



## 9100 Series

### Wide-Bandwidth, High-Power Switch-Mode Amplifiers

**AE Techron's 9100 Series** amplifiers are 200Vp, DC-to-250 kHz capable amplifiers that offer a unique combination of switch-mode efficiency and linear-amplifier-like fidelity in a single, compact package. They are able to drive virtually any type of load without a reduction in rated power, with low distortion and low DC drift.

The 9100 series is a powerful and flexible partner when the environment is difficult or existing AC Mains options are limited. It is able to be powered from any normal single-phase AC mains voltage (100V AC – 250V AC). It is power-efficient, producing up to 2,000 watts output from a 20A, 120V AC mains supply, and up to 5 kW\* from 230V or 240V sources.

This combination of features makes the 9100 series an ideal solution for a wide range of high-current, low-voltage applications that require both wide bandwidth and the ability to drive reactive or widely varying load impedances.

### Features

- Stable when driving highly capacitive loads.
- Four-quadrant operation.
- Fixed or variable gain.
- User-selectable current limit to protect fragile DUTs or where specified in the Standard.
- DC enabled or DC blocked and DC Servo (for driving transformer-coupled loads or coils).
- Balanced and/or unbalanced input.
- Operate as a voltage-controlled voltage source or voltage-controlled current source.
- Variable output impedance from 0 to 1 ohm (Voltage mode).

### Performance Overview:

<b>Bandwidth:</b>	DC to 250 kHz
<b>Minimum Drop/Rise Time:</b>	7µs
<b>Slew Rate:</b>	Up to 150 V/µs
<b>Maximum Voltage:</b>	200 V <sub>p</sub>
<b>Maximum Current:</b>	100 A <sub>p</sub>
<b>Distortion:</b>	<0.1% at 1 kHz, below clip
<b>Maximum Long-Term Power:</b>	5 kW*

	Continuous Output Current		
	9105	9110	9115
13.5 VDC	35A	60A	90A
24 VDC	35A	60A	90A
48 VDC	34A	60A	90A
30 VAC	37A	74A	100A
60 VAC	37A	74A	80A
120 VAC	37A	37A	37A

Performance data is for a purely resistive load; performance will be improved into loads that are partially or completely reactive.

\*9105 output is 4.5 kW from 230V or 240V sources; output for all other models is 5 kW.

## Specifications

### 9105

#### Maximum Continuous Output

**Current:** 37A<sub>RMS</sub> AC or DC

**Power:** 2 kW from 20A, 120VAC; 4.5 kW from 30A, 230/240VAC

**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 40 lbs. (18.14 kg)

### 9110

#### Maximum Continuous Output

**Current:** 74A<sub>RMS</sub> AC or DC

**Power:** 5 kW

**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 45 lbs. (20.41 kg)

### 9115

#### Maximum Continuous Output

**Current:** 100A<sub>RMS</sub> AC or DC

**Power:** 5 kW

**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 50 lbs. (22.68 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

**DC Offset:** <2mV

**Distortion:** <1.0%

**Voltage Slew Rate, 8Ω:** 150 V/μs

**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

### 9100 Series Default DIP Switch Settings

Red = Default

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

NOTE: GRAY TEXT INDICATES SWITCH USED FOR FACTORY CONFIGURATION ONLY.

ALL BIT SWITCHES ARE ADDITIVE. RIGHT = ON.

\*CURRENT LIMIT VALUES:

BIT 1 = +30Ap (9105), +60Ap (9110), +90Ap (9115)

BIT 2 = +15Ap (9105), +30Ap (9110), +45Ap (9115)

MIN=15Ap (9105), 30Ap (9110), 45Ap (9115)

MAX= 60Ap (9105), 120Ap (9110), 180Ap (9115)

### SIM-91 Default DIP Switch Settings

Red = Default

OFF	ON				
<input type="checkbox"/>	<input type="checkbox"/>	1	SYNTHETIC IMPEDANCE BIT 3 (MSB)	OFF	BIT 3 VALUE**
<input type="checkbox"/>	<input type="checkbox"/>	2	SYNTHETIC IMPEDANCE BIT 2	OFF	BIT 2 VALUE**
<input type="checkbox"/>	<input type="checkbox"/>	3	SYNTHETIC IMPEDANCE BIT 1 (LSB)	OFF	BIT 1 VALUE**
<input type="checkbox"/>	<input type="checkbox"/>	4	UNUSED	OFF	NULL

