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).**

	Continuous Output Current		
	9105	9110	9115
13.5 VDC	35A	60A	90A
24 VDC	35A	60A	90A
48 VDC	34A	60A	90A
30 VAC	35A	70A	100A
60 VAC	35A	70A	80A
120 VAC	35A	37A	37A

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

Performance Overview:

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

*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: $35A_{RMS}$ 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: $70A_{RMS}$ 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: $100A_{RMS}$ 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_{RMS}
AC + DC: 0 – ±200 V_P
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_{RMS}
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

1	DC SERVO		OFF	ON
2	OPERATION MODE		CC	CV
3	COMPENSATION NETWORK 2		OFF	ON
4	COMPENSATION NETWORK 1		OFF	ON
5	*CONTROL CONFIGURATION*		FOLLOWER	MASTER
6	COUPLING		AC	DC
7	GAIN BIT 3 (MSB)	ALL OFF = 2.5 ALL UP = 20	OFF	10
8	GAIN BIT 2		OFF	5
9	GAIN BIT 1 (LSB)		OFF	2.5
10	*ELECTRONIC GAIN MATCHING*		OFF	ON
11	CURRENT LIMIT BIT 1	BOTH OFF=MIN* BOTH ON=MAX*	OFF	BIT 1 VALUE*
12	CURRENT LIMIT BIT 2		OFF	BIT 2 VALUE*

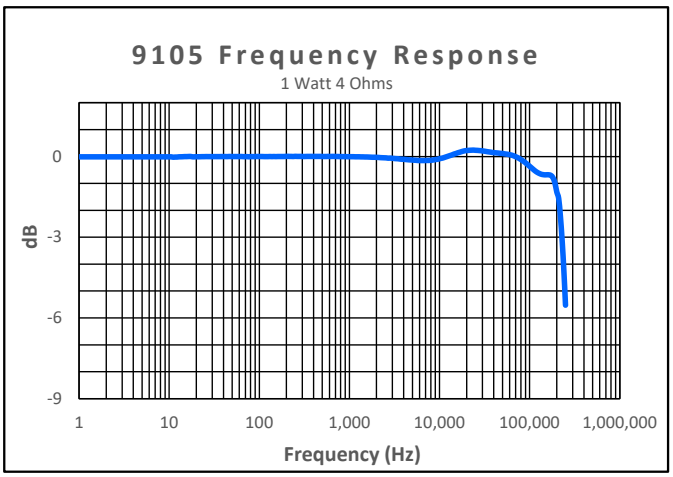
NOTE: *GRAY TEXT INDICATES SWITCH USED FOR FACTORY CONFIGURATION ONLY.*
ALL BIT SWITCHES ARE ADDITIVE. RIGHT = ON.
*CURRENT LIMIT VALUES:
BIT 1 = +25Ap (9105), +50Ap (9110), +75Ap (9115)
BIT 2 = +12.5Ap (9105), +25Ap (9110), +37.5Ap (9115)
MIN=12.5Ap (9105), 25Ap (9110), 37.5Ap (9115)
MAX= 50Ap (9105), 100Ap (9110), 150Ap (9115)

