



## *Installation and Operation Manual*



### **DAS 8.4, Version A/B** ***Eight Input, Four Output Digital Audio (AES) Routing Switcher***

Firmware Version 1.3 (PCB Ver A/B) (v 1.5 multicast)

Manual Update: 04/07/06

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## INTRODUCTION

Thank you for your purchase of a **Broadcast Tools® DAS 8.4, Eight Input, Four Output Digital Audio Routing Switcher** (referred to as the **DAS 8.4** 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® **DAS 8.4**.

## SAFETY INFORMATION

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

## 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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**THANK YOU FOR CHOOSING  
BROADCAST TOOLS® BRAND PRODUCTS!**



**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 DESCRIPTION

The Broadcast Tools DAS 8.4 provides AES/EBU digital audio routing/switching of any one of eight AES/EBU inputs to any/or all four AES/EBU outputs. The DAS 8.4 may be used in Multicast applications, where an AES enabled EAS device assigned to input eight is routed to all four outputs via a contact closure or serial command. When the alert/test is completed, the DAS 8.4 will return to its previous I/O configuration. The DAS 8.4 may be controlled via front panel switches, contact closures, 5-volt TTL/CMOS logic and/or the multi-drop RS-232 serial port. The front panel is equipped with input and output selection push buttons, output assignment LED's, sample rate LED indicators and a headphone jack with level control. Additional features: 96 KHz AES receiver, a 24-bit D/A converter with analog balanced stereo output, headphone amplifier and 16 x 16 GPIO port. Installation is simplified with plug-in euroblock screw terminals. 1-RU chassis.

### PRODUCT FEATURES

- Routing type switching, any one input may be assigned to any/or all outputs.
- Multicast function and remote control port
- Logic functions via microprocessor and non-volatile memory
- Internal digital/analog audio activity/silence sensor monitors any one-output channel. The unit is equipped with four front panel sample-rate LED indicators, SS, AES/EBU Digital Error and ACT LED indicators; adjustable analog Silence Sensor/AES Digital error alarm delay and restore duration. Analog silence sensor sensitivity is factory set at -30db.
- Front panel input selection switches are provided for each input channel with separate output indicator LEDs.
- Power-up selection of inputs to outputs, mute or last source selected.
- Eight user configured macros.
- Most configuration options via rear panel dipswitches.
- 16 input GPI port (Remote Control or PIP) with LED indicator.
- 16 open collector channel status outputs or programmable via burst commands.
- Remote control of front panel functions and status.
- Multi-drop RS-232 serial port with data activity LED.
- Multiple units may be looped-thru to expand outputs.
- Plug-in euroblock screw terminals for ALL connections.
- Multi-voltage power supply (220v CE, optional).
- 1-RU chassis.

## PRODUCT DESCRIPTION

### Front Panel:

The DAS 8.4 is a 1 - RU device (19" w x 1.75" h x 10" d). The front panel supports 15 selection switches and 43 LED indicators.

### Rear Panel:

Installation is simplified with plug-in euroblock terminals. The DAS 8.4 may be pre-wired and installed in minutes. The multi-drop RS-232 modular connection and a 7-pin DIN power connector are provided for the supplied multi-voltage power supply.

### Switches:

Fifteen pushbutton switches (The "PGM" switch is hidden) that may be used to mute or select input and output channels. Eight macros may also be programmed and selected.

### LED Indicators:

The DAS 8.4's 43 front panel LED indicators provide operational display of the following information:

- Four indicators per input channel display which output channel the input is connected.
- Sample rate display of 32, 44.1, 48 and 96Khz
- "PIP" Parallel Input Port active, indicating any change with the 16 input "Pulse Stretcher" ports.
- Macro select LED indicator
- Silence sensor alarm LED
- AES/EBU digital "error" led indicator.
- Program activity led.
- Analog audio activity LED.
- Unit power and serial data activity

### Controls:

#### AES Inputs:

Each of the eight AES inputs is supplied with a fixed termination for 110.

