



UTAH-100/1



System Setup and Operation



UTAH-100/1 Operations Guide

- Document Number: 82101-0083
- Document Version: 1.0
- Date: September 26, 2012
- Printed in U.S.A.

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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).



Important Safeguards and Notices

This section provides important safety guidelines for the Operator and Service Personnel. Specific warnings and cautions are found throughout the guide where they apply, but may not appear here. Please read and follow the important safety information, specifically those instructions related to risk of fire, electric shock, or injury to persons.

Safety Symbols



- Hazardous Voltage symbol



- Caution symbol. The product is marked with this symbol when it is necessary to refer to the manual to prevent damage to the product.

Warnings

Please observe the following important warnings:



- Any instructions in this guide that require opening the chassis, changing a power supply, or removing a board, should be performed by qualified personnel only. To reduce the risk of electric shock, do not perform any service unless you are qualified to do so.
- Heed all warnings on the unit and in the operating instructions.
- Do not use this product in or near water. Disconnect AC power before installing any options or servicing the unit unless instructed to do so by this manual.
- This product is grounded through the power cord ground conductor. To avoid electric shock, plug the power cord into a properly wired receptacle before connecting the product inputs or outputs.
- Route power cords and other cables so they won't be damaged.
- The AC receptacle (socket) should be located near the equipment and be easily accessible.
- Disconnect power before cleaning. Do not use any liquid or aerosol cleaner - use only a damp cloth.



- Dangerous voltages exist at several points in this product. To avoid personal injury, do not touch exposed conductors and components while power is on. Do not insert anything into either of the systems two-power supply cavities with power connected.
- Do not wear hand jewelry or watches when troubleshooting high current circuits, such as power supplies. During installation, do not use the door handles or front panels to lift the equipment as they may open abruptly and injure you.
- To avoid fire hazard when replacing fuses, use only the specified correct type, voltage and current rating as referenced in the appropriate parts list for this product. Always refer fuse replacement to qualified service personnel.
- Have qualified personnel perform safety checks after any service.

Cautions

Please observe the following important cautions:



- When installing this equipment do not install power cords to building surfaces. To prevent damage when replacing fuses, locate and correct the problem that caused the fuse to blow, before reconnecting power.
- Use only specified replacement parts

Notices

Please observe the following important notes:



- When the adjacent symbol is indicated on the chassis, please refer to the manual for additional information.
- For the HD-2020 Chassis and Master Control Panel, refer to “Connecting and Disconnecting Power” - Chapter 2 (Hardware Installation).

Company Information

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- **After Hours Emergency:** +1 (800) 447-7204. Follow the menu instructions for Emergency Service.

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- 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.

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Table of Contents

Section 1

Introduction 1-1
Installation 1-2
 Initial Inspections 1-2
 Before Applying Power 1-2
 Service 1-2
Installation 1-3

Section 2

Maintenance 2-1
 General 2-1
 Power indicators 2-1
 General Description 2-2

Section 3

Configurations 3-1
 Distribution and Changeover 3-1
 8x8 Routing Switcher & Distribution/Changeover 3-3
 16x16 Routing Switcher 3-4
Connectors 3-5
 BNC 3-5
 D-SUB 3-5
Control Port 3-6
 Important Note 3-6
 Warning 3-6
Specifications 3-7
 UTAH-100/1 Distribution Front and Rear 3-8
 UTAH-100/1 8x8 Router Front and Rear 3-9
 UTAH-100/1 16x16 Router Front and Rear 3-10
 UTAH-100/1 Control Wiring 3-11
 XABP - Audio Breakout Panel 140030-120 3-12





Section 1

Introduction

Thank you for choosing a Utah Scientific Inc. product. We are convinced that your choice will prove to be a wise and worthy decision for many years to come.

Your product has been tested for performance at the factory according to the specifications given for the system in this manual. However, before putting the device into operation we kindly ask you to read this manual, and act according to the information given. All information given in this document is property of Utah Scientific Inc. To the knowledge of Utah Scientific Inc there are no errors in the manual. Should any errors be discovered, please notify Utah Scientific Inc. We will under no circumstances accept responsibility neither for errors in this manual, nor consequences of such errors.

Installation

Initial Inspections

Check the contents of the shipment for completeness and possible transport damage.

If the contents are incomplete or damaged, contact Utah Scientific Inc immediately for repairing or replacement parts of the equipment.

