Utah Scientific

# UTAH-100/UDS 288


*System Setup and Operation Guide*

## *UTAH 100/UDS 288x288 Operations Guide*


- Document Number: 82102-0079
- Document Version: 1.3
- Date: March 21, 2016
- Printed in U.S.A.


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

This equipment has been tested and found to comply with the limits for a Class A, digital device, pursuant to Part 15, Subpart B of the FCC Rules and the Canadian EMC Requirement (ICES-003). These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference, in which case, the user will be required to correct the interference at their own expense. Shielded cables must be used to ensure compliance with the FCC Class A limits.

## *Declaration of Conformity*

**Utah Scientific, Inc.**

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

We declare our sole responsibility that the UTAH-100/UDS 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

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## *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

## *Company Information*

### Utah Scientific, Incorporated

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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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# Section 1

# System Setup

## Introduction

The Universal Distribution System (UDS 288) is a compact, power efficient series of SDI routing switcher. It combines a compact design with unique control facilities to allow cost effective routing solutions and flexible, configurable distribution amplifiers or, when combined with a Utah Scientific SC-4 or SC-400 control system, provide a cost sensitive alternative to the flagship Utah Scientific UTAH-400 SDI routers.

The UDS 288 routing switcher is available in one frame size –

- 288x288 frame size, consuming 300 watts of power.

The frame is 13.5 inches deep.

## Control System

The crosspoint switching and status monitoring of the UDS routing switcher is performed by the ‘MX-Bus Interface’.

The routing switcher is simply a slave to a larger Utah Scientific SC4 or SC400 control system. This is useful if a user requires more control locations or hardware panel options than are supplied with the smaller UDS system. Information regarding SC4 and SC400 control systems can be found in their respective manuals.

# Router Hardware Description

The UDS system is based upon a four board architecture similar to other Utah Scientific routing switchers. These four boards are made up of an Input board, a crosspoint board, midplane, and output board.

Input or Output boards can be removed or added (via the midplane) in the field to expand systems, change IO types or replace defective modules.

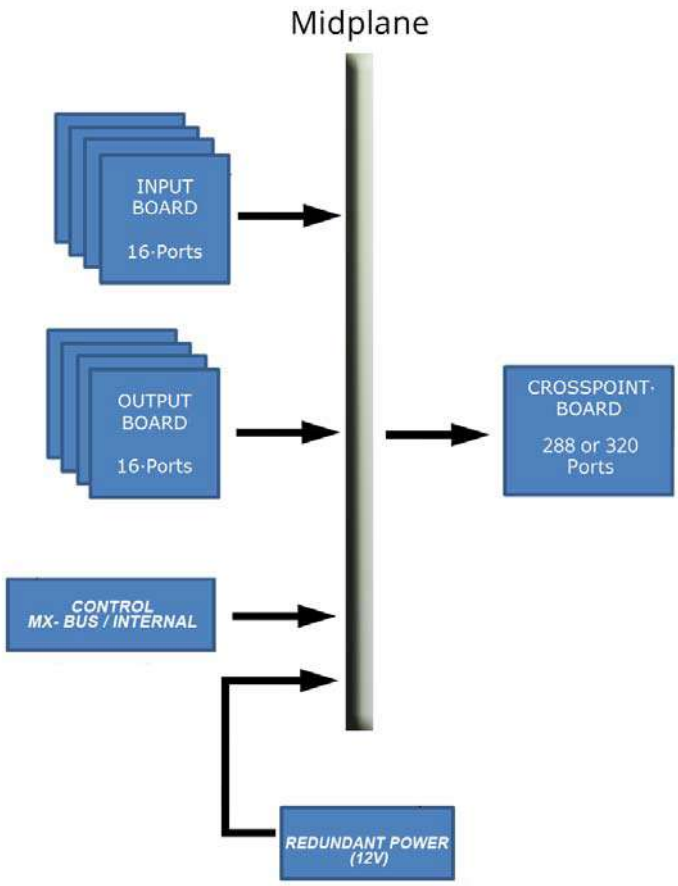



**Figure 1-1.**

The UDS system is designed to carry SDI signals. The system natively supports and reclocks SMPTE259C, SMPTE292, SMPTE424, ST2081, ST2082, and DVB-ASI signals with a maximum data rate of 11.88 Gb/Sec.

The reclocking mechanism within the UDS automatically bypasses when a signal that is not one of these standards is presented to it, allowing non-reclocked routing of any signal from 18 Mb/Sec to 11.88 Gb/Sec.

The coaxial version of IO cards uses the HD-BNC connector offered by Amphenol and Samtec. It provides superior performance and density while allowing connection of industry standard Belden 1694 cable or other cable types with standard tools. Visit http://hdbnc.amphenolrf.com/ for more information.

UDS Routing Switchers are powered by 12V DC connections. Systems are delivered with 1 power supply as a standard. (The part number for the optional redundant power supply is USI 94001-9006.)

### *3G/12G*

The UDS 288 supports two types of IO cards; those that support signals p to 3Gb/Sec and others that support up to 11.88 Gb/Sec signals.

## *Signal Levels*

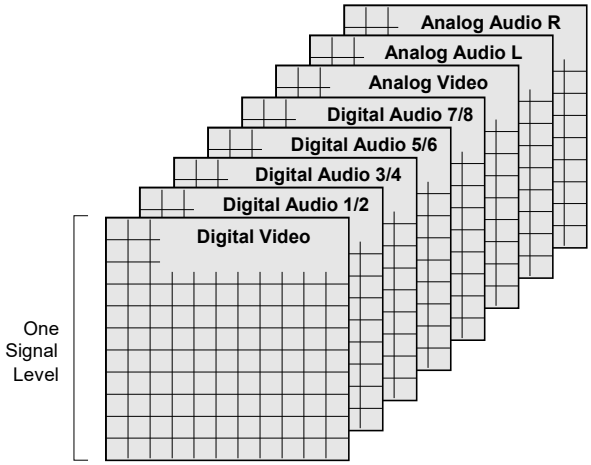
A "signal level" represents one of many specific types of audio or video elements that a routing switcher is capable of handling. The typical signals capable of being switched are:

- Analog Video
- Analog Audio (stereo with left and right channels).
- Digital Video
- Digital Audio (dual channel – stereo pair)
- High Definition Video.

Some systems may be configured with one signal level, while others may be configured with multiple signal levels.

While the diagram in the previous section shows only one signal level, a multi-signal level system is capable of routing any combination up to 32 levels – each with its own matrix and cross-points.

The figure below illustrates ***eight signal levels*** in a 10 X 10 matrix system.




Signal routers are typically much larger than a 10 X 10 matrix, depending on user needs. Each signal level may also have different sizes of matrices and do not all need to be the same size.

# Hardware 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/UDS frame may only be installed in specific positions. Interchanging power and function modules may harm the UTAH-100/UDS frame permanently.

### *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.

## *Initial Setup*

1. Remove the chassis and inspect the unit carefully for damages that may have occurred during transport.
2. Check that the frame is installed so the airflow though the unit is unrestricted. No forced ventilation is required under normal operating conditions.
3. Connect the external power cord to the corresponding power connector on the rear side of the UTAH-100/UDS frame. Check that the Power LED on the front panel is lit. Green LEDs indicate normal operation, while Red LEDs indicate a failure condition. If a failure occurs; potentially related to no power, inoperative fan, or temperature range, please disconnect power and contact UTSCI support for assistance.

# Installation

## *288x288 UDS System*

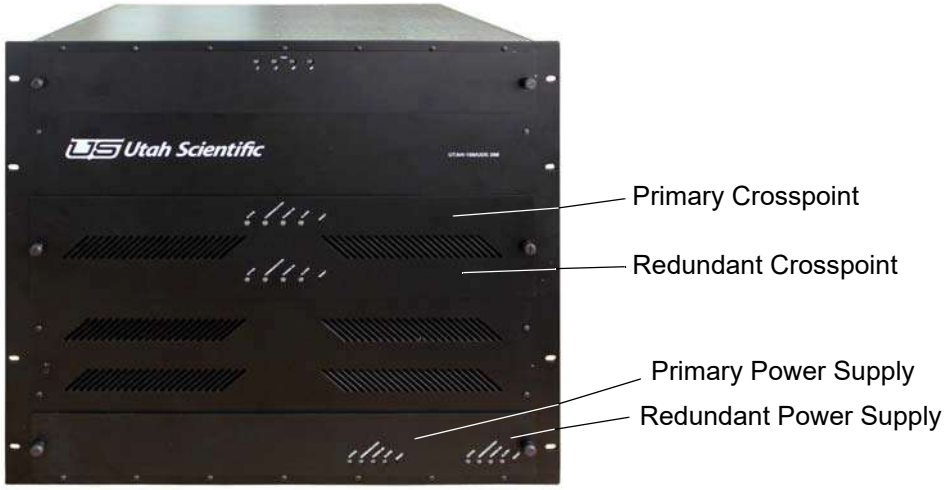



**Figure 1-2. UTAH-100/UDS 288 - Front**

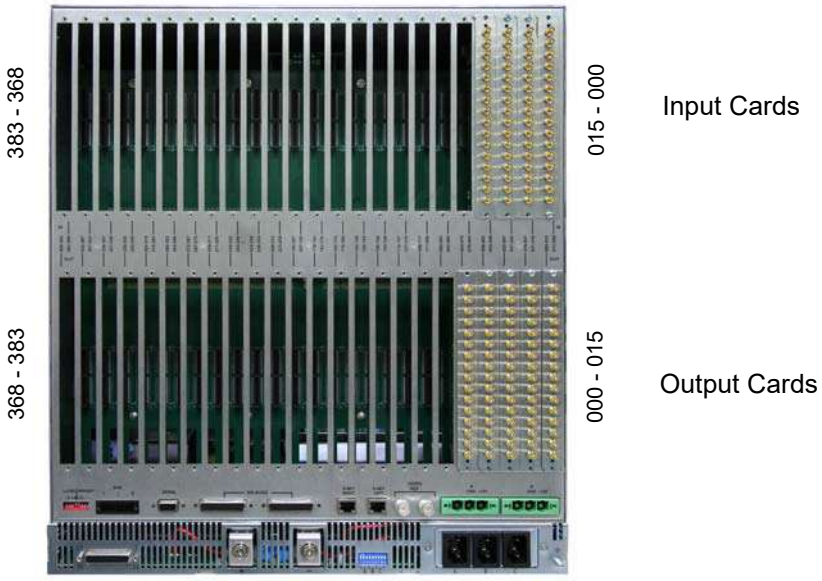



**Figure 1-3. UTAH-100/UDS 288 - Rear**

### *Contents*

- 1 Primary Crosspoint card
- 1 Redundant Crosspoint card
- 18 Input card Slots.
- 18 Output card Slots.
- 1 Primary Control Card Slot
- 1 Redundant Control card slot
- 1 12V Power Supply with chassis
- 1 Redundant 12V Power Supply slot
- 4 internal cooling fans located near the chassis top. Air is drawn from the front and exhausted through the sides.

This system is only capable of being controlled via MX Bus, as the internal controller option is not available for this frame. When encoding an SC-4, 400 or 40 to utilize this frame, you must first set the MX-BUS level of the router as described in the MX-Bus Based Systems section of this manual.

## Rear Panel Considerations

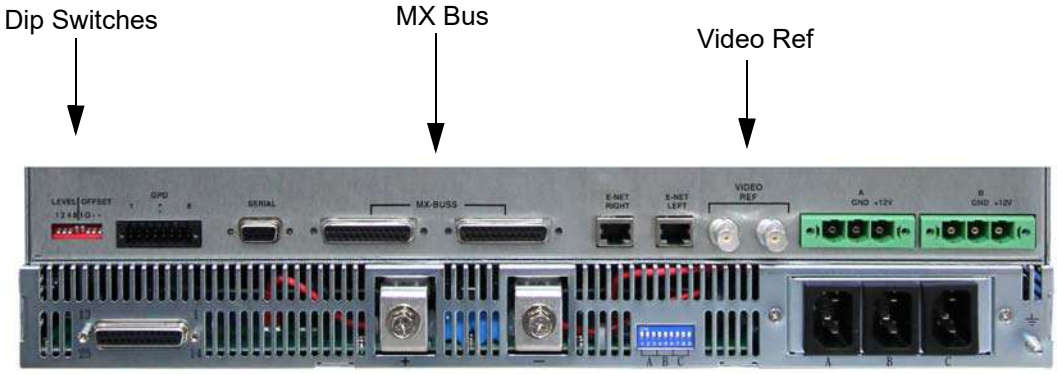



**Figure 1-4.**

### MX Bus

This is the control bus between the UDS 288 and the SC-4 controller. Each chassis contains two connectors, fed through either side, then distributed to the next piece of equipment from either side.

### Dip Switches

The dip switches are used to set the location of the router within the MX-Bus system. Usage example: A first level, binary setting would require all switches to be placed in the down position.

### Video Ref

Used as a switching reference. Provides analog blackburst or tri-level sync. This port is a loop thru, and the unused BNC must be terminated in 75 Ohms.

## Power Supplies

### Connecting and Disconnecting Power

The power system within the UDS 288x288 router consists of a 1 RU power supply shelf that has up to (2) 12 VDC power supplies. Within this architecture, there is no power supply assembly internal to the chassis itself, as each module receives and converts the 12V bus to its own internal requirements. Overall power consumption depends upon loading, but an average fully loaded system consumes 350 watts.

The standard power supply assembly shipped with a router (that is to be powered via AC mains) contains two rectifier modules. The power supply shelf contains 3 slots, however only one is required for system operation. A second power supply can be added for redundancy, and will load share when a redundant power supply is in the system.

**Figure 1-5. Power Supply (front view)**

From the power supply assembly, two 8 AWG wires carry power as follows;

- (1) black wire connect to negative (-) terminal of the power supply
- (1) red wire connects to the positive(+) terminal of the power supply, and passes through a 40A fuse prior to connecting to the +12V input of the router. This fuse is a *Littlefuse* part number 142.6885.5402, or USI part number 41913-0001.

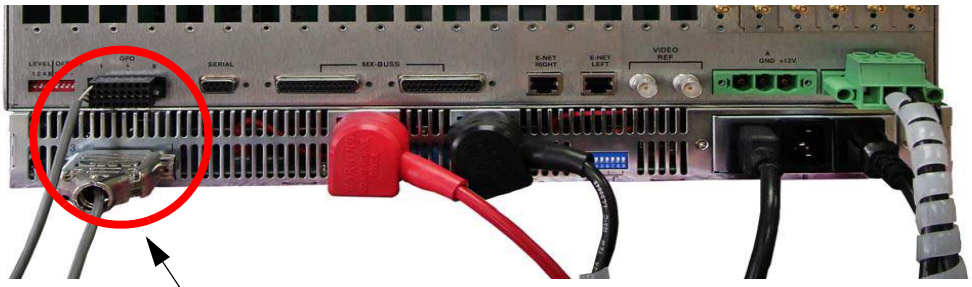



**Figure 1-6. Power supply - connected**

## *Determining and Setting Router Signal Levels*

Signal levels are preset at the factory and tested during manufacturing, determined by customer input and requirements. The installation of your new Utah-400 Router should not require any signal level changes to operate after the new installation.

By definition, a signal level represents distinct elements of the broadcast system. These individual elements include, but are not limited to, High Definition Video, SDI Video, Digital Audio, Analog Video, Analog Audio and Data Routers. For additional information relating to signal levels, refer to “Signal Levels,” on page 1-5.

## *Switch Settings*

Should you ever need to change the signal level of your router it is useful to determine:

- What new signal level is required.
- If other signal levels will have to be modified to accommodate the new signal level.
- Additional encoding requirements necessitated by the change.
  1. Locate the dip switch on the control I/O panel at the rear of the chassis.
  2. The four level bits work in a binary addition mode. Possible values range from 0 (all down) to 15 (all up). 0 is level 1 in an SC-4 control system, and 15 is level 16.
  3. Set the switches to the level you have chosen according to the following table.

| Switch | 1 | 2 | 4 | 8 | Binary Value | SC-4 Level |
|---|---|---|---|---|---|---|
| | OFF | OFF | OFF | OFF | 0 | 1 |
| | ON | OFF | OFF | OFF | 1 | 2 |
| | OFF | ON | OFF | OFF | 2 | 3 |
| | ON | ON | OFF | OFF | 3 | 4 |
| | OFF | OFF | ON | OFF | 4 | 5 |
| | ON | OFF | ON | OFF | 5 | 6 |
| | ... | ... | ... | ... | ... | ... |
| | ON | ON | ON | ON | 15 | 16 |

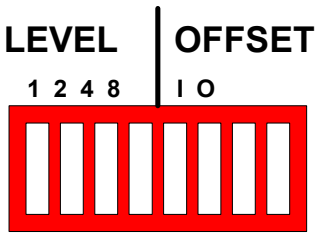



**Figure 1-7.**

### *Unlabeled Dipswitch Positions*

The last two dipswitch locations must be down in all cases.

## Serial Port

This is a RS-232 DTE port, and is used as for diagnostic purposes. A terminal emulation program such as Tera Term is used for communication.

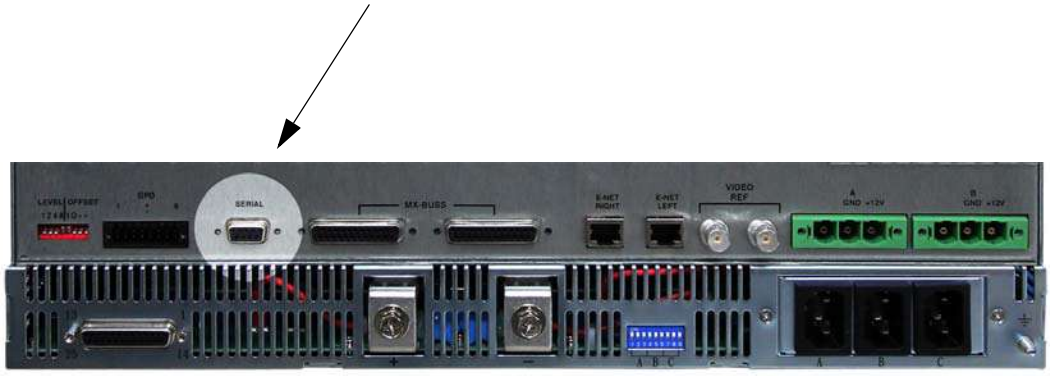



**Figure 1-8.**

### *Baud Rate Information*

| | |
|---|---|
| Baud | 115,200 |
| Data Bits | 8 |
| Stop Bits | 1 |
| Parity Bits | N |
| Handshake | XON/XOFF |
| Output Translation | CR = CR |

### *Pinout Information*

| Pin | Signal Name | Direction |
|---|---|---|
| 2 | Receive Data | In |
| 3 | Transmit Data | Out |
| 7 | RTS | Out |
| 8 | CTS | In |
| 5 | Ground | |

## Ethernet Port (Future Use)

The 10/100 ethernet ports are used as a diagnostic and monitoring ports. Connect these to a standard ethernet network. Each port is directly connected to its corresponding controller located in the chassis.

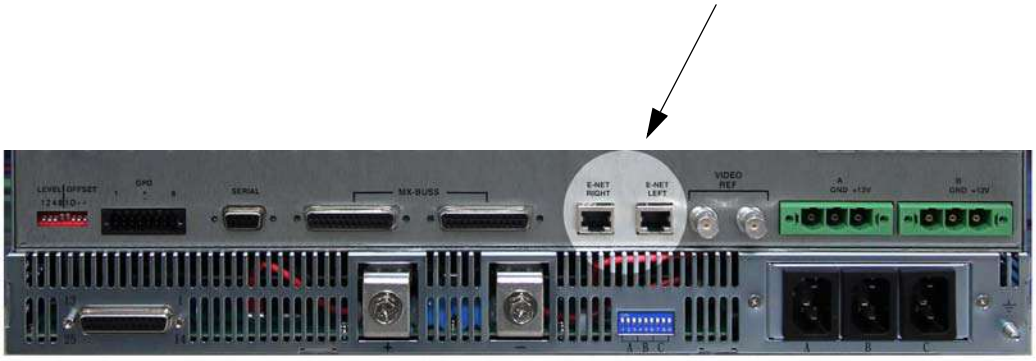



**Figure 1-9.**

## GPIO Port

**Figure 1-10.**

The GPIO block provides the following functions:

| GPIO# | Direction | Function |
|---|---|---|
| 1 | INPUT | Indicate Power Supply Failure |
| 2 | INPUT | Unconnected (TBD) |
| 3 | INPUT | Controller Changeover |
| 4 | INPUT | Crosspoint Changeover |
| 5 | OUT | SMPTE Alarm |
| 6 | OUT | TBD |
| 7 | OUT | TBD |
| 8 | OUT | TBD |

To activate a GPI input, short the + and - leads together.

When the SMPTE Alarm is active, there will be a short circuit across the + and - pins.

## Connecting Cables

### Video Cables

Use high quality coaxial cable with HDBNC ends to connect to the UDS system. The input and output numbers are silk-screened on the rear of the chassis.

**IMPORTANT NOTE:***SC4 and SC400 control systems are zero based. This means that SC4 input 0 corresponds to the input labeled 1 on the router, 1 corresponds to 2, etc. Make sure to take that into account when connecting cables.*

### MX Bus Cables

The UDS 288 routing system utilizes the MX-Bus control system. It must be connected to the SC-4 control system to switch its inputs and outputs. In addition, the proper levels and offsets must be set on the UDS 288 routing system(s) so they will operate on the proper signal levels.

The MX-Bus is a daisy chain configuration, must not exceed 300 feet (91.4 meters) in length; and must be terminated at both ends of the daisy chain.

Your UDS 288 router is shipped standard with one MX-Bus Cable - 10 ft. (USI Part Number: 80299-10). Other lengths are available and may be ordered through Utah Scientific sales at 1 (800) 453-8782.

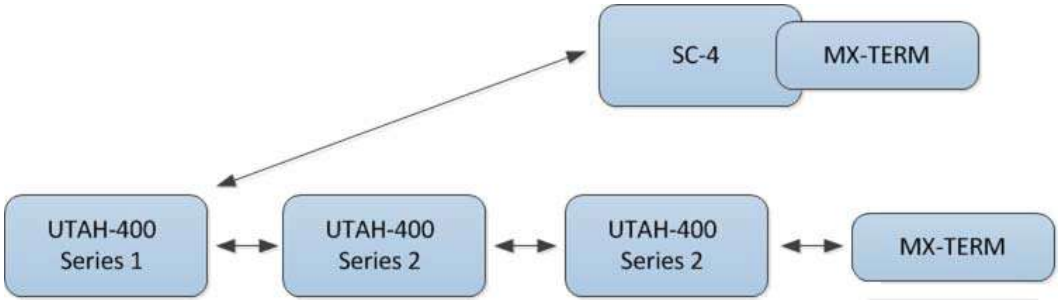



**Figure 1-11.**

Note the necessary termination on the MX-Bus in the above illustration.

## *UDS288 Crosspoint Card – 121414-1*

### *General*

The 121414-1 Crosspoint Card is the central component in the 10 RU UDS288 router. It contains circuitry to control a 288x288 switching array based on commands from the MX-BUS, power supply circuitry and alarm reporting circuitry.

**Figure 1-12. Crosspoint Card - part # 121414-1**

### *Circuit Description*

The upper end of the card is the power supply section. There are modules that convert the system 12V down to the 3.3V, 2.5V, 1.8V and 1.2V. U7 monitors these voltages and will generate alarms if any are faulty. PWR OK, a green LED on the board front edge, lights when all supplies are good.

The lower end of the card contains all of the control circuitry on the board. This consists mainly an 16 bit DSP, and a FPGA. The FPGA receives commands from the external MXBUS and switches the crosspoint chip appropriately, while the DSP monitors the health of the board and reports that back to the system level Frame Controller Module for reporting to the external world.

The video switching core of the system is in the center of the board, under the heat sink. This is a 3.2Gb/Sec 288x288 crosspoint chip in a 2398 ball BGA package. It receives the 1.2V and 1.8V rails from the power supply section, a 30 bit control bus from the FPGA, and 288 inputs from video input cards and drive 288 video outputs to output cards.

