

SERIES PRM

These units are modular ferroresonant voltage stabilizers which obtain their source-isolated, overload-protected output from Kepco's proprietary transformer, Flux-O-Tran. This design lends itself to custom volt-ampere combinations; consult factory.

The low cost, highly dependable ferroresonant stabilizing technique provides extraordinary isolation from a wide variety of source noise. The d-c output is inherently short-circuit proof and cannot expose delicate loads to over-voltage hazards, see Figure 7, page 119. Hence no crowbar, fuses, or bounding circuits are needed in the output. Conventional input circuit protection is required.

Ferroresonant power supplies use no noise-producing switches or oscillators. Voltage setting is independent of delicate control settings or diode references, and requires no comparators, references, or limiters. Efficiency is 65-75%. Many models are UL recognized: UL 114 and 478. Consult factory.



PRM can be individually installed or may be combined into a custom power assembly for multi-output requirements. Please see pages 131-135 for details on Kepco's Power Assembly Program.



PRM MODEL TABLE

MODEL	d-c OUTPUT (2) For custom Volt/Ampere combinations, consult factory		LOAD EFFECT (1) VOLTS INCREASE			LOAD EFFECT CURVE See Pg 118	RIPPLE (max) rms VOLTS
	VOLTS	AMPS	100-50% LOAD	100-25% LOAD	100-0% LOAD		
120 WATTS (Size B)						FIG. 1	
PRM 12-10	12	0-10	0.6	1.0	1.3	2	0.3
PRM 24-5	24	0-5	1.0	1.7	2.1	3	0.3
PRM 120-1	120	0-1	4.6	7.6	9.4	5	0.3
180 WATTS (Size A)						FIG. 1	
PRM 12-15	12	0-15	0.6	1.0	1.2	1	0.4
PRM 24-8	24	0-8	0.7	1.2	1.4	2	0.3
PRM 28-7	28	0-7	0.7	1.2	1.6	2	0.4
PRM 120-1.5	120	0-1.5	2.2	3.6	5.8	4	0.3
280 WATTS (Size AA)						FIG. 4	
PRM 8.5-30	8.5	0-30	0.5	0.8	0.9	1	0.3
PRM 12-23	12	0-23	0.5	0.8	1.1	2	0.3
PRM 15-18	15	0-18	0.7	1.1	1.2	3	0.3
PRM 24-12	24	0-12	0.8	1.25	1.5	4	0.3
PRM 28-10	28	0-10	0.8	1.25	1.6	5	0.3
PRM 48-6	48	0-6	1.2	1.8	2.5	6	0.4
PRM 120-2.4	120	0-2.4	2.4	4.0	5.5	7	0.4
300 WATTS DUAL OUTPUT (Size C)						FIG. 1	
PRM 2X12-12	12, 12	0-12, 0-12	0.5	0.7	1.0	1	0.3
PRM 2X15-10	15, 15	0-10, 0-10	0.5	1.0	1.0	1	0.3
PRM 2X24-6	24, 24	0-6, 0-6	0.6	1.0	1.0	2	0.2
PRM 2X60-2.5	60, 60	0-2.5, 0-2.5	1.0	1.7	2.0	3	0.2
450 WATTS (Size C)						FIG. 1	
PRM 12-35	12	0-35	0.7	1.2	2.0	1	0.06
PRM 24-20	24	0-20	0.8	1.3	2.7	2	0.06
PRM 28-17	28	0-17	0.7	1.3	2.8	2	0.06
PRM 48-10	48	0-10	0.9	1.4	3.8	3	0.06

(1) Measured at 115V a-c source.

(2) Accuracy $\pm 2\%$ or 0.25V set at 115V a-c, full load, and 30°C. The initial (cold) output is 1% higher. In dual output models, interaction between sections produces an extra +2% change when one section is unloaded from maximum to zero.

