

8422-00 Power Supply (48Vdc, 10A)

 Recognized under UL Standard 1459, Second Edition*

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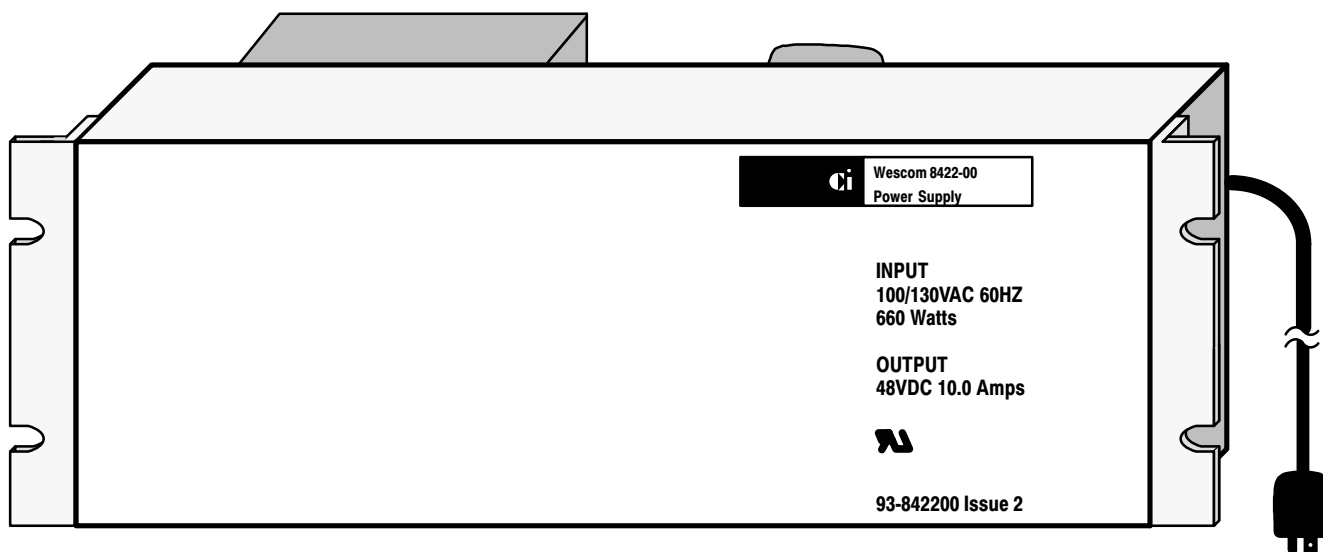


Figure 1. 8422-00 Power Supply

***CAUTION**

Field repairs/modifications may void compliance with UL Standard 1459 — 2nd Edition. Compliance with UL Standard 1459 — Second Edition is restricted to inside plant wiring.

1. GENERAL

1.1 Document Purpose

This document provides general, circuit, installation and testing information for the 8422-00 (Issue 2) and 48Vdc Power Supply. The 8422-00 is shown in Figure 1.

1.2 Document Status

This document is reprinted to remove the 8440-00 power supply (obsolete), add mounting information, and include a general editorial update.

1.3 Equipment Description

The 8422-00 power supply provides filtered, regulated 48Vdc output. The maximum current output of the 8422-00 is 10 amps. This unit is UL recognized.

1.4 Equipment Mounting

Mounts in a 19-inch relay rack; additional brackets are included for mounting in 23-inch relay rack. For projected-forward mounting with balanced weight distribution for the 8422-00, order Charles Industries kit # A80-000737 (includes the 8422-00 and additional side flanges for 19" racks) or Charles Industries part # A80-000736 (includes the 8422-00 and additional side flanges for 23" racks).

1.5 Equipment Features

Features of the 8422-00 power supply includes:

- Regulated, floating 48Vdc output from standard 120Vac, 60Hz power source
- Either polarity can be grounded
- 9-foot, 3-wire power cord, plugs into any convenient 120Vac, 60Hz grounding-type receptacle
- Ferroresonant regulation circuit
- Self-protecting against overload—a short circuit across the output terminals will not damage the units
- Direct mounting in a 19-inch relay rack; additional brackets are included for 23-inch relay rack mounting

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 8422-00 can be used in any 48Vdc application that does not exceed its current limitations (10A). It is intended to be installed in a protected environment.

For increased current capacity, two or more units of the same type may be connected in parallel. For applications requiring higher voltage, two or more units of the same type may be connected in series.

The current output and noise of the unit is low enough for the unit to be used as a talk battery. Output is floating and either the negative or the positive terminal can be connected to ground as required.

4. CIRCUIT DESCRIPTION

Refer to Figure 2 while reading the following description.

AC power is supplied to the unit via a 3-conductor power cord connected to terminals 1 and 2 of barrier block TB1 and the ground screw on the chassis. Power entering on terminals 1 and 2 is routed to T1, a constant voltage power transformer. Transformer T1 provides isolation from the power line and output regulation for changes in input voltage and output currents.