### *Controls and Indicators*

Controls

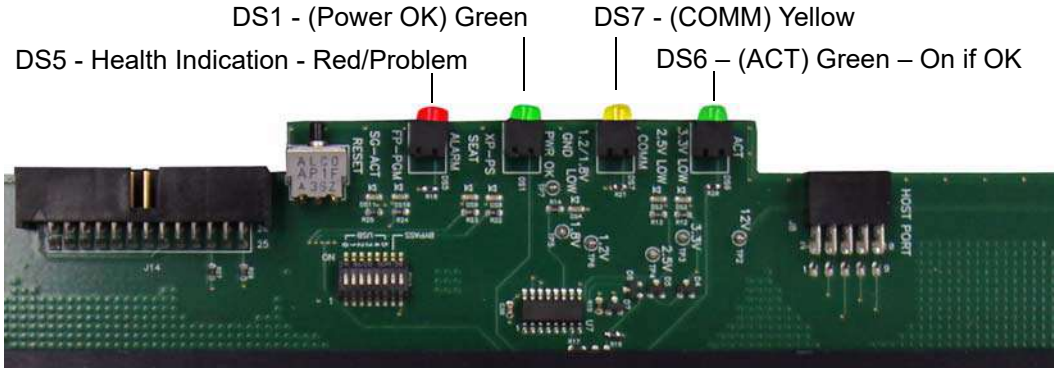
SW2 – Momentary push button reset switch. Resets all processing on the card.

SW1 – 8 Position Dipswitch. Used for board programming and custom settings.

J8 - Header for connection of a JTAG pod for programming the FPGA.

J14 – Header for programming the DSP, from a PC parallel port.

P1 – Used for serial diagnostics of the card from a RS-232 port.




**Indicators**

DS4 – 1.2 or 1.8V failure indication – RED.

DS3 – 2.5V failure indication – RED.

DS2 – 3.3V failure indication – RED.

DS8 – XP Power Supply OK indication – GREEN.

DS5 – Health Indication – (ALARM)RED – On if there is a problem.

DS7 – Communication from FCM indicator – (COMM)Yellow.

DS6 - Communication to crosspoint chip – (ACT)GREEN – On if OK.

DS1 – Power Supply OK LED – (PWR OK)GREEN.

DS9 – Seating LED – Indicates that the crosspoint card is correctly installed in its slot when green.

DS10 – FPGA programming complete – GREEN.

DS11 – Scangate active LED – Yellow.

## UDS288 Frame Controller

### Overview

Part # 121412-1, the UDS288 Frame Controller Module (FCM) has the system function of coordinating all switching and reporting functions from the control system and applying them to the router hardware. It has several communications busses, including the Utah Scientific MX-Bus which carries crosspoint switches and general status to and from the control system, a diagnostic serial port, and an Ethernet port for more detailed status and control.

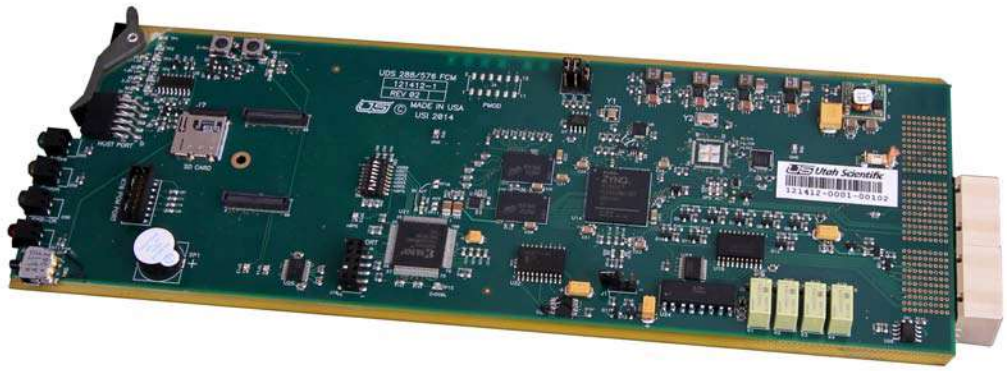


**Figure 1-13. UDS-288 Frame Controller - 121412-1**

### Circuit Description

The heart of the FCM is a Kinetis K70 SOM/FPGA combination that allows the FCM to process the large amount of switches required for this system.

Dedicated high speed control and status busses to each crosspoint and 6 busses that communicate to the total IO cards make up the interconnect between the FCM and the other boards in the system. The FCM operates as a redundant pair with an identical card in the adjacent slot.

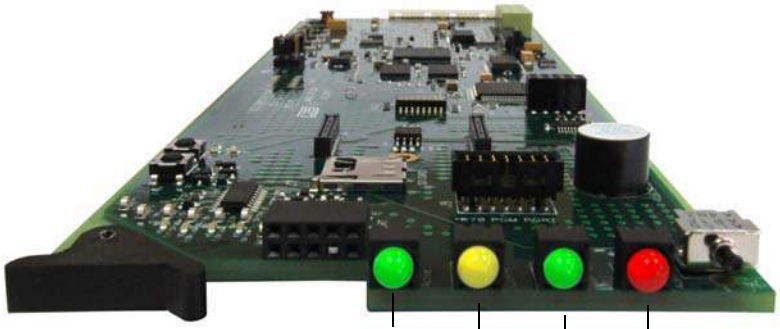
### *UDS288 Frame Controller*

**Controls and Indicators**

Controls for this card are concentrated on the router rear panel, in the Ethernet and Diagnostic serial ports. The only board level control is the Speaker Enable or Disable jumper, J11, that allows the audible alarm to be turned off (on = pins 1-2, off = 2-3). The audible alarm sounds any time that the SMPTE alarm is on.

The following LED's indicate different board conditions:

- DS11 – SMPTE Alarm – (Alarm)RED – Red when any error condition exists.
- DS5 – Active – (Active)Green – When illuminated indicates that this is the Active card in the pair and is currently managing the system.
- DS8 – Power OK – (PWR OK)Green – Illuminated when all on board power supplies are OK.
- DS1 – 1.0 & 1.5V LOW - RED - Indicates an alarm condition for the on board 1.0V and 1.5V power supply.
- DS2 – 1.8V LOW - RED - Indicates an alarm condition for the on board 1.8V power supply.
- DS3 – 3.3V LOW - RED - Indicates an alarm condition for the on board 3.3V power supply.
- DS4 – 5V LOW - RED - Indicates an alarm condition for the on board 5V power supply.



## *UDS288 FCM Field Software Update*

The UDS 288 FCM, part number 121412-1, has the ability to boot from an SD Card as a software update mechanism.

All cards ship from the factory using internal memory to load their programming files from. If a software update is required, you will be shipped an SD Card preloaded with the correct software from USI service personnel. The update is a two step process.

1. Insert the SD card into the holder pictured below.

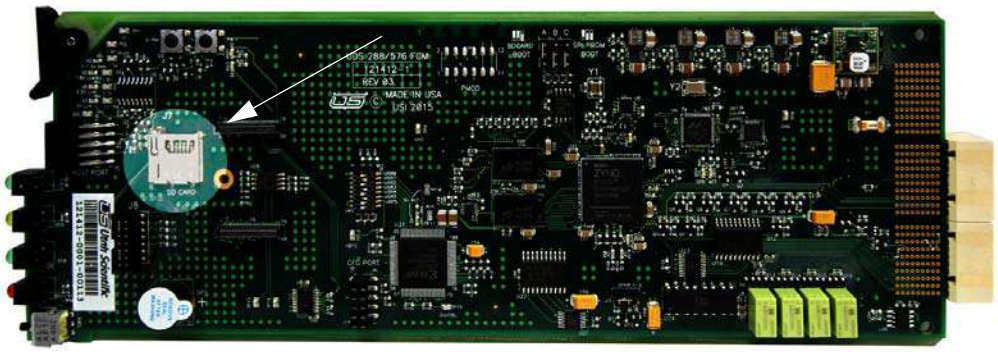


**Figure 1-14.**

2. Move the jumpers J1, J23 and J3 into the ‘SDCARD Boot’ position.

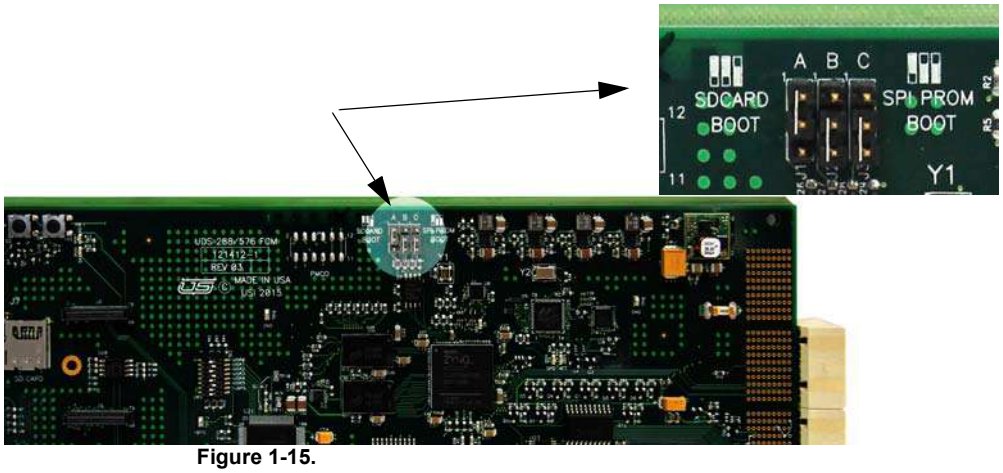



**Figure 1-15.**

3. Re-install the card and continue with normal operation.

## Coax Input Card 121415-1 (up to 12G)

### General

The SDI Coax input card is responsible for receiving, reclocking, and presenting the input signals to the crosspoint card. It has 16 HDBNC connectors, 16 SDI Cable equalizers, with reclockers. The reclocking components automatically detect, lock to and re-time the incoming SDI signals. If a non-standard signal is presented to the card, the reclocker will automatically bypass and allow the signal thru without re-timing it.

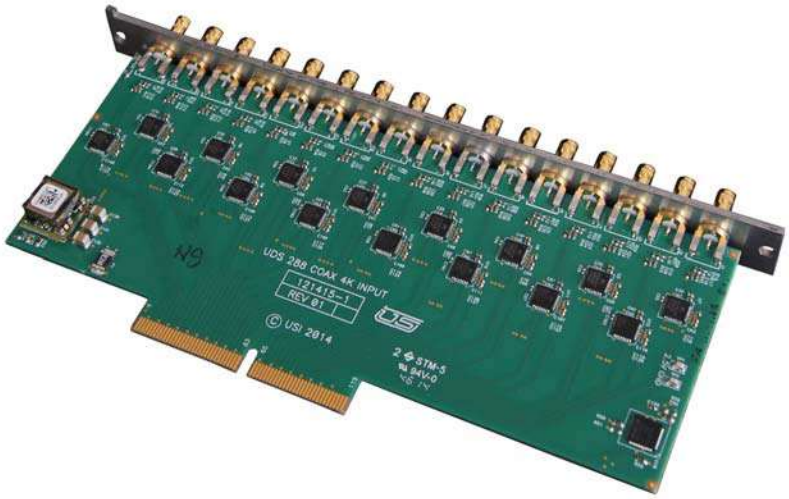



**Figure 1-16.**

### Circuit Description

12 V is received by this card and regulated down to 2.5V.

SDI cable equalizers are capable of equalizing more than 50 meters of 1694A cable when using 11.88 Gbps signals.

There is an I2C based IO expander that identifies the card to the control system. This component also allows the system to provide status of IO card functionality to the user interface.

### Controls and Indicators

This card has a single Power OK indicator, DS1, which shines thru the rear of the chassis to indicate the card is active.

## *Fiber Input Card 121423-1 (up to 3G)*

### *General*

This card can be populated with a variety of SFP receiver devices to allow for different functionality. It allows for 8 dual DFP connections, allowing 16 total inputs. The list of SFP module types is –

1. DUAL Single mode 1220-1620nM SFP – 94061-01.
2. DUAL CVBS to SDI Converter (HDBNC) – 94061-06.
3. DUAL SDI Receiver with reclocking – 94061-09.
4. DUAL Multi Mode 850nM SFP – 94061-11.
5. HDMI Receiver with HDMI connectors. 14003-40
6. HDMI Receiver with DVI connector. 140033-41

*The HDMI Receiver occupies both ports in the SFP cage, making 1 input inaccessible. The receiver uses the upper input. (i.e., if the slot corresponds to inputs 1 and 2, the signal will display on the router input 2).*

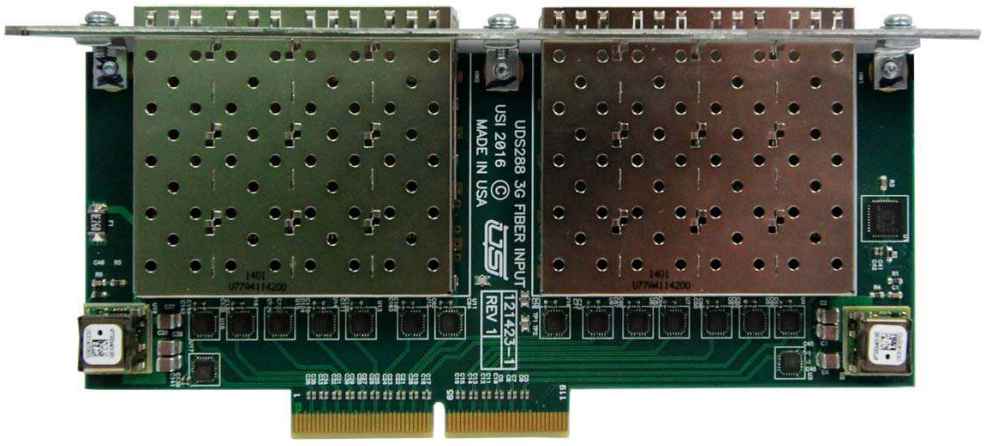



**Figure 1-17.**

### *Circuit Description*

Component U2 receives and regulates 12V into 3.3V to be used by the SFP's and 2x2 crosspoint 2G.

Component U19 receives and regulates 12V into 1.2V to be used by the 2x2 crosspoint 2G.

Component U1 is the system identifier I2C based IO expander, which allows board presence to be communicated to the user.

### Controls and Indicators

None.

### Control Interface

**Figure 1-18. HDMI SFP**

## *Fiber Output Card 121424-1 (up to 3G)*

### *General*

This card can be populated with a variety of SFP transmitter devices to allow for different functionality. It allows for different functionality. It allows for 8 dual DFP connections, allowing 16 total outputs. The list of SFP module types is -

- DUAL Single mode 1310nM SFP - 94061-02
- DUAL SDI to CVBS Converter (HDBNC) - 94061-03
- DUAL SDI Transmitter reclocking - 94061-06
- DUAL Multi Mode 850nM SFP - 94061-12
- CWDM Modules of different frequencies are also available.
- HDMI Transmitter with HDMI connector - 140033-42
- HDMI Transmitter with DVI connector - 140033-43

**Note:** *The HDMI transmitter occupies both slots in the SFP cage, making 1 output inaccessible. The transmitter uses the lower port. (i.e., if the slot corresponds to router outputs 1 - 2, the SFP will output the signal switched to output 1.*

**Figure 1-19.**

### *Circuit Description*

Component U2 receives and regulates 12V into 3.3V to be used by the SFP's.

Component U19 is the system identifier I2C based 1.2V expander, which allows board presence to be connumicated to the user.

### Controls and Indicators

None.

### Control Interface

**Figure 1-20. HDMI SFP**

## Coax Output Card 121417-1 (up to 3G)

### General

The SDI Coax Output card is responsible for driving the switched video signals down coaxial cables in a SMPTE compliant fashion. It has 16 HDBNC connectors and 16 SDI Cable drivers on it.

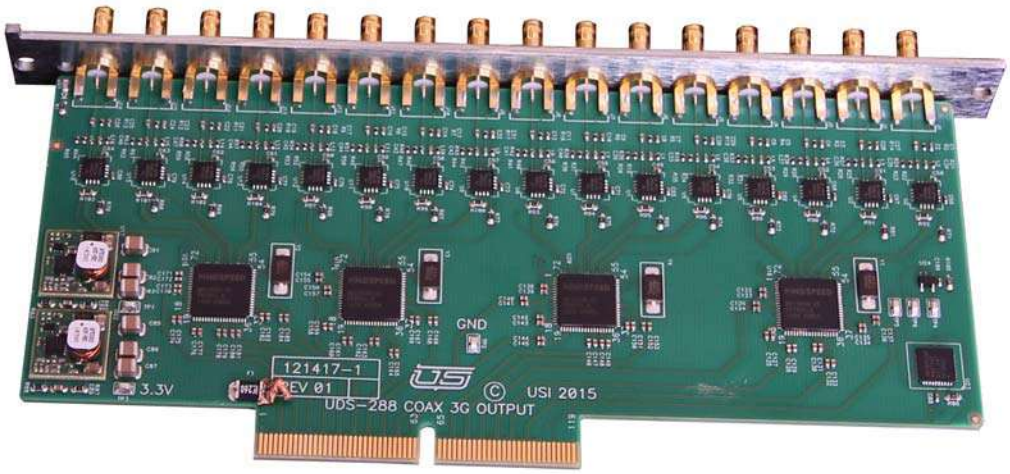



**Figure 1-21.**

### Circuit Description

12 V is received by this card and regulated down 3.3V and 1.2V.

There are four Quad Reclockers that supply high quality signals to the cable drivers for a nominal output of 800 MV. There is a I2C based IO expander that identifies the card to the control system. Controls and Indicators.

This card has a single Power OK indicator, DS1, which shines thru the rear of the chassis to indicate the card has power (3.3V).

## Coax Output Card 121416-1 (up to 12G)

### General

The SDI Coax Output card is responsible for driving the switched video signals down coaxial cables in a SMPTE compliant fashion. It has 16 HDBNC connectors and 16 SDI Cable drivers on it.

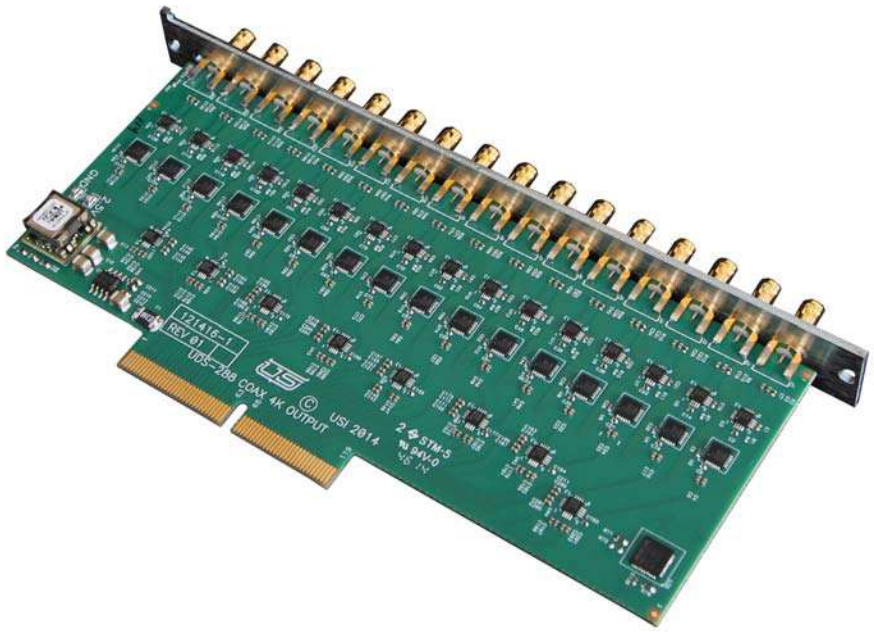



**Figure 1-22.**

### Circuit Description

12 V is received by this card and regulated down 3.3V and 2.5V. There are eight high bandwidth switches that route signals from the active crosspoint card to reclockers and cable drivers for a nominal output of 800 MV. There is an I2C based IO expander that identifies the card to the control system. Controls and Indicators.

This card has a single Power OK indicator, DS1, which shines thru the rear of the chassis to indicate the card has power (3.3V).

## Coax Output Card 121417-1 (up to 3G)

### General

The SDI Coax Output card is responsible for driving the switched video signals down coaxial cables in a SMPTE compliant fashion. It has 16 HDBNC connectors and 16 SDI Cable drivers on it.

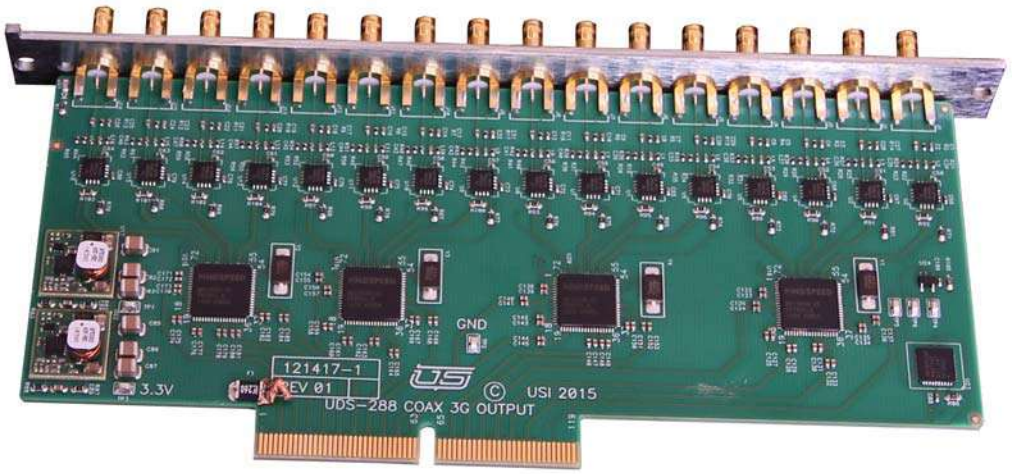



**Figure 1-23.**

### Circuit Description

12 V is received by this card and regulated down 3.3V and 1.2V.

There are four Quad Reclockers that supply high quality signals to the cable drivers for a nominal output of 800 MV. There is a I2C based IO expander that identifies the card to the control system. Controls and Indicators.

This card has a single Power OK indicator, DS1, which shines thru the rear of the chassis to indicate the card has power (3.3V).

# Section 2

## UTAH-100/UDS Browser Utility

# Network Configuration

### Introduction

This guide describes the network configuration for the UTAH-100/UDS Router and Panel. Using two setup scenarios; New Configuration on an Independent Network, and New Configuration on an Existing Network. These are the first steps required to configure and control the system.

## System Setup Requirements

- Windows™ operating system 7
- Java 7.07™ or newer
- Internet Explorer™, Firefox™, or Chrome™
- Ethernet connection

All UDS devices - PC, Router, and Panel - connect over Ethernet on a house network, or within a stand-alone (direct) mode. The system will provide default IP address during setup, or you can use unique IP addresses if required within your operation.

# UTAH-100/UDS Network Configuration

## *New Configuration on Independent Network*

This scenario consists of a router and a panel working in a stand-alone mode with one or more PC to complete an independent, stand alone network.

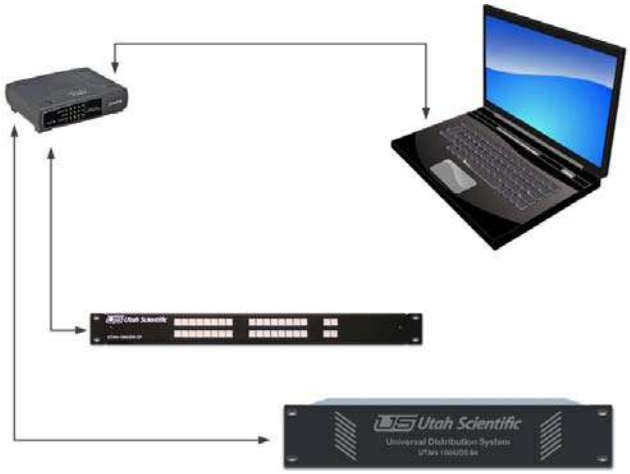



**FIGURE 1.**

New configuration on an independent network is relatively simple, involving Ethernet connection between the PC and devices (router and panel) only, as a stand alone network. Simply connect all devices together as shown in Figure 1 for basic setup. In this case you will only need to set the PC address to the same subnet as the router and panel. This will facilitate applet operation and table configuration. The following default IP addresses (below) ship from the factory. The numbers will be consecutive in the case of multiple panels; i.e., .182, 183, etc.

