BROADCAST tools INC

Installation and Operation Manual



Status Sentinel 16

Web enabled sixteen-input status / logic input module.

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NOTE: We recommend the use of Firefox or Safari for Windows as your browser.

Manual update: 10/31/2010

If you need a firmware upgrade, contact Broadcast Tools®

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INTRODUCTION

Thank you for your purchase of a Broadcast Tools® Status Sentinel®16 Web enabled sixteen-input status/digital module (referred to as the Status Sentinel®16 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® Status Sentinel®16.

SAFETY INFORMATION

Only qualified technical personnel should install the Status Sentinel®16. 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 Status Sentinel®16 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 Status Sentinel®16.

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.

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

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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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Product Overview

The Status Sentinel®16 is a robust, full-featured; Ethernet based data acquisition device with sixteen logic-level (status) inputs. All status/logic inputs are activated by a closure to ground. External sources can be contact closures, open collectors or 5, 12, 15 and 24-volt logic-level sources. The Status Sentinel®16 can be monitored over any IP network including private networks, IP-based industrial control network 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 EIGHT recipients when alarms are detected. The user may also enable a sound effect to play on the monitoring PC when an alarm is generated. Logging of all user selected input status with site ID information which may be emailed from once an hour to once a day, along with hourly snap-shot functionality.

We have also provided SNMP capabilities to allow multiple units to be monitored with any SMNP manager software package. SMTP username and passwords are also supported.

The Status Sentinel®16 may be paired with the Relay Sentinel®16 to form a "16 channel Relay Extension Cord".

Features/Benefits

- Logging of all input status, along with the site ID may be emailed in time spans from once an hour to once a day.
- Event scheduler
- Front panel led indicators are provided to monitor each input.
- Plug-in euro-block screw terminals for all status / logic inputs. Mating plug supplied.
- Protocols: TCP/IP, UDP/IP, ARP, ICMP, SNMP, TFTP, Telnet, DHCP, BOOTP, HTTP, and AutoIP.
- Front panel RJ-45, 10/100base-T LAN/Ethernet interface.
- Fully RFI proofed.
- Surge protected power supply. Domestic 7.5 VDC, 1 amp supply provided.
- Four units may be mounted on one RA-1 1-RU shelf.

Applications

- PPM Monitoring and alarm logging.
- Web-enabled networked message board controller.
- Input side of a web-enabled relay extension cord.
- Input status monitoring via a web browser and/or user defined PC application.

Inspection

Please examine your Status Sentinel®16 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 Status Sentinel®16, 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 @ 1 amp wall transformer.

Installation

Surge Protection
The Status Sentinel®16 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 Status Sentinel®16 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 Status Sentinel®16 to a UPS system. A UPS helps minimize the risk to the Status Sentinel®16 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 supply.

Status / Logic input connections
The Status Sentinel®16 is equipped 16 inputs. All inputs are connected through removable euro-block screw terminals. Refer to the label attached to the top of the unit for the correct input and ground connections. The schematic in the appendix shows the internal configuration of the inputs. Each input has a 22 K pull-up resistor. The CMOS gate is protected by a pair of clamp diodes and the 22 K series resistor limits the current during clamping. The internal clamping allows the inputs to be connected to voltages up to 50 volts DC. The inputs have transient protection up to ± 350 volts. The inputs can be activated with a relay contact connection to ground, an open-collector driver, +5, +12 and +15 volt logic-levels, or it can "piggy-back" on an external control circuit.

When connecting to control circuitry with logic-levels greater than +5 volts (+12 for example), verify that the Status Sentinel®16's internal 22K resistor is connected to +5 volts and does not prevent the external circuitry from working properly. Also, be sure the ground potential of the Status Sentinel 16 is at the same potential as the external equipment's ground.

Input Status LED's
Each input status led will Illuminate when the appropriate status / logic input is activated. The operation may be reversed.

Power/HB LED
The flashing LED Indicates valid power and that the control processor is operating.

CAUTION!

Installation of the Status Sentinel®16 in high RF environments should be performed with care. The station ground should be connected to the designated chassis ground terminal using a 20 to 24-gauge wire.

