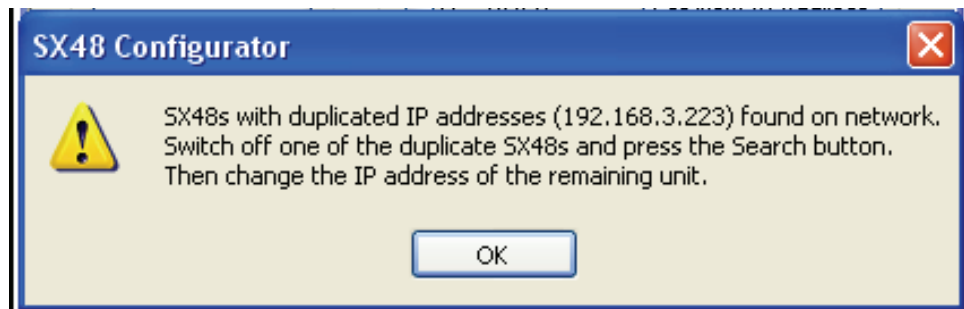
It is even now possible to set up these units to accommodate DHCP!



Simply click on the tick box <Use DHCP> ... then click on <Set New IP Address>. There is also a “direct” front panel feature on the SX48 to set this. Use a screwdriver (or similar tool) to press and hold the Setup button for 20 seconds followed by a 1 second key press. This will set the unit to DHCP mode.



The software will warn you if you have accidentally set up duplicate IP addresses.

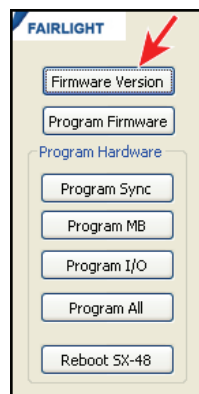


Upgrading Firmware.

It is highly recommended that all of your current SX-48s be upgraded to current firmware. The upgrade is required for compatibility with Dream II and Xynergi software version 1.50!

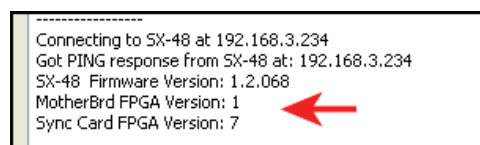
Firmware Version

Click on the **Firmware Version** button to read the current firmware versions for any particular SX-48 unit chosen in the “drop-down” window.

