90W AC-DC High Reliable PCB-Mount Green Medical Power Module MPM-90 series

User's Manual

(MPM-90)

(MPM-90-xxST)

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

Features

- 3.43"x2.05" compact size
- PCB,chassis or screw terminal mounting version
- Medical safety approved (2 x MOPP) according to ANSI/AAMI ES60601-1 and IEC/BS EN/EN60601-1
- Suitable for BF application with appropriate system consideration
- No load power consumption<0.1W
- Extremely low leakage current
- Wide operating temp. range -30 ~ +80℃
- EMI Class B without additional components
- Isolation Class Ⅱ
- Protections: Short circuit / Overload / Over voltage
- No minimum load required
- Operating altitude up to 4000 meters(Note.7)
- 100W peak(10 sec.)
- 3 years warranty

Applications

- Portable medical device
- Mobile clinical workstation
- Medical computer monitor
- Medical examination instrument

GTIN CODE

MW Search: https://www.meanwell.com/serviceGTIN.aspx

Description

MPM-90 is a 90W high density and small size (87x52x29.5mm) AC/DC PCB-mount module type medical grade power supply . It features the operation for 80~264VAC, a low no load power consumption less than 0.1W, a high efficiency up to 93%, Class Ⅱ (no FG) double insulation, outstanding dissipation, 2~5G anti-vibration by model, high EMC performance, 4KVAC isolation, etc. The design observes IEC/BS EN/EN60601-1 and ANSI/AAMI ES60601-1version three with 2 x MOPP level and ultra-low leakage current (<100μA). It is very suitable for BF (patient contact) type medical device or relevant equipment.

Model Encoding

MPM - 90 - 12 ST

- ST: Blank : PCB mounting style; ST : Screw terminal style
- 12: Output voltage
- 90: Rated wattage
- MPM: Series name

SPECIFICATION

MODEL			MPM-90-12 ☐	MPM-90-15 ☐	MPM-90-24 ☐	MPM-90-48 ☐
OUTPUT	DC VOLTAGE		12V	15V	24V	48V
	CURRENT	Peak(10 sec.)	7.37A	6.23A	4.13A	2.07A
		Convection	6.7A	5.67A	3.75A	1.88A
	RATED POWER	Peak(10 sec.)Note.2	88.4W	93.5W	99W	99.2W
		Convection	80.4W	85.05W	90W	90.2W
	RIPPLE & NOISE (max.) Note.3		120mVp-p	150mVp-p	200mVp-p	240mVp-p
	VOLTAGE TOLERANCE Note.4		±2.0%	±2.0%	±2.0%	±2.0%
	LINE REGULATION		±0.5%	±0.5%	±0.5%	±0.5%
	LOAD REGULATION		±1.0%	±0.5%	±0.5%	±0.5%
	SETUP, RISE TIME		1000ms, 30ms/230VAC	1000ms, 30ms/115VAC at full load		
	HOLD UP TIME (Typ.)		30ms/230VAC	10ms/115VAC at full load		
INPUT	VOLTAGE RANGE Note.5		80 ~ 264VAC	113 ~ 370VDC		
	FREQUENCY RANGE		47 ~ 63Hz			
	EFFICIENCY (Typ.)		92%	92.5%	93%	93%
	AC CURRENT (Typ.)		1.9A/115VAC	1.1A/230VAC		
	INRUSH CURRENT (Typ.)		COLD START	30A/115VAC	65A/230VAC	
	LEAKAGE CURRENT (max.) Note.6		Touch current <100μA/264VAC			
PROTECTION	OVERLOAD		115% ~ 160% rated output power			
			Protection type : Hiccup mode, recovers automatically after fault condition is removed			
	OVER VOLTAGE		12.6 ~ 16.2V	15.8 ~ 20.3V	25.2 ~ 32.4V	50.4 ~ 64.8V
			Protection type : Shut down o/p voltage, re-power on to recover			
	OVER TEMPERATURE		Protection type : Shut down o/p voltage, re-power on to recover			
ENVIRONMENT	WORKING TEMP.		-30 ~ +80℃ (Refer to "Derating Curve")			
	WORKING HUMIDITY		20 ~ 90% RH non-condensing			
	STORAGE TEMP.		-40 ~ +85℃			
	TEMP. COEFFICIENT		±0.03%/℃ (0 ~ 50℃)			
	SOLDERING TEMPERATURE		260℃ ±5℃/10sec.max.			
	VIBRATION		Blank:10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes			
			ST:10 ~ 500Hz, 5G 10min./1cycle, period for 60min. each along X, Y, Z axes			
	OPERATING ALTITUDE Note.7		4000 meters / OVC II			
SAFETY & EMC (Note 8)	SAFETY STANDARDS		IEC60601-1, BS EN/EN60601-1, EAC TP TC 004, UL ANSI/AAMI ES60601-1(3.1 version), CAN/CSA-C22 3rd Edition approved; Design refer to BS EN/EN60335-1(by request)			
	ISOLATION LEVEL		Primary-Secondary: 2xMOPP			
	WITHSTAND VOLTAGE		I/P-O/P:4KVAC			
	ISOLATION RESISTANCE		I/P-O/P:100M Ohms / 500VDC / 25℃/ 70% RH			
	EMC EMISSION		**Parameter**	**Standard**	**Test Level / Note**	
			Conducted	BS EN/EN55011 (CISPR11)	Class B	
			Radiated	BS EN/EN55011 (CISPR11)	Class B	
			Harmonic Current	BS EN/EN61000-3-2	Class A	
			Voltage Flicker	BS EN/EN61000-3-3	-----	
	EMC IMMUNITY		BS EN/EN60601-1-2			
			Parameter	**Standard**	**Test Level / Note**	
			ESD	BS EN/EN61000-4-2	Level 4, 15KV air ; Level 4, 8KV contact	
			RF field susceptibility	BS EN/EN61000-4-3	Level 3, 10V/m(80MHz~2.7GHz) Table 9, 9~28V/m(385MHz~5.78GHz)	
			EFT bursts	BS EN/EN61000-4-4	Level 3, 2KV	
			Surge susceptibility	BS EN/EN61000-4-5	Level 3, 1KV/Line-Line	
			Conducted susceptibility	BS EN/EN61000-4-6	Level 3, 10V	
			Magnetic field immunity	BS EN/EN61000-4-8	Level 4, 30A/m	
			Voltage dip, interruption	BS EN/EN61000-4-11	>95% dip 0.5 periods, 30% dip 25 periods, >95% interruptions 250 periods	
OTHERS	MTBF		4548.9K hrs min. Telcordia SR-332 (Bellcore) ; 570.5K hrs min. MIL-HDBK-217F (25℃)			
	DIMENSION		PCB mounting style : 87*52*29.5mm (L*W*H)	Screw terminal style : 109*52*33.5mm (L*W*H)		
	PACKING		PCB mounting style : 0.197Kg;60pcs/12.8Kg/0.94CUFT	Screw terminal style :0.219Kg;50pcs/12Kg/0.56CUFT		

