

BROADCAST
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PROBLEM SOLVED

Installation and Operation Manual



Mix-4
Four-channel Utility Mixer

Manual Revised 7/18/2019

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

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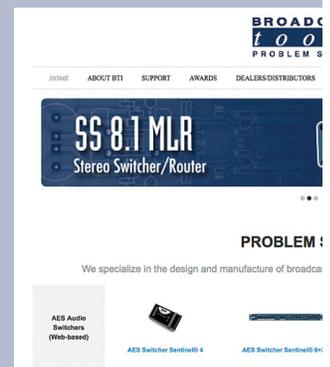
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Table of Contents

Section Title	Page #
Safety Information	3
Who to Contact for Help	3
Introduction	3
Product Overview	4
Inspection	5
Installation/Operation	5-7
Specifications	8
Warranty	9
Functional Diagram	Appendix A
Front and Rear Panel Drawings	Appendix B

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INTRODUCTION

Thank you for your purchase of the Mix-4, four-channel utility mixer, which we will refer to throughout the manual as the Mix-4. We are confident this product will give you many years of dependable service. This manual will give you all the information needed to install and operate the product.

SAFETY INFORMATION

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

Broadcast Tools, Inc., is unable to support NON-Broadcast Tools software, hardware or NON-Broadcast Tools computer/hardware/software problems. If you experience these problems, please research your hardware/software instruction manuals or contact the manufacturers technical support department.

WHO TO CONTACT FOR HELP

If you have any questions regarding your product or you need assistance, please contact your distributor from whom you purchased this equipment. If you would like more information about BROADCAST TOOLS® products, you may reach us at:

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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.

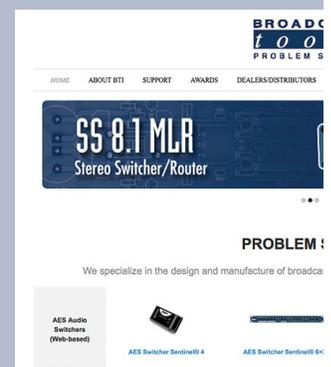


NOTE:

This manual should be read thoroughly before installation and operation.

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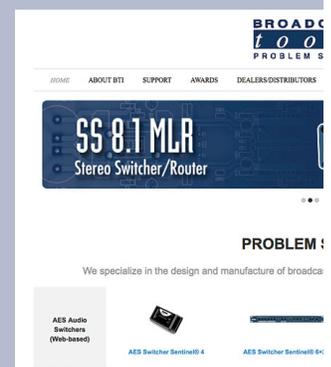


Product Overview

The Broadcast Tools Mix-4 is a four-channel stereo line level mixer with a professional microphone input, along with a stereo line output and mix-minus monaural output to drive a telephone hybrid. The Mix-4 mixer is ideally suited for the typical broadcast studio or any similar applications. It features four high impedance stereo line level mixing inputs, which accept balanced or unbalanced stereo sources. Each input is equipped with rotary level controls, along with on/off switches and LED indicators. Input one may be configured as either a stereo line input or a microphone input with or without 15V phantom power via rear panel switches. The microphone input uses a high-performance pre-amp from THAT Corporation. Inputs one through four feed the balanced output, while inputs one, two, and three feed the balanced mono mix-minus output, which allows input four to accept caller audio from a telephone hybrid. Channel audio switching is performed by professional level electronic analog switches. The inputs and outputs are supplied with removable screw terminal block connectors, while the microphone input is a female XLR jack. 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 three units in 1-RU.

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Inspection

Please examine your Mix-4 carefully for any damage sustained during shipping. If any damage is present, please notify the shipper immediately and retain the packaging for inspection by the shipper. The package contains the Mix-4 and a +/-15 VDC wall power supply (PS-1515) with domestic connector. Manuals can be downloaded from our web site.