**Routers - 192.168.5.180**
**Panel - 192.168.5.181**

To change the devices to use non default addresses, see *New Configuration on an Existing Network* (next). Also note, the PC and devices (router and panel) must occupy the same subnet.[1] See your network administrator for configuration assistance if no default subnet appears.

1. All routers and panels require separate IP addresses.

*Online instruction is also available by accessing the HTML help file located within the applets, which will also provide details for setup and configuration of the router and panel tables.*

## New Configuration on an Existing Network

This procedure describes new configuration on an existing network. Use this routine if you need to modify the router or panel's network parameters. The steps below are based on the default set of parameters.

On the PC, click Control Panel, Network and Internet, Network Sharing Center, then Change Adapter Settings.[1]

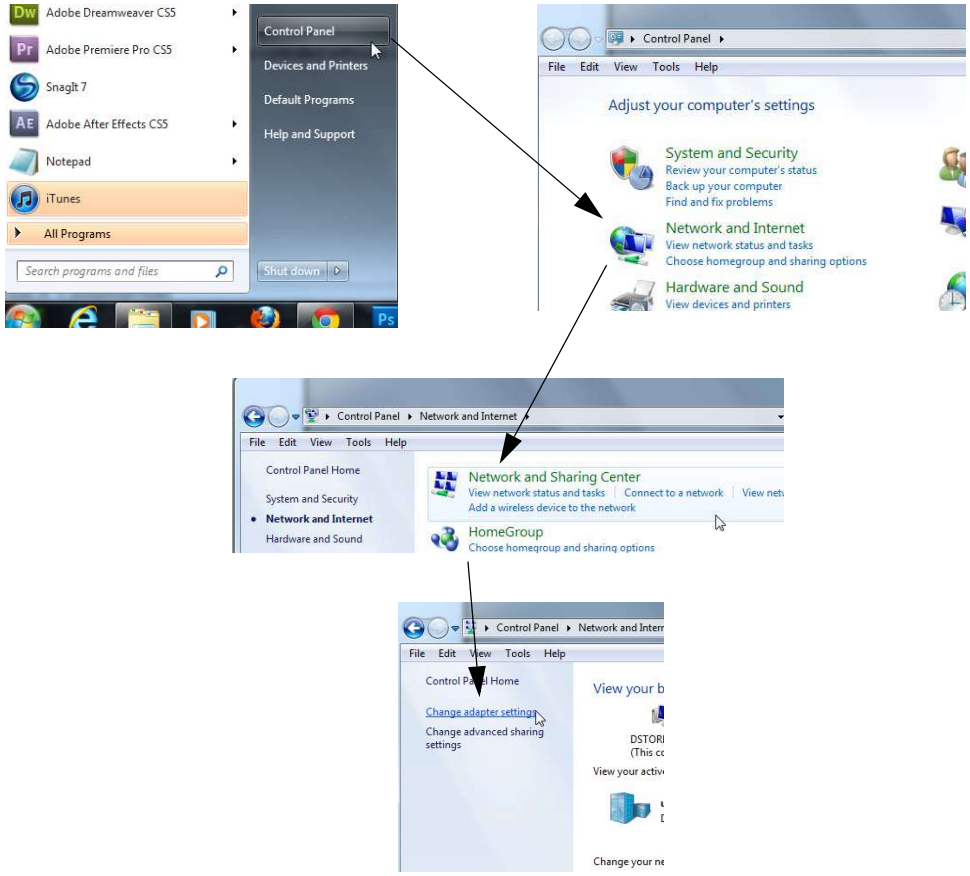



**FIGURE 2.**

1. These steps are based on Windows 7 operation.

When the following window appears, right-click the icon to produce the drop-down menu, then select *Properties*.

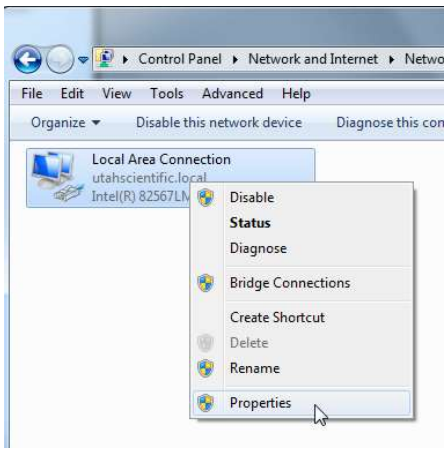



**FIGURE 3.**

The following window will appear.

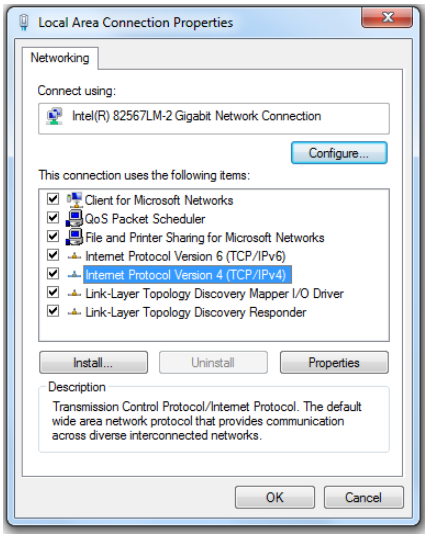



**FIGURE 4.**

Select Internet Protocol Version 4, then click the Properties button. The following window will appear.

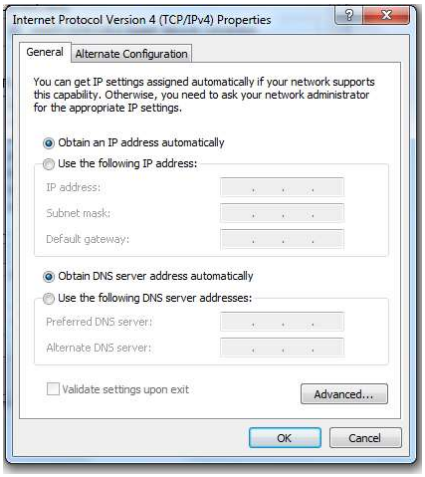



**FIGURE 5.**

Click the second radio button down to set a static IP address.

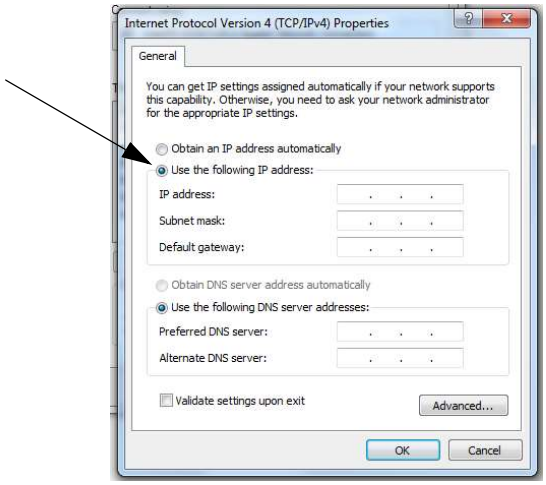



**FIGURE 6.**

Enter the following address into the indicated cell (192.168.5.2)[1]

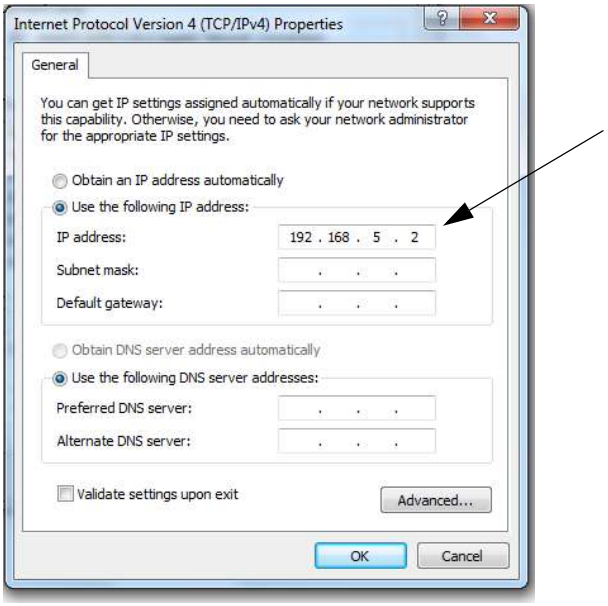



**FIGURE 7.**

Accept the Subnet mask default, then click OK.

Now connect your PC or laptop to the router with a standard Ethernet cable.

**Note:** *A crossover cable (typically used with an Ethernet connection) is not necessary as the signal 'switch' is done internally.*

1. This is the subnet default address. You can substitute the last digit if required for your system. If your system contains a completely different subnet for the PC, routers, and panels, substitute the correct addresses where applicable.

# Router Applet Activation and Configuration

Launch your preferred browser and complete the following steps:[1]

a. Log into the Router Applet by entering 192.168.5.180 into your browser's URL line (default). If your router is using a different address than the default, enter it into the browser.

*NOTE: If the applet does not activate, try pinging the system by opening your command prompt and typing the router's IP address (address number ending in .180) to determine whether or not the connection is good. If you are unable to ping the device, check the connections or see the network administrator for additional help.*

*In addition, if you are unsure of the IP address, you may need to default the router to the factory IP address of 192.168.5.180.*

b. Accept the following advisory (checkbox) then click Run to continue

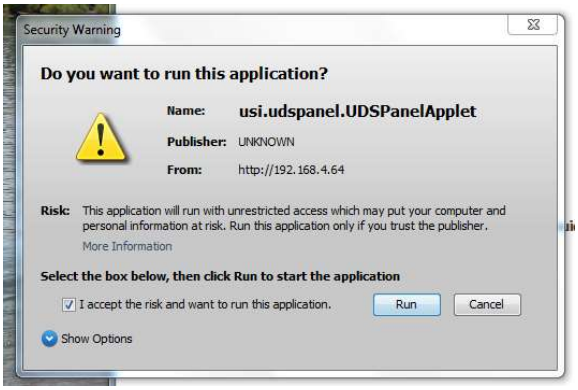



**FIGURE 8.**

1. IMPORTANT: You must use Java version 7 or later.

c. When the Router icons appears, select “Router Configuration”.

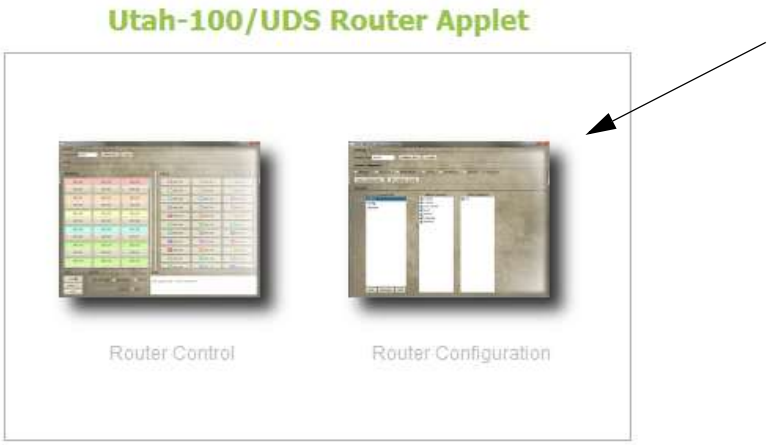



**FIGURE 9.**

*Note: You will only be able to connect if the browser window (shown in Figure 9) indicates “Applet ready for login.”*

d. Enter Username “admin” (default) - *in the username entry box*


e. Enter Password “admin” (default) - *in the password entry box*

f. Click the Data Comm (radio button) to change the network configuration.

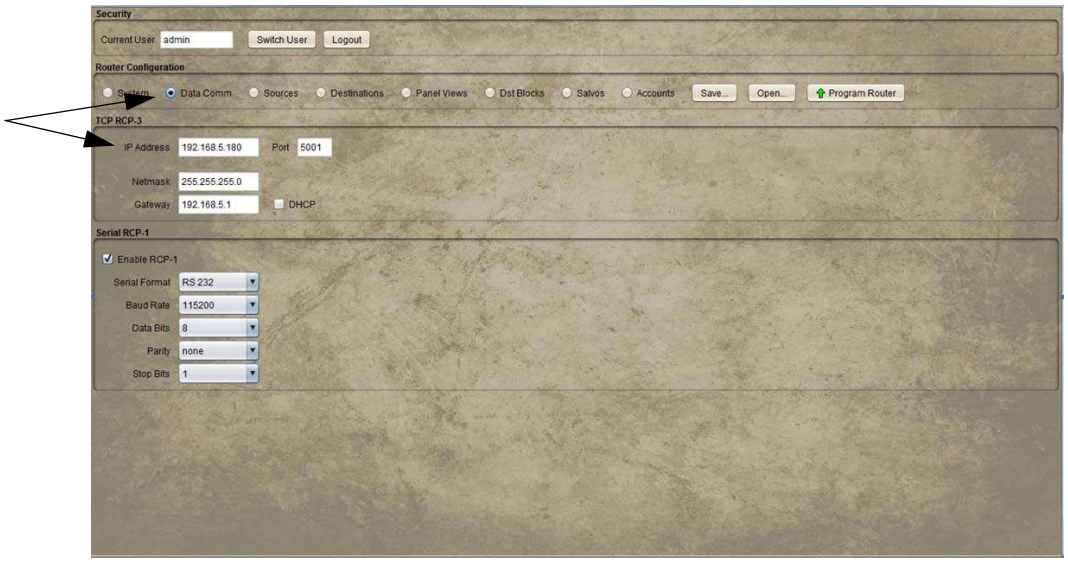



**FIGURE 10.**

***Note: The program will display the router's IP address (IP Address cell, above). It is important however that Net mask and Gateway remain constant among all devices, and to keep the DHCP box unchecked.***

g. Enter the desired IP address in the space provided.

h. Verify the Port setting of 5001.

i. Make sure the DHCP box is unchecked.

j. Click the "Program Router" button when the network configuration is complete.

k. A dialog will appear prompting you to reset the device. To make the IP changes active, reset the router by pressing (and quickly releasing) the small button at the far right side of the control module on the back of the router.

*Note: There is no need to restart the browser when the router is reset.*

Once the above steps are complete, the router can be placed on the target network and configured as needed.

## Panel Applet Activation and Configuration

Make sure the panel is plugged into the same network as the PC, and that the PC is set to the same subnet as the panel. This procedure allows the configuration from the Panel Applet in the absence of a physical router connection.

Log into the Panel Applet first by bringing up a web browser and entering 192.168.5.181 (factory default setting) in the URL browser box. Click the Panel Configuration icon to log in, as shown in the figure below.

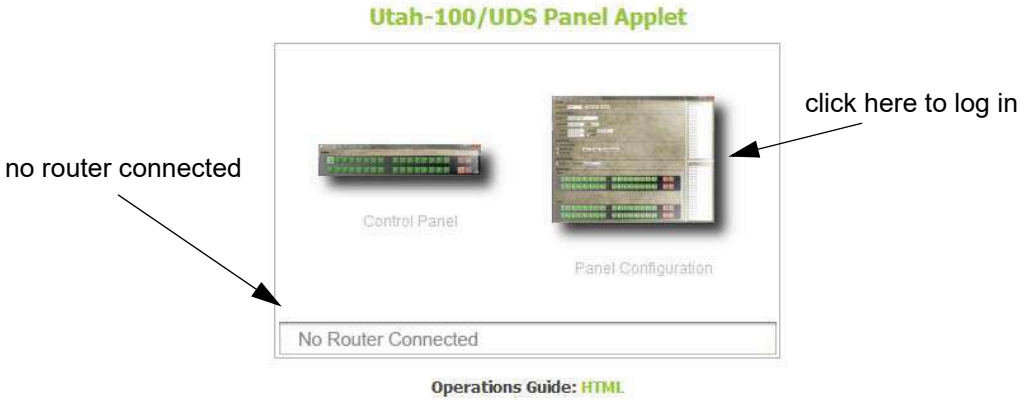



**FIGURE 11.**

In this mode, the Panel Applet dialog will indicate the router's absence.[1]

The following dialog will appear (with no router connected).


**FIGURE 12.**

1. This is a simple operational scenario with no router currently connected. You will be taken directly to the Configuration screen when the router and panel are simultaneously connected.

Since there is no router connected, click Cancel to dismiss this dialog.

The following window will appear, which will give you an opportunity to designate the necessary configuration detail.

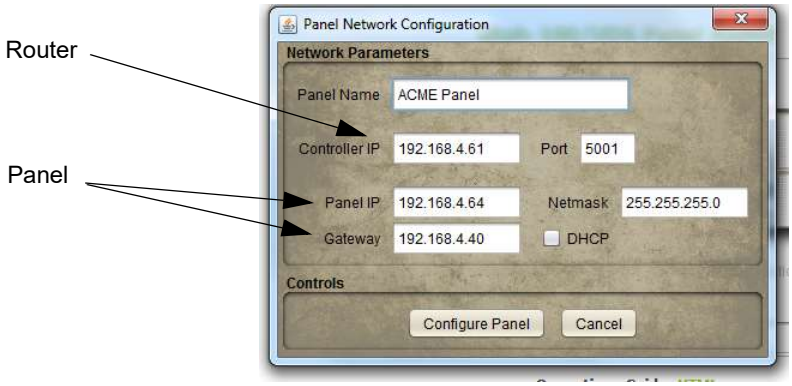



**FIGURE 13.**

The above illustration contains a default IP address (your address may be different). The Controller IP corresponds to the router address, while the Panel IP and Gateway are associated with the panel that you are using. Enter the correct addresses as needed.

Click **Configure Panel** when the correct addresses are in place, then reset the system.

A dialog will appear prompting you to reset the device. To make the IP changes active, cycle the power to the panel or reset the panel by pressing (and quickly releasing) the small button at the far right side of the control module (rear of panel).

Once the above steps are complete, the panel can be placed on the target network and configured as needed.

You can now log in to the router and panel applets to configure you system as needed using the newly configured IP addresses. The default username and password is ***admin***, in both cases. Once you have logged in, click the configuration icons to activate the configuration dialogs.

For additional assistance, please contact Utah Scientific Customer Service - 1(800) 447-7204.

# Section 3

## UTAH-100/UDS Browser Utility

# The Router Applet

### Router Configuration

Router Configuration is activated by launching the browser applet (using the supplied default IP address). This section contains the steps involved in activation and operation of the UTAH-100/UDS Router Applet.

The Router applet must be connected to the actual router to communicate properly. Once the necessary hardware is in place, start the application with the provided IP address, then launch the applet by clicking the Router Configuration icon.

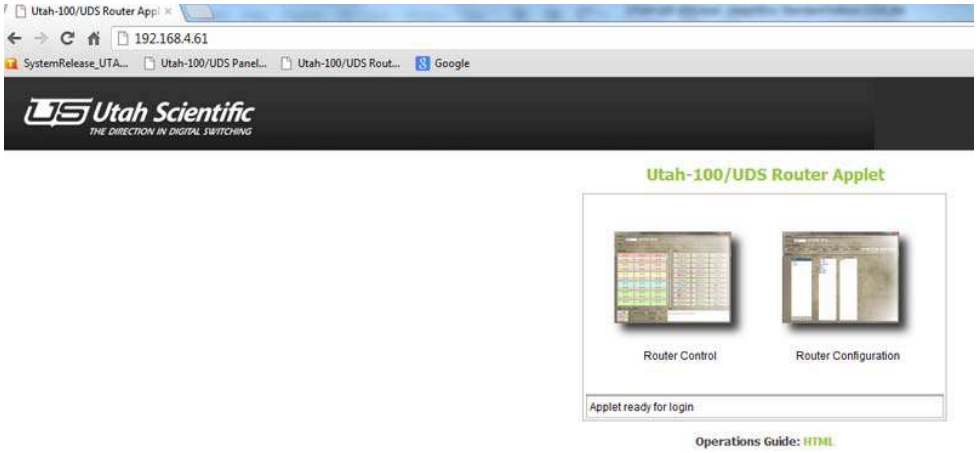



**Figure 3-1.**

You will be prompted to log in with your username and password. The default is admin/admin).


**Figure 3-2.**

This will activate the setup window. During a successful login, all associated accounts are loaded into the system at the time of the initial launch (*Current User*).


**Figure 3-3.**

## *Security*

The default user is listed in the 'Current User' cell. You can change users from the list of previously designated users (Switch User button). Users are *selected* from this dialog but not configured.


**Figure 3-4.**

## Data Comm

### TCP RCP-3 (Network)

This dialog is used to set Device Communications parameters. Network IP address, netmask, and gateway parameters are edited at this location along with the RCP-3 port setting. Alternatively, you can select DHCP to automatically set network parameters. The only way to verify the IP address setting in DHCP mode is to access the DHCP server.

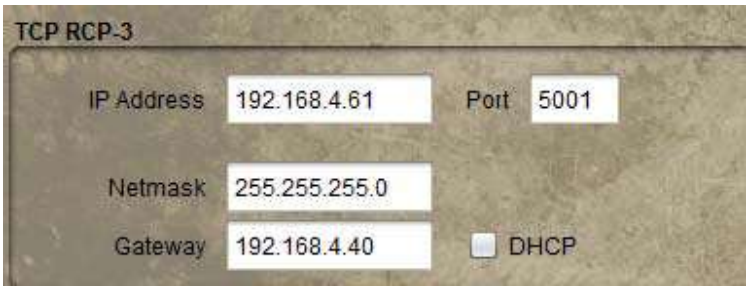



**Figure 3-5.**

### Serial RCP-1

This area allows for enabling or disabling RCP-1 (checkbox) and assigning the parameters associated with serial format, baud rate, data bits, parity, and stop bits.

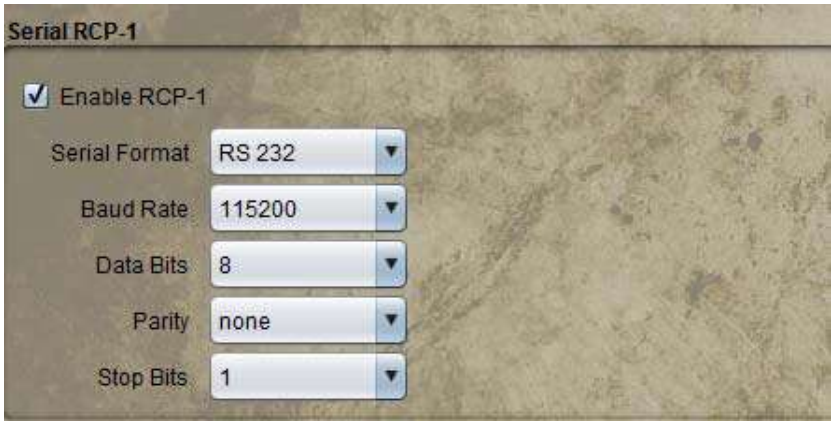



**Figure 3-6.**

### *DHCP*

In certain circumstances the default IP address is unusable and DHCP connectivity is expected. Click the DHCP box to activate the connection. The address cells will gray out when the box is clicked. The only way to verify the IP address setting in this mode is to monitor the DHCP server via serial connection.

Once network modifications are complete (IP changes), click the **Program Router** button.

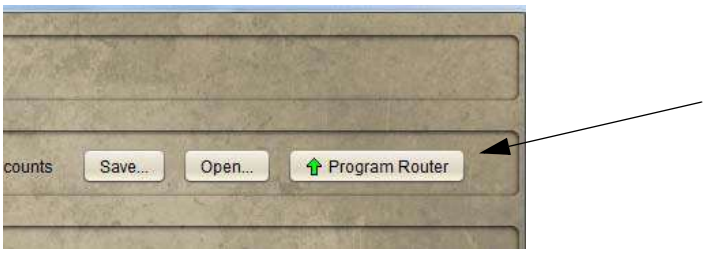



**Figure 3-7.**

The ‘configuration successful’ dialog will appear.


**Figure 3-8.**

### *Sources*

The program defaults with all sources configured. Since this is not the likely desired configuration, highlight the unwanted sources and click the Remove button.

