

Model 1000 Portable NIM/Bin Power Supply

9231790B

User's Manual



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The information in this document describes the product as accurately as possible, but is subject to change without notice.

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For technical assistance, call our Customer Service Hotline at 1-800-255-6370 or email techsupport@canberra.com.

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Important Safety Considerations

Read Carefully



Indicates warning of mains or high voltage present at output labeled HV.
Risk of electrical shock if covers are removed.



Caution – risk of danger. Refer to documentation for detailed explanation of caution symbol wherever marked.



Earth symbol: indicates the connection point for the primary earth (ground) supply.



Product complies with appropriate current EU directives (Low Voltage & EMC).



Product complies with appropriate current FCC /UL /CSA 61010-1 directives (Low Voltage & EMC).

Manufacturer's Address

Mirion Technologies (Canberra), Inc.
800 Research Parkway
Meriden, CT 06450 USA

1. Introduction

The Canberra Model 1000 Bin/Power Supply provides mounting space and power sources for up to 6 standard NIM widths (Nuclear Instrument Modules) conforming to the recommended standard of USAEC report TID-20893 (rev.)

The Model 1000 accepts input power from 100 to 120 V ac or 220 to 240 V ac and distributes +24 V dc, -24 V dc, +12 V dc and 120 V ac (nominal) to each module connector. Wiring is included for ± 6 V power distribution to support an external user-supplied ± 6 V power source

Power indicator and voltage test points are conveniently located on the front control panel and the integral ON-OFF switch is located on the rear panel.

The Model 1000 has a handle on top, making the unit easily portable. In addition, the front feet under the unit can be folded out to raise the front of the unit.

2. Operating Instructions

The following general setup procedure should be followed to insure that the Model 1000 is set up and operating correctly before proceeding with the initial installation.

Setup

1. Verify power line voltage and frequency to be within the specified ranges for the power supply.
2. Connect the Model 1000 to the ac main supply and switch the power ON. Verify that the POWER indicator lamp is ON.
3. Using a voltmeter of accuracy commensurate with desired reading, measure the regulated outputs on the test point jacks for the + 12, -12, + 24, and -24 volt supplies with respect to the ground test point jack.
4. Verify that the total current drain of the modules or load to be used does not exceed the rated output of the supplies to be used (See Appendix A, *Specifications*).

Installation

The Model 1000 will not be damaged by insertion or removal of instrument modules while power is applied. However, it is recommended that the power switch be OFF whenever installing or removing a module to prevent potential internal damage to that unit due to the effects of sequencing the various voltages used.

Changing the Line Voltage

The Model 1000 is shipped set for the line voltage of the destination country. If it is necessary to change the line voltage, please consult the factory.

Changing the Fuse

The fuse is located inside the power connector assembly on the rear panel. To change the fuse, put the tip of a small screwdriver under the tab located just above the power switch. Gently pry the power connector assembly's cover out and down to open it. Now gently push the fuse holder against the direction of the arrow on the holder. It will come free and may be pulled out.

Be sure to replace the fuse with one of the proper type and rating:

110 V line voltage requires a 2 A slow-blow fuse.

220 V line voltage requires a 1 A slow-blow fuse.

A. Specifications

Input Voltage

100 - 120 V ac or 220 - 240 V ac (factory set for destination country); 50-60 Hz.

Fuse protected: 115 V – 2A slow-blow; 230 V – 1A slow-blow.

The input power cord is a 150 cm (5-foot) long, 3-wire cable with a NEMA parallel-blade plug and a U-grounding pin.

Outputs

+24 V dc at 0.6 A +12V dc at 1.0 A

–24 V dc at 0.6 A –12V dc at 1.0 A

Total combined output power must not exceed 48 VA. 115 V ac supply (nominal) is limited to 0.25 A or 29 VA.

Bin Power connector pin assignments are tabulated in schematic B-17637. The power connector is a Winchester 111-20854 per TID-20893 (rev.).

Front Panel

STATUS INDICATOR – Lights when ac power switch is turned on.

TEST POINTS – Provided to monitor each of the four regulated power supply output voltages; referenced to ground at the fifth (ground) test point.

Rear Panel

POWER – Power switch for both sides of the input power line, ac power cord connector, and fuse holder.

Performance

REGULATION – $\leq 0.1\%$ for line voltage variation of $\pm 10\%$ and for no load to full load.

STABILITY – $\leq 0.3\%$ within 24-hour period after 60 minute warmup for constant line, load, and ambient temperature.

TEMPERATURE COEFFICIENT – $\leq 0.03\%/^{\circ}\text{C}$; 0 to 60 $^{\circ}\text{C}$.

NOISE AND RIPPLE – ≤ 5 mV peak to peak.

OVERLOAD PROTECTION – Current limit protection for overloads above 150% of rated output with automatic recovery.

Physical

MODULE CONNECTORS – Six (6) AMP type 202516-3.

SIZE – 28.8 x 22.9 x 32.3 cm (11.4 x 9.0 x 12.7 in.): height x width x depth. NET WEIGHT – 6.3 kg (14 lb)

SHIPPING WEIGHT – 8.6 kg (19 lb)

Environmental

OPERATING TEMPERATURE RANGE - 0 to 50 $^{\circ}\text{C}$ (32 to 122 $^{\circ}\text{F}$).

