



AV-110 SERIES

HIGH VOLTAGE, DC-COUPLED
LINEAR BROADBAND AMPLIFIERS
FOR HIGH IMPEDANCE LOADS

AV-112 SERIES

MEDIUM VOLTAGE, DC-COUPLED
LINEAR BROADBAND AMPLIFIERS
FOR LOW IMPEDANCE LOADS

The AV-110 family of variable-gain linear amplifiers is designed for driving high impedance loads with peak-to-peak output voltages as high as 1000 Volts.

The AV-112 family is similar, but is designed for lower impedance loads (and thus higher average powers).

Model AV-110A-PS provides up to $\pm 500V$ (i.e., 1000 Volts peak-to-peak), with a bandwidth of DC to 3 kHz, a 35 μs rise time, and gain variable (by a ten-turn control) from x1 to x250.

The high-speed, high-voltage AV-110J-PS drives loads as low as 10 k Ω with amplitudes to $\pm 400V$, with 3.5 μs rise times.

Model AV-110B-PS provides up to $\pm 200V$ for loads of greater than 50 k Ω , with 100 kHz bandwidth. The gain is variable from x1 to x100 and the rise time at maximum output is 1 μs . The AV-110G-PS is identical, except that the maximum bandwidth is extended to 350 kHz.

For lower amplitude applications, model AV-110C-PS provides up to 200 Volts peak-to-peak with a bandwidth of DC to 200 kHz, and a gain which is variable from x1 to x50.

For higher bandwidth applications, the AV-110H-PS features a 1MHz bandwidth and amplitudes to ± 50 Volts into high-impedance loads (≥ 10 k Ω). Model AV-110D-PS also features a 1 MHz bandwidth but offers amplitudes to ± 30 Volts into low-impedance loads (≥ 50 Ω).

The AV-110E-PS can drive load impedances as low as 20 Ω , with amplitudes to ± 25 Volts, at frequencies up to 50 kHz.

Most AV-110 models are available with a two-channel option that provides two independent amplifiers with separate connectors and gain controls. Also, most models are available with an optional ten-turn DC offset control that introduces a bipolar DC offset to the output waveform.

The 400 Volt (peak-to-peak) Model AV-112A-PS features a bandwidth of DC to 300 kHz, a 1 μs rise time, and a gain that is variable (using a ten-turn control) from

x1 to x100. Model AV-112A-PS will drive load impedances as low as 5 k Ω and will provide an average output power as high as 8 Watts. The AV-112AH-PS is a higher-power version, capable of driving load impedances as low as 1.2 k Ω and generating output powers of up to 35W.

The 50 kHz bandwidth Model AV-112B-PS provides up to 270 Volts peak-to-peak for load impedance greater than 500 Ohms. The gain is variable from x1 to x68 and the rise time at maximum output is 1 μs . This model will provide an average output power as high as 40 Watts.

For lower amplitude and load impedance (100 Ohms) applications, Avtech offers Model AV-112C-PS, which provides up to 180 Volts peak-to-peak with a bandwidth of DC to 30 kHz and a gain that is variable from x1 to x45. Model AV-112C-PS will output an average output power level as high as 81 Watts.

Standard models provide non-inverting gain. An inverting gain mode can be added as an option.

Model AV-112D-PS provides unipolar (positive-only) operation up to 50V for load impedances as low as 10 Ohms. This provides peak currents of up to 5 Amps (50V / 10 Ω = 5A), with average currents as high as 2.5 Amps. The bandwidth is 20 kHz.

All models are protected from overload conditions (such as low load impedance) by an automatic control feature that limits the output power for as long as the overload condition persists.

All models require 100-240 Volts, 50-60 Hz prime power and are equipped with BNC input and output connectors.

Many aspects of these amplifiers can be customized for special requirements. Contact Avtech with your special requirement (info@avtechpulse.com)!

The AV-151 and AV-153 series of function generators (<http://www.avtechpulse.com/function/>) also offer linear amplifier capabilities.



