SERIES **KRW/MRW**

Series KRW/MRW are a series of PC card style switch-mode power supplies ranging up to 65 watts. Each features a single flyback voltage stabilizer with one or more auxiliary outputs. They are well suited to driving video displays, disk drives, modems and printers. EMI is suppressed to FCC Class B levels and wide ranging a-c inputs are at home anywhere in the world. All models have full safety agency recognitions and bear the CE mark per the low voltage directive (LVD), EN60950.

UL RECOGNIZED CSA CERTIFIED TÜV APPROVED

This KEPCO product is backed by a firm **1-YEAR WARRANTY**

CE KRW and MRW are CE marked per the Low Voltage Directive (LVD), EN60950.

DIN-RAIL MOUNTABLE
with optional enclosure

Model KRW 351KV

KRW MODEL TABLE

SPECIFICATION		OUTPUT VOLTAGE		OVP SETTING	OUTPUT CURRENT	CURRENT LIMIT	OUTPUT POWER				RIPPLE SOURCE	RIPPLE SWITCHING	NOISE (SPIKE)	EFFICIENCY
Units		Volts		Volts	Amps		Watts				mV		mV	Percent
Condition	MODEL	Factory Set (1)	Adjustment range	Nominal input, 25°C	50°C (See Curves)	Nominal input	40°C	50°C	60°C	71°C	Nominal input typ load p-p max		d-c to 20MHz max	Nom input, rated load typ
KRW 350KV and KRW 351KV (40 WATTS)														
Output #1	KRW 350KV	+5	4.75-5.25	5.8-6.9 (2)	0.5-3.0 (typ) (4.0 max)	Total max. output power no more than 45 Watts	40	40	28	16	30	25	150	70%
	KRW 351KV	+5	4.75-5.25	5.8-6.9	0.5-3.0 (typ) (4.0 max)									
Output #2	KRW 350KV	+12	(3)	—	0.3-2.0 (typ) (3.0 max)						40	20	250	
	KRW 351KV	+15	(3)	—	0.3-1.6 (typ) (2.0 max)									
Output #3	KRW 350KV	-12	—	—	0-0.1 (typ) (0.3 max)						10	20	250	
	KRW 351KV	-15	—	—										

(1) Nominal input, typical load, 25°C. (2) All outputs are shut down when OVP is activated. (3) This output follows the adjustment of Output #1.

FEATURES

- 115/230V a-c operation without user intervention: Special flyback circuit accepts any input voltage from 90V to 264V a-c.
- Current trade-off: Current may be increased from one of the outputs at the expense of the others, within the limits defined in the curves on page 111.
- Adjustable voltage: Internal trimmer accessible through the case allows manual adjustment of the principal voltage setting. The auxiliary output tracks.
- Overvoltage protection for principal output: Shuts down all outputs if output voltage is forced beyond the set limit.
- Holding time: Output is sustained by internally stored energy for 30 milliseconds typically, 20 milliseconds minimum.
- Built-in EMI filter: Attenuates conducted noise below the requirements of FCC Class B.
- Safety: All models recognized by UL to UL 1950, certified by CSA to CSA 1402C, and approved by TÜV Rheinland to EN60950.

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MRW MODEL TABLE

SPECIFICATION		OUTPUT VOLTAGE		OVP SETTING	OUTPUT CURRENT	CURRENT LIMIT	OUTPUT POWER				RIPPLE SOURCE | SWITCHING		NOISE (SPIKE)	EFFICIENCY
Units		Volts		Volts	Amps		Watts				mV		mV	Percent
Condition	MODEL	Factory Set(1)	Adjustment range	Nominal input, 25°C	50°C (See Curves)	Nominal input	40°C	50°C	60°C	71°C	Nominal input, typ load p-p max		d-c to 20MHz p-p max	Nom. input, rated load typ
MRW 150KV and MRW 151KV (35 WATTS)														
Output #1		+5	4.75-5.25	5.8-6.9(2)	1.0-2.2 (typ) (4.0 max)	Total max. output power no more than 38.5 Watts	35.0	35.0	24.5	14.0	30	50	150	70%
Output #2	MRW 150KV	+12	(3)	—	0.6-1.8 (typ) (2.5 max)						30	50	290	
	MRW 151KV	+15	(3)	—	0.6-1.4 (typ) (2.0 max)									
Output #3	MRW 150KV	-12	—	—	0-0.1 (typ) (0.3 max)						10	20	290	
	MRW 151KV	-15	—	—										
MRW 160KV and MRW 161KV (50 WATTS)														
Output #1		+5	4.75-5.25	5.8-6.9(2)	1.0-5.0 (typ) (6.0 max)	Total max. output power no more than 60 Watts	50	50	35	20	30	50	150	72%
Output #2	MRW 160KV	+12	(3)	—	0.5-2.0 (typ) (2.5 max)						30	50	290	
	MRW 161KV	+15	(3)	—	0.5-1.5 (typ) (2.0 max)						30	50	350	
Output #3	MRW 160KV	-12	—	—	0-0.1 (typ) (0.5 max)						10	20	290	
	MRW 161KV	-15	—	—	0-0.1 (typ) (0.4 max)						10	20	350	
MRW 170KV and MRW 171KV (65 WATTS)														
Output #1		+5	4.75-5.25	5.8-6.9(2)	0.8-5.0 (typ) (7.0 max)	Total max. output power no more than 70 Watts	65.0	65.0	45.5	26.0	30	50	150	70%
Output #2	MRW 170KV	+12	(3)	—	0.3-1.7 (typ) (2.5 max)						30	50	250	
	MRW 171KV	+15	(3)	—	0.3-1.3 (typ) (2.0 max)									
Output #3	MRW 170KV	-12	(3)	—	0.3-1.7 (typ) (2.5 max)									
	MRW 171KV	-15	(3)	—	0.3-1.3 (typ) (2.0 max)									

