



7114

High-speed AC/DC Amplifier with Precision DC Supply

Performance Overview:

AC Power (up to 20 kHz):	400 watts RMS
Small Signal (8V p-p):	400 kHz
For High-Power Applications to:	50 kHz
DC Power:	15A at 13.5V DC
40 mS Pulse (0.5Ω):	25 Ap
Slew Rate:	50 V/μs
Output Voltage:	±92 Vp or ±42 Vp
Output Impedance:	10mΩ in series with 0.95 μH

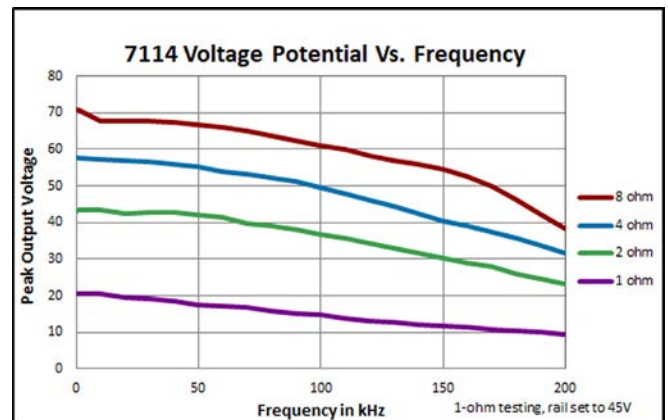
Features

- 15A DC and capable of reproducing 250-kHz ripple or < 4-μs dropout/pulses
- User-variable DC offset: ±20V or ±45V
- User-adjustable current limit: 1A to 25A
- Compact 9.5-inch width, 2U height; weighs only 20 lbs.
- AC/DC coupled
- Four-quadrant operation
- AE Techron Tough: Protection from over-temperature, over-current, over/under supply voltages; will drive capacitive and inductive loads

AE Techron's **7114** is a 400-VA, 4-quadrant, AC and DC amplifier that provides exceptional versatility and value. Compact size, user configurability, DC-Max™ topology, and AE Techron toughness makes the 7114 the ideal lab partner for automotive conducted immunity testing, PSRR testing, or any application where more voltage or current is needed than is available from the signal source.

Compact Power

The 7114 weighs just 20 pounds and fits into approximately one-half of a 2U rack space, but still can output up to 400 watts RMS continuous. This makes the 7114 a great choice when size or portability are important selection criteria.



Versatile

Front panel user controls give the 7114 a wide range of possible uses; gain, maximum current, and DC offset can be fixed or infinitely varied. The choice of AC or DC coupling makes it suitable both for DC applications and for driving objects like coupling transformers or piezo elements that shouldn't see DC. All controls can be turned off when only a durable, high-current amplifier or DC source is needed. Or each function can be individually enabled to provide the unique set of capabilities needed at the moment.

The 7114 can produce a DC output without an input signal. DC output is independent of input signal and amplifier gain. This DC capability, when combined with an input

signal from a function generator, creates a versatile DC source with high-speed ripple and dropout capabilities.

DC-Max™

7114 is built with our new DC-Max topology. Amplifiers with DC-Max have long-term DC power that is more than 40% greater than traditional designs. This increased DC performance better matches the power requirements found in DC conducted immunity and PSRR testing.

AE Techron Toughness

The 7114 is compact in size, but it is designed using the same conservative design rules and protection systems that have made AE Techron amplifiers the toughest audio bandwidth amplifiers available.

AC Specifications - High Voltage Mode

Ohms	PEAK OUTPUT						RMS OUTPUT				
	40 mSec Pulse, 20% Duty Cycle		5 Minutes, 100% Duty Cycle		1 Hour, 100% Duty Cycle		5 Minutes, 100% Duty Cycle		1 Hour, 100% Duty Cycle		
	Volts	Amps	Volts	Amps	Volts	Amps	Volts	Amps	Volts	Amps	Watts
Open	92.0	0.0	92.00	0.0	92.0	0.0	65.0	0.0	65.0	0.0	0
16	80.0	5.0	80.0	5.0	80.0	5.0	56.0	3.5	56.0	3.5	196
8	71.0	8.8	71.0	8.8	71.0	8.8	50.0	6.3	48.0	6.0	288
4	60	15.0	60.0	15.0	80.0	20.0	42.0	10.5	40.0	10.0	400
2	43.0	22.0	43.0	22.0	28.0	14.0	30.0	15.0	20.0	10.0	200

