

# BROADCAST<sup>®</sup> tools INC

PROBLEM SOLVED

## *Installation and Operation Manual*



### **AES Audio Sentinel<sup>®</sup> + Web** *web-enabled (HTML5) two channel AES/EBU silence monitor/switcher*

Manual update: 11/5/2020

For firmware versions equal to or greater than 0.14.

If you need a firmware upgrade, contact Broadcast Tools<sup>®</sup>

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

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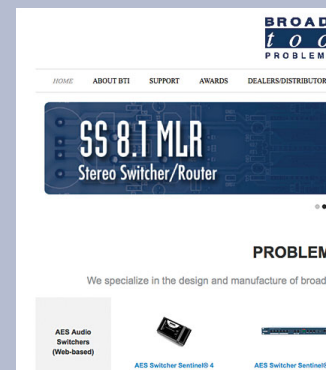
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## Table of Contents

Section Title .....	Page #
Introduction.....	3
Safety Information .....	3
Who to Contact for Help .....	3
Product Overview .....	4
Inspection .....	5
Installation .....	5
Surge Protection .....	5
UPS Standby Power System .....	5
+/- 15 VDC POWER connector .....	5
LED Indicators .....	6
Front Panel Controls.....	6
Audio Connector Pinouts/Cable Prep. ....	8
Audio Input Connections .....	9
Audio Output Connections .....	9
Remote Control Connections .....	10
LAN / NET Jack.....	10
Chassis ground .....	10
Operation .....	11
Reset to Defaults.....	11
Ethernet “Quick Start” Guide.....	12
Opening the LOGIN Web Page .....	15
Web Setup/Operation .....	16
“Login” Web Page .....	16
“Monitor/Control” Web Page .....	17
“User Setup” Web Page .....	19
“I/O Setup” Web Page .....	20
“Email/Network Setup” Web Page.....	24
“Show Logs” Web Page .....	30
“About” Web Page .....	31
Specifications .....	32
Warranty .....	33
Front and Rear Panel silkscreen views.....	Appendix
Connector Layout .....	Appendix
Fractional Schematic.....	Appendix

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## INTRODUCTION

Thank you for your purchase of a Broadcast Tools® AES Audio Sentinel®+» Web web-enabled (HTML5) two channel stereo silence monitor/audio switcher (referred to as the AES Audio 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® AES Audio Sentinel®.

## SAFETY INFORMATION

Only qualified technical personnel should install the AES Audio Sentinel®+» 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 AES Audio Sentinel®+» 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 AES Audio Sentinel®+» Web.

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 98284-1503 USA  
Voice: 360.854.9559  
Fax: 866.783.1742

Internet Home Page: [www.broadcasttools.com](http://www.broadcasttools.com)  
E-mail: [support@broadcasttools.com](mailto: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



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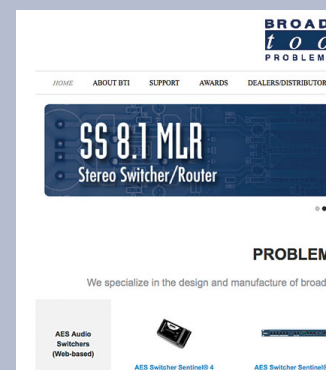


### NOTE:

This manual should be read thoroughly before installation and operation.

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## INTRODUCTION

## Product Overview

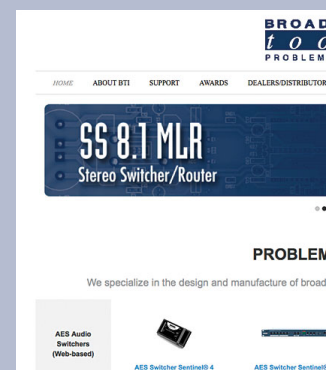
The AES Audio Sentinel®+» Web is a web-enabled (HTML5) two channel AES/EBU silence monitor combined with an integrated 2x1 switcher. It is designed to monitor two AES audio sources, one primary, the other back-up. When silence is detected on the primary AES input it can automatically switch to the back-up AES input. The AES Audio Sentinel®+» Web can be configured and monitored locally and/or remotely over any IP network, including private networks, IP-based industrial control networks, and the Internet. Users can operate the product using a desktop web browser or web-enabled (HTML5) mobile device. Email notification may be configured to alert up to eight recipients when silence or out of phase audio is detected. SMTP username and passwords using STARTTLS or Base64 authentication are supported. SNMP traps and SET/GET are built in to allow multiple units to be monitored and configured with SNMP management software.

## Features/Benefits

- Built-in web server provides simple, web-based (HTML5) notification, monitoring, configuration, and control.
- Front panel, remote, and web-based (HTML5) switcher controls.
- Both AES inputs feature silence sensors/phase monitors with front panel activity and alarm LED indicators.
- Silence trip level detection from -12dB to -35dB in 1 dB steps for each stereo channel.
- Precise alarm time delay from 0(OFF) to 65535 seconds (18 hours, 12 min and 15 sec's). in one-second increments for each channel.
- Alarm restore time delay from 0(OFF) to 65535 seconds (18 hours, 12 min and 15 sec's). in one-second increments for each channel.
- Email notification may be configured to alert up to EIGHT recipients when alarm-sare detected.
- Email logging of system status, along with the site ID may be emailed in timespans from once an hour to once a day.
- Support for STARTTLS secure SMTP authentication (Gmail.)
- XLR and StudioHub+ compatible RJ45 connectors for AES inputs and output.
- Analog monitor output features front panel level control or fixed output (switch selectable) and uses a StudioHub+ compatible RJ45 jack.
- Front panel headphone jack with level control and monitor source select button.
- Fully RFI proofed.
- Includes PS-1515 +/-15VDC desktop power supply with IEC inlet.
- Up to two units may be mounted on the optional RA-1 rack shelf. Desktop and-wall mounting is also possible.

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## OVERVIEW



## Inspection

Please examine your AES Audio 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 AES Audio Sentinel®, a 7-foot BLUE straight-through CAT 5 cable, a 7-foot GRAY crossover CAT 5 cable and a +/- 15 volt DC @ 500mA universal switching (PS1515-IEC) desktop power supply with IEC inlet. Manuals may be downloaded from our web site.

## Installation

### Surge Protection

The AES Audio 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 AES Audio Sentinel® and connected equipment if it is not properly protected. For lightning protection devices, check out [www.polyphaser.com](http://www.polyphaser.com) and [www.itwlinx.com](http://www.itwlinx.com).

### UPS Standby Power System

We recommend that you connect your AES Audio Sentinel® to a UPS system. A UPS helps minimize the risk to the AES Audio Sentinel® and provides AC power during a power outage.

**NOTE: Signal bypass is provided by internal relays that will passively route the input one signal to the output in the event of power loss.**

### POWER: +/- 15 VDC power connector

Connect the 3-pin AMP-style latching power connector to the unit and the included +/-15 VDC 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 (PS-1515) power supply.

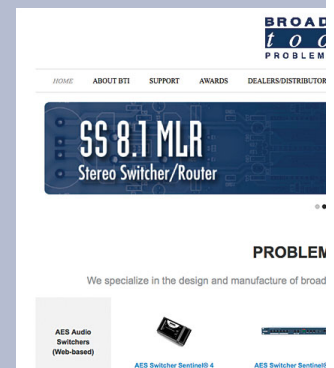
**NOTE: Never use any type of power supply other than the specified/supplied power supply.**



*Installation of the AES Audio Sentinel® in high RF environments should be performed with care. The station ground should be connected to the “Chs Gnd” chassis ground screw.*

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## LED Indicators

- “Pwr/HB” LED: Illuminates when power is applied and flashes to indicate micro-processor operation. (Green)
- “Mon 1” LED: Lit when Input 1 is routed to the headphones and analog monitor outputs (Yellow)
- “Mon 2” LED: Lit when Input 2 is routed to the headphones and analog monitor outputs (Red)
- “Auto” 1 LED: Lit when in Automatic backup switching mode. (Red)
- “ON” LEDs: Lit when the Input is routed to the AES/EBU output. (Green)
- “ACT” LEDs: Lit when an AES/EBU signal and valid analog audio is present on the input. (Yellow)
- “SS/P” LEDs: Silence Sensor/Phase alarm indicator, lit when silent or out-of-phase audio is detected on the input. (Red)
- “AES ERR” LEDs: AES Error indicator, lit if AES/EBU input signal is missing or invalid. (Red)
- “Enable” LED: Lit when the front panel enable push button option is engaged. (Green)

## Front Panel Switching Controls

**“1” and “2” pushbuttons:** Used to select which input is routed to the output when in Manual mode. Each push button has an LED indicator, which will illuminate when that channel is selected and routed to the output. When a channel is selected, the previous channel is deselected (interlock). Only one input can be routed to the output at a time.

**“Auto” pushbutton:** Used to toggle between automatic backup and manual switching modes.

**“Enable” pushbutton:** The enable (safety) push button can be enabled to 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 configured

### SW8 Enable Configuration Switch:

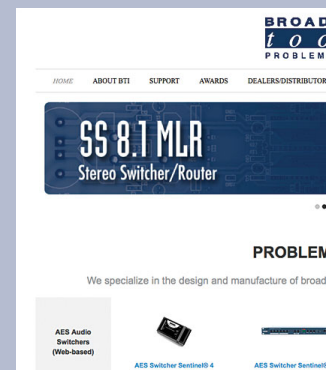
IN = Front panel ENABLE push button active and the Enable LED is illuminated.

OUT = Front panel enable switch defeated.

**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

### **Front Panel Monitor Audio Controls**

**“Monitor Select” (Mon Sel) pushbutton:** Used to select which input audio source is fed to the headphone and monitor outputs.

**“PM lvl” knob:** Powered monitor “Analog Out” output audio volume adjustment knob. Fed by the internal DACs.

### **SW7 Fixed/PM (Powered Monitor) Switch:**

The recessed Fixed/PM switch toggles the “Analog Out” monitor output audio between a fixed output level (+4 dBu) mode and a power monitor mode which allows the output level to be controlled by the front panel “PM lvl” knob.

IN = Fixed +4 dBu Output Level.

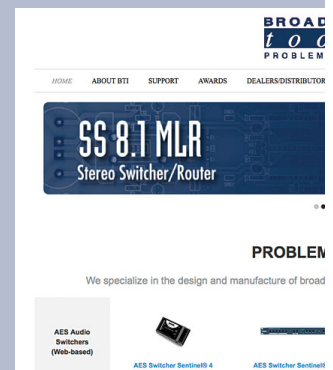
OUT = Adjustable Output Level via the “PM lvl” knob.