Before Applying Power

Verify that the product is configured to match the available main power source per the input power configuration instructions provided in this manual.



The modules of the UTAH-100/3 frame may only be installed in specific positions. Interchanging power and function modules may harm the UTAH-100/3-frame permanently.

The modules of the UTAH-100/3 frame shall always have the components facing to the right. Failure may occur if modules are installed incorrectly.

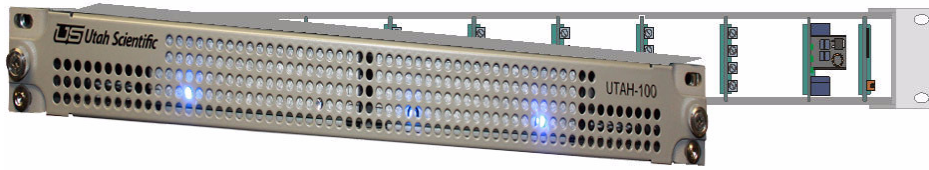
Service



Servicing, adjustments, maintenance or repair of this product may be performed by qualified personnel only. Adjustments described in this manual may be performed with power supplied to the product while protective covers are removed. Energy available at many points may, if contacted, result in personal injury. Capacitors inside this product may still be charged even when disconnected from their power source.

Installation

1. Remove the front cover and inspect the frame and the cards carefully for damages that may have occurred during transport.



Remove the front by unscrewing the two centre screws on the mounting brackets and of the frame gently towards you. Mind that the front is now detachable.

2. Check that the frame is installed so the airflow through the unit is unrestricted. No forced ventilation is required under normal operating conditions.
3. Leave one power module (card-slot to the far left) in the frame.



4. Connect the external power cord to the corresponding power connector on the rear side of the UTAH-100/1-frame. Check that the green LEDs indicating $\pm 5V$ presence are lit on the DAXPWR module. The upper LED indicates +5V power supply and the lower LED indicates -5V power supply. In case of failure indication (no emission from LED) on either power, remove power the cord and proceed to point 11.

Section 1

- Put a distribution/switch module in one of the card positions to the right. Check the power LEDs on this module as well as on the power module.



- If the dual power option was ordered, put the last power module in the frame – position number 2 counting from the right hand side of the frame. Connect the power cord for the redundant power. Check the LEDs on all three cards in the frame.



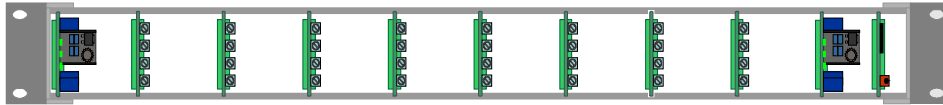
- Put the control card in the frame if used – position number 1 counting from the right of the frame.



If no control card is used, continue to point 9.



8. Check the power LEDs and - if installed - the blinking green "Activity"-LED in front of the changeover-module. Remove the control module and verify that the correct jumper setting is present. Normally no changes are necessary if used with Utah Scientific Inc. control software/systems.
9. Install the remaining cards in the frame - while observing the LED status at all times.



10. Reinstall the front cover to ensure that air travels properly through the unit.



11. If a failure occurs, please disconnect power and contact UTSCI support for assistance.



Section 2

Maintenance

General

All modules are hot-swappable and the only maintenance that should be performed by the user is the output level adjustments and reset of control modules.

In case of failure on a module the module must be replaced. A sufficient amount of modules will normally be kept on stock at Utah Scientific Inc. at all times.

CAUTION



- The modules of the UTAH-100/1 frame may only be installed in specific positions. Interchanging power and function modules may harm the UTAH-100/1 frame permanently.
- The modules of the UTAH-100/1 frame shall always have the components facing to the right. Failure may occur if modules are installed incorrectly.

Power indicators

All DA and switching modules have LEDs in the front.

The upper LED will indicate correct +5V power supply and the lower LED indicates correct -5V power supply. The power LEDs shall emit green light at all times. An unlit/dark power LED indicates an error.

Some modules will have only one LED. This will indicate correct +5V operating power.

Some modules will have a third or more LEDs in addition to the power LEDs. Refer to the manual of the module for detailed description of LED interpretation.

General Description

The UTAH-100/1 is a high-density frame for distribution and switching of analog and digital signal formats. The super compact and modular 19" wide, 1RU high and 120 millimeters deep system housing can be equipped in a number of different configurations for routing, switching and distribution applications.

