TLP7000 Series

7000 W, 3-Phase Industrial AC-DC High Power Supply

RoHS Compliant

The TLP7000 Series is a 7000 Watt, universal 3-phase AC-DC converter with adjustable DC output and universal 3-phase AC input.

The integrated liquid cooling plate (no fan) makes this power supply series suitable for a wide variety of high-performance industrial applications, such as supporting high frequency pulsed loads.

Emphasis is given on reliability and long life. Parallel operation is possible up to 15 units (up to 100 kW).

The Full digital control of the PSU with three DSPs enable to control and customize the performance and functionality of the PSU.

An RS485 & CAN bus is used for command, monitoring and diagnostic information that can be supplied to a system controller.

Compact mechanical dimensions allow to install the PSU into standard 19” rack systems (21 kW in 2U height or 35 kW in 3.5U height).

FEATURES

- Worldwide 3-phase input voltage range (200 - 480 VAC, L-L)
- Power factor > 0.94
- Power density 20 W/in^3
- Typical efficiency >95%
- Nominal DC output voltage 48 V
- Adjustable output voltage +10% / -20%
- Advanced performance for fast dynamic & pulsed load up to 100 kHz
- Parallel operation up to 15 units (up to 100 kW)
- Design optimized for the installation to 19" rack:
  - 3 pcs in horizontal position 2U height, installed power 21 kW
  - 5 pcs in vertical position 3.5U height, installed power 35 kW
- Liquid cooling system
- Operating temperature range:
  - 0 - 40°C coolant temperature
  - 0 - 70°C ambient air temperature
- RS485 & CAN communication interface (ETHERNET optional on system level)
- Active current sharing
- Configurable auxiliary output: 12V / 2A or 24V / 1A
- SEMI F47 compliant
- Dimensions: 460 x 147 x 85 mm (18.1 x 5.8 x 3.3 in)

APPLICATIONS

- High power laser cutting machines (48 VDC)
- Charging systems for 48 V batteries

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Please read our datasheet & drawing disclaimer here.

1. MODEL SELECTION

MODEL	INPUT VOLTAGE RANGE	NOMINAL OUTPUT VOLTAGE [4]	ADJUSTABLE OUTPUT VOLTAGE RANGE [1]	MAX OUTPUT CURRENT	MAX OUTPUT POWER
TLP7000-1048	180 – 528 Vrms, 50/60 Hz	48 V [2]	43.2 – 57.6 VDC	146 ADC	7000 W
TLP7000-H048	180 – 528 Vrms, 50/60 Hz	48 V	38.4 – 52.8 VDC	146 ADC or pulse [3]	7000 W

[1] A possibility to adjust or preset output voltage via: SCI (Serial Communication Interface) or analog signal MARGIN
[2] A power supply model optimized for Battery Charging Systems with nominal voltage 48 VDC
[3] PSU model with pulse load operation capability 0 – 100 kHz, 0 – 100% Duty, 0 A/Iout_max.
[4] Other output voltages on request

2. INPUT SPECIFICATIONS

All specifications are measured at Ta = 25°C, humidity <75 % nominal input voltage and rated output load unless otherwise specified.

PARAMETER	DESCRIPTION / CONDITIONS	MIN	NOM	MAX	UNIT
Input voltage	3-phase (L-L), 3 wires + PE, 50% Po_nom 3-phase (L-L), 3 wires + PE, 100% Po_nom	180 350		528 528	VAC
Input frequency	Permited variation	47	50 / 60	63	Hz
Max. phase input current				14	Arms
Power factor		0.94			

3. OUTPUT SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS	MIN	NOM	MAX	UNIT
Output voltage	Adjustable or fixed (see Model Selection table)				
Output power rating	High Line (350 - 528 VAC L-L) Low Line (180 - 350 VAC L-L)		7000 3500		W
Efficiency	Typical, High Line and load above 40% of Po_nom		95		%

4. ENVIRONMENTAL SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS	MIN	NOM	MAX	UNIT
Operating temperature	Coolant temperature Ambient air temperature	0 0		+40 +70	°C
Storage temperature		-40		+85	°C
Humidity	Operating range according to IEC 60068-2-78	10		90	%RH
Coolant flow rate		2			L/min

