



7234

Single-phase, 2U, Industrial Amplifier/Battery Simulator

Performance Overview:

AC Power (up to 20 kHz):	900 watts RMS
Small Signal (3V p-p):	1 MHz
For High-Power Applications to:	150 kHz+
DC Power:	28A at 13.5 VDC
40 mS Pulse (0.5Ω):	50 Ap
Slew Rate:	100+ V/μs
Output Voltage:	±150 Vp
Output Impedance:	4.4 mΩ in series with 0.43 μH

AE Techron's **7234** amplifier is a capable, versatile, and reliable EMC lab partner.

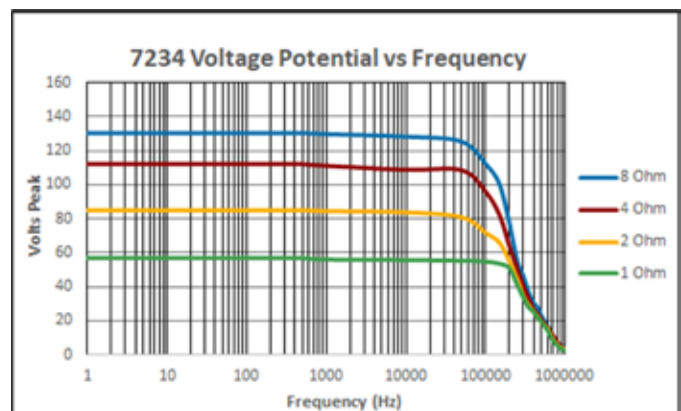
This powerful amplifier/battery simulator provides up to 28A of long-term DC current with surges of up to 50A and can slew voltages at rates of up to 100+ V/μs.

It is load-tolerant, able to drive most inductive, capacitive, and resistive loads easily. The feature set of the 7234 allows it to meet or exceed the requirements of 1000+ Automotive and Aviation DC Conducted Susceptibility Standards Tests.

The 7234 is light enough to be hand-carried from one test location to another, rugged enough to tolerate being bounced around on a cart, and able to be powered from standard 120V/230V AC wall power. These features, along with the 7234's powerful performance, make it possible to turn virtually any bench or desk into a competent test location.

Features:

- Bench-sized.
- Drop outs and surges as fast as 1.2μs.
- Source and sink (4-quadrant).
- Small signal response up to 1 MHz.
- 13.5 VDC at up to 28A.
- Rugged design.
- Field-selectable ±40V, 75V or 150V potential.
- Protection circuitry protects the amplifier from input overloads, improper output connection (including shorted and improper loads), over-temperature, over-current, and supply voltages that are too high or low.
- Shipped ready to operate from 120-volt (±10%) single-phase AC mains; 220/240-volt model available on request.



Specifications

Performance

AC testing was done at 100 Hz. Continuous DC power levels are lower. See DC Specifications chart for test conditions.

Frequency Response, DC–300 kHz (1 watt): +1.0 to -1.5 dB

Slew Rate: 100+ V/ μ Sec

Unit to Unit Phase Error: ± 0.1 degrees at 60 Hz

Output Impedance: 4.4 mOhm in Series with 0.43 μ H

Phase Response (10 Hz - 10 kHz):

± 5 degrees plus 600 nsec propagation delay

Input Characteristics

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

Unbalanced: BNC connector, 10k ohm single ended

Gain (variable or fixed):

Voltage Mode: 20 volts/volt or 6 volts/volt (DIP switch)

Current Mode: 5 amperes/volt

Gain Linearity (over input signal, from 0.2V to 5V): 0.15%

Max Input Voltage: ± 10 V, balanced or unbalanced

Input Impedance: 20k ohm differential

Residual Noise,

10 Hz to 22 kHz: <250 μ V

10 Hz to 500 kHz: <700 μ V

Signal-to-Noise Ratio,

10 Hz to 22 kHz: <110 dB

10 Hz to 500 kHz: <100 dB

Control, Status, I/O

Front Panel LED Displays indicate:

Ready, Standby, Fault, Over Temp, Over Voltage, Overload

Soft Touch Switches for: Run, Stop, Reset

Gain Control, when enabled:

Voltage gain adjustable from 20 to 0.

Can be configured for a gain of 6 to 0.

On/Off Breaker

Back Panel Power Connection:

25 Amp IEC (with retention latch)

Signal Output:

Four-position terminal strip (OUTPUT/Common/SAMPLED COMMON/CHASSIS GROUND); resistor between SAMPLED COMMON and CHASSIS GROUND terminals is a 2.7-ohm, 2W, 5%, metal-oxide resistor

Signal Input:

User-selectable BNC or Barrier Strip, Balanced or Unbalanced

Remote Sense Port: Correction up to 10V drop, DC-1kHz, 0.1% accuracy; Up to 10V drop, DC-10kHz, 1% accuracy.