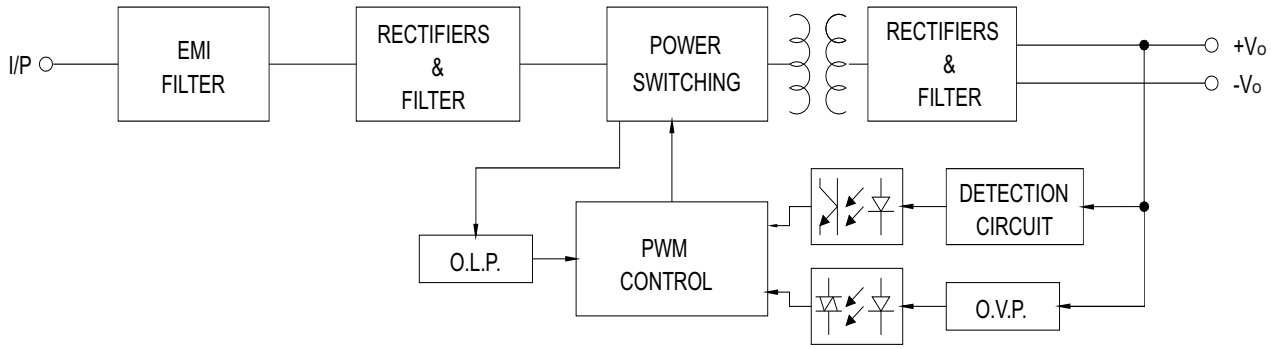
NOTE

1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25℃ of ambient temperature.
2. 33% Duty cycle maximum within every 30 seconds. Average output power should not exceed the rated power.
3. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1 μf & 47 μf parallel capacitor.
4. Tolerance : includes set up tolerance, line regulation and load regulation.
5. Derating may be needed under low input voltages. Please check the derating curve for more details.
6. Touch current was measured from primary input to DC output.
7. The ambient temperature derating of 3.5℃/1000m with fanless models and of 5℃/1000m with fan models for operating altitude higher than 2000m(6500ft).
8. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to “EMI testing of component power supplies.” (as available on http://www.meanwell.com)

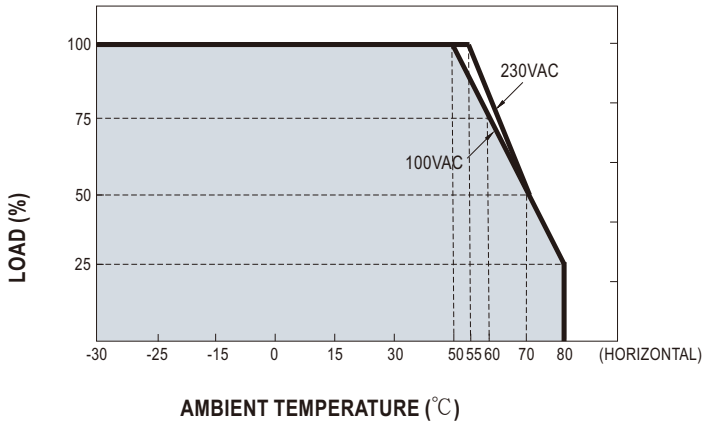
※ Product Liability Disclaimer : For detailed information, please refer to https://www.meanwell.com/serviceDisclaimer.aspx