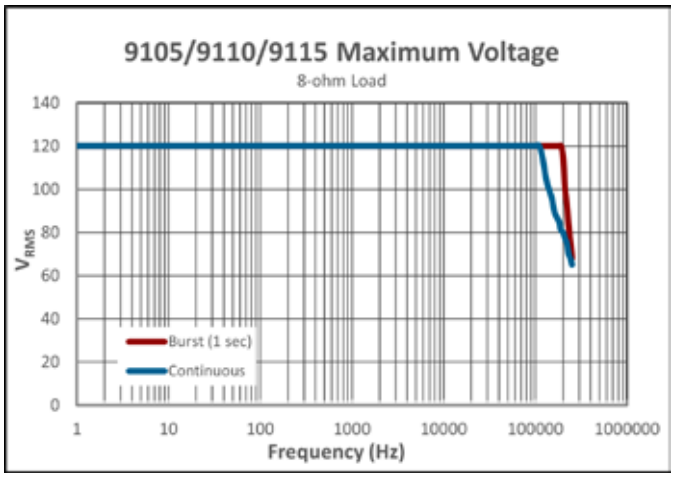
SIM-91 Default DIP Switch Settings

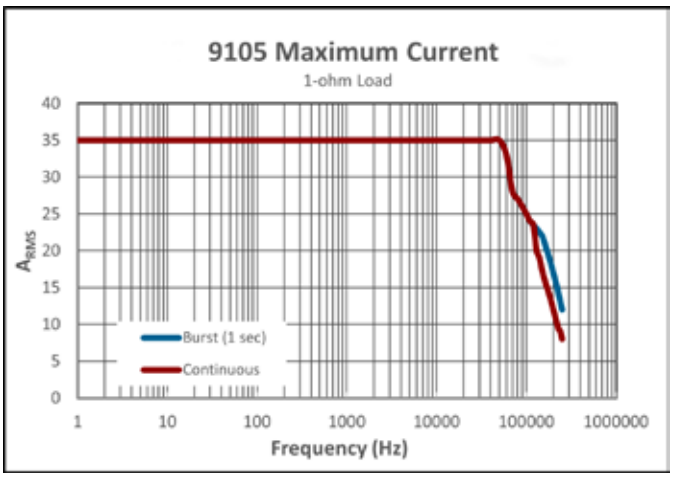
Red = Default

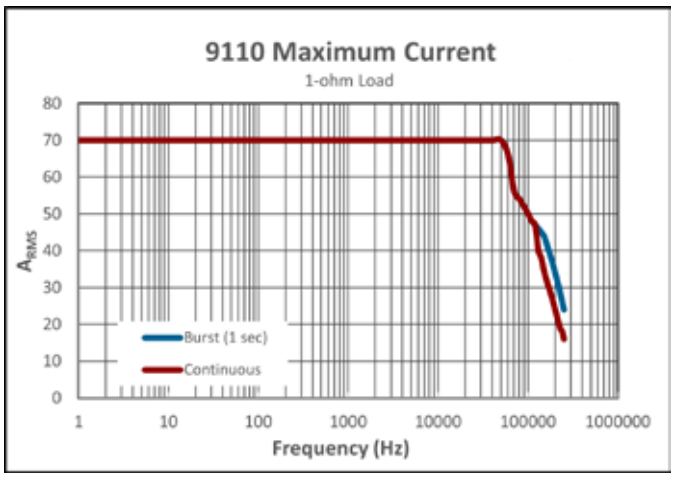
1	SYNTHETIC IMPEDANCE BIT 3 (MSB)	OFF	BIT 3 VALUE**
2	SYNTHETIC IMPEDANCE BIT 2	OFF	BIT 2 VALUE**
3	SYNTHETIC IMPEDANCE BIT 1 (LSB)	OFF	BIT 1 VALUE**
4	UNUSED	OFF	NULL

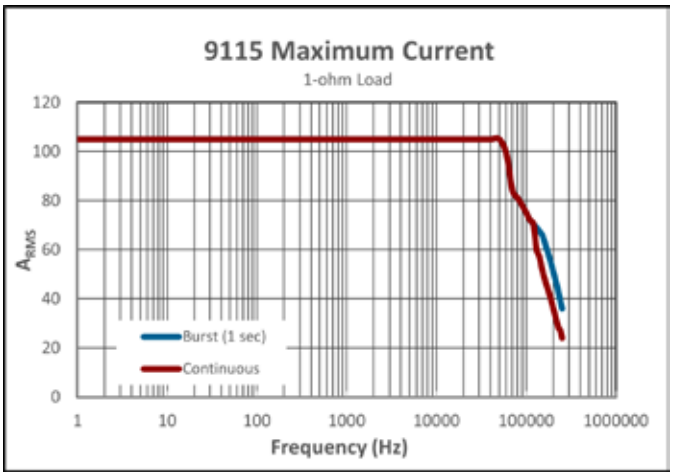
NOTE: ALL BIT SWITCHES ARE ADDITIVE. RIGHT = ON.
**SYNTHETIC IMPEDANCE VALUES:
BIT 3 = +0.5Ω (9105), +0.25Ω (9110), +0.125Ω (9115)
BIT 2 = +0.25Ω (9105), +0.125Ω (9110), +0.0625Ω (9115)
BIT 1 = +0.125Ω (9105), +0.0625Ω (9110), +0.03125Ω (9115)





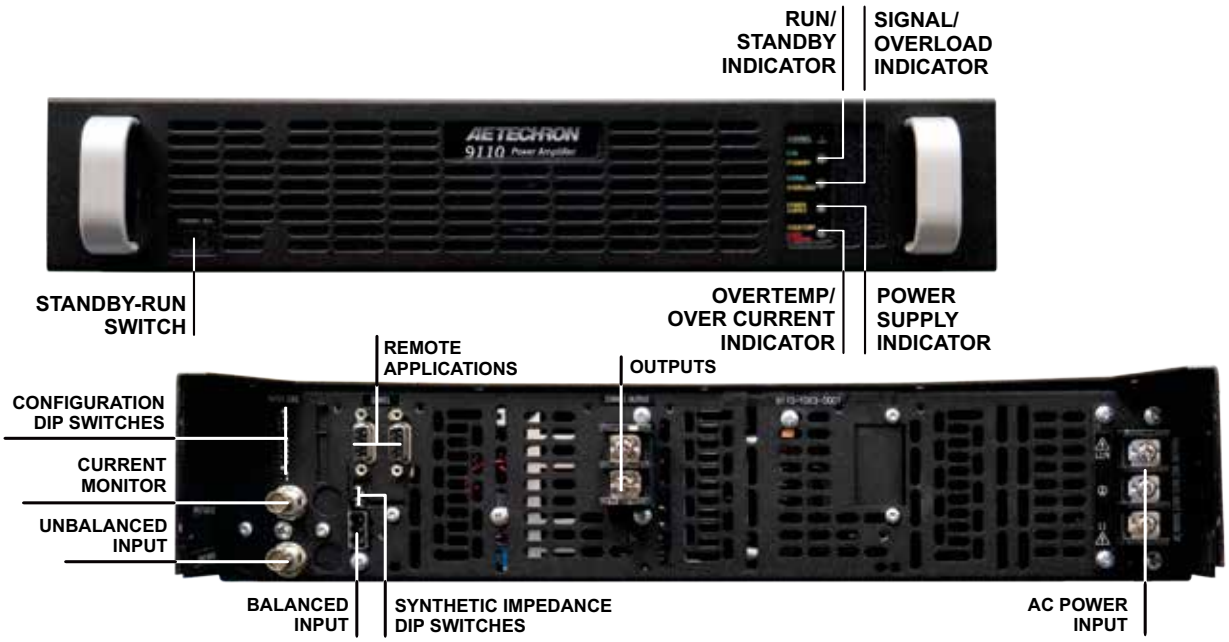






THD + Noise*	
Below	mV
500 kHz	25
80 kHz	2

*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