(1) Nominal input, typical load, 25°C. (2) All outputs are shut down when OVP is activated. (3) This output follows the adjustment of Output #1.

KRW/MRW INPUT CHARACTERISTICS

SPECIFICATION	KRW 350KV KRW 351KV	MRW 150KV MRW 151KV	MRW 160KV MRW 161KV	MRW 170KV MRW 171KV	CONDITION
Voltage Range	90 to 264V a-c; 130-370V d-c (1)				
Brownout Voltage	85V a-c; 120V d-c (1)				Typical load
Input Current	0.9A	1.0A	1.3A	1.5A	Typ, 115V a-c
	0.6A	0.5A	0.8A	0.8A	Typ, 230V a-c
Fuse Value	2.5A	2.5A	3A	3A	
Initial Turn-on Surge First Half Cycle	50A max				115V a-c, typ load 25°C cold start
Frequency	50/60Hz nominal range 47-440Hz (2)				Single phase
EMI	Meets the conducted noise standard of FCC 20780, Class B and VDE 0871, Class B				
Leakage Current	0.5mA				115V a-c (UL method) 25°C
	0.75mA				230V a-c (VDE method) 25°C
Start-up Time	500ms	400ms	500ms	600ms	typ std (3)
Hold-up Time	20ms				typ std (3)
Circuit Type	Flyback converter				
Switching Frequency	100KHz	100KHz	80KHz	100KHz	

(1) Safety approval is valid for a-c operation only. (2) At 440Hz the leakage current exceeds the UL/VDE safety specification limit.
(3) Std conditions = nominal input, typical load, 25°C.

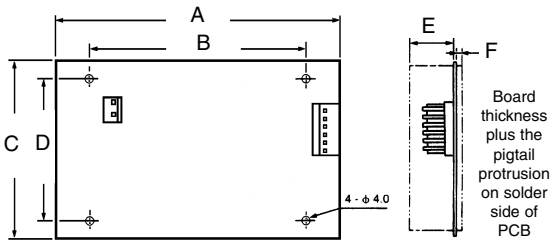
KRW/MRW OUTPUT CHARACTERISTICS

SPECIFICATION	KRW 350KV/351KV OUTPUT			MRW 150KV/151KV OUTPUT			MRW 160KV/161KV OUTPUT			MRW 170KV/171KV OUTPUT			CONDITION
	#1	#2	#3	#1	#2	#3	#1	#2	#3	#1	#2	#3	
Source Effect	1% max	1% max	1% max	1% max	1% max	1% max	2% max	2% max	1% max	1% max	1% max	1% max	90-132V a-c or 180-264V a-c
Load Effect	2% max	4% max	1% max	3% max	5% max	1% max	4% max	2% max	1% max	3.5% max	5% max	5% max	Minimum load to rated load
Temperature Effect (0-50°C)	2% max	3.5% max	1% max	2% max	2% max	1% max	2% max	2% max	1% max	2% max	3.5% max	3.5% max	Nominal input, rated load
Combined Effect (source, load & temperature)	+3.5% -3.6% max	+7% -7% max	+7% -7% max	+4% -2% max	+4% -6% max	+6% -6% max	+4% -4% max	+6% -4% max	+6% -6% max	+4% -4% max	+8% -7% max	+8% -7% max	Initial setting 5.00V ±20mV
Time Effect (drift)	0.5% max												0.5-8.5 hrs std (1)
Cross Effect max Output #1	—	6.0%	1.0%	—	4.0%	0.5%	—	4.0%	1.0%	—	5.0%	5.0%	Load change from minimum to typical, std (1)
Output #2	1%	—	0.5%	1.5%	—	0.5%	1.5%	—	1.0%	3.0%	—	5.0%	
Output #3	0.5%	0.5%	—	0.5%	0.5%	—	0.5%	0.5%	—	3.0%	5.0%	—	
Recovery Characteristics: Excursion	<4.0%												Step load change from 50% to 100% of rated load, std (1)
Recovery within 1%)	<0.5msec		<2msec										

