INSTRUCTION SHEET

KEPCO

MRW

KEPCO MRW 151KV
SWITCHING POWER SUPPLY

Kepco Model MRW 151KV low profile switching power supply is capable of accepting an input voltage range from 95V ac to 264 Vac without jumpers or adjustment. The dc output power is shared between three outputs, +5V, +15V, and –15V. Units feature isolated input and output. They are UL 1950 (D3) Recognized, Certified to CSA E.B. No. 1402C level 3 and TÜV (Rheinland) EN60950 Approved. EMI meets both FCC Class B and VDE 0871 Class B (10KHz-30MHz). The 5V output is provided with overvoltage protection. When voltage across the 5V terminal exceeds the overvoltage limit range of 5.8V-6.9V all outputs are shut down.

The power supply is self contained on a PC card and all components are within a 1-inch profile. A steel cover (Model CA-19) is available as an option. A "POWER OK" signal is accessible through a separate plug terminal. Kepco supplies an optional mating connector cable kit 219-0184 for all output and input connections.

OUTPUT SPECIFICATIONS

SPECIFICATION		OUTPUT #1	OUTPUT #2	OUTPUT #3	CONDITIONS
Output Voltage		+5V	+15V	–15V	Factory set, nom input, typ load, 25°C
Initial Setting		5.10V ±20mV	–	–	115 Vac, typ load, 25°C
Adjustment [1] Range		+5% to –5%	–	–	115 Vac, typ load, 25°C
Output Current Amps (See Figure 2)		1.0–2.2 (typ) (4.0 max.)	0.5–1.4 (typ) (2.0 max.)	0–0.1 (typ) (0.25 max.)	0–50°C
Output Power (Watts maximum)		35.0			40°C
		35.0			50°C
		24.5			60°C
		14.0			71°C
Ripple: [2]	Source	30	80	10	Nom. input, typ. load
	Switching	50	40	20	
Noise [2]		150	350	350	dc to 20 MHz
Efficiency		70% typ			Nom. input, typ. load
Source Effect		1% max			95-132Vac or 190-264Vac, typ load, 25°C
Load Effect [3]		3% max.	5% max	1% max	min. - typ load
Cross Effect (maximum)					Load change from minimum to typical; nominal input, 25°C, other outputs at typical load
	Output #1 V1 1.0–2.2A	–	5.0%	0.5%	
	Output #2 V2 0.5A–1.4A	1.5%	–	0.5%	
	Output #3 V3 0A–0.1A	0.5%	0.5%	–	
Temperature Effect		2% max.	2% max	1% max	Nom. input, typ. load, 0–50°C
Time Effect		0.5% max			Nom. input, typ. load, 25°C, 0.5–8.5 hr drift
Combined Effect: source, load, maximum cross effect and temperature		+4%, –2%	+4%, –6%	±6%	Initial Setting 5.10V ±20mV
Recovery Characteristics					Step load change from 50% to 100% of typ. load, nom. input, 25°C
	Excursion	4% max			
	Recovery (within ±1%)	2 msec max			
Overvoltage Protection		5.8–6.9V [4]			V1 only
Overcurrent Protection (minimum)		Total maximum output power limit 38.5 Watts (see Figure 2)			Nominal input, 40°C

[1] Output #2 follows the adjustment of output #1 [2] mV p-p max. [3] *V1*: 1.0A-2.2A, *V2*: 0.5A-1.4A, *V3*: 0A-0.1A.
[4] All outputs are shut down when OVP is activated. Recovery time to reset, 45 seconds (minimum)

GENERAL SPECIFICATIONS

SPECIFICATION	RATING/DESCRIPTION	CONDITION
Temperature	0-71°C (derate output power linearly from 100% at 50°C to 40% at +71°C)	Operating
	-40°C to 85°C	Storage
Humidity	95% RH	Non-condensing
Shock	20g 3 axes (11 msec ±5 msec pulse duration)	Non-Operating 3 shocks each axis
Vibration	5-10Hz; 10mm 10-55Hz: 2G, sinusoidal vibration in each of 3 axes for 1 hour	Non-Operating
Isolation	500 Vdc, >100MΩ	Between input and output, ground and output, ground and input
Withstand Voltage	2KVac for 1 min	Input to output and input to ground
	3.75K Vac, 1 min. without Y capacitors	Input to output
Dimensions	3.94 x 6.3 x 1.18	inches
	100 x 160 x 30	mm
Weight	12.35	ounces
	350	grams
Mounting	see Mechanical Outline Drawing	
Safety	UL 1950 (D3) Recognized, CSA E.B. No. 1402C Level 3 Certified. EN 60950 Approved by TÜV Rheinland	
Enclosure	Optional metal cover (see Mechanical Outline Drawing)	
Type of Construction	PC card	
Warranty	Used within ratings	1 year