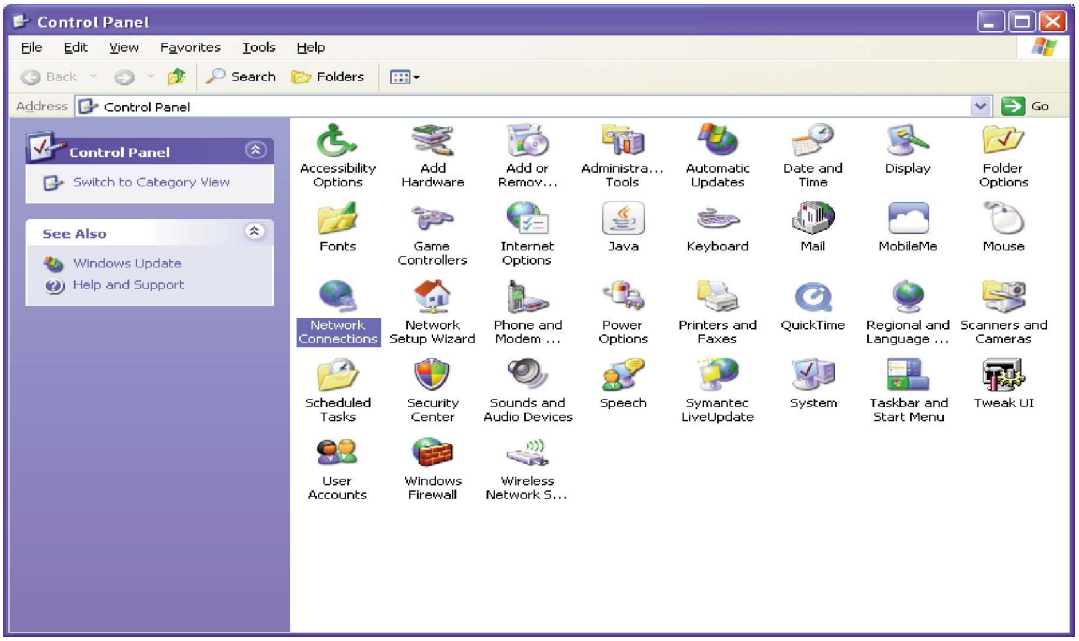
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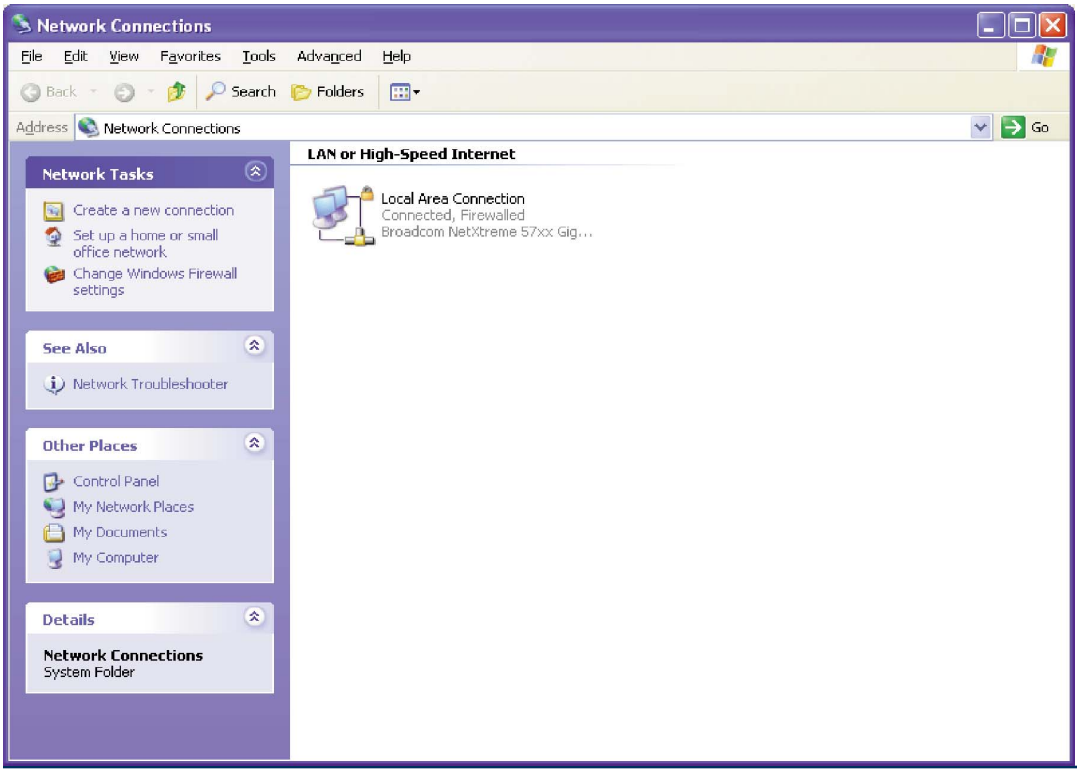
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Web Setup/Operation

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.)*



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

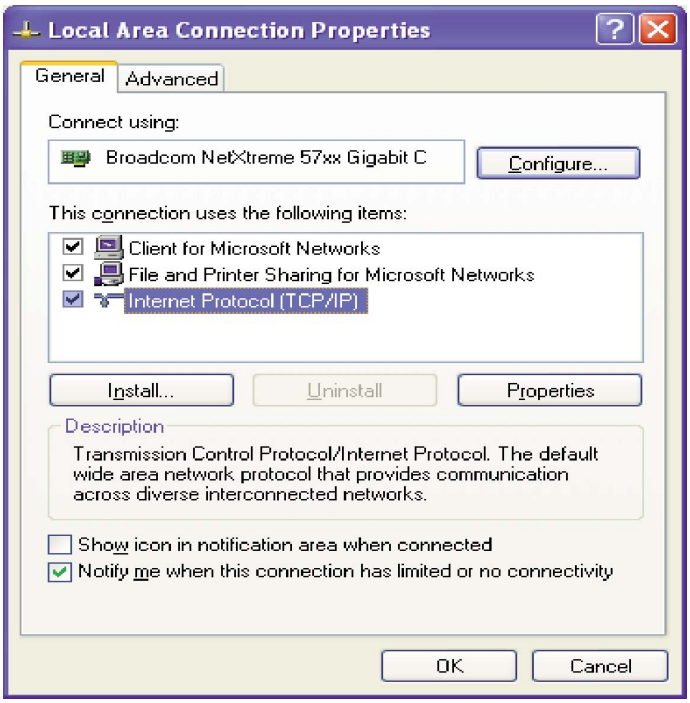


CAUTION!

