

840 -48 Vdc Regulated Power Supply

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1. GENERAL

1.01 This Section provides circuit description, installation, and testing information for the Wescom 840-48 Vdc Regulated Power Supply.

1.02 The 840 Power Supply (Figure 1) is a compact, KTU size unit intended for use where power requirements do not justify a large battery installation. The power supply requires a nominal 117 Vac, 60-Hz, single-phase input and provides a regulated 1-ampere output at -48 Vdc.

1.03 The Model 840 features 1% voltage regulation for changes in either line voltage or load current, and transistorized circuitry to reduce size and weight and increase reliability.

2. SPECIFICATIONS

2.01 Specifications describing the electrical and physical characteristics of the power supplies are as follows:

(a) INPUT: 105 to 130 Vac, 48 to 63 Hz, single phase.

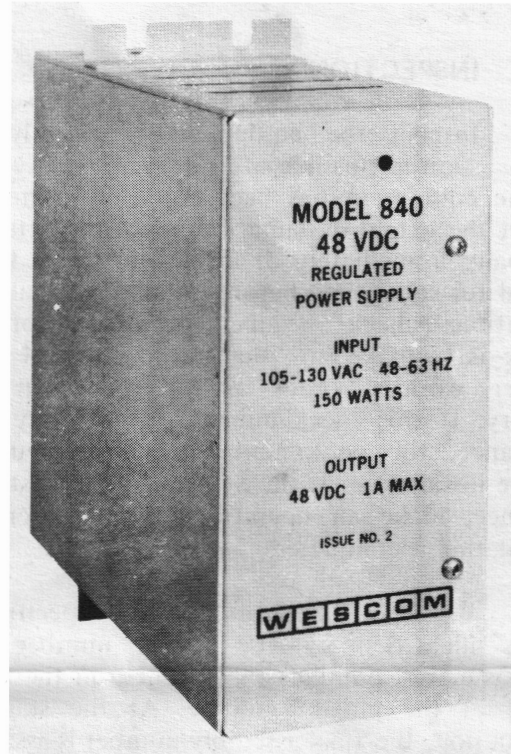


Figure 1. 840 Power Supply

- (b) OUTPUT: 48 Vdc at 1 ampere.
- (c) REGULATION: ± 1 volt, line and load.
- (d) POLARITY: Floating, either side may be grounded.
- (e) RIPPLE: 5 millivolts (maximum).
- (f) TEMPERATURE: 0° to 150°F (115°F at full load).
- (g) FUSING: Input and output, 1 amp cartridge.
- (h) LINE CORD: 10 foot , three conductor, 18 AWG.
- (i) DIMENSIONS: 6-7/8 inches high, 2-13/16 inches wide, 6-3/4 inches deep, 4-3/4 inches forward projection.

- (j) WEIGHT: 6 pounds.
- (k) FINISH: Telephone grey enamel.
- (l) MOUNTING: KTU apparatus case or relay rack.

3. INSPECTION

3.01 Inspect the equipment thoroughly, as soon as possible after delivery. If any part of the equipment has been damaged in transit, report the extent of damage to the transportation company immediately. If the equipment is to be stored for some time before installation, make an operational check at once. The purpose of this check is to make sure that the equipment is in proper working order as received from the factory. If this check indicates satisfactory performance, the equipment may be stored for future installation. If the System is to be installed at once, make an operational check after the installation is completed.

3.02 Wescom equipment is specifically identified by the model number and final-assembly number silk screened on the front panel of the plug-in module. At the start of production, the final-assembly number is assigned an issue number of 1 which becomes an integral part of the final-assembly number. After the start of production, this issue number is advanced each time a major engineering change occurs. Therefore, be sure to use the model number and final-assembly number when making inquiries about the equipment. The issue number of the instruction manual and schematic diagram attached should be the same as the issue number assigned to the equipment. If a one-to-one correspondence does not exist between these items, request from Wescom the instruction manual required for your equipment.

4. MOUNTING

4.01 The Model 840 Power Supply is designed to mount in any standard Key Telephone Unit apparatus case such as the Wescom 15A (equivalent to W.E.Co. 31B) or the Wescom 16C (equivalent to the W.E.Co. 16C). The Model 840 may also be installed on mounting bars in either a 19- or 23-inch relay rack. When the power supply is installed on mounting bars for relay rack

mounting, 7-inches of vertical rack space (four, 1-3/4 inch mounting spaces) are required.

4.02 Before mounting the power supply, select a location which is conveniently near a commercial a-c receptacle. Install the power supply in a KTU apparatus case or on a relay rack (as described above) with the mounting hardware provided.

5. INSTALLER CONNECTIONS

5.01 All installer connections, with the exception of the line cord, are made to a three-terminal, screw-type terminal block at the rear of the power supply. Make the connections in accordance with the following instructions.

- (1) Connect the positive lead (+) of the equipment to be powered to the + terminal.
- (2) Connect the negative lead (-) of the equipment to be powered to the - terminal.
- (3) Either side of the power-supply output may be grounded by strapping either the + or - terminal to the ground terminal.
- (4) Connect the line-cord plug to a grounded, commercial a-c receptacle providing nominal 117 Vac, 60-Hz, single-phase current.