Different signal format modules using coaxial cables may be freely interchanged within the UTAH-100/1. (SDI, 140MBps, 155MBps, ASI, SSI, 45MBps, 34MBps, 2MBps) Because of the broadband analog nature of the UTAH-100/1 it will handle normal "two level" and HDB3 coded telecom formats equally well.

To meet the high availability requirements of the professional Broadcast and Telecom industries the unit can optionally be equipped with a dual redundant power supply. The internal DC/DC converter modules will accept the Telecom standard -48VDC supply directly to the frame, or be supplied from AC mains by using an ext. AC/DC converter. UTSCI can supply both individual stand alone and rack mount power supply units.

An optional control module is available for serial port interfacing to external control systems.

The module is available with different software/protocol and hardware options.



Figure 2-1. UTAH-100/1 w/ detachable front cover mounted



Figure 2-2. UTAH-100/1 rear view

Configurations

Distribution and Changeover

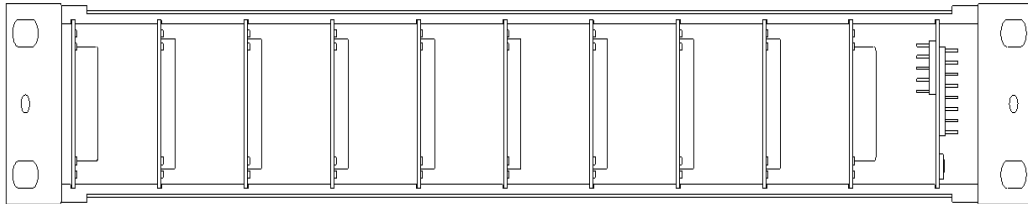


Figure 3-1.

When used as a distribution/changeover unit the frame can be equipped with up to 8 distribution amplifier and/or switching modules. A number of 1:3 distribution modules for different formats are available.

2x1 changeover modules supporting multiple formats may be installed and controlled via ext. connection Alarm inputs, automatic signal detection mode or via serial remote control (requires optional controller module).

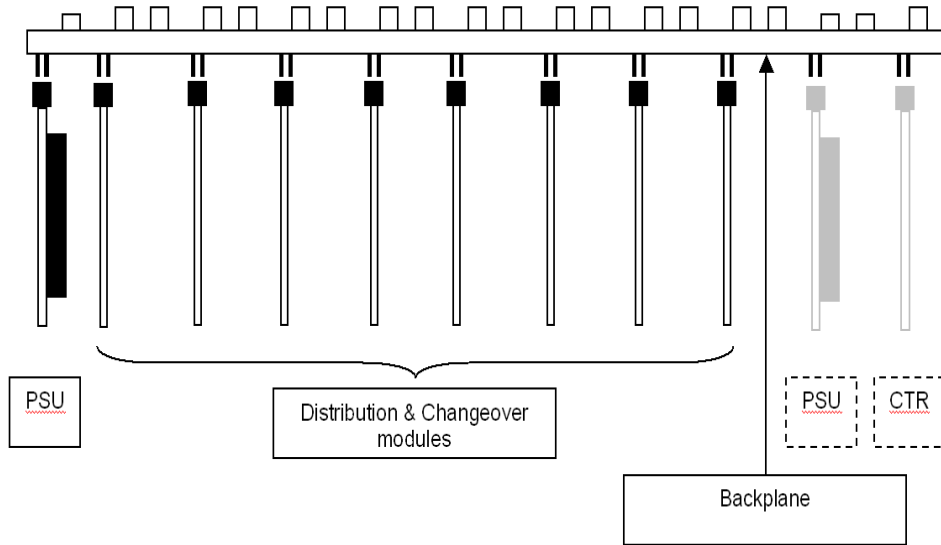


Figure 3-2.



8x8 Routing Switcher & Distribution/Changeover

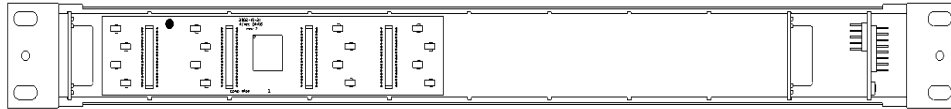


Figure 3-3.

An 8x8 multiformat matrix board may be installed and occupies then 4 of the 8 possible slots. The 4 remaining slots may be populated with distribution or changeover modules. Due to the broadband analog matrix core it may be used for many different formats/signals. By using format specific matrix I/O modules also features like automatic cable EQ etc. are available.

