



Installation and Operation Manual

for the

10 x 1

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10 x 1 Stereo Audio Switcher/Router

Broadcast Tools, Inc.

INTRODUCTION

Thank you for your purchase of a Broadcast Tools, Inc., 10 x 1 Stereo Audio Switcher/Router. We're confident 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 unit.



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.

Broadcast Tools Products, as 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.

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10 x 1 Stereo Audio Switcher/Router

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PRODUCT DESCRIPTION

The 10 x 1 Stereo Audio Switcher/Router passively switches or routes a variety of electrical signals to a destination. The 10 x 1 Stereo Audio Switcher/Router selects any one of ten stereo inputs to a single stereo output. The 10 x 1 Stereo Audio Switcher/Router provides PASSIVE switching through gold contact relays. The passive switching means that the unit can route a signal in both directions (any one of ten stereo inputs to a single destination, or a single source to any one of ten destinations). Due to the passive nature of the switching, distortion and noise are almost non-existent and in no way change the quality of the signal it is switching. In addition to their normal use with audio signals, the unit can also be used to switch digital signals and telephone lines.

The 10 x 1 Stereo Audio Switcher/Router is controlled by means of front panel switches, and may be optionally controlled from a rear panel 25 pin male D-sub connector or the 2400 baud serial port.

The version of the 10 x 1 Stereo Audio Switcher/Router has features to allow selecting which of any source is active at power-up; audio mute; allowing the user to turn off the audio output when activated; an Enable switch; providing a safety lock to the front panel source selection switches and an serial port; allowing operation from a computers serial port. Source number one is configured to route audio to the output in the case of loss of power to the unit. Sources, which are not selected, are terminated with a 620 Ω , $\frac{1}{2}$ watt load resistor.

APPLICATIONS

Typical switching applications include: EAS switching, Studio selection, Audio processing select, Exciter input select, Remote broadcast input selection, STL source selection, Automation source selection, ISDN routing, Phone hybrid send/receive selection, IFB selection, Satellite audio channel switching and console monitor inputs and outputs selection.

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FRONT PANEL DESCRIPTION

SOURCE SWITCHES

Each switch represents an input to be routed to the switcher's output. The switches are highly reliable switches, which will give the user years of dependable service. Each switch has an LED indicator, which will illuminate when that particular source is routed to the output. When a source is selected, the previous source will be deselected, (interlocked). The **ENABLE** switch must be pressed and held in order for any of the source switches to function. This function may be bypassed, for the ten source switches. The front panel is also equipped with a **MUTE** switch. This switch, when pressed in combination with the **ENABLE** switch, mutes the output.

REAR PANEL DESCRIPTION

The rear panel contains all the inputs, outputs and remote control interfacing connectors. Signal inputs and outputs are routed through pluggable screw terminals. Remote control is accomplished via a 25-pin D-sub connector or the 2400-baud serial port.

POWER

Connect the 2.1mm coaxial type power connector into the unit and the wall transformer into a 120 Vac 50-60 Hz power source. The front panel power LED indicates when power is applied to the unit. (220 Vac 50-60 Hz wall transformer OPTIONAL)

SIGNAL CONNECTOR

Pluggable screw terminals provide connection of the signal (audio) sources.

OPTIONS

Removing the cover and placing a jumper between the "C" terminal may determine input selection at power-up and any one of the numbered input pins on the POWER-UP HEADER, J5. **EXAMPLE:** A jumper between C and the pin labeled 4 would select input 4 at power-up. If audio mute is required at power-up, remove the jumper. Factory power-up default is source # 1. The **Enable** switch is disabled at the factory. Removing the jumper on JP6 may ENABLE this feature.

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REAR PANEL DESCRIPTION, Continued

REMOTE CONNECTOR

A male 25 pin D-sub connector is provided for connection to equipment which will remotely control the 10 x 1 Stereo Audio Switcher/Router. Pulsing the "MUTE" input to ground (low) will turn off the output of the 10 x 1 Stereo audio switcher/router until a front panel source switch is pressed, a remote control input is activated or the unit is powered up.

INSTALLATION

The 10 x 1 Stereo Audio Switcher/Router is very simple to install. The signal inputs, outputs are connected via insulation displacement terminals.

Installation of the 10 x 1 Stereo Audio Switcher/Router consists of six steps:

1. Inspection
2. Removal of the source termination resistors, if applicable
3. Bench test
4. Mount the unit on a rack shelf or a desk top
5. Connect your equipment to the unit
6. Label the front panel switches
7. Serial operation, if applicable

STEP 1: INSPECTION

Please examine your 10 x 1 Stereo Audio Switcher/Router carefully for any damage that may have been sustained during shipping. If any are noted, please notify the shipper immediately. Retain the packaging for inspection by the shipper. The package should contain the 10 x 1 Stereo Audio Switcher/Router, 9 VAC wall power transformer, this manual, 25 pin female D-sub solder connector/shell, 7 foot modular cable, 25 and 9 pin D-sub adapter.

