



60W Reliable Triple Output Medical Grade

RPT-60 series

ANSI/AAMI ES60601-1 BS EN/EN60601-1 BS EN/EN62368-1 IEC60601-1 IEC62368-1 TPTC004
UL62368-1

■ Features

- 4"×2" compact size
- 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
- Cooling by free air convection
- EMI class B for class I configuration
- Extremely low leakage current
- Protections: Short circuit / Overload / Over voltage
- 3 years warranty

■ Applications

- Oral irrigator
- Hemodialysis machine
- Medical computer monitors
- Sleep apnea devices

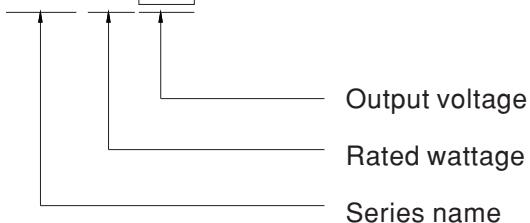
■ Description

RPT-60 is a 60W highly reliable green PCB type medical power supply with a high power density on the 4" by 2" footprint. It accepts 90~264VAC input and offers dual output voltages .

RPT-60 is able to be used for Class I (with FG) system design. The extremely low leakage current is less than 150 μ A. In addition, it conforms to international medical regulations (2*MOPP) and EMC BS EN/EN55011.

