

# INSTALLATION INSTRUCTION

## TXP3500/4000 Series

READ THIS CAREFULLY BEFORE INSTALLATION!	VOR DER INSTALLATION BITTE FOLGENDE SICHERHEITSHINWEISE BEACHTEN!	LEGGERE ATTENTAMENTE PRIMA DELL'INSTALLAZIONE!	A LIRE ATTENTIVEMENT AVANT L'INSTALLATION!
<p>Before operating, read this document thoroughly and retain it for future reference. Non-respect of these instructions may reduce performances and safety of the devices and cause danger for people and property.</p> <p>The products must be installed, operated, serviced and maintained by qualified personnel in compliance with applicable standards and regulations.</p> <p>Do not open the device, it does not contain replaceable components, the tripping of the internal fuse (if included) is caused by an internal failure.</p> <p>Do not repair or modify the device, if malfunction or failure should occur during operation, send unit to the factory for inspection.</p> <p>No responsibility is assumed by Bel Power Solutions for any consequences deriving from the use of this material.</p>	<p>Lesen Sie dieses Dokument vor der Inbetriebnahme sorgfältig durch und bewahren Sie es zum späteren Nachschlagen auf.</p> <p>Die Nichtbeachtung dieser Anweisungen kann die Funktion und Sicherheit der Geräte beeinträchtigen und birgt Gefahren für Personen und Eigentum.</p> <p>Die Geräte müssen von qualifiziertem Personal unter Einhaltung der geltenden Normen und Vorschriften installiert, betrieben, gewartet und instand gehalten werden.</p> <p>Öffnen Sie das Gerät nicht, es enthält keine austauschbaren Komponenten, das Auslösen der internen Sicherung (falls vorhanden) ist stets auf tiefergehende Fehler im Schaltkreis zurück zu führen.</p> <p>Reparieren oder modifizieren Sie das Gerät nicht. Sollte während des Betriebs eine Fehlfunktion oder ein Defekt auftreten, schicken Sie das Gerät zur Überprüfung ins Werk.</p> <p>Bel Power Solutions übernimmt keine Haftung für die Folgen, die sich aus dem Einsatz dieses Gerätes ergeben.</p>	<p>Prima dell'installazione, leggere attentamente questo documento istruzioni e conservare per future consultazioni.</p> <p>L'inosservanza delle presenti istruzioni può compromettere le caratteristiche e la sicurezza dell'apparecchio e causare pericolo per le persone e le cose.</p> <p>Il prodotto deve essere installato, utilizzato e riparato da personale qualificato e nel rispetto delle normative vigenti.</p> <p>Non aprire il prodotto, esso non contiene componenti sostituibili, il guasto del fusibile interno (se previsto) è causato da un guasto interno.</p> <p>Non tentare di riparare o modificare il prodotto, se durante il funzionamento si verificano guasti o anomalie, inviarlo al produttore per il controllo.</p> <p>Bel Power Solutions non si assume nessuna responsabilità per qualunque conseguenza derivante dall'uso di questo materiale.</p>	<p>Lire ces instructions avant l'installation, conserver ce manuel pour référence future.</p> <p>Défaut de se conformer à ces instructions peut affecter les caractéristiques et la sécurité du dispositif, et causer du danger aux personnes ou aux biens.</p> <p>Les produits doivent être installés, exploités et entretenus par du personnel qualifié et en conformité avec les règlements.</p> <p>N'ouvrez pas le produit, il ne contient aucune pièce réparable, le déclenchement du fusible interne (le cas échéant) est causé par un défaut interne.</p> <p>Ne pas essayer de réparer ou modifier le produit ; si des défaillances se produisent pendant le fonctionnement, retourner le produit au fabricant pour inspection.</p> <p>Bel Power Solutions n'assume aucune responsabilité des conséquences éventuelles découlant de l'utilisation des produits.</p>
CAUTION	ACHTUNG	ATTENZIONE	AVERTISSEMENT
<p><b>RISK OF BURNS, EXPLOSION, FIRE, ELECTRICAL SHOCK, PERSONAL INJURY.</b></p> <p>Never carry out work on live parts! Danger of fatal injury!</p> <p>The product's enclosure may be hot, allow time for cooling product before touching it.</p> <p>Do not allow liquids or foreign objects to enter into the products.</p> <p>To avoid sparks, do not connect or disconnect the device before having previously turned-off input power and wait for internal capacitors discharge (minimum 2 minutes).</p>	<p><b>GEFAHR VON VERBRENNUNGEN, EXPLOSIONEN, FEUER, STROMSCHLAG, PERSONENSCHÄDEN.