INSTALLATION INSTRUCTION

PFE1500-12-054XX & PFE1500-12XXXS412 SERIES, SPABRCD-14G, SPABRCD-15G, SPABRCD-16, SPABRCD-17, PFE1500-12-054NACS457, PFE1500-12-054NACS439, PPC33 A022

AC/DC-DC Front-End Power Supply

READ THIS CAREFULLY BEFORE INSTALLATION!	VOR DER INSTALLATION BITTE FOLGENDE SICHERHEITSHINWEISE BEACHTEN!	LEGGERE ATTENTAMENTE PRIMA DELL'INSTALLAZIONE!	A LIRE ATTENTIVEMENT AVANT L'INSTALLATION!
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. The products must be installed, operated, serviced and maintained by qualified personnel in compliance with applicable standards and regulations. 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. Do not repair or modify the device, if malfunction or failure should occur during operation, send unit to the factory for inspection. No responsibility is assumed by Bel Power Solutions for any consequences deriving from the use of this material.	Lesen Sie dieses Dokument vor der Inbetriebnahme sorgfältig durch und bewahren Sie es zum späteren Nachschlagen auf. Die Nichtbeachtung dieser Anweisungen kann die Funktion und Sicherheit der Geräte beeinträchtigen und birgt Gefahren für Personen und Eigentum. Die Geräte müssen von qualifiziertem Personal unter Einhaltung der geltenden Normen und Vorschriften installiert, betrieben, gewartet und instand gehalten werden. 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. 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. Bel Power Solutions übernimmt keine Haftung für die Folgen, die sich aus dem Einsatz dieses Gerätes ergeben.	Prima dell'installazione, leggere attentamente questo documento istruzioni e conservarle per future consultazioni. L'inosservanza delle presenti istruzioni può compromettere le caratteristiche e la sicurezza dell'apparecchio e causare pericolo per le persone e le cose. Il prodotto deve essere installato, utilizzato e riparato da personale qualificato e nel rispetto delle normative vigenti. Non aprire il prodotto, esso non contiene componenti sostituibili, il guasto del fusibile interno (se previsto) è causato da un guasto interno. Non tentare di riparare o modificare il prodotto, se durante il funzionamento si verificano guasti o anomalie, inviarlo al produttore per il controllo. Bel Power Solutions non si assume nessuna responsabilità per qualunque conseguenza derivante dall'uso di questo materiale.	Lire ces instructions avant l'installation, conserver ce manuel pour référence future. 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. Les produits doivent être installés, exploités et entretenus par du personnel qualifié et en conformité avec les règlements. 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. Ne pas essayer de réparer ou modifier le produit ; si des défaillances se produisent pendant le fonctionnement, retourner le produit au fabricant pour inspection. Bel Power Solutions n'assume aucune responsabilité des conséquences éventuelles découlant de l'utilisation des produits.

CAUTION	ACHTUNG	ATTENZIONE	AVVERTISSEMENT
RISK OF BURNS, EXPLOSION, FIRE, ELECTRICAL SHOCK, PERSONAL INJURY. Never carry out work on live parts! Danger of fatal injury! The product's enclosure may be hot, allow time for cooling product before touching it. Do not allow liquids or foreign objects to enter into the products. 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).	**GEFAHR VON VERBRENNUNGEN, EXPLOSIONEN, FEUER, STROMSCHLAG, PERSONENSCHÄDEN.** 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. 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).	**RISCHIO USTIONI, ESPLOSIONE, INCENDIO, SCOSSA, LESIONI GRAVI.** Non effettuare mai operazioni sulle parti sotto tensione! Pericolo di lesioni letali! Il contenitore può scottare, lasciar quindi raffreddare il dispositivo prima di toccarlo. Non far entrare liquidi o oggetti estranei nel dispositivo. 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).	**RISQUE DE BRULURES, EXPLOSION, INCENDIE, ELECTROCUTION, DOMMAGE AUX PERSONNES.** Ne jamais effectuer des opérations sur les parties sous tension! Danger de mort! Le boîtier peut produire des brûlures, le laisser refroidir avant de toucher l'appareil. Ne faire pas pénétrer des liquides ou des corps étrangers dans l'appareil. 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 eut lieu la décharge des condensateurs internes (minimum 2 minutes).

INTENDED USE	BESTIMMUNGSGEMÄßER BETRIEB	USO PREVISTO	UTILISATION
These are component type devices for internal installation within system equipment. They are isolated from hazardous voltages and with outputs under 60 Vdc or connected to protective earth. The devices can be used for general applications such as ITE network/servers, industrial and medical. Do not use these devices in applications where malfunction may cause injury or death. Please see full spec of unit for further details.	Dies sind Komponenten für die interne Installation in Systemgeräten. Sie sind gegen gefährliche Spannungen isoliert und haben Ausgänge unter 60 VDC oder sind mit Schutzerde verbunden. Die Geräte können für allgemeine Anwendungen wie ITE-Netzwerke / Server, Industrie und Medizin verwendet werden. Verwenden Sie diese Geräte nicht in Anwendungen, bei denen eine Fehlfunktion zu Verletzungen oder zum Tod führen kann. Weitere Informationen finden Sie in der vollständigen Spezifikation des Geräts.	I dispositivi sono di tipo componente per l'installazione all'interno dell'apparecchiatura. Sono isolati da una tensione pericolosa e hanno tensione in uscita sotto 60Vdc o sono collegati a terra protettiva. I dispositivi son per l'utilizzo generale per applicazioni come rete ITE/ server, industriali e medici. Non utilizzare in applicazioni in cui un eventuale guasto può comportare rischio di lesioni o di morte. vedere le specifiche complete del dispositivo per ulteriori dettagli	Ce sont des types de composant pour une installation interne d'équipement de système. Ils sont isolés des tensions dangereuses et avec des sorties inférieures à 60 Vdc ou connectés au terre de protection. Les appareils peuvent être utilisés pour des applications générales telles que les réseaux / serveurs ITE, industriels et médicaux. Ne pas utiliser ces dispositifs dans une application où un dysfonctionnement pourrait entraîner le risque des blessures ou de mort. Pour de plus amples informations, se référer à la fiche technique du produit

