



AP2400

Dual-Channel Power Amplifier

- 215 watts per channel at 8 ohms, 1 kHz
- Independent channel selection for 8/4-ohm and/or 70-volt operation
- Ultraquiet and efficient cooling system
- Interchangeable input modules
- Illegal mode protection for mono output modes
- Linkable signal processing PCBs plug directly onto input modules
- InterActive Technology compatible

Description

The Electro-Voice AP2400 dual-channel power amplifier is designed for direct voice-coil drive and/or 70-volt distributed systems. Each channel can be independently configured for 70-volt line operation or 8/4-ohm systems. The two channels can be paralleled or bridged for driving a single load.

This amplifier features an ultraquiet, continuously variable cooling system which pulls air from front to rear in a directed fashion which focuses the air flow on the critical components. A removable air filter is incorporated into the front grille allowing easy access for cleaning or replacement.

The signal input module is removable and comes standard with both XLR and screw terminal connectors. Optional signal processing PCBs plug directly onto the input modules. Control module options provide compatibility and connection to EVI Audio's Interactive Technology network, allowing remote, centralized supervision and/or control of the amplifier.

Each channel is protected against load shorts, over temperature and output DC. Front panel indicators provide a visual display of signal present, signal clip and stand by for each channel, as well as a power on indicator.

Architects' and Engineers' Specifications

The power amplifier shall be a two-rack-space, dual-channel amplifier providing 100 watts per channel in dual-channel mode. The amplifier will provide an incorporated means to independently configure each channel for either 8/4-ohm loads or 70-volt line operation.

The amplifier shall have a switchable configuration between dual-channel, parallel mono and bridged mono mode. The amplifier will also provide a guard against illegal mode operation with a visual indicator as well as disabling operation until channel load configurations correspond to output configuration mode. Bridged mono output mode shall provide a differential balanced signal to the speaker load.

The amplifier will incorporate a directed air flow cooling system utilizing an ultraquiet continuously variable cross-flow fan pulling air from the front and pushing air out the rear of the amplifier. The unit will provide a front-accessible air filter.

The amplifier shall incorporate interchangeable signal input modules which provide for signal processing PCBs to be directly connected to the module without replacement. Input modules will provide both XLR and screw terminal connectors in a parallel circuit. In-

put module pinouts shall be published information. The amplifier will provide for optional Interactive Technology control modules to be used.

The amplifier shall meet the following performance criteria. Rated power in dual channel mode: 4-ohm = 250 watts, 8-ohm = 200 watts, 70-volt = 200 watts; rated power in parallel mono mode: 2-ohm = 500 watts, 4-ohm = 400 watts, 8-ohm = 200 watts, 70-volt = 400 watts; rated power in bridged mono mode: 8-ohm = 500 watts, 16-ohm = 400 watts, 70-volt = 400 watts, 140-volt = 400 watts.

The power amplifier shall be 482.6 mm (19 in.) wide by 406.4 mm (16 in.) deep by 88.1 mm (3.4 in.) high and weigh 13.95 kg (30.75 lb).

The power amplifier shall be the Electro-Voice AP2400.

Uniform Limited Warranty Statement

Electro-Voice products are guaranteed against malfunction due to defects in materials or workmanship for a specified period, as noted in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual, beginning with the date of original purchase. If such malfunction occurs during the specified period, the product will be repaired or replaced (at our option) without charge. The product

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will be returned to the customer prepaid.

Exclusions and Limitations: The Limited Warranty does not apply to: (a) exterior finish or appearance; (b) certain specific items described in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual; (c) malfunction resulting from use or operation of the product other than as specified in the product data sheet or owner's manual; (d) malfunction resulting from misuse or abuse of the product; or (e) malfunction occurring at any time after repairs have been made to the product by anyone other than EVI Audio Service or any of its authorized service representatives. **Obtaining Warranty Service:** To obtain warranty service, a customer must deliver the product, prepaid, to EVI Audio Service or any of its authorized ser-

vice representatives together with proof of purchase of the product in the form of a bill of sale or receipted invoice. A list of authorized service representatives is available from EVI Audio Service at 600 Cecil Street, Buchanan, MI 49107 (800/234/6831 or FAX 616/695/4743). **Incidental and Consequential Damages Excluded:** Product repair or replacement and return to the customer are the only remedies provided to the customer. Electro-Voice shall not be liable for any incidental or consequential damages including, without limitation, injury to persons or property or loss of use. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. **Other Rights:** This warranty gives

you specific legal rights, and you may also have other rights which vary from state to state.

Electro-Voice Electronics are guaranteed against malfunction due to defects in materials or workmanship for a period of three (3) years from the date of original purchase. Additional details are included in the Uniform Limited Warranty statement.

For warranty repair, service information, or a listing of the repair facilities nearest you, contact the service repair department at: 616/695-6831 or 800/685-2606.

For technical assistance, contact Technical Support at 800/234-6831 or 616/695-6831, M-F, 8:00 a.m. to 5:00 p.m. Eastern Standard time.

Specifications subject to change without notice.