</b></p> <p>Führen Sie niemals Arbeiten an spannungsführenden Teilen durch! Gefahr von tödlichen Verletzungen! Das Gehäuse des Gerätes kann heiß sein, lassen Sie Zeit zum Abkühlen des Gerätes, bevor Sie es berühren. Lassen Sie keine Flüssigkeiten oder Fremdkörper in die Geräte eindringen.</p> <p>Um Überschläge zu vermeiden, schließen Sie das Gerät nicht an oder trennen Sie es nicht ohne vorher die Eingangsspannung abgeschaltet zu haben, und warten Sie die Entladung der internen Kondensatoren ab (mindestens 2 Minuten).</p>	<p><b>RISCHIO USTIONI, ESPLOSIONE, INCENDIO, SCOSSA, LESIONI GRAVI.</b></p> <p>Non effettuare mai operazioni sulle parti sotto tensione! Pericolo di lesioni letali!</p> <p>Il contenitore può scottare, lasciar quindi raffreddare il dispositivo prima di toccarlo.</p> <p>Non far entrare liquidi o oggetti estranei nel dispositivo.</p> <p>Per evitare scintille, non collegare o scollegare l'apparecchiatura prima di avere tolto tensione di ingresso e prima che sia avvenuta la scarica dei condensatori interni (min. 2 minuti).</p>	<p><b>RISQUE DE BRULURES, EXPLOSION, INCENDIE, ELECTROCUTION, DOMMAGE AUX PERSONNES.</b></p> <p>Ne jamais effectuer des opérations sur les parties sous tension! Danger de mort!</p> <p>Le boîtier peut produire des brûlures, le laisser refroidir avant de toucher l'appareil.</p> <p>Ne faire pas pénétrer des liquides ou des corps étrangers dans l'appareil.</p> <p>Pour éviter des étincelles, ne pas connecter ou déconnecter l'équipement jusqu'à ce que la tension d'entrée a été supprimée et avant qu'il n'ait eu lieu la décharge des condensateurs internes (minimum 2 minutes).</p>
INTENDED USE	BESTIMMUNGSGEMÄßER BETRIEB	USO PREVISTO	UTILISATION
<p>These are isolated devices suitable for <b>ES1</b> and <b>ES2</b> circuitry and are designed to be mounted internally within a system. They are intended for general use such as in industrial control, communication, medical and instrumentation equipment.</p> <p>Do not use these devices in applications where malfunction may cause injury or death. Please see full spec of unit for further details.</p>	<p>Es handelt sich um galvanisch getrennte Geräte, die für <b>ES1</b>- und <b>ES2</b>-Anwendungen geeignet sind und für die Montage auf DIN-Schienen und die Installation in einem Schutzgehäuse konzipiert sind. Sie sind für den allgemeinen Gebrauch wie z.B. in industriellen Steuer-, Kommunikations- und Automatisierung-Anwendungen vorgesehen. Verwenden Sie diese Geräte nicht in Anwendungen, bei denen eine Fehlfunktion zu Verletzungen oder zum Tod führen kann.</p>	<p>I dispositivi sono isolati, adatti per applicazioni <b>ES1</b> e <b>ES2</b>, sono dotati di aggancio per il montaggio su guida DIN all'interno di quadri elettrici o contenitori di protezione, per l'utilizzo con controllori industriali, unità di comunicazione o apparecchi di misura.</p> <p>Non utilizzare in applicazioni in cui un eventuale guasto può comportare rischio di lesioni o di morte.</p>	<p>Les produits sont isolés, appropriés pour les circuits <b>ES1</b> et <b>ES2</b> et sont équipés d'un crochet pour montage sur rail DIN dans des armoires ou conteneurs de protection, pour utilisation avec les contrôleurs industriels, des modules de communication ou des unités de mesure.</p> <p>Ne pas utiliser ces dispositifs dans une application où un dysfonctionnement pourrait entraîner le risque des blessures ou de mort.</p>
ENVIRONMENTAL CHARACTERISTICS	UMGEBUNGSBEDINGUNGEN	CARATTERISTICHE AMBIENTALI	CARACTÉRISTIQUES ENVIRONNEMENTALES
<p>Installation in a Pollution Degree 2 environment.</p> <p>Do not use in wet area or subject to moisture.</p> <p>Carefully recycle the product and related batteries according to local regulations.</p>	<p>Installation in einer Umgebung mit Verschmutzungsgrad 2.</p> <p>Nicht in nassen Bereichen oder unter Feuchtigkeit verwenden.</p> <p>Das Gerät und die zugehörigen Batterien sind entsprechend den lokalen Vorschriften zu recyceln bzw. zu entsorgen.</p>	<p>Usare in ambienti con Grado di Inquinamento 2.</p> <p>Non far funzionare l'apparecchio in un ambiente umido o soggetto a formazione di condensa. Riciclare il prodotto e le batterie collegate, nel rispetto delle normative locali vigenti.</p>	<p>Utiliser les produits dans des environnements avec degré de pollution 2.</p> <p>Ne pas employer l'appareil dans un environnement humide ou soumis à la condensation. Recycler les produits et les batteries, conformément à la réglementation locale.</p>

