

BROADCAST[®] tools INC

PROBLEM SOLVED

Installation and Operation Manual



Universal 4.1 MLR >> Web Switcher/Router with Mechanical Latching Relays

Manual update: 11/5/2020

If you need a firmware upgrade, contact Broadcast Tools®
Firmware version 0.2 and higher.

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NOTE: We recommend the use of Chrome, Firefox or Safari as your browser.

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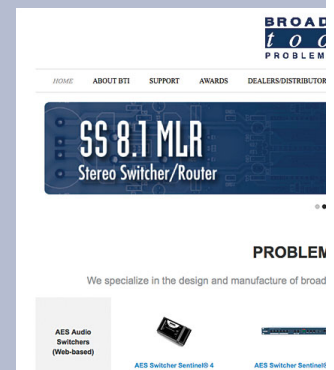
Visit www.broadcasttools.com for important product update information.

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INTRODUCTION

Thank you for your purchase of a BROADCAST TOOLS® UNIVERSAL 4.1 MLR >> WEB transparent four input, single output switcher/router (referred to as the UNIVERSAL 4.1 MLR >> WEB throughout this manual). We're confident that this product will give you many years of dependable service. This manual is intended to give you all the information needed to install and operate the BROADCAST TOOLS® UNIVERSAL 4.1 MLR >> WEB.

SAFETY INFORMATION

Only qualified technical personnel should install the UNIVERSAL 4.1 MLR >> WEB. Any attempt to install this device by a person who is not technically qualified could result in a hazardous condition to the installer or other personnel or damage to the UNIVERSAL 4.1 MLR >> WEB or other equipment. Please ensure that proper safety precautions have been taken before installing this device. If you are unfamiliar with this type of equipment, please contact a properly qualified engineer to handle the installation and setup of the UNIVERSAL 4.1 MLR >> WEB. Broadcast Tools, Inc., is unable to support NON-Broadcast Tools software, hardware or NON-Broadcast Tools computer/hardware/software problems. If you experience these problems, please research your hardware/software instruction manuals or contact the manufacturers technical support department.

WHO TO CONTACT FOR HELP

If you have any questions regarding your product or you need assistance, please contact your distributor from whom you purchased this equipment. If you would like more information about BROADCAST TOOLS® products, you may reach us at:

Broadcast Tools, Inc.

131 State Street
Sedro-Woolley, WA 98284-1503 USA
Voice: 360.854.9559
Fax: 866.783.1742

Internet Home Page: www.broadcasttools.com
E-mail: support@broadcasttools.com

**THANK YOU FOR CHOOSING
BROADCAST TOOLS® BRAND PRODUCTS!**

Broadcast Tools is a Veteran Owned Business



Designed, Assembled and Supported in WA State, USA

e-mail: support@broadcasttools.com voice: 360.854.9559 fax: 866.783.1742



CAUTION!

Broadcast Tools® Products, as with any electronic device, can fail without warning. Do not use this product in applications where a life threatening condition could result due to failure.

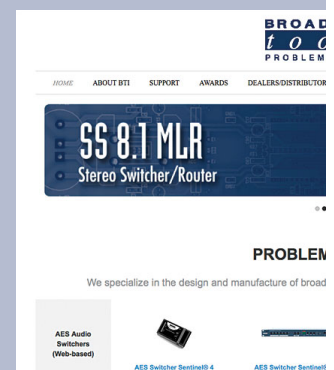


NOTE:

This manual should be read thoroughly before installation and operation.

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INTRODUCTION

Product Overview

The Universal 4.1 MLR >> Web is a web enabled transparent four input, single output switcher/router with mechanical latching relays designed to pass AES/EBU digital audio or stereo analog audio signals. The Universal 4.1 MLR >> Web is perfect for all types of passive signal switching via front panel controls, web browser control, contact closures or logic remote control. The inputs/output feature stereo XLR and StudioHub+ compatible RJ45's connectors. Switching is accomplished via mechanical latching gold contact relays, which means that the unit can route a signal in either direction and will keep routing the signal even after losing power. Due to the passive nature of the switching, any input level and impedance can be used. Inputs may be balanced or unbalanced, while output levels, impedance, distortion, noise and balancing will match that of the selected input.

Features/Benefits

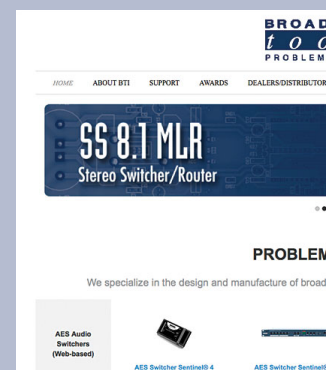
- Front panel channel selection push buttons with active channel LED indicators.
- “MUTE” function allows the user to turn off all audio to the output.
- Front panel Enable switch with enabled LED indicator can be configured to provide a safety lock to the front panel selection push buttons.
- HTML based web interface for easy monitor/control.
- TCP control command interface for automated control.
- Email logging of system status, along with the site ID may be emailed in time spans from once an hour to once a day.
- Email alarm notification may be configured to alert up to EIGHT recipients.
- Signal switching via mechanical latching sealed relays utilizing 2-form-C bifurcated – crossbar silver alloy with gold overlay contacts.
- Remote control or PIP (trigger) via contact closures and 5-volt TTL/CMOS logic levels.
- Four normally open relay contact closure outputs for remote channel status.
- Stereo Neutrik XLR, and StudioHub+ RJ45's connectors. The RJ45's conforms to the StudioHub+ wiring standard and pass “DC-LINK” power.
- Removable euro-block screw terminal connectors are used for remote control connections. Necessary mating plugs are supplied.
- If power is lost, the last selected channel is passed to the output.
- Fully RFI proofed.
- Surge protected internal power supply, 9 VDC universal switching power supply with domestic connector supplied. International connectors optional.
- Small 1-RU rack chassis.

Applications

Source switching; Studio selection and routing; Audio processing selection; Exciter input selection; Remote broadcast input selection; STL source selection; PA switching; IFB selection; Satellite audio channel switching and console monitor input and output selection.

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OVERVIEW

Inspection

Please examine your UNIVERSAL 4.1 MLR >> WEB carefully for any damage that may have been sustained during shipping. If any damage is present, please notify the shipper immediately and retain the packaging for inspection by the shipper. The package should contain the UNIVERSAL 4.1 MLR >> WEB, and a 9 VDC wall transformer. Manuals may be downloaded from our web site.

Installation

Surge Protection

The UNIVERSAL 4.1 MLR >> WEB has built-in resistance to voltage changes; we recommend that you use a power surge protector or line conditioner on the incoming AC line. Lightning strikes and/or other high voltage surges may damage your UNIVERSAL 4.1 MLR >> WEB and connected equipment if it is not properly protected. For lightning protection devices, check out www.polyphaser.com and www.itwlinx.com.

UPS Standby Power System

We recommend that you connect your UNIVERSAL 4.1 MLR >> WEB to a UPS system. A UPS helps minimize the risk to the UNIVERSAL 4.1 MLR >> WEB and provides power during a power outage.

NOTE: If power is lost, the last selected channel is passed to the output.

Installation/Operation

Front Panel Controls

The first four front panel push buttons represent the four inputs that can be routed to the switcher's output, additionally there are mute and enable push buttons. Each push button has an associated LED indicator. When an input channel is selected its LED will light and the previously selected channel is deselected (interlock). Only one input can be routed to the output at a time. When the Mute button is pressed the switcher will deselect all inputs and stop routing audio, the Mute LED will light to indicate this state. The enable (safety) function can be turned on, which will require the user to hold down the enable push button while selecting any of the other front panel push buttons, the enable LED is illuminated when this function is enabled.

SW7 Enable Configuration Switch:

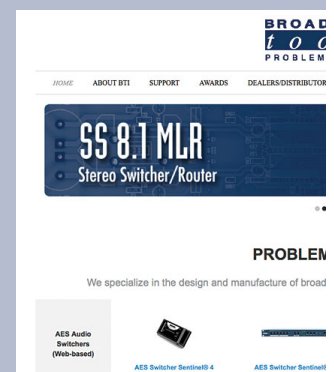
IN = Front panel enable switch defeated.

