

**MTC-E1 SERIES**
**15 Watts**
**KEY FEATURES**

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


**ELECTRICAL SPECIFICATIONS**

Model No. ( Single Output )	MTC-3.3S -E1	MTC-5S -E1	MTC-7.36S -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 (V.DC.)	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 (V.DC.)	+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 (10-100%) (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%	

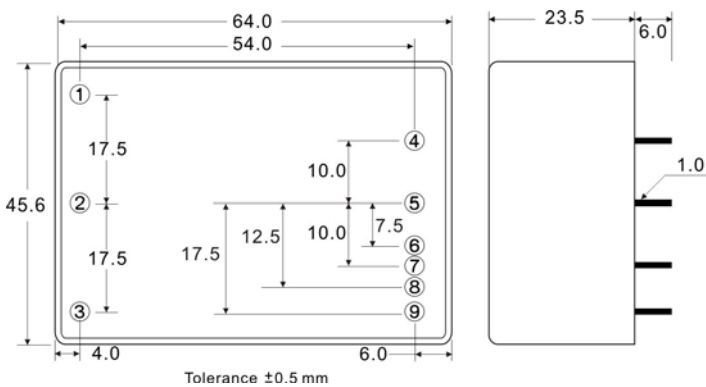
Model No. ( Triple Output )	MTC-5S12D-E1			MTC-5S15D-E1			
Max output wattage ( W )	15W			15W			
Output		Output 1	Output 2	Output 3	Output 1	Output 2	Output 3
	Voltage (V.DC.)	5	+12	-12	5	+15	-15
	Current (mA) max	2000	200	200	2000	150	150
	Voltage set accuracy	±2%		±3%	±2%		±3%
	Line regulation (Max..)	0.5%		2%	0.5%		2%
	Load regulation (10-100%) (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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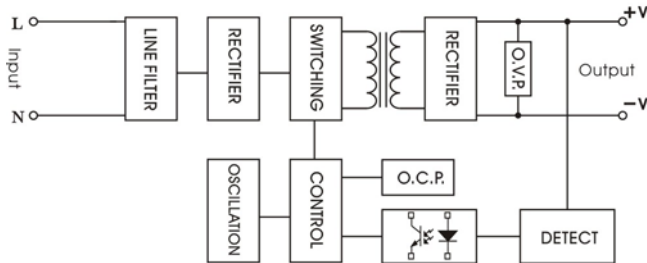
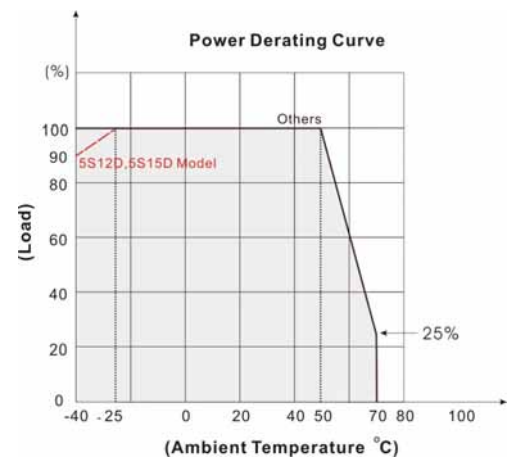
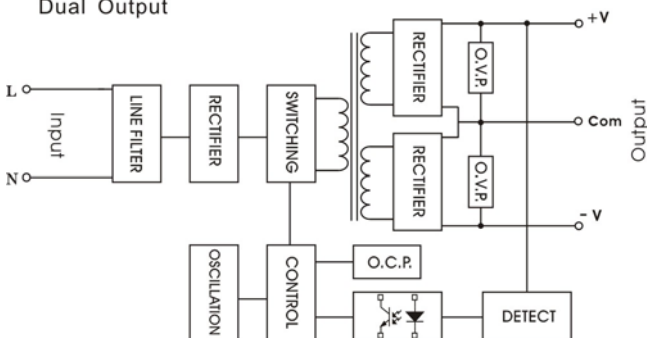
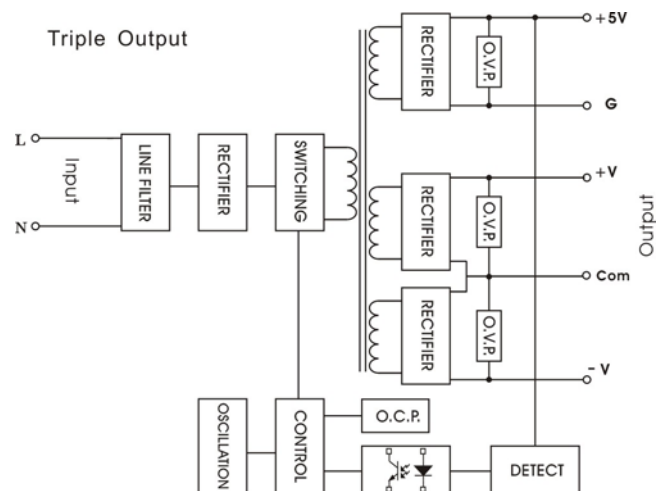
Input	Voltage	90-264 VAC or 100-375 VDC
	Frequency (Hz)	47-440 Hz
	Current (Full load)	220 mA max. (115 VAC) / 118 mA max. (230 VAC)
	Inrush current (<2ms)	23 A max. (115 VAC) / 46 A max. (230 VAC)
	Leakage Current	0.1 mA max. (115 VAC) / 0.2 mA max. (230 VAC)
	External fuse (recommend)	2.0 A slow blow type
Output	Maximum capacitive load	330-23,000 $\mu$ F depending on model
	Ripple & Noise	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 h~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 $\pm$ 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	

