INSTRUCTION MANUAL

KRW

KEPCO KRW 352KV
SWITCHING POWER SUPPLY

Kepco Model KRW 352KV is a PC card style, triple-output switching power supply. The Kepco KRW 352KV Power Supply can be operated with universal a-c to d-c power sources (90-264 Vac or 130-370 Vdc). DC output power is shared between +3.3V, +12V and -12V (40W combined). The +3.3V output has overvoltage protection; all KRW 352KV outputs shutdown when the +3.3V output exceeds the overvoltage limit range (3.8-4.6V). Model KRW 352 KV features isolation between input and output power. The KRW Series is UL 1950 recognized, certified to CSA E.B. No. 1402C, Level 3 and VDE EN60950 approved by TÜV Rheinland. EMI meets both FCC 20780, Class B and VDE 0871, Class B (10KHz-30MHz).

Its 76.2 x 127mm (3" x 5") footpring and 31.8mm (1.25") height allow installation in confined areas. An optional steel cover (CA-29) and mating connector Kit (P/N 219-0242) are available.

OUTPUT SPECIFICATIONS

SPECIFICATION		OUTPUT #1	OUTPUT #2	OUTPUT #3	CONDITIONS
Output Voltage		+3.3V	+12V	–12V	Factory set, nom input, typ load, 25°C
Initial Setting		3.30V ±20mV	–	–	120 Vac, V1 @ 4.0A, V2 @ 2.0A, V3 @ 0.1A, 25°C
Adjustment [1] Range		3.14~ 3.47V	–	–	25°C
Output Current (Amps)		0.5 min. 3.0 typ 4.0 max.	0.3 min. 2.0 typ 3.0 max.	0 min. 0.1 typ 0.3 max.	
Output Power (Watts maximum) see Figure 1		40W max.			50°C
Ripple: [2]	Source	30	40	10	Nom. input, 0 to 50°C min. to max. load
	Switching	25	20	20	
Noise [2]		150	250	250	dc to 20 MHz
Efficiency (typical)		70% typ			100 to 120 Vac typ. load
Source Effect (maximum)		1%	1%	1%	90-132Vac or 180-264Vac, typ load, 25°C
Load Effect (maximum)		2.0%	4.0%	1.0%	min. - max. load
Cross Effect % maximum					Load change from minimum to maximum nominal input, 25°C, other outputs at max. load
Output #1 3.3V load change min to typ		–	6.0%	1.0%	
Output #2 +12V load change min to typ		1.0%	–	0.5%	
Output #3 –12V load change min to typ		0.5%	0.5%	–	
Temperature Effect (maximum)		2%	3.5%	1.0%	Nom. input, typ. load, 0–50°C
Time Effect		0.5% max			Nom. input, typ. load, 25°C, 0.5–8 hr drift
Combined Effect: source, load, typical cross effect and temperature		+3.5%	±7%	±7%	Source, Load, Temperature
Recovery Characteristics					Step load change from 50% to 100% of typ. load, nom. input, 25°C t_r, t_f = 1A/µsec
	Excursion	+4% max.			
	Recovery (within ±1%)	500 µsec typ			
Overvoltage Protection		3.8–4.6V [3]	–	–	Shut down type
Overcurrent Protection (minimum)		Total maximum output power limit 41 Watts (see Figure 1)			Nominal input

[1] Output #2 follows the adjustment of output #1 [2] mV p-p max. [3] All outputs are shut down when OVP is activated.

GENERAL SPECIFICATIONS

SPECIFICATION	RATING/DESCRIPTION	CONDITION
Temperature	0-70°C (derate output power linearly from 100% to 50°C to 40% at 70°C)	Operating (power derating required for 50 to 70°C)
	-40°C to 85°C	Storage
Humidity (maximum)	95% RH	Non-condensing, operating and storage, wet bulb temperature <35°C
Shock	20G 3 axes (11 msec ±5 msec pulse duration)	Non-Operating , 1/2 sine pulse 3 shocks each axis
Vibration	5-10Hz; 10mm 10-55Hz: 2G,	3 axes, Non-Operating 1 hour each axis
Isolation	500 Vdc, 100MΩ min.	Between input and output, ground and output, ground and input
Withstand Voltage	2K Vac for 1 min	Input to output and input to ground
	3K Vac, 1 min. with Y capacitors removed	Input to output
Dimensions (see Figure 2)	3.0 x 5.0 x 1.25	inches
	76.20 x 127 x 31.8	mm
Weight	7.41 typ., 8.47 max.	ounces
	210 typ., 240 max.	grams
Mounting (see Figure 2)	see Mechanical Outline Drawing	Four 0.14 in. (3.5mm) holes are for mounting
Safety	UL 1950 Recognized, CSA E.B. No. 1402C, Level 3 Certified. EN 60950 Approved TÜV Rheinland	Temperature 25°C
Enclosure	Optional metal cover	CA29
Type of Construction	PC card	
Warranty	1 year	Used withing ratings

