

## 3200W 3-Phase Input Industrial Power Supplies

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Industrial



COTS



Test



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Broadcast



The TPS3000 series industrial AC-DC power supplies offer output power up to 3,200W in a 2U high package with 3 phase supply input. Features include voltage and current programming, remote on/off, remote sense, a standby supply, PMBus™ communication, built in ORing FET and wide operating temperature range of -40°C to +70°C. The TPS3000 is also designed to meet MIL-STD-810F vibration and shock.

Features	Benefits
• 400/440/480Vac (Nominal) 3 Phase Delta or Wye	• Global Use
• Fully Regulated, Wide Range Voltage Adjustment	• Versatile Application
• Voltage and Current Programming	• Flexible Control and Adjustment
• -40°C (start up) to +70°C Operation	• Suitable for Rugged Environments
• 92% Typical Efficiency	• Less Energy Used
• PMBus™ Communication	• Remote Output Programming and Monitoring
• Built in ORing FET for Parallel Operation	• Suitable for N + 1 Redundancy

Model Selector						
Model	Nominal Output Voltage (V)	Adjustment Range (V) <sup>(4)</sup>	Maximum Current (A)	Maximum Power (W)	Max Current (A) <sup>(3)</sup>	Maximum Power (W) <sup>(3)</sup>
TPS3000-24	24	19.2 - 28.5	125	3000	133.3	3200
TPS3000-48	48	38.4 - 56.5	66.7	3200	66.7	3200

\*Wider range adjustment as stated on the UL safety files are possible, although some parameters might not meet some of the listed specifications.

Specifications		
Model		TPF3000
<b>Input</b>		
Input Voltage range	Vac	350 - 528, Delta or Wye 3 phase
Input Frequency	Hz	47 - 63Hz
Input Current (At nominal Vin)	A	6 per phase (steady state)
Inrush Current at 400-480Vac (Cold Start)	A	<15 per phase (excluding initial filter capacitor charging <2ms)
Dropped Phase Power	W	Output Power 1290; output power increases with input voltage
Leakage Current	mA	<3
Power Factor (400-480Vac)	-	0.92 typical at rated load, nominal Vin
Harmonics	-	Not applicable
Hold Up Time (typ)	ms	>10 at 80% of rated current, nominal input/output voltage
Efficiency (Typical)	%	92
Conducted & Radiated EMI	-	EN55022 Class A, FCC part 15 Class-A
Safety Agency Certifications	-	IEC/UL/CSA/EN62368-1, 60950-1, CE Mark
Voltage Dips	-	SEMI F47-0706

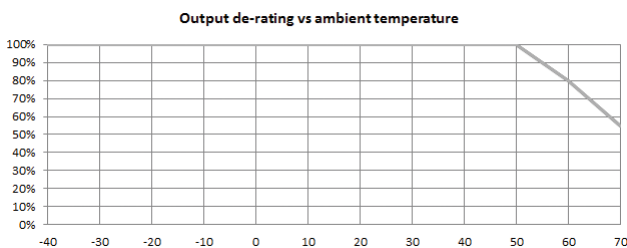
Immunity				
Test	Standard	Test Level	Criteria	Notes
ESD	EN61000-4-2	±8 kV air discharge, ±4 kV contact discharge	B	See Immunity Data
Radiated Susceptibility	EN61000-4-3	3 V/m from 80-1000 MHz (80% AM at 1kHz)	A	
Electrical Fast Transient Burst	EN61000-4-4	Power line pulses of ± 1 kV; I/O line pulses of ± 0.5 kV	B	
Surge	EN61000-4-5	±2kV common mode, ±1kV differential mode	B	
Conducted Susceptibility	EN61000-4-6	3 Vrms, 150 kHz - 80 MHz (80% AM at 1kHz)	A	
Magnetic fields	EN61000-4-8	Inductive loop at 50 Hz to 1 amp (rms) per meter	A	
Voltage Dips and Input Interruptions	EN61000-4-11	Voltage Dips of 30% and >95%; Interruptions of >95%.	B & C	