■ Model Encoding

RPT - 60 A





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SPECIFICATION

MODEL	RPT-60A			RPT-60B			RPT-60C																									
OUTPUT	OUTPUT NUMBER	CH1	CH2	CH3	CH1	CH2	CH3	CH1	CH2	CH3																						
	DC VOLTAGE	5V	12V	-5V	5V	12V	-12V	5V	15V	-15V																						
	RATED CURRENT	4A	2A	0.5A	4A	2A	0.5A	4A	1.5A	0.5A																						
	CURRENT RANGE	0.5 ~ 4.4A	0.1 ~ 2.2A	0.1 ~ 0.55A	0.5 ~ 4.4A	0.1 ~ 2.2A	0.1 ~ 0.55A	0.5 ~ 4.4A	0.1 ~ 1.65A	0.1 ~ 0.55A																						
	RATED POWER	46.5W			50W			50W																								
	PEAK LOAD(10sec.) Note.2	51.15W			55W			55W																								
	RIPLPE & NOISE (max.) Note.3	80mVp-p	80mVp-p	80mVp-p	80mVp-p	80mVp-p	100mVp-p	80mVp-p	100mVp-p	150mVp-p																						
	VOLTAGE TOLERANCE Note.4	+3,-2%	±6.0%	+9,-8%	+3,-2%	±6.0%	+10,-6%	+3,-2%	±6.0%	±8.0%																						
	LINE REGULATION	±0.5%	±1.0%	±1.0%	±0.5%	±1.0%	±2.0%	±0.5%	±2.0%	±2.0%																						
	LOAD REGULATION	±1.5%	±2.0%	+5,-7%	±1.5%	±2.0%	±5.0%	±1.5%	±3.0%	±4.0%																						
INPUT	SETUP, RISE TIME	300ms, 15ms/230VAC		300ms, 15ms/115VAC at full load																												
	HOLD UP TIME (Typ.)	70ms/230VAC		15ms/115VAC at full load																												
	VOLTAGE RANGE	90 ~ 264VAC		127 ~ 370VDC																												
	FREQUENCY RANGE	47 ~ 63Hz																														
	EFFICIENCY (Typ.)	77%		78%		79%																										
PROTECTION	AC CURRENT (Typ.)	1.1A/115VAC		0.7A/230VAC																												
	INRUSH CURRENT (Typ.)	COLD START 60A/230VAC		30A/115VAC																												
	LEAKAGE CURRENT Note.5	Earth leakage current < 150 μA/264VAC , Touch current < 100 μA/264VAC																														
	OVERLOAD	115 ~ 150% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed																														
	OVER VOLTAGE	CH1: 5.75 ~ 6.75V Protection type : Shut down o/p voltage, re-power on to recover																														
ENVIRONMENT	WORKING TEMP.	-20 ~ +65°C (Refer to "Derating Curve")																														
	WORKING HUMIDITY	20 ~ 90% RH non-condensing																														
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH non-condensing																														
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 45°C)																														
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes																														
SAFETY & EMC (Note 8)	OPERATING ALTITUDE Note.6	3000 meters																														
	SAFETY STANDARDS	UL62368-1, TUV BS EN/EN62368-1, IEC62368-1, IEC60601-1, EAC TP TC 004, UL ANSI/AAMI ES60601-1, CAN/CSA-C22.2 No. 60601-1:14 - Edition 3 approved, TUV BS EN/EN60601-1 approved																														
	ISOLATION LEVEL	Primary-Secondary: 2xMOPP, Primary-Earth:1xMOPP, Secondary-Earth:1xMOPP																														
	WITHSTAND VOLTAGE	I/P-O/P:4KVAC I/P-FG:2KVAC O/P-FG:1.5KVAC																														
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH																														
	EMC EMISSION	Parameter	Standard		Test Level / Note																											
		Conducted emission	BS EN/EN55011 (CISPR11)		Class B																											
		Radiated emission	BS EN/EN55011 (CISPR11)		Class B																											
		Harmonic current	BS EN/EN61000-3-2		Class A																											
	EMC IMMUNITY	Voltage flicker	BS EN/EN61000-3-3		-----																											
		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 4, 4KV/Line-FG ; 2KV/Line-Line																											
		Conducted susceptibility	BS EN/EN61000-4-6		Level 3, 10V																											
OTHERS	MTBF	BS EN/EN61000-4-8																														
		100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods																														
		100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods																														
NOTE	DIMENSION (L*W*H)	101.6*50.8*29mm or 4" * 2" * 1.14" inch																														
	PACKING	0.15Kg; 96pcs/15.4Kg/0.89CUFT																														
	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C 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 0.1μf & 47μf parallel capacitor.																															
	4. Tolerance : includes set up tolerance, line regulation and load regulation.																															
	5. Touch current was measured from primary input to DC output.																															
	6. The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft).																															
	7. Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time.																															
	8. Heat Sink HS1,HS2 can not be shorted.																															
	9. The power supply is considered a component which will be installed into a final equipment. All the EMC tests are been executed by mounting the unit on a 360mm*360mm metal plate with 1mm of thickness. 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)																															
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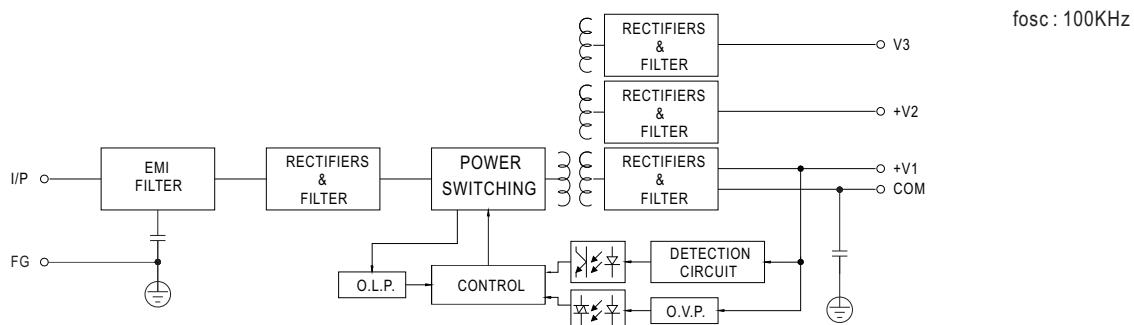
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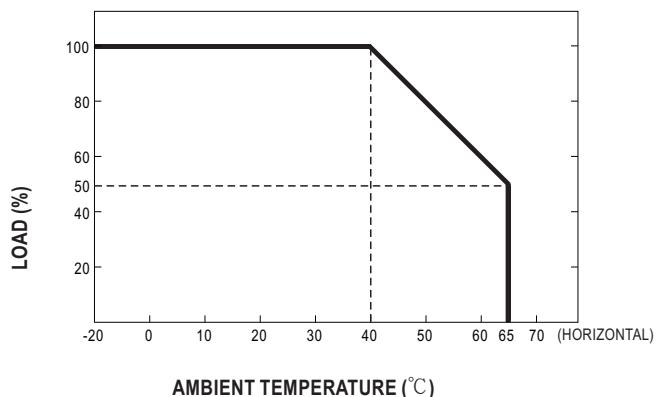
SPECIFICATION