# INSTALLATION INSTRUCTION



<b>MODEL:</b>	TXP3500-1048G	TXP4000-1110G
<b>AC INPUT:</b>	~ 3 PHASE VOLTAGE: 115-277 / 200-480 VAC, 3W + PE CURRENT: 12 - 5 A FREQUENCY: 50 - 60 Hz	~ 3 PHASE VOLTAGE: 230-277 / 400-480 VAC, 3W + PE CURRENT: 7 - 5.2 A FREQUENCY: 50 - 60 Hz
<b>NOTE:</b>	Input selection is automatic, no manual change is required	
<b>DC OUTPUT:</b>	---	---
	VOLTAGE: adjustable 10 - 50 V CURRENT: max. 73 A POWER: 3500 W @ 48 V	VOLTAGE: adjustable 30 - 137.5 V CURRENT: max. 36.5 A POWER: 4000 W @ 110 V

## SAFETY APPROVALS

- UL/CSA 62368-1 3rd
- IEC 62368-1 3rd
- EN 62368-1 3rd
- CE Mark for LVD



## 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 1 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 is not designed to be operated outside of an enclosure which provides a means of mechanical, electrical, and fire protection. To maintain SELV requirements by 48V version, the outputs should not be connected together in any manner which causes the total output voltage to exceed 60 VDC. Input fuses are rated 20A/500V, fast acting. In case of failure the unit must be returned to Authorized Service Center. There are no user-serviceable parts in this power supply.