**“HdPh lvl” knob:** Headphone monitor output audio volume adjustment knob.

**“HdPh” jack:** ¼” stereo headphone monitor output. Fed by the internal DACs.

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## Audio Connector Pinouts/Cable Preparation

The AES Audio Sentinel® interfaces to external equipment through XLR and StudioHub+ compatible RJ45 jacks for audio signals, and removable euro-block screw terminals for control. The input and output AES/EBU XLR connector pinouts conform to 3-pin XLR Wiring Standards:

Pin 1 = Ground. Pin 2 = Positive. Pin 3 = Negative.

Please use 110-ohm cable that is qualified for AES/EBU digital audio signals.

The terminals blocks accommodate wire sizes from 16 - 28 AWG solid or stranded. Before installing a wire, remove the euro-block screw terminal plug and turn each capture screw fully counterclockwise. Strip each conductor to a length of 0.25” and insert the conductor fully into the terminal. Turn the capture screw fully clockwise to secure the conductor. Verify that no bare wires are exposed.

## 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.

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

## RJ45 Connectors

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

## RJ45 Pinout:

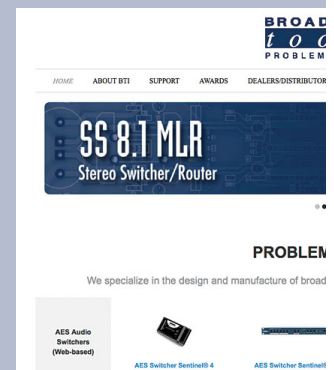
Function:	Wire Pair:	RJ45 Pins:
Left+/AES+	White/Orange	1
Left-/AES-	Orange/White	2
Right+	White/Green	3
Right -	Green/White	6
n/c	White/Blue	5
GND	Blue/White	4
n/c	White/Brown	7
n/c	Brown/White	8
GND	Shield	Shield



*Installation of the AES Audio Sentinel® in high RF environments should be performed with care. The station ground should be connected to the designated “Chs Gnd” ground terminal.*

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## INSTALLATION



## AES/EBU Inputs and Outputs

The AES Audio Sentinel's AES/EBU two inputs and output have StudioHub+ compatible RJ45 jacks and 3-pin XLR jacks, each respective input and output jack is wired in parallel. This means either input connector can route to either output connector, providing an easy way to interface between devices with different connectors without the need for custom cables.

AES In 1 = Primary AES input (AES Silence Sensor 1) XLR-F and RJ45

AES In 2 = Backup AES input (AES Silence Sensor 2) XLR-F and RJ45

AES Output = AES Switcher Output XLR-M and RJ45

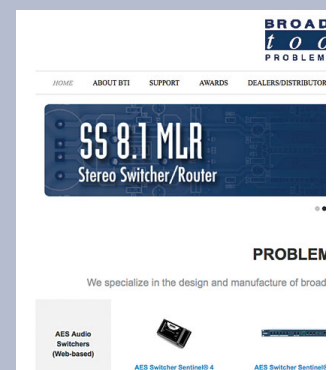
AES/EBU signal switching is accomplished via mechanical latching gold contact relays which means that the unit can will keep routing that signal even after losing power.

## Stereo Monitor Output “Analog Out”

The AES Audio Sentinel features an RJ45 balanced line level analog monitor audio output that can switch between Input 1 and Input 2 audio via front panel, web and remote control. See below for pinout. The output level can be set to a fixed +4 dBu output level or an adjustable output level via the front panel SW7 PM/Fixed switch.

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**Remote Control Connections**

The AES Audio Sentinel® has four relay contact closure remote control outputs located on the two 8-position pluggable screw terminal blocks (TB2 top and bottom). The SPST Normally Open relay K6 and the SPDT relay K7 are used to represent the status of the internal 2x1 AES/EBU audio switcher. When input channel ONE is selected the NO (normally open) contacts is are open, while the NC (normally closed) contact is closed with respect to the CM (common) contact. When input channel TWO is selected the NO (normally open) contact is closed, while the NC (normally closed) contact is open with respect to the CM(common) contact.

The SPDT K3 and K4 relays are each available for user configurable notification. The operation of K3 & K4 is determined by the configuration assigned on the “Silence Sensor Setup” page.

**(Top row, TB2)**

K4NO	K4CM	K4NC	K5NO	K5CM	K5NC	K6NO	K6CM
CH1	CH2	RMT3	RMT4	DGND	K7NO	K7CM	K7NC

**(Bottom Row, TB2)**

The AES Audio Sentinel® has four remote control inputs labelled “CH1” “CH2” “RMT3” and “RMT4” located on the first four pins of the bottom 8-postion pluggable screw terminal blocks (TB2 bottom).

CH1 = Momentary closure to ground (DGND) switches Input 1 to the Output.

CH2 = Momentary closure to ground (DGND) switches Input 2 to the Output.

RMT3 = EXTERNAL sustained trigger or Auto/Manual toggle. Closure to ground (DGND) triggers.

RMT4 = Analog Out /Headphone Monitor Audio Toggle. Closure to ground (DGND) triggers.

**LAN / NET Jack**

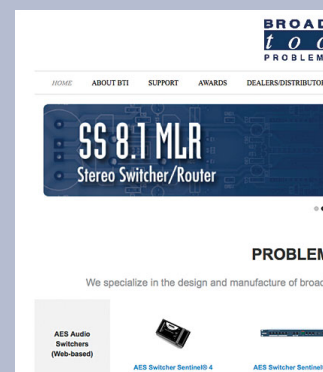
RJ45 Ethernet jack for 10/100baseT LAN/WAN connection.

**Chassis Ground (Chs Gnd)**

#4-40 screw for connection to the station/site ground system.

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**INSTALLATION**

## Operation

The AES Audio Sentinel® can be controlled from a web browser, front panel controls, and/or remote control connections. The slow blinking front panel “PWR/Heartbeat” LED indicates valid power and proper operation. The front panel equipped with push button controls and indicator LEDs.

The AES Audio Sentinel® has two primary modes of operation Automatic Mode, where silence/out of phase and/or AES loss/error on the primary input will cause the unit to automatically switch the backup input to the output, and Manual Mode where switching control must be performed manually via the front panel controls, web controls, or remote-control inputs. Email and SNMP alarm notifications function in both modes.

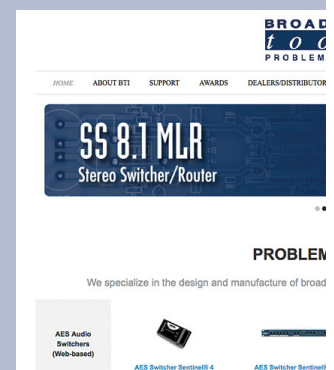
By default, in Automatic mode, when valid audio returns to Input 1 the switcher automatically will switch back (restore) to Input 1 following the delay time. This feature is called Switcher Bounce and it can be disabled from the Switcher Bounce control Monitor & Control web page.

### Reset to Defaults

Factory defaults may be restored by depressing the recessed front panel “Defaults” push button for five seconds after waiting for the unit to power up. The PWR/HB led will rapidly blink two to three times when loaded.

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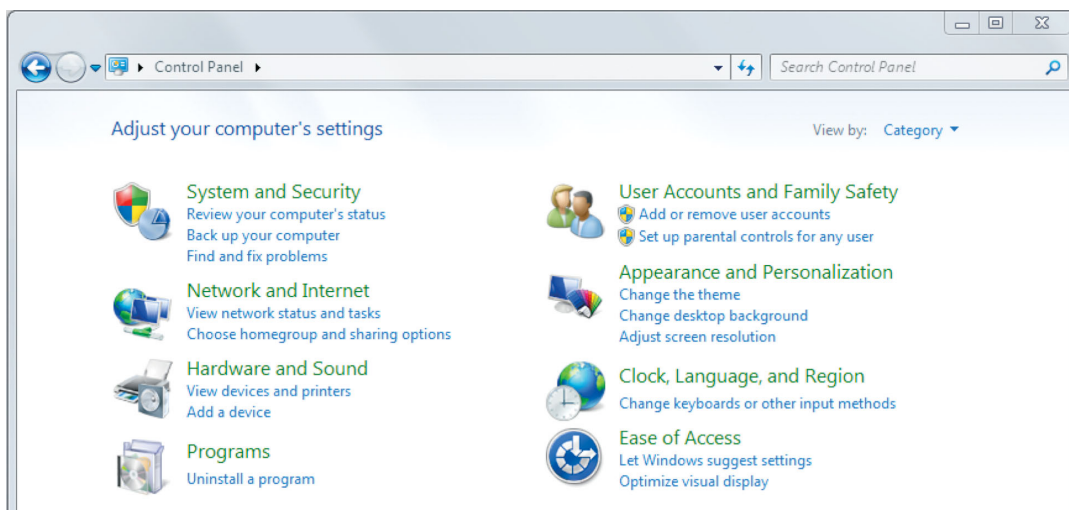


## Ethernet “Quick Start” Guide

**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 7 operating system. For setup using other operating systems, refer to the appropriate OS user’s manual.

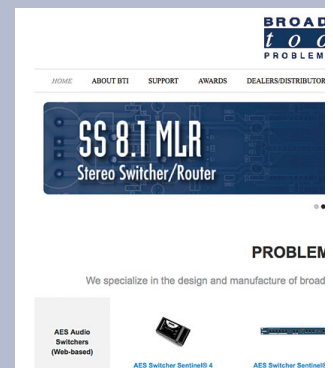
**Step 1:** Open the control panel by clicking on the Start Menu, click on settings, then click on Control Panel. Click on View network status and tasks under Network and Internet.



