3200W 3-Phase Input Industrial Power Supplies

https://product.tdk.com/en/power/tps
www.emea.lambda.tdk.com/tps



Industrial COTS Test COMM Broadcast

PMBus

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) (1)	Maximum Current (A)	Maximum Power (W)	Max Current (A) (2)	Maximum Power (W) (2)
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.

Related Products

Type	Part Number	Description
EMC filter	RTMN-5020	High attenuation 20A 500Vac 3-phase input two stage filter

Specifications

Model		TPS3000
Input		
Input Voltage range	Vac	350 - 528, Delta or Wye 3 phase (Note: Safety certified for 400-480Vac only)
Input Frequency	Hz	47 - 63 (Note: Safety certified for 50 to 60Hz only)
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 (RMS)	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 Certifications and Markings	-	IEC/UL/CSA/EN62368-1, 60950-1, CE Mark and UKCA
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	

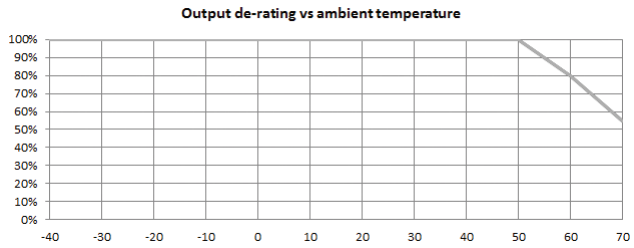
Specifications

Model		TPS3000
Output		
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)	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	-	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
Environmental		
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
Pollution Degree	-	PD 2
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
Other		
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

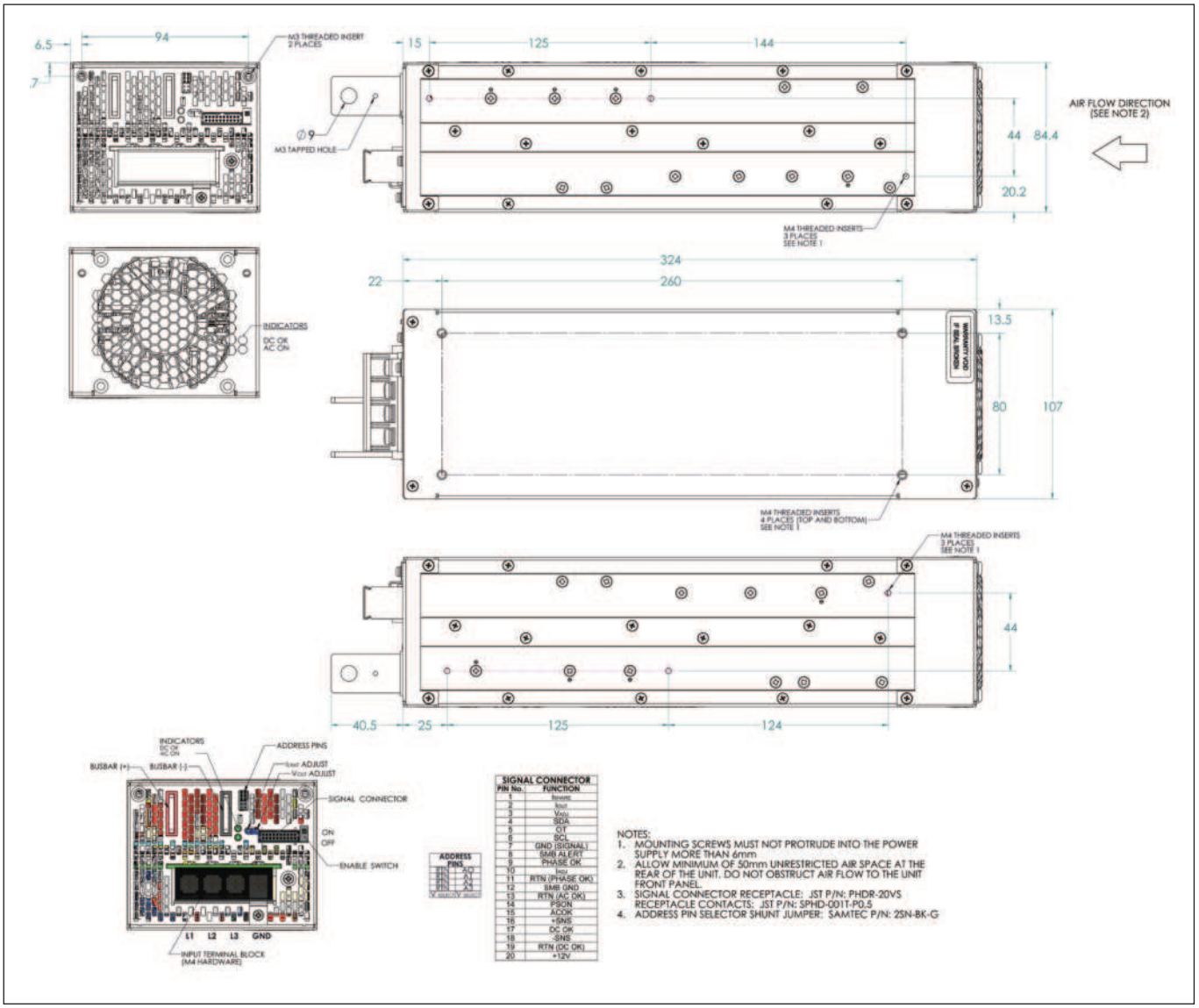
Output Voltage Monitoring
Output Current Monitoring
Internal Temperature Monitoring
Remote On/Off Programming
Remote Voltage Programming
Remote Overcurrent Programming
Fault Clearing
Reading Manufacturing Related Data

