

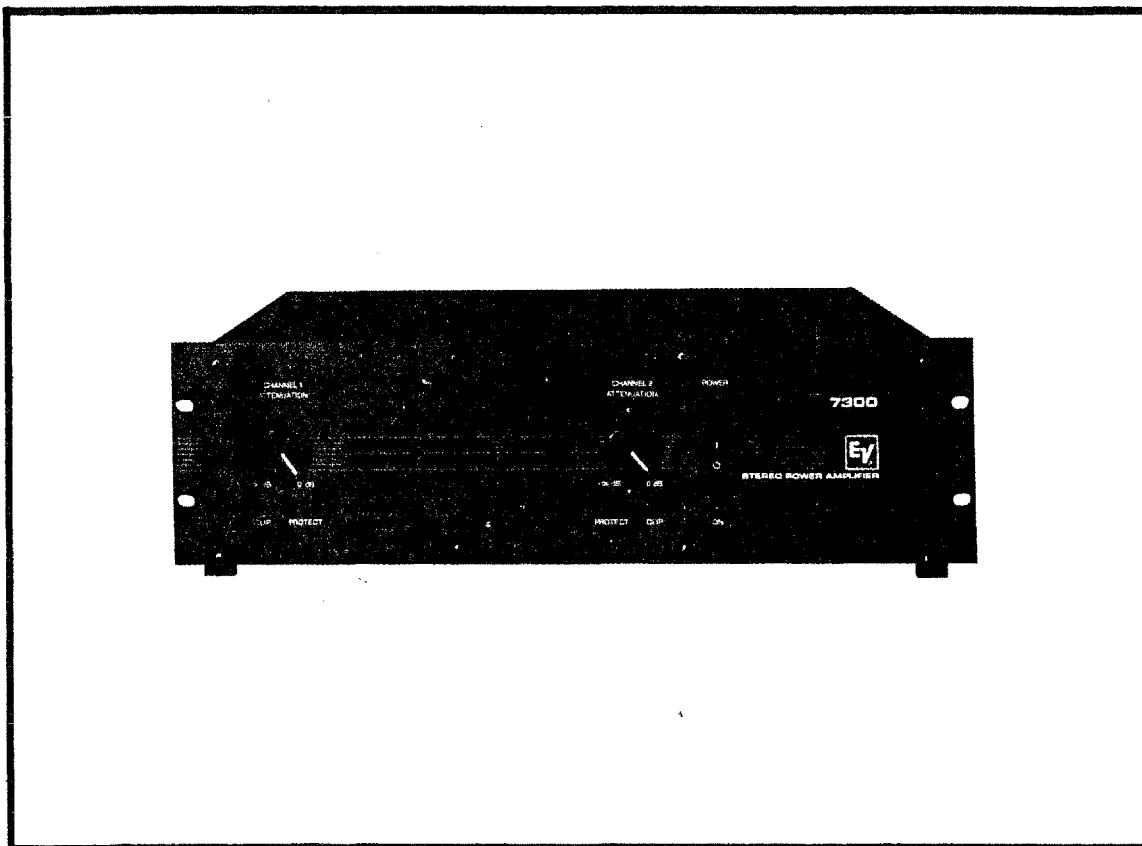


Electro-Voice®

7300

STEREO POWER AMPLIFIER

OWNER'S MANUAL



7300
STEREO POWER AMPLIFIER

MASTER COPY

I. INTRODUCTION

The EV 7300 was designed to deliver exceptional performance and reliability at an affordable price. Each channel delivers 200 watts of power into 8 ohms, and 300 watts into 4 ohms over the full audio frequency range. In the mono bridge mode, the 7300 can deliver over 600 watts.

The APX octal crossover accessory provides the convenience of on-board, bi-amp capability. The APX module has 24 preset selectable crossover frequencies from 50 Hz to 10,000 Hz. Simply plug the module into the octal sockets provided on the rear of the amplifier and your system is bi-amp ready.

The 7300 is an addition to the growing family of Electro-Voice electronic products. We would appreciate any comments you have regarding the performance, features or reliability of the 7300.

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***** WARNING *****

The service information contained within this document is for use only by Electro-Voice, Inc. authorized warranty stations and qualified service personnel.

