8548–00 Power Supply (24/48 VDC, 1.25 A)

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Figure 1. 8548–00 Power Supply

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1. GENERAL

1.1 Document Purpose

This document includes a circuit description, installation procedures and basic testing information for the Charles Industries 8548–00 Power Supply, shown in Figure 1.

1.2 Document Status

This document is reprinted to provide a general editorial update.

1.3 Equipment Function

The 8548–00 Power Supply is provides a switchable supply of 24 or 48 VDC at 1.25 amps from a commercial 105 to 130 VAC, 60Hz. source.

1.4 Equipment Location/Mounting

Mount the power supply in a 400/4000 type mounting on a wall, in an apparatus case or in a relay rack.

1.5 Equipment Features

The 8548–00 features include the following:

- Regulate, floating, switch-selectable, 24 or 48 VDC, up to 1.25 amps output.
- Either output polarity can be grounded.
- 10-foot, three-conductor power cord plugs in to any convenient 120 VAC, 60Hz grounding-type receptacle.
- Input surge protection using gas-filled discharge tube.
- Output transient protection prevents damage from over- or reverse-voltage surges.
- Current limiting prevents damage from a short circuit across output terminals.
- Compact KTU-size case.
- Mounting bracket kit permits maximum installation flexibility.

2. INSPECTION

2.1 Inspect for Damages

Inspect the equipment thoroughly upon delivery. If the equipment has been damaged in transit, immediately report the extent of damage to the transportation company.

2.2 Equipment Identification

Charles Industries' equipment is identified by a model and issue number imprinted on the front panel or located elsewhere on the equipment. Each time a major engineering design change is made on the equipment, the issue number is advanced by 1 and imprinted on subsequent units manufactured. Therefore, be sure to include both the model number and its issue number when making inquiries about the equipment.

3. APPLICATION GUIDELINES

The 8548–00 can be used in any application requiring up to 1.25 amps of filtered battery. The 24 and 48 VDC outputs are both floating and either the negative or positive can be connected to ground as required.

4. CIRCUIT DESCRIPTION

Refer to the block diagram in Figure 2 while reading the following circuit description.

AC power is supplied to the unit via a 3-conductor power cord routed through a 1.5 amp. SLO-BLO fuse to transformer T1. The ground lead of the power cord is routed to the chassis ground terminal on terminal board TB1.

Transformer T1 provides a stepped-down AC voltage that is rectified and filtered by CR1 and C1. This DC filtered voltage is then applied to the switching regulator. The switching regulator regulates the DC voltage to either 24 or 48 VDC as selected by switch S1.

The DC output is protected against output short circuits. A short across the DC output will cause the output voltage to fold back; the AC line fuse will not blow. When the short is removed, the output will recover to its normal voltage.

The DC output is protected against overvoltage conditions. The 8548–00 cannot, under any internal failure mode, generate voltages which could damage the equipment it is powering. As selected by switch S1, transient suppressors set the internal clamp levels at 60 and 30 VDC for the 48 and 24 VDC modes, respectively. The transient suppressors also function as blocking diodes for reverse-voltage protection.

