

### DESCRIPTION

The TM300 series comprising single and multiple output models for 200 to 300 watts of continuous output power is specially designed for medical applications. They operate at 90 to 264VAC input voltage without the need of a selector strap. All auxiliary outputs are with magnetic amplifier to keep regulation. The units are constructed on a printed circuit board with a U-bracket for mechanical support and heat sinking. A cover-and-fan assembly can be added during manufacturing.

### FEATURES

- EN61000-3-2 class A and D compliant
- Power Factor 0.98 typical
- Overvoltage protection
- Short-circuit protection
- Power Fail Detect (PFD)
- 100% burn-in at full rated load
- Remote sense on output #1 and output #2
- Remote inhibit – TTL high disables output
- Compliant with RoHS requirements

### INPUT SPECIFICATIONS

Input voltage :	90 to 264VAC
Input frequency:	47 to 63Hz
Input current :	4.7A (rms) for 115VAC 2.3A (rms) for 230VAC
Earth leakage current:	100µA max. @ 115VAC, 60Hz 220µA max. @ 230VAC, 50Hz

### OUTPUT SPECIFICATIONS

Output voltage/current :	See rating chart
Total output power :	See rating chart
Ripple and Noise :	2% peak to peak maximum
Overvoltage protection :	Provided on output #1 only; set at 115–140% of its nominal output voltage
Overcurrent protection :	All outputs protected to short circuit conditions
Temperature coefficient :	All outputs $\pm 0.04\%/^{\circ}\text{C}$ maximum
Transient response :	Maximum excursion of 4% or better on all models, recovering to 1% of final value within 500µs after a 25% step load change
PFD signal :	TTL logic high for normal operation and TTL logic low upon loss of input power. This signal appears at least 1ms prior to master output dropping 5% below its nominal value. This signal also provides a minimum delay of 100ms after master output is within regulation.
Remote inhibit :	Requires an external TTL high level signal to inhibit outputs for standard models.

### TM300 SERIES

CE (LVD)

RoHS



### Safety Standard Approvals :



UL 60601-1  
CSA C22.2 No. 601.1



TÜV EN60601-1

### ENVIRONMENTAL SPECIFICATIONS

Operating temperature :	0°C to +70°C
Storage temperature :	-40°C to +85°C
Relative humidity :	5% to 95% non-condensing
Derating :	Derate from 100% at +50°C linearly to 50% at +70°C 200/250/300 watts continuous output power at 35 CFM forced air cooling or 100/125/150 watts at convention cooling
Cooling :	

### GENERAL SPECIFICATIONS

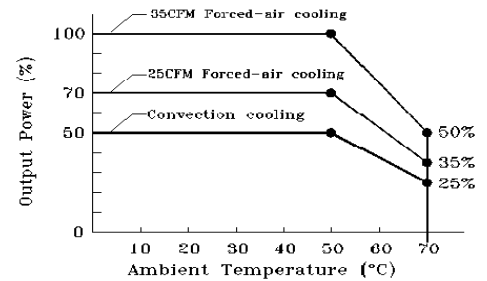
Switching frequency :	KHz $\pm 10\text{KHz}$
Power factor :	0.98 typical
Efficiency :	70% minimum on all models
Hold-up time :	12 msec minimum at 110VAC
Line regulation :	$\pm 0.2\%$ maximum at full load
Inrush current :	30 amps @ 115VAC or 60 amps @ 230VAC, at 25°C cold start
Withstand voltage :	4000VAC from input to output 1500VAC from input to ground 500VAC from output to ground
MTBF :	300,000 hours minimum at full load at 25°C ambient, calculated per MIL-HDBK- 217F
EMC Performance (EN60601-1-2: 2001)	
EN55011:	Class B conducted, Class B radiated
EN61000-3-2:	Harmonic distortion, Class A and D
EN61000-3-3:	Line flicker
EN61000-4-2:	ESD, $\pm 8\text{KV}$ air and $\pm 6\text{KV}$ contact
EN61000-4-3:	Radiated immunity, 3V/m
EN61000-4-4:	Fast transient/burst, $\pm 2\text{KV}$
EN61000-4-5:	Surge, $\pm 1\text{KV}$ diff, $\pm 2\text{KV}$ com.
EN61000-4-6:	Conducted immunity, 3Vrms
EN61000-4-8:	Magnetic field immunity, 3A/m
EN61000-4-11:	Voltage dips, 30% reduction for 500ms, 60% reduction for 100ms and $>95\%$ reduction for 10ms