Capacitor C1, part of T1's regulating circuit, forms a resonant circuit (with T1) that operates at the power line frequency (60Hz). Diodes CR1 and CR2, together with a portion of the secondary winding of T1, comprise a full wave rectifier circuit. The 120Hz pulsating DC, appearing in the output, is filtered by a pi network comprised of C2, C3, and inductor L1. The resulting output appears on terminals 5(+) and 6(-) of barrier block TB1 to connect to external equipment.

Resistor R1, a bleeder resistor, is provided to discharge the filter capacitors when the input power is removed. Additionally, R1 stabilizes the output voltage under low- or no-load conditions.

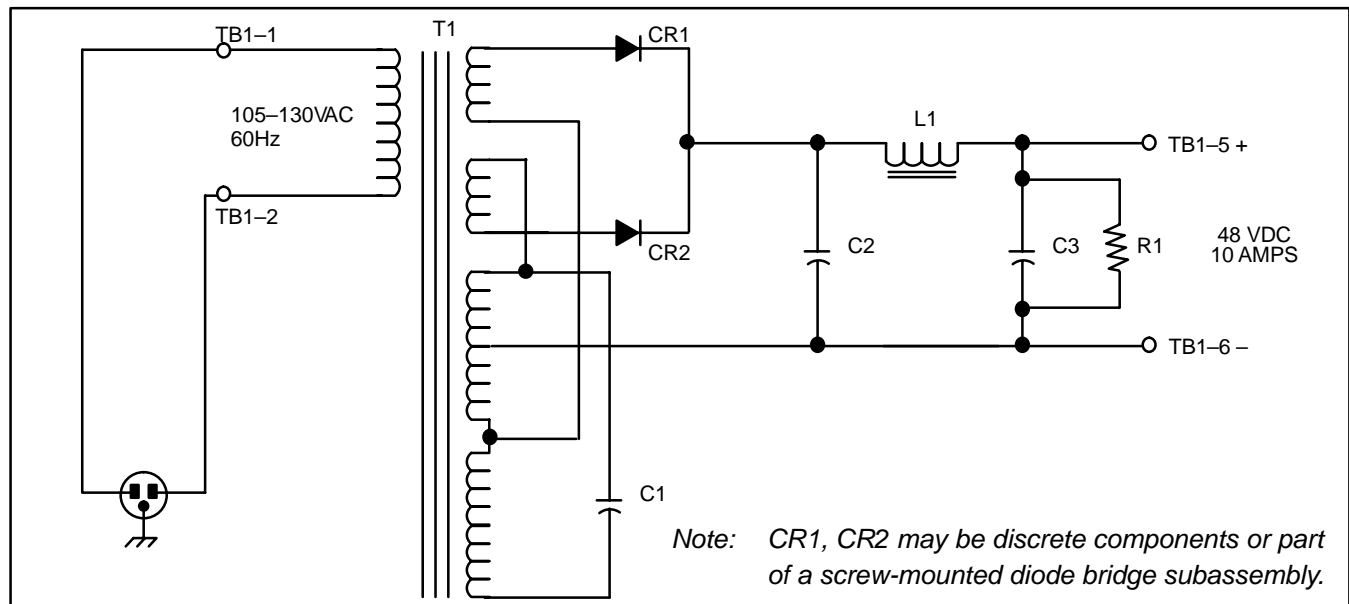


Figure 2. 8422-00 Power Supply (48Vdc, 10A) Schematic Diagram (Issue 2)

5. MOUNTING

As received from the factory, the 8422-00 includes side flanges (mounting ears) for flush-mounting in a 19-inch relay rack. Each power supply requires approximately 5.25-inches of vertical rack space (3 mounting spaces). Extension brackets are included to permit flush-mounting in a 23-inch relay rack.

5.1 Mounting in a 23-inch Rack

You will need the following equipment, included with the extension brackets

- 4 #10-32 mounting screws OR 4 1/4-20 mounting screws
- 4 #10 lock washers OR 4 1/4" lock washers

Step	Action
1.	Mount the extension brackets to the power supply using either the 1/4-20 mounting screws and 1/4" lock washers at 4-1/4" centers, or the #10-32 mounting screws and #10 lock washers at 3-1/4" centers.
2.	Mount the power supply on the rack using appropriate hardware.

5.2 Rack Mounting Options

For applications where balanced weight distribution within the relay rack is a concern, order Charles Industries kit # A80-000737 (for 19" racks) or Charles kit # A80-000736 (for 23" racks). These kits include the power supply and additional, special side flanges that allow the power supply to be installed in a projected-forward position within the relay rack.

6. INSTALLER CONNECTIONS

The power supply has a 9-foot power cord for connecting to a standard 120Vac, 60Hz power source. This 3-conductor cord is factory-wired to terminals 1 and 2 of barrier block TB1. The ground conductor (green lead) is connected to the chassis of the power supply.

Barrier block TB1 has a protective, insulating cover, fastened with screws. Remove the screws to remove the cover.