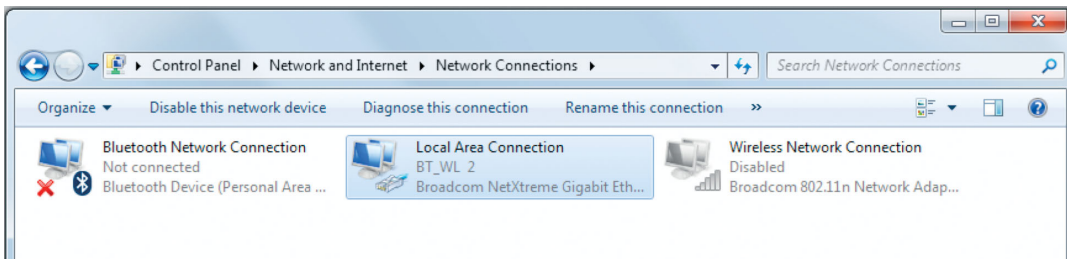
*NEVER DOWNLOAD FIRMWARE UPDATES OR CHANGES TO THE BNET WEBSERVER UNLESS INSTRUCTED TO DO SO BY BROADCAST TOOLS®. DOING SO DELETES ALL SOFTWARE AND VOIDS ALL WARRANTIES FROM BROADCAST TOOLS, INC.*

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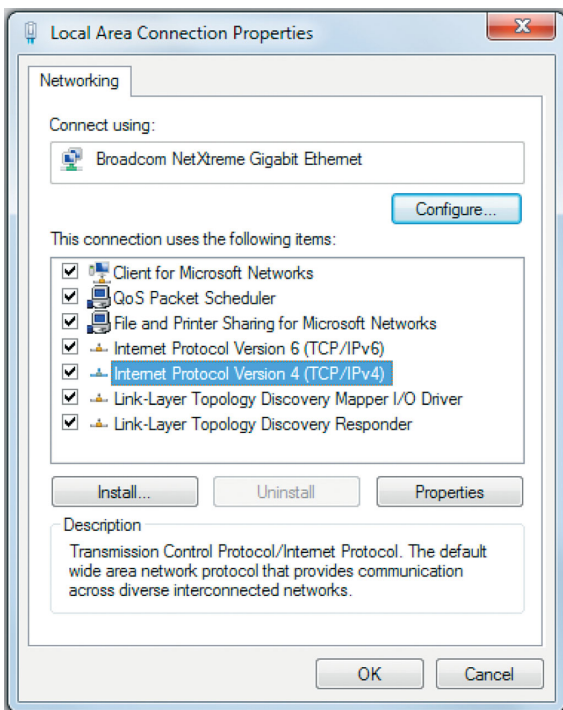
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**Step 2:** Click on the sidebar labelled Change adapter settings. The Network Connections windows will pop up, as shown below.

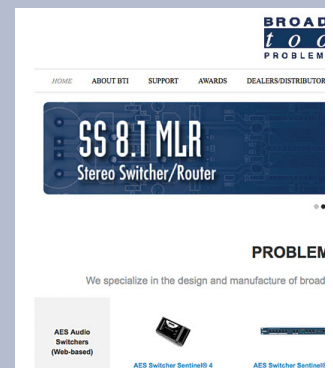


**Step 3:** Right click on the icon labeled Local Area Connection or Ethernet. A menu will appear. Select the option at the bottom of the menu labeled Properties. The Local Area Connection Properties window will appear.



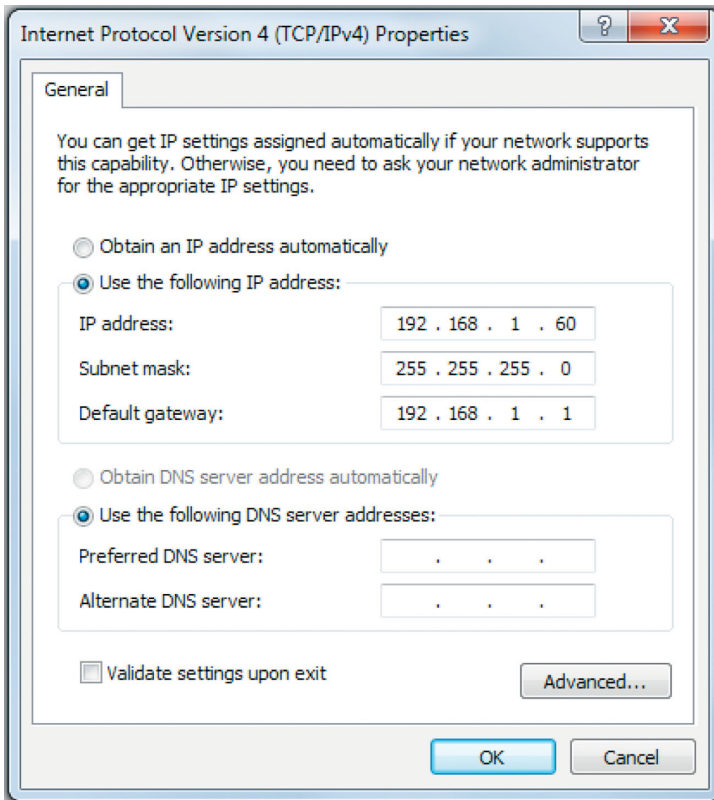
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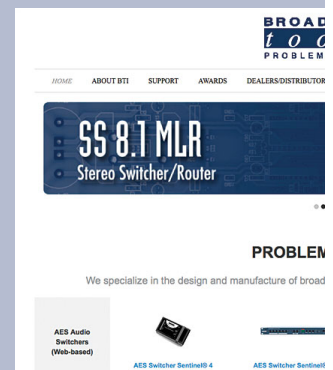
**Step 4:** On the Local Area Connection Properties page, double click on **Internet Protocol (TCP/IPv4)** to display properties.



**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.

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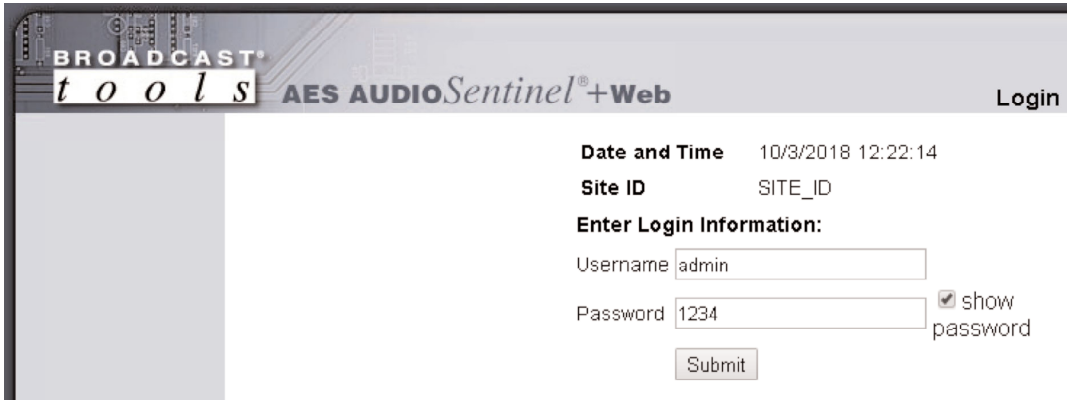




## Web Setup and Operation

### “Login” Web Page

The Login screen displays the Username and Password entry points.



**BROADCAST tools** AES AUDIO Sentinel® + Web Login

**Date and Time** 10/3/2018 12:22:14  
**Site ID** SITE\_ID

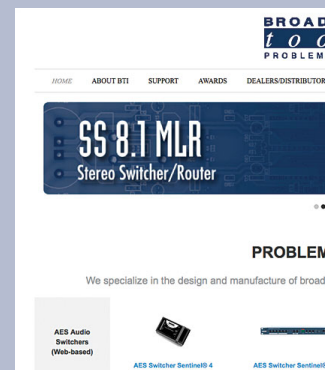
**Enter Login Information:**

Username

Password   show password

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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.

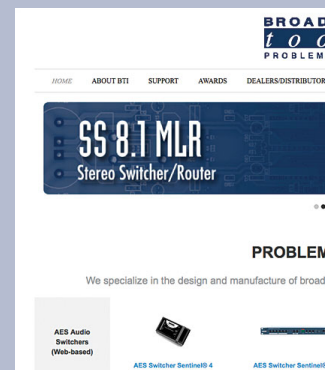
## “Monitor/Control” Web Page

The Monitor/Control page allows the monitoring and or control of the AES Audio Sentinel. The following is an explanation of each item on this page:

User defined Site ID, Time and Date are always displayed.

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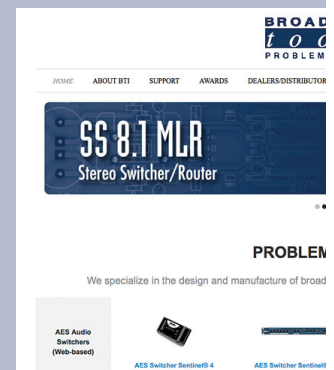


### WEB SETUP

Queued Logs:	Displays the number of queued logs.
Input Labels:	User defined input labels are set on the I/O Setup page
Left/Right Level Meters:	Display the left and right input audio levels for inputs one and two. The green indicators are light when audio is -19 db and above. The yellow and red indicators are lit when the input audio is either above (yellow) or below (red) the programmed trip levels.
In Phase/Below Threshold:	Indicates if the input audio is Above Threshold/In Phase, Out of Phase, or Below Threshold.
AES Input buttons:	If the unit is in manual mode, the user may switch between each input by placing the cursor under each input LED, then click. The desired input is selected as denoted by the LED being illuminated.
Monitor Input buttons:	Control analog monitor/headphone audio outputs. The user may switch between each input by placing the cursor under each input LED, then click. The desired input is selected as denoted by the LED being illuminated. If the “Monitor Audio Switching Mode” setting is set to “Follow AES” these control are disabled.
EXT Indicator:	Illuminates when the “External” input is triggered.
AUTO:	When this mode is selected, any time input ONE fails, the unit will switch to input TWO. Manual and remote operation of the unit is disabled except for “SUSTAINED” operation. The LED is illuminated when selected.
MANUAL:	Manual mode allows the user to select either input one or two as well as remote control operation. The manual LED is illuminated when selected.
SWITCHER BOUNCE:	Allows the switcher to automatically restore from Input 2 to Input 1 when audio returns while in AUTO mode. Enabled by default.

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“User Setup” Web Page

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="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
		<input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
		<input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
		<input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
		<input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
		<input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
		<input type="checkbox"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>

Save Settings

**NOTE:** You may view a password by checking the “Show Password” box.

Eight Usernames and Passwords may be configured for one of three access levels:

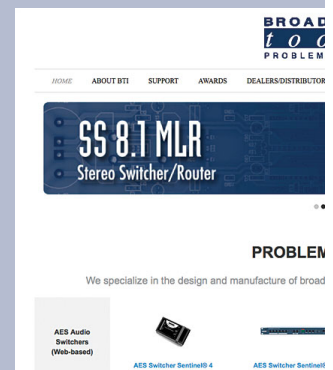
1. “Admin” allows complete configuration access and control.
2. “Monitor/Control” allows the following access:  
About, Monitor/Control, Show log, Help, and Logout.
3. “Monitor Only” allows the following access:  
About, Monitor only, Help, and Logout.