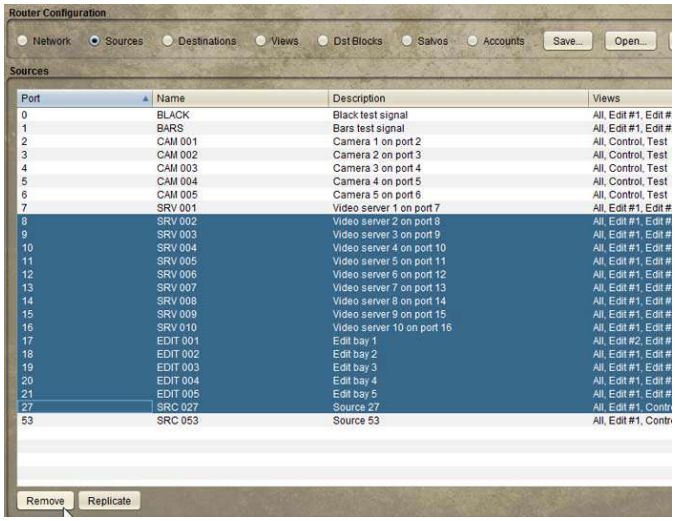



**Figure 3-9.**

## Source Creation

New Sources are defined and added by clicking the Replicate button.

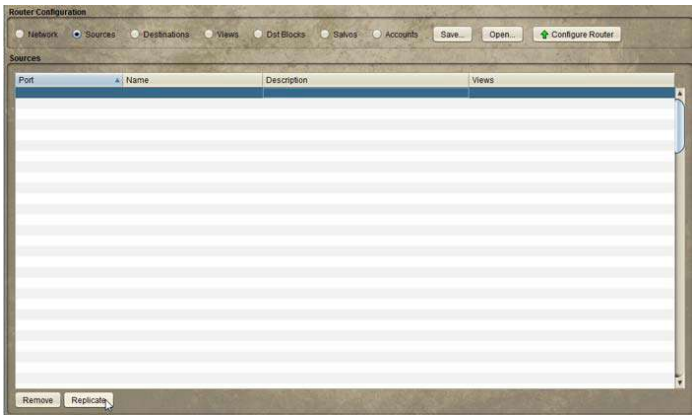



**Figure 3-10.**

Also, the Source table can be sorted by clicking on the desired column header.

In this example, the prefix is the three character descriptor for camera. Numeric suffix start is the 3 digit end definer associated with the device. Increment, and starting port number are all assigned as number ‘1’. The Description is a long form identifier, with ‘suffix’ placed inside ‘less than’ and ‘greater than’ symbols to allow the system to properly increment the devices in the listing. ‘All’ views are selected, and the number of devices requested for the list count is ‘5’.

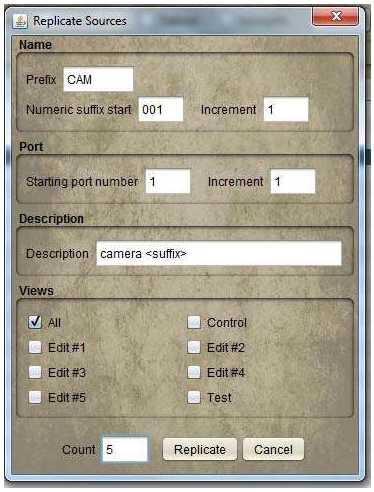



**Figure 3-11.**

The resulting list display is illustrated below.

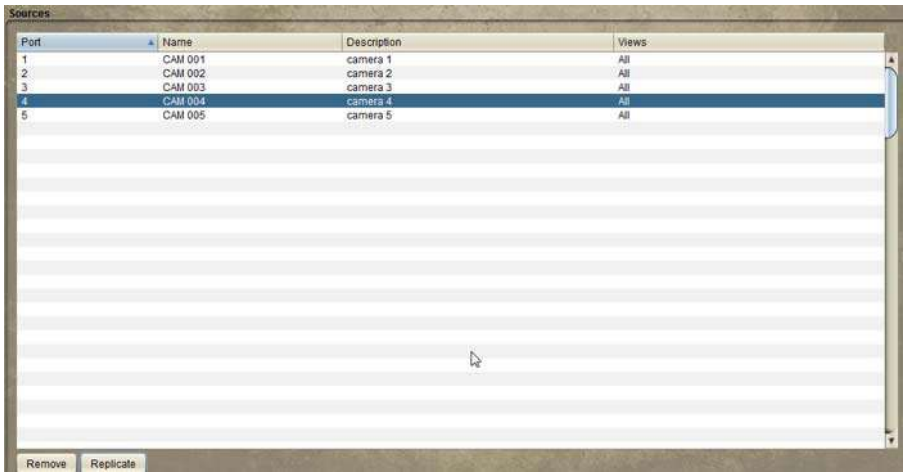



**Figure 3-12.**

### Source creation from within the list

Highlight the line and enter the definitions for Port, Name, and Description.

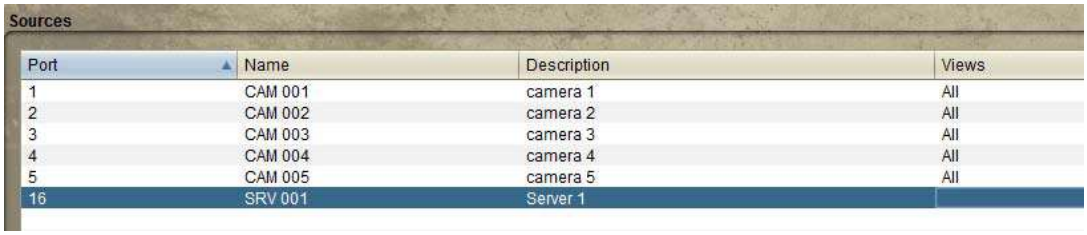



**Figure 3-13.**

Using this option to add Sources will not allow you to manually enter the View method. Click the View radio button to make this modification.


**Figure 3-14.**

Click the checkbox associated with the new Source, then highlight the desired view type within the View list.

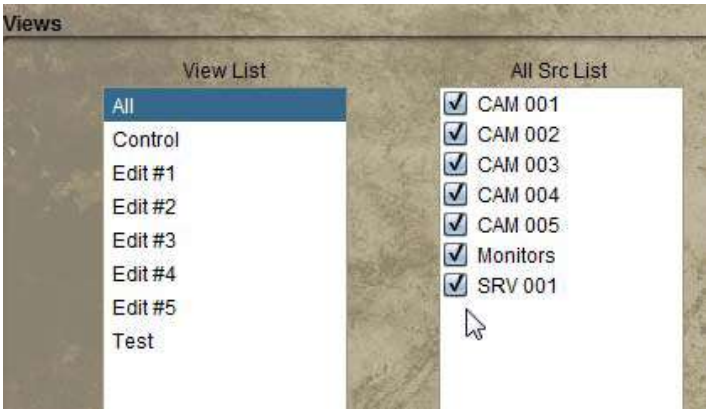



**Figure 3-15.**

Your new view will be associated when you return to the Sources window.

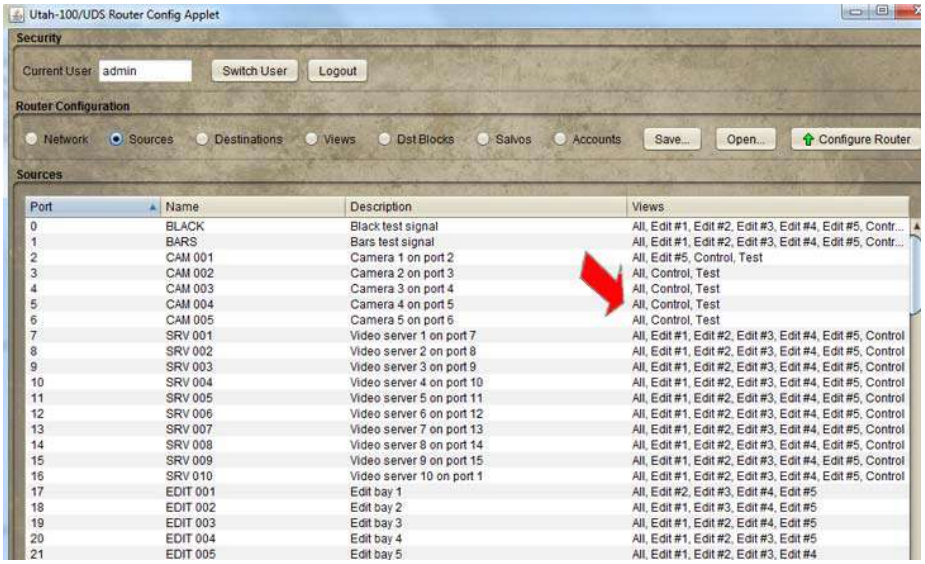



**Figure 3-16.**

### *Destinations*

The program defaults with all destinations configured. Since this is not the likely desired configuration, highlight the unwanted sources and click the Remove button.

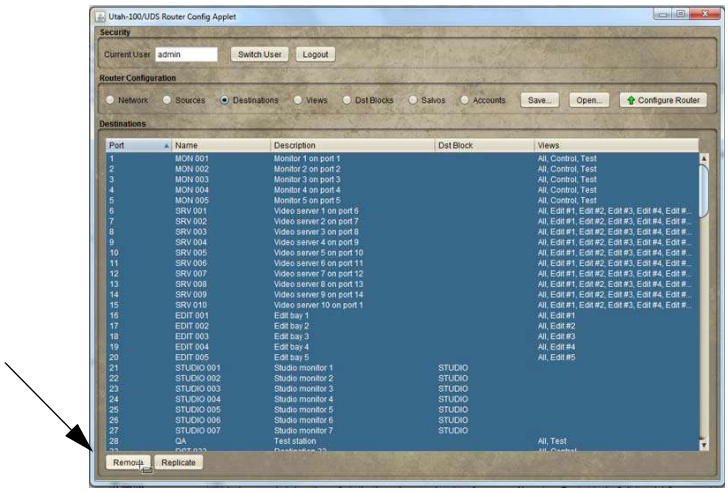



**Figure 3-17.**

## Destination creation

New Destinations are defined and added by clicking the Replicate button, or by entering data in the table directly. In addition, the Destination table can be sorted by clicking the desired column header.

**Figure 3-18.**

In this example, the prefix is the three character descriptor for camera. Numeric suffix start is the 3 digit end definer associated with the device. Increment, and starting port number are all assigned as number ‘1’. The Description is a long form identifier, with ‘suffix’ placed inside ‘less than’ and ‘greater than’ symbols to allow the system to properly increment the devices in the listing. ‘All’ views are selected, and the number of devices requested for the list count is ‘5’.

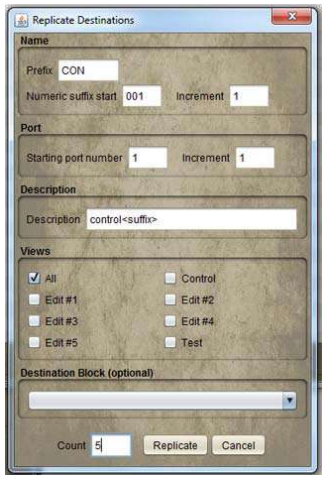



**Figure 3-19.**

The resulting list display is illustrated below.

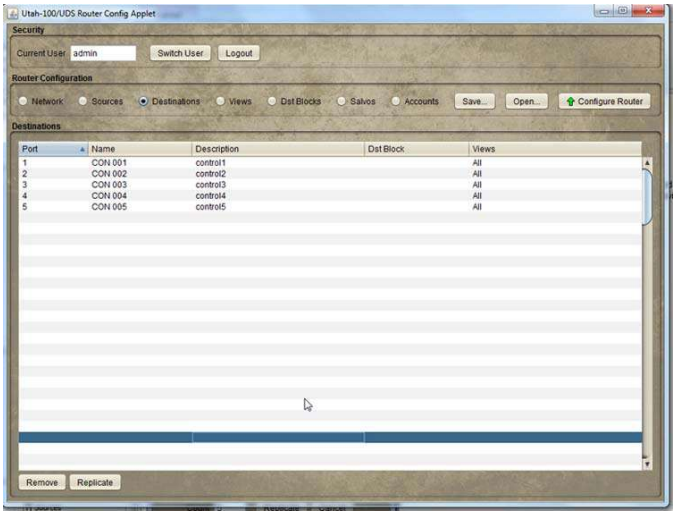



**Figure 3-20.**

### *Destination Creation from Within the List*

Highlight the line and enter the definitions for Port, Name, and Description.

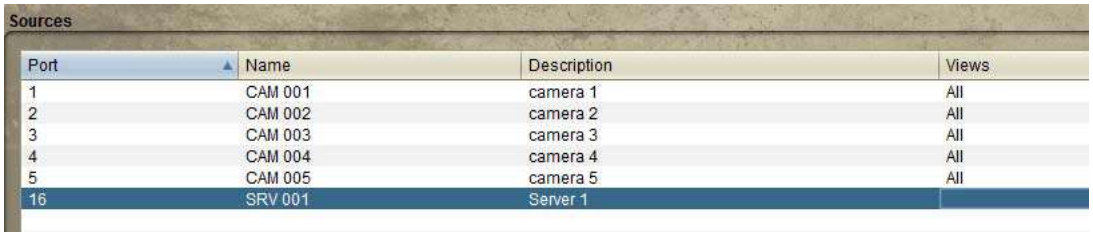



**Figure 3-21.**

Do this to overwrite the lines contents when the cursor becomes active.

Using this option to add Destinations will not allow you to manually enter the View method. Click the View radio button to make additional modifications.


**Figure 3-22.**

Click the checkbox associated with the new Destination, then highlight the desired view type within the View list.

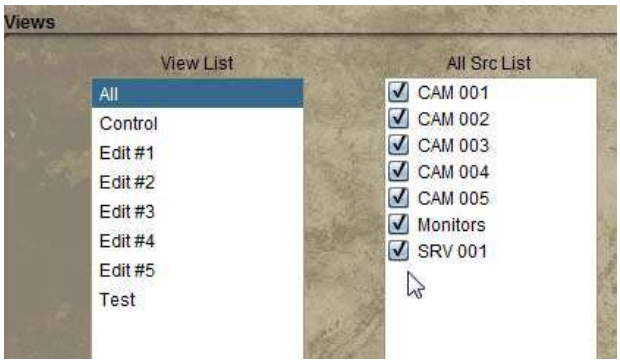




**Figure 3-23.**

You can also click the Destinations radio button and 'Replicate' in the same manner as with Sources. This involves adding Destinations to the list in the correct sequence.

The Replicate dialog window contains a pop down menu at the bottom, which will contain any previously created Destination blocks.

Click the **Configure Router** button when the needed destination blocks have been created.

## *Panel Views*

### Organizing

The *Views* selection is a way to organize Sources and Destinations into manageable groups for the router control window. Views will appear within the Source and Destination lists immediately after editing.

To facilitate this, click the *Panel Views* radio button, select the desired View from the list on the left, then click the checkboxes within the next two devices you would like associated with the View.

You can also create a whole new view by clicking the **Add** button at the bottom of the left-hand list.

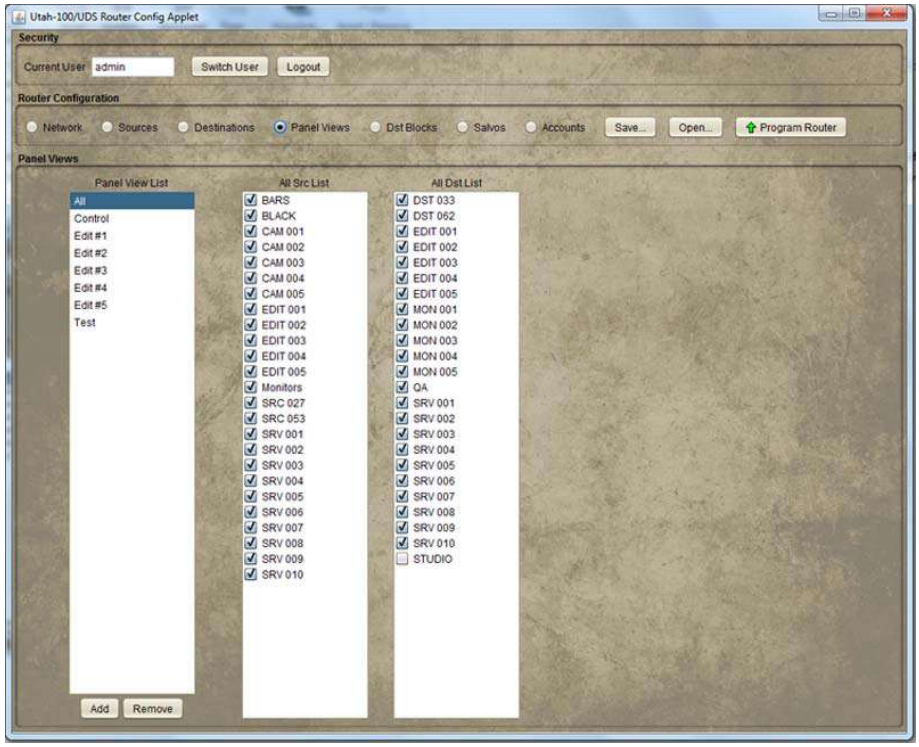
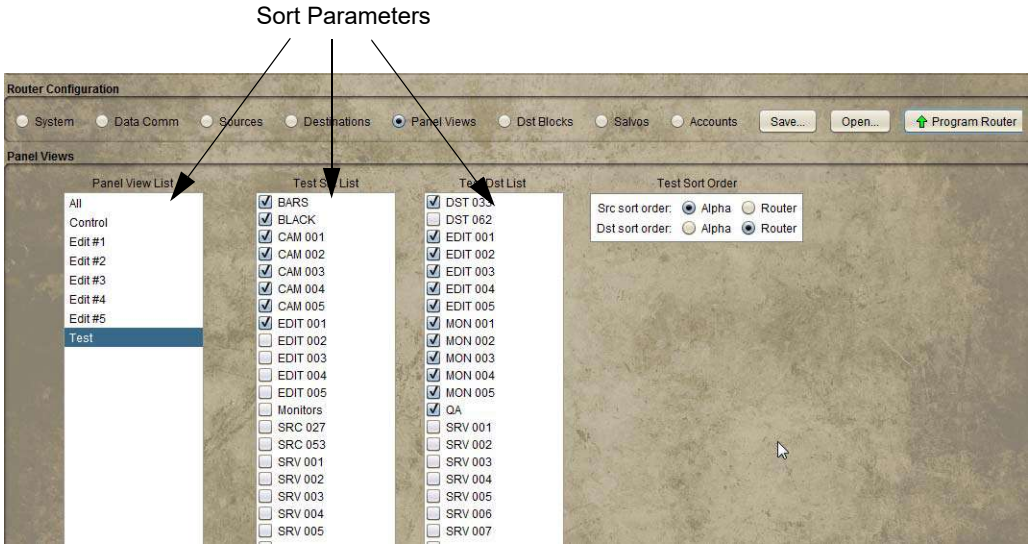



**Figure 3-24.**

### *Sorting Option*

With **Panel Views** selected, the *Sorting Option* is a way to organize Sources and Destinations into display lists (*Router Control* applet) based on a router or alphabetic port designation.

To access the sorting option, click the Panel Views radio button, the parameters you would like to sort within, then indicate the *All Sort Order* (Alpha or Router) and click the **Program** button.



## Router Sort

This is an example of the display that will appear within the Router Control Applet when Router Sort is indicated (Config Applet). Sorting is completed by *router port*.

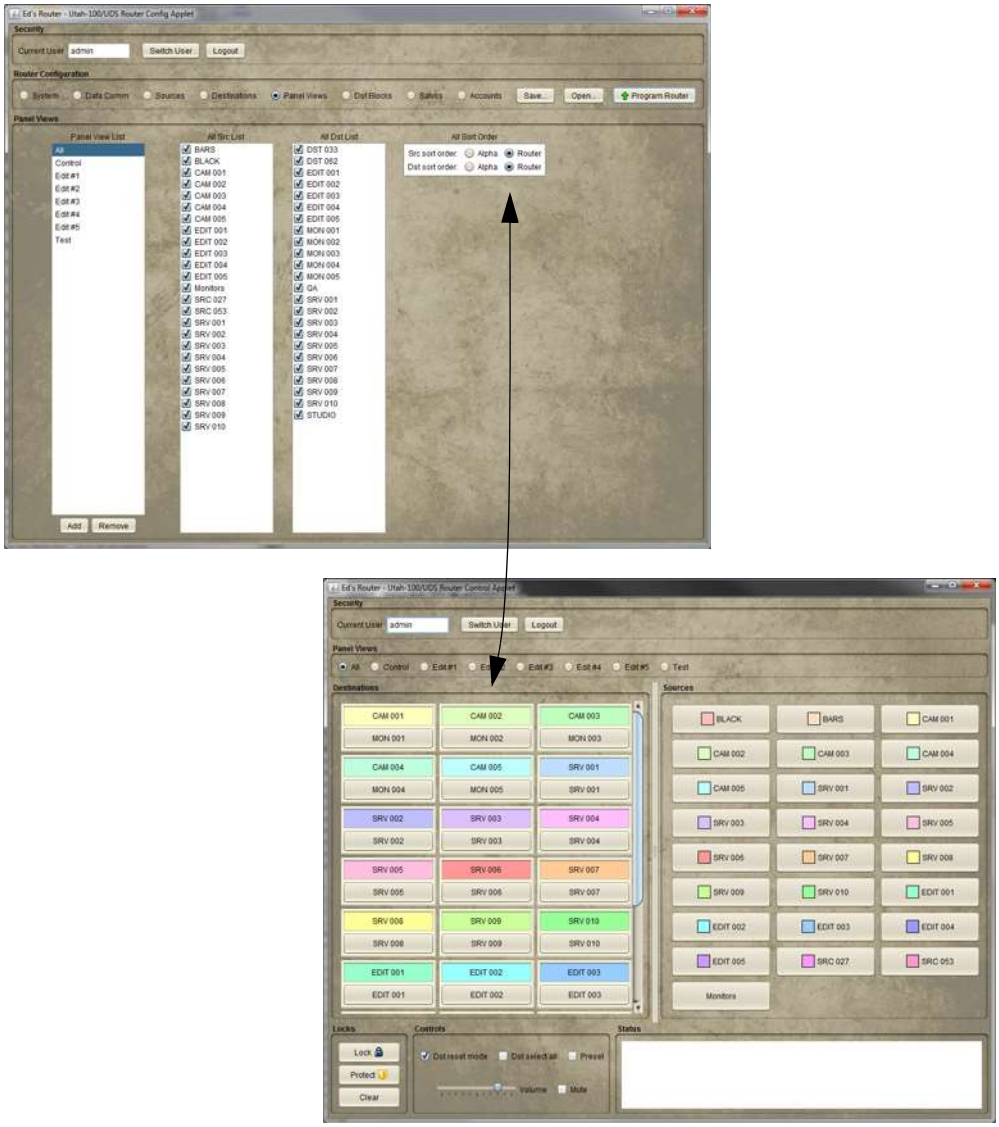


**Figure 3-25. Router Sort**

## Alpha Sort

And this is an example of the display that will appear within the Router Control Applet when Alpha Sort is indicated (Config Applet). Sorting is completed by *alpha numeric port*.

