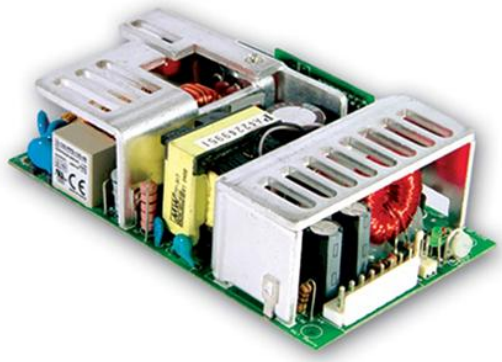
KINRI® INNOVATE

MEDICAL SWITCHING POWER SUPPLY 200W 4 OUTPUT SERIES



Features

. Input 90V to 264VAC, 50~60Hz suitable for worldwide use
. Outputs options: 5V/12V/-5V/-12V and 5V/24V/12V/-12VDC
. 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℃
. 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

ANSI/AAMI ES60601-1 BS EN/EN60601-1 IEC60601-1 TPTC004

Product Description:

It is a highly reliable 4 output 200W 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/-5V /-12V, 5V/24V/12V/-12V, 5V/15V/-5V/-15V and 5V/24V/15V/-15VDC. The product is suitable for various types of medical devices such as hemodialysis machine, sleep apnea devices and so on. The 200W 4 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 fixed switching frequency at 100KHz.

Technical Specification

Typ. Model	KMPQ-200B				KMPQ-200D			
Output								
Output Number	CH1	CH2	CH3	CH4	CH1	CH2	CH3	CH4
Output Voltage	5VDC	12VDC	-5VDC	-12VDC	5VDC	24VDC	12VDC	-12VDC
Rated Current	12A	5.3A	1A	1A	12A	2.3A	1A	1A
Current Range	3 ~12A	0.7 ~ 5.3A	0 ~ 1A	0 ~ 1A	3 ~ 12A	0.3 ~ 2.A	0 ~ 1A	0 ~ 1A
Output Power	140.6W Max.				139.2W Max.			
Voltage Tolerance	±2%	±8%	±5%	±5%	±2%	±8%	±5%	±5%
Ripple & Noise	100mVp-p	150mVp-p	100mVp-p	100mVp-p	100mVp-p	200mVp-p	100mVp-p	100mVp-p
Input								
Input voltage	90 - 264Vac or 120- 370Vdc							
Input Frequency	50-60Hz (When the input is AC)							
Input Current	1.6A Max. @ 100 ~240Vac 50/60Hz input							
Inrush Current	40A Max. @ 100 ~240Vac 50/60Hz input							
Efficiency (Typ.)	78%				79%			
Leakage Current	≤0.15mA @ full input range							
Protections								
Over current	120~ 160% 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							
Environmental								
Operation Temperature	-20℃ to +40℃, 20%RH to 90%RH							
Storage Temp, Humidity	-45~ +85℃, 10%RH to 95%RH							
Operation Altitude	≤3000m @ full load and rated operating temperatures							
MTBF	≥50000Hrs @ full load and rated operating temperatures							
Mechanical								
Dimensions (L x W x H)	177.8 x 107.2 x 35.5mm (7.00 x 4.22 x 1.40 inch)							
Unit Weight	330g±10 grams							
Packing Information	24pcs/ Carton, carton dimensions:47*37*20cm, 16.8kgs/ Carton							

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TEST REPORT

OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	RIPPLE & NOISE	CH1:100/ CH2:150/ CH3:100/ CH4:100mV	I/P:230VAC / O/P:FULL LOAD / Ta:25℃	39mVp-p /88mVp-p /76mVp-p / /63mVp-p	P
2	VOLTAGE TOLERANCE	CH1: ±2% CH2:±8% CH3:±5% CH4: ±5%	I/P:90VAC~264VAC O/P:FULL~MIN. LOAD / Ta:25℃	CH1: -0.76% ~+1.10% CH2: -2.96% ~+4.46% CH3: -2.19% ~+3.23% CH4: -1.98% ~+2.54%	P
3	LINE REGULATION	CH1: -0.5% ~ +0.5% (Max)	I/P:90VAC ~264VAC O/P:FULL LOAD / Ta:25℃	-0.21% ~ +0.20% of output voltage	P
4	LOAD REGULATION	CH1: -1.0% ~ +1.0% (Max)	I/P:230VAC O/P:FULL ~MIN LOAD / Ta:25℃	-0.65% ~ +0.68% of output voltage	P
5	OVER/UNDERSHOOT	<±5%	I/P: 230VAC O/P:FULL LOAD / Ta:25℃	0.84%	P
6	SET UP TIME	3000 mS (Max)	I/P:230VAC O/P:FULL LOAD / Ta:25℃	2260 mS	P
7	RISE TIME	20 mS (Max)	I/P: 230VAC O/P:FULL LOAD / Ta:25℃	16 mS	P
8	HOLD UP TIME	16 mS (Min)	I/P: 115VAC O/P:FULL LOAD / Ta:25℃	19 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℃	84V~264V	P
2	FREQUENCY RANGE	50HZ - 60HZ (Typ) NO DAMAGE OSC	I/P: 100VAC ~ 240VAC O/P:FULL~MIN LOAD / Ta:25℃	TEST: OK	P
3	EFFICIENCY	78% (Typ)	I/P:230VAC O/P:FULL LOAD / Ta:25℃	78.98%	P
4	AVERAGE EFFICIENCY	>76%	I/P:115/230VAC &O/P:25%、50%、75%、100% LOAD & Ta:25℃	7.6.86% (115VAC) 7.7.05% (230VAC)	P
5	AC CURRENT	1.6A (Max)	I/P:100VAC & O/P:FULL LOAD Ta:25℃	1.28A	P
6	INRUSH CURRENT	<40A COLD START	I/P: 230VAC / O/P:FULL LOAD Ta:25℃	24.8A	P
7	LEAKAGE CURRENT	< 0.15mA	I/P:240VAC & O/P:Min LOAD Ta:25℃	L-FG:0.121mA N-FG:0.120mA	P