MODEL	RPT-60D			RPT-6003										
OUTPUT	OUTPUT NUMBER	CH1	CH2	CH3	CH1	CH2								
	DC VOLTAGE	5V	24V	12V	3.3V	5V								
	RATED CURRENT	3.5A	1A	0.5A	5A	3A								
	CURRENT RANGE	0.5 ~ 3.85A	0.1 ~ 1.1A	0.1 ~ 0.55A	0.5 ~ 5.5A	0.3 ~ 3.3A								
	RATED POWER	47.5W			39.9W									
	PEAK LOAD(10sec.) Note.2	52.25W			43.89W									
	RIPLPE & NOISE (max.) Note.3	80mVp-p	150mVp-p	80mVp-p	80mVp-p	80mVp-p								
	VOLTAGE TOLERANCE Note.4	+3,-2%	±6.0%	±8.0%	+3,-2%	±8.0%								
	LINE REGULATION	±0.5%	±2.0%	±2.0%	±0.5%	±1.0%								
	LOAD REGULATION	±1.5%	±3.0%	±4.0%	±1.5%	±2.0%								
INPUT	SETUP, RISE TIME	300ms, 15ms/230VAC	300ms, 15ms/115VAC at full load											
	HOLD UP TIME (Typ.)	70ms/230VAC	15ms/115VAC at full load											
	VOLTAGE RANGE	90 ~ 264VAC	127 ~ 370VDC											
	FREQUENCY RANGE	47 ~ 63Hz												
	EFFICIENCY (Typ.)	79%		75%										
PROTECTION	AC CURRENT (Typ.)	1.1A/115VAC	0.7A/230VAC											
	INRUSH CURRENT (Typ.)	COLD START 60A/230VAC	30A/115VAC											
	LEAKAGE CURRENT Note.5	Earth leakage current < 150 μA/264VAC , Touch current < 100 μA/264VAC												
	OVERLOAD	115 ~ 150% rated output power Protection type : Hiccup mode, recovers automatically after fault condition is removed												
	OVER VOLTAGE	CH1: 5.75 ~ 6.75V		CH1: 3.8 ~ 4.45V										
ENVIRONMENT	WORKING TEMP.	-20 ~ +65°C (Refer to "Derating Curve")												
	WORKING HUMIDITY	20 ~ 90% RH non-condensing												
	STORAGE TEMP., HUMIDITY	-40 ~ +85°C, 10 ~ 95% RH non-condensing												
	TEMP. COEFFICIENT	±0.03%/°C (0 ~ 45°C)												
	VIBRATION	10 ~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes												
SAFETY & EMC (Note 9)	OPERATING ALTITUDE Note.6	3000 meters												
	SAFETY STANDARDS	UL62368-1, TUV BS EN/EN62368-1, IEC62368-1, IEC60601-1, EAC TP TC 004, UL ANSI/AAMI ES60601-1, CAN/CSA-C22.2 No. 60601-1:14 - Edition 3 approved, TUV BS EN/EN60601-1 approved												
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	WITHSTAND VOLTAGE	I/P-O/P:4KVAC I/P-FG:2KVAC O/P-FG:1.5KVAC												
	ISOLATION RESISTANCE	I/P-O/P, I/P-FG, O/P-FG:100M Ohms / 500VDC / 25°C / 70% RH												
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		Harmonic current	BS EN/EN61000-3-2	Class A										
	EMC IMMUNITY	Voltage flicker	BS EN/EN61000-3-3	-----										
		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 4, 4KV/Line-FG ; 2KV/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	100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods										
OTHERS	MTBF	677.8K hrs min. MIL-HDBK-217F (25°C)												
	DIMENSION (L*W*H)	101.6*50.8*29mm or 4" * 2" * 1.14" inch												
	PACKING	0.15Kg; 96pcs/15.4Kg/0.89CUFT												
NOTE	1. All parameters NOT specially mentioned are measured at 230VAC input, rated load and 25°C 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 0.1μf & 47μf parallel capacitor. 4. Tolerance : includes set up tolerance, line regulation and load regulation. 5. Touch current was measured from primary input to DC output. 6. The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft). 7. Length of set up time is measured at cold first start. Turning ON/OFF the power supply may lead to increase of the set up time. 8. Heat Sink HS1,HS2 can not be shorted. 9. The power supply is considered a component which will be installed into a final equipment. All the EMC tests are been executed by mounting the unit on a 360mm*360mm metal plate with 1mm of thickness. 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)													
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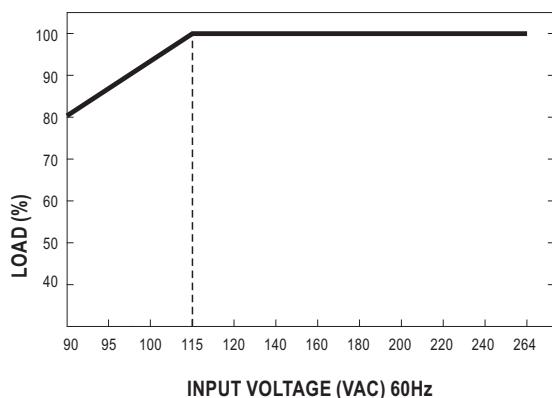
■ Block Diagram



