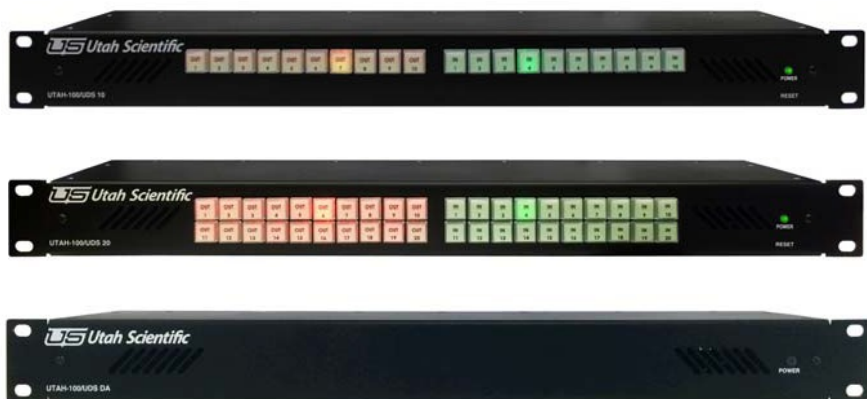




UTAH-100/UDS Compact Router Series



System Setup and Operation

UTAH 100/UDS Compact Series- Operations Guide

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Utah Scientific, Inc.

4750 Wiley Post Way, Suite 150
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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

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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.
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- 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



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Section 1

Overview

Introduction

The UDS Utility Router Series is a compact, self-contained routing switcher system designed for SDI video routing. Using common components, systems of 10x10, 20x20 and 8x32 DA can be constructed in a 1 RU chassis using standard BNC connectors. All necessary control and cooling components reside in the chassis.

The Utility Series builds off of the existing UDS control system allowing for up to 10 remote connections consisting of automation systems, hardware based control panels or software based control panels. RS-232 or RS-422 control is also available using standard RCP-1 protocols to a single DB9F port on the chassis.

The 10x10 and 20x20 routers can be ordered with or without an integral control panel on the front of the unit. This control panel provides dedicated output and input select buttons that are fixed functionality -- they cannot be configured. The button legends can be modified however, to be more descriptive of the source or destination controlled by that key.

Each system has optional redundant power supply connections, and consumes less than 30 watts of power.

Overview

The video path within the router is capable of 18 Mb/Sec to 3Gb/sec. Reclocking is performed at 270Mb/Sec, 1.485Gb/Sec and 2.970 Gb/Sec, and any other frequency is passed with the reclocking automatically bypassing. The reclocking feature is DVB-ASI compatible. Very long cable lengths are achieved by reclocking each input signal directly after it is received, providing the cleanest signal possible to the system.

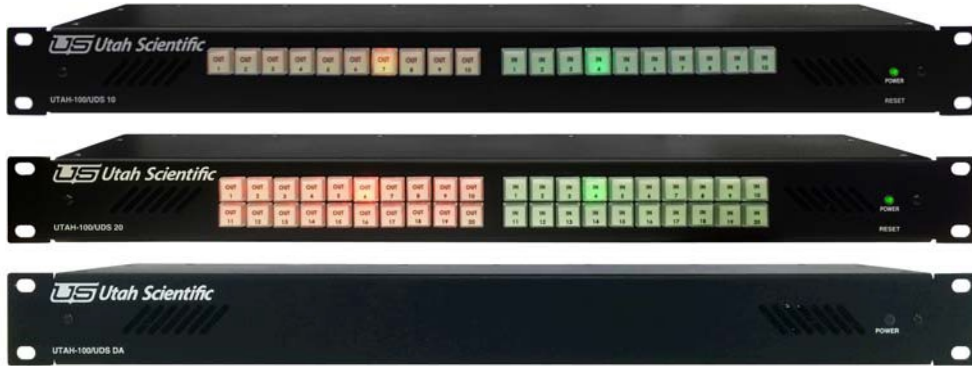


Figure 1-1. UT-100 UDS 10x10, 20x20, and 8x32



System Architecture

Each of the three possible configurations begin with a Base Crosspoint card, the 121352-1. This card contains all control circuitry, crosspoints, 8 dedicated inputs, 10 dedicated outputs, and two Bi-Directional ports. This card also has two expansion slot connections for additional boards.

For a 10x10 router, only this base card is used.

For a 20x20 router, an Input Expansion board (121353-1) and an Output Expansion Board (121354-1) is added to the Base Crosspoint.

For an 8x32 DA product, both expansion slots are filled with Output Expansion Cards and the system automatically makes the bidirectional ports Outputs when this configuration is recognized, resulting in an 8x32 port system.

Each system can contain a local control panel. The default configurations have the 8x32 without a local panel, the 10x10 with a local 20 button panel, and the 20x20 with a local 40 button panel. These local panels have a fixed configuration that is not changeable from the control system. If more advanced panels are desired, systems can be ordered without local panels and the UDS-CP or UDS-XY can be added as external panels.

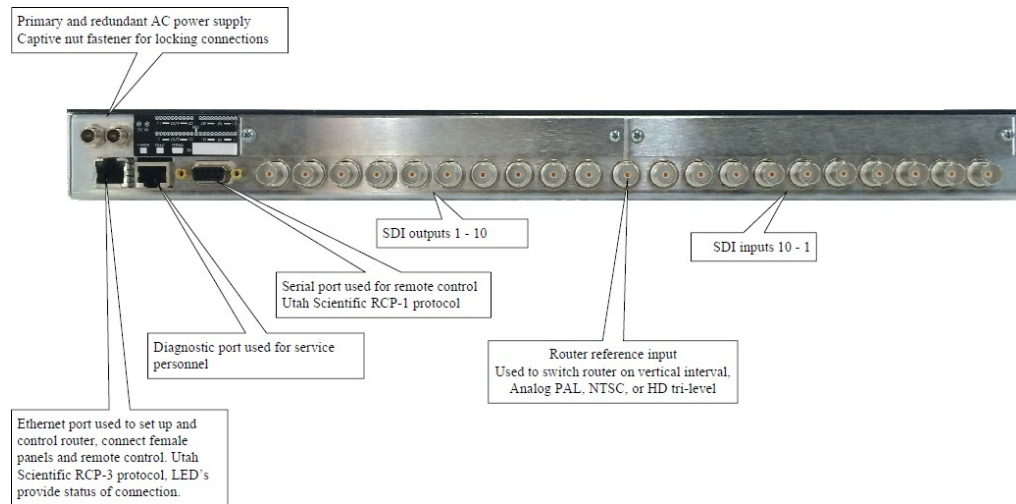


Figure 1-2. UDS-XY

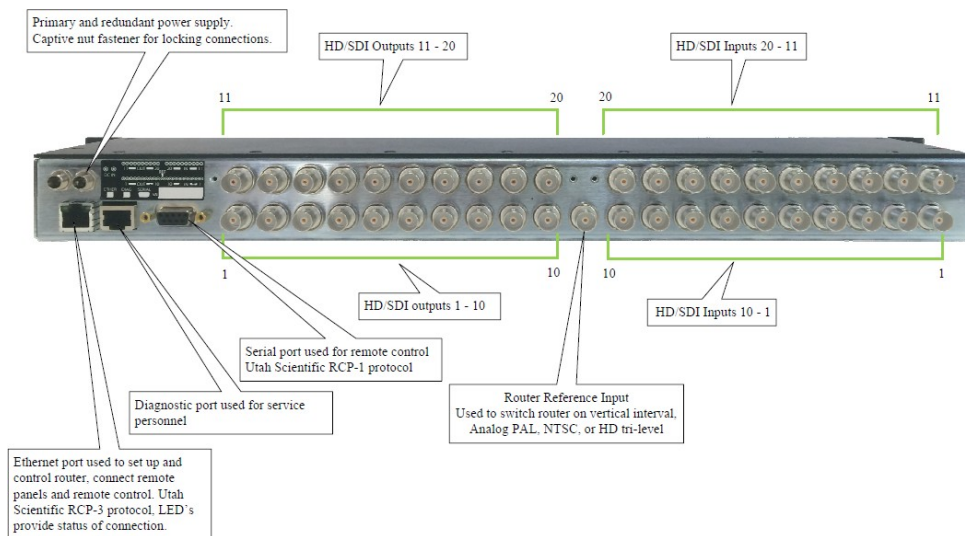
The front panels include generic labels that can be changed to suit your installation.

System Diagrams

UDS 10x10

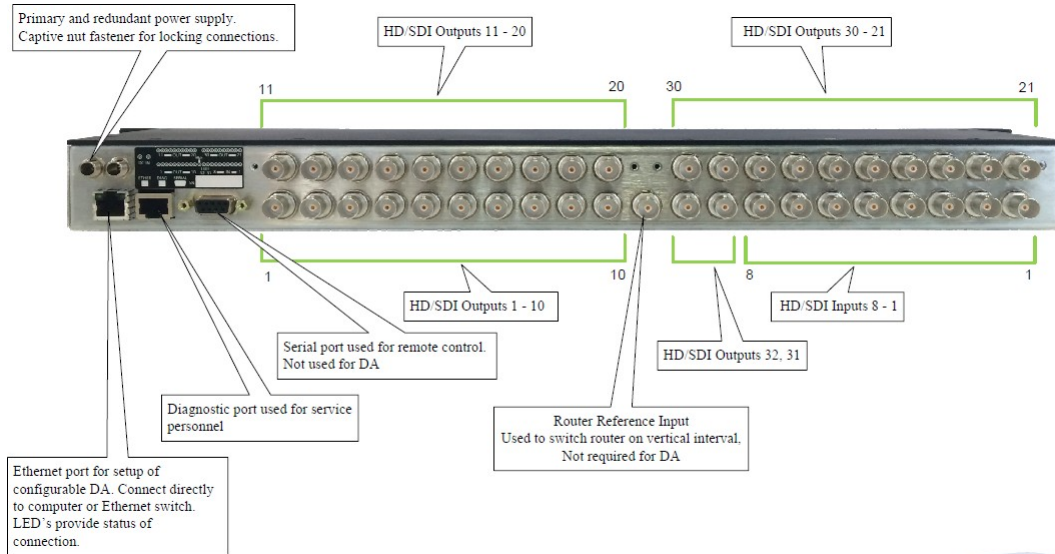


UDS 20x20

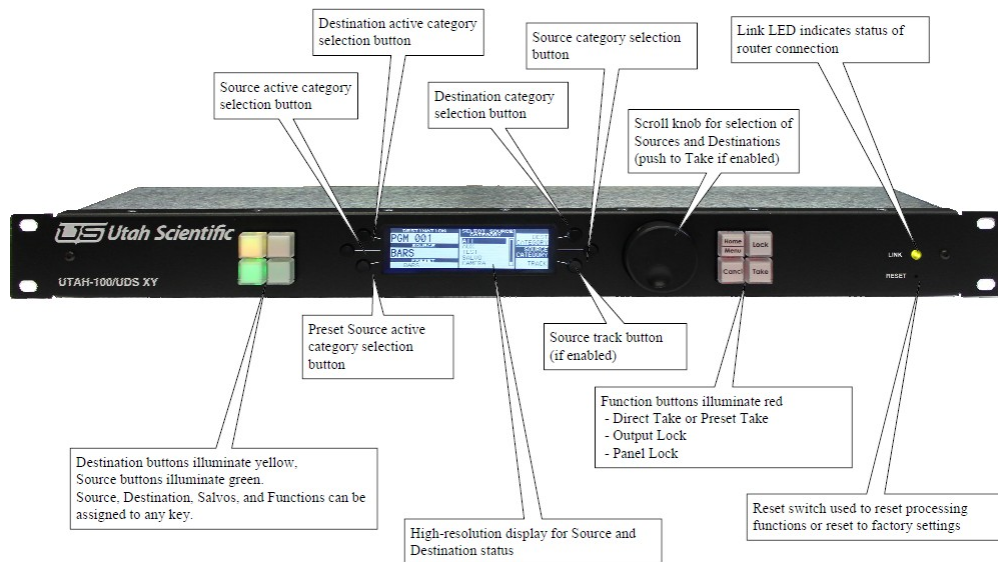




8x32 DA



UDS XY



Installation

Power Connections



Figure 1-3. LH rear panel connections (power connectors)



Figure 1-4. 140033-08 power supply here

There are two captive-nut power connections on the rear of the chassis. They accept input from the 140033-08 Utah Scientific 30W power supply. Either port can be used, and one or two supplies can be connected or redundancy.



Ethernet Connections



Figure 1-5. LH rear panel connections - Ethernet Jack

Using standard CAT-5 or CAT-6 Ethernet cable, connect this port to an Ethernet Switch. This port is an Auto MDI-X port, so if desired it can be connected directly to a PC or UDS Remote Control Panel without the need for a crossover cable. Cable lengths of up to 100 meters are supported. This port is 10/100 capable.

The two LED's in this port indicate link state and speed.

- Both LED's ON solidly indicate no link.
- The LH LED flashing and the RH LED solid indicate 10 Mb/Sec link.
- The LH LED flashing and the RH LED off indicate 100 Mb/Sec link.

RCP-1 Serial Port



Figure 1-6. LH rear panel connections - DB-9

The DB9 Serial port can be used to remotely control the router using standard RCP-1 protocols. Contact Utah Scientific Customer Support for a copy of this protocol. The baud rate, data/start/stop bit configuration and 232/422 mode of this port are configured in the Web Based GUI described in Section 2 of this manual. The pinout of this port is –

Table 1-7.

DB9 Pin	RS-232 Signal	RS-422 Signal
2	TX	TX+
3	RX	RX+
5	Ground	Ground
7	N/C	TX-
8	N/C	RX-



Diagnostic Serial Port



Figure 1-8. LH rear panel connections - RJ45 Serial Port

The RJ-45 serial port is used for Diagnostic connections only. Utah Scientific Service Personnel may ask you to connect a serial port here to diagnose certain issues. The system is delivered with an adapter, USI PN 140033-15, that allows you to connect a CAT5 patch cord to this port, then to the adapter, and then to an RS-232 port on a standard PC. The pinout of this port is –

Table 1-9.

RJ45 Pin	RS-232 Signal
1	UDS Debug TX
2	Ground
4	SC-CPU Debug TX
5	SC-CPU Debug RX
7	Ground
8	UDS Debug RX

140033-15 Adapter Pinout and Schematic

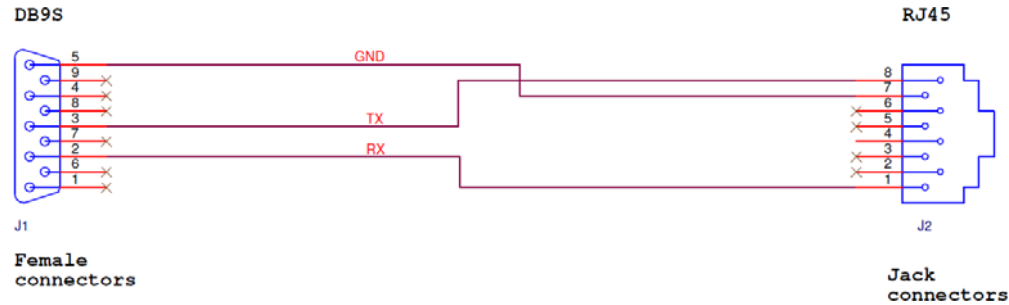


Figure 1-10. Pinout Schematic

DB9S to RJ45			
Name	PIN	Wire Color	PIN
GND	5	Brown	7
RX	2	White	1
TX	3	Blue	8

Reference Connections

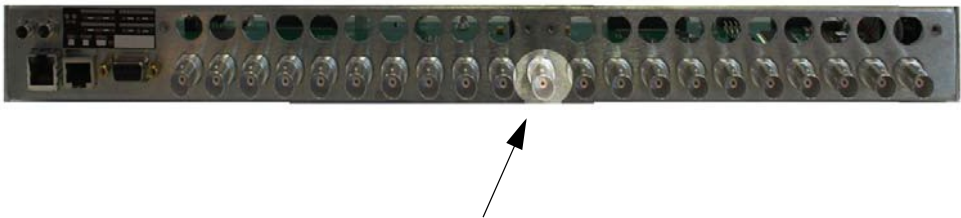


Figure 1-11. Rear Panel - Center BNC on the lower row

The BNC on the lower row of the router directly in the center is for an analog reference signal used to switch the router in vertical interval. Connect Analog Black Burst or Tri-Level Sync to this port.