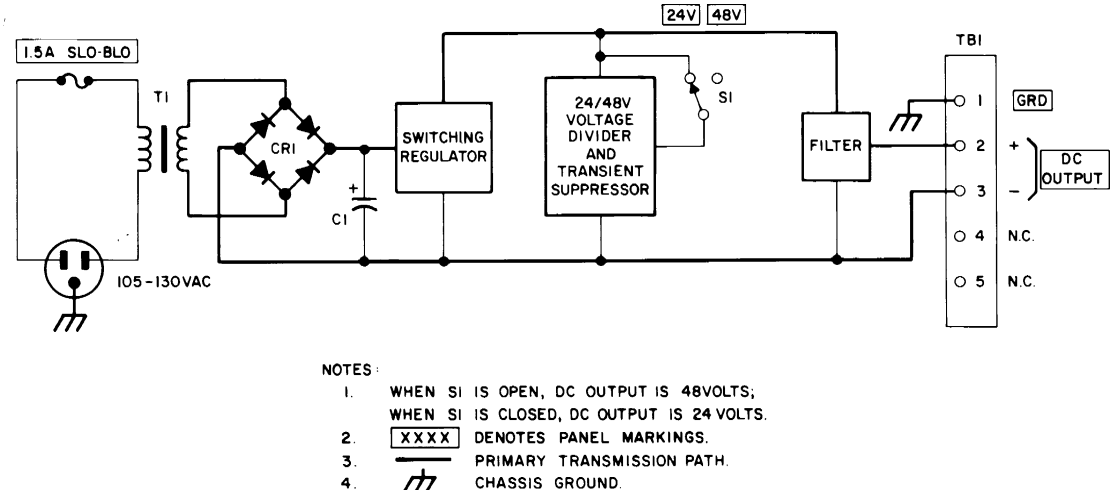


Figure 2. Block Diagram

5. MOUNTING

Before mounting the power supply, select a convenient location within 10 feet of a grounding-type 120 VAC receptacle. Assemble the mounting brackets (if required) to the power supply case in the appropriate positions for the intended application.

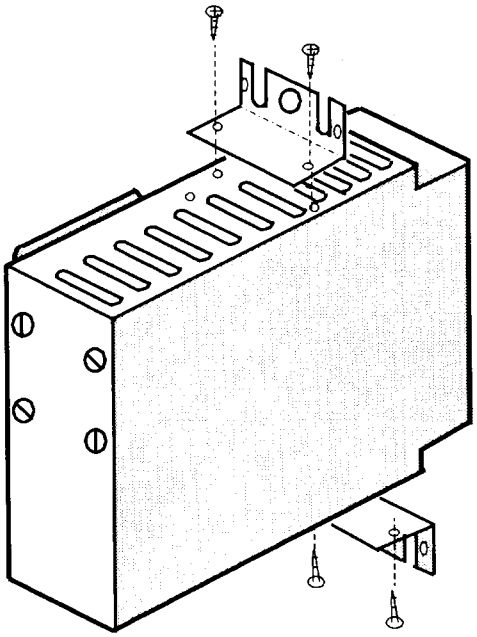
The 8548–00 has been designed for maximum installation versatility. See Figure 3. A kit containing two removable mounting brackets and four screws is supplied with the unit. The brackets can be mounted across the top and bottom when installing in a standard apparatus case or relay rack, or they can be attached parallel with the side for mounting on a wall or apparatus case backplane (if sufficient space is available). To mount the power supply into 400- or 4000-type mounting assemblies having one-piece die-cast shelves, use one bracket at the top rear of the power supply to lock it into the shelf.

Note: Some die–cast shelves are constructed of several separate die-castings; that type may not accommodate the power supply.

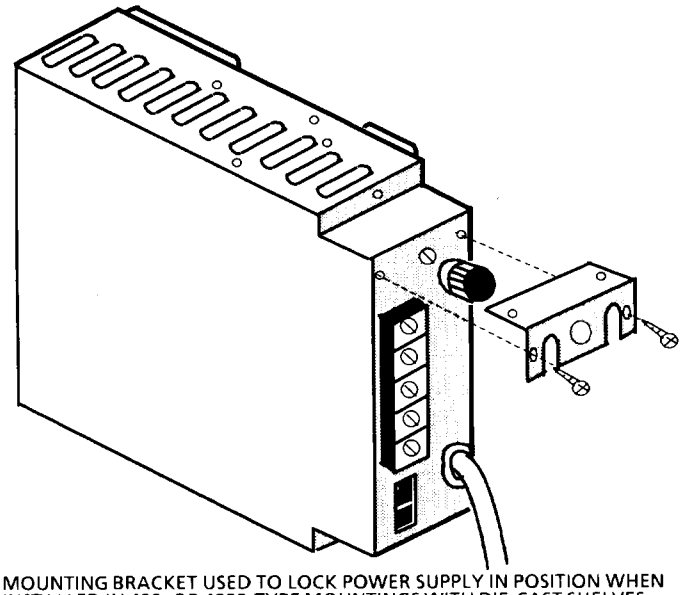
In metal-stamped shelves, no brackets are required and only one screw is needed to lock it into position.

