ORTEC®

AMETEK®

4002P
Portable Power Supply

- **Power for four preamplifiers and a NIM module in a remote location**
- **Can power up to 16 preamplifiers using optional power fan-out cables**
- **Operates from 100, 120, 220, or 240 V AC; 47–63 Hz**
- **DC outputs: +12 V @ 1 A, –12 V @ 1 A, +24 V @ 0.5 A, –24 V @ 0.5 A**
- **Compact, portable size: 21.5 X 26 X 10.2 cm**



The ORTEC Model 4002P Portable Power Supply is ideally suited for providing power to preamplifiers or NIM modules, in remote locations. It is an effective solution when the additional power, size, or cost of a standard NIM bin is inconvenient.

DC power is provided by the Model 4002P for four preamplifiers through standard 9-pin connectors on the rear panel. These connectors deliver ±12 and ±24 V DC, and are compatible with ORTEC standard preamplifier power cables, as well as those of most NIM manufacturers. The Model 4002P can supply power for up to 16 preamplifiers by adding an optional Model 4002P-C1 Preamp Power Fan-Out Cable to each connector. The fan-out cable converts a single preamp power output connector to four separate preamp power output connectors.

A standard NIM bin power connector is incorporated for supplying ±12 V DC, and ±24 V DC to a NIM module. Connection between the 4002P and the NIM module is made with the ORTEC Model 401-C3 Module Extender Cable, which can be ordered as an accessory. The output power is sufficient to operate a NIM module and four preamplifiers.

Designed for international use, the 4002P Portable Power Supply can accommodate input voltages of 100, 120, 220, and 240 V AC at 47 to 63 Hz. A connector block on the rear panel is used to change and display the selected input voltage. Also incorporated in this connector block are a fuse holder and the input power cord connector. The 4002P uses an international standard IEC power connector to permit the use of power cords and plugs that meet local electrical standards.

The Model 4002P has maximum output current ratings of 1 A on +12 V, 1 A on –12 V, 0.5 A on +24 V, and 0.5 A on –24 V.

There are three levels of protection against overload. A fuse on the AC power connector limits the input current. All DC outputs include a current foldback circuit to limit the output current to nominally 150% of the rated value. This feature provides short-circuit and overload protection. Recovery is automatic after removal of the overload condition. Test points are conveniently located on the front panel to allow monitoring the status of the DC outputs. A temperature warning light on the front panel turns on when the heat sink temperature rises above 82°C. When the temperature of the heat sink exceeds 95°C, the power supply is automatically turned off. Recovery is automatic when the load is reduced and the temperature decreases to a safe value.

Specifications

PERFORMANCE

INPUT AC VOLTAGE The primary voltage selection card and indicator located in the AC POWER connector assembly permit operation with 100 V, 120 V, 220 V, or 240 V nominal input voltages. Input voltage ranges accommodated on each setting are:

Nominal Input Voltage Selected (V AC)	Allowed Input Voltage Range (V AC)
100	88–110
120	103–129
220	191–239
240	206–258

FREQUENCY RANGE Operating range for AC input voltage frequency is 47–63 Hz.

INPUT CURRENT Typically 0.8 A rms with a 48 W DC load and a 120 V AC input. Protected with a 2 A fuse on the 100 and 120 V AC settings, and by a 1 A fuse on the 220 and 240 V AC settings.

DC OUTPUTS Maximum rated output currents are:

DC Voltage	Maximum Current
+12 V	1 A
–12 V	1 A
+24 V	0.5 A
–24 V	0.5 A

Maximum DC output power from 0 to 50°C is 48 W. Derate 2.5%/°C for 50 to 60°C.

DC REGULATION Variations in DC output voltages are <±0.1% over the combined range of zero through full load and input voltages from the minimum to maximum limits of the allowed input voltage range. Measurements are made within a 1-minute period. Regulation <±0.3% over any 24-hour period at constant ambient temperature for the same load and input voltage ranges, after a 60-minute warmup.

LONG-TERM STABILITY DC output voltages change <±0.5% (after a 60-minute warmup) over a 6-month period at constant load, input voltage, and ambient temperature.

OUTPUT IMPEDANCE <0.3 Ω at any frequency up to 100 kHz for the DC outputs.

TEMPERATURE COEFFICIENT <0.02%/°C from 0 to 60°C for the DC outputs.

NOISE AND RIPPLE <3 mV peak-to-peak for any DC output, as observed on a 50-MHz bandwidth oscilloscope.

VOLTAGE ADJUSTMENT ±5% minimum range. Range typically ±1 V about the nominal supply voltage. Resettability <±0.05% of the supply voltage.

RECOVERY TIME <50 µs to return to within ±0.1% of the rated voltage for all DC outputs for any input voltage change within the rated range, or for a change of load current from 10 to 100% of full load.

THERMAL PROTECTION The red, front-panel, TEMP light turns on when the temperature of the side-panel heat sink is within 13°C of the maximum operating temperature limit. When the heat sink temperature exceeds the 95°C maximum limit, a thermal switch automatically turns off the power supply. Under this thermal shut-down condition, both the TEMP and the POWER lights are turned off. Recovery from thermal shut-down is automatic once the load is reduced, so that the heat sink temperature drops below the maximum operating limit.