Video Connections

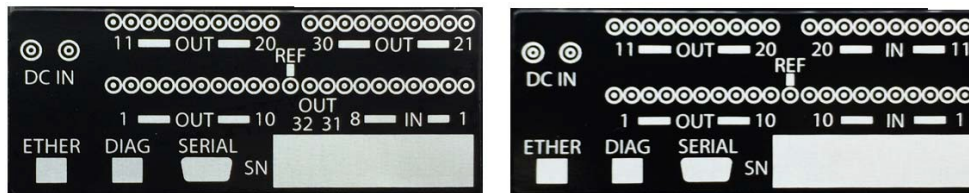


Figure 1-12. Rear Panel - label indicating IO Numbers

The 40 BNC connectors have different numbering based on the 3 different configurations. Each configuration has a label indicating which BNC's are which. Refer to this label when connecting Input or Output Coax cables to the BNC's.

Front Panel Controls and Indicators

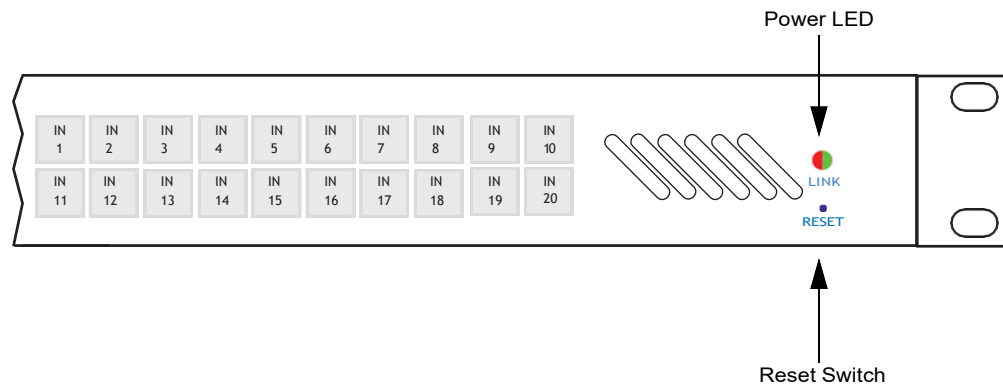


Figure 1-13.

Power LED

- Green indicates normal operation.
- Red indicates a fault with temperature or power supplies.

Reset Switch

- Pressing this switch momentarily will reset all processing functions.
- Holding this switch in for 10 seconds will default all configuration settings to the original factory settings.

The IP setting's default is 192.168.5.180

The serial port default is RS-232, 115k baud, 8,N,1.



Components

Base Crosspoint Card (121352-1) Revision 02



Figure 1-14. Crosspoint Card - #121352-1

Power Supplies

This system utilizes the standard external 12 Volt DC power supply, 140033-08. It accepts one or two supplies for redundancy. Diode D2 acts as an O ring diode for the two external power supplies.

The 12VDC rail feeds the two attached fans directly, and also feeds the three regulators that create the lower DC voltages required for the board. U35 creates a 6 amp 3.3V rail, U29 creates a 2 amp 2.5V rail, and U24 creates 6 amp 1.2V rail.

All of these supplies are fixed output and non-adjustable. U34, an LTC2910 voltage supervisor, monitors all of the voltage and generates a reset not signal if any are out of tolerance. LED DS3 illuminates if all of the supplies are in tolerance.

Control Circuitry

The control circuitry for this card is centered around a Freescale K60 MCU and Xilinx FPGA. The CPU interfaces control inputs from Ethernet and Serial to the FPGA, which controls all of the switching functions within the router.

FPGA and Memory. The K60 communicates to the XC6SLX9 FPGA (U27) and the battery backed SRAM (U37). The 16 bit multiplexed Flexbus from the K60 connects to both of these components to control router switches and store status. FPGA support circuitry includes the SPI Configuration PROM U36 and programming port J24. There are two 3 position jumpers –

JP3 – Should always be installed on 1-2.

JP4 - Place on 1-2 to program the FPGA, 2-3 to program the CPU.

Also, sync stripper component U6 receives analog reference and presents H,V, and F to the FPGA. The front panel switches and LED's are monitored and controlled by a soft core processor inside the FPGA.

A general description of the control lines from the FPGA are -

- FPCA1-8. These lines make up two I2C busses, reset and presence control lines for the front panel.
- SG1-6. Control lines to the Scangate device (Page 8) that allow the CPU to read the board part number and revision.
- ECON1-8. Two I2C busses and 4 presence lines to the two expansion connector slots (Page 11)
- A0-7 and XPC0-3. Control lines to the Crosspoint chip (Page 10)
- BISP0-5. SPI control lines to the two bi-directional ports.
- RXn0-1. Control lines that make the bi-directional parts either inputs or outputs.
- CN0-1. I2C Bus to the two on-board reclocker components.

External port interconnects. The CPU connects to the following external ports - Ethernet, DB9 and diagnostic RJ-45 serial. The Ethernet port, made up of PHY component U25 and MagJack J1, is a 10/100 Mb compatible port with no configurable elements.



Crosspoint

The crosspoint is a M23636 (U28). All input signals are AC coupled into the device and outputs are DC Coupled. A heatsink is installed on the IC.

Input Circuits

Inputs 1-8 are made up of M21564 cable equalizers that feed M21350 reclocking components. These reclocker's automatically lock to and reclock signals at 270, 1485 and 2970 Mb/Sec rates, and automatically bypass other signals. The bandwidth is from 18 Mb/Sec to 3.2Gb/Sec. There are no adjustments on these inputs. The differential pairs created by the reclocker's feed directly into the crosspoints.

Output Circuits

There are 10 dedicated outputs on the board. They are DC coupled to the crosspoint and the outputs driven by M21328 cable drivers.

Bi-Directional Circuits

Two LMH0387 bi-directional components make up the bi-directional ports. They function as cable equalizers or cable drivers depending on the state of the RX- pin. There is both an input and an output connection to the crosspoint for each of these devices.

Expansion Connectors

The expansion connectors will accept either 121353-1 Input cards or 121354-1 output cards. The Left hand connector (JP1) connects to the crosspoint on inputs 11-20 and outputs 21-30. The right hand connector (JP2) connects on outputs 11-20 and inputs 21-30. 12 VDC power is applied to each of these slots as well as control signals.

Expansion Input Card (121353-1) Revision 02



Figure 1-15. 121353-1 Here

This card is a simple board that receives and reclocks 10 input signals and then drives them to the base crosspoint card. It has local power supplies and control circuitry.

Power Supplies

The 12 VDC from the base card is fused and then regulated to 3.3, 2.5 and 1.2 VDC 2 amp rails by U17, U15 and U14 respectively. This page also details a small I2C IO expander (U18) that identifies this card as an input card.

Input Circuits

Inputs 1-10 are made up of M21564 cable equalizers that feed M21350 reclocking components. These reclockers automatically lock to and reclock signals at 270, 1485 and 2970 Mb/Sec rates, and automatically bypass other signals. The bandwidth is from 18 Mb/Sec to 3.2 Gb/Sec. There are no adjustments on these inputs. The differential pair's created by the reclocker's feed directly into the crosspoints.



Expansion Output Card (121354-1) Revision 02

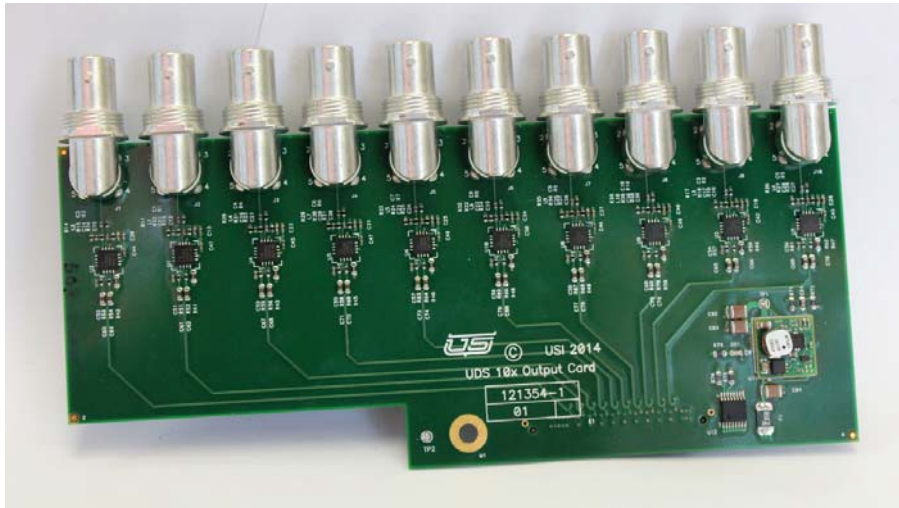


Figure 1-16. 121354-1 Here

This card is a simple board that receives 10 output signals from the crosspoint core and drives them out of BNC's. It has a local power supply and control circuitry.

Power Supplies

The 12 VDC from the base card is fused and then regulated to 3.3 VDC by U11. This page also details a small I2C IO expander (U12) that identifies this card as an output card.

Output Circuits

Outputs 1-10 are made up of signals delivered to this board from the crosspoint, and then driven out of BNC's by M21328 cable drivers.

Local Control Panel (121355-1) Revision 02



Figure 1-17. Front Panel - #121355-1

This assembly is a simple control panel that has 10 or 20 buttons to select outputs and 10 or 20 buttons to select inputs. The output buttons are backlit in amber (Red+Green) and the inputs are backlit in green.

The keys are polled and the top row of LED's lit by one I2C bus, and the lower row of keys lit by another I2C bus. This allow short loading of the maximum number of components for the 10x10 panel.

The Left Hand 20 buttons are outputs, and the right hand 20 buttons are inputs.

System Interface

J1 is a 20 pin connector that carries 3.3 VDC from the base card as well as reset signals, I2C Busses, and key press interrupts. Also on this page is a TCA8418 keyboard decoder IC that reports switch commands back to the processor.



Input Switches and LED's

Each LED is backlit by virtue of a voltage divider (See R58 and R59 for led DS20) and actively lit, when appropriate, by an associated transistor turning on (See Q10). Each transistor is driven from a separate output of the TCA6416 I2C IO expander associated with that bank of LED's (10 per).

Output Switches and LED's

The Output section has a green and a red LED for each switch, to provide an amber backlit color. The same voltage divider and transistor for actively lighting the LED's is use in this section.

Button Legends

The legends in this panel can be remade to label them for a users facility.



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.

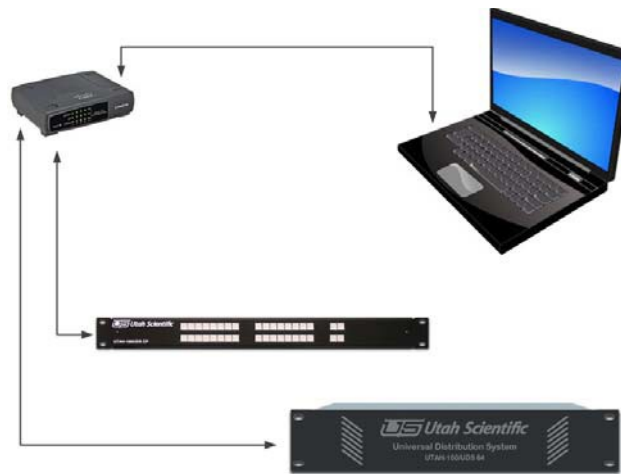


FIGURE 1.

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.

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.

1. All routers and panels require separate IP addresses.



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

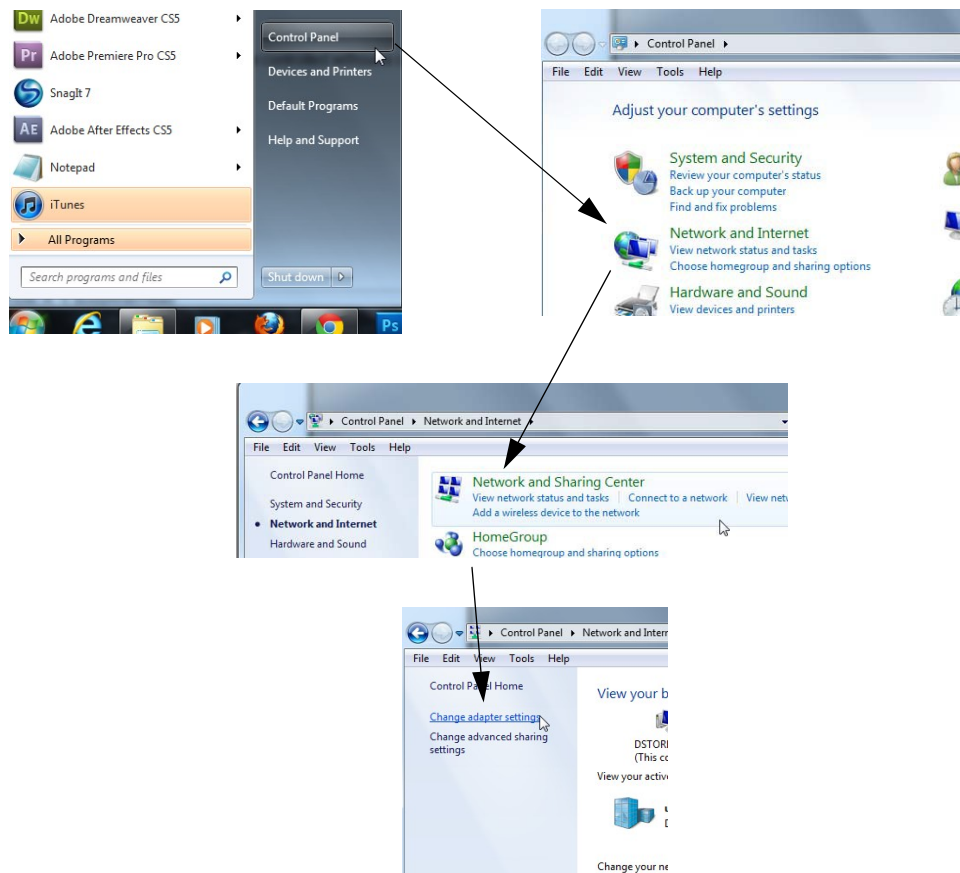


FIGURE 2.

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*.

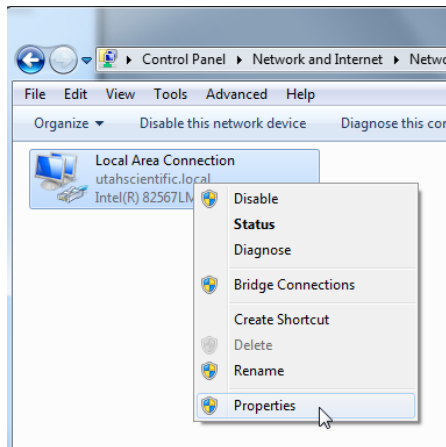


FIGURE 3.

The following window will appear.

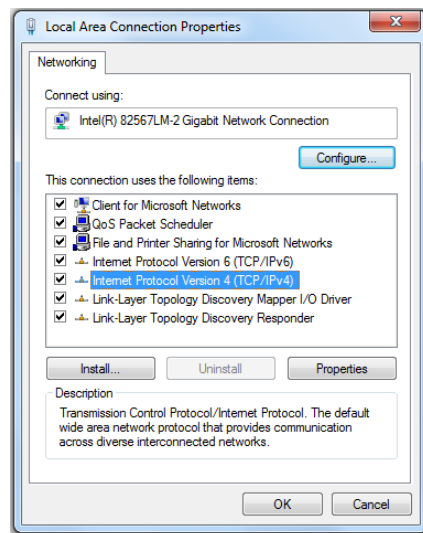


FIGURE 4.



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

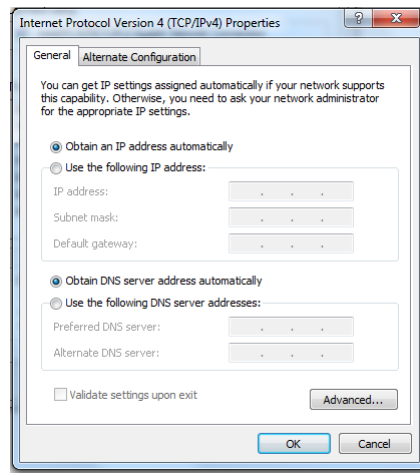


FIGURE 5.