STEP 2: SOURCE TERMINATION RESISTOR REMOVAL

Input sources, which are not selected, are terminated with a 620 Ω load (1/4 watt maximum). If you do not want this load applied across the *deselected sources*, it may be removed from each channel. Each channel has a pair of resistors.

EXAMPLE: Channel 1, relay K1 A&B switches the signal, R28 & R29 are the load resistors. As delivered, all channels are configured with these resistors installed. To remove the load resistors from a channel, locate via the schematic the proper resistors for that channel, cut its leads and discard the resistors.

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INSTALLATION, Continued

STEP 3: BENCH TEST

Place each unit on a workspace and connect power to the unit. Check to see if LED #1 (Switch 1) and the power LED is lit (Source one is the power-up factory default). Connect a audio source to stereo input one and a monitoring device to the output. Verify that audio is present. Repeat the process until each channel's operation has been verified. This would also be a good time to set up the desired jumper options.

STEP 4: MOUNTING

Mount the unit in any EIA format equipment rack.

STEP 5: CONNECT YOUR EQUIPMENT

The 10 x 1 Stereo Audio Switcher/Router interfaces to your equipment (sources, loads and remote control) through the removable rear panel connectors. Follow the legends for the desired audio input and output connections. Remove the first pluggable screw terminal and install your cabling. The 10 x 1 Stereo Audio Switcher/Router provides a means of monitoring source audio though 4.7 K bridging resistors. Be sure as not to *unbalance* this source.

STEP 6: DESIGNATION STRIP

The designation strip is provided in order to write the source descriptions under each source switch.

STEP 7: SERIAL OPERATION

The supplied modular cable, 9 and 25 pin D-sub adapters may be connected to the 10 x 1's rear panel modular connector. Plug in the D-sub adapter into your computers serial port. Plug the supplied wall transformer into a source of 117 vac and the cable end of the transformer into the power receptacle on the 10 X 1. The protocol is as follows: 2400, N81. Flow Control should be NONE, emulation ANSI and the mode should be DIRECT.

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INSTALLATION Continued

To select a channel, send the following string: `*##<cr>`
Where the `<*>` denotes start of string and the `<##>` is a channel 01 through 10 or m, denoting MUTE. Terminate all commands with a carriage return.

Example: `*10<cr>` this string would turn on channel 10. No serial status is provided.

Apply power via the wall transformer to the unit. Your 10 x 1 Stereo Audio Switcher/Router is now fully functional.

REMOTE CONTROL CONNECTOR PINOUTS

The front panel switches are brought out through the rear panel REMOTE CONTROL connector, providing a means of controlling the 10 x 1 Stereo Audio Switcher/Router from a remote point. These digital inputs may be connected to any remote pair of switch contacts, such as external relays, switches, etc. The digital inputs may also be connected to external open-collector circuits or 5-volt logic signals.

CONTROL

J1 Switch Pin numbers:

1	Switch number 1	2	Switch number 2
3	Switch number 3	4	Switch number 4
5	Switch number 5	6	Switch number 6
7	Switch number 7	8	Switch number 8
9	Switch number 9	10	Switch number 10
11	Mute switch		

STATUS

The status signals from the front panel indicator LED's are supplied through the remote control connector as individual open collectors. This may provide status to a remote control point to indicate which source is selected. The status output for the selected output will go low, providing a return for an LED indicator or TTL/CMOS logic. External pull-up resistors may be required in some installations.

J1 Status pin numbers:

12	Status number 1	13	Status number 2
14	Status number 3	15	Status number 4
16	Status number 5	17	Status number 6
18	Status number 7	19	Status number 8
20	Status number 9	21	Status number 10
22	Status MUTE	23	Digital ground
24	Digital Ground	25	Chassis ground

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SPECIFICATIONS

FREQUENCY RESPONSE:	DC to 100 Khz; +/- .1 dB
SIGNAL/NOISE RATIO:	>90 dB
CHANNEL SEPARATION:	>90 dB
SWITCHING METHOD:	<i>Passive.</i> Sealed relays utilizing 2-form-C Bifurcated-Crossbar silver alloy with gold overlay contacts.
LOGIC:	Microprocessor.
OPERATION CONTROL:	<i>Front Panel</i> - Momentary switches. <i>Remote</i> - Momentary or sustained closure to ground. <i>Serial</i> - RS-232c, RJ-11 modular /w 9 pin-D-sub adapter, Receive only, 2400, 8N1
STATUS:	<i>Front Panel</i> - Indicator LED in Switch. <i>Remote</i> - Open collector output, limit current to 50ma per output. Pull-ups may be required.
INTERFACING:	<i>Audio</i> - Rear panel pluggable screw terminals for all audio input and output signals. <i>Remote Control</i> - Male 25 pin, D-sub connector. <i>RS-232</i> - RJ-11 Modular.
POWER REQUIREMENTS:	9 Vac @ 500 ma. 120 Vac 50-60 hz wall transformer. (240 Vac 50-60 hz optional)
PHYSICAL DIMENSIONS:	19" X 1.75" X 4.5" (WHD).
WEIGHT:	6.0 lb.
SHIPPING WEIGHT:	8.0 lb.

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