CIRCUIT PROTECTION The input AC power line is protected with a fuse (2 A fuse for 100 and 120 V AC input power; 1 A fuse for 220 and 240 V AC input power). All DC outputs include a current foldback circuit to limit the output current to nominally 150% of the rated value. This feature provides short-circuit and overload protection. Recovery is automatic after removal of the overload condition.

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OPERATING TEMPERATURE RANGE 0 to 50ºC. Humidity: 0 to 95%, non-condensing.

CONTROLS AND INDICATORS

POWER Front-panel two-position toggle switch turns power on or off. Adjacent red light indicates power On condition when illuminated. Power indicator light and output power turn off if the heat sink temperature exceeds 95°C.

TEMP Front-panel red light turns on when the heat sink temperature exceeds 82°C to warn that the shut-down temperature limit is being approached. TEMP light turns off if power has been shut off by exceeding the heat sink temperature limit.

INPUTS

AC POWER Rear-panel, international standard IEC power connector, type CEE-22, accepts power cables wired according to local electrical standards. A power cable is shipped with the 4002P. The CEE-22 connector meets standard 22 of the International Commission on Rules for the Approval of Electrical Equipment. The primary voltage selection card and the primary fuse are incorporated into the AC POWER connector. The primary voltage selected (100, 120, 220, or 240 V) is visible through the plastic window. U.S.A. standard inline fuse is 2 A for 100 or 120 V AC, and 1 A for 220 or 240 V AC.

OUTPUTS

PREAMP 1, PREAMP 2, PREAMP 3, PREAMP 4 Rear-panel, 9-pin, "D" connectors (Amphenol 17-10090) provide power for up to four preamplifiers. Connectors mate with power cords on all standard ORTEC preamplifiers. Compatible with preamplifier power cables of most other NIM manufacturers. Pin assignments are listed in Table 1. Each preamp power output connector can be expanded to four output connectors by using the optional Model 4002P-C1 Preamp Power Fan-Out Cable. Using four of the Model 4002P-C1 allows the 4002P to supply power to 16 preamplifiers.

Table 1. Pin Assignments for Preamp Power Connectors.

Pin Number	Power Voltage
1	Ground
2	Ground
3	No connection
4	+12 V
5	No connection
6	–24 V
7	+24 V
8	No connection
9	–12 V

NIM POWER Rear-panel, NIM-standard bin connector compatible with the power connector on the rear of NIM modules, per DOE/ER-0457T. For use with a Module Extender Cable, such as ORTEC Model 401-C3, to power a single NIM module. Pin assignments are listed in Table 2. Pins not listed have no connection in the Model 4002P, but may be assigned to a specific function by DOE/ER-0457T.

Table 2. Pin Assignments as Wired for the NIM POWER Connector on the Model 4002P.

Pin Number	Power Voltage
16	+12 V
17	–12 V
28	+24 V
29	–24 V
34	Power Return Ground
42	High-Quality Ground

OUTPUT TEST POINTS Front-panel jacks provide test points to monitor each of the DC voltages delivered to the rear-panel connectors.

ELECTRICAL AND MECHANICAL

WEIGHT
Net 10.9 kg (24 lb).
Shipping 13 kg (29 lb).

DIMENSIONS 21.5 cm (8.4 in.) wide, 26 cm (10.2 in.) deep, and 10.2 cm (4.0 in.) high.

Optional Accessories

121-C1 PREAMPLIFIER POWER CABLE EXTENDER Provides a 3-m (10-ft) extension cable to connect a preamplifier power cable to the PREAMP 1, 2, 3, or 4 power output on the 4002P Portable Power Supply. Compatible with all standard ORTEC preamplifiers.

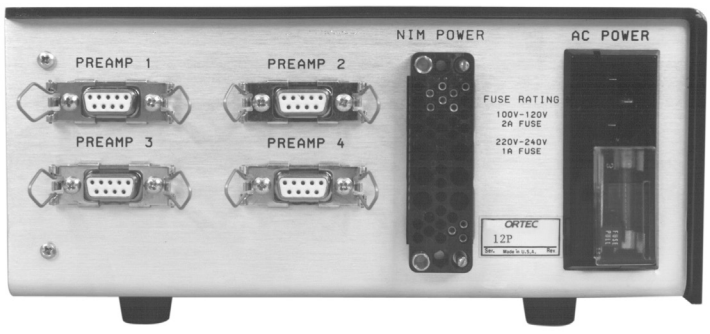
401-C3 MODULE EXTENDER CABLE Connects the 4002P NIM POWER output to the standard bin power connector on the rear of a NIM module. Permits powering a NIM module in a remote location using the 4002P Portable Power Supply. Cable length is 91 cm (3 ft).

4002P-C1 PREAMP POWER FAN-OUT CABLE Plugs into a standard ORTEC preamplifier power output connector and provides four preamplifier power output connectors. Use four of the optional 4002P-C1 with the 4002P to power 16 preamplifiers.

Ordering Information

To order the Model 4002P Portable Power Supply and/or accessories, specify the following model numbers and descriptions.

Model	Description
4002P	48-W Portable Power Supply (with ±12 V, ±24 V)
121-C1	Preamplifier Power Cable Extender
401-C3	Module Extender Cable
4002P-C1	Preamp Power Fan-Out Cable



ORTEC®
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www.ortec-online.com
Tel. (865) 482-4411 ortec.info@ametek.com
801 South Illinois Avenue, Oak Ridge, TN 37830 U.S.A.
Visit Our Website For International Office Locations

Specifications subject to change
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