Derating Curve



Notes:
See website for detailed specifications, test methods and installation manual
(1) A minimum load of 0.5A is required to maintain regulation and ripple spec throughout the output voltage adjustment range.
(2) Rating at nominal output voltage only

Outline Drawings & Pin Out



TDK-Lambda France SAS
Tel: +33 1 60 12 71 65
tlf.fr-powersolutions@tdk.com
www.emea.lambda.tdk.com/fr

Italy Sales Office
Tel: +39 02 61 29 38 63
tlf.it-powersolutions@tdk.com
www.emea.lambda.tdk.com/it

Netherlands
tlf.nl-powersolutions@tdk.com
www.emea.lambda.tdk.com/nl

TDK-Lambda Europe GmbH
Tel: +49 7841 666 0
tlg.powersolutions@tdk.com
www.emea.lambda.tdk.com/de

Austria Sales Office
Tel: +43 2256 655 84
tlg.at-powersolutions@tdk.com
www.emea.lambda.tdk.com/at

Switzerland Sales Office
Tel: +41 44 850 53 53
tlg.ch-powersolutions@tdk.com
www.emea.lambda.tdk.com/ch

TDK-Lambda Europe GmbH
Tel: +45 3222 8086
tlg.dk-powersolutions@tdk.com
www.emea.lambda.tdk.com/dk

TDK-Lambda UK Ltd.
Tel: +44 (0) 12 71 85 66 66
tlu.powersolutions@tdk.com
www.emea.lambda.tdk.com/uk

TDK-Lambda Israel Ltd.
Tel: +972 3 902 4333
tli.powersolutions@tdk.com
www.emea.lambda.tdk.com/il-en

TDK-Lambda Americas
Tel: +1 800-LAMBDA-4 or 1-800-526-2324
tla.powersolutions@tdk.com
www.us.lambda.tdk.com

TDK Electronics do Brasil Ltda
Tel: +55 11 3289-9599
sales.br@tdk-electronics.tdk.com
www.tdk-electronics.tdk.com/en

TDK-Lambda Corporation
Tel: +81-3-6778-1113
www.jp.lambda.tdk.com

TDK-Lambda (China) Electronics Co. Ltd.
Tel: +86 21 6485-0777
tlc.powersolutions@tdk.com
www.lambda.tdk.com.cn

TDK-Lambda Singapore Pte Ltd.
Tel: +65 6251 7211
tls.marketing@tdk.com
www.sg.lambda.tdk.com

TDK India Private Limited, Power Supply Division
Tel: +91 80 4039-0660
mathew.philip@tdk.com
www.sg.lambda.tdk.com