INSTALLATION INSTRUCTION

TLP5000-1048

AC-DC Converter



MODELS:	TLP5000-1048
AC Input [1]:	~ 3-Phase 230 - 277 / 400 - 480 VAC 3W + PE
AC Input Current:	9 - 7 A
Frequency:	50 /60 Hz
DC Output:	⎓ 39 – 57 VDC adjustable
DC Output Current:	105 A
Safety Approvals:	UL/CSA 62368-1 4th edition IEC 62368-1 4th edition CE Mark for LVD

[1] Note: Input selection is automatic, no manual change is required.

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS — This installation contains important instructions for our TLP5000-1048 that should be followed during the maintenance of the unit.

DISCLAIMER

It is the customer's responsibility to check the suitability and qualify the product in their application, if any queries please contact Bel (at powersupport@belf.com or website belfuse.com) to ensure product remains within specification at all time.

Supplier shall in no way be liable for use or installation of the product outside of the parameters of the specification.

INSTALLATION REQUIREMENTS

There are 3 input fuses with rating 20 A / 500 V inside TLP5000-1048. Recommended rating of upstream fuse or circuit breaker is 25 A per phase.
For further details, please see TLP5000-1048 datasheet (BCD.20322), communication manual (BCA.20078) and mechanical drawing (TLP5000-1048.FD).

Note: Bel's converters are designed in accordance with EMC regulations. When they are integrated into a system, the EMC characteristics of the end system must be re-verified again. It is needed to use ferrite beads to meet EN 55011 Class A: WE 74271251 or equivalent: 1 turn at Vout+ and Vout- (Output DC); WE 74272722 or equivalent: 1 turn at +5V_AUX and +5V_AUX_RTN (Auxiliary Output); WE 74272722 or equivalent: 2 turns at CAN_H and CAN_L (Communication).

CAUTION / ATTENTION



CAUTION – These component level power supplies are intended exclusively for installation within other equipment by an industrial assembly operation or by professional installers. These are Class I * power supplies; the unit must be properly connected to earth ground in end use. A component power supply should be installed in end-use equipment according to the requirements of the safety standard used for that equipment. This power supply unit is not designed to be operated outside of an enclosure which provides a means of mechanical, electrical, and fire protection. To maintain ES1 requirements, the outputs should not be connected together in any manner which causes the total output voltage to exceed 60 VDC.

*According to IEC 62368-1: 3.3.15.1, class I equipment is one in which protection against electric shock does not rely on basic insulation only, but that includes a supplementary safeguard in such a way that means are provided for the connection of accessible conductive parts to the protective earthing conductor in the fixed wiring of the installation.

ATTENTION – Ces alimentations au niveau des composants sont destinées exclusivement à être installées dans d'autres équipements par une opération d'assemblage industriel ou par des installateurs professionnels. Il s'agit d'alimentations de classe I* ; l'unité doit être correctement connectée à la terre lors de l'utilisation finale. Une alimentation par composants doit être installée dans l'équipement d'utilisation finale conformément aux exigences de la norme de sécurité utilisée pour cet équipement. Cette alimentation n'est pas conçue pour fonctionner à l'extérieur d'une enceinte offrant un moyen de protection mécanique, électrique et incendie.

Pour respecter les exigences ES1, les sorties ne doivent pas être connectées ensemble d'une manière qui entraînerait une tension de sortie totale supérieure à 60 VDC.

*Selon la norme IEC 62368-1 : 3.3.15.1, un équipement de classe I est un équipement dans lequel la protection contre les chocs électriques ne repose pas uniquement sur une isolation de base, mais qui inclut une protection supplémentaire de telle sorte que des moyens soient prévus pour le raccordement des équipements accessibles, parties conductrices au conducteur de protection dans le câblage fixe de l'installation.

CAUTION - Do not use this product if there is any damage to the unit.

ATTENTION – Ne pas utiliser le produit si celui-ci est endommagé.

