

# TPMPU31 SERIES

30W Desk Top Type  
Medical Power Supplies

## Features:

- Wide Operating Voltage 90 to 264 VAC, 47 to 63 Hz
- IEC-320-C14 Input Inlet
- Single to Triple Output
- Over Voltage and Over Load protection
- ANSI/AAMI ES 60601-1: 2005(UL/cUL 3rd Edition)  
EN 60601-1:2006 (TUV/T-mark 3rd Edition)
- Input to Output : 2MOPP
- Energy Star 2.0, Efficiency level V
- Class I
- 3 year warranty



## Electrical Characteristics:

Vin	Safety Approvals Input Voltage Range	100~240VAC
	Operate Voltage Range	90~264VAC
fin	Input Frequency	47~63Hz
Po	Output Power Range	See rating chart
Vo	Output Voltage Range	See rating chart
Io	Output Current Range	See rating chart
Iil	Input Current (Low Line)	Io=Full load, Vin=100VAC 0.9A
	Input Current (High Line)	Io=Full load, Vin=240VAC 0.34A
Ir	Low Line Inrush Current	Io=Full load, 25°C, Cool start, Vin=115VAC 14A (max.)
	High Line Inrush Current	Io=Full load, 25°C, Cool start, Vin=230VAC 28A (max.)
Eff	Efficiency	Io=Full Load, Vin=230VAC 67.6~85%
REG-i	Line Regulation	Io=Full Load 1% (max.)
REG-o	Load Regulation	Vin=230VAC 2~10%
OVP	Over Voltage Protection	112~132%
OCP	Over Current Protection	110~150%
Ttr	Time of Transient Response	Io=Full Load to Half Load, Vin=100VAC 4mS (max.)
Th	Hold-Up Time	Io=Full Load, Vin=110VAC 12mS (min.)
Ts	Start Up Time	Io=Full Load, Vin=100VAC 0.3~2S
Vp-p	Ripple & Noise(Peak to Peak)	Full Load, Vin=90VAC 1~2% (max.)
Ilk	Safety Ground Leakage Current	Vin=240VAC/60Hz 0.1mA (max.)
TC	Temperature Coefficient	All output ±0.04%/°C
OA	Operating Altitude	Up to 3000m
Pno	No-Load Power Consumption	No load, Vin=230VAC See rating chart
Vps	Dielectric Withstanding Voltage	Primary to secondary 6802VDC (min.)
Vpg	Dielectric Withstanding Voltage for Primary to PE	Primary to PE 2121VDC (min.)
Ris	Isolation Resistance	Test Voltage=500VDC 50MΩ (min.)

**Note:** The Ripple & Noise which is under 3.3VDC at 2% max.

The specifics for testing the energy efficiency of TPMPU31 Series are outlined in a separate document titled "Test Method for Calculating the Energy Efficiency of Single-Voltage External Ac-Dc and Ac-Ac Power Supplies (August 11, 2004)," which is available on the ENERGY STAR Website.

## Environmental

To	Operating Temperature	See derating curve
Ts	Storage Temperature	-40~85°C
Ho	Operating Humidity	0~95%
Hr	Storage Humidity	0~95%
MTBF	Operating Temperature at 25°C, Calculated per MIL-HDBK-217F	0.1M Hrs (min.)
Pd	Derate linearly from 100% load at 50°C to 50% load at 70°C	

## Application:

- Blood Pressure system
- Portable medical devices
- ECG machine

## Safety Approvals:

c  us  



**RoHS**  
2002/95/EC  
COMPLIANT



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## Output Voltage And Current Rating Chart ( Single Output ) :

Model Number	Output Voltage	Output Current	Total Regulation	Max. Output Power	Pno (max.)
TPMPU31-101	3 ~ 5 VDC	6.66 ~ 4.00 A	7%	20W	0.3W
TPMPU31-102	5 ~ 6 VDC	5.00 ~ 4.16 A	5%	25W	0.3W
TPMPU31-103	6 ~ 8 VDC	4.16 ~ 3.12 A	5%	25W	0.3W
TPMPU31-104	8 ~ 11 VDC	3.75 ~ 2.72 A	4%	30W	0.3W
TPMPU31-105	11 ~ 13 VDC	2.72 ~ 2.30 A	3%	30W	0.3W
TPMPU31-106	13 ~ 16 VDC	2.30 ~ 1.87 A	3%	30W	0.3W
TPMPU31-107	16 ~ 21 VDC	1.87 ~ 1.42 A	3%	30W	0.3W
TPMPU31-108	21 ~ 27 VDC	1.42 ~ 1.11 A	2%	30W	0.3W
TPMPU31-109	27 ~ 33 VDC	1.11 ~ 0.90 A	2%	30W	0.3W
TPMPU31-110	33 ~ 40 VDC	0.90 ~ 0.75 A	2%	30W	0.3W