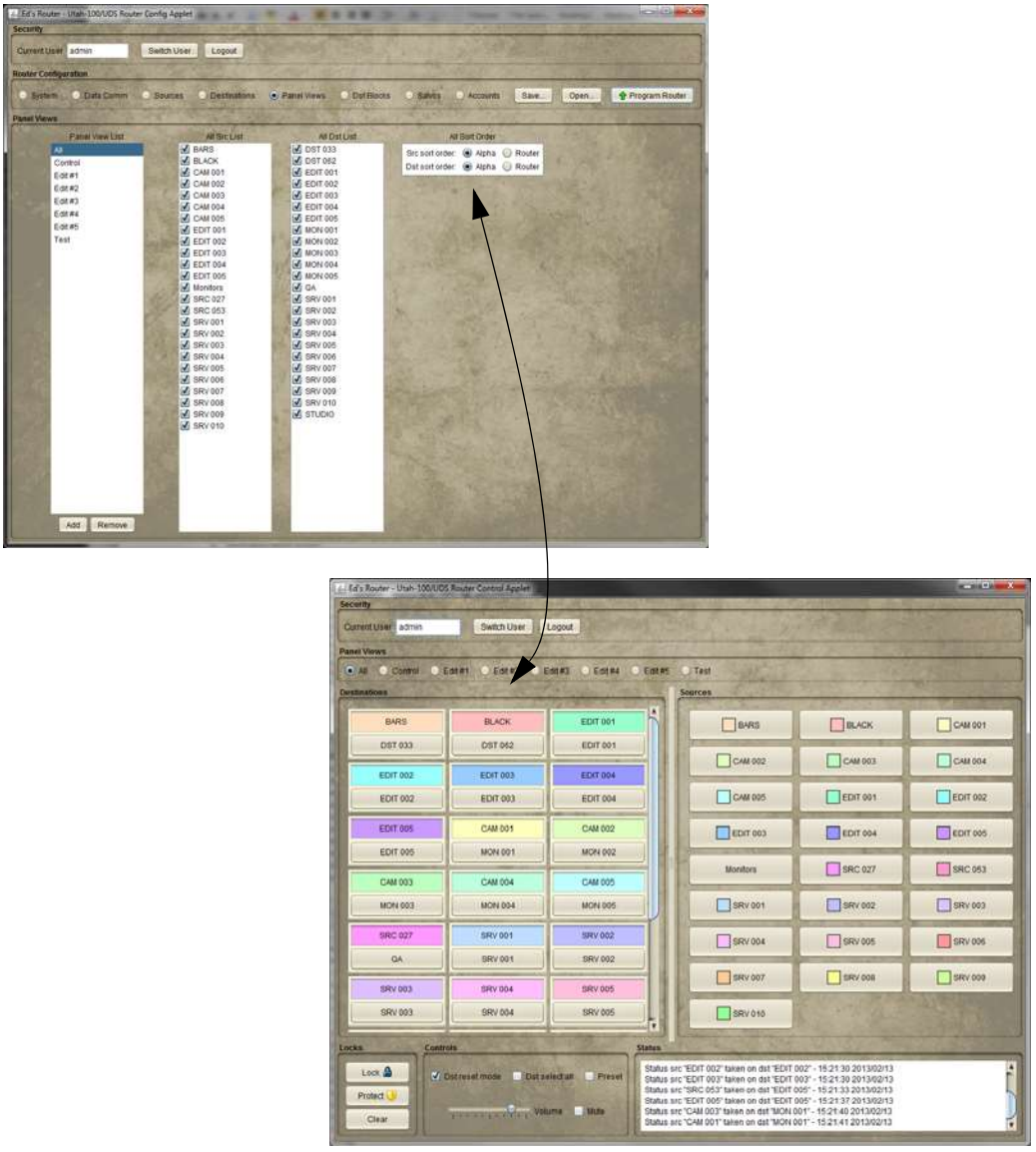


**Figure 3-26. Alpha Sort**

### *Destination Blocks*

The Destination Block is essentially a way to assign a destination grouping as a DA. Any pre-configured destination blocks will display in the drop down list inside this dialog window. This saves time by assigning an entire group, or block at once.

Click the Dst Block checkbox to activate this feature. Provide a name when the dialog appears.

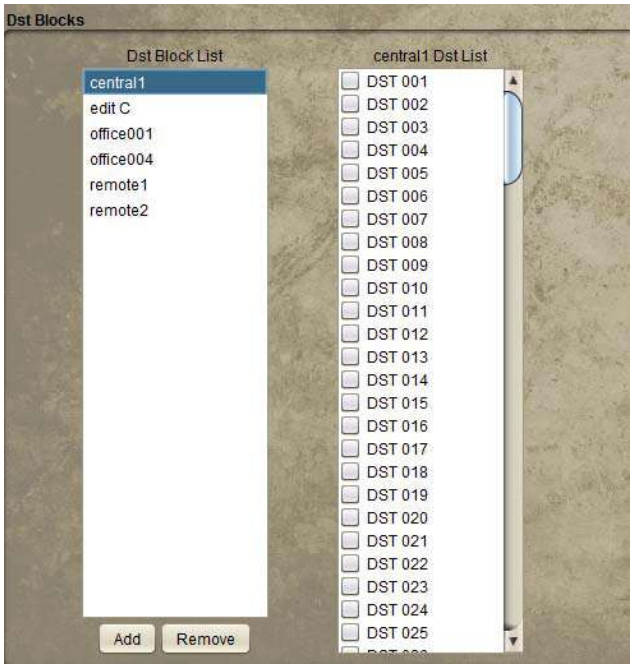



**Figure 3-27.**

The block will appear as one single destination in the system when a destination block is created. The new name will appear within the left listing and the options (to include) will appear within the right listing.

When Takes are made on the DA block, the take source will be immediately switched up to all of the destinations in the block.

The router will report the total number of takes corresponding to the number of replicated destinations whenever takes are made on the DA block.

**Note:** *Destinations assigned to specific Destination Blocks cannot be assigned to additional Destination Blocks. A dialog will appear, asking if you wish to reassign, in the event this is attempted.*

### *Salvos*

The Salvo is a mechanism for storing multiple takes to be conveniently triggered at a later time. Salvos will appear as new sources in the system and will trigger the configured takes when selected.

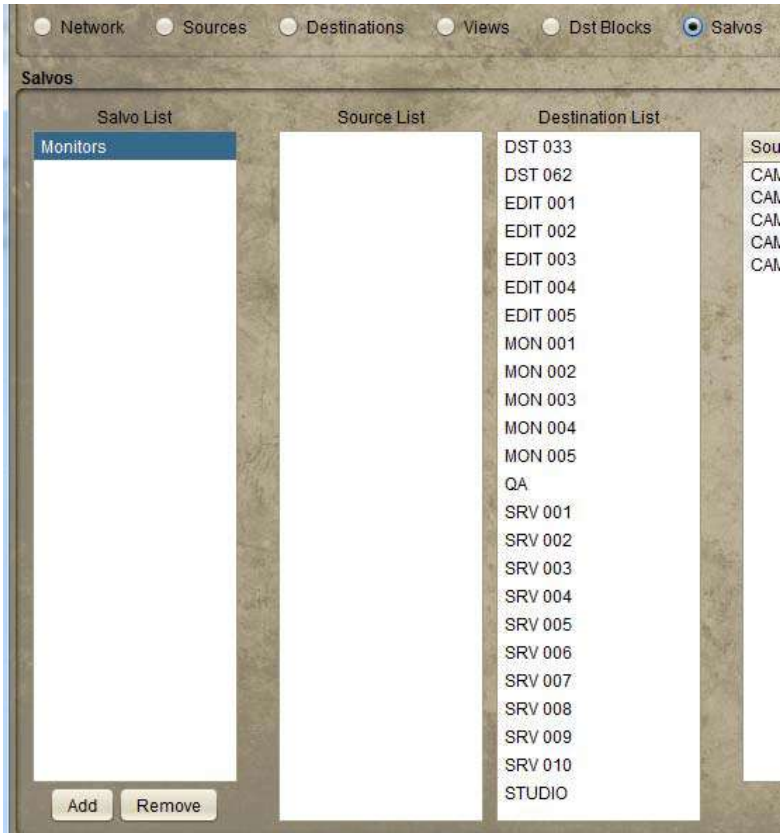



**Figure 3-28.**

Select the desired Source and Destination from the lists, then click the “Add” button to place the new Salvo to the listing on the right.

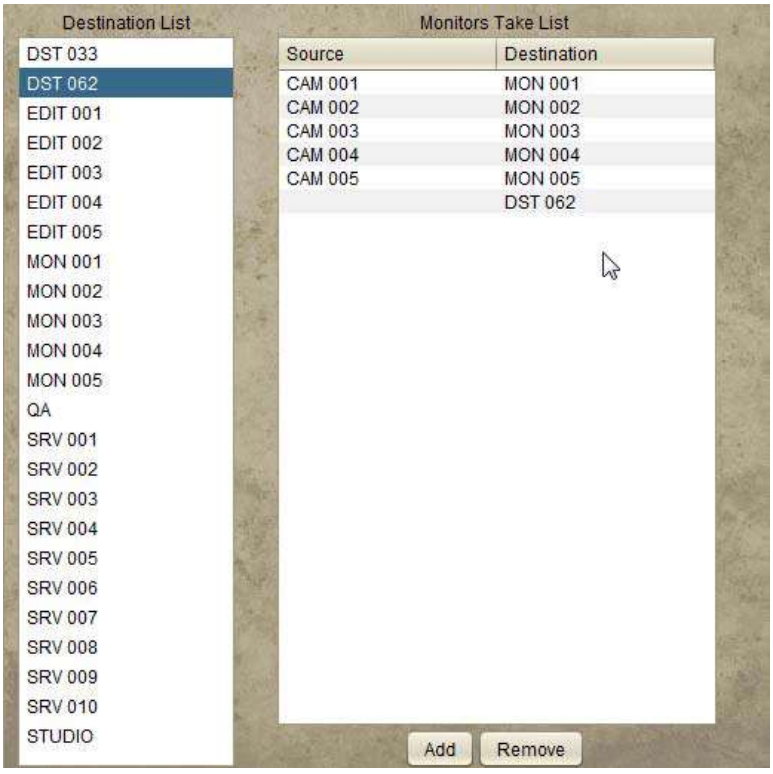



**Figure 3-29.**

You can now verify your new Salvo by accessing the View dialog area (View radio button). Note that a new Source is listed within the corresponding column.

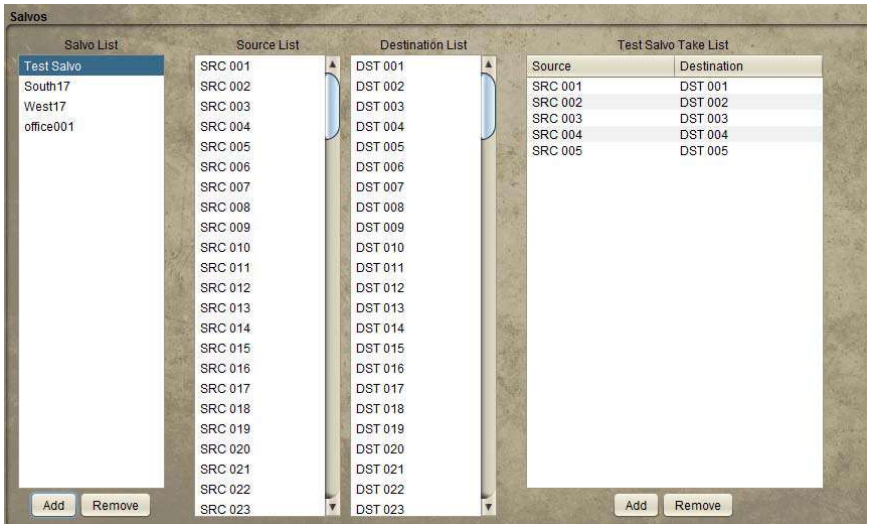



**Figure 3-30.**

Your new Salvo will also be displayed inside the Router Control applet.

### *Accounts*

The ‘UDS System’ defaults with 3 pre-defined use accounts. You can edit the passwords, modify, delete, or add accounts as needed for your operation.

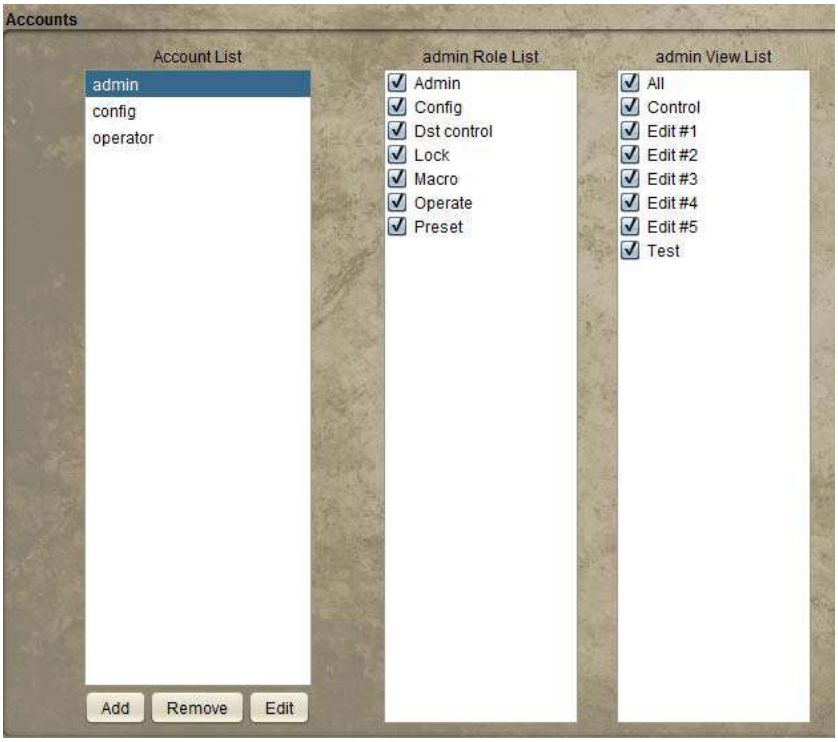



**Figure 3-31.**

- Roles allow permissions for various system attributes; the actual creation, modification, or deletion of accounts (admin).
- Config allows router and panel configuration. Dst control allows for control over the Dst reset and Dst select all checkboxes (Router Control area).
- Lock gives the associated account control over actual lock status.
- Macro allows macro editing while in preset mode.
- Operate controls the ability to make Takes.

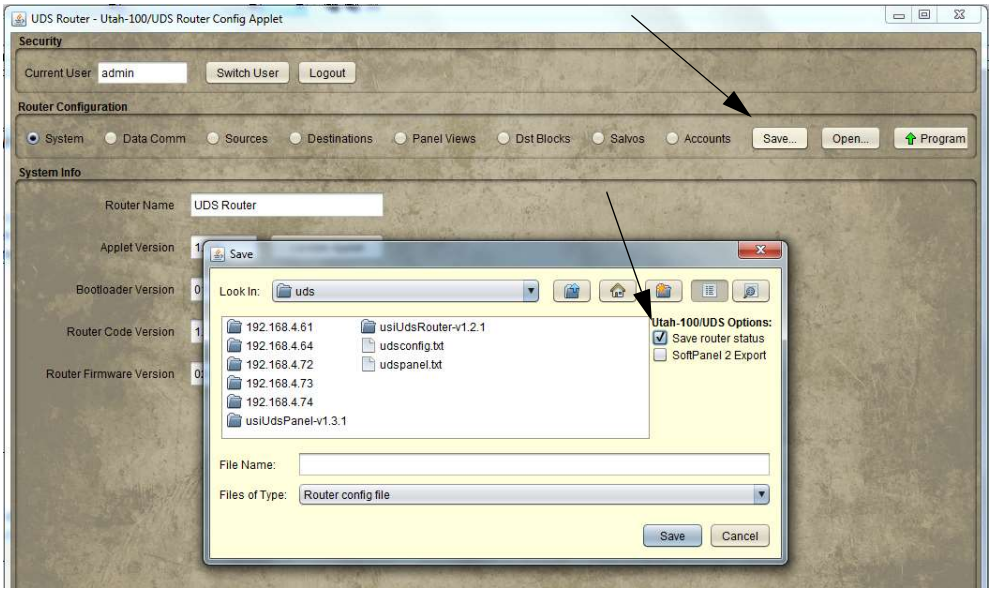
- Preset controls the ability to turn preset on or off; Preset ON allows constant preset activation if needed.

Views to be associated with given accounts are defined by the checkboxes in the admin View List. While all layouts are available to any user for status view, destination selection and the ability to make takes are defined within this listing.

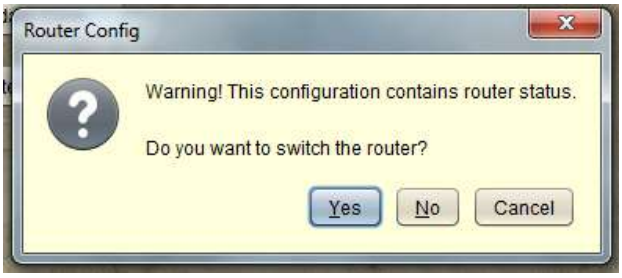

**Figure 3-32.**

## *Save Button*

The router configuration is saved to a file on your computer. If you want to save the current state of the router connections, make sure the corresponding check box is indicated within the Router Configuration dialog window (right side).




***Note:*** *When you program the router (Program Router button), a warning dialog will appear indicating that the current configuration 'Contains Router Status - Do you wish to Switch the Router?'*




*Clicking 'No' indicates the configuration will be saved without the Router.*

*Clicking 'Yes' indicates the configuration is saved and the Router Outputs will be stored.*

# Router Control

## *Source and Destination Management*

Destination buttons are contained on the left side of the display, with the Source status indicated above each button.

The Control panel layout (illustrated below) will follow your own panel configuration. Destinations are selected on the left side of the display by clicking the labeled button, then the intended Source is selected (clicked) on the right side of the display.

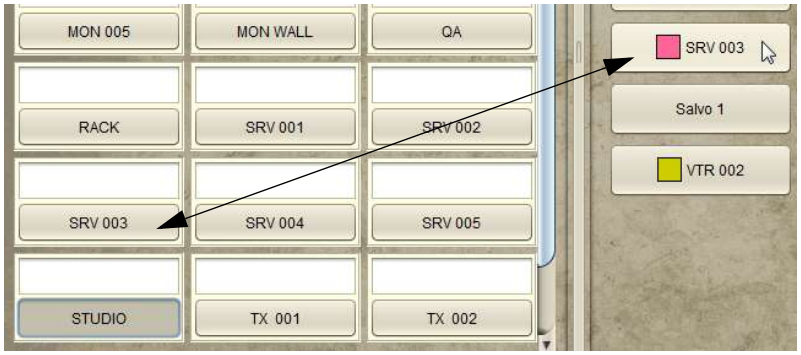



**Figure 3-33.**

When you select a Destination and make a Take, the Destinations will automatically reset if the checkbox below is set.

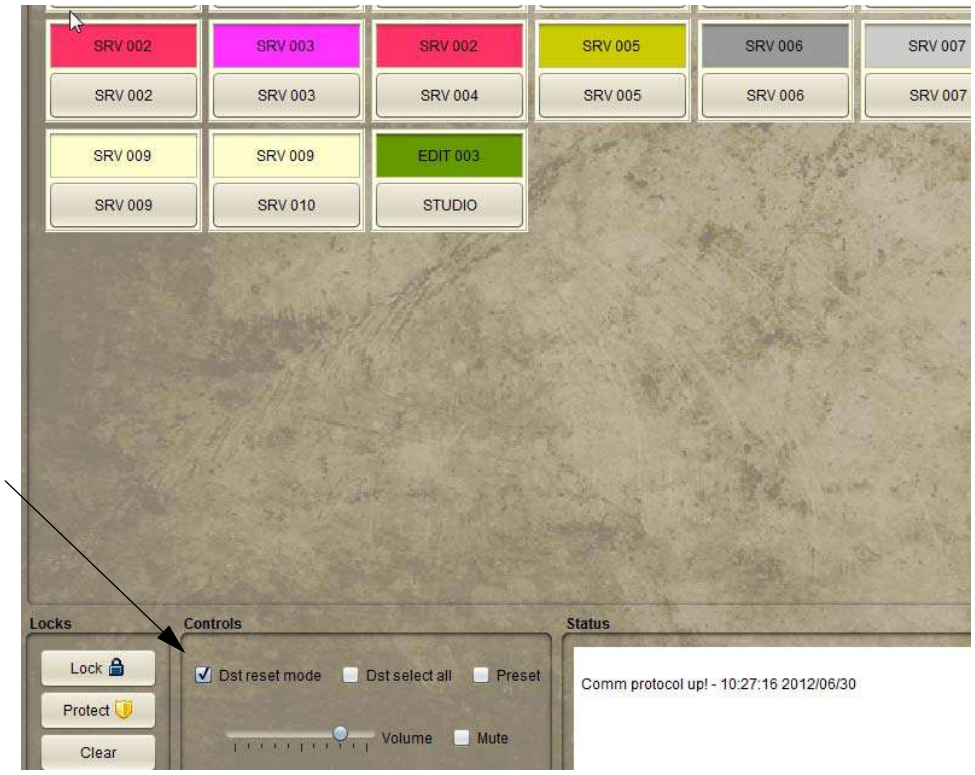



**Figure 3-34.**

Otherwise the Destinations will remain selected allowing you to make multiple takes on the same Destinations without having to re-select each one.

Destinations can be locked or protected by clicking the corresponding buttons within the lower-left of the display.


**Figure 3-35.**

Takes can still be made on Destinations in Protect mode locally, while remote users will not have access to protected Destinations. Locked Destinations are not switchable by anyone until the lock is actually cleared.

The status window (lower right above) will display all Controller activity.

### *Preset (checkbox)*

If the Preset box is checked (Controls group area), the ‘Take’ button (lower right) will blink, waiting for the user to activate the take by a button click.

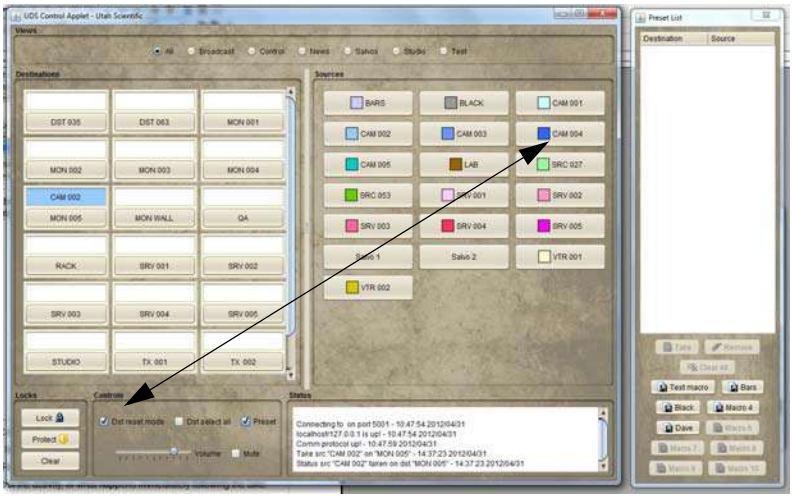


**Figure 3-36.**

The ‘status’ will alternate between what currently exists, and what the action will be once the Take commences.

Takes will occur immediately if the Preset box is not checked.

When this window is active all actions will be directed to the preset list (right side list window), rather than immediately affecting the router.

All UDS Control activity is logged in the Status box in the lower right portion of the display.

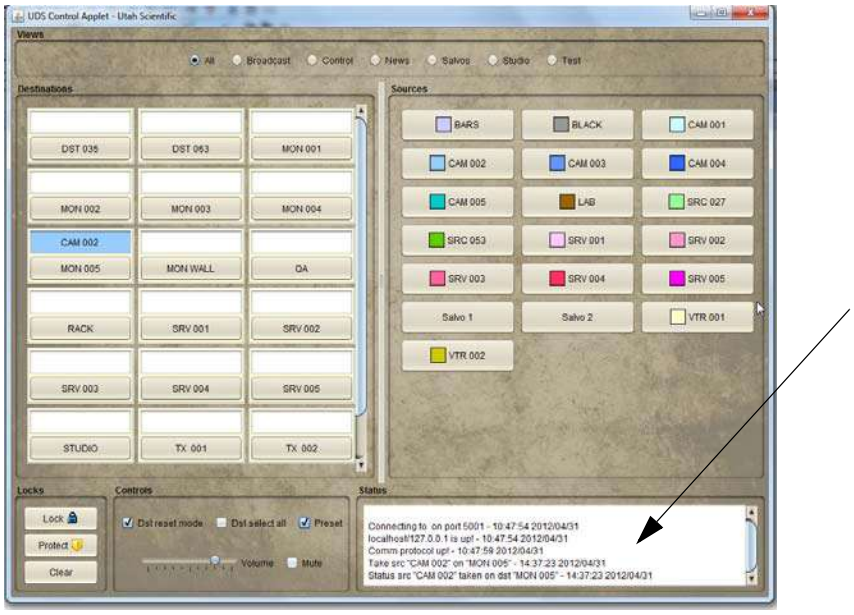



**Figure 3-37.**

### *Changing the Button Color Scheme*

Changing the Source button color schemes is useful for designating status colors for different equipment sets. Right-click on a Source button to produce a color picker window.