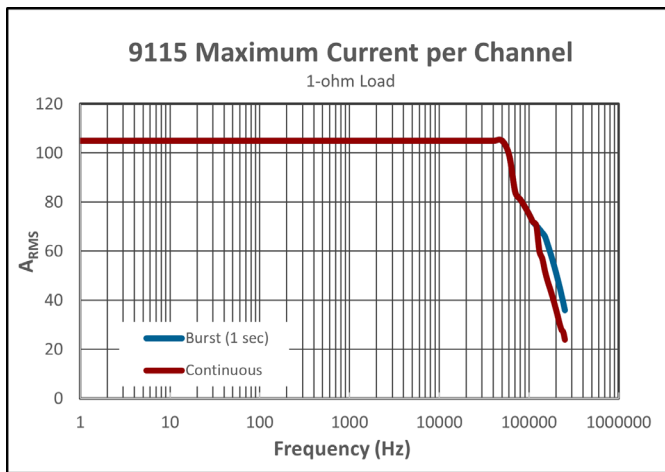
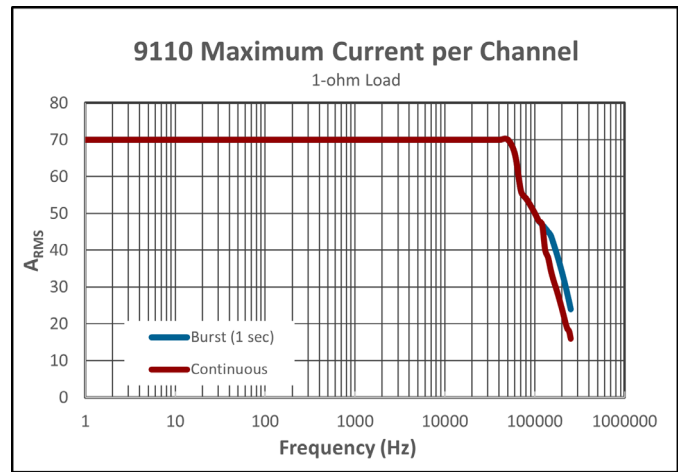
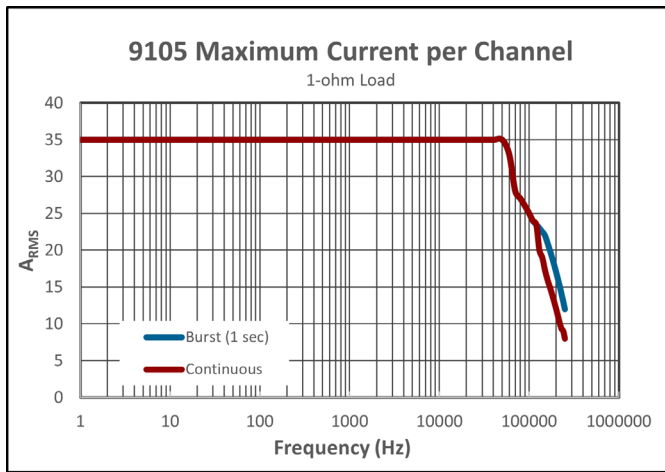
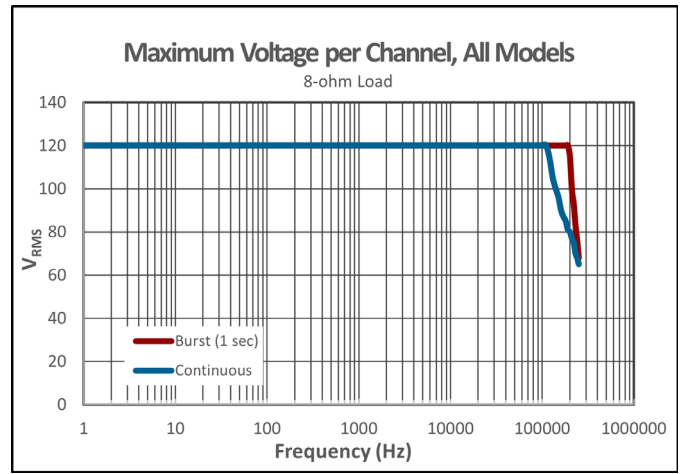
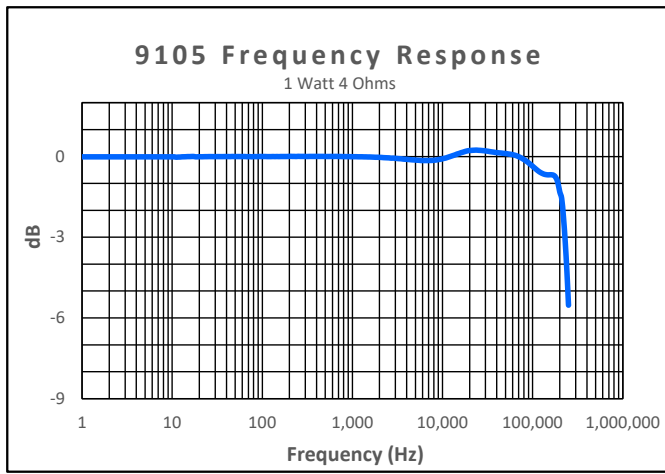
NOTE: ALL BIT SWITCHES ARE ADDITIVE. RIGHT = ON.

