

Utah Sandar

User Manual & Installation Guide

UTAH-100 X-SERIES

Routers and Distribution Amplifiers

CONTENTS

Quick Start Guide

Routers

HD

SD

Analog Video

Analog Audio

Distribution Amplifiers

HD

SD

Analog Video

Analog Audio

Software Installation and Operation

Utah Sandar

User Manual

UTAH-100/X16HD

**16x16, 8x8 SDI-HD 3Gb/s Router with/without
Control Panel**

UTAH-100/X16HD, UTAH-100/X16HDCP,
UTAH-100/X8HD, UTAH-100/X8HDCP

CONTENTS

CONTENTS	2
INTRODUCTION	3
WARRANTY	3
DOCUMENT REVISION HISTORY	3
SAFETY & ENVIRONMENT	4
GENERAL	4
SAFETY SYMBOLS	4
SAFETY EARTH GROUND	4
ENVIRONMENT	4
INSTALLATION	5
INITIAL INSPECTIONS	5
ESD HANDLING	5
BEFORE APPLYING POWER	5
SERVICE	5
GENERAL DESCRIPTION	6
EXTERNAL POWER SUPPLY	7
UTAH-100 CONTROL SOFTWARE:	7
PINOUT	7
POWER CONNECTION	7
PORT PIN ORIENTATION	7
SPECIFICATIONS	9
BLOCK DIAGRAM	10
MODEL UTAH-100/X16HD	10
MODEL UTAH-100/X16HDCP	11
MODEL UTAH-100/X8HD	12
MODEL UTAH-100/X8HDCP	13

INTRODUCTION

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

Your Utah Sandar 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 Sandar. To the knowledge of Utah Sandar there are no errors in the manual. Should any errors be discovered, please notify Utah Sandar. Utah Sandar will under no circumstances accept responsibility neither for errors in this manual, nor consequences of such errors.



Utah Sandar
Thorøyaveien 11
N-3209 Sandefjord,
Norway
Tel.: +47 33 52 27 00
Fax: +47 33 52 27 01

WARRANTY

This Utah Sandar product is warranted against defects in materials and workmanship for a period of two (2) years from the date of invoice. During the warranty period, Utah Sandar will, at its option, either repair or replace products that prove to be defective.

The warranty shall not apply to defects resulting from improper or inadequate installation or maintenance by buyer, buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation or maintenance.

If a product needs to be returned for service, please first contact the Utah Sandar Helpdesk to obtain a Return Material Authorization (RMA) number. Make sure the packaging provides sufficient protection against ESD and mechanical damage. Please enclose a note with the RMA, return address, contact person details and a failure symptom description.

DOCUMENT REVISION HISTORY

Rev.	Date	Description
1.0	2009-10-07	Changed product name
B	2008-12-22	Change name and logo
A	2008-04-30	Preliminary

SAFETY & ENVIRONMENT

General

This product and related documentation must be reviewed for familiarization with safety markings and instructions before operation. This product has been designed and tested in accordance with the relevant international standards.

Safety Symbols



Indicates hazardous voltages.



Indicates earth (ground) terminal.



The **CAUTION** sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which if not correctly performed or adhered to could result in damage to or destruction of part or all of the product. Do not proceed beyond a CAUTION sign until the indicated conditions are fully understood and met.



The **WARNING** sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not performed or adhered to could result in personal injury. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.

Safety Earth Ground

This is a Safety Class 1 product (a protective earth terminal (Ch) is provided).

An uninterrupted safety earth ground must be provided from the main power source to the product input wiring terminals, power, cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, the product must be made inoperative and secured against any unintended operation.

Environment



WEEE: All Utah Sandar products will comply with the EU Directive 2002/96/EC on Waste from Electrical and Electronic Equipment aka WEEE directive. Please contact your local Utah Sandar sales representative for information about returning these products for safe disposal/recycling. Utah Sandar equipment that complies with the directive will be marked with a WEEE-compliance emblem.



RoHS: All Utah Sandar products will comply with the EU Directive 2002/95/EC on Restriction of Hazardous Substances aka RoHS directive. Thereby not containing above the limits specified in the said directive of any of the banned substances. Utah Sandar equipment that complies with the directive will be marked with a RoHS-compliance emblem.

Exempt: Spare/Expansion parts for older systems are exempt from the directive.

INSTALLATION

Initial Inspections

Check the contents of the shipment for completeness and possible transport damage. If the contents are incomplete or damaged, contact Utah Sandar AS immediately for repairing or replacement parts of the equipment.



ESD Handling

This product may contain Electrostatic Sensitive Devices (ESD). Precautions to minimise the risk of damage, due to electrostatic discharge during handling, are recommended. For guidance, refer to British Standard BS CECC 00015, Part 1: BASIC SPECIFICATION FOR PROTECTION OF ELECTROSTATIC SENSITIVE DEVICES



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 and product marking.



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.

GENERAL DESCRIPTION

The **UTAH-100/X16HD Compact HD/SDI Router** fully complies with the relevant standards for SD-, HD- and 3G-SDI (SMPTE 259M, 292M and 424M) formats. With adaptive cable equalizers, signal re-clocking, cable drivers and multi-sync reference switching these routers are well suited for OB vans and all other digital Broadcast and Telecom routing and distribution systems. Having both an Ethernet SNMP/HTTP/SanEth) and DSUB9P RS-232 interface for remote control and configuration makes it very adaptable to any 3rd party control system.

The UTAH-100/X16HD is delivered in four models:

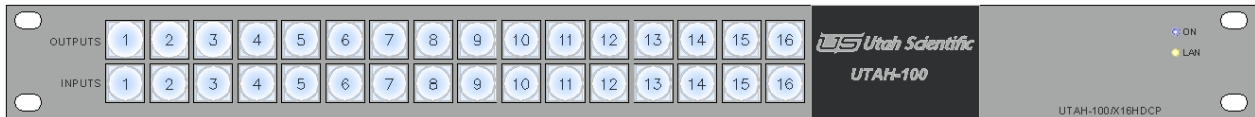
- Model UTAH-100/X16HD : 16x16 with 16 LEDs for signal presences in the front.
- Model UTAH-100/X16HDCP : 16x16 with Push Buttons in the front 16 for outputs selection and 16 for input selection.
- Model UTAH-100/X8HD : 8x8 with 8 LEDs for signal presences in the front.
- Model UTAH-100/X8HDCP : 8x8 with Push Buttons in the front, 8 for outputs selection and 8 for input selection.

All units are delivered with one standard off-the-shelf universal AC/DC Power Supply. Two independent power inputs are provided to enable redundant supplies.

The 19" wide, 1RU high and 60 millimetres deep frame houses the switch, local control unit and RS-232 and Ethernet remote control interface. Two 12 VDC 2.1mm power input connectors enable use of redundant power supplies.



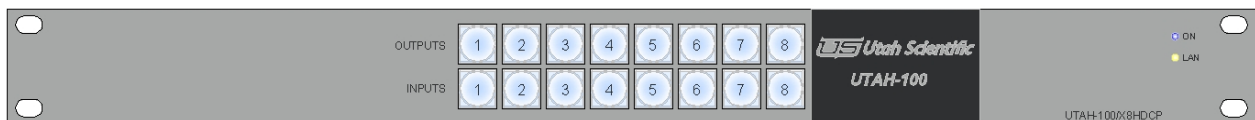
UTAH-100/X16HD



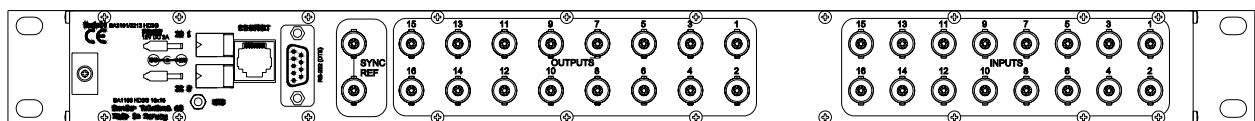
UTAH-100/X16HDCP



UTAH-100/X8HD



UTAH-100/X8HDCP



External Power Supply

The external Power Supply is an AC/DC Switch Mode desktop power supply module with compact design. The power supply has a universal input voltage, with 3 pins IEC 320 connector. The output voltage is 13.2 VDC and is short circuit proof and deliver up to 40W. One secondary cable with the modular connector in the one end connects to the power supply and the other end with a 5.5/2.1mm jack connects to the UTAH-100/XHDA frame. Utah Sandar recommends the Power Supply 9920 from Mascot A/S, but other types of Power Supplies may be used with similar specifications. **Mains cord is not included.**

Mounting bracket is available.

UTAH-100 CONTROL SOFTWARE:

- For Quick Start Guide see the attached document in the delivery.
- UTAH-100 Control Software see the document file: UTAH-100-ControlSoftware10.pdf attached in the user manual CD.

PINOUT

Power Connection

The UTAH-100/X16HD units have two 2.1mm DIN 12VDC connector with + at centre.



The power unit supplied with the UTAH-100/X16HD is a 13.2 VDC with a max rating of 3A (40W)

Port Pin Orientation

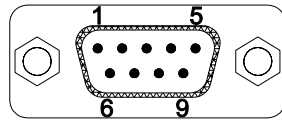
Ethernet Port

The Ethernet port is an 8-pin RJ-45 jack meeting the requirements of ISO 8877 for 10/100Base-T.

Ethernet Pin Assignment		
Pin	Signal Name	Figure RJ-45
1	TxD+ (Transmit Data)	<p>A diagram of an 8-pin RJ-45 jack. The pins are numbered 1 through 8 from left to right. The diagram shows the internal wiring structure of the jack.</p>
2	TxD- (Transmit Data)	
3	RxD+ (Receive Data)	
4	Not used	
5	Not used	
6	RxD- (Receive Data)	
7	Not used	
8	Not used	

RS-232 Port

Serial port, RS-232 is a DSUB9pin (male) connector. Use the following figure and tables for pin orientation and pin assignment information.



Serial Pin Assignment									
Port	Signal Pin1	Signal Pin 2	Signal Pin3	Signal Pin4	Signal Pin5	Signal Pin6	Signal Pin7	Signal Pin 8	Signal Pin 9
RS-232	Not connected	RxD	TxD	Not connected	GND	Not connected	Not connected	Not connected	Not connected

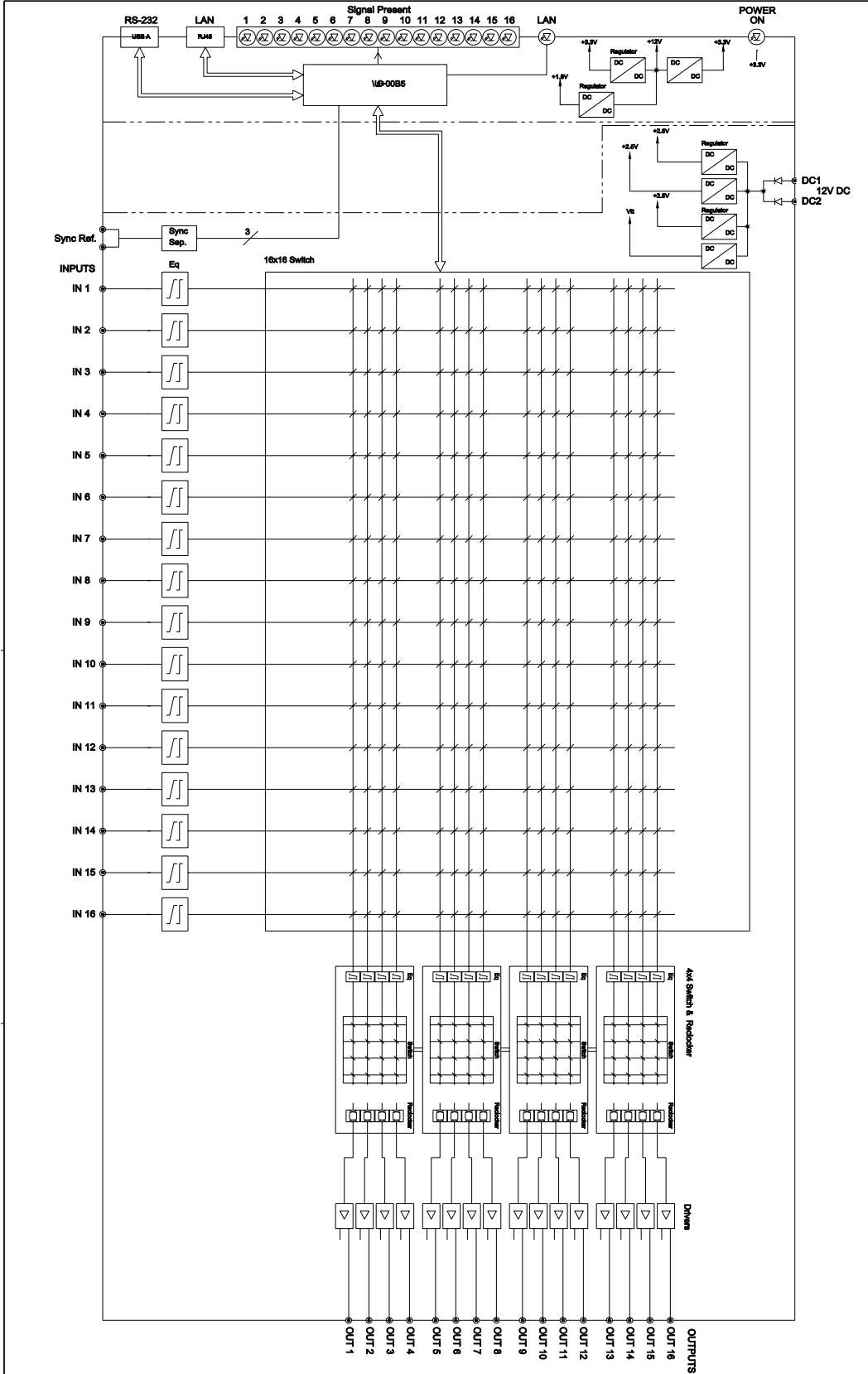
SPECIFICATIONS

Type	High Definition Serial Digital Video
Standard	SMPTE 259M, 292M, 424M
Data Rate	Auto Reclocking at 270 Mb/s, 1.483 Gb/s, 1.485 Gb/s, 2.966 Gb/s, 2.97 Gb/s
Number of In/Out	UTAH-100/X8HD: 8/8 UTAH-100/X16HD: 16/16
Impedance	75 Ohm
Cable Equalization	380 m Belden 1694A at 270 Mb/s 180 m Belden 1694A at 1.5 Gb/s 80 m Belden 1694A at 3 Gb/s
Output level	800 mV ±10%
Return Loss Input/Output 5 MHz to 3 GHz	≥ 15dB
Output Rise/Fall Time	≤ 135ps
Output Overshoot	≤ 10%
Output Alignment Jitter	≤ 0.3UIpp 100kHz-300MHz
Output Timing Jitter	≤ 0.2UIpp 10Hz-100kHz
Connector	BNC
Video Reference Input	
Type	Analogue Video Reference according to SMPTE RP168
Standard	PAL, NTSC, Tri-Level Sync
Connector	BNC Loop-Through
Impedance	Hi-Z, External 75 Ohm termination
Input Level	0.5 Vpp - 2 Vpp
Input Return Loss to 5MHz	> 40 dB
Ethernet	
Type	10/100 Base T
Standard	IEEE 802.3
Connector	RJ45
RS-232	
Type	RS-232(DTE)
Connector	DSUB 9 PIN
Electrical	
DC input Nominal	12 VDC
DC Input Range	10 - 15 VDC
DC Connector	DC Jack 2.1mm
DC Power	25W
Operating Temperature Range	0 °C - +40 °C
Humidity	90 % non condensing
External Power Supply	Universal 90-250VAC, 50/60Hz
Mechanical	
Dimensions	W: 482.6mm (19") H: 43.6mm (1U) D: 52mm + Connectors
Weight	0.855/0735 kg

Utah Sandar AS reserves the right to change specifications without prior notice.

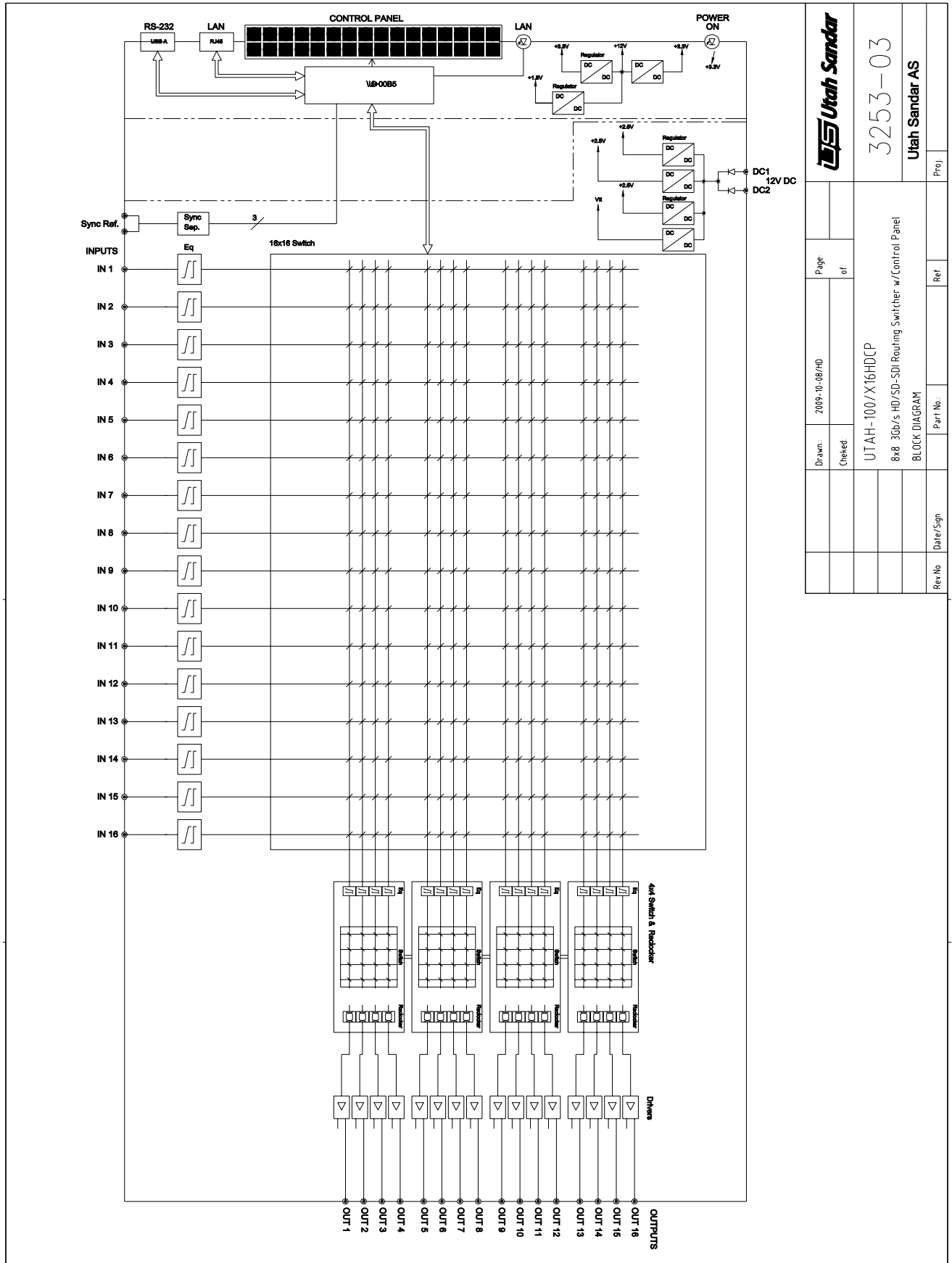
BLOCK DIAGRAM

Model UTAH-100/X16HD



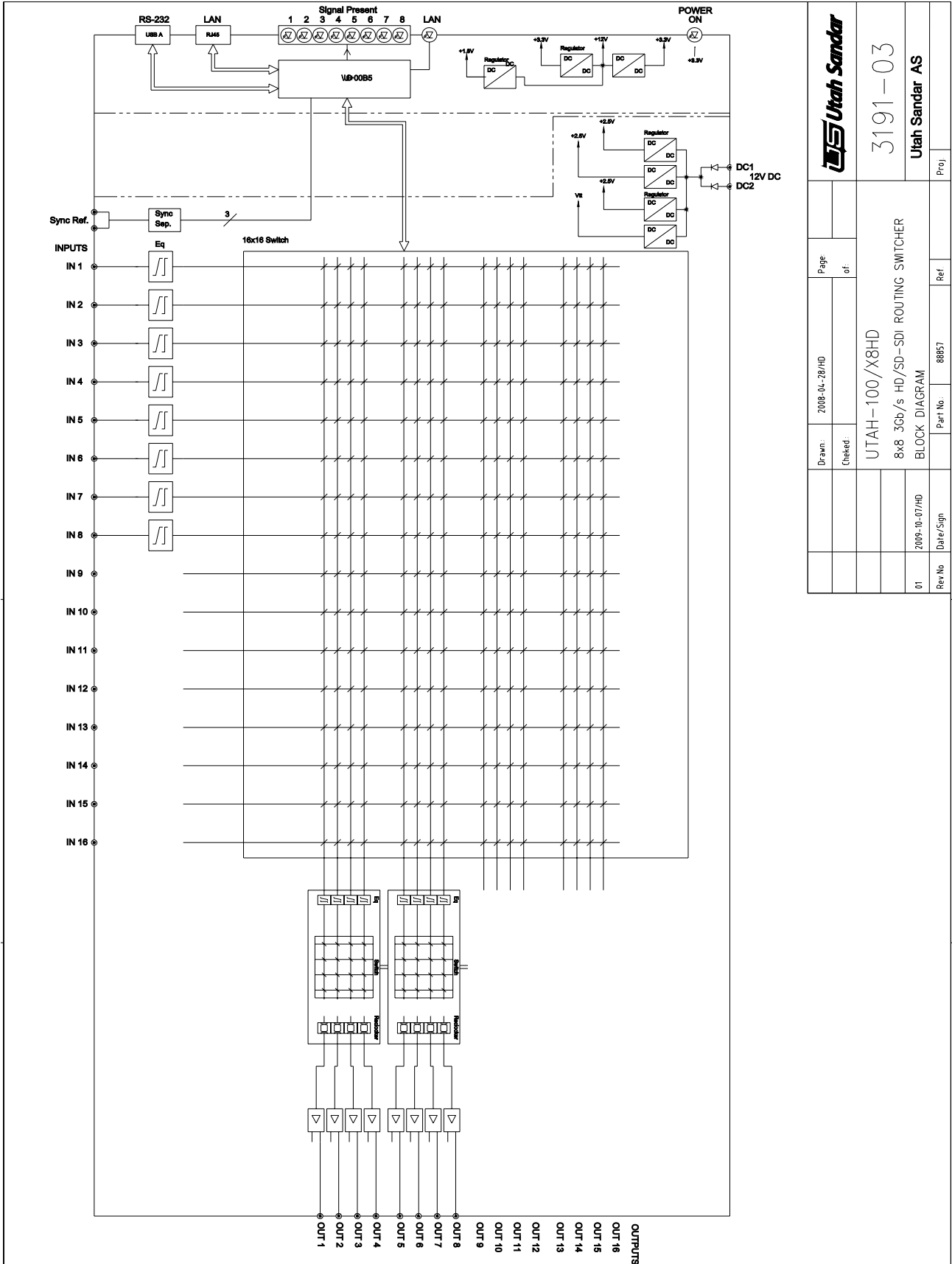
		Page		Ref	
		of		88857	
Drawn:	2008-01-10/HD	UTAH-100/X16HD 3Gb/s HD/SD-SDI ROUTING SWITCH BLOCK DIAGRAM		Part No.	88857
Checked:				Date/Sign	
Rev. No.	01	Date/Sign		Proj	Utah Sandar AS
		3213-03			

