



Installation and Operation Manual



Relay Sentinel

Manual Update: 11/05/2013

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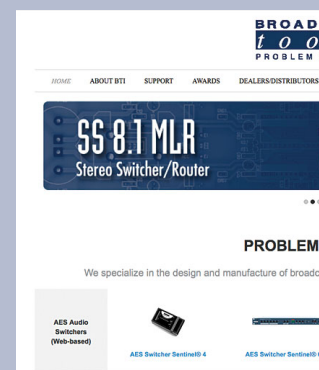
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INTRODUCTION

Thank you for your purchase of a Broadcast Tools® Relay Sentinel™ Web enabled three-relay module (referred to as the Relay Sentinel™ 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® Relay Sentinel™.

SAFETY INFORMATION

Only qualified personnel should install Broadcast Tools® products. Incorrect or inappropriate use and/or installation could result in a hazardous condition.

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 98284-1540 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



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.

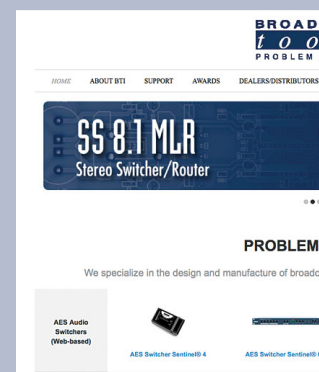


NOTE:

This manual should be read thoroughly before installation and operation.

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INTRODUCTION

Product Overview

The Relay Sentinel™ is the fastest, easiest, least expensive, and most reliable way to remotely control and/or monitor equipment over any IP network including private networks, IP-based industrial control networks, and the Internet. Users can operate the product using a web browser or web-enabled mobile device, while email notification may be configured to alert up to four recipients when alarms are detected. The user may also enable a sound effect to play when an alarm is generated. Logging of relay status, along with the site ID text may be emailed from once an hour to once a day. The Relay Sentinel™ has three low-signal SPDT relays that can individually switch up to 1 Amp at 28V. Each relay can be turned on, off, pulsed or timed latched using the built in web pages.

The Relay Sentinel™ may be paired with the Status Sentinel™ to form a “Relay Extension Cord”.

Inspection

Please examine your Relay Sentinel™ carefully for any damage that may have been sustained during shipping. If any damage is noted, please notify the shipper immediately and retain the packaging for inspection by the shipper. The package should contain the Relay Sentinel™, this manual and/or CD, 7 foot BLUE straight-through CAT 5 cable, 7 foot GRAY crossover CAT 5 cable, and the 7.5 VDC @ 500ma wall transformer.

Installation

Surge Protection

The Relay Sentinel™ 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 Relay Sentinel™ 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 Relay Sentinel™ to a UPS system. A UPS helps minimize the risk to the Relay Sentinel™ and provides power during a power outage.

“NET” network RJ45 connector

Connect one end of the supplied CAT5 (straight or crossover) cable to the desired ETHERNET (WAN/LAN) or PC port.

POWER 7.5 VDC connector

This is the connector used to power the unit. Never use any type of power supply other than the specified power supply.



CAUTION!

Installation of the Relay Sentinel™ in high RF environments should be performed with care. The station ground should be connected to the designated chassis ground terminal or chassis ground screw using a 20 to 24-gauge wire.

Installation

K1, K2, K3, relay connections

Equipment to be controlled by the relays should be connected to the terminals labeled K1, K2, K3, NC (normally closed), CM (common) and/or NO (normally open). The terminals labeled 5VDC and GND may be used to supply five volts DC at 100ma (max) to external equipment.

Power LED

Indicates power is applied.

Relay- K1, K2, K3 LED

Illuminates when the selected relay is activated.

On-board 5VDC power source

The on-board five-volt DC power source may be used to power external equipment. The supply is current limited to 100ma. Connections should be made to the “5VDC” and “GND” terminals.

Chassis (CHS) GND connector

Connect the station ground to this terminal.

Web Setup/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 help. 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 users 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.)