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

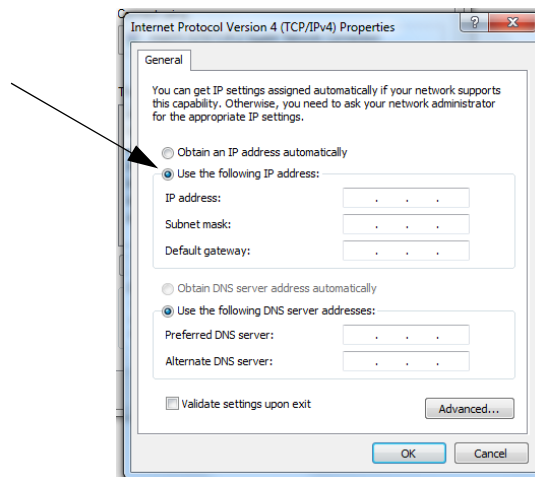


FIGURE 6.

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

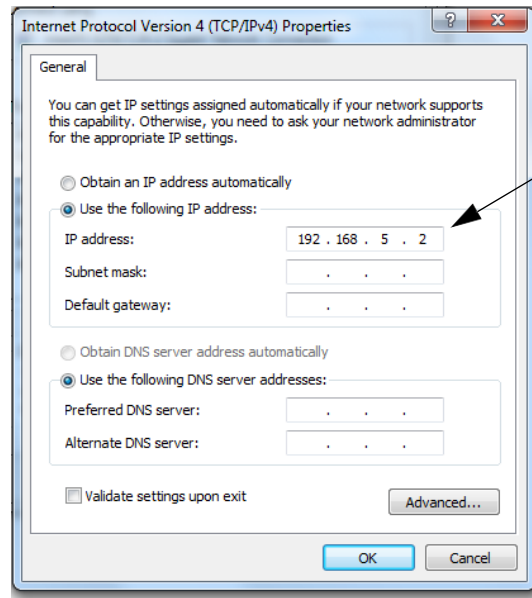


FIGURE 7.

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

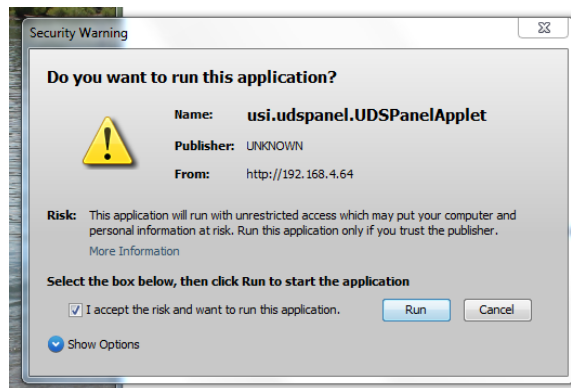


FIGURE 8.

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

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

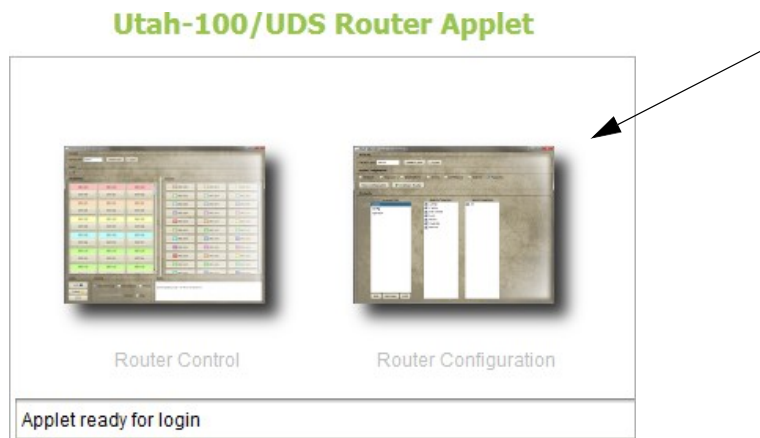


FIGURE 9.

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.

The screenshot shows a web-based configuration interface for a router. At the top, there's a 'Security' section with 'Current User: admin' and buttons for 'Switch User' and 'Logout'. Below that is the 'Router Configuration' section. It has several radio buttons: 'Serial', 'Data Comm' (which is selected), 'Sources', 'Destinations', 'Panel Views', 'Dst Blocks', 'Salvos', and 'Accounts'. To the right of these are buttons for 'Save...', 'Open...', and 'Program Router'. Under the 'Data Comm' section, there's a 'TCP RCP-3' configuration area. It includes fields for 'IP Address' (192.168.5.180), 'Port' (5001), 'Netmask' (255.255.255.0), and 'Gateway' (192.168.5.1). There is also an unchecked checkbox for 'DHCP'. Below this is the 'Serial RCP-1' section, which has a checked checkbox for 'Enable RCP-1'. It also includes dropdown menus for 'Serial Format' (RS 232), 'Baud Rate' (115200), 'Data Bits' (8), 'Parity' (none), and 'Stop Bits' (1). Two arrows from the left point to the 'Data Comm' radio button and the 'IP Address' field.

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.

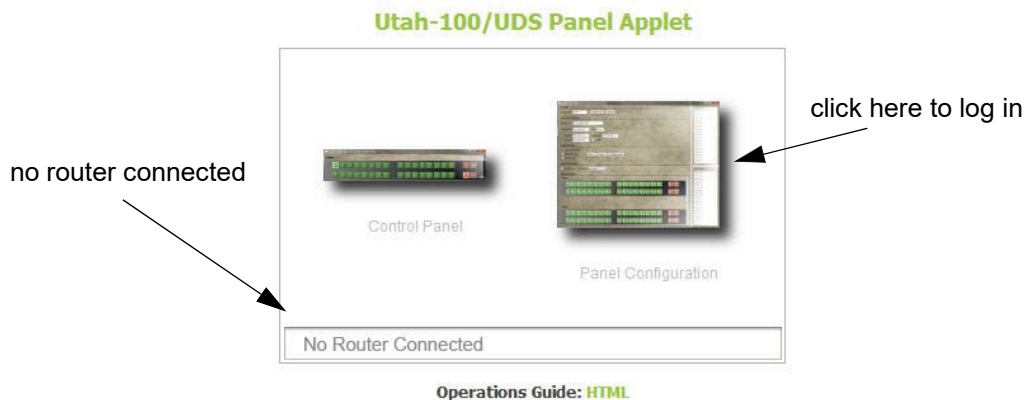


FIGURE 11.

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

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

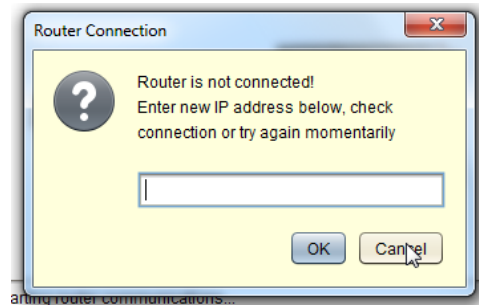


FIGURE 12.

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.

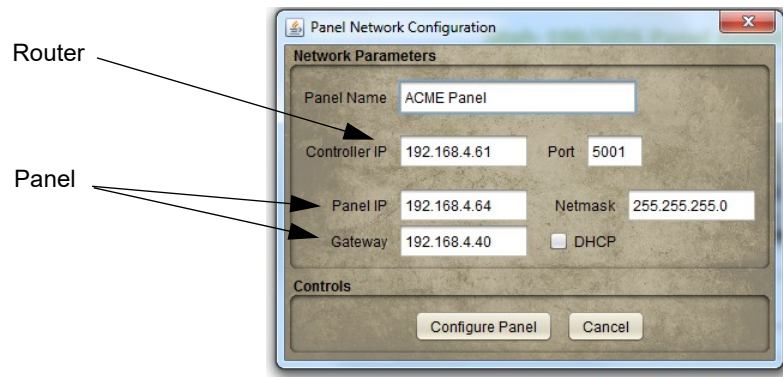


FIGURE 13.

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

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.

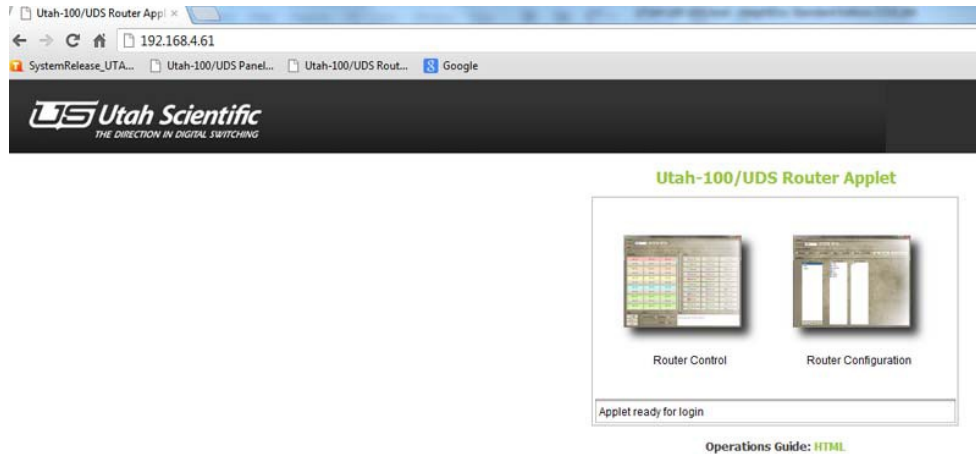


Figure 3-1.

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

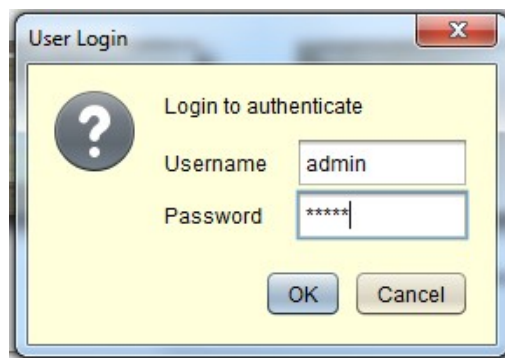


Figure 3-2.



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.

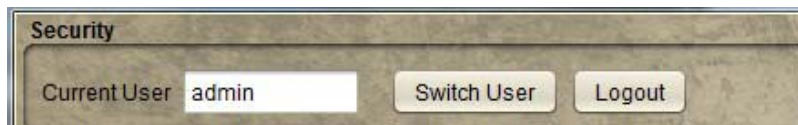
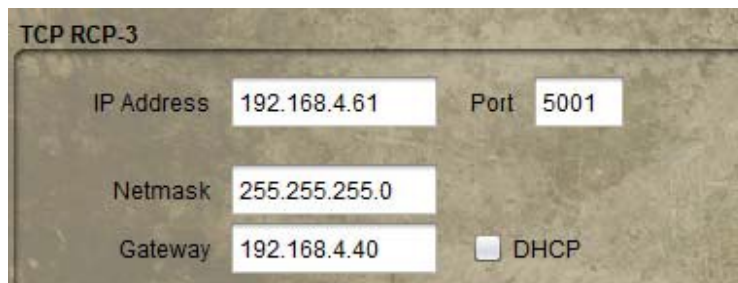


Figure 3-4.

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.



The screenshot shows the 'TCP RCP-3' dialog box with the following fields and values:

Field	Value
IP Address	192.168.4.61
Port	5001
Netmask	255.255.255.0
Gateway	192.168.4.40
DHCP	<input type="checkbox"/>

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.



The screenshot shows the 'Serial RCP-1' dialog box with the following fields and values:

Field	Value
Enable RCP-1	<input checked="" type="checkbox"/>
Serial Format	RS 232
Baud Rate	115200
Data Bits	8
Parity	none
Stop Bits	1

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.

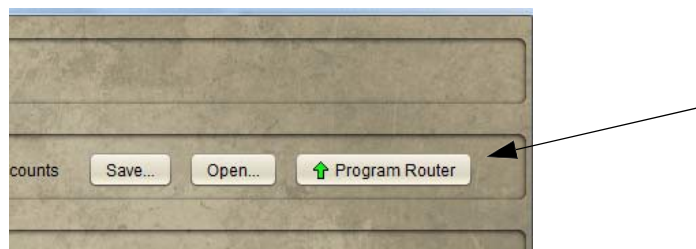


Figure 3-7.

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.

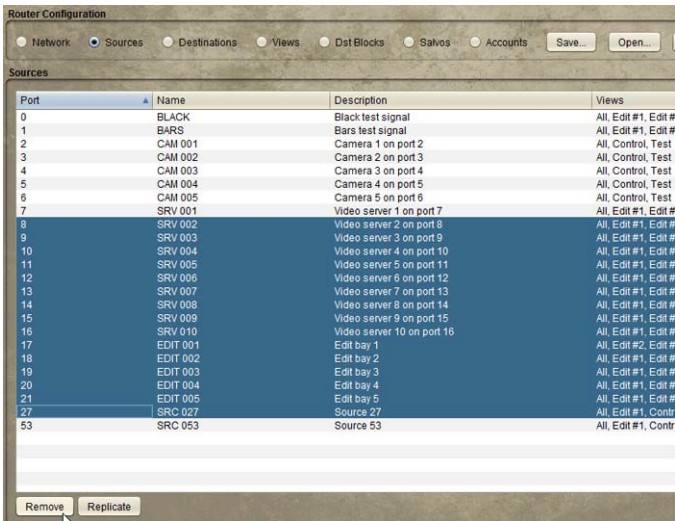


Figure 3-9.

Source Creation

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

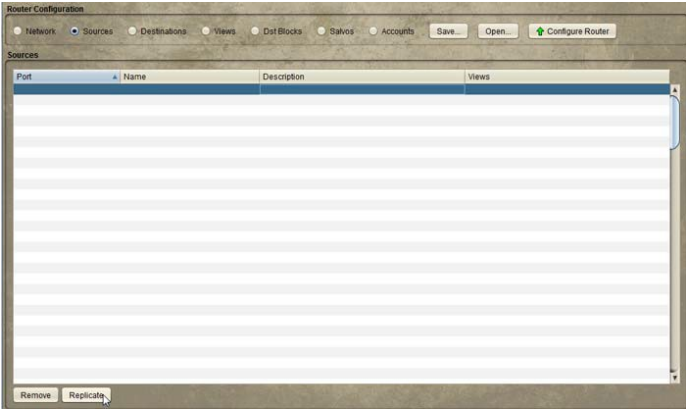
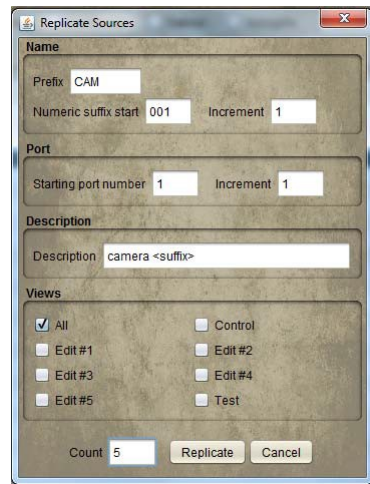


Figure 3-10.

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'.

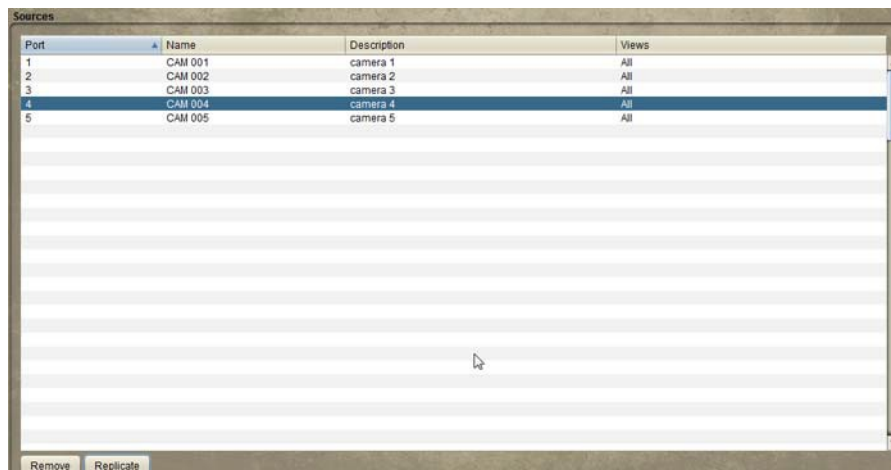


The 'Replicate Sources' dialog box contains the following fields and options:

- Name:**
 - Prefix: CAM
 - Numeric suffix start: 001
 - Increment: 1
- Port:**
 - Starting port number: 1
 - Increment: 1
- Description:**
 - Description: camera <suffix>
- Views:**
 - ☒ All
 - ☐ Edit #1
 - ☐ Edit #3
 - ☐ Edit #5
 - ☐ Control
 - ☐ Edit #2
 - ☐ Edit #4
 - ☐ Test
- Count:** 5
- Buttons:** Replicate, Cancel

Figure 3-11.