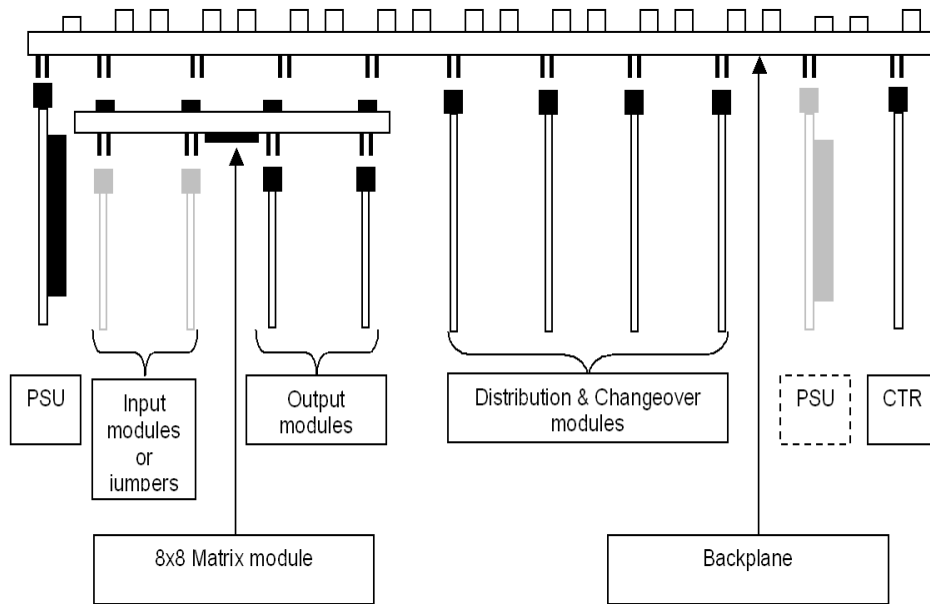


Figure 3-4.

16x16 Routing Switcher

The 16x16 multi format matrix board occupies all the 8 slots.

The same broadband analog matrix core as in the 8x8 board is used, and the 16x16 version may also use the same format specific matrix I/O modules to support a number of different formats/signals and features (automatic cable EQ etc.).

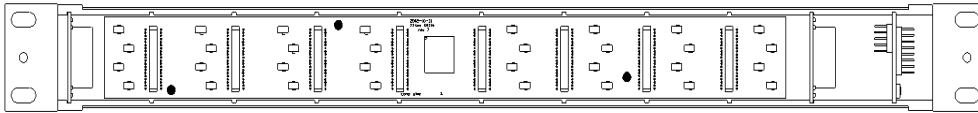


Figure 3-5.

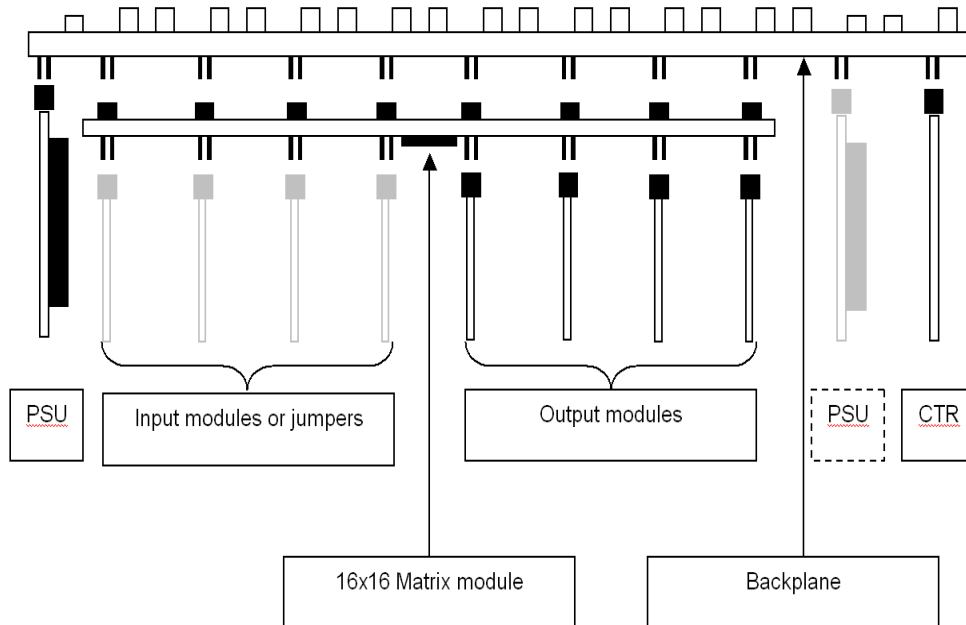


Figure 3-6.