Model UTAH-100/X16HDCP



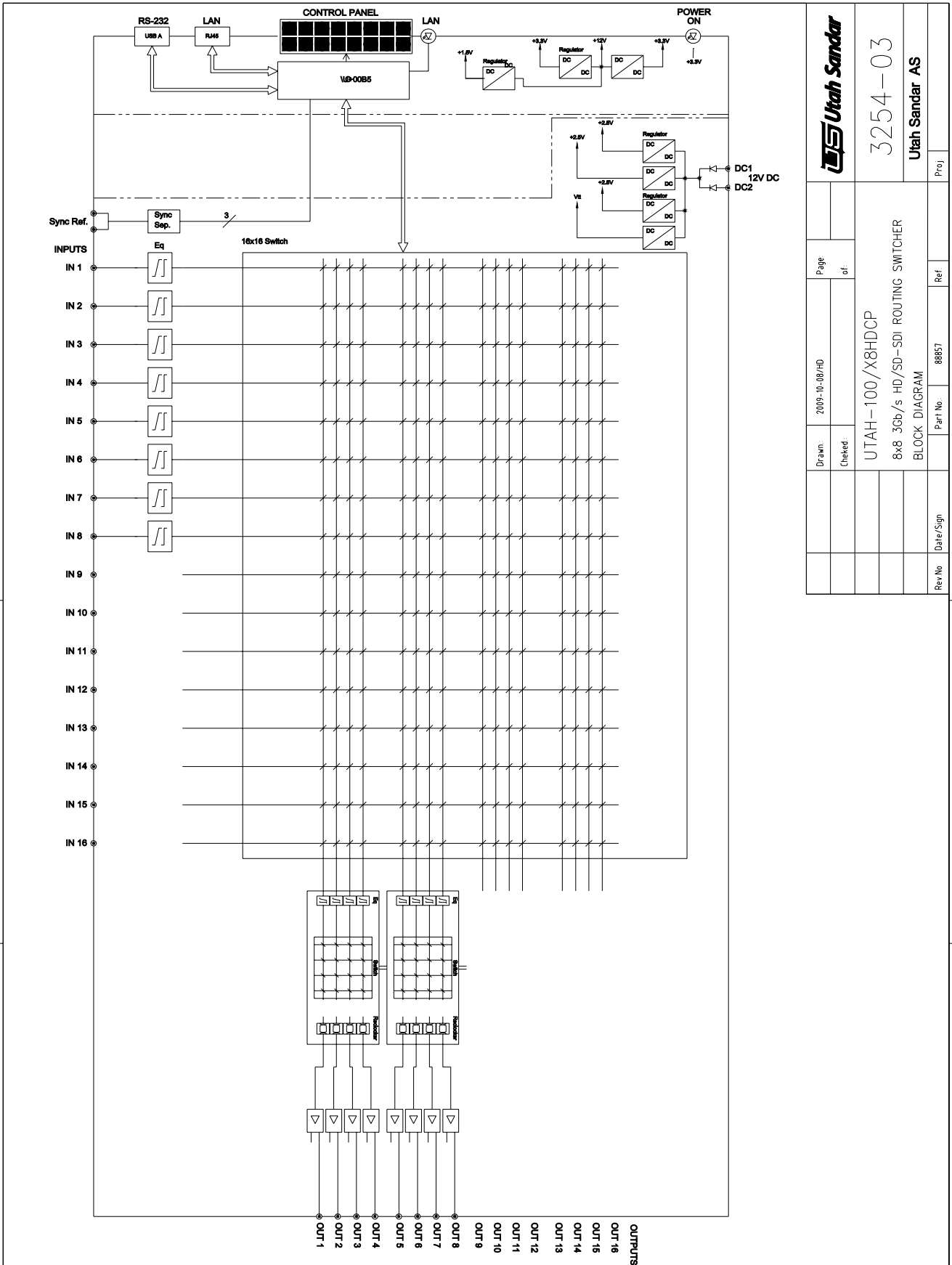
Utah Sandar		3253-03		Utah Sandar AS	
Drawn:	2009-10-08/HD	Page:		Ref:	
Checked:		of:		Part No.:	
UTAH-100/X16HDCP		8x8 36Gb/s HD/SD-SDI Routing Switcher w/Control Panel			
BLOCK DIAGRAM		Rev No			
Date/Sign		Date/Sign			

Model UTAH-100/X8HD



		3191-03		Utah Sandar AS	
		Page of		Proj	
Drawn: 2008-04-28/HD	Checked:	UTAH-100/X8HD 8x8 3Gb/s HD/SD-SDI ROUTING SWITCHER BLOCK DIAGRAM		Part No. 88857	Ref
		2009-10-07/HD	Date/Sign		
01	Rev No				

Model UTAH-100/X8HDCP



		3254-03		Utah Sandar AS	
		Project		Ref	
Drawn: 2009-10-08/HD	Checked:	UTAH-100/X8HDCP		Part No: 88857	Rev No
		8x8 3Gb/s HD/SD-SDI ROUTING SWITCHER		Date/Sign	
		BLOCK DIAGRAM			

Utah Sandar AS

User Manual

UTAH-100/X16SD

16x16, 8x8 SDI-SD Router with/without Control Panel

UTAH-100/X16SD, UTAH-100/X16SDCP,
UTAH-100/X8SD, UTAH-100/X8SDCP

CONTENTS

CONTENTS	2
INTRODUCTION	3
WARRANTY	3
DOCUMENT REVISION HISTORY	3
SAFETY & ENVIRONMENT	4
GENERAL	4
SAFETY SYMBOLS	4
SAFETY EARTH GROUND	4
ENVIRONMENT	4
INSTALLATION	5
INITIAL INSPECTIONS	5
ESD HANDLING	5
BEFORE APPLYING POWER	5
SERVICE	5
GENERAL DESCRIPTION	6
EXTERNAL POWER SUPPLY	7
UTAH-100 CONTROL SOFTWARE:	7
PINOUT	7
POWER CONNECTION	7
PORT PIN ORIENTATION	7
SPECIFICATIONS	9
BLOCK DIAGRAM	10
MODEL UTAH-100X16SD	10
MODEL UTAH-100X16SDCP	11
MODEL UTAH-100/X8SD	12
MODEL UTAH-100/X8SDCP	13

INTRODUCTION

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

Your Utah Sandar 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 Sandar. To the knowledge of Utah Sandar there are no errors in the manual. Should any errors be discovered, please notify Utah Sandar. Utah Sandar will under no circumstances accept responsibility neither for errors in this manual, nor consequences of such errors.



Utah Sandar
Thorøyaveien 11
N-3209 Sandefjord,
Norway
Tel.: +47 33 52 27 00
Fax: +47 33 52 27 01

WARRANTY

This Utah Sandar product is warranted against defects in materials and workmanship for a period of two (2) years from the date of invoice. During the warranty period, Utah Sandar will, at its option, either repair or replace products that prove to be defective.

The warranty shall not apply to defects resulting from improper or inadequate installation or maintenance by buyer, buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation or maintenance.

If a product needs to be returned for service, please first contact the Utah Sandar Helpdesk to obtain a Return Material Authorization (RMA) number. Make sure the packaging provides sufficient protection against ESD and mechanical damage. Please enclose a note with the RMA, return address, contact person details and a failure symptom description.

DOCUMENT REVISION HISTORY

Rev.	Date	Description
1.0	2009-10-26	Released

SAFETY & ENVIRONMENT

General

This product and related documentation must be reviewed for familiarization with safety markings and instructions before operation. This product has been designed and tested in accordance with the relevant international standards.

Safety Symbols



Indicates hazardous voltages.



Indicates earth (ground) terminal.



The **CAUTION** sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which if not correctly performed or adhered to could result in damage to or destruction of part or all of the product. Do not proceed beyond a CAUTION sign until the indicated conditions are fully understood and met.



The **WARNING** sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not performed or adhered to could result in personal injury. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.

Safety Earth Ground

This is a Safety Class 1 product (a protective earth terminal (Ch) is provided).

An uninterrupted safety earth ground must be provided from the main power source to the product input wiring terminals, power, cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, the product must be made inoperative and secured against any unintended operation.

Environment



WEEE: All Utah Sandar products will comply with the EU Directive 2002/96/EC on Waste from Electrical and Electronic Equipment aka WEEE directive. Please contact your local Utah Sandar sales representative for information about returning these products for safe disposal/recycling. Utah Sandar equipment that complies with the directive will be marked with a WEEE-compliance emblem.



RoHS: All Utah Sandar products will comply with the EU Directive 2002/95/EC on Restriction of Hazardous Substances aka RoHS directive. Thereby not containing above the limits specified in the said directive of any of the banned substances. Utah Sandar equipment that complies with the directive will be marked with a RoHS-compliance emblem.

Exempt: Spare/Expansion parts for older systems are exempt from the directive.

INSTALLATION

Initial Inspections

Check the contents of the shipment for completeness and possible transport damage. If the contents are incomplete or damaged, contact Utah Sandar AS immediately for repairing or replacement parts of the equipment.



ESD Handling

This product may contain Electrostatic Sensitive Devices (ESD). Precautions to minimise the risk of damage, due to electrostatic discharge during handling, are recommended. For guidance, refer to British Standard BS CECC 00015, Part 1: BASIC SPECIFICATION FOR PROTECTION OF ELECTROSTATIC SENSITIVE DEVICES



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 and product marking.



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.

GENERAL DESCRIPTION

The **UTAH-100X16SD Compact HD/SDI Router** fully complies with the relevant standards for SD-formats. With adaptive cable equalizers, signal re-clocking, cable drivers and multi-sync reference switching these routers are well suited for OB vans and all other digital Broadcast and Telecom routing and distribution systems. Having both an Ethernet SNMP/HTTP/SanEth) and DSUB9P RS-232 interface for remote control and configuration makes it very adaptable to any 3rd party control system.

The UTAH-100X16SD is delivered in four models:

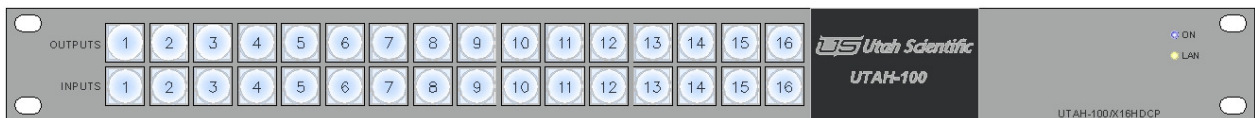
- Model UTAH-100X16SD : 16x16 with 16 LEDs for signal presences in the front.
- Model UTAH-100X16SDCP : 16x16 with Push Buttons in the front 16 for outputs selection and 16 for input selection.
- Model UTAH-100/X8SD : 8x8 with 8 LEDs for signal presences in the front.
- Model UTAH-100/X8SDCP : 8x8 with Push Buttons in the front, 8 for outputs selection and 8 for input selection.

All units are delivered with one standard off-the-shelf universal AC/DC Power Supply. Two independent power inputs are provided to enable redundant supplies.

The 19" wide, 1RU high and 60 millimetres deep frame houses the switch, local control unit and RS-232 and Ethernet remote control interface. Two 12 VDC 2.1mm power input connectors enable use of redundant power supplies.



UTAH-100X16SD



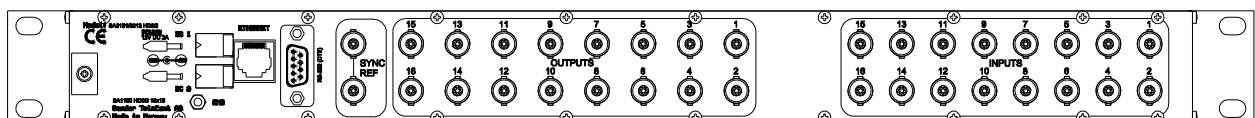
UTAH-100X16SDCP



UTAH-100/X8HD



UTAH-100/X8HDSCP



External Power Supply

The external Power Supply is an AC/DC Switch Mode desktop power supply module with compact design. The power supply has a universal input voltage, with 3 pins IEC 320 connector. The output voltage is 13.2 VDC and is short circuit proof and deliver up to 40W. One secondary cable with the modular connector in the one end connects to the power supply and the other end with a 5.5/2.1mm jack connects to the UTAH-100/XHDA frame. Utah Sandar recommends the Power Supply 9920 from Mascot A/S, but other types of Power Supplies may be used with similar specifications. **Mains cord is not included.**

Mounting bracket is available.

UTAH-100 CONTROL SOFTWARE:

- For Quick Start Guide see the attached document in the delivery.
- UTAH-100 Control Software see the document file: UTAH-100-ControlSoftware10.pdf attached in the user manual CD.

PINOUT

Power Connection

The UTAH-100X16SD units have two 2.1mm DIN 12VDC connector with + at centre.

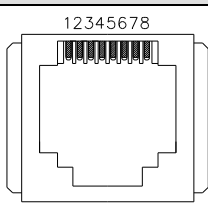


The power unit supplied with the UTAH-100X16SD is a 13.2 VDC with a max rating of 3A (40W)

Port Pin Orientation

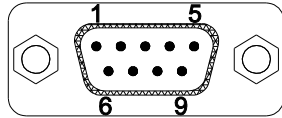
Ethernet Port

The Ethernet port is an 8-pin RJ-45 jack meeting the requirements of ISO 8877 for 10/100Base-T.

Ethernet Pin Assignment		
Pin	Signal Name	Figure RJ-45
1	TxD+ (Transmit Data)	
2	TxD- (Transmit Data)	
3	RxD+ (Receive Data)	
4	Not used	
5	Not used	
6	RxD- (Receive Data)	
7	Not used	
8	Not used	

RS-232 Port

Serial port, RS-232 is a DSUB9pin (male) connector. Use the following figure and tables for pin orientation and pin assignment information.



Serial Pin Assignment									
Port	Signal Pin1	Signal Pin 2	Signal Pin3	Signal Pin4	Signal Pin5	Signal Pin6	Signal Pin7	Signal Pin 8	Signal Pin 9
RS-232	Not connected	RxD	TxD	Not connected	GND	Not connected	Not connected	Not connected	Not connected

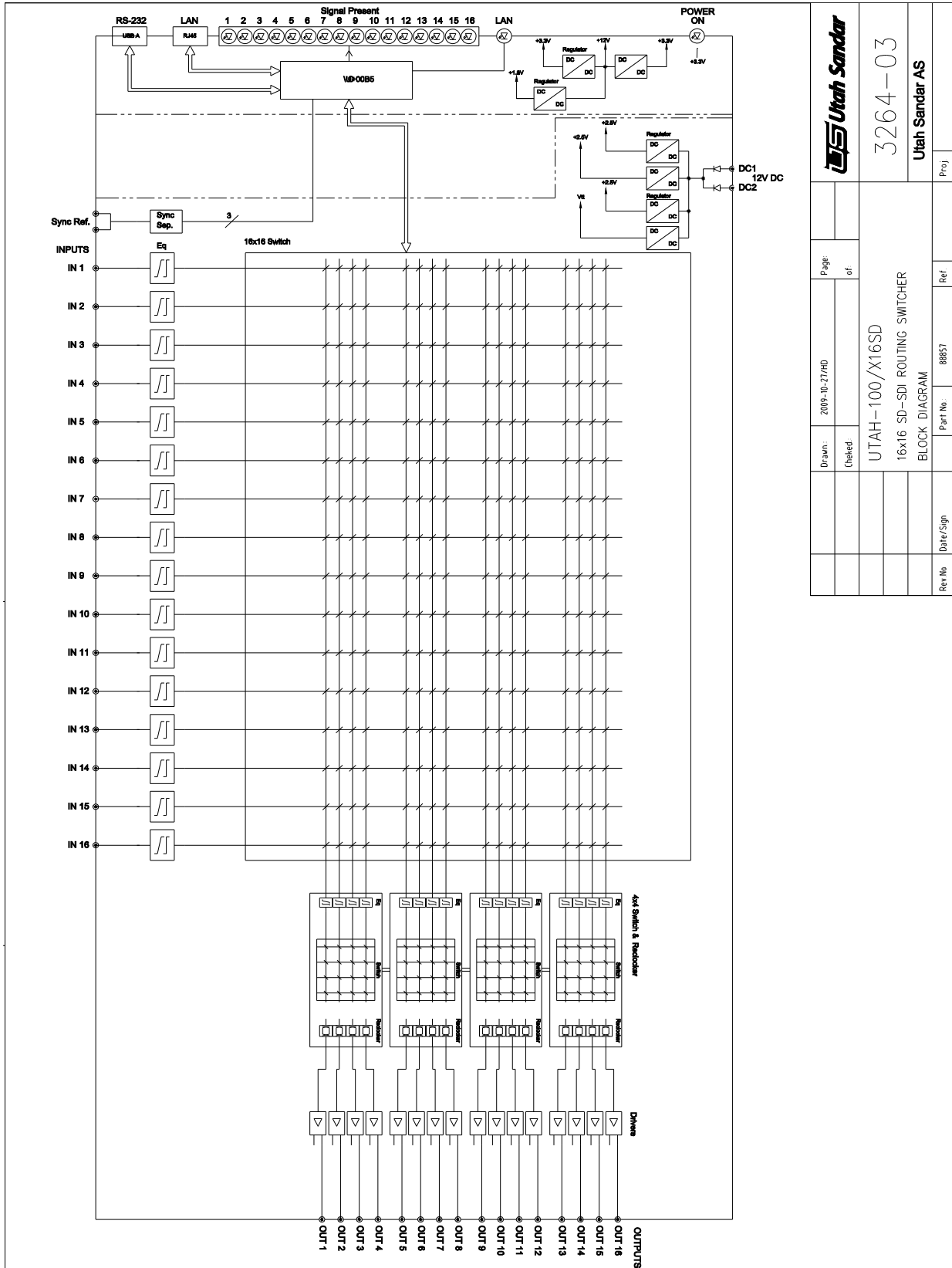
SPECIFICATIONS

Type	Standard Definition Serial Digital Video, DVB-ASI
Standard	SMPTE 259M
Data Rate	Reclocking at 270 Mb/s
Number of In/Out	UTAH-100/X8SD: 8/8 UTAH-100X16SD: 16/16
Impedance	75 Ohm
Cable Equalization	380 m Belden 1694A at 270 Mb/s
Output level	800 mV \pm 10%
Return Loss Input/Output 5 MHz to 270GHz	\geq 15dB
Output Rise/Fall Time	\leq 600ps
Output Overshoot	\leq 10%
Output Alignment Jitter	\leq 0.3UIpp 100kHz-300MHz
Output Timing Jitter	\leq 0.2UIpp 10Hz-100kHz
Connector	BNC
Video Reference Input	
Type	Analogue Video Reference according to SMPTE RP168
Standard	PAL, NTSC, bi-level sync
Connector	BNC Loop-Through
Impedance	Hi-Z, External 75 Ohm termination
Input Level	0.5 Vpp - 2 Vpp
Input Return Loss to 5MHz	> 40 dB
Ethernet	
Type	10/100 Base T
Standard	IEEE 802.3
Connector	RJ45
RS-232	
Type	RS-232(DTE)
Connector	DSUB 9 PIN
Electrical	
DC input Nominal	12 VDC
DC Input Range	10 - 15 VDC
DC Connector	DC Jack 2.1mm
DC Power	25W
Operating Temperature Range	0 °C - +40 °C
Humidity	90 % non condensing
External Power Supply	Universal 90-250VAC, 50/60Hz
Mechanical	
Dimensions	W: 482.6mm (19") H: 43.6mm (1U) D: 52mm + Connectors
Weight	0.855/0735 kg

Utah Sandar AS reserves the right to change specifications without prior notice.

