248 High Voltage Supply

- **Source voltages up to 5kV, negative or positive polarity**
- **Up to 5mA compliance current**
- **Low output ripple for precision sourcing**
- **Two selectable filters**
- **IEEE-488 programmable**
- **Programmable voltage and current limits**
- **Compact, half-rack design**

Ordering Information

248 **High Voltage Supply**

Accessories Supplied

Instruction manual (order mating cable separately)

The programmable Model 248 High Voltage Supply offers reversible polarity, excellent regulation, low output voltage ripple, and flexible operation. Two front panel digital displays provide accurate readings of voltage and current output. A separate display simplifies setting output values precisely. The Model 248's output can be set using the front panel controls, over the standard IEEE-488 interface, or via a remote analog voltage.

Low-Noise Operation

A source with low output ripple is crucial when using sensitive measurement instruments to characterize high resistance or resistivity. When operated without a filter, the Model 248 is capable of sourcing up to ±5000V DC at a maximum output current of 5mA DC with an output ripple of <0.002%. Two selectable filters are available to reduce output ripple in order to optimize operation for lower noise by trading off longer rise and discharge times.

Applications of the Model 248 include high-voltage resistivity and resistance testing, insulation resistance testing, high-voltage component testing, monitoring breakdown effects, and I-V measurements.

VOLTAGE RANGE: 0 TO ±5000V DC[1]

Output Voltage	Maximum Output Current	Conditions
0 to ± 5000 V DC	5.000 mA DC	NO FILTER
0 to ± 3000 V DC	5.000 mA DC	FILTER 1
0 to ± 5000 V DC	3.000 mA DC	FILTER 2

VOLTAGE SET ACCURACY: ±(0.01% of setting + 2.5V)[4].
VOLTAGE DISPLAY ACCURACY: Voltage Set Accuracy ±1V, typical (±2V, max.).
VOLTAGE RESOLUTION: 1V (set and display).
VOLTAGE RESETTABILITY: 1V.
VOLTAGE LIMIT RANGE: 0 to 100% of full scale.
VOLTAGE REGULATION:[2]
Line: 0.001% for ±10% line voltage change.
Load: 0.005% for 100% load change, typical.
OUTPUT RIPPLE (10Hz–100kHz):[3]

0.002% of full scale, Vrms, max.	NO FILTER
1.0mV rms @ 1kV	FILTER 1 or FILTER 2
2.0mV rms @ 3kV	FILTER 1 or FILTER 2
3.0mv Rms @ 5kv	Filter 2

Voltage	Current Limit and Trip Range	Filter
0 V to 1.5 kV	0.4 mA to 5.25 mA	NO FILTER or FILTER 1
	0.4 mA to 3.25 mA	FILTER 2
1.5 kV to 5.0 kV	0.5 mA to 5.25 mA	NO FILTER or FILTER 1
	0.5 mA to 3.25 mA	FILTER 2

CURRENT LIMIT ACCURACY: 0.01% + 2.5μA[5].
CURRENT RESOLUTION: 1μA.
CURRENT DISPLAY ACCURACY: Current Set Accuracy ±1μA, typ. (±2μA, max.).
STABILITY: ±0.02% per hour typical for ambient temperature within 2°C.
TEMPERATURE DRIFT: 50ppm/°C, 0° to 50°C, typical.
PROTECTION: Arc and short circuit protected; programmable voltage and current limits and current trip.
SETTLING TIME:
From 0 to Programmed Voltage: To within 99.9% of final value within 3s.
Discharge Time from Programmed Voltage to Within 50V of Zero: Within 6s for no load (faster with load, slower with filters on).

MONITOR OUTPUTS:
Output Scale: 0 to +10V for 0 to full range output regardless of polarity.
Current Rating: 10mA maximum.
Output Impedance: <1Ω.
Accuracy: ±0.2% of full scale.
Update Rate: 8Hz.
EXTERNAL VOLTAGE SET:
Input Scale: 0 to +10V for 0 to full range output regardless of polarity.
Input Impedance: 1MΩ.
Accuracy: ±0.2% of full scale.
Update Rate: 16Hz.
Output Slew Rate: <0.3s for 0 to full range under full load.

NOTES

1. Polarity of output is set with a rear panel switch. The unit must be powered off and the output fully discharged before changing polarity.
2. Regulation specifications apply for greater than 25V DC (with full load) or 50V DC (with no load). Below these values, the unit may not regulate correctly.
3. Peak to peak values are within five times the rms value.
4. Add ±5V DC when FILTER 1 or FILTER 2 is enabled.
5. Add 2.5 μA offset when Filter 1 or Filter 2 is enabled.

GENERAL

DIMENSIONS: 89mm high × 206mm wide × 406mm deep (3.5 in × 8.1 in × 16 in).
WEIGHT: 3.7 kg (8 lbs).
INPUT POWER: 55 watts; 100, 120, 220, 240V AC ±10%, 50 or 60Hz.
OUTPUT HIGH VOLTAGE CONNECTOR: SHV male (Kings Type 1704-1 or equivalent), on rear panel.
REMOTE INTERFACE: GPIB (IEEE-488.1).
WARM-UP TIME: 1 hour.
OPERATING ENVIRONMENT: 0°C to 50°C.

ACCESSORIES AVAILABLE

RACK MOUNT KITS

248-RMK-1	Single Fixed Rack Mount Kit: Mounts a single Model 248 in a standard 19-inch rack.
248-RMK-2	Dual Fixed Rack Mount Kit: Mounts two Model 248s side-by side in a standard 19-inch rack.

CABLES

248-SHV	High Voltage Female-to-Female Cable, 3m (10 ft)
248-MHV	High Voltage Female-to-Male Cable, 3m (10 ft)
7007-1	Shielded IEEE-488 Cable, 1m (3.3 ft)
7007-2	Shielded IEEE-488 Cable, 2m (6.6 ft)

CONNECTOR

CS-970	High Voltage Male Bulkhead Connector. Same as on rear panel. Mates with 248-SHV Cable.

IEEE-488 INTERFACES

KPCI-488LPA	IEEE-488 Interface/Controller for the PCI Bus
KUSB-488B	IEEE-488 USB-to-GPIB Interface Adapter

SERVICES AVAILABLE

248-3Y-EW	1-year factory warranty extended to 3 years from date of shipment