



## INSTALLATION AND OPERATION

### MANUAL

for the

**Broadcast Tools® “SSM”**

**Smart Silence Monitor**

Broadcast Tools® is a registered trademark of Broadcast Tools, Inc.  
Copyright® 1997 - 2002 by Broadcast Tools, Inc. All rights reserved.  
No part of this document may be reproduced or distributed without permission.

---

*For serial numbers 43424 and higher*

ALL SPECIFICATIONS AND FEATURES FOR THIS PRODUCT ARE SUBJECT TO CHANGE WITHOUT NOTICE

---

Software Version 07/07/98

Revised 11/06/02

Manual



TABLE OF CONTENTS


---

Introduction	3
Safety Information	3
Who to Contact for Help	3
Product Description	4
Installation Guidelines	4
Inspection	4
Mounting	4
Connecting	4
Defeat and Reset Setup	5
Level Setup	5
Dual Monaural Mode Operation	6
Delay Setup	6
Configured for Backup Switching	7
Specifications	8
Warranty	9
Schematic and Component Layout	Appendix

## INTRODUCTION

---


Thank you for your purchase of a **Broadcast Tools® SSM, Smart Silence Monitor** (referred to as the SSM 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® SSM, Smart Silence Monitor.

 **NOTE:** *This manual should be read thoroughly before installation and operation.*

## SAFETY INFORMATION

---

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

 **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.*

## 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: 360 . 854 . 9479**

**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!

*Installation and Operation Manual  
Smart Silence Monitor  
Page 3*

## PRODUCT DESCRIPTION

---

The NEW Smart Silence Monitor utilizing the innovative “WNSD” circuitry is designed to monitor any stereo or two independent monaural sources and generate alarm(s) when white noise or silence is detected. The white noise detection circuit enables detection of a loss of carrier, which other monitors are unable to provide.

The following are just a few of the many **features** of the Smart Silence Monitor.

- Active balanced inputs with multi-turn trimmers
- Alarm sensitivity down to 35db below program
- Precise time delay from 2 seconds to 93 \_ minutes
- May be configured for stereo or dual independent monaural operation
- Alarm and activity LED indicators for each channel with multiple-alarm-recycling
- Two DPDT relays, which may be used as a 2x1 program switcher
- Four open collector function outputs
- Remote opto-isolated defeat and reset input with local reset switch
- Screw style wire captive terminals
- Aluminum case with four mounting holes allowing convenient mounting
- Optional RM-2 or RM-3 rack mount for mounting two units in a 19-inch rack

## INSTALLATION GUIDELINES

---

### **Inspection:**


Please examine your Smart Silence Monitor for any damage that may have been sustained during shipping. If any is noted, please notify the shipper immediately. Retain the packaging for inspection by the shipper. The package should contain the Smart Silence Monitor, 12 Vac wall power transformer and this manual.

### **Mounting:**

Mount the Smart Silence Monitor where it will be visible and the rear panel accessible. Four (4) screw holes are provided for mounting.

### **Connecting the SSM to Your Equipment:**

Connect the audio source to the left and right inputs, grounding the negative (-) side if the source is unbalanced and observing proper phasing.


 **NOTE:** *If the audio source is a tuner or receiver, be sure to feed the Smart Silence Monitor from a fixed output such as the tape monitor outputs.*

## INSTALLATION GUIDELINES

---


### Defeat and Reset Setup:

The defeat / reset input is opto-isolated. Input voltages should be between 5 and 24 vdc. For connection to equipment that provides (DRY) open collector, switch or relay contacts, leave the jumpers on Jp-3 with the factory default setting. Connect the collector or one contact to the terminal labeled “DEF, RST”- input. The emitter or other contact should be connected to the “DEF, RST”+ input. To control these inputs with external voltages, remove the jumpers on pins 1 & 2 / 3 & 4 (Counting from left to right) and place one jumper on pins 2 & 3. Be sure to observe the correct polarity. To defeat the operation of the unit, keep the defeat / reset input energized. To reset the alarm LED's and OC-4, either press the on board reset switch or pulse the defeat / reset input.