The resulting list display is illustrated below.



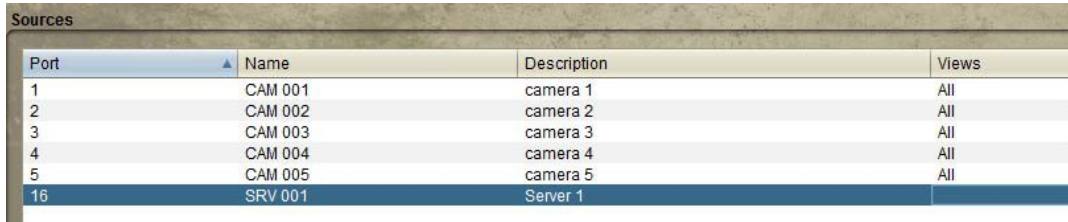
Port	Name	Description	Views
1	CAM 001	camera 1	All
2	CAM 002	camera 2	All
3	CAM 003	camera 3	All
4	CAM 004	camera 4	All
5	CAM 005	camera 5	All

Remove Replicate

Figure 3-12.

Source creation from within the list

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



Port	Name	Description	Views
1	CAM 001	camera 1	All
2	CAM 002	camera 2	All
3	CAM 003	camera 3	All
4	CAM 004	camera 4	All
5	CAM 005	camera 5	All
16	SRV 001	Server 1	

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.



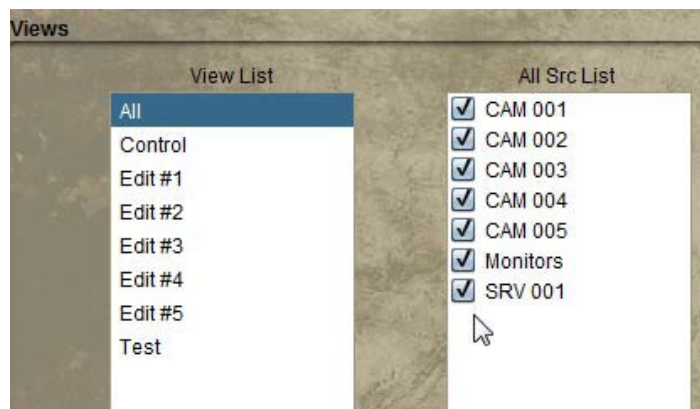
Configuration

☒ Sources
 ☐ Destinations
 ☐ Views
 ☐ Dst Blocks
 ☐ Src Blocks

Name	Description
CAM 001	camera 1

Figure 3-14.

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



Views

View List

- All
- Control
- Edit #1
- Edit #2
- Edit #3
- Edit #4
- Edit #5
- Test

All Src List

- ☒ CAM 001
- ☒ CAM 002
- ☒ CAM 003
- ☒ CAM 004
- ☒ CAM 005
- ☒ Monitors
- ☒ SRV 001

Figure 3-15.



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

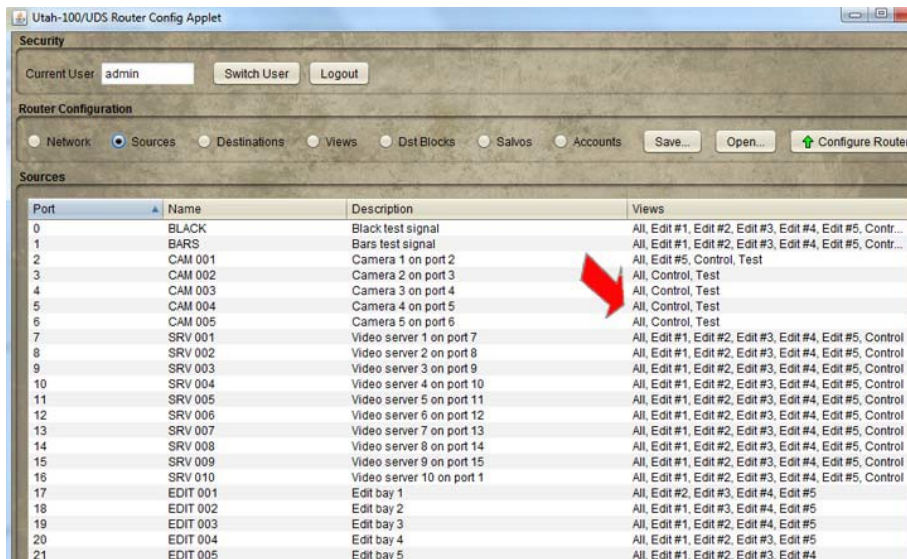


Figure 3-16.

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.

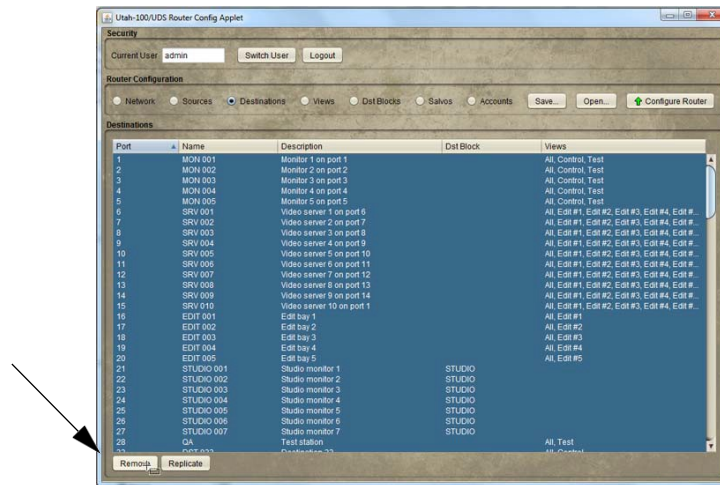


Figure 3-17.

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.

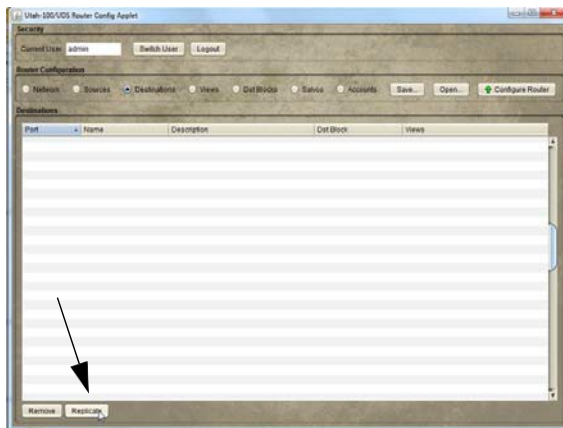


Figure 3-18.



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'.

The 'Replicate Destinations' dialog box contains the following fields and options:

- Name:**
 - Prefix: CON
 - Numeric suffix start: 001
 - Increment: 1
- Port:**
 - Starting port number: 1
 - Increment: 1
- Description:**
 - Description: control<suffix>
- Views:**
 - ☒ All
 - ☐ Edit #1
 - ☐ Edit #3
 - ☐ Edit #5
 - ☐ Control
 - ☐ Edit #2
 - ☐ Edit #4
 - ☐ Test
- Destination Block (optional):**
 - [Empty dropdown menu]
- Count:** 5
- Buttons:** Replicate, Cancel

Figure 3-19.

The resulting list display is illustrated below.

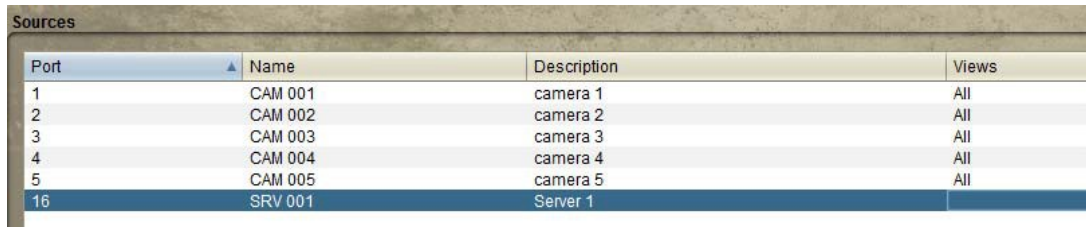
The screenshot shows the 'Utah-100/UDS Router Config Applet' with the 'Destinations' tab selected. The table below displays the replicated destinations.

Port	Name	Description	Dist Block	Views
1	CON 001	control1		All
2	CON 002	control2		All
3	CON 003	control3		All
4	CON 004	control4		All
5	CON 005	control5		All

Figure 3-20.

Destination Creation from Within the List

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



Port	Name	Description	Views
1	CAM 001	camera 1	All
2	CAM 002	camera 2	All
3	CAM 003	camera 3	All
4	CAM 004	camera 4	All
5	CAM 005	camera 5	All
16	SRV 001	Server 1	

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.



ration

☒ Sources ☐ Destinations ☐ Views ☐ Dst Blocks ☐ S

Name	Description
CAM 001	camera 1

Figure 3-22.



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

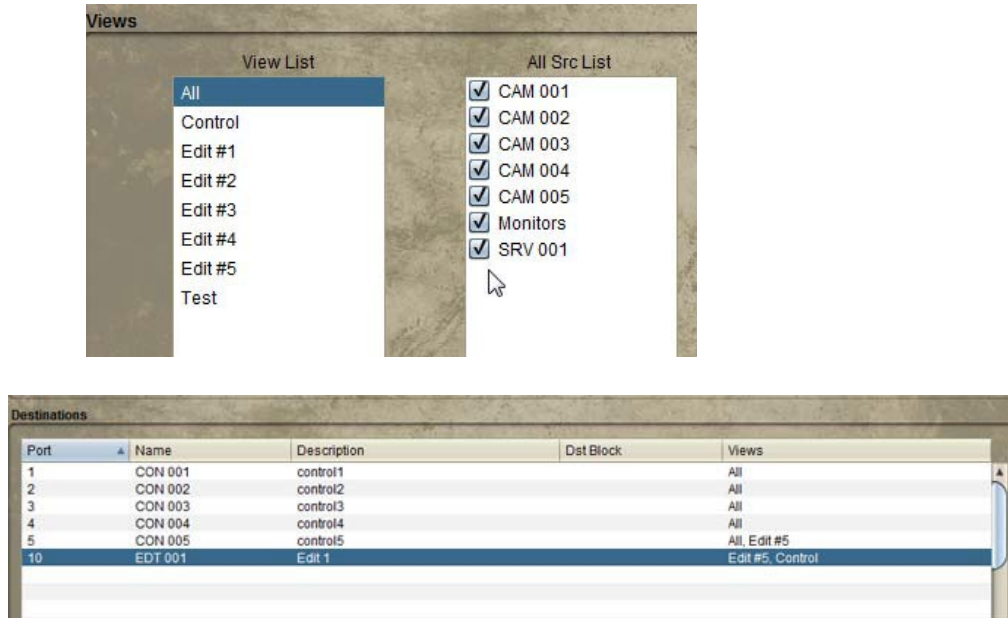


Figure 3-23.

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.

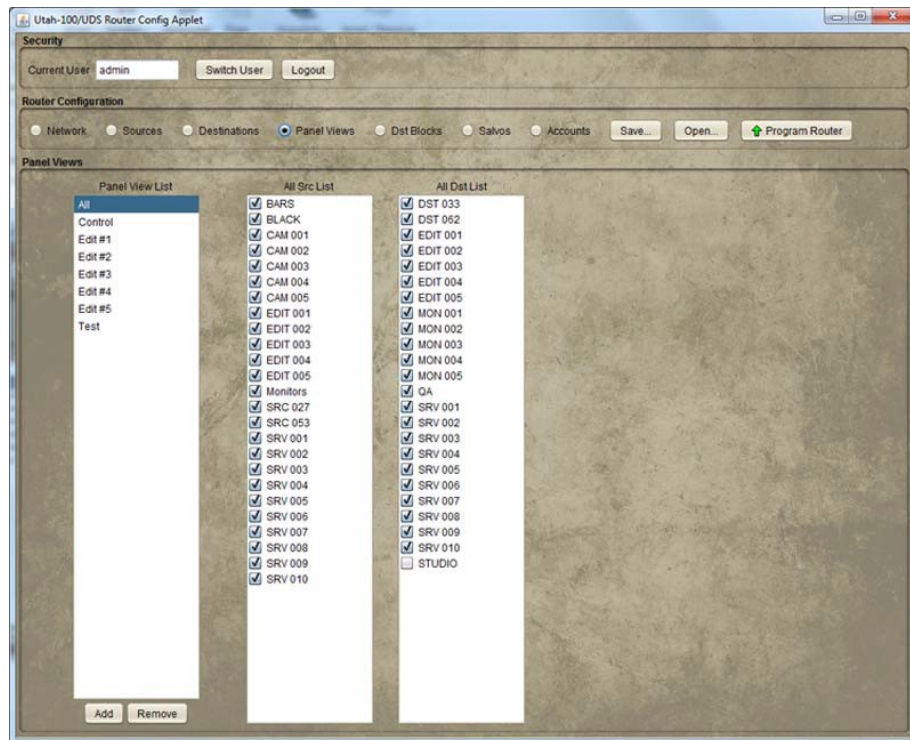


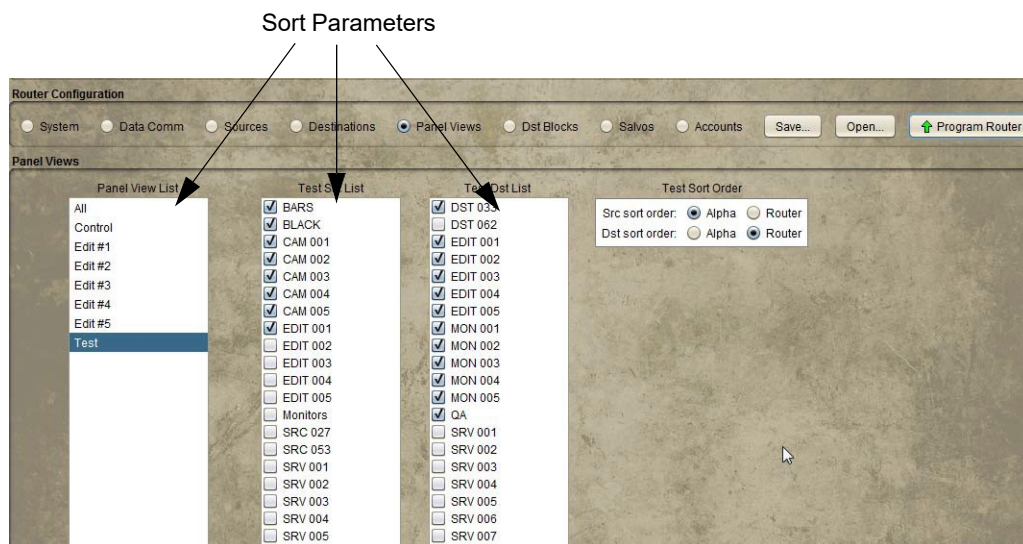
Figure 3-24.



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*.

