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Installation and Operation Manual



Silence Sentinel Basic G2

Firmware version: PIC1.08 or greater.

Manual updated 1/15/2023.

If you need a firmware upgrade, contact Broadcast Tools[®]

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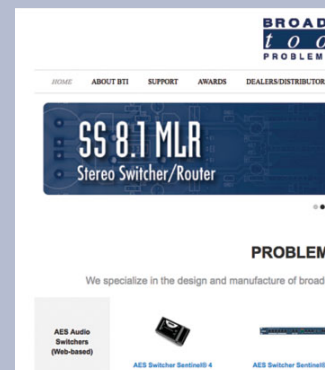
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INTRODUCTION

Thank you for your purchase of the Broadcast Tools® Silence Sentinel® Basic G2 (referred to as the Silence Sentinel® Basic G2 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® Silence Sentinel® Basic G2.

SAFETY INFORMATION

Only qualified technical personnel should install the Silence Sentinel® Basic G2. 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 Silence Sentinel® Basic G2 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 Silence Sentinel® Basic G2.

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:

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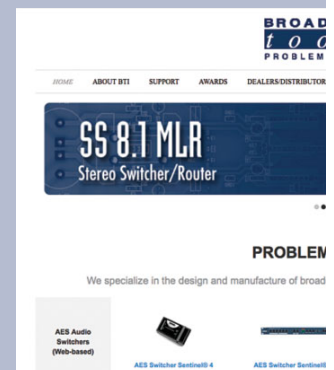
Broadcast Tools® Products, as with any electronic device, can fail without warning. Do not use this product in applications where a life threatening condition could result due to failure.



This manual should be read thoroughly before installation and operation.

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Product Overview

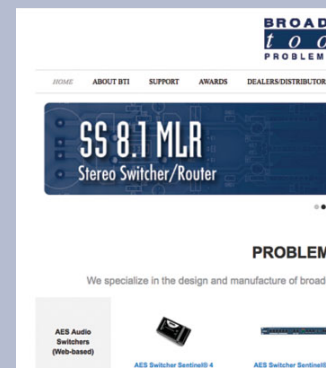
The Broadcast Tools® Silence Sentinel® Basic G2 is a simple stereo silence sensor designed to monitor any stereo or two independent monaural sources and generate alarm contact closures when silence is detected but doesn't incorporate an audio switcher. Additional features include front panel control, remote control input and status relay outputs, RJ45 and plug-in euroblock screw terminals audio connectors wired in parallel, plug-in euroblock screw terminals for remote control/status. Configuration options include dipswitch configuration of silence detection from -20, -25, -30 and -35db below zero reference, OFF to 5 minutes in 2 or 20 - second increments, and precise restore timing delay from restore timing delay from OFF, 5, 30 and 90 seconds. The Silence Sentinel® Basic G2 may be set on a desktop, mounted on a wall or optional RA-1 rack shelf for mounting up to four units in 1-RU.

Features/Benefits

- Configurable for stereo or dual independent monaural operation.
- Left and right valid audio (ACT) and alarm LED indicators.
- Dipswitch selection of silence detection of -20, -25, -30 and -35dB below zero reference.
- Dipswitch selection of time delay from OFF to 5 minutes in 2 or 20 - second increments.
- Dipswitch selection of restore timing delay from OFF, 5, 30 and 90 seconds.
- Two independent SPDT alarm relay outputs and LED indicators.
- Active balanced stereo input.
- Front panel and remote "Disable/Alarm Reset" switch with LED indicator.
- Front Panel Power/Heartbeat LED.
- Logic functions via microprocessor and non-volatile memory.
- RJ45 connector and plug-in euroblock screw terminals for audio input wired in parallel. Plug-in euroblock screw terminals for remote control, mating plugs supplied.
- Fully RFI proofed.
- Surge protected internal power supply, 9 VDC universal desktop power adapter with IEC inlet included.
- Each unit may be set on a desktop, mounted on a wall or rack-mounted with the optional RA-1 rack shelf for mounting up to four units in 1-RU. Velcro mounting

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Installation Guidelines

Inspection

Please examine your Silence Sentinel® Basic G2 for any damage that may have been sustained during shipping. If any is noted, please notify the shipper immediately and retain the packaging for inspection by the shipper. The package should contain the Silence Sentinel® Basic G2, 9 VDC universal switching power supply with domestic power plug and Velcro feet. Manuals can be downloaded from our web site.

Mounting

Mount the Silence Sentinel® Basic G2 where it will be visible and rear panel accessible. The Silence Sentinel® Basic G2 may be set on a desktop, mounted on a wall or optional RA-1 rack shelf for mounting up to four units using supplied hardware.

