

FEATURES

- Universal 90-264VAC.
- Operating ambient temperature range: -40°C to +70°C.
- Built-in active PFC function.
- Output short circuit, over-current, over-voltage protection, over-temperature protection.
- 140W with convention cooling, 250W with forced air cooling.
- High efficiency up to 94.5%.
- High power density, compact size: 2"x4"x1.063" (above PCB).
- Safety according to IEC 62368-1.

Models & Ratings

Model No. (1)	Cooling Method (3)	Output Power (W)	Output Voltage (V)	Output Current (A)	Efficiency (%) Typ. (2)
TN19-0250-12	Convention Cooling	140	12	11.67	92.5
	Forced Air Cooling	250	12	20.84	
TN19-0250-24	Convention Cooling	140	24	5.83	93.5
	Forced Air Cooling	250	24	10.42	
TN19-0250-48	Convention Cooling	140	48	2.92	94.5
	Forced Air Cooling	250	48	5.21	
TN19-0250-55	Convention Cooling	140	55	2.55	94.5
	Forced Air Cooling	250	55	4.55	

Notes:

1. Model Name Description.

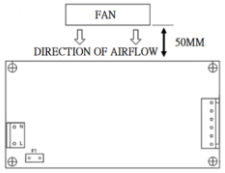
TN 19 - 0250 - XX
- VV
①

① VV : Output Voltage or Series Model
12 : 12V Output.
24 : 12V Output.
48 : 48V Output.
55 : 55V Output.

2. Efficiency is measured at 50% load, 230VAC input, 25°C ambient temperature, after a 20-minute warm-up.

3.Forced Air Cooling

Additional fan cooling is required, with an airflow rate of 13 CFM min.



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	115VAC & Maximum load		-	-	3.0	Arms
	230VAC & Maximum load				1.5	Arms
Inrush Current	115VAC	At 25°C, Cold start	-	-	45	A peak
	230VAC		-	-	90	
Power Factor	115VAC & Maximum load		0.98	-	-	-
Leakage Current	264VAC		-	-	3.5	mA

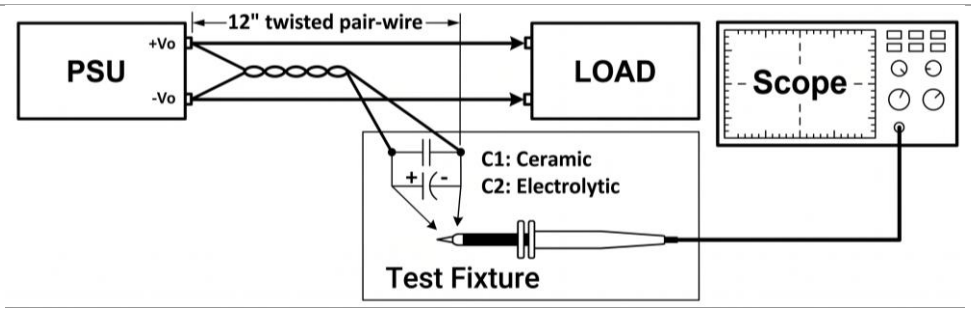
Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage	See Models and Ratings table		12	-	55	VDC
Output Accuracy	Not adjustable		-	±5	-	%
Minimum Load	-		0	-	-	A
Line Regulation	100% load		-	±0.5	-	%
Load Regulation	Output from 0 - 100% load (12V)		-	±2	-	%
	Output from 0 - 100% load (24V,48V,55V)			±1		%
Ripple & Noise (4)	20MHz bandwidth	0°C < Ta < 70°C	-	-	1	%
Turn On Time	115VAC/60Hz Maximum load load from input AC turn on		-	-	2	S
Rise Time	10% to 90% of output voltage		-	-	50	mS
Hold Up Time (5)	75% of Maximum load		10	-	-	mS
Short Circuit Protection	Output shut down and auto recovery		-	-	-	-
Over Current Protection	Output shut down and auto recovery (12V)		22	-	30	A
	Output shut down and auto recovery (24V)		11	-	15.1	A
	Output shut down and auto recovery (48V)		5.5	-	7.55	A
	Output shut down and auto recovery (55V)		4.8	-	6.6	A
Over Voltage Protection	Output shut down and auto recovery (12V)		-	-	15.6	V
	Output shut down and auto recovery (24V)		-	-	31.2	V
	Output shut down and auto recovery (48V)		-	-	60	V
	Output shut down and auto recovery (55V)		-	-	65	V

4.Ripple & Noise :

The output is decoupled with a 47μF low ESR aluminum electrolytic capacitor (C2) and a 0.1μF ceramic capacitor (C1).

Measurement is made with a high impedance probe connected across the decoupling capacitance. Measurements shall be made with an oscilloscope with 20MHz bandwidth.



5.Hold-up Time

Hold-up time is measured until the output voltage drops to 90%, under the following conditions: 10ms (minimum) at 75% Maximum load and ambient temperature 25°C.

General Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Operating Temperature (6)	Refer to power de-rating curve		-40	-	+70	°C
Storage Temperature	Non-operation		-40	-	+85	
Operating Humidity	Non-condensing		20	-	90	%
Storage Humidity			5	-	95	
Power De-rating (7)	Convention cooling 140W	+40°C to +50°C	0.892	-	-	%/°C
		+50°C to +70°C	2.35	-	-	
	Forced Air Cooling 250W	+50°C to +70°C	2.5	-	-	
	90VAC ~ 115VAC (8)		0.8	-	-	%/VAC
Altitude	Operating altitude		-	-	5,000	meter
Dielectric Strength Test (9)	Input – Output	Electrical strength test for 1 minute, leakage current is less than 10mA.	3,000	-	-	VAC
	Input – FG		1,800	-	-	VAC
	Output – FG		500	-	-	VDC
Insulation Resistance	Input – Output	25±5°C, 70% RH, non-condensing testing voltage 500VDC.	20	-	-	MΩ
	Input – FG		20			
	Output – FG		20			
Mean Time Between Failure	At 230VAC/50Hz, 100% load, 25°C, Telcordia SR332, issue 4.		300,000	-	-	Hrs.
Vibration	Operating：0.5G, 5 - 500Hz, 10 min/cycle, 30 min each axis (X, Y, Z)					
Shock	Non-operating (package)：20G, 11 ms, 1 shock per direction per axis (X, Y, Z)					

Notes

6.Operating Temperature

Starts at 100Vac or above with a 50% load within the temperature range of -40°C to 0°C. Continuous operation under these conditions is subject to the limitations defined in the "temperature de-rating curve".

Some specifications may not be met below 0°C.

7.Temperature de-rating curve

Forced-cooled ≧ 13 CFM: de-rate linearly from 250W at +50°C to 125W at +70°C.

Convention -cooled: de-rate linearly from 140W at +40 °C, to 127.5W at +50 °C, and to 75W at +70 °C.

8.Power De-rating

Input voltage de-rating curve, refer to Fig. C

Input voltage de-rate from 100% load at 115Vac to 80% load at 90Vac .

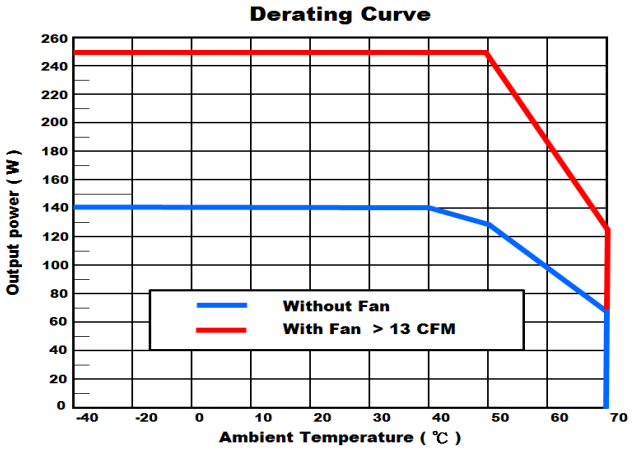


Fig. B

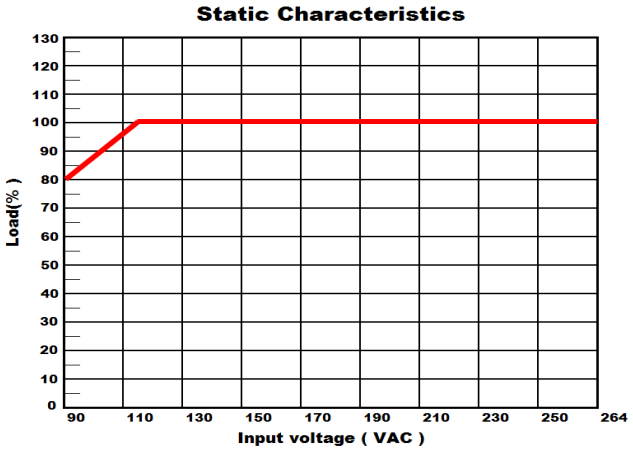


Fig. C

9. The electric strength test of LY production line was conducted for 3 seconds, and the leakage current was less than 10mA.

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
Safety Class	-	Class I

Electromagnetic Compatibility (EMC)

Emissions (10)	CE	EN55032 (CISPR32) Class B	
	RE	EN55032 (CISPR32) Class B	
	Harmonic Current	EN61000-3-2 Class D	
	Flicker	EN 61000-3-3	
Immunity	ESD	EN 61000-4-2, level 4, Contact +/- 8KV; Air discharge +/- 15KV	Criteria A
	RS	EN 61000-4-3, level 3, 10V/m	Criteria A
	EFT	EN 61000-4-4, level 3, +/- 2KV	Criteria A
	Surge	EN 61000-4-5, level 3, Line to Line +/-1KV; Line to Earth +/- 2KV	Criteria A
	CS	EN 61000-4-6, level 2	Criteria A
	PFMF	EN 61000-4-8, level 1	Criteria A
	DIP	EN 61000-4-11	Criteria B

10.EMI
With an external ferrite core (T20.5×10×10.2, material K5B) applied to the AC input L & N cable with 5 turns, the product complies with EN55032 Class B limits; without the external core, it complies with Class A.

The power supply should be considered a part of the system component. All EMC tests conducted with the unit installed in a metal enclosure dummy system. The power supply needs to be confirmed for electromagnetic compatibility in conjunction with the terminal equipment.

Dimensions and Recommended Layout

Item	Value	Unit
Weight (Typ.)	192	g
Size (L x W x H)	101.6 x 50.8 x 21.4 (above PCB)	mm

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

