

Installation and Operating Instructions for the 8428A Programmable 8 Channel Attenuator

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1 POWER CONNECTIONS

The power transformer has two independent 120 V ac primary windings and each has a 100 V ac tap. The windings can be series-connected or connected in parallel to match the required ac line voltage. This is accomplished by installing a short jumper wire(s) across the numbered pads as shown in Figure 1 and Table I.

1.1 For 120 V ac, 50/60 Hz Operation

The 8428A is normally connected for 120 V ac operation from the factory. Before powering the unit, however, it is always prudent to check the actual internal connections with those shown in Table I.

1.2 For Other ac Line Voltages

To connect the power transformer's primary windings for other ac line voltages, proceed as outlined below.

1. Unplug the 8428A from the ac line.
2. Remove and save the 10 screws that secure the top cover to the equalizer. There are 3 across the top-front edge of the front panel, 3 across the top-rear edge of the top cover, and 2 on either side.
3. Referring to Figure 1, remove and salvage the jumper wire(s) from the board between pads 1-6 and 3-4.
4. Referring to Table I, solder the wire(s) to the designated pair of pads corresponding to the desired ac line voltage.
5. Replace the slow-blow fuse provided in the fuse holder with one having the proper rating as determined from Table II. Apply the proper voltage and fuse stick-on labels.
6. Re-install the equalizer's top cover with the 10 screws previously removed.

Table I Voltage Conversion Chart

Line Voltage	Connect:
100 V ac	2-6, 3-5
120 V ac	1-6, 3-4
200 V ac	2-5
220 V ac	2-4
240 V ac	1-4

Table II Primary Fuse Values

Line Voltage	Fuse Value
100 V ac	½ amp S, 250 V
120 V ac	½ amp S, 250 V
200 V ac	¼ amp S, 250 V
220 V ac	¼ amp S, 250 V
240 V ac	¼ amp S, 250 V

1.3 Special Meanings for the Power LED

The power LED should always be brightly illuminated during normal operation. If the LED is ever dimly illuminated, it can mean that the digital circuitry is not functioning or that the non-volatile RAM memory is not retaining data. In either case, the unit must be returned for repair. Refer to Section 8 for instructions on returning the unit.

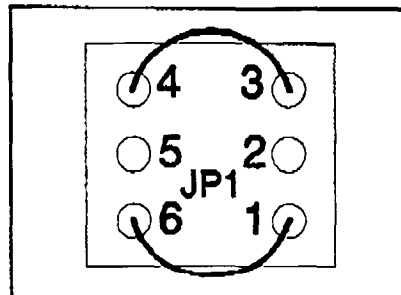


Figure 1 Jumper Area for Primary Voltage Selection

2 INSTALLATION

2.1 Rack Mounting

The attenuator may be installed in a standard 19 inch (48.3

cm) equipment rack. It requires one rack unit (1.75 inches or 4.45 cm) of vertical rack space and secures to the rack cabinet with the four screws and cupwashers provided in the hardware kit.

2.2 Ventilation

The attenuator must be adequately ventilated to avoid an excessive temperature rise. It should not be used in environments where the ambient temperature exceeds 60 °C (140 °F). To determine the ambient air temperature, operate the equipment in the rack until the temperature stabilizes. Measure the ambient air with a bulb-type thermometer held at the bottom of the uppermost unit (amp, EQ, attenuator, etc.). Do not let the thermometer touch the metal chassis because the chassis may be hotter than the ambient air. If the air temperature exceeds 60 °C, the equipment should be spaced at least one rack unit apart, or a blower installed to provide sufficient air movement within the cabinet.

3 SIGNAL CONNECTIONS

Removeable screw terminal connectors, sometimes referred to as "phoenix" connectors, are used for all audio signal input and output connections as well as for the remote volume controls. See Figure 2.

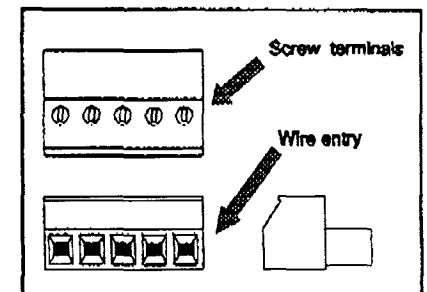


Figure 2 Phoenix-type Connector

3.1 Input Signal Connections

Connect the non-inverting side of the line to the "+" input

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terminal and the inverting side to the “-” input terminal. A small section of the rear panel is shown in Figure 3. In keeping with standard wiring practices, the shield should not be connected at this end; it should be connected only at the sending end.