## PROTECTIVE EARTHING

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

## ENVIRONMENTAL CONDITIONS:

Ambient Temperature Range -40 °C to +85 °C

TRANSPORTATION & STORAGE: Relative Humidity Range: 5% to 95% RH Non-Condensing  
Altitude: to 12192 m (40 000 feet) ASL

Ambient Temp. Range -25°C to +55°C (at 100% load)

OPERATION: Relative Humidity Range: 10% to 90% RH Non-Condensing  
Altitude: to 3048 m (10 000 feet) ASL

## INSTALLATION REQUIREMENTS

Recommended power wires dimensions you can find in charts below. The mate parts of connectors are also described below. For the air inlet and outlet there is required to maintain a minimum open space 10 cm. For chassis fastening you will need 4x screws M4. **To bring the unit working you will need to reconnect externally pins 6, 7, 8 of signal connector (input or output), to activate Enable and disable Inhibit functions.** There is also a SW Enable and Inhibit commands, but these are factory set as unit should work (no need to set them by GUI).

## WARNING

The equipment is for business use (Class A) and has acquired electromagnetic conformity registration. 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.

## SAFETY INSTRUCTIONS

**Switch-off the input power before doing any maintenance on the unit! By Vout >60V do not touch output busbars after switch-off for min. 90 s!**

## SERVICING

In case of failure, the unit must be returned to the Bel Power Solutions Authorized Service Center. There are no user serviceable parts inside. In case of failure of the fan this can be replaced without whole chassis opening. Only remove four outer screws on the front panel containing the non-running fan (not those holding the grill) and pull the panel out. Disconnect the fan connector from the PC board by pressing the latch. Replace the part for an original replacement part (contact our Service Center).

## 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 pre-assigned 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 products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.

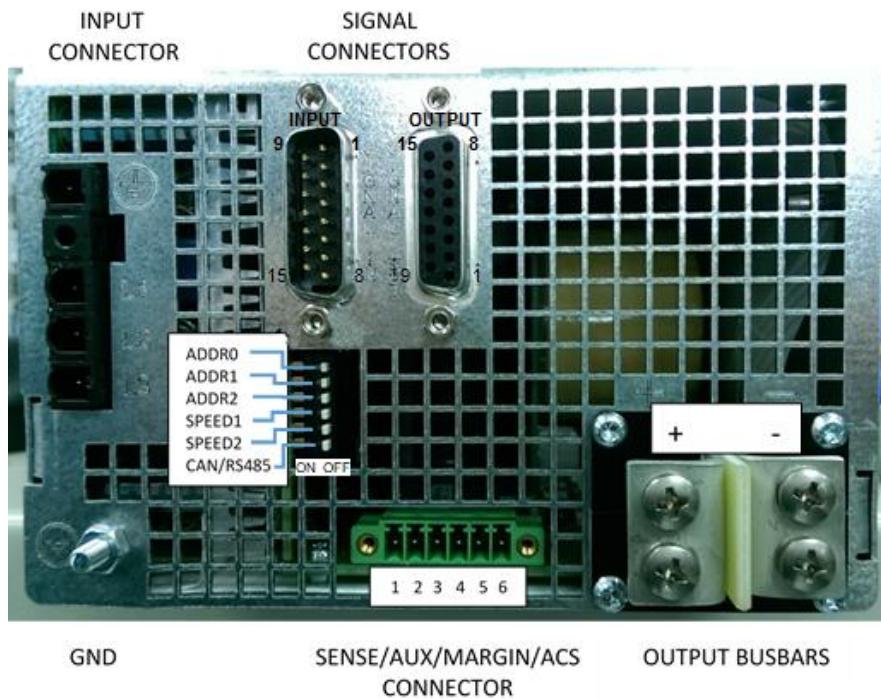


Figure 1. Rear View - Connector Positions

### INPUT POWER CONNECTOR: PINOUT

SIGNAL NAME	PIN #	TYPE	RECOMMENDED WIRES	V MAX I MAX
Earth		Earth / Chassis	Min. 2.5 mm <sup>2</sup>	
AC Line 1	L1	Input Power AC Fused	Min. 2.5 mm <sup>2</sup>	
AC Line 2	L2	Input Power AC Fused	Min. 2.5 mm <sup>2</sup>	528 Vrms (line to line) 16 Arms (per line)
AC Line 3	L3	Input Power AC Fused	Min. 2.5 mm <sup>2</sup>	

Connector type:  
Mating part:

Weidmüller 1081850000  
Weidmüller 1173520000

### POWER OUTPUT CONNECTOR: +/- BUS BARS

SIGNAL NAME	PIN #	TYPE	SIGNAL REFERENCE
Vout+	+	Output Power DC	Vout-
Vout-	-	Output Power DC	-

Connector type:  
Mating part:

Bus-bar see Fig. 1  
Ring terminal for M4 screw, with appropriate cross section for wire.

