

KEPCO/TDK single & dual input SWITCHING POWER SUPPLIES

RMK 115V a-c input
(145Vd-c)

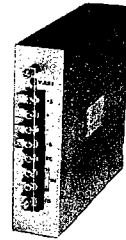
RMX 115/230V a-c input
selectable
(290Vd-c)

RMK/RMX produce a single stabilized d-c output using a high frequency modulated inverter. The input is rectified and filtered, then "switched" at 25 KHz to pass through a miniature ferrite transformer, where it is rectified and filtered again to become the d-c output. Stabilization and control is effected by modulating the pulse width of the switching circuit. An adjustable, rectangular, current limit circuit provides overload protection, an adjustable squelch-type overvoltage circuit protects the load.

MODULAR/SWITCHING

Size S

RMK	RMX	VOLTS	OUTPUT CURRENT - AMPS VS. TEMPERATURE				
			30°C	40°C	50°C	60°C	71°C
RMK 05-S	—	3.5-5.5	6.9	6.4	6.0	4.2	2.4
RMK 09-S	—	6.3-9.9	4.1	3.7	3.3	2.3	1.3
RMK 12-S	—	8.4-13.2	3.0	2.7	2.5	1.7	1.0
RMK 15-S	—	10.5-16.5	2.4	2.2	2.0	1.4	0.8
RMK 24-S	—	16.8-26.4	1.6	1.4	1.3	0.9	0.5



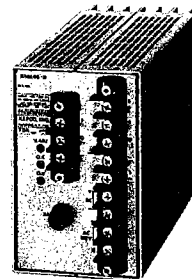
Size A

RMK	RMX	VOLTS	OUTPUT CURRENT - AMPS VS. TEMPERATURE				
			30°C	40°C	50°C	60°C	71°C
RMK 05-A	RMX 05-A	3.5-5.5	12.0	10.8	10.0	8.3	5.0
RMK 09-A	RMX 09-A	6.3-9.9	7.6	6.8	6.0	5.2	2.7
RMK 12-A	RMX 12-A	8.4-13.2	6.3	5.6	5.0	4.3	2.0
RMK 15-A	RMX 15-A	10.5-16.5	5.0	4.5	4.0	3.4	1.7
RMK 24-A	RMX 24-A	16.8-26.4	3.2	2.8	2.5	2.2	1.0
RMK 28-A	RMX 28-A	19.6-30.8	2.65	2.40	2.15	1.90	0.90



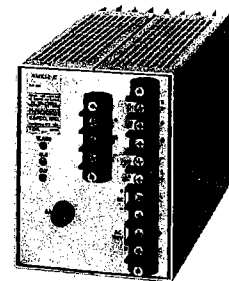
Size B

RMK	RMX	VOLTS	OUTPUT CURRENT - AMPS VS. TEMPERATURE				
			30°C	40°C	50°C	60°C	71°C
RMK 05-B	RMX 05-B	3.5-5.5	36.0	34.0	26.0	17.0	9.0
RMK 09-B	RMX 09-B	6.3-9.9	20.0	17.0	15.0	10.0	5.2
RMK 12-B	RMX 12-B	8.4-13.2	16.6	15.0	12.0	8.0	4.2
RMK 15-B	RMX 15-B	10.5-16.5	13.3	13.3	10.2	6.2	3.3
RMK 24-B	RMX 24-B	16.8-26.4	8.5	8.5	7.5	4.7	2.3
RMK 28-B	RMX 28-B	19.6-30.8	7.2	6.8	6.4	4.6	2.0



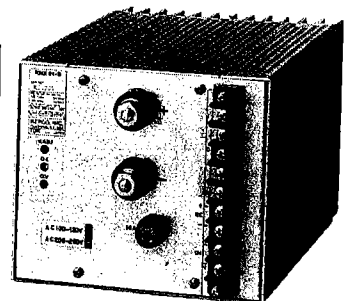
Size C

RMK	RMX	VOLTS	OUTPUT CURRENT - AMPS VS. TEMPERATURE				
			30°C	40°C	50°C	60°C	71°C
RMK 05-C	RMX 05-C	3.5-5.5	40.0	38.0	30.0	21.5	14.0
RMK 09-C	RMX 09-C	6.3-9.9	22.0	22.0	17.2	12.5	7.7
RMK 12-C	RMX 12-C	8.4-13.2	17.0	17.0	14.6	10.5	5.8
RMK 15-C	RMX 15-C	10.5-16.5	14.0	14.0	12.3	8.3	4.7
RMK 24-C	RMX 24-C	16.8-26.4	9.0	9.0	8.0	5.5	3.0
RMK 28-C	RMX 28-C	19.6-30.8	7.7	7.7	6.8	4.7	2.5