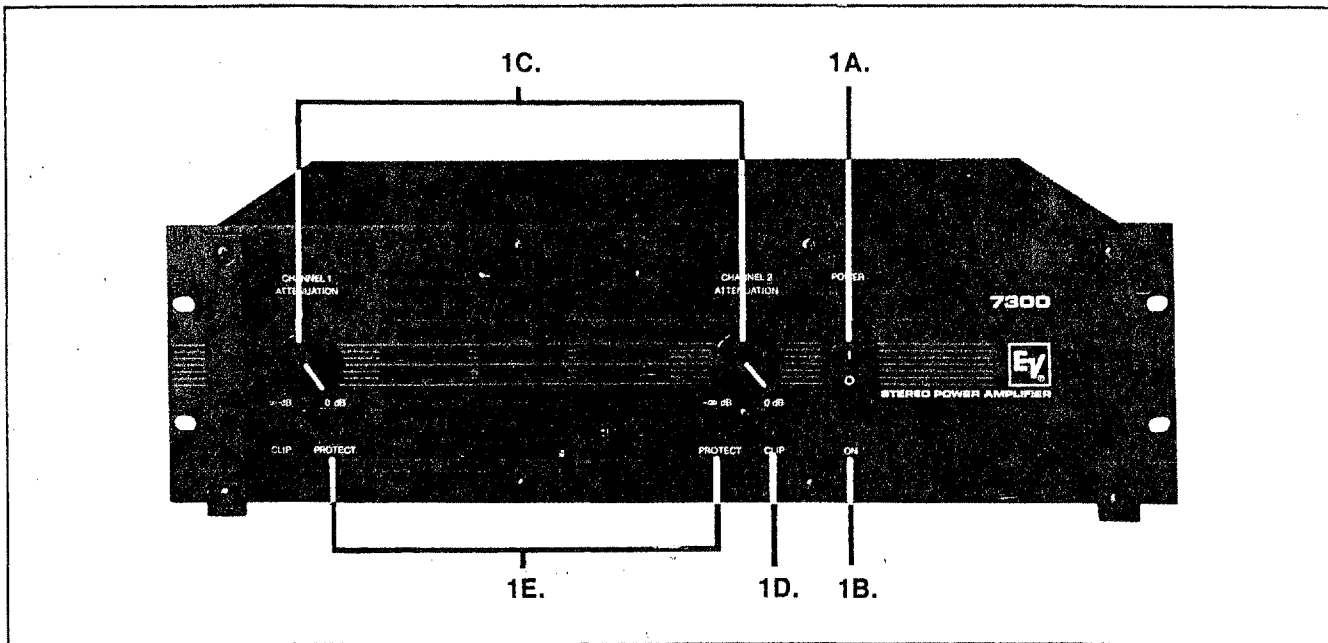


FIGURE 1 — Front Panel View

DESCRIPTION

1. Front Panel

- 1A. **Power Switch** — The power switch turns the amplifier on and off.
- 1B. **Power Status Indicator** — This LED indicates when the unit is on.
- 1C. **Input Attenuators** — Clockwise rotation increases the amount of amplifier gain.
- 1D. **Clip Indicators** — When the amplifier is driven into clipping, the clip indicator will illuminate. To avoid distortion reduce the input level until the LED's no longer light.
- 1E. **Protect Indicators** — The protect light illuminates when the amplifier overheats or when shorted loads or dc is detected on the amplifier output. A relay automatically disconnects the load from the channel when a problem is detected. The amplifier will reset itself when the problem is corrected. See the Troubleshooting section for problem solving.

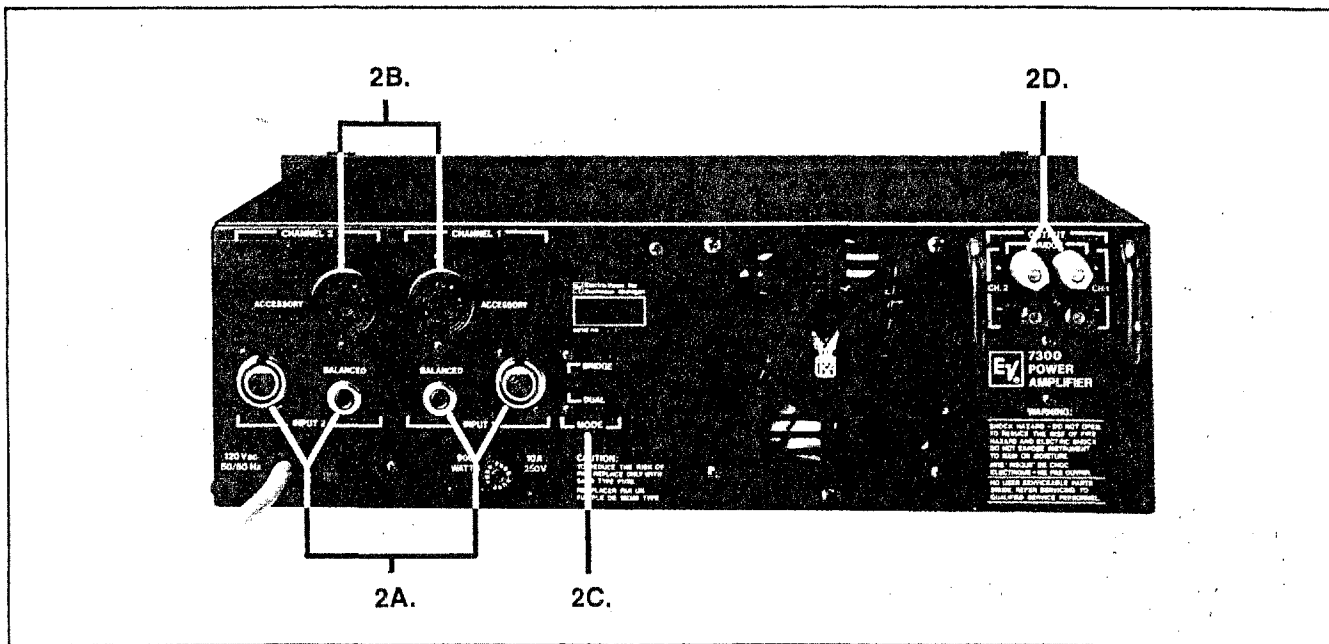


FIGURE 2 — Back Panel View

DESCRIPTION

2. Back Panel

- 2A. **Input Connectors** — Located on the left side are two 3-pin-XLR-type connectors and two balanced quarter-inch phone jacks. The inputs can also be unbalanced. See Figure 3 for typical input connections.
- 2B. **Octal Accessory Sockets** — Located above the input jacks, accessory octal sockets are provided for the APX crossover module. Twenty-four crossover frequencies are available from 50 Hz to 10,000 Hz.
- 2C. **Dual/Mono Bridge Mode** — The mode switch located to the right of channel 1 input selects stereo mode or bridge-mode without any additional patching.
- 2D. **Output Connectors** — The speaker connectors are heavy-duty five-way binding posts. For protection, there is a bracket on each side of the binding posts.

SPECIFICATIONS
CONDITIONS —

1. 0 dBu = 0.775 V rms.
2. Dual-mode ratings are for each channel.
3. Both channels operating at rated output power unless noted.
4. 120 volt ac line voltage maintained throughout testing.

CONTINUOUS RATED OUTPUT POWER —

(20 Hz, reference 1 kHz)

- Dual Mode, 4 Ohms: 300 watts at <0.10% THD
- Bridge Mode, 8 Ohms: 600 watts at <0.10% THD
- Dual Mode, 8 Ohms: 200 watts at <0.05% THD
- Bridge Mode, 16 Ohms: 400 watts at <0.05% THD

MAXIMUM MIDBAND OUTPUT POWER —

(reference 1 kHz, 1% THD)

- Dual Mode, 4 Ohms: 400 watts
- Bridge Mode, 8 Ohms: 800 watts
- Dual Mode, 8 Ohms: 250 watts
- Bridge Mode, 16 Ohms: 500 watts

DYNAMIC HEADROOM (reference 1 kHz) —

- Dual Mode, 4 Ohms: >1.25 dB
- Bridge Mode, 8 Ohms: >1.25 dB
- Dual Mode, 8 Ohms: >1.0 dB
- Bridge Mode, 16 Ohms: >1.0 dB

