Utah Scientific

Utah-400 Series 2

Utility Chassis Supplemental Guide

Utah-400 Series 2 – Utility Chassis Supplemental Guide

- Document Number: 82102-0087
- Document Version: 1.0
- Date: August 19, 2016
- Printed in U.S.A.

Copyrights and Trademarks

Notice

Information contained in this guide is subject to change without notice or obligation. While every effort has been made to ensure that the information is accurate as of the publication date, Utah Scientific, Inc. assumes no liability for errors or omissions. In addition, Utah Scientific, Inc. assumes no responsibility for damages resulting from the use of this guide.

FCC Compliance (USA) and Digital Equipment Compliance (Canada)

This equipment has been tested and found to comply with the limits for a Class A, digital device, pursuant to Part 15, Subpart B of the FCC Rules and the Canadian EMC Requirement (ICES-003). These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case, the user will be required to correct the interference at their own expense. Shielded cables must be used to ensure compliance with the FCC Class A limits.

Declaration of Conformity

Utah Scientific, Inc.
4750 Wiley Post Way, Suite 150
Salt Lake City, Utah 84116-2878 U.S.A.
We declare our sole responsibility that the Utah-400 Digital Routing Switcher is in conformance with the following standards:

Emission
- EN55022:1994+A1&A2

Immunity
- EN55024:1998
- EN61000-3-2
- EN61000-3-3

Safety
- IEC 60950-1:2001 /EN 60950-1:2001

Following the provisions of the Directive(s) of the Council of the European Union:
- EMC Directive 89/336/EED
- Low Voltage Electrical Directive 72/23/EEC

Utah Scientific, Inc. hereby declares that the product specified above conforms to the above Directive(s) and Standard(s).

Company Information

Utah Scientific, Incorporated

4750 Wiley Post Way, Suite 150
Salt Lake City, Utah 84116-2878 U.S.A.

- Telephone: +1 (801) 575-8801
- FAX: +1 (801) 537-3098
- Technical Services (voice): +1 (800) 447-7204
- Technical Services (FAX): +1 (801) 537-3069
- E-Mail -General Information: info@utsci.com
- E-Mail -Technical Services: service@utsci.com
- World Wide Web: http://www.utahscientific.com
- After Hours Emergency: +1 (800) 447-7204. Follow the menu instructions for Emergency Service.

Warranty Policies

Hardware Warranty

Utah Scientific, Inc. warrants to the original purchaser that the Utah Scientific hardware is free from defects in materials and workmanship and will perform substantially in accordance with the accompanying written materials under normal use and service for a period of ten (10) years from the date of shipment. Any implied warranties on hardware are limited to ten (10) years. Some states/jurisdictions do not allow limitations on duration of an implied warranty, so the above limitation may not apply to certain specific purchasers.

Software Warranty

Utah Scientific warrants that the software will perform substantially in accordance with the accompanying written materials for a period of one (1) year from the date of shipment.

Customer Remedies

For the first one (1) year after purchase of the software and the first ten (10) years after the date of purchase of the hardware, Utah Scientific's and its suppliers' entire liability and purchaser's exclusive remedy shall be, at Utah Scientific's option, either:

• Return of the price paid, or
• Repair or replacement of the software or hardware that does not meet the above warranties and is returned to Utah Scientific under the returned materials authorization (RMA)
process with freight and forwarding charges paid.
After the initial warranty periods, purchaser's exclusive remedy is the repair or replacement of the hardware upon payment of a fixed fee to cover handling and service costs based on Utah Scientific's then-current price schedule. The above warranties are void if failure of the software or hardware has resulted from an accident, abuse, or misapplication. Any replacement software or hardware will be warranted for the remainder of the original warranty period or thirty (30) days, whichever is longer.

No other warranties. To the maximum extent permitted by applicable law, Utah Scientific and its suppliers disclaim all other warranties, either express or implied, including, but not limited to implied warranties of merchantability and fitness for a particular purpose, with regard to the software, the accompanying written materials, and any accompanying hardware. This limited warranty gives the purchaser specific legal rights. These rights may vary in certain states/ jurisdictions.