OPERATING HUMIDITY – 0 to 80% relative, non-condensing.

Meets the environmental conditions specified by EN 61010, Installation Category I, Pollution Degree 2.

B. Installation Considerations

This unit complies with all applicable requirements. Compliance testing was performed with application configurations commonly used for this device.

During design and assembly of the device, precautions were taken by the manufacturer to minimize the effects of RFI and EMC on the system. However, care should be taken to maintain full compliance. These considerations include:

- A rack or tabletop enclosure fully closed on all sides with rear door access.
- Single point external cable access.
- Blank panels to cover open front panel Bin area.
- Compliant grounding and safety precautions for any internal power distribution.
- The use of NRTL/CE compliant accessories such as fans, UPS, etc.

Preventive Maintenance

This unit does not require any periodic cleaning maintenance.

Any maintenance should be performed by a qualified Mirion Technologies (Canberra) service representative.

Operating Protection Impairment

Mirion Technologies (Canberra) is not liable for any operational malfunctions or personal injuries due to mishandling or unauthorized repair and maintenance not detailed in this manual.

Cleaning/Decontamination



When needed, the unit may be cleaned. Remove power from the unit before cleaning. Use only a soft cloth dampened with warm water and *do not* allow water to enter the unit. Make sure unit is fully dry before restoring power.

C. FCC Notice

The following paragraphs are notices required by Federal Communications Commission (FCC) rules, Part 15, Subpart A.

“The user is cautioned that any changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.”

This equipment has been tested and found to comply with the limits for a class A digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Request for Circuit Information

The Schematics and Block Diagrams may be available for this unit directly from CANBERRA. Request can be made by calling, faxing, or emailing:

Training and Technical Services Department
Canberra Industries
800 Research Parkway, Meriden, CT 06450
Telephone: (800) 255-6370 FAX: (203) 639-2067
Email: techsupport@canberra.com

If you would like schematics and/or a circuit description, if available, for this unit, please provide us with the following information.

Your Name _____

Your Address _____

Unit's model number _____

Unit's serial number _____

Note: Schematics and block diagrams are provided for information only; if you service or repair or try to service or repair this unit without Canberra's written permission you may void your warranty.

Notes

Warranty

Mirion Technologies (Canberra) Inc. (we, us, our) warrants to the customer (you, your) that for a period of ninety (90) days from the date of shipment, software provided by us in connection with equipment manufactured by us shall operate in accordance with applicable specifications when used with equipment manufactured by us and that the media on which the software is provided shall be free from defects. We also warrant that (A) equipment manufactured by us shall be free from defects in materials and workmanship for a period of one (1) year from the date of shipment of such equipment, and (B) services performed by us in connection with such equipment, such as site supervision and installation services relating to the equipment, shall be free from defects for a period of one (1) year from the date of performance of such services.

If defects in materials or workmanship are discovered within the applicable warranty period as set forth above, we shall, at our option and cost (A) in the case of defective software or equipment, either repair on a return to factory basis or replace the software or equipment, or (B) in the case of defective services, reperform such services.

LIMITATIONS

EXCEPT AS SET FORTH HEREIN, NO OTHER WARRANTIES OR REMEDIES, WHETHER STATUTORY, WRITTEN, ORAL, EXPRESSED, IMPLIED (INCLUDING WITHOUT LIMITATION, THE WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE) OR OTHERWISE, SHALL APPLY. IN NO EVENT SHALL WE HAVE ANY LIABILITY FOR ANY SPECIAL, EXEMPLARY, PUNITIVE, INDIRECT OR CONSEQUENTIAL LOSSES OR DAMAGES OF ANY NATURE WHATSOEVER, WHETHER AS A RESULT OF BREACH OF CONTRACT, TORT LIABILITY (INCLUDING NEGLIGENCE), STRICT LIABILITY OR OTHERWISE. REPAIR OR REPLACEMENT OF THE SOFTWARE OR EQUIPMENT DURING THE APPLICABLE WARRANTY PERIOD AT OUR COST, OR, IN THE CASE OF DEFECTIVE SERVICES, REPERFORMANCE AT OUR COST, IS YOUR SOLE AND EXCLUSIVE REMEDY UNDER THIS WARRANTY.

EXCLUSIONS

Our warranty does not cover damage to equipment which has been altered or modified without our written permission or damage which has been caused by abuse, misuse, accident, neglect or unusual physical or electrical stress, as determined by our Service Personnel.

We are under no obligation to provide warranty service if adjustment or repair is required because of damage caused by other than ordinary use or if the equipment is serviced or repaired, or if an attempt is made to service or repair the equipment, by other than our Service Personnel without our prior approval.

Our warranty does not cover detector damage due to neutrons or heavy charged particles. Failure of beryllium, carbon composite, or polymer windows or of windowless detectors caused by physical or chemical damage from the environment is not covered by warranty.

We are not responsible for damage sustained in transit. You should examine shipments upon receipt for evidence of damage caused in transit. If damage is found, notify us and the carrier immediately. Keep all packages, materials and documents, including the freight bill, invoice and packing list.