Connect the positive output lead to terminal 5 and the negative output lead to terminal 6 on barrier block TB1 (refer to Figure 3). These terminals are floating and either may be connected to ground as required. For protection against accidental shorts, replace the insulating cover upon completion of the power supply installation.

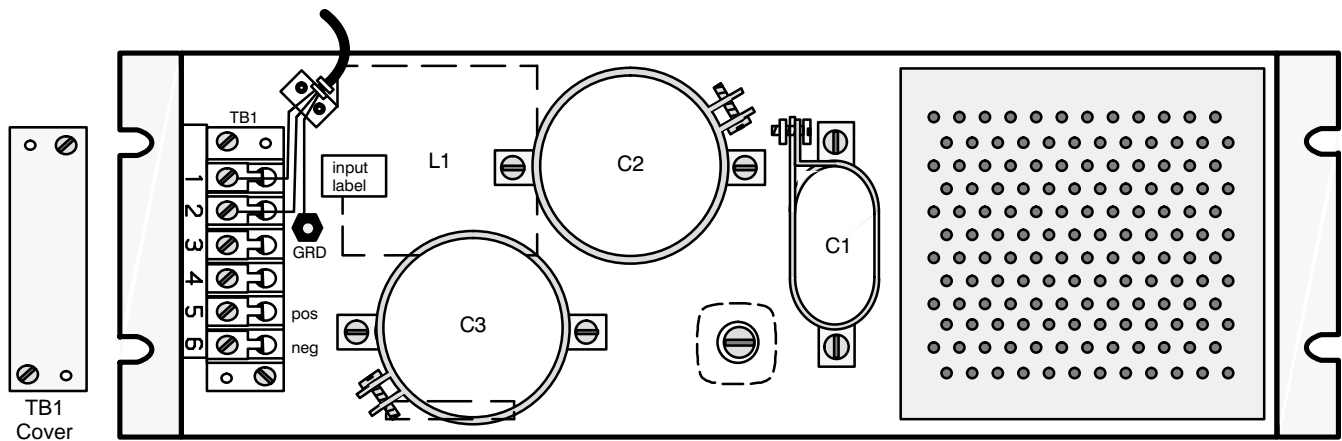


Figure 3. Location of Components and Barrier Block TB1 on the 8422-00

7. TESTING

Required equipment: Simpson 260 multimeter or equivalent.

Use the following steps to test the power supply.

Step	Action
3.	Set the multimeter to the 250Vdc range; connect the positive lead to terminal 5 and the negative lead to terminal 6 on barrier block TB1 on the 8422-00. The multimeter should read 45 to 54V. If the test condition is satisfied, no further testing is required. However, if no voltage indication is obtained, proceed with Step 4. If a low voltage indication is obtained, proceed with Step 5.
4.	Set the multimeter to the 250Vac range; measure the input voltage between terminals 1 and 2 on barrier block TB1. The multimeter should indicate 105 to 130V. If this condition is satisfied, proceed with Step 5. Otherwise, check the AC source feeding the power supply.
5.	With the multimeter set to the 150Vdc range and connected between terminals 5(+) and 6(-) on barrier block TB1 on the 8422-00, disconnect the load from the power supply by removing the main (input) fuses on all battery distributing panels being fed by the supply. If removing the load restores the operating voltage to normal, the trouble is caused by an overload or short circuit in the external circuit. If removing the load does not cause the output voltage to return to normal, replace the power supply with a similar unit known to be in good operating condition and retest.
6.	After proper operation is achieved, install all fuses removed in Step 3 and disconnect the multimeter.

8. TECHNICAL ASSISTANCE

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)

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 situation. 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
 503 N.E. 15th St., P.O. Box 339
 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 Electrical

The electrical characteristics of the 8422-00 Power Supply is as follows:

- (a) INPUT VOLTAGE: 105 – 130Vac, 60Hz \pm 0.5 Hz, single-phase.
- (b) INPUT POWER: 600W.
- (c) OUTPUT VOLTAGE: 45 to 54Vdc.
- (d) OUTPUT CURRENT: 10A maximum.
- (e) OUTPUT POLARITY: Floating; either positive or negative terminal may be grounded.
- (f) RIPPLE: Less than 50mV peak-to-peak.
- (g) NOISE: Less than 23dBnC.
- (h) OVERLOAD PROTECTION: Current foldback characteristic of transformer T1, protects the power supply from damage if the output is shorted.

10.2 Physical

The physical characteristics of the 8422-00 Power Supply are shown in Table 1:

Table 1. Physical Specifications

Feature	U.S.	Metric
Height	5.25 inches	13.3 centimeters
Width (with flanges)	19 or 23 inches	48.26 centimeters
Depth (original configuration)	9.75 inches	24.77 centimeters
Depth (alternate configuration)	8 inches	20.3 centimeters
Line Cord (nominal, 3 conductors)	9 feet	2.74 meters
Weight	42 pounds	19.05 kilograms
Temperature	32 to 120° F	0 to 49° C
Humidity	To 95% (no condensation)	

