



**Features**

- . Input 90V to 264VAC, 50~60Hz suitable for worldwide use
- . Output voltage optional from 12V/54VDC and 24V/54VDC
- . 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 -20~45°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 450W medical examination instrument 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 12V/54V and 24V/54V. The product is suitable for various types of medical devices such as medical examination instrument, hemodialysis machine, medical computer monitors, sleep apnea devices and so on. This 450W medical examination instrument power supply 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.

**Technical Specification**

Typ. Model	KNW-450A01		KNW-450A02	
<b>Output</b>				
Output Number	CH1	CH2	CH1	CH2
Output Voltage	12VDC	54VDC	24VDC	54VDC
Rated Current	5.8A	7A	2.9A	7A
Current Range	0.5 ~ 5.8A	0.1 ~ 7A	0.5 ~ 2.9A	0.1 ~ 7A
Output Power	450W Max.		450W Max.	
Voltage Tolerance	±3%	±6%	±3%	±8%
Ripple & Noise	150mVp-p	350mVp-p	200mVp-p	350mVp-p
<b>Input</b>				
Input voltage	90 - 264Vac or 120- 370Vdc			
Input Frequency	50-60Hz (When the input is AC)			
Input Current	6A Max. @ 100 ~240Vac 50/60Hz input			
Inrush Current	80A Max. @ 100 ~240Vac 50/60Hz input			
Efficiency (Typ.)	90%		90%	
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 +45°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)	240.0 x 131.2 x 34.0mm (9.45 x 5.17 x 1.34 inch)			
Unit Weight	780g±20 grams			
Packing Information	15pcs/ Carton, carton dimensions:47*37*20cm, 12.4kgs/ Carton			

**TEST REPORT**
**OUTPUT FUNCTION TEST**

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	RIPPLE & NOISE	CH1:150mVp-p (Max) CH2:350mVp-p (Max)	I/P:230VAC / O/P:FULL LOAD / Ta:25°C	98mVp-p 215mVp-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% ~+1.96% 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	3000 mS (Max)	I/P:230VAC O/P:FULL LOAD / Ta:25°C	2150 mS	P
7	RISE TIME	50 mS (Max)	I/P: 230VAC O/P:FULL LOAD / Ta:25°C	35 mS	P
8	HOLD UP TIME	10 mS (Min)	I/P: 115VAC O/P:FULL LOAD / Ta:25°C	13 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	85V~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	90% (Typ)	I/P:230VAC O/P:FULL LOAD / Ta:25°C	90.33%	P
4	AVERAGE EFFICIENCY	>88%	I/P:115/230VAC & O/P:25%、50%、75%、 100% LOAD & Ta:25°C	88.25% (115VAC) 88.86% (230VAC)	P
5	AC CURRENT	6.0A (Max)	I/P:100VAC & O/P:FULL LOAD Ta:25°C	5.25A	P
6	INRUSH CURRENT	<80A COLD START	I/P: 230VAC / O/P:FULL LOAD Ta:25°C	58.9A	P
7	LEAKAGE CURRENT	< 0.15mA	I/P:240VAC & O/P:Min LOAD Ta:25°C	L-FG:0.073mA N-FG:0.080mA	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	136.7% 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:6.32mA I/P-FG: 5.71mA O/P-FG: 3.25mA 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
PASS	ZHU LI	WANG LW	ZHANG DL