



**Features**

- . Input 90V to 264VAC, 50~60Hz suitable for worldwide use
- . Output voltage optional from 5V/12VDC and 5V/24VDC
- . Protections: Short Circuit / Overload / Over Voltage Protection
- . 100% full load burn-in test for 2Hrs to make every unit reliable
- . Suitable for BF application with appropriate system consideration
- . Cooling by free air convection, operating temperature -20~40°C
- . Long life and high reliability design with 3 years warranty
- . No minimum load required and extremely low leakage current

**Safety Standards**

- . IEC60601-1 CB report for worldwide use
- . UL ANSI/AAMI ES60601-1/CAN/CSA-C22.2 for USA
- . TUV BS EN/EN 60601-1 for European Union



**Product Description:**

It is a highly reliable dual output 60W medical grade open frame switching power supply solution with wide range 90-264Vac input and designed strictly according to the medical safety standards. The entire series supplies two models with output voltages 5V/12V and 5V/24V. The product is suitable for various types of medical devices such as oral irrigator, hemodialysis machine, medical computer monitors, sleep apnea devices and so on. The 60W dual output medical power supply solution is built-in full protections of over load / short circuit and over voltage. The design is in low leakage current <0.15mA and long life with 3 years warranty for whole series.

**Technical Specification**

Typ. Model	KRPD-60A		KRPD-60B	
<b>Output</b>				
Output Number	CH1	CH2	CH1	CH2
Output Voltage	5VDC	12VDC	5VDC	24VDC
Rated Current	5A	2A	3.5A	1.5A
Current Range	0.5 ~ 5A	0.1 ~ 2A	0.5 ~ 3.5A	0.1 ~ 1.5A
Output Power	49W Max.		53.5W Max.	
Voltage Tolerance	±3%	±6%	±3%	±8%
Ripple & Noise	100mVp-p	100mVp-p	100mVp-p	100mVp-p
<b>Input</b>				
Input voltage	90 - 264Vac or 120- 370Vdc			
Input Frequency	50-60Hz (When the input is AC)			
Input Current	1.1A Max. @ 100 ~240Vac 50/60Hz input			
Inrush Current	60A Max. @ 100 ~240Vac 50/60Hz input			
Efficiency (Typ.)	78%		82%	
Leakage Current	≤0.15mA @ full input range			
<b>Protections</b>				
Over current	115 ~ 150% rated output power. Hiccup mode, Recovery when the fault is removed			
Short Circuit	No damage. Auto-Recovery when the fault is removed			
Over temperature	Shut down o/p voltage, re-power on to recover			
<b>Environmental</b>				
Operation Temperature	-20°C to +40°C, 20%RH to 90%RH			
Storage Temp, Humidity	-45~ +85°C, 10%RH to 95%RH			
Operation Altitude	≤3000m @ full load and rated operating temperatures			
MTBF	≥50000Hrs @ full load and rated operating temperatures			
<b>Mechanical</b>				
Dimensions (L x W x H)	101.6 x 50.8 x 29.0mm (4.00 x 2.00 x 1.14 inch)			
Unit Weight	150g±10 grams			
Packing Information	96pcs/ Carton, carton dimensions:47*37*20cm, 15.4kgs/ Carton			

## TEST REPORT

### OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	RIPPLE & NOISE	CH1:100mVp-p (Max) CH2:100mVp-p (Max)	I/P:230VAC / O/P:FULL LOAD / Ta:25°C	28mVp-p 65mVp-p	P
2	VOLTAGE TOLERANCE	CH1: -3% ~ +3% CH2: -6% ~ +6%	I/P:90VAC~264VAC O/P:FULL~MIN. LOAD / Ta:25°C	CH1: -0.76% ~+1.85% CH2: -1.96% ~+4.56%	P
3	LINE REGULATION	-2% ~ +2% (Max)	I/P:90VAC ~264VAC O/P:FULL LOAD / Ta:25°C	-0.6% ~ +0.8% of output voltage	P
4	LOAD REGULATION	-4% ~ +4% (Max)	I/P:230VAC O/P:FULL ~MIN LOAD / Ta:25°C	-0.95% ~ +2.36% of output voltage	P
5	OVER/UNDERSHOOT	<±5%	I/P: 230VAC O/P:FULL LOAD / Ta:25°C	1.0%	P
6	SET UP TIME	800 mS (Max)	I/P:230VAC O/P:FULL LOAD / Ta:25°C	750 mS	P
7	RISE TIME	50 mS (Max)	I/P: 230VAC O/P:FULL LOAD / Ta:25°C	28 mS	P
8	HOLD UP TIME	20 mS (Min)	I/P: 115VAC O/P:FULL LOAD / Ta:25°C	39 mS	P

### INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	VOLTAGE RANGE	90VAC~264VAC	I/P:TESTING O/P:FULL LOAD / Ta:25°C	72V~264V	P
2	FREQUENCY RANGE	50HZ - 60HZ (Typ) NO DAMAGE OSC	I/P: 100VAC ~ 240VAC O/P:FULL~MIN LOAD / Ta:25°C	TEST: OK	P
3	EFFICIENCY	78% (Typ)	I/P:230VAC O/P:FULL LOAD / Ta:25°C	79.39%	P
4	AVERAGE EFFICIENCY	>75%	I/P:115/230VAC & O/P:25%、50%、75%、 100% LOAD & Ta:25°C	76.85% (115VAC) 77.32% (230VAC)	P
5	AC CURRENT	1.5A (Max)	I/P:100VAC & O/P:FULL LOAD Ta:25°C	1.36A	P
6	INRUSH CURRENT	<60A COLD START	I/P: 230VAC / O/P:FULL LOAD Ta:25°C	36.9A	P
7	LEAKAGE CURRENT	< 0.15mA	I/P:240VAC & O/P:Min LOAD Ta:25°C	L-FG:0.078mA N-FG:0.085mA	P