When the power supply is installed on mounting bars for relay-rack mounting, 7 inches of vertical rack space (4 1.75 inch mounting spaces) are required. Mounting bar kits consisting of 2 mounting bars, 4 machine screws, and 4 washers can be procured from Charles Industries by ordering the following part numbers:

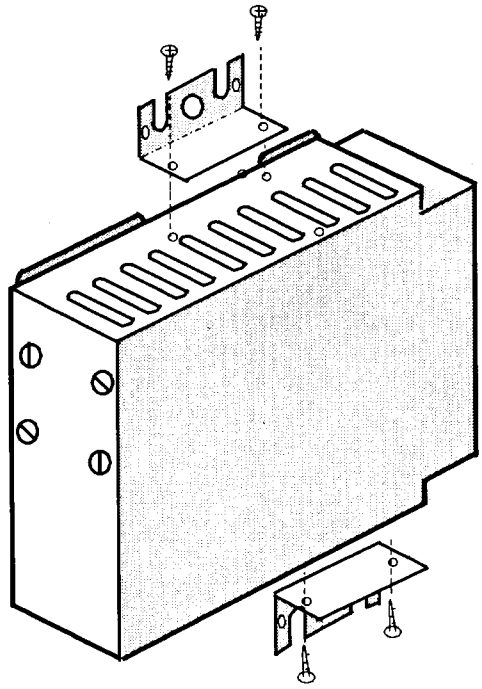
- 19-inch kit—8923-19
- 23-inch kit—8923-23



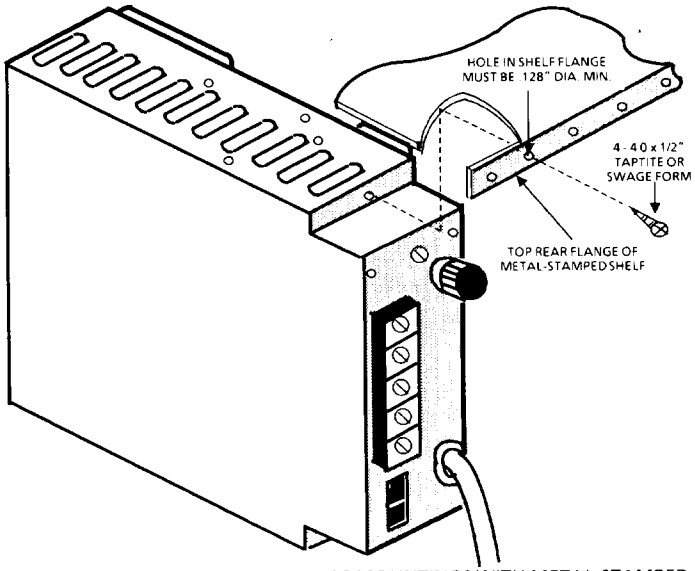
MOUNTING BRACKET POSITIONS FOR INSTALLATION IN AN APPARATUS CASE OR ON MOUNTING BARS IN A RELAY RACK.



MOUNTING BRACKET USED TO LOCK POWER SUPPLY IN POSITION WHEN INSTALLED IN 400- OR 4000-TYPE MOUNTINGS WITH DIE-CAST SHELVES.



/IOUNTING BRACKET POSITIONS FOR INSTALLATION ON WALL OR)N BACKPLANE OF APPARATUS CASE HAVING SUFFICIENT SPACE.



WHEN INSTALLED IN 400- OR 4000-TYPE MOUNTINGS WITH METAL-STAMPED SHELVES, LOCK POWER SUPPLY IN POSITION WITH A 4-40 X 1/2" TAPTITE OR SWAGE FORM SCREW THROUGH THE CARD-EDGE CONNECTOR MOUNTING HOLE FOR THAT SLOT. (PROCURE SCREW LOCALLY.)

Figure 3. Mounting Options

6. INSTALLER CONNECTIONS

All installer connections, with the exception of the power cord, are made to the screw terminal at the rear of the power supply (see Figure 4). Make connections according to the following instructions.

