60W AC/DC Switching Power Supply
Model: TN19-0060-XX



FEATURES

- Universal 90 - 264VAC input voltage.
- Operating ambient temperature range: -20°C to +70°C.
- Output short circuit, over-current, over-voltage protection.
- 60W with natural air convention cooled.
- High efficiency up to 89%.
- Operating altitude up to 5000m.
- 2" x 4" x 1.06" with low profile size.
- Safety according to IEC 62368-1

Models & Ratings

Model No.	Cooling Method	Output Power (W)	Output Voltage (V)	Output Current (A)	Efficiency (%) Typ.
TN19-0060-12	Convention Cooling	60	12	5	87
TN19-0060-24			24	2.5	88
TN19-0060-48			48	1.25	89

Efficiency
Efficiency is measured at 100% load, 230VAC input, 25°C ambient temperature, after a 15-minute warm-up.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	AC input		90	100 - 240	264	VAC
Input Frequency	-		47	50 - 60	63	Hz
Input Current	100VAC		-	-	1.4	Arms
Inrush Current	115VAC	At 25°C, Cold start	-	-	30	A peak
	230VAC		-	-	60	
Earth Leakage Current	264VAC		-	-	0.5	mA

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage	See Models and Ratings table	12	-	48	VDC
Output Accuracy	-	-	±5	-	%
Minimum Load	-	0	-	-	A
Line Regulation	100% load	-	±1	-	%
Load Regulation	Output from 0 - 100% load	-	±1	-	%
Ripple & Noise	20MHz bandwidth	-	-	1	%
Turn On Time	115VAC/60Hz rated load from input AC turn on	-	-	3	S
Rise Time	10% to 90% of output voltage	-	-	100	mS
Hold Up Time	115VAC 100% load	16	-	-	mS
	230VAC 100% load	40			mS
Short Circuit Protection	Output shut down and auto recovery	-	-	-	-
Over Current Protection	Output shut down and auto recovery (+12v)	-	-	10	A
	Output shut down and auto recovery (+24V)			5	
	Output shut down and auto recovery (+48)v			3	
Over Voltage Protection	Output shut down and latch off, manual reset (Re-power on)	110	-	135	%

Ripple & Noise

Please refer to Fig. A for measurement of Vo, line & load regulation and ripple voltage, ripple and noise is the maximum peak-to-peak voltage value measured at the output with 20MHz bandwidth, at rated line voltage and output load, and with a 47μF electrolytic capacitor(C2) in parallel with a 0.1μF ceramic capacitor(C1).