AC Specifications - High Current Mode

Ohms	PEAK OUTPUT						RMS OUTPUT				
	40 mSec Pulse, 20% Duty Cycle		5 Minutes, 100% Duty Cycle		1 Hour, 100% Duty Cycle		5 Minutes, 100% Duty Cycle		1 Hour, 100% Duty Cycle		
	Volts	Amps	Volts	Amps	Volts	Amps	Volts	Amps	Volts	Amps	Watts
Open	42.4	0.0	42.4	0.0	42.2	0.0	30.0	0.0	30.0	0.0	0
4	32.0	8.0	32.0	8.0	32.0	8.0	22.0	5.5	22.0	5.5	121
2	28.0	14.0	28.0	14.0	28.0	14.0	20.0	10.0	20.0	10.0	200
1	20.0	20.0	20.0	20.0	20.0	20.0	14.0	14.0	14.0	14.0	196
0.5	12.5	25.0	12.5	25.0	12.5	25.0	8.9	17.8	8.9	17.8	158

DC Specifications

VDC	OUTPUT (Amperes)	
	5 Minutes, 100% Duty Cycle	1 Hour, 100% Duty Cycle
	48	12
24	10	9
13.5	20	15

Specifications

Performance

AC testing was done at 1 kHz. Continuous DC power levels are lower. See DC Specifications chart.

Frequency Response, DC–150 kHz (1 watt): +0 to -3.0 dB

8-Ohm Power Response (continuous duty),

DC to 60 kHz: ± 65 Vpk

DC to 200 kHz : ± 37 Vpk

Slew Rate: 40 V/ μ Sec

Residual Noise,

10 Hz to 22 kHz: <190 μ V (0.19 mV)

10 Hz to 500 kHz: <550 μ V (0.55 mV)

Signal-to-Noise Ratio,

10 Hz - 22 kHz: -105 dB

10 Hz - 500 kHz: -95 dB

THD (DC - 50 kHz): <0.5%

DC Offset: < ± 10 mV

DC Drift (after 1 minute operation): < ± 200 μ V

Output Impedance: 10 mOhm in Series with 0.95 μ H

Phase Response (10 Hz - 10 kHz):

± 6 degrees including 800 nsec propagation delay

Input Characteristics

Balanced with ground: Three terminal barrier block connector, 20k ohm differential

Balanced with ground: Back-panel DB-9 connector (pins 1, 2 and 3), 20k ohm differential

Unbalanced: BNC connector, 10k ohm single ended

Gain (variable or fixed):

Voltage Mode: 10 volts/volt

Current Mode: 5 amperes/volt

Gain Linearity (over input signal, from 0.2V to 5V):

AC: 0.05%

DC: 0.025%

Max Input Voltage: ± 10 V, balanced or unbalanced

Display, Control, Status, I/O

Front Panel

Toggle Switch for: Power

I LIMIT,

Switch: 25A fixed or variable

Variable Control Knob: 1 - 25A

COUPLING Switch: AC or DC

OFFSET,

Switch: None or Variable

Variable Control Knob: ± 20 V (configurable for ± 45 V)

RAIL V Switch (voltage potential): 90V or 45V

GAIN,

Switch: 10X fixed or variable

Variable Control Knob: 0-10X

LED Displays indicate: Power, Signal, Overload, Fault

Signal Input: Unbalanced BNC or balanced Barrier Strip

Signal Output: One pair of 5-Way Binding Posts, accepts wire up to 12 AWG

Back Panel,

Power Connection: 25 Amp IEC (with retention latch)

DB-9 Connector for: Balanced signal input, remote emergency stop, fault monitor, current monitor.

Communication Capabilities (via back-panel DB-9 Control Port)

Current Monitor: 5A/V $\pm 1\%$

Reporting: System Fault

Remote Control: Emergency Stop

Physical Characteristics

Chassis:

The Amplifier is designed for stand- alone or rack-mounted operation. The chassis is steel with a black powder coat finish. The unit occupies one-half rack of two EIA RU.

Weight: 20 lbs (9.1 kg), Shipping 26 lbs (11.8 kg)

AC Power:

Single phase, 120 VAC, 60 Hz, 15A service; (220-240 VAC, 50-60 Hz, 8A-service, CE-marked model available)

Operating Temperature:

10°C to 50°C (50°F to 122°F), maximum output power derated above 30°C (86°F.)

