INSTRUCTION MANUAL

KEPCO POWER SUPPLIES

Size C-450 Series

PRM MODULAR

Please record the equipment nameplate serial number in the space provided.

Model PRM 24—20-(50)

Serial No.....

GENERAL DESCRIPTION

The Kepco PRM Series 450 modules are a group of voltage stabilized d-c power supplies which operate either from a nominal 115V a-c, 60 Hz (models without suffix) or from a nominal 230V a-c, 50 Hz (models with suffix "-50") single phase power line. The design of PRM power supplies is based on Kepco's patented "FLUX-O-TRAN" ® ferroresonant power transformer, which provides output voltage stabilization and output current limiting. Due to their rugged construction and low parts count, Kepco's PRM modules are highly reliable d-c power sources, featuring efficiencies of approximately 65 to 75%. Cased PRM modules carry the additional suffix "C" following their model designation.

SPECIFICATIONS, SOURCE INPUT:

a) INPUT REQUIREMENTS (Models without suffix): 115V a-c, ±15V, 60 Hz ±5%, single phase.

b) INPUT REQUIREMENTS (Models with suffix "-50"): 230V a-c ±30V a-c, 50 Hz ±5%, single phase.

NOTE: Input frequency variations produces approximately equal percentages of output voltage change.

SPECIFICATIONS, D-C OUTPUT

a) OUTPUT RATINGS, LOAD EFFECT and RIPPLE:

MODEL	D-C OUTPUT		LOAD EFFECT (VOLTS INCREASE)		SEE LOAD EFFECT CURVE	MAXIMUM RIPPLE (RMS)
	VOLTS	AMPS	100%—50% LOAD STEP	100%—25% LOAD STEP		
PRM 12-35	12V	0-35A	0.7V	1.2V	1	60mV
PRM 12-35-50	12V	0-28A	0.7V	1.2V	1	60mV
PRM 24-20	24V	0-20A	0.8V	1.3V	2	60mV
PRM 24-20-50	24V	0-16A	0.8V	1.3V	2	60mV
PRM 28-17	28V	0-17A	0.7V	1.3V	2	60mV
PRM 28-17-50	28V	0-13.6A	0.7V	1.3V	2	60mV
PRM 48-10	48V	0-10A	0.9V	1.4V	3	60mV
PRM 48-10-50	48V	0-8A	0.9V	1.4V	3	60mV

TABLE 1 OUTPUT SPECIFICATIONS, PRM 450 SERIES.

NOTE: Output voltage as listed is ±2%, measured at nominal source voltage and frequency, at an ambient temperature of 30°C, maximum load and following a 30-minute warm-up period. The initial (cold) output voltage is approximately 1% higher. Output voltage values for less than maximum load currents may be determined from the load effect curves (FIG. 3) and added to the listed nominal values.

b) SOURCE EFFECT: Output varies less than ±1% (±0.5% typical) for the rated source voltage range at full load. At no load, the source effect is ±1.5% maximum.

c) TIME EFFECT (8-hour drift): Less than ±1%.

d) TEMPERATURE EFFECT (coefficient): Less than 0.05% per °C.

e) DYNAMICS:

1) VOLTAGE RECOVERY: The time required for the stabilized output voltage to recover within the load effect band, following a 50% load step, is less than 200 milliseconds.

2) OUTPUT IMPEDANCE: The output impedance from d-c to 10 KHz is a function of the load effect:

$$Z_O = \Delta E_O / \Delta I_O,$$

where ΔE_O is the change in output voltage for a given change in load current (ΔI_O). For frequencies *above* 10 KHz, the effect of a 0.5 μH series inductance must be added.

SPECIFICATIONS, GENERAL

a) OPERATING TEMPERATURE RANGE: -20°C to 55°C. No derating of the specified output current and no external heat sink is required.

b) STORAGE TEMPERATURE RANGE: -40°C to 85°C.

c) ISOLATION: The circuit of the PRM module is isolated from the chassis and from ground. It may be floated up to 600V d-c (or peak) off ground. The chassis should be grounded for safety. A common mode current of 50 μA rms, 500 μA p-p (at 60 Hz) flows to the ground return of the a-c power source.

d) SERIES/PARALLEL: PRM modules can be connected in series up to the 600V isolation limit. Identical models can be paralleled for approximately double current (allow for 10% imbalance).

e) STANDARDS: PRM modules are designed and tested in accord with NEMA standard for stabilized power supplies, d-c output. Publication No. PY-1-1972.