POWER BANDWIDTH (+0, -3 dB, reference 0 dB at 1 kHz) —

- Dual Mode, 4 Ohms: 7 Hz-70 kHz
- Bridge Mode, 8 Ohms: 7 Hz-60 kHz
- Dual Mode, 8 Ohms: 7 Hz-85 kHz
- Bridge Mode, 16 Ohms: 7 Hz-65 kHz

VOLTAGE GAIN (reference 1 kHz) —

- Dual Mode: 32.0 dB
- Bridge Mode: 38.0 dB

INPUT SENSITIVITY FOR RATED OUTPUT POWER —

 (reference 1 kHz, ± 0.3 dB)

- Dual Mode, 4 Ohms: 0 dBu (0.775 V rms)
- Bridge Mode, 8 Ohms: 0 dBu (0.775 V rms)
- Dual Mode, 8 Ohms: +3 dBu (0.902 V rms)
- Bridge Mode, 16 Ohms: +1.3 dBu (0.902 V rms)

MAXIMUM INPUT LEVEL (reference 1 kHz) —

+20 dBu (7.75 V rms)

INPUT IMPEDANCE (per channel, 20 Hz-20 kHz) —

- Balanced: >30 kilohms
- Unbalanced: >15 kilohms

PHASE RESPONSE (at rated output power, any mode) —

- at 20 Hz: +15 degrees
- at 20 kHz: -15 degrees

THD (at rated output power) —

- Dual Mode, 4 Ohms, 20 Hz-20 kHz: <0.10%
- Bridge Mode, 8 Ohms, 20 Hz-20 kHz: <0.10%
- Dual Mode, 8 Ohms, 20 Hz-1 kHz: <0.01%
- Dual Mode, 8 Ohms, 1 kHz-20 kHz: <0.05%
- Bridge Mode, 16 Ohms, 20 Hz-1 kHz: <0.01%
- Bridge Mode, 16 Ohms, 1 kHz-20 kHz: <0.05%

IMD [SMPTE] (at rated output power) —

- Dual Mode, 4 Ohms: <0.05%
- Bridge Mode, 4 Ohms: <0.05%
- Dual Mode, 8 Ohms: <0.03%
- Bridge Mode, 16 Ohms: <0.03%

TIM [DIM 100] (at rated output power) —

- Dual Mode, 4 Ohms: <0.05%
- Bridge Mode, 8 Ohms: <0.05%
- Dual Mode, 8 Ohms: <0.03%
- Bridge Mode, 16 Ohms: <0.03%

RISE TIME (10% to 90%, at rated output power) —

- Dual Mode, 4 Ohms: <5 μ sec
- Bridge Mode, 8 Ohms: <6 μ sec
- Dual Mode, 8 Ohms: <4.5 μ sec
- Bridge Mode, 16 Ohms: <5.5 μ sec

SLEW RATE (at rated output power) —

- Dual Mode, 4 Ohms: >20 V/ μ sec
- Bridge Mode, 8 Ohms: >30 V/ μ sec
- Dual Mode, 8 Ohms: >30 V/ μ sec
- Bridge Mode, 16 Ohms: >60 V/ μ sec

DAMPING FACTOR —

- Dual Mode, 4 Ohms, 20 Hz-1 kHz: >100
- Dual Mode, 4 Ohms, 20 kHz: >40
- Bridge Mode, 8 Ohms, 20 Hz-1 kHz: >200
- Bridge Mode, 8 Ohms, 20 kHz: >50
- Dual Mode, 8 Ohms, 20 Hz-1 kHz: >200
- Dual Mode, 8 Ohms, 20 kHz: >80
- Bridge Mode, 16 Ohms, 20 Hz-1 kHz: >400
- Bridge Mode, 16 Ohms, 20 kHz: >100

CHANNEL SEPARATION —

 (below rated output power, single channel operating)
 >80 dB at 1 kHz

NOISE (below rated output power, A-weighted, any mode) —

>100 dB

AMPLIFIER PROTECTION —

- Excessive output voltage
- Shorted loads
- Excessive phase shift
- RF interference
- Over temperature

LOAD PROTECTION —

- Startup/shutdown transients
- dc fault
- Infrasonic signals
- Low ac line voltage

COOLING —

- Heatsink: Thermally equalized $\frac{3}{16}$ -inch aluminum, black anodized heatsink
- Dual-Speed Fan: 106 CFM (high speed), minimum life rating of 20,000 hours at 72°C, or 43,500 hours at 25°C ambient temperature

OUTPUT TOPOLOGY —

True complementary symmetry

OUTPUT TYPE —

- Dual Mode: Unbalanced, each channel
- Bridge Mode: Balanced

OUTPUT DEVICES —

Sixteen 250-watt, 250-V/16-A, TO-3 transistors

CONTROLS AND SWITCHES —

- Input level controls (two), rear
- Mode switch, rear
- Power switch, front

FRONT-PANEL INDICATORS —

- Power LED
- Clip LED's (two)
- Protect LED's (two)

CONNECTIONS —

- Input: 6-terminal barrier strip, female XLR-type connectors (two)
- Output: 4-terminal barrier strip
- Power: 8-foot, 3-wire, 17-GA power cord with NEMA 5-15 plug

POWER REQUIREMENTS —

100, 120, 200, 220, 240 V ac, 50/60 Hz, 900 watts

POWER CONSUMPTION/HEAT PRODUCED —

(both channels operating dual mode with 1 kHz input signal at stated output power into 4 ohms, or bridge mode into 8 ohms)

- Idle: 130 watts/0.442 kBTU/hr
- $\frac{1}{8}$ Power: 900 watts/2.380 kBTU/hr
- $\frac{1}{2}$ Power: 1060 watts/2.584 kBTU/hr
- Rated Power: 1430 watts/2.822 kBTU/hr
- Maximum Midband Power: 960 watts/1.564 kBTU/hr

OPERATING TEMPERATURE RANGE —

Up to 60°C (140°F) ambient

DIMENSIONS —

- Height: 13.3 cm (5 $\frac{1}{4}$ in.)
- Width: 48.2 cm (19 in.)
- Depth: 32.4 cm (12 $\frac{3}{4}$ in.)