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.

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

**WEBSITE:**

Visit our web site for product updates and additional information.



WEB SETUP

## “I/O Setup” Web Page

The I/O setup page allows you to label and configure both AES inputs/silence sensors, as well as configure the relay output and remote-control inputs.

**BROADCAST tools** AES AUDIO Sentinel® + Web I/O Setup

**NAVIGATION**  
 About  
 Monitor/Control  
 User Setup  
 I/O Setup  
 Email/Network Setup  
 Show Alarms  
 Help  
 Logout

**RMT Functions**  
 RMT3 Input Function: EXternal Sustained

**Monitor Functions**  
 Monitor Audio Switching Mode: Follow AES

Silence Sensors:  
 AES Silence Sensor 1

		Alarms	Email Addresses							
Input Label	AES Silence Sensor 1	Silent	1	2	3	4	5	6	7	8
Delay (seconds)	5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restore (seconds)	5	Active	1	2	3	4	5	6	7	8
Trip Level (dB)	-25	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Log device	<input type="checkbox"/>									

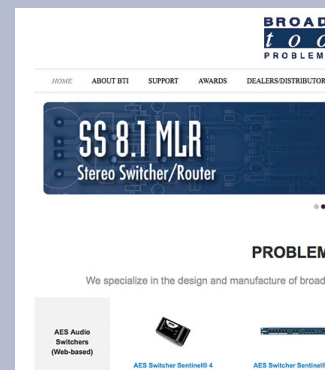
**K4 Configuration**  
 When Input 1 Is Active delay 0 sec. then engage for 1 sec.

**K5 Configuration**  
 When Input 2 Is Active delay 0 sec. then engage for 1 sec.

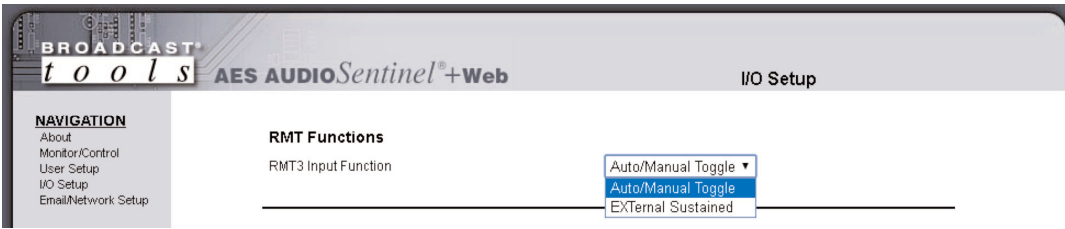
Save Settings

### WEBSITE:

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### WEB SETUP



RMT3 Input Function:

**Auto/Manual Toggle:** Pulsing the RMT3 input toggles unit between Auto and Manual mode.

**EXternal Sustained:** Holding the RMT3 input low switches the unit to the backup input, releasing returns to the primary input.



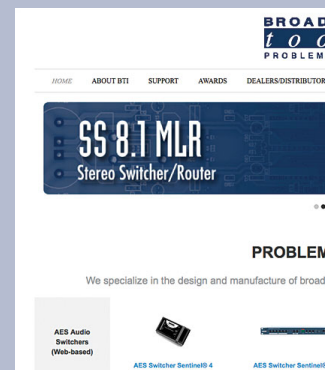
**Monitor Audio Switching Mode: Follow AES:** Analog monitor audio output follows AES switching.

**Independent:** Analog monitor audio is switch separately from AES switching.

**NOTE:** Press the “Save Settings” button to save your changes.

## WEBSITE:

Visit our web site for product updates and additional information.



Silence Sensors:  
 AES Silence Sensor 1 ▾

	Input Label	Alarms		Email Addresses								
		Silent	Active	1	2	3	4	5	6	7	8	
Delay (seconds)	AES Silence Sensor 1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Restore (seconds)	30	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trip Level (dB)	5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Log device	-25	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Silence Sensors:

**Input Label:** Up to 20 characters may be entered to describe the input.

**Delay (Sec):** When the input goes below threshold or out of phase the delay timer starts, if the input remains below threshold or out of phase for the duration of the delay then an alarm is generated and, if in automatic (bouce) mode, switches from input ONE to input TWO.

**Restore Delay (Sec):** This is the time required for valid stereo audio to return and remain present before the unit clears the alarm and, if in automatic (bouce) mode, switches back to input ONE from input TWO.

**Trip Level (db):** The left, right or both input levels below which input audio is considered below threshold.

**Alarms:** When checked, the unit logs an alarm when the silence sensor enters or exits an alarm condition.

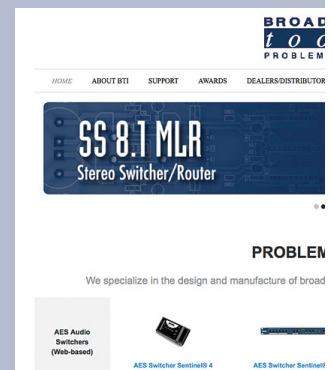
**Email addresses:** The boxes labeled 1-8 allow the user to assign up to eight different email addresses for alarm notification.

**NOTE:** The delay and restore timing range for both channels is 0 (OFF) to 65535 seconds (18 hours, 12 minutes and 15 seconds).

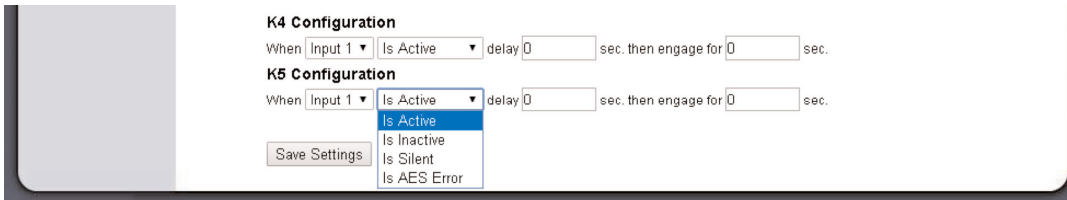
**NOTE:** Press the “Save Settings” button to save your changes.

## WEBSITE:

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## WEB SETUP



**K3 and K4 Configuration:** Each relay, labelled K3 and K4, respectively, may be programmed to operate when an input is silent, active (switched to) or inactive (not switched to). The logic for each relay is as follows:

When [input 1 or input 2] [Is Active, Inactive, Silent, or AES Error] delay [X] seconds then [Engage] for [X] seconds.

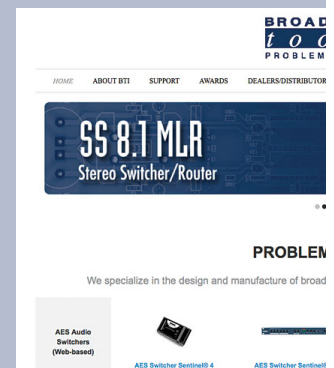
**NOTE: Delay timing = 0 (OFF) to 65535 seconds (18 hours, 12 min and 15 sec's).**

**NOTE: To enable relay latch/sustained type operation, the [Engaged] delay should be set to 0.**

**NOTE: Press the “Save Settings” button to save your changes.**

## WEBSITE:

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## “Email/Network Setup” Web Page

**NAVIGATION**  
 About  
 Monitor/Control  
 User Setup  
 I/O Setup  
 Email/Network Setup  
 Show Alarms  
 Help  
 Logout

**Device Address** 192.168.1.55  
**Device Netmask** 255.255.255.0  
**Gateway Address** 192.168.1.1  
**DNS Server Address** 8.8.8.8  
**HTTP Port** 80

**SMTP Server Address** smtp.gmail.com  
**SMTP Port** 587  
**SMTP Return Address** support@broadcasttools.com  
**SMTP Host ID** BTI-Emailer  
**Secured SMTP (STARTTLS)** Enabled  
**SMTP Authentication**   
**SMTP Username** support@broadcasttools.com  
**SMTP Password** \*\*\*\*\*  show password

**Logging Email Address** support@broadcasttools.com  
**Logging Email Snapshot Interval (Hours)** 23  
**Logging Email Update Interval (Hours)** 23  
**Email Alarms Immediately**   
**Email Alarms Daily**   
**Daily Alarm Email Time (Hour)** 0

**Recipient Addresses**  
 1 support@broadcasttools.com  
 2  
 3  
 4  
 5  
 6  
 7  
 8

**SNMP Enable** Enabled  
**SNMP Enable Traps** Disabled  
**SNMP Trap IP Address** 192.168.1.170  
**SNMP Read Community** public  
**SNMP Write Community** private

**NTP Enabled** Enabled  
**NTP Server Address** pool.ntp.org  
**NTP Port** 123  
**NTP Update Interval (Minutes)** 30

**Site ID** SITE\_ID  
**Monitor Refresh Time** 1 Seconds  
**MTU Size** 1500  
**Time Zone Offset from UTC** -8  
**Enable Daylight Savings**

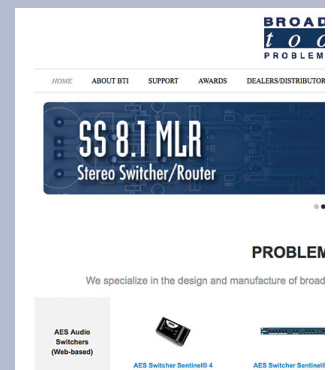
**Set Time**  
 Hour: 19 Minute: 32 Second: 41  
 Month: 10 Day: 3 Year: 2018  
 Time is only saved when "Save Time" is clicked

**Enable Event Logging**  
 Login  
 Email  
 Reboot  
 Alarms Cleared

**Buttons:** Save Settings, Reboot Device, Send Test E-mail, Reload Defaults, Clear Daily Logs, Send Daily Logs

**Import Settings** Choose File No file chosen  
**Export Settings** Save  
**Firmware** Choose File No file chosen

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



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

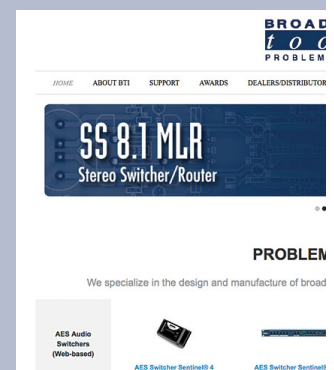
### “Email/Network Setup” Web Page – SMTP Settings

SMTP Server Address: SMTP (Simple Mail Transfer Protocol) server address. Used to send emails.  
SMTP Port: Normally Port 25, 587 or 2525. Default: 25  
SMTP Return Address: Enter your return email address here. Emails from the AES Audio Sentinel 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 string here to identify the device. No spaces or special characters allowed.  
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:** Required for successful email: SMTP Server Address, SMTP Port, SMTP Return Address, SMTP Host ID. If the SMTP server requires authentication: SMTP username and SMTP password must be supplied, and authentication turned on. A valid email address must be entered into Recipient Address field #1.