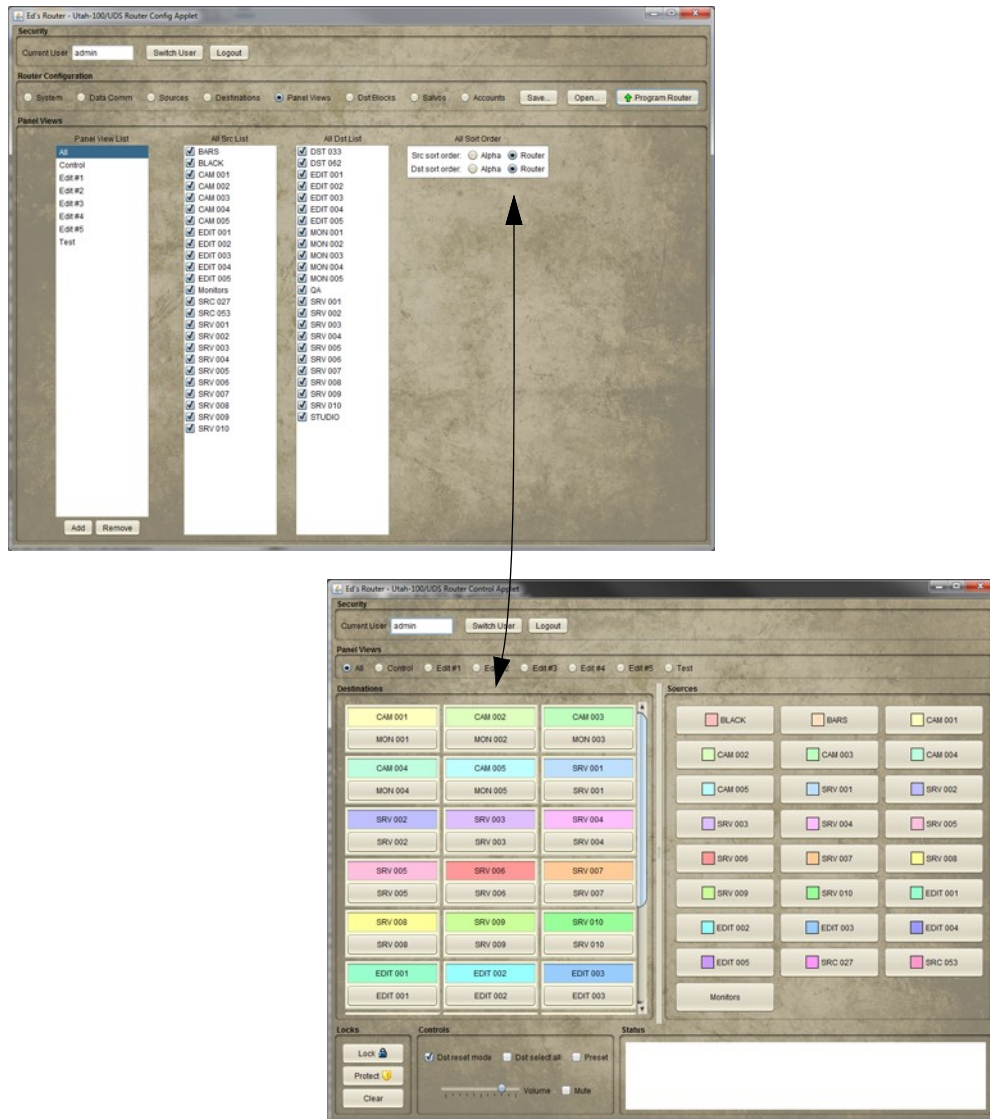


Figure 3-25. Router Sort



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*.

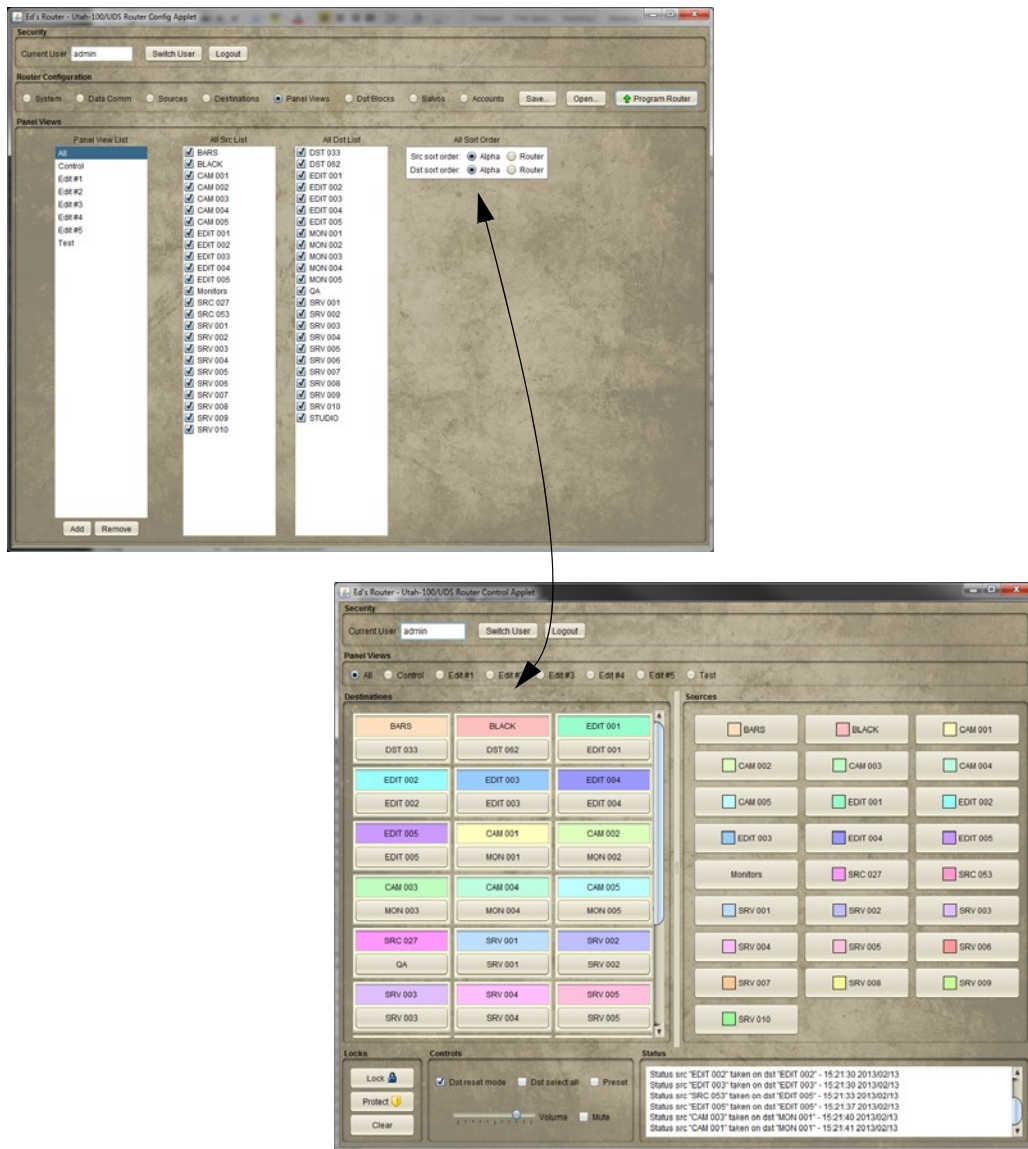


Figure 3-26. Alpha Sort

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.

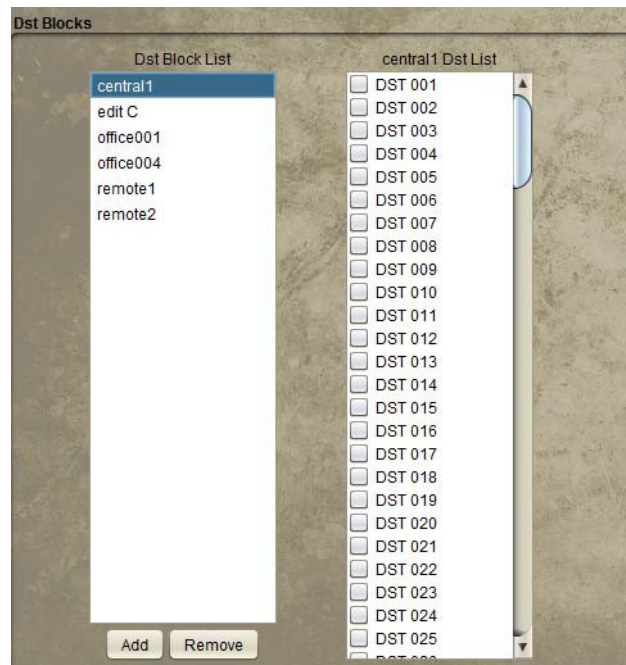


Figure 3-27.

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.

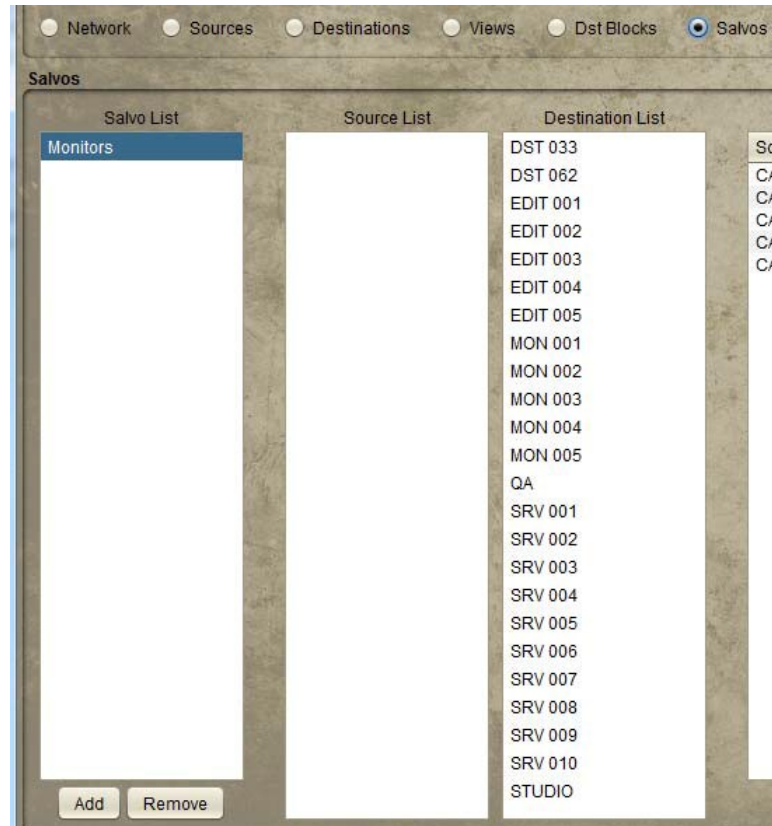


Figure 3-28.

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.

The screenshot shows a web-based interface for managing a Router. It features two main panels. The left panel, titled "Destination List", contains a scrollable list of destinations: DST 033, DST 062 (highlighted in blue), EDIT 001, EDIT 002, EDIT 003, EDIT 004, EDIT 005, MON 001, MON 002, MON 003, MON 004, MON 005, QA, SRV 001, SRV 002, SRV 003, SRV 004, SRV 005, SRV 006, SRV 007, SRV 008, SRV 009, SRV 010, and STUDIO. The right panel, titled "Monitors Take List", contains a table with two columns: "Source" and "Destination". The table lists five rows: CAM 001 to MON 001, CAM 002 to MON 002, CAM 003 to MON 003, CAM 004 to MON 004, and CAM 005 to MON 005. Below these rows is a large empty area with a mouse cursor pointing at it. At the bottom of the interface are two buttons: "Add" and "Remove".

Monitors Take List	
Source	Destination
CAM 001	MON 001
CAM 002	MON 002
CAM 003	MON 003
CAM 004	MON 004
CAM 005	MON 005
	DST 062

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.

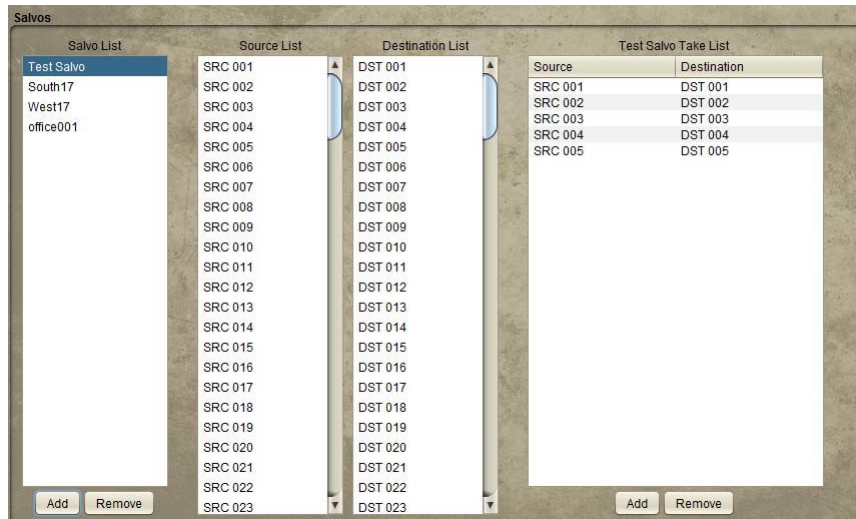


Figure 3-30.

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.

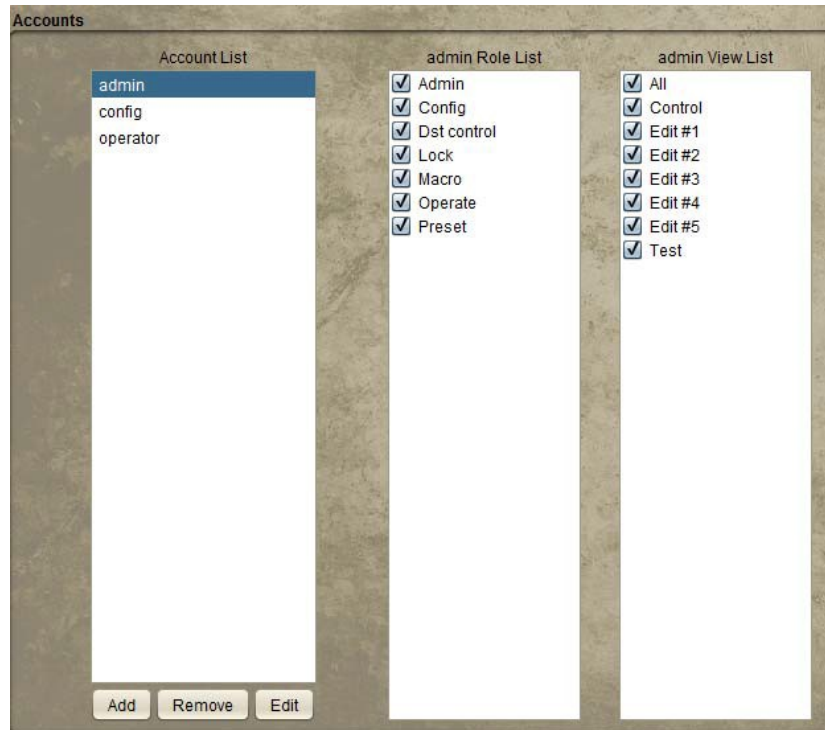


Figure 3-31.

- 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.

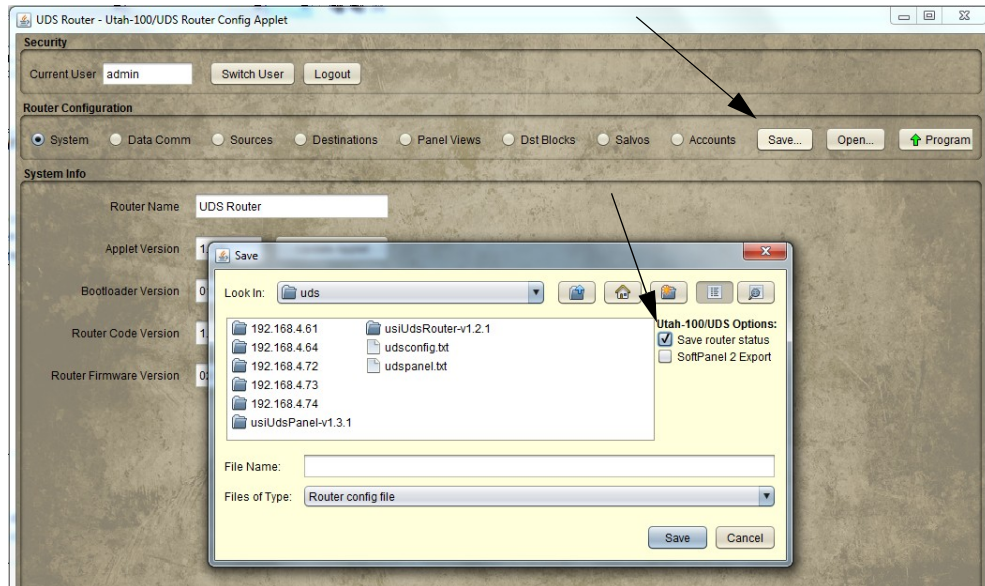
Views to be associated with given accounts are defined by the checkboxes in the admin View List. While all layouts are available to any user for status view, destination selection and the ability to make takes are defined within this listing.