Specifications		
Model		TPS3000
<b>Output</b>		
Line Regulation	%	<0.25
Load Regulation	%	<0.5
Total Regulation	%	<1.75
Warm Up Drift	%	<0.15
Temperature Stability	-	0.05% of rated Vout for 8hrs after 30min warmup. Constant line, load, & temp.
Temperature Coefficient	ppm/°C	200
Ripple & Noise (pk-pk) (Max) (2)	mV	24V model: 130, 48V model: 260
Minimum Load	A	0.5 minimum
Overcurrent Protection	%	Adjustable (70-105 of maximum rated current). Constant current style.
Overvoltage Protection	%	115 of output voltage set point (tracking). Cycle AC or use the remote on/off to reset
Overtemperature Protection	-	Internal thermostat. Automatic reset
Fan Fail	-	Blocked or fan failure detection. Cycle AC input or use PMBus to reset
Remote Sense	-	Compensates for a total of 1V cable drop
Remote On/Off	-	Enable or Inhibit (switch selectable)
Voltage Programming	-	0 - 5V external voltage adjusts the output from Vout max to Vout min
Overcurrent Programming	-	0 - 5V external voltage adjusts the current limit from Iout max to Iout min
DC Good	-	Open Collector, max sink current 5mA, ON when output is above 85 to 95% of output set point (tracking)
AC Fail	-	Open Collector, max. sink current 5mA; ON when AC input is above 340Vac and unit is enabled
Dropped Phase Warning (2)	-	Open collector, max. sink current 5mA; OFF (open) normal operation; strobing when input phase missing.
Standby Voltage	-	11.2 - 12.5V, 0.3A (200mVp-p ripple and noise)
Indicators	-	Green LEDs indicates DC is OK and AC is ON. Blinking red/green during dropped phase (Load >20%)
Parallel Operation	-	Single wire current share, 10% accuracy up to 8 units. Power derated 10% of rated.
Series Operation	-	See installation manual
<b>Environmental</b>		
Operating Temperature (-40°C start-up)	°C	-10 to +50, derate 2%/C from 50°C to 60°C, and 2.5%/C from 60 to 70 (At <-10C a 20 min warm-up is needed)
Storage Temperature	°C	-40 to +85
Humidity (non condensing)	%RH	10 - 90
Cooling	-	Internal variable speed fan
Altitude	m	4,000
Withstand Voltage (For 1 minute)	-	Input to Ground 2,000Vac, Input to Output 3,000Vac, Output to Ground 500Vdc
Isolation Resistance	MΩ	>100 at 25°C, 70%RH
Vibration	-	MIL-STD-810F, Method 514.5, Proc I, Category 4, 10
Shock	-	MIL-STD-810F, Method 516.5, Procedure I, IV & VI
<b>Other</b>		
Weight (Typ)	g	3,700
Size (WxHxD)	mm	107 x 85 x 324 (excluding output busbars)
Size (WxHxD)	Inches	4.21 x 3.35 x 12.76 (excluding output busbars)
MTBF - Telcordia SR-332 issue 3	Hours	180,000. Method 1, Ground Benign, 25C, nominal input
Warranty	Years	3

