1000W AC/DC Switching Power Supply
Model: TN19-1000-01



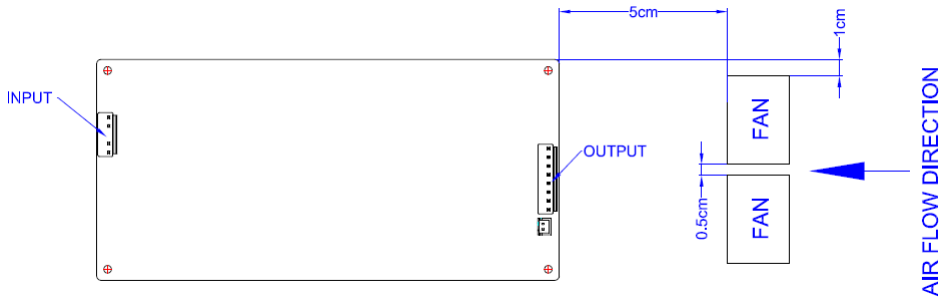
FEATURES

- Universal AC input range 90-264VAC.
- 1,000W PoE Open Frame PSU.
- Meets IEEE 802.3af/at/bt PSE requirements.
- High efficiency up to 94%.
- Two power supplies in parallel provide up to 2,000W.
- 1+1 redundancy design with current sharing.
- High power density up to 21.48W/in^3.
- Japanese capacitors improve PSU reliability.
- Operating altitude up to 5000m.
- Complies with IEC/EN/UL 62368-1 3rd.

Models & Ratings

Model No.	Output Power	Cooling Method	Typical load Voltage/ Current	Full load Voltage/ Current	Efficiency at 230VAC Typ.
TN19-1000-01	1000W	Forced Air Cooling	56V / 10.0A	56V / 17.8A	94%

Cooling :
A minimum airflow for 18.7 CFM fan will be available to the power supply. Recommended power supply and cooling airflow setting method as below



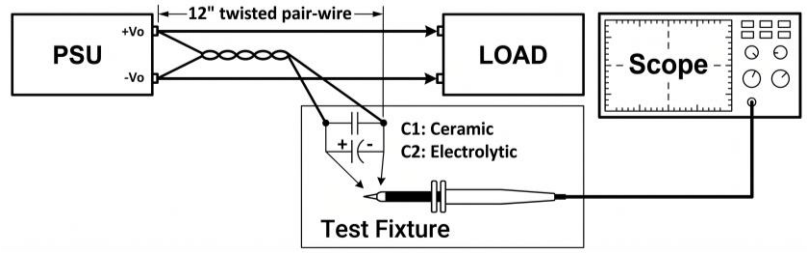
Input Specifications

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	Input current less than 12A at nominal voltage		-	12.0		Arms
Inrush Current	100VAC	At 25°C, Cold start	-	-	20	A peak
Power Factor	100VAC	At maximum load	0.95	-	-	-
Leakage Current	nominal temp. nominal humidity.		-	-	1.75	mA

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage	Output from minimum to maximum load		56		VDC
Output Current	Output range	0	10	17.8	A
Load Regulation	Output from minimum to maximum load	-	-	3	%
Ripple & Noise	20MHz bandwidth	-	-	1	%
Turn On Time	115Vac and maximum load.	-	-	3	S
Hold Up Time	100Vac and maximum load.	10	-	-	mS
Overshoot		5			%
Short Circuit Protection	Output shut down and auto recovery	-	-	-	-
Over Current Protection	Output shut down and auto recovery		-	25	A
Over Voltage Protection	Output shut down and auto recovery		-	63	V
Thermal protection	Output shut down				

Ripple & Noise :
The +56V output is decoupled with 47μF low ESR aluminum electrolytic (C2) and 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.