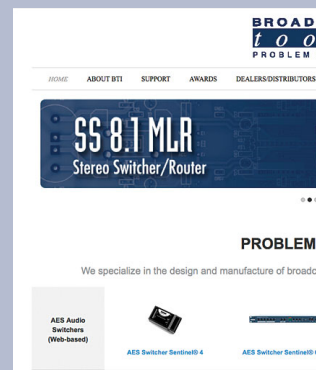


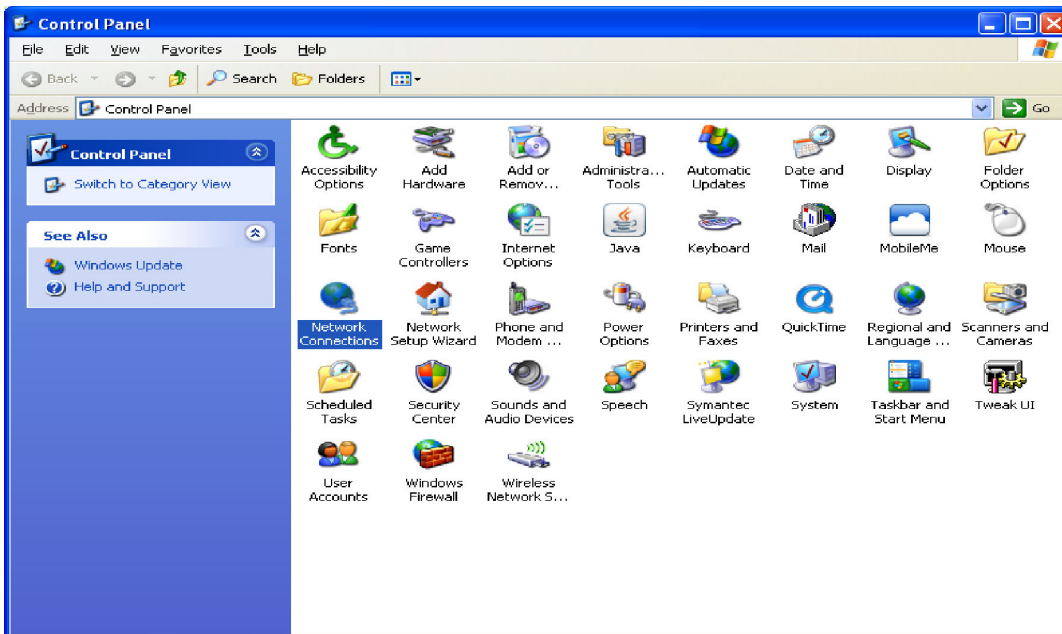
CAUTION!

NEVER DOWNLOAD FIRMWARE UPDATES OR CHANGES TO THE XPORT WEB-SERVER UNLESS INSTRUCTED TO DO SO BY BROADCAST TOOLS®. DOING SO DELETES ALL SOFTWARE AND VOIDS ALL WARRANTIES FROM BROADCAST TOOLS, INC.

