https://product.tdk.com/en/power/tpf

45kW 3-Phase Input Non-isolated 385Vdc Power Supplies

Industrial Test LED Semi-Fab

The TPF45000-385 non-isolated modular power supply offers output power levels up to 45kW and accepts 400/440/480Vac 3 phase delta or Wye inputs. Providing a regulated 385Vdc output, the product can be used to provide a high voltage source to power isolated DC-DC converters used in distributed power architecture systems. With an operating efficiency of 98%, waste heat is dramatically reduced, avoiding the need for water cooling. PMBus™ and USB interfaces are available for monitoring and control. Containing ten 4,500W modules, the TPF45000 can be scaled down for lower power requirements.

Features	Benefits
• 400/440/480 Vac (Nominal) 3 Phase Delta or Wye Inputs	• Global Use
• PMBus™ and USB Interfaces	• Flexible Control and Monitoring
• -20°C (Start-Up) to +50°C Operation	• Suitable for Industrial Environments
• 98% Efficient	• Less Energy Used
• Less than 30kg Weight	• Easier Handling

Model Selector

Model	Nominal Output Voltage (V)	Adjustment Range (V)	Rated Current (A)	Maximum Current (A) (1)	Rated Power (W)	Maximum Power (W) (1)
TPF45000-385	385	Fixed	110	117	42,000	45,000

Specifications

Model		TPF45000-385
Input		
Input Voltage range	V	360 - 528Vac, Delta or Wye 3 phase
Input Frequency	Hz	47 - 63
Input Current (At nominal Vin)	A	75 at 400Vac, 65 at 480Vac per phase
Inrush Current (400-480Vac)	A	<150 per phase (excluding initial filter capacitor charging <2ms) at 25°C ambient, cold start
Dropped Phase Power	W	15,000
Leakage Current	mA	<40
Power Factor (400-480Vac)	-	0.94 typical at rated load, nominal Vin
Harmonics	-	Not applicable
Hold Up Time (typ at nominal input)	ms	10 (80V output drop)
Efficiency (Typical)	%	98 at 25°C ambient, nominal input and at 100% of the rated load
Conducted & Radiated EMI	-	EN55032 Class A, FCC part 15 Class-A (In end system with external filter)
Immunity	-	EN61000-4-2, -3, -4, -5, -6, -8, -11 (see immunity table)
Line Dip	-	SEMI F47-0706 at 480Vac nominal (see immunity table)
Safety Certifications and Markings	-	IEC/UL/CSA/EN62368-1, CE Mark and UKCA Mark

Immunity

Test	Standard	Test Level	Criteria	Notes
ESD	EN61000-4-2	±8 kV air discharge, ±4 kV contact discharge	A	See test report or installation / operation manual
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	A	
Surge	EN61000-4-5	4kV common mode, 2kV differential mode	B	
Conducted Susceptibility	EN61000-4-6	3 Vrms, 150 kHz - 80 MHz 1 kHz 80% AM	A	
Magnetic fields	EN61000-4-8	30A/m (Continuous), 300A/m (Short)	A	
Voltage Dips and Input Interruptions	EN61000-4-11	Dip to 0% of nom. line for 0.5 cycles Dip to 0% of nom. line for 1 cycles Dip to 40% of nom. line for 0.2 seconds Dip to 70% of nom. line for 0.5 seconds Dip to 80% of nom. line for 5 seconds	C	
	SEMI F47-0706	-	C	50% of nom. line for 10 cycles 70% for 25 cycles 80% for 50 cycles