CAUTION – Risk of electric shock. Do not remove the top cover or attempt to open the enclosure.

No user serviceable parts are inside. Please refer servicing to qualified service personnel.

ATTENTION – Risque d'électrocution. Ne pas retirer le couvercle ni tenter d'ouvrir le boîtier. Cet appareil ne contient aucun composant susceptible d'être réparé par l'utilisateur. Pour toute réparation, s'adresser à des spécialistes qualifiés.

CAUTION – Do not remove the top cover or attempt to open the enclosure as you will void the warranty.

ATTENTION – Ne pas retirer le couvercle supérieur ni tenter d'ouvrir le boîtier au risque d'annuler la garantie.

CAUTION – High voltage: Turn off the AC input before disconnecting any terminal. Discharge the power terminals before servicing.

ATTENTION – Haute tension : coupez l'alimentation secteur avant de débrancher une borne. Déchargez les bornes d'alimentation avant de procéder à l'entretien.

CAUTION – READ THIS CAREFULLY BEFORE INSTALLATION! Before operating, read this document thoroughly and keep it for future reference. Not respecting these instructions may reduce the performance and safety of the converter and could cause danger for people.

ATTENTION – À LIRE ATTENTIVEMENT AVANT TOUTE INSTALLATION! Avant toute utilisation, lire ce document attentivement et le conserver à des fins de consultation ultérieure. Le non-respect de ces instructions peut altérer les performances et la sécurité des dispositifs et impliquer des dangers pour les personnes et l'appareil.

WARNING / AVERTISSEMENT

WARNING – The equipment is for industrial or business use (Class A, EN 61000-6-4). This product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts.

AVERTISSEMENT – L'équipement est destiné à un usage industriel ou professionnel (Classe A, EN 61000-6-4). Ce produit peut provoquer des interférences s'il est utilisé dans des zones résidentielles. Une telle utilisation doit être évitée à moins que l'utilisateur ne prenne des mesures spéciales pour réduire les émissions électromagnétiques afin d'éviter toute interférence avec la réception des émissions de radio et de télévision.

WARNING – Maximal Touch current measured according to IEC 62368-1 is 5.6 mA.

The AC-DC converter must be properly grounded to the protective earth in the end-use application. Connection must be provided by inserting wire to the Input connector pin and additionally independent wire mounted to grounding screw.

AVERTISSEMENT – Le courant de contact maximal mesuré selon la norme IEC 62368-1 est de 5.6 mA.

Le convertisseur AC-DC doit être correctement raccordé à la terre de protection (PE) dans l'application finale. Le raccordement doit être réalisé en insérant un conducteur dans la broche du connecteur d'entrée et, en complément, au moyen d'un conducteur indépendant fixé à la vis de mise à la terre.

WARNING – Maximal value of the Protective conductor current (leakage current) is 10.6 mA. It is recommended using a 30 mA residual current device.

AVERTISSEMENT – La valeur maximale du courant du conducteur de protection (courant de fuite) est de 10.6 mA. Il est recommandé d'utiliserun protecteur de courant de 30 mA.

PROTECTIVE EARTHING

The Power Supply must be properly grounded to mains protective earth termination at end use.

SERVICING

In case of failure, the power supply must be returned to a Bel Power Solutions Authorized Service Center. There are no user serviceable parts in this power supply.

LIMITED WARRANTY

Bel Power Solutions warrants each power supply of its manufacture for a period of two years from the date of original shipment. This warranty applies to defects in materials and workmanship that result in non-performance to published specifications. The product(s) must be returned to a Bel Power Solutions Authorized Service Center for repair with a Bel Power Solutions preassigned RMA number.
Bel Power Solutions assumes no liabilities for consequential damages of any kind through the use or misuse of its products by any user. No other obligations are expressed or implied. Please note that the specifications, terms, and conditions stated are subject to change without notice.