Connectors

BNC

BNC connectors are in groups of four per module slot.

The BNCs may be inputs or outputs depending on functionality of the card installed in the specific slot.

A sticker/label will follow each module – or may already be factory installed on a new UTAH-100/1.

The sticker should be added to the rear of the UTAH-100/1 frame to indicate the current use of the BNCs of that slot.

D-SUB

The 9-pin, female, D-sub connector on the rear panel is for serial communication. This may be used when the optional control card is installed in the UTAH-100/1 frame.

Two 9-pin, male, D-sub connectors are the power inlets for the DC/DC converter(s) in the UTAH-100/1 frame.

The power inlets are completely independent of each other, and are only connected to isolated input of the DC/DC converter located right next to the connector.

	Control port	DC Power 1	DC Power 2
	Dsub9, Female	Dsub9, Male	Dsub9, Male
Pin #			
1	+5V	- DC	- DC
2	TX	NC	NC
3	RX	NC	NC
4	NC	NC	NC
5	GND	+DC	+DC
6	LineBusy	- DC	- DC
7	NC	NC	NC
8	NC	NC	NC
9	NC	+DC	+DC

Figure 3-7.

Control Port

Important Note

The Control port Dsub9 Female has deviations from the RS232 wiring standard.

A +5VDC and an auxiliary data signal has been added to the port to enable the use of an external RS232->485 converter. Care must be taken when interfacing to the control port to avoid permanent damage to either the UTAH-100/1 frame or the externally connected equipment.

Warning



The RS-232 cable connections for the control interface should be limited to the wiring indicated in the figure below. (i.e. only Rx, Tx and GND)

Do not attempt to use the +5VDC pin as a power source for external equipment!

Do not connect an RS232 cable with more than the 3 connections indicated in the figure below.

If an RS422/RS485 channel is required in your application, please contact UTSCI for further information.

For setup of baud rate and protocols on the RS232 interface, please refer to the controller module manual and/or additional system related software notes (if supplied).



Specifications

Operating temp.range (*)	0 - 45°C (ambient)
Mechanical size of frame	19" x 1RU x 120mm
Frame weight (empty)	1300g
Frame weight (full)	1750g (depending on type of modules installed)

(*) Free air circulation through the unit has to be maintained.
Required airflow with inlet airflow temperature 20°C is 10m³/h.

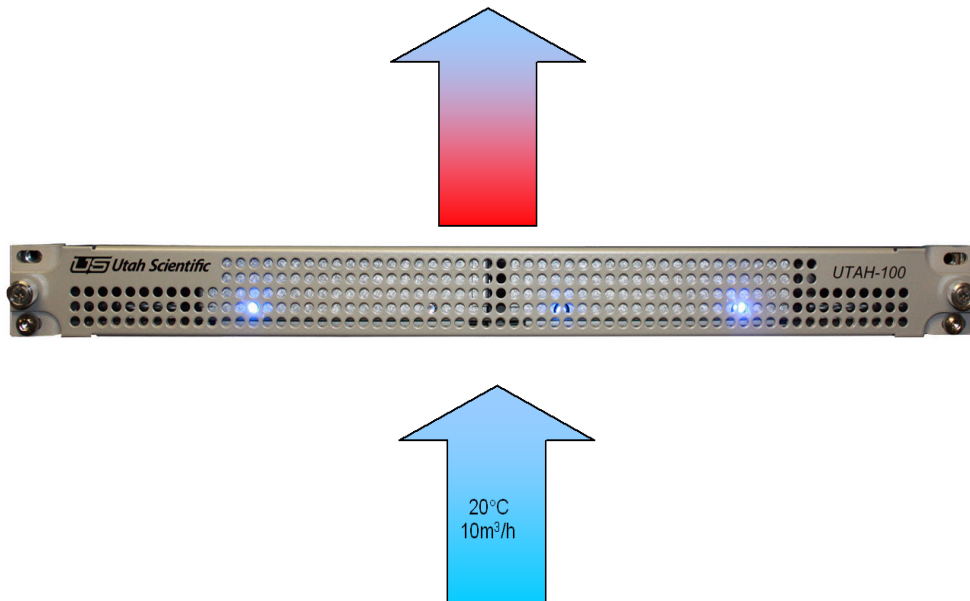


Figure 3-8.