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5. EMC SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS	CLASS / LEVEL / CRITERION
Emission Requirements		
Conducted emissions	EN 55011	Class A
Radiated emissions	EN 55011	Class A
Immunity Requirements		
Electrostatic discharge	IEC 61000-4-2, Level 4: ±8 kV contact, ±15 kV air	Performance Criterion B
Radiated electromagnetic field	IEC 61000-4-3, 10 V/m	Performance Criterion B
Electrical fast transient (EFT)/burst	IEC 61000-4-4, Level 3: ± 2 kV	Performance Criterion B
Surge immunity	IEC 61000-4-5, Level 3: ±2 kV DM, ±2 kV CM	Performance Criterion B
RF conducted immunity	IEC 61000-4-6, Level 3: 10 V	Performance Criterion A
Useful life assessment	at Tamb = +55°C, Tcoolant = +35°C, 100% load	>10 years of life

6. SAFETY SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS	MIN	NOM	MAX	UNIT
Safety standards & approvals	SEMI F47 compliant				
Insulation	Input to Output Input to Chassis	3.0 1.5			kVAC

7. CONNECTORS

PARAMETER	DESCRIPTION / CONDITIONS	
AC input connector	4-pin, Pitch 7.62 mm (Weidmüller: 1156590000)	See Figure 1
DC output connector	Bus bars, screw size M4 (2 pcs for each pole)	
Signal input connector	15-pin D-SUB Male (Würth Elektronik: 61801529221)	
Signal output connector	15-pin D-SUB Female (Würth Elektronik: 61801529321)	
2-pin Stand-by output connector	2-pin Header, Pitch 3.81 mm (Phoenix Contact: 1803426)	
4-pin Analog signals connector	4-pin Header, Pitch 3.81 mm (Phoenix Contact: 1803442)	

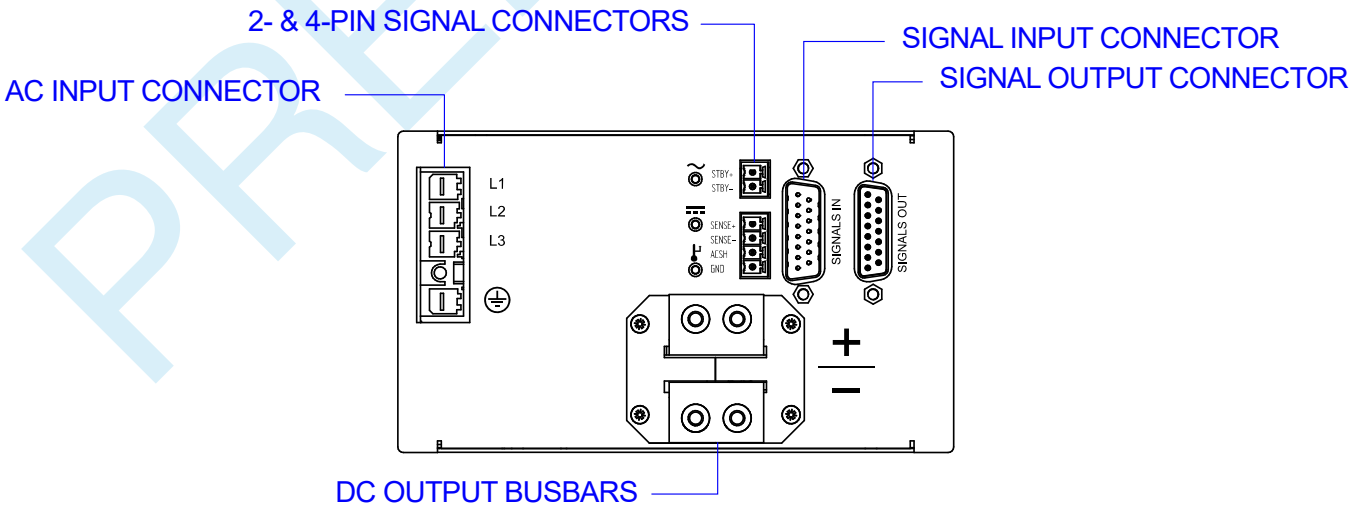

Figure 1. Connectors layout

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8. MECHANICAL SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITIONS	MIN	NOM	MAX	UNIT
Dimensions	See Figure 2		460 x 147 x 85 18.1 x 5.8 x 3.3		mm in
Weight			7		kg
Enclosure	IP20				