NUCLEAR AND MEDICAL APPLICATIONS

Bel Power Solutions products are not designed, intended for use in, or authorized for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems without the express written consent of the respective divisional president of Bel Power Solutions.

TECHNICAL REVISIONS

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

CONNECTORS AND PINOUTS DESCRIPTION

AC INPUT POWER CONNECTOR – PINOUT

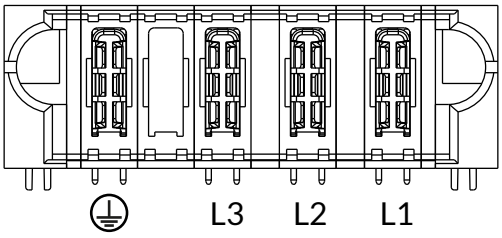


Figure 1. AC Input Connector - detail

SIGNAL NAME	PIN #	TYPE	RECOMMENDED WIRES	V MAX I MAX
Earth	⏚	Protective Earth	Min. 2.5 mm²	528 Vrms (line to line) 10 Arms (per line)
AC Line 3	L3	Input Power AC Fused	Min. 2.5 mm²	
AC Line 2	L2	Input Power AC Fused	Min. 2.5 mm²	
AC Line 1	L1	Input Power AC Fused	Min. 2.5 mm²	

Connector type: Amphenol 10106262-4000k02LF
Mating part: to PCB: Amphenol 10106264-4000K02LF / with cables: Amphenol 10129500-1ND1121LF

POWER | PROTECT | CONNECT

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DC OUTPUT POWER & SIGNAL CONNECTOR - PINOUT