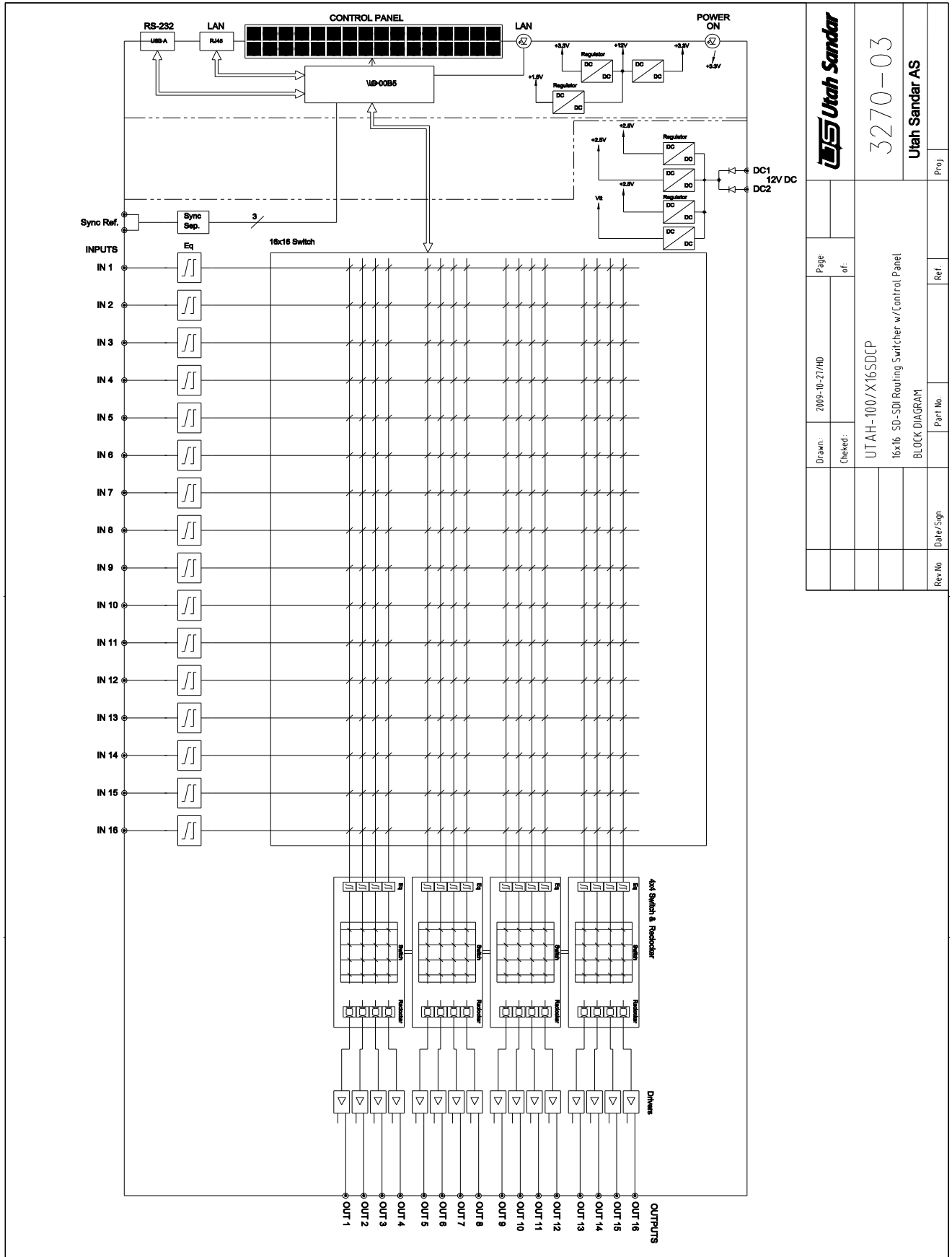
BLOCK DIAGRAM

Model UTAH-100X16SD



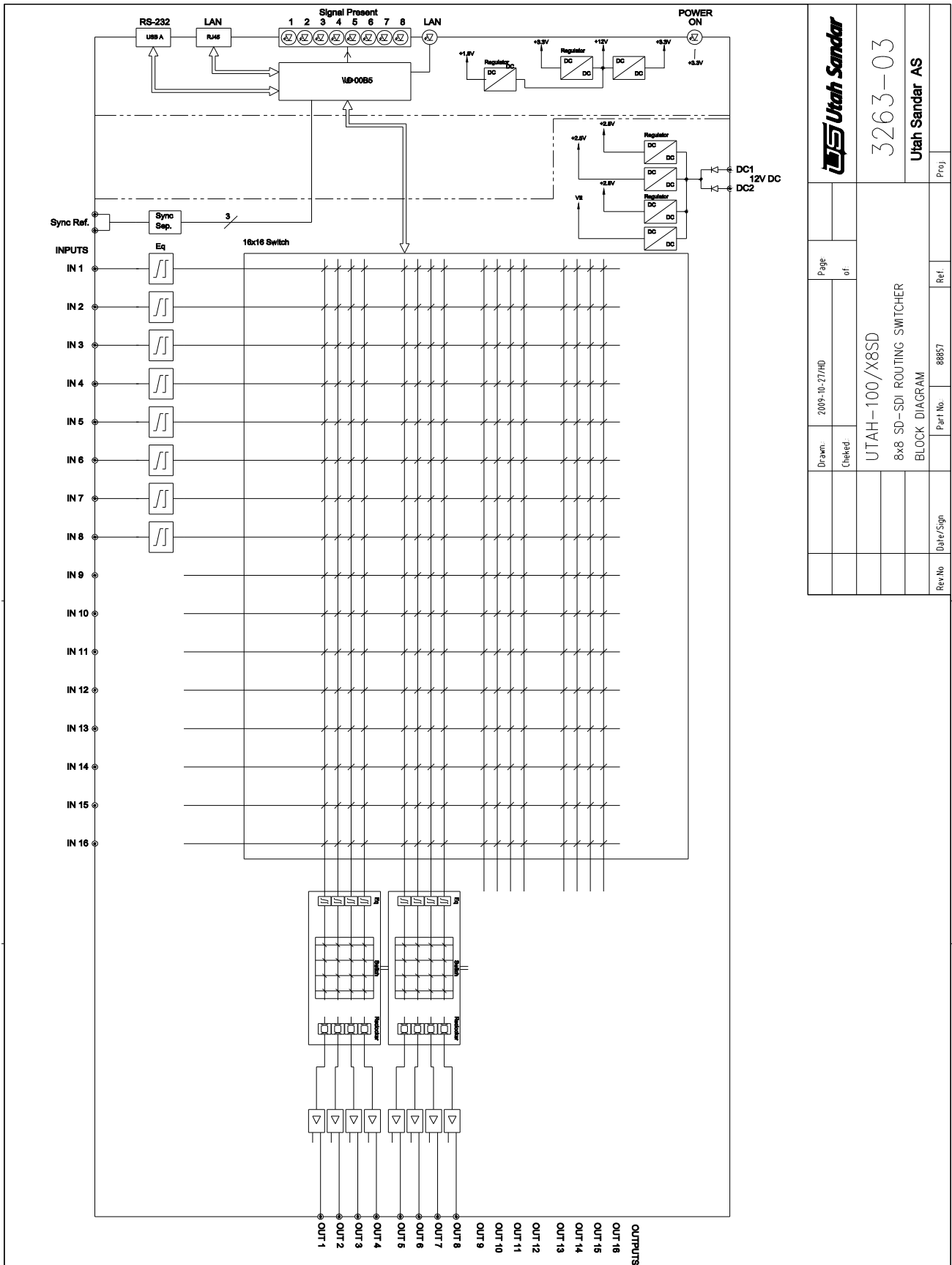
		Page		Ref
		of		
Drawn:	2009-10-27/AD	UTAH-100/X16SD 16x16 SD-SDI ROUTING SWITCHER BLOCK DIAGRAM	Part No.	88857
Checked:			Date/Sign	
		3264-03		Proj
		Utah Sandar AS		

Model UTAH-100X16SDCP



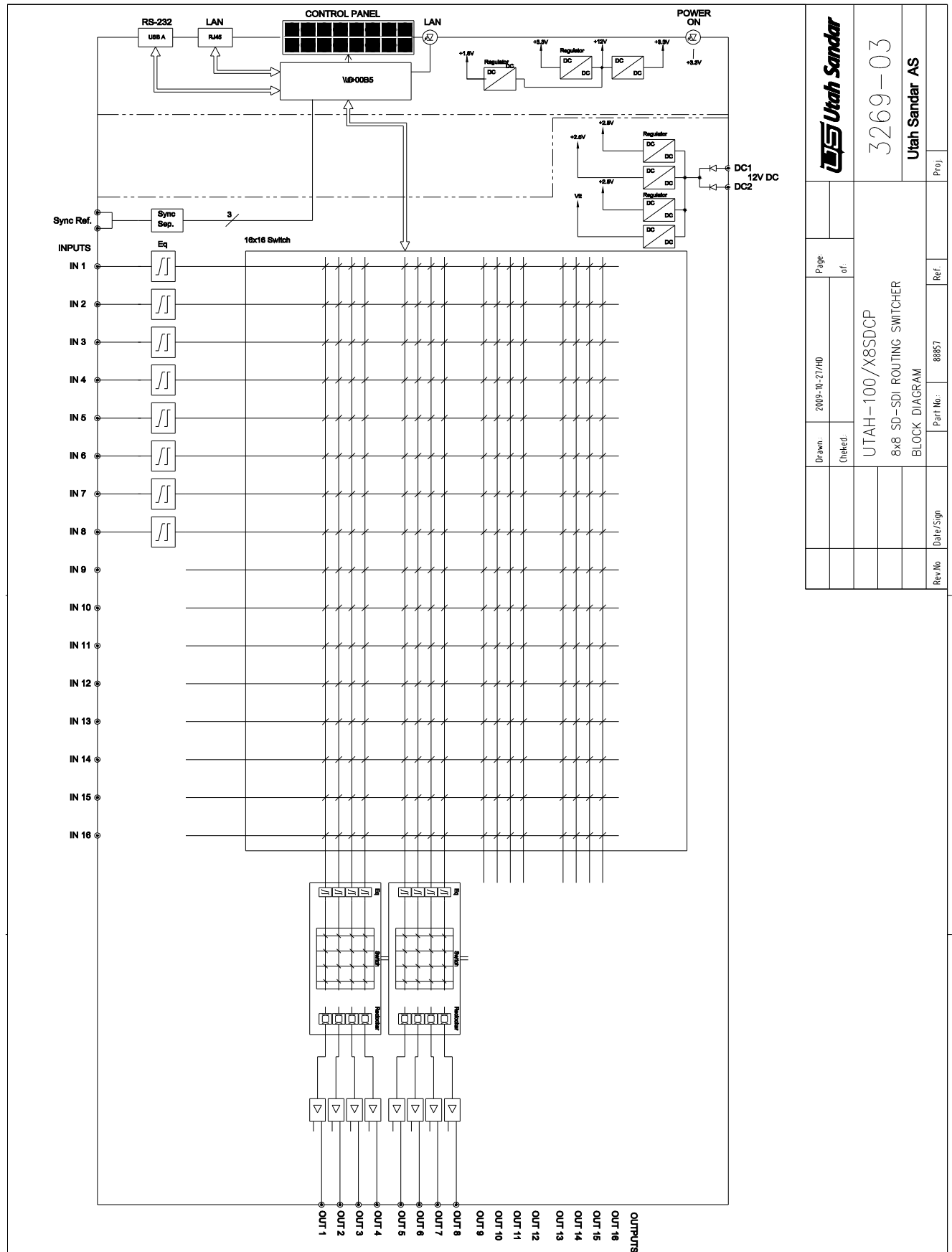
		3270-03		Utah Sandar AS	
		Drawn: 2009-10-27/HD Checked:		Page: of: Part No.	
UTAH-100/X16SDCP 16x16 SD-SDI Routing Switcher w/Control Panel BLOCK DIAGRAM		Date/Sign		Ref.	

Model UTAH-100/X8SD



		3263-03		Utah Sandar AS	
		Page of		Proj.	
Drawn: 2009-10-27/HD	Checked:	UTAH-100/X8SD		Ref.	
		8x8 SD-SDI ROUTING SWITCH		Part No. 88857	
		BLOCK DIAGRAM		Date/Sign	
				Rev/No	

Model UTAH-100/X8SDCP



		Page _____ of _____	
Drawn: 2009-10-27/HMD	Checked:	UTAH-100/X8SDCP 8x8 SD-SDI ROUTING SWITCH BLOCK DIAGRAM	
Part No.: 88857	Ref:	Rev No _____ Date/Sign _____	
3269-03		Utah Sandar AS	

Utah Sandar

User Manual & Installation Guide

UTAH-100/X16AA

**16x16/8x8 Audio Stereo Routers with/without
Control Panel**

UTAH-100/X16AA, UTAH-100/X16AACP,
UTAH-100/X8AA, UTAH-100/X8AACP

CONTENTS

CONTENTS	ERROR! BOOKMARK NOT DEFINED.
INTRODUCTION	3
WARRANTY	3
DOCUMENT REVISION HISTORY	3
SAFETY & ENVIRONMENT	4
GENERAL	4
SAFETY SYMBOLS	4
SAFETY EARTH GROUND	4
ENVIRONMENT	4
INSTALLATION	5
INITIAL INSPECTIONS	5
ESD HANDLING	5
BEFORE APPLYING POWER	5
SERVICE	5
GENERAL DESCRIPTION	6
• <i>Analogue audio (Twisted Pair Signals)</i>	6
• <i>Time code signals (SMPTE/EBU LTC)</i>	6
EXTERNAL POWER SUPPLY	7
UTAH-100 CONTROL SOFTWARE:	7
PINOUT	8
AUDIO CABLE CONNECTIONS POWER CONNECTION	8
POWER CONNECTION	9
PORT PIN ORIENTATION	9
SPECIFICATIONS	10
DRAWING - SIGNAL DIAGRAM 16X16	11
DRAWING - SIGNAL DIAGRAM 16X16 W/CONTROL PANEL	12
DRAWING - SIGNAL DIAGRAM 8X8	13
DRAWING - SIGNAL DIAGRAM 8X8 WITH CONTROL PANEL	14

INTRODUCTION

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

Your Utah Sandar 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 Sandar. To the knowledge of Utah Sandar there are no errors in the manual. Should any errors be discovered, please notify Utah Sandar. Utah Sandar will under no circumstances accept responsibility neither for errors in this manual, nor consequences of such errors.



Utah Sandar
Thorøyaveien 11
N-3209 Sandefjord,
Norway
Tel.: +47 33 52 27 00
Fax: +47 33 52 27 01

WARRANTY

This Utah Sandar product is warranted against defects in materials and workmanship for a period of two (2) years from the date of invoice. During the warranty period, Utah Sandar will, at its option, either repair or replace products that prove to be defective.

The warranty shall not apply to defects resulting from improper or inadequate installation or maintenance by buyer, buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation or maintenance.

If a product needs to be returned for service, please first contact the Utah Sandar Helpdesk to obtain a Return Material Authorization (RMA) number. Make sure the packaging provides sufficient protection against ESD and mechanical damage. Please enclose a note with the RMA, return address, contact person details and a failure symptom description.

DOCUMENT REVISION HISTORY

Rev.	Date	Description
1.0	2009-10-26	Updated document
B	2009-08-27	Changed product name and company name
A	2008-08-07	Preliminary

SAFETY & ENVIRONMENT

General

This product and related documentation must be reviewed for familiarization with safety markings and instructions before operation. This product has been designed and tested in accordance with the relevant international standards.

Safety Symbols



Indicates hazardous voltages.



Indicates earth (ground) terminal.



The **CAUTION** sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which if not correctly performed or adhered to could result in damage to or destruction of part or all of the product. Do not proceed beyond a CAUTION sign until the indicated conditions are fully understood and met.



The **WARNING** sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not performed or adhered to could result in personal injury. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.

Safety Earth Ground

This is a Safety Class 1 product (a protective earth terminal (Ch) is provided).

An uninterrupted safety earth ground must be provided from the main power source to the product input wiring terminals, power, cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, the product must be made inoperative and secured against any unintended operation.

Environment



WEEE: All Utah Sandar products will comply with the EU Directive 2002/96/EC on Waste from Electrical and Electronic Equipment aka WEEE directive. Please contact your local Utah Sandar sales representative for information about returning these products for safe disposal/recycling. Utah Sandar equipment that complies with the directive will be marked with a WEEE-compliance emblem.



RoHS: All Utah Sandar products will comply with the EU Directive 2002/95/EC on Restriction of Hazardous Substances aka RoHS directive. Thereby not containing above the limits specified in the said directive of any of the banned substances. Utah Sandar equipment that complies with the directive will be marked with a RoHS-compliance emblem.

Exempt: Spare/Expansion parts for older systems are exempt from the directive.

INSTALLATION

Initial Inspections

Check the contents of the shipment for completeness and possible transport damage. If the contents are incomplete or damaged, contact Utah Sandar AS immediately for repairing or replacement parts of the equipment.



ESD Handling

This product may contain Electrostatic Sensitive Devices (ESD). Precautions to minimise the risk of damage, due to electrostatic discharge during handling, are recommended. For guidance, refer to British Standard BS CECC 00015, Part 1: BASIC SPECIFICATION FOR PROTECTION OF ELECTROSTATIC SENSITIVE DEVICES



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 and product marking.



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.

GENERAL DESCRIPTION

This User manual is a general description for:

- UTAH-100/X16AA** 16x16 Audio Stereo Router
- UTAH-100/X16AA-CP** 16x16 Audio Stereo Router with Control panel
- UTAH-100/X8AA** 8x8 Audio Stereo Router
- UTAH-100/X8AA-CP** 8x8 Audio Stereo Router with Control Panel

The description refers to UTAH-100/X16AA.

UTAH-100/X16AA Audio Stereo Router is a high-density frame for switching of twisted pair analogue audio formats. It is designed with two 16x16 matrix modules that can be operated independently, or as a:

- 16x16 (8X8) stereo routers for analogue audio.
- Dual 16x16 (8X8) mono routers for analogue audio.

It is also possible to order the unit factory configured to operate as a quad 8x8 or 32x16 router. Contact Utah Sandar AS for more information for available cables & software.

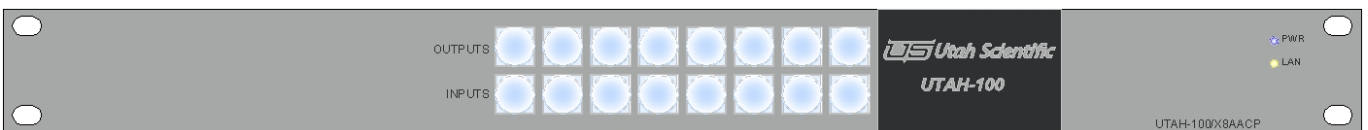
The 19" wide, 1RU high and 67 millimetres deep frame houses the matrix, DC-DC power and a control module. The frame thereby offers 32 channels of audio switching as well as a complete dual, redundant power supply solution, Ethernet and Serial port interfacing to external control systems or control panels.

Because of the broadband nature of the UTAH-100/X16AA Audio Stereo Router, it will handle several formats:

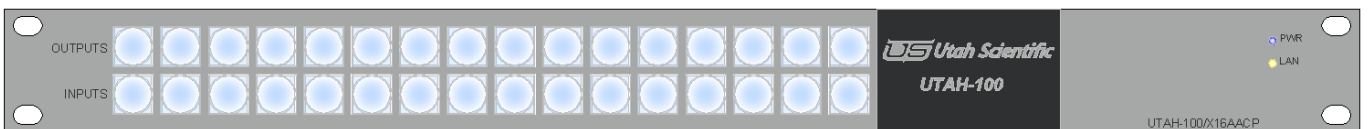
- Analogue audio (Twisted Pair Signals)
- Time code signals (SMPTE/EBU LTC)



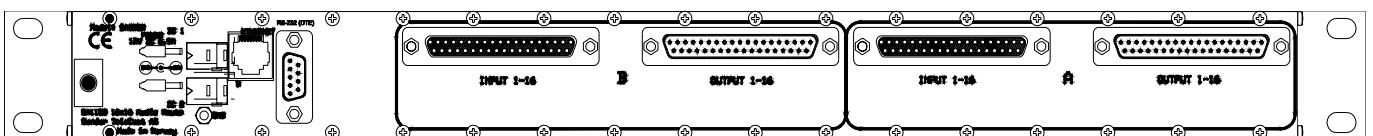
FRONT UTAH-100/X16AA / UTAH-100/X8AA



FRONT UTAH-100/X8AACP



FRONT UTAH-100/X16AACP



REAR

External Power Supply

The external Power Supply is an AC/DC Switch Mode desktop power supply module with compact design. The power supply has a universal input voltage, with 3 pins IEC 320 connector. The output voltage is 13.2 VDC and is short circuit proof and deliver up to 40W. One secondary cable with the modular connector in the one end connects to the power supply and the other end with a 5.5/2.1mm jack connects to the UTAH-100/XHDA frame. Utah Sandar recommends the Power Supply 9920 from Mascot A/S, but other types of Power Supplies may be used with similar specifications. **Mains cord is not included.**

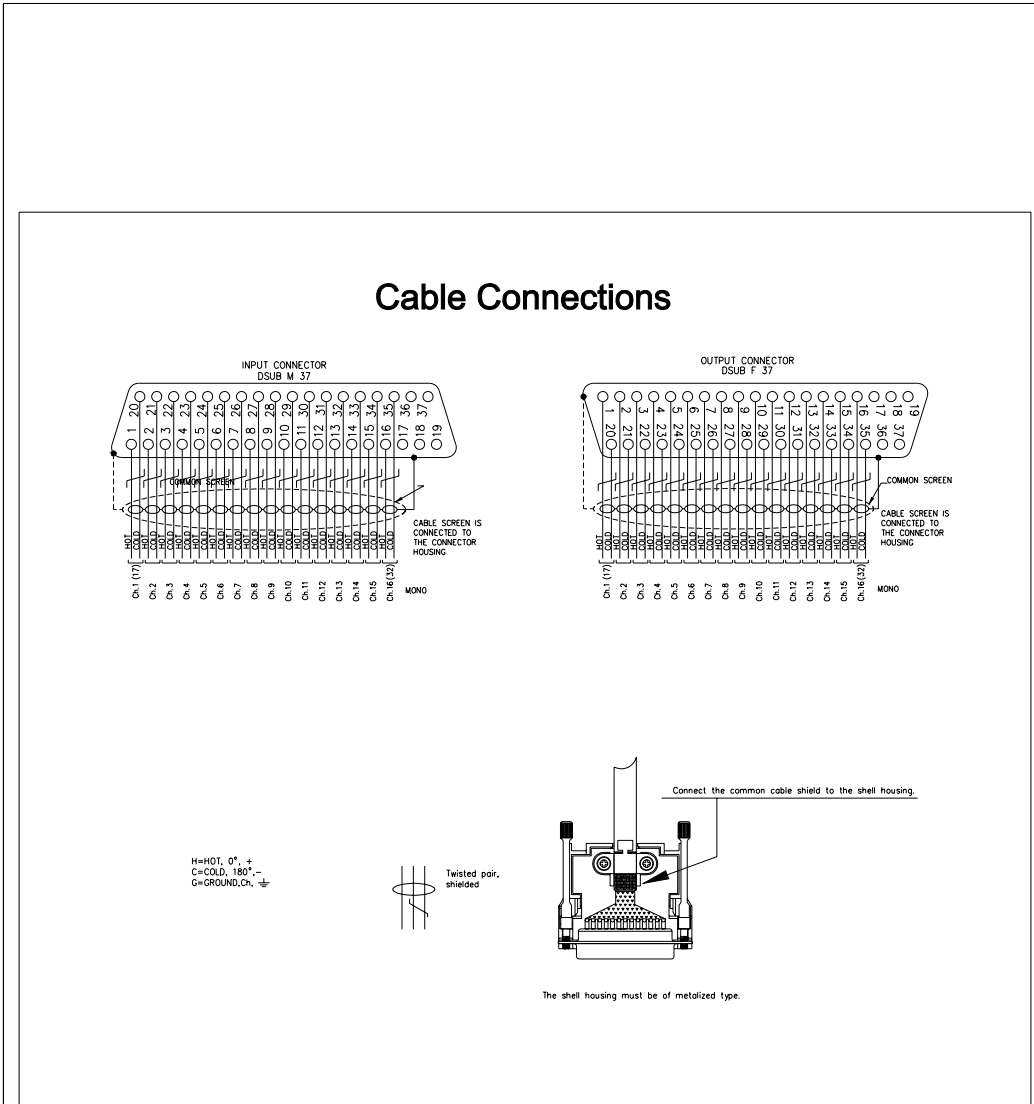
Mounting bracket is available.