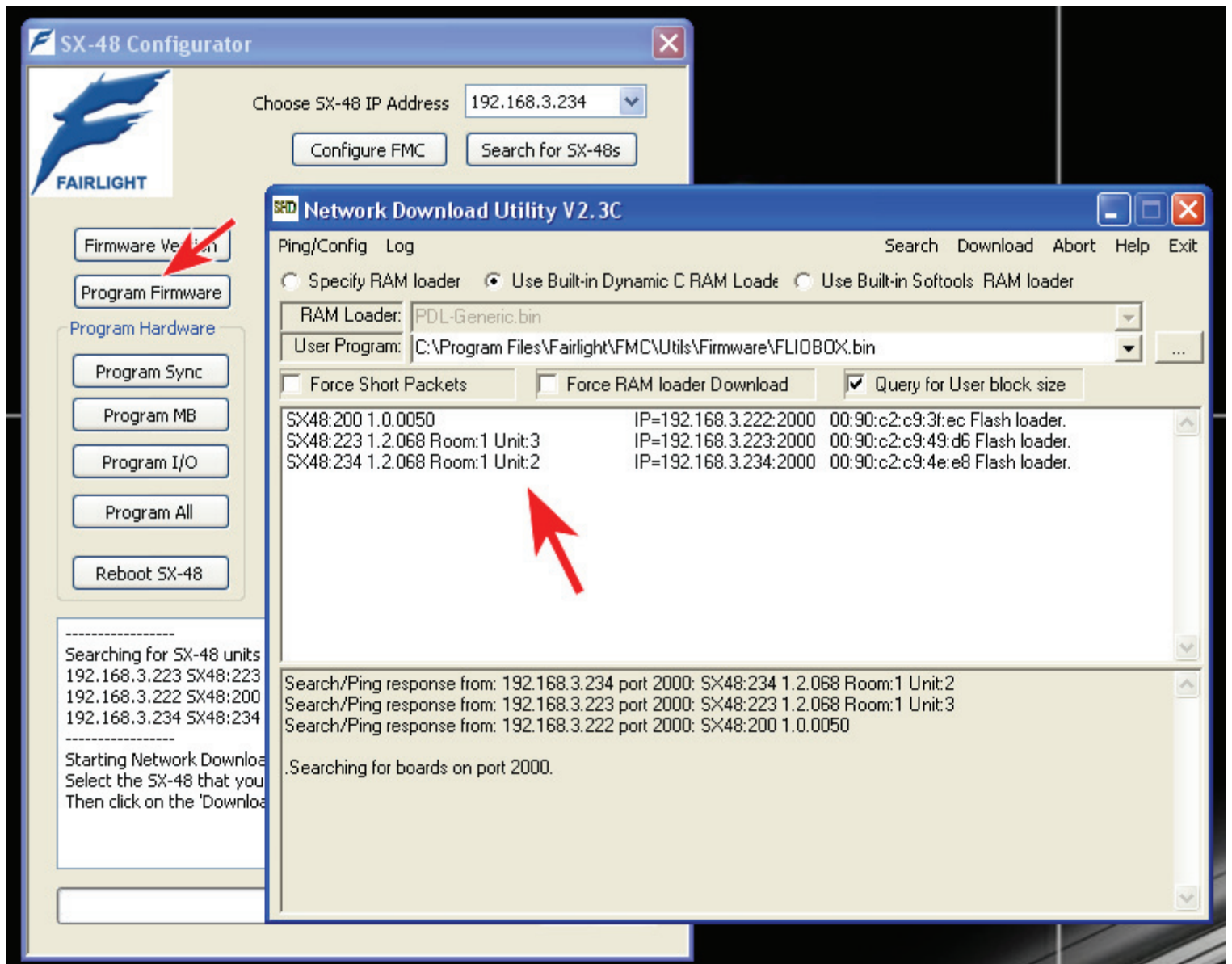


You will see the following information displayed in the “info” window:

- Current SX-48 Firmware version
- Motherboard FPGA firmware version
- SX-48 Sync card FPGA firmware version



To program the firmware for the chosen SX-48, click on the **Program Firmware** Button. The SX-48 Configurator will automatically launch the “Network Download Utility” application for SX-48.



This application will automatically select the correct firmware update for SX-48 (included in the Dream II or Xynergi installer). The firmware is stored here:

C:\Program Files\Fairlight\FMC\Utils\Firmware\FLIOBOX.bin

The application will automatically list all SX-48s found on the network. Simply highlight the desired unit that you wish to upgrade then click on the menu item **Download** in the upper right.

You will see a progress bar indicating that the download is taking place. You will also see information "scrolling" in the info box of the Network Download Utility on the progress of the upgrade. Like this:

```
Searching for boards on port 2000.
Board at 192.168.3.222 is rebooting.
Sent Reboot command to target!
Download Complete :)
RAM Loader found.
Search/Ping response from: 192.168.3.222 port 2000: Generic RAM Downloader Mon Nov 28 2005
....Looking for RAM loader
Sent RAM Loader Run command to target!
Route to board ok
Search/Ping response from: 192.168.3.222 port 2000: SX48:222 1.0.0050
.Checking route to 192.168.3.222 Downloading board 1 of 1 at IP=192.168.3.222.
```

Note: the information in this window scrolls “downwards”, so you must read from the bottom line up to the top line.

Once the download is complete ... The application will automatically send a **reboot** command to the unit. This might take some time. After a moment ... you can hit the **search** menu option in the application and you will see that the unit has been successfully upgraded with the new firmware.

Searching for boards on port 2000.

Search/Ping response from: 192.168.3.223 port 2000: SX48:223 1.2.068 Room:1 Unit:3

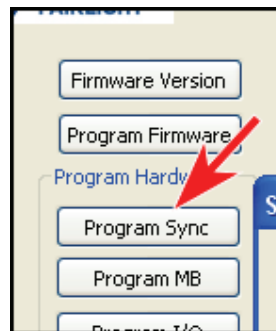
Search/Ping response from: 192.168.3.234 port 2000: SX48:234 1.2.068 Room:1 Unit:2