Utah Scientific Inc. reserves the right to change specifications without prior notice.

UTAH-100/1 Distribution Front and Rear

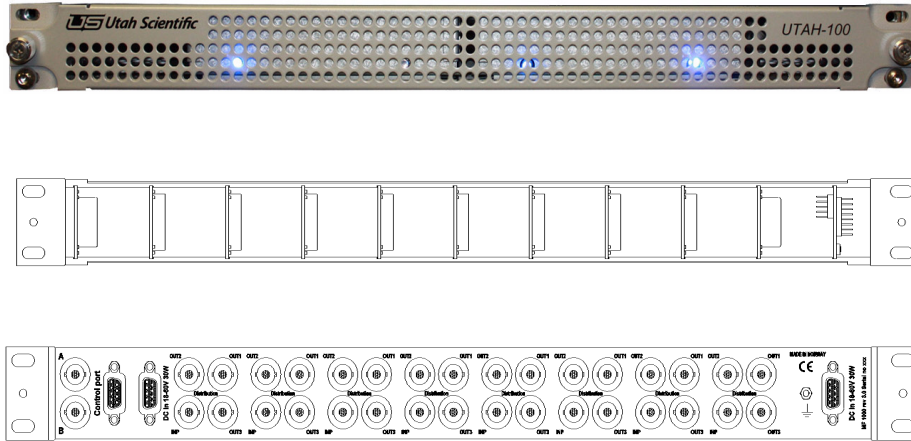
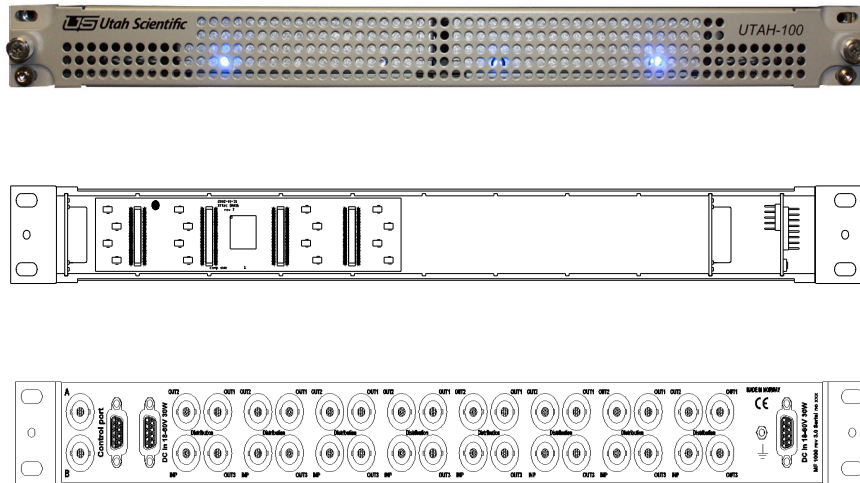


Figure 3-9.



UTAH-100/1 8x8 Router Front and Rear



Section 3

Figure 3-10.

UTAH-100/1 16x16 Router Front and Rear

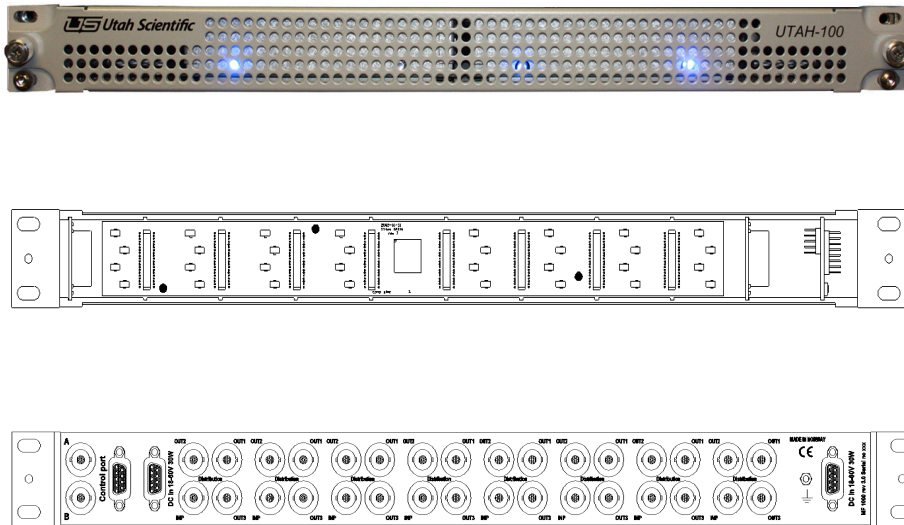


Figure 3-11.