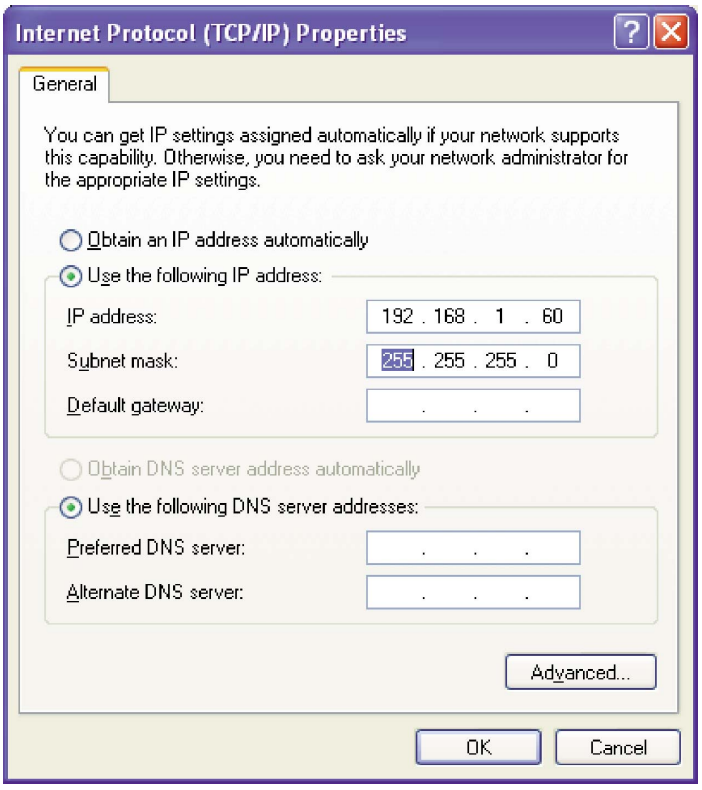
NEVER DOWNLOAD FIRMWARE UPDATES OR CHANGES TO THE XPORT WEB-SERVER UNLESS INSTRUCTED TO DO SO BY BROADCAST TOOLS®. DOING SO DELETES ALL SOFTWARE AND VOIDS ALL WARRANTIES FROM BROADCAST TOOLS, INC.

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 user's manual.

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 @ 1 amp 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. You may view the password by checking the "Show Password" box.



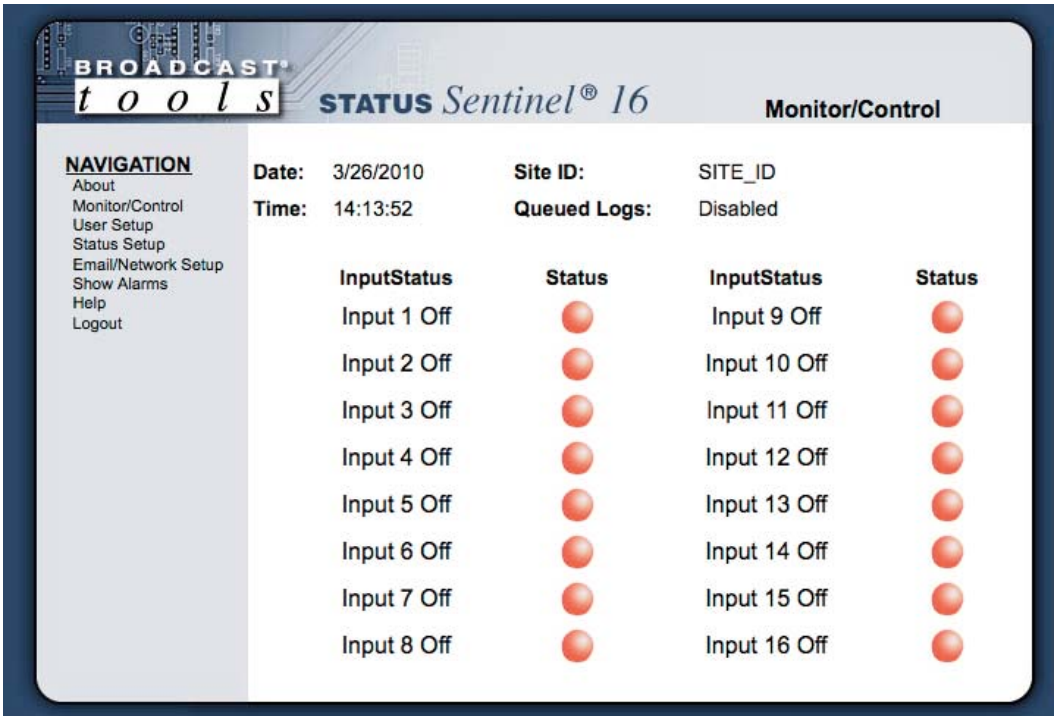
After you have successfully logged in, the Monitor/Control page will be displayed. Depending on your access level, you may or may not be able to control or modify the product's configuration.

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"Monitor/Control" Web Page



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.

The Monitor/Control page allows the monitoring of each status/logic input via each status LED. The alert function may be enabled on this page.

NOTE: *The user defined Site ID, Time, Date and Queued Logs are always displayed.*

Queued Logs: Displays the available number of queued logs.

Input Status: Used to identify the status/logic input.

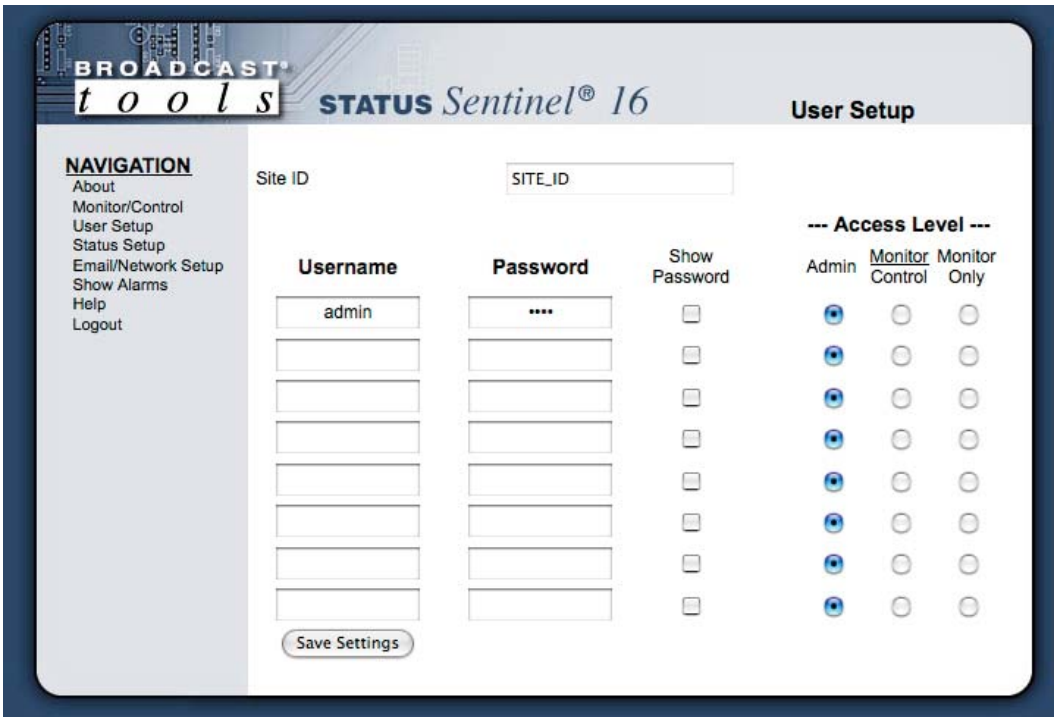
Status ON: This indicator will display GREEN when ON and may be reversed.