 **NOTE:** *The SSM provides multiple-alarm-recycling, which automatically resets K1, K2, OC-1, OC-2 and OC-3 after each alarm. The Alarm LED's and OC-4 need to be reset, if required after each alarm.*

### Level Setup:

Verify that power is applied to the unit. Feed the unit normal programming, while turning each channels gain trimmer counter clockwise until the green “OK” signal LED extinguishes and the red “ALM” led lights. Adjust each channels gain trimmer one full turn clockwise or until the green “OK” LED is on solid. Using this procedure will trip the alarm at approximately 35 dB below program. You may also feed the unit with white noise and verify that this causes an alarm. This may take a little experimentation. Remove power from the unit.

 **NOTE:** *You may also use white noise from your air monitor or receiver to double-check your setup.*

### Operational Setup:

Jp-4 selects the two operating modes:

Installed = Stereo    Removed = Dual Mono

Stereo Mode operation

K1 and K2 close for the duration of silence if either or both channels fail

Alarm LED'(s) flash and are latched denoting the channel(s) that failed, until reset

OC-1 Pulses for \_ second on start of alarm if EITHER fail

OC-2 Pulses for \_ second on start of alarm if BOTH fail

OC-3 Pulses for \_ second on the return of EITHER channel

OC-4 latches until reset if either or both channels fail

INSTALLATION GUIDELINES

**Dual Monaural Mode Operation :**

K1 closes for the duration of silence for channel 1 only  
 K2 closes for the duration of silence for channel 2 only  
 Alarm LED 1 flashes and latches denoting that channel 1 failed, until reset  
 Alarm LED 2 flashes and latches denoting that channel 2 failed, until reset  
 OC-1 Pulses for \_ second on start of alarm for channel 1  
 OC-2 Pulses for \_ second on start of alarm for channel 2  
 OC-3 latches denoting that channel 1 failed, until reset  
 OC-4 latches denoting that channel 2 failed, until reset

**Delay Setup:**

The Smart Silence Monitor time delay is set via SW-2, the 8-position dipswitch and Jp-5. The default for this jumper is installed. This provides TWO second resolutions. To provide longer time resolution, remove and stow Jp-5, which will provide 22 second resolution. The switches are set at the factory for a 6 second delay (switches 1 & 2 ON and Jp-5 installed). Each switch has a digit value as shown in the two tables below. For the factory default setting, as shown in the two second resolution table below, we have turned ON switches one and two. Switch one represents a one-digit value, while switch two represents a two-digit value. We add these two digit values together to obtain a total digit value of three. Each value is given a time delay of two or twenty two seconds, so we therefore multiply the total digit value of three by two (or 22) to obtain six (or 66) seconds. Please note the table below refers to the time delay in seconds.

**Two (2) Second Resolution Table**

SW-2 Switch Position and Jp-5 installed.	1	2	3	4	5	6	7	8
Digit Value	1	2	4	8	16	32	62	128
<b>® EXAMPLE:</b>								
1 = 2 seconds	ON ↑	OFF ↓	OFF ↓	OFF ↓	OFF ↓	OFF ↓	OFF ↓	OFF ↓
1 + 2 = 3 x 2 = 6 seconds	ON ↑	ON ↑	OFF ↓	OFF ↓	OFF ↓	OFF ↓	OFF ↓	OFF ↓
1 + 2 + 4 = 7 x 2 = 14 seconds	ON ↑	ON ↑	ON ↑	OFF ↓	OFF ↓	OFF ↓	OFF ↓	OFF ↓
32 x 2 = 64 seconds, or 1 minute and 4 seconds	OFF ↓	OFF ↓	OFF ↓	OFF ↓	OFF ↓	ON ↑	OFF ↓	OFF ↓
255 x 2 = 510 seconds, or 8 minutes and 30 seconds	ON ↑	ON ↑	ON ↑	ON ↑	ON ↑	ON ↑	ON ↑	ON ↑