INPUT CHARACTERISTICS

SPECIFICATION	RATING/DESCRIPTION	CONDITION
Nominal Voltage	120, 220, 240 Vac	
Voltage Range	90-264Vac,130-370 Vdc	
Current	0.75A (typ), 0.90A (max)	120 Vac, typ load
	0.45A (typ), 0.55A (max)	240 Vac, typ load
Frequency	50~60 Hz (47-440 Hz)	Single Phase
Fuse Value	2.0A, 250V	
Switching Frequency	~100 KHz typ	
Brownout Voltage	85 Vac, 120 Vdc, Low operating limit	typ. load
Soft Start	Thermistor Limiter	
Initial turn-on surge, first ½ cycle	50A peak (max)	120 Vac, cold start
	100A peak (max.)	240 Vac, cold start
EMI	FCC Class 20780B, VDE 0871 Class B	120 Vac, 240 Vac input
Leakage current	0.5mA (max)	120 Vac, 50 to 60 Hz (UL method)
	0.75mA (max)	240 Vac, 50 to 60 Hz VDE Method
Startup time	500 msec (typ)	25°C, 120 Vac input, typical load
Holdup time	20 msec (typ), 15 msec (min)	25°C, 120 Vac input, typical load
Circuit type	Flyback Converter	

CONNECTOR TYPES: See Mechanical Outline Drawing, Figure 2

PART NUMBER	CONNECTOR	HOUSING (Mating)	CONTACT (Mating)
CP1 INPUT	Faston Tab 250 Series		aston 250 Series
CP2 INPUT	Molex No. 10-31-1028	Molex No. 09-50-1021	Molex No. 08-70-1031
CP51 OUTPUT	Molex No. 09-65-2068	Molex 09-52-4064	Molex No. 08-70-0018

Connector Cable Kit: An optional mating connector cable kit (P/N 219-0242) with the mating connectors above is available. The connectors are provided with 1 meter lead lengths to allow for trimming.

The KRW 352KV can draw a maximum of 40W total power from the three output rails (+3.3V, +12V and –12V). The –12V output is independently regulated via a 3-terminal post regulator.