Status OFF: This indicator will display RED when OFF and may be reversed.

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

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"User Setup" Web Page



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.

You may view the password by checking the "Show Password" box.

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.

NOTE:

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

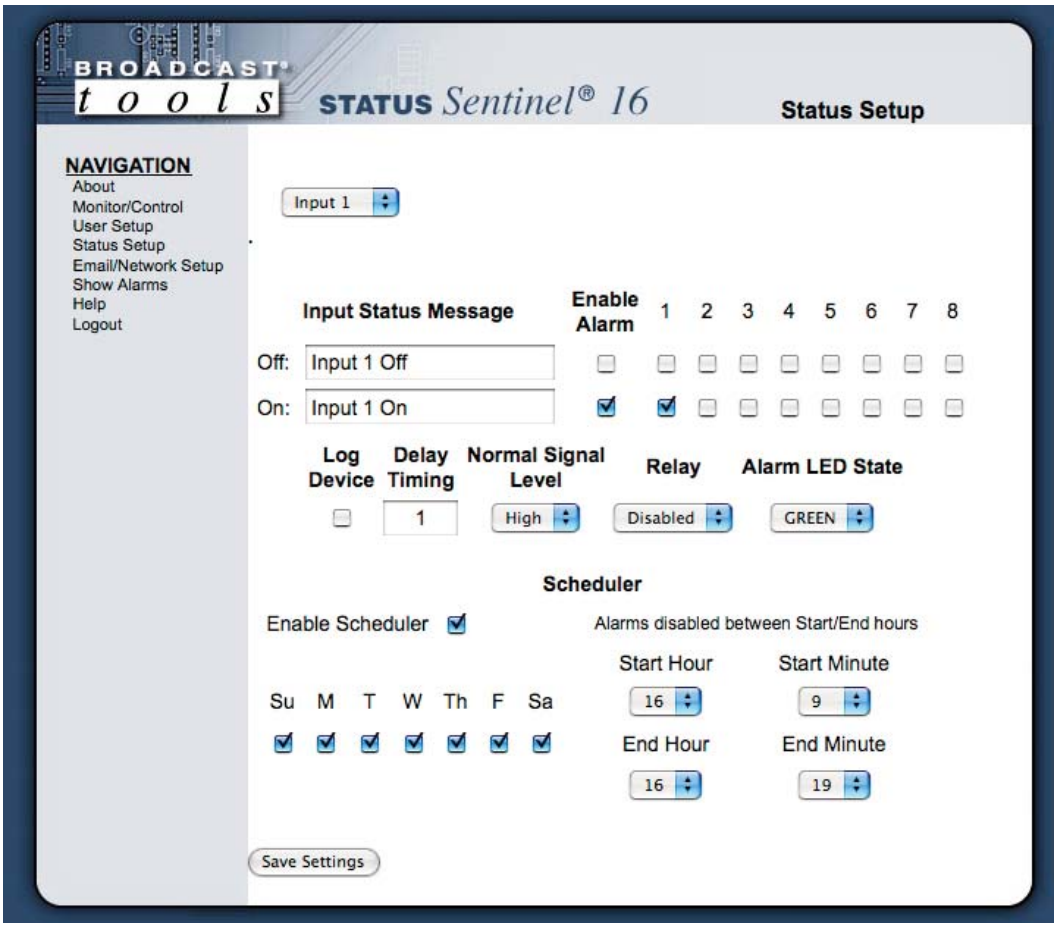
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"Status Setup" Web Page



Input selection drop-down: Allows for the selection of each status/logic input.

Input Status Message: Used to identify each status/logic input.

OFF: Description for the OFF condition.

ON: Description for the ON condition.

OFF, Enable Alarms: This box is checked to enable alarms when the input is OFF.

ON, Enable Alarms: This box is checked to enable alarms when the input is ON.

OFF Alarms: The box labeled 1 thru 8 allows the user to select up to eight different email addresses when enabled.

ON Alarms: The box labeled 1 thru 8 allows the user to select up to eight different email addresses when enabled.

Log Device: This box is checked to enable the logging of each input.

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Delay Timing: The delay is in seconds. This option specifies the wait time from when a status/logic input changes state before an alarm is activated.

NOTE: Set to zero when paired with the Relay Sentinel® 16.

Normal Signal Level: This drop-down allows the selection for the current logic level. This is normally set for High, but may be set to low.

NOTE: When the "Normal signal level" is set to High, a high logic level is considered OFF and a ground or low logic level is considered ON.

When the "Normal signal level" is set to LOW, a ground or logic low is considered ON and a high logic level is considered OFF.