UTAH-100 CONTROL SOFTWARE:

- For Quick Start Guide see the attached document in the delivery.
- UTAH-100 Control Software see the document file: UTAH-100-ControlSoftware10.pdf attached in the user manual CD.

PINOUT

Audio Cable Connections



		Drawn:	2008-08-07/HD	Page:	
		Checked:		of:	
		UTAH-100/X16AA 16x16 AUDIO STEREO ROUTING SWITCHER, 19", 1U AUDIO CONNECTIONS			3212-04
01	2009-08-27/HD				Utah Sandar AS
Rev No	Date/Sign	Part No:		Ref	Proj

Power Connection

The SA1100 units have two 2.1mm DIN 12VDC connector with + at centre.



The power unit supplied with the SA1100 is a 13.2 VDC with a max rating of 3A (40W)

Port Pin Orientation

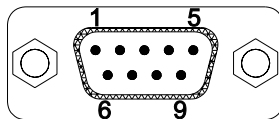
Ethernet Port

The Ethernet port is an 8-pin RJ-45 jack meeting the requirements of ISO 8877 for 10/100Base-T.

Ethernet Pin Assignment		
Pin	Signal Name	Figure RJ-45
1	TxD+ (Transmit Data)	
2	TxD- (Transmit Data)	
3	RxD+ (Receive Data)	
4	Not used	
5	Not used	
6	RxD- (Receive Data)	
7	Not used	
8	Not used	

RS-232 Port

Serial port, RS-232 is a DSUB9pin (male) connector. Use the following figure and tables for pin orientation and pin assignment information.



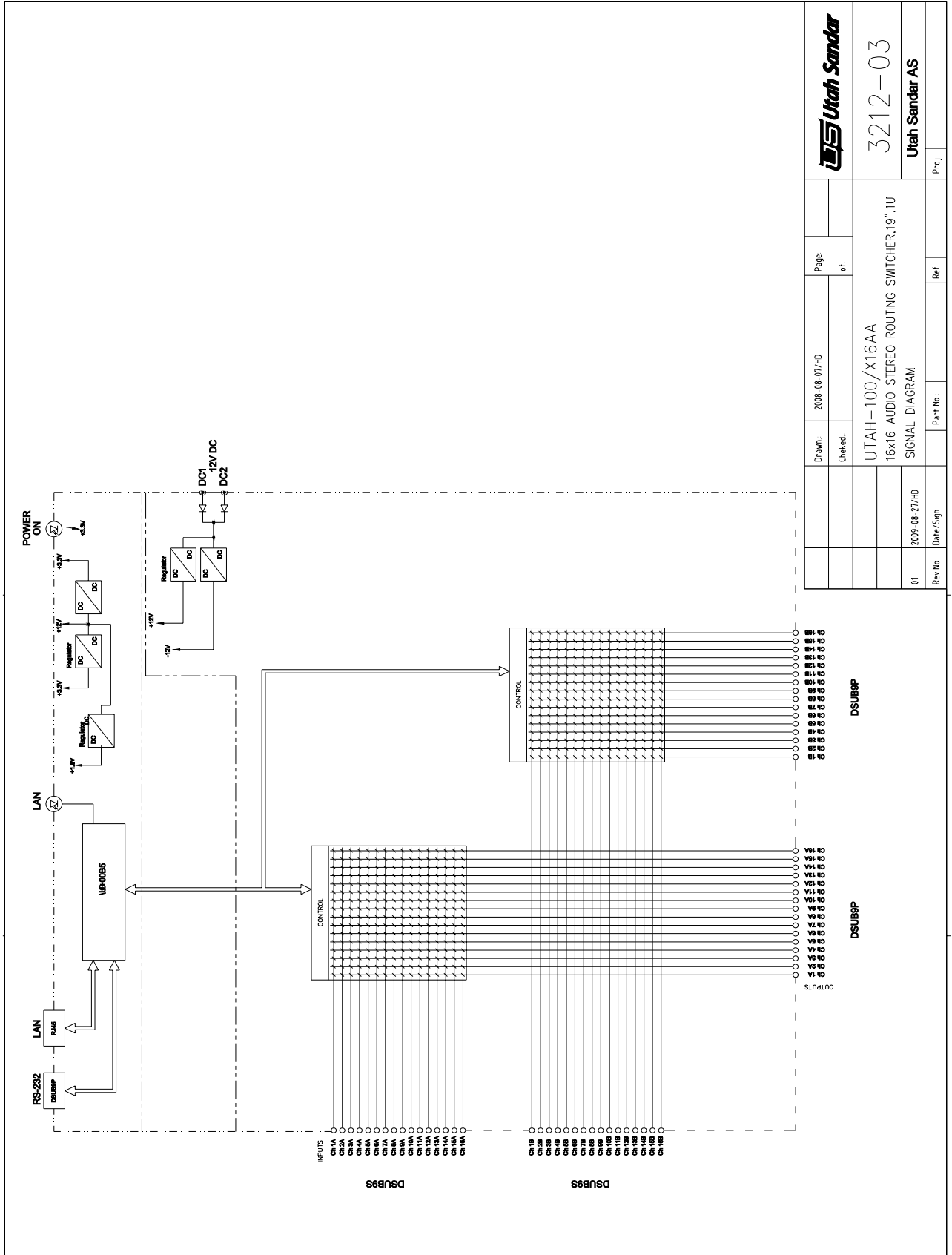
Serial Pin Assignment									
Port	Signal Pin1	Signal Pin 2	Signal Pin3	Signal Pin4	Signal Pin5	Signal Pin6	Signal Pin7	Signal Pin 8	Signal Pin 9
RS-232	Not connected	RxD	TxD	Not connected	GND	Not connected	Not connected	Not connected	Not connected

SPECIFICATIONS

Type	Analogue Audio
Number of Inputs	16 el. balanced
Impedance Inputs	<20K Ω
CMRR 20-20000Hz	>70dB
Number of Outputs	16 el. balanced
Impedance Outputs	<50 Ω
Output symmetry	>60dB
Performance	
System gain, 600 Ω load	0dB, -0,8dB
System gain, 10k Ω load	0dB, -0,2dB
Gain difference two Ch. 1kHz	\pm 0.2dB
Frequency range \pm 0.1dB	20-20000Hz
Bandwidth 20Hz-200kHz	-0,3dB
Phase between two Ch.	< 1°
THD+noise, +6dB into 600 Ω	< 0.002%
THD+noise, +22dB into 600 Ω	< 0.005%
Max level, 10K Ω load	+22dBu (<0,003%THD+N @ 1kHz)
Max level, 10K Ω load	+22dBu(<0,005%THD+N 20-20000Hz)
Noise, 50 Ω source (Q-Pk)	< -87dBu
Click noise	> 85dBqp
Crosstalk, 20-20000Hz	> 85dB
Ethernet	
Type	10/100 Base T
Standard	IEEE 802.3
Connector	RJ45
RS-232	
Type	RS-232(DTE)
Connector	DSUB 9 PIN
Electrical	
DC input Nominal	12 VDC
DC Input Range	10 - 15 VDC
DC Connector	DC Jack 2.1mm
DC Power	13.2 W
Operating Temperature Range	0 °C - +40 °C
Humidity	90 % non condensing
External Power Supply	Universal 90-250VAC, 50/60Hz
Mechanical	
Dimensions	W: 482.6mm (19") H: 43.6mm (1U) D: 52mm + Connectors
Weight	0.7 kg

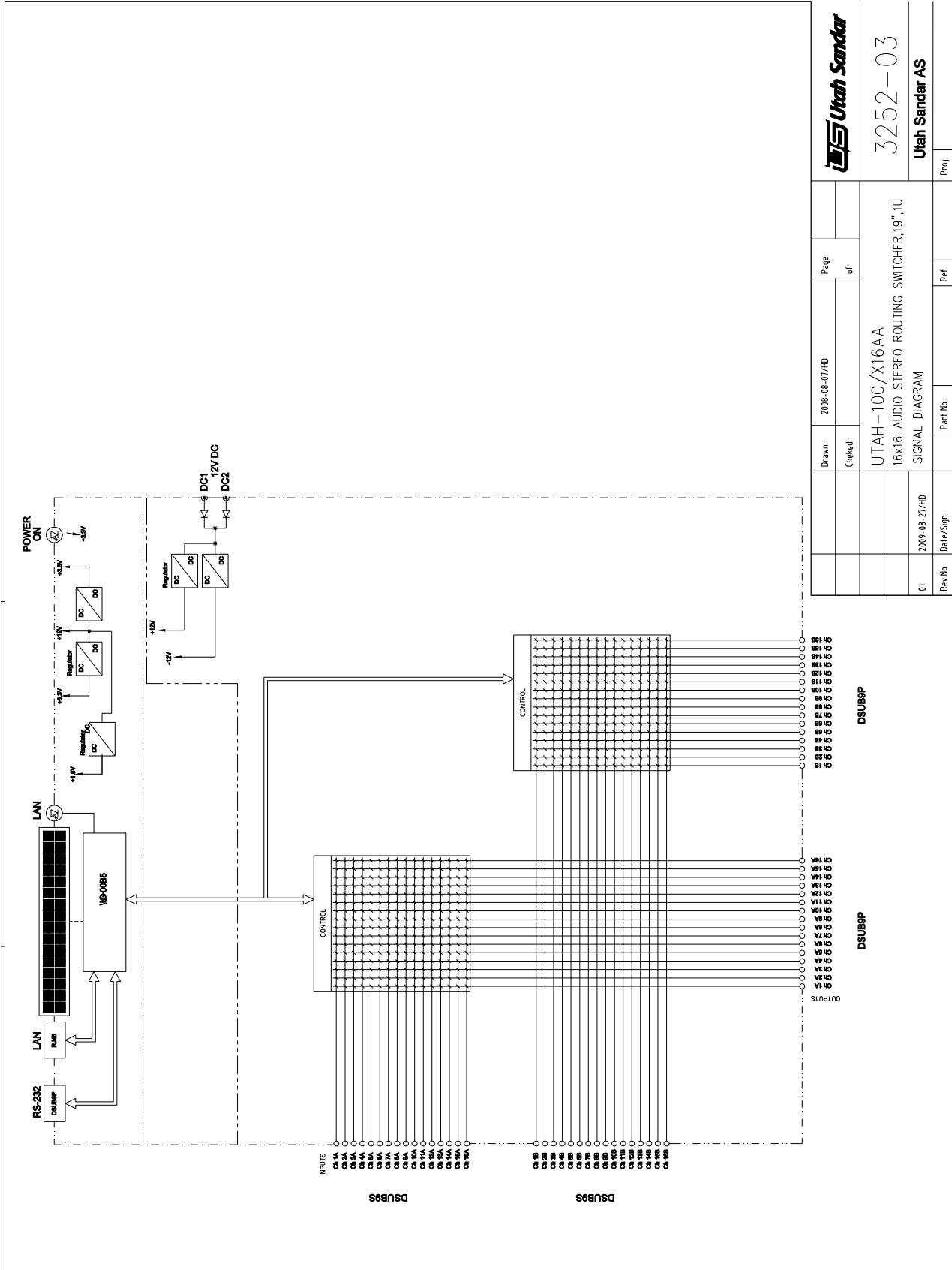
Utah Sandar AS reserves the right to change specifications without prior notice.

DRAWING - SIGNAL DIAGRAM 16X16



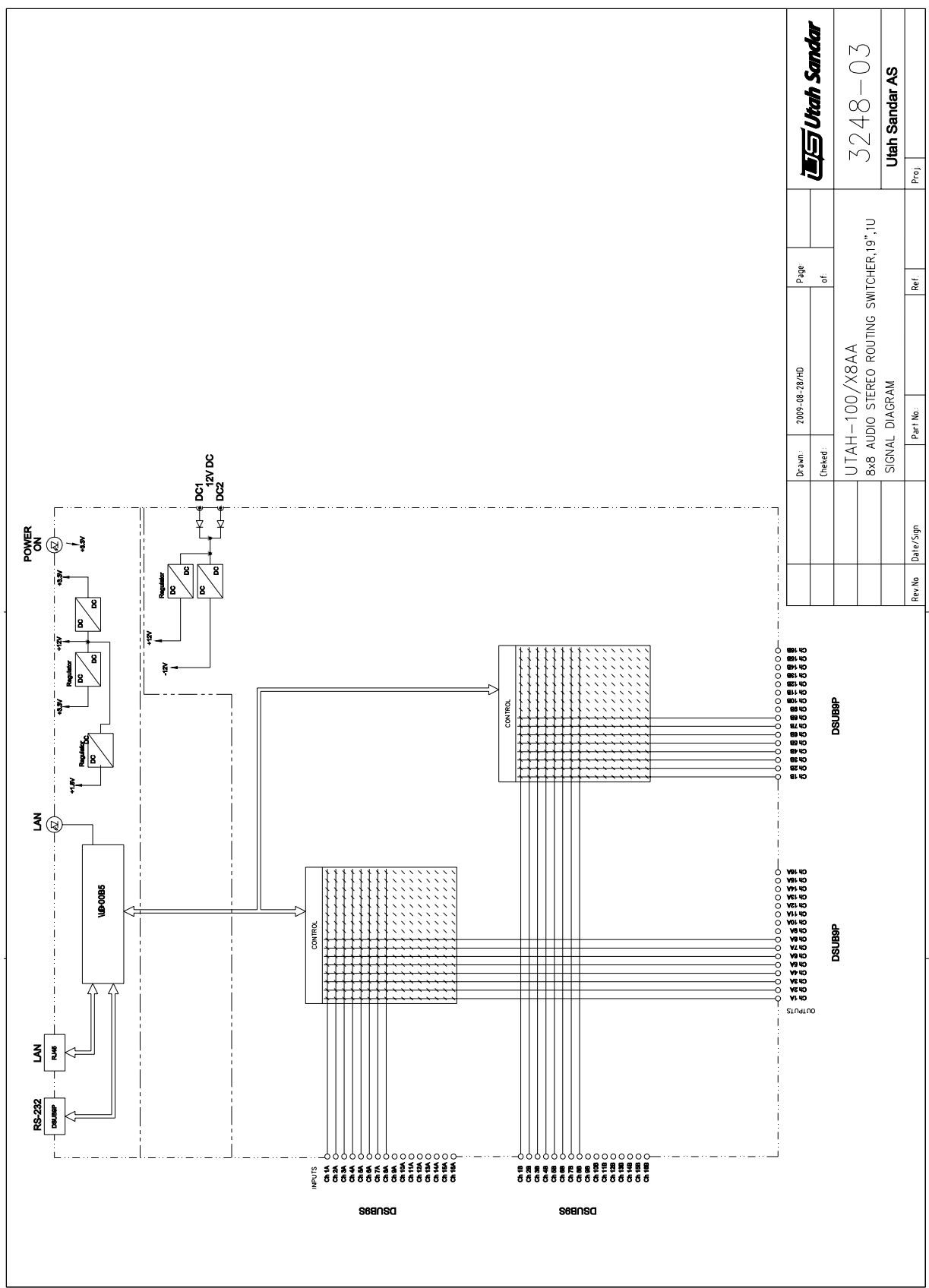
Drawn:	2008-08-07/HD	Page	
Checked:		of:	
UTAH-100/X16AA 16x16 AUDIO STEREO ROUTING SWITCHER, 19" 1U			
3212-03 Utah Sandar AS			
Rev No	01	Date/Sign	
Part No:		Ref	
Proj			

DRAWING - SIGNAL DIAGRAM 16X16 W/CONTROL PANEL



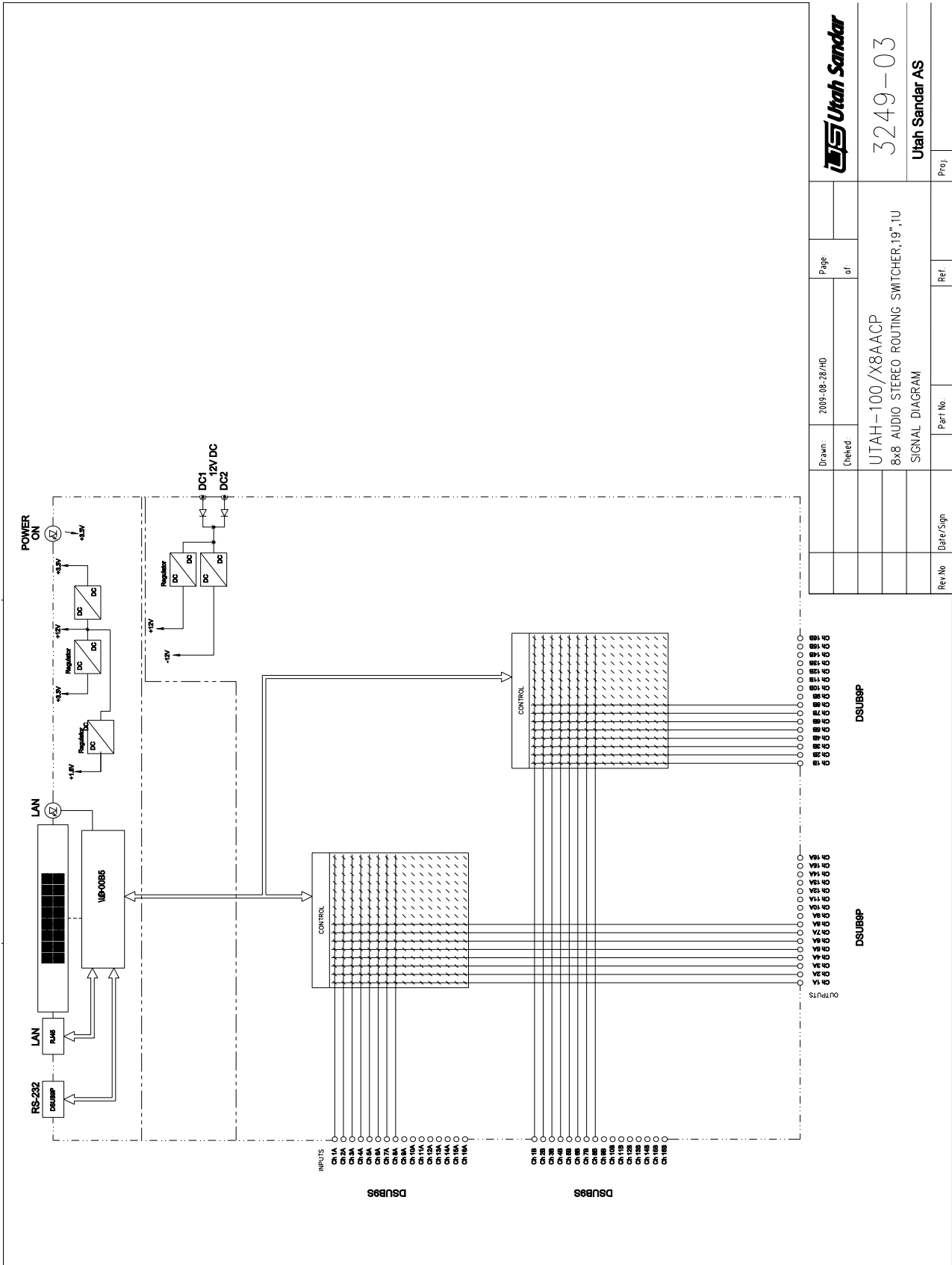
Drawn:	2006-08-07/HD	Page:	of:
Checked:		Utah Sandar	
Rev No:	01	3252-03	
Date/Sign:	2009-08-27/HD	Utah Sandar AS	
Part No:		16x16 AUDIO STEREO ROUTING SWITCHER,19",1U	
Ref:		SIGNAL DIAGRAM	
Proj:			

DRAWING - SIGNAL DIAGRAM 8X8



Utah Sandar	
3248-03	Utah Sandar AS
Drawn: 2005-08-29/HD	Page of
Checked:	
UTAH-100/X8AA 8x8 AUDIO STEREO ROUTING SWITCHER;19",1U SIGNAL DIAGRAM	
Rev/No	Date/Sign
Part No.	Ref.
Proj	

DRAWING - SIGNAL DIAGRAM 8X8 WITH CONTROL PANEL



Utah Sandar

User Manual & Installation Guide

UTAH-100/XHDA SERIES

SD & HD3G Digital Distribution 1:4 & 1:8

CONTENTS

CONTENTS	2
INTRODUCTION	3
WARRANTY	3
DOCUMENT REVISION HISTORY	3
SAFETY & ENVIRONMENT	4
GENERAL	4
SAFETY SYMBOLS	4
SAFETY EARTH GROUND	4
ENVIRONMENT	4
INSTALLATION	5
INITIAL INSPECTIONS	5
ESD HANDLING	5
BEFORE APPLYING POWER	5
SERVICE	5
GENERAL DESCRIPTION	6
EXTERNAL POWER SUPPLY	6
POWER INPUT	6
POWER CONNECTION	6
CONTROL INTERFACE	7
PORT PIN ORIENTATION	7
START UP	8
OPERATION	8
SPECIFICATIONS	10
DRAWING – PRODUCT FRONT & REAR	11

INTRODUCTION

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

Your Utah Sandar 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 Sandar. To the knowledge of Utah Sandar there are no errors in the manual. Should any errors be discovered, please notify Utah Sandar. Utah Sandar will under no circumstances accept responsibility neither for errors in this manual, nor consequences of such errors.



