



### Features

- . Input 90V to 305VAC, 50~60Hz suitable for worldwide use
- . Output voltage optional from 5V to 48Vdc constant voltage
- . Protections: Short Circuit / Overload / Over Voltage Protection
- . 100% full load burn-in test for 2Hrs to make every unit reliable
- . EMI Class B without additional components, pass LPS
- . Cooling by free air convection, operating temperature -30~40°C
- . Long life and high reliability design with 3 years warranty
- . Low standby consumption power <0.15W

### Safety Standards

- . IEC62368-1 CB report for worldwide use
- . UL62368-1 + CAN/CSA 62368-1 for USA and Canada
- . EN 62368-1:2014/A11:2017 for European Union
- . AS/NZS 62368.1:2018 for Australia and New Zealand
- . J62368-1 for Japan and GB4943.1 for China market.



### Product Description:

This is a highly reliable and small size AC-DC module type 60W switching power supply solution with wide range 90-305Vac input and designed strictly according to the international safety standards. It's ready to be solder onto the PCB boards of various kind of electronic instruments, industrial automation equipments, and military devices. The entire series supplies different models with output voltages ranging between 5Vdc and 48Vdc that can satisfy the demands for various types of electronics devices. This 60W PCB mount power module is built-in EMI filtering components with supreme EMC features keep the end electronics units from electromagnetic interference. With high efficiency up to 91% and very low no load power consumption of less than 0.15W, the power module fulfill the worldwide energy regulation for low power consumption requirements for electronics with compact size of 87.0 x 52.0 x 29.5mm.

### Technical Specification

Typ. Model	KRM-60-5	KRM-60-12	KRM-60-15	KRM-60-24	KRM-60-48
<b>Output</b>					
Output Voltage	5VDC	12VDC	15VDC	24VDC	48VDC
Rated Current	10A	5A	4A	2.5A	1.25A
Current Range	0 ~ 10A	0 ~ 5A	0 ~ 4A	0 ~ 2.5A	0 ~ 1.25A
Output Power	50W Max.	60W Max.	60W Max.	60W Max.	60W Max.
Voltage Tolerance	±3%	±3%	±3%	±3%	±3%
Ripple & Noise	100mVp-p	150mVp-p	200mVp-p	200mVp-p	250mVp-p
<b>Input</b>					
Input voltage	90 - 305Vac or 120- 430Vdc				
Input Frequency	50-60Hz (When the input is AC)				
Input Current	1.8A Max. @ 100 ~240Vac 50/60Hz input				
Inrush Current	60A Max. @ 100 ~240Vac 50/60Hz input				
Efficiency (Typ.)	84%	87.5%	89%	90%	91%
Leakage Current	≤0.25mA @ full input range				
<b>Protections</b>					
Over current	115~160% rated output power. Auto-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	-30°C to +40°C, 20%RH to 90%RH				
Storage Temp, Humidity	-45~ +85°C, 10%RH to 95%RH				
Operation Altitude	≤2000m @ full load and rated operating temperatures				
MTBF	≥50000Hrs @ full load and rated operating temperatures				
<b>Mechanical</b>					
Dimensions (L x W x H)	87.0 x 52.0 x 29.5mm (3.43 x 2.05 x 1.16 inch)				
Unit Weight	195g±10 grams				
Packing Information	60pcs/ Carton, carton dimensions:47*37*20cm, 12.7kgs/ Carton				