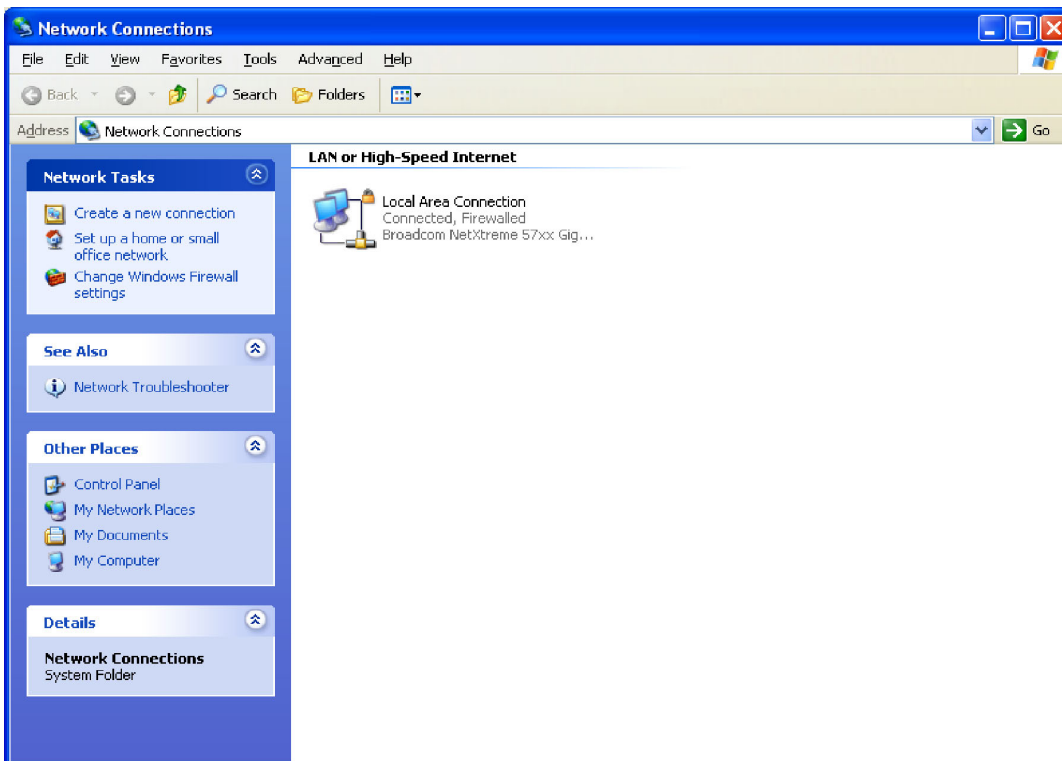
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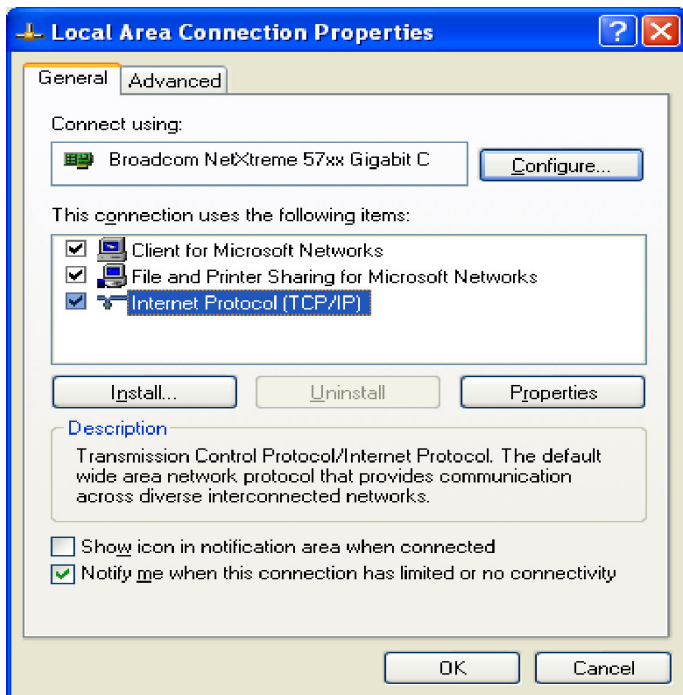




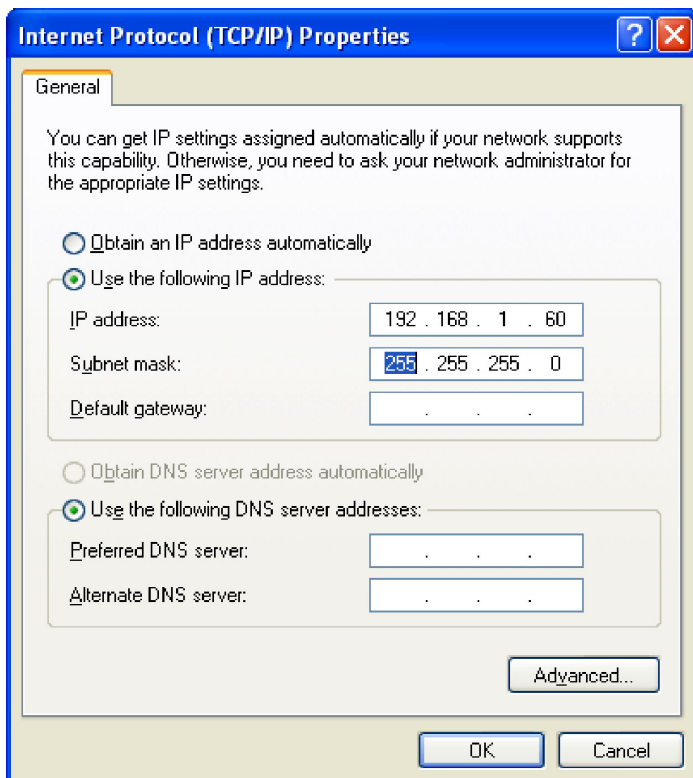
Step 2: Double click on the icon labeled Network Connections. The following menu will pop up.



