



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 high-power density, wide-bandwidth, high efficiency, and linear amplifier-like fidelity in a single, compact package. They can drive virtually any type of load without a reduction in rated power, with low distortion and low DC drift.

The 9100 series is power-efficient, with a typical efficiency over 90% at full power. It is a powerful and flexible partner when the environment is difficult or existing AC Mains options are limited.

The single-unit models can be powered from any normal single-phase AC mains voltage (100V AC – 250V AC). The cabinet-based Power Systems can be powered from a variety of three-phase voltages from 200VAC to 415VAC*.

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.

** Three-phase voltages above 240VAC will require a 5-wire service.*

Features:

- **Stable when driving highly capacitive loads.**
- **Four-quadrant operation.**
- **User-selectable 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:

Bandwidth:	DC to 250 kHz
Min. Drop/Rise Time:	7μs
Slew Rate:	Up to 150 V/μs
Maximum Voltage:	200Vp
Current:	35A_{RMS} to 540A_{RMS}
Distortion:	<0.1% at 1 kHz, below clip
Long-Term Power:	5 kW to 30 kW*

**9105 output is 4.2 kW from 230V or 240V sources; output for models 9110 and 9115 is 5 kW.*

Specifications

SINGLE UNIT MODELS



9105

Maximum Continuous Output Current: 35A_{RMS} AC or DC
Power: 2 kW from 20A, 120VAC; 4.2 kW from 30A, 230/240VAC
Supply Voltage: Universal power supply with PFC, single-phase, 100V to 240V AC \pm 10%, 30A, 50/60 Hz
Quiescent Power, Standby: 55W
Run: 125W
Dimensions (HxWxD): 3.47 x 17.3 x 22.8 in. (8.81 x 43.94 x 57.91 cm)
Weight: Approx 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 \pm 10%, 30A, 50/60 Hz
Quiescent Power, Standby: 55W
Run: 184W
Dimensions (HxWxD): 3.47 x 17.3 x 22.8 in. (8.81 x 43.94 x 57.91 cm)
Weight: Approx 45 lbs. (20.41 kg)

9115

Maximum Continuous Output Current: 90A_{RMS} AC or DC
Power: 5 kW
Supply Voltage: Universal power supply with PFC, single-phase, 100V to 240V AC \pm 10%, 30A, 50/60 Hz
Quiescent Power, Standby: 55W
Run: 255W
Dimensions (HxWxD): 3.47 x 17.3 x 22.8 in. (8.81 x 43.94 x 57.91 cm)
Weight: Approx 50 lbs. (22.68 kg)

POWER SYSTEM MODELS

9130

Maximum Continuous Output Current: 180A_{RMS} AC
Power: 10 kW
Supply Voltage: 3-phase, 208V \pm 10%, 30A, 50/60 Hz; 400V \pm 10%, 30A version available
Quiescent Power, Standby: 110W
Run: 510W
Dimensions (HxWxD): 35.05 x 22.56 x 31.56 in. (89.03 x 57.3 x 80.16 cm)
Weight: Approx 222 lbs. (100.7 kg)

9145

Maximum Continuous Output Current: 270A_{RMS} AC
Power: 15 kW
Supply Voltage: 3-phase, 208V \pm 10%, 30A, 50/60 Hz; 400V \pm 10%, 30A version available
Quiescent Power, Standby: 165W
Run: 765W
Dimensions (HxWxD): 35.05 x 22.56 x 31.56 in. (89.03 x 57.3 x 80.16 cm)
Weight: Approx 272 lbs. (123.4 kg)

9160

Maximum Continuous Output Current: 360A_{RMS} AC
Power: 20 kW
Supply Voltage: 3-phase, 208V \pm 10%, 60A, 50/60 Hz; 400V \pm 10%, 60A version available
Quiescent Power, Standby: 220W
Run: 1,020W
Dimensions (HxWxD): 35.05 x 22.56 x 31.56 in. (89.03 x 57.3 x 80.16 cm)
Weight: Approx 322 lbs. (146 kg)

9175

Maximum Continuous Output Current: 450A_{RMS} AC
Power: 25 kW
Supply Voltage: 3-phase, 208V \pm 10%, 60A, 50/60 Hz; 400V \pm 10%, 60A version available
Quiescent Power, Standby: 275W
Run: 1,275W
Dimensions (HxWxD): 35.05 x 22.56 x 31.56 in. (89.03 x 57.3 x 80.16 cm)
Weight: Approx 435 lbs. (197.3 kg)

9190

Maximum Continuous Output Current: 540A_{RMS} AC
Power: 30 kW
Supply Voltage: 3-phase, 208V \pm 10%, 60A, 50/60 Hz; 400V \pm 10%, 60A version available
Quiescent Power, Standby: 330W
Run: 1,530W
Dimensions (HxWxD): 45.80 x 22.56 x 31.56 in. (116.33 x 57.3 x 80.16 cm)
Weight: Approx 485 lbs. (220 kg)



NOTE: The Power System Models (9130, 9145, 9160, 9175, and 9190) are comprised of 9115 units.