#### AES Outputs:

The DAS 8.4 provides four selectable AES outputs.

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## DESCRIPTION

### Digital, Analog Audio and Activity Sensor.

The DAS 8.4 contains an 8 – 96kHz AES receiver and 24-bit D/A converter. The AES receiver may be jumpered to monitor any one of the four AES outputs. The AES receiver provides data integrity information to the microcontroller, which is used to indicate a data error. The D/A converter furnishes a stereo feed to the balanced analog audio output amplifier, headphone amplifier and level control, along with the audio activity and silence sensor circuitry. The factory default time delay and restore delay is set at 10 seconds, with a fixed signal threshold of -30dB. Upon silence detection for the user-selected time, the “ACT” indicator is extinguished for the duration of silence and the serial “SS/DIG Error” status is sent. When audio returns and the restore time delay has expired, the front panel “ACT” led will illuminate and the serial “SS/DIG Error” status is sent. The “SS/DIG Error” may be programmed for:

- Number of seconds of silence that must be present before an alarm state is reached.
- Number of seconds of audio presence after an alarm state before the “SS/AES/EBU “DIG Error” led illuminates.

### PIP Input:

The **Parallel Input Port** (GPI) with the Programmable Pulse Stretcher provides 16 pulse-stretched parallel 5-volt TTL/CMOS compatible inputs. The inputs are pulled high to 5 volts through a 20KW resistor and are activated by pulling the input to ground for a minimum of 40ms. These inputs supply status to any serial polling device (when the unit ID is set to 0, no polling of inputs is required). For all PIP inputs a pulse of specified minimum input duration (000 to 2.55 Seconds) causes the status to go true until the end of the input pulse. The pulse width may vary between the specified value and 10 ms less than that value. This allows the polling computer more time to detect an input change.

### “Open Collector” Status Outputs, 16 Port Output Control

The DAS 8.4 provides sixteen open collector status outputs. The status outputs may be configured to operate in one of three modes:

- The status outputs follow the first eight-associated channel.
- The status outputs a one-second pulse when the first eight-associated channel is selected.
- RS-232 serial burst mode control

## Serial Communication:

The DAS 8.4's serial communication is configured for multi-drop RS-232, allowing up to 8 - DAS 8.4's on the same computer's serial port. Burst mode allows a computer or ASCII terminal to control and interrogate the unit. This section defines all burst mode commands. Each burst mode command starts with an asterisk ("\*"). Next is a single decimal digit that corresponds to the unit (ID) address 0-7. Following that are one or more ASCII characters specifying the command. No carriage-return or line-feed is required to terminate the command except for those few commands of variable length, if the maximum length is not sent. If acknowledgements are enabled, successful commands are responded to with "RRR" while errors get an "EEE" response. The syntax of each command is given below. The syntax shows the command exactly as it should be sent, except that lower case characters represent values that should be substituted:

## User Programming:

The DAS 8.4 programming is stored in non-volatile memory. Configurations are set with selection dipswitches and computer commands.

## Inspection:

Please examine your DAS 8.4 carefully 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 contains the DAS 8.4, Multi-voltage "Lump-n-Line" power supply, depluggable screw terminal mating plugs, Installation manual, reversed modular serial cable and the 9-pin D-Sub (S 9) adapter.

## Setting Operation "DIP" Switches:

The DAS 8.4 is equipped with an 8-position "PGM" DIP Switch. The DIP Switch specifies 3-bit unit ID, baud rate, power-up modes, remote control and other features listed below. The dipswitch (SW16) is located on the rear panel.