# INSTALLATION INSTRUCTION

## SIGNAL INPUT CONNECTOR: PINOUT

SIGNAL NAME	PIN #	TYPE	SIGNAL REFERENCE	LOW LEVEL HIGH LEVEL	V MAX I MAX
RS485-A	1	RS485 Half Duplex, Differential pair	RS485-B	+/-60 mA @ 60 Ω, 0 pF <sup>2</sup>	-7 to 12 VDC 8 mA
CAN_H	2	CAN Bus	CAN_L	-	-27 to 40 VDC 15 mA
RESERVED	3	Do not connect	DRTN	-	-
IN OK	4	AC Power Fail Warning – open collector, low by fail	DRTN	<0.4 VDC 5 VDC	5.1 VDC 15 mA
OUT OK	5	Output Voltage Fault – open collector, low by fail	DRTN	<0.4 VDC 5 VDC	5.1 VDC 15 mA
INHIBIT	6	Output Inhibit - Open circuit or "High" to DRTN shuts OFF Vout	DRTN	<0.4 VDC >2.5 VDC	5.1 VDC -
ENABLE	7	Power Supply Enable pin – for unit enable short this pin to DRTN	DRTN	<0.4 VDC >2.5 VDC	5.1 VDC -
DRTN <sup>1</sup>	8	Digital Ground / Return	-	-	-
RS485-B	9	RS485 Half Duplex, Differential pair	RS485-A	+/-60 mA @ 60 Ω, 50 pF <sup>2</sup>	-7 to 12 VDC 8 mA
CAN_L	10	CAN Bus	CAN_H	-	-27 to 40 VDC 15 mA
N.C.	11	Do not connect	-	-	-
OT/FAIL	12	Over Temperature / PSU Fail - open collector, low by fail	DRTN	<0.4 VDC 5 VDC	5.1 VDC 15 mA
PS-PRESENT	13	Power Supply Seated – signal internally connected through 10 Ohm resistor to DRTN	DRTN	-	1 VDC 100 mA
N.C.	14	Do not connect	-	-	-
N.C.	15	Do not connect	-	-	-

<sup>1</sup> DRTN and SRTN / Vout- are galvanically separated, SRTN and Vout- are internally connected together

<sup>2</sup> Connect 120Ω resistors between RS485-A and RS485-B on both sides of the line externally

Connector type: E-TEC, SDD-1515-2-95-FMS  
Mating part: Würth Elektronik, 61801529321