Specifications

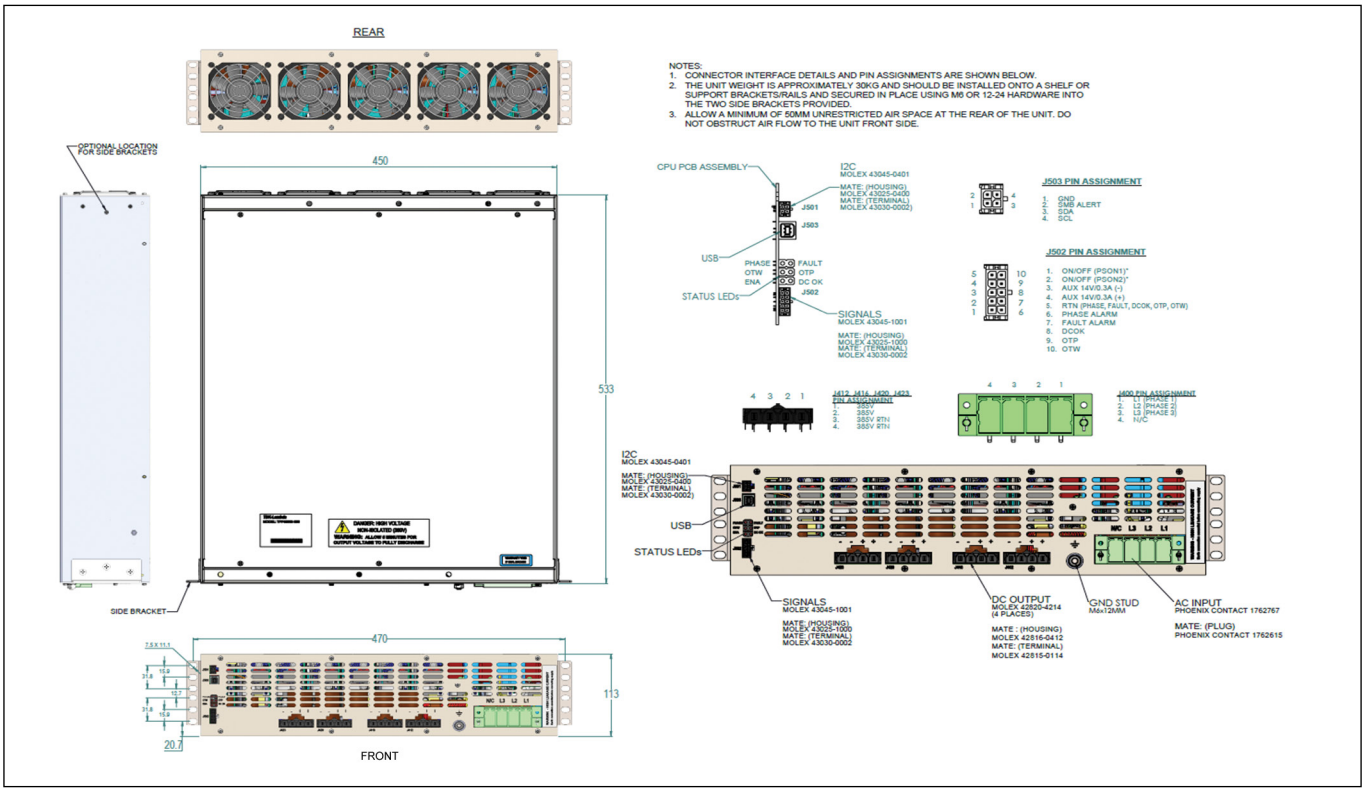
Model		TPF45000-385
Output		
Line Regulation	%	<2
Load Regulation	%	<3 (2)
Temperature Coefficient	ppm/°C	400
Ripple & Noise (RMS) Maximum	V	10 (Using JEITA RC-9131C probe method)
Minimum Load	A	Unit enabled: 0.5 (200W), unit inhibited: 50Ω
Overcurrent Protection	A	>116. Foldback with delayed latching shutdown. Reset by cycling the AC or using the PMBus. A short circuit when the unit is operating will damage the power supply
Overvoltage Protection	V	394 to 400
Overtemperature Protection	-	Internal thermostat. Reset by cycling the AC input or using the PMBus
Fan Fail Indication	-	Blocked fan and fan failure detection will trigger the FAULT/WARNING.
Remote Sense	-	None
Remote On/Off	-	Enable. Isolated from primary.
DC OK Signal	-	Yes
AC Fail Signal	-	None
Dropped Phase Warning Signal	-	Yes
Overtemperature Warning	-	Yes
Standby Voltage	-	13 to 15V, 0.5A. Isolated from primary (input / output)
Indicators	-	LEDs indicate dropped phase, overtemperature, overtemperature warning, enable, DC OK and I2C fault
Parallel Operation	-	Not possible
Series Operation	-	Not possible
Environmental		
Operating Temperature (-20°C start-up)	°C	-10 to +50
Storage Temperature	°C	-40 to +85
Humidity (non condensing)	%RH	10 - 95
Cooling	-	Internal variable speed fans (five)
Altitude	m	4,000
Withstand Voltage (For 1 minute)	Vac	Input to Ground 2,000
Vibration (Operating)	-	Designed to meet MIL-STD-810F, Method 514.5, Proc I, Category 1, 10
Shock	-	Designed to meet MIL-STD-810F, Method 516.5, Procedure II
Other		
Weight (Typ)	kg	<30. Install on a shelf or use support brackets or rails
Size (WxHxD) Excluding side mount flanges	mm	450 x 113 x 533
Size (WxHxD) Excluding side mount flanges	Inches	17.7 x 4.4 x 21
Mating Connectors		See pinout drawing
MTBF - Telcordia SR-332 issue 3	hrs	105,000 (25°C ambient)
Warranty	yrs	3

PMBus Functions

Output Voltage Monitoring
Input Voltage Monitoring
Output Current Monitoring
Internal Temperature Monitoring
Remote On/Off Control
Status Information
Product Information

Notes
See website for detailed specifications, test methods and installation/operating manual
(1) Input voltage 380 to 504Vac
(2) The output must be in regulation before the load is applied

Block Diagram



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

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

Netherlands
info@nl.tdk-lambda.com
www.emea.lambda.tdk.com/nl

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

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

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

Nordic Sales Office
Tel: +45 8853 8086
info@dk.tdk-lambda.com
www.emea.lambda.tdk.com/dk

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

TDK-Lambda Ltd.
Tel: +9 723 902 4333
info@tdk-lambda.co.il
www.emea.lambda.tdk.com/il

C.I.S.
Commercial Support:
Tel: +7 (495) 665 2627
Technical Support:
Tel: +7 (812) 658 0463
info@tdk-lambda.ru
www.emea.lambda.tdk.com/ru

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

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

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

For Additional Information, please visit
https://product.tdk.com/en/power/