No liability for consequential damages. To the maximum extent permitted by applicable law, in no event shall Utah Scientific or its suppliers be liable for any damages whatsoever (including without limitation, damages for loss of business profits, business interruption, loss of business information, or any other pecuniary loss) arising out of the use of or inability to use Utah Scientific products, even if Utah Scientific has been advised of the possibility of such damages. Because some states/jurisdictions do not allow the exclusion or limitation of liability for consequential.

Table of Contents

Introduction

The Utah-400 Series 2 Utility chassis is a 2 RU assembly, containing redundant AC power supplies whose purpose is to house Series 2 routing switcher input and output cards to create point solutions for specific needs.

Figure 1 – Utility Router Front

Several different applications can be created using the various cards available for the Utah-400 Series 2 router. Several possibilities are listed below –

- SDI to SMPTE 2022 conversion, 12 or 24 channels.
- SMPTE 2022 to SDI conversion, 12 or 24 channels.
- Clean/Quiet processing of SDI signals, 8 or 16 channels.
- Frame Sync processing of SDI signals, 8 or 16 channels.
- Dis-embedding of audio signals from SDI, output on MADI, 12 or 24 channels.
- Embedding of audio signals onto SDI, 12 channels.
- Copper to Fiber SDI conversion, 12 or 24 channels.
- Fiber to copper SDI conversion, 12 or 24 channels.

Note: Some of these functions can be combined in one chassis.

Chassis Physical Information

The chassis installs into a standard 19” equipment rack, and consumes 2RU (3.5”). A removable front cover allows access to the cards and their indicators.

The power supplies and Passive Crosspoint card and standard with the chassis, while the two pairs of input and output cards are user customizable depending on the intended function of the chassis.

The power supplies are auto switching 90-230VAC 50/60 HZ, and operate in a redundant configuration. All chassis functions will work with only one of the two supplies operational.

As noted in the illustration below (Figure 2), the top two slots are an input and output pair, while the bottom two slots are a separate input and output pair.

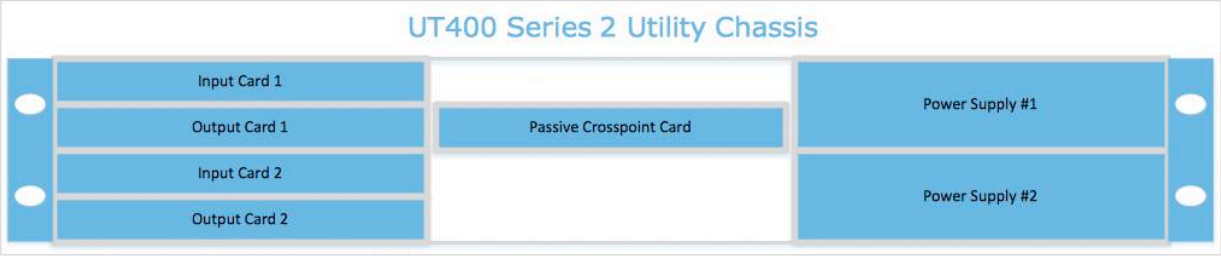


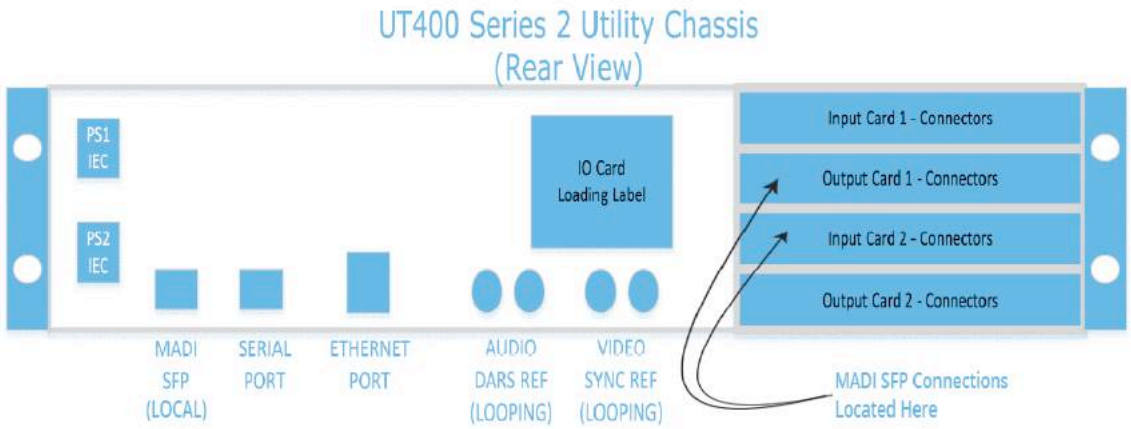
Figure 2 – Utility Router – physical layout

