High Voltage Supply

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**

<table>
<thead>
<tr>
<th>Output Voltage</th>
<th>Maximum Output Current</th>
<th>Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to ± 5000 V DC</td>
<td>5000 mA DC</td>
<td>NO FILTER</td>
</tr>
<tr>
<td>0 to ± 5000 V DC</td>
<td>3000 mA DC</td>
<td>FILTER 2</td>
</tr>
</tbody>
</table>

**VOLTAGE SET ACCURACY:** ±(0.01% of setting + 2.5V)¹

**VOLTAGE DISPLAY ACCURACY:** Voltage Set Accuracy ±1V, typical ±2V, max.

**VOLTAGE RESOLUTION:** 1V (set and display).

**VOLTAGE LIMIT RANGE:** 0 to 100% of full scale.

**VOLTAGE LIMITATION:**
- Line: 0.001% for ±10% line voltage change.
- Load: 0.05% for 100% load change, typical.

**OUTPUT RIPPLE (10Hz–100kHz):**
- 0.002% of full scale, Vrms, max
- NO FILTER
- 1.0mV rms @ 1kHz FILTER 1 or FILTER 2
- 2.0mV rms @ 3kHz FILTER 1 or FILTER 2
- 5.0mV rms @ 5kHz FILTER 2

**CURRENT LIMIT ACCURACY:** ±1µA; ±2.5µA²

**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.

**SETTING 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: 1kHz.
- 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 ±5% DC when FILTER 1 or FILTER 2 is enabled.
5. Add ±2.5 µA offset when filter 1 or filter 2 is enabled.

**ACCESSORIES AVAILABLE**

<table>
<thead>
<tr>
<th>RACK MOUNT KITS</th>
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<tbody>
<tr>
<td>248-RMK1 Single Fixed Rack Mount Kit: Mounts a single Model 248 in a standard 19-inch rack</td>
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<tr>
<td>248-RMK2 Dual Fixed Rack Mount Kit: Mounts two Model 248s side-by-side in a standard 19-inch rack</td>
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<tr>
<th>CABLES</th>
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<tbody>
<tr>
<td>248-SHV High Voltage Female-to-Female Cable, 5m (10 ft)</td>
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<tr>
<td>248-MHV High Voltage Female-to-Male Cable, 5m (10 ft)</td>
</tr>
<tr>
<td>7007-1 Shielded IEEE-488 Cable, 1m (3.3 ft)</td>
</tr>
<tr>
<td>7007-2 Shielded IEEE-488 Cable, 2m (6.6 ft)</td>
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<th>CONNECTOR</th>
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<tbody>
<tr>
<td>CS-970 High Voltage Male Bulkhead Connector. Same as on rear panel. Mates with 248-SHV Cable</td>
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<th>IEEE-488 INTERFACES</th>
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<tr>
<td>KPCI-488IPEA IEEE-488 Interface/Controller for the PCI Bus</td>
</tr>
<tr>
<td>KUSB-488B IEEE-488 USB-to-GPIB Interface Adapter</td>
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**GENERAL**

DIMENSIONS: 89mm high x 206mm wide x 406mm deep (3.5 in x 8.1 in x 16 in).

WEIGHT: 5.7 kg (12 lbs).

INPUT POWER: 55 watts, 100, 120, 220, 240V AC ±10%, 50 or 60Hz.

INPUT HIGH VOLTAGE CONNECTOR: SHV male (Kings Type 170/4 or equivalent), on rear panel.

REMOTE INTERFACE: GPIB (IEEE-488.1).

WARM-UP TIME: 1 hour.

OPERATING ENVIRONMENT: 0°C to 50°C.

**SERVICES AVAILABLE**

248-EW 1 additional year of factory warranty
248-JEY-STD 1-year factory warranty extended to 3 years from date of shipment
248-SV-STD 1-year factory warranty extended to 5 years from date of shipment