#### **WEBSITE:**

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#### **WEB SETUP**

## “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

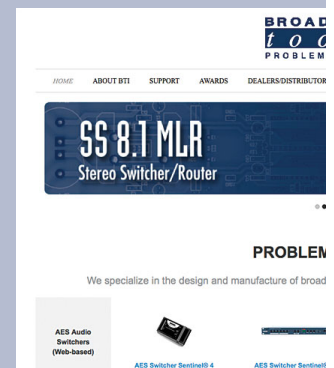
**Email Alarms:** Choose Immediate and/or Daily. If Immediate is selected, then an email will be sent out as soon as an alarm is generated. If Daily is selected, then each alarm is queued and emailed as a digest every 24 hours. Both can be used at the same time. The number of queued alarms is displayed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

**Daily Alarm Email Time:** The hour of the day 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:	Enables or disables SNMP functionality, enabled by default.
SNMP Enable Traps:	When enabled, SNMP trap messages will be sent. When disabled, no trap messages will be sent to the manager IP.
SNMP Trap IP Address:	This is the IP address of the SNMP manager. The system will send traps to UDP port 162 at this IP address.
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.

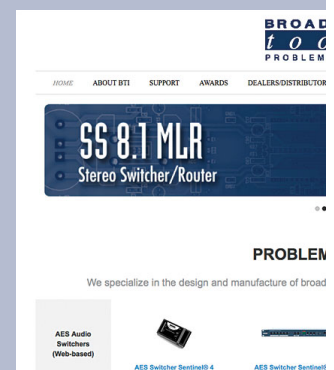
**NOTE:** A cold-start trap will be sent when the unit boots up if the SNMP Enable Traps are enabled and trap messages will be sent when a device enters or exits an alarm condition, depending on whether or not alarms are enabled.

## “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: 30

### WEBSITE:

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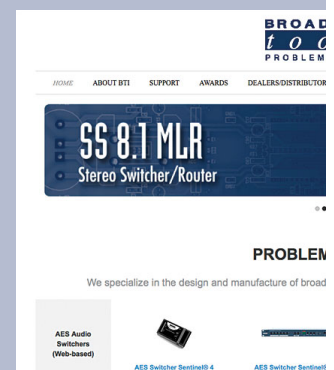


## “Email/Network Setup” Web Page – Other Settings

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. Default: 1
MTU Size:	Sets the network interface’s Maximum Transmittable Unit. 1400 by default. If a VPN is being used this may need to be reduced to 1296 to account for added overhead.
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 in the alarm log.
Email:	When an email is sent, the type of email and date/time will be logged in the alarm log.
Reboot:	When the device boots the date/time will be logged in the alarm log.
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.

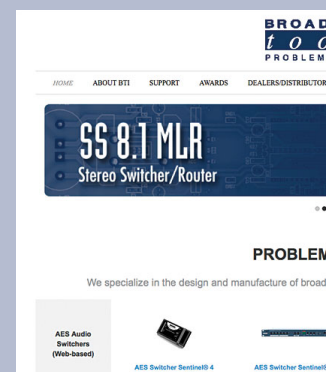
**Import Settings:** Browse to locate and import a previously saved .ncs settings file.

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

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

### **WEBSITE:**

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### **WEB SETUP**

## “Show Log” Web Page

Device/Event	Message	Date/Time
AES Silence Sensor 2	Active	10/3/2018 12:46:33
AES Silence Sensor 1	Sample Error	10/3/2018 12:46:46
AES Silence Sensor 1	Silent	10/3/2018 12:46:47

Last Updated 10/3/2018 12:47:02

This page displays current alarms.

### Alarm Messages

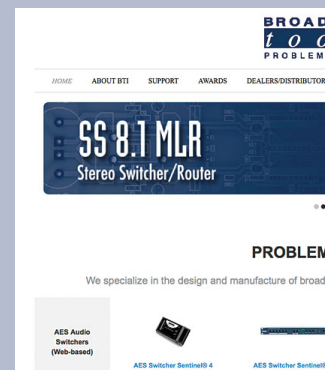
- Active:** Audio above silence alarm threshold.
- Silent:** Audio below silence alarm threshold.
- In Phase:** Stereo audio exited out of phase alarm.
- Out of Phase:** Stereo audio entered out of phase alarm.
- AES Error:** Error flag from AES receiver; AES signal error or loss.

### Controls

- Disable Sound:** Mutes the alarms sound.
- Silence Alarms:** Makes active alarms as acknowledged.
- Clear Alarms:** Empties the Alarm Log.

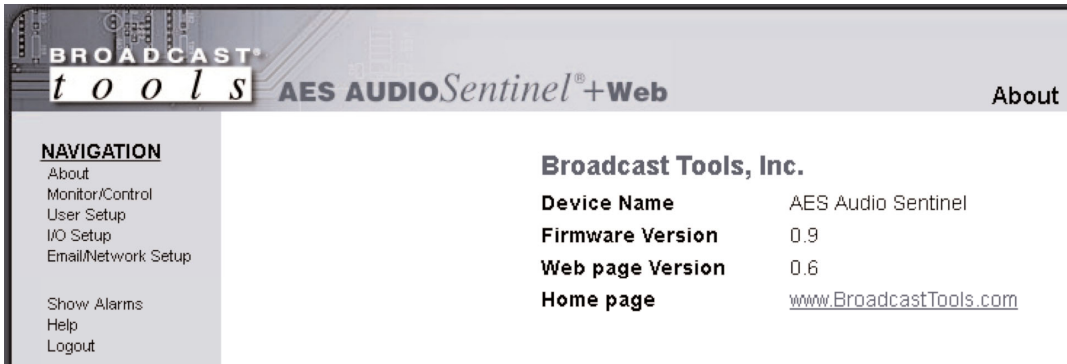
### WEBSITE:

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### WEB SETUP

## “About” Web Page



**BROADCAST tools** AES Audio Sentinel® + Web About

**NAVIGATION**

- About
- Monitor/Control
- User Setup
- I/O Setup
- Email/Network Setup
- Show Alarms
- Help
- Logout

**Broadcast Tools, Inc.**

**Device Name** AES Audio Sentinel

**Firmware Version** 0.9

**Web page Version** 0.6

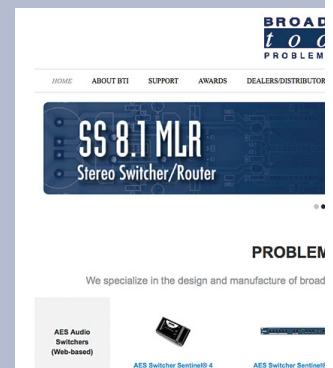
**Home page** [www.BroadcastTools.com](http://www.BroadcastTools.com)

The “About” web page displays the product name, firmware version numbers, and Broadcast Tools® web site link. For firmware updates please contact Broadcast Tools® Technical Support.

<http://broadcasttools.com/support/>

## WEBSITE:

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**BROADCAST tools**

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® 4

AES Switcher Sentinel®

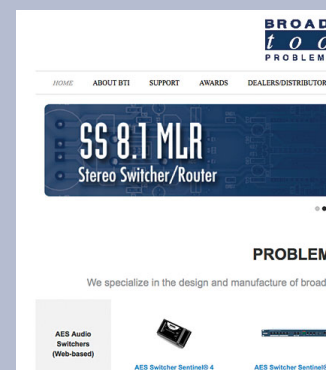
## WEB SETUP

## 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, DHCP, HTTP, SMTP, ESMTP (Gmail.)
AES Program Switcher:	Via mechanical latching sealed relays utilizing 2-form-C bifurcated – crossbar silver alloy with gold overlay contacts.
Silence Sense Level:	-24 to -35 dB below normal level, in 1dB steps.
Alarm Delay, Restore Delay Time:	0 to 65535 seconds (18 hours, 12 minutes and 15 seconds).
Remote Control Inputs:	Closure to ground (Sustained or momentary depending on mode). Internally pulled up to 5 VDC.
Relays (K4, K5, K6, K7):	K4, K5, K7 = SPDT, K6 = STST,NO. Dry contacts, 30 VDC @ 1 Amp maximum rating.
CAUTION!	For safety, never connect 120 Vac circuits to the above relays!
Connectors:	AES/EBU = XLR/RJ45. Analog = RJ45. StudioHub+ compatible. All I/O, removable euro-block screw terminals. Mating plugs supplied.
Required power supply:	PS-1515 universal switching power supply with IEC inlet and domestic AC cable. +/-15 VDC 500mA output with 3-pin AMP-style latching power connector.
Size:	8.50" x 7.10" x 1.576" (WDH)
Weight:	3.0 lb.
Options:	* RA-1, 1-RU rack shelf. Accommodates 2 units.