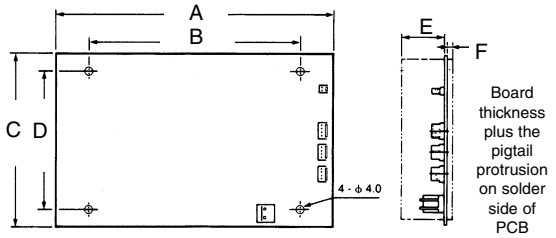
(1) Std conditions = nominal input, typical load, 25°C.

OUTLINE DIMENSIONAL DRAWINGS

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



KRW



MRW

MODEL	A	B	C	D	E	F
KRW 350KV 351KV	5.00 **127**	4.625 **117.5**	3.00 **76.2**	2.593 **65.9**	1.187 **30.1**	0.079 **2.0**
MRW 150KV 151KV	6.3 **160**	4.80 **121.9**	3.94 **100**	3.15 **80**	1.0 **25.4**	0.14 **3.6**
MRW 160KV 161KV	6.3 **160**	4.80 **121.9**	3.94 **100**	3.15 **80**	1.3 **33**	0.2 **5.0**
MRW 170KV 171KV	6.3 **160**	4.80 **121.9**	3.94 **100**	3.15 **80**	1.38 **35**	0.079 **2.0**

KRW/MRW GENERAL SPECIFICATIONS

SPECIFICATION		RATING/DESCRIPTION	CONDITION
Temperature		0-71°C (see model table)	Operating
		-40 to 85°C	Storage
Humidity		95% RH	Non-condensing; operating & storage
Shock		20g, 3 axes (11msec ±5msec pulse duration)	Non-operating 3 shocks each axis
Vibration		5-10Hz: 10mm amplitude	Non-operating 1 hour each axis
		10-55Hz: 2g, 3 axes	
Isolation	Output to ground	500V d-c, 100MΩ	25°C, 65% RH
Withstand voltage	Input to output	3KV a-c for 1 minute	25°C, 65% RH Y capacitor removed
	Input to ground	2KV a-c for 1 minute	25°C, 65% RH
Safety		UL 1950 recognized, CSA 1402 C certified. EN60950 approved by TÜV Rheinland.	
Type of construction		PC card	
Enclosure		Optional metal	
Cooling		Convection	

WEIGHT
(Packed for shipment)

KRW
8.47oz, 240gm

MRW 150/151KV
12.35oz, 350gm

MRW 160/161KV
17.65oz, 500gm

MRW 170/171KV
15.87oz, 450gm

OPTIONAL STEEL ENCLOSURES

KRW	CA 29
MRW 150/151KV	CA 19
MRW 160/161KV	CA 20
MRW 170/171KV	CA 20

INPUT-OUTPUT CABLE KITS

KRW	Kit 219-0242
MRW 150/151KV	Kit 219-0184
MRW 160/161KV	Kit 219-0184
MRW 170/171KV	Kit 219-0239

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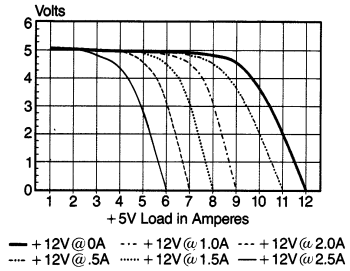
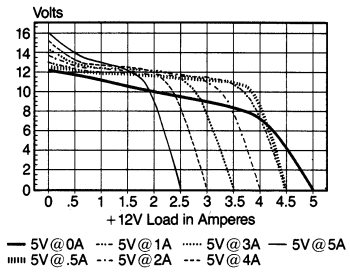
MRW 150KV
Plot of +5V as a Function of +12V Load