PRM MODEL TABLE

MODEL	VOLTS ⁽¹⁾					AMPS					LOAD EFFECT ⁽¹⁾ VOLTS INCREASE			LOAD EFFECT CURVE VOLTS	RIPPLE (max) rms
	-B	-A	NOM	+A	+B	-B	-A	NOM+B	+A	LOAD	100-50%	100-25%	100-0%		
											LOAD	LOAD	See Pg 118		
60 WATTS (Size D)														FIG. 2	
PRM 5-10	4.2	4.6	5.0	5.4	5.8	12.0	11.0	10.0	9.3	8.6	0.5	0.8	1.0	6	0.50
PRM 8-7	7.2	7.6	8.0	8.4	8.8	7.8	7.5	7.0	6.7	6.4	0.6	0.9	1.0	6	0.33
PRM 12-5	10.4	11.2	12.0	12.8	13.6	5.7	5.4	5.0	4.7	4.5	0.8	1.2	1.5	7	0.33
PRM 15-4	13.4	14.2	15.0	15.8	16.6	4.5	4.2	4.0	3.8	3.6	0.9	1.3	1.8	8	0.33
PRM 21-2.9	17.9	19.4	21.0	22.6	24.2	3.4	3.1	2.9	2.7	2.6	1.3	2.1	2.2	9	0.33
PRM 26-2.3	22.0	24.0	26.0	28.0	30.0	2.7	2.5	2.3	2.1	2.0	1.3	2.1	2.7	10	0.33
PRM 36-1.7	32.0	34.0	36.0	38.0	40.0	1.9	1.8	1.7	1.6	1.5	1.7	2.7	3.7	11	0.33
PRM 240-0.25	220.0	230.0	240.0	250.0	260.0	0.27	0.26	0.25	0.24	0.23	6.0	10.8	12.5	12	0.33

(1) Measured at 115V a-c source.

The size D, Series 60 PRM modules are equipped with an adjustable tap arrangement on the output winding of the ferroresonant transformer selecting two increments of voltage above the nominal output and two increments of voltage below the nominal output. In the table of voltages, the nominal (center) tap is indicated by the bold face type.

The table of currents has a corresponding bold face column showing the current rating at the nominal voltage. The two adjacent columns on either side of the nominal current correspond to the respective voltage tap increments (A, B). The load effect is specified for the nominal output voltage.

PRM GENERAL SPECIFICATIONS

SPECIFICATION	RATING/DESCRIPTION	CONDITION
INPUT		
Voltage	100-130V a-c(1)	Single phase
Current	See Table 1	Maximum load, 115V a-c
Frequency	60Hz $\pm$ 5%(1)	
OUTPUT		
d-c Output	Ferroresonant	
Type of Stabilizer	Voltage stabilizer	Fixed
Current Limiting	~150% of rated load current	115V a-c source voltage
Isolation Voltage	600V (d-c or peak) Dual output 60V d-c peak	Output to ground
Leakage Current Output to Ground	50 microamperes 500 microamperes	rms at 115V a-c p-p at 115V a-c
Series Connection	600V	Max. voltage off ground. On dual models, the maximum potential between outputs is 60V (d-c or peak).
Parallel Connection	Current sharing. Allow for 10% imbalance.	Possible for identical models (or halves of a dual supply)
OVP	Not required	Inherent in ferroresonant design
DYNAMICS		
Transient Recovery	<400 milliseconds	50-100% step-load current
Output Impedance	May be derived from tabulated load effect calculations ($\Delta E_o / \Delta I_o$). Above 10KHz, add the equivalent of 0.5 microhenries series inductance.	
MECHANICAL		
Input & Output Connections	Barrier strip on one surface	All models
Cooling	Full output current is delivered at -20 to +55°C, no derating or external heat sink is required	Natural convection
Dimensions	See outline drawings	
Finish	Blue anodized housing	Sizes B & D
	Royal blue epoxy paint	Sizes A, AA, & C enclosures
Weight	See outline drawings	

(1) PRM operate at 115V a-c 60Hz only. For models to operate at 230V a-c 50Hz, consult factory. For rack adapter panels, see page 120.