INPUT CHARACTERISTICS

SPECIFICATION	RATING/DESCRIPTION	CONDITION
Nominal Voltage	115, 230 Vac	
Voltage Range	90-264Vac	
Current	1.0A	120 Vac, typ load
	0.5A	240 Vac, typ load
Frequency	50-60 Hz	Single Phase
Fuse Value	2.5A	
Switching Frequency	~100 KHz typ	Nominal input, typical load
Brownout Voltage	85 Vac	typical load
Initial turn-on surge, first ½ cycle	50A peak (max)	120 Vac, rated load
	100Apeak (max.)	240 Vac, rated load
EMI	FCC Class B, VDE 0871 Class B	Conducted
Leakage current	0.5mA (max)	25°C, 120 Vac (UL method)
	0.75mA (max)	25°C, 240 Vac (VDE method)
Startup time	380 msec (typ) rise time 10 ms (typ)	25°C, nominal input, typical load
Holdup time	20 msec (min)	25°C, nominal input, typical load
Circuit type	Flyback	

Determining available power from each output: Total output power available from the Model MRW 151KV is 35 Watts at temperatures up to 50°C. The load is distributed to each output. Each output has a different maximum value of current that may be drawn.

A feature of the MRW 151KV Power Supply is the ability to draw nearly full power from either of the two (+) rails. Figures 1A and 1B show how the current from one output can be balanced against the other to meet power needs for each specific applica-

tion. Note the effect of the secondary voltage dropping when the primary output's load is reduced below its minimum value (the stabilization of the secondary output is degraded) [see Figures 1A and 1B].

NOTE: In all cases the maximum current from an individual output should not allow the total power to exceed 35 Watts. Use the following chart to determine allowable current for each output.

In the graph of Figure 2 the vertical scale represents the +5V output (#1) and the horizontal scale represents the +15V (#2) output. The three diagonal lines represent three possible loads for the -15V output (#3). The diagonal lines signify no load (0 Amps.), 0.1 Amp., and 0.25 Amp.

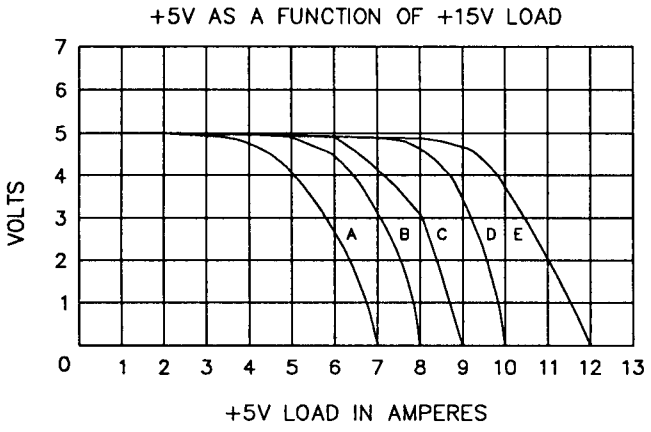
To find the available current for output #2 with any desired load on #1 and a selected load on #3, locate the desired load on the vertical scale and move across to the appropriate diagonal. For example, when #1 is loaded with 3 Amp. and #3 is loaded with 0.25 Amp., the available current for #2 will be 1.08 Amp. If #3 is loaded to 0.1 Amp. the available current for #2 increases to 1.23 Amp.

"POWER OK" Signal Output: The unit supplies a "POWER OK" TTL logic 1 signal at CP54 when the 5V output reaches 4.5 volts or more. Logic 0 is 0.4V max. Logic 1 is 2.5V min. (see Figure 3).