6. CIRCUIT DESCRIPTION

6.01 The Model 840 is a d-c power supply which derives a well regulated and highly filtered 48 volt output from the standard a-c power line. The 840 provides up to one ampere continuous direct current for installations where the power requirements do not justify the installation of a battery supply. Refer to Figure 2, the Functional Schematic Diagram, and to the attached schematic diagram while reading the following description.

6.02 Line voltage is coupled through isolation and step-down transformer T1 to bridge rectifier CR1, where it is rectified to direct current. The resulting pulsating direct current is filtered by capacitor C3 and passes through the series regulator, Q6 into the external load connected across the output terminals.

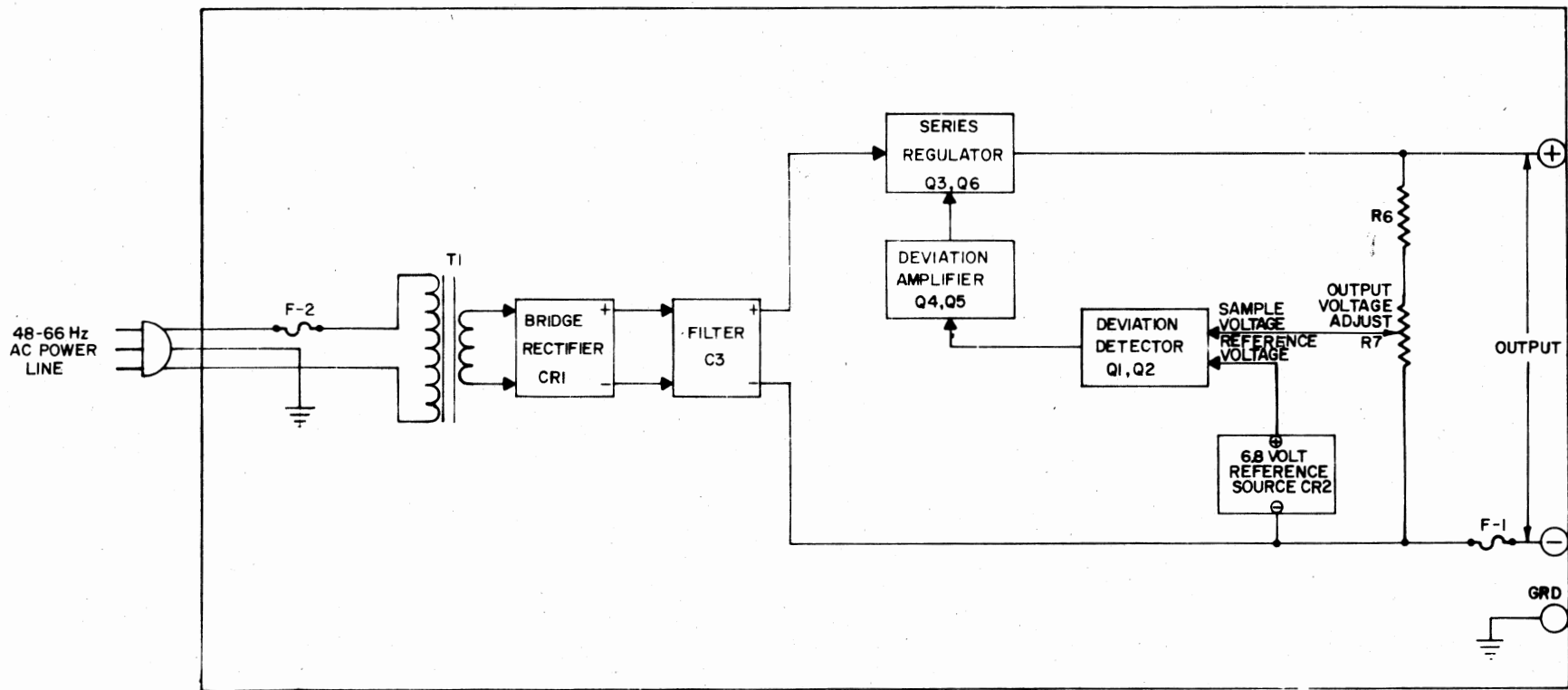


Figure 2. Functional Schematic Diagram

6.03 A deviation detector is provided to sample the output for proper operating voltage and produce a correction signal to maintain the power supply output at the specified voltage. A precise reference voltage is developed by the reference source and is applied to one input of the deviation detector. Resistor R6 and potentiometer R7 form a voltage divider across the output terminals. The specific percentage of the nominal output voltage required to equal the potential of the reference source is selected by a tap on potentiometer R7, to provide a sample voltage which is applied to the other input of the deviation detector. This sample voltage is compared to the reference voltage in the deviation detector. Any difference in voltage between these two inputs results in a correction voltage which is amplified by the deviation amplifier and applied as a correction current to the series regulator.