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.

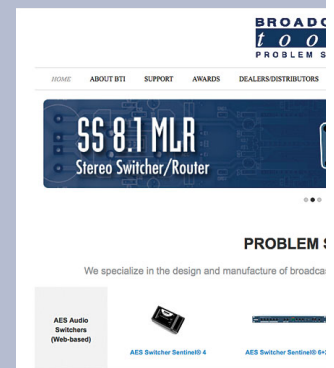


Step 4: On the Local Area Connection Properties page, double click on Internet Protocol (TCP/IP) to display properties.



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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.

Opening the LOGIN Web Page

1. Connect the supplied GRAY colored XOVER cable between the PC’s Ethernet port and the products NETWORK RJ45’s jack.
2. Connect the supplied 7.5 VDC power supply to the product’s power jack labeled Power 7.5 VDC. Verify that the green POWER LED and left “LINK” LED above the “NET” Network RJ-45 are illuminated

Ethernet (NETWORK) port LED indicator functions

Link LED Left Side	
Color	Meaning
Off	No Link
Amber	10 Mbps
Green	100 Mbps

Activity LED Right Side	
Color	Meaning
Off	No Activity
Amber	Half Duplex
Green	Full Duplex

3. Open the product’s login page by typing the following URL into the browser: <http://192.168.1.55> A username and password is required to change any parameter and are case sensitive.

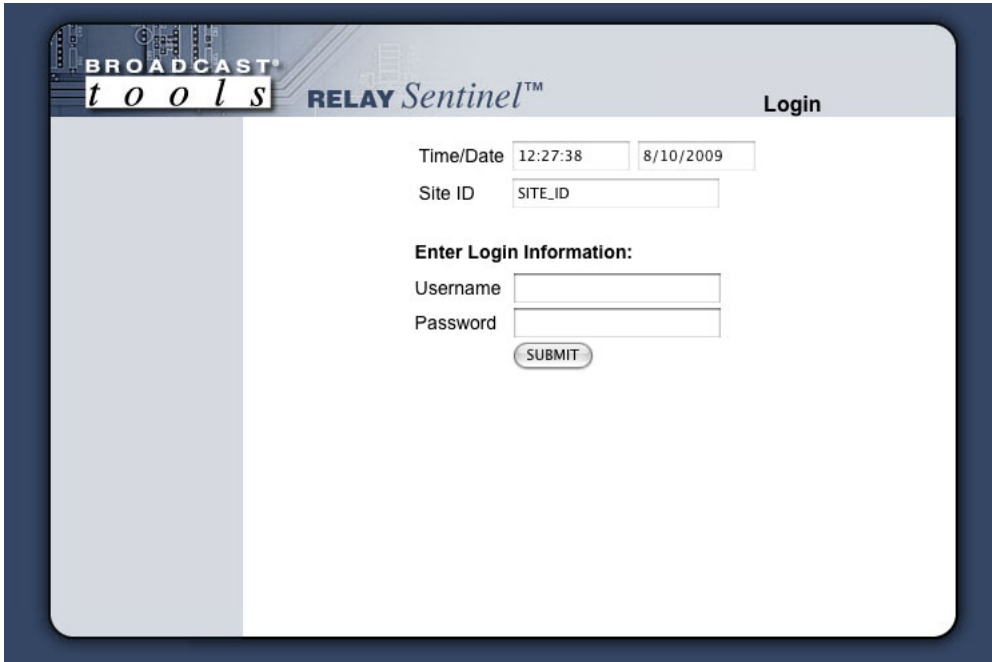
Factory “Login” defaults:

username: admin (lower case)
password: 1234

4. Once you are logged in, follow this manual for setup and/or operational information.

“Login” Web Page

The Login screen displays the Username and Password entry points.