6.1 DC Output

Step	Action
1.	Using a screwdriver, set the recessed switch on the rear of the unit to the required DC output voltage (24 or 48 volts).
2.	Snap off the terminal block cover and connect the positive lead (+) of the equipment to be powered to the + terminal.
3.	Connect the negative (–) of the equipment to be powered to the – terminal.
4.	Either side of the power supply output can be grounded by strapping either the + or – terminal to the GRD terminal. For floating ground, do not connect GRD to either the + or – terminals. *Note: Typical telephone equipment applications require positive ground.*

6.2 AC Line

Step	Action
1.	After completing the connections to the terminal block, install the terminal block cover and connect the power-cord plug to a grounded, commercial AC receptacle providing nominal 117 VAC, 60 Hz single phase power.

CAUTION

Select the desired output voltage (24 or 28 volts) before connecting the power cord plug to the AC receptacle.

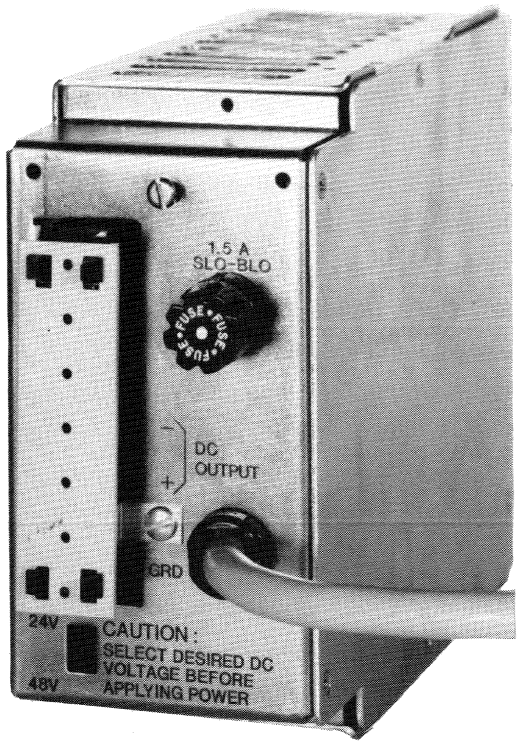


Figure 4. 8548–00 Rear Panel

7. TESTING

If trouble is encountered with the operation of the unit, verify that its power cord is properly plugged in and that the correct voltage (105 VAC to 130 VAC) is present at the AC receptacle. If trouble persists, use the following test procedure to determine if the problem is internal or external. A Simpson 260 multimeter (or equivalent) is required to test the power supply.

Step	Action	Verification
1.	Check the input fuse.	If the fuse is good, check the line voltage. Proceed to step 2. If the fuse is blown, replace it. Proceed to step 2.
2.	Disconnect the load from the power supply. Set the multimeter to 50 VDC. Connect the negative test lead to the negative terminal and the positive test lead to the positive terminal. Set the output voltage to 24 or 48 volts.	Normal output is 24 VDC +/– 1.0 volt, or 48 VDC +/– 2.0 volts. If output voltage is normal with load disconnected, check the load for a short condition. If output voltage is not normal with load disconnected, the unit is faulty and should be replaced.

8. TECHNICAL ASSISTANCE

8.1 Technical Assistance — U.S.

If technical assistance is required, contact Charles Industries' Technical Services Center at:

847–806–8500
847–806–8556 (FAX)
800–607–8500
techserv@charlesindustries.com (e-mail)

8.2 Technical Assistance — Canada

Canadian customers contact:

905–821–7673 (Main Office)
905–821–3280 (FAX)

9. WARRANTY & CUSTOMER SERVICE

9.1 Warranty

Charles Industries, Ltd. offers an industry-leading, 5-year warranty on products manufactured by Charles Industries. Contact your local Sales Representative at the address or telephone numbers below for warranty details. The warranty provisions are subject to change without notice. The terms and conditions applicable to any specific sale of product shall be defined in the resulting sales contract.