OUT = Front panel ENABLE push button active and the Enable LED is illuminated.

NOTE: The enable push button must be held closed to operate any of the other front panel push buttons and isn't associated with any of the remote-control functions.

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INSTALLATION

Silence Sensor/AES Activity Detector

The Universal 4.1 MLR >> Web has a selectable analog silence sensor circuit as well as an AES/EBU clock activity detection circuit. These circuits monitor the switcher's output and can be configured to send alarm emails and trigger automatic switching.

The front panel switch labelled "AES/Analog" allows you to switch between monitoring modes. With the switch set to the IN position, the switcher is in analog mode and the silence sensor is enabled, with the switch set to the OUT position, the switcher is in AES/EBU mode and the AES clock activity detection circuit is enabled.

To disable output monitoring entirely: place the "AES/Analog" switch in the Analog Silence Sensor position (IN). Remove power, cables and remove the cover. Locate RP2 via the component layout (see Component Layout appendix), on the printed circuit board. Remove the socketed 1kohm DIP resistor network and stow it. Reassemble the unit, reinstall cables and restore power.

LED indicators

- "Power" LED: Blinks to indicate power and microcontrollers normal operation. (Green)
- "AES/Analog" LED: Indicates monitoring mode, lit = Analog, unlit = AES/EBU. (Yellow)
- "SS" LED: Lit = Analog silence detected. (Red)
- "AES Error" LED: Lit = AES/EBU clock not detected. (Red)
- "Enable" LED: Illuminates when the front panel enable push button option is enabled.
- "1" "2" "3" "4" Channel LED's: illuminate when the input channel is selected. (Green)

Defaults Button

The defaults button is located behind a recessed opening on the far left of the front panel. To reset the unit to default settings, apply power and wait for the Power LED to begin flashing, then hold down the defaults button for 10 seconds. Releasing the defaults button will trigger a reset to defaults.

LAN / NET Jack

RJ45 Ethernet jack for 10/100baseT LAN/WAN connection.

MicroSD Card Slot

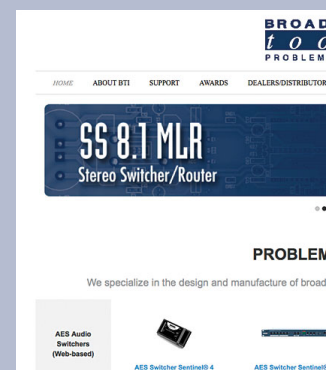
MicroSD memory card slot. Used for file storage and firmware updates.

Power

Connect the 2.1mm coaxial barrel type power connector into the unit and the 9 VDC universal switching power supply with domestic connector into a 120 Vac 50-60 Hz power source. Never use any type of power supply other than the specified/supplied power supply.

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INSTALLATION

Audio Inputs and Outputs

The Universal 4.1 MLR >> Web's inputs and output have StudioHub+ compatible RJ45 jacks, and balanced stereo XLR jacks wired in parallel. This means any input connector can route to any output connector, providing an easy way to interface between devices with different connectors without the need for custom cables.

Switching is accomplished via mechanical latching gold contact relays, which means that the unit can route a signal in either direction and will keep routing that signal even after losing power. Due to the passive nature of the switching, any input level and impedance can be used. Inputs may be balanced or unbalanced, while output levels, impedance, distortion, noise and balancing will match that of the selected input

XLR Connector Pinout

The input and output XLR connector pinouts conform to 3-pin XLR wiring standards: Pin 1 = Ground. Pin 2 = Positive. Pin 3 = Negative.

RJ45 Pinout

The input and output RJ45 jacks conform to StudioHub+ wiring standards. Please use shielded twisted pair Cat5e or Cat6 cables and connectors (STP).

StudioHub+ Pinout:

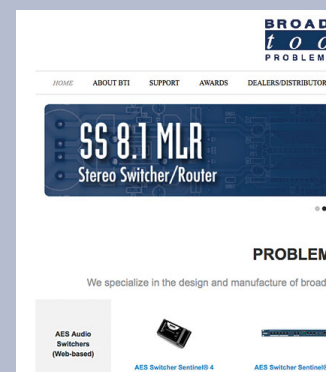
Function:	Wire Pair:	RJ45 Pins:
Left+/AES+	White/Orange	1
Left-/AES-	Orange/White	2
Right+	White/Green	3
Right -	Green/White	6
n/c	White/Blue	5
GND*	Blue/White	4
15V-*	White/Brown	7
15V+*	Brown/White	8
GND	Shield	Shield

* StudioHub+ "DC-LINK" allows +/-15 VDC and Ground to pass on pin 8, 7, and 4 (respectively) of the RJ45. These pins are connected in parallel across all RJ45s.

NOTE: For AES/EBU signals please use AES/EBU qualified cable.

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INSTALLATION

Remote Control / PIP (trigger) Inputs

The Universal 4.1 MLR >> Web has five status inputs that can be used that may be configured for PIP (“triggers”) or remote-control operation. The inputs accept momentary contact closures (sustained, if break before make); open collector or TTL/CMOS input logic levels.

For example, in the default Remote-Control mode, pulsing the “I2” input to ground would switch Input 2 to the output of the Universal 4.1 MLR >> Web and it would remain switched that way until a front panel source switch is pressed, a different remote-control input is activated.

PIP mode is enabled via the “PIP Mode Enable” setting on the Email & Network Setup page

PIP/Remote Control Inputs

(Top row, TB1)

I1 (Input 1) PIP1	I2 (Input 2) PIP2	I3 (Input 3) PIP3	I4 (Input 4) PIP4	Mute PIP5	Gnd (Ground)

See Below
(Bottom Row, TB1)

Relay Outputs

The Universal 4.1 MLR >> Web has four relay contact outputs that indicate switch positions. O1 indicates when Input 1 is selected, O2 indicates for Input 2, etc. The relay output for the selected channel will connect to the “Com” (common) terminal providing a return for an LED indicator, TTL/CMOS logic or relay.

See Above
(Top row, TB3)

O1	O2	O3	O4	Com	Gnd

Relay Outputs
(Bottom Row, TB3)

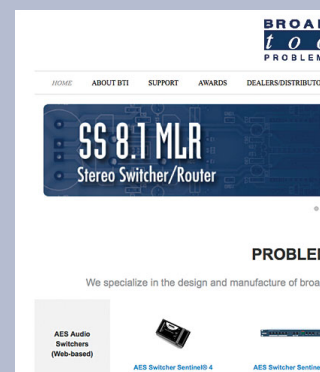
Note: For wiring information, refer to the grids in this section of the manual, the silk-screen text on the rear panel of the product or the fractional schematic in the appendix.



Installation of the UNIVERSAL 4.1 MLR >> WEB in high RF environments should be performed with care. The station ground should be connected to the chassis using a 20 to 24-gauge wire.