PRM STATIC SPECIFICATIONS

SPECIFICATION	RATING/DESCRIPTION	CONDITION
Accuracy	$\pm 2\%$	Nominal source +30°C after ½ hour warmup
	$\pm 1\%$ (1) higher	Cold start
Source Effect	$\pm 1\%$ (1)	For loads between 25-100%
	$\pm 1.5\%$	For loads between 0-25%
Source Frequency Effect	1-1.5%	For 1% change in frequency
Temperature Effect	0.05% per °C	0-50 °C
Load Effect	See Fig. 1, 2, 4 page 118	
Ripple & Noise	See Fig. 8 page 119	
Time Effect	1% or 0.1V whichever is greater	8-hour drift
Efficiency	65-75%	Max load
Temperature	-40°C to +85°C	Storage
	-20°C to +55°C	Operating

(1) Size C, 450W models. $\pm 0.5\%$ typical.

TABLE 1
Input Current, Input Power, 115V a-c

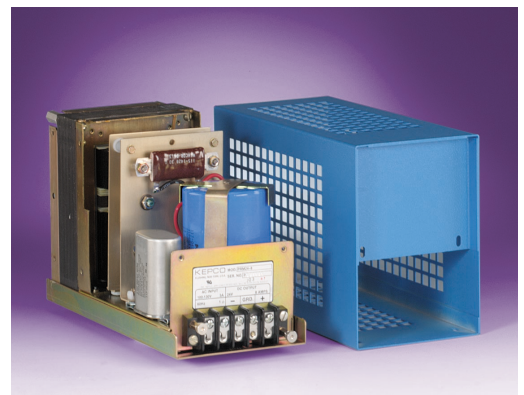
MODEL GROUP	AMPS, rms	WATTS
60W (Size D)	1.1	100
120W (Size B)	2	190
180W (Size A)	3	280
280W (Size AA)	4	360
300 (Size C)	5	465
450W (Size C)	6.5	600



Model PRM 21-2.9
60 Watts Size D
Available with case only



Model PRM 12-10
120 Watts Size B
Available with case only



Model PRM 24-8
180 Watts Size A
Optional cover, CA 200



Model PRM 15-18
280 Watts Size AA
Optional cover, CA 200



Model PRM 2X12-12
300 Watts Size C
Optional cover, CA 300

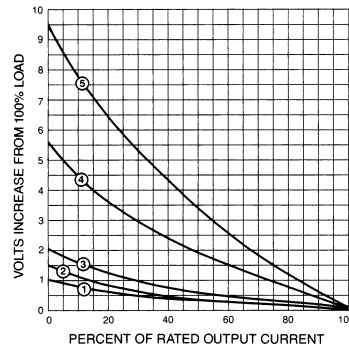


Model PRM 24-20
450 Watts Size C
Optional cover, CA 300

Series PRM Load Effect

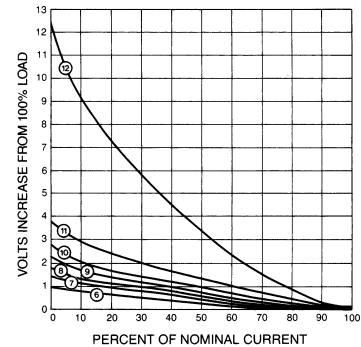
These curves represent typical performance parameters. Maximum specified values are given in the model tables. Use these curves to estimate the load effect for your load requirements.