**DIP (SW16) Switch Functions**

Switch Number	Default Setting	Function
1	OFF	Add 1 to Address (base address is 0)
2	OFF	Add 2 to Address (base address is 0)
3	OFF	Add 4 to Address (base address is 0)
4	OFF	Baud Rate: OFF = 9600, ON = 38400
5	OFF	Open Collector Operation Mode
6	OFF	Open Collector Operation Mode
7	OFF	Power up mode (Off = User programmable)
8	OFF	PIP/Remote Control (Off = Remote Control)

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## DESCRIPTION

## INSTALLATION GUIDELINES

### Address (ID) DIP Switches

SW16-1	SW16-2	SW16-3	ID
OFF	OFF	OFF	ID = 0
ON	OFF	OFF	ID = 1
OFF	ON	OFF	ID = 2
ON	ON	OFF	ID = 3
OFF	OFF	ON	ID = 4
ON	OFF	ON	ID = 5
OFF	ON	ON	ID = 6
ON	ON	ON	ID = 7

### Baud Rate DIP Switch

SW16-4	Function
OFF	9600 baud
ON	38400 baud

### Open collector DIP Switch

SW16-5	Function
OFF	Follow (See SW16-6)
ON	Pulse (See SW16-6)

### Open Collector Operation Switch

SW16-6	Function
OFF	Enable SW16-5
ON	OC's software control

### Power up/Last source DIP Switch

SW16-7	Function
OFF	User Programmable
ON	Last Source(s) selected



## INSTALLATION GUIDELINES

PIP/Remote SW16-8	Mode DIP Switch Function
OFF	Remote Control
ON	PIP inputs enabled

### Front Panel Switches

Switch(es)	Function
01-08	Channel Inputs
Output 1,2,3,4	Output selector
MUTE	Mutes selected channel
MACRO	Selects up to 8 Macro's
Hidden "PGM"	Special programming functions

 **NOTE:**

*To mute any/or all output channels assigned to an input, hold down the mute button and press the desired input button.*

Operation	
Action	Result
Hold down the Output 1 button, then push the desired input channel button	Selected input channel is connected to Output 1. To mute the active channel, simultaneously hold down the mute switch and press the desired input channel button.
Hold down the Output 2 button, then push the desired input channel button	Selected input channel is connected to Output 2. To mute the active channel, simultaneously hold down the mute switch and press the desired input channel button.
Hold down the Output 3 button, then push the desired input channel button	Selected input channel is connected to Output 3. To mute the active channel, simultaneously hold down the mute switch and press the desired input channel button.
Hold down the Output 4 button, then push the desired input channel button	Selected input channel is connected to Output 4. To mute the active channel, simultaneously hold down the mute switch and press the desired input channel button.

**NOTE:** To mute any/or all output channels assigned to an input, hold down the mute button and press the desired input button.

## INSTALLATION GUIDELINES

### Power-Up Feature, user programmable:

#### To select a channel configuration at power-up:

- 1 - Verify that dipswitch SW16-7 is OFF.
- 2 - Select the desired input and output channel configuration.
- 3 - Press and hold the hidden “PGM” button with a non-metallic object.
- 4 - Press the output 1 button.
- 5 - The macro led will flash for 2 seconds.
- 6 - Release both switches.
- 7 - Your power up configuration is saved.

### Power-Up Feature, last source selected:

- 1 - Verify that dipswitch SW16-7 is ON.
- 2 - The DAS 8.4 will power up with whatever channel configuration was present at power off.

### Macro Feature:

Set the input/output configuration desired, press the hidden “PGM” button with a non-metallic object and then press the macro button along with the desired input channel button.

To recall the macro, press the macro button and any one of the desired stored macro's using the input channel buttons.