Installation/Operation

RFI and surge suppression suggestions

LED indicators

- “PWR” LED: Illuminates when power is applied. (Green)
- “P15” LED: Illuminated when +15-volt DC phantom microphone power is switched on. (Green)
- “LT” LED: Indicates left channel audio output activity. (Green)
- “RT” LED: Indicates right channel audio output activity. (Green)
- “1” “2” “3” “4” LEDs: Lit when respective input channel is switched on. (Green)

Front Panel Controls

“1” “2” “3” “4” pushbuttons: Used to turn each input channel on or off. When a button is switched in, the channel is on and when a button is switched out, the channel is off. Each switch can be disabled using the SW7 dipswitch on the printed circuit board. Turning each input Dip-switch ON, disables the front panel switch and forces each input ON.

To access dipswitch SW7, remove power. Remove the four-front panel screws and metal front panel. Locate the SW7 on the right side of the circuit board behind input fours level control. SW7-1 is controls input one, SW7-2, for input two, SW7-3 input three and SW7-4 controls input four. Reassemble the Mix-4.

“1” “2” “3” “4” level adjustment knobs: Each input channel is supplied with a front panel level control. When the control is turned fully counterclockwise, the channel is OFF. When the control is turned fully clockwise, 12 dB of gain is added to the input level. Unity gain can be achieved by turning the control to the 2 o'clock position.

Power +/- 15VDC.

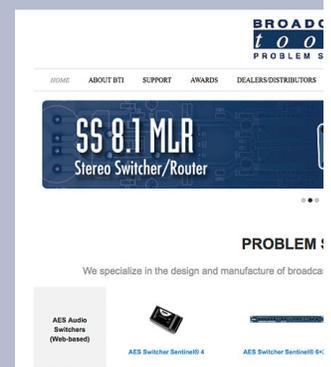
Connect the 3-pin AMP-style latching power connector to the unit and the +/-15 VDC switching power supply (PS-1515) with domestic connector into a 120 Vac 50-60 Hz power source. Never use any type of power supply other than the specified/supplied power supply.



Installation of the Mix-4 in high RF environments should be performed with care. It is recommended that all cables connected to the Mix-4 be looped through ferrite cores to suppress RF. All shields should be tied to the “Chs Gnd” ground terminal. Surge protection with RF filtering is also suggested. For lightning protection devices, check out www.polyphaser.com and www.itwlinx.com.

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Microphone Phantom Power Switch & LED

This pushbutton switch turns on/off +15 V phantom power to the MIC IN 1 XLR jack. When the switch is depressed, phantom power is on and the front panel P15 led is illuminated.

Microphone Gain Adjustment (Mic Gain)

The 15-turn trimmer sets the microphone pre-amplifier gain and allows the use a variety of microphones with different sensitivity levels. The microphone input is set to 40 db of gain at the factory but up to 60 db of pre-amp gain is available.

Audio Connections

The MIX-4 interfaces to external equipment through removable euroblock screw terminals and one XLR-F jack for the microphone input. 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 clockwise to tighten and secure the conductor.

Input 1 (Top row, TB1)			Input 4 (Top row, TB2)				Switch Tally/Mix Minus (Top row, TB3)							
2L-	2L+	Gnd	2R-	2R+	4L-	4L+	Gnd	4R-	4R+	Gnd	S1NO	Gnd	MM-	MM+
1L-	1L+	Gnd	1R-	1R+	3L-	3L+	Gnd	3R-	3R+	OL-	OL+	Gnd	OR-	OR+
Input 2 (Bottom row, TB1)			Input 3 (Bottom row, TB2)				Output (Bottom Row, TB3)							

CAUTION: In no case should either the + or - outputs be connected to ground. The input impedance is 20KΩ, 600Ω terminations may be installed on the connector if required.

Inputs

Connect your audio sources to any of the four Mix-4 inputs, labelled (1L-/1L+ and 1R-/1R+) thru (4L-/4L+ and 4R-/4R+). For unbalanced input connections, install a jumper between the “-” input and GND. Single (monaural) inputs should have their left and right inputs connected in parallel. Observe proper phasing.