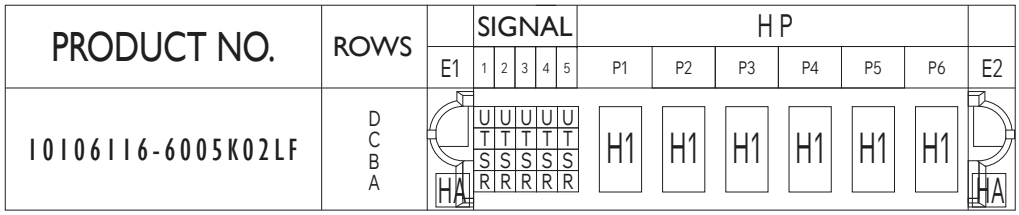


Figure 2. DC Output Connector - detail

SIGNAL NAME	PIN #	TYPE	SIGNAL REFERENCE	LOW LEVEL HIGH LEVEL	V MAX I MAX
+5V_AUX_RTN	U1	Auxiliary Output Ground (Return)	-	-	-
+5V_AUX	U2	Auxiliary Output +5 VDC, max. 0.5 A	AUX_RTN	4.8 VDC to 5.2 VDC	5.5 VDC 0.5 A
INHIBIT	U3	Output Inhibit - Open circuit or “High” to SRTN shuts OFF Vout	SRTN	<0.4 VDC >2.5 VDC	3.6 VDC 0.2 mA
CAN_L	U4	Communication Data	CAN_H	—	-2 to 7 VDC 15 mA
CAN_H	U5	Communication Data	CAN_L	—	-2 to 7 VDC 15 mA
ACSH_RTN	T1	Active Current Share Ground (Return)	ACSH	—	—
ACSH	T2	Active Current Share	ACSH_RTN	0.2 VDC to 5.0 VDC	7 VDC 0.7 mA
ADDR_0	T3	CAN Bus Address	SRTN	<0.4 VDC >2.5 VDC	3.6 VDC 0.2 mA
ADDR_1	T4	CAN Bus Address	SRTN	<0.4 VDC >2.5 VDC	3.6 VDC 0.2 mA
ADDR_2	T5	CAN Bus Address	SRTN	<0.4 VDC >2.5 VDC	3.6 VDC 0.2 mA
V_MARGIN	S1	Analog Signal for Output Voltage Adjustment	SRTN	—	5.5 VDC 0.2mA
SRTN	S2	Signal Ground (Return)		—	—
I_MARGIN	S3	Analog Signal for Output Current Adjustment	SRTN	—	5.5 VDC 0.2 mA
SENSE-	S4	Sense Line for Vout- – voltage drop compensation for negative pole	Vout+	—	—
SENSE+	S5	Sense Line for Vout+ – voltage drop compensation for positive pole	Vout-	—	—
PS_PRESENT_CHAIN	R1	Power Supply Seated – Input Signal	SRTN	—	1 VDC 100 mA
OUTPUT_OK	R2	Output Voltage Fault - open collector, external pull-up needed to max. 7 V	SRTN	<0.4 VDC Pull up	7 VDC 20mA
INPUT_OK	R3	AC Power Fault or Warning - open collector, external pull-up needed to max. 7 V	SRTN	<0.4 VDC Pull up	7 VDC 20mA
OTP/FAILURE	R4	Over Temperature / Over Load Fault - open collector, external pull-up needed to max. 7 VDC	SRTN	<0.4 VDC Pull up	7 VDC 20mA
STANDBY	E5	Power Supply Standby Pin – Open circuit or “High” to SRTN means Standby mode – Vout is disabled with low power consumption	SRTN	<0.4 VDC >2.5 VDC	3.6 VDC 0.2 mA
Vout-	P1 P2 P3	Output Power DC	—	—	60 VDC 105 A
Vout+	P4 P5 P6	Output Power DC	Vout-	—	60 VDC 105 A

[1] SRTN and Vout- are connected together inside the power supply
[2] 120 Ω resistors connection required between CAN_L and CAN_H on both sides externally

Connector type: Amphenol 10106116-6005K02LF
Mating part: to PCB: Amphenol 10106118-6005K02LF

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ADDRESS - SWITCH FUNCTION

ADDR_0	ADDR_1	ADDR_2	UNIT ADDRESS	
			HEX	DEC
OPEN	OPEN	OPEN	0xC1	193
SHORT	OPEN	OPEN	0xC2	194
OPEN	SHORT	OPEN	0xC3	195
SHORT	SHORT	OPEN	0xC4	196
OPEN	OPEN	SHORT	0xC5	197
SHORT	OPEN	SHORT	0xC6	198
OPEN	SHORT	SHORT	0xC7	199
SHORT	SHORT	SHORT	0xC8	200

LED SIGNALING

LED NAME	COLOR	STATUS	OPERATING CONDITIONS
AC-OK	Green	ON Blinking	AC Input Voltage is within operation range FW upgrade via CAN
DC-OK	Green	ON	Output is Enabled and Operational
OT/FAIL	Orange	ON Blinking	Over Temperature conditions inside the unit or FAIL appeared (e.g. Overload) Over Temperature warning

COOLING

Liquid cooled:
Inlet Coolant Temp.: 0°C to 40°C
Coolant Flow: 5 l/min ± 2 l/min
Max. Coolant Pressure: 6 bar