### PROTECTION FUNCTION TEST

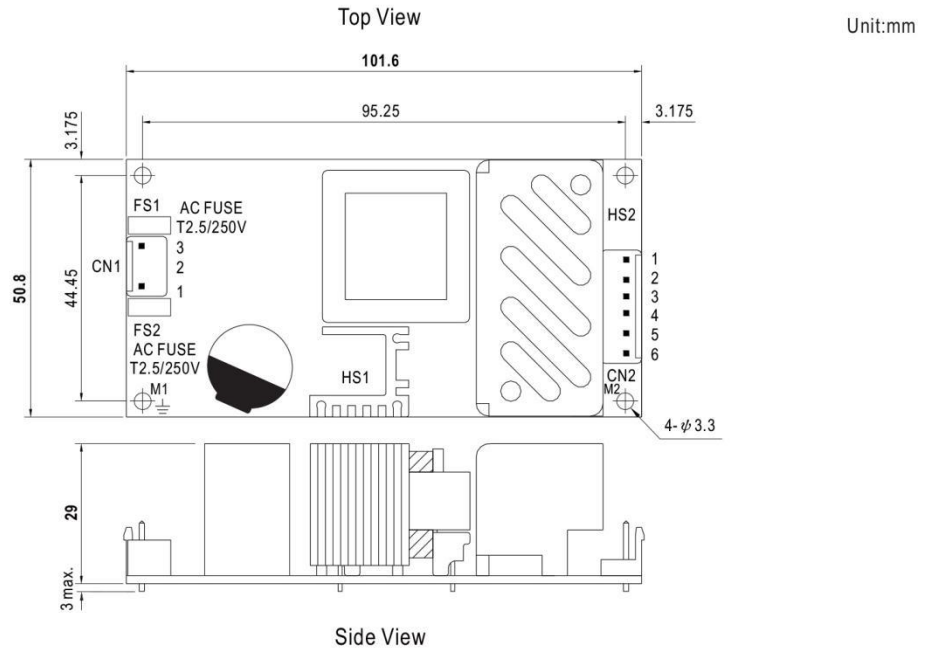
NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	OVER LOAD PROTECTION	115 ~ 150% (Typ)	I/P:230VAC & O/P:TESTING Ta:25°C	140.1% HICCUP MODE	P
2	OVER VOLTAGE PROTECTION	115 ~ 135% (Typ)	I/P:230VAC O/P:MIN LOAD & Ta:25°C	Hiccup mode ,recovers automatically after fault condition is removed	P
3	SHORT PROTECTION	SHORT OUTPUT 1 HOUR NO DAMAGE	I/P:264VAC O/P:FULL LOAD & Ta:25°C	NO DAMAGE HICCUP MODE	P

### SAFETY TEST & E.M.C TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 4KVAC/min I/P- FG: 2KVAC/min O/P-FG:1.5KVAC/min	I/P-O/P: 4 KVAC/min I/P-FG: 2.4KVAC/min O/P-FG: 1.8KVAC/min Ta:25°C	I/P-O/P:6.08mA I/P-FG: 5.88mA O/P-FG: 3.06mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 500VDC>100MΩ O/P-FG:500VDC>100MΩ	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25°C	I/P-O/P: 9999MΩ I/P-FG: 9999MΩ O/P-FG:9999 MΩ NO DAMAGE	P
3	CONDUCTION	BS EN/EN55032(CISPR32), FCC PART 15 / CISPR22 CAN	I/P: 230 VAC (50HZ) O/P: FULL/50% LOAD Ta: 25°C	PASS Test by certified Lab	P
4	RADIATION	BS EN/EN55032(CISPR32), FCC PART 15 / CISPR22 CAN	I/P: 230 VAC (50HZ) O/P: FULL LOAD Ta: 25°C	PASS Test by certified Lab	P
5	SURGE	BS EN/EN61000-4-5 LIGHT INDUSTRY L-N: 1KV	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25°C	CRITERIA B	P
6	E.S.D	BS EN/EN61000-4-2 LIGHT INDUSTRY AIR: 8KV / Contact: 4KV	I/P: 230 VAC/50HZ O/P: FULL LOAD Ta: 25°C	CRITERIA B	P

TEST RESULT	TESTER	REVIEW	APPROVAL
<b>PASS</b>	<b>ZHU LI</b>	<b>WANG LW</b>	<b>ZHANG DL</b>

**Mechanical Specification**



AC Input Connector (CN1) : JST B3P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	AC/N	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
2	No Pin		
3	AC/L		

DC Output Connector (CN2) : JST B6P-VH or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1,2	V1	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
3,4	COM		
5	V2		
6	NC		

⊕ : Grounding Required

- ⚠ 1.HS1,HS2 cannot be shorted.
- 2.M1 is safety ground. For better EMC performance,  
Please secure an electrical connection between  
M1,M2 and chassis grounding.