Humidity: 70% or less, non-condensing

Cooling:

Two-speed forced air cooling from front to back

Dimensions: 9.5 in. x 22.75 in. x 3.5 in.

(24.1 cm x 57.8 cm x 8.9 cm)

Protection

Over/Under Voltage:

$\pm 10\%$ from specified supply voltage amplifier is forced to Standby

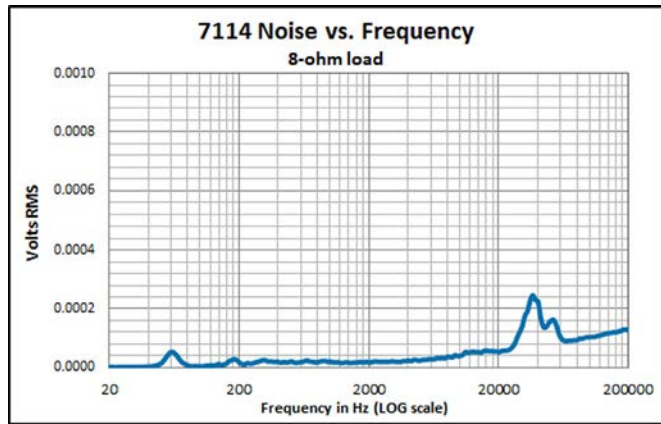
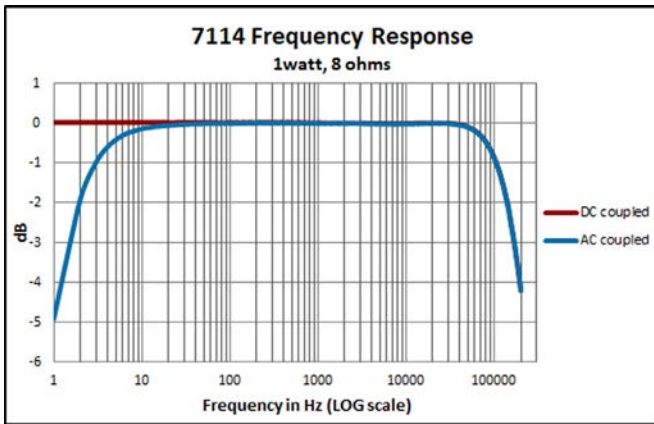
Over Current:

Fuse protection on both main power and low voltage supplies

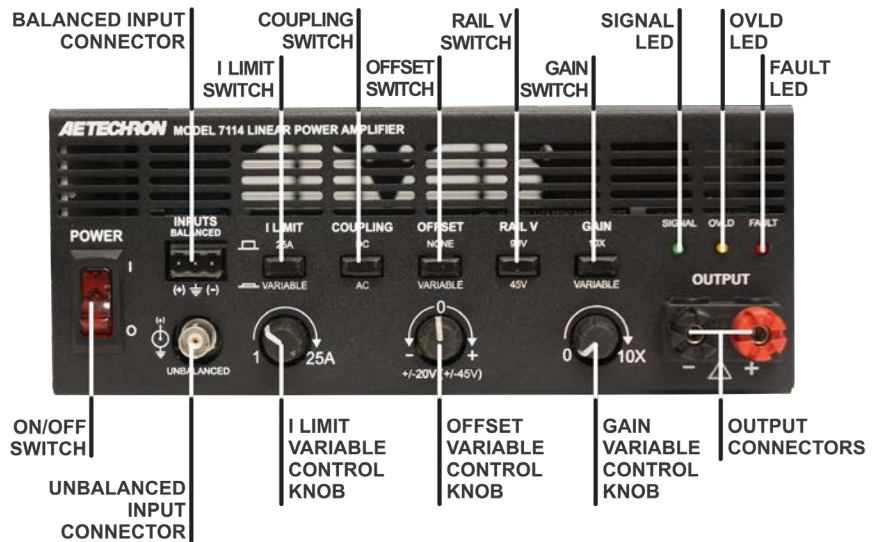
Over Temperature:

Separate output transistor, heat sink, and transformer temperature monitoring and protection

Frequency Performance



Front Panel Controls, Connectors and Indicators



Back Panel Connectors



CE 220-240V versions of this product bear the CE mark

AE Techron Sales Representative