Relay: Normally disabled. When paired with the Relay Sentinel® 16 to form a "16 Channel Relay Extension Cord". This drop-down should be set to enable.

NOTE: You will also need to enter the IP address of the Relay Sentinel® 16 and port number (normally 10001).

Alarm Led State: When set to green, the M&C display will display RED when the input is OFF and GREEN when it is ON.

NOTE: This may also be changed depending on how the "Normal Signal Level" is set.

Scheduler: When enabled, the user may set each input alarm to be disabled or enabled by configuring the required day(s) of week and the start and end hours and minutes.

NOTE:

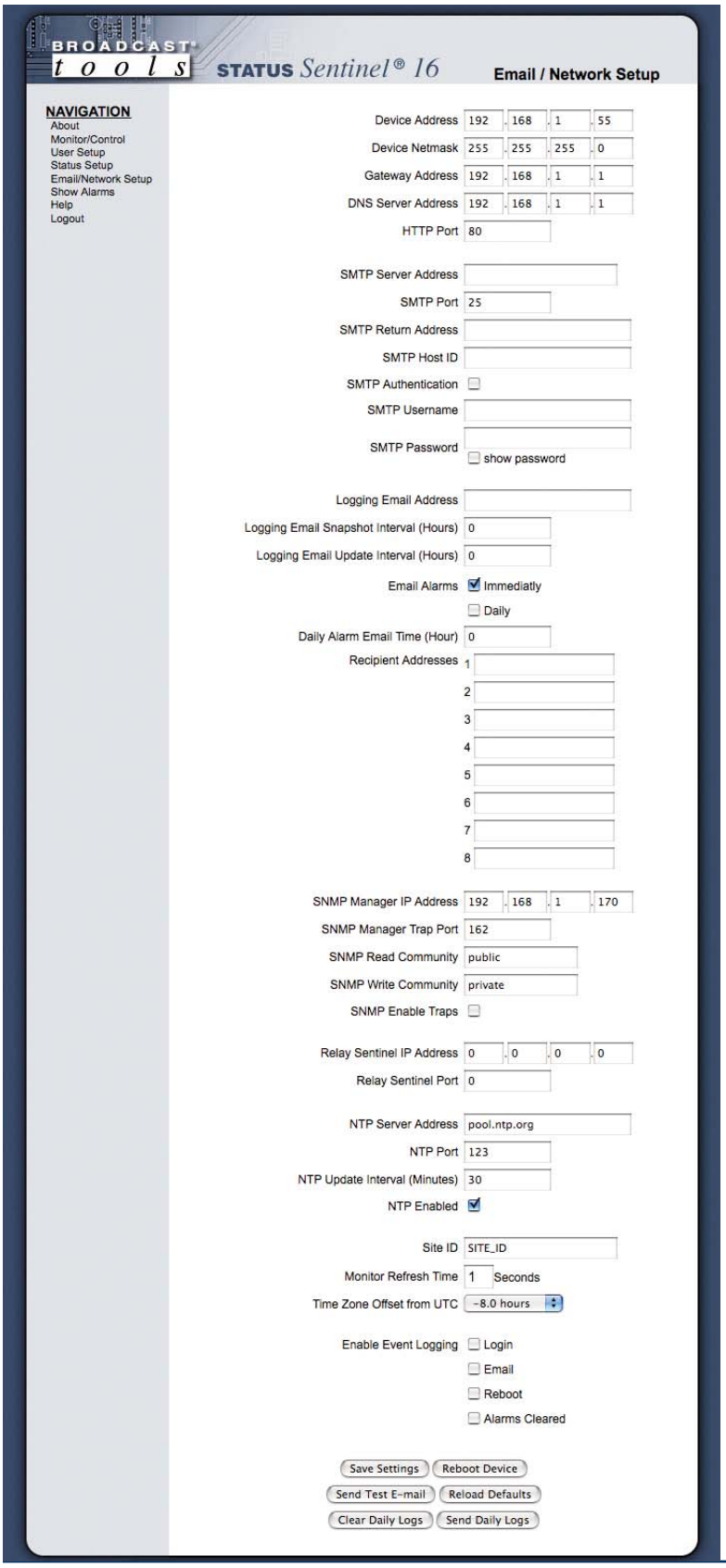
After any item has been changed, you MUST press the "Save Settings" button for your changes to be saved.

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"Email/Network Setup" Web Page



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Restoring Network Factory Defaults

The Status Sentinel®16 factory defaults may be restored by depressing the recessed front panel "default" push button for five seconds while powering up the unit.

"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: 192.168.1.1
HTTP Port:	Normally Port 80	Default: 80

"Email/Network Setup" Web Page

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 its IP address entered into the system.	
SMTP Port:	Normally Port 25	Default: 25
SMTP Return Address:	Enter your return email here. If an email cannot be delivered, a message stating why will be sent to this address.	

NOTE: The user must enter the following items before an email can be successfully sent: SMTP Server Address, SMTP Port, SMTP Return Address, SMTP Host ID, SMTP username and SMTP password must be supplied if authentication is turned on and the 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. If authentication fails, the email is not sent, please ensure that the username and password is correct.

SMTP Host ID:	Enter something here to identify the device.
SMTP Authentication:	When checked, Base64 SMTP authentication is supported by clicking on the checkbox.
SMTP Username:	Enter user name here.
SMTP Password:	Enter password here.

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"Email/Network Setup" Web Page – Email Logging Settings

Logging Email Address: IP 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.

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

Logging Email Update Interval: The period in hours that the 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 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 address correlate to the 8 email addresses selectable on each I/O Device.

"Email/Network Setup" Web Page – SNMP Manager Settings

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.

SNMP Read Community: This is the community name for Read-Only access.

SNMP Write Community: This is the community name for Read-Write access.