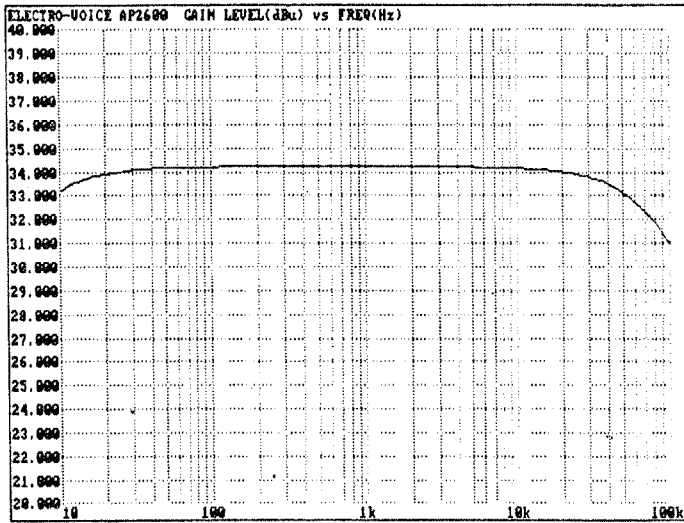
COLOR — Gray/black

ENCLOSURE —

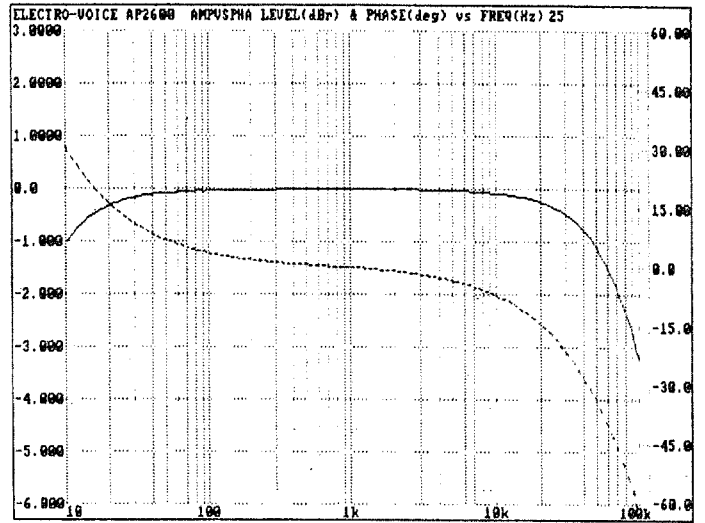
 Rack mount chassis, 16-GA steel bottom/sides, $\frac{1}{16}$ -inch aluminum top/back, $\frac{3}{16}$ -inch 6061-T6 aluminum front panel

SHIPPING WEIGHT — 21.8 kg (48 lb)

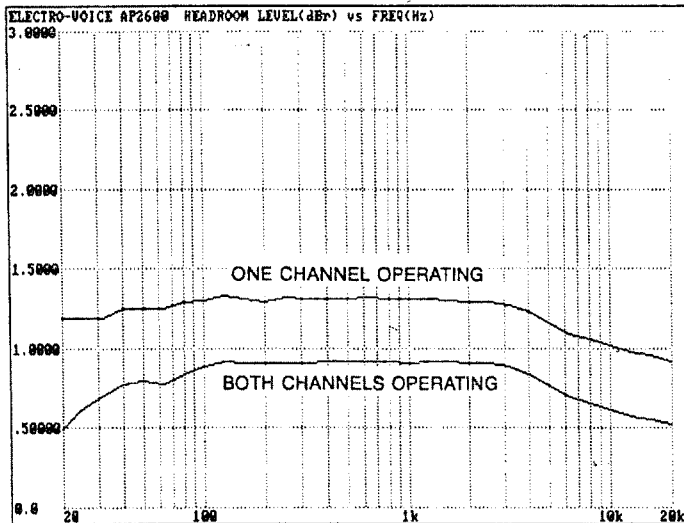
NET WEIGHT — 17.7 kg (39 lb)