### 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.

## 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.

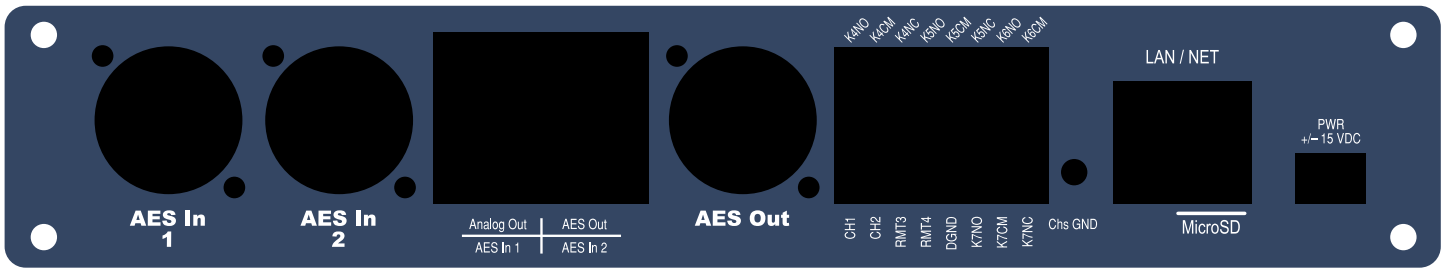
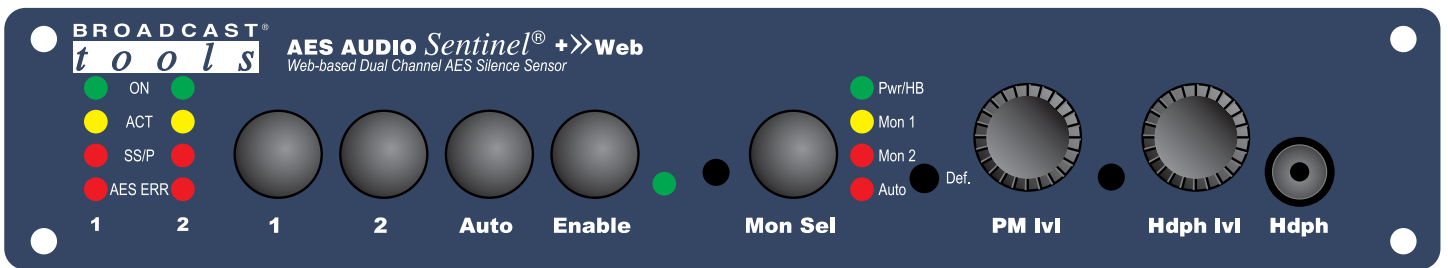
## NO LIABILITY FOR CONSEQUENTIAL DAMAGES

TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, NEITHER BROADCAST TOOLS NOR ANY OF ITS SUPPLIERS SHALL HAVE ANY LIABILITY FOR ANY SPECIAL, INCIDENTAL, INDIRECT, CONSEQUENTIAL OR PUNITIVE DAMAGES WHATSOEVER (INCLUDING, WITHOUT LIMITATION, ANY DAMAGES FOR LOST PROFITS, BUSINESS INTERRUPTION, LOSS OF DATA OR INFORMATION, COST OF CAPITAL, CLAIMS OF CUSTOMERS, OR ANY OTHER PECUNIARY LOSS) ARISING OUT OF THE USE OF OR THE INABILITY TO USE ANY ITEM SUPPLIED BY BROADCAST TOOLS, EVEN IF BROADCAST TOOLS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES HAVE ANY LIABILITY FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL, EXEMPLARY OR PUNITIVE DAMAGES. THIS LIMITATION OF LIABILITY APPLIES WHETHER A CLAIM IS ONE ALLEGING BREACH OF A CONTRACT OR WARRANTY, NEGLIGENCE OR OTHER TORT, FOR THE VIOLATION OF ANY STATUTORY DUTY, THE FAILURE OF ANY LIMITED OR EXCLUSIVE REMEDY TO ACHIEVE ITS ESSENTIAL PURPOSE, OR ANY OTHER CLAIM OF ANY NATURE. BECAUSE SOME STATES AND JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, THIS LIMITATION MAY NOT APPLY TO YOU.

### **Broadcast Tools, Inc.**

131 State Street  
Sedro-Woolley, WA 98284 • USA

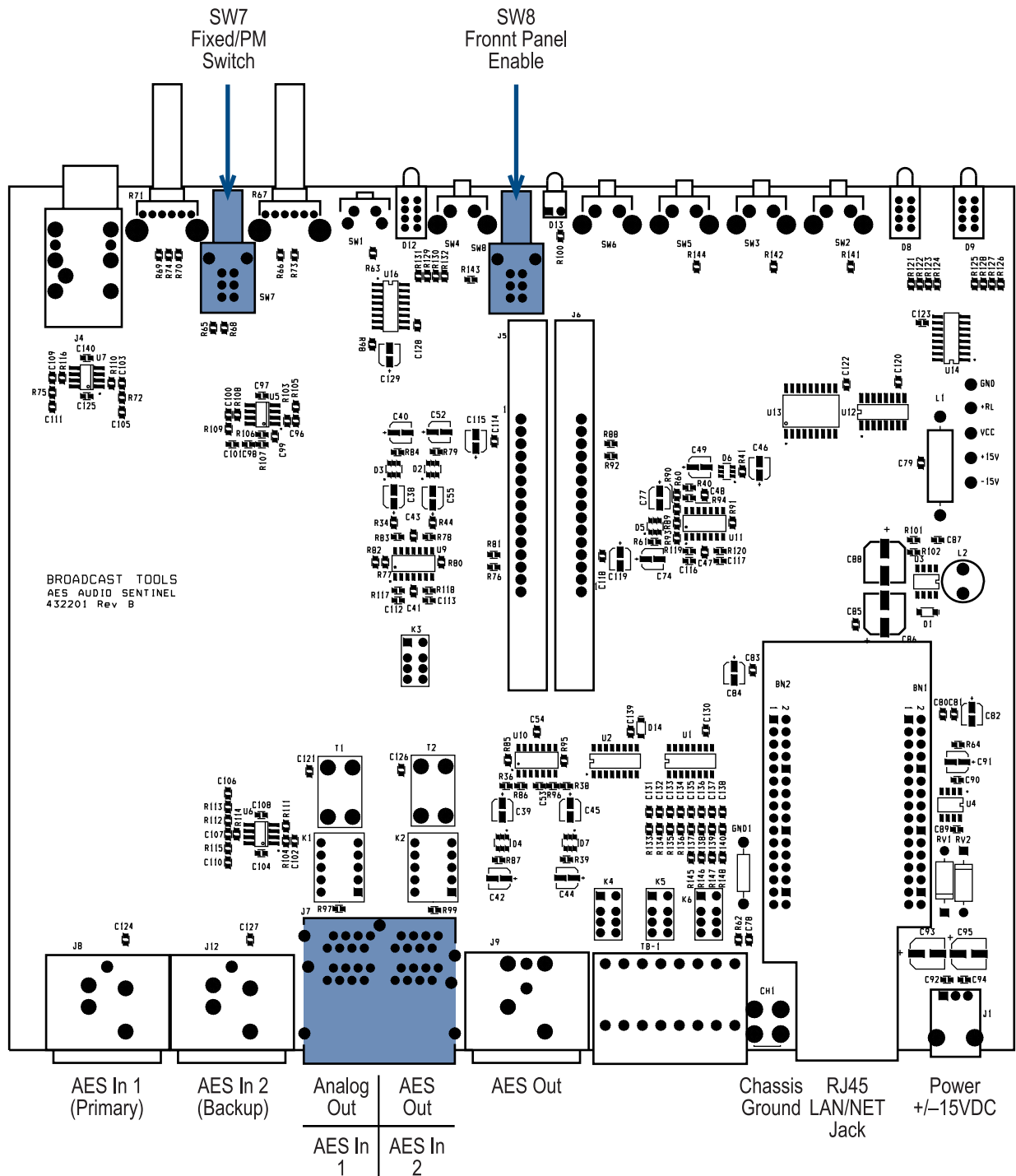
360.854.9559 **voice** • 866.783.1742 **fax**  
support@broadcasttools.com **e-mail**  
www.broadcasttools.com **website**