Search/Ping response from: 192.168.3.222 port 2000: SX48:222 1.2.068

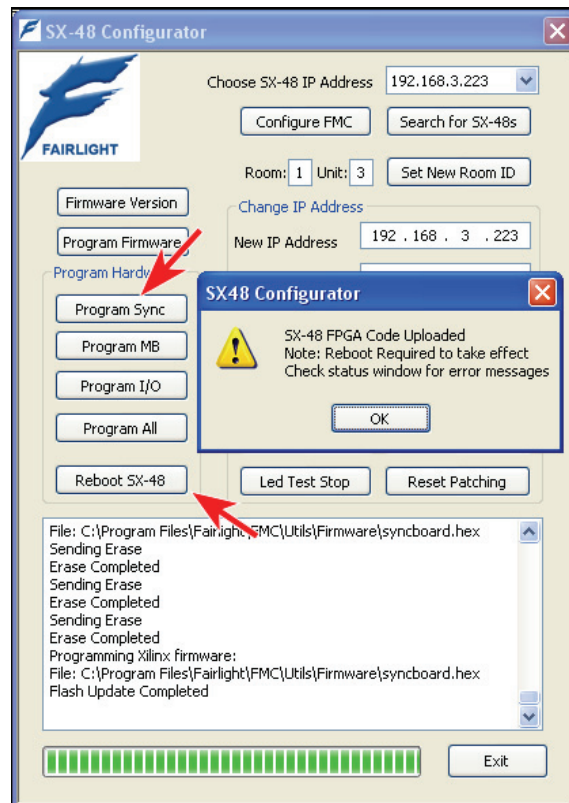
Program Sync

The “Program Sync” Button should be used to reprogram the Sync Card in the SX-48. **This must be done for compatibility with software version 1.50.** This will update the SX-48’s Sync Card FPGA to Version: 7.

Simply click on the <Program Sync> Button.



Once the flash programming is completed ... you should see the following:



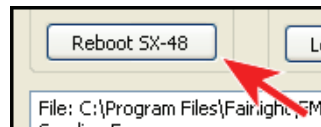
All information concerning the flash, including a progress bar, can be observed in the application's info window. At any time this information can be highlighted and copied using <Ctrl-C>.

```

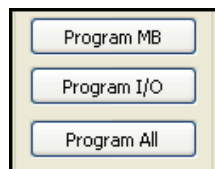
Connecting to SX-48 at 192.168.3.223
Got PING response from SX-48 at: 192.168.3.223
Preparing to upload flash
Reading Xilinx files:
File: C:\Program Files\Fairlight\FMC\Utils\Firmware\IOctrl.hex
File: C:\Program Files\Fairlight\FMC\Utils\Firmware\MADI_CTRL.hex
File: C:\Program Files\Fairlight\FMC\Utils\Firmware\AOOUT_CTRL.hex
File: C:\Program Files\Fairlight\FMC\Utils\Firmware\AES_CTRL.hex
File: C:\Program Files\Fairlight\FMC\Utils\Firmware\AES2_CTRL.hex
File: C:\Program Files\Fairlight\FMC\Utils\Firmware\AO_AES_Test.hex
File: C:\Program Files\Fairlight\FMC\Utils\Firmware\syncboard.hex
Sending Erase
Erase Completed
Sending Erase
Erase Completed
Sending Erase
Erase Completed
Programming Xilinx firmware:
File: C:\Program Files\Fairlight\FMC\Utils\Firmware\syncboard.hex
Flash Update Completed

```

Please note that a Reboot is required in order for the upgrade to take effect. This can be accomplished at any time by simply clicking on the <Reboot SX-48> button.



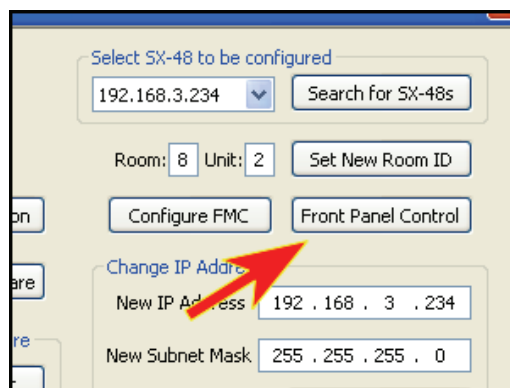
The Buttons Program MB, Program I/O, and Program All



SHOULD NOT BE USED, as these are reserved for Factory Testing here in Sydney

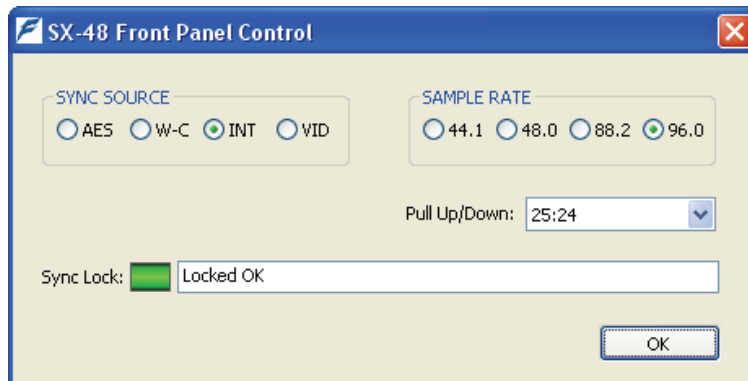
Front Panel Control

By Clicking on the <Front Panel Control> button,

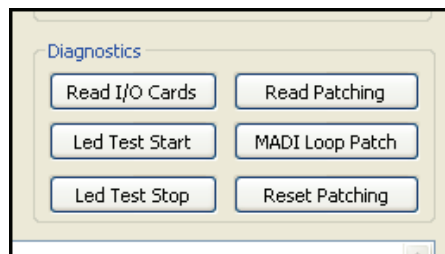


You can set up the Sync source and Sample Rate, and also Pull Ratio setting. This can also display the reason for a lock failure such as "Sync Source not connected".