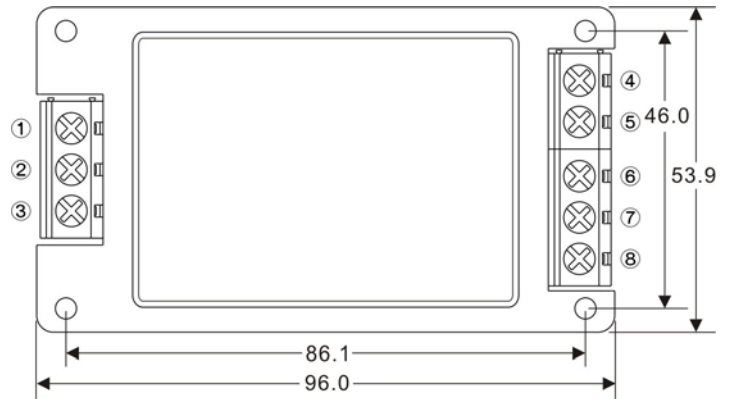
1. All specifications valid at nominal input voltage, full load and +25°C after warm-up time unless otherwise stated.

2. Ripple & Noise are measured at 20MHz of bandwidth with 0.1 $\mu$ F & 47 $\mu$ F parallel capacitor.

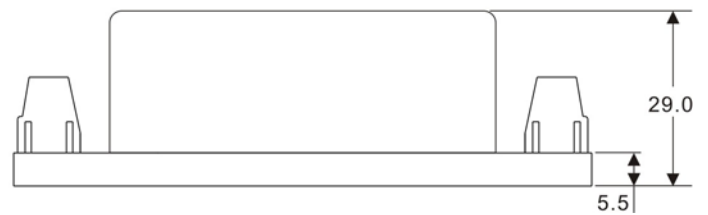
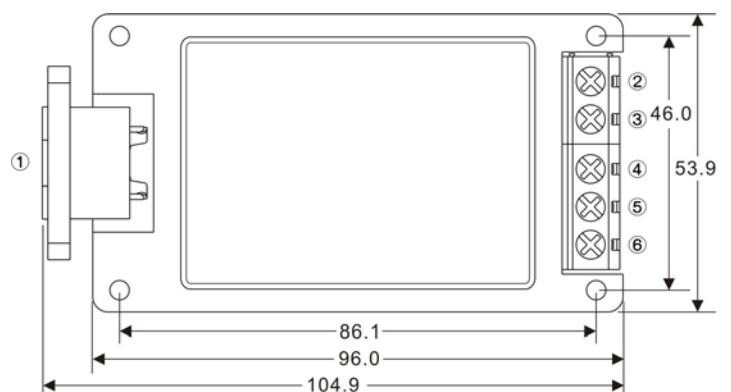
**MECHANICAL DIMENSION (Top View)**