6.04 Circuit operation is such that a rise in output voltage, due either to an increase in power line voltage or a decrease in external load current, causes the sample voltage to become greater than the reference voltage. This condition causes a corrective current which increases the resistance of the series regulator allowing the output voltage to decrease to its nominal value.

6.05 A decrease in output voltage, due either to a decrease in power line voltage or an increase in external load current, causes the sample voltage to become less than the reference voltage. This condition causes a corrective current in the opposite direction, which decreases the

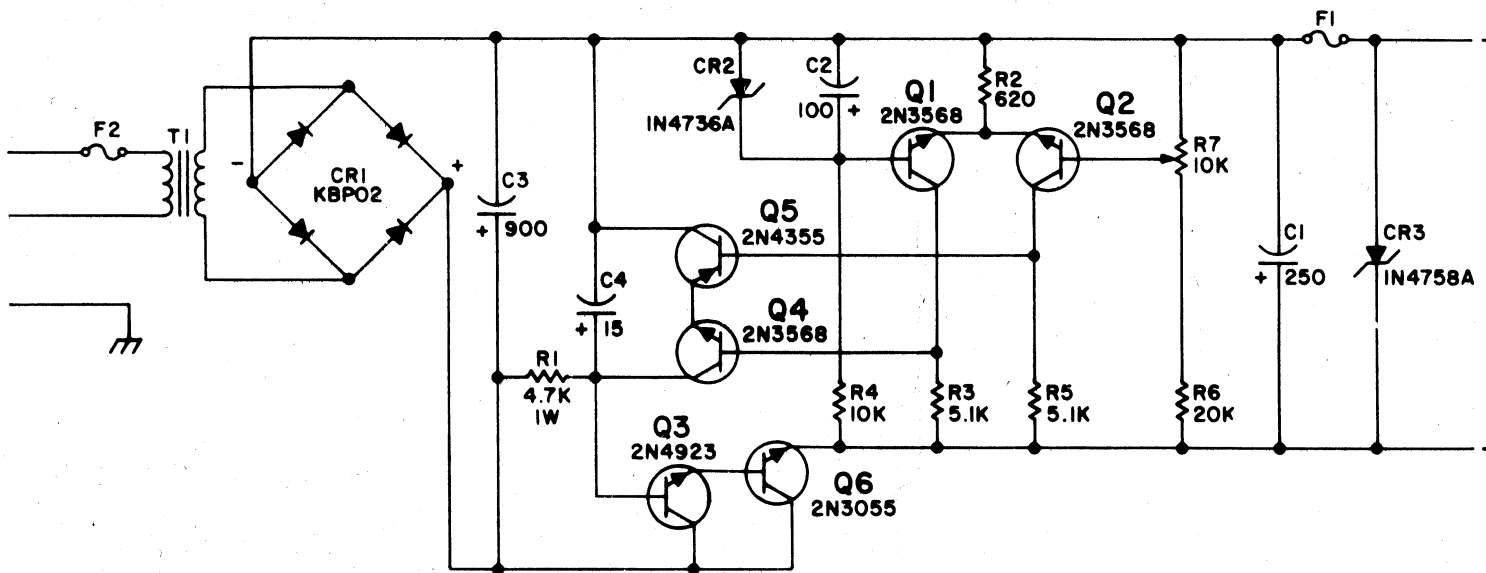
resistance of the series regulator allowing the output voltage to increase to its nominal value.

6.06 In order to describe the circuit operation it is necessary to assume a step operation; that is, a change in output voltage followed by a correction to its nominal value. The power supply circuit response to changes in line voltage or load current, however, is instantaneous. Therefore, the output voltage is actually never allowed to change, but remains at its nominal value during changes in line voltage or load current.

7. TESTING

7.01 If trouble is encountered with the operation of the power supply, check the obvious. Verify that the power-supply line cord is plugged in, and that the proper potential (105 to 130 Vac) is present at the a-c receptacle; determine that the fuses are not blown, and verify that the power supply provides the proper output voltage, using a multimeter set to the 50 Vdc scale. Meter the output current to verify that it is not greater than 1 ampere. If trouble persists, replace the power supply and retest.

7.02 Field repairs involving replacement of components within a module are not recommended. All Wescom products are warranted for 1 full year from the date of purchase. Return to Wescom, Inc., 501 Rogers Street, Downers Grove, Illinois 60515. For technical assistance call 312-971-2010 or TWX 910-695-4735.



NOTES:

1. UNLESS OTHERWISE SPECIFIED:
 RESISTORS ARE IN OHMS, $\pm 5\%$, 1/2WATT.
 CAPACITORS ARE IN MICROFARADS.

G	6-9-72	ECO 2098 ASSEMBLY CHG ONLY	WPA
F	6-9-71	1801 - ADDED CR3, REDRAWN	WPA
E	2-10-71	1686	AJM
D	11-13-70	1638	JSP
C	3-9-70	1419	RDV
B	9-11-69	1213	ERK
A	1-3-69	CHG. R1 VALUE	ERK

MODEL 840 POWER SUPPLY SCHEMATIC DIAGRAM			
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WESCOM INC. 801 ROGERS
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