For unbalanced inputs, connect the “hot” wire to the “+” input terminal and the returning shield wire to the “G” input terminal. To avoid a 6 dB drop in level, strap the “-” input terminal to “G”.

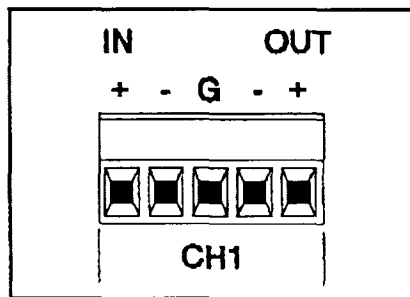


Figure 3 Rear Panel Connections

3.2 Output Signal Connections

Connect the non-inverting side of the line to the “+” output terminal, the inverting side to the “-” output terminal, and the shield to the “G” output terminal.

For unbalanced (single-ended) outputs, connect the “hot” wire to the “+” output terminal and the shield wire to “G”.

NOTE: DO NOT strap the “-” output to the “G” terminal unless an optional output isolation transformer is installed.

3.3 Remote Volume Control (RVC) Connections

Remote volume controls (RVCs) can be used with the 8428A by enabling a user-specified number of controls through software. When enabled, the channels with RVCs respond to their individual control settings. If fewer than eight channels are specified, the remaining channels

respond to contact closures on the remote memory select connector. For information on enabling RVCs through software, refer to Section 11.21 in the software guide (Altec part #42-02-087645).

To connect a remote volume control to a channel of the 8428A, use a 10 k Ω (minimum) linear potentiometer and connect the wiper to the “+” terminal of the desired channel and the counterclockwise end to the associated “G” terminal. Refer to Figure 4.

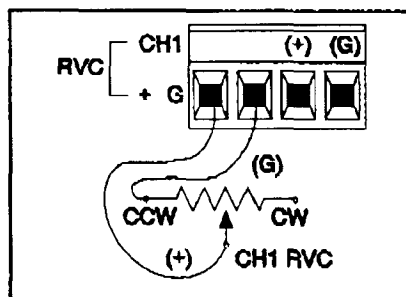


Figure 4 RVC Connections

NOTE: Since no audio signals are imposed on the cable, almost any length of wire can be used but its resistance must be taken into account relative to the potentiometer's resistance value. A high resistance cable will decrease the maximum level obtainable when the wiper of the pot is full clockwise.

3.4 Remote Memory Select (RMS) Connections

The attenuator may be enabled through software to respond to contact closures connected to the “REM MEM SEL” (RMS) connector on the rear panel. This permits an external contact closure (relay, switch, etc.) to remotely select one of the preset memories and reprogram the channels automatically.

A D-subminiature 9-pin male connector is provided on the panel. In the accessory kit is a mating female connector which may be used as the interface. Figure 5 shows a typical wiring diagram permitting remote memory selection. For information on enabling the RMS response mode, refer to Section 11.20 in the accompanying software guide (Altec part #42-02-037645).

NOTE: On power-up, the 8428A responds to the last programming mode used. For example, if the PA-422 programming mode was last enabled, the next time the unit is powered it will again be in the PA-422 programming mode. This means that changes at the RVC or RMS inputs will be ignored. If PA-422 was disabled, the unit will respond solely to contact closures on the RMS connector and/or to RVCs (if any are enabled).