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

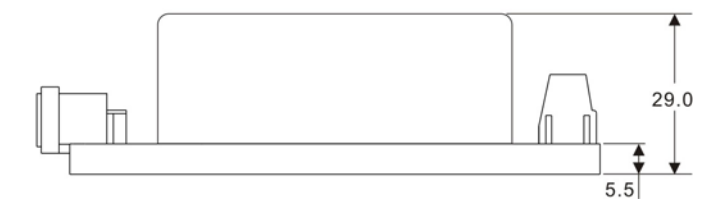
**BLOCK DIAGRAM**
**Single Output**

**DERATING**

**Dual Output**

**Triple Output**


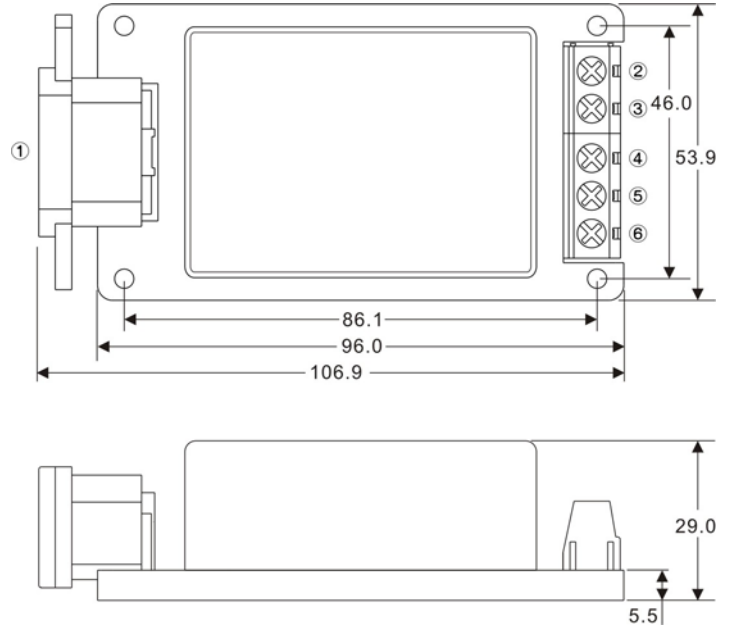
**MTC-E1 SERIES**
**15 Watts**
**SCREW TERMINAL**
**MTC-E1-A2**


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

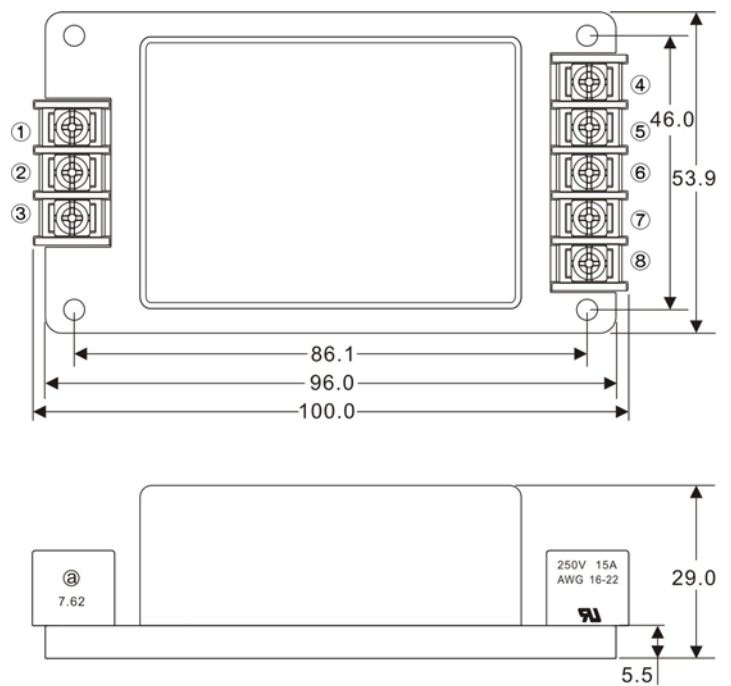

**MTC-E1-A3**


PIN#	Single	Dual	Triple
1	AC IN	AC IN	AC IN
2	NO CONNECT	NO CONNECT	+5V RTN
3	-DC OUT	-DC OUT	+5V OUT
4	NO CONNECT	COMMON	-DC OUT
5	+DC OUT	+DC OUT	COMMON
6	NO CONNECT	NO CONNECT	+DC OUT