**SIGNAL OUTPUT CONNECTOR: PINOUT**

SIGNAL NAME	PIN #	TYPE	SIGNAL REFERENCE	LOW LEVEL HIGH LEVEL	V MAX I MAX
RS485-A	1	RS485 Half Duplex, Differential pair	RS485-B	+/-60 mA @ 60 Ω, 50 pF <sup>2</sup>	-7 to 12 VDC 8 mA
CAN_H	2	CAN Bus	CAN_L	-	-27 to 40 VDC 15 mA
RESERVED	3	Do not connect	DRTN	-	-
IN OK	4	AC Power Fail Warning – open collector, low by fail	DRTN	<0.4 VDC 5 VDC	5.1 VDC 15 mA
OUT OK	5	Output Voltage Fault – open collector, low by fail	DRTN	<0.4 VDC 5 VDC	5.1 VDC 15 mA
INHIBIT	6	Output Inhibit - Open circuit or "High" to DRTN shuts OFF Vout	DRTN	<0.4 VDC >2.5 VDC	5.1 VDC -
ENABLE_MULTI	7	Power Supply Enable pin for all units enable (in serial or parallel operation)	DRTN	<0.4 VDC >2.5 VDC	5.1 VDC -
DRTN <sup>1</sup>	8	Signal Return	-	-	-
RS485-B	9	RS485 Half Duplex, Differential pair	RS485-A	+/-60 mA @ 60 Ω, 50 pF <sup>2</sup>	-7 to 12 VDC 8 mA
CAN_L	10	CAN Bus	CAN_H	-	-27 to 40 VDC 15 mA
N.C.	11	Do not connect	-	-	-
OT/FAIL	12	Over Temperature / PSU Fail – open collector, low by fail	DRTN	<0.4 VDC 5 VDC	5.1 VDC 15 mA
PS-PRESENT OUT	13	Power Supply Seated – last unit in a string will pull down this signal (external short to DRTN) and informs the Master Controller that all units in the string are seated and connected	DRTN	<0.4 VDC 5 VDC	5.1 VDC 15 mA
N.C.	14	Do not connect	-	-	-
N.C.	15	Do not connect	-	-	-

<sup>1</sup> DRTN and SRTN / Vout- are galvanically separated, SRTN and Vout- are internally connected together<sup>2</sup> Connect 120Ω resistors between RS485-A and RS485-B on both sides of the line externally

Connector type: E-TEC, SDD-1515-2-95-FMS  
 Mating part: Würth Elektronik, 61801529221

## SENSE/AUX/MARGIN/ACS LINES INPUT/OUTPUT CONNECTOR: PINOUT

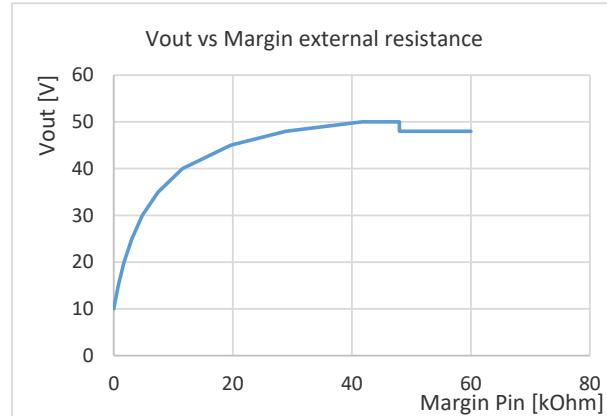
SIGNAL NAME	PIN #	TYPE	SIGNAL REFERENCE	LOW LEVEL HIGH LEVEL	V MAX I MAX
SENSE+	1	Sense line for Vout+ – voltage drop compensation for positive pole		-	-
SENSE-	2	Sense line for Vout- – voltage drop compensation for positive pole		-	-
+Vaux	3	Auxiliary output voltage	SRTN	12.15 VDC 11.85 VDC	0.8 ADC
SRTN <sup>1</sup>	4	Return for +Vaux, Margin, ACS	-	-	-
MARGIN	5	Adjust output voltage by ext. resistor connected between this pin and SRTN	SRTN	0 Ohms 37k Ohms	5.1 VDC
ACS	6	Active Current Share	SRTN	0.2 VDC 5.0 VDC	7 VDC 0.7 mA

<sup>1</sup> SRTN and Vout- are internally connected together

Connector type: Phoenix Contact, MC 1.5/2-G-3.81  
Mating part: Phoenix Contact, MC 1.5/2-ST-3.81