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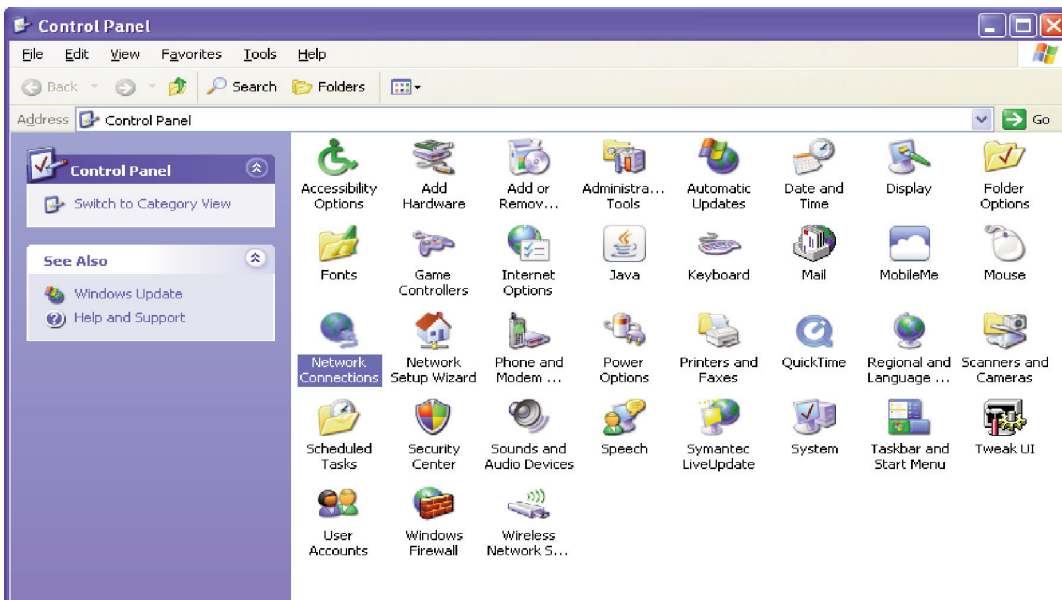
Web Setup and Operation

Ethernet “Quick Start” guide

CAUTION! If you are not familiar with Ethernet enabled equipment, it may be useful to contact your IT department, network administrator or network consultant for assistance. Assigning an IP address already in use by another device may cause problems with your network!

Instructions for changing the IP address of the computer that will be used for the configuration of this product are given here. Note that these instructions are specifically for computers with the Windows XP operating system. For setup using other operating systems, refer to the appropriate OS user’s manual.

Step 1: Open the control panel by clicking on the start menu, click on settings, then click on Control Panel. (Note that the control panel shown is in “Classic View”. If control panel is in “Category View” select the “Classic View” option before proceeding.)



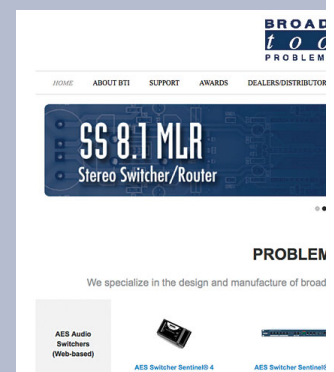
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We recommend the use of the latest version of Firefox, Safari for Windows or Chrome as your browser.

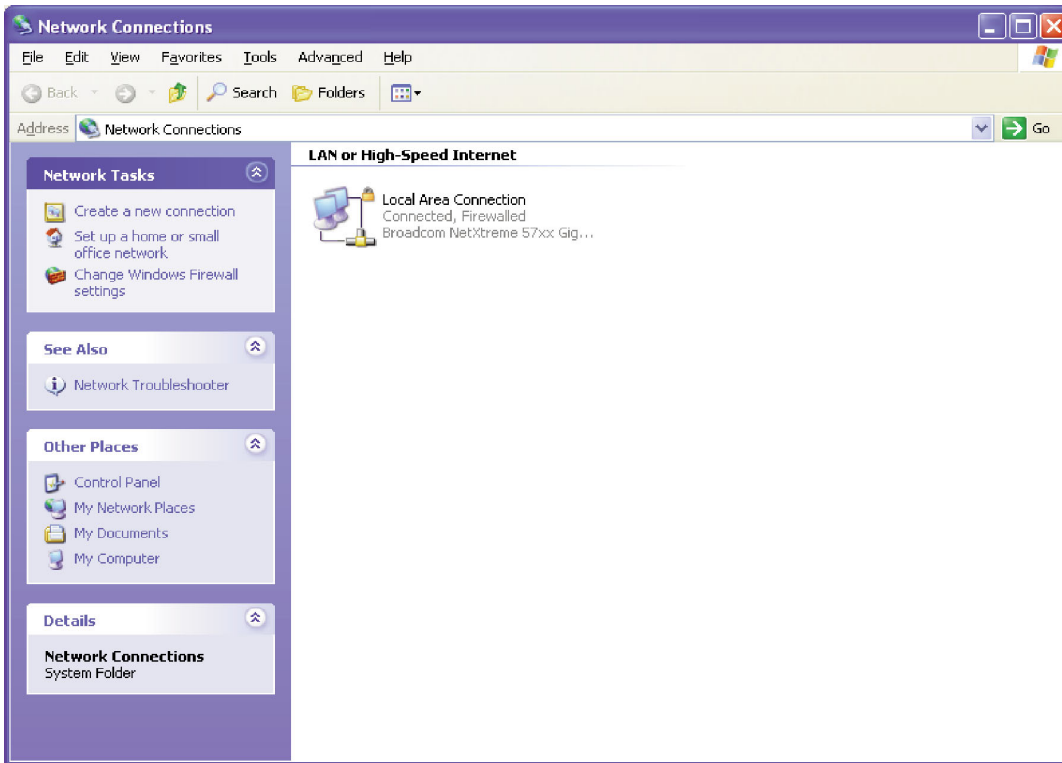
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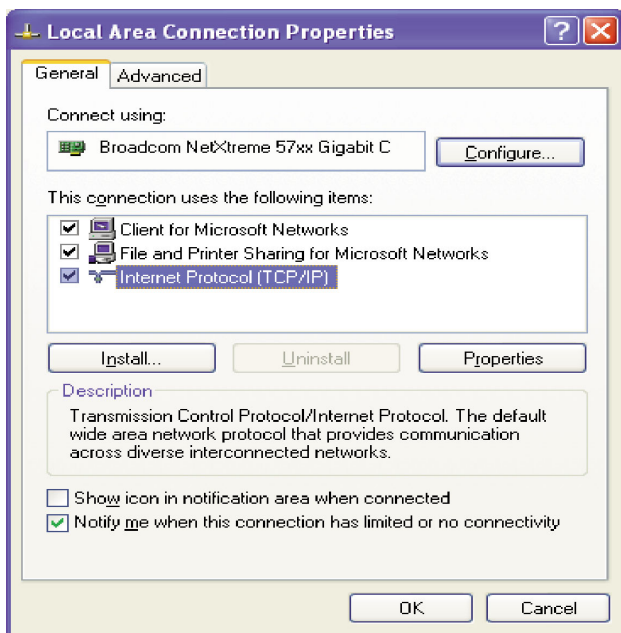


Ethernet “Quick Start” guide (cont).

Step 2: Double click on the icon labeled Network Connections. The following menu will pop up

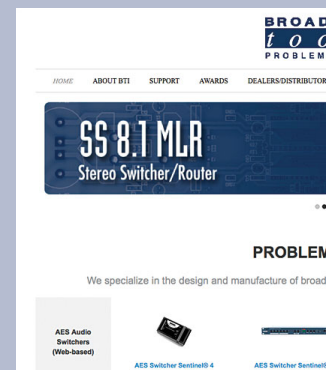


Step 3: Right click on the icon labeled Local Area Connection. Another menu will appear. Select the option at the bottom of the menu labeled Properties. The Local Area Connection Properties window will appear.



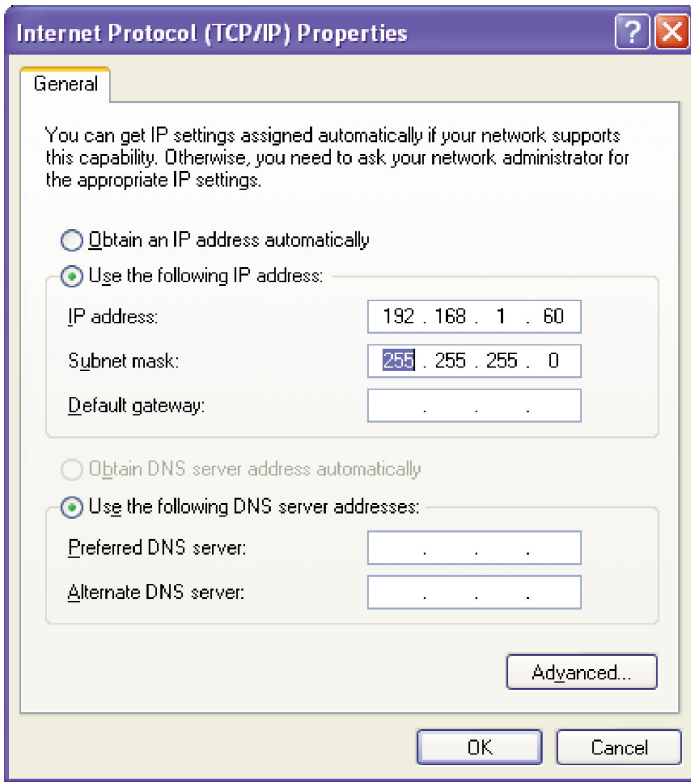
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Ethernet “Quick Start” guide (cont).

