INSTRUCTION MANUAL

KEPCO POWER SUPPLIES

Size B-120 Series

PRM MODULAR

Model PRM 24-5(-50)

Serial No. .....

GENERAL DESCRIPTION

The Kepco PRM Series 120 modules are a group of voltage stabilized d-c power supplies. The design of the PRM power supplies is based on Kepco's patented "FLUX-O-TRAN" ® ferroresonant 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%.

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"): 104V a-c ± 13.5V a-c or 115V a-c ± 15V a-c or 208V a-c ± 27V a-c or 230V a-c ± 30V a-c, 50 Hz ± 5%, single phase.

Kepco PRM Series 120 Power Supply Modules with suffix "-50" (50 Hz) are shipped for operation on 230V a-c, 50 Hz, single phase lines. The transformer primary connections on these models may be changed for other a-c input voltages, however, by altering the primary jumper connections as shown in FIG. 2.

NOTE: A ± 1% change in source frequency produces approximately ± 1.5% of output voltage change.

SPECIFICATIONS, D-C OUTPUT

a) OUTPUT RATINGS, LOAD EFFECT and RIPPLE:

MODEL	d-c OUTPUT VOLTS	d-c OUTPUT AMPS	LOAD EFFECT VOLTS INCREASE 100%—50% LOAD	LOAD EFFECT VOLTS INCREASE 100%—25% LOAD	LOAD EFFECT CURVE (FIG. 4)	RIPPLE (max) RMS VOLTS (FIG. 3)
PRM 5-15	5.2	0-15	0.5	0.8	1	0.4
PRM 5-15-50	5.2	0-12	0.5	0.8	1	0.4
PRM 6-15	6.3	0-15	0.5	0.8	1	0.4
PRM 6-15-50	6.3	0-12	0.5	0.8	1	0.4
PRM 12-10	12	0-10	0.6	1.0	2	0.4
PRM 12-10-50	12	0-8	0.6	1.0	2	0.4
PRM 18-6.7	18	0-6.7	0.8	1.3	3	0.3
PRM 18-6.7-50	18	0-5.4	0.8	1.3	3	0.3
PRM 24-5	24	0-5	1.0	1.7	3	0.3
PRM 24-5-50	24	0-4	1.0	1.7	3	0.3
PRM 28-4.3	28	0-4.3	1.2	2.0	4	0.3
PRM 28-4.3-50	28	0-3.4	1.2	2.0	4	0.3
PRM 36-3.3	36	0-3.3	1.5	2.4	5	0.3
PRM 36-3.3-50	36	0-2.64	1.5	2.4	5	0.3
PRM 48-2.5	48	0-2.5	2.0	3.4	6	0.3
PRM 48-2.5-50	48	0-2	2.0	3.4	6	0.3
PRM 60-2	60	0-2	2.3	3.8	7	0.3
PRM 60-2-50	60	0-1.6	2.3	3.8	7	0.3
PRM 120-1	120	0-1	4.6	7.6	9	0.3
PRM 120-1-50	120	0-0.8	4.6	7.6	9	0.3

TABLE 1 OUTPUT SPECIFICATIONS

NOTE: Output voltage accuracy ± 2% or 0.25 volts, at nominal source input, full load and 30°C ambient. Initial (cold) output voltage is 1% higher than the table values.

SPECIFICATIONS, CONT'D.

b) SOURCE EFFECT: Output varies less than ±1% 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% or 0.1V, whichever is greater.

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 400 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 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 standards for stabilized power supplies, d-c output, Publication No. PY-1-1972. 60 Hz PRM models (models without suffix) are recognized by Underwriters Laboratories under the UL Component Recognition Program: UL specifications 114 and 478.

f) SHIPPING WEIGTH: Approximately 17 lbs. (7.6 Kg.).

SPECIFICATIONS, MECHANICAL (See "Mechanical Outline Drawing", FIG. 7)

a) MOUNTING: Three mounting methods are illustrated in the Mechanical Outline Drawing, FIG. 7. 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 15-1.
2) Three-unit Rack Adapter, Kepco Model RA 14-3
3) Four-unit Rack Adapter, Kepco Model RA 16-4.
4) Five-unit Rack Adapter, Kepco Model RA 17-5.

TERMINATIONS AND LOAD CONNECTIONS

A-C input and d-c output connections on the PRM Series 120 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. Load wires should be as heavy as practicable, as short as possible and should be tightly twisted to avoid noise pick-up problems. Recommended external fuse (if required): 2.5A @ 115V a-c, 1.25A @ 230V a-c, slow-acting type.