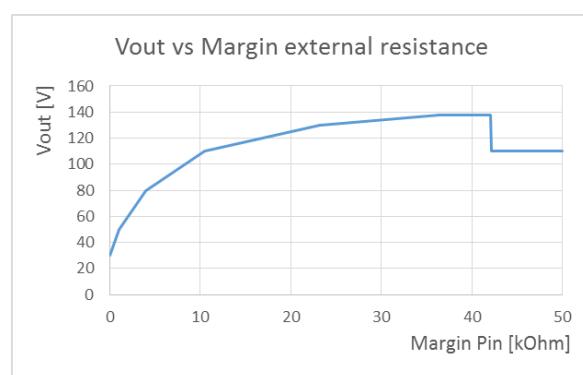
## TXP3500-1048G:

Margin pin [Ohm]	Vout [V]
0	10
750	15
1,78k	20
3k	25
4,8k	30
7,5k	35
11,5k	40
28,7k	48
43k	50
43k - 48k	50
48k - ∞	48 (Vout set)



## TXP4000-1110G:

Margin pin [Ohm]	Vout [V]
0	30
1k2	50
4k2	80
11k	110
39k	138
39k - 45k	138
45k - ∞	110 (Vout set)



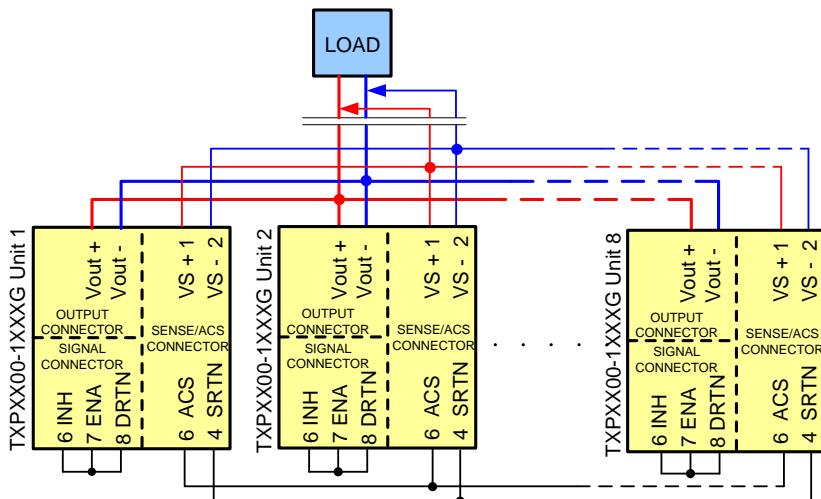
## DIP SWITCH FUNCTION

WITCH 1 ADR0	SWITCH 2 ADR1	SWITCH 3 ADR2	UNIT ADDRESS (hex/dec)	
OFF	OFF	OFF	0xB7	183
ON	OFF	OFF	0xB6	182
OFF	ON	OFF	0xB5	181
ON	ON	OFF	0xB4	180
OFF	OFF	ON	0xB3	179
ON	OFF	ON	0xB2	178
OFF	ON	ON	0xB1	177
ON	ON	ON	0xB0	176

SWITCH 4 SPEED SEL1	SWITCH 5 SPEED SEL2	SWITCH 6 RS485/CAN	RS485 BUS SPEED [baud]	CAN BUS SPEED [baud]
OFF	OFF	OFF	460 800	-
ON	OFF	OFF	115 200	-
OFF	ON	OFF	19 200	-
ON	ON	OFF	9 600	-
OFF	OFF	ON	-	1 000 000
ON	OFF	ON	-	500 000
OFF	ON	ON	-	250 000

## PARALLEL OPERATION

In case of parallel operation all SENSE/AUX/MARGIN/ACS connectors of units in parallel (pins 1, 2, 4, 6) need to be interconnected:



*Figure 2. Parallel Operation Schematic*



# POWER SOLUTIONS & PROTECTION

## **Asia-Pacific**

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Europe, Middle East

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## SERIAL OPERATION

In case of serial operation, the pins SRTN of particular units must not be connected together!