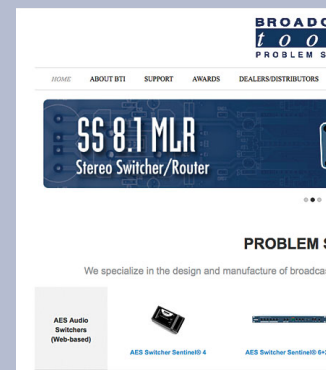


The screenshot shows the 'Login' page of the Relay Sentinel web interface. At the top left is the 'BROADCAST tools' logo, and next to it is the 'RELAY Sentinel™' logo. The word 'Login' is in the top right corner. Below the logos, there are two input fields for 'Time/Date' with values '12:27:38' and '8/10/2009'. Below that is a 'Site ID' field with the placeholder text 'SITE_ID'. Underneath is the heading 'Enter Login Information:' followed by 'Username' and 'Password' input fields. A 'SUBMIT' button is located below the password field.

After you have successfully logged in, the Monitor/Control page will be displayed. Depending on your access level, you may or may not be able to control or modify the product's configuration.

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“Monitor/Control” Web Page

Output Relay	Status	State	Duration	
Relay0	<input type="radio"/>	Off	100	Submit
Relay1	<input type="radio"/>	Off	100	Submit
Relay2	<input type="radio"/>	Off	100	Submit

The Monitor/Control page allows the monitoring of each relay via each status LED. The relays may be configured for one of four states. OFF, ON, Pulse with selectable length of 100 to 2000 milliseconds and reboot with selectable duration of 1 to 30 minutes.

When the desired state and duration is completed, the “SUBMIT” button MUST be pressed to activate the function.

The user defined Site ID, Time and Date is also displayed.

To select other pages (if authorized), make your selection under the left hand Navigation column.

Output Relay Label: Used to identify the relay.

Status: Illuminates when each relay is activated.

State: Determines the state a relay will function

Duration: Allows the user to select the timing for pulse or reboot operation.

“User Setup” Web Page

BROADCAST tools RELAY Sentinel™ User Setup

NAVIGATION
 About
 Monitor/Control
 User Setup
 Relay Setup
 Email/Network Setup
 Show Log
 Help
 Logout

Site ID: SITE_ID

Username	Password	--- Access Level ---		
		Admin	Monitor Control	Monitor Only
admin	1234	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
		<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
		<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
		<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
		<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
		<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
		<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
		<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>

Save Settings



NOTE:

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

This page can only be configured with (factory default) the “admin” access level.

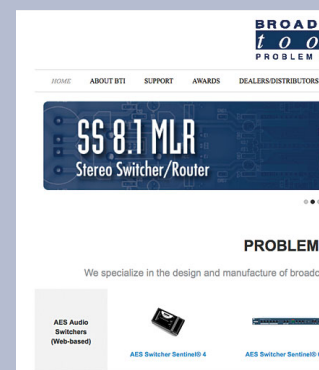
The site ID may be used to display up to 29 numbers and/or characters labels.

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

1. “Admin” allows complete product configuration access.
2. “Monitor/Control” allows the following access:
About, Monitor/Control, Show log, Help, and Logout.
3. “Monitor Only” allows the following access:
About, Monitor only, Help, and Logout.