SNMP Enable Traps: When checked, trap messages will be sent. When Unchecked, no trap messages will be sent.

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

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"Email/Network Setup" Web Page – "Optional" Relay Sentinel® 16 Settings

Relay Sentinel® 16 IP Address: Enter the IP address of the Relay Sentinel® 16 being used.

Relay Sentinel® 16 port: Enter the port of the Relay Sentinel® 16. Normally 10001

NOTE: Normally left blank unless paired with the Relay Sentinel® 16 to form a "16 Channel Relay Extension Cord". The above two entries will need the Relay Sentinel® 16's IP address and port number entered in the above locations.

"Email/Network Setup" Web Page – NTP Settings

NTP (Time) Server Address:	Enter the NTP address here.	Default: pool.ntp.org
NTP Port:	Normally 123.	Default: 123
NTP Update Interval (Min):	Time between timing updates.	Default: 30
NTP Enabled:	Must be enabled for correct timing.	Default: Enabled

"Email/Network Setup" Web Page – Other Settings

Site ID:	This is the Site Identifier that will be sent in each email.
Monitor Refresh Time (Sec):	How many seconds the Monitor page refreshes. Shorter times may increase network traffic.
Time Zone Offset from UTC:	Must be set for correct timing. Default: -8
Enable Event Logging:	Enabling these checkboxes will generate an alarm, but will not send an email. If the system is configured for Daily Alarm emails, then that Daily Alarm email will contain the Event Logging items as well.
Login:	Whenever someone logs into the system, the username and date/time will be logged.
Email:	Whenever an email is sent, the type of email and date/time will be logged.
Reboot:	Whenever the device boots, the date/time will be logged.
Alarms Cleared:	Whenever 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 the web page will return to the login screen after the device reboots.

Reboot Device: When you press the "Reboot Device" button, the device resets, you must navigate your web browser to the new IP address.

Send Test Email: Press this button to send a test email. When the email has Completed, an alert box will pop-up indicating the status of the email and an error condition if the email was not sent correctly. If an email was not sent correctly, please review your SMTP settings and correct as necessary.

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

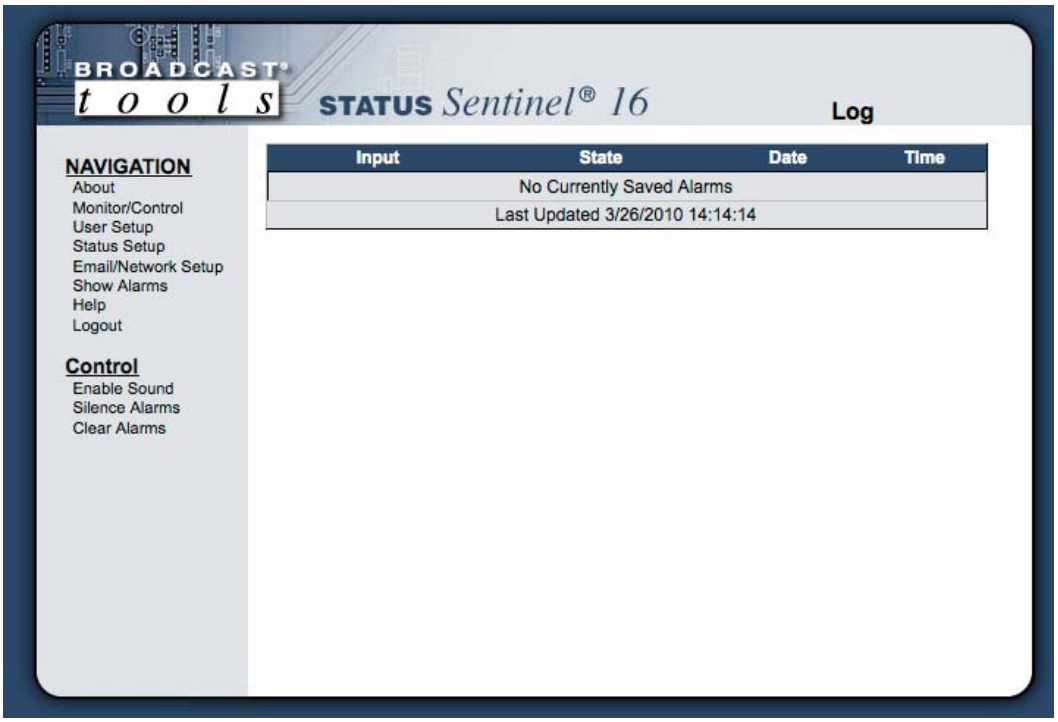
Reload Defaults: When you press the "Reload Defaults" button, the device resets, you must navigate your web browser to the new IP address (if the HTTP port was changed from port 80, be sure to add the new port number after the IP: xxx.xxx.xxx.xxx:port #).

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 then clear those logs as ifthe correct time has expired.

"Show Log" Web Page

This page displays current alarms.



