Portable AC DC Power Supply

AD-2

INSTRUCTION MANUAL

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Electrical Test Instruments, Inc.
1301 Avondale Road, Suite J
New Windsor, MD 21776

www.etiinc.com

(410) 857-1880
Fax (410) 857-1387

ACDC Power Supply Model AD-2

Overview:

This is a portable AC and DC power supply intended for circuit breaker charging motors and other general purpose applications. It will provide DC voltage in three nominal ranges from 0 to 120, 240, and 480 volts at 2 kVA, and AC voltage in three nominal ranges from 0 to 140, 280, and 560 volts at 2.8 kVA. It is housed in a rugged enclosure approximately 22.0" x 22.5" x 11.3", and weighs approximately 128 lbs.

Basic Description and Operation:

This instrument is housed in a rugged waterproof case with protective lids. The input connection is by way of a recessed three prong male inlet compatible with standard extension cords. The input is protected and controlled by a 20 amp single pole circuit breaker. When it is turned ON, a variable autotransformer (vernier) is energized, and a green POWER ON light is illuminated, as well as a 0-600 volt digital meter. The output arm(s) are protected by a two pole breaker. The variable output of the vernier is connected to the primaries of four 700 VA toroidal transformers. The secondaries are connected in series and parallel configuration by means of a multi-deck six position selector switch. The AC output is monitored by the 0-600 VAC digital meter. An additional resistor is added in DC mode to read the DC output voltage for open circuit or resistive loads.

The output is controlled by means of a three position illuminated rotary switch. It has a maintained and momentary position, and a center OFF. When turned ON, a relay is energized and the internal lamp is illuminated. The contacts of the relay provide AC voltage directly to one pair of yellow binding posts, and through a full wave bridge rectifier to a pair of red and black binding posts. LED indicators next to the binding posts and near the meter indicate AC or DC mode.

A 20 kOhm load resistance is connected to the DC output along with a 12 volt zener diode and an indicator LED. This provides a 3-12 watt load for the DC output, and indicates if there is an output voltage above about 20 volts as a safety precaution.

This power supply has no filter capacitors, and is intended to be operated with no load capacitance. If a capacitive load is applied, the output voltage may increase to as much as 140% of the unfiltered output value, and the voltmeter will not read correctly. The voltmeter will read the unloaded AC voltage that will be applied to the output. The actual AC voltage will drop by as much as 11% under rated load, and the voltmeter will read the actual voltage. The calibration resistor for DC will be set so that the voltmeter reads the expected DC output at no load, but this will drop by 11% or more depending on actual load. Snubbers are connected across the output terminals to reduce noise and high voltage spikes when connected to inductive loads.

The TIMER jacks may be used to start an external timer when the output voltage is applied to the load. These contacts consist of a solid state relay rated at 0.1 amps and 200 V.

Specifications:

Width:	21.5 inches (546 mm)
Length:	18.5 inches (470 mm)
Height:	11.5 inches (292 mm)
Length with lids:	22.5 inches (572 mm)
Weight:	70 pounds (32.2 kG)

Input:	105-130 VAC, 50/60 Hz, 1.2 kVA nominal (20 amperes)
Outputs:	0-140 VAC at 20 A continuous (2.8 kVA)
	0-280 VAC at 10 A continuous
	0-560 VAC at 5 A continuous
	0-480 VDC at 4 A continuous (1.92 kVA)
	0-240 VDC at 8 A continuous
	0-120 VDC at 16 A continuous
Regulation:	11% on AC outputs at 2.8 kVA
	11% on DC outputs at 2 kVA
Ripple (DC):	N/A (unfiltered)

Overloads:

200%	30 seconds ON, 90 seconds OFF	(25% Duty Cycle)
300%	10 seconds ON, 90 seconds OFF	(10% Duty Cycle)

Voltmeter Accuracy:

AC:	+/- 0.5% of reading +/- 0.5% FS
DC:	+/- 2% of reading +/- 1% FS (at rated output current and resistive load)