### Multicast Mode:

Verify that dipswitch SW16-8 is OFF. Connect the output of your AES enabled EAS unit to AES input eight. Connect the sustained relay contacts of your EAS unit between ground and remote control input 16 on the DAS 8.4. When the EAS unit trips, the DAS 8.4 will switch AES input eight to all four AES outputs. The four led's associated with input eight will start to flash in sequence. When the alert/test is completed, the relay contact of the EAS unit should open and the DAS 8.4 will return to its previous I/O configuration. **NOTE: You may also put the DAS 8.4 into Multicast mode via serial commands listed on page 15.**

### Mounting:

The DAS 8.4 is designed to be rack mounted in a standard 19” rack, (1-RU). It should be mounted in an area that is accessible from the rear and preferably away from sources of heat. We recommend before permanently installing the DAS 8.4, you bench test and become familiar with the operation of the unit.

### Power Supply Connection:

Install the 7-pin DIN connector into the receptacle on the DAS 8.4. When ready, plug the Lump-N-Line power supply cable into the appropriate AC receptacle.

### Connecting The Digital Inputs, Outputs, PIP, remote control inputs and OC's, see NOTE.

It is recommended that all cables connected to the DAS 8.4 be looped through ferrite cores to suppress RF. Surge protection with RF filtering such as the Tripp Lite “ISOBAR 4” is also suggested for the power transformer. The purchase of an inexpensive uninterruptible power supply (UPS) will provide back up in case of power outages. Check out our web site for lightning protection links.



## CAUTION!

*Installation of the DAS 8.4 in high RF environments should be performed with care. Shielded cable is suggested for all control, audio inputs and outputs. All shields should be tied to the “CHASSIS GROUND” terminal. The station ground should be connected to the chassis ground screw (CH1) located behind J1 as viewed from the rear. For lightning protection devices, check out [www.polyphaser.com](http://www.polyphaser.com) and [www.itwlinx.com](http://www.itwlinx.com).*



## NOTE:

**Connection grid on page 18.** *The DAS 8.4 interfaces to your equipment are through depluggable rear panel screw terminals. Refer to the supplied connection template. Remove each screw terminal, strip each conductor, insert the conductor into the terminal and screw down the capture screw. The terminals accommodate wire sizes from 16 - 28 AWG solid or stranded wire.*

## INSTALLATION

## Remote Control:

Most front panel functions of the DAS 8.4 may be remote controlled via plug-in euroblock terminals located on the rear panel. The DAS 8.4 accepts momentary contact closures, open collector or 5-volt TTL/CMOS logic levels. Open collector status is provided. Multicast mode requires a sustained contact closure on remote input 16. **NOTE: Refer to the connection grid on page 18.**

## Serial Interface:

The Serial Interface uses a multi-drop RS-232 transceiver.

## Front Panel Switches:

Switch(es)	Function
1-8	Input Channels or Macros 1-8
Output 1	Output 1 selection
Output 2	Output 2 selection
Output 3	Output 3 selection
Output 4	Output 4 selection
Mute	Turn off selected I/O
Macro	Select any one of 8 Macros
Hidden "PGM"	Special programming functions

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## INSTALLATION

## INSTALLATION GUIDELINES

### Front panel LED indicators:

Front Panel LED's	# LED's	Activation Event/Mode	Activation Behavior
Inputs connected to Output 1	8 Green	State of Connection	On if connected
Inputs connected to Output 2	8 Yellow	State of Connection	On if connected
Inputs connected to Output3	8 Red	State of Connection	On if connected
Inputs connected to Output 4	8 Red	State of Connection	On if connected
Power Status	1 Green	Valid Power	On
PGM	1 Red	In program Mode	On if active
Macro	1 Yellow	Macro selection	On if active
"PIP" Active	1 Green	Any valid "PIP" input	On if active
"ACT"	1 Green	Analog Audio Activity	On if active analog audio is detected on selected output.
SS	1 Red	Analog Audio Silence Sensor	On if silence is detected on selected output.
Digital Error	1 Red	Sample Rate Converter Digital error	On if digital error is detected on selected output.
Sample-rate	4-colors	Four sample rates	Sample rate of input signal connected to monitored output.