MIC IN 1 XLR Connection

When using Input 1 as a microphone input connect a microphone to the female XLR connector (1) on the rear of Mix-4. Dynamic microphones are recommended. Powered condenser microphones can be used if they will operate from +15 volt phantom power, otherwise an external user-supplied phantom power supply may be necessary.

XLR connection pin-out:

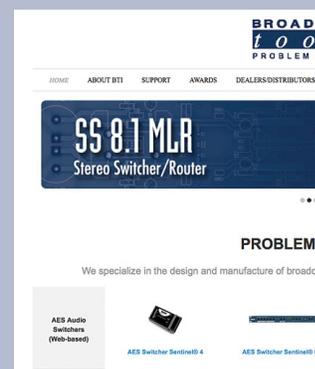
PIN 1: Ground

PIN 2: Hi (+)

PIN 3: Lo. (-)

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Telephone Hybrid Connection (Input 4)

When using the Mix-4 with a telephone hybrid: connect the “caller” output of the user supplied telephone hybrid to input four, labelled “4L-/4L+” and “4R-/4R+”. If the hybrid’s caller output is a single (monaural) source it must be connected in parallel to the left/right channels Mix-4’s input terminal block. Observe proper phasing.

Outputs

Connect the STEREO load to the Mix-4’s main output, labeled “OL-/OL+” and “OR-/OR+”. For unbalanced loads, use the “+” and GND terminals only. Do not connect the “-” terminal to ground. Connect cable shields to the “GND” terminals.

Mix Minus Output

When using the Mix-4 with a telephone hybrid: connect the mix-minus output, labelled “MM+/MM-“ to the “send” input of the user supplied telephone hybrid. Inputs one through three feed this output.

Switch Tally (input one only) Connection, S1NO

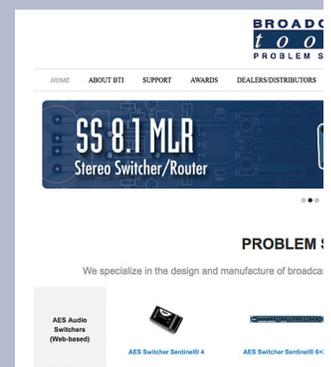
This normally open switch will close to ground when input one is on. Possible uses for this tally connection include: warning light control, monitor mute control, etc.

“Chs Gnd” Connection

Tie this chassis ground screw to the station ground system.

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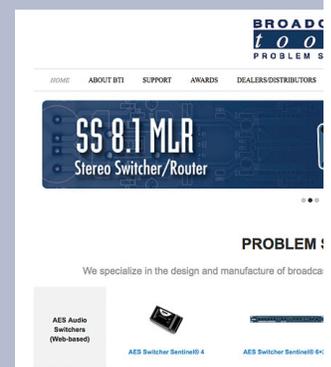


Specifications:

Input Level	+4dBu nominal. +22dBu max.
Input Impedance	20K ohms balanced, 10 K ohms unbalanced.
Stereo/Mix-Minus Output level:	+4dBu nominal, +24dBu max, @ 600 ohms.
Stereo and Mix-Minus Impedance:	100 ohms balanced, 47 ohms unbalanced.
Microphone Gain:	Up to 60dB.
System Gain:	Up to 12dB.
Frequency Response:	20 to 20 kHz, +/- 0.15 dB.
Noise:	80 dB below nominal, output.
THD+N:	<0.09%, any frequency.
IMD:	.280% (250/7 kHz).
Microphone Phantom Power:	+15VDC.
Connectors:	Female XLR Microphone connection, stereo audio inputs/outputs - Removable screw terminals.
Power:	PS-1515 universal switching power supply with domestic AC connector supplied. International connectors optional. +/-15 VDC 400mA output with 3-pin AMP-style latching power connector.
Size:	5.65" x 7.10" x 1.575" (WDH) Aluminum chassis.
Weight:	2.0 lb.
Options:	RA-1, Rack Shelf. 1 RU. Accommodates 3 units.