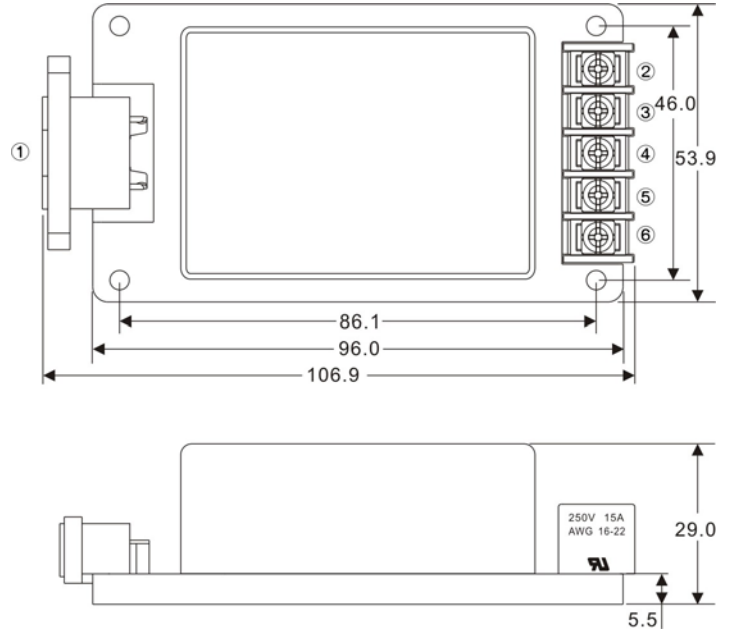


**MTC-E1 SERIES**
**15 Watts**
**MTC-E1-A4**


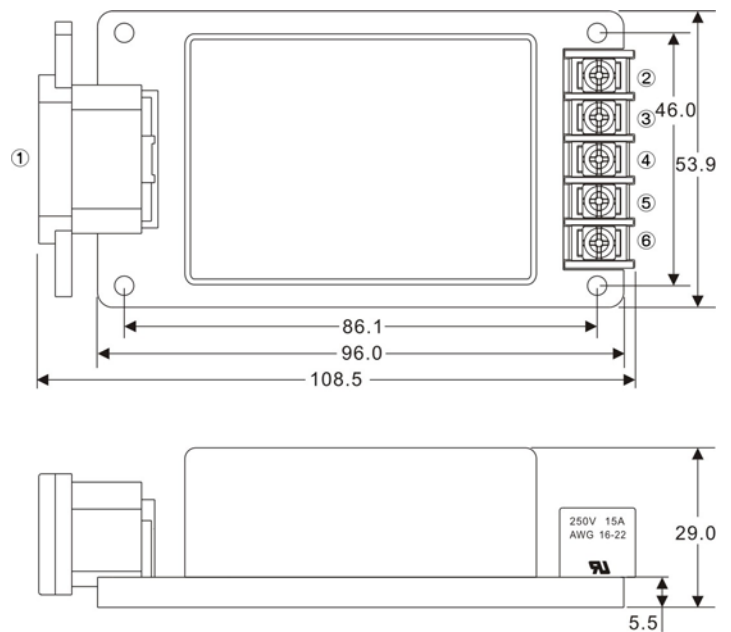
PIN#	Single	Dual	Triple
1	AC IN	AC IN	AC IN
2	NO CONNECT	NO CONNECT	+5V RTN
3	-DC OUT	-DC OUT	+5V OUT
4	NO CONNECT	COMMON	-DC OUT
5	+DC OUT	+DC OUT	COMMON
6	NO CONNECT	NO CONNECT	+DC OUT

**MTC-E1-A5**


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

**MTC-E1 SERIES**
**15 Watts**
**MTC-E1-A6**


PIN#	Single	Dual	Triple
1	AC IN	AC IN	AC IN
2	NO CONNECT	NO CONNECT	+5V RTN
3	-DC OUT	-DC OUT	+5V OUT
4	NO CONNECT	COMMON	-DC OUT
5	+DC OUT	+DC OUT	COMMON
6	NO CONNECT	NO CONNECT	+DC OUT

**MTC-E1-A7**


PIN#	Single	Dual	Triple
1	AC IN	AC IN	AC IN
2	NO CONNECT	NO CONNECT	+5V RTN
3	-DC OUT	-DC OUT	+5V OUT
4	NO CONNECT	COMMON	-DC OUT
5	+DC OUT	+DC OUT	COMMON
6	NO CONNECT	NO CONNECT	+DC OUT