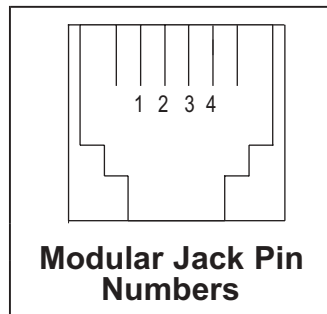
### Connecting the RS-232 Serial Port:

Use the provided modular 9-pin D-sub connector adapter (S9) and reversed modular cord to connect the DAS 8.4's serial connector to your serial port.

The pin out of the adapter is shown below.

RJ-11 Adapter Pin	DB-9 D-Sub	DAS 8.4 (Point of view)
4	3	RS-232 Receive
3	2	RS-232 Transmit
2	5	Ground

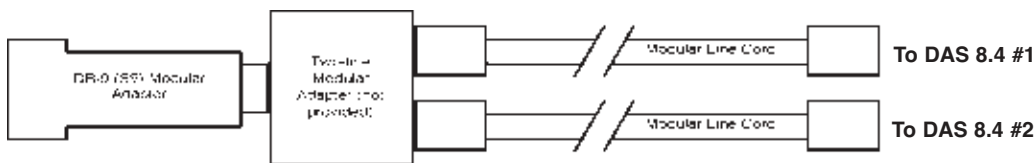
## INSTALLATION GUIDELINES



The DAS 8.4 is supplied with a reversed modular cable and a 9-pin D-connector modular adapter (S9) for serial control. Only use the reversed modular cord that is supplied with the DAS 8.4 or a replacement that reverses, such as Radio Shack Cat No. 279?347. Connect the cable between the DAS 8.4 and your computer. The DAS 8.4 may operate at baud rates 9600 or 38400 baud. The unit is shipped set for 9600 baud, with 8 data bits, no parity and one stop bit. Load your favorite communication software package Windows 95/98/ME/NT/2000/XP HyperTerminal, etc.) Using the protocol of 9600-N-8-1. Set the mode to: DIRECT, Flow Control to: NONE and emulation to: ANSI.

### Connecting Two DAS 8.4's to a Single Computer's Serial Port:

Multiple DAS 8.4's may be cascaded serially to operate from the same serial port. The first step is to assign unit ID's to each DAS 8.4. One suggestion is to assign 1 to the first DAS 8.4 and 2 to the second switcher. The second step is to parallel the serial ports of the DAS 8.4's. Plug the male end of the duplex modular adapter into the supplied female (S9) DB-9 to RJ-11 adapter, then attach the supplied reversed modular line cords into each of the duplex modular adapter receptacles (Radio Shack Cat No. 279-0357) and the other ends into each DAS 8.4 modular receptacles. See the diagram below. NOTE: Three or more DAS 8.4's may be daisy chained by using the above description and a Radio Shack Cat No. 279-0410, 5-jack modular adapter.



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### INSTALLATION

### Serial Control:

The unit is controlled in either Menu or Burst mode. It can run at the following data rates:

- 9600 Default
- 38,400

Serial communications is multi-drop RS-232. Commands may be entered either via a menu (menu mode) or a short form code (burst mode). All commands and responses use normal ASCII characters, facilitating scripting. A burst mode command starts with an asterisk (“\*”) followed by the device (ID) address as a single decimal digit. A burst mode command must be entered within 5 seconds or it will time out. The command to enter menu mode starts with an asterisk (“\*”) followed by the device (ID) address as a single decimal digit and then MM. The menu mode displays certain parameters, and allows the setting of these parameters. In both cases, device (ID) address (0-7) is specified with the on-board dipswitches.

**Type \*0MM, follow the prompts on the pop-up menu.**

### Menu Mode:

The command to enter menu mode starts with an asterisk (“\*”) followed by the device (ID) address as a single decimal digit, then the **MM** command. **NOTE: Commands you type will NOT be seen, unless you turn “Echo On” in HyperTerminal.** The menu mode displays advanced configuration parameters. Unit ID, Baud rate and other configurations are set via the on-board dipswitches (SW16) at the rear of the unit.