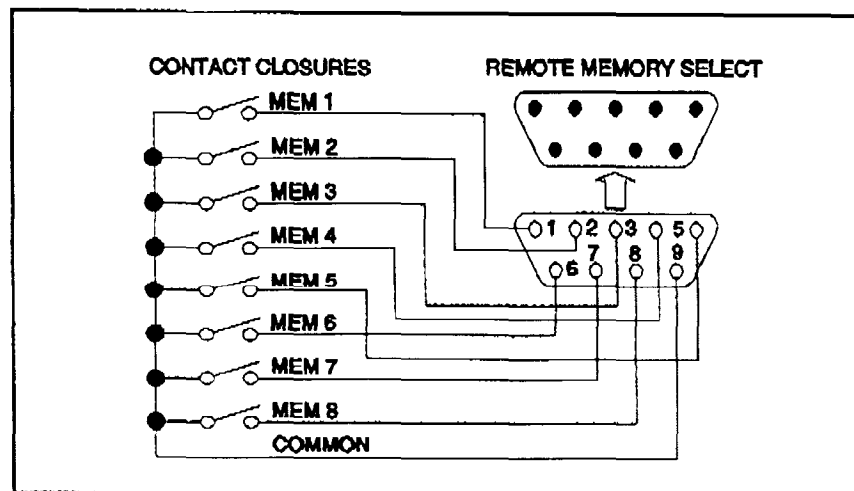


Figure 5 Remote Preset Memory Selection via Contact Closures

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NOTE: If the RMS connector does not sense any closures and the RMS/RVC mode is enabled, the 8428A will reprogram its eight channels with the values stored in the DEF memory (memory #0).

3.4 Remote Amplifier Monitor (RAM) Connections

The 8428A has the ability to monitor external binary events through the "REM AMP MON" (RAM) connector on the rear panel. As the name implies, it is primarily intended as a sense input for power amplifiers which have contact closure outputs indicating a failure.

The RAM connector is a D-subminiature 9-pin male connector. Included in the accessory kit is a mating female connector which may be used as the interface.

The RAM input can be used to monitor the eight individual channel relay failure outputs in the 2280B Incremental Mainframe system. A wiring diagram for the interconnecting cable is shown in Figure 6. Pin 1 of the 9-pin RAM connector senses the failure relay state of the 2271 power amplifier installed in channel #1. Pin 2 senses channel #2, etc. Pin 9 is common.

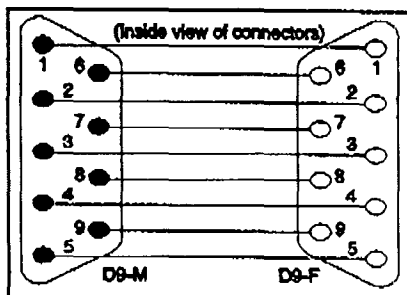


Figure 6 Interconnection Cable for the 2280B.

NOTE: Since the individual channel failure relays are normally open, the sensing state of the RAM connector should be set through the software to interpret contact closures as failures. Refer to

Section 11.19 in the software guide (Altec part #42-02-037645).

When the RAM connector is used with 2280A mainframes, eight individual mainframes can be sensed.

4 System 422™ DIGITAL CONTROL AND THE PA-422 COMMUNICATIONS INTERFACE

The PA-422 communications interface is a high speed bi-directional serial-data transmission system. Since the digital signal lines are electronically-balanced, the programmable devices can be quite far, up to 1.2 kilometers (4,000 ft.) from the controlling means. The following sections describe the setup required to take full advantage of the interface.

4.1 Setting the Device Address

Since up to 250 programmable devices may be connected to one PA-422 output port, each device must have a unique "telephone" number assigned. This is accomplished using the 8-position DIP switch located at the rear panel. Since there are 8 binary-weighted switches, there can be at most 256 possible addresses (telephone numbers). However, six addresses are reserved for future system use. The reserved address codes are 0, 251, 252, 253, 254, 255. Therefore, use only address codes from 1 to 250 as device addresses.

When looking at the rear of the unit, the 8 switch positions on the DIP switch are numbered from 1 to 8 (left to right). The "ON" position of each switch is towards the TOP. To set the switches to a particular address code, refer to the chart in the Appendix.

NOTE: Each address code must be unique. DO NOT set the switches on two (or more) devices

to the same address code setting unless the devices are connected to two different PA-422 output ports.

4.2 Interconnecting PA-422 Programmable Devices

Each PA-422 device communications interface has an input port and an output port to serially-link (daisy-chain) additional devices. The input port connects to the preceding device or to the controller and the output to the input of the next device.