DIP Switches: Refer to the Configuration Settings graphic

Interconnect Connectors: Two back-panel DB9 connectors.

Refer to the *Configuration Settings* graphic for more information.

Communication Capabilities

Operation Monitor: Run/Standby

Voltage Monitor: 10V/V $\pm 1\%$

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

Temperature Monitor: 1V/100 Kelvin

Reporting:

System Fault, Over Temp, Over Voltage, Over Load

Remote Control via Interconnect Connectors:

Force to Standby

Remote Control via Interlock Connector:

Blanking Control, Force to Standby, Reset after a Fault

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 two EIA 19-inch-wide units.

Weight: 47.5 lbs (21.5 kg), Shipping 58 lbs (26 kg)

AC Power:

Single phase, 120 VAC, 60 Hz, 20A service;
(220-240 VAC, 50-60 Hz, 10A service model available)

Operating Temperature:

10°C to 50°C (50°F to 122°F), maximum output Power de-rated above 30°C (86°F.)

Humidity: 70% or less, non-condensing

Cooling:

Forced air cooling from front to back through removable filters.

Airflow: 180CFM

Dimensions (HxWxD): 3.5 in. x 19 in. x 22.75 in.
(8.9 cm x 48.3 cm x 57.8 cm)

Protection

Over/Under Voltage:

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

Over Current:

Breaker protection on both main power and low voltage supplies

Over Temperature:

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

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

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
16	158	9.8	158	9.8	158	9.8	112	6.9	112	6.9	773
8	154	19	136	16	120**	15**	96	11.5	85**	10.6**	900**
4	124	31	108	25.7	61	14.5	76	18.2	43	10.3	443
2	98	49	*	*	*	*	*	*	*	*	*

AC Specifications – Mid-Level 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
4	72	18	69	16.4	69	16.4	49	12	49	11.6	568
2	61	30	57	26.2	57	26.2	40	19	40	18.5	740
1	47	47	43	39.6	21	21	30	28	15	14.8	222
0.5	26	52	*	*	*	*	*	*	*	*	*

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
1	29	29	29	29	29	29	21	21	20.5	20.5	420
0.75	27	36	26	34	26	34	18	24	18	24	432
0.5	24	48	22.7	45	22.7	45	16	32	16	32	512

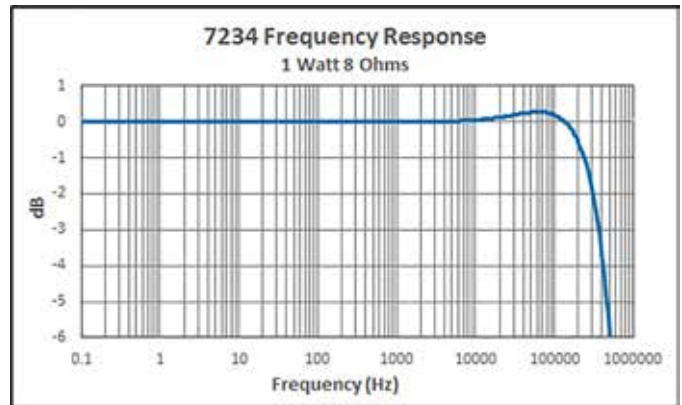
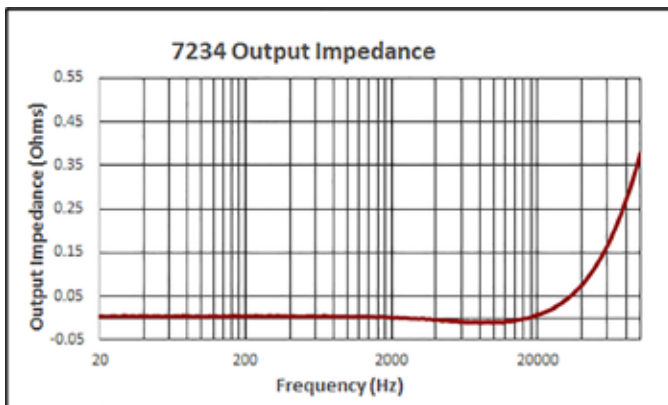
Note: **Numbers provided are preliminary.** Testing performed into resistive loads as specified. Performance reported is typical into the specified load up to 20 kHz frequency levels. Performance may be affected when operating into highly reactive loads or above 20 kHz, reducing maximum voltage, current and power output. *Testing not performed. **Maximum 45 minutes of continuous operation.