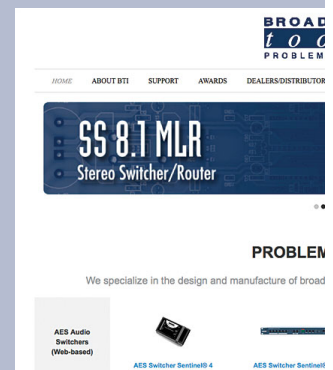
Step 4: On the Local Area Connection Properties page, double click on Internet Protocol (TCP/IP) to display properties.



Step 5: Before making any changes to the network settings, write down the current settings (or screen capture the page and print) so that they can be restored once the unit is configured. Next, select the radio button labeled “Use the following IP address” and type in the IP address 192.168.1.60. Type in the subnet mask of 255.255.255.0. Leave the default gateway field blank. Click OK to apply the new settings.

WEBSITE:

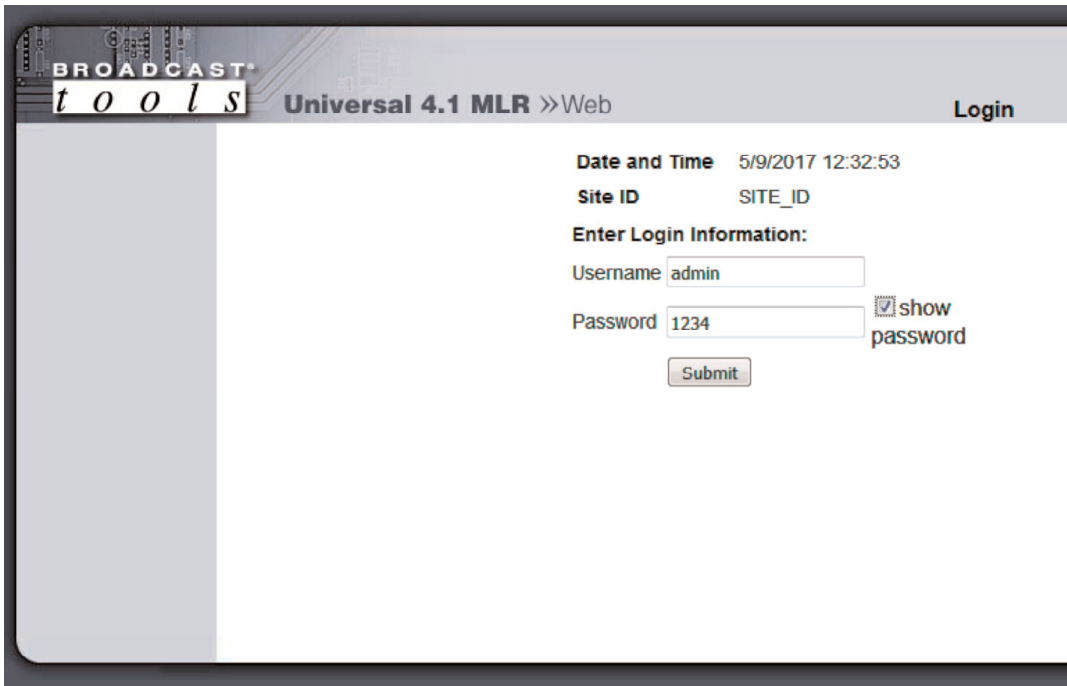
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“Login” Web Page

The Login screen displays the Username and Password entry points as well as the date, time, and site ID.

You may view the password as you type by checking the “Show Password” box.



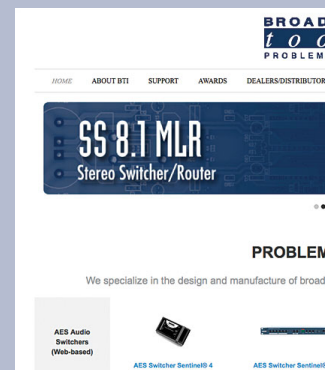
The screenshot shows the login interface for Broadcast Tools Universal 4.1 MLR. The header includes the logo 'BROADCAST tools' and the text 'Universal 4.1 MLR » Web' and 'Login'. The main content area displays the following information:

- Date and Time: 5/9/2017 12:32:53
- Site ID: SITE_ID
- Enter Login Information:
- Username: admin
- Password: 1234
- A checkbox labeled 'show password' is checked.
- A 'Submit' button is located below the password field.

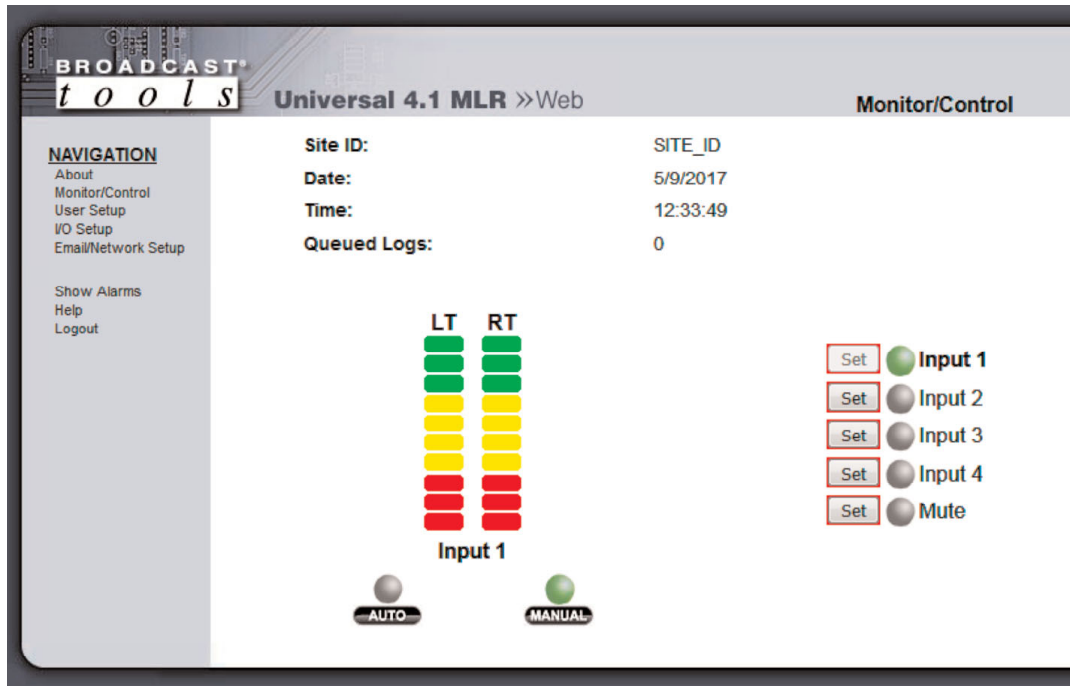
After you have successfully logged in, the Monitor/Control page will be displayed.

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“Monitor/Control” Web Page



The Monitor/Control page allows the monitor and/or control of the Universal 4.1 MLR » Web. The following is an explanation of each item on this page:

- Site ID: Identifies the unit and location.
- Data/Time: Current date/time from the Universal 4.1 MLR.
- Queued Logs: Displays the number of queued log entries scheduled to be emailed.