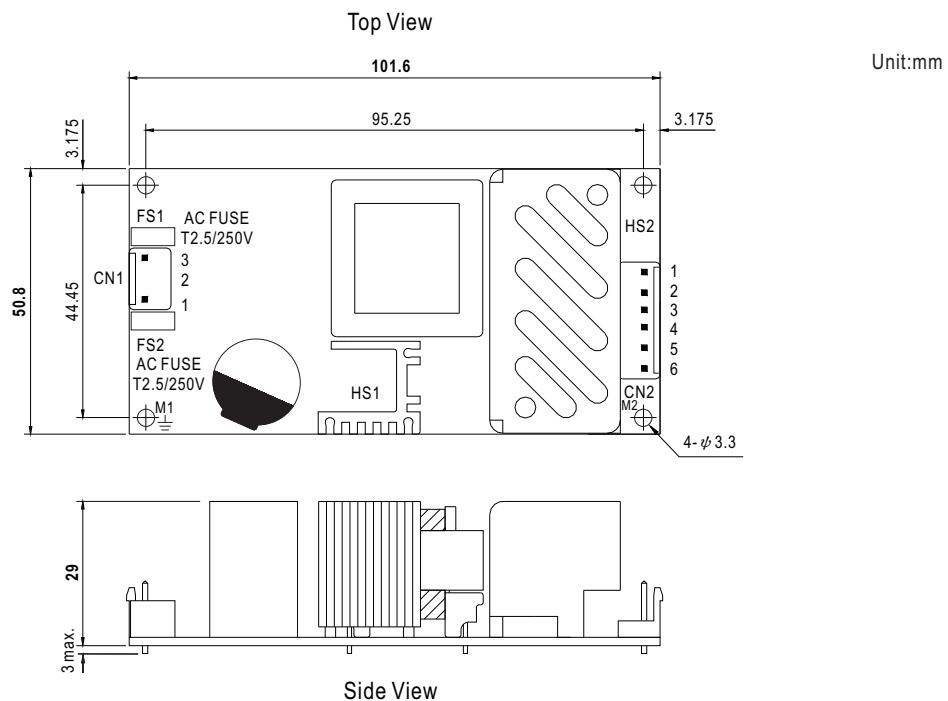
■ Derating Curve



■ Output Derating VS Input Voltage



■ 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	V3		

± : 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.

■ Installation Manual

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