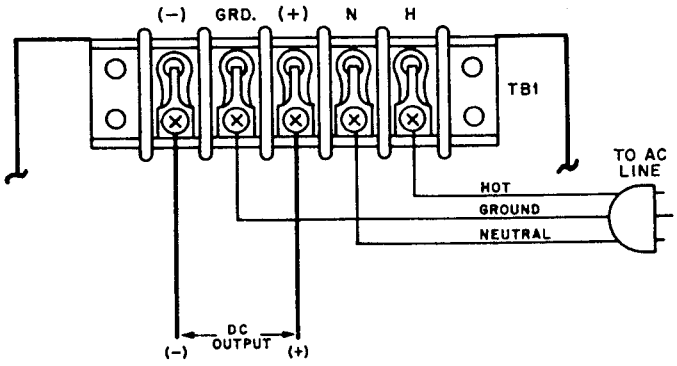
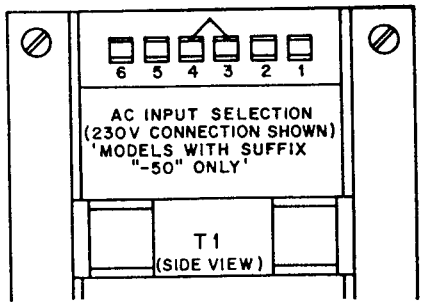


FIG 1 TERMINATIONS, PRM SERIES 120.



NOTE:

104V a-c input: Connect (1)-(2) and (5)-(6).
115V a-c input: Connect (2)-(3) and (4)-(5).
208V a-c input: Connect (1)-(6).
230V a-c input: Connect (3)-(4).

FIG. 2 A-C INPUT VOLTAGE SELECTION. (MODELS WITH SUFFIX "—50").

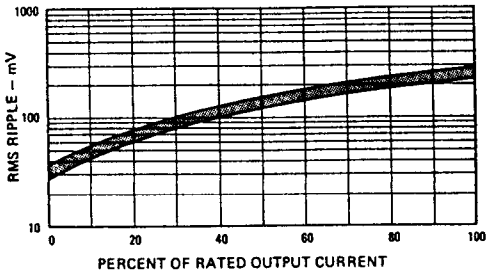


FIG. 3 TYPICAL OUTPUT RIPPLE, PRM SERIES 120.

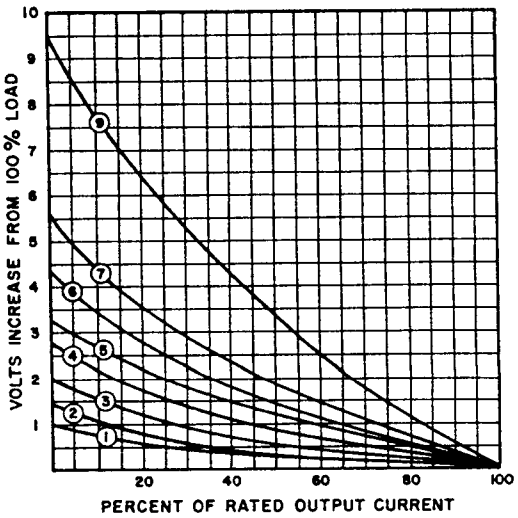
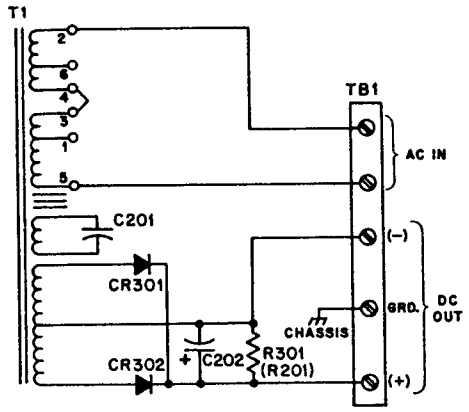
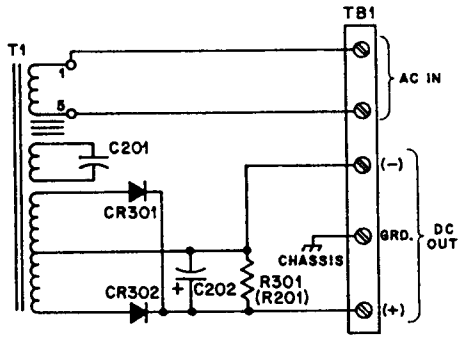


FIG. 4 TYPICAL LOAD EFFECT, PRM SERIES 120.

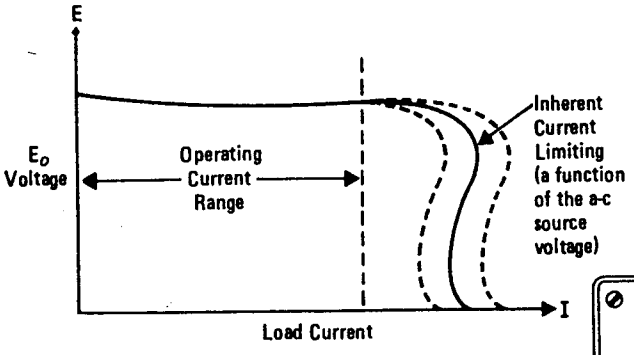


MODELS WITH SUFFIX "–50"



MODELS WITHOUT SUFFIX

FIG. 5 SCHEMATIC DIAGRAM, PRM 120 SERIES.