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“I/O Setup” Web Page

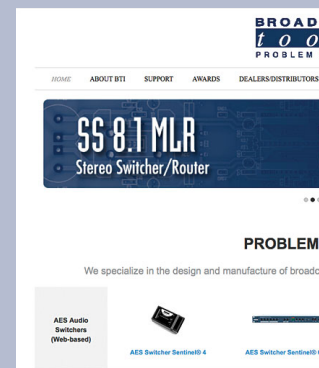
- Relay selection drop-down: Allows for the selection of each relay.
- Relay Label: Used to identify each relay.
- Alarms ON: This box is checked to enable alarms when the relay is ON.
- Alarms OFF: This box is checked to enable alarms when the relay is OFF.
- Email Addresses: The boxes labeled 1 thru 8 allows the user to select up to eight different alarm email addresses when enabled.
- Log Device: This box is checked to enable the logging of each relay.
- Default State: This setting allows you to set the default state of each relay control. The factory default setting is OFF for all relays.
- Sync Pulse: When checked, the relay will close at the minute and second programmed each hour.

NOTE: By enabling the ON and/or OFF monitoring and NOT enabling an email box, the device will log the events, but not send an email. If the device is exiting a OFF alarm condition, then the email addresses used will be those notified when the OFF alarm condition was entered.

NOTE: 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

NAVIGATION

- About
- Monitor/Control
- User Setup
- Relay Setup
- Email/Network Setup
- Show Log
- Help
- Logout

Email / Network Setup

HTTP Server Address: 192.168.1.90

HTTP Server Netmask: 255.255.255.0

HTTP Server Gateway: 192.168.1.1

HTTP Port: 80

Site ID: SITE_ID

SMTP Server Address:

SMTP Port: 25

SMTP Return Address:

SMTP Host ID:

SMTP Authentication: ☐

SMTP Username:

SMTP Password:

Logging Email Address:

Update Interval (Hours): 0

Recipient Addresses:

- 1
- 2
- 3
- 4

SNMP Manager IP Address: 192.168.1.170

SNMP Manager Trap Port: 162

SNMP Read Community: public

SNMP Write Community: private

SNMP Enable Traps: ☐

Listening Port: 0

Listening Enabled: ☐

Backup DNS Server IP Address: 192.168.1.1

NTP Server Address: pool.ntp.org

NTP Port: 123

NTP Update Interval (Minutes): 30

NTP Enabled: ☒

Time Zone Offset from UTC: -7.0 hours

Save Settings Send Test E-mail Reload Defaults

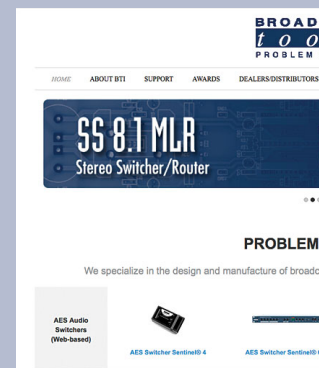
Restoring Network Factory Defaults

The Relay Sentinel™ factory defaults may be restored by shorting pins 3 & 4 on the module RJ11 jack while powering up the product. Remove the short after 3 seconds.

HTTP Server Address:	Enter a static IP address here. Default:	192.168.1.55
HTTP Server Net mask:	Enter the Net mask here: Default:	255.255.255.0
HTTP Server Gateway:	Enter the Gateway IP here: Default:	192.168.1.1
HTTP Port:	Normally Port 80	Default: 80
Site ID:	Enter text to identify the site, location, etc.	
SMTP Server Address:	The user can enter either an IP address in the xxx.xxx.xxx.xxx format or a URI in the form smtp.comcast.net. In order to resolve the URI, a working DNS server must be present or it's IP address entered into the system.	

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SMTP Port: Normally Port 25 **Default: 25**

Return Address: Enter your return email here.

NOTE: The user must enter the following items before an email can be successfully sent: SMTP Server Address, SMTP Port, Return Address, Host ID and Recipient Address 1. The test email is sent to email recipient address 1. The user should press the “Save Settings” button after entering the SMTP information before attempting an email test.

SMTP Port: Normally Port 25 **Default: 25**

Return Address: Enter your return email address here.

NOTE: After entering the return email address, you can test email operation by pressing the “Send Test Email” button.

Host ID: Enter something here, to identify the host.

Logging Email Address: IP address for the “Logging” email recipient (may be different from the four “Alarm” Recipient Addresses).