Surge Protection

The Silence Sentinel® Basic G2 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 Silence Sentinel® Basic G2 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

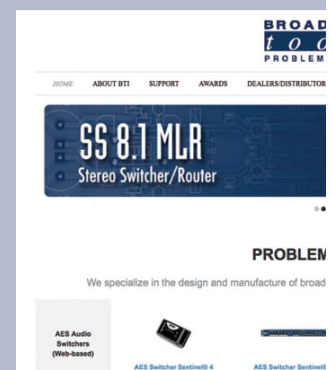
We recommend that you connect your Silence Sentinel® Basic G2 to a UPS system. A UPS, like the BE600M1 from APC helps to minimize the risk to the Silence Sentinel® Basic G2 and provides power during a power outage.

POWER: 9-12 VDC power connector

Connect the center-positive coaxial type power connector from the supplied switching power supply to the power jack on the unit. Plug the power supply's IEC AC cord into a 100-240 Vac 50-60 Hz power source. Never use any type of power supply other than the specified/supplied power supply.

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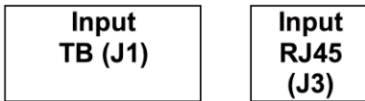


Cable Preparation

The Silence Sentinel® Basic G2 interfaces to external remote-control equipment through removable euroblock screw terminals. The terminals accommodate wire sizes from 16 - 28 AWG solid or stranded wire. Before installing a wire, remove the euroblock 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.

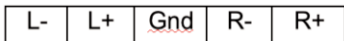
Audio Inputs

The Silence Sentinel® Basic G2 connects to stereo analog audio using an RJ45 audio jack (J3) or 5-postion pluggable screw terminal block (J1), which are wired in parallel. This means either input connector can be used, providing an easy way to interface between devices with different connectors without the need for custom cables.



Audio Connector Pinouts

Terminal Block Audio Connector (J1)



RJ45 Audio Connector (J3)

The input RJ45 jack conforms to the RJ45 analog audio wiring standards. Please use shielded twisted pair Cat5e or Cat6 cables and connectors (STP).

RJ45 Pinout:

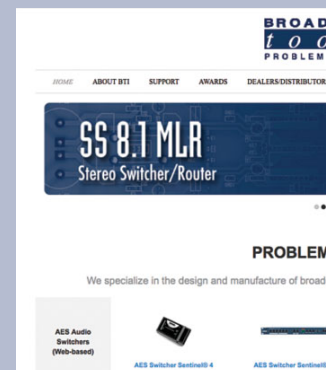
Function:	Wire Pair:	RJ45 Pins:
Left+	White/Orange	1
Left-	Orange/White	2
Right+	White/Green	3
Right -	Green/White	6
n/c	White/Blue	5
GND	Blue/White	4
n/c	White/Brown	7
n/c	Brown/White	8
GND	Shield	Shield



Installation of the Silence Sentinel® Basic G2 in high RF environments should be performed with care. The station ground should be connected to “Gnd” ground screw terminal.

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INSTALLATION

Connecting your equipment

Connect the line-level audio source you wish to monitor for silence (air monitor, etc.) to J1 (terminal block) or J3 (RJ45) input connector. Audio inputs may be balanced or unbalanced. When using unbalanced sources, feed the + input and jumper the minus (-) input to GND. These inputs are labeled LT- and LT+ for the left channel and RT- and RT+ for the right channel. Observe proper stereo phasing.

When used in dual monaural (independent) mode, the left input is ONE and the right input is TWO.

NOTE: If the audio source is a tuner or receiver, be sure to feed the input(s) from the fixed output, such as the tape monitor outputs.

Relay Outputs and Remote Control Input

The K1 and K2 SPDT relays provide alarm closures for the Silence Sentinel® Basic G2. Their behavior is determined by the mode setting. Two additional normally open contact closures to ground (GND) are provided: labelled “1B” and “2B”. “1B” follows K1 and “2B” follows K2.

J2 Top

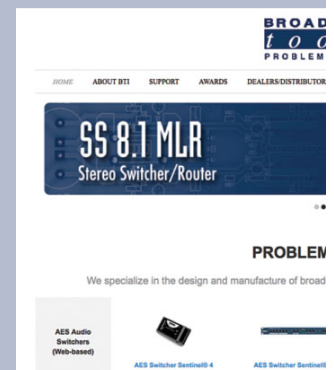
K1NO	K1CM	K1NC	A1	B1
K2NO	K2CM	K2NC	DIS (Disable)	GND (Ground)

J2 Bottom

The Disable (DIS) remote control input is wired in parallel with the front panel Reset/Disable switch. Pull and hold the remote “Disable” input to low ground to disable alarms. Pulse the remote “Disable” input low to ground momentarily to clear the alarm tally LEDs after an alarm has cleared.

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Programming Guidelines

Dip Switch Setup

Silence Sentinel® Basic G2 is configured via one 10-position dipswitch (SW2) located on the front panel of the unit. Follow the grid and instructions below to set the delay times, threshold, and modes.