## TEST REPORT

### OUTPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	RIPPLE & NOISE	200mVp-p (Max)	I/P:230VAC / O/P:FULL LOAD / Ta:25°C	120mVp-p	P
2	VOLTAGE TOLERANCE	-3% ~ +3% (Max)	I/P:90VAC~305VAC O/P:FULL~MIN. LOAD / Ta:25°C	-1.0% ~ +1.1% of output voltage	P
3	LINE REGULATION	-0.3% ~ +0.3% (Max)	I/P:90VAC ~305VAC O/P:FULL LOAD / Ta:25°C	-0.07% ~ +0.06% of output voltage	P
4	LOAD REGULATION	-0.5% ~ +0.5% (Max)	I/P:230VAC O/P:FULL ~MIN LOAD / Ta:25°C	-0.20% ~ +0.25% of output voltage	P
5	OVER/UNDERSHOOT	<±5%	I/P: 230VAC O/P:FULL LOAD / Ta:25°C	0.7%	P
6	SET UP TIME	2000 mS (Max)	I/P:230VAC O/P:FULL LOAD / Ta:25°C	1550 mS	P
7	RISE TIME	30 mS (Max)	I/P: 230VAC O/P:FULL LOAD / Ta:25°C	22 mS	P
8	HOLD UP TIME	12 mS (Min)	I/P: 115VAC O/P:FULL LOAD / Ta:25°C	15 mS	P

### INPUT FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	VOLTAGE RANGE	90VAC~305AC	I/P:TESTING O/P:FULL LOAD / Ta:25°C	83V~305V	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	91% (Typ)	I/P:230VAC O/P:FULL LOAD / Ta:25°C	91.25%	P
4	AVERAGE EFFICIENCY	88%	I/P:115/230VAC & O/P:25%、50%、75%、100% LOAD & Ta:25°C	88.35% (115VAC) 88.92% (230VAC)	P
5	AC CURRENT	1.8A (Max)	I/P:100VAC & O/P:FULL LOAD Ta:25°C	1.19A	P
6	INRUSH CURRENT	<60A COLD START	I/P: 230VAC / O/P:FULL LOAD Ta:25°C	48.95A	P
7	LEAKAGE CURRENT	<0.25mA	I/P:240VAC & O/P:Min LOAD Ta:25°C	L-FG:0.166mA N-FG:0.165mA	P

### PROTECTION FUNCTION TEST

NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	OVER LOAD PROTECTION	115 ~ 160% (Typ)	I/P:230VAC & O/P:TESTING Ta:25°C	134.55% 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

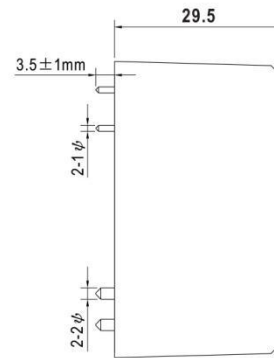
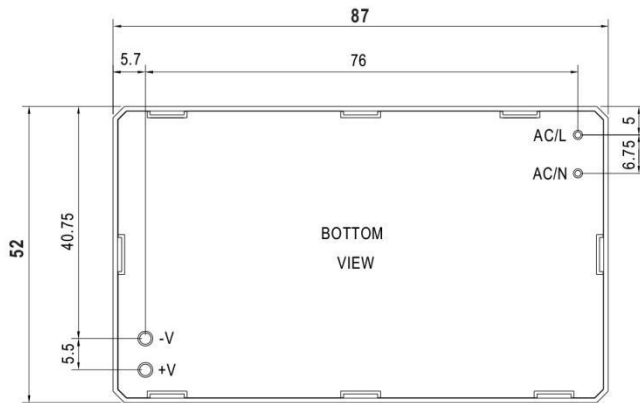
NO	TEST ITEM	SPECIFICATION	TEST CONDIDTION	RESULT	VERDICT
1	WITHSTAND VOLTAGE	I/P-O/P: 4KVAC/min I/P- FG: 2KVAC/min O/P-FG:0.5KVAC/min	I/P-O/P: 4.4 KVAC/min I/P-FG: 2.4KVAC/min O/P-FG: 0.6KVAC/min Ta:25°C	I/P-O/P:3.36mA I/P-FG: NA O/P-FG: NA NO DAMAGE	P
2	ISOLATION RESISTANCE	I/P-O/P:500VDC>100MΩ I/P-FG: 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: NA O/P-FG: NA 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**

Unit:mm

• **PCB mounting style**



AC/L, AC/N P/N diameter:1 φ  
+V, -V P/N diameter:2 φ

• **Screw terminal style**