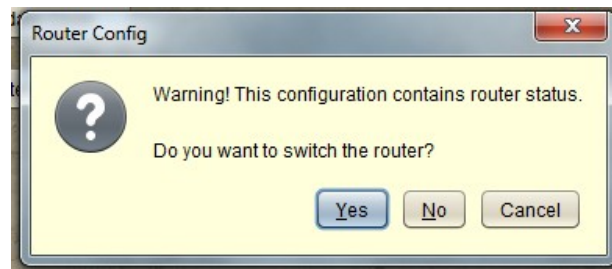
Figure 3-32.

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.

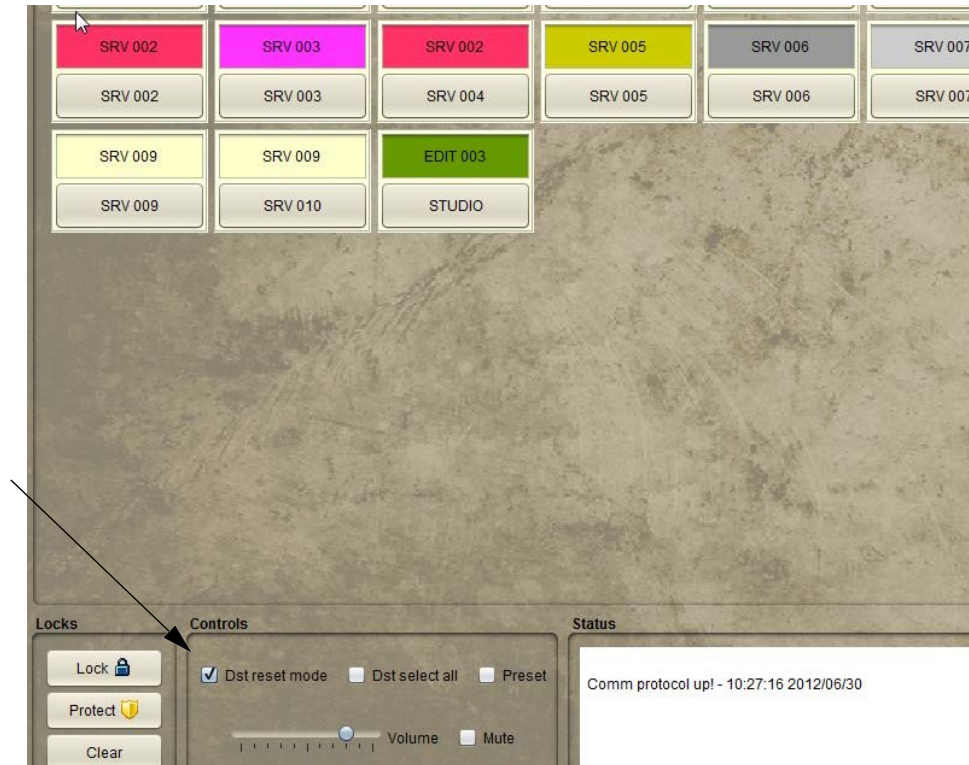


Figure 3-34.

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.

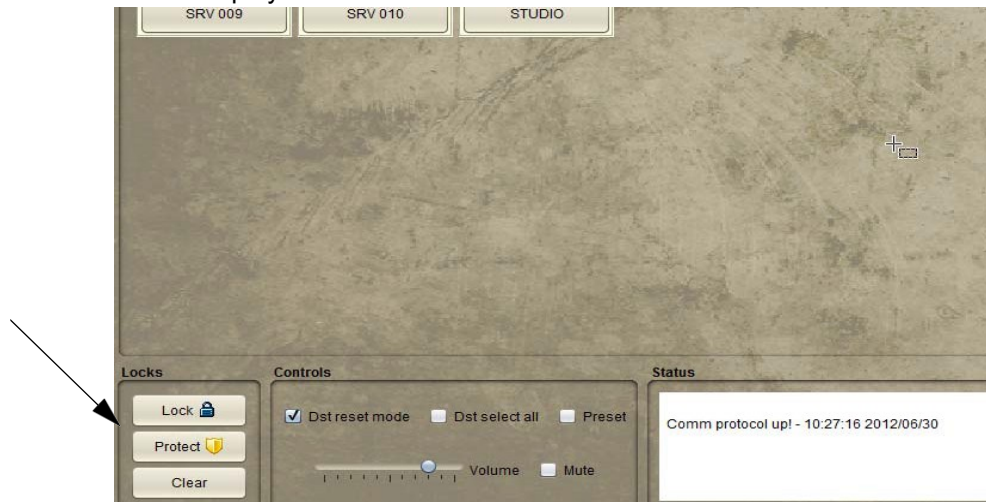


Figure 3-35.

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.

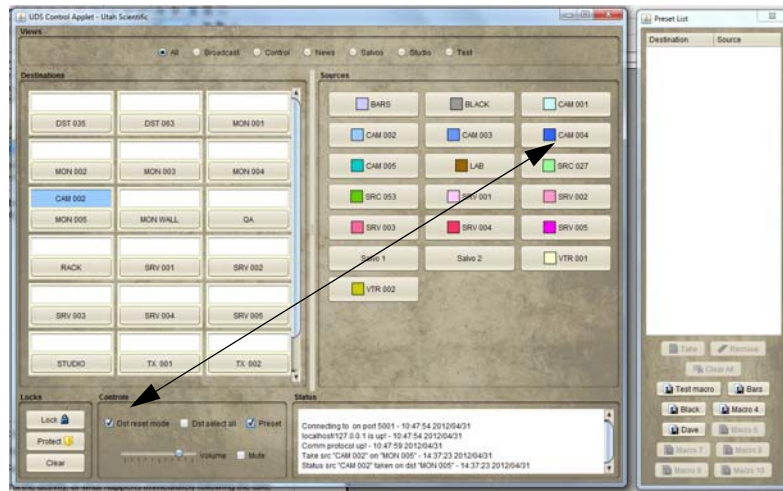


Figure 3-36.

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.

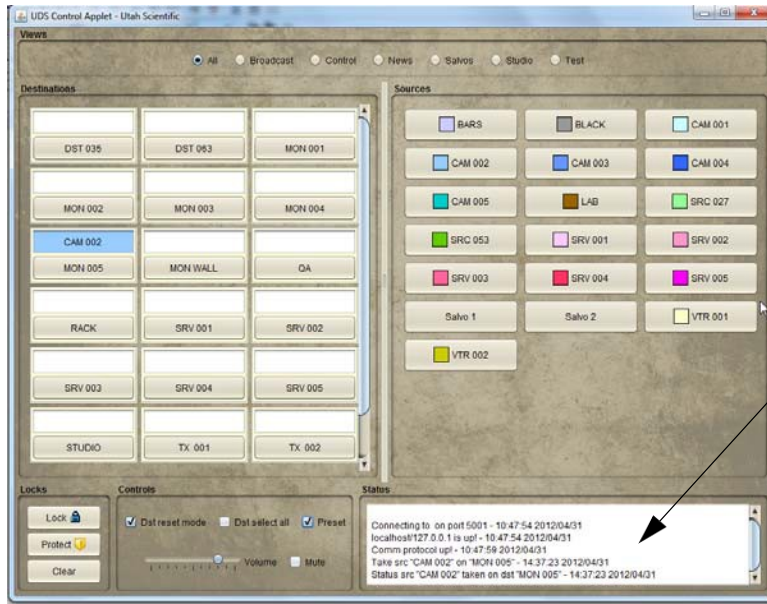


Figure 3-37.

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.)

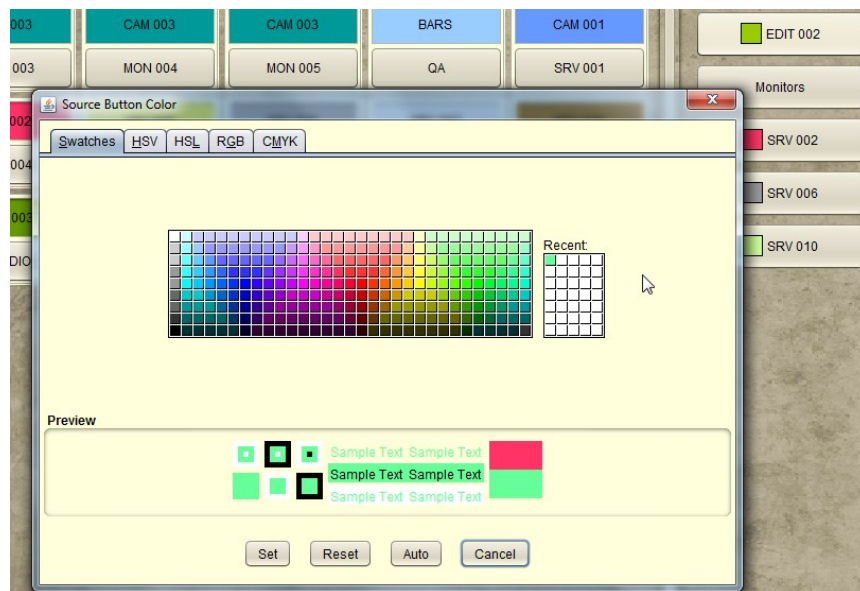


Figure 3-38.

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.

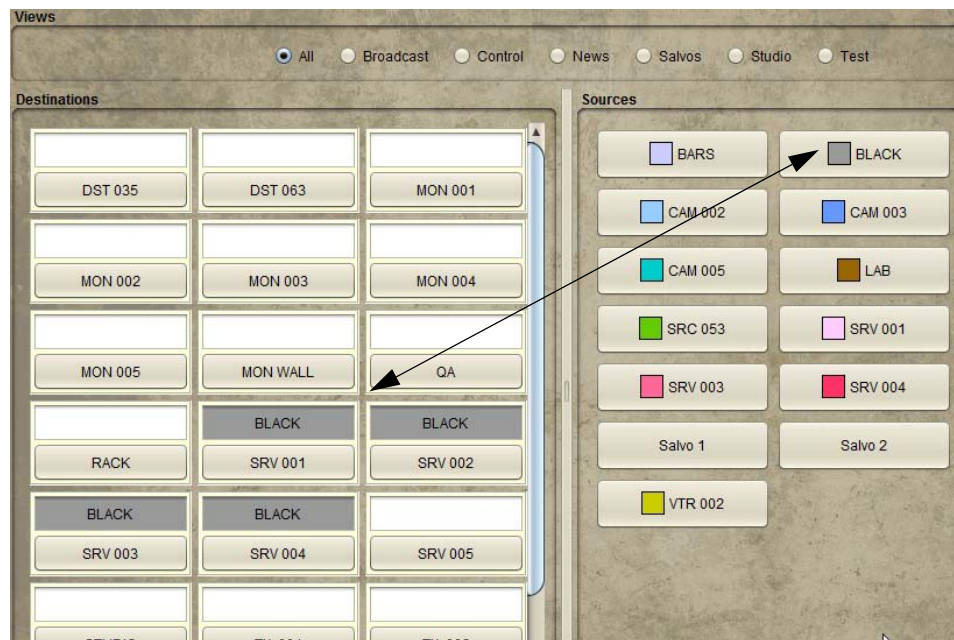


Figure 3-39.

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.

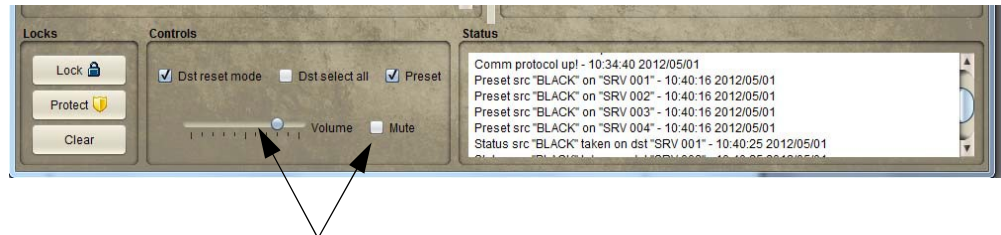


Figure 3-40.

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.

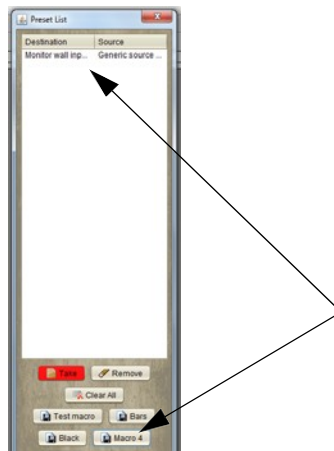


Figure 3-41.



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.

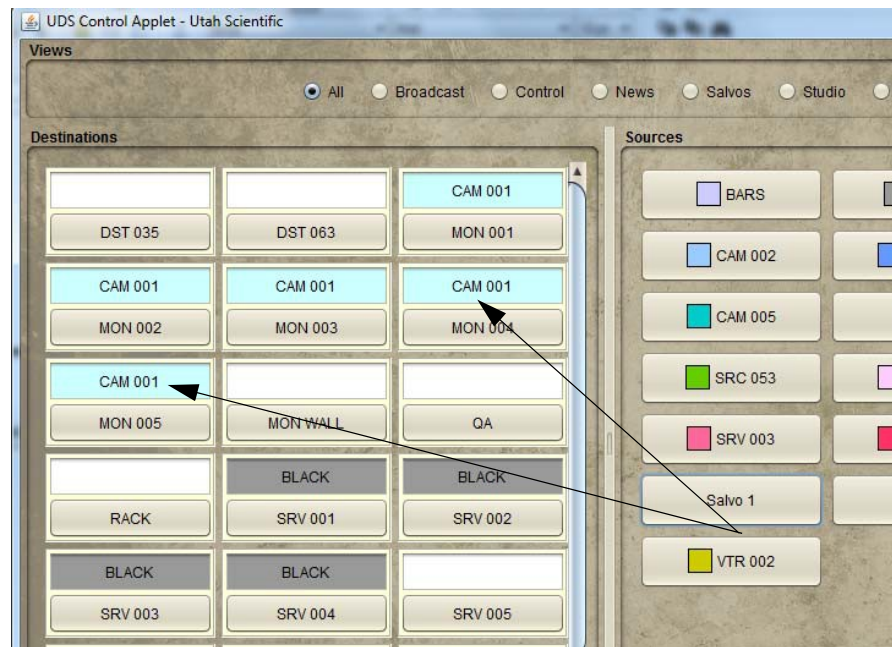


Figure 3-43.

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.

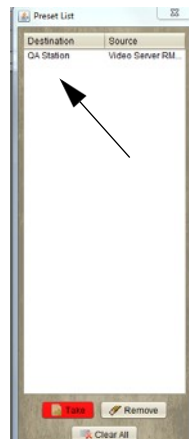


Figure 3-44.

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.

Utah-100/UDS Panel Applet



Figure 4-3.

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



Figure 4-4.

The following window will appear (next).