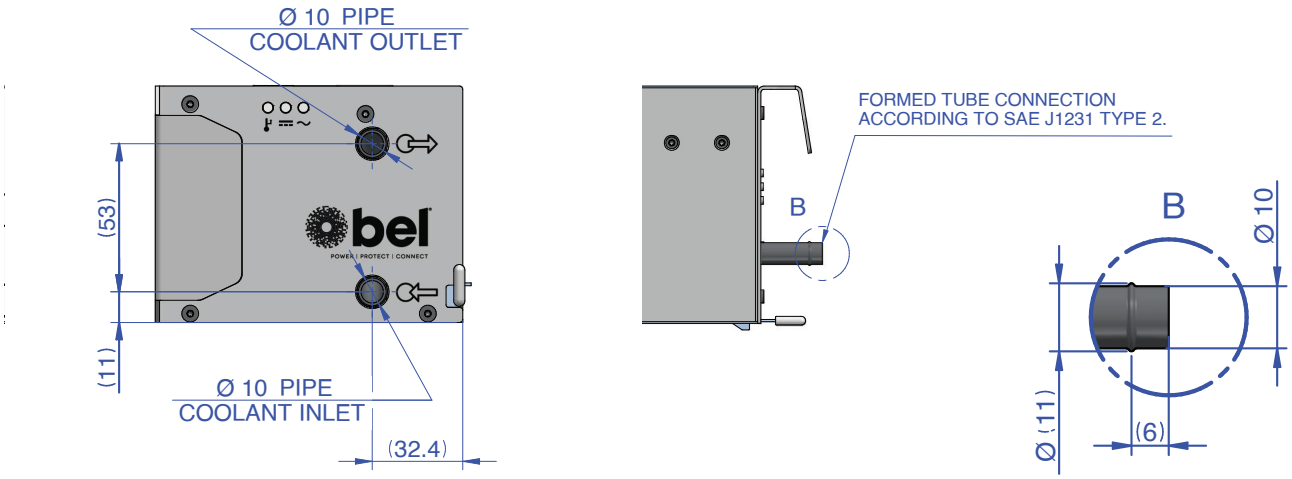


Figure 3. Front View – LEDs and Coolant Connection

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MECHANICAL DIMENSIONS

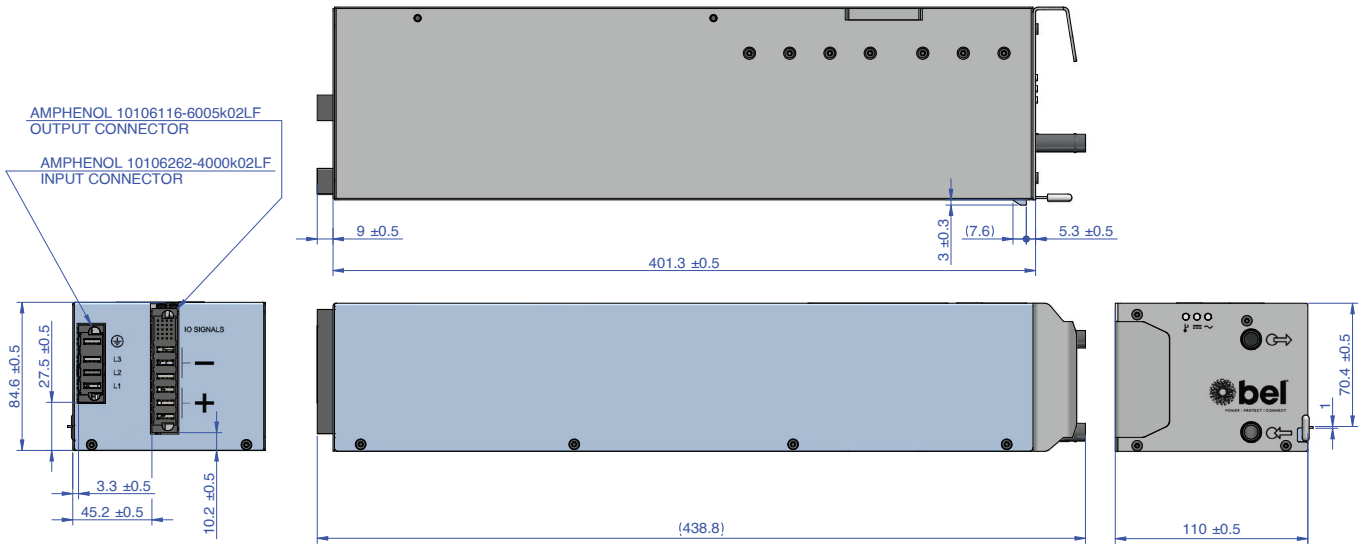


Figure 4. Mechanical Drawing

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