



## 9205/9305

### Multi-Channel Switch-Mode Amplifiers

#### Features

- Multi-channel options (available in 2- or 3-channel versions).
- Operate as a voltage-controlled voltage source or voltage-controlled current source.
- Four-quadrant operation.
- Adjustable gain.
- Stable when driving highly capacitive loads.
- User-selectable current limit to protect fragile DUTs or where specified in a Standard.
- DC enabled or DC blocked and DC Servo (for driving transformer-coupled loads or coils).
- Balanced and/or unbalanced inputs.

#### Performance Overview:

Bandwidth:	DC to 250 kHz
Minimum Drop/Rise Time:	7 $\mu$ s
Slew Rate:	Up to 150 V/ $\mu$ s
Maximum Voltage:	200 V <sub>p</sub>
Maximum Current:	Up to 50 A <sub>p</sub> per channel
Distortion:	<0.1% at 1 kHz below clip
Maximum Long-Term Power:	5.0 kW

**AE Techron's 9205/9305** amplifiers are 200V<sub>p</sub>, DC-to-250 kHz capable amplifiers that offer a unique combination of switch-mode efficiency and linear-amplifier-like fidelity in a compact, portable package. They can be configured for Controlled Current or Controlled Voltage operation, and are able to drive virtually any type of load without a reduction in rated power, while maintaining low distortion and low DC drift.

9205/9305 amplifiers are a great choice when available AC Mains power is limited or may change. The 9205/9305 amplifier couples an 85% operating efficiency with a universal, 100V-to-250V power supply with PFC (power factor correction). This highly efficient supply can draw up to 30% more power from a given-size AC Mains breaker while putting less noise back on the AC mains.

Combined, these features permit a 9205/9305 amplifier to produce up to 2 kW output when connected to a 20A, 120V mains supply and up to 5 kW from 230V or 240V sources. Plus, they can move seamlessly from lab to factory since they can be powered from any normal, single-phase, AC Mains supply.

With a slew rate of up to 150 V/ $\mu$ s and a minimum drop/rise time of 7 $\mu$ s, 9205/9305 amplifiers are fast enough to meet the surge and dropout requirements of many current EMC test standards.

9205/9305 amplifiers are available in two- and three-channel versions, with all channels drawing power from the amplifier's common power supply. This design allows power to shift dynamically between channels during operation, so up to 4500 watts of the power supply's potential 5000 watts can be available at any given moment for use by any single channel. This dynamic power capability makes the 9205/9305 amplifier able to perform like a much more powerful amplifier, making it well-suited for applications that have intermittent power demands for each channel over time, such as MRI systems, multi-channel positioning systems, or multi-element sonar.

Low THD+N and IMD distortion and low DC drift make 9205/9305 amplifiers ideal for many industrial multi-channel

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applications. Because the 9205/9305 amplifier's output is ground-referenced, channels can be used independently to create a three-phase, wide-bandwidth voltage source, or channels can be connected in series to form a higher-voltage differential output.

Altogether, 9205/9305 amplifiers are a great solution for a wide range of high-current, low-voltage, low-noise applications that require wide bandwidth and the ability to drive reactive or widely varying load impedances.

NOTE: The handles are not to be used for carrying the amplifier and only lift the device using a two-person technique.

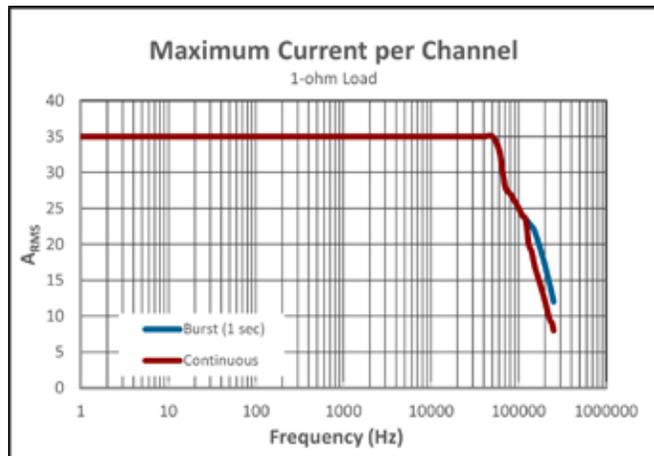
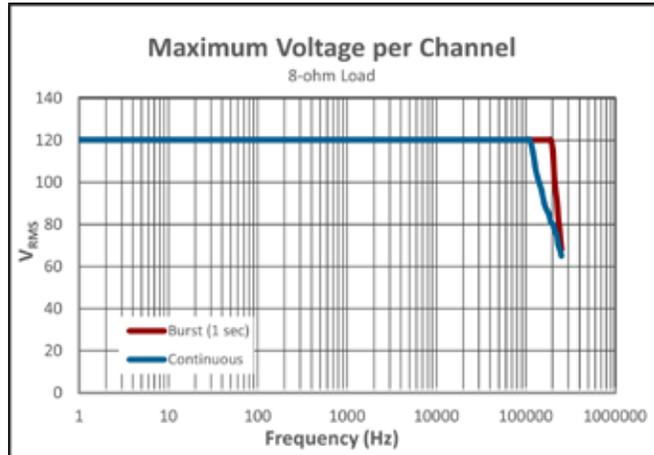
Maximum Continuous AC Output Current			
$V_{RMS}$	Per Channel, All Channels Driven		Single Channel Driven
	9205	9305	9205/9305
30	35A	35A	35A
60	35A	25A	35A
120	20A	12A	35A

Performance data is for a purely resistive load; when the load is reactive, it is possible for the All Channels Driven VA output to improve up to Single Channel Driven performance for all channels.