The Control Applet

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

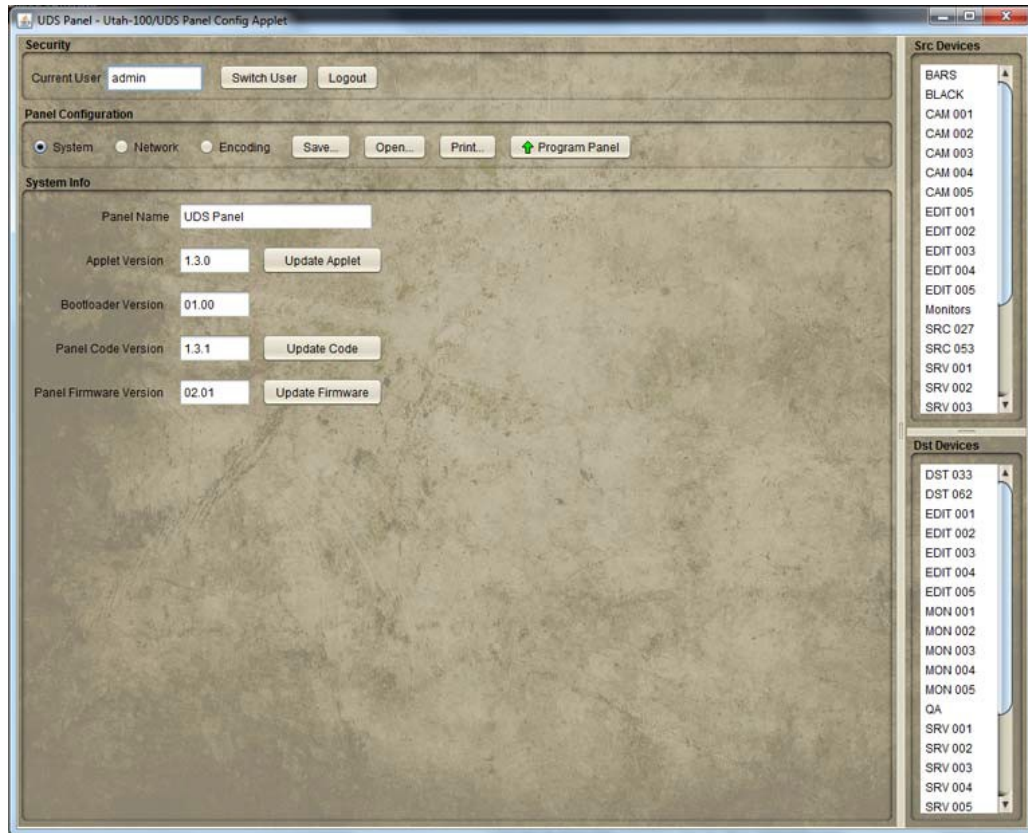


Figure 4-5.

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).

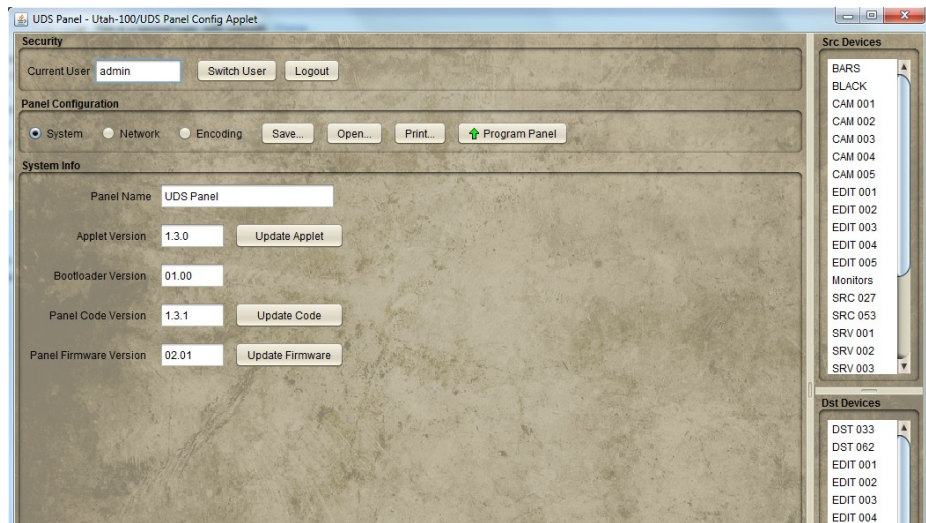


Figure 4-6.

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.

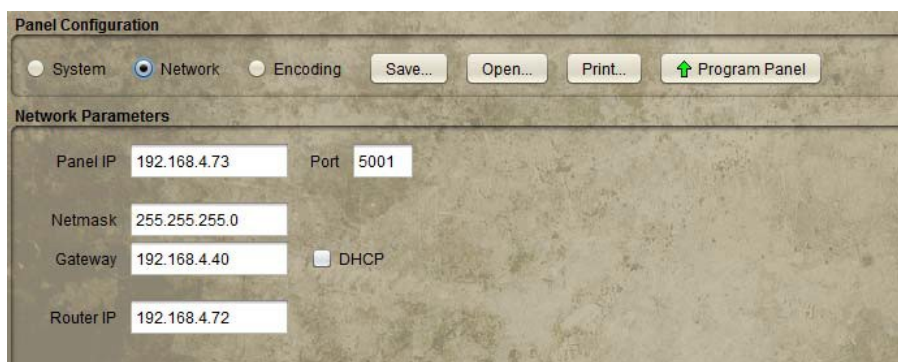


Figure 4-7.

Network Parameters

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

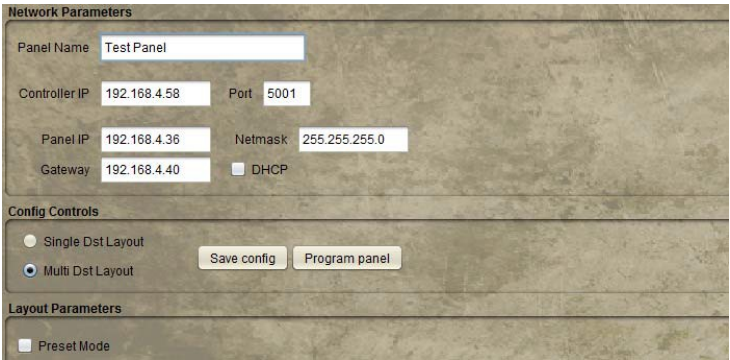


Figure 4-8.

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.

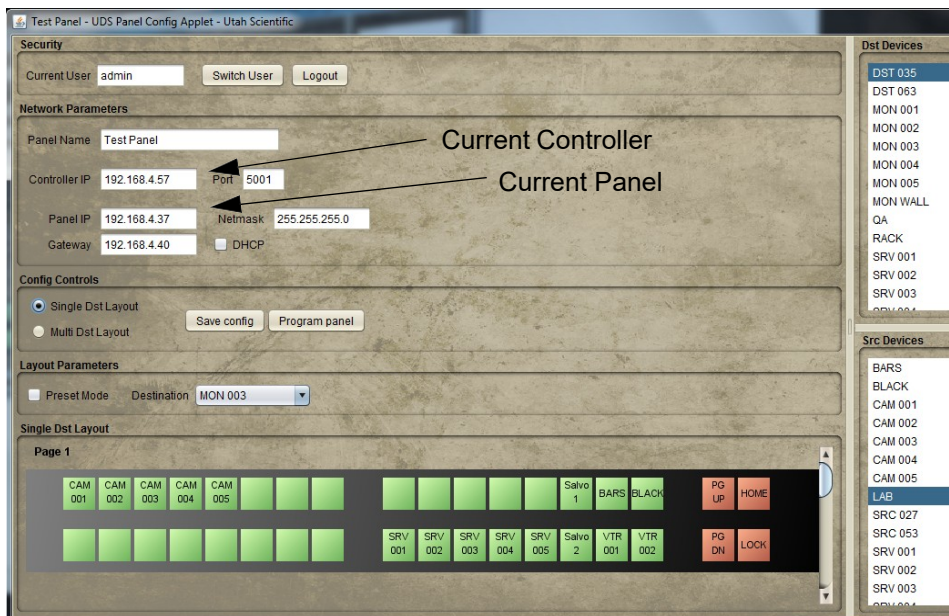


Figure 4-10.

This sets the destination applied to a single panel.

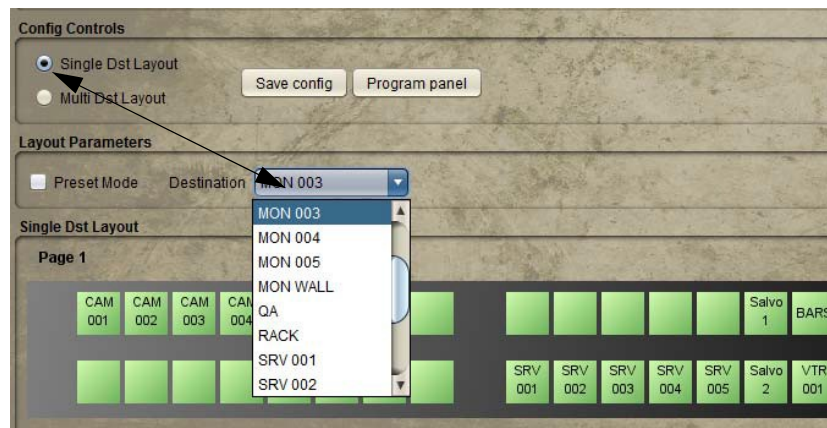


Figure 4-11.

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

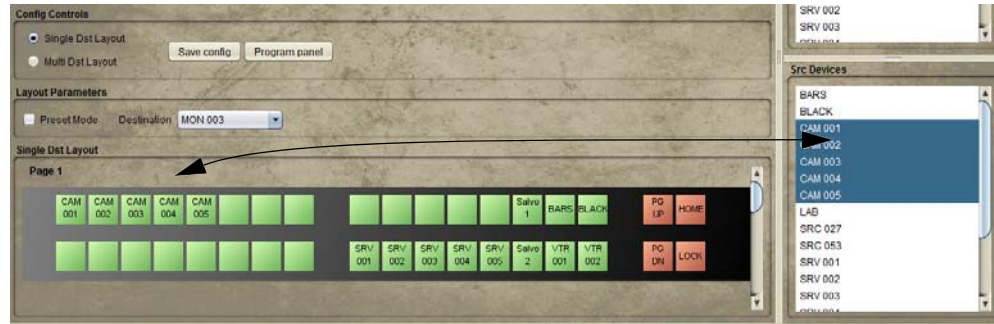
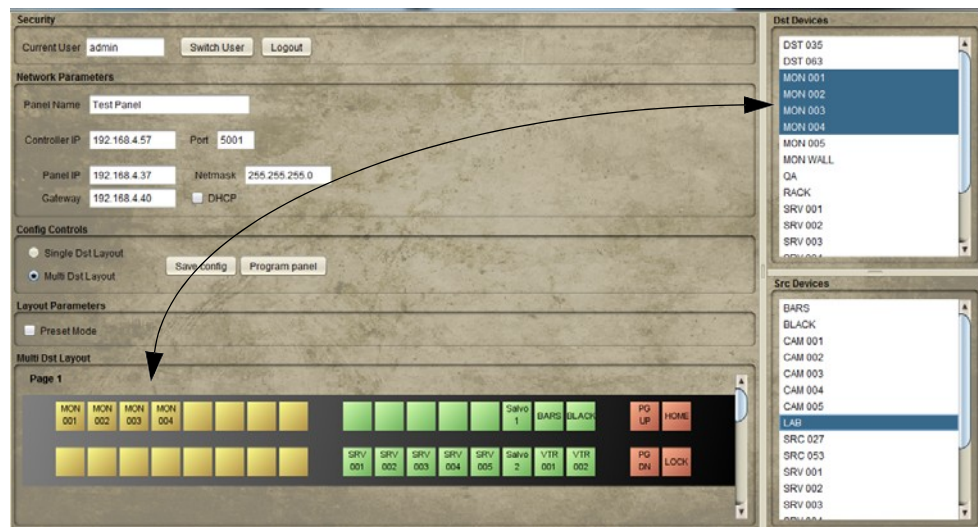


Figure 4-12.

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.

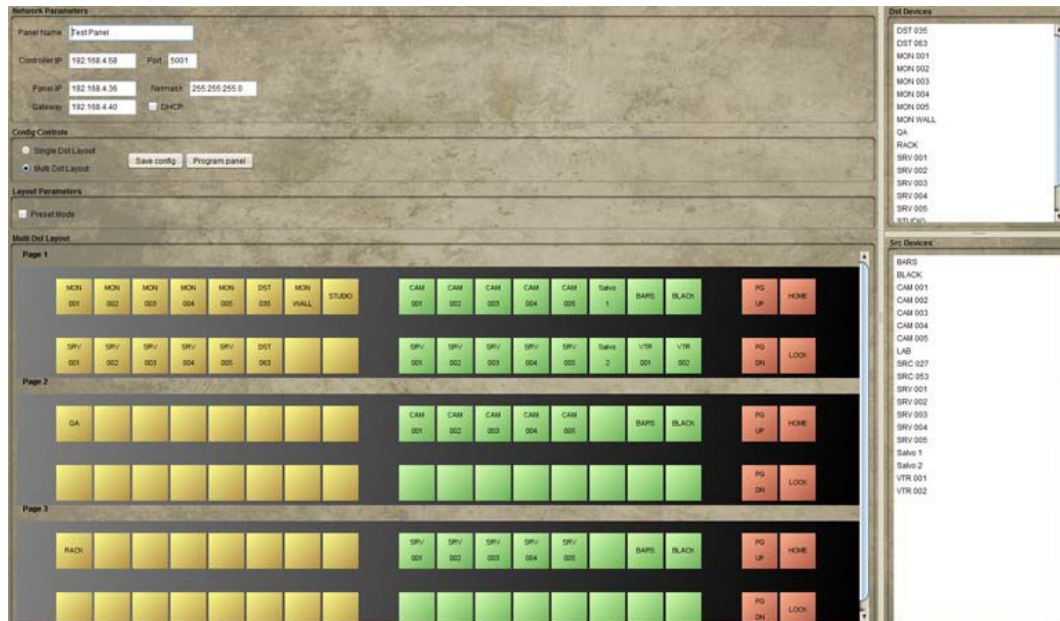


Figure 4-14.

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.

The Control Applet

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.

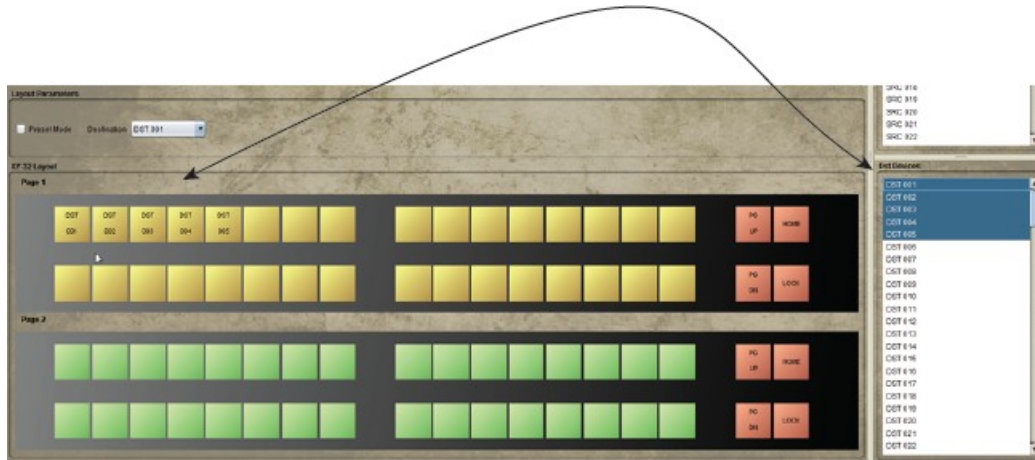


Figure 4-16.

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.