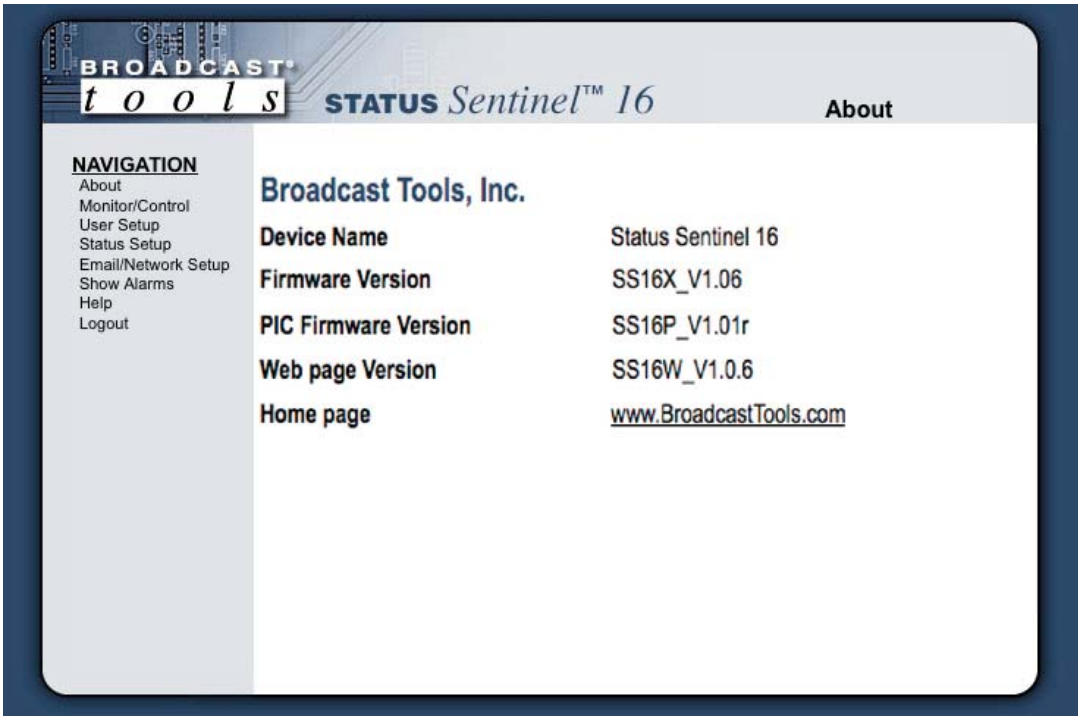
With the "admin" access level, the user may control all functions.

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.

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Specifications

Ethernet Interface: - Full/half duplex.	RJ-45, 10base-T or 100base-TX, auto sensing with link & activity led indicators
Protocols:	TCP/IP, UDP/IP, ARP, ICMP, SNMP, TFTP, Telnet, DHCP, BOOTP, HTTP, and AutoIP.
Status / Logic Inputs:	All 16 status / logic inputs may be activated either by pulling the input to ground or releasing the input to a high state. The action and display is configured through each inputs status setup web page. External sources can be contact closures, open collectors or 5, 12, 15 and 24-volt logic-level sources. The input impedance of each input is 22 K ohms.
Connectors:	Removable euroblock screw terminals. Mating plugs supplied.
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 @ 1 Amp. 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:	2.0 lb.
Options:	* CE certified 240 VAC power supply. * RA-1, 1-RU rack shelf. Note: User supplied Velcro may be used to secure the product to the RA-1 shelf.

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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.

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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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www.broadcasttools.com **website**

Declaration of Conformity

The XPORT Device contained in the Status Sentinel®16 conforms to the following standards: (according to ISO/IEC Guide 22 and EN 45014)

Manufacturer's Name & Address:
Status Sentinel®16: 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/CSPIR22: 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:
Status Sentinel®16
Broadcast Tools®, Inc.
131 State Street
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XPORT®
Lantronix:
Director of Quality Assurance
15353 Barranca Parkway, Irvine, CA 92618 USA
Tel: 949 . 453 . 3990 Fax: 949 . 453 . 3995

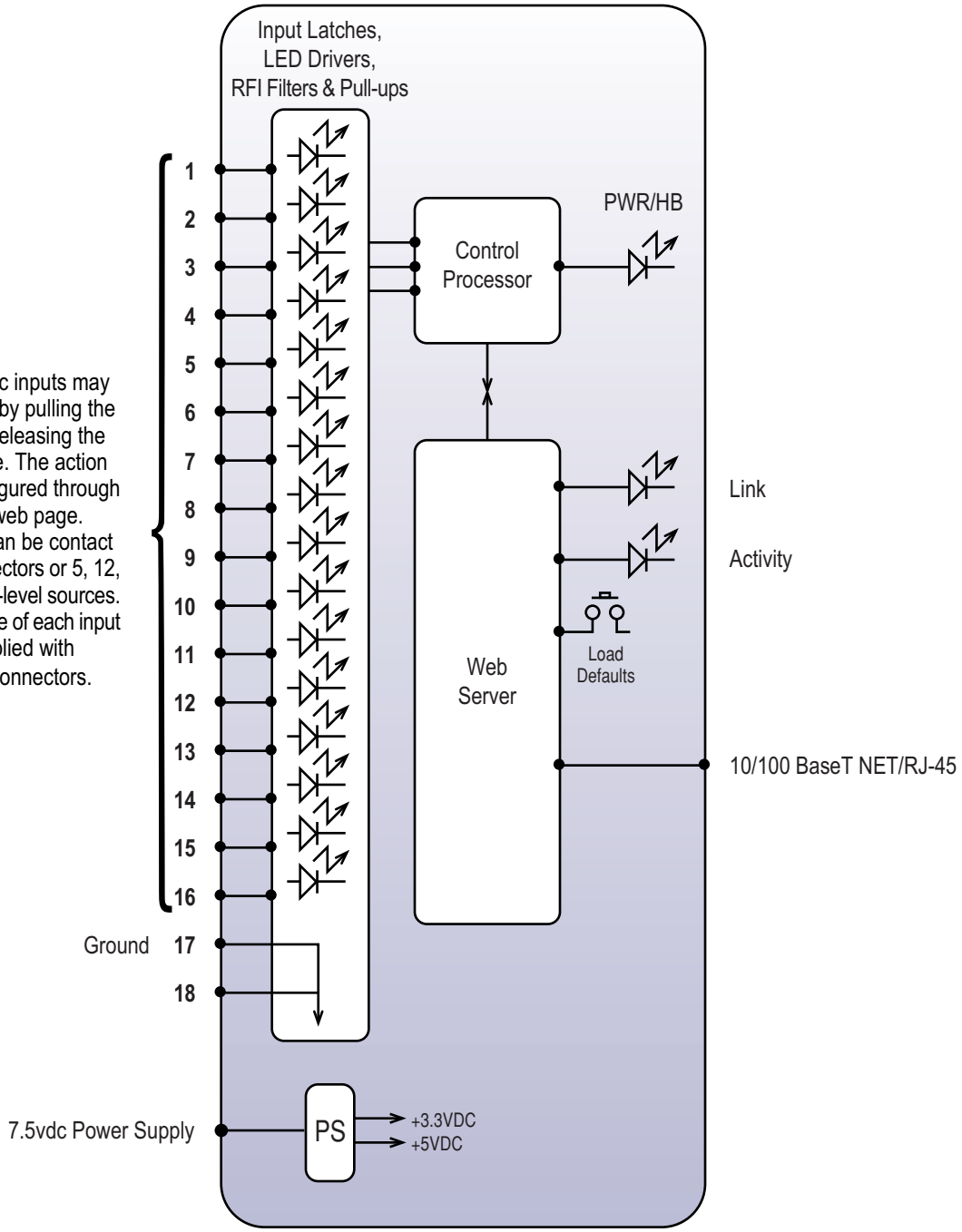
WEBSITE:
Visit our web site for product updates and additional information.