FIGURE 1



TYPICAL LOAD EFFECT CURVE FOR
SIZES "A" (180W), "B" (120W) AND
"C" (300W) PRM MODELS

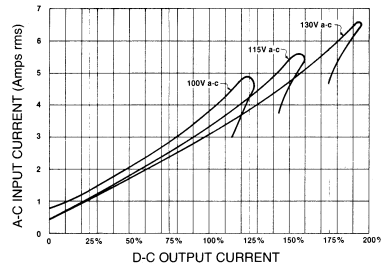
FIGURE 2



TYPICAL LOAD EFFECT CURVE FOR
SIZE "D" (60W) PRM MODELS

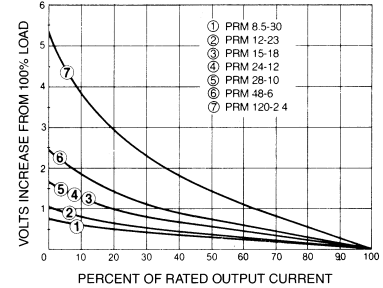
PRM 280 SERIES SIZE AA

FIGURE 3



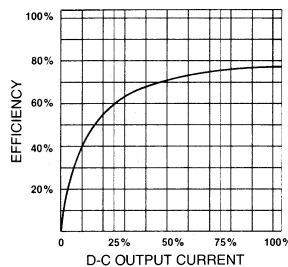
A-C INPUT CURRENT VS.
LOAD CURRENT FOR LOW, NOMINAL
AND HIGH INPUT SOURCE

FIGURE 4



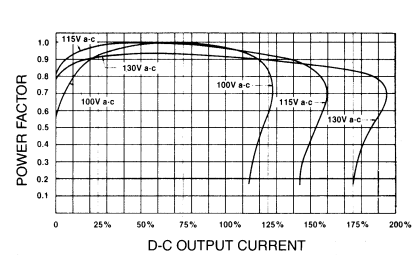
TYPICAL LOAD EFFECT AS A
FUNCTION OF LOAD CURRENT

FIGURE 5



EFFICIENCY VS. LOAD CURRENT

FIGURE 6



POWER FACTOR VS. LOAD CURRENT FOR
LOW, NOMINAL AND HIGH INPUT SOURCE

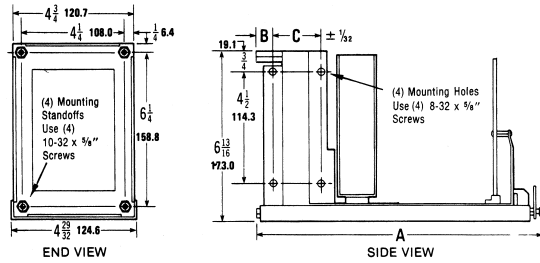
NOTE:

The end points of the curves in Figures 3 and 6 represent short-circuit conditions.



WEIGHTS

Size AA – 24lbs (10.9Kg)
Size A – 24lbs (10.9Kg)
Size C – 36lbs (16.4Kg)



SIZE AA, A, & C UNCASSED MODELS

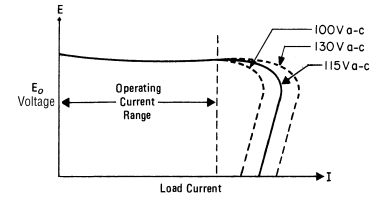
MODELS	A	B	C	D	J
PRM SIZE "A" 180 Series	10 ¹³ / ₁₆ 274.6	5/8 15.9	2 ¹¹ / ₃₂ 59.5	6 ¹ / ₂ 165.1	1 ¹ / ₁₆ 17.5
PRM SIZE "AA" 280 Series	10 ²⁹ / ₃₂ 277.0	1 ¹ / ₁₆ 17.5	2 ¹¹ / ₃₂ 59.5	6 ¹ / ₂ 165.1	1 ⁹ / ₁₆ 19.5
PRM SIZE "C" Dual Output	15 ¹ / ₈ 384.2	1 ¹ / ₁₆ 17.5	3 ¹¹ / ₃₂ 84.9	9 ⁹ / ₁₆ 242.9	1 ¹ / ₂ 12.7
PRM SIZE "C" 450 Series	15 381.0	1 ¹ / ₁₆ 17.5	3 ¹¹ / ₃₂ 84.9	9 ⁹ / ₁₆ 242.9	1 ¹ / ₂ 12.7

OUTLINE DIMENSIONAL DRAWINGS

Fractional dimensions in light face type are in inches.
dimensions in bold face type are in millimeters.