Delay Time (SW2-9 ON)	SW2-1	SW2-2	SW2-3	SW2-4	Restore Delay Time	SW2-5	SW2-6	Delay Resolution	SW2-9
OFF / Instant	OFF	OFF	OFF	OFF	OFF/Instant	OFF	OFF	2 seconds	OFF
2 Sec (20 Sec)	ON	OFF	OFF	OFF	5 seconds	ON	OFF	20 seconds	ON
4 Sec (40 sec)	OFF	ON	OFF	OFF	30 seconds	OFF	ON		
6 Sec (1 Minute)	ON	ON	OFF	OFF	90 seconds	ON	ON		
8 Sec (1 Minute, 20 sec)	OFF	OFF	ON	OFF				Mode Select	SW2-10
10 Sec (1 Minute, 40 sec)	ON	OFF	ON	OFF				Stereo Mode *	OFF
12 Sec (2 Minutes)	OFF	ON	ON	OFF				Dual monaural mode.	ON
14 Sec (2 Minutes, 20 sec)	ON	ON	ON	OFF	Trip Level	SW2-7	SW2-8		
16 Sec (2 Minutes, 40 sec)	OFF	OFF	OFF	ON	- 20dB	OFF	OFF		
18 Sec (3 Minutes)	ON	OFF	OFF	ON	- 25dB	ON	OFF		
20 Sec (3 Minutes, 20 sec)	OFF	ON	OFF	ON	- 30dB	OFF	ON		
22 Sec (3 Minutes, 40 sec)	ON	ON	OFF	ON	- 35dB	ON	ON		
24 Sec (4 Minutes)	OFF	OFF	ON	ON				K2 Pulse length *	JPR1
26 Sec (4 Minutes, 20 sec)	ON	OFF	ON	ON				2 Second	OFF
28 Sec (4 Minutes, 40 sec)	OFF	ON	ON	ON				20 Seconds	ON
30 Sec (5 Minutes)	ON	ON	ON	ON					

* Note: K2 pluses when the system is in stereo mode only.

Delay Time Setup

The alarm delay time is the time between when valid audio fails and when an alarm is triggered. The Silence Sentinel® Basic G2's alarm time delay is set using the first 4 positions of the SW2 along with switch position 9 which sets the Delay Resolution. The table provides TWO second resolution settings along with 20 second resolution settings in parentheses. Each switch has a digit value. SW2-1 = 1, SW2-2 = 2, SW2-3 = 4, and SW2-4 = 8. We add these digit values together to obtain a total digit value and multiply it by the resolution value, either two or twenty seconds, to obtain the delay time.

Restore Delay Time Setup

The restore delay is the time between when valid audio returns and when the alarm is cleared. The Silence Sentinel® Basic G2's restore time delay is set with SW2-5 and SW2-6.

Silence Sense Trip Level/Threshold Setup

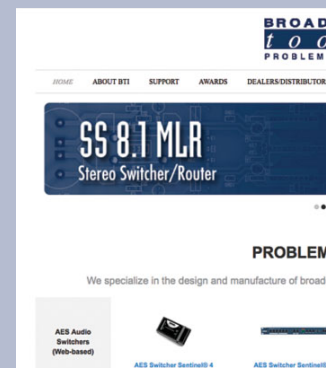
SW2-7 and SW2-8 are used to set the silence sensor trip levels. The factory default is both switches OFF, OFF = -20. We recommend setting the trip level to -25 for most installations. The silence sensor trip levels are referenced from zero dBu.

Delay Resolution Setup

SW2-9 sets the delay timing for either 2 seconds or 20 seconds. Factory default is (OFF) 2 seconds.

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Mode Setup (Stereo / Dual Mono)

SW2-10 determines stereo or dual monaural (Independent) operation. When this switch is OFF, (factory default) stereo operation is selected. With the switch ON, dual monaural (Independent) operation is selected.

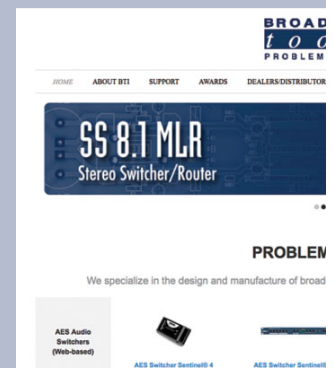
K2 Function pulse length setup

With a jumper over the ON position of JPR1, K2 generates a 20 second pulse. When the OFF position is selected, a 2 second pulse is set (Factory default). This is only operational with the unit in stereo mode. This function could be used to trigger an external AC power relay to reboot equipment. In dual monaural (Independent) mode, K1 is associated with input one (left) and K2 is associated with input 2 (right).