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%
THD: .02% at 1kHz
Ripple Voltage: 250mV @ 250kHz
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

Continuous Output Current

	9105	9110	9115	9130	9145	9160	9175	9190
13.5 VDC	35A	60A	90A	180A	270A	360A	450A	540A
24 VDC	35A	60A	90A	180A	270A	360A	450A	540A
48 VDC	34A	60A	90A	180A	270A	360A	450A	540A
30 VAC	35A	70A	90A	180A	270A	360A	450A	540A
60 VAC	35A	70A	80A	160A	240A	320A	400A	480A
120 VAC	35A	37A	37A	74A	100A	137A	174A	200A

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

9100 Series 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	BIT 1 VALUE*
8	<input type="checkbox"/>	12 CURRENT LIMIT BIT 2	OFF	BIT 2 VALUE*

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)

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

SIM-91 Default DIP Switch Settings

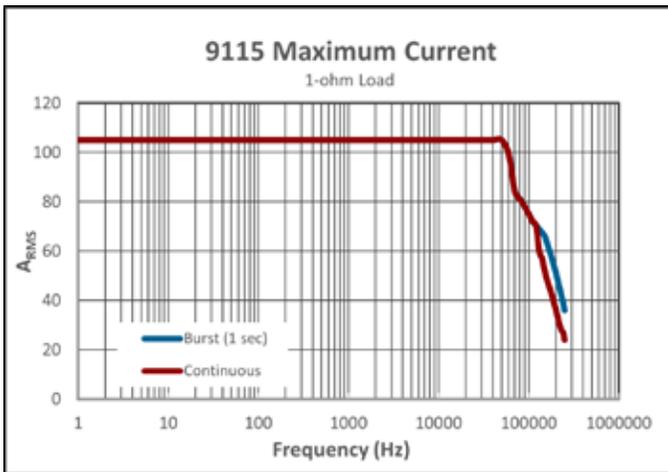
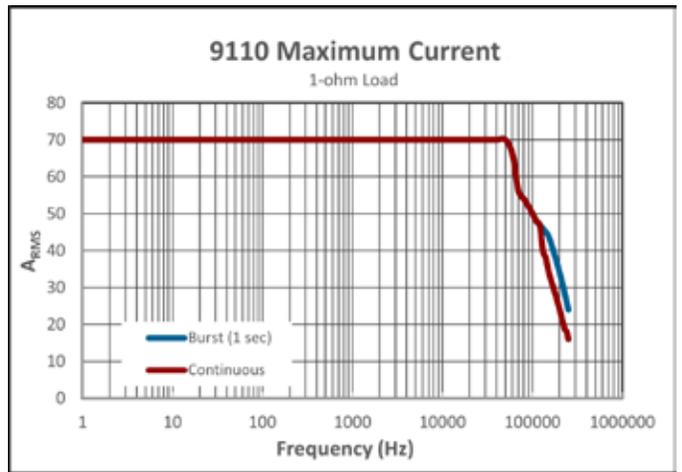
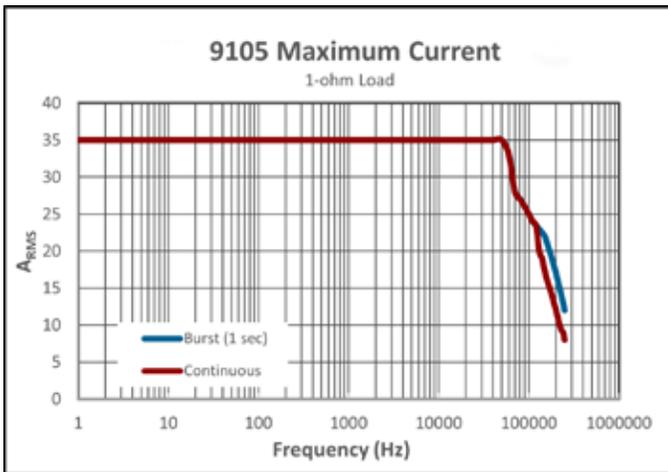
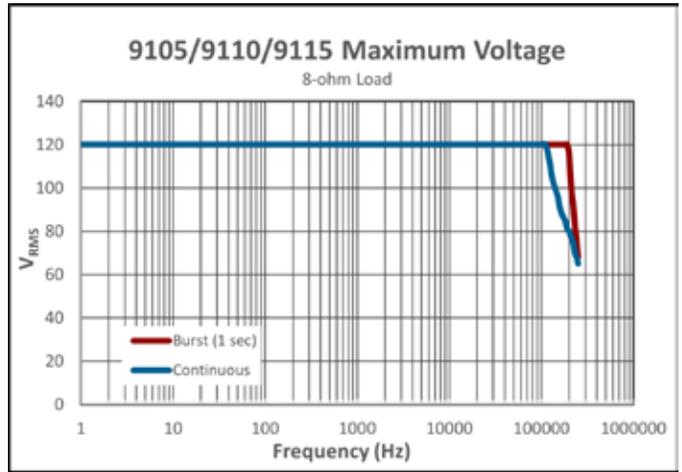
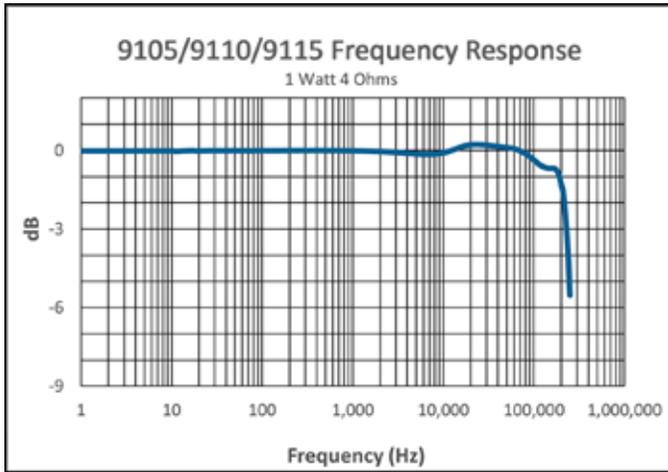
Red = Default