## PMBus Functions

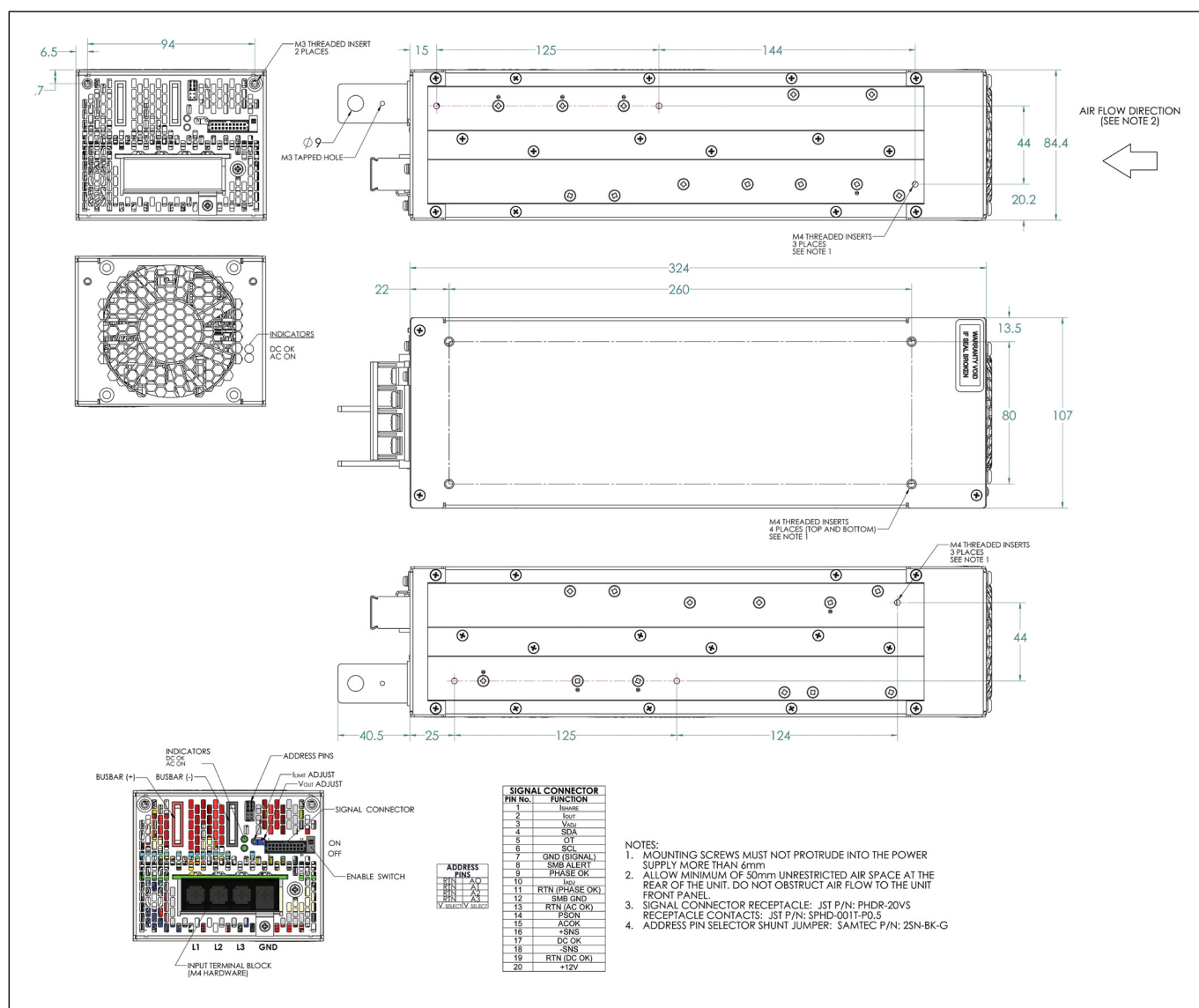
Output Voltage Monitoring  
Output Current Monitoring  
Internal Temperature Monitoring  
Remote On/Off Programming  
Remote Voltage Programming  
Remote Overcurrent Programming  
Fault Clearing  
Reading Manufacturing Related Data

## PMBus Functions



- (1) Typical, 75-100% at rated current
- (2) See website for detailed specifications, test methods and installation manual
- (3) Rating at nominal output voltage only
- (4) A minimum load of 0.5A is required to maintain regulation and ripple spec throughout the output voltage adjustment range.

## Outline Drawing





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