Charles Industries, Ltd.
5600 Apollo Drive
Rolling Meadows, Illinois 60008–4049
847–806–6300 (Main Office)
847–806–6231 (FAX)

9.2 Field Repairs (In-Warranty Units)

Field repairs involving the replacement of components within a unit are not recommended and may void the warranty and compatibility with any applicable regulatory or agency requirements. If a unit needs repair, contact Charles Industries, Ltd. for replacement or repair instructions, or follow the *Repair Service Procedure* below.

9.3 Advanced Replacement Service (In-Warranty Units)

Charles Industries, Ltd. offers an "advanced replacement" service if a replacement unit is required as soon as possible. With this service, the unit will be shipped in the fastest manner consistent with the urgency of the situa-

tion. In most cases, there are no charges for in-warranty repairs, except for the transportation charges of the unit and for a testing and handling charge for units returned with no trouble found. Upon receipt of the advanced replacement unit, return the out-of-service unit in the carton in which the replacement was shipped, using the pre-addressed shipping label provided. Call your customer service representative at the telephone number above for more details.

9.4 Standard Repair and Replacement Service (Both In-Warranty and Out-Of-Warranty Units)

Charles Industries, Ltd. offers a standard repair or exchange service for units either in- or out-of-warranty. With this service, units may be shipped to Charles Industries for either repair and quality testing or exchanged for a replacement unit, as determined by Charles Industries. Follow the *Repair Service Procedure* below to return units and to secure a repair or replacement. A handling charge applies for equipment returned with no trouble found. To obtain more details of this service and a schedule of prices, contact the CI Service Center at 217–932–5288 (FAX 217–932–2943).

Repair Service Procedure

1. Prepare, complete, and enclose a purchase order in the box with the equipment to be returned.

2. Include the following information:

   – Company name and address
   – Contact name and phone number
   – Inventory of equipment being shipped
   – Particulars as to the nature of the failure
   – Return shipping address

3. Ship the equipment, purchase order, and above-listed information, transportation prepaid, to the service center address shown below.

   CI Service Center
   Route 40 East
   Casey, IL 62420–2054

4. Most repaired or replaced units will be returned within 30 or 45 days, depending on the product type and availability of repair parts. Repaired units are warranted for either 90 days from the date of repair or for the remaining unexpired portion of the original warranty, whichever is longer.

10. SPECIFICATIONS

10.1 Regulatory

- UL Recognized. Recognized under the component program of Underwriters Laboratories, Inc.
- CSA Certified.

10.2 Electrical

(a) INPUT: 105 VAC to 130 VAC, 60Hz, +/–1Hz, single-phase, power source

(b) MAXIMUM LINE CURRENT DRAIN: 1.1 amps

(c) MAXIMUM INPUT POWER: 95 watts

(d) OUTPUT VOLTAGE DC: Regulated, 48 VDC +/–2.0 volts or 24 VDC, +/–1.0 volts, switch selectable. Tolerances are at 25° C.

(e) MAXIMUM RIPPLE: 30 mV peak-to-peak at 25° C.

(f) OUTPUT CURRENT DC: 1.25 amps maximum.

(g) OUTPUT NOISE DC: 25 dBrnC maximum.

(h) POLARITY: Floating, either side can be grounded.

(i) INPUT SURGE PROTECTION: 140 volt gas filled discharge tube.

(j) OUTPUT TRANSIENT PROTECTION: The 30 volt/60 volt suppressor prevents damage from over- or reverse-voltage surges.

(k) OVERLOAD PROTECTION: Current limiting prevents short circuit across output terminal from damaging the unit.

(l) POWER CORD:10 foot 3–conductor SJT type power cord, 16 AWG.

10.3 Physical

See Table 1 for the physical characteristics of the

Table 1. Physical Specifications

Feature	U.S.	Metric
Height (excluding mounting brackets)	5.55 inches	14.09 centimeters
Width	2.75 inches	6.98 centimeters
Depth (excluding fuse holder, terminal block and power cord projections)	6.65 inches	16.89 centimeters
Weight	6.6 pounds	2.99 kilograms
Temperature	32° to 122° F	0° to 50° C