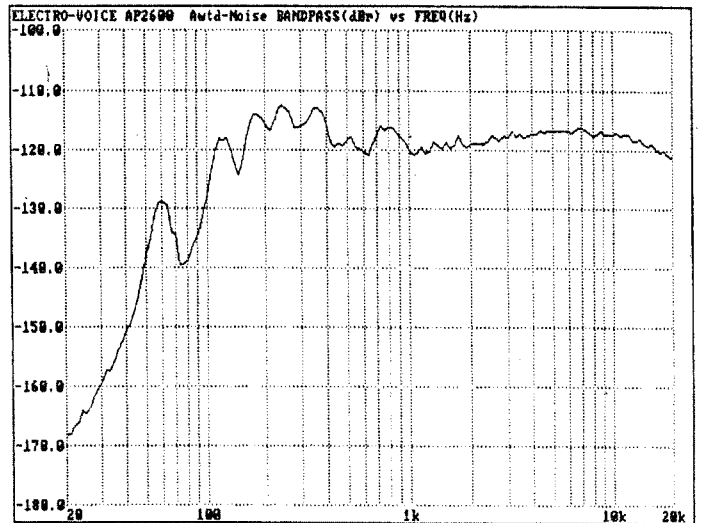
LEVEL vs. FREQUENCY



LEVEL + PHASE vs. FREQUENCY



HEADROOM vs. FREQUENCY



NOISE vs. FREQUENCY

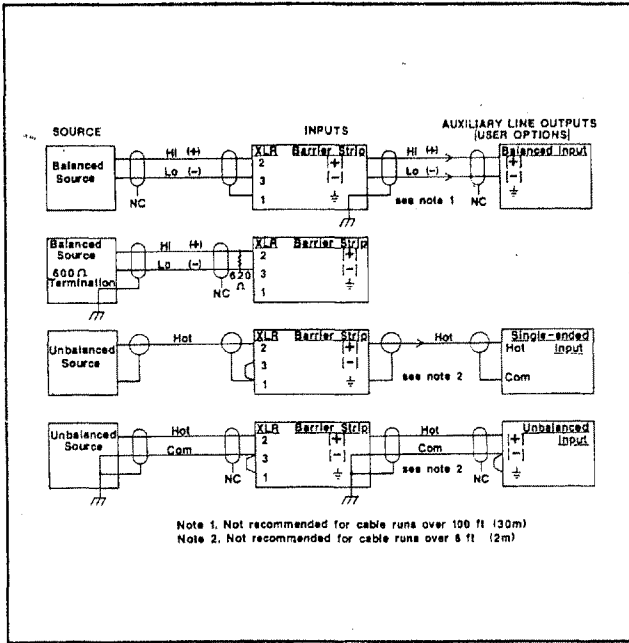


FIGURE 3 — Typical Input Connections

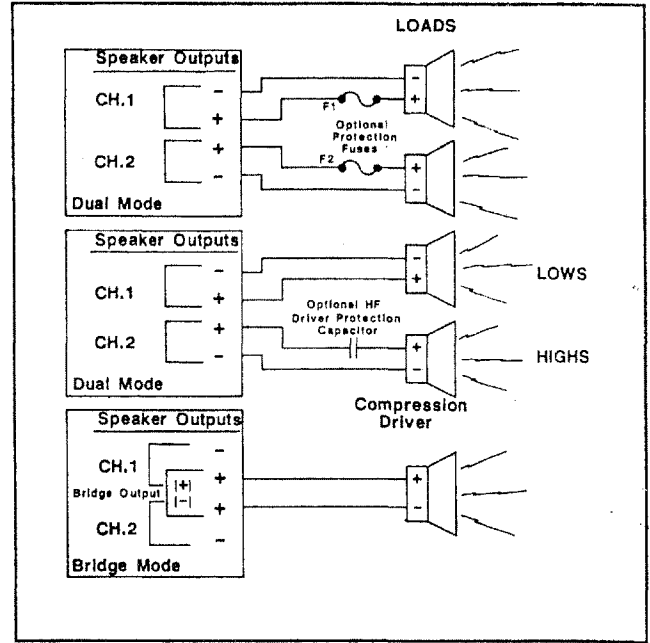


FIGURE 4 — Typical Output Connections

4. INSTALLATION

4A. Operating Cautions

- a. Do not operate the amplifier in a completely closed, unventilated housing.
- b. Do not connect the outputs of the channels in parallel.
- c. Do not connect the output terminals to a battery, power supply, or the power mains. Damage caused by such hookup is not covered by the warranty.
- d. Be careful when making connections, selecting signal sources and controlling the output level.
- e. Do not tie the input signal ground to the ground lead of an output. Ground-loop-induced oscillations may occur.
- f. Ensure that the main ac power is within 10% of selected voltage and frequency. Failure to operate the unit within these limits voids the warranty.
- g. Use only the proper size mains fuse for the selected ac voltage.
- h. Do not connect either side of the loudspeaker cable to ground when operating the unit in bridged mode. The bridged mode is balanced to ground.
- i. Make certain that test equipment is not ground referenced when testing the unit in the bridged mode.
- j. Tampering with the circuit or repair by unauthorized personnel will void the warranty of the unit.

4B. Input Connections

Two conductor shielded low-impedance cable is recommended for input lines to the amplifier. Pin 2 of the XLR-type connector is high (+), pin 3 is low (-), and pin 1 is ground. The ¼-inch jack may be used as a low impedance input. Tip is high (+), ring is low (-), and the sleeve is ground. See Figure 3.

High impedance lines may be connected to the amplifier inputs with a single-conductor low capacitance shielded cable of 30 feet or less in length. A two conductor ¼-inch plug will automatically unbalance the input. To help avoid hum or buzz in the output, be certain that all input cables are physically separated from power wiring or power transformers.

4C. Output Connections

Binding posts are provided for speaker terminations, the red post is high (+) and the black post is low (-). The preferred connector is a high quality dual banana plug. See Figure 4 for typical output configurations.

Before making output connections, the input attenuators should be turned off (full counterclockwise), doing so will eliminate any chance of loud blasts or damage to the loudspeaker.

Power loss in the speaker wire. The impedance of the speaker connecting wire would ideally be zero, so all of the amplifier output power would be delivered to the speaker load. However, the impedance of the speaker wire can become a significant percentage of the speaker impedance. Thus, part of the amplifier power is "lost" in the wire (in the form of heat) and the power delivered to the speaker system

AWG Size	Resistance (ohms/1000 feet)	Impedance		
		4Ω	8Ω	16Ω
10	1.00	120	240	480
12	1.59	75	150	300
14	2.50	48	96	190
16	4.02	30	60	120
18	6.39	19	38	75
20	10.1	12	24	48
22	16.2	7	15	30

TABLE I — Cable Selection Chart

is correspondingly reduced. Wire impedance is higher when using long wire runs and small wire sizes.

Table I shows the two-wire cable (copper) lengths permissible for a number of wire sizes and speaker impedances, to avoid a loss of more than 0.5 dB. For a loss of 1 dB (basically imperceptible) lengths may be doubled. For a 2-dB loss, the lengths would be multiplied by 4.4.

In general, note that the higher load impedances allow much longer smaller-gauge wiring to be used.

4D. Grounding

The chassis of the unit should be grounded. Connecting the chassis grounds of additional audio equipment to the chassis ground of the amplifier may help reduce noise and hum.

4E. Ventilation

In order to offset the heat generated by the power amplifier, it is necessary to provide ample ventilation around the unit. Avoid blocking or impeding the vent slots of the chassis.

Locate the unit where it is free from direct sunlight, humidity, dust or vibration to help prevent problems which might be caused by the environment.

5. OPERATION

5A. Dual/Stereo Mode:

In the dual or stereo mode the channels may be operated independently. Before hook-up make sure that the mode switch is in the dual position and that the level controls are down (FCCW). Connect the inputs and outputs (See Figures 3 and 4). Turn the power amp on and slowly increase level until the desired output power is obtained. If either (clip) LED illuminates, reduce the output with the input attenuators or reduce the source signal level.

5B. Bridge Mode:

Input connection should be made into channel 1 only. Do not make any input connections into channel two. Move the mode switch to bridge mode and make sure both level controls are down (FCCW). Connect the speaker across the two red binding posts. Channel 1 red post is high (+), channel 2 red post is low (-). Do not make a connection

to either of the black binding posts. Switch power on and slowly increase amplifier channel 1 level control until the desired output power is obtained. If the clip LED indicators come on, reduce the power amp level control or the source signal level.

5C. APX Crossover Option:

The APX crossover is a 24 dB per octave Linkwitz-Riley filter network. There are 24 selectable frequencies from 50 Hz to 10,000 kHz.

***** CAUTION *****

No user serviceable parts inside. Hazardous voltage and currents may be encountered within the chassis. To avoid electric shock, do not perform any servicing unless you are qualified to do so.