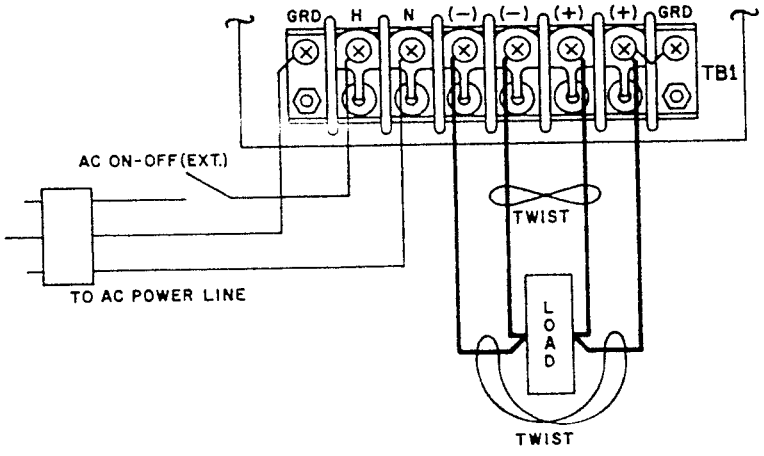
SPECIFICATIONS, MECHANICAL (See "Mechanical Out line Drawings", FIG. 6)

a) MOUNTING: Three mounting methods are illustrated in the Mechanical Outline Drawing, FIG. 6. The PRM module may also be mounted into a standard (19-inch) instrument rack by means of the following Kepco Rack Adapters:

1) Single-unit Rack Adapter, Kepco Model RA 18–1
2) Two-unit Rack Adapter, Kepco Model RA 8–2
3) Three-unit Rack Adapter, Kepco Model RA 9–3.

TERMINATIONS AND LOAD CONNECTIONS

A-C input and d-c output connections on the PRM Series 450 power supply are terminated at the barrier strip (TB1) as shown in FIG. 1. The barrier strip terminals are rated for 30 amperes and can accommodate wires to AWG #12. For output currents in excess of 30 amperes, a second pair of terminals are provided, permitting proper load distribution. Load wires should be as heavy as practicable, as short as possible, and should be tightly twisted to avoid noise pick-up problems.



NOTE: Positive output side shown grounded. *Alternately* the negative output side may be grounded, or the output may be left ungrounded.

FIG. 1 TERMINATIONS AND LOAD CONNECTIONS, PRM SERIES 450.

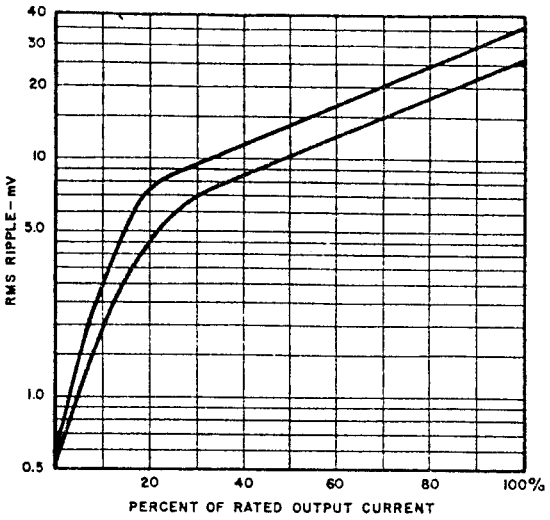


FIG. 2 TYPICAL OUTPUT RIPPLE, PRM SERIES 450.

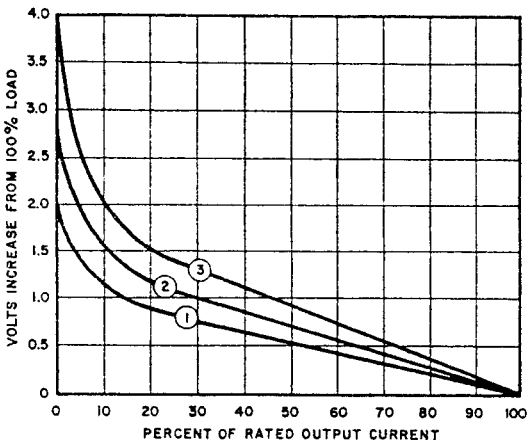


FIG. 3 TYPICAL LOAD EFFECT, PRM SERIES 450.