4.2.1 Making Additional Linking Cables

If several attenuators will be installed within the same rack cabinet, you may want to build short linking cables to daisy-chain the devices. Shown in Figure 7 is the wiring diagram of the cable. The cable should be Belden Part No. 9681 or the equivalent.

4.3 Programming the 8428A Attenuator from a Computer System Using the PA-422 Interface

To program the equalizer, you must use Acousta-Graphics™ Release 2.0 for the 8428A Programmable Attenuator. Refer now to the accompanying software guide (Altec part #42-02-037645). Should assistance be required, please refer to Section 17 on page 15 of the same guide.

4.3.1 Significance of the Status LED

Normally, the Status LED is brightly illuminated. When a PA-422 command is issued, the status LED on the receiving device(s) will dim for approximately 1/2 second. The resulting "blink" serves to identify the attenuator(s) from others mounted in a rack.

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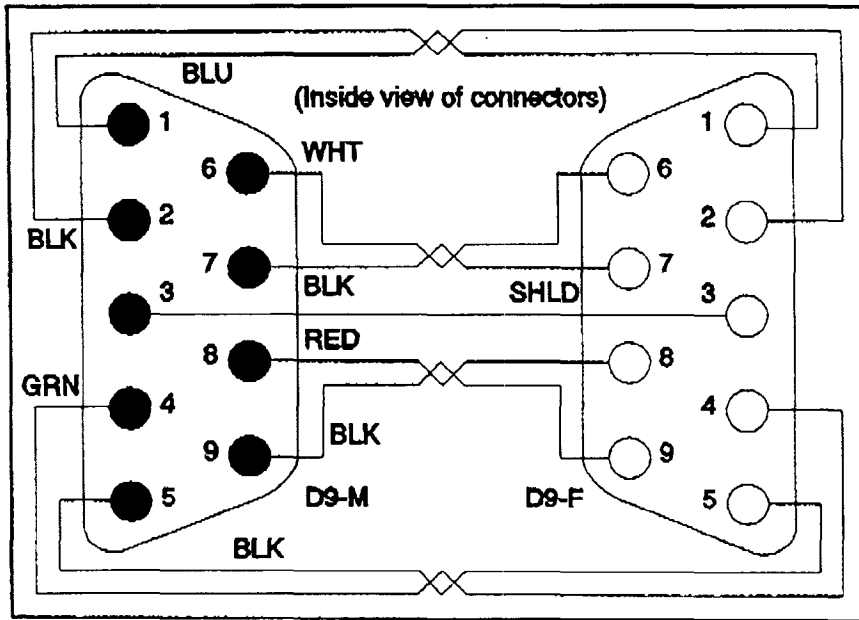


Figure 7 PA-422 Linking Cable

Table III Component Designators for Input and Output Transformers, and Zero Ohm Jumpers

Channel #	Designators
1:	T2, R10, R11, T8, R27, R28
2:	T4, R36, R37, T5, R53, R54
3:	T6, R90, R62, T7, R79, R80
4:	T8, R88, R89, T9, R105, R106
5:	T10, R146, R114, T11, R131, R132
6:	T12, R140, R141, T18, R157, R158
7:	T14, R166, R167, T15, R183, R184
8:	T16, R192, R193, T17, R209, R210

5 INSTALLING THE OPTIONAL INPUT AND OUTPUT ISOLATION TRANSFORMERS

The optional transformers install on the main (bottom) circuit board. To install the optional transformers, follow the steps below.

1. Unplug the unit from the ac line and disconnect all other cables. If the unit is installed in a rack cabinet, remove it and place the unit on a smooth working surface.
2. Remove and save the 10 screws securing the top cover. There are 8 screws across the top-front edge of the front panel, 3 across the top-rear edge of the top cover, and 2 on either side.
3. There are 16 exposed transformer positions. Eight input transformers mount at the rear and are designated T2 (channel 1), T4 (channel 2), etc., up to T16 (channel 8). The output transformers at the front are designated T3 (channel 1), T5 (channel 2),

etc., up to T15 (channel 8). Located adjacent to each transformer position are two zero ohm jumpers which must be removed before installing the transformers. The 0 Ω jumpers are given R designators which are silkscreened on the circuit board. Refer to Table III for the designators associated with each channel.