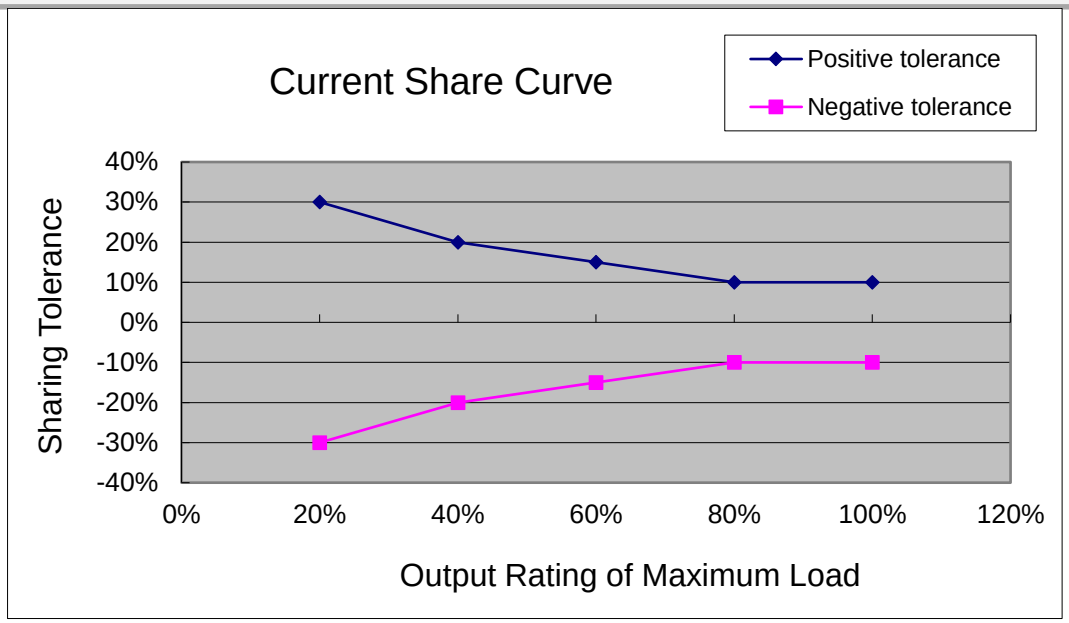
Dynamic Load :

Output	Step load	Transient Voltage	Slew rate
+56V	50% to 100% Load	±5%	1A/us

Step load change is 1A/us, at 50Hz-5KHz. The recovery time is less than 500us.

Protection
If the output is protected (when OVP, OCP, OTP and SCP), the power supply will be auto-recovery. The power supply return to normal operation after the fault has been removed.

Current Share (option)
Current share is achieved by means of active current sharing for maximum 2 units of same type redundant.
Current sharing tolerance is defined 10% of the maximum load. If there was one piece of power supply shut down at the condition of N+1 current sharing, the maximum load of system must be reduced to 90% x maximum load (Amp.) until the fault was removed and turned on the power supply.



General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Operating Temperature	Refer to Power de-rating	-20	-	70	°C
Power De-rating	Operating Temperature at +50°C to +70°C	2.5			%/℃
Storage Temperature	Non-operation	-40	-	+85	°C
Operating Humidity	Non-condensing	10	-	90	%
Storage Humidity		5	-	95	%
Altitude	Operating altitude	-	-	5000	meter
Dielectric Strength Test	Input - FG	1800	-	-	VAC
	Input to Output	1800			VAC
	Output to FG	1800			VAC
Insulation Resistance	Input– FG, 500VDC, 3 seconds at 25°C and 70% RH	20	-	-	MΩ
Mean Time Between Failure	At 230VAC/50Hz, 100% load, 25°C, Telcordia SR332, issue 4.	1,000,000	-	-	Hrs.
Vibration	Operating：2.94 m/s^2 , 5-150Hz, 10 minutes per cycle, 30 minutes for each X, Y and Z axis.				
	Non-operating：5.88 m/s^2 , 5-150Hz, 10 minutes per cycle, 30 minutes for each X, Y and Z axis.				
Shock	Operating：The power supply shall not be damaged during a shock of half sine 10G, 11mS pulse, 100 pulses in each direction.				
	Non-operating：The power supply shall not be damaged during a shock of 50G with an 11mS half sine wave.				

Operating Temperature :
Some specifications may not be met below 0°C.

Altitude :
For every 305 meters of altitude increase, the operating ambient temperature needs to be decreased by 1°C.

Safety Approvals

Safety Standard	-	UL/cUL UL 62368-1, 3rd Edition

		CB 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.)	600	g
Size (L x W x H)	210 x 100 x 33.5	mm

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