UTAH-100/1 Control Wiring

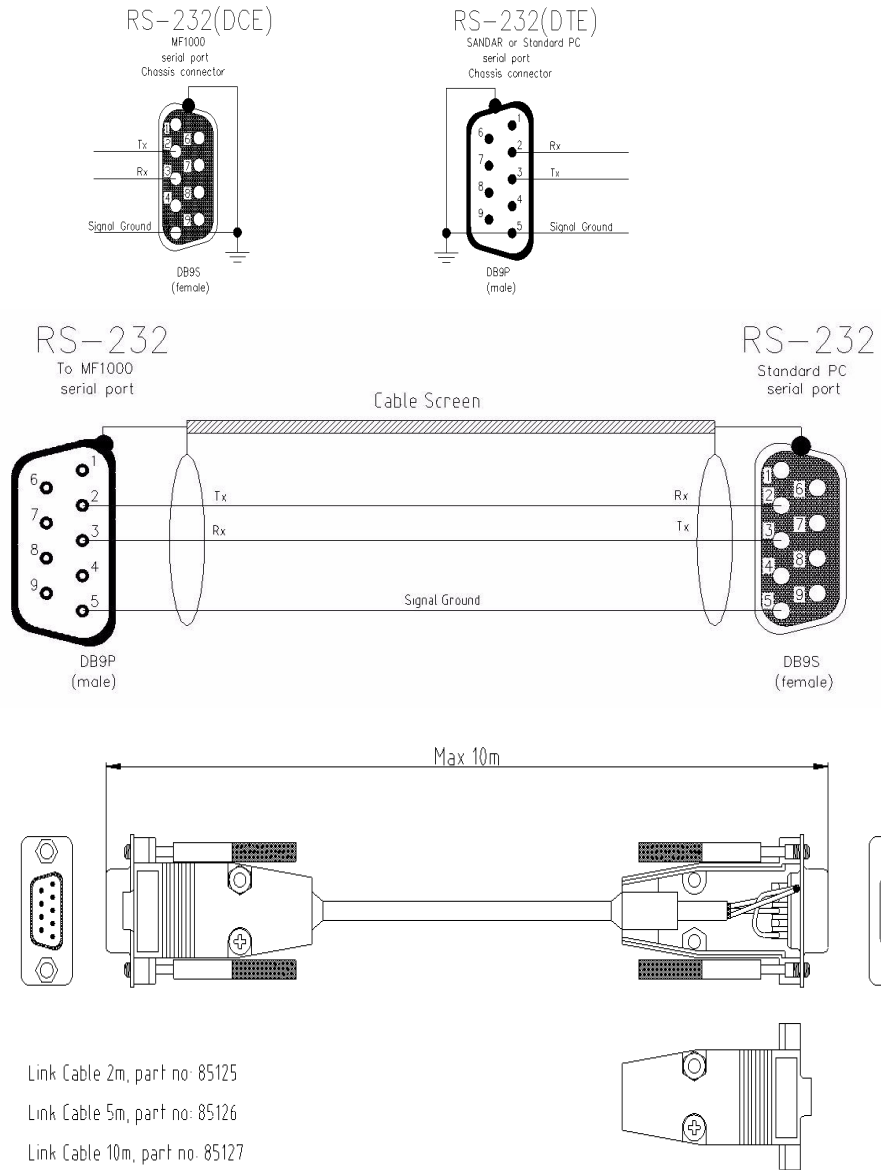


Figure 3-12.

XABP - Audio Breakout Panel 140030-120

The XABP audio breakout panel is designed to extend and simplify rear panel input and output connectivity. Though the breakout panel connection is the same, the panel configuration will vary depending upon the router type (mono, stereo, 16x and 32x panels). A stereo configuration will involve two separate panels, as will 16x and 32x panel type, with the former (16x) utilizing one side as the input and one side as the output during connectivity.