Utah Sandar
Thoroyaveien 11
N-3209 Sandefjord,
Norway
Tel.: +47 33 52 27 00
Fax: +47 33 52 27 01

WARRANTY

This Utah Sandar product is warranted against defects in materials and workmanship for a period of two (2) years from the date of invoice. During the warranty period, Utah Sandar will, at its option, either repair or replace products that prove to be defective.

The warranty shall not apply to defects resulting from improper or inadequate installation or maintenance by buyer, buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation or maintenance.

If a product needs to be returned for service, please first contact the Utah Sandar Helpdesk to obtain a Return Material Authorization (RMA) number. Make sure the packaging provides sufficient protection against ESD and mechanical damage. Please enclose a note with the RMA, return address, contact person details and a failure symptom description.

DOCUMENT REVISION HISTORY

Rev.	Date	Description
1.1	2009-10-07	Changed Product name
1.0	2009-09-10	Changed login
B	2009-03-11	Change Company name
A	2008-04-16	Preliminary

SAFETY & ENVIRONMENT

General

This product and related documentation must be reviewed for familiarization with safety markings and instructions before operation. This product has been designed and tested in accordance with the relevant international standards.

Safety Symbols



Indicates hazardous voltages.



Indicates earth (ground) terminal.



The **CAUTION** sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which if not correctly performed or adhered to could result in damage to or destruction of part or all of the product. Do not proceed beyond a CAUTION sign until the indicated conditions are fully understood and met.



The **WARNING** sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not performed or adhered to could result in personal injury. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.

Safety Earth Ground

This is a Safety Class 1 product (a protective earth terminal (Ch) is provided).

An uninterrupted safety earth ground must be provided from the main power source to the product input wiring terminals, power, cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, the product must be made inoperative and secured against any unintended operation.

Environment



WEEE: All Utah Sandar products delivered after 13. Aug 2005 will comply with the EU Directive 2002/96/EC on Waste from Electrical and Electronic Equipment aka WEEE directive. Please contact your local Sandar sales representative for information about returning these products for safe disposal/recycling. Sandar equipment that complies with the directive will be marked with a WEEE-compliance emblem.



RoHS: All Utah Sandar products delivered after 30. June 2006 will comply with the EU Directive 2002/95/EC on Restriction of Hazardous Substances aka RoHS directive. Thereby not containing above the limits specified in the said directive of any of the banned substances. Sandar equipment that complies with the directive will be marked with a RoHS-compliance emblem.

Exempt: Spare/Expansion parts for older systems are exempt from the directive.

INSTALLATION

Initial Inspections

Check the contents of the shipment for completeness and possible transport damage. If the contents are incomplete or damaged, contact Utah Sandar AS immediately for repairing or replacement parts of the equipment.



ESD Handling

This product may contain Electrostatic Sensitive Devices (ESD). Precautions to minimise the risk of damage, due to electrostatic discharge during handling, are recommended. For guidance, refer to British Standard BS CECC 00015, Part 1: BASIC SPECIFICATION FOR PROTECTION OF ELECTROSTATIC SENSITIVE DEVICES



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 and product marking.



Service

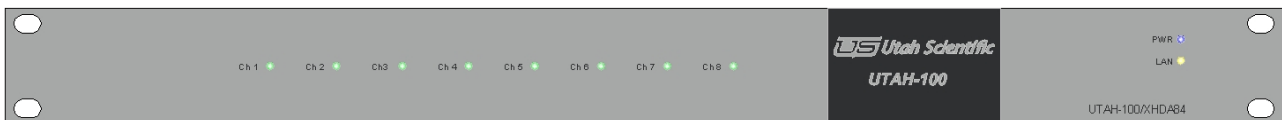
Servicing, adjustments, maintenance or repair of this product may be performed by qualified personnel only. Adjustments described in this manual may be performed with power supplied to the product while protective covers are removed. Energy available at many points may, if contacted, result in personal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

GENERAL DESCRIPTION

The UTAH-100/XHDA HD3G Distribution frame comes in two versions. The 1:4 x 8 contain 8 separate 1:4 digital wideband distribution amplifiers. The 1:8 x 4 contains 4 separate 1:8 digital wideband distribution amplifiers. The data rates supported by reclocking are 143, 177, 270, 360, 540, 1483.5, 1485 Mbps and 3Gbps. These units are well suited for all digital Broadcast and Telecom distribution systems. With Automatic Cable Equalizer supporting up to 300m (SD-SDI) cable, auto detect reclockings supporting all known digital broadcast standards and proper Cable Drivers on the outputs. The Ethernet (SNMP/HTTP/SanEth) interface gives possibilities for monitoring voltage, temperature and signal types.

The UTAH-100/XHDA is delivered with a standard off-the-shelf universal AC/DC Power Supply. To reduce the possibility of power interrupt the unit is equipped with two DC connectors for redundancy powering. Extra Power Supply is an option and is not delivered as standard.

The 19" wide, 1RU high and 60 millimetres deep frame houses the switch, local control unit and Ethernet remote control interface. Two 12 VDC 2,1mm power input connectors enable use of redundant power supplies.



External Power Supply

The external Power Supply is an AC/DC Switch Mode desktop power supply module with compact design. The power supply has a universal input voltage, with 3 pins IEC 320 connector. The output voltage is 12V DC and is short circuit proof and deliver up to 40W. One secondary cable with the modular connector in the one end connects to the power supply and the other end with a 5.5/2.1mm jack connects to the UTAH-100/XHDA frame. Utah Sandar recommends the Power Supply 9920 from Mascot A/S, but other types of Power Supplies may be used with similar specifications. **Mains cord is not included.**

Mounting bracket is available.

POWER INPUT

Power Connection

The UTAH-100/XHDA units have two 2.1mm DIN 12VDC connector with + at centre.



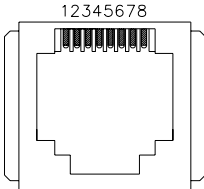
The power unit supplied with the UTAH-100/XHDA is a 13.2 VDC with a max rating of 3A (40W)

CONTROL INTERFACE

Port Pin Orientation

Ethernet Port

The Ethernet port is an 8-pin RJ-45 jack meeting the requirements of ISO 8877 for 10/100Base-T.

Ethernet Pin Assignment		
Pin	Signal Name	Figure RJ-45
1	TxD+ (Transmit Data)	
2	TxD- (Transmit Data)	
3	RxD+ (Receive Data)	
4	Not used	
5	Not used	
6	RxD- (Receive Data)	
7	Not used	
8	Not used	

START UP

- Connect power to the unit
- The device is configured with a static IP address for network connectivity
- Connect the (not supplied) crossed cable between the device and a PC to change the network configuration to suit your LAN. The default IP address is 192.168.125.123.
- For configuration and monitoring, open the web browser and go to the address http://[IP address].
- For protected sites, use login name “admin” and the default password “password”

Web interface

Figure 1 shows the front page of the web interface. Temperature and voltages from two sensor devices are monitored at the top. In the “Misc” box the connection status is either connected or disconnected which tells whether the web browser has contact to the device or not. From the drop-down box the frequency at which the status is updated can be selected (default every 5 seconds).

The image in the middle represents the front side of the UTAH-100/XHDA. In addition to the LEDs which turn on if a signal is present, the signal type is also written below. If the mouse pointer is moved over each of the channel names on the front panel, the box at the bottom is showing. This box shows the signal path and the signal types detected by the different internal reclockers. Also an image of the back side is provided to display the actual BNCs that are in use for the current channel.

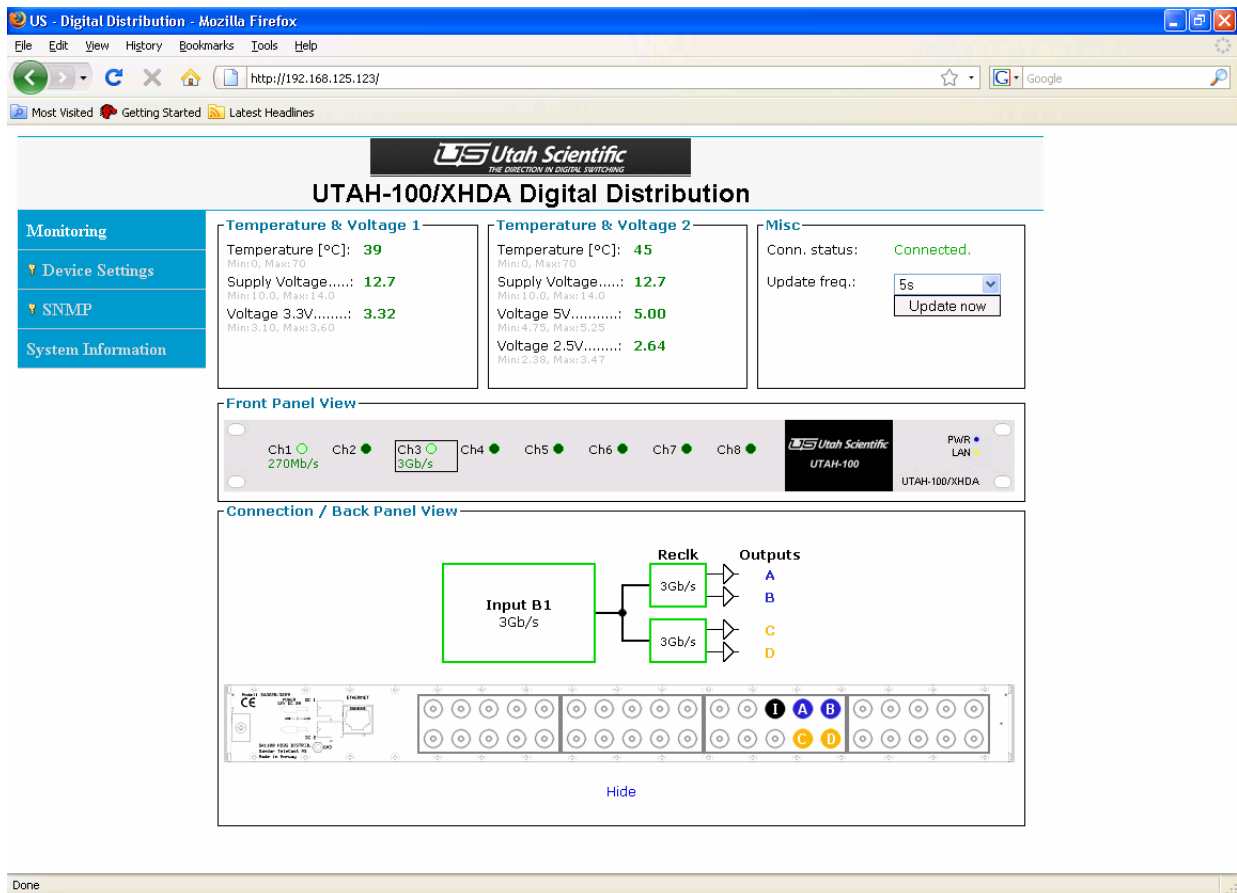
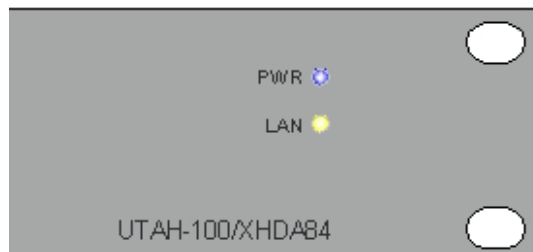


Figure 1

Password, network settings and SNMP settings can be configured using the menu at the left. These are protected sites which require username and password. At the top of each of these pages there is a link to a help page for further assistance.

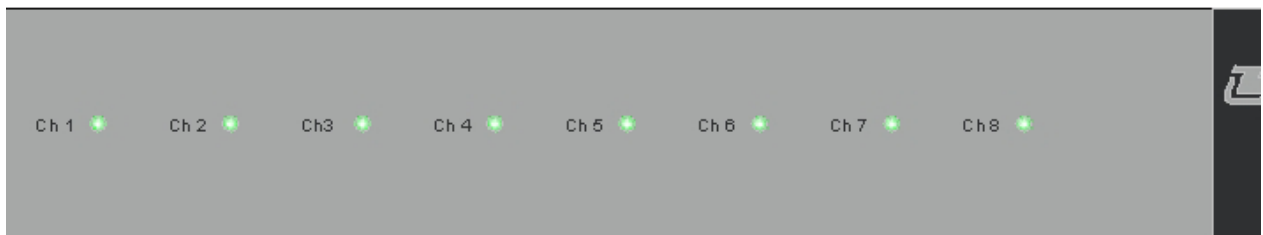
OPERATION

The units are monitored through the Ethernet interface (SNMP/Web/Sandar Protocol).



PWR: Blue LED indicate power on

LAN: Blinking yellow LED indicate network activity



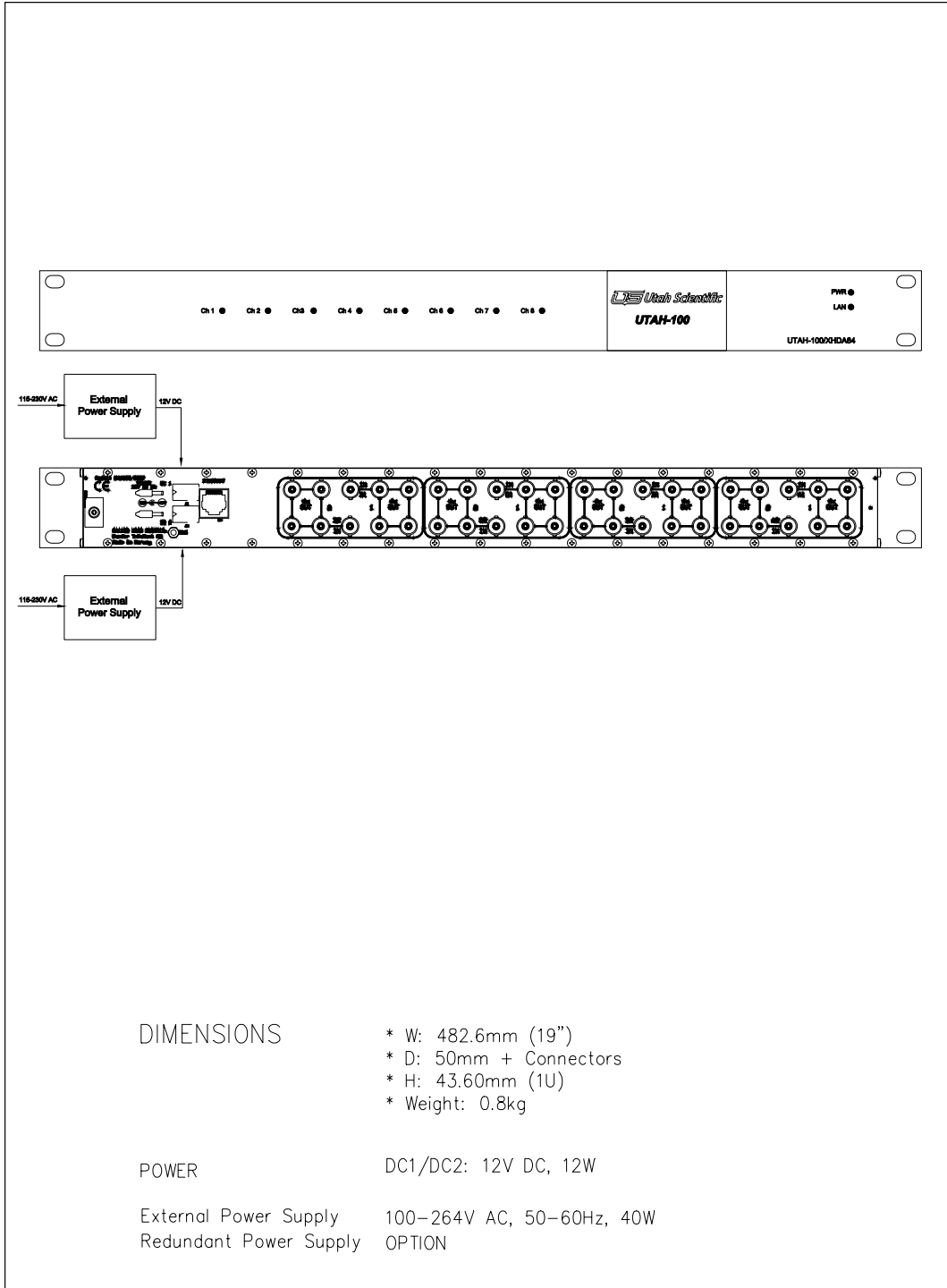
Ch1 – Ch8: Eight green LEDs in the front indicate presences of signal on the outputs (model UTAH-100/XHDA84). Four green LEDs on model UTAH-100/XHDA48.

SPECIFICATIONS

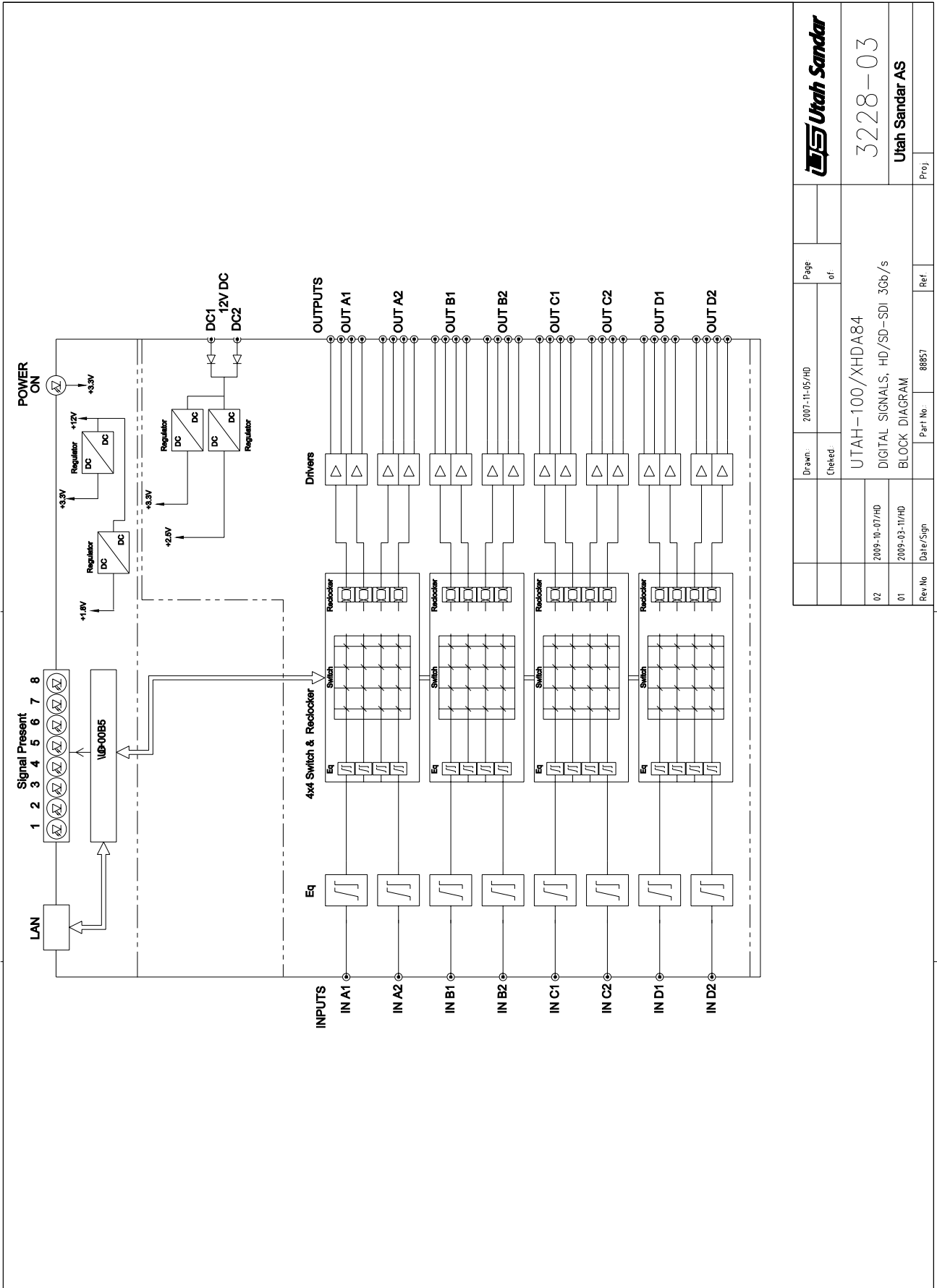
Type	High Definition Serial Digital Video
Standard	SMPTE 292M, 424M
Data Rate	Auto Reclocking at 270 Mb/s, 1.483 Gb/s, 1.485 Gb/s, 2.966 Gb/s, 2.97 Gb/s
Number of In/Out	UTAH-100/XHDA84 UTAH-100/XHDA48
	1 Input, 4 Outputs x 8 1 Input, 8 Outputs x 4
Impedance	75 Ohm
Cable Equalization	380m Belden 1694A at 270 Mb/s 180m Belden 1694A at 1.5 Gb/s 80m Belden 1694A at 3 Gb/s
Output level	800 mV \pm 10%
Return Loss Input/Output 5 MHz to 3 GHz	\geq 15dB
Output Rise/Fall Time (HD)	\leq 135ps
Output Overshoot	\leq 10%
Output Alignment Jitter	\leq 0.15UIpp
Connector	BNC
Ethernet	
Type	10/100 Base T
Standard	IEEE 802.3
Connector	RJ45
Power	
DC input	12 VDC (Range 10 - 14 VDC)
DC Connector	DC Jack 2.1mm x 2
DC Power	19 W
Operating Temperature Range	0 °C - +40 °C
Humidity	90 % non condensing
External Power Supply	Vin: Universal 100-240 VAC, 50/60Hz, Vout: 13.2 VDC, 40W Recommended type: 9920 Mascot
Frame	
Dimensions	W: 482.6mm (19") H: 43.6mm (1U) D: 52mm + Connectors
Weight	0.87 kg

Utah Sandar AS reserves the right to change specifications without prior notice.