PROTECTION FUNCTION TEST

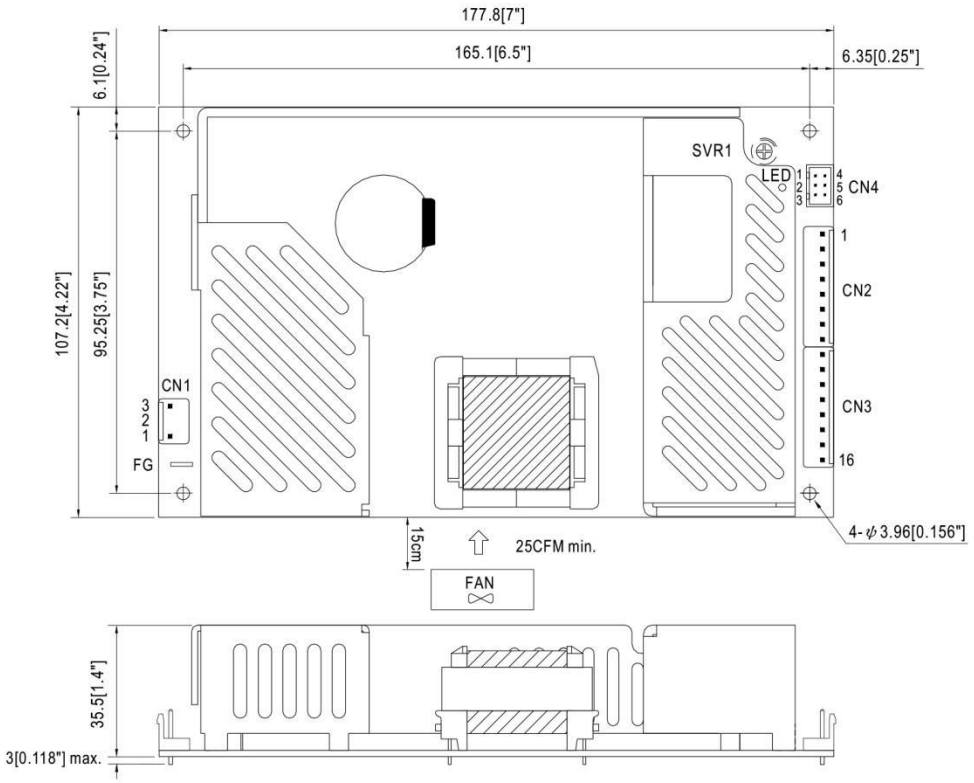
NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	OVER LOAD PROTECTION	120 ~ 160% (Typ)	I/P:230VAC & O/P:TESTING Ta:25℃	128.8% HICCUP MODE	P
2	OVER VOLTAGE PROTECTION	115 ~ 135% (Typ)	I/P:230VAC O/P:MIN LOAD & Ta:25℃	Hiccup mode ,recovers automatically after fault condition is removed	P
3	SHORT PROTECTION	SHORT OUTPUT 1 HOUR NO DAMAGE	I/P:264VAC O/P:FULL LOAD & Ta:25℃	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℃	I/P-O/P:6.31mA I/P-FG: 5.82mA O/P-FG: 3.45mA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100M Ω I/P-FG: 500VDC>100M Ω O/P-FG:500VDC>100M Ω	I/P-O/P: 500 VDC I/P-FG: 500 VDC O/P-FG: 500 VDC Ta:25℃	I/P-O/P: 9999M Ω I/P-FG: 9999M Ω O/P-FG:9999 M Ω 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℃	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℃	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℃	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℃	CRITERIA B	P

TEST RESULT	TESTER	REVIEW	APPROVAL
PASS	ZHU LI	WANG LW	ZHANG DL

■ 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		

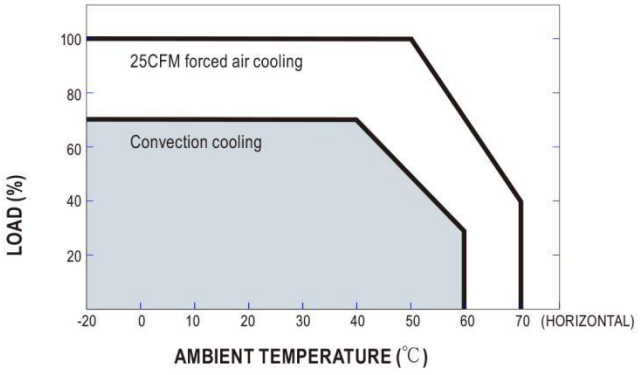
DC Output Connector (CN2,3) : JST B8P-VH*2 or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1,2,3,4	V1	JST VHR or equivalent	JST SVH-21T-P1.1 or equivalent
5~11	COM		
12,13	V2		
14	V3		
15	No pin		
16	V4		

DC Output Connector (CN4) : JS-2008-03*2 or equivalent

Pin No.	Assignment	Mating Housing	Terminal
1	PG	JS-2007-03*2 or equivalent	JS-2007-T or equivalent
2	RS-		
3	GND		
4	RC+		
5	RS+		
6	RC-		

■ Derating Curve



■ Static Characteristics