Use the **Auto** button to [ask the system to] uniquely color all Source buttons. This is useful when original button colors are needed quickly. (A prompting dialog will appear before all buttons are colored.)

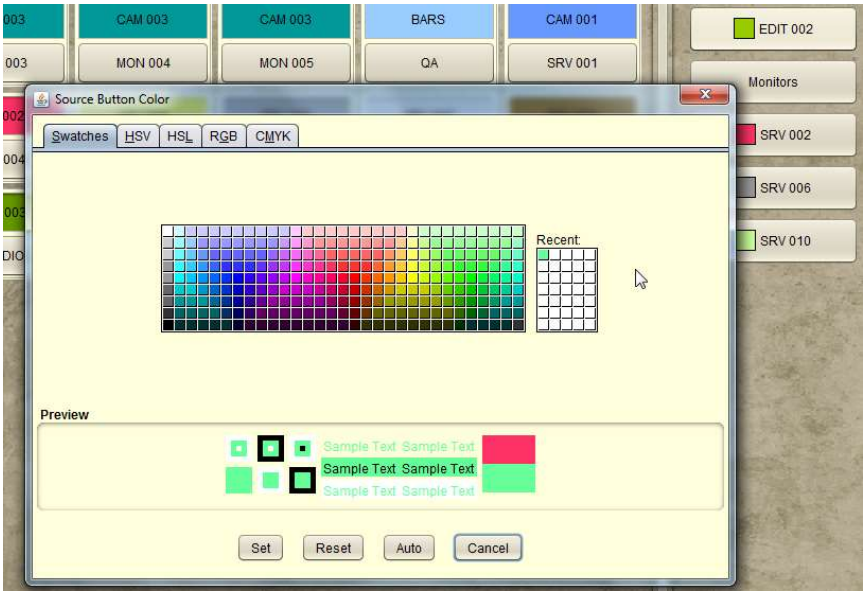



**Figure 3-38.**

Use the **Auto** button to [ask the system to] uniquely color all Source buttons. This is useful when original button colors are needed quickly. (A prompting dialog will appear before all buttons are colored.)

### *Destination Reset Mode (checkbox)*

The Destination Reset Mode checkbox (Dst reset mode) will control the activity, or what happens immediately following the take. Specifically, when checked, the Destination button itself is no longer selected (or highlighted) after the Take is made. If not checked, the Destination button will remain selected after the Take is made. This features allows the user to continually make new selections and takes on the same button without having to reset the button each time.

> *When the box is checked, you will need to select (or highlight) the Destination on every instance prior to making a new Source indication. When the box is unchecked you can continually make new Source selections without having to re-highlight the Destination button (box) each time.*

### *Multiple Destination Selection*

You can select (or highlight) multiple Destination buttons, then select a Source to simultaneously affect all selected destinations.

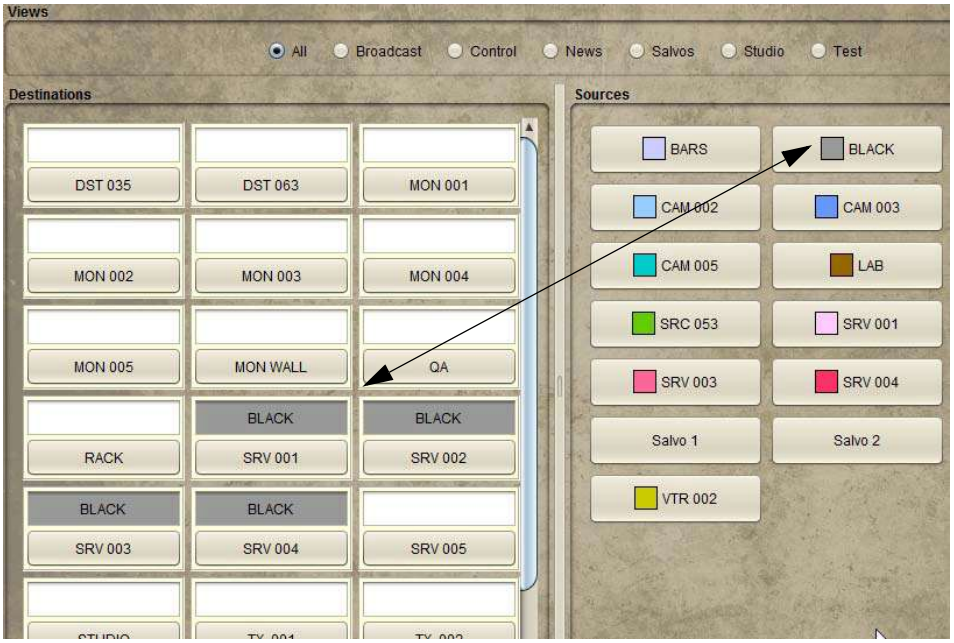



**Figure 3-39.**

### *Audio*

*Take* status is indicated by the audio control at the bottom of the display. If the Mute box is unchecked, takes are heard and controlled with the corresponding audio slider bar.

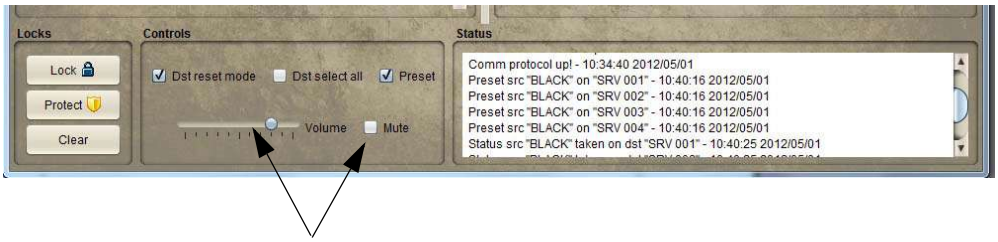



**Figure 3-40.**

### *Macro buttons*

A series of Takes can be saved as a Macro while in the Preset mode. Macros work like Salvos, but are saved to the PC where they are configured and cannot be used system wide. To save a Macro, right click on the Macro switch and select **Save**.

The Macro buttons allow you to save the take action prior to the actual take being made. Macros can be customized by name, or edited as needed. Macros work on a local basis at each control station.

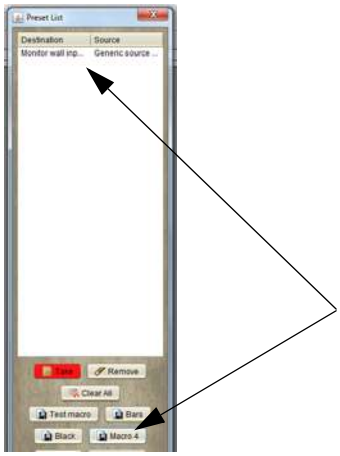



**Figure 3-41.**

Macros are saved in the listing, or renamed by clicking the selection at the bottom of the pop up window.

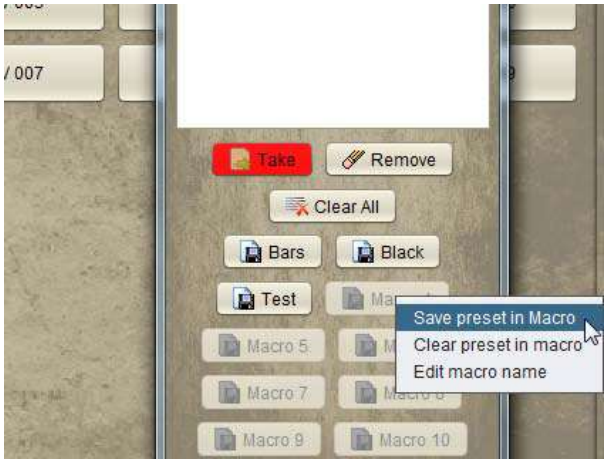



**Figure 3-42.**

## *Salvos*

The Salvo buttons inside the Sources group area allow you to activate Takes on multiple Destinations. As an example, one Salvo button may control multiple Destinations with pre-configured Sources for each salvo destination.

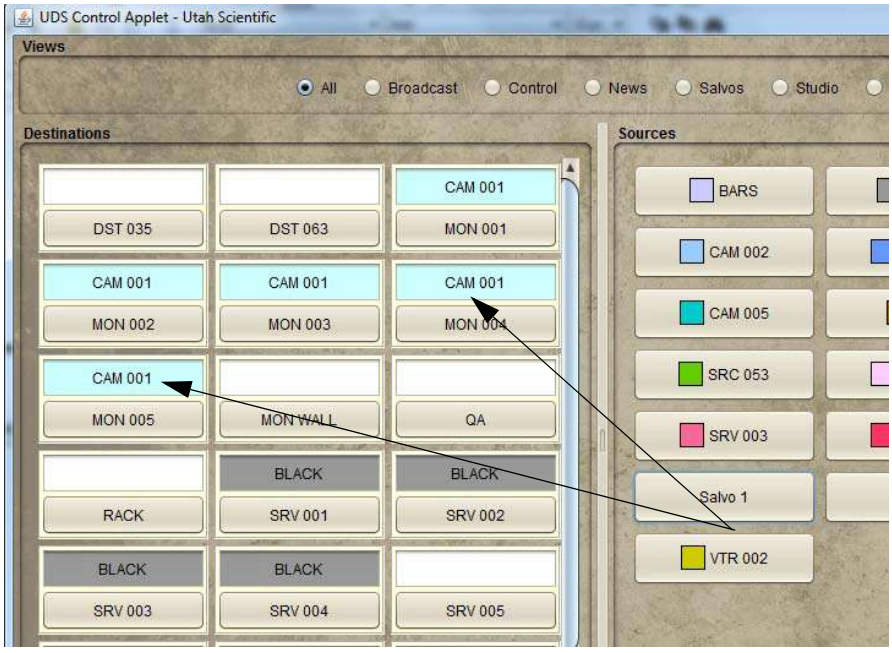



**Figure 3-43.**

*Salvos are set up on a system-wide basis with the configuration window.*

## *Preset List Window*

The waiting takes will be listed within the display once a Destination and Source have been selected.

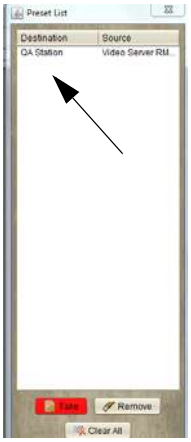



**Figure 3-44.**

*Please continue on to the next section, Hardware Based Control Panel Configuration and Operation, for UDS panel setup and maintenance detail.*

# Section 4

# The Control Applet

## Introduction

As discussed in Section 3, the UTAH-100/UDS can be controlled and monitored using a virtual control via a built-in web interface, or external hardware control panel via Ethernet. This section describes the setup, configuration and operation of the optional external control panel.

# The UTAH-100/UDS CP

The external hardware control panel and virtual control via Ethernet extends the functionality of the system to local and remote users as necessary.

## *Front View*


**Figure 4-1.**

## *Rear View*

**Figure 4-2.**

## *Setup*

Use the following steps to install the Utah-100/UDS Systems into the rack frames:

1. Determine the vertical layout of your frames before you begin the installation.
2. Once your layout is determined, install the Utah-100/UDS chassis' in the 19" rack frame.
3. Connect the Ethernet cable for network communications.

# Panel Configuration

Panel Configuration is activated by launching a web browser and entering the panel's IP address as the URL. The panel must be connected to the network in order to communicate properly.

Click the Config icon to activate the UDS Panel Config applet.

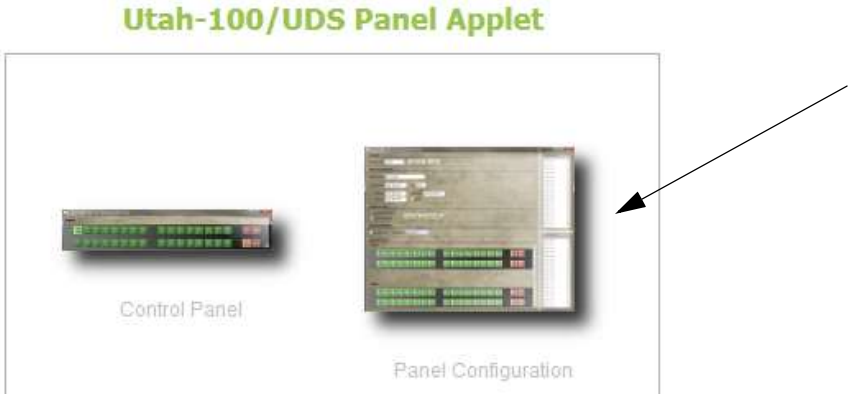



**Figure 4-3.**

Enter the default username and password (admin/admin).


**Figure 4-4.**

The following window will appear (next).

Use the radio buttons in the Panel Configuration section to navigate through the configuration screens; *System*, *Network* and *Encoding*.

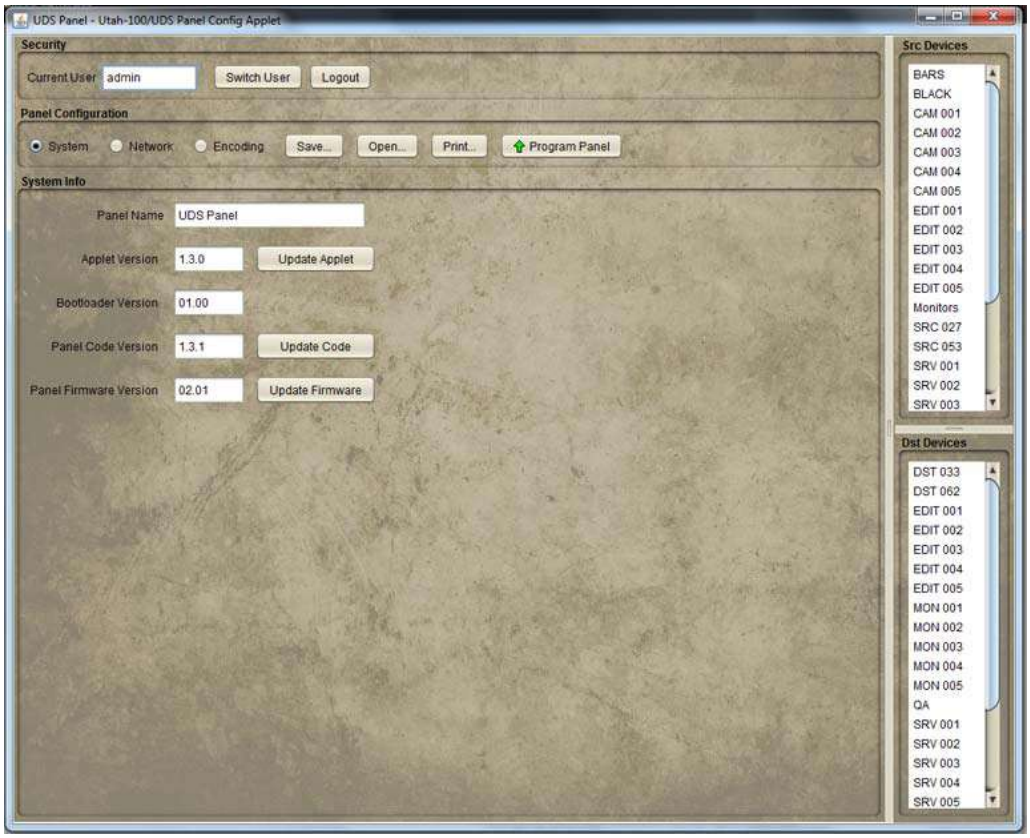



**Figure 4-5.**

**Save** - Saves the current panel configuration to a file on your computer.

**Open** accesses the directory containing previously saved panel configuration files.

**Print** allows you to produce a listing of all buttons and assignments when encoding is complete. Printing will produce the entire list along with a button label reference sheet that can be helpful for operators.

## System

When selected, the **System** radio button displays the current panel configuration detail (System Info area).

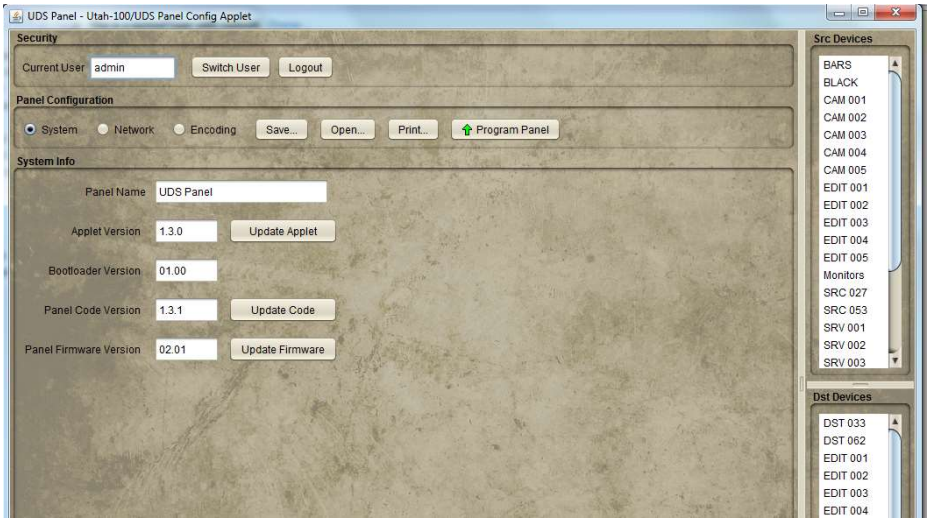



**Figure 4-6.**

You can edit the System Name, view the system version number, and update system components from the System Info screen.

## Network

Network configuration is essentially the same as network setup during Router configuration, with the exception that the user must specify the router IP address.

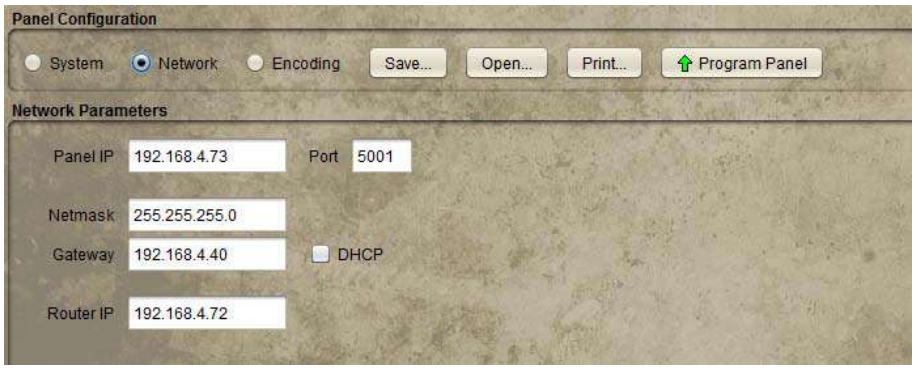



**Figure 4-7.**

### *Network Parameters*

Panel ID and address configuration is entered at the top of the display. 5001 is the Port default.

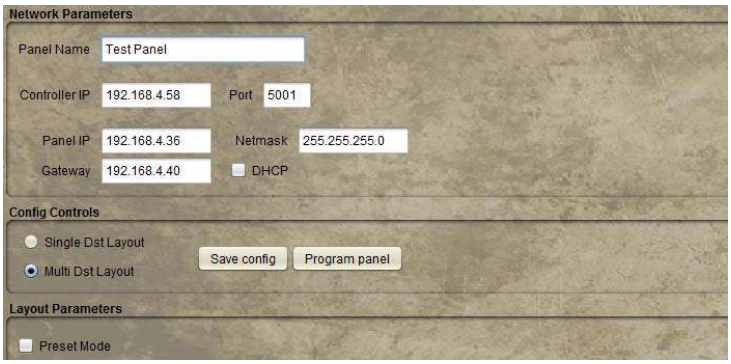



**Figure 4-8.**

When indicated, the DHCP checkbox will allow the program to complete its own designation.

## *Encoding*

Once you have logged in and the window is open, the activated panel layout will mimic the setup actions of the external control panel itself.

**Figure 4-9.**

## *Panel Layout - Config Controls*

The current panel's IP address is displayed, along with the controller to which the panel is connected.

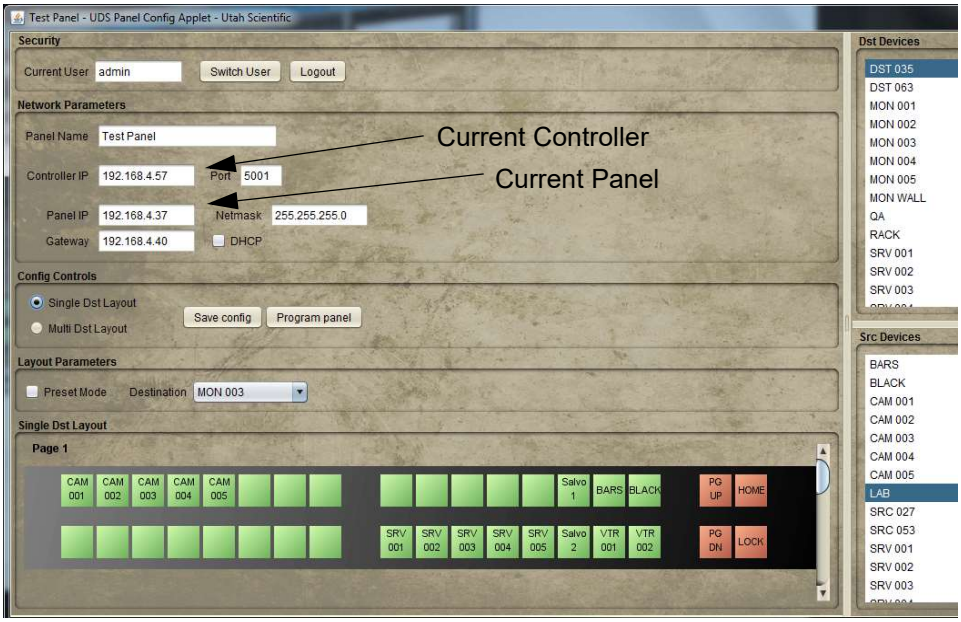



**Figure 4-10.**

This sets the destination applied to a single panel.

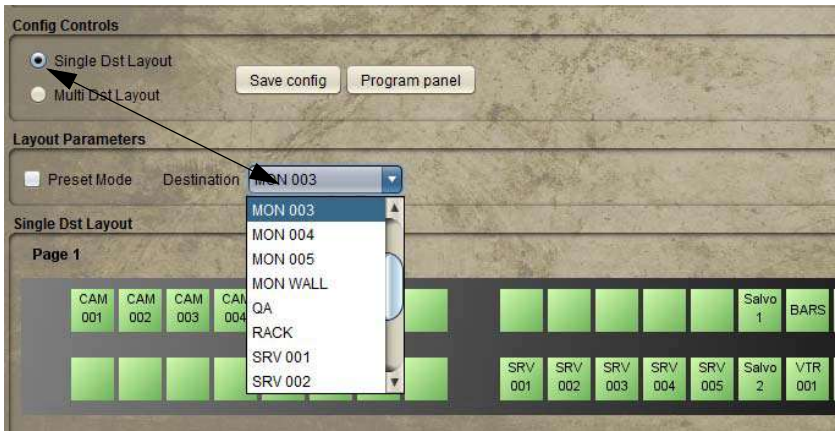



**Figure 4-11.**

Buttons are assigned by highlight device selections (1 or more), then dragging the list items to the individual buttons.