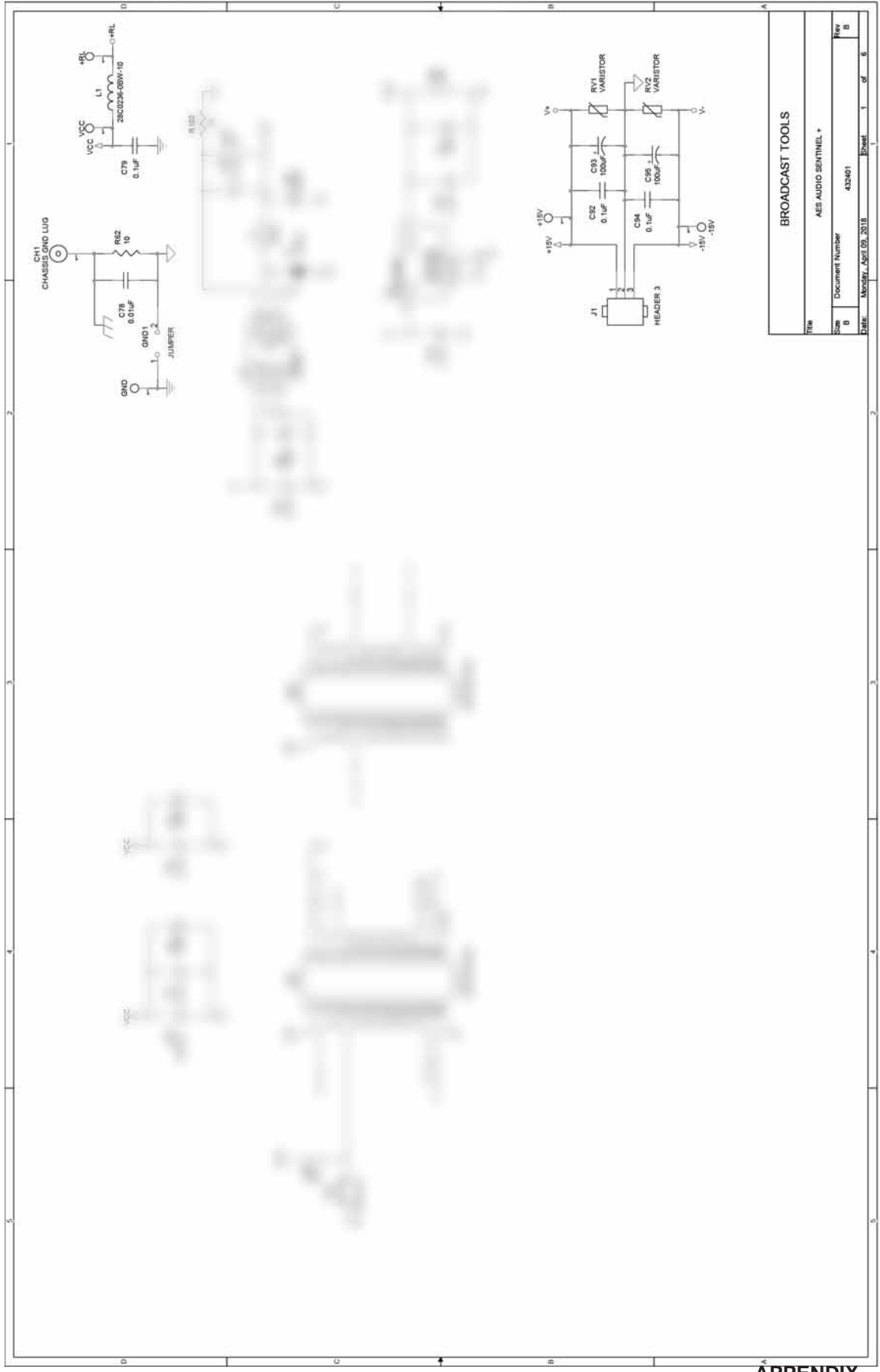


# AES Audio Sentinel® +Web

## Component Layout



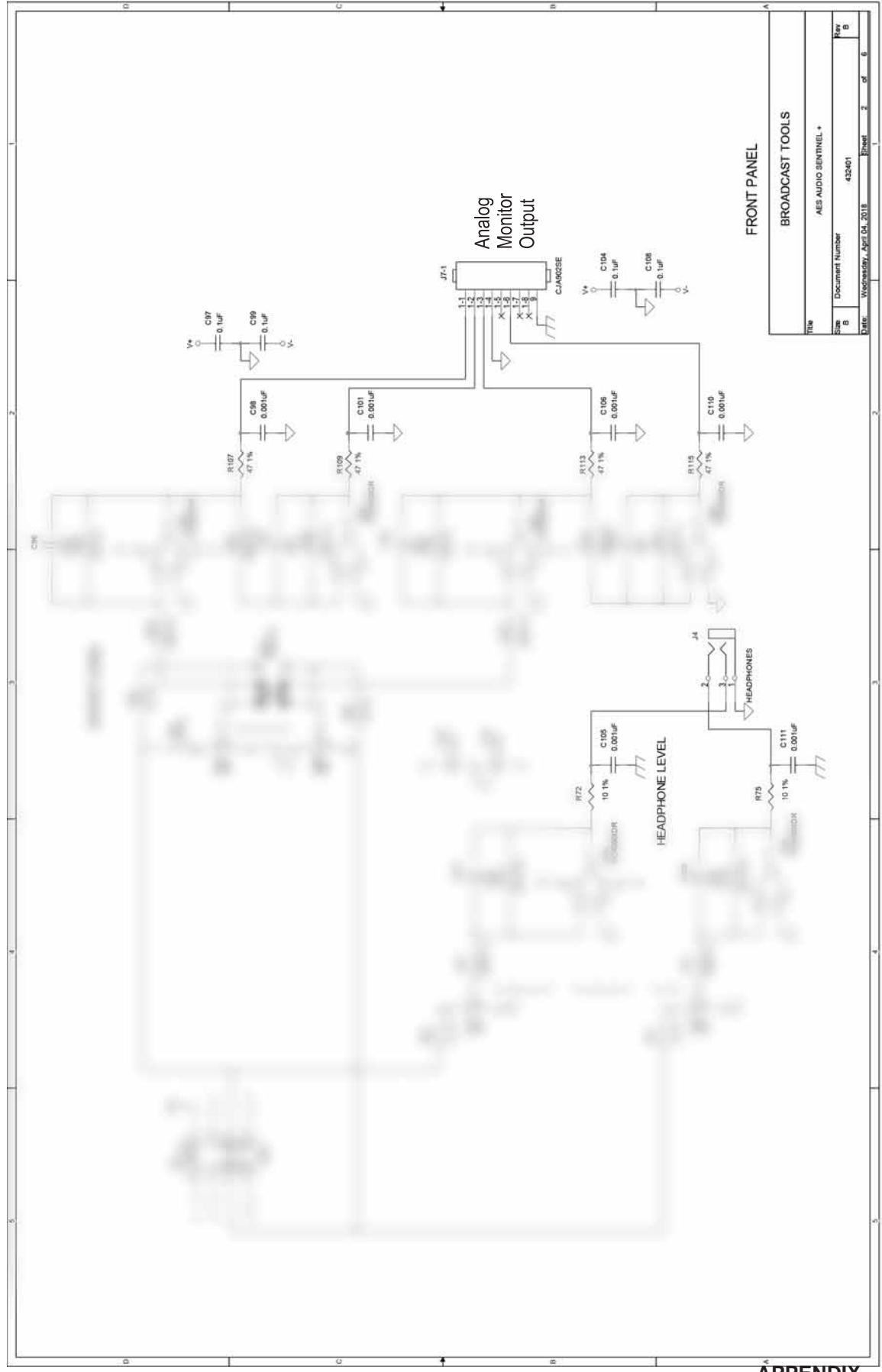
**FRACTIONAL SCHEMATIC**



BROADCAST TOOLS	
Title	AES AUDIO SENTINEL +
Size	B
Document Number	432401
Date	Monday, April 09, 2018
Sheet	1 of 6