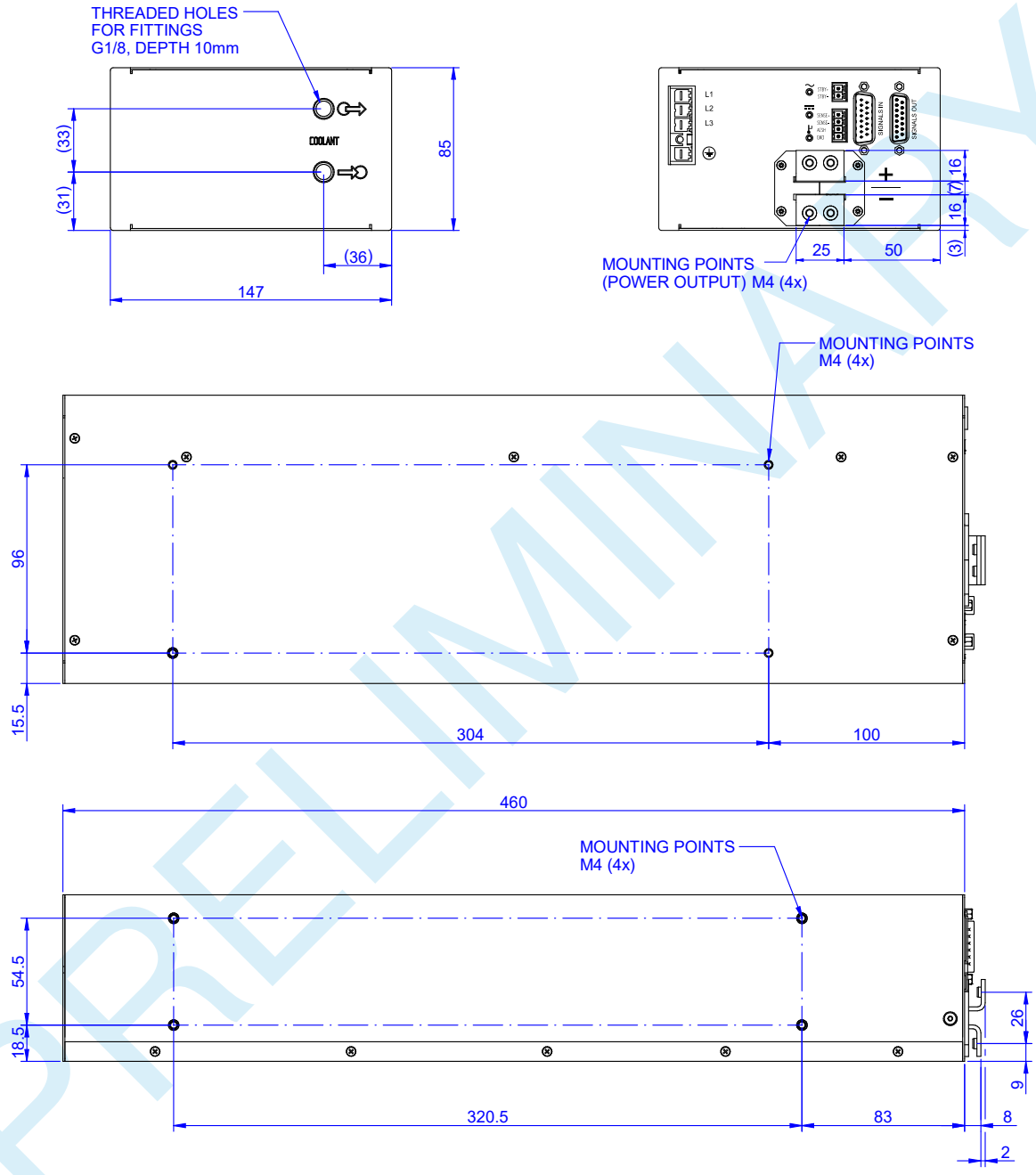

Figure 2. Mechanical Drawing

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NUCLEAR AND MEDICAL APPLICATIONS - Products are not designed or intended for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems.

TECHNICAL REVISIONS - The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.