Maximum Continuous DC Output Current			
$V_{DC}$	Per Channel, All Channels Driven		Single Channel Driven
	9205	9305	9205/9305
13.5	35A	35A	35A
24	35A	35A	35A
48	20A	12A	35A

THD + Noise*	
Below	mV
500 kHz	25
80 kHz	2

\*THD + Noise with 1V input, 8-ohm load

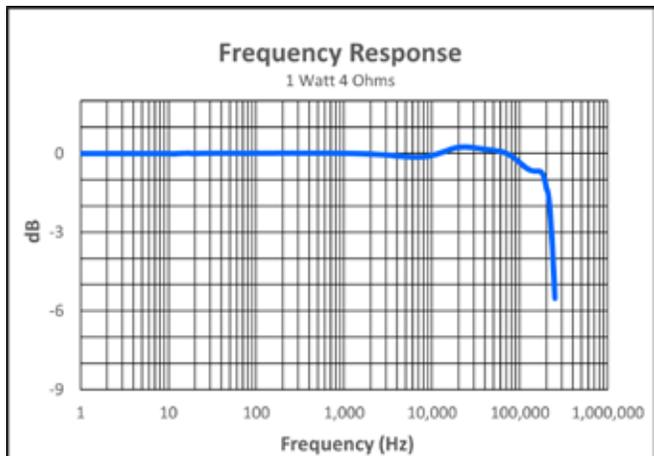


### 9205/9305 Default DIP Switch Settings

Red = Default

OFF	ON				
1	<input type="checkbox"/>	1	DC SERVO	OFF	ON
2	<input type="checkbox"/>	2	OPERATION MODE	CC	CV
3	<input type="checkbox"/>	3	COMPENSATION NETWORK 2	OFF	ON
4	<input type="checkbox"/>	4	COMPENSATION NETWORK 1	OFF	ON
1	<input type="checkbox"/>	5	CONTROL CONFIGURATION	FOLLOWER	MASTER
2	<input type="checkbox"/>	6	COUPLING	AC	DC
3	<input type="checkbox"/>	7	GAIN BIT 3 (MSB)	OFF	10
4	<input type="checkbox"/>	8	GAIN BIT 2	OFF	5
5	<input type="checkbox"/>	9	GAIN BIT 1 (LSB)	OFF	2.5
6	<input type="checkbox"/>	10	ELECTRONIC GAIN MATCHING	OFF	ON
7	<input type="checkbox"/>	11	CURRENT LIMIT BIT 1	OFF	+25Ap
8	<input type="checkbox"/>	12	CURRENT LIMIT BIT 2	OFF	+12.5Ap

NOTE: GRAY TEXT INDICATES SWITCH USED FOR FACTORY CONFIGURATION ONLY. ALL BIT SWITCHES ARE ADDITIVE. RIGHT = ON.



## Specifications

### 9205

#### Maximum Continuous Output

Current per Channel: 35A<sub>RMS</sub> AC or DC

Power: 5 kW from 30A, 230/240VAC;

2 kW from 20A, 120VAC

Output Channels: 2

Supply Voltage: Universal power supply with PFC, single-phase, 100V to 240V AC ±10%, 30A, 50/60 Hz

Dimensions (HxWxD): 3.47 x 17.3 x 22.8 in.  
(8.81 x 43.94 x 57.91 cm)

Weight: Approximately 44.5 lbs. (20.2 kg)

### 9305

#### Maximum Continuous Output

Current per Channel: 35A<sub>RMS</sub> AC or DC

Power: 5 kW from 30A, 230/240VAC;

2 kW from 20A, 120VAC

Output Channels: 3

Supply Voltage: Universal power supply with PFC, single-phase, 100V to 240V AC ±10%, 30A, 50/60 Hz

Dimensions (HxWxD): 3.47 x 17.3 x 22.8 in.  
(8.81 x 43.94 x 57.91 cm)

Weight: Approximately 56 lbs. (25.4 kg)

## Common Data (all models)

Operating Modes: AC, DC, and AC + DC

Frequency, AC Mode Output (-3 dB): DC - 250 kHz

Max Voltage Ranges (no load),

AC: 0 - 140 V<sub>RMS</sub>

AC + DC: 0 - ±200 V<sub>p</sub>

Load Regulation (ref to full scale): <0.05%, DC to 100 Hz; <0.1%, 10 Hz to 10 kHz

Line Regulation (full scale): 100V to 250V AC<sub>RMS</sub>

Harmonic Distortion (80 kHz, low-passed): Less than 0.3% from 10 Hz to 30 kHz; 0.5% up to 50 kHz

Harmonic Distortion (30 kHz, low-passed): Less than 0.1% from 10 Hz to 50 kHz

Quiescent Power, Standby: 55W

Run: 135W

DC Offset: <2mV

Distortion: <1.0%

THD: .02% at 1kHz

Voltage Slew Rate, 8Ω: 150 V/μs

Ripple Voltage: 250mV @ 250kHz

Efficiency: 85%, typical

Power Factor: .98, typical

Source Impedance: 5 mΩ + 6 μH

Cooling: Internal forced-air fans

Protection: Over/under voltage, over current, over temperature

Input, Signal In: BNC connector (unbalanced)

Output: High-current barrier strip

Operating Environment,

Temperature: 5 °C to 50 °C (41 °F to 122 °F);

Maximum output power de-rated above 30 °C (86 °F)

Humidity: Maximum relative humidity 80% for temperatures up to 31 °C decreasing linearly to 50% relative humidity at 40 °C

Altitude: 3000 m Maximum

Environment: Indoor Use Only, Pollution degree 2

Equipment Class: Group 1 Class A

Transient Overvoltage: Overvoltage Category II