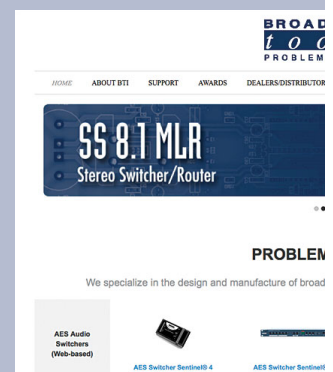
LT/RT meters: Analog audio output level bar graph.

AES Activity: Indicates the presence of AES activity on the selected input. Green=AES activity detected, Red=NO AES activity.

Auto/Manual: LED indicates whether the device is in Auto or Manual switching mode. You can switch between the modes by clicking the “Auto” and “Manual” buttons. The behavior of the device in Auto mode is defined on the I/O Setup page.

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WEB SETUP

“User Setup” Web Page

Eight Usernames and Passwords may be configured for up to three access levels:

1. “Admin” allows complete access for configuration and control.
2. “Monitor/Control” allows access to these pages:
About, Monitor/Control, Show log, Help, and Logout.
3. “Monitor Only” allows access to these pages:
About, Monitor only, Help, and Logout.

Only users with “Admin” access can make changes to this page.

The Site ID is displayed and can be changed on the Email/Network Setup page.

Site ID		SITE_ID		--- Access Level ---		
Username	Password	Show Password	Admin	Monitor Control	Monitor Only	
admin	****	<input type="checkbox"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	
<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	

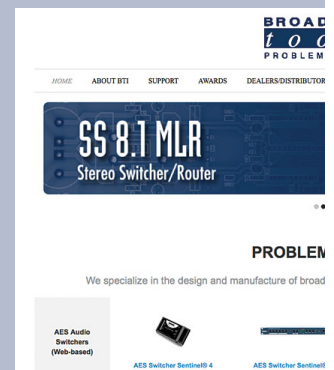
Save Settings

NOTE:

After any item has been changed, you MUST press the “Save Settings” button for your changes to be saved.

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“I/O” Setup Page

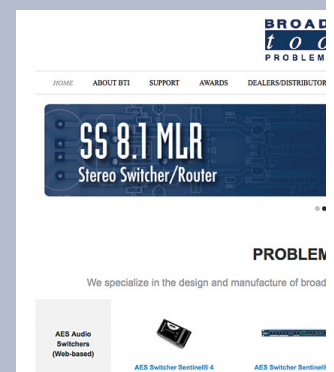
- Override Mode:** Allows front panel and/or remote control input to override Auto mode and manually switch to an input. Checking the "Override Turns Off Auto Mode" check box causes an override action to turn Manual mode on and Auto mode off, otherwise Auto mode remains on.
- When Booting Switch To:** Sets the power up input channel either 1,2,3,4, Mute, or Last Source Selected.
- Channels dropdown:** Select the input channel to be configured.
- Label:** Each input can be given a custom label for easy identification.
- Email Addresses:** Email messages can be sent when an input source becomes active as a result of auto mode or manual control. Each input can have up to eight email address assigned to using the checkboxes labeled 1-8.
- User Defined Action Sequences:** The behavior of the Universal 4.1 when in Auto mode (as indicated/controlled on the Monitor/Control page) is defined by the conditional statement: If (Input) is active and is less than (audio threshold in dB), wait (time in seconds) then (action.) By default the Universal 4.1 is configured to wait for 5 seconds after on the selected input and then switch to next input in ascending order.



After any item has been changed, you MUST press the “Save Settings” button for your changes to be saved.

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“Email/Network Setup” Web Page

BROADCAST TOOLS
Universal 4.1 MLR » Web
Email/Network Setup

NAVIGATION

- About
- Monitor/Control
- User Setup
- VO Setup
- Email/Network Setup

Show Alarms

Help

Logout

Device Address:

Device Netmask:

Gateway Address:

DNS Server Address:

HTTP Port:

SMTP Server Address:

SMTP Port:

SMTP Return Address:

SMTP Host ID:

Secured SMTP (STARTTLS):

SMTP Authentication:

SMTP Username:

SMTP Password: show password

Logging Email Address:

Logging Email Snapshot Interval (Hours):

Logging Email Update Interval (Hours):

Email Alarms Immediately:

Email Alarms Daily:

Daily Alarm Email Time (Hour):

Recipient Addresses:

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8

SNMP Enable Traps:

SNMP Manager IP Address:

SNMP Manager Trap Port:

SNMP Read Community:

SNMP Write Community:

NTP Enabled:

NTP Server Address:

NTP Port:

NTP Update Interval (Minutes):

TCP Enabled:

PIP Mode Enabled:

TCP Listen Port:

TCP Timeout (sec):

Command Format:

Site ID:

Monitor Refresh Time: Seconds

Time Zone Offset from UTC:

Enable Daylight Savings:

Hour	Minute	Second
<input type="text" value="19"/>	<input type="text" value="39"/>	<input type="text" value="16"/>

Set Time: Month Day Year

Time is only saved when "Save Time" is clicked.

Enable Event Logging:

- Login
- Email
- Reboot
- Alarms Cleared

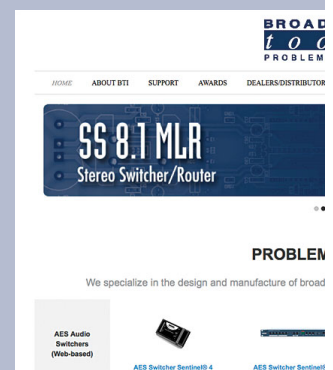
Import Settings: No file selected.

Export Settings:

Firmware: No file selected.

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WEB SETUP

Email/Network Setup” Web Page – Device Network Settings

Device Address: Enter a static IP address here. Default: 192.168.1.55
Device Netmask: Enter the Netmask here: Default: 255.255.255.0
Gateway Address: Enter the Gateway IP here: Default: 192.168.1.1
DNS Server IP Address: Enter your DNS address here. Default: 8.8.8.8
HTTP Port: Normally Port 80 Default: 80

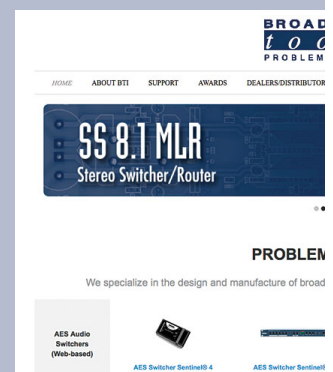
“Email/Network Setup” Web Page – SMTP Settings

SMTP Server Address: SMTP (Simple Mail Transfer Protocol) server address. Used to send emails.
SMTP Port: Normally Port 25 or 587. Default: 25
SMTP Return Address: Enter your return email address here. Emails from the Universal 4.1 MLR will indicate they are from this address. If an email cannot be delivered, a message stating why will be sent to this address.
SMTP Host ID: Enter something here to identify the device. Can be left blank.
Secured SMTP: STARTTLS secure authentication is supported by most providers. This must be enabled for many SMTP servers, like Gmail. Leave disabled for standard Base64 authentication.
SMTP Authentication: When checked SMTP authentication (username/password) is used. Most SMTP servers require authentication.
SMTP Username: Enter SMTP server username here.
SMTP Password: Enter SMTP server password here.

NOTE: The user must enter the following items before an email can be successfully sent: SMTP Server Address, SMTP Port, SMTP Return Address, and SMTP Host ID. SMTP username and SMTP password must be supplied and authentication turned on if the SMTP server requires authentication. An email address must be entered into Recipient Address field #1.

The user must press the “Save Settings” button after entering the SMTP information before attempting an email test. If authentication fails, the email is not sent, please ensure that the username and password are correct.

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“Email/Network Setup” Web Page – Email Logging Settings

Logging Email Address: Email address for the “Logging” email recipient (may be different from the 8 “Alarm” Recipient Addresses. Logging emails and Daily emails are sent to this address only.