TYPICAL OUTPUT CHARACTERISTICS,
PRM DESIGN GROUP

NOTE: *(See FIG,'s 5, 6) on some models, R301 is located on the chassis and is designated R 201. See Parts List.*

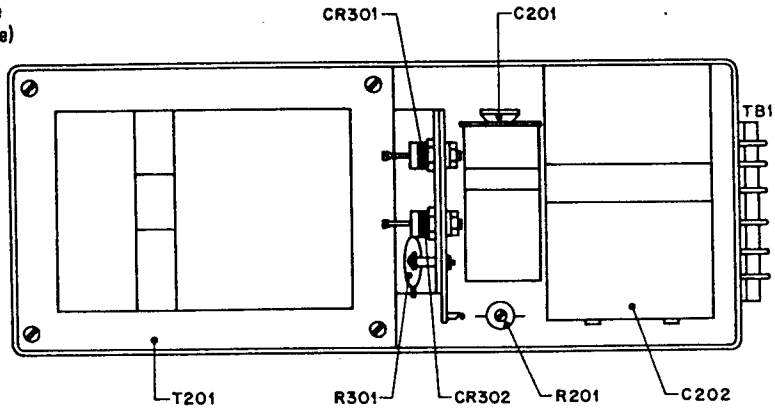
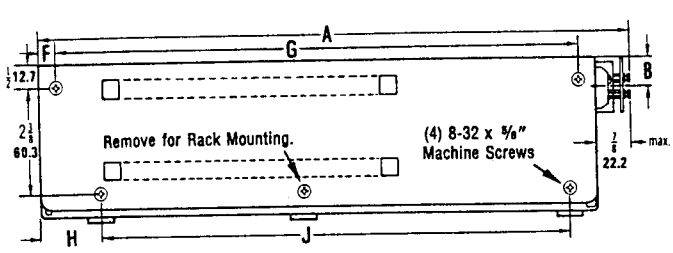
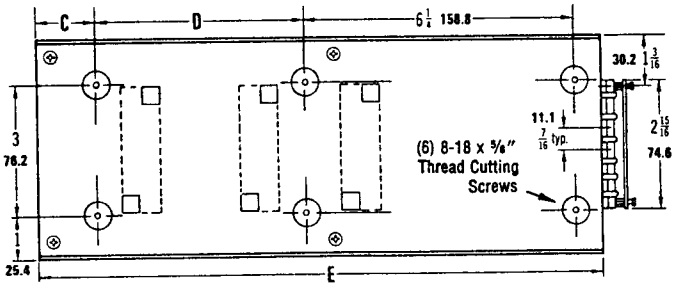


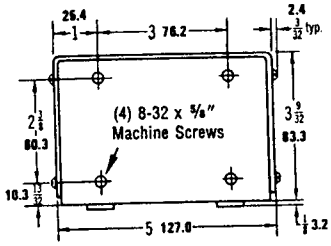
FIG. 6 COMPONENT LOCATION, PRM 120 SERIES.



SIDE VIEW



BOTTOM VIEW



END VIEW

Tolerance:
± 1/64" (0.4) between mounting holes.
± 1/32" (0.8) other dimensions.

A	B	C	D	E	F	G	H	J
13 7/8	19/32	1 3/8	4 3/4	13	3/8	12 1/4	1 3/8	11
352.4	15.1	34.9	120.7	330.2	9.5	311.2	34.9	279.4

FIG. 7 MECHANICAL OUTLINE DRAWING, PRM 120 SERIES.

Notes:
1) MATERIAL: Chassis, 3/32 Aluminum; Case, 16GA - Aluminum.
2) FINISH: Chassis and Case: blue anodized finish.
3) Fractional Dimensions (Light Face Type) are in inches.
   Decimal Dimensions (Bold Face Type) are in millimeters.
4) TOLERANCES: ± 1/64 (0.4) between mounting holes.
   ± 1/32 (0.8) all other dimensions.

MODEL PRM 24-5 (-50) **REPLACEMENT PARTS LIST** **Code 06-0299**

REFERENCE DESIGNATION	QTY	DESCRIPTION	MFRS. NAME & PARTS NO. SEE BOTTOM NOTE	KEPCO PART NO.	REC. SPARE PART QTY.
C201	1	Cap., Paper, Can, Oval 2μF, 6%, 660V a-c	General Electric Type 21L	117-0924	1
C202	1	Cap., Electrolytic, Can 60K μF, +150 –10%, 25V d-c	Sangamo Type 500	117-0452	1
CR301,302	2	Rect., Silicon, Stud Type 200V (PIV), 15A	Motorola 1N3210	124-0555	1
R201	1	Res., Fxd., Power Strip 50 ohm, 5%, 20W	E-Systems Type FRL-20	115-2421	1
T201	1	Transformer, Power (Models without suffix only)	Kepco, Inc. 100-1441	100-1441	1
T201	1	Transformer, Power (Models with suffix "-50" only)	Kepco, Inc. 100-1542	100-1542	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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