Size D

RMK	RMX	VOLTS	OUTPUT CURRENT - AMPS VS. TEMPERATURE				
			30°C	40°C	50°C	60°C	71°C
—	RMX 05-D	3.5-5.5	70.0	70.0	60.0	42.0	30.0
—	RMX 09-D	6.3-9.9	37.0	37.0	32.0	24.0	16.0
—	RMX 12-D	8.4-13.2	32.0	32.0	27.0	19.0	11.0
—	RMX 15-D	10.5-16.5	27.0	27.0	23.0	16.0	9.0
—	RMX 24-D	16.8-26.4	18.0	18.0	16.0	11.0	6.0
—	RMX 28-D	19.6-30.8	15.4	15.4	13.7	9.4	5.1



SPECIFICATIONS

INPUT CHARACTERISTICS

RMK -a-c input: 100-130V a-c, 47-447 Hz., single phase.
d-c input: 130-170V d-c is standard in sizes S, B and C. Consult the factory for d-c input on Size A.
BROWN-OUT PROTECTION:
 Minimum input voltage: 85V a-c/110V d-c (typically 80V a-c/105V d-c). Operation is maintained down to this brown-out level with minor degradation in performance (slightly increased ripple, larger load effect, reduced holding time).

RMX -a-c input: Selectable, 100-130V a-c or 200-260V a-c, 47-440 Hz, single phase.
d-c input: 260-340V d-c, standard for all sizes.
BROWN-OUT PROTECTION: Operation is maintained down to 90/180V a-c, (234V d-c) with minor degradation in performance (slightly increased ripple, larger load effect and reduced holding time).

SOFT START: A surge limiting circuit is incorporated to limit the initial turn-on current. A separate logic level on-off circuit is provided in all models for no-surge cycling.

EFFICIENCY: The high frequency converter in RMK/RMX stabilizes voltage with minimum losses.

EFFICIENCY	S	A	B	C	D
Typical	73%	68%	75%	75%	75%
Minimum	70%	65%	70%	70%	70%

EMI: Filters are built into all models to attenuate the line-conducted electro-magnetic interference to levels that are acceptable for most applications. Accessory filters may be used between the power supply and the source power line to further attenuate the conducted EMI.

ACCESSORY FILTERS AVAILABLE FROM KEPCO

MODEL	VOLTS	AMPS	ATTENUATION		FREQUENCY
			TYP.	MIN.	RANGE
FLT-3A	250V a-c	3A	70 dB	60 dB	0.15-20 MHz
FLT-10A	250V a-c	10A	65 dB	40 dB	0.7 -30 MHz

HOLDING TIME: The RMK and RMX store sufficient energy in their filters to sustain the d-c output a minimum of 20 milliseconds (30 milliseconds typically) after source power is lost. This rating is based upon nominal (115V/230V a-c) source voltage and the +50°C loading level.

OUTPUT CHARACTERISTICS

VOLTAGE ADJUSTMENT RANGE: Output voltage is adjustable through a range of -30% to +10% of the nominal setting.

CURRENT LIMIT: The output current limit is factory-set to 115% of the +50°C current rating. Note: The current limit adjustment is internal in the Size S models.

CURRENT-TEMPERATURE RATINGS: Output current is rated on the basis of an average 80°C maximum heat-sink temperature. The ambient temperature ratings are derived for free-air operation with the cooling fins (Sizes B, C and D) oriented vertically and spaced 1/2-inch (1.25 cm) above a plane surface. When moving air or other cooling means are available, the output current rating may be increased to the +30°C level. The Size S and Size A models can be equipped with accessory fins that allow an increased current rating.

INCREASED CURRENT RATINGS WITH ADDED FIN ASSEMBLIES

VOLTS	AMPERES AT									
	30°C		40°C		50°C		60°		71°C	
	MODEL S	MODEL A	MODEL S	MODEL A	MODEL S	MODEL A	MODEL S	MODEL A	MODEL S	MODEL A
5V	7.4	12.0	7.0	12.0	6.7	10.9	4.7	9.0	2.7	5.0
9V	4.7	7.6	4.2	7.6	3.8	6.6	2.6	5.7	1.5	2.7
12V	3.5	6.3	3.2	6.3	2.9	5.5	2.0	4.7	1.2	2.0
15V	2.8	5.0	2.5	5.0	2.3	4.4	1.6	3.8	0.9	1.7
24V	1.9	3.2	1.7	3.2	1.5	2.8	1.1	2.4	0.6	1.0
28V	—	2.7	—	2.7	—	2.4	—	2.2	—	0.9

ACCESSORY FINS:

FIN ORIENTATION	SIZE S	SIZE A	SIZE B	SIZE C
Horizontal (Short)	FIN-SS	FIN-AS	FIN-BS	FIN-CS
Vertical (Long)	FIN-SL	FIN-AL	—	—

REMOTE ERROR SENSING: Separate terminals allow a 4-terminal connection between power supply and load. These connections can compensate for voltage drops in the connecting wires up to 0.25 volts per wire.