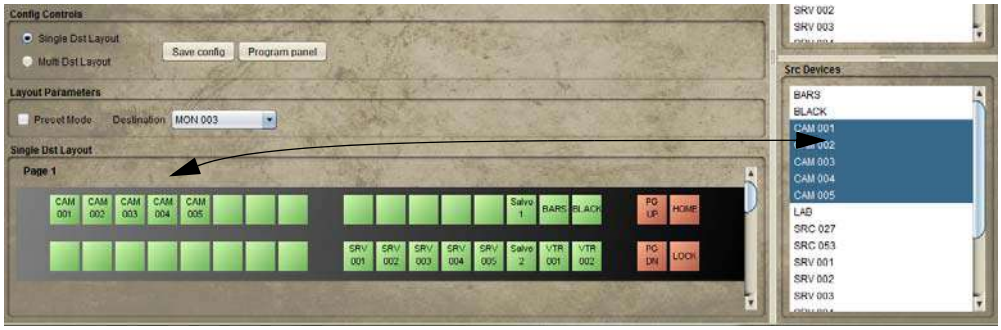
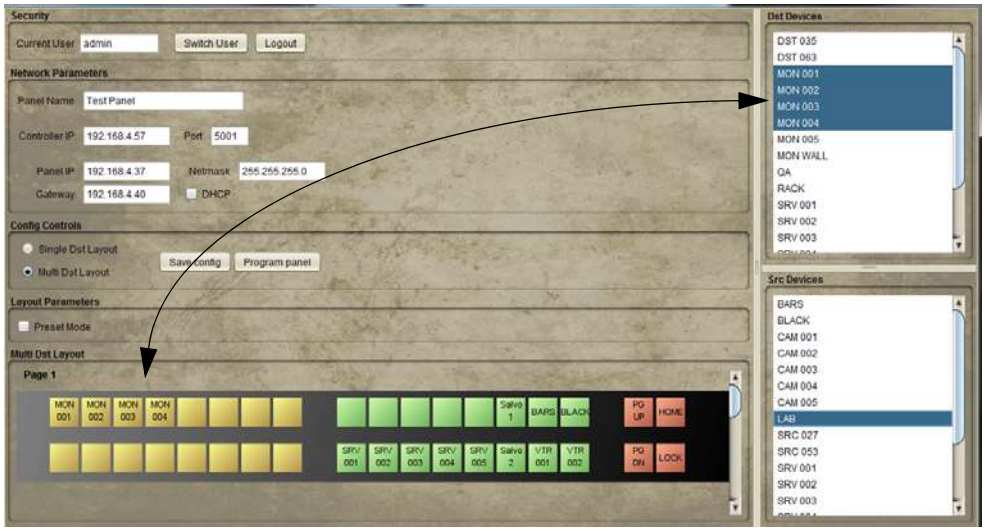



**Figure 4-12.**

A Multi Dst Layout with more than one destination assigned to the panel's destination buttons.



## Layouts - Single and Multi-Dest

### Single Destination

When indicated, 32 Sources are defined with one Destination selected for control. In this configuration you can drag Sources one at a time or double-click Sources from the list area (Dst and Src Devices list area).


**Figure 4-13.**

The hardware panel will support up to three pages using these buttons, with the page and home buttons navigating through individual pages.

### *Multi-Dest layout*

Multi-Dest mode allows the user to simultaneously control 16 Destinations and 16 Sources. As with Single Destination mode, the page navigation includes three pages for operation.

**Figure 4-14.**

In this mode you may drag destinations or sources to the panel buttons, with Destinations on the yellow buttons and Sources on the green buttons. The program will alert when a ‘Wrong Device Type’ is attempted. Right-clicking will clear the button display

Changes are committed once ‘Save Config’ is clicked, and actual hardware programming occurs when ‘Program Panel’ is clicked.

## *XY-32 Configuration*

Click the corresponding radio button to activate the XY-32 Layout.

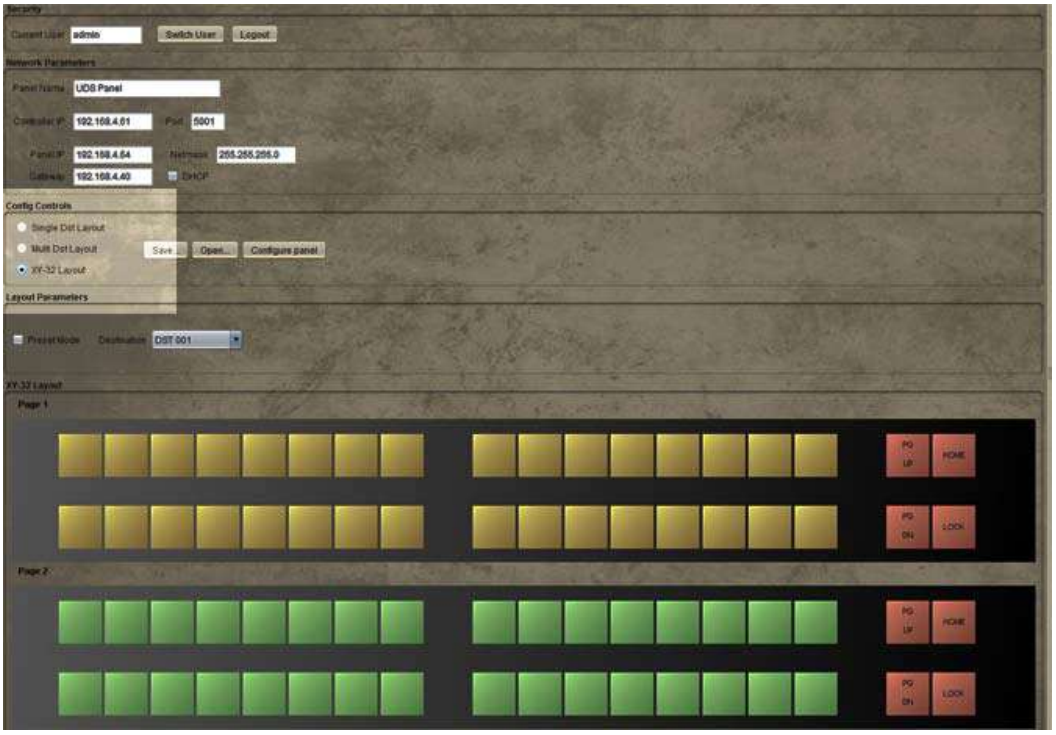



**Figure 4-15.**

This layout contains two pages; one page for 32 Destinations and one for 32 Sources.

Dragging Destinations from the listing (lower right) will apply to one button block only. In this way, list selections will never overflow into the next button block.

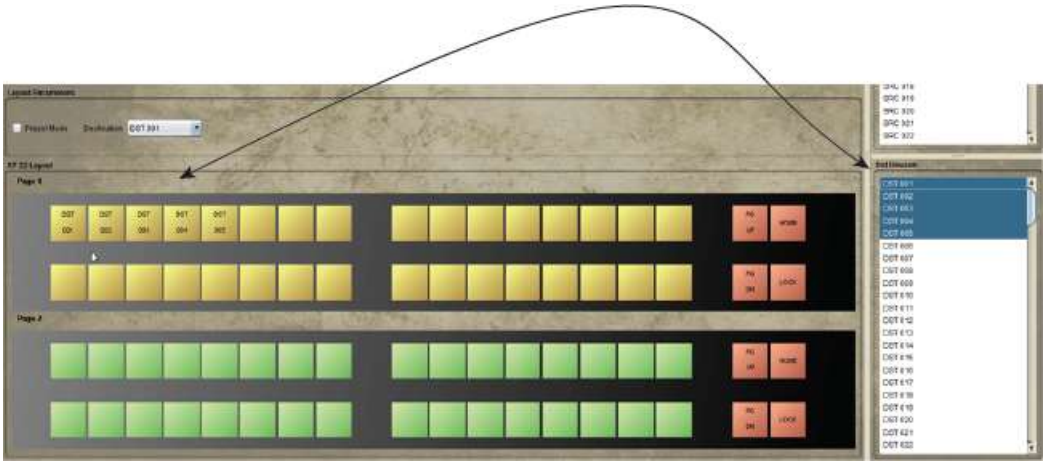


**Figure 4-16.**

Click the Page Up and Page Down buttons to view the configured panel pages.


**Figure 4-17.**

Click the **Configure Panel** button when button population for both Destination and Source buttons are complete.

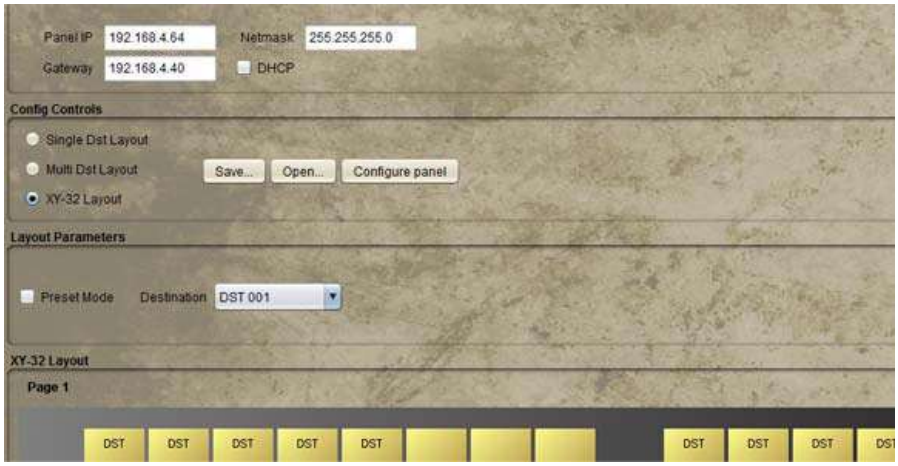



**Figure 4-18.**

## *Print Option*

The Panel Configuration contains a Print option that allows you to produce a listing of all buttons and assignments when encoding is complete. Clicking the **Print** button in the listing dialog will allow you to print the actual listing along with a button label reference sheet that can be helpful for operators.

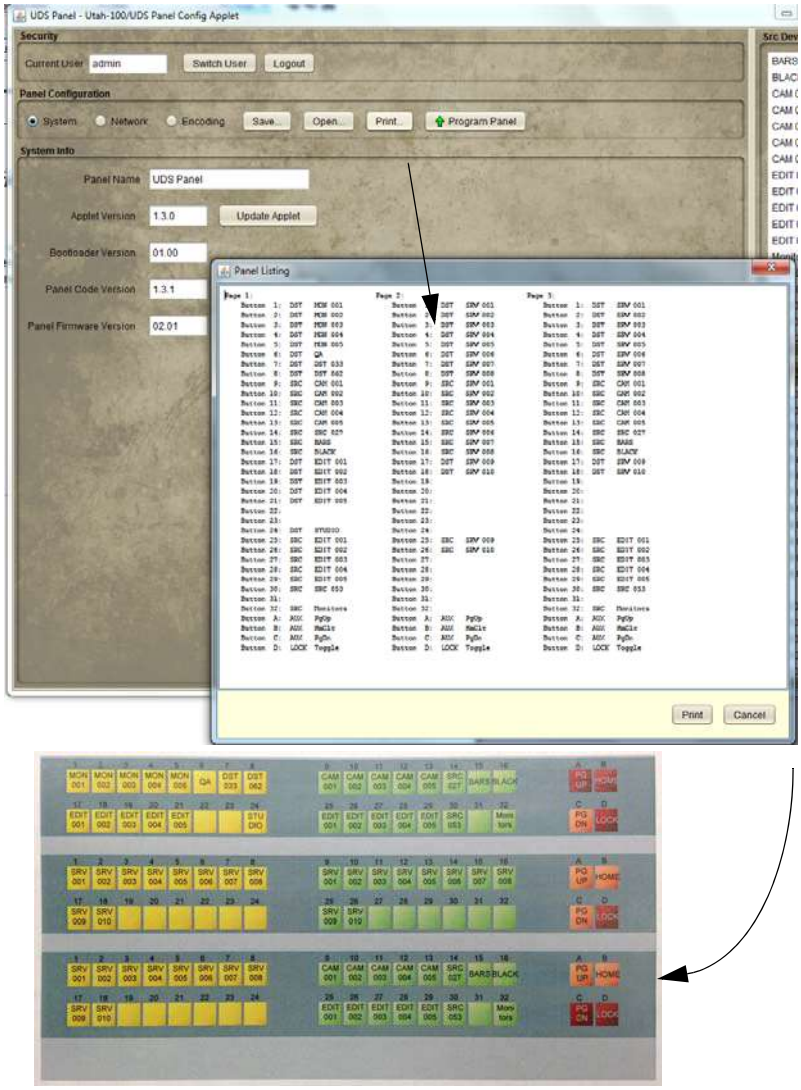



**Figure 4-19.**

# Control Panel

Click the Control Panel icon to activate the UDS Panel applet.


**Figure 4-20.**

Once you have logged in and the window is open, the activated panel layout will mimic the setup actions of the external control panel itself.


**Figure 4-21.**

The panel is presented and operational at this time.

# Section 5

# Specifications

## Frame Specifications

### *Width*

19” Rack Mount

### *Depth*

13.5”

### *Sizes*

10 RU -- Capacity: 288 inputs, 288 outputs

Power Consumption: <350W

## *Power Supply*

### *AC Input Specifications*

Power Consumption - 720 watts per module

Voltage - 900-240

Frequency - 50-60Hz

Redundancy - optional (shares load)

### *DC output specifications*

12VDC - 60 Amps max (typically 25 Amps)

## *Control Connections: RJ-45 Ethernet*

RJ-45 Serial

Vertical Interval Reference

# I/O Module Specifications

## *Multi-Rate Digital Input Card*

Number of ports per card: 16

Formats supported: From 18Mbps up to 3Gbps

Connector Type: HD-BNC

## *Multi-Rate Digital Output Card*

Number of ports per card: 16

Formats supported: From 18Mbps up to 3Gbps

Reclocking: All SDI rates up to 3Gbps

Connector Type: HD-BNC

Conforms to SMPTE 259C, 292, and 424

## *Digital Video*

The following table lists the system digital video specifications.

**TABLE 5-1. Digital Video Specifications**

| | |
|---|---|
| Jitter | Conforms to SMPTE 259, 292, 424 |
| Reclocked Data Rates | 270, 1485, 2970, Mb/Sec, 5.94 Gb/Sec, 11.88 Gb/Sec |
| Input Return Loss | < -15 dB to 1.5 Ghz, -10dB to 3Ghz |
| Output Return Loss | < -15 dB to 1.5 Ghz, -10dB to 3Ghz |
| Input EQ level | |
| Belden 1694A cable | > 300 M @ 270 Mb/Sec |
| | > 150 M @ 1.485 Gb/Sec |
| | > 100 M @ 2.970 Gb/Sec |
| | > 50 M @ 11.8 Gb/Sec |

## *Control*

The following table lists control specifications:

### Control Specifications

**TABLE 5-2.**

| Parameter | Specification |
|---|---|
| Control | MX-Bus Daisy Chain - Terminated |

## *Alarms*

The following table lists alarm specifications:

### Alarm Specifications

**TABLE 5-3.**

| Parameter | Specification |
|---|---|
| Primary alarm | ANSI / SMPTE 269M fault reporting (Relay closure) |
| Connector Type | Phoenix Male Barrier Strip – 3 pin |
| Functions | • Power<br>• Temperature<br>• Fans<br>• System Board Failure |
| Maximum current | 20 milli-Amp |

## *Physical*

The following table lists physical specifications:

### Physical Specifications

**TABLE 5-4.**

| Parameter | Specification |
|---|---|
| Width | EIA – RS-310 – D 92 19” rack mount standard |
| Height | 10 rack units |
| Depth | 13.5 inches, 342 mm |
| Weight | 60 pounds |
| Mounting | Eight front mount rack ears |
| System connectors | All connectors rear panel mounted |
| Cooling | 4 Fans – side exhaust |
| Temperature range | 10 – 40 Degrees Celsius |
| Humidity range | 0 – 90% non - condensing |

* The power supply will add one rack unit if installed above or below the system.

## *Regulatory*

The following table lists system regulatory specifications

### Regulatory Specifications

**TABLE 5-5.**

| Parameter | Specification |
|---|---|
| EMC | EN50 081-1 (EN50 022 Class A) |
| Susceptibility | EN50 082 (IEC 801-3, IEC 801-4) |
| Safety | EN60 950, UL 1950, CSA 022.2 No. 234 |
| Shock / Vibration | MIL Std. 810E, Method 514.4(cargo truck 500 / 500 miles) |

## *Determining and Setting Router Signal Levels*

Signal levels are preset at the factory and tested during manufacturing, determined by customer input and requirements. The installation of your new Utah-400 Router should not require any signal level changes to operate after the new installation.

By definition, a signal level represents distinct elements of the broadcast system. These individual elements include, but are not limited to, High Definition Video, SDI Video, Digital Audio, Analog Video, Analog Audio and Data Routers. For additional information relating to signal levels, refer to “Signal Levels,” on page 1-5.

## Switch Settings

Should you ever need to change the signal level of your router it is useful to determine:

- What new signal level is required.
- If other signal levels will have to be modified to accommodate the new signal level.
- Additional encoding requirements necessitated by the change.
  1. Locate the dip switch on the control I/O panel at the rear of the chassis.
  2. The four level bits work in a binary addition mode. Possible values range from 0 (all down) to 15 (all up). 0 is level 1 in an SC-4 control system, and 15 is level 16.
  3. Set the switches to the level you have chosen according to the following table.

| Switch | 1 | 2 | 4 | 8 | Binary Value | SC-4 Level |
|---|---|---|---|---|---|---|
| | OFF | OFF | OFF | OFF | 0 | 1 |
| | ON | OFF | OFF | OFF | 1 | 2 |
| | OFF | ON | OFF | OFF | 2 | 3 |
| | ON | ON | OFF | OFF | 3 | 4 |
| | OFF | OFF | ON | OFF | 4 | 5 |
| | ON | OFF | ON | OFF | 5 | 6 |
| | ... | ... | ... | ... | ... | ... |
| | ON | ON | ON | ON | 15 | 16 |


**Figure 5-1.**

### *Unlabeled Dipswitch Positions*

The last two dipswitch locations must be down in all cases.

# Addendum A

# RCP1 Protocol for UDS

This addendum contains additional detail associated with serial interfacing; describing the basic commands supported for serial-to-router communications.

## Matrix Refresh Report Enable

ASCII CODE HEX

Command Code: ESC @ 1B, 40

Response: None

The ESC @ sequence causes the System Controller to routinely report crosspoint information to the external computer.

Refresh data is provided on an unsolicited basis with the data format as follows:

STX OOOO <Matrix Input> <Matrix Output> <Checksum> CR

Related Commands:

MATRIX REFRESH REPORT DISABLE

## Matrix Refresh Report Disable

ASCII CODE HEX

Command Code: ESC A 1B, 41

Response: None

Matrix Refresh reporting is described in the previous section. To disable the function, the Matrix Refresh Report **Disable Command** is provided.

Issuing the command string ESC A will disable Matrix Refresh Reporting.

Related Commands:

MATRIX REFRESH REPORT ENABLE

## Matrix Change Report Enable

ASCII CODE HEX

Command Code: ESC B 1B, 42

Response: None

The **Matrix Change Report Function** causes the controller to issue a **status update** whenever a change occurs in the Matrix Status. A change in status occurs when a Take is made resulting in a change to the status of the matrix. If a Take is made to a destination requesting the same sources that is already selected, then this will not cause a change in status, and consequently this will not be reported.

The ESC B Sequence causes the System Controller to **enable** the Matrix Change Reporting Function. Until the function is disabled, the controller will report changes in status without further request.

The change report data format is as follows:

FS OOOO <Matrix Input> <Matrix Output> <Checksum> CR

Related Commands:

MATRIX CHANGE REPORT DISABLE

## Matrix Change Report Disable

ASCII CODE HEX

Command Code: ESC C 1B, 43

Response: None

Matrix Change Reporting is described in detail in the previous section.

The ESC C Command sequence disables the Matrix Change Reporting Function.

Related commands:

MATRIX CHANGE REPORT ENABLE

## Matrix Take Report Enable

ASCII CODE HEX

Command Code: ESC D 1B, 44

Response: None

The **Matrix Take Report Function** causes the controller to issue a **status update**, whenever a Take occurs, regardless of whether the Take changes the state of the matrix. Only takes from the connection are reported.

The ESC D sequence causes the system controller to report any change in router matrix status (Take Reporting) to the ECD.

The Matrix Take Report format is as follows:

SOH OOOO <Matrix Input> <Matrix Output> <Checksum> CR

Related Commands:

MATRIX TAKE REPORT DISABLE

## Matrix Take Report Disable

ASCII CODE HEX

Command Code: ESC E 1B, 45

Response: None

The Matrix Take Report is described in detail in the previous section. The ESC E command sequence disables the Take reporting function.

Related commands:

MATRIX TAKE REPORT ENABLE

## Matrix Section Refresh

ASCII CODE HEX

Command Code: ESC L 1B, 4C

Response: None

The **ESC L sss eee** sequence causes the System Controller to report cross-point information to the external computer for the outputs between sss and eee (inclusive).

The controller will respond with a report consisting of a sequence of status messages ordered by output number, with each message formatted as follows:

STX OOOO <Matrix Input> <Matrix Output> <Checksum> CR

The report is terminated by the system controller with the ASCII Code US (Hex 1F).

To obtain Status of a Single Matrix Output, the command string should be terminated with a CR immediately following the starting matrix output number:

ESC L <Start Output> CR

The controller will respond with a single status message formatted as follows:

STX OOOO <Matrix Input> <Matrix Output> <Checksum> CR

## Matrix Take Command

ASCII CODE HEX

Command Code: SOH 01

Response: None

**Making a take.**

Switcher cross points are changed by using the Matrix Take Command. The Input Number and Output Number identify each cross point. (This protocol supports levels, UDS does not support levels, any level set per the level mapping as will make a take.). The command message is structured as follows:

SOH <@@ | OO> <@@ | OO> <Matrix Input> <Matrix Output> |<Checksum>| or |CR|

To generate a Matrix Take Command, issue the command SOH followed by the code for enabled levels “OOOO” (note that this is the letter upper case O) input and output selection and terminated by either the optional checksum or carriage return (C/R). The following example, uses the Matrix Take Command to select input 45 to output 123.

Symbol SOH O O 0 4 5 1 2 3 C/R

HEX 01 4F 4F 30,34,35 31,32,33 0D

NOTE: This protocol allows control of routers with levels, for the UDS does not support levels, if any level is set, then the router will switch, use OO to make a take. Setting the level to none (use @@), will simply request status of the cross-point.

Related commands:

MATRIX STATUS REQUEST

## CALCULATE <Checksum>

A single-byte checksum in the range 20 hex through 7F hex calculated as follows:

Start with the hexadecimal value of the first byte (control code). To that value, Exclusive OR the second byte, Exclusive OR the third byte, etc. until all bytes have been Exclusive OR'ed. Finally, OR a hexadecimal 20 to the final Exclusive Or'ed value of all the bytes. By OR'ing in the 20 you ensure that the checksum is greater than or equal to a hexadecimal 20. This must be done to ensure an ASCII Control Code is NOT generated as the checksum.

## MISC items

The UDS does not allow 7 bit data and no parity.

Unknown sources are reported as 31F

- SC4 vs UDS:
- SC4 is 0 relative on sources and destinations, UDS is 1 relative.
- SC4 switches indexes, UDS switches ports.

SC4 has levels. UDS does not use levels. The RCP1 protocol includes levels. The UDS will accept any level from he protocol and switch on it. Status is always reported with all levels set.

# Addendum B

# System Update

## Introduction

This addendum contains instruction for updating the device code and applets on Utah Scientific UDS devices using a PC running Windows™. There are three major steps involved in updating each device:

- First you must run the installer in order to place the files in the default location on the PC.
- Next, perform the update using the applet's device configuration windows.
- Finally, you must reset the device and allow the update to be burned into the device flash.

The device configuration and status will not be changed by the update. But as a precaution, you should save the configuration of the device to a file before proceeding with the update.

The router device code will be updated to version 1.2.1 and the router applet will be updated to version 1.3.0. The panel device code will be update to version 1.3.1 and the panel applet will be update to version 1.3.0.