MRW 150KV
Plot of +12V as a Function of +5V Load

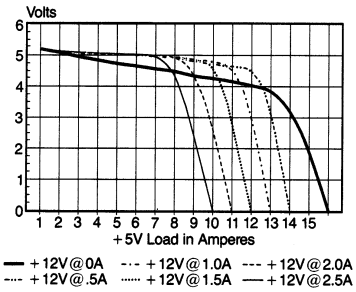


MRW 151KV curves are similar

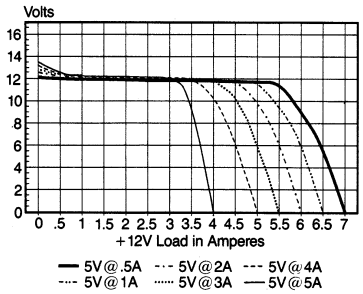
There are three outputs in MRW power supplies. Outputs #1 and #2 of the MRW 150/151KV and 160/161KV can share the available power as illustrated by these curves. For MRW 170/171KV all three outputs share the power. The curves illustrate these possibilities.

NOTE: The maximum current from each output is limited to the tabulated value.

MRW 160KV
Plot of +5V as a Function of +12V Load



MRW 160KV
Plot of +12V as a Function of +5V Load

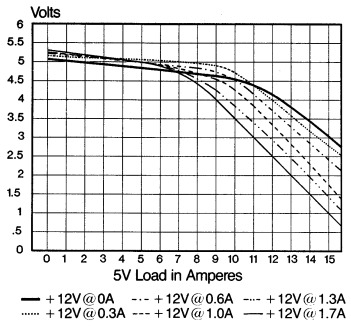


MRW 161KV curves are similar

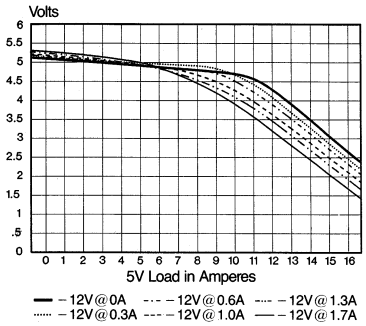
The KRW power supplies feature three outputs. Output #3 is stabilized by a 3-terminal regulator. Outputs #1 and #2 can share the available power as illustrated by these curves.

NOTE: The maximum current from each output is limited to the tabulated value.

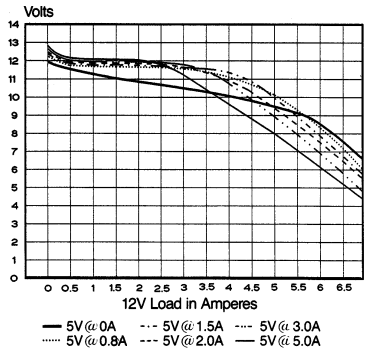
MRW 170KV
Plot of 5V as a Function of 12V Load



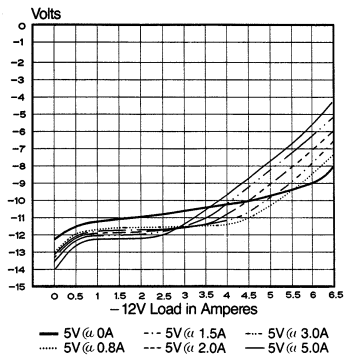
MRW 170KV
Plot of 5V as a Function of -12V Load



MRW 170KV
Plot of 12V as a Function of 5V Load

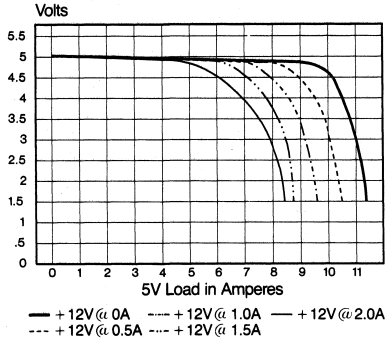


MRW 170KV
Plot of -12V as a Function of 5V Load

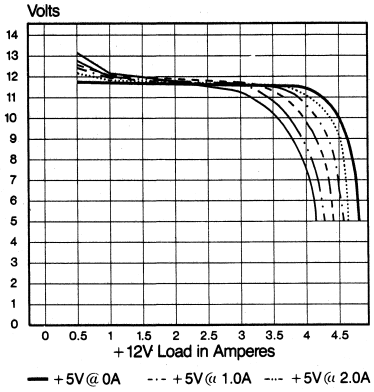


MRW 171KV curves are similar

KRW 350KV
Plot of 5V as a Function of +12V Load



KRW 350KV
Plot of +12V as a Function of +5V Load



KRW 351KV curves are similar