Connector Types: Refer to the Mechanical Outline Drawing of the MRW 151KV Power Supply (see Figure 4). Mating connector types for CP51, CP52 and CP53 are as follows:

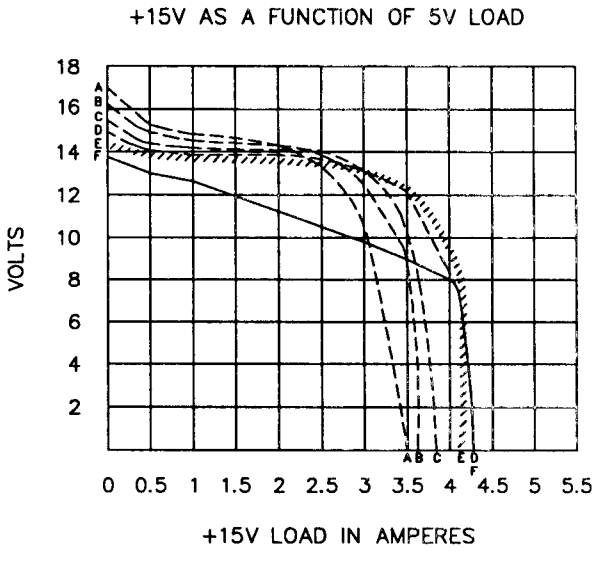
CP51, CP52, CP53, (Output):	Mfg. Panduit, P/N CT100F22-4 Cover P/N TC100F-4
CP54, (POWER OK):	Mfg. Panduit, P/N CT100F22-2 Cover P/N TC100F-2
CP1, (Input):	Mfg. Panduit, P/N CT156F-18 Series Cover P/N TC156F
CP2, (Ground lug 250 Series (.250" tab)):	Mfg. AMP. Inc., P/N 42510-2

Connector Cable Kit: Kepco furnishes an optional connector cable kit with the connectors specified above. The kit may be ordered under Kepco Model Kit 219-0184. The connectors are provided with 1 meter length leads for trimming to desired lengths.



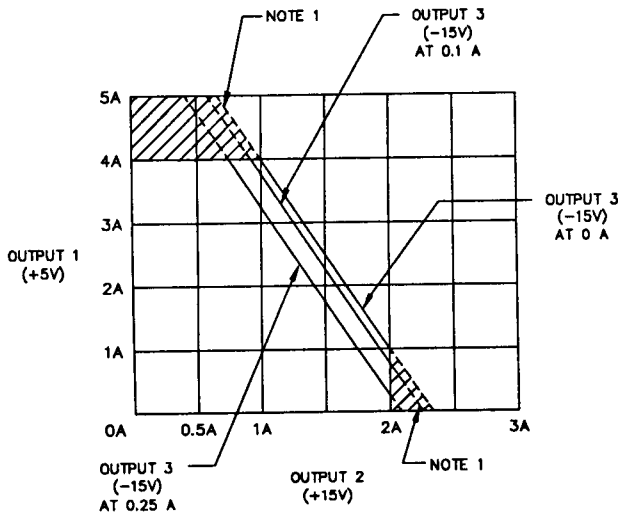
A: (+) 15V @ 2.0A
B: (+) 15V @ 1.5A
C: (+) 15V @ 1.0A
D: (+) 15V @ 0.5A
E: (+) 15V @ 0A