Logging Interval (Hours): This determines how often the input status is emailed. If set to 0 (zero), no email will be sent. **Default: 1**

“Alarm” Recipient Addresses: Email Recipient 1
Email Recipient 2
Email Recipient 3
Email Recipient 4

Listening Port: Enter the port of the Status Sentinel™. Normally 10001

Listening Enabled: Normally unchecked unless paired with the Status Sentinel™ to form a “Relay Extension Cord”.

Backup DNS Server IP Add: Enter your DNS address here. **Default: 192.168.1.1**

NTP Server Address: Enter the NTP address here. **Default: pool.ntp.org**

NTP Port: **Default: 123**

NTP Update Interval (Min): Time between timing updates. **Default: 30**

NTP Enabled: Must be enabled for correct timing. **Default: Enabled**

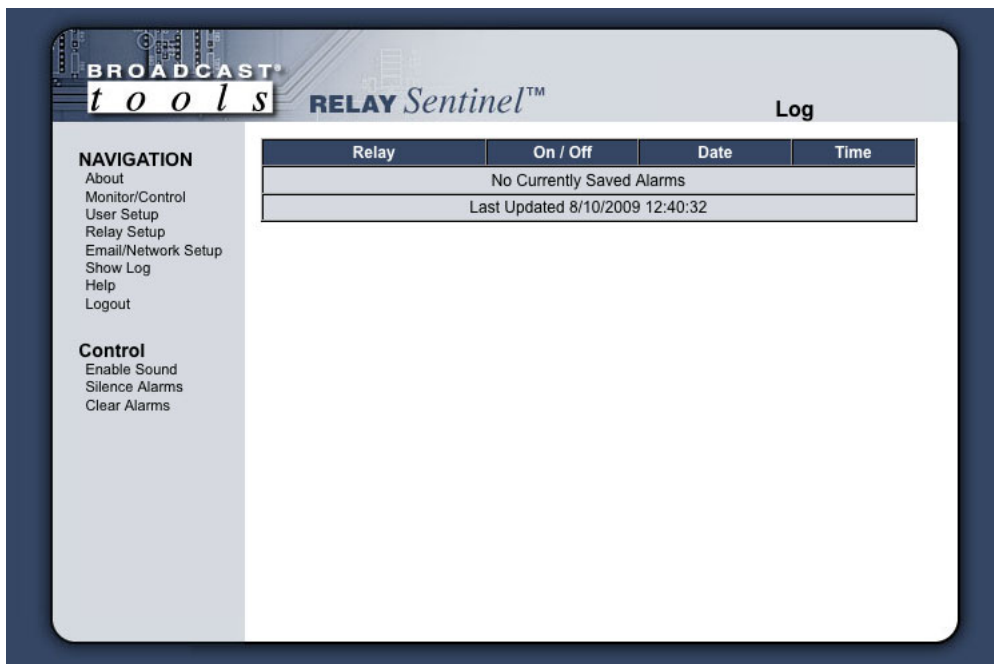
Time Zone Offset from UTC: Must be set for correct timing. **Default: -8**

NOTE: After you are done making changes to the Email/Network Setup page, you **MUST** press the “Save Settings” button to save your changes. 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 the web page will return to the login screen after the device reboots.

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

Reload Defaults: When you press the “Reload Defaults” button, the device resets and if the IP address was changed, 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 the web page will return to the login screen after the device reboots.

“Show Log” Web Page



This page displays current alarms.

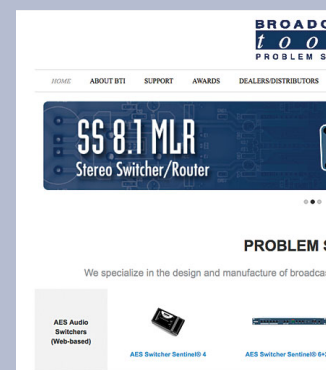
With the “admin” access level, the user may control all functions.

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

NOTE: Shock Wave “Flash” must be installed and operating properly on your PC for the “Alarm Sound” to work when enabled.