With AES or W-C sync input it will show the actual input sample rate and pull ratio if not locked.

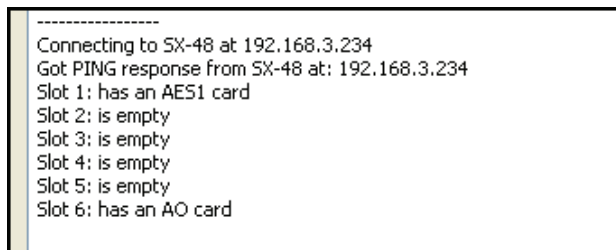


Diagnostics Section



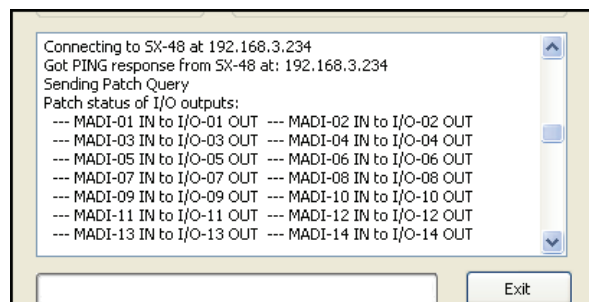
Read I/O cards

This gives you the I/O card configuration in a particular unit.



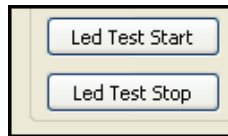
Read Patching

This currently gives you a readout of the current patching scheme.



Led Test – Start and End

This runs through a LED test cycle for the front panel of the SX-48. This is mainly used here in Sydney for production.



MADI Loop Patch and Reset Patching

This is used by production for MADI testing. This is rarely used in the field. Please note that this test will switch the MADI ports of the SX-48 into 56 channel mode for CC-1 testing. If you use this feature ... please do not forget to use the <reset patching> button afterwards!

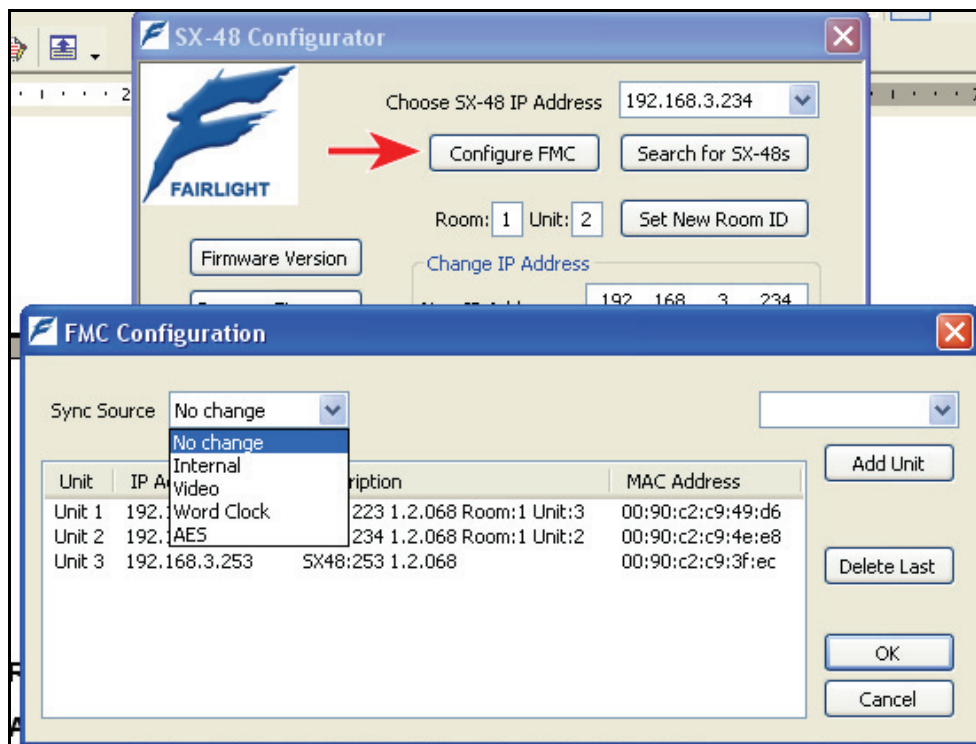


The **Reset patching** button may be used at any time to return the SX-48's patching scheme to its "default" state.