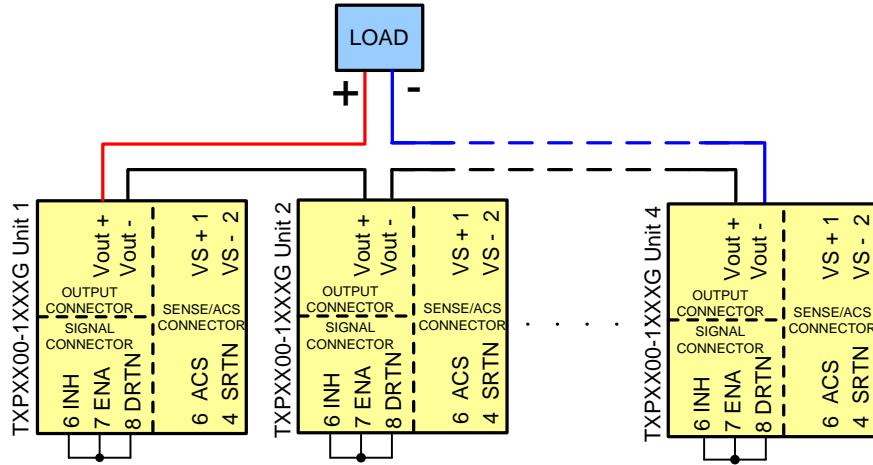


Figure 3. Serial Operation Schematic

## MECHANICAL SPECIFICATIONS

PARAMETER	CONDITIONS / DESCRIPTION
Dimensions (W x H x D)	135 x 85 x 465 mm (see Fig.4)
Weight	6.5 kg (single PSU)
Enclosure	IP20

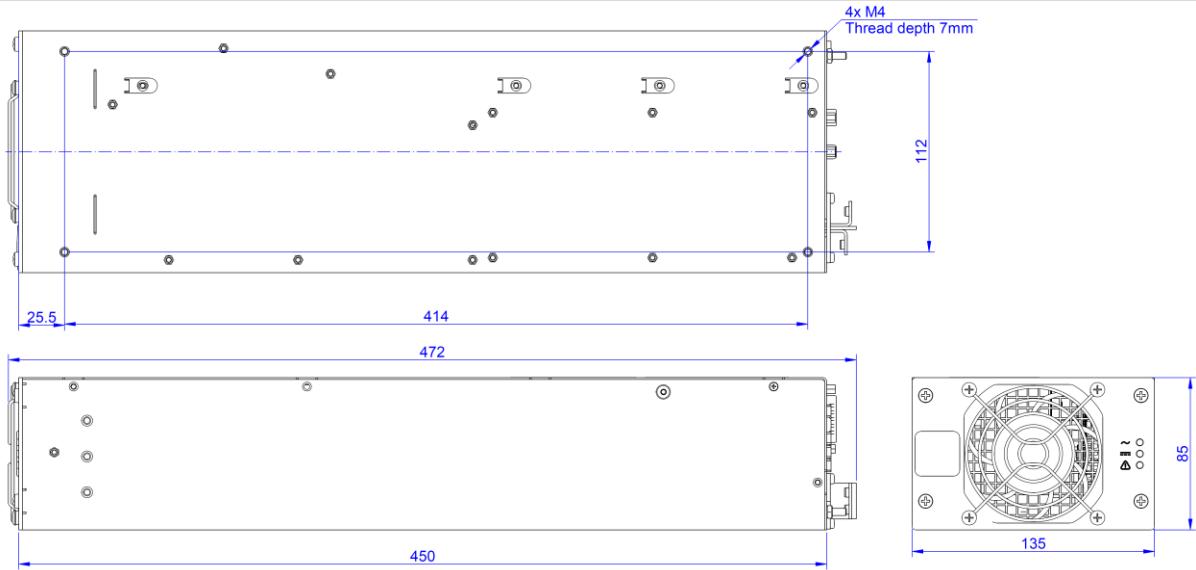


Figure 4. Mechanical Dimension