Logging Email Snapshot Interval: The period in hours that a snapshot is taken of the system. The logging email is not sent on this interval.

Logging Email Update Interval: The period in hours that snapshots are emailed. This email may contain multiple snapshots if the Snapshot Interval is less than the Update Interval. Each snapshot will be identified by the date and time.

“Email/Network Setup” Web Page – Email Alarm Settings

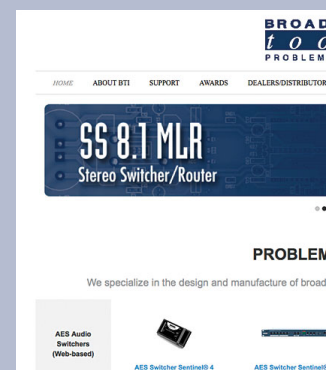
Email Alarms: Choose Immediate and/or Daily. If Immediate is selected, then an email will be sent out as soon as an alarm is generated. If Daily is selected, then each alarm is queued and emailed as a digest every 24 hours. Both can be used at the same time. The number of queued alarms is displayed on the Monitor/Control page.

Daily Alarm Email Time: The time that queued alarms are sent. Queued alarms are sent to the Logging Email Address only.

“Alarm” Recipient Address: Email addresses for up to 8 addresses. These addresses correlate to the 8 email addresses selectable on the I/O Setup page.

WEBSITE:

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“Email/Network Setup” Web Page – SNMP Manager Settings

- SNMP Enable Traps: When checked, SNMP trap messages will be sent. When unchecked, no trap messages will be sent to the manager.
- SNMP Manager IP Address: This is the IP address of the SNMP manager. The system only accepts SNMP requests from this IP address, and will send traps to this IP address only.
- SNMP Manager Trap Port: This is the port number that SNMP trap messages will be sent to at the manager IP. Default port 161.
- SNMP Read Community: This is the community name used for Read-Only access.
- SNMP Write Community: This is the community name used for Read-Write access.

NOTE: A cold-start trap will be sent when the unit boots up if the SNMP Enable Traps are enabled and trap messages will be sent when a device enters or exits an alarm condition, depending on whether or not alarms are enabled.

“Email/Network Setup” Web Page – NTP Settings

- NTP Enabled: Enable for NTP network time sync. Default: Enabled
- NTP (Time) Server Address: Enter the NTP address here. Default: pool.ntp.org
- NTP Port: Port used to connect to NTP server. Default: 123
- NTP Update Interval (Min): Interval between time updates. Default: 60

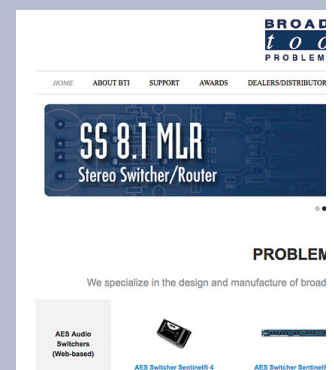
“Email/Network Setup” Web Page – TCP Control Settings

See the TCP Control Commands section for more information.

- TCP Enable: Enables TCP control of the unit. Default: Disabled
- PIP Mode Enable: Enables PIP/triggers over TCP. Default: Disabled
- TCP Listen Port: The port at which the unit will accept TCP control connections. Default: 56.
- TCP Timeout (sec.): The time the unit will keep a TCP connection open after inactivity. Default: 10 seconds.
- Command Format: TCP string format, see control commands section.

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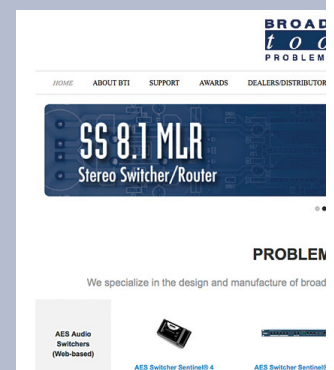


“Email/Network Setup” Web Page – Other Settings

Site ID:	This is the Site Identifier that is displayed on the web and in email.
Monitor Refresh Time (Sec):	Interval at which the Monitor page refreshes. Shorter times may increase network traffic.
Time Zone Offset from UTC:	Sets the time zone used for the internal clock. Default: -8
Enable Daylight Savings:	Adjusts the clock for daylight savings time.
Set Time:	The hour, minute, second, month, day and year boxes can be used to set the time of the real-time clock. The time is only updated if you click “Save Time” and not when you “Save Settings”.
Enable Event Logging:	Event logging will generate an alarm, but it will not send an email. If the system is configured for Daily Alarm emails, then that Daily Alarm email will contain the event logging alarms as well as the alarms configured on the I/O Setup page.
Login:	When someone logs into the unit, the username and date/time will be logged.
Email:	When an email is sent, the type of email and date/time will be logged.
Reboot:	When the device boots the date/time will be logged.
Alarms Cleared:	When the Daily Logs or Normal Alarms are cleared, the type of log cleared and date/time will be stored. When Daily Logs are sent, the Daily Logs are also cleared; this will cause an event log as well.

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Email/Network Setup” Web Page – Controls

Save Settings: After pressing the “Save Settings” button, the device will reboot (If you changed the IP address, you must navigate your web browser to the new IP address (if the HTTP port was changed from port 80, be sure to add the new port number after the IP: xxx.xxx.xxx.xxx:port #). If you didn’t change the IP address, then you will be returned to the login screen after the device reboots.

Reboot Device: When you press the “Reboot Device” button, the internal web server restarts.

Send Test Email: Press this button to send a test email to recipient address 1.

NOTE: After you are done making changes to the Email/Network Setup page, you **MUST** press the “Save Settings” button to save your changes.

Reload Defaults: When you press the “Reload Defaults” button, the device resets to factory default settings.

Clear Daily Logs: When you press the “Clear Daily Logs” button, the daily logs stored in memory will be cleared. Keep in mind that if the Alarms Cleared Event is enabled, this event will post after the logs are cleared.

Send Daily Logs: When you press the “Send Daily Logs” button, the system will send the daily logs email and clear the log queue.

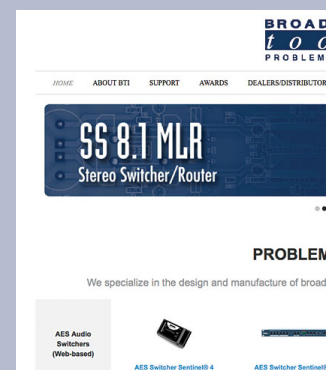
Import Settings: Browse to locate and import a saved .ncs settings file.

Export Settings: Clicking save will allow you to download a backup copy of the settings entered into the unit as .ncs file.

Firmware: Browse to locate and apply a firmware updated file saved on your computer.

WEBSITE:

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“Show Alarms” Web Page

The screenshot shows the 'Show Alarms' web page. At the top, there is a header with 'BROADCAST tools' on the left and 'Universal 4.1 MLR » Web Alarms' on the right. Below the header is a navigation sidebar on the left with sections for 'NAVIGATION' (About, Monitor/Control, User Setup, I/O Setup, Email/Network Setup) and 'Control' (Show Alarms, Help, Logout). The main content area features a table with three columns: 'Device/Event', 'Message', and 'Date/Time'. The table contains the text 'No Currently Saved Alarms' and 'Last Updated 5/9/2017 12:49:11'.

This page displays current alarms.

Device/Event : Labels the device or event.

Message: Describes event/alarm condition.

Date: Displays the date that the event/alarm was logged.

Time: Displays the time that the event/alarm was logged.

NOTE: With the “admin” access level, the user may control all functions.

With the “Monitor/Control” or “Monitor” only access level, the user may view the “Show Log”, enable/disable PC speaker sound and silence alarms.

WEBSITE:

Visit our web site for product updates and additional information.