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“About” Web Page



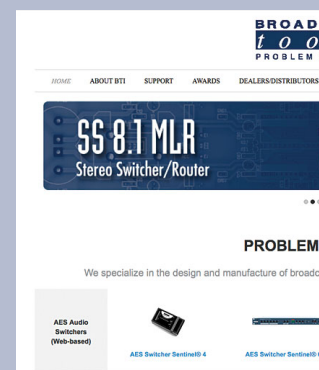
The “About” Web Page displays the product name, firmware version numbers, and Broadcast Tools® Web site link.

Specifications

Ethernet Interface:	RJ-45, 10base-T or 100base-TX, auto sensing with link & activity led indicators - Full/half duplex.
Protocols:	TCP/IP, UDP/IP, ARP, ICMP, SNMP, TFTP, Telnet, DHCP, BOOTP, HTTP, and AutoIP.
Relays:	Three SPDT dry contacts, 30 VDC, one amp.
On-board 5VDC Power Source:	Five-volts DC, current limited to 100ma.
Connectors:	Removable euroblock screw terminals
EMI / FCC Compliance:	See the Declaration of Conformity page. Operation is subject to the following two conditions: 1) This device may not cause harmful interference, and 2) this device must accept any interference received, including that which may cause undesired operation.
Required power supply:	7.5 VDC only @ 500ma. 2.1mm ID x 5.5mm OD coaxial connector. Surge protected. Domestic PS supplied.
Operating Temperature:	32 to 122 °F / 0 to 50 °C for all operating voltage ranges.
Humidity:	0 - 90% RH, non-condensing.
Size:	6.18" x 3.70" x 1.42" (L,W,H)
Weight:	1.0 lb.
Options:	* LR-5, 5 pole mechanical latching relay. * CE certified 240 VAC power supply. * RA-1, 1-RU rack shelf. Note: Velcro may be used to secure the product to the RA-1 shelf.

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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.

NO OTHER WARRANTIES OR REMEDIES

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, BROADCAST TOOLS AND ITS SUPPLIERS DISCLAIM ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE; AND THE FOREGOING ALTERNATIVE REMEDIES SHALL BE EXCLUSIVE OF ALL OTHER REMEDIES. THIS LIMITED WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS. YOU MAY HAVE OTHER RIGHTS, WHICH VARY FROM STATE/JURISDICTION TO STATE/JURISDICTION.

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Broadcast Tools, Inc.

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support@broadcasttools.com **e-mail**
www.broadcasttools.com **website**

Declaration of Conformity

The XPORT Device contained in the Relay Sentinel™ conforms to the following standards: (according to ISO/IEC Guide 22 and EN 45014)

Manufacturer's Name & Address:

Relay Sentinel™: Broadcast Tools®, Inc.
131 State Street, Sedro Woolley, WA 98284-1503 USA

XPort: Lantronix 15353 Barranca Parkway, Irvine, CA 92618 USA

Declares that the following product:

Product Name Model: XPORT™ Device Server

Conforms to the following standards or other normative documents:

Electromagnetic Emissions:

EN55022: 1998 (IEC/CSP122: 1993) Radiated RF emissions, 30MHz-1000MHz
Conducted RF Emissions – Telecom Lines – 150KHz – 30MHz
FCC Part 15, Subpart B, Class B
IEC 1000-3-2/A14: 2000
IEC 1000-3-3: 1994

Electromagnetic Immunity:

EN55024: 1998 Information Technology Equipment-Immunity Characteristics
Direct ESD, Contact Discharge
Indirect ESD
Radiated RF Electromagnetic Field Test
Electrical Fast Transient/Burst Immunity
RF Common Mode Conducted Susceptibility
Power Frequency Magnetic Field Test

Manufacturer's Contact:

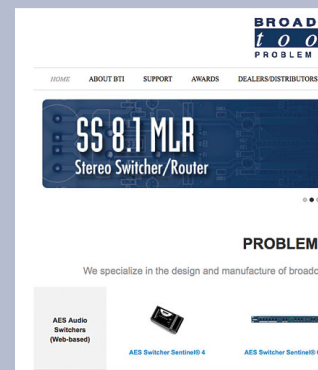
Relay Sentinel™
Broadcast Tools®, Inc.
131 State Street
Sedro Woolley, WA 98284-1503 USA
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XPORT™

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