RECOVERY CHARACTERISTICS: A step-load change from 50-100% produces less than 2% output excursion (or 0.5V, whichever is greater). Recovery occurs to within 0.5% (or 0.05V, whichever is greater) of the original setting within 1 millisecond (2 milliseconds for the Size S models).

REMOTE CONTROL: A TTL compatible logic level signal can be used to turn the power supply on and off. An internal pull-up resistor programs the power supply on, in the absence of external signals. This feature can be used for sequencing and for no-surge cycling.

OVERVOLTAGE PROTECTION: An overvoltage sensor shuts down the switching oscillator and reduces the output to zero whenever the output voltage tries to exceed the overvoltage threshold setting. It is reset by turning the source power off and then back on. The setting is fixed (approximately 120%) in "S" models, adjustable in all other models.

STABILIZATION

STATIC STABILIZATION	RMK-S		RMK-A, -B, -C RMX-A, -B, -C, -D	
	Typ.	Max.	Typ.	Max.
SOURCE EFFECT (min-max):	<0.4%	0.8%	<0.3%	0.6%
LOAD EFFECT (10%-100%):	<0.4%	1.0%	<0.3%	0.6%
TEMPERATURE EFFECT Coefficient per °C:	<0.02%	0.1%	<0.02%	0.1%
Envelope, 0-50°C:	<0.6%	1.0%	<0.4%	0.8%
COMBINED EFFECT: (For rated changes in source voltage, load current and temperature:	<1.4%	2.8%	<1.0%	2.0%
TIME EFFECT (8-hour drift) Constant source voltage, load and temperature:	<0.02%	0.1%	<0.02%	0.1%
RIPPLE and NOISE				
Rms:	< 7 mV	10 mV	< 5 mV	10 mV
Source component:	< 20 mV	50 mV	< 10 mV	50 mV
Switching component:	< 30 mV	100 mV	< 15 mV	50 mV
Spike voltage to 10 MHz:	< 70 mV	1% E _o +50 mV	< 50 mV	1% E _o +50 mV

GENERAL

AMBIENT OPERATING TEMPERATURE RANGE: 0 to +71°C. The model tables specify the maximum current available from each model as a function of ambient temperature. Ratings are based on a maximum heat sink temperature of +80°C.

SHOCK and VIBRATION: Shock: 2g, 3 axes.

Vibration: 2g, 5 Hz to 55 Hz.

ISOLATION, between input and output terminals or case:

RMK: 1.5 kV a-c for 1 minute.

RMX: 2.5 kV a-c for 1 minute.

ISOLATION, between output terminals and case: 500V d-c, 100 megohms minimum. Floating output enables plus or minus operation of any power supply.

SERIES/PARALLEL: RMK/RMX power supplies employ a rectangular current limit (not a foldback or re-entrant type). This means there is no "lockout" problem or start-up problem when two or more units are connected in series or in parallel.

DIMENSIONS: (English = inches, metric = mm.)

Size S CASE OVERALL WEIGHT
 English: 5.12" x 1.38" x 5.75" 5.12" x 1.38" x 6.38" 1.4 lbs.
 Metric: 130H x 35W x 146D 130H x 35W x 162D 0.65 kg.

Size A CASE OVERALL WEIGHT
 English: 5.12" x 2.17" x 7.52" 5.12" x 2.17" x 8.31" 3.1 lbs.
 Metric: 130H x 55W x 191D 130H x 55W x 211D 1.4 kg.

Size B CASE OVERALL WEIGHT
 English: 5.12" x 3.27" x 8.82" 5.12" x 3.27" x 9.61" 4.85 lbs.
 Metric: 130H x 83W x 224D 130H x 83W x 244D 2.2 kg.

Size C CASE OVERALL WEIGHT
 English: 5.12" x 4.06" x 8.82" 5.12" x 4.06" x 9.61" 5.25 lbs.
 Metric: 130H x 103W x 224D 130H x 103W x 244D 2.4 kg.

Size D CASE OVERALL WEIGHT
 English: 5.12" x 6.02" x 8.82" 5.12" x 6.02" x 10.57" 9.0 lbs.
 Metric: 130H x 153W x 224D 130H x 153W x 268.5D 4.1 kg..

MOUNTING: Tapped 8-32 mounting holes allow these power supplies to be fastened by any of the four major surfaces.

FINISH: Phosphate treated aluminum.