\*\*SYNTHETIC IMPEDANCE VALUES:

BIT 3 = +0.5Ω (9105), +0.25Ω (9110), +0.125Ω (9115)

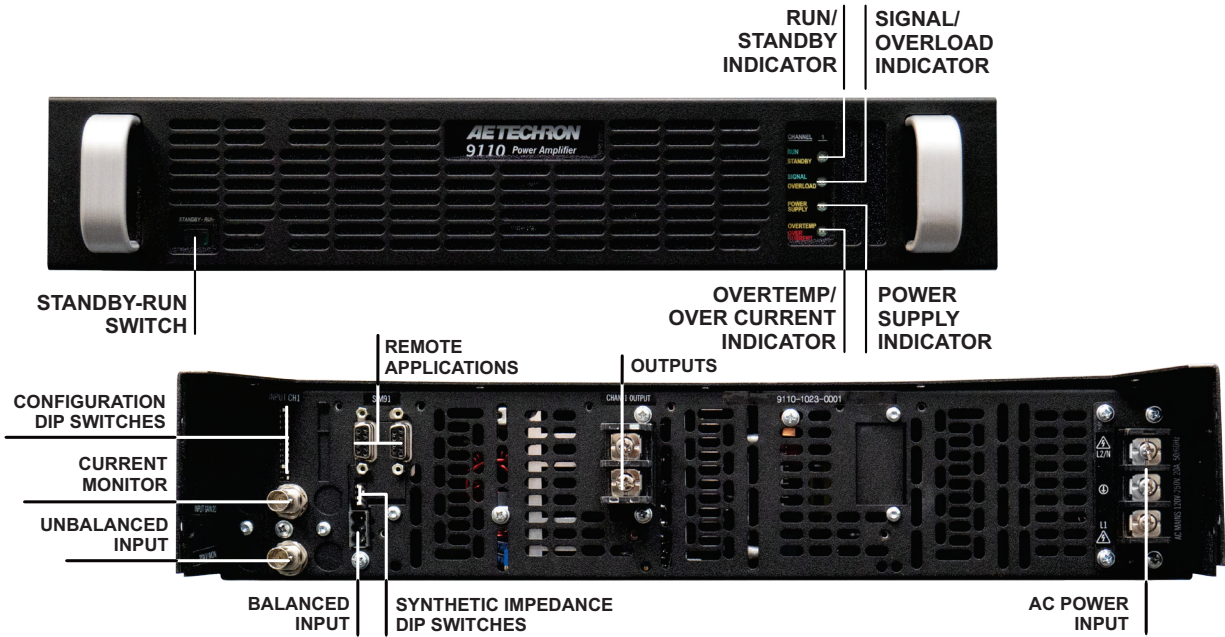
BIT 2 = +0.25Ω (9105), +0.125Ω (9110), +0.0625Ω (9115)

BIT 1 = +0.125Ω (9105), +0.0625Ω (9110), +0.03125Ω (9115)



THD + Noise*	
Below	mV
500 kHz	22.5
80 kHz	1.64
30 kHz	0.75
22 kHz	0.60

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



CURRENT MONITOR: 1V = 10ARMS (9105) 1V = 20ARMS (9110) and 1V = 30 ARMS (9115)

*AE Techron Sales Representative*