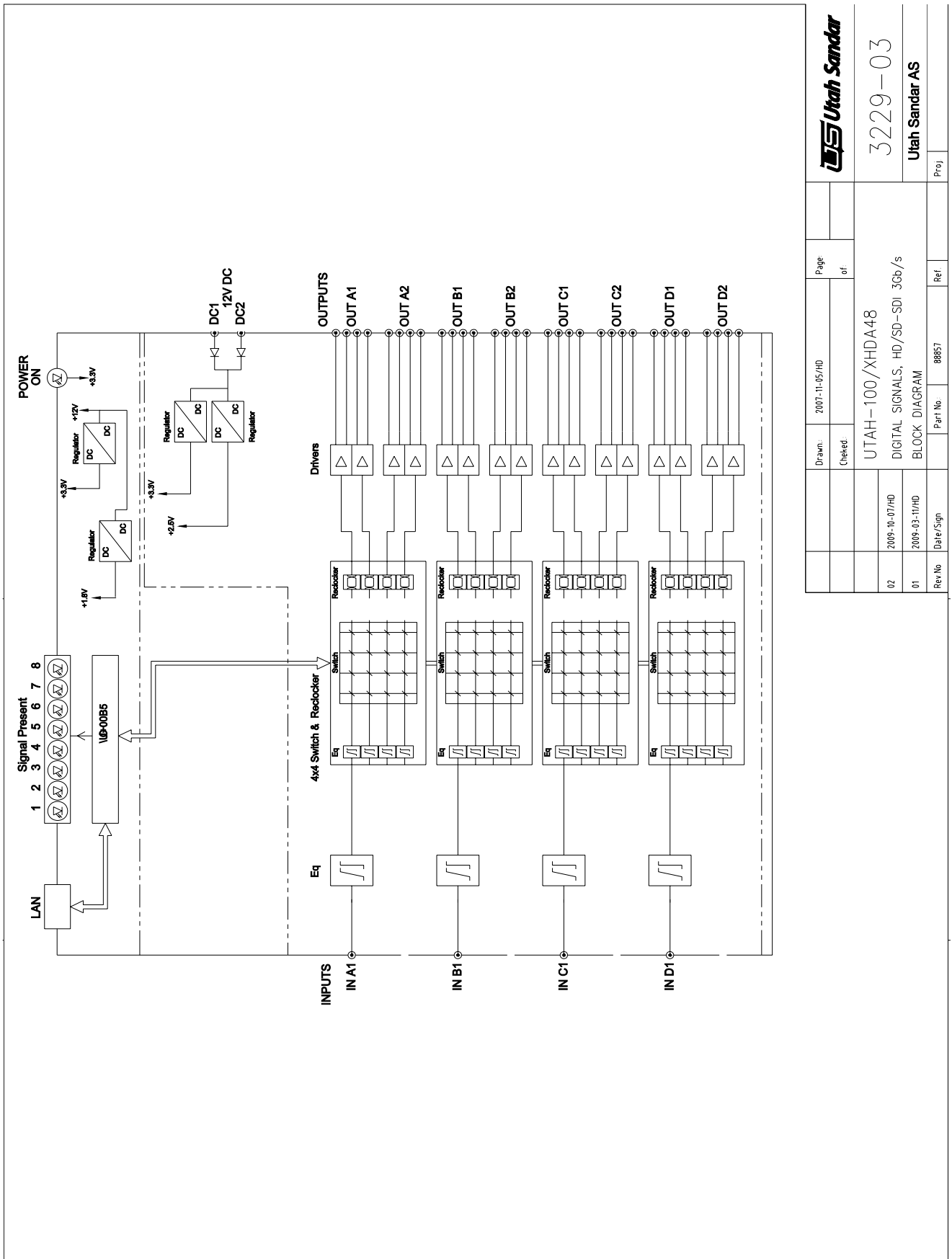
DRAWING – PRODUCT FRONT & REAR



		Drawn:	2008-04-17/HD	Page		Utah Sandar
		Checked:		of:		
		UTAH-100/XHDA84				3228-01
02	2009-10-07/HD	DIGITAL SIGNALS, HD/SD-SDI 3Gb/s				Utah Sandar AS
01	2009-03-11/HD	FRONT & REAR				
Rev.No	Date/Sign	Part No.		Ref.		Proj.



		Page	
		of:	
Drawn:	2007-11-05/HD	UTAH-100/XHDA84 DIGITAL SIGNALS, HD/SD-SDI 3Gb/s BLOCK DIAGRAM	
Checked:			
Rev No	Date/Sign	Part No.	Ref
02	2009-10-07/HD	88857	
01	2009-03-11/HD		
		Prej	
		Utah Sandar AS	



Drawn:	2007-11-05/HD	Page	
Checked:		of:	
UTAH-100/XHDA48 DIGITAL SIGNALS, HD/SD-SDI 3Gb/s BLOCK DIAGRAM			
Rev No	02	Date/Sign	2005-10-07/HD
	01		2005-03-11/HD
Part No	88857	Ref	
Proj			



3229-03

Utah Sandar AS

Utah Sandar

User Manual & Installation Guide

UTAH-100/XADA SERIES

Analogue Audio Distribution 1:4 & 1:8

CONTENTS

CONTENTS 2

INTRODUCTION 3

WARRANTY 3

DOCUMENT REVISION HISTORY 3

SAFETY & ENVIRONMENT 4

 GENERAL 4

 SAFETY SYMBOLS 4

 SAFETY EARTH GROUND 4

 ENVIRONMENT 4

INSTALLATION 5

 INITIAL INSPECTIONS 5

 ESD HANDLING 5

 BEFORE APPLYING POWER 5

 SERVICE 5

GENERAL DESCRIPTION 6

 MODEL UTAH100/XADA SERIES: 6

- UTAH100/XADA24: 6
- UTAH100/XADA44: 6
- UTAH100/XADA64: 6
- UTAH100/XADA84: 6
- UTAH100/XADA18: 6
- UTAH100/XADA28: 6
- UTAH100/XADA38: 6
- UTAH100/XADA48: 6
 - *Analogue audio (Twisted Pair Signals)* 6
 - *Time code signals (SMPTE/EBU LTC)* 6

PINOUT 7

 AUDIO CABLE CONNECTIONS 7

 1:4 7

 1:8 7

 POWER CONNECTION 7

SPECIFICATIONS 8

DRAWING – UTAH-100/XADA84 BLOCK DIAGRAM 9

DRAWING – UTAH-100/XADA48 BLOCK DIAGRAM 10

INTRODUCTION

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

Your UTAH SANDAR 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 Sandar. To the knowledge of Utah Sandar there are no errors in the manual. Should any errors be discovered, please notify Utah Sandar. Utah Sandar will under no circumstances accept responsibility neither for errors in this manual, nor consequences of such errors.



Utah Sandar
Thorøyaveien 11
N-3209 Sandefjord,
Norway
Tel.: +47 33 52 27 00
Fax: +47 33 52 27 01

WARRANTY

This Utah Sandar product is warranted against defects in materials and workmanship for a period of two (2) years from the date of invoice. During the warranty period, Utah Sandar will, at its option, either repair or replace products that prove to be defective.

The warranty shall not apply to defects resulting from improper or inadequate installation or maintenance by buyer, buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation or maintenance.

If a product needs to be returned for service, please first contact the Utah Sandar Helpdesk to obtain a Return Material Authorization (RMA) number. Make sure the packaging provides sufficient protection against ESD and mechanical damage. Please enclose a note with the RMA, return address, contact person details and a failure symptom description.

DOCUMENT REVISION HISTORY

Rev.	Date	Description
1.1	2009-10-06	Changed Product name
1.0	2008-11-27	Production release
A	2008-08-08	Preliminary

SAFETY & ENVIRONMENT

General

This product and related documentation must be reviewed for familiarization with safety markings and instructions before operation. This product has been designed and tested in accordance with the relevant international standards.

Safety Symbols



Indicates hazardous voltages.



Indicates earth (ground) terminal.



The **CAUTION** sign denotes a hazard. It calls attention to an operating procedure, practice, or the like, which if not correctly performed or adhered to could result in damage to or destruction of part or all of the product. Do not precede beyond a CAUTION sign until the indicated conditions are fully understood and met.



The **WARNING** sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not performed or adhered to could result in personal injury. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.

Safety Earth Ground

This is a Safety Class 1 product (a protective earth terminal (Ch) is provided).

An uninterrupted safety earth ground must be provided from the main power source to the product input wiring terminals, power, cord, or supplied power cord set. Whenever it is likely that the protection has been impaired, the product must be made inoperative and secured against any unintended operation.

Environment



WEEE: All Utah Sandar products delivered after 13. Aug 2005 will comply with the EU Directive 2002/96/EC on Waste from Electrical and Electronic Equipment aka WEEE directive. Please contact your local Sandar sales representative for information about returning these products for safe disposal/recycling. Sandar equipment that complies with the directive will be marked with a WEEE-compliance emblem.



RoHS: All Utah Sandar products delivered after 30. June 2006 will comply with the EU Directive 2002/95/EC on Restriction of Hazardous Substances aka RoHS directive. Thereby not containing above the limits specified in the said directive of any of the banned substances. Sandar equipment that complies with the directive will be marked with a RoHS-compliance emblem.
Exempt: Spare/Expansion parts for older systems are exempt from the directive.

INSTALLATION

Initial Inspections

Check the contents of the shipment for completeness and possible transport damage. If the contents are incomplete or damaged, contact Utah Sandar AS immediately for repairing or replacement parts of the equipment.



ESD Handling

This product may contain Electrostatic Sensitive Devices (ESD). Precautions to minimise the risk of damage, due to electrostatic discharge during handling, are recommended. For guidance, refer to British Standard BS CECC 00015, Part 1: BASIC SPECIFICATION FOR PROTECTION OF ELECTROSTATIC SENSITIVE DEVICES



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 and product marking.



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.

GENERAL DESCRIPTION

UTAH100/XADA SERIES 1:4 x8 and 1:8 x4 Audio Distribution is a high-density frame for use in professional Broadcast or Studio environments. Different versions are available, but two versions are standard. One are designed with eight amplifiers, each amplifier with 1 electronic balanced input and 4 electronic balanced outputs and the other one are designed with four amplifiers, each with 1 electronic balanced input and 8 electronic balanced outputs.

The versions are:

Model UTAH100/XADA Series:

- **UTAH100/XADA24:** 2 Channels with 1 input 4 outputs
- **UTAH100/XADA44:** 4 Channels with 1 input 4 outputs
- **UTAH100/XADA64:** 6 Channels with 1 input 4 outputs
- **UTAH100/XADA84:** 8 Channels with 1 input 4 outputs (Standard)

- **UTAH100/XADA18:** 1 Channels with 1 input 8 outputs
- **UTAH100/XADA28:** 2 Channels with 1 input 8 outputs
- **UTAH100/XADA38:** 3 Channels with 1 input 8 outputs
- **UTAH100/XADA48:** 4 Channels with 1 input 8 outputs (Standard)

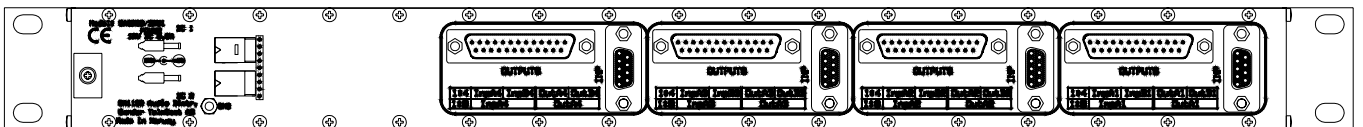
The 19" wide, 1RU high and 67 millimetres deep frame houses the amplifiers and DC-DC power. The frame has redundant power solution and supplies with 12V DC. The blue LED in the front indicates that the unit is ON.

Because of the broadband nature of the UTAH100/XADA SERIES 1x4/1x8 Audio Distribution, it will handle different type of signals:

- **Analogue audio** (Twisted Pair Signals)
- **Time code signals** (SMPTE/EBU LTC)



Front

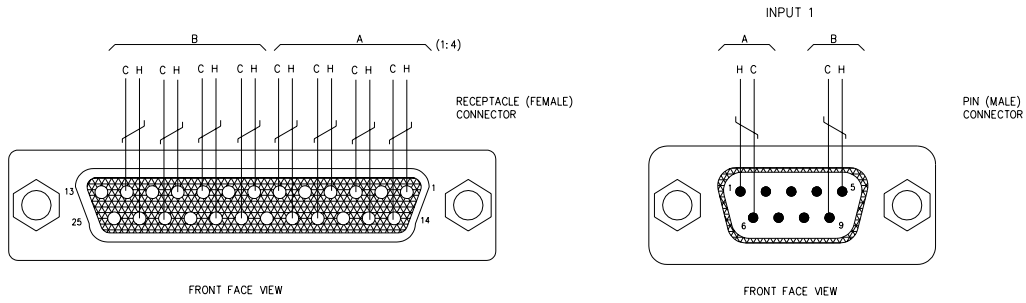


Rear

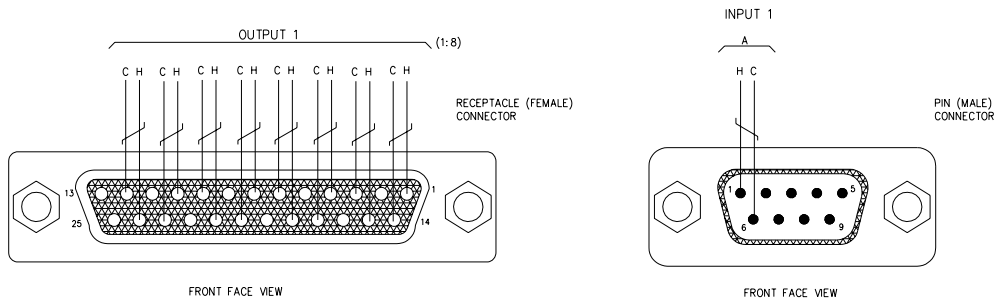
PINOUT

Audio Cable Connections

1:4

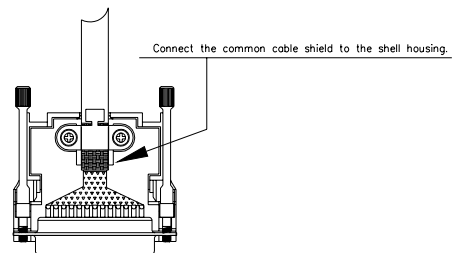
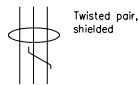


1:8



H=HOT, 0°, +
C=COLD, 180°, -
G=GROUND, Ch, \oplus

The shell housing must be of metalized type.
Connect the common cable shield to the shell housing.



The shell housing must be of metalized type.

Power Connection

The UTAH100/XADA SERIES units have two 2.1mm DIN 12VDC connector with + at centre.



The power unit supplied with the UTAH100/XADA SERIES is a 12 VDC with a max rating of 0.8A (10W)

To prevent unintended disconnecting of power plugs: Use the cable clamp as the image shows.



SPECIFICATIONS

INPUTS:

Number	UTAH-100/XADA84	: 1 (x 8 amplifiers) el. balanced
	UTAH-100/XADA48	: 1 (x 4 amplifiers) el. balanced
Impedance		: <20K Ω
CMRR 20-20000Hz		: >70dB

OUTPUTS:

Number	UTAH-100/XADA84	: 4 (x 8 amplifiers) el. balanced
	UTAH-100/XADA48	: 8 (x 4 amplifiers) el. balanced
Impedance		: <50 Ω
Output symmetry		: >60dB

PERFORMANCE:

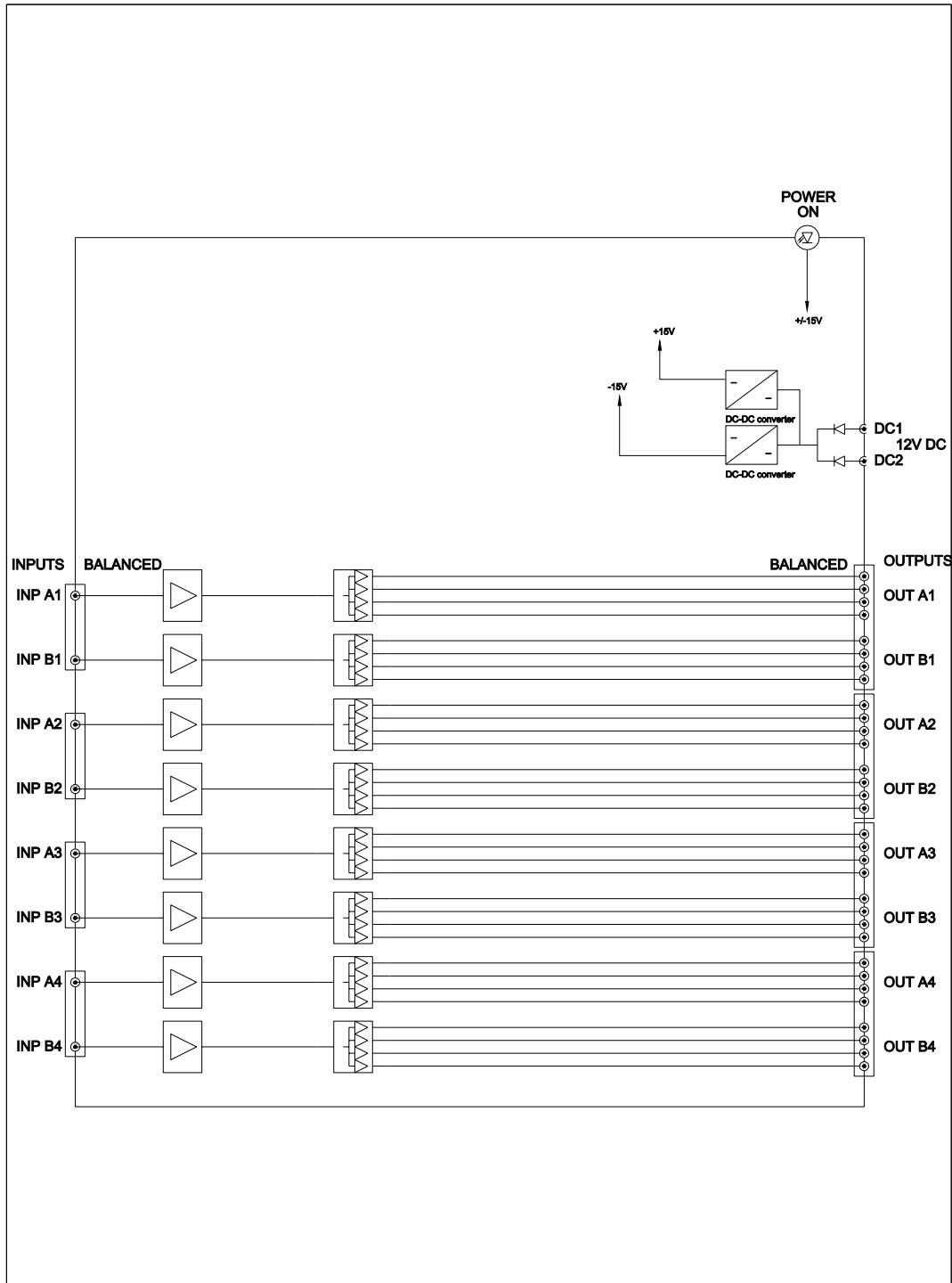
System gain, 600 Ω load		: -0.8 dB, \pm 0,1dB
System gain, 10k Ω load		: -0.15 dB, \pm 0,1dB
Gain difference two Ch. 1kHz		: \pm 0.2dB
Frequency response 20 – 20000Hz		: \pm 0.1dB
Bandwidth 20Hz-200kHz		: -0.3dB
Phase between two Ch.		: < 1°
THD+noise, +6dB into 600 Ω		: < 0.002%
THD+noise, +24dB into 600 Ω		: < 0.005%
Max level, 10K Ω load		: +24dBu (<0,003%THD+N @ 1kHz)
Max level, 10K Ω load		: +24dBu (<0,005%THD+N 20-20000Hz)
Noise, 50 Ω source (Q-Pk)		: < -87dBu
Crosstalk, 20-20000Hz		: > 90dBr

POWER:	DC 1	: 12V, 0.6A
	DC 2	: 12V, 0.6A

FRAME:		: UTAH100/XADA84 & UTAH100/XADA48
		W: 482.6mm (19")
		H: 43.6mm (1U)
		D: 52mm
Weight		: 0.7kg
Operating temperature range		: 0°C - 45°C
Humidity		: 90% non condensing

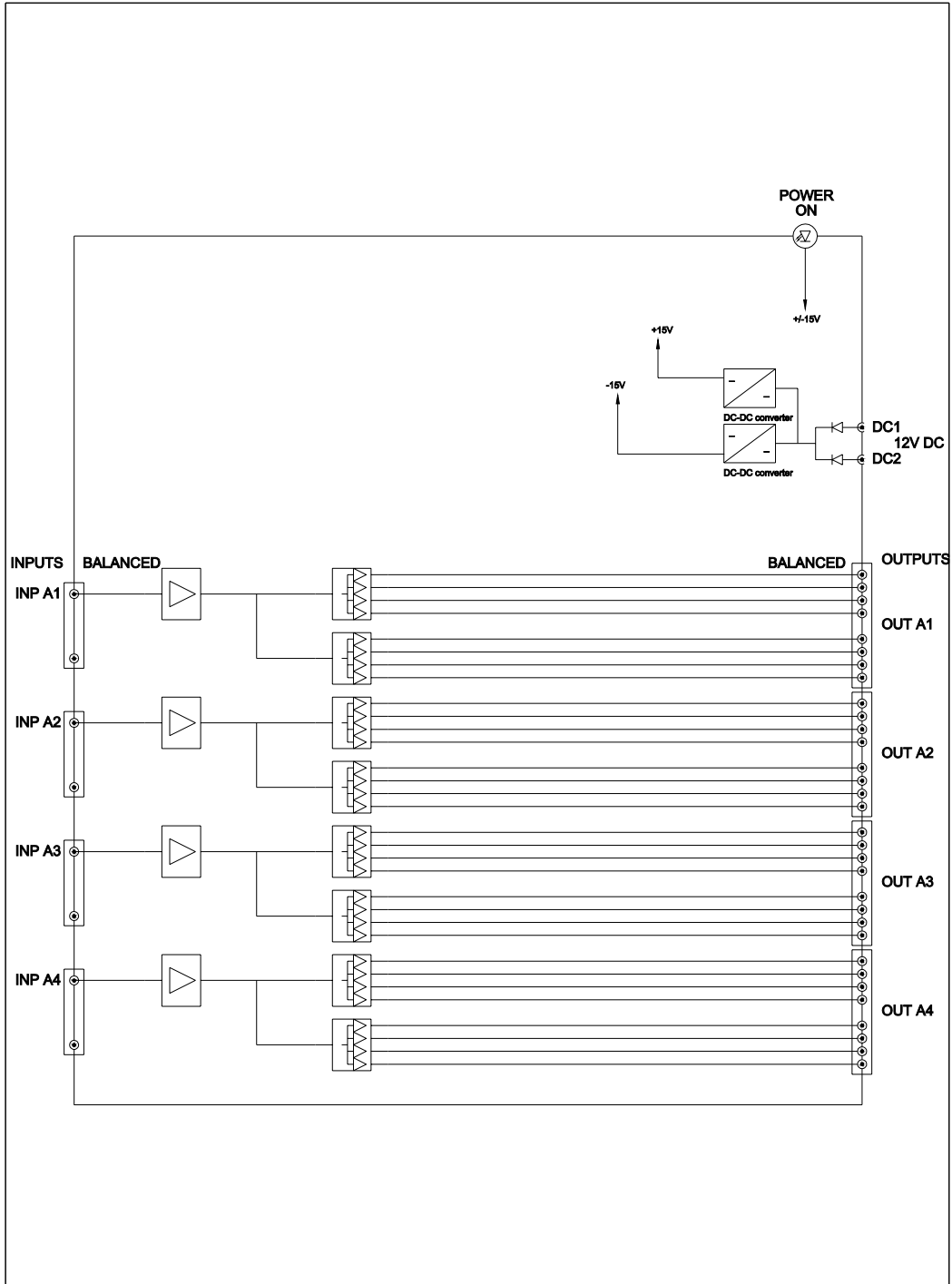
Utah Sandar AS reserves the right to change specifications without prior notice.