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

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

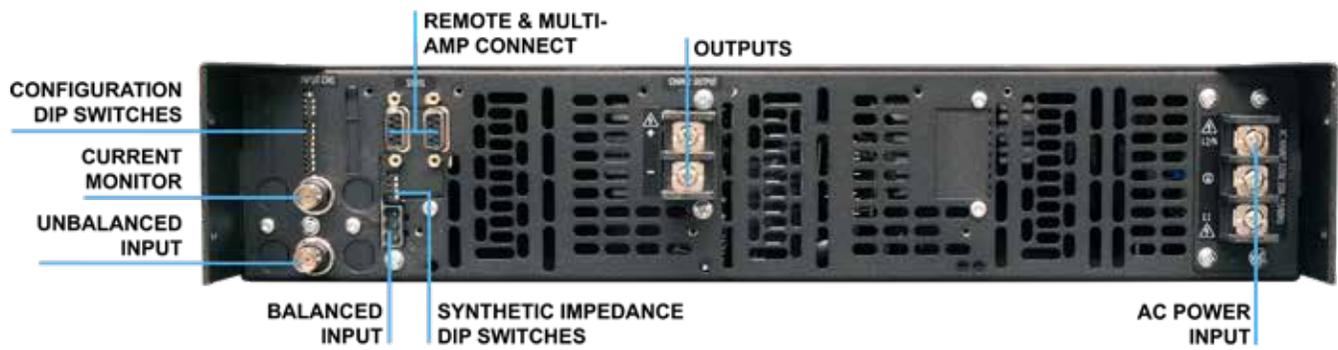
**SYNTHETIC IMPEDANCE VALUES:

BIT 3 = +0.5Ω (9105), +0.25Ω (9110), +0.166Ω (9115)
 BIT 2 = +0.25Ω (9105), +0.125Ω (9110), +0.0833Ω (9115)
 BIT 1 = +0.125Ω (9105), +0.0625Ω (9110), +0.0416Ω (9115)



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

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



CURRENT MONITOR: 1V = 10A_{RMS} (9105), 1V = 20A_{RMS} (9110), and 1V = 30A_{RMS} (9115)



Please note that the handles are not to be used for carrying the amplifier and only lift the device using a two-person technique.

AE Techron Sales Representative