## Output Voltage And Current Rating Chart ( Multi Output ) :

Model Number	Output #1				Output #2				Output #3				Max. Output Power	Pno (max.)
	Vonom	Iomin	Iomax	Regmax	Vonom	Iomin	Iomax	Regmax	Vonom	Iomin	Iomax	Regmax		
TPMPU31-200	+3.3V	0.30A	3.0A	7%	+12V	0.13A	1.3A	5%					25W	3W
TPMPU31-201	+5V	0.30A	3.0A	5%	+12V	0.13A	1.3A	5%					30W	3W
TPMPU31-202	+5V	0.30A	3.0A	5%	+15V	0.10A	1.0A	5%					30W	3W
TPMPU31-203	+5V	0.30A	3.0A	5%	+24V	0.07A	0.7A	5%					30W	3W
TPMPU31-204	+3.3V	0.30A	3.0A	7%	+5V	0.16A	1.6A	5%					17.9W	3W
TPMPU31-209	+12V	0.20A	2.0A	5%					-12V	0.05A	0.5A	10%	30W	3W
TPMPU31-210	+15V	0.15A	1.5A	5%					-15V	0.05A	0.5A	10%	30W	3W
TPMPU31-215	+5V	0.30A	3.0A	5%					-24V	0.10A	1.0A	10%	30W	3W
TPMPU31-301	+5V	0.25A	2.5A	5%	+12V	0.11A	1.1A	5%	-5V	0.05A	0.5A	10%	25W	3W
TPMPU31-302	+5V	0.25A	2.5A	5%	+12V	0.10A	1.0A	5%	-12V	0.05A	0.5A	10%	30W	3W
TPMPU31-303	+5V	0.25A	2.5A	5%	+15V	0.10A	1.0A	5%	-15V	0.05A	0.5A	10%	30W	3W
TPMPU31-304	+5V	0.30A	3.0A	5%	+24V	0.10A	1.0A	5%	-24V	0.05A	0.5A	10%	30W	3W
TPMPU31-305	+5V	0.30A	3.0A	5%	+24V	0.10A	1.0A	5%	-12V	0.05A	0.5A	10%	30W	3W
TPMPU31-306	+3.3V	0.30A	3.0A	7%	+12V	0.11A	1.1A	5%	-5V	0.05A	0.5A	10%	25W	3W

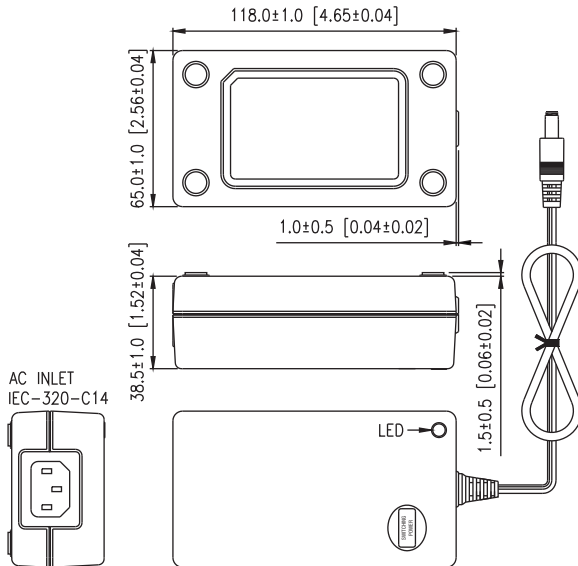
TPMPU31-101~104 are required to use AWG#16 / 4FT output cable.

TPMPU31-105~108 are required to use AWG#18 / 6FT output cable.

TPMPU31-109~110 are required to use AWG#20 / 6FT output cable.

The regulation and efficiency will be changed by modified output cable.

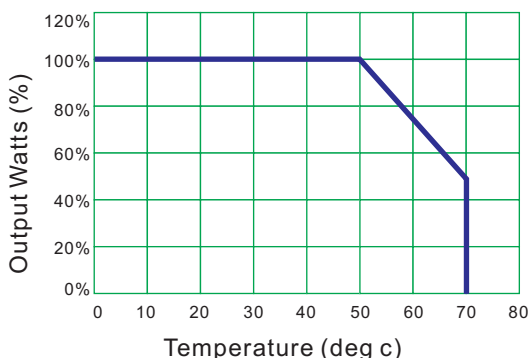
## Mechanical Specifications:



### Note:

1. Dimensions are shown in mm.
2. Weight: 400~460gs approx.
3. Optional output connector:  
See page Appendix.

## Derating Curve :



1. Operating Temperature: 0 to 70°C
2. Derate linearly from 100% load at 50°C to 50% load at 70°C