AV-110G-PS-OS

< 50 WATT MODELS**SPECIFICATIONS****AV-110 SERIES**

Model:	AV-110A-PS	AV-110J-PS	AV-110B-PS	AV-110G-PS	AV-110C-PS	AV-110H-PS	AV-110D-PS	AV-110E-PS
Output amplitude:	0 to ±500 V	0 to ±400 V	0 to ±200 V	0 to ±200 V	0 to ±100 V	0 to ±50 V	0 to ±30 V	0 to ±25 V
Maximum current:	5 mA	40 mA	4 mA	4 mA	10 mA	5 mA	600 mA	1.25 Amps
Load impedance:	≥ 100 kΩ	≥ 10 kΩ	≥ 50 kΩ	≥ 50 kΩ	≥ 10 kΩ	≥ 10 kΩ	≥ 50 Ω	≥ 20 Ω
Output resistance ¹ :	≈ 0Ω	≈ 0Ω	≈ 0Ω	≈ 0Ω	≈ 50Ω	≈ 0Ω	≈ 0Ω	≈ 0Ω
Bandwidth (f _{-3dB}):	3 kHz	50 kHz	100 kHz	350 kHz	200 kHz	1000 kHz	1000 kHz	50 kHz
Rise time (20%-80%, for maximum output):	35 us	3.5 us	1.0 us	1.0 us	0.6 us	0.3 us	0.08 us	1.5 us
Output power (maximum)	2.5 W	16 W	0.8 W	0.8 W	1 W	0.25 W	18 W	31 W
Voltage gain ² :	×1 to ×250	×1 to ×200	×1 to ×100	×1 to ×100	×1 to ×50	×1 to ×25	×1 to ×15	×1 to 12.5
Gain polarity:	Standard: Non-inverting (+) Optional ⁵ : Switchable between Non-inverting (+) and Inverting (-) modes							
Input range ² :	0 to ± 2 Volts (1 kΩ input impedance)							
Dual channel:	Optional ³	Optional ³	Optional ³	Optional ³	Optional ³	Optional ³	Optional ³	No
Regular DC offset option ^{2,4,7} :	± 100 V	± 100 V	± 50 V	± 50 V	± 25 V	± 25 V	± 15 V	No
Extended DC offset option ^{2,6,7} :	± 500 V	± 400 V	± 200 V	± 200 V	± 100 V	± 50 V	± 30 V	No
Connectors:	In, Out: BNC							
Dimensions:	100 mm x 430 mm x 375 mm (3.9" x 17" x 14.8")							
Power requirement:	100-240 Volts, 50-60 Hz							

- 1) "Output resistance" is the internal resistance in series with output. Non-zero output impedances (R_{OUT}) will reduce the maximum output amplitude slightly when operating into low load impedances. That is, $V_{OUT} = V_{SET} \times R_{LOAD} / (R_{LOAD} + R_{OUT})$, where V_{SET} is the set amplitude and R_{LOAD} is the load resistance.
- 2) These parameters can easily be adapted to meet special requirements. Contact Avtech (info@avtechpulse.com) with your special application!
- 3) To specify the two channel option add the suffix -D to the model number.

- 4) To specify the regular DC offset option, add the suffix -OS to the model number.
- 5) Add the suffix -INV to specify the switchable gain polarity feature.
- 6) To specify the extended DC offset option, add the suffix -OS to the model number.
- 7) The sum of the amplitude and the offset must remain within the rated output amplitude range – i.e., this option does not change the minimum or maximum obtainable output voltage.

≥ 50 WATT MODELS**SPECIFICATIONS****AV-112 SERIES**

Model:	AV-112A-PS	AV-112AH-PS	AV-112B-PS	AV-112C-PS	AV-112D-PS
Output amplitude:	0 to ±200 Volts	0 to ±200 Volts	0 to ±135 Volts	0 to ±90 Volts	0 to +50 Volts
Maximum peak current:	40 mA	167 mA	270 mA	900 mA	5 Amps
Maximum average current:	40 mA	167 mA	270 mA	900 mA	2.5 Amps
Output polarity:	Bipolar				Positive only
Load impedance:	≥ 5 kΩ	≥ 1.2 kΩ	≥ 500 Ω	≥ 100 Ω	≥ 10 Ω
Output resistance ¹ :	≈ 20 Ω	≈ 20 Ω	≈ 20 Ω	≈ 5 Ω	≈ 0 Ω
Bandwidth (f _{-3dB}):	300 kHz	300 kHz	50 kHz	30 kHz	20 kHz
Rise time (20%-80%, for maximum output):	1 us	1 us	1 us	3 us	10 us
Average output power: (maximum)	8 W	35 W	40 W	81 W	125 W
Voltage gain ² :	×1 to ×100	×1 to ×100	×1 to ×68	×1 to ×45	×1 to ×25
Gain polarity:	Standard: Non-inverting (+) Optional ⁴ : Switchable between Non-inverting (+) and Inverting (-) modes				Non-inverting (+)
Input range ² :	0 to ± 2 Volts				0 to +2 Volts
Input impedance:	1 kΩ				
Dual channel option:	Not available.				
DC offset option ³ :	0 to ±200 Volts	0 to ±200 Volts	0 to ±135 Volts	0 to ±90 Volts	0 to +35 Volts
Connectors:	In, Out: BNC				
Dimensions:	100 mm x 430 mm x 375 mm (3.9" x 17" x 14.8")				
Power requirement:	100-240 Volts, 50-60 Hz				

- 1) "Output resistance" is the internal resistance in series with output. Non-zero output impedances (R_{OUT}) will reduce the maximum output amplitude slightly when operating into low load impedances. That is, $V_{OUT} = V_{SET} \times R_{LOAD} / (R_{LOAD} + R_{OUT})$, where V_{SET} is the set amplitude and R_{LOAD} is the load resistance.
- 2) These parameters can easily be adapted to meet special requirements.

- 3) Contact Avtech (info@avtechpulse.com) with your special application. To specify the DC offset option, add the suffix -OS to the model number. The sum of the amplitude and the offset must remain within the rated output amplitude range – i.e., this option does not change the minimum or maximum obtainable output voltage.
- 4) Add the suffix -INV to specify the switchable gain polarity feature.