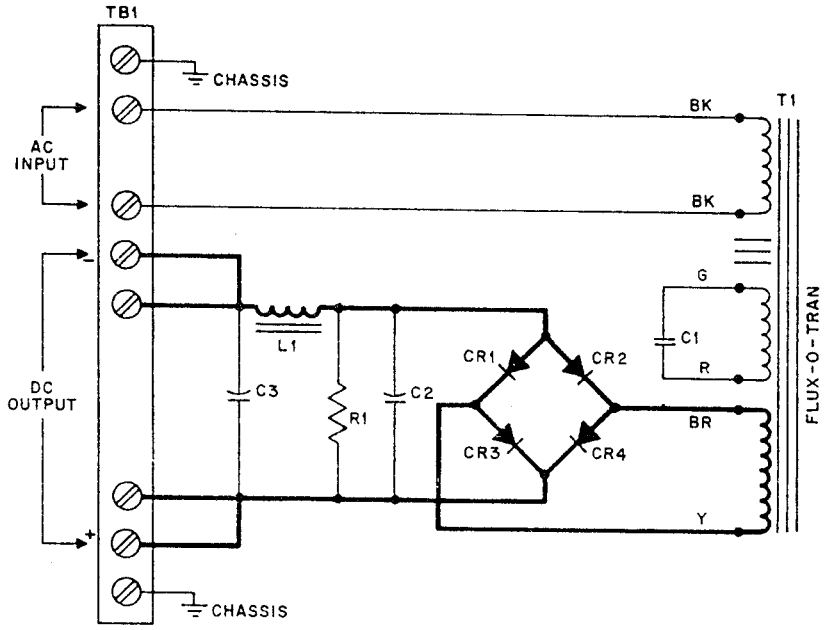


FIG. 4 SCHEMATIC DIAGRAM

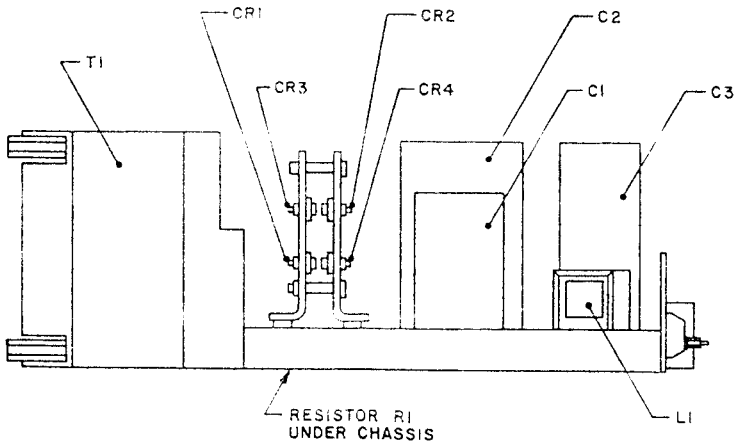


FIG. 5 COMPONENT LOCATION

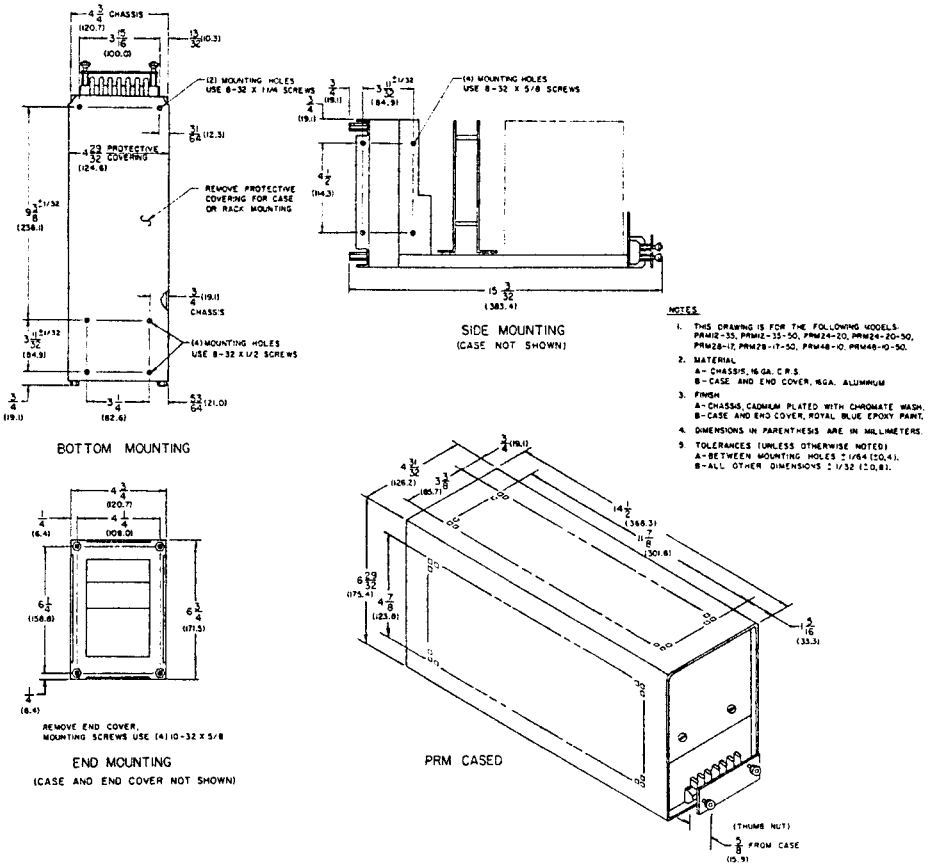


FIG. 6 MECHANICAL OUTLINE DRAWING, PRM 450 SERIES.

MODEL PRM 24–20 (-50) **REPLACEMENT PARTS LIST** **Code 03-2894**

REFERENCE DESIGNATION	QTY	DESCRIPTION	MFRS. NAME & PARTS NO. SEE BOTTOM NOTE	KEPCO PART NO.	REC. SPARE PART QTY.
C1	1	Cap., Poly/Paper, Can-Type 5μF, 6%, 660V a-c	General Electric Type 26F	117-0927	1
C2	1	Cap., Elect., Can-Type 75K μF, + 75 –10%, 25V	Mepco Electra Type 3186	117-0887	1
C3	1	Cap., Elect., Can-Type 45K μF, + 75 –10%, 25V	Sangamo Series 500	117-0882	1
CR1,2	2	Rect. Diode, Si., Stud-Type 200V (PIV), 15A	Motorola 1N3210	124-0555	1
CR3,4	2	Rect. Diode, Si., Stud-Type 200V (PIV), 40A	Motorola 1N1186RA	124-0210	1
L1	1	Filter, Choke	Kepco, Inc. 100-1501	100-1501	