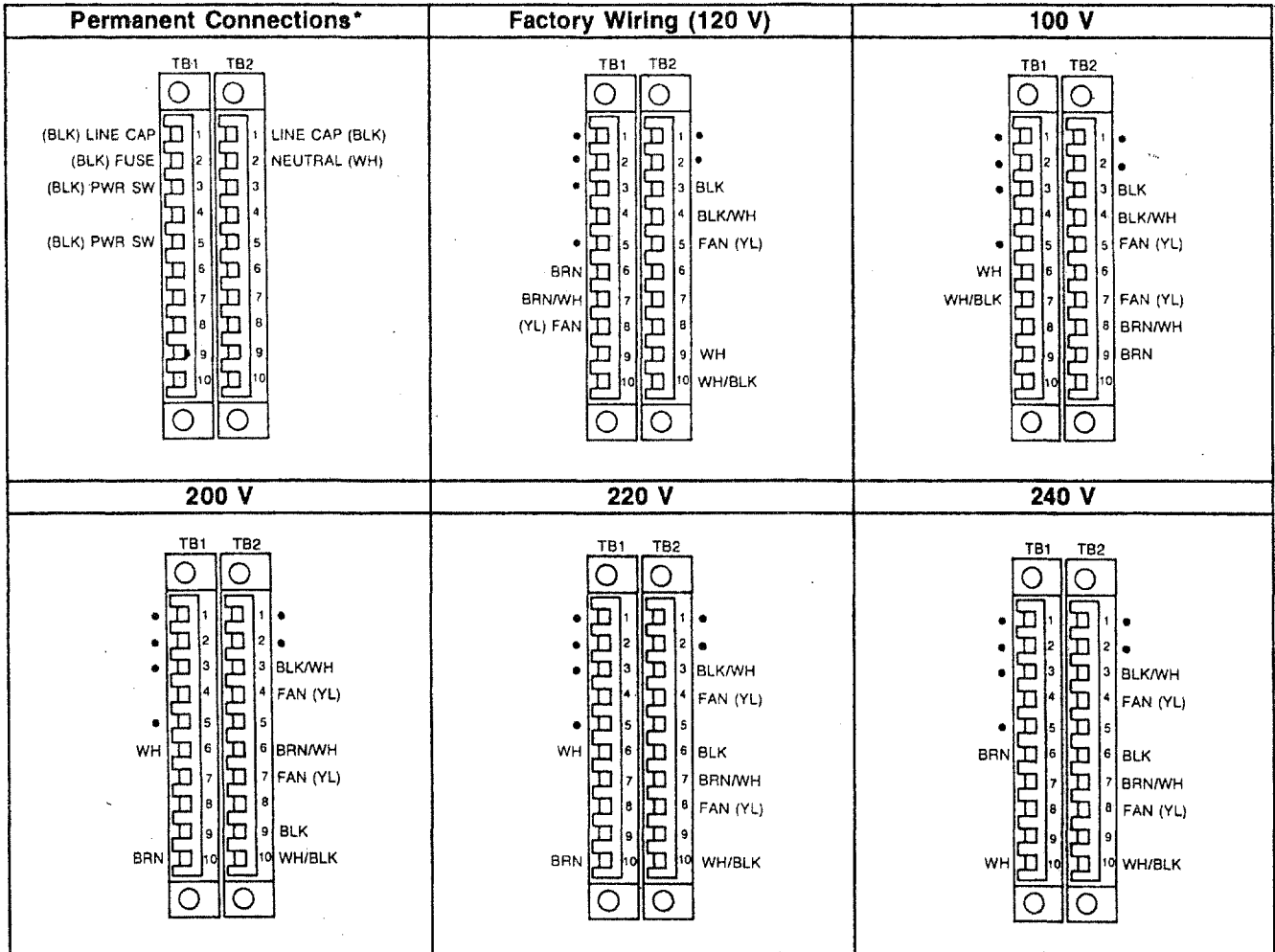
5D. Alternate Primary Voltage

The amplifier can be powered with line voltages other than 120 volts by altering the primary wiring of the power transformer. Table II lists the primary wire color, the terminal block (TB), and the position of the TB the wire should be located in for operation at the desired voltage.

To alter the transformer primary wiring configuration use the following procedure:

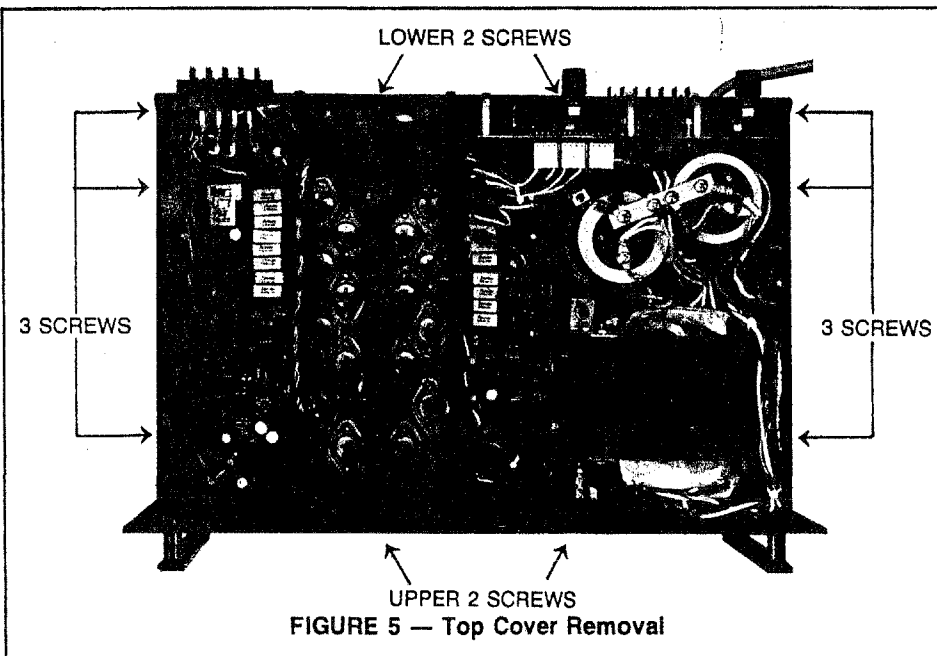
1. Disconnect the amplifier from the ac power source.
2. Remove the ten screws securing the top cover. There are three screws on each side, two screws on the rear along the bottom edge, and the two innermost screws inset into the top strip on the front panel. See Figure 5 for exact screw locations.
3. Discharge each large capacitor carefully through a 150-ohm, 2-watt resistor for at least one minute. See Figure 6.
4. Locate the two voltage-selection terminal blocks mounted next to each other on the side of the chassis between the power transformer and the large capacitor.
5. The transformer has six primary leads. Disconnect the primary leads of the power transformer by pulling each wire firmly to disengage it from the terminal block. Note: The primary lead colors are black, brown, white, black/white, brown/white and white/black.
6. Select the desired operating voltage on Table II and reconnect the wires accordingly. Push each wire firmly into the block until it snaps into place.
7. Relocate the fan wires according to the wiring chart.
8. Install the correct line fuse (values in Table III).
9. Plug the amplifier into a variac and sweep the mains voltage from zero to full operating voltage while monitoring the amplifier's dc rail voltages. The dc rail voltage should be ±78 V dc, ±5% at the selected primary voltage.
10. Reinstall the top cover with the ten screws.