Note: If you patch the OSC to all 48 MADI streams then the Output LEDs will light up, not the Input LEDs. This is because the Input and Output LEDs show the status of the Analog and Digital cards inputs and outputs, not the MADI channels.

In MADI loopback there is no change as the I/O cards are still outputting so the Output LEDs are still On. The Input LEDs also do not change as they always show the status of I/O card inputs not MADI.

Configure FMC - **Required!!**



The **Configure FMC** button is used to assign SX-48s found on the Network to FMC unit numbers. The assignments are saved directly in the registry at:

HKEY_LOCAL_MACHINE\SOFTWARE\Fairlight ESP\FMC\SX-48

The IP address and MAC address are saved along with the common Sync mode.

You can also set the sync mode to "No Change" which means that current setting will be retained. This enables the SX-48-s to have different sync modes set up from the front panel.

When FMC boots it checks for the registry entry "Enable Yes" and if found will ignore the FMC.ini SX48 line.

FMC then polls the local network for SX-48s.

If it finds an SX-48 with a matching MAC address that has a different IP address, it will update the registry with the new IP number. The updated IP addresses are now used to connect to the SX-48s.

Using AES2

The AES2 card provides automatic sample rate conversion of digital input signals if their sample frequency is not locked to that of the SX-48 system.

To use this facility, the **I-O config.txt** file must be edited to include some new information. Note: this file is found in the following folder: C:\Program Files\Fairlight\FMC\Data\

For each AES2 card installed in the SX-48, add a line in the following format:

SX48_SRC,unit_number,card_number,enable

unit_number – SX-48 unit number starting from 1 (max 8)
card_number – Card slot position within the SX-48, range 1-6
enable – 0 = SRC off, 1 = Input Sample Rate Conversion ON for all 8 inputs on this card

Example: To turn on SRC ON for the inputs of SX48 number 1 with an AES2 at card position 3 add the following line: SX48_SRC,1,3,1

If this line is missing from the config file, or commented out, the SRC mode will remain as it was last set up.

After editing the text file and saving it, quit the DREAM II application, power cycle the SX-48, and restart DREAM II.

Appendix A - Specifications

Analog Inputs and Outputs

| | |
|--------------------------------|------------------------------------|
| Input impedance | 10k Ohms |
| Output impedance | <55 Ohms |
| Maximum input level | +24dBu |
| Maximum output level | +24dBu |
| Standard operating level | adjustable from +14dBu to +24 dBu |
| Input signal to noise | >113dB A-weighted (A/D conversion) |
| Output signal to noise | >113dB A-weighted (D/A conversion) |
| Through system signal to noise | >110dB A-weighted |
| Through system THD | <0.001% |
| Bandwidth (.25dB) | 20Hz to 20kHz |

AES/EBU Inputs

| | |
|----------------------|-------------------------------|
| Minimum differential | 200mV |
| Input impedance | 110 Ohms transformer isolated |
| Channel status | insensitive to channel status |

AES/EBU Outputs

| | |
|------------------|---|
| Output level | 4V |
| Output impedance | 110 Ohms transformer isolated |
| Channel status | professional, normal audio, source locked, sample frequency locked to project sample rate, stereophonic, 24-bit word length |

Synchronization

| | |
|--|--|
| System sample rates | 44.1, 48, 88.2, 96kHz |
| Run-Up/Run-down sample rates | 44.044, 44.056, 44.144, 47.952, 48.048, 95.904, 96.096kHz |
| SRC range (with optional SRC I/O module) | Input: 0.33 to 3.0 x system sample rate with range limits of 8kHz to 108kHz |

| | |
|--|--|
| | Output: current system sample rate converted to any other possible system sample rate |
| | internal, AES reference, WCLK, video reference |

Dimensions, Weight and Power Requirements

CAUTION: Double pole/neutral fusing. Disconnect power before changing fuse or servicing.

| | |
|-------------------|---|
| Width | 484 mm (standard 19 inch rack mount) |
| Depth | 428 mm |
| Height | 89 mm (2 standard rack units) |
| Net Weight | Up to 8 kg, depending on card configuration |
| Supply Voltage | 90 – 250 VAC |
| Power Consumption | 50 Watts approx |
| Fuse | 3A at 250 V (same can be used with all supply voltages, as current is low). |