

MTC-E1 Series

15 W AC/DC Switching Power Supply Module – Medical

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- Switching Power Modules for PCB Mounting
- Fully Encapsulated Plastic Case
- Universal Input Range 90-264VAC, 47-440 Hz
- Regulated Output
- Low Ripple and Noise & High Efficiency
- Isolation class II
- UL60601-1 / IEC60601-1 / EC60601-1 Medical Safety Approvals
- 3-Years Product Warranty



Electrical specifications

Model No.	MTC-3.3S -E1	MTC-5S -E1	MTC-7.35S -E1	MTC-9S -E1	MTC-12S -E1	MTC-15S -E1	MTC-24S -E1
Max Output Wattage (W)	9.9W	15W	15W	15W	15W	15W	15W
Output	Voltage (VDC)	3.3V	5V	7.35V	9V	12V	24V
	Current (mA) max.	3000	3000	2040	1666	1250	625
	Voltage set accuracy	±2%	±2%	±2%	±2%	±2%	±2%
	Line regulation (Max.)	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%
	Load regulation (0-100%) (Max.)	1%	1%	1%	1%	1%	1%
	Minimum load	0%	0%	0%	0%	0%	0%
	Efficiency (Typ)	74%	78%	79%	79%	81%	81%

Model No. (Dual Output)	MTC-5D-E1		MTC-12D-E1		MTC-15D-E1		
Max Output Wattage (W)	15W		15W		15W		
Output	Output 1	Output 2	Output 1	Output 2	Output 1	Output 2	
	Voltage (VDC)	+5V	-5V	+12V	-12V	+15V	-15V
	Current (mA) max.	1500	1500	625	625	500	500
	Voltage set accuracy	±2%		±2%		±2%	
	Line regulation (Max.)	0.5%		0.5%		0.5%	
	Load regulation (0-100%) (Max.)	1% (symmetric load)		1% (symmetric load)		1% (symmetric load)	
	Cross regulation	5%		3%		3%	
	Minimum load	10%		10%		10%	
	Efficiency (Typ)	78%		80%		81%	

Model No. (Triple Output)	MTC-5S12D-E1			MTC-5S15D-E1			
Max Output Wattage (W)	15W			15W			
Output	Output 1	Output 2	Output 3	Output 1	Output 2	Output 3	
	Voltage (VDC)	+5V	+12V	-12V	+5V	+15V	-15V
	Current (mA) max.	2000	200	200	2000	150	150
	Voltage set accuracy	±2%	±3%		±2%	±3%	
	Line regulation (Max.)	0.5%	2%		0.5%	2%	
	Load regulation (0-100%) (Max.)	1%	5% (symmetric load)		1%	5% (symmetric load)	
	Cross regulation	1%	5%		1%	5%	
	Minimum load	25%			25%		
	Efficiency (Typ)	78%			78%		

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Input	Voltage	90-264 VAC or 100-375 VDC
	Frequency (Hz)	47-440 Hz
	Current (Full load)	220 mA max. (115 VAC) / 118 mA max. (230 VAC)
	Inrush Current (<2ms)	23 A max. (115 VAC) / 46 A max. (230 VAC)
	Leakage Current	0.1 mA max. (115 VAC) / 0.2 mA max. (230 VAC).
	External fuse (recommend)	2.0 A slow blow type
Output	Maximum Capacitive Load	330-23,000µF depending on model
	Ripple & Noise (Vp-p)	1% of Vout
	Hold-up Time	20 ms min.
	Switching Frequency	132 kHz
Protection	Over Current Protection	Above 105% rated output power
	Over Voltage Protection	Zener diode clamp
	Short Circuit Protection	Hiccup mode, indefinite (automatic recovery)
	OTP	100°C
Isolation	Input-Output (V.AC)	4000V
Environment	Operating Temperature	-40°C...+70°C (Case Temperature max. +95°C)
	Storage Temperature	-40°C...+100°C
	Temperature Coefficient	±0.01%/°C
	Humidity	95% RH
	MTBF	>200 000 – 400 000 h @ 25°C
Physical	Dimension (L x W x H)	2.52 x 1.79 x 0.92 Inches (64.0 x 45.6 x 23.5 mm) Tolerance ±0.5 mm
	Case Material	Plastic resin + Fiberglass (flammability to UL 94V-0)
	Weight	120 g
	Cooling Method	Free air convection
Safety & EMC	Safety Approvals	UL60601-1 / IEC60601-1
	approval	cUL / UL / CB
	EMI / PFI conducted	EN 55011 class B
	EMC Standards	EN60601-1-2
	ESD Susceptibility	EN60601-1-2
	Radiated Susceptibility	EN60601-1-2
	EFT / Burst	EN60601-1-2
	Surge	EN60601-1-2
Conducted Susceptibility	EN60601-1-2	