## OUTPUT VOLTAGE/CURRENT RATING CHART

Product No.	Output # 1				Output # 2				Output # 3				Output # 4				Maximum Output Power (5)	
	Vnom.	Imin.	I <sub>max</sub>	Tol.	Vnom.	Imin.	I <sub>max</sub>	Tol.	Vnom.	Imin.	I <sub>max</sub>	Tol.	Vnom.	Imin.	I <sub>max</sub>	Tol.		
TM300-S3.3	3.3V	3.0A	60A	3%														200W
TM300-S5.1	5.1V	3.0A	60A	2%														300W
TM300-S12	12V	1.2A	25A	2%														300W
TM300-S15	15V	1.0A	20A	2%														300W
TM300-S24	24V	0.6A	12.5A	2%														300W
TM300-S30	30V	0.5A	10A	2%														300W
TM300-S48	48V	0.5A	6.3A	2%														300W
TM300-Q403	3.3V	3.0A	35A	3%	5.1V	2.0A	22A	2%	12V	0A	4A	4%	12V	0A	4A	4%		250W
TM300-Q40	5.1V	2.0A	35A	2%	12V	1.0A	10A	2%	12V	0A	4A	4%	5.1V	0A	4A	4%		300W
TM300-Q41	5.1V	2.0A	35A	2%	15V	0.8A	8A	2%	15V	0A	4A	4%	24V	0A	2.5A	4%		300W
TM300-Q42	5.1V	2.0A	35A	2%	12V	1.0A	10A	2%	12V	0A	4A	4%	12V	0A	4A	4%		300W
TM300-Q45	5.1V	2.0A	35A	2%	12V	1.0A	10A	2%	12V	0A	4A	4%	24V	0A	2.5A	4%		300W
TM300-Q46	5.1V	2.0A	35A	2%	12V	1.0A	10A	2%	12V	0A	4A	4%	15V	0A	4A	4%		300W
TM300-Q47	5.1V	2.0A	35A	2%	24V	0.5A	5A	2%	12V	0A	4A	4%	12V	0A	4A	4%		300W
TM300-Q48	5.1V	2.0A	35A	2%	24V	0.5A	5A	2%	5.1V	0A	4A	4%	15V	0A	4A	4%		300W
TM300-Q49	5.1V	2.0A	35A	2%	12V	1.0A	10A	2%	5.1V	0A	4A	4%	24V	0A	2.5A	4%		300W
TM300-Q410	24V	0.5A	6.3A	2%	12V	1.0A	10A	2%	5.1V	0A	4A	4%	12V	0A	4A	4%		300W
TM300-Q411	24V	0.5A	6.3A	2%	12V	1.0A	10A	2%	5.1V	0A	4A	4%	24V	0A	2.5A	4%		300W
TM300-Q412	24V	0.5A	6.3A	2%	12V	1.0A	10A	2%	12V	0A	4A	4%	12V	0A	4A	4%		300W
TM300-Q413	24V	0.5A	6.3A	2%	24V	0.5A	5A	2%	5.1V	0A	4A	4%	15V	0A	4A	4%		300W
TM300-Q414	24V	0.5A	6.3A	2%	24V	0.5A	5A	2%	12V	0A	4A	4%	12V	0A	4A	4%		300W

### NOTES:

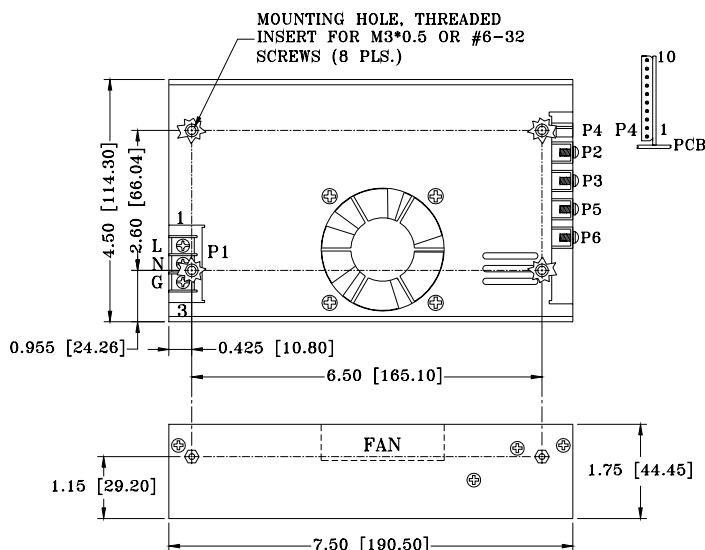
1. Add suffix "C" for enclosed format with option fan control, e.g. TM300-Q45C.
2. All outputs are floating. It can be connected externally for positive or negative output.
3. Output #1 & #2 can be adjusted within  $\pm 5\%$  of their nominal voltage.
4. Output #3 & #4 can be adjusted within  $\pm 15\%$  of their nominal voltage.
5. 300 watts for "C" version with cover-and-fan assembly. 150 watts for U-bracket version without moving air (maximum current of output #1 & #2 derated to 50%), or 300 watts with 35 CFM forced air provided by user.
6. TM300-S5.1 is rated 200 watts with 35 CFM forced air cooling or 100 watts convection cooled. TM300-Q403 is rated 250 watts with 35 CFM forced air cooling (maximum current of output #1 & #2 derated to 50%) or 125 watts convection cooled.
7. Single output models may be operated at no-load. At no-load, output voltage tolerance increases to 10%.