#### Broadcast Tools® DAS 8.4 v 1.3 - Setup Menu

- |   |                 |
|---|-----------------|
| 1 - Set PIP Minimum (0 - 2.55 sec)          | - Now: 0.02     |
| 2 - Set Remote Mode Open Collector Mode     | - Now: "Follow" |
| 3 - Set Silence Sense Acquire Delay (sec)   | - Now: 10       |
| 4 - Set Silence Sense Restore Delay (sec)   | - Now: 10       |
| A - Save Current Channel State for Power Up |                 |

C - Show Current Configuration

F - Set Factory Defaults

Enter Selection, or Q to quit:

## Serial Burst Mode Commands:

Burst mode allows a computer or ASCII terminal to control and interrogate the unit. This section defines all burst mode commands. Each burst mode commands starts with an asterisk (“\*”). Next is a single decimal digit that corresponds to the unit (ID) address 0-7. Following that are one or more ASCII characters specifying the command. No carriage-return or line-feed is required to terminate the command except for those few commands of variable length, if the maximum length is not sent. If the command requested a response, the response will consist of an upper case “S”, followed by the unit address, and then the specific response. If acknowledgements are enabled, successful commands are responded to with “RRR” while errors get an “EEE” response. The syntax of each command is given below. The syntax shows the command exactly as it should be sent, except that lower case characters represent values that should be substituted:

### Glossary Of Command Notation:

Character String	Meaning	Allowable Values
u	Unit ID	0-7
ii	Input Number	01-08
o	Output Number	1,2,3,4
oo	Open Collectors	01 – 16

## Set-up Commands:

- \*uCCx - Ignore, set by switches
- \*uCEx - Enable Error and Good Responses - Where x = Y to enable and N = disable. In this mode, when a command is sent that is in error, the unit will reply (possibly before receiving the entire command) with “EEE.” If the command is sent correctly, the unit will reply with “RRR.”
- \*CDEF - Reset to factory defaults
- \*uCIIittt - Set “PIP” Programmable Pulse Stretcher Input Duration = ttt: 000 – 255  
Off to 2.55 Seconds.
- \*uCIOiittt - Ignore, send OK
- \*uCLx - Lock Front Panel if x is “L”. Unlock Front Panel if x is “U”
- \*uCRtt- Set Open Collector Momentary Pulse Length – tt:00-99 for 00 – 9.9 Seconds
- \*uCSAtttt - Set digital data error and/or silence sensor time delay to tttt seconds (0002 – 9999), 0000 = OFF
- \*uCSBtttt - Set digital data error and/or silence sensor restore delay to tttt seconds (0002 – 9999), 0000 = OFF

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## INSTALLATION

## INSTALLATION GUIDELINES

- \*uCSDttt - Ignore, send OK
- \*uCST - Ignore, send OK
- \*uCSVttt - Ignore, send OK
- \*uMCnn - Save current audio state as Macro #nn (01 → 08)
- \*uMInn - Invoke macro # nn (01 → 08)
- \*uMM - Enter menu mode if unit ID = 0
- \*uMS - Ignore, send OK
- \*uN - Ignore, send OK

### Real Time Control Commands:

- \*uDxx - Delay xx seconds before processing next command.
- \*uZx - Echo character “x” to serial control port. This is useful in debugging command strings.