NOTE: *The 0 Ω jumpers typically have a light beige body with a single black band around their middle.*

Since the jumpers are soldered into place, simply cut them free with a small pair of dikes and remove them.

4. The 15560A transformers have a polarized mounting pin arrangement and can only be installed one way. Test the orientation first before pressing each one firmly into place.
5. Re-install the top cover with the 10 screws previously removed.

6 TECHNICAL ASSISTANCE

If you need technical assistance, please write

Altec Lansing Corporation
 Attn: Technical Services Manager
 P.O. Box 26105
 Oklahoma City, OK 73125-0105
 U.S.A.

or telephone (405) 324-5311

Ask for the Technical Services Manager. Unfortunately, we are unable to accept collect calls.

You can also contact him via FAX at (405) 324-8981. Every effort will be made to provide prompt and reliable support.

7 FACTORY SERVICE

If factory service is required, prepare a note describing the problem in detail. Include any additional information which may be helpful such as test conditions, where used, etc. and ship the unit to:

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Altec Lansing Customer
Service/Repair
10500 W. Reno
Oklahoma City, OK 73128 U.S.A.

NOTICE: *Modifications to ALTEC LANSING products, except for those described herein, are not recommended. Such modifications shall be at the sole expense of the person(s) or company responsible, and any damage resulting therefrom shall not be covered under warranty or otherwise.*

Notes:

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APPENDIX - 8428A DEVICE ADDRESS CODES

ADDRESS CODES	DIP SWITCH POSITIONS (FROM LEFT TO RIGHT)								ADDRESS CODES	DIP SWITCH POSITIONS (FROM LEFT TO RIGHT)							
	#1	#2	#3	#4	#5	#6	#7	#8		#1	#2	#3	#4	#5	#6	#7	#8
001	ON	ON	ON	ON	ON	ON	ON	OFF	049	ON	ON	OFF	OFF	ON	ON	ON	OFF
002	ON	ON	ON	ON	ON	ON	OFF	ON	050	ON	ON	OFF	OFF	ON	ON	OFF	ON
003	ON	ON	ON	ON	ON	ON	OFF	OFF	051	ON	ON	OFF	OFF	ON	ON	OFF	OFF
004	ON	ON	ON	ON	ON	OFF	ON	ON	052	ON	ON	OFF	OFF	ON	OFF	ON	ON
005	ON	ON	ON	ON	ON	OFF	ON	OFF	053	ON	ON	OFF	OFF	ON	OFF	ON	OFF
006	ON	ON	ON	ON	ON	OFF	OFF	ON	054	ON	ON	OFF	OFF	ON	OFF	OFF	ON
007	ON	ON	ON	ON	ON	OFF	OFF	OFF	055	ON	ON	OFF	OFF	ON	OFF	OFF	OFF
008	ON	ON	ON	ON	OFF	ON	ON	ON	056	ON	ON	OFF	OFF	OFF	ON	ON	ON
009	ON	ON	ON	ON	OFF	ON	ON	OFF	057	ON	ON	OFF	OFF	OFF	ON	ON	OFF
010	ON	ON	ON	ON	OFF	ON	OFF	ON	058	ON	ON	OFF	OFF	OFF	ON	OFF	ON
011	ON	ON	ON	ON	OFF	ON	OFF	OFF	059	ON	ON	OFF	OFF	OFF	ON	OFF	OFF
012	ON	ON	ON	ON	OFF	OFF	ON	ON	060	ON	ON	OFF	OFF	OFF	OFF	ON	ON
013	ON	ON	ON	ON	OFF	OFF	ON	OFF	061	ON	ON	OFF	OFF	OFF	OFF	ON	OFF
014	ON	ON	ON	ON	OFF	OFF	OFF	ON	062	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
015	ON	ON	ON	ON	OFF	OFF	OFF	OFF	063	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF
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017	ON	ON	ON	OFF	ON	ON	ON	OFF	065	ON	OFF	ON	ON	ON	ON	ON	OFF
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046	ON	ON	OFF	ON	OFF	OFF	OFF	ON	094	ON	OFF	ON	OFF	OFF	OFF	OFF	ON
047	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	095	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF
048	ON	ON	OFF	OFF	ON	ON	ON	ON	096	ON	OFF	OFF	ON	ON	ON	ON	ON