R1	1	Res., Fxd., Power, Ax. Leads 1K ohm, 5%, 5W	Omtronics Mfg. Inc. Type T-5	115-0512	1
T1	1	Transformer, Power (Model with suffix "-50" only)	Kepco, Inc. 100-2097	100-2097	1
T1	1	Transformer, Power (Models without suffix only)	Kepco, Inc. 100-2093	100-2093	1
TB1	1	Terminal Strip, Barrier Type, 6 Terminals	Kepco, Inc. 167-0374	167-0374	1

NOTE: REPLACEMENT PARTS MAY BE ORDERED FROM KEPCO, INC. ORDERS SHOULD INCLUDE KEPCO PART NUMBER AND DESCRIPTION.

PLEASE NOTE: THE MANUFACTURER'S NAME AND PART NUMBER LISTED FOR EACH ITEM ON REPLACEMENT PARTS LISTS REPRESENTS AT LEAST ONE SOURCE FOR THAT ITEM AND IS LISTED SOLELY FOR THE CONVENIENCE OF KEPCO EQUIPMENT OWNERS IN OBTAINING REPLACEMENT PARTS LOCALLY. WE RESERVE THE RIGHT TO USE EQUIVALENT ITEMS FROM ALTERNATE SOURCES. KEPCO, INC.

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