FIGURE 1A A PLOT OF THE +5 VOLT OUTPUT AS A FUNCTION OF THE +15V LOAD FOR THE MRW 151KV



A: (+) 5V @ 4.0A
B: (+) 5V @ 3.0A
C: (+) 5V @ 2.0A
D: (+) 5V @ 1.0A
E: (+) 5V @ 0.5A
F: (+) 5V @ 0A

FIGURE 1B A PLOT OF THE +15 VOLT OUTPUT AS A FUNCTION OF THE +5V LOAD FOR THE MRW 151KV



NOTE 1: FORCED AIR 20 CFM AT ONE ATMOSPHERE

FIGURE 2 OUTPUT RATINGS OF THE MRW 151KV POWER SUPPLY

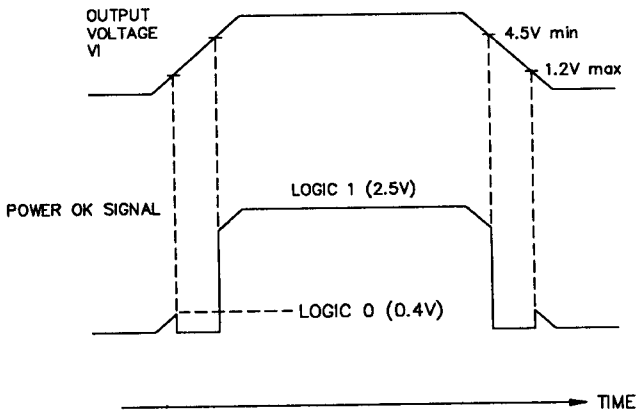
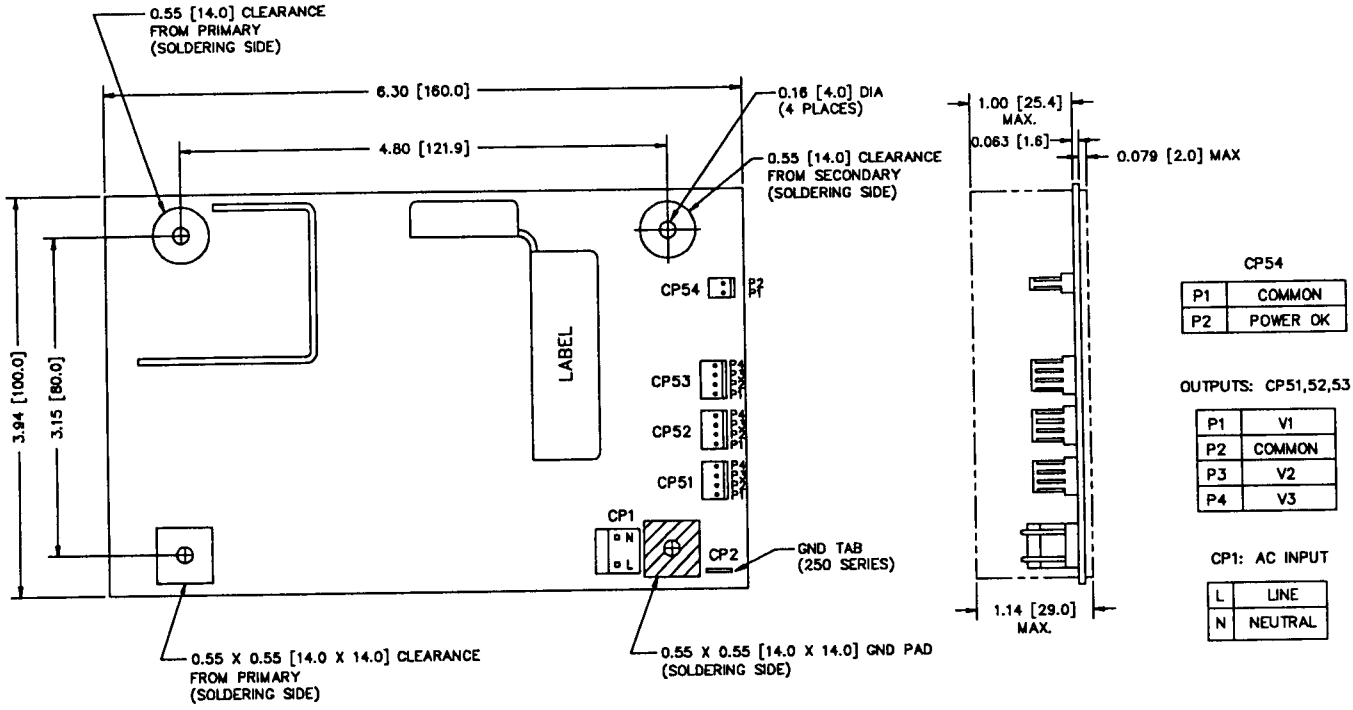


FIGURE 3 POWER OK SIGNAL FOR THE MRW 151KV POWER SUPPLY

UN−CASED



NOTES:

1. DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS.
2. SCREWS FOR 8−32 MOUNTING HOLES NOT TO BE SCREWED IN MORE THAN 0.27 (7.0) FROM FRAME SURFACE.
4. ± 0.03 (±0.07) TOLERANCE UNLESS OTHERWISE SPECIFIED.

FIGURE 4 MECHANICAL OUTLINE DRAWING OF THE MRW 151KV POWER SUPPLY