DERATING CURVE

## MECHANICAL SPECIFICATIONS

### Single Output Models

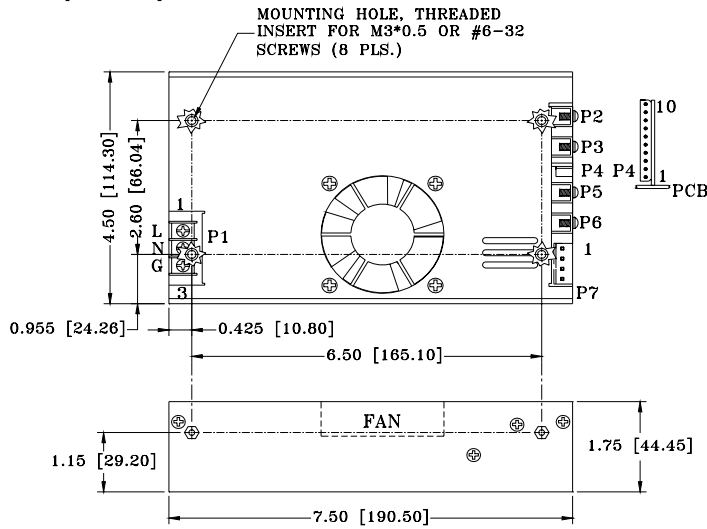


### NOTES:

1. Dimensions shown in inch [mm]
2. Tolerance 0.02 [0.5] maximum
3. Input connector P1 is Dinkle DT-35-B01W-03 screws are M3, Nickel plated.
4. Connector P4 mates with Molex housing 50-37-5103 and pins 5263.
5. Connectors P2, P3, P5 and P6: M3\*0.5 screw connections
6. Weight: 1.20 kgs. (2.64 lbs.) approx.
7. DC fan on P4 is rated at 12V/0.1A.

## MECHANICAL SPECIFICATIONS

### Multiple Output Models



#### NOTES:

- Dimensions shown in inch [mm]
- Tolerance 0.02 [0.5] maximum
- Input connector P1 is Dinkle DT-35-B01W-03 screws are M3, Nickel plated.
- Connector P4 mates with Molex housing 50-37-5103 and pins 5263.
- Connectors P2, P3, P5 and P6: M3\*0.5 screw connections
- Output connector P7 mates with Molex housing 09-50-3041 and Molex 2878 series crimp terminal.
- Weight: 1.24 kgs. (2.73 lbs.) approx.
- DC fan on P4 is rated at 12V/0.1A.

## PIN CHART

### Single Output Models

Product No.	CONN PIN	P1 (AC)			P2	P3	P4				
		1	2	3			1	2	3	4	
TM300-S5.1 TM300-S12 TM300-S24 TM300-S48	TM300-S3.3 TM300-S15 TM300-S30	LIVE	NEUTRAL	GROUND	+VO1	+VO1	SIGNAL GROUND (-VO1)	+S (VO1)	-S (VO1)	PFD	

Product No.	CONN PIN	P4						P5	P6	P7			
		5	6	7	8	9	10			1	2	3	4
TM300-S5.1 TM300-S12 TM300-S24 TM300-S48	TM300-S3.3 TM300-S15 TM300-S30	INHIBIT	N.C.	N.C.	N.C.	0V (FAN)	FAN	-VO1	-VO1	VOID	VOID	VOID	VOID

### Multiple Output Models

Product No.	CONN PIN	P1 (AC)			P2	P3	P4				
		1	2	3			1	2	3	4	
TM300-Q403 TM300-Q41 TM300-Q45 TM300-Q47 TM300-Q49 TM300-Q411 TM300-Q413	TM300-Q40 TM300-Q42 TM300-Q46 TM300-Q48 TM300-Q410 TM300-Q412 TM300-Q414	LIVE	NEUTRAL	GROUND	+VO1	-VO1	SIGNAL GROUND (-VO1)	+S (VO1)	-S (VO1)	PFD	

Product No.	CONN PIN	P4						P5	P6	P7			
		5	6	7	8	9	10			1	2	3	4
TM300-Q403 TM300-Q41 TM300-Q45 TM300-Q47 TM300-Q49 TM300-Q411 TM300-Q413	TM300-Q40 TM300-Q42 TM300-Q46 TM300-Q48 TM300-Q410 TM300-Q412 TM300-Q414	INHIBIT	N.C.	+S (VO2)	-S (VO2)	0V (FAN)	FAN	+VO2	-VO2	+VO3	-VO3	+VO4	-VO4