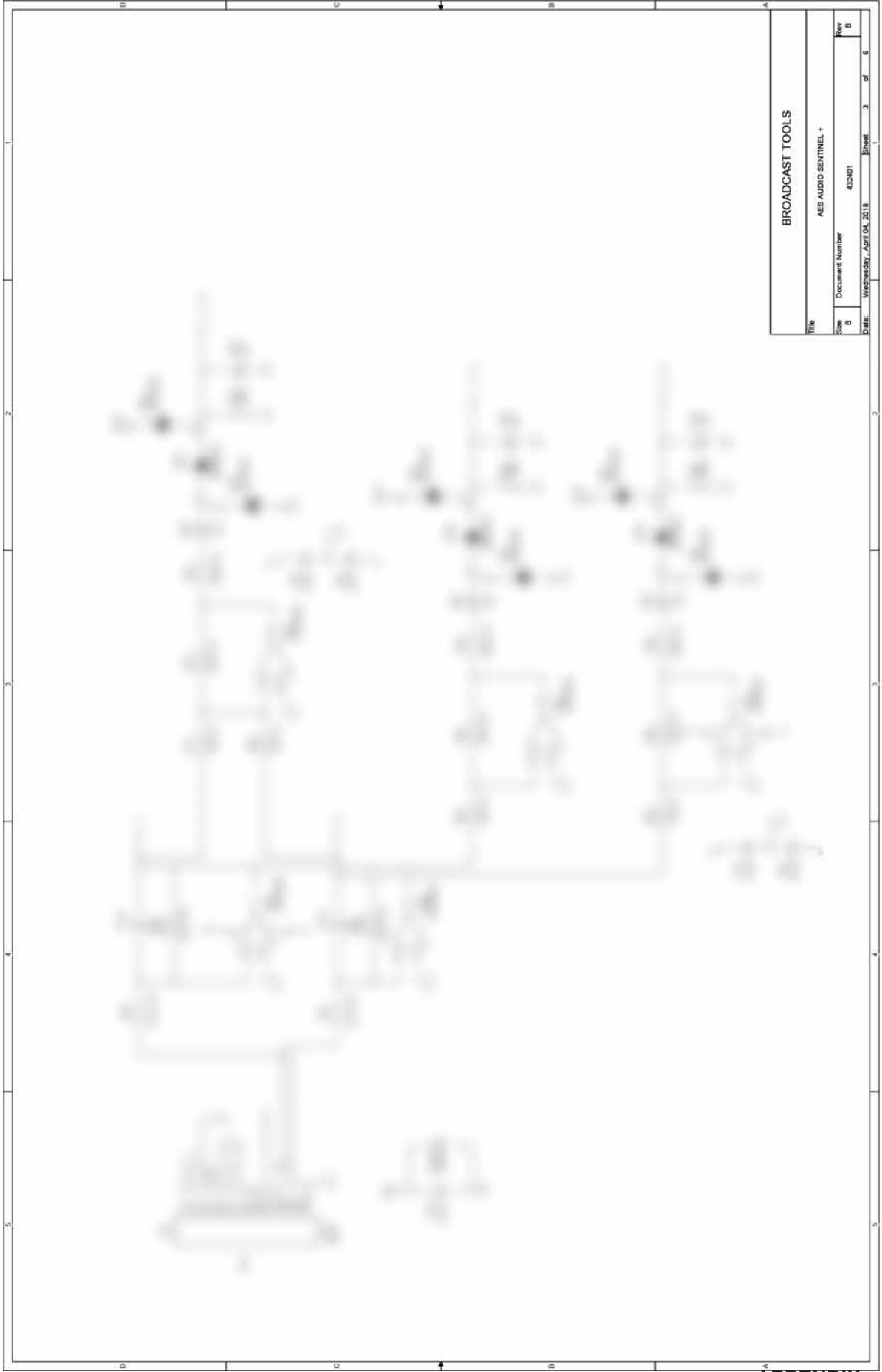
APPENDIX

### FRACTIONAL SCHEMATIC



APPENDIX

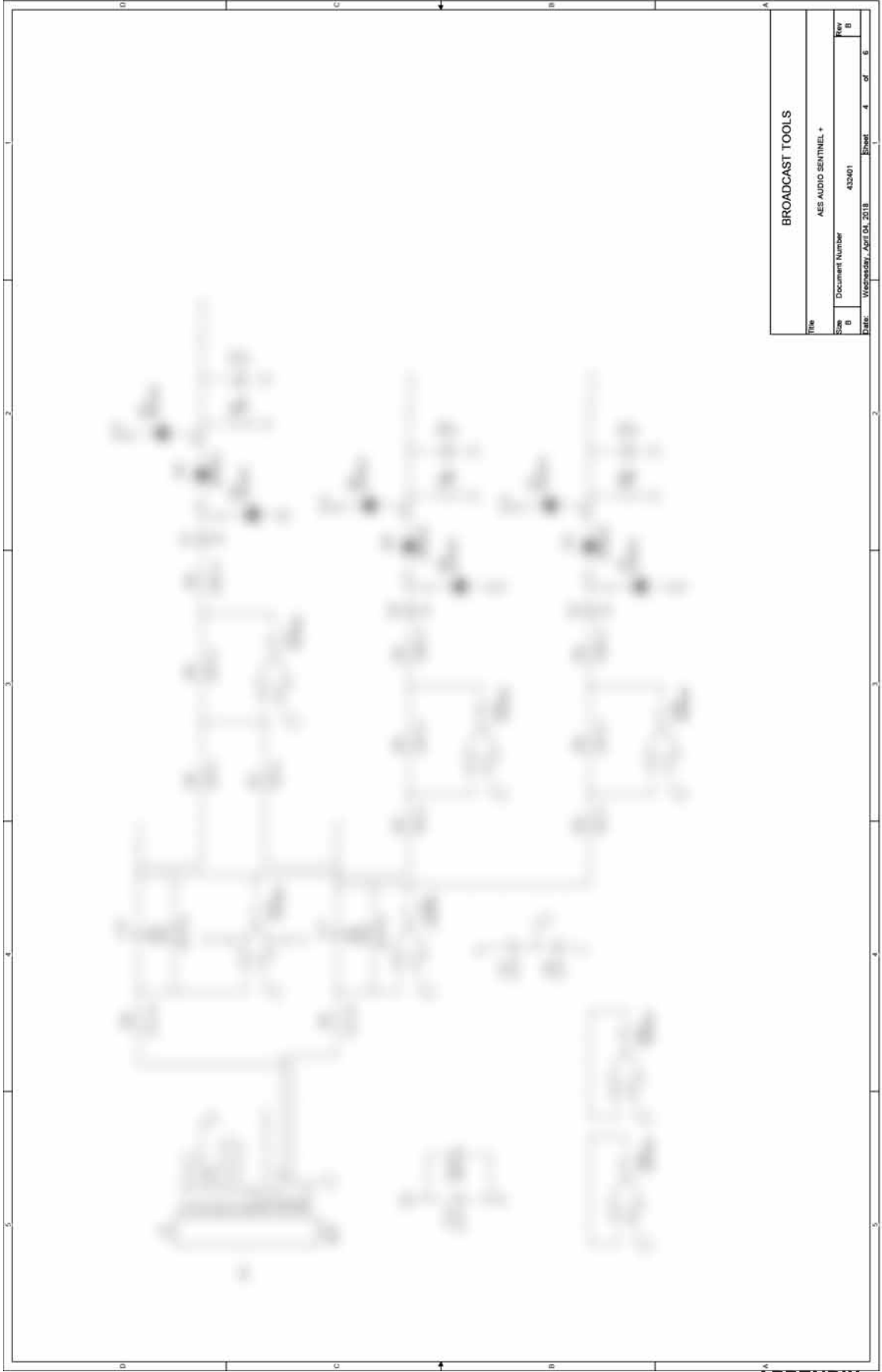
### FRACTIONAL SCHEMATIC



BROADCAST TOOLS	
Title	AES AUDIO SENTINEL +
Size	432401
Doc Number	432401
Rev	B
Date	WEDNESDAY, APR 04, 2018
Sheet	3 of 6

APPENDIX

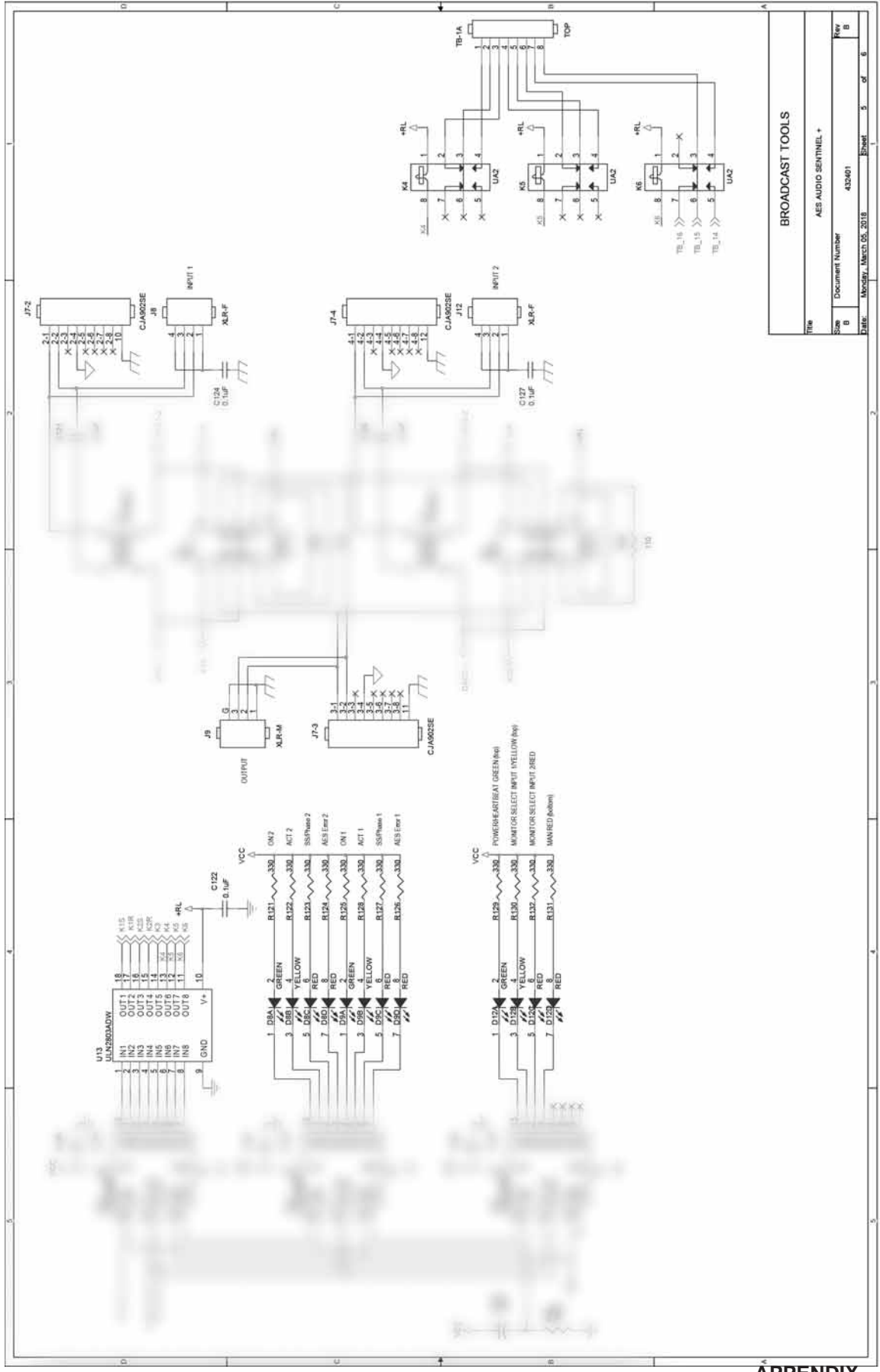
### FRACTIONAL SCHEMATIC



BROADCAST TOOLS	
Title	AES AUDIO SENTINEL +
Size	
B	Document Number
	432401
Rev	
B	
Date	Wednesday, April 04, 2018
Sheet	4 of 6

APPENDIX

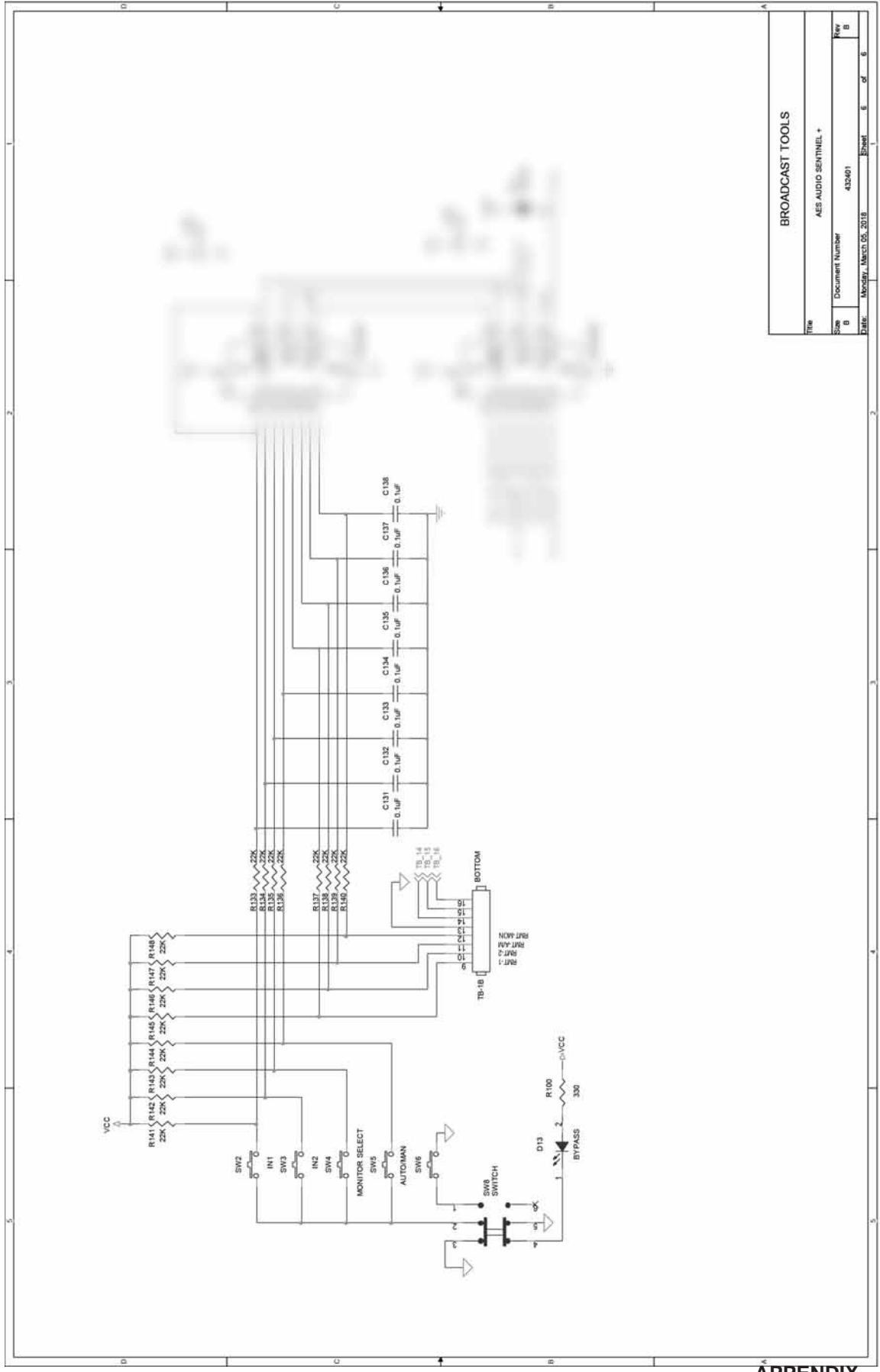
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Title		AES AUDIO SENTINEL +	
Size	Document Number	432401	
Rev	Sheet	5	of 6

BROADCAST TOOLS

### FRACTIONAL SCHEMATIC



APPENDIX