The screenshot shows the Broadcast Tools website. At the top right is the 'BROADCAST tools' logo. Below it is a navigation menu with links for 'HOME', 'ABOUT BTI', 'SUPPORT', 'AWARDS', and 'DEALERS/DISTRIBUTOR'. The main content area features a large banner for 'SS 8.1 MLR Stereo Switcher/Router'. Below the banner is a section titled 'PROBLEM' with the text 'We specialize in the design and manufacture of broad...'. At the bottom, there are three product images: 'AES Audio Switchers (Web-based)', 'AES Switcher Sentinel® 4', and 'AES Switcher Sentinel®'.

WEB SETUP

“About” Web Page

BROADCAST TOOLS Universal 4.1 MLR >> Web About

NAVIGATION
About
Monitor/Control
User Setup
I/O Setup
Email/Network Setup

Show Alarms
Help
Logout

Broadcast Tools, Inc.
Device Name Universal 4.1 MLR Web
Firmware Version 0.12
Web page Version 0.6
Home page www.BroadcastTools.com

The “About” Web Page displays the product name, firmware version numbers, and Broadcast Tools® Web site link.

WEBSITE:



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BROADCAST TOOLS
PROBLEM

HOME ABOUT BTI SUPPORT AWARDS DEALERS/DISTRIBUTOR

SS 8.1 MLR
Stereo Switcher/Router

PROBLEM
We specialize in the design and manufacture of broad

AES Audio Switchers (Web-based)  

AES Switcher Sentinel® II 4 AES Switcher Sentinel® II 4

WEB SETUP

TCP Control Commands

The Universal 4.1 MLR >> Web can be configured to accept ASCII control strings over TCP. The TCP port used, TCP timeout and TCP enable check box can be found on the Email/Network Setup page. TCP must be enabled for TCP control to work.

By default, when enabled, the Universal 4.1 uses TCP port 56 for control. A Telnet client such as PuTTY may be used to test the TCP control interface.

Audio Switch Control Commands: (Carriage return not required)

*uui - Select input “ii”.

Command example: *001

Where * (asterisk) is the beginning of string, “u” is unit ID, zero on these products and “ii” is the two digit input number: 01, 02, etc.

*uMA - Mute outputs.

Command example: *0MA

Where * (asterisk) is the beginning of string, “u” is unit ID, zero on these products and “MA” is the command.

*uCAx - Auto/Manual mode.

Command example: *0CAY

Where * (asterisk) is the beginning of string, “u” is unit ID, zero on these products and “CA” is the command and “x” is the modifier. Where x = y to turn Auto mode on, and x = n to turn auto mode off (manual mode).

When x =? the unit will return C0A,1<CR><LF> if Auto mode is On and C0A,0<CR><LF> if auto mode is Off.

Information Retrieval Commands: (Carriage return not required)

*uSPA - Send PIP Input Status.

Command example: *0SPA

Where * (asterisk) is the beginning of string, “u” is unit ID, zero on these products, and “SPA” is the command.

Response example: “S0P,A,0,0,0,1<CR><LF> says that PIP input 5 is active.

The response will list all inputs, “1” if the input is active and zero “0” if inactive.

Note: Status is automatically sent each time a channel is changed.

*uSL - Send Audio Status.

Command example: *0SL

Where * (asterisk) is the beginning of string, “u” is unit ID, zero on these products, and “SL” is the command.

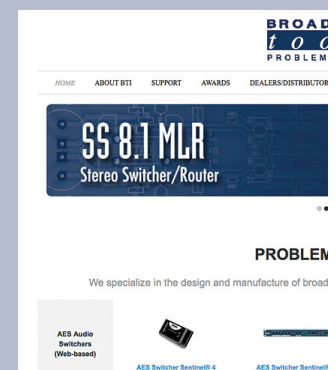
Response example: “S0L,0,0,0,1<CR><LF> says that input 4 is selected.

The response will list all inputs, “1” if the input is selected and zero “0” if not selected.

Note: Status is automatically sent each time a channel is changed.

WEBSITE:

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TCP Control Commands (cont)

*uSS - Send status of Silence or AES activity detector.

Command example: *0SS

Where * (asterisk) is the beginning of string, “u” is unit ID, zero on these products, and “SS” is the command.

Response example: S0S,1<CR><LF>

0 = Audio/AES activity, 1 = No Audio/AES activity.

Note: Status is automatically sent each time an error is detected.

*uU - Send unit firmware version and Site ID.

Command example: *0u

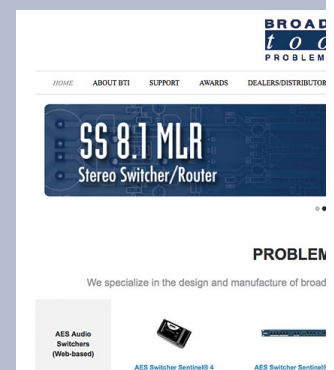
Where * (asterisk) is the beginning of string, “u” is unit ID, zero on these products, and “U” is the command.

Response example: <Universal41MRLWeb_0.12, SITE_ID><cr><lf

Note: Unit information is automatically sent each time this information is requested.

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SPECIFICATIONS

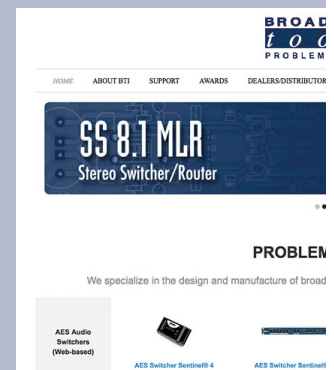
Inputs/Outputs:	Any input level and impedance can be used. Inputs may be balanced or unbalanced. Output levels, impedance, distortion, noise and balancing will match that of the selected input.
Switching Method:	Passive. Mechanical latching sealed relays utilizing 2-form-C bifurcated-crossbar silver alloy with gold overlay contacts.
Operation Control:	Front Panel - Momentary switches. Remote - Momentary or sustained, compatible with 5 volts CMOS/TTL logic, open collector or contact closures to ground.
Status:	Front Panel - LED Indicators. Remote – Four channel relay status output contacts. 30 VDC @ 1-amp maximum.

CAUTION! For safety, never connect 120 Vac circuits to the relays!

Interfacing:	Audio I/O- balanced stereo XLR, and StudioHub+ RJ45 connectors. Remote control - Rear panel pluggable screw terminals. Mating connectors supplied.
Ethernet Interface:	RJ45, 10base-T or 100base-TX, auto sensing with link & activity LED indicators - Full/half duplex.
Power Requirements:	9 VDC @ >500 ma. Center positive. Universal switching power supply with domestic connector supplied. International connectors optional.
Physical Dimensions:	19.00" x 4.00" x 1.75" (WDH), 1-RU rack mount painted aluminum chassis.
Weight:	2.0 lb.
Shipping Weight:	3.0 lb.

WEBSITE:

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SPECIFICATIONS

LIMITED WARRANTY

The term “Buyer” as used in this document refers to and includes both (but only) (a) any person or entity who acquires such an item for the purpose of resale to others (i.e., a dealer or distributor of an item), and (b) the first person or entity who acquires such an item for such person’s or entity’s own use.

Broadcast Tools warrants to each Buyer of any item manufactured by Broadcast Tools that the item will be free from defects in materials and workmanship at the time it is shipped by Broadcast Tools if the item is properly installed, used and maintained.

EXCLUSIVE REMEDIES

If Broadcast Tools is notified, in writing, of a failure of any item manufactured by Broadcast Tools to conform to the foregoing Limited Warranty within one (1) year following the date of the Buyer’s acquisition of the item, and if the item is returned to Broadcast Tools in accordance with Broadcast Tools’ instructions for confirmation by inspection of the defect (which at Broadcast Tools’ election may include, without limitation, a requirement that the Buyer first obtain a Return Authorization number from Broadcast Tools, that the Buyer furnish proof of purchase in the form of an invoice and/or receipt, and that the Buyer prepay all freight charges associated with any return of the item to Broadcast Tools using such freight service as Broadcast Tools reasonably may specify), Broadcast Tools will repair or replace the defective item, or will refund the purchase price paid by the Buyer for the item. Broadcast Tools shall have the exclusive right to choose between these alternative remedies.