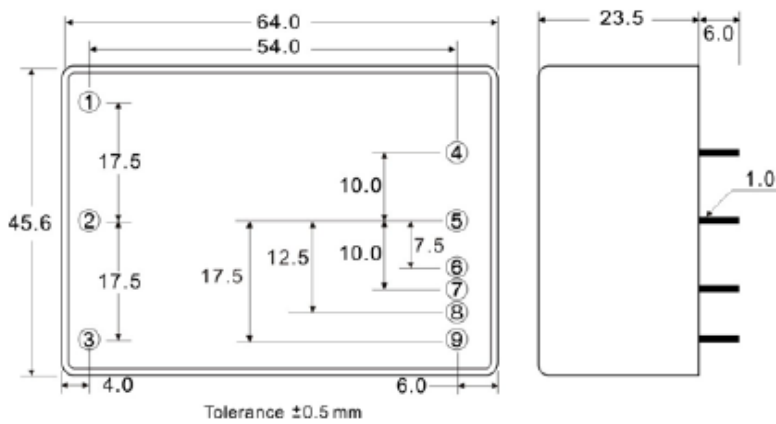
1. All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.
2. Ripple & Noise are measured at 20MHz of bandwidth with 0.1µF & 47µF parallel capacitor.

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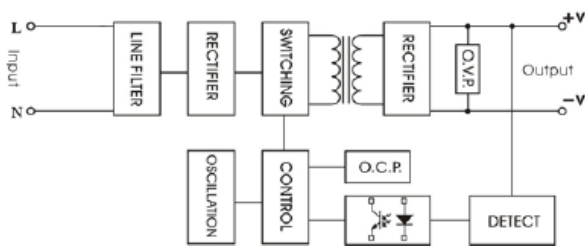
Mechanical Specifications (top view)



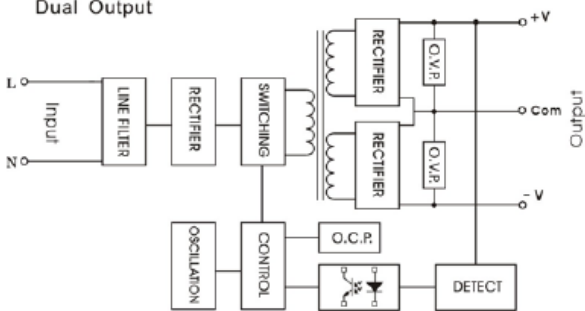
Pin	Single	Dual	Triple
1	NO PIN	NO PIN	NO PIN
2	AC IN (L)	AC IN (L)	AC IN (L)
3	AC IN (N)	AC IN (N)	AC IN (N)
4	-DC OUT	-DC OUT	+5V RTN
5	NO PIN	COMMON	+5V OUT
6	NO PIN	NO PIN	-DC OUT
7	+DC OUT	+DC OUT	NO PIN
8	NO PIN	NO PIN	COMMON
9	NO PIN	NO PIN	+DC OUT