DRAWING – UTAH-100/XADA84 BLOCK DIAGRAM



		Drawn:	2008-08-06/HD	Page:		Utah Sandar
		Checked:		of:		
02	2009-10-06/HD	UTAH-100/XADA84 8 Ch. 1x4 ANALOGUE AUDIO DISTRIBUTION, 19",1U				3250-03
01	2008-11-28/HD	BLOCK DIAGRAM				Utah Sandar AS
Rev No	Date/Sign	Part No.		Ref.		Proj

DRAWING – UTAH-100/XADA48 BLOCK DIAGRAM



		Drawn:	2008-08-06/HD	Page:		
		Checked:		of:		
		UTAH-100/XADA48				3251-03
02	2009-10-06/HD	4 Ch. 1x8 ANALOGUE AUDIO DISTRIBUTION, 19",1U				Utah Sandar AS
01	2008-112-03/HD	BLOCK DIAGRAM				
Rev.No	Date/Sign		Part No.	Ref.	Proj.	

Utah Sandar AS

User Manual & Installation Guide

UTAH-100

Control Software

CONTENTS

CONTENTS 2

DOCUMENT REVISION HISTORY 3

UTAH-100 WEB CONTROL 4

Page layout overview..... 4

Start Page 5

Control 5

Control – Router..... 5

Control – Control Panel..... 5

Level Map..... 8

INP Devices..... 9

Partition and Levels..... 10

Device Settings..... 11

Protocol Settings..... 12

SNMP..... 13

Mail Service 14

Device Log..... 15

DOCUMENT REVISION HISTORY

Rev.	Date	Description
1.0	2009-11-10	Release

UTAH-100 WEB CONTROL

A Utah-100/X device is configured through its web interface. This document describes the different pages in the web interface and the utilities currently available.

The device shown in the page examples below is a 16x16 Audio router, but the pages layout will be similar for all type of UTAH-100/X family products.

Page layout overview

The web interface consists of two parts/frames (figure 1); a top frame displaying the different page contents (1), and a bottom frame which is visible at all times displaying the device hardware status and other useful information (2). The bottom frame is updated at intervals of a few seconds.

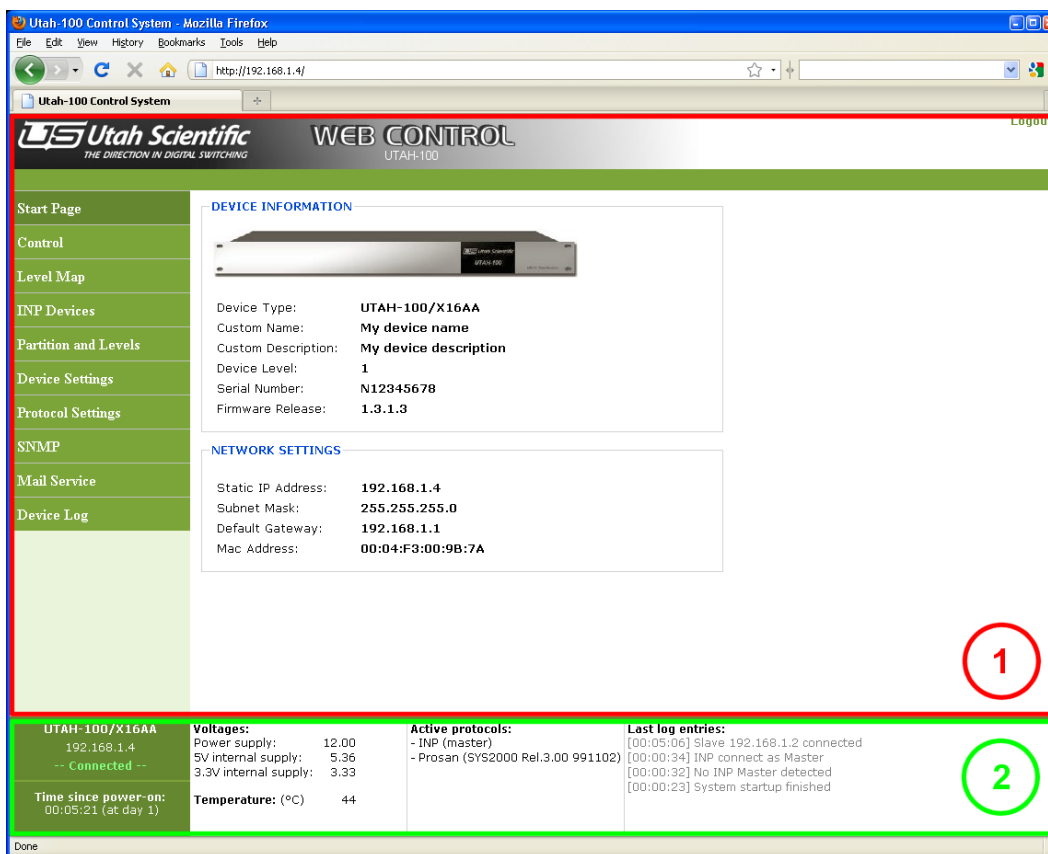


Figure 1: Start Page and the layout of the web interface

Start Page

When accessing the Web Control of a UTAH-100 device the user must log on with a registered username and password (figure 2). Default username is “admin” and default password is “password” (both without quotes). After a successful logon, the Start Page is shown (figure 1) with an image and some info about the device and the current network configuration.

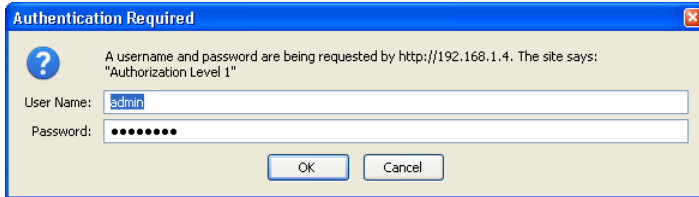


Figure 2: Users must logon to access the web interface

Control

The content of this page is dependent on the device whether it is a router or a stand-alone control panel.

Control – Router

On this page you can view and control the switch status of the device (figure 3). The control is done with the use of a Java Applet and hence it is necessary to have the Java Runtime Environment (JRE) installed on the computer for this to work. If this is not installed, the message “You have to install the Java Runtime Environment” will be displayed on the page instead. The JRE can be downloaded from <http://www.java.com>.

When the applet is loaded, it will display the matrix according to the device hardware and what sources and destinations are present. If the router is partitioned into two logical devices, two applets will show up so the parts can be controlled separately. As example, the Audio router is configured as 16x16 Stereo in figure 3a and 16x16 Mono in figure 3b. To do a take or change the mnemonics, right-click on a cross point and select from the popup menu.

Control – Control Panel

For control panels, a soft panel control will appear on this page (figure 4). This works the same way as if clicking the buttons on the physical panel, except from disconnect and lock actions which require clicking a separate button (on the physical panel this is performed by holding the button down). The soft panel is updated at intervals of a few seconds if no action is performed. When clicking a button on the soft panel on the other hand, the soft panel is updated immediately with a read-back of the new button status.

The control panel can also be configured through the Web Control. Click the “Panel Configuration” link (see figure 4) and the soft panel is replaced with colored buttons (figure 5) and some more options. The different colors are codes for the different button functions and the number on the buttons are the current value parameter. To do changes you must click a button and select either a function or a parameter and hit the correspondent “Apply” button. One click on a button selects it (a thick border shows it is selected) and click again to deselect it. You can select multiple buttons to add the same function to each of them, but you can only apply parameters to one button at a time. The “Clear selected” button only deselects all buttons. The “Reset form” button reloads the buttons with their currently saved states. After changes are done, click the “Save changes” button to save the new button configuration, and the panel (both physical and soft) will run the new configuration immediately.

Also for control panels the switch matrix shown on figure 3 is available by clicking the tab “Matrix Control on local device level” (see figure 4 or 5). Even though a control panel does not have a physical router, it is still provided with a virtual router with size according to the current panel

User Manual & Installation Guide

UTAH-100 Control Software



configuration and level as defined for the device. This level can then be viewed and controlled from the switch matrix applet tool.

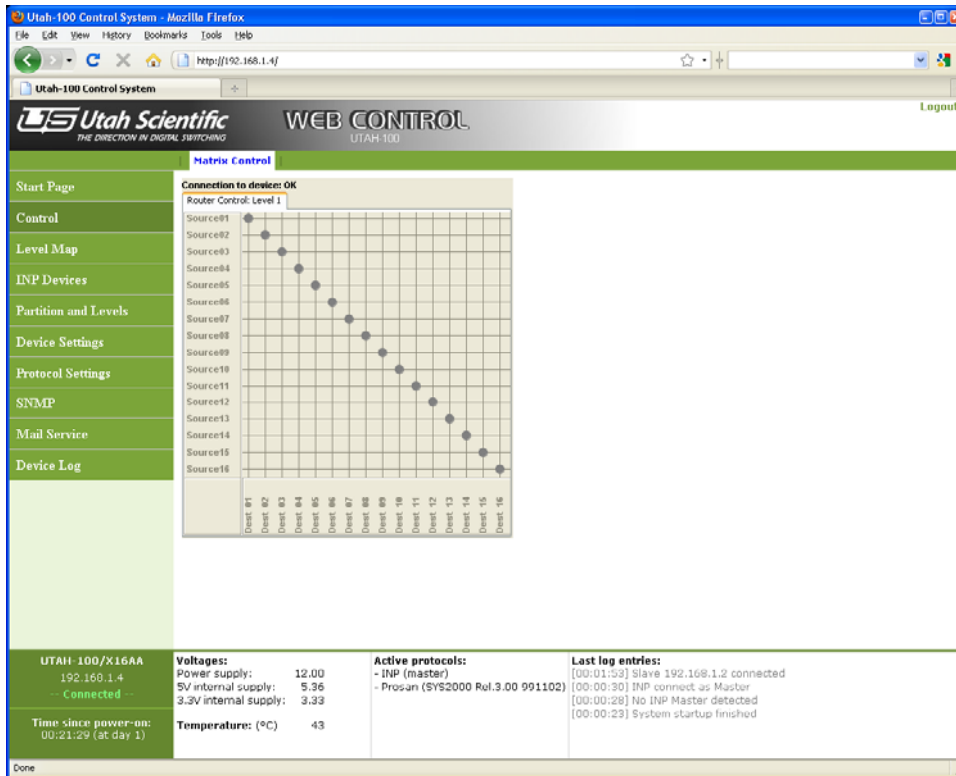


Figure 3a: Router Control- Stereo

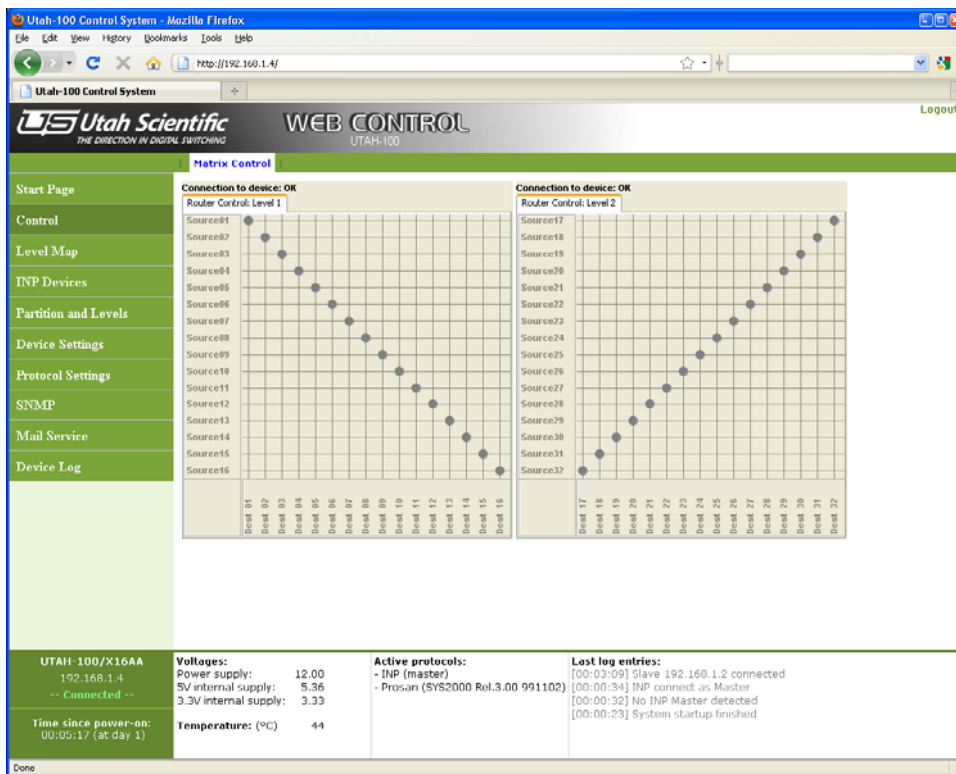


Figure 3b: Router Control - Mono

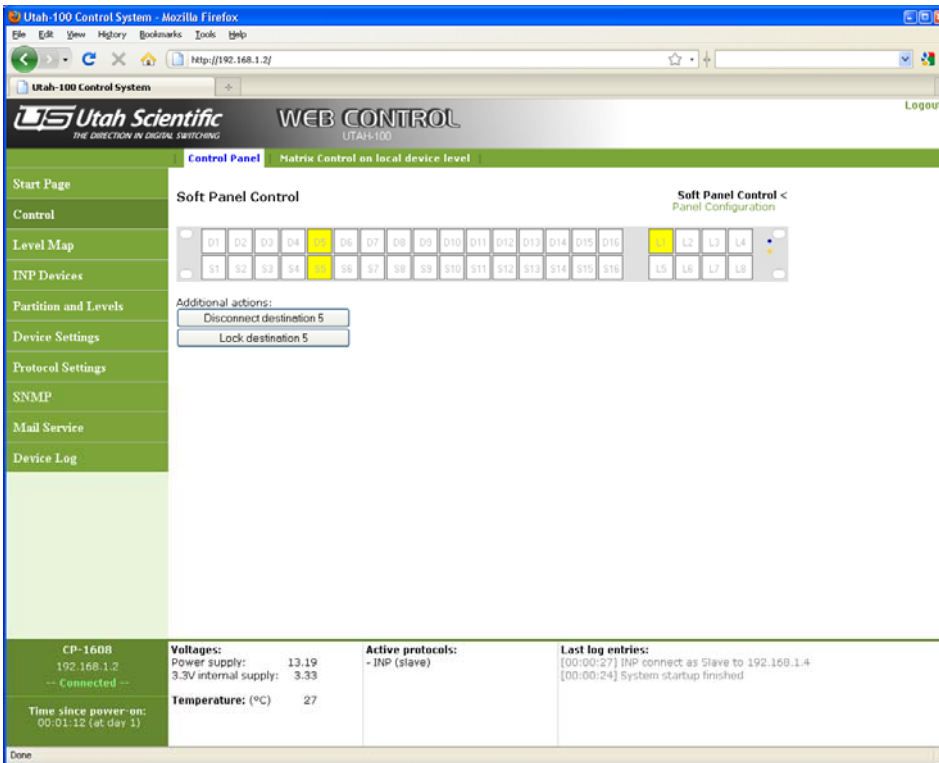


Figure 4: Soft Panel Control (for stand-alone control panels only)

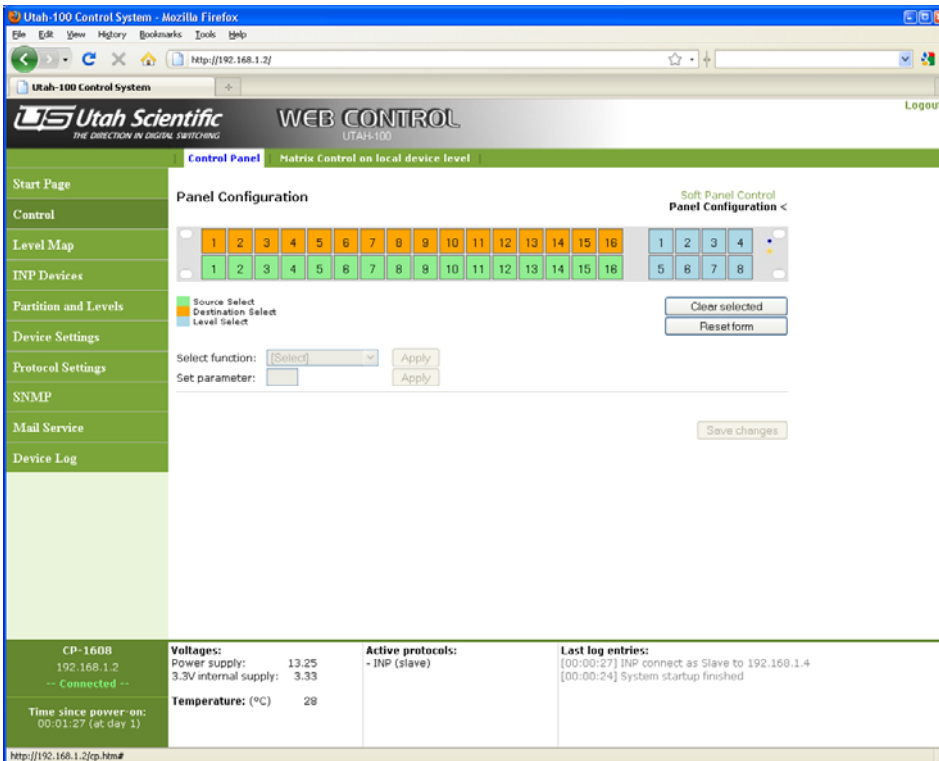


Figure 5: Control Panel Configuration (for stand-alone control panels only)

Level Map

From this page you can view the status of all populated levels (figure 6). The information is collected from both the local device and the devices it is connected to. In the left column is a list of the levels with a link and if you click a link the matrix will be shown in the right column. This is only for viewing so no takes can be performed from here.

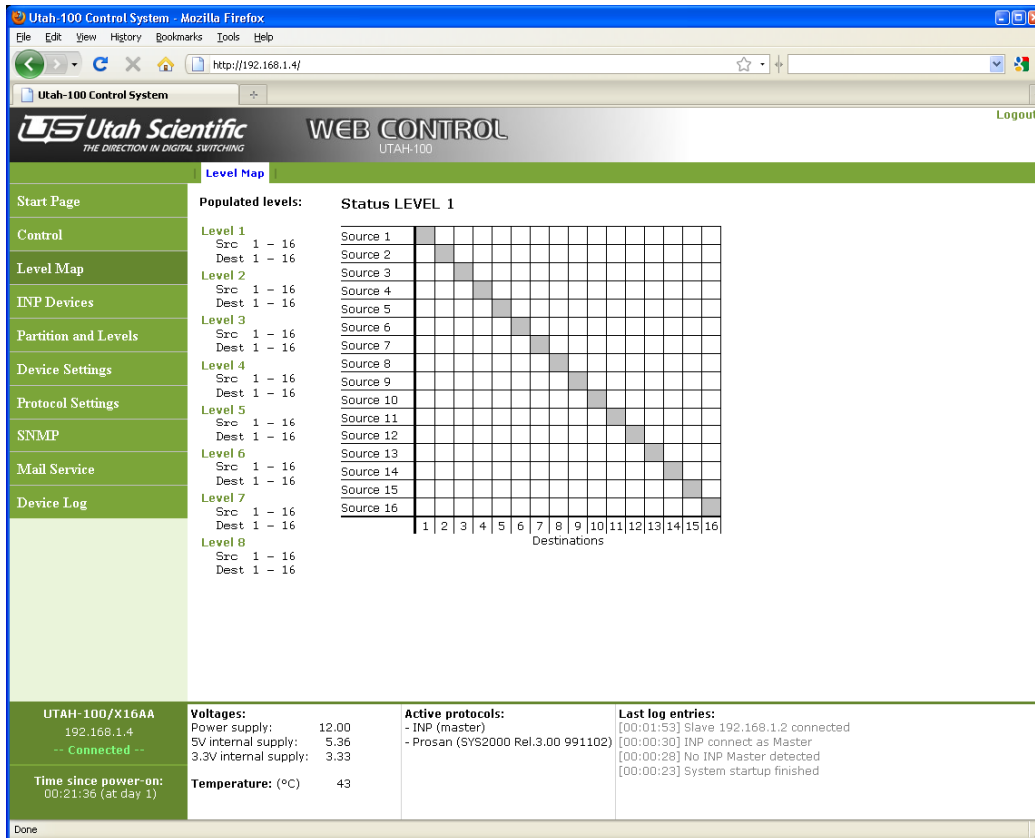


Figure 6: Level Map – see status for all populated levels in the system

INP Devices

Utah-100 devices communicate with each other through Ethernet with a special protocol called Internal Network Protocol (INP). The “INP Devices” page (see figure 7) shows a list of devices connected and some info about their configuration: IP address, device type, custom device name, custom device description, level A and level B [LA/LB], time connected to the INP Network (Con.time) and if the device is master or slave. Slave/Master parameter will be followed by “Auto” or “Fixed” in brackets which is telling how the correspondent device is configured (*fixed* master/slave or *auto* decided).