## System Setup Requirements

- The router must contain version 1.2.0 software and version 1.2.1 applet.
- The panel must contain version 1.3.0 software and version 1.2.1 applet.
- A Windows PC connected to the devices via Ethernet.
- A web browser to access the device applets.
- The installer file for the device you want to update:
    - usiUdsRouter-v1.2.5.exe for the router
    - usiUdsPanel-v1.3.2.exe for the panel

    ***These files can be dlwnloade from ftp://dcust:cust2pwd@ftp.utahscientific.com***

## *Settings File Update*

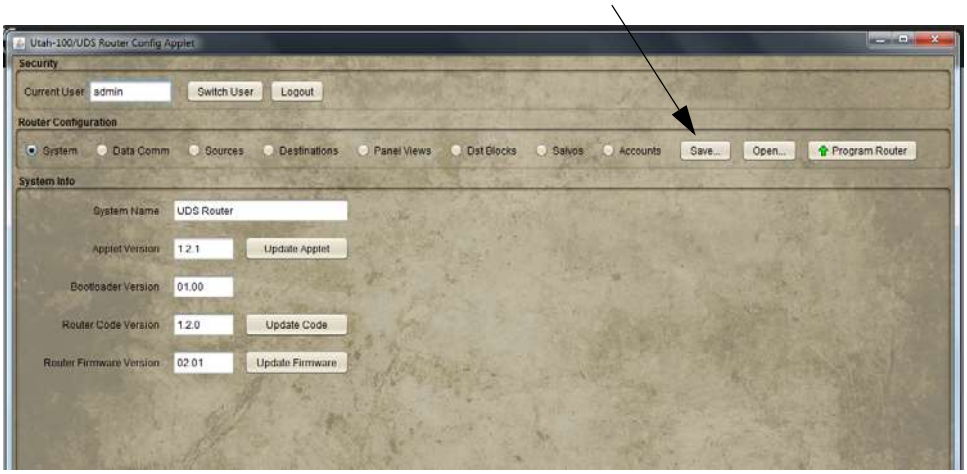
### *Warning - Read Before Proceeding*

This update supports unique settings for each router connection. Settings consist of source status colors, and macros. As a result, existing settings will be lost following the update. You can simply reconfigure the settings as you prefer, or to restore the original settings, follow the steps below after completing the update.

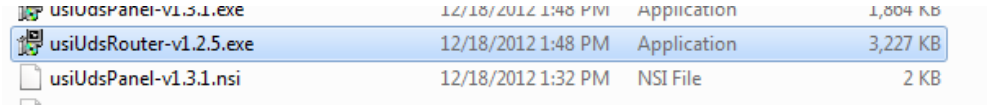
If you would like to use your router settings (source status colors and macros) saved prior to the upgrade, you will need to copy the settings file to the correct router subfolder. The previous settings file can be found in your home directory under usi/uds/uds.settings. Copy it to the subfolder that corresponds to your router's IP address. For example, if your router's IP address were 192.168.4.180 and your home directory were C:\Users\usiuser, then you would copy the uds.settings file from C:\Users\usiuser\usi\uds to C:\Users\usiuser\usi\uds\192.168.4.180.

# Updating the Router Config Applet

1. As a precaution before continuing, open Router applet's Configuration window (below) and save the configuration of the device to a file on the PC. By doing so you can easily restore the device configuration *if necessary.*[1] (Please see Appendix C - Troubleshooting - for assistance with Configuration restoration.)



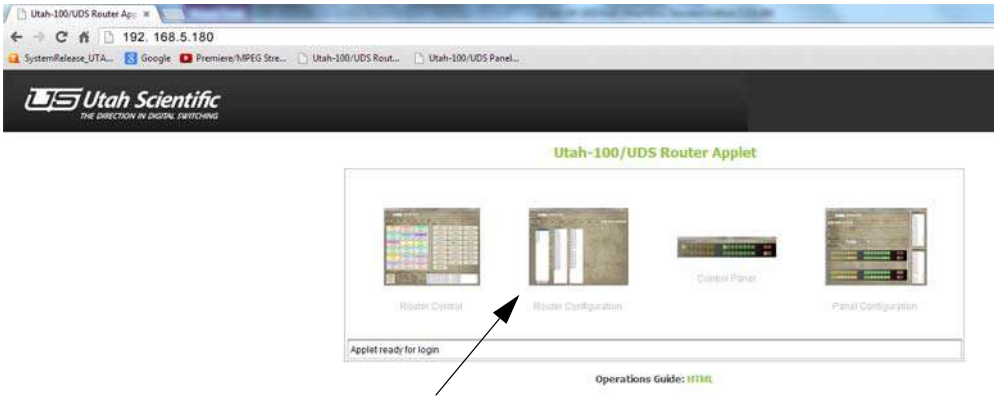

2. Run the appropriate installer on the PC.



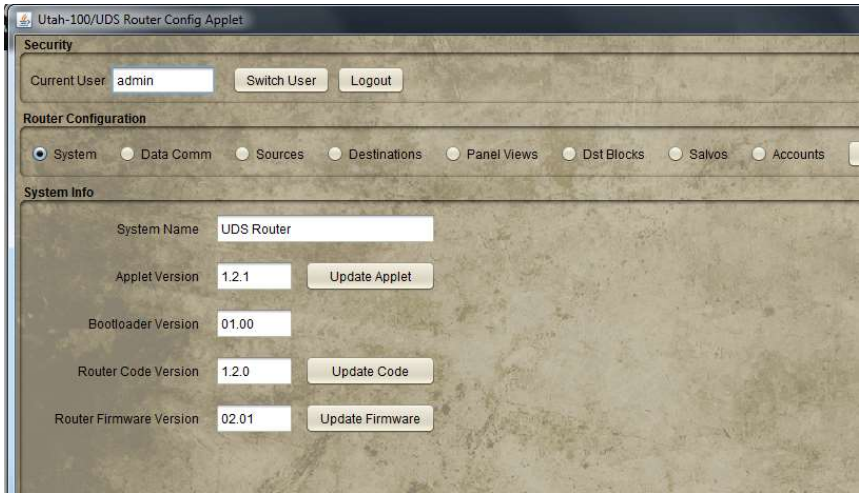

Leave the default installation path. Take note of the path of the .uus file in the instructions as you close the installer. You will use this file in step 6 (below).

1. Early hardware version may require configuration restoration following a system reset.

3. Using the web browser on the PC, access the device applet and open the configuration window.

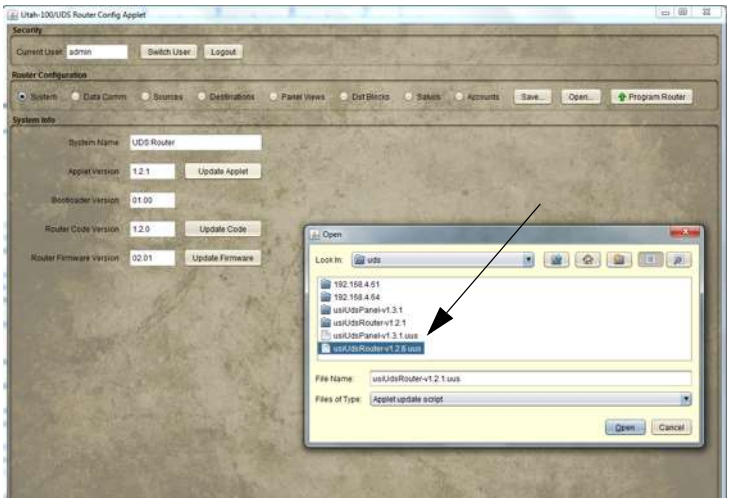



4. Select the ‘System’ screen in the config window.




5. Click the ‘Update Applet’ button.

6. Select the appropriate .uus file installed in step 2 (usiUdsRouter-v1.2.1.uus).

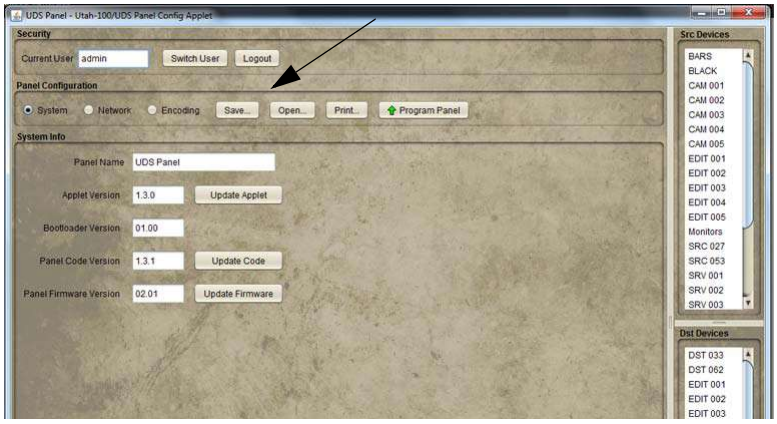



7. Several files will be transferred to the device. When the file transfer is complete, close any open web browser windows and reset the device by pressing the chassis reset button. The device will take a bit longer to reboot as the update is burned into the device flash.

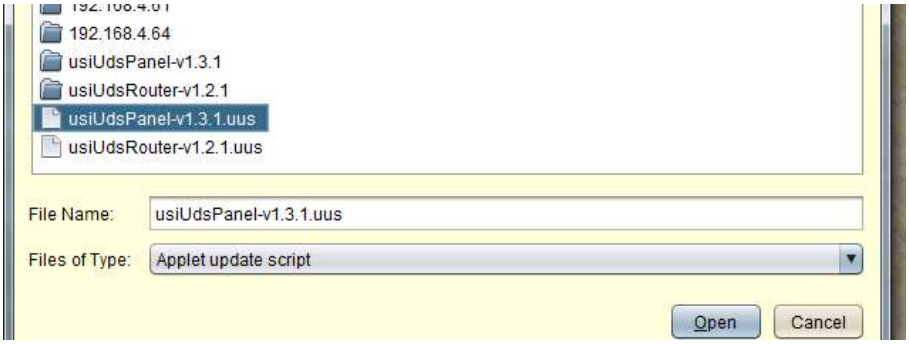
8. The update is complete once the device has finished rebooting. The system will now operate with the new device software and a new version of the device applet.

## Updating the Panel Config Applet

1. As a precaution before continuing, open the Panel applet's Configuration window (below) and save the configuration of the device to a file on the PC. By doing so you can easily restore the device configuration if the file is somehow lost.[1] Please see Appendix C - Troubleshooting - for assistance with Configuration restoration.)



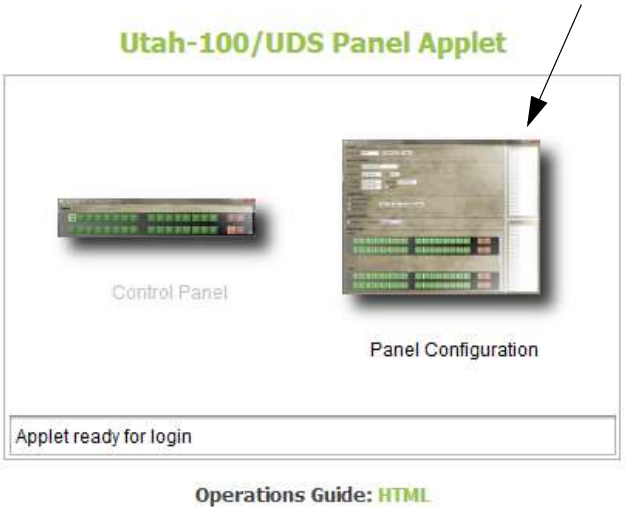

2. Run the appropriate installer on the PC.



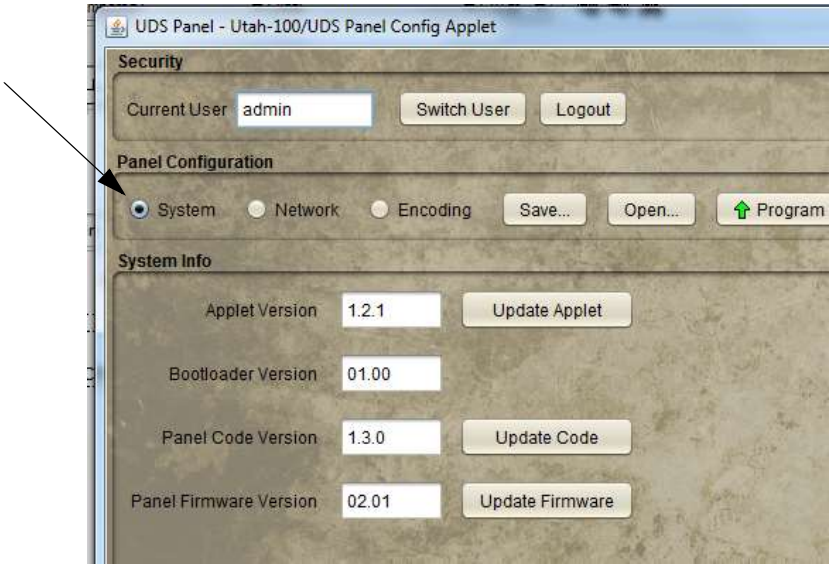

Leave the default installation path. Take note of the path of the .uus file in the instructions as you close the installer. You will use this file in step 6 (below).

1. Early hardware version may require configuration restoration following a system reset.

3. Re-launch the PC's web browser, access the device applet, then open the configuration window.

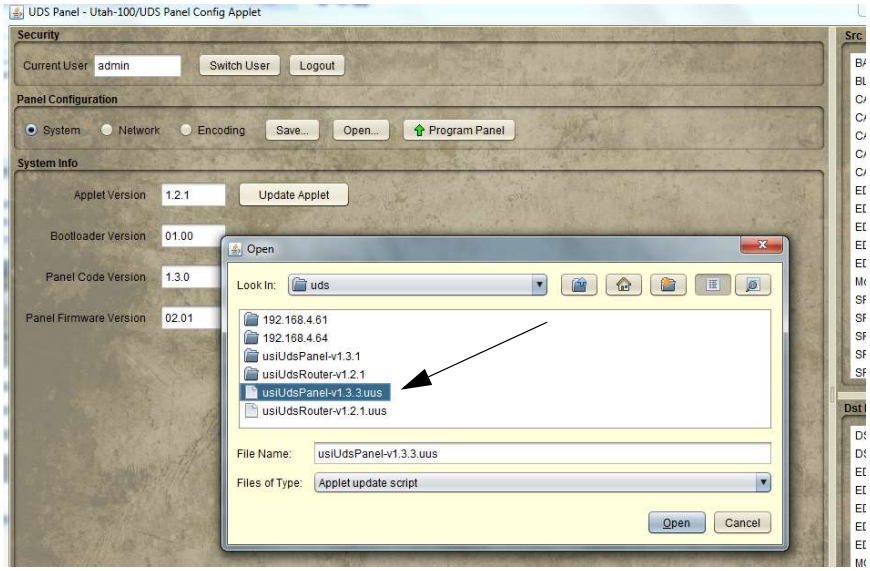



4. Select the 'System' screen in the config window.



5. Click the ‘Update Applet’ button.


6. Select the appropriate .uus file installed in step 2 (usiUdsPanel-v1.3.1.uus).




7. Several files will be transferred to the device. When the file transfer is complete, close any open web browser windows and reset the device by pressing the chassis reset button. The device will take a bit longer to reboot as the update is burned into the device flash.

8. The update is complete once the device has finished rebooting. The system will now operate with the new device software and a new version of the device applet.

# Addendum C

# The Debug Port

## *Diagnostic Port Usage*

The UDS 288 crosspoint and FCM contain an on board microprocessor and RS-232 DTE port that can be used to configure, gather status, or perform updates to the card. This section describes the commands and status information generated by these ports.

## *Physical Connections*

There are two types of physical connection for these ports, a DB-9 female labeled ‘Serial’ on the router rear panel for the system Frame Controller Module pair, and an RJ-45 connector on the crosspoint board’s front edge.

For the FCM connection, the pinout is detailed below. The crosspoint board uses a DB9 to RJ-45 adapter, USI Part Number 140000-9, and a length of standard CAT5 patch cord for its connection.

Pinout Information

**Table 0-1.**

| Pin | Signal Name | Direction |
|---|---|---|
| 2 | Receive Data | In |
| 3 | Transmit Data | Out |
| 7 | RTS | Out |
| 8 | CTS | In |
| 5 | Ground | - |

## *Recommended Terminal Emulation Program*

It is recommended that the ‘TeraTerm. shareware program, which is included in all Utah Scientific System CD’s be used when communicating to the router. It is also recommended that a PERMANENT connection between the Utah Scientific control computer and the router FCM be put in place for diagnostics.

## *System Diagnostics - Frame Controller Module*

The FCM in the system gathers information from all the devices and determines when to change the system operation based upon what it received. It controls which crosspoint card is actually passing signal and which is standby, sets or clears alarms, and reports status to the SC4 over the MX Bus.

The serial port on the FCM contains a command-response type interface that allows you to determine how it is operating. Pressing the space bar will show you a list of available commands.

### *Status Description List*

In Development

## *UDS288 Diagnostic Port*

### *Diagnostic Port Usage*

Manual is good.

### *Physical Connections*

Manual is good.

### *Baud rate and terminal settings*

For the crosspoint card, use these settings –

| Item | Setting |
|---|---|
| Baud | 38400 |
| Data·Bits | 8 |
| Stop·Bits | 1 |
| Parity | None |
| Handshaking | XON/XOFF |
| CR·Translation | CR=CR/LF |

For the FCM card, use these settings –

| Item | Setting |
|---|---|
| Baud | 38400 |
| Data·Bits | 8 |
| Stop·Bits | 1 |
| Parity | None |
| Handshaking | XON/XOFF |
| CR·Translation | CR=CR |

Remove terminal settings heading and paragraph

### *Recommended Terminal Emulation Program*

Manual is Good

### *System Diagnostics – Frame Controller Module*

Manual is Good

### *FCM Diagnostics Menu*

Pressing the space bar when connected to the FCM will give you a menu of choices. That menu is reproduced below.

Invalid Selection

I = IO Card Information

S = Status Report

G = Read ScanGate

### *'I' IOCard information Menu*

Below is a sample printout of this menu. It shows which cards are installed in the system and their status.

It has been shortened for readability, and actual system will report all 24 input and output card slots and the cards that are installed their, or NI for an uninstalled card.

**Crosspoints -**

XPT1 = PN 1414- 1, SN 0101 Temp Stat = 85, Power = 0 W, Vers = 36, Errs = 0, REV=1

XPT2 = PN 1414-21, SN 0107 Temp Stat = 85, Power = 0 W, Vers = 36, Errs = 0, REV=21

Output Cards -

Card 0 Type = 3G Output SPD = 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 MUX = 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Card 1 Type = 3G Output SPD = 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 MUX = 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Card 2 Type = 3G Output SPD = 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 MUX = 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Card 3 Type = 3G Output SPD = 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 MUX = 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Card 4 Type = 3G Output SPD = 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 MUX = 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Card 5 Type = 12G Output SPD = 1b1b1b1b1b1b1b1b1b1b1b1b1b1b1b1b

Input Cards -

Card 0 Type = 3G Input SPD = 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

Card 1 Type = NI

Card 2 Type = NI

Card 3 Type = NI

Card 4 Type = NI

Card 5 Type = 12G Input SPD = 1b1b1b1b1b1b1b1b1b1b1b1b1b1b1b1b

### *'S' Status Report*

This command reports the overall status of the system, including whether or not there are any alarms.

Status Report =

External PS - OK | Fans - OK | Crosspoints – OK // Alarm status of the crosspoints, fans and external PS

FCM Slot = Primary//Indicates which FCM module is active.

Level = 0 //Indicates the setting of the MX Level Dipswitch

Offset = 00 //Indicates the setting of the IO Offset Dipswitch

Partner Status = 0 //Indicates whether or not the partner FCM is present

### *'G' Scangate Read*

This menu item reports the part number, revision and option dipswitches of the currently active FCM Module.

Scangate Read =

PN - 14121000, Rev - 30, Sn - 109, Dipswitch - 0

# Addendum D

# UDS288 Crosspoint Card – 121418-1

## General

The 121418-1 Crosspoint Card is the central component in the 10 RU UDS288 router. It contains circuitry to control a 288x288 switching array based on commands from the MX-BUS, power supply circuitry and alarm reporting circuitry.

### *Circuit Description*

The upper end of the card is the power supply section. There are modules that convert the system 12V down to the 3.3V, 1.8V and 1.2V. U12 monitors these voltages and will generate alarms if any are faulty. PWR OK, a green LED on the board front edge, lights when all supplies are good.

The lower end of the card contains all of the control circuitry on the board. This consists mainly of a 16 bit DSP, and a FPGA. The FPGA receives commands from the external MXBUS and switches the crosspoint chip appropriately, while the DSP monitors the health of the board and reports that back to the system level Frame Controller Module for reporting to the external world.

The video switching core of the system is located under the heat sinks. This consists of multiple crosspoint chips that are mainly powered by 1.8V. Each crosspoint receives an 8 bit control bus and signals from video input cards, then drives the video outputs to the output cards.

## *Power*

Power consumption is <550w.

## *Controls and Indicators*

Controls

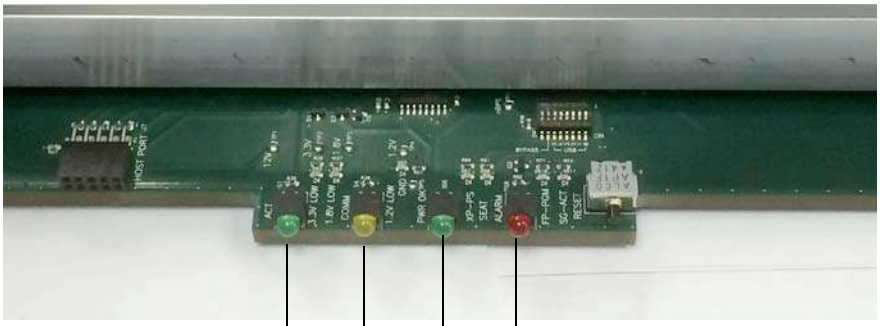
SW2 – Momentary push button reset switch. Resets all processing on the card.

SW1 – 8 Position Dipswitch. Used for board programming and custom settings.

J7 - Header for connection of a JTAG pod for programming the FPGA.

J19 – Header for programming the DSP, from a PC parallel port.

P1 – Used for serial diagnostics of the card from a RS-232 port.



### Indicators

DS5 – 1.2V failure indication – RED.

DS3 – 1.8V failure indication – RED.

DS2 – 3.3V failure indication – RED.

DS7 – XP Power Supply OK indication – GREEN.

DS9 – Health Indication – (ALARM)RED – On if there is a problem.

DS4 – Communication from FCM indicator – (COMM)Yellow.

DS1 - Communication to crosspoint chip – (ACT)GREEN – On if OK.

DS6 – Power Supply OK LED – (PWR OK)GREEN.

DS8 – Seating LED – Indicates that the crosspoint card is correctly installed in its slot when green.

DS10 – FPGA programming complete – GREEN.

DS11 – Scangate active LED – Yellow.

# Addendum E

# Troubleshooting

### *Hard Reset*

(This resets the device and implements changes to software and network settings that are changed without putting it back to the factory default settings)

- Locate the small hole on the rear of the device and press the button within releasing it quickly, using a small tool such as a paper clip.
- If the reset button is not easily accessible, power cycle the device by removing the AC end of the cord and not directly at the device.

### *Factory Reset*

(This resets the device and rewrites all of the data parameters such as IP addresses and router tables to the default settings)

- Locate the small hole on the rear of the device and press and hold the button within for 5 seconds or longer. NOTE: the LED's on the Ethernet port of the unit should go dim while the button is pressed.

### *Serial Port Network Configuration*

(These steps will temporarily set the network parameters so that the device applet can access the device in the event that the network settings in the device do not match the settings of the network that the device is connected to.)

1. Locate the RJ45 to 9pin adapter labeled 'UDS Diag' provided with the system
2. Connect a straight through CAT5 cable between one side of adapter and the 'Serial' port on the back of the device.
3. Connect the 9pin side of the adapter to the computer.
4. Use terminal program such as TeraTerm or HyperTerminal and set the serial port settings to 115,200 baud and 8 data bits, no parity and one stop bit.

5. At the shell prompt, type ‘ipconfig(space)staticip(space)<enter IP address here>(space)<enter network subnet here, such as 255.255.255.0>(space)<enter optional gateway address here>
6. Press the enter key to temporarily implement the settings in step 5. Note: this is temporary and only valid until the device is rebooted. You must program the device from the device applet in order to permanently set the network configuration.
7. The device should now be accessible using the device applet from the web browser.

## *System Fails to Reboot Properly*

There are earlier versions of router and panel hardware that had the potential of corrupting the device configuration, causing the device to not reboot properly. If this occurs,

1. Perform factory reset as shown above.
2. If your device is not using the default network configuration, then use the quick start documentation or follow the ‘Serial Port Network Configuration’ steps above to temporarily set the network parameters in the device so they can be accessed and configured via the device applet.
3. Open the saved device configuration file to restore the configuration and program the device.

## *Applet Opens with Wrong or Old View*

- After programming the update to the device, sometimes the status and other operations don’t work properly. Either refresh the browser window using the browser refresh button or simply close and re-open the browser and access the device applet.