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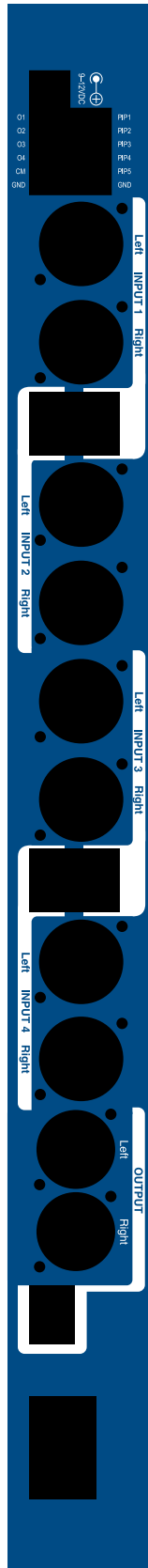
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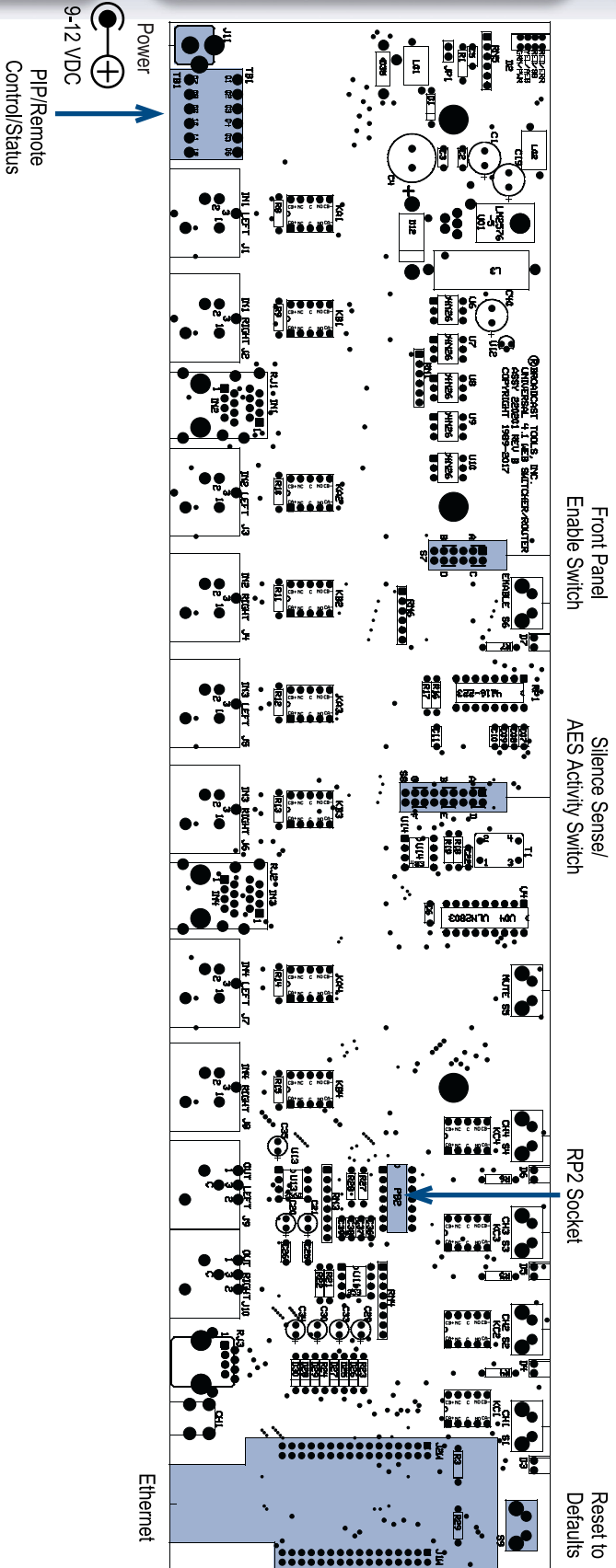
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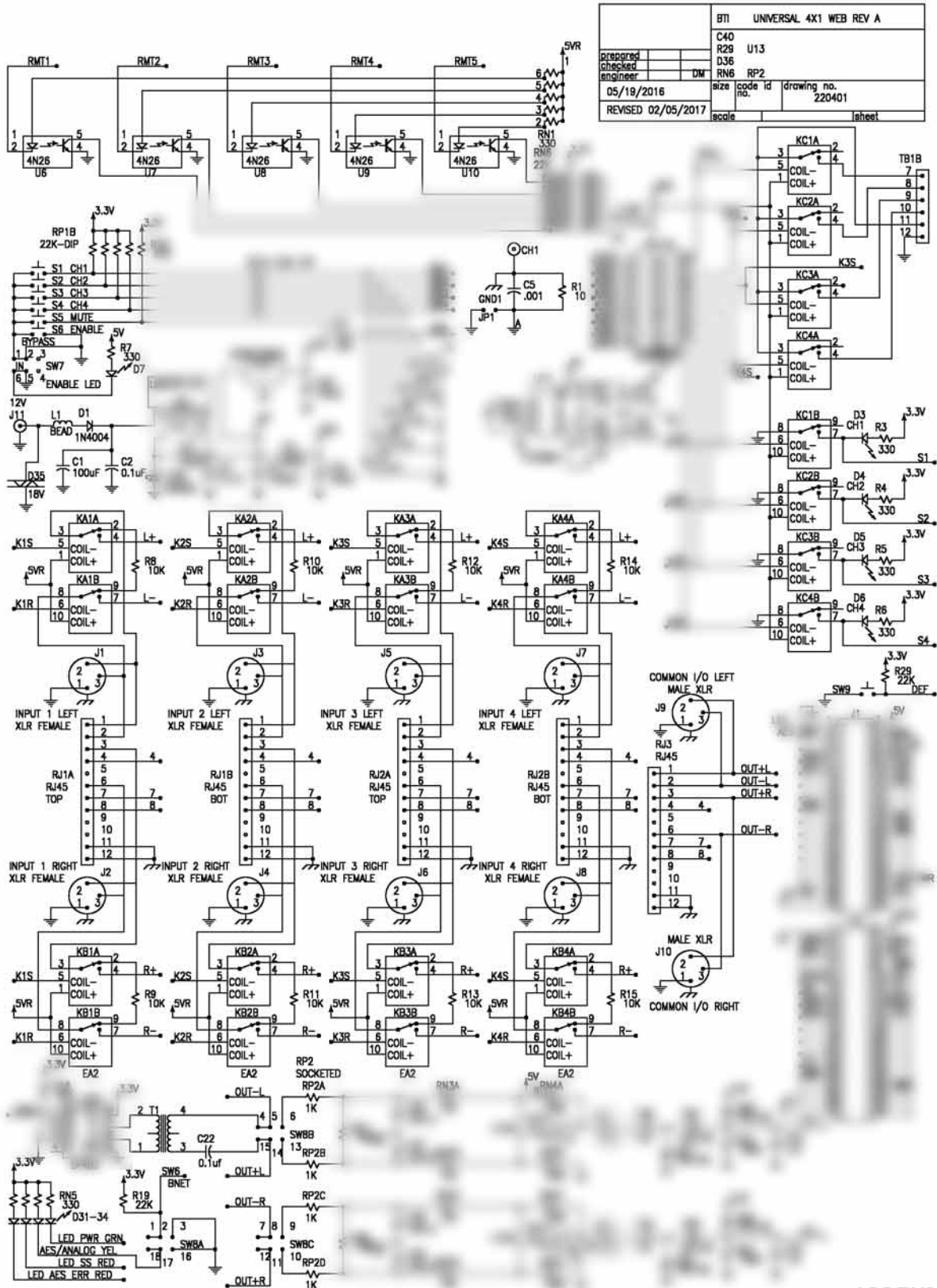
Universal 4.1 MLR»Web Component Layout



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Modification Date: 07/13/17

Fractional Schematic



APPENDIX