NOTE: The top cover must be removed to access this jumper (refer to the configuration and wiring sheet) in the appendix.

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Operational Guidelines

Operation

Front Panel LED indicators

“PWR/HB” LED: Blinks to indicate operation when power is applied. (Green)

“Reset” LED: Lit the Reset/Disable input is active. (Red)

“ACT” Left/Right LEDs: Lit when input audio is above threshold. (Yellow)

“Alarm” Left/Right Tally LEDs: Lit = Indicates a current or past silence alarm. (Red)

“K1” Left “K2” Right LEDs: Lit = Lit when a relay is closed/active. (Green)

Front Panel Controls

Recessed Reset/Disable switch (“Reset”): Used to clear Alarm Tally LEDs after an alarm or to disable alarms.

Stereo Mode Operation

When the Silence Sentinel® Basic G2 is “Enabled”, it will trigger in the absence of audio (see trip level setup) on either or both channels after the delay time has expired (See delay dipswitch SW2-1 through 4 and SW2-9) which will cause the following action:

- 1 - The front panel left and/or right “ACT” audio LEDs extinguish.
- 2 - The left and/or right alarm tally “Alarm” LEDs and relay K1 activate.
- 3 - K2 relay pulses for either 2 or 20 seconds.

Note: The K2 relay will generate a pulse duration determined by JPR1.

When both channels return and the restore time delay has expired (if enable), the following action occurs:

- 1 - Relay K1 opens.
- 2 - The front panel left and right “ACT” audio LEDs will illuminate
- 3 - Either or both “Alarm” tally LED indicators will stay illuminated to provide history of the alarm until reset. To reset/clear an alarm, press in the disable (alarm reset) switch and then press again to release the switch, or momentary pull the remote “disable” input to ground.

Dual Monaural (Independent) Mode Operation

When the Silence Sentinel® Basic G2 is enabled, it will trigger in the absence of audio (see trip level setup) on each of the independent channels after the delay time has expired (See delay dipswitch SW2-1 through 4 and SW2-9).

The Silence Sentinel® Basic G2 when triggered will cause the following action:

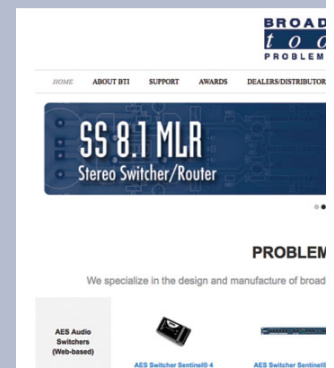
- 1 - The left and or right “Alarm” tally LED(s) will illuminate.
- 2 - Relay K1 will close for the “Left” input and relay K2 will close for the “Right input.

When either audio channel returns, and the restore time delay has expired (if enabled), the following action occurs:

- 1 - Either or both relays K1 and K2 will open.
- 2 - The “Alarm” tally LED indicators stay illuminated to provide history of the alarm. To reset/clear an alarm, press in the disable (alarm reset) switch and then press again to release the switch, or momentary pull the remote “disable” input to ground.

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OPERATION

Specifications

Input Level:	-35 to +24 dBu, MIL. 22 K ohm, balanced.
Silence Sense trip levels:	-20, -25, -30, or -35dB below zero reference.
Alarm Delay:	OFF to 5 minutes in 2 or 20 - second increments.
Restore Delay:	OFF, 5, 30, or 90 seconds.
Remote Control:	Remote Reset/Disable input. Reset = momentary closure to ground, disable = sustained closure to ground.
Relays K1 and K2:	SPDT dry contacts each, 30 VDC @ 1 Amp maximum.

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

Connectors: RJ45 audio jack and removable euro-block screw terminals for audio and removable euro-block screw terminals for remote control.

Power supply: 9-12 VDC, greater than 500 mA. 2.1mm ID x 5.5mm OD coaxial connector, center positive, surge protected. Universal switching power supply with domestic connector supplied.

Operating Environment: 32°F/0°C-122°F/50°C; 0%-95% non-condensing relative humidity; 10,000ft/3048m.

Size: 5.00 x 3.80 x 1.50 in. (L x W x H), ABS Plastic Chassis.

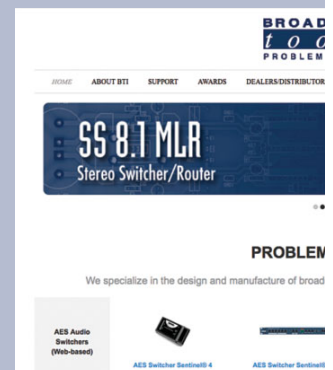
Weight: 1.0 lb.

Options: RA-1 Rack Shelf. 1 RU. Accommodates up to four units.

Note: Included Velcro may be used to secure the product to an RA-1 rack 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.

EXCLUSIVE REMEDIES

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

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Component Layout