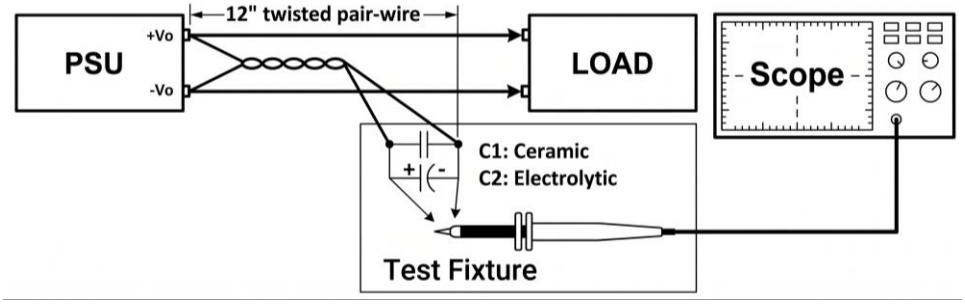


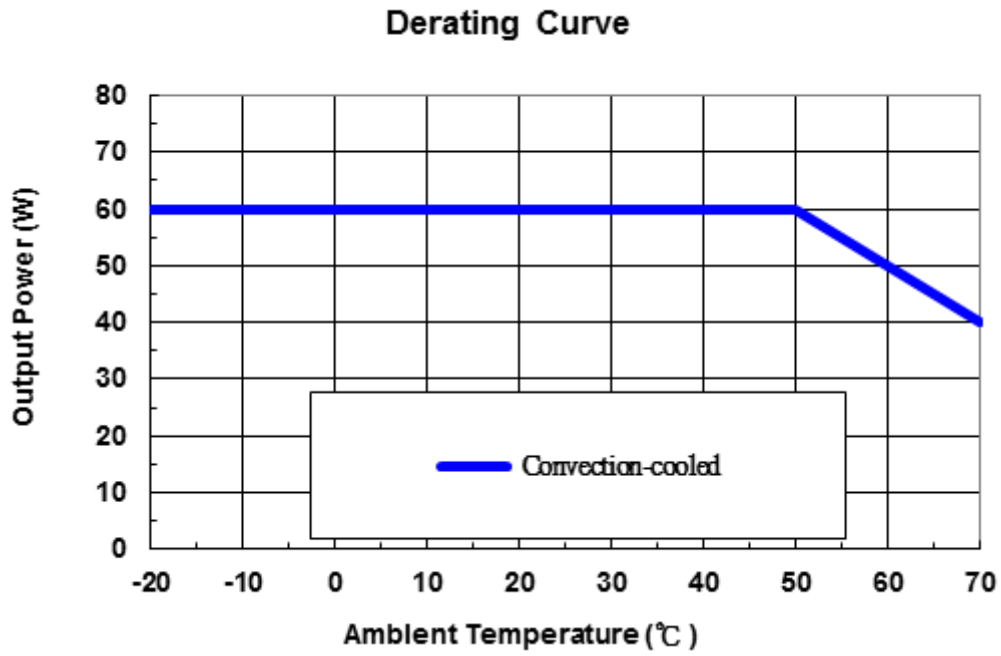
Fig. A

General Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Operating Temperature	Refer to power de-rating curve		-20	-	+70	°C
Storage Temperature	Non-operation		-40	-	+85	
Operating Humidity	Non-condensing		0	-	90	%
Storage Humidity			0	-	90	
Power De-rating	Operating Temperature	-20°C to +50°C	-	-	-	W/°C
		+50°C to +70°C	1	-	-	
Altitude	Operating altitude		-	-	5000	meter
Dielectric Strength Test	Input - Output		3000	-	-	VAC
	Input - FG		1800	-	-	
Insulation Resistance	Input– FG, 500VDC,		50	-	-	MΩ
Mean Time Between Failure	At 115VAC/50Hz, 100% load, 25°C, Telcordia SR332, issue 4.		1,000,000	-	-	Hrs.
Vibration	Operating：0.5G, 10 - 55Hz, 15 minutes per cycle, 30 minutes for each X, Y and Z axis.					
Shock	Non-operating (package)：20G, half sin-wave, each per axis.					

Power De-rating

The output power de-rates above 50°C @1 watts per °C. PSU could start up at -20℃ to 0℃, but some specification parameters may not be met below 0°C.



Other :
All specifications typical at 230Vac, 100% load 25 °C, unless otherwise noted.

Safety Approvals

Safety Standard	All models	UL/cUL UL 62368-1, 3rd Edition CB IEC 62368-1, 3rd Edition TUV IEC 62368-1, 3rd Edition
Safety Class	-	Class I

Electromagnetic Compatibility (EMC)

Emissions	CE	EN55032 (CISPR32) Class B,	
	RE	EN55032 (CISPR32) Class B,	
	Harmonic Current	IEC/EN61000-3-2 Class A	
	Flicker	IEC/EN61000-3-3	
Immunity	ESD	IEC/EN61000-4-2, level 4, Contact +/- 8KV; Air discharge +/- 15KV	Criteria A
	RS	IEC/EN61000-4-3, level 3, 10V/m	Criteria A
	EFT	IEC/EN61000-4-4, level 3, +/- 2KV	Criteria A
	Surge	IEC/EN61000-4-5, level 4, Line to Line +/-2KV; Line to Earth +/-4KV	Criteria A
	CS	IEC/EN61000-4-6, level 2	Criteria A
	PFMF	IEC/EN61000-4-8, level 1	Criteria A
	DIP	IEC/EN61000-4-11	Criteria B

Dimensions and Recommended Layout

Item	Value	Unit
Weight (Typ.)	134	g
Size (L x W x H)	101.6 x 50.8 x 27	mm

Outline Drawing: (Unit: mm, Tolerance: ±1.0 mm)