Figure 3 – Utility Router – open view

Rear Panel Connections

The rear panel of the chassis provides the following connections –

- Separate AC power cords for the two power supplies.
- Serial port, not currently used.
- SFP port for local MADI connections, not currently used.
- Ethernet port for diagnostics, not currently used.
- Digital Audio Reference Signal (DARS) loop thru connection.
- Analog video reference loop thru connection, for use with Black Burst 50/60 Hz analog reference signals.
- A label describing the IO card loading is positioned next to the rear panels for the IO cards.



Note: The standard port configuration = 11 - 0

Figure 4 – Rear Panel Layout

The *Input* and *Output* slots at the right-side of the chassis rear (illustrated above) can consist of varying rear panels, such as a MADI In/Out or SFP. Your MADI and SFP connections will occur at this location.

Component description –

Power Supplies

Figure 5 – Power Supplies

The 140035-02 power supply accepts an AC input and provides a single 48 volt output that supplies up to 300W of power for cards within the chassis. This assembly also has integral fans that provide cooling for the chassis.

There are no adjustments on this supply.

The supply has three indicators.

PWR LED (GREEN) – This LED is lit if AC power has been applied to the frame.
DC OUT (RED) – This LED is dark in normal operation, and glows RED if there is a problem with the supplies DC output.
TEMP (RED) – This LED is dark in normal operation, and glows RED for an over temperature condition on the power supply.

The supply has a mechanical hold down that is controlled by loosening the two screws that hold the bracket on the front of the supply in place. To remove, loosen the screws and slide the bracket away from the hold down bar in the chassis (UP for the lower supply, DOWN for the upper supply) and then slide the supply out of the frame.

When inserting a new supply, pay attention to 2 things –

1. The exposed supply components are oriented towards the bottom of the chassis.
2. The hold down bracket is inverted between the upper and lower slots. If moving a supply from the lower slot to the upper, the two set screws must be completely removed and the bracket rotated 180 degrees before reinstalling the set screws.

Passive Crosspoint Card

The passive crosspoint card, part number 121430-1, delivers signals between the IO cards, monitors them for errors, and reports alarm conditions if they exist.

All video signals are tied in a 1 to 1 fashion between the cards of each input and output pair. The TDM audio signals which are generated and received by some of the cards that can be loaded in this frame, are distributed based upon a dipswitch setting, to be discussed below.