Input Card Pin Assignments

Pin #	Name	Function	Pin #	Name	Function	Pin #	Name	Function
1	VOUT_SENSE_CH1	0 to 5 V dc, load voltage channel one.	12	-15V	-15 V dc supply with 100 mA capacity.	21	POWER_CTL	Shorting this pin to DGND will power down entire amplifier with exception of 6 V dc supply.
2	VOUT_SENSE_CH2	0 to 5 V dc, load voltage channel two.	13	CLIP_CH1	0 to 8 volt signal indicating channel one clip by going high (> 4 volts).	22	AGND	Analog, fault and +15-volt supply ground reference.
3	IOUT_SENSE_CH1	0 to 5 V dc, load current channel one.	14	+6V	6 V dc supply with 800 mA capacity reference only to DGND.	23	AUDIO_IN_CH2	Unbalanced channel two input to amplifier referenced to AGND. Sensitivity=0.775 Vrms.
4	IOUT_SENSE_CH2	0 to 5 V dc, load current channel two.	15	CLIP_CH2	0 to 8 volt signal indicating channel two clip by going high (> 4 volts).	24	AGND	Analog, fault and +15-volt supply ground reference.
5	TEMP_CH1	0 to 5 V dc, heat sink temperature channel one.	16	DGND	Reference for 6 V dc supply (PIN 14).	25	AGND	Analog, fault and +15-volt supply ground reference.
6	TEMP_CH2	0 to 5 V dc, heat sink temperature channel two.	17	FAULT_CH1	Normally connected to PIN 9. Indicates channel one critical temp, over-current, output DC or shorted output by going high (> 5 volts). Signal norm is low (< 1 volt). Referenced to AGND.	26	AGND	Analog, fault and +15-volt supply ground reference.
7	AUDIO_OUT_CH1	Channel one output scaled down for 0 dBu full scale. Can be used for monitoring or line out.	18	DGND	Reference for 6 V dc supply (PIN 14).	27	AUDIO_IN_CH1	Unbalanced channel one input to amplifier referenced to AGND. Sensitivity=0.775 Vrms.
8	AUDIO_OUT_CH2	Channel two output scaled down for 0 dBu full scale. Can be used for monitoring or line out.	19	FAULT_CH2	Normally connected to PIN 9. Indicates channel two critical temp, over-current, output DC or shorted output by going high (> 5 volts). Signal norm is low (< 1 volt). Referenced to AGND.	28	AGND	Analog, fault and +15-volt supply ground reference.
9	STANDBY_CH1	Control signal turns channel one power supply on by forcing pin to AGND. Normally connected to PIN 17.	20	DGND	Reference for 6 V dc supply (PIN 14).	29	CHASSISGND	Connects to chassis ground inside amplifier.
10	+15V	15 V dc supply with 100 mA capacity.				30	CHASSISGND	Connects to chassis ground inside amplifier.
11	STANDBY_CH2	Control signal turns channel two power supply on by forcing pin to AGND. Normally connected to PIN 17.						

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00 Rear Panel Diagram

POWER

CAUTION: To prevent fire hazard, do not short the output terminals. Disconnect the power cord from the plug.

120 Watt 80 Hz

AVOID EXCESSIVE HEAT: Do not touch the rear panel for 10 minutes after use.

TRIM THUMB

LOAD SELECT SWITCHES

CH 2 LOAD **CH 1 LOAD**

CH 2 **70W** **CH 1** **70W**

CH 2 1 WATT **CH 1 1 WATT**

CAUTION: Do not touch the output terminals for 10 minutes after use. Do not touch the output terminals for 10 minutes after use.

CHANNEL 2 INPUT

CHANNEL 2 INPUT

CHANNEL 1 INPUT

LEVEL

LEVEL

MODE SELECT SWITCH

STEREO **MONO** **ILLEGAL MODE**

INPUT MODULE

OUTPUT CONNECTIONS

ILLEGAL MODE INDICATOR

WARNING: Risk of Electrical Shock. See Operating Manual.

MODE SWITCH: Center Position

DUAL-CHANNEL MODE

MODE SWITCH: Left Position

PARALLEL MONO MODE

MODE SWITCH: Right Position

BRIDGE MONO MODE

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Specifications

All output power specifications are for 120 V ac input power unless otherwise stated.

Full Power, 0.1% THD, 1 kHz
(30 kHz measurement bandwidth),
both channels driven, 120 V ac
input power,

Dual Mode:

4 ohm	264 watts
8 ohm	215 watts
70 volt	227 watts

Parallel Mono Mode:

2 ohm	507 watts
70 volt	464 watts

Bridged Mono Mode

8 ohm	542 watts
140 volt	458 watts

Frequency Response:

10 Hz to 80 kHz
(ref. 1 kHz, 1 watt output, +0/-3 dBr)

Power Bandwidth:

20 Hz to 20 kHz
(ref. 1 kHz, +0/-0.5 dBr where 0 dBr =
rated output power in any mode)

Voltage Gain (ref. 1 kHz):

Dual Mode

4/8 ohm	34.2 dBr
70 volt	39.2 dBr

Parallel Mono Mode

2/4/8/ ohm	34.2 dBr
70 volt	39.2 dBr

Bridged Mono Mode

8/16 ohm	40.2 dBr
140 volt	45.2 dBr

Signal to Noise: >100 dBr (A weighted)
measured below rated output

Rated Power THD:

<0.1% 20 - 20 kHz (any mode, 30 kHz
measurement bandwidth)

Sensitivity,

8 ohm/70 volt/140 volt:
0 dBr (0.775 V RMS)

4 ohm:

-2 dBr (0.616 V RMS)

Input Impedance: 20 k ohms

Source Impedance: 0.032 ohms

Cross Talk: <-70 dB at 1 kHz

DC Offset: < 5 mV

Slew Rate: 15 V/ μ S

Damping Factor: >300 (1 kHz, 8 ohm)

AC Power: 120 V ac/60 Hz

Minimum AC Voltage:

95 V ac/60 Hz

Power Consumption:

See Table 1 (below)

Physical Dimensions:

Height: 88.1 mm (3.4 in.)

Width: 482.6 mm (19 in.)

Depth: 406.4 mm (16 in.)

Weight:

13.95 kg (30.75 lb)

Shipping Weight:

15.81 kg (34.87 lb)

Table 1 — AP2400 Line Current, Power Consumption, Thermal Dissipation and Power Output for Selected Applications

The following table provides guidelines for estimating heat dissipation of each amplifier, given its intended application. This data is based on the following equation:

$$P_{dis} = P_{ac} + P_{ld}$$

where:

P_{dis} = Power dissipated in watts

P_{ac} = True ac mains power in watts consumed

P_{ld} = Total average power delivered to the load

Measurement Conditions:

Line = 120 V ac, both channels driven equally and with equal loads for dual mode measurements.

The application definitions are as follows:

Idle: The amplifier is on with no signal present.

Paging/Background Music: The amplifier is operating with one second announcements (at full power) every 15 seconds or background music which is attenuated -32 dBr

Continuous Speech: The amplifier is operating with continuous speech that is attenuated -23 dBr.

Dynamic: The amplifier is operating with a dynamic input signal such as motion-picture sound track or classical music. Loud passages are at full power, soft passages are equivalent to continuous speech.

Full Music Power: The amplifier is operating with continuous music input at rated output to the load with only occasional clipping.

Application: Idle

LOAD	LINE CURRENT (A)	P_{ac} (W)	P_{ld} (W)	P_{dis} (W)	BTU/HR	KCAL/HR
2-ohm parallel	.44	29	0	29	99	25
4-ohm dual	.55	42	0	42	143	36
8-ohm dual	.55	42	0	42	143	36
8-ohm bridged	.52	36	0	36	123	31
70-V dual	.58	45	0	45	154	39
70-V parallel	.50	35	0	35	120	30
140-V bridged	.60	47	0	47	161	41

Application: Paging/Background Music

LOAD	LINE CURRENT (A)	P_{ac} (W)	P_{ld} (W)	P_{dis} (W)	BTU/HR	KCAL/HR
2-ohm parallel	.85	85	.45	84.5	220	55
4-ohm dual	.75	58	.45	57.5	196	49
8-ohm dual	.90	70	.36	69.6	238	60
8-ohm bridged	.89	70	.45	69.5	237	60
70-V dual	.78	62	.36	61.6	210	53
70-V parallel	.74	58	.36	57.6	197	50
140-V bridged	.77	61	.36	60.6	207	52

Application: Continuous Speech

LOAD	LINE CURRENT (A)	P_{ac} (W)	P_{ld} (W)	P_{dis} (W)	BTU/HR	KCAL/HR
2-ohm parallel	1.87	154	5	149	508	128
4-ohm dual	1.94	161	5	156	533	134
8-ohm dual	1.41	113	4	109	372	94
8-ohm bridged	1.91	159	5	154	526	133
70-V dual	1.40	113	4	109	372	94
70-V parallel	1.38	110	4	106	362	91
140-V bridged	1.38	111	4	107	365	92

Application: Dynamic

LOAD	LINE CURRENT (A)	P_{ac} (W)	P_{ld} (W)	P_{dis} (W)	BTU/HR	KCAL/HR
2-ohm parallel	3.55	317	26.3	291	994	250
4-ohm dual	3.60	321	26.3	295	1007	254
8-ohm dual	2.53	218	21.2	197	673	170
8-ohm bridged	3.60	321	26.3	295	1007	254
70-V dual	2.46	208	21.6	186	635	160
70-V parallel	2.42	204	21.6	182	622	157
140-V bridged	2.47	210	21.6	188	642	162

Application: Full Music Power

LOAD	LINE CURRENT (A)	P_{ac} (W)	P_{ld} (W)	P_{dis} (W)	BTU/HR	KCAL/HR
2-ohm parallel	5.50	520	80	440	1503	379
4-ohm dual	5.65	535	80	455	1554	391
8-ohm dual	3.93	353	64	289	987	249
8-ohm bridged	5.61	535	80	455	1554	392
70-V dual	3.72	332	64	268	915	231
70-V parallel	3.72	331	64	267	912	230
140-V bridged	3.65	325	64	261	891	225

Electro-Voice®

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