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

FIGURE 7



TYPICAL OUTPUT VOLTAGE CHARACTERISTIC
AS A FUNCTION OF LOAD CURRENT AND
A-C INPUT VOLTAGE

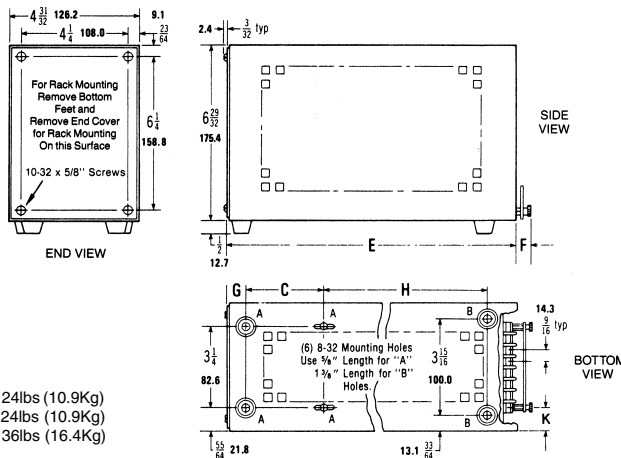


FIGURE 8

WEIGHTS

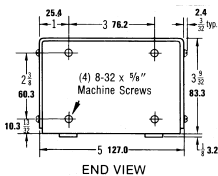
Size AA – 24lbs (10.9Kg)
Size A – 24lbs (10.9Kg)
Size C – 36lbs (16.4Kg)

SIZE AA, A & C CASED MODELS

MODELS	C	E	F	G	H	J
PRM SIZE "A" 180 Series	2 ¹¹ / ₃₂ 59.5	10 ⁷ / ₁₆ 265.1	1/2 12.7	1 ¹¹ / ₁₆ 17.5	6 ¹ / ₂ 165.1	5 ¹ / ₁₆ 20.2
PRM SIZE "AA" 280 Series	2 ¹¹ / ₃₂ 59.5	10 ¹ / ₈ 266.7	1/2 12.7	3/4 19.1	6 ¹ / ₂ 165.1	5 ¹ / ₁₆ 20.2
PRM SIZE "C" Dual Output	3 ¹¹ / ₃₂ 84.9	14 ⁹ / ₁₆ 369.9	5/8 15.9	3/4 19.1	9 ⁹ / ₁₆ 242.9	3 ⁹ / ₁₆ 55.5
PRM SIZE "C" 450 Series	3 ¹¹ / ₃₂ 84.9	14 ¹ / ₂ 368.3	5/8 15.9	1 ³ / ₁₆ 20.6	9 ⁹ / ₁₆ 242.9	1 ¹ / ₂ 12.7

TYPICAL OUTPUT RIPPLE
VS. LOAD CURRENT CURVES

Cases for Series PRM

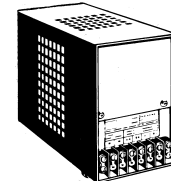
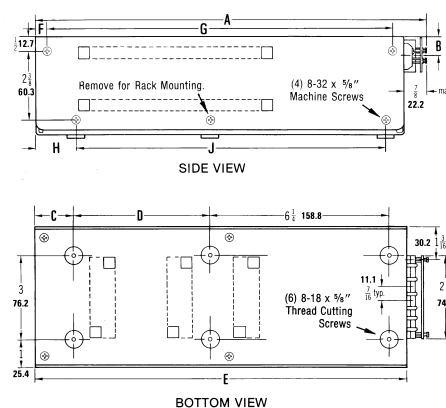


WEIGHTS

Size B – 17lbs (7.7Kg)
Size D – 12lbs (5.5Kg)

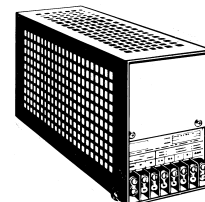
SIZE B & D MODELS (available cased only)

MODELS	A	B	C	D	E	F	G	H	J
PRM SIZE "B" 120 Series	13 ⁷ / ₈ 352.4	1 ⁹ / ₃₂ 15.1	1 ³ / ₈ 34.9	4 ³ / ₄ 120.7	13 330.2	3/8 9.5	12 ¹ / ₄ 311.2	1 ³ / ₈ 34.9	11 279.4
PRM SIZE "D" 60 Series	10 ⁷ / ₈ 276.2	2 ¹ / ₃₂ 16.7	1 ³ / ₈ 20.6	2 ⁵ / ₁₆ 58.7	10 254.0	1 ³ / ₃₂ 10.3	9 ⁹ / ₁₆ 233.4	1 ³ / ₁₆ 20.6	8 ⁹ / ₁₆ 217.5



CA 200

Protective cover for PRM
Size A and Size AA model



CA 300

Protective cover for PRM
Size C model

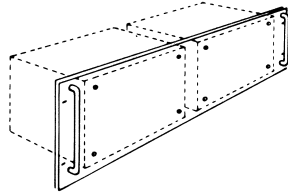
Rack Adapters for PRM Models

These models adapt Kepco ferroresonant power supplies to the standard 19" wide equipment rack or cabinet. Panel mounting holes are pre-drilled (standard E.I.A. pattern). Finish: Light gray, color 26440, Fed. Std. 595.