### Open Collector output Control Commands:

- \*uOOrrL - Latch open collector “rr”
- \*uOOrrF - Unlatch open collector “rr”
- \*uOOrrP - Pulse open collector “rr”

### Channel Switch Control Commands:

- \*uiio - Apply input “ii” to output
- \*uiiA - Apply input “ii” to ALL outputs
- \*uiiMA - Mute input “ii” for all outputs
- \*uiiMo - Mute input “ii” for output “o”
- \*uMo - Mute output “o”
- \*uMA - Mute all outputs

### Multicast Switch Control Commands:

- \*uEY - Turn ON Multicast mode
- \*uEN - Turn OFF Multicast mode

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## INSTALLATION





## INSTALLATION GUIDELINES

### Remote Control connector TB-1

**18-position double-decker connector on the rear of the switcher.**

OC 1	OC 2	OC 3	OC 4	OC 5	OC 6	OC 7	OC 8	OC 9	OC 10	OC 11	OC 12	OC 13	OC 14	OC 15	OC 16	Gnd	Gnd	Top
PIP 1	PIP 2	PIP 3	PIP 4	PIP 5	PIP 6	PIP 7	PIP 8	PIP 9	PIP 10	PIP 11	PIP 12	PIP 13	PIP 14	PIP 15	PIP 16	Gnd	Gnd	Bottom SW16-8 <b>ON</b>
IN 1	IN 2	IN 3	IN 4	IN 5	IN 6	IN 7	IN 8	OP 1	OP 2	OP 3	OP 4	Mute	Multi-cast mode	Macro		Gnd	Gnd	Bottom SW16-8 <b>OFF</b>

**Digital inputs TB2 (IN1), TB3 (IN2), TB4 (IN3), TB5 (IN4), TB6 (IN5), TB7 (IN6), TB8 (IN7) and TB9 (IN8).**

Pin 1 +	Pin 2 -	Gnd
---------	---------	-----

**Digital outputs TB10 (OP 1), TB11 (OP 2), TB12 (OP 3) and TB13 (OP 4).**

Pin 1 +	Pin 2 -	Gnd
---------	---------	-----

**Balanced stereo analog audio output TB14.**

Left -	Left +	Gnd	Right -	Right +
--------	--------	-----	---------	---------

## DAS 8.4 SPECIFICATIONS \* Audio Precision Test Equipment

<b>Inputs:</b>	Level - 0.1Vp-p minimum Eight - Transformer isolated, AES/EBU, 110-ohm termination. May be removed for loop-thru operation.
<b>Outputs:</b>	Four - Transformer isolated, AES/EBU, 110-ohm termination. 1 - Analog Headphone - 24 to 600 ohm. 75 mw peak. Front panel ?" phone jack with level control. 1 - Analog - Balanced Stereo, +24dBm peak, +4dBm nom. 100 ohm. 20 to 20kHz +/- .25dB. .01%.
<b>Sample Rate / A/D:</b>	8 to 96 kHz / 16 - 24 bit A/D.
<b>Switching Method:</b>	Asynchronous digitally controlled multiplexers.
<b>Logic:</b>	Microprocessor / Non-volatile memory.
<b>Operation Control:</b>	Front Panel - Momentary push button switches. Remote - Sixteen momentary closures to ground. >40ms. RS-232 - Multi-drop Serial 9600 or 38.400 baud, 8N1.
<b>Status:</b>	Front Panel - LED indicators. Remote - Sixteen open collector outputs. RS-232 - Multi-drop Serial 9600 or 38.400 baud, 8N1.
<b>Interfacing:</b>	AES/EBU digital Audio & Remote Control - Rear panel plug in euroblock terminals. Accommodates 16 - 28 AWG wire. Mating connectors supplied. RS-232 Serial - RJ-11/6P4C Modular, female DB-9 adapter and cable supplied.
<b>Power:</b>	Version 0: 16Vac @ 600ma. Version A/B: 34.5 Vac/ct @ 500 ma / 10.5 Vac @ 1 amp, 120 Vac 50-60 Hz "Lump in the line" power transformer. Supplied. (CE 240 Vac 50-60 Hz optional)
<b>Mechanical:</b>	19" x 1.75" x 10.0" (WHD) / Weight: 5.0 lbs.

### WEBSITE:

*Visit our web site for product updates and additional information*



### 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.

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