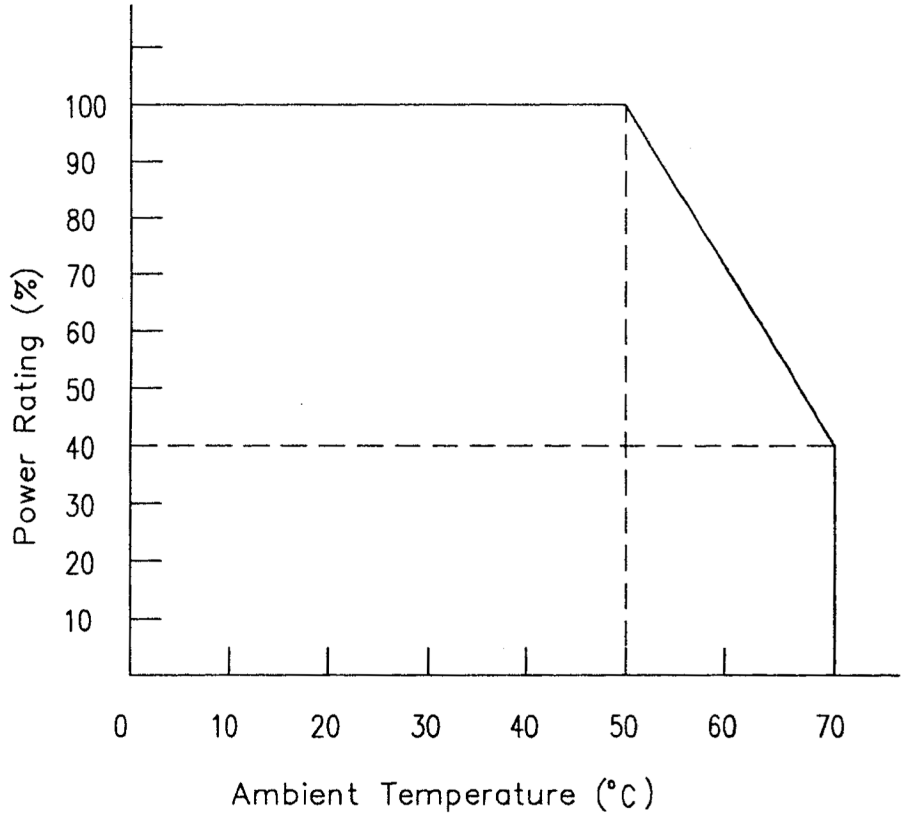
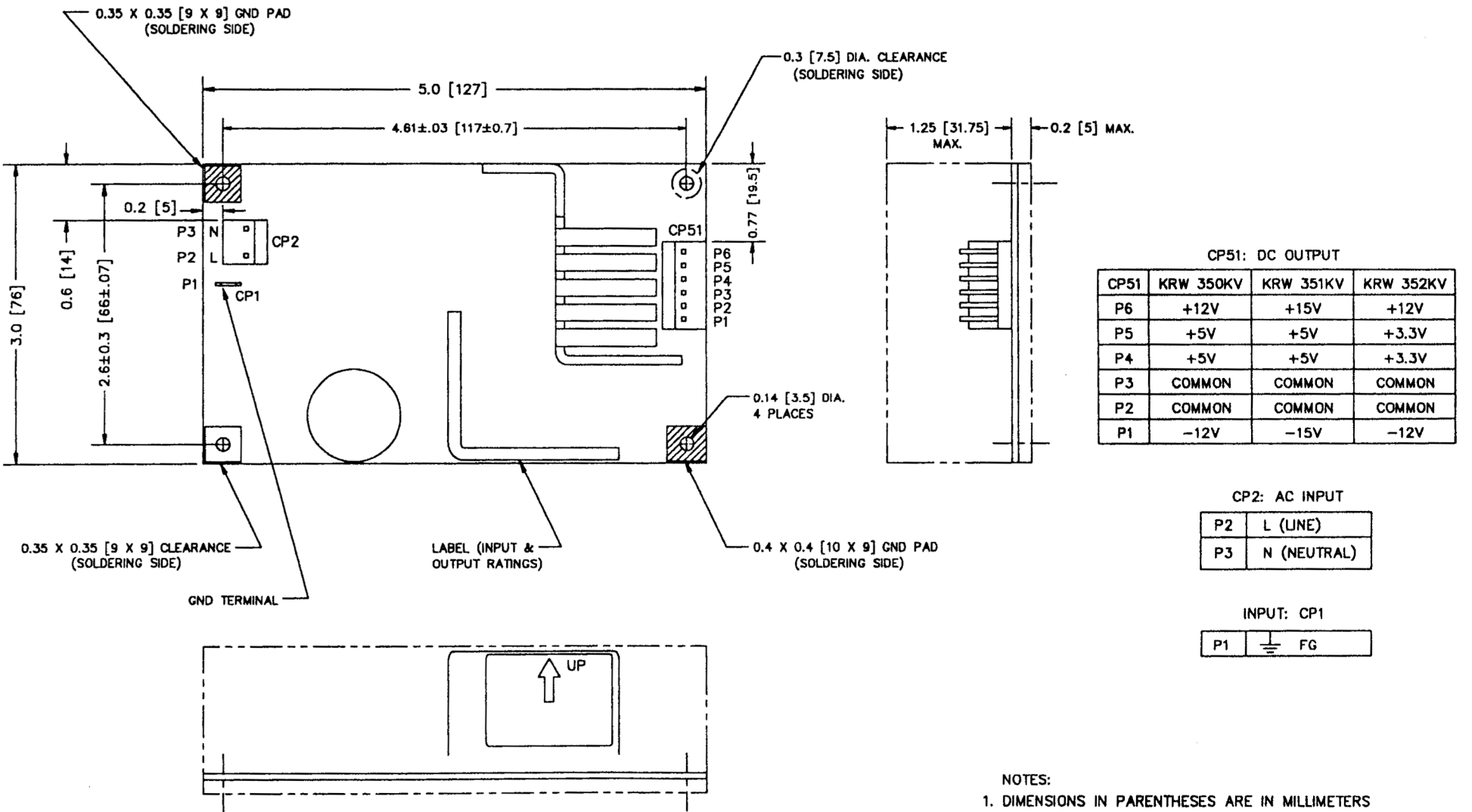


FIGURE 1 PERCENT POWER RATING VERSUS AMBIENT TEMPERATURE



CP51: DC OUTPUT

CP51	KRW 350KV	KRW 351KV	KRW 352KV
P6	+12V	+15V	+12V
P5	+5V	+5V	+3.3V
P4	+5V	+5V	+3.3V
P3	COMMON	COMMON	COMMON
P2	COMMON	COMMON	COMMON
P1	−12V	−15V	−12V

CP2: AC INPUT

P2	L (LINE)
P3	N (NEUTRAL)

INPUT: CP1

P1	⏚ FG

NOTES:
1. DIMENSIONS IN PARENTHESES ARE IN MILLIMETERS
2. ±0.04 [±1] TOLERANCE UNLESS OTHERWISE SPECIFIED
3. MAXIMUM PENETRATION OF SCREWS FOR 8-32 MOUNTING HOLES NOT MORE THAN 0.27 [7.0] FROM FRAME SURFACE

FIGURE 2 MECHANICAL OUTLINE DRAWING FOR THE KRW 352KV POWER SUPPLY