7300 STEREO POWER AMPLIFIER



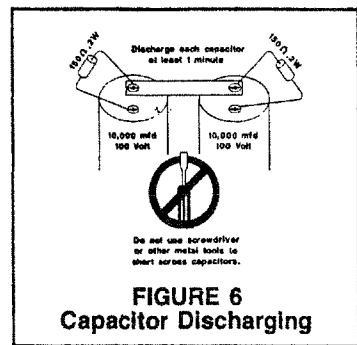
* DO NOT MOVE THESE WIRES, THEY ARE COMMON TO ALL PRIMARY VOLTAGES

TABLE II
Primary Power Conversion Chart for 100-, 120-, 200-, 220-, and 240-V, 50/60-Hz Operation



Line Voltage	Line Fuse, 314 Series Normal-Blo
100 V ac	10 A/250 V
120 V ac	10 A/250 V
200 V ac	5 A/250 V
220 V ac	5 A/250 V
240 V ac	5 A/250 V

TABLE III
Main Fuse Selection Guide



6. TROUBLESHOOTING

- Be systematic; check one thing at time; check the obvious.
- Verify that the input connections are properly made. See Figure 3, page 4.
- Verify that the output connections are properly made. See Figure 3, page 4.
- Check input and output cables for proper wiring.
- Check the signal source and the load. Make sure the level controls are up.
- Check that the bridge mode switch is in the desired position.
- If there are no lights, check ac power switch and power fuse.
- Fuses that blow instantly on turn-on are a sign of internal distress, and you should refer the unit to a qualified service station.

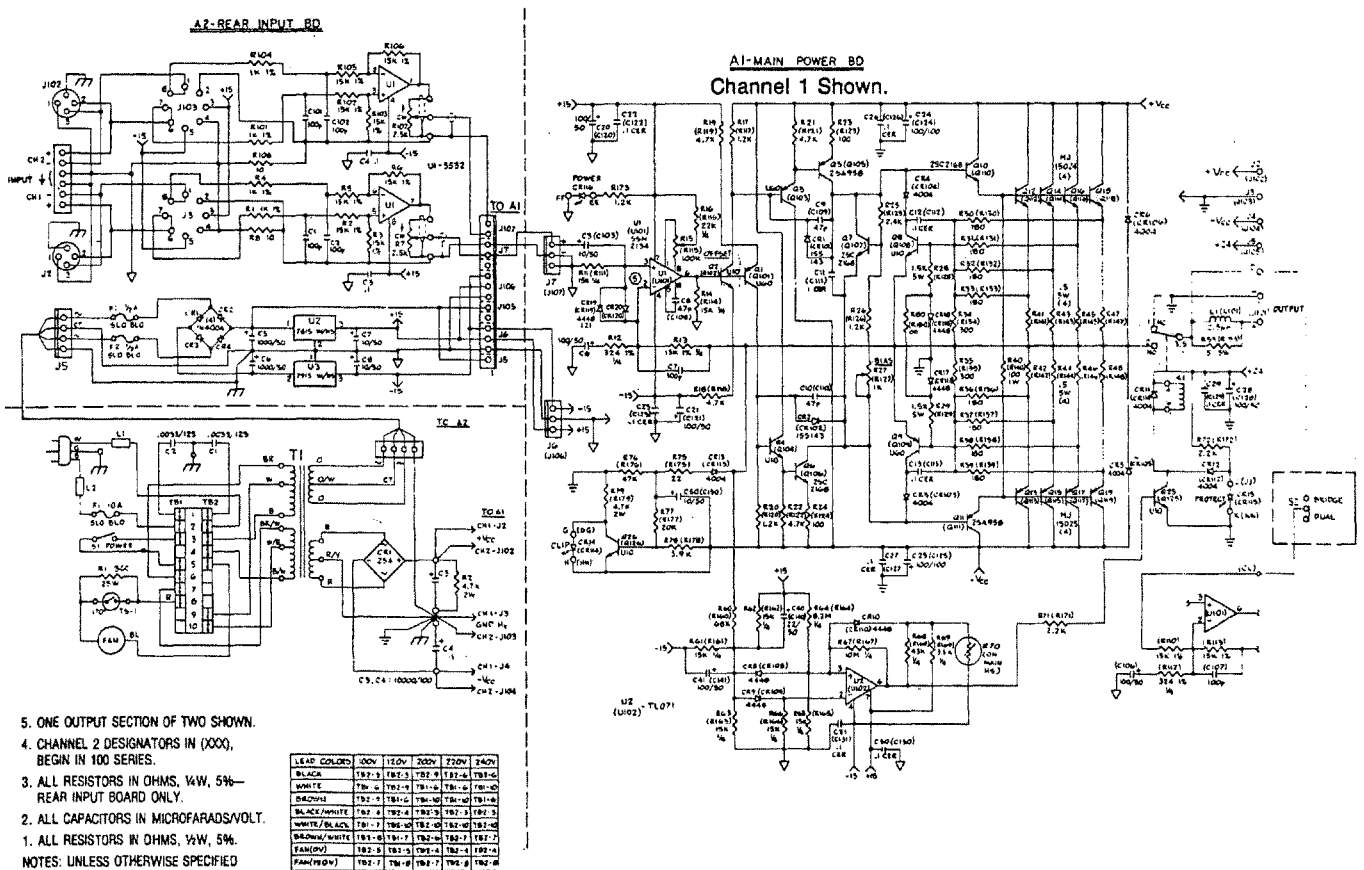
6A. Protection

If the amplifier goes into "protect" mode it is probably for one of the following reasons:

Very Low Impedance Load or Shorted Load. Disconnect the speaker lines from the power amplifier and allow the amplifier to cool. If the protect LEDs go out after a short period of time check the speakers or decrease the number of speakers attached to the outputs.