■ Block Diagram

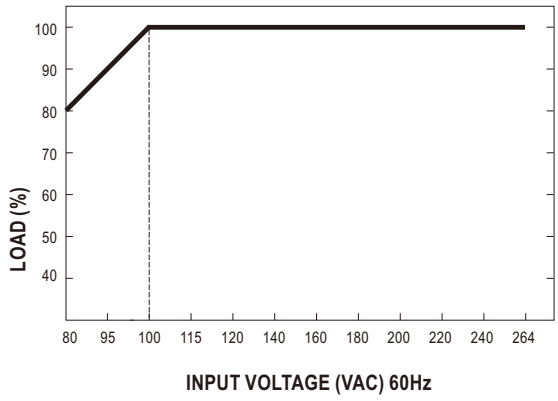
fosc : 70KHz



■ Derating Curve



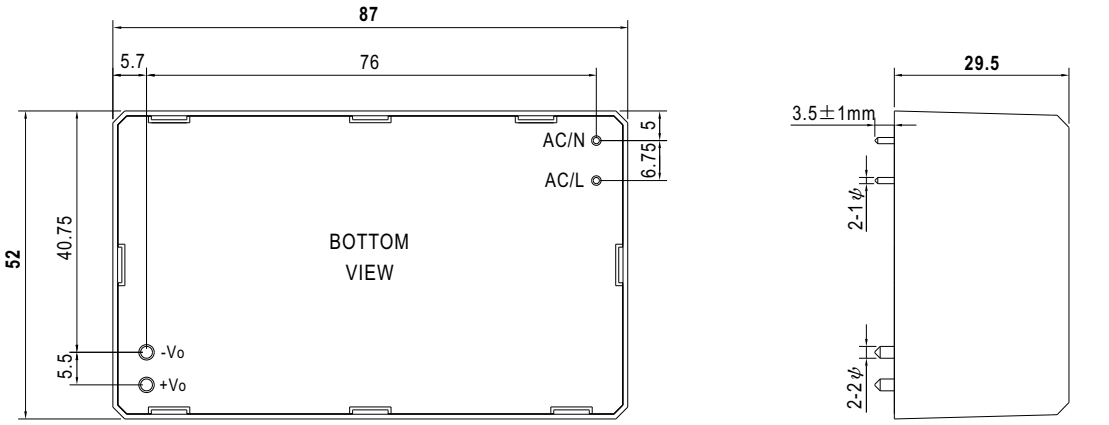
■ Output Derating VS Input Voltage



■ Mechanical Specification

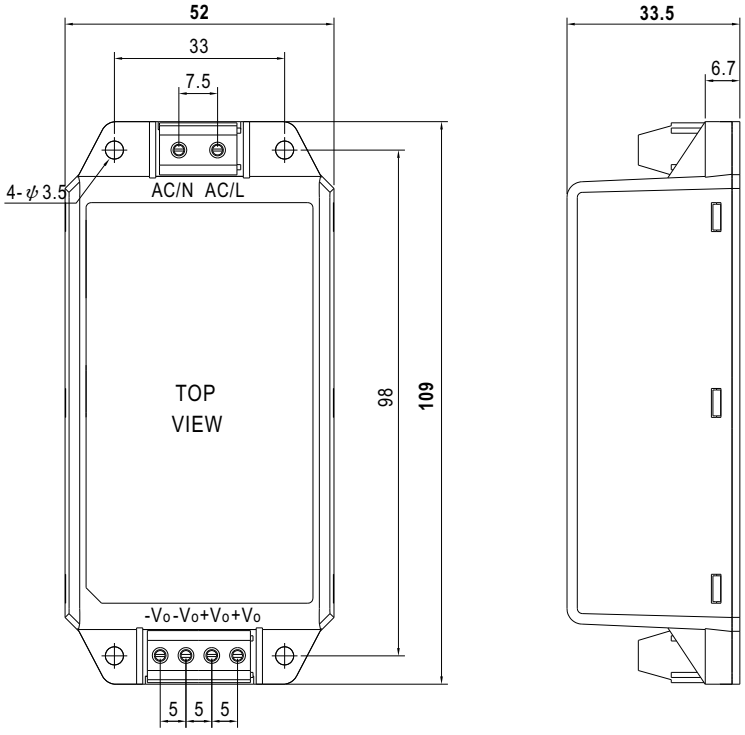
Case No.IRM60 Unit:mm

- **PCB mounting style (MPM-90)**



AC/L, AC/N P/N diameter:1 ψ
+Vo, -Vo P/N diameter:2 ψ

- **Screw terminal style (MPM-90-xxST)**



■ Installation Manual

Please refer to : http://www.meanwell.com/manual.html