BLOCK DIAGRAM

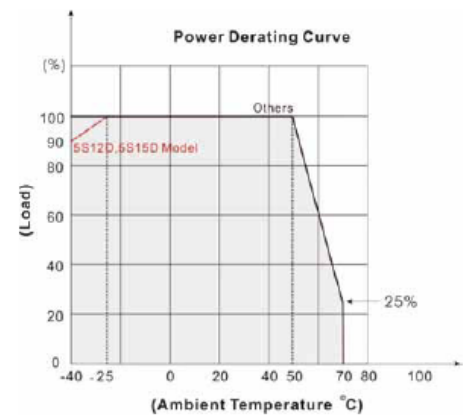
Single Output



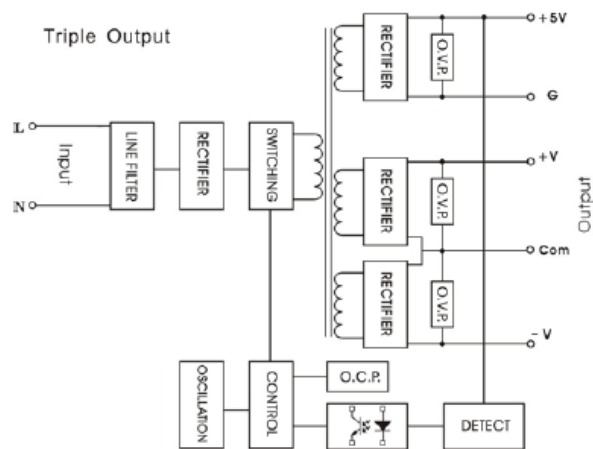
Dual Output



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Triple Output



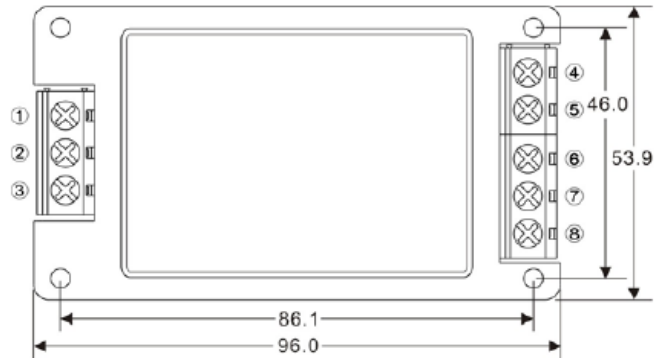
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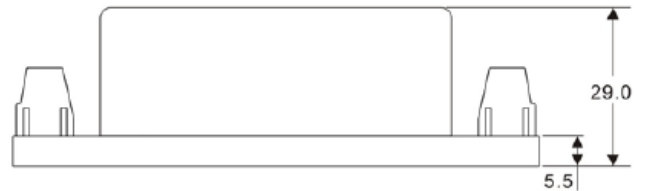
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SCREW TERMINALS

MTC-E1-A2

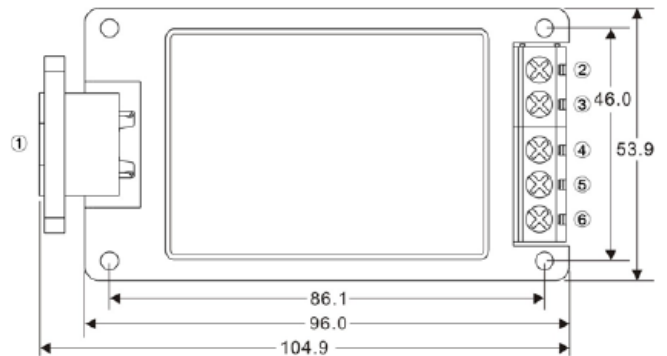


Pin	Single	Dual	Triple
1	AC IN (L)	AC IN (L)	AC IN (L)
2	NO CONN	NO CONN	NO CONN
3	AC IN (N)	AC IN (N)	AC IN (N)
4	NO CONN	NO CONN	+5V RTN
5	-DC OUT	-DC OUT	+5V OUT
6	NO CONN	COMMON	-DC OUT
7	+DC OUT	+DC OUT	COMMON
8	NO CONN	NO CONN	+DC OUT

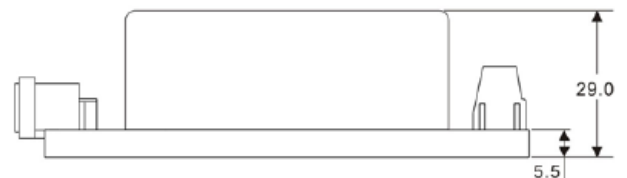


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MTC-E1-A3



Pin	Single	Dual	Triple
1	AC IN	AC IN	AC IN
2	NO CONN	NO CONN	+5V RTN
3	-DC OUT	-DC OUT	+5V OUT
4	NO CONN	COMMON	-DC OUT
5	+DC OUT	+DC OUT	COMMON
6	NO CONN	NO CONN	+DC OUT