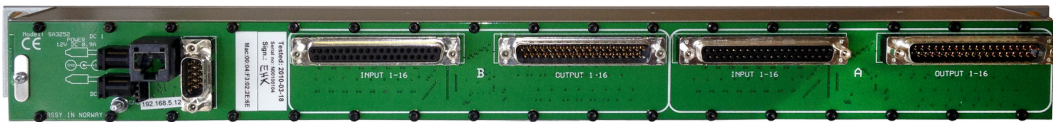


Figure 3-13. UTAH-100/X8AA - rear view

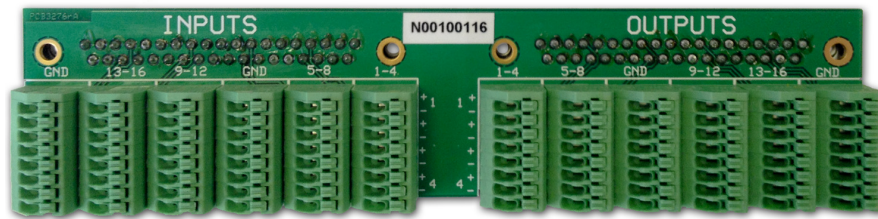


Figure 3-14. XABP breakout panel

The breakout panel mates up with both 37-pin **input** and **output** connections at the chassis rear. Necessary breakout wiring is accomplished by using the spring loaded wire clips on the mating card (below).

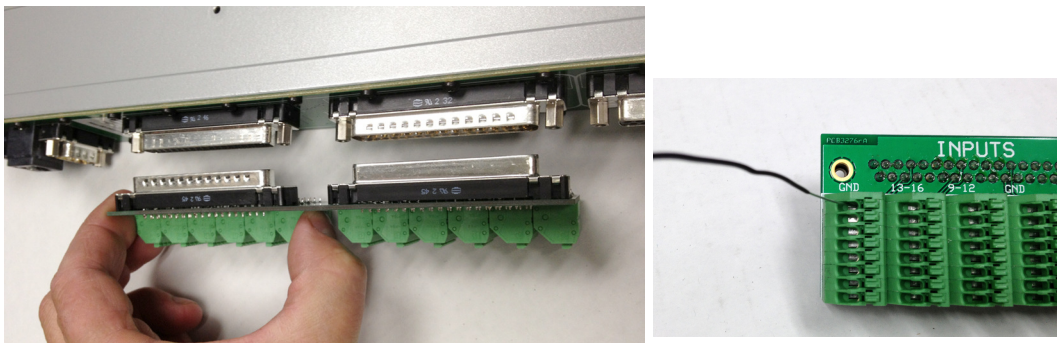


Figure 3-15. Simple panel and wire attachments



Symbols

- +5V power supply 2-1
- +5VDC pin
 - Warning 3-6

Numerics

- 16x16 Routing Switcher 3-4
- 5V power supply 1-3, 2-1
- 8x8 Routing Switcher 3-3

A

- air circulation 3-7
- airflow temperature 3-7
- Audio Breakout Panel 3-12
- auxiliary data signal 3-6

B

- BNC 3-5

C

- Configurations 3-1
- Connectors 3-5
- Control Port 3-6
- Control Wiring 3-11

D

- DC/DC converter 3-5
- DC/DC converter modules 2-2
- Distribution and Changeover 3-1
- distribution/switch module 1-4
- D-SUB 3-5
- D-sub connector 3-5
- dual power option 1-4
- dual redundant power supply 2-2

G

- General Description 2-2

H

- HDB3 2-2

I

- Initial Inspections 1-2
- Installation 1-2
 - procedure 1-3
- Introduction 1-1

M

- Maintenance 2-1

- matrix I/O modules 3-3

P

- Power application 1-2
- Power indicators 2-1

R

- redundant power 1-4
- RS-232 cable connections
 - Warning 3-6
- RS232 wiring standard 3-6
- RS232->485 converter 3-6

S

- Service 1-2
- signal format modules 2-2
- Specifications 3-7
- switching modules 3-1

U

- UTAH-100/1
 - 16x16 router front and rear 3-10
 - 8x8 router front and rear 3-9
 - control wiring 3-11
 - Distribution front and rear 3-8
- UTAH-100/1 rear view 2-2
- UTAH-100/1-frame 1-3

X

- XABP 3-12