DC on the Output of the Amplifier. Disconnect the speaker lines from the power amplifier and allow the amplifier to cool. If the protect LEDs do not go out after a short period of time it is likely that a dc voltage is on the output and that the amplifier will need servicing.

7. SCHEMATIC





8. SERVICE/WARRANTY INFORMATION

WARRANTY (Limited) — Electro-Voice Professional Sound Reinforcement Electronic Components are guaranteed for two years from date of original purchase against malfunction due to defects in workmanship and materials. If such malfunction occurs, unit will be repaired or replaced (at our option) without charge for materials or labor if delivered prepaid to the proper Electro-Voice service facility. Unit will be returned prepaid. Warranty does not extend to finish, appearance items or malfunction due to abuse or operation under other than specified conditions, nor does it extend to incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you. Repair by other than Electro-Voice or its authorized service agencies will void this guarantee. A list of authorized service centers is available from Electro-Voice, Inc., 600 Cecil Street, Buchanan, MI 49107 (AC/616-695-6831); Electro-Voice, Inc., 3810 148th Avenue N.E., Redmond, WA 98052 (AC/206-881-9555); Electro-Voice, Inc., 10500 W. Reno, Oklahoma City, OK 73128 (AC/405-324-5311); and/or Electro-Voice West, 8234 Doe Avenue, Visalia, CA 93291 (AC/209-651-7777). This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

FACTORY SERVICE ADDRESS

Electro-Voice, Inc.
Service Department
10500 West Reno
Oklahoma City, OK 73125
AC/405-324-5311

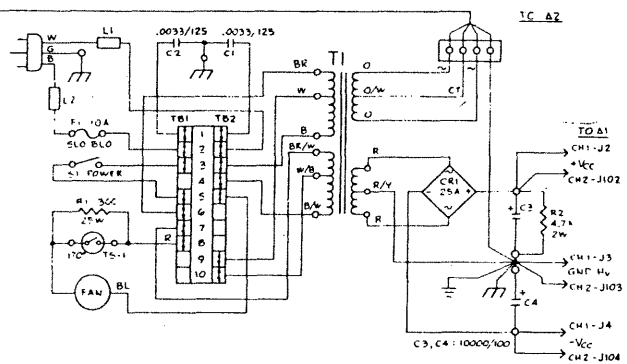
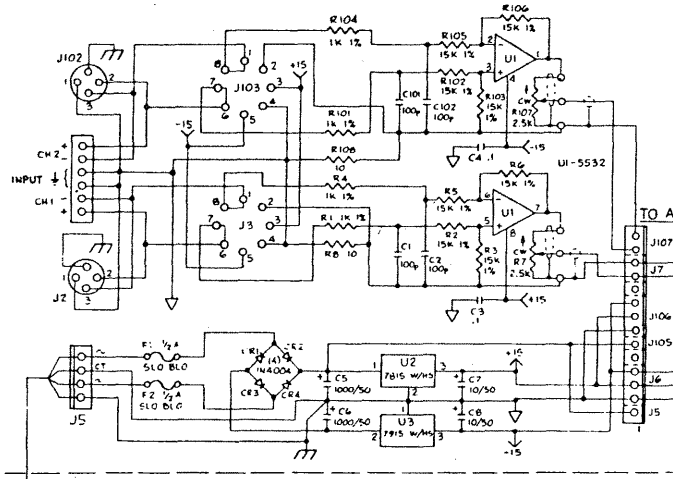
Specifications subject to change
without notice.



600 Cecil Street, Buchanan, Michigan 49107, Phone (616)695-6831, TWX: 810-270-3135

8234 Doe Avenue, Visalia, California 93291, Phone (209)651-7777, TLX 172 119
Electro-Voice Div., 345 Herbert St., Gananoque, Ontario, Canada K7G 2V1, Phone (613)382-2141, TLX 389 066 3245
Electro-Voice, S.A., Keltenstrasse 5, CH-2563 IPSACH, Switzerland, Phone (41)32-51-68-33, TLX 845 934 045, FAX (41)32-51-12-21
Electro-Voice, Ltd., 2-5-60 Izumi, Suginami-ku, Tokyo, Japan 168, Phone (81)3-325-7900, TLX 781 232 2494
Electro-Voice Germany, Larchenstrasse 99, 6230 Frankfurt/Main 80, Germany, Phone (49)69-380-100, TLX 841 413 847
Electro-Voice Pty, Ltd., 59 Waratah Street, Kirrawee, N.S.W. 2232, Australia, Phone (61)2-521-5322, TLX 790 267 93

A2-REAR INPUT BD



5. ONE OUTPUT SECTION OF TWO SHOWN.

4. CHANNEL 2 DESIGNATORS IN (XXX), BEGIN IN 100 SERIES.

3. ALL RESISTORS IN OHMS, 1/4W, 5%—REAR INPUT BOARD ONLY.

2. ALL CAPACITORS IN MICROFARADS/VOLT.

1. ALL RESISTORS IN OHMS, 1/2W, 5%.

NOTES: UNLESS OTHERWISE SPECIFIED

LEAD COLORS	100V	110V	200V	220V	240V
BLACK	TB2-3	TB2-3	TB2-9	TB2-6	TB2-6
WHITE	TB1-6	TB2-9	TB1-6	TB1-6	TB1-6
BROWN	TB2-9	TB1-6	TB1-10	TB1-6	TB1-6
BLACK/WHITE	TB2-4	TB2-4	TB2-3	TB2-3	TB2-3
WHITE/BLACK	TB1-7	TB2-10	TB2-10	TB2-10	TB2-10
BROWN/WHITE	TB2-0	TB1-7	TB2-7	TB2-7	TB2-7
FAN(0V)	TB2-5	TB2-5	TB2-4	TB2-4	TB2-4
FAN(220V)	TB2-7	TB1-8	TB2-7	TB2-8	TB2-8

A1-MAIN POWER BD

Channel 1 Shown.