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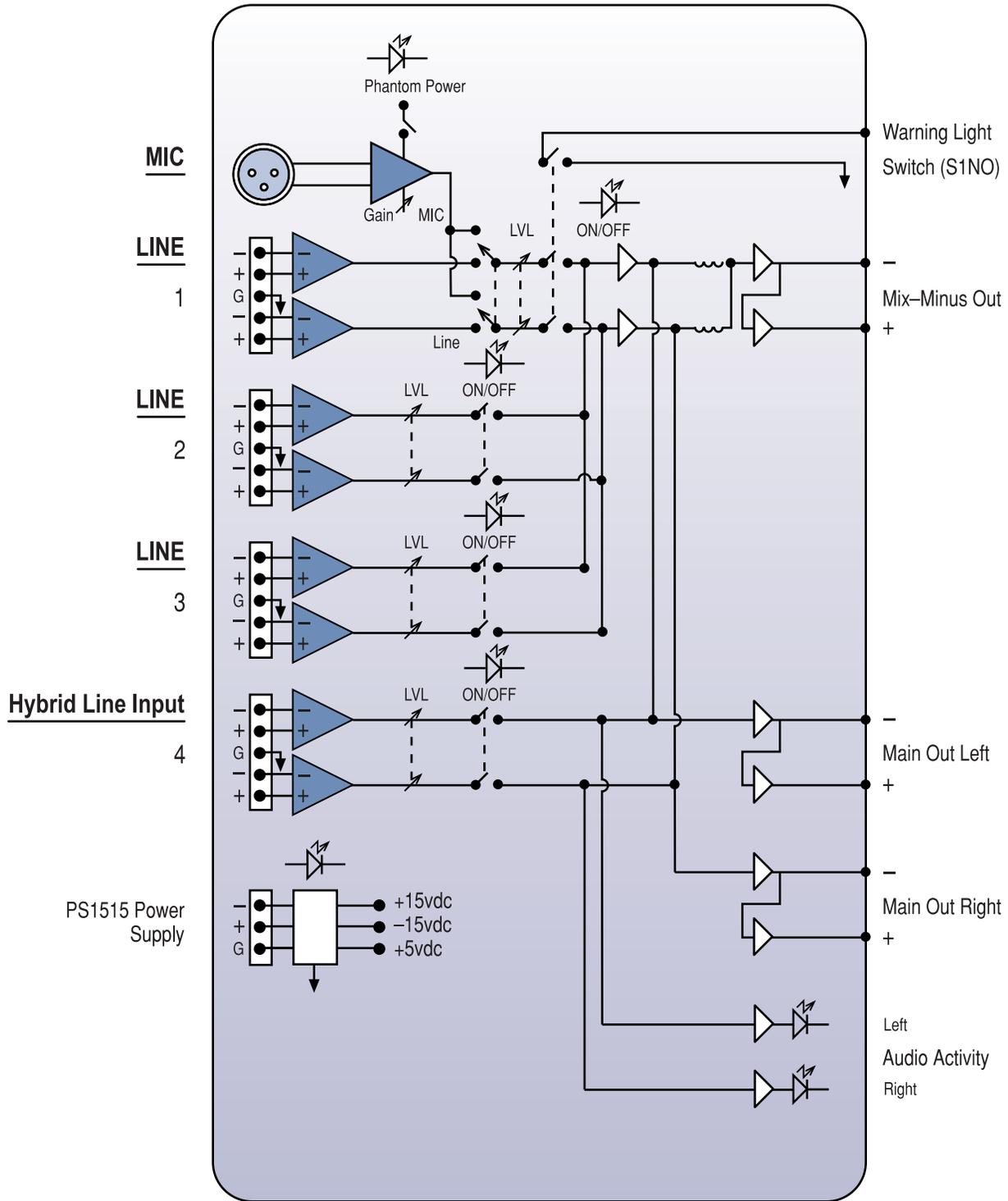
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Functional Diagram



Front Panel



Rear Panel