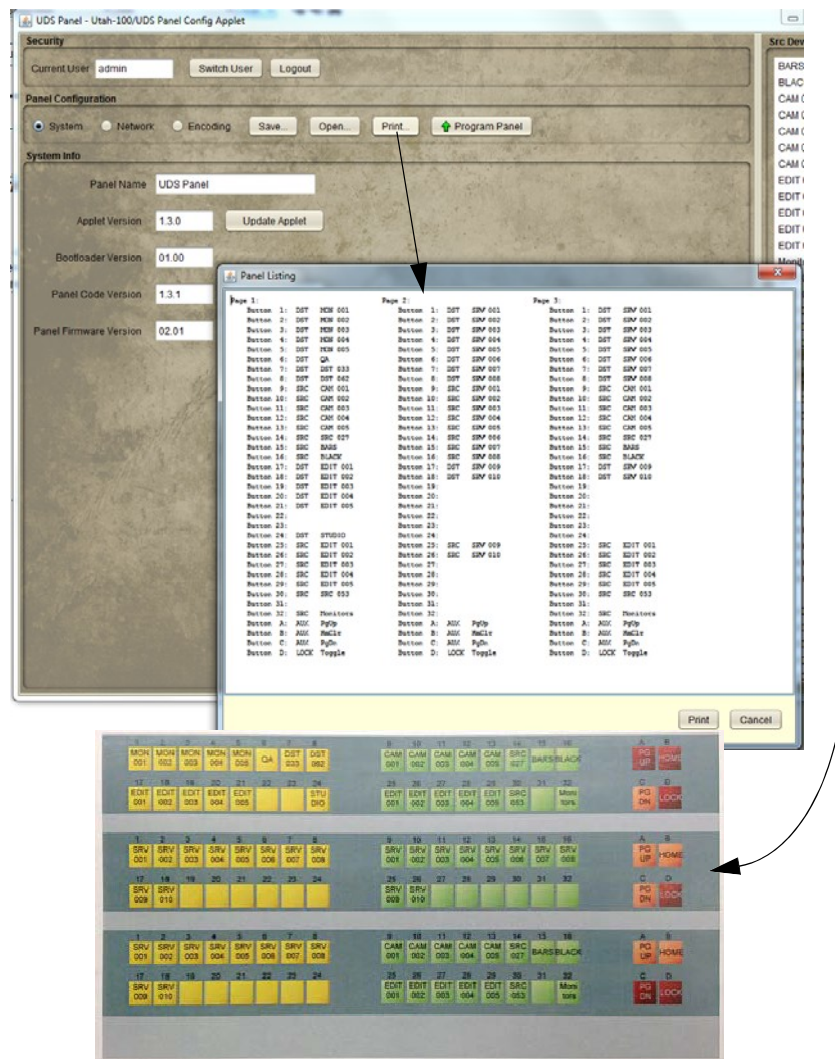


Figure 4-19.



Control Panel

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

Utah-100/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 and Alarms

Frame Specifications

Width

19" Rack Mount

Depth

3.4"

Sizes

1RU -- Capacity: 32 inputs, 32 outputs

Power Consumption: <30W

2RU -- Capacity: 64 inputs, 64 outputs

Power Consumption: <50W

4RU -- Capacity: 144 inputs, 144 outputs

Power Consumption: <100W

Power Supply

External

Redundant supply optional

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

FLEX-I/O Option

Number of ports per card: 16 (8 SFP cages)

Dual-Channel SFPs support the following:

SDI up to 3Gbps on coax

SDI up to 3Gbps on fiber

PAL / NTSC Analog composite video

DVI/HDMI (single-port SFP)

IP-encapsulated DVB-ASI signals

Alarm Conditions

The UDS will enter a *temperature alarm* condition when the internal temperature exceeds the allowable limit. A temperature alarm is most likely caused by fan failures.

The Blue LED on the front left of the unit will turn Red when the UDS enters a temperature alarm condition. The alarm will clear when the temperature drops below the limit. The left LED will remain Blue when the UDS is not in temperature alarm.

The UDS will enter a *power supply* alarm condition when a redundant power supply fails. The alarm will clear on a system reset, or when the redundant supply returns to normal operation.

The Blue LED on the front right of the unit will turn Red when the UDS has entered a power supply alarm. The right LED will remain Blue when the UDS is not in a power supply alarm condition.



Appendix A

RCP1 Protocol for UDS

This appendix 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



CALCULATE <Checksum>

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 the protocol and switch on it. Status is always reported with all levels set.



Appendix B

System Update

Introduction

This appendix 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

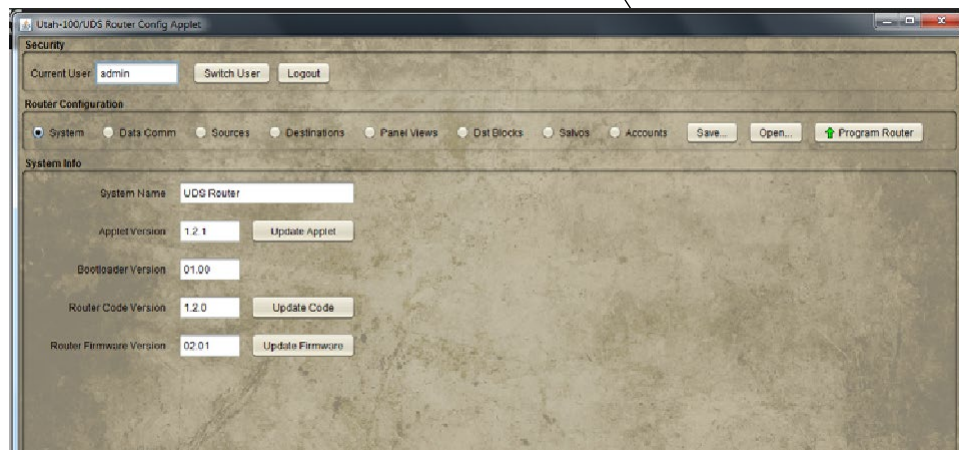
This update supports unique settings for each router connection. Settings consist of source status colors, and macros. As a result, existing settings will be lost following the update. You can simply reconfigure the settings as you prefer, or to restore the original settings, follow the steps below after 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\usiuuser, then you would copy the uds.settings file from C:\Users\usiuuser\usi\uds to C:\Users\usiuuser\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.)



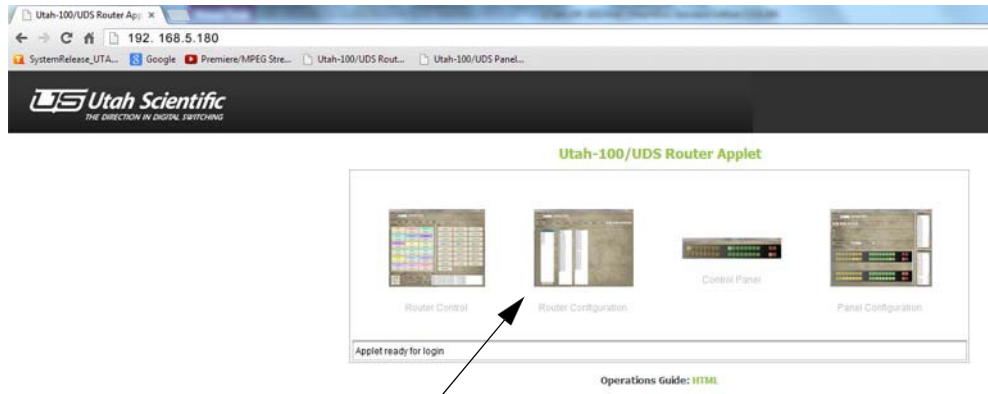
2. Run the appropriate installer on the PC.

usiUdsPanel-v1.3.1.exe	12/18/2012 1:48 PM	Application	1,804 KB
usiUdsRouter-v1.2.5.exe	12/18/2012 1:48 PM	Application	3,227 KB
usiUdsPanel-v1.3.1.nsi	12/18/2012 1:32 PM	NSI File	2 KB

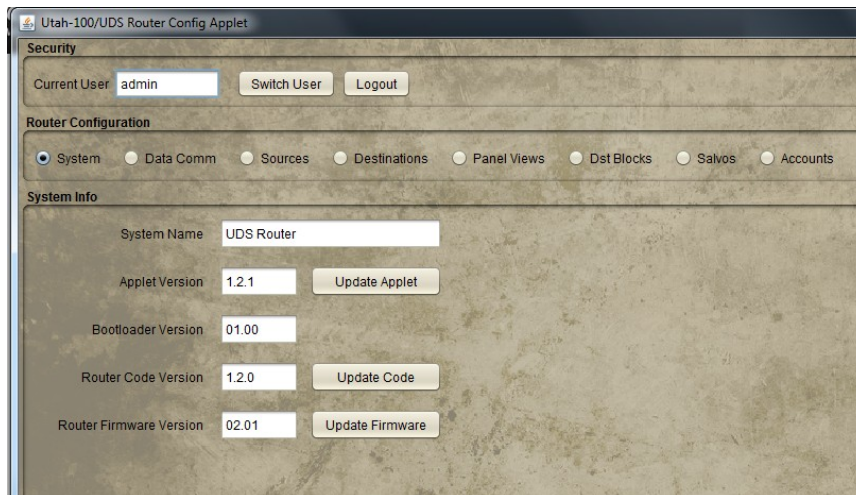
Leave the default installation path. Take note of the path of the .uus file in the instructions as you close the installer. You will use this file in step 6 (below).

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

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



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

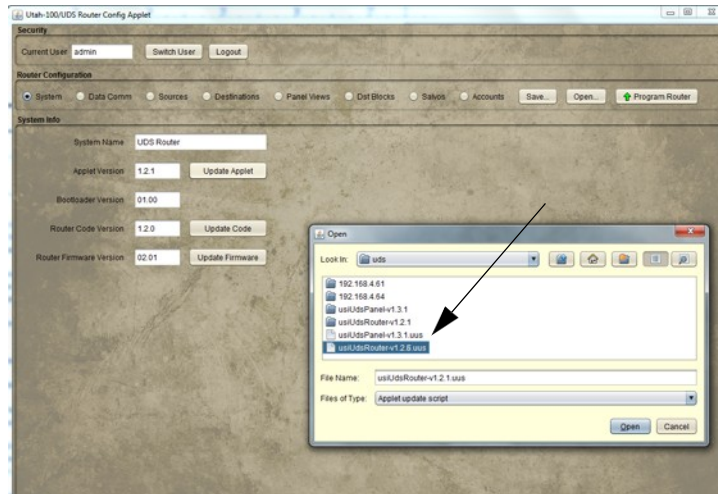


- Click the 'Update Applet' button.





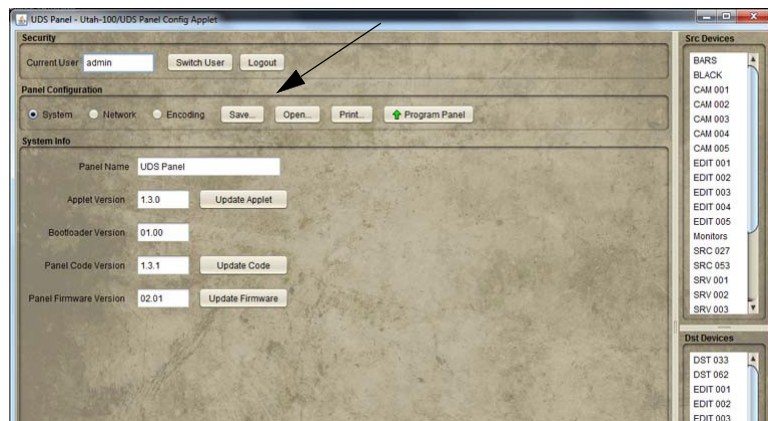
6. Select the appropriate .uus file installed in step 2 (usiUdsRouter-v1.2.1.uus).



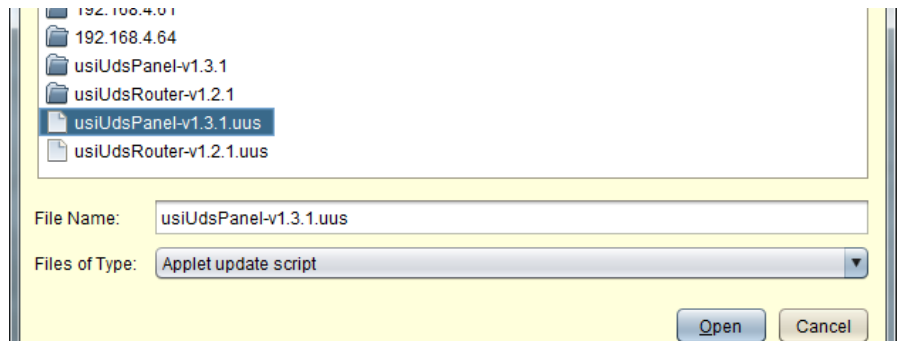
7. Several files will be transferred to the device. When the file transfer is complete, close any open web browser windows and reset the device by pressing the chassis reset button. The device will take a bit longer to reboot as the update is burned into the device flash.
8. The update is complete once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

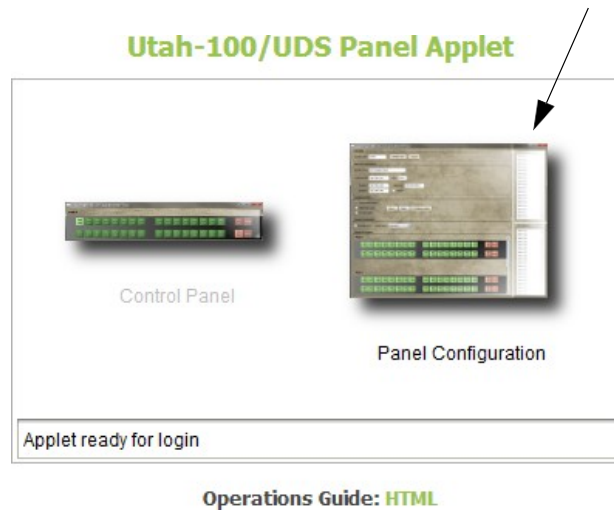


Leave the default installation path. Take note of the path of the .uus file in the instructions as you close the installer. You will use this file in step 6 (below).

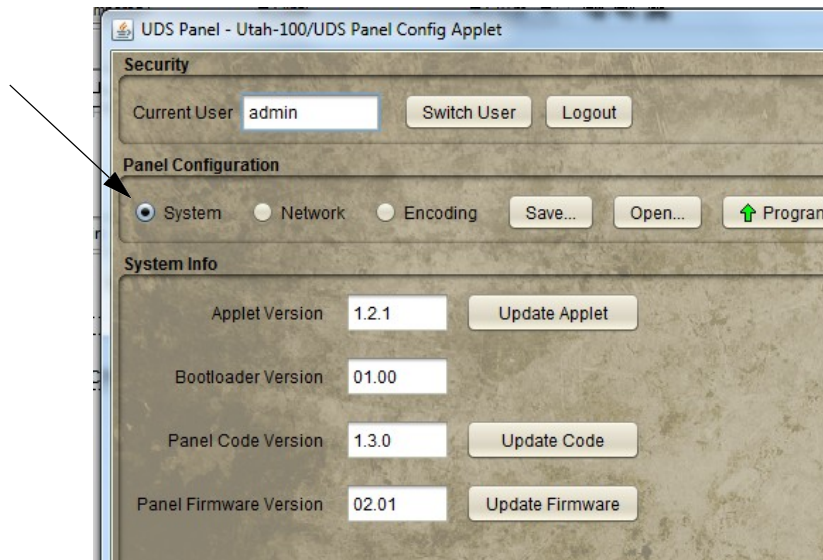
1. Early hardware version may require configuration restoration following a system reset.



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



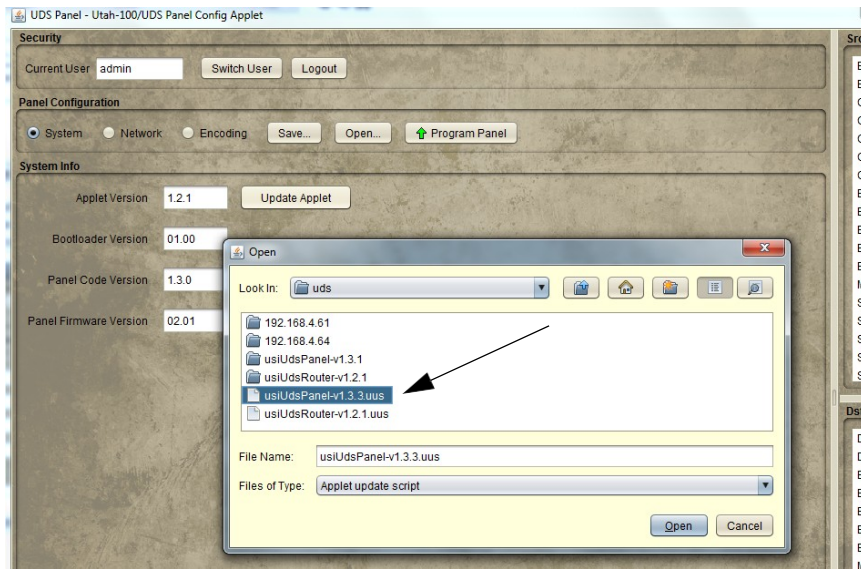
4. Select the 'System' screen in the config window.



- Click the 'Update Applet' button.



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



- 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.
- 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.



Appendix C

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.

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