DC Specifications – High-Current Mode

VDC	OUTPUT (Amperes)		
	100 mS Surge	10 Minute, 100% Duty Cycle	1 Hour, 100% Duty Cycle
13.5	50	30	28
24	45	29	29
48	40	19	19

THD + Noise*	
Filter	µV
10 to 500 kHz	697
10 to 80 kHz	418
10 to 30 kHz	331
10 to 22 kHz	315

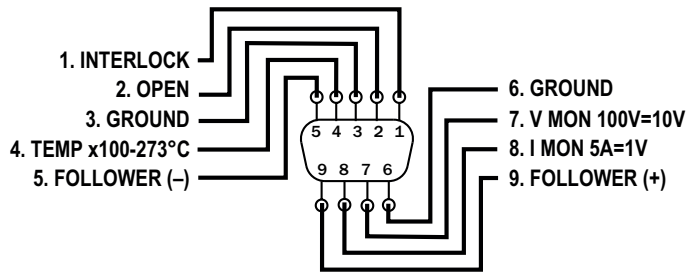
*THD + Noise with 1V input, 8-ohm load



CONFIGURATION SETTINGS

PINOUTS FOR INTERCONNECT PORTS (A & B)

Models 7224 and 7234



DIP SWITCH SETTINGS

Models 7224 and 7234



DEFAULT DIP SWITCH SETTINGS SHOWN

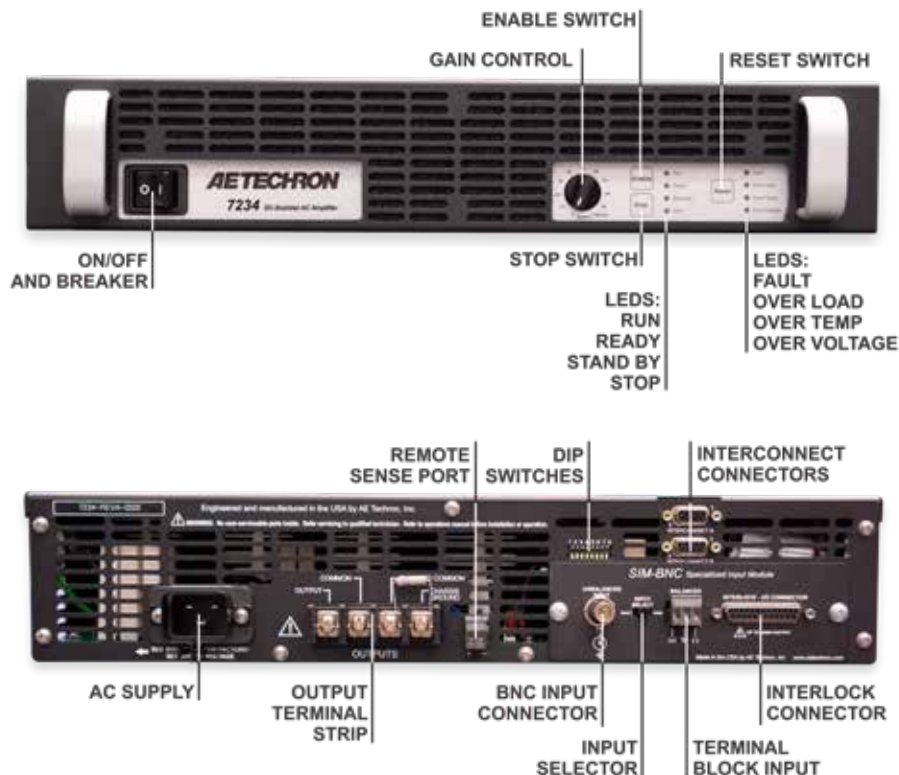
DIP SWITCH SETTINGS

- 1 OPERATION (CV / CC)
- 2 COMPENSATION (CC1 / CC2)
- 3 LOW PASS FILTER
- 4 GAIN (20 / 6)
- 5 ELECTRONIC GAIN MATCHING
- 6 MASTER / FOLLOWER
- 7 VOLTAGE INPUT (LOW / HIGH)
- 8 DC / AC COUPLING

- | | |
|---------------|----------|
| UP | DOWN |
| CV | CC |
| CC1 | CC2 |
| OFF | ON |
| 20 | 6 |
| ON | OFF |
| MASTER | FOLLOWER |
| LOW | HIGH |
| DC | AC |

- **Controlled-voltage or controlled-current operation**
- **Compensation network (for controlled-current operation)**
- **Enable 50 kHz low-pass filter**
- **Gain selection (20 / 6)**
- **Enable electronic gain matching (for parallel multi-amp operation)**
- **Multi-amp configuration**
- **Low (line-level) input or high input (up to 180V)**
- **DC enable or DC block**

RED = FACTORY DEFAULT



CE 230V versions of this product bear the CE mark