INSTALLATION GUIDELINES


**Twenty Two (22) Second Resolution Table**

SW-2 Switch Position and Jp-5 removed.	1	2	3	4	5	6	7	8
Digit Value	1	2	4	8	16	32	62	128
<b>® EXAMPLE:</b>								
1 = 22 seconds	ON ↑	OFF ↓	OFF ↓	OFF ↓	OFF ↓	OFF ↓	OFF ↓	OFF ↓
1 + 2 = 3 x 22 = 66 seconds or 1 minute and 6 seconds	ON ↑	ON ↑	OFF ↓	OFF ↓	OFF ↓	OFF ↓	OFF ↓	OFF ↓
1 + 2 + 4 = 7 x 22 = 154 seconds or 2 minutes and 34 seconds	ON ↑	ON ↑	ON ↑	OFF ↓	OFF ↓	OFF ↓	OFF ↓	OFF ↓
32 x 22 = 704 seconds or 12 minutes and 44 seconds.	OFF ↓	OFF ↓	OFF ↓	OFF ↓	OFF ↓	ON ↑	OFF ↓	OFF ↓
255 x 22 = 5,610 seconds or 93 minutes and 30 seconds.	ON ↑	ON ↑	ON ↑	ON ↑	ON ↑	ON ↑	ON ↑	ON ↑

**SSM Configured For Backup Switching:**


- Connect the source equipment (Console, Automation) to both the left and right “IN’s” and the K1 A/B & K2 A/B NC (normally closed) contacts.
- Connect the Audio Processing’s left and right inputs to the K1 A/B & K2 A/B COM (**common** or wiper) contacts.
- Connect the back-up audio source to the K1 A/B & K2 A/B NO (normally open) contacts.

When the main (Console or automation) audio is lost, the SSM will sense the loss and start timing. When the time-out is reached, the SSM will close K1 & K2. Closing the relays will switch the “BACK-UP” audio source to the processing. When audio returns to the console (automation) output, the SSM will automatically switch the main source back to the processing.

 **NOTE:** *You may elect to use “OC-4” to latch an external relay if remote control of the back-up device is needed. “OC-4” will need to be reset after the alarm condition has cleared.*

BROADCAST TOOLS® SSM SPECIFICATIONS

---

<b>Input Level:</b>	<i>−15 to + 8 dbu, balanced bridging (20 K Ω), Left and Right 15 turn “GAIN” trimmers and “SIGNAL” LED indicators.</i>
<b>Sensitivity:</b>	<i>Approximately 35 dB below program level.</i>
<b>Reset/Defeat Input:</b>	<i>On-card “RESET” switch. Opto-isolated “RESET/DEFEAT” input. Closure to ground or 5 - 24 vdc. Jumpers selectable wet or dry inputs.</i>
<b>Silence Delay:</b>	<i>2 seconds to 93 minutes and 30 seconds, in 2 or 22 second increments, via a 8 position DIP switch and Jp-5.</i>
<b>Relay Type:</b>	<i>Two sealed spdt relays. 1.0 amp/30vdc, 30w/62.5vac.</i>
 <b>NOTE:</b>	<i>For safety, do NOT connect 120 Vac circuits to these Relays!</i>
<b>Open Collectors:</b>	<i>50 vdc @ 100 ma.</i>
<b>Logic And Audio:</b>	<i>Microprocessor, Op-amps.</i>
<b>Connectors:</b>	<i>24 position wire captive screw terminal / 2.1 mm barrel connector for power.</i>
<b>Power:</b>	<i>12 vac, @ 500 ma, with green power LED.</i>
<b>Size:</b>	<i>7.75 “ x 4” x 1.25” Aluminum case.</i>
<b>Weight:</b>	<i>1.5 pounds.</i>
<b>Options:</b>	<i>RM-2 rack panel, holds two units (3-RU’s) RM-3 rack shelf, holds two units (1-RU)</i>



BROADCAST TOOLS® SSM  
SMART SILENCE MONITOR

**BROADCAST TOOLS, INC.  
LIMITED WARRANTY AND REMEDIES**

**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 in 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 98284-1540 USA  
Voice: 360.854.9559  
Fax: 360.854.9479**

*Installation and Operation Manual  
Smart Silence Monitor  
Page 9*