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

Functional Diagram

The 16 status / logic inputs may be activated either by pulling the input to ground or releasing the input to a high state. The action and display is configured through each inputs setup web page. External sources can be contact closures, open collectors or 5, 12, 15 and 24-volt logic-level sources. The input impedance of each input is 22 K ohms. Supplied with Plug-in euroblock connectors.

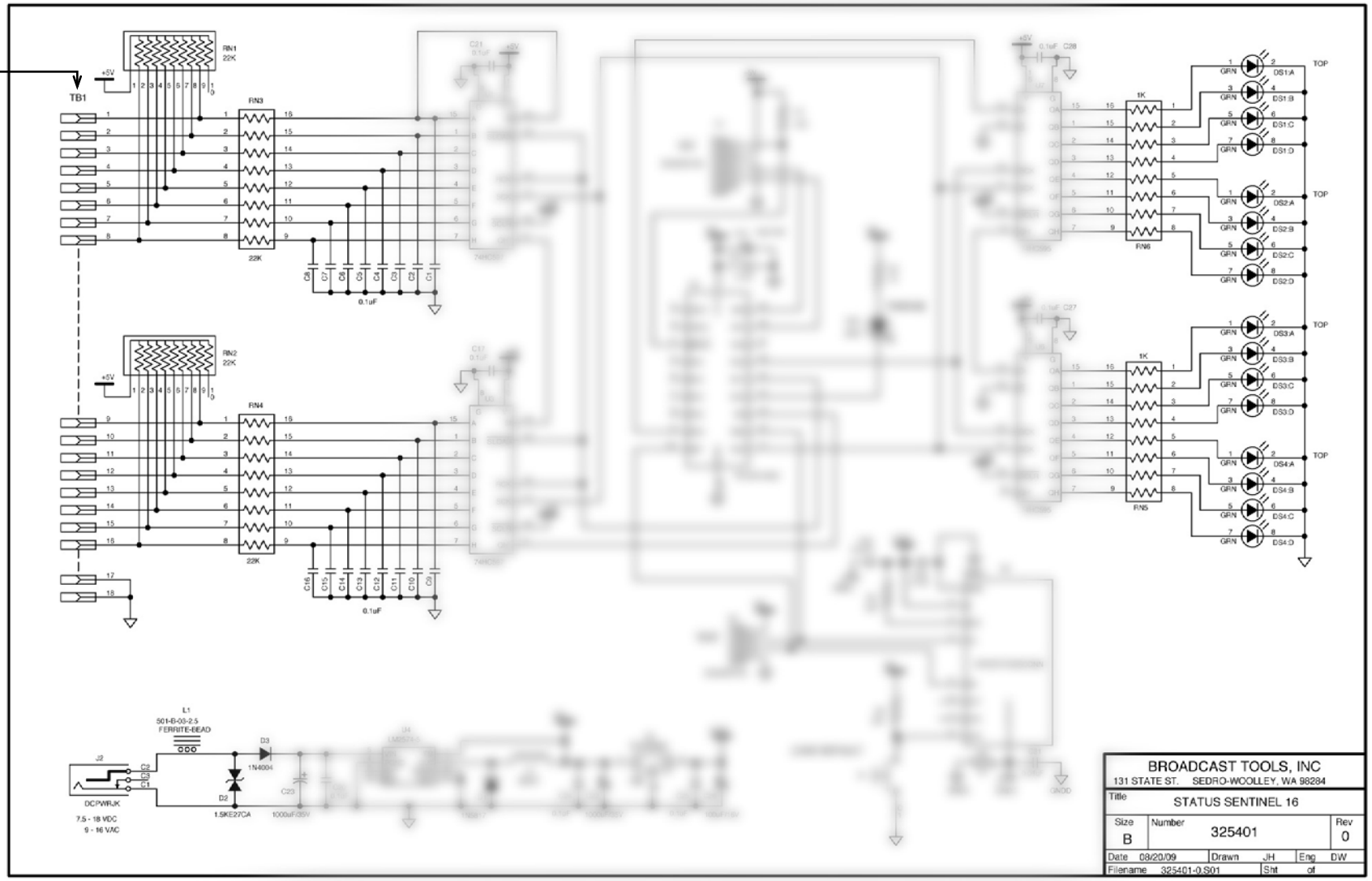


NOTE: May be paired with the **Relay *Sentinel*™ 16** to form a "16 channel relay extension cord"

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

Fractional Schematic

Inputs
1-16



Input LEDS
1-4
5-8
9-12
13-16

Power
7.5VDC

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