Dimensions in light face type are in inches, **dimensions in bold face type are in millimeters**. Weight in light face type is English measure, **bold face type is metric measure**.

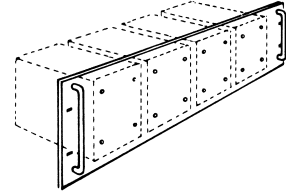
RA 8-2

Rack adapter for (2)
PRM size A-180 series or
size AA-280 series or
PRM size C; 300 series
(dual output) or 450 series.
Height: $5\frac{7}{32}$ (**132.6**)
Ship. Weight: 3 lbs. (**1.4 kg.**)



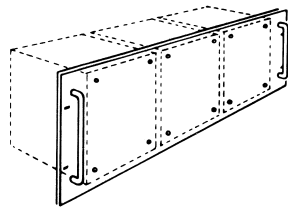
RA 16-4

Rack adapter for (4)
PRM size B-120 series
or size D-60 series.
Height: $5\frac{7}{32}$ (**132.6**)
Ship. Weight: 3 lbs. (**1.4 kg.**)



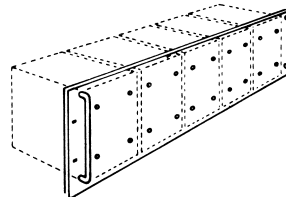
RA 9-3

Rack adapter for (3)
PRM size A-180 series or
size AA-280 series or
PRM size C; 300 series
(dual output) or 450 series.
Height: $6\frac{3}{32}$ (**177.0**)
Ship. Weight: 4 lbs. (**1.8 kg.**)



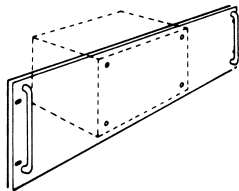
RA 17-5

Rack adapter for (5)
PRM size B-120 series
or size D-60 series.
Height: $5\frac{7}{32}$ (**132.6**)
Ship. Weight: 3 lbs. (**1.4 kg.**)



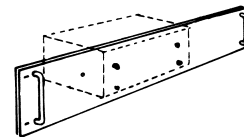
RA 10-1

Rack adapter for (1)
PRM size A-180 series or
size AA-280 series.
Height: $5\frac{7}{32}$ (**132.6**)
Ship. Weight: 3 lbs. (**1.4 kg.**)



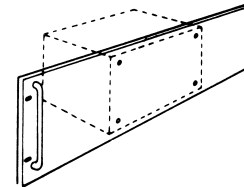
RA 30-1

Rack adapter for (1)
PRM size D-60 series.
Height: $3\frac{15}{32}$ (**88.1**)
Ship. Weight: 2 lbs. (**0.9 kg.**)



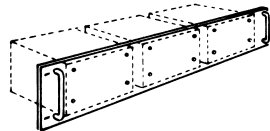
RA 31-1

Rack adapter for (1)
PRM size C-300 series
(dual output).
Height: $5\frac{7}{32}$ (**132.6**)
Ship. Weight: 3 lbs. (**1.4 kg.**)



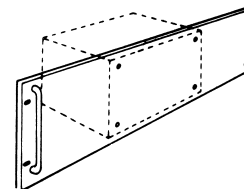
RA 14-3

Rack adapter for (3)
PRM size B-120 series or
size D-60 series.
Height: $3\frac{15}{32}$ (**88.1**)
Ship. Weight: 2 lbs. (**0.9 kg.**)



RA 38-1

Rack adapter for (1)
PRM size C-450 series.
Height: $5\frac{7}{32}$ (**132.6**)
Ship. Weight: 3 lbs. (**1.4 kg.**)



RA 15-1

Rack adapter for (1)
PRM size B-120 series.
Height: $3\frac{15}{32}$ (**88.1**)
Ship. Weight: 2 lbs. (**0.9 kg.**)