The INP Master will also get the option to add mode devices on this page. By default the INP devices will discover each other automatically, but in case of situations where a device is on a different subnet (or network) and communication is routed through a gateway, the device can be added manually by adding its IP address. Adding IP addresses is also needed if the INP automatic discovery feature is turned off (silent mode).

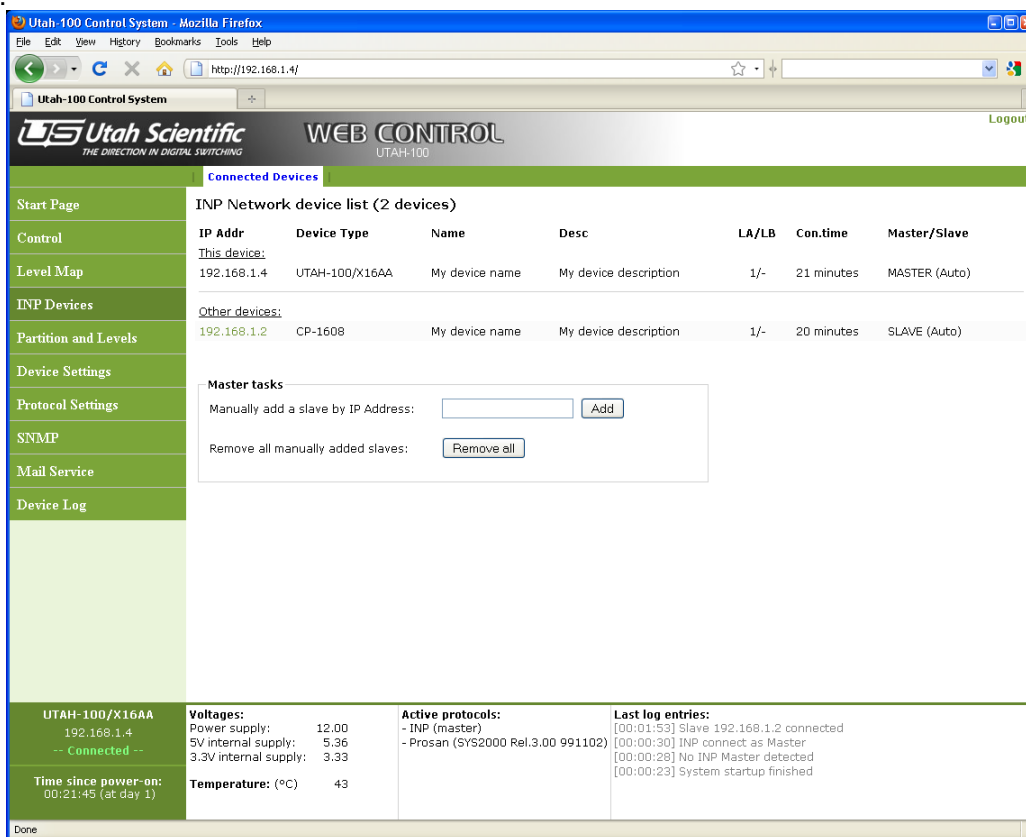


Figure 7: “INP Devices” shows a list of INP connected devices

Partition and Levels

On this page you set the level of the device. This is the INP level and the router status will follow this level, independent on where the changes (takes) are performed.

Also on this page is the possibility of doing a simple matrix partitioning (only available on routers and with more than one stand-alone destination). This is achieved by dividing the matrix in the middle into two logical devices; A and B. Examples:

No Partition	Partitioned	
	Logical device A	Logical device B
16x16 Audio Stereo Router	16x16 (Mono)	16x16 (Mono)
16x16 Video Router	8x8	8x8
32x4 Video Router	16x2	16x2

Two methods of control are available when the device is partitioned; married or stand-alone. If married is chosen, A is controllable while B mirrors A. The Control page will show one matrix. If stand-alone is chosen, the two logical devices operates independently at two different levels and the Control page shows two devices (figure 3b).

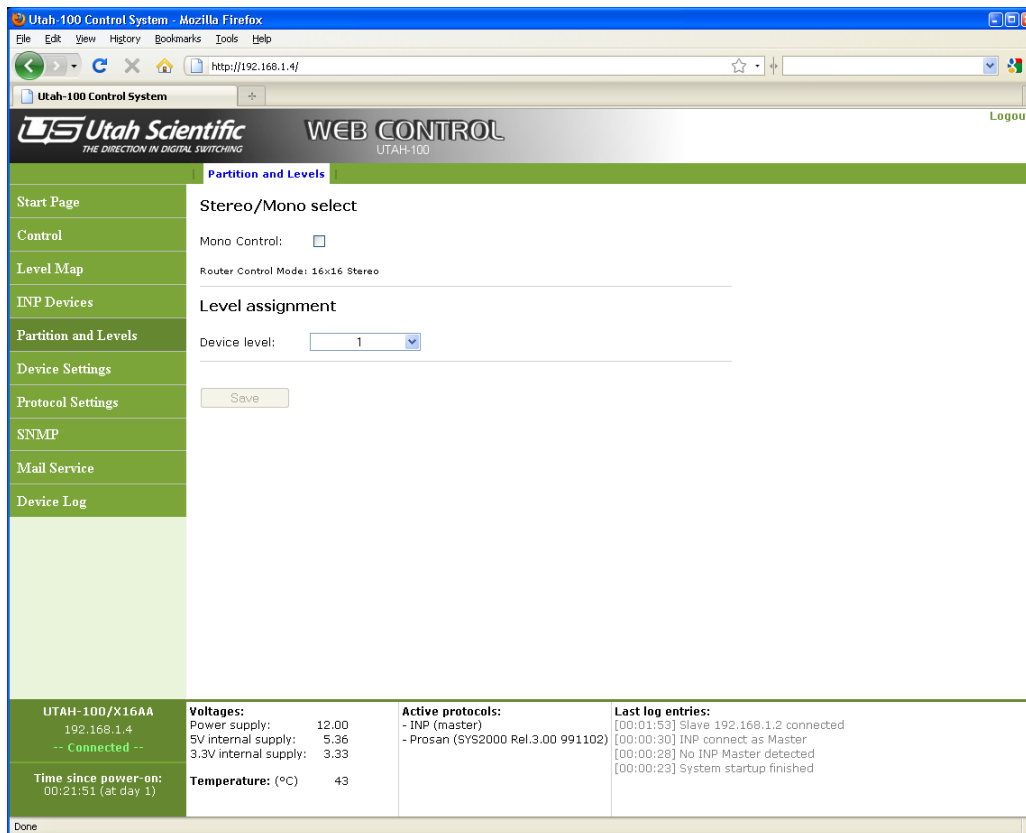


Figure 8: Simple partitioning and level assignment

Device Settings

On this page there are a few tabs to set device settings (figure 9). In the “Network Settings” tab you enter the network settings of the device. Click the “Device Description” tab to specify a custom name and description for the device. In the “User Database” tab you can add more users to access the Web Control with different privileges.

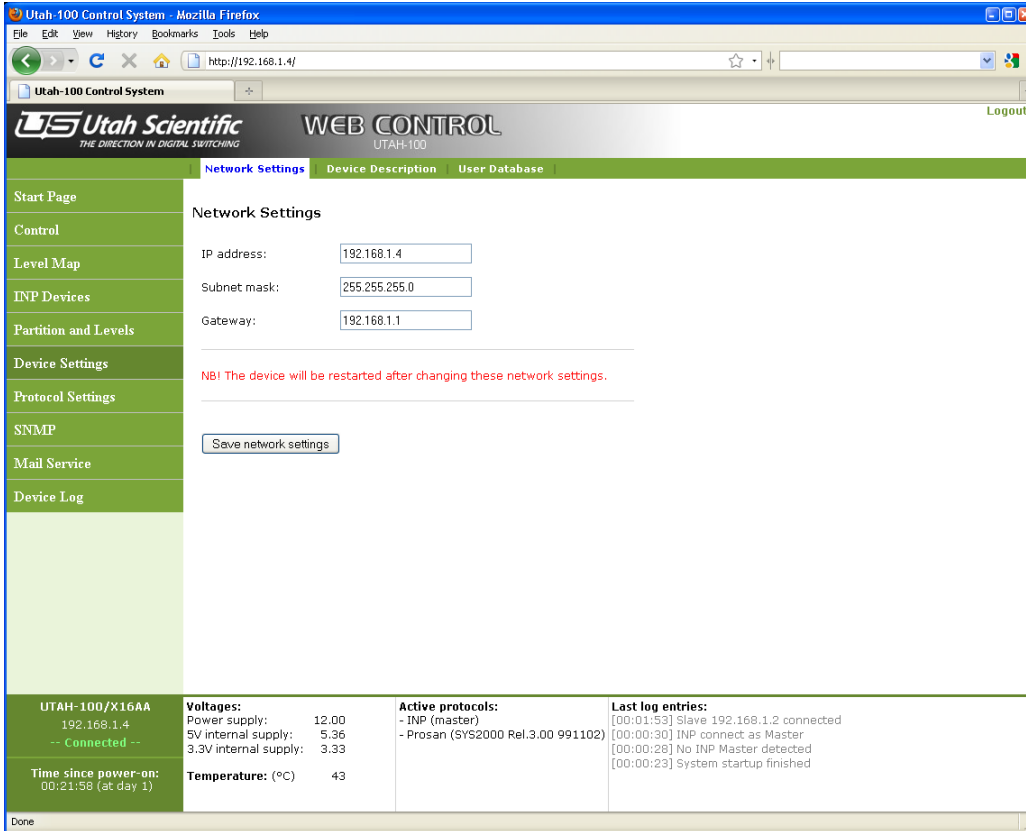


Figure 9: Device Settings

Protocol Settings

The Utah-100 devices support different protocols and they are configured from this page (figure 10).

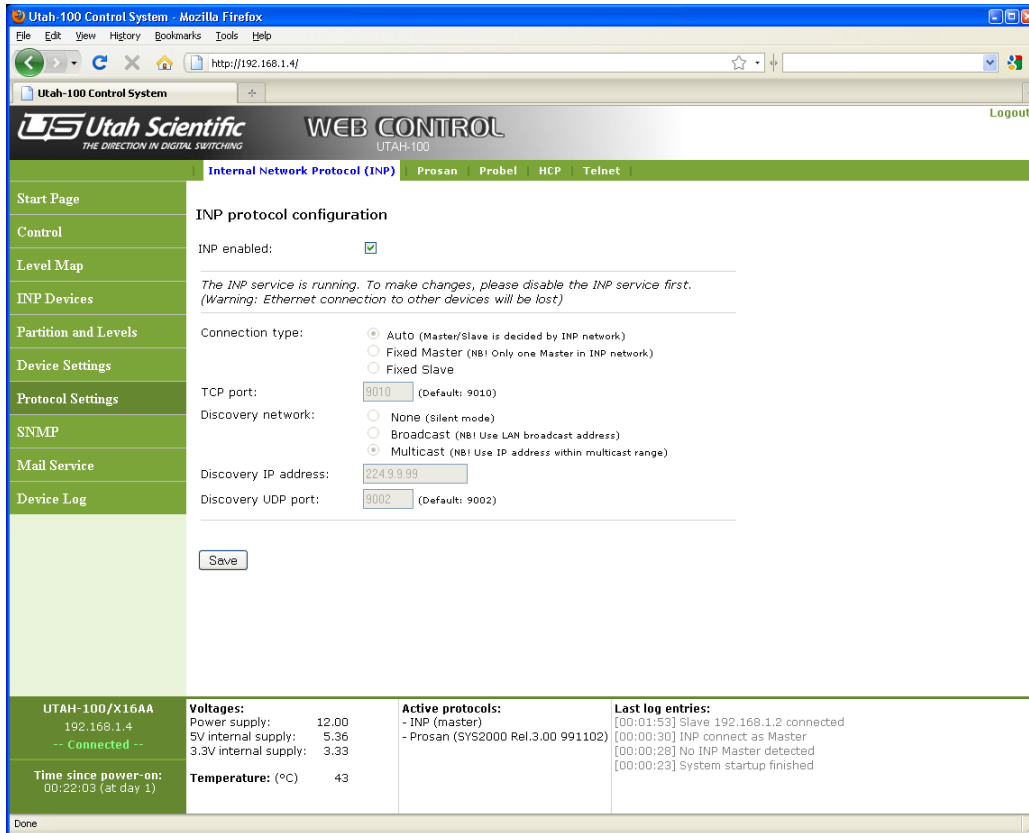


Figure 10: Configuration of different protocols

SNMP

The Utah-100 devices support SNMP (figure 11). Currently traps can be performed and status can be read via SNMP. Click on the “Trap destinations” tab to add IP addresses which will receive traps when a status change has occurred.

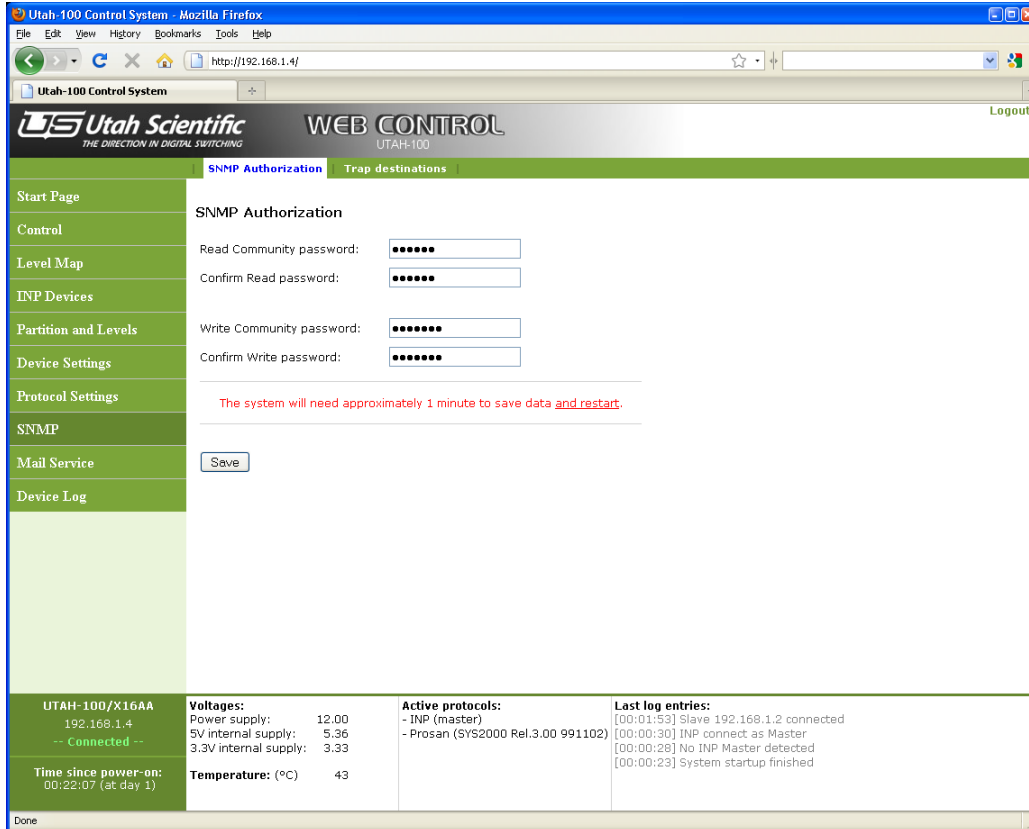


Figure 11: SNMP configuration

Mail Service

Mail can be sent from the device to registered recipients (figure 12). Currently only a “Device reset” message sent at start-up is supported.

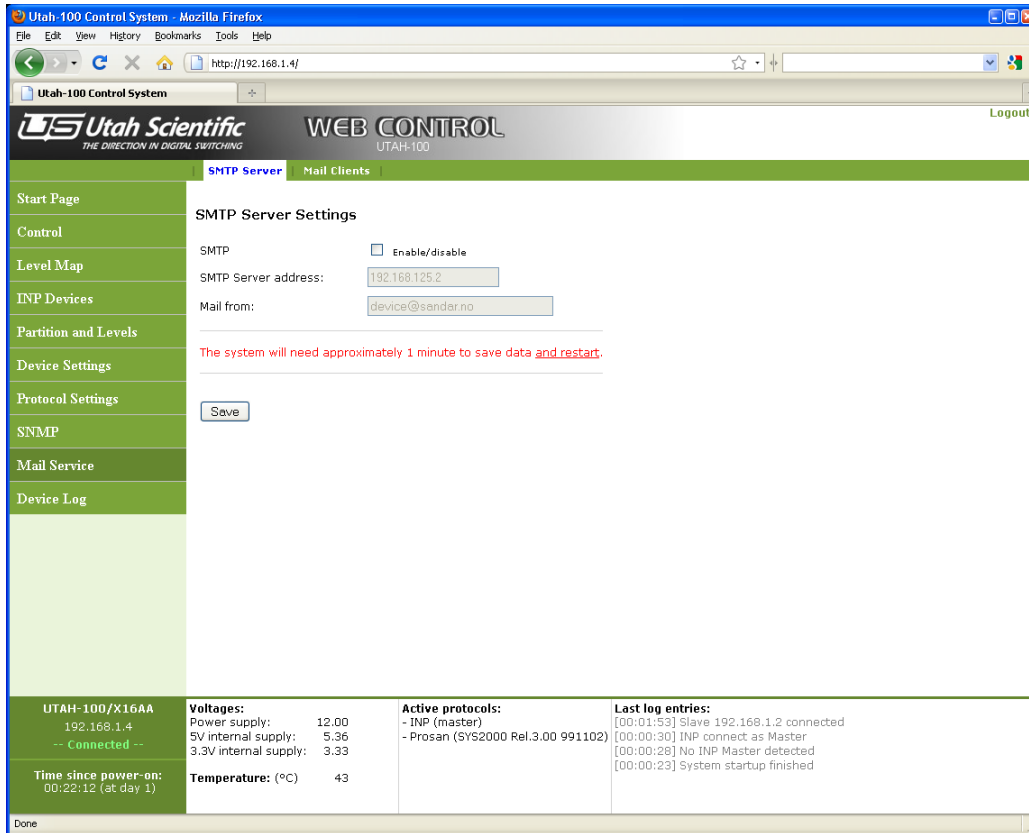
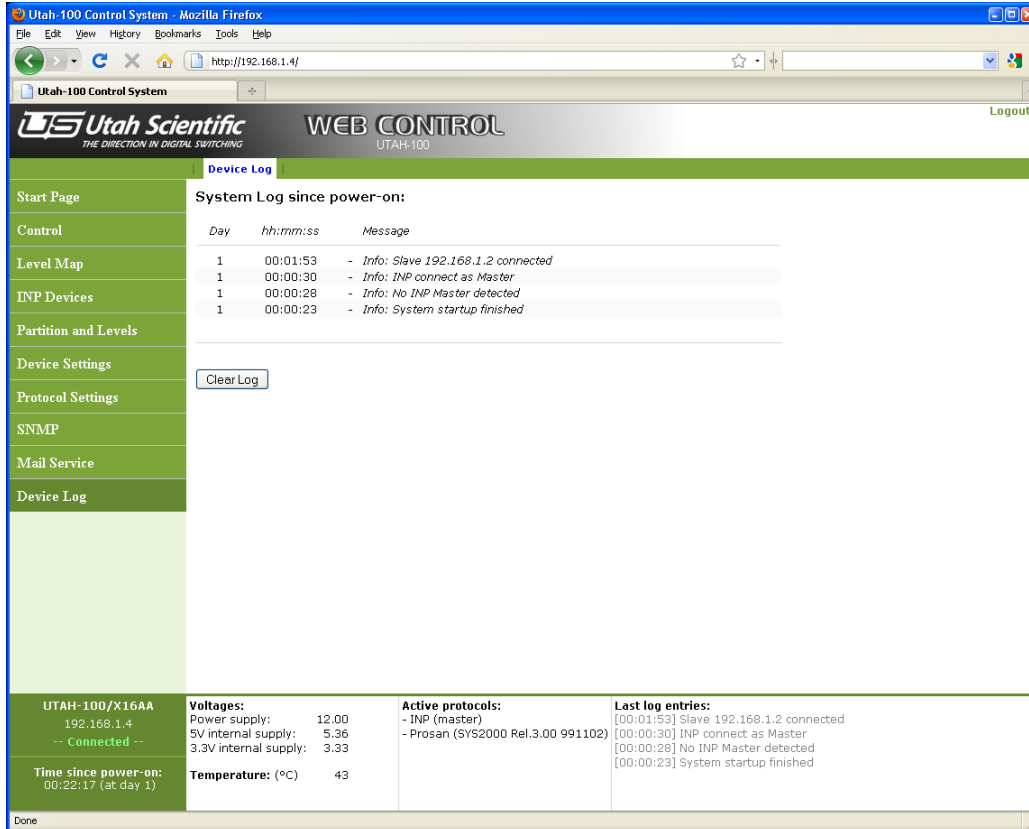


Figure 12: Mail Service configuration

Device Log

This page shows the entries of the log since the device started (figure 13). The entries have a time stamp telling when the entry occurred since device start. The last few entries are also listed in the bottom status frame of the page layout. Click the “Clear Log” button to delete all entries.



The screenshot shows a web browser window displaying the Utah-100 Control System interface. The main content area is titled "System Log since power-on:" and contains a table with the following data:

Day	hh:mm:ss	Message
1	00:01:53	- Info: Slave 192.168.1.2 connected
1	00:00:30	- Info: INP connect as Master
1	00:00:28	- Info: No INP Master detected
1	00:00:23	- Info: System startup finished

Below the table is a "Clear Log" button. At the bottom of the page, there is a status summary section with the following information:

UTAH-100/X16AA 192.168.1.4 -- Connected --	Voltages: Power supply: 12.00 5V internal supply: 5.36 3.3V internal supply: 3.33	Active protocols: - INP (master) - Prosan (SYS2000 Rel.3.00 991102)	Last log entries: [00:01:53] Slave 192.168.1.2 connected [00:00:30] INP connect as Master [00:00:28] No INP Master detected [00:00:23] System startup finished
Time since power-on: 00:22:17 (at day 1)	Temperature: (°C) 43		