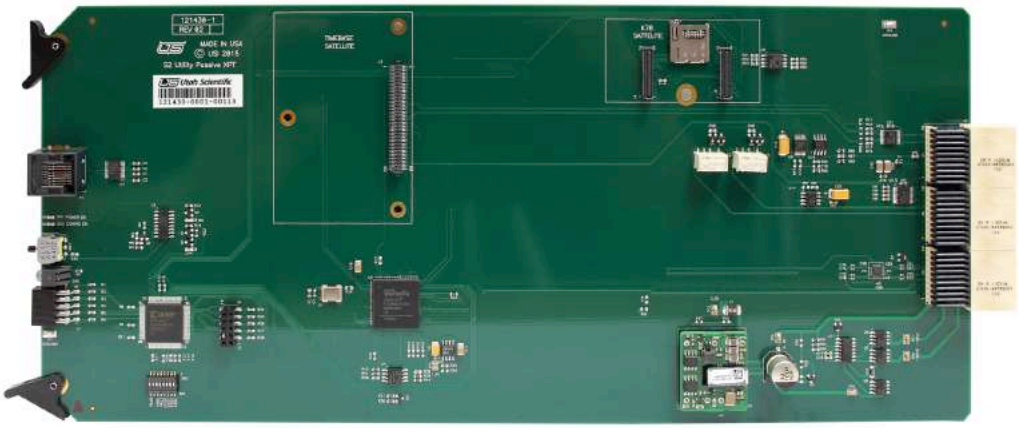


Figure 6 – Passive Crosspoint Card

Passive Crosspoint Indicators

DS1 – Green LED – On when all board level power supplies are within tolerance.
DS3 – Green LED – On when the onboard control circuitry is active.
DS5 – RED/GREEN LED. This LED indicates GREEN for no alarm condition and RED for an alarm condition. This LED shines thru the front panel of the chassis for alarm identification when the chassis is installed.

Passive Crosspoint Serial Port

P1, an RJ45 connector on the board front edge, is an RS-232 diagnostic port intended to be used to diagnose problems or gather status of the installed cards. It uses the same 140000-9 adapter as the standard UT400 Series 2 IO cards do, and runs an RS-232 protocol at 115.2KBaud, 8 data bits, 1 stop bit and no parity.
It has a very simple menu structure that can be accessed by pressing the S key on the terminal. This will report status of the power supplies, local Passive Crosspoint card and all 4 IO cards.

Passive Crosspoint Controls

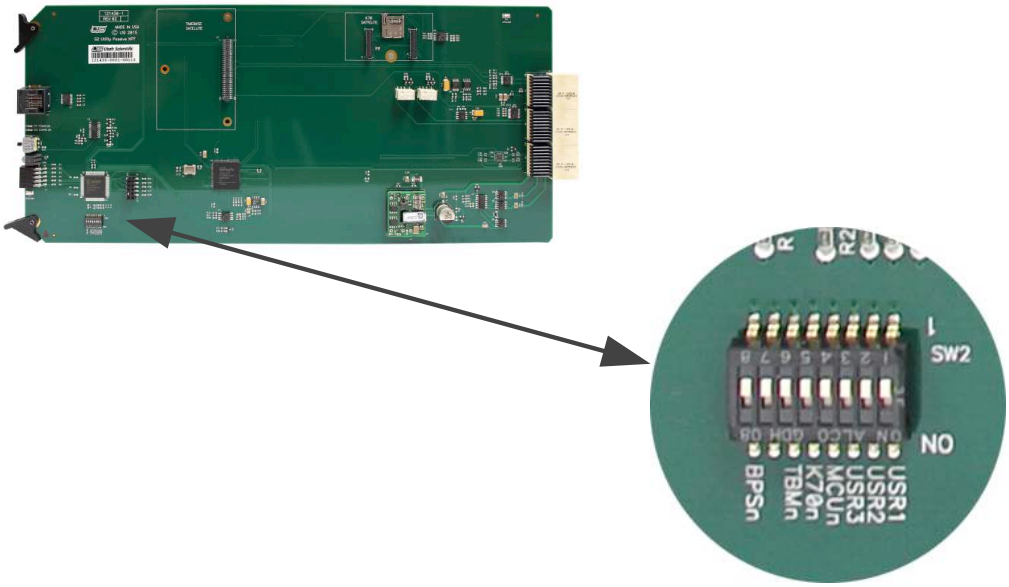


Figure 7 – Crosspoint Controls

SW1 – Front edge mounted reset switch.
SW2 - 8 Position dip switch located at the right front of the card.
DIP4-8 – Must be all off in normal operation.
DIP1 - Controls which TDM Audio Stream feeds Output Card #1.
OFF = Input Card #1, ON = Input Card #2
DIP2 - Controls which TDM Audio Stream feeds Output Card #2.
OFF = Input Card #1, ON = Input Card #2
DIP3 - Controls the Embedder mechanism on Embedding Output Cards.
OFF = Do Not embed Audio, ON = Embed Audio

Note: *For Additional Information, refer to the Series 2 manual for descriptions of all of the IO cards that can be loaded in this chassis.*

Alphabetical Index