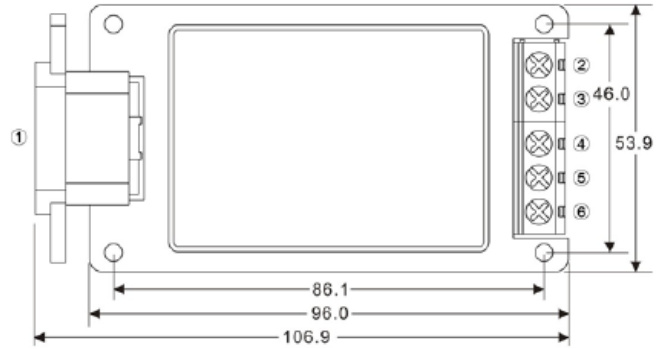


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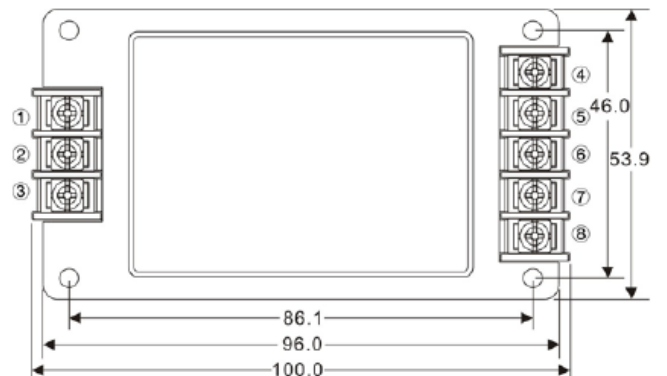
MTC-E1-A4



Pin	Single	Dual	Triple
1	AC IN	AC IN	AC IN
2	NO CONN	NO CONN	+5V RTN
3	-DC OUT	-DC OUT	+5V OUT
4	NO CONN	COMMON	-DC OUT
5	+DC OUT	+DC OUT	COMMON
6	NO CONN	NO CONN	+DC OUT

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MTC-E1-A5



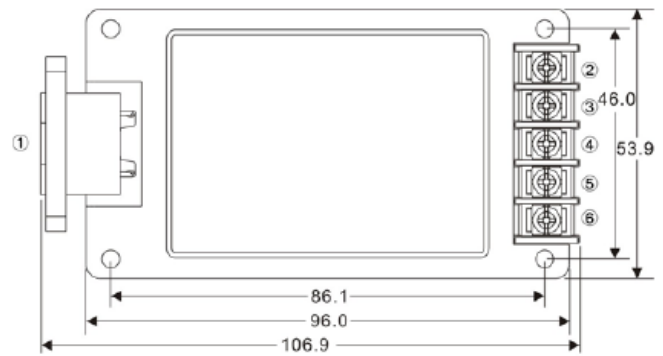
Pin	Single	Dual	Triple
1	AC IN (L)	AC IN (L)	AC IN (L)
2	NO CONN	NO CONN	NO CONN
3	AC IN (N)	AC IN (N)	AC IN (N)
4	NO CONN	NO CONN	+5V RTN
5	-DC OUT	-DC OUT	+5V OUT
6	NO CONN	COMMON	-DC OUT
7	+DC OUT	+DC OUT	COMMON
8	NO CONN	NO CONN	+DC OUT

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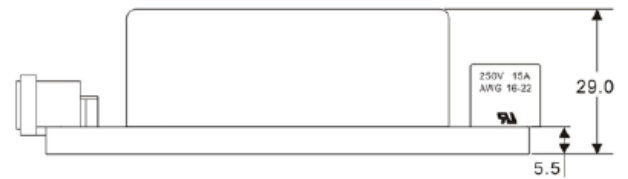
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MTC-E1-A6

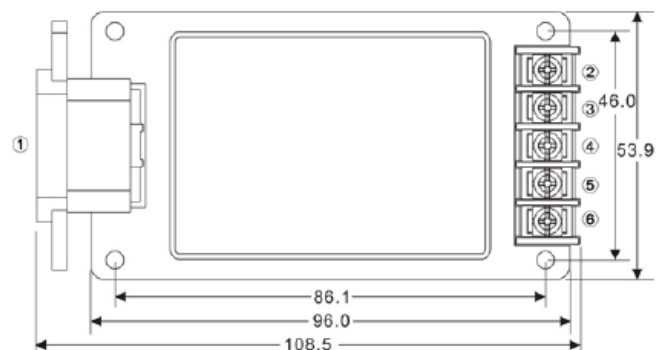


Pin	Single	Dual	Triple
1	AC IN	AC IN	AC IN
2	NO CONN	NO CONN	+5V RTN
3	-DC OUT	-DC OUT	+5V OUT
4	NO CONN	COMMON	-DC OUT
5	+DC OUT	+DC OUT	COMMON
6	NO CONN	NO CONN	+DC OUT



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MTC-E1-A7



Pin	Single	Dual	Triple
1	AC IN	AC IN	AC IN
2	NO CONN	NO CONN	+5V RTN
3	-DC OUT	-DC OUT	+5V OUT
4	NO CONN	COMMON	-DC OUT
5	+DC OUT	+DC OUT	COMMON
6	NO CONN	NO CONN	+DC OUT