ENVIRONMENTAL CHARACTERISTICS	UMGEBUNGSBEDINGUNGEN	CARATTERISTICHE AMBIENTALI	CARACTÉRISTIQUES ENVIRONMENTALES
Installation in a Pollution Degree 2 environment. Do not use in wet area or subject to moisture. Carefully recycle the product and related batteries according to local regulations.	Installation in einer Umgebung mit Verschmutzungsgrad 2. Nicht in nassen Bereichen oder unter Feuchtigkeit verwenden. Das Gerät und die zugehörigen Batterien sind entsprechend den lokalen Vorschriften zu recyceln bzw. zu entsorgen.	Usare in ambienti con Grado di Inquinamento 2. 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.	Utiliser les produits dans des environnements avec degré de pollution 2. 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.



MODEL OPTIONS:

PFE1500-12-054NA **PFE1500-12-054RA** **PFE1500-12-054NAC** **PFE1500-12-054NACS457** **PFE1500-12-054NACS439** **PFE1500-12-054RAC** **PFE1500-12NAS412** **PFE1500-12NACS412** **PFE1500-12RACS412** **SPABRCD-14G** **SPABRCD-15G**	**AC INPUT:** 100-240 VAC, 12-7 A, 50/60 Hz **DC INPUT:** 200-350 VDC 10 – 5 A	**DC OUTPUT:** **V1:** 12.0 V / 125 A Max **V2:** 3.3 V / 5 A or 5 V / 3.3 A Max or 12.0 V / 3 A Max (PFE1500-12XXXS412 Series)
PFE1500-12-054NAH **PFE1500-12-054RAH** **PFE1500-12NAHS412**	**AC INPUT:** 100-240 VAC, 12-7 A, 50/60 Hz **DC INPUT:** 200-380 VDC 10 – 5 A	
PPC33 A022	**AC INPUT:** 100-240 VAC, 12-5 A, 50/60 Hz **DC INPUT:** 200-380 VDC 7 – 4 A	
SAFETY APPROVALS:	Approved to the latest version of the following safety standards: UL/CSA 62368-1,EN62368-1 and IEC62368-1.	

Note: Input selection is automatic; no manual change is required.

OUTPUT DERATING TABLE

OUTPUT	DISTRICT	VIN	MAXIMUM OUTPUT POWER/CURRENT (W/A)			MODEL
			45°C	LINEAR DERATING	60°C	
V1	Canada and United States of America (105°C and 12A)	100-200 VAC	83.4-125A	Linear derating	69-104A	PFE1500-12-054NA, SPABRCD-14G, PFE1500-12-054NAC, PFE1500-12-054RA SPABRCD-15G, PFE1500-12-054RAC PFE1500-12NAS412 PFE1500-12NACS412 PFE1500-12RACS412 PFE1500-12-054NACS457 PFE1500-12-054NACS439
		200-240 VAC 200-350 VDC	125A	Linear derating	104A	
	District other than Canada and United States of America (10A and 70°C)	100-200 VAC	42-75A	Linear derating	13-19A	PFE1500-12-054NA, SPABRCD-14G PFE1500-12NAS412
		200-240 VAC 200-350 VDC	75A	Linear derating	19A	
	District other than Canada and United States of America (10A and 70°C)	100-200 VAC	66.5-125A	Linear derating	36-77A	PFE1500-12-054RA, SPABRCD-15G
		200-240 VAC 200-350 VDC	125A	Linear derating	77A	
	District other than Canada and United States of America (10A and 120°C)	100-200 VAC	66.5-125A	Linear derating	66.5-104A	PFE1500-12-054NAC PFE1500-12-054RAC PFE1500-12NACS412 PFE1500-12RACS412 PFE1500-12-054NACS457 PFE1500-12-054NACS439
		200-240 VAC 200-350 VDC	125A	Linear derating	104A	
	Canada and United States of American (15A and 105°C)	100-200 VAC	90-125A	Linear derating	69-104 A	PFE1500-12-054NAH, PFE1500-12-054RAH PFE1500-12NAHS412
		200-240 VAC 200-380 VDC	125A	Linear derating	104A	
	District other than Canada and United States of American (15A and 70°C)	100-200 VAC	70-91A	Linear derating	14-19A	PFE1500-12-054NAH PFE1500-12NAHS412
		200-240 VAC 200-380 VDC	91A	Linear derating	19A	
	District other than Canada and United States of America (15A and 70°C)	100-200 VAC	90A-125A	Linear derating	69-104A	PFE1500-12-054RAH
		200-240 VAC 200-380 VDC	125A	Linear derating	104A	
	Canada and United States of America (15A and 105°C)	100-240 VAC 200-380 VDC	70A	Linear derating	69A	PPC33 A022
	District other than Canada and United States of America (15A and 70°C)	100-200 VAC	70A	Linear derating	14-19A	
		200-240 VAC 200-380 VDC	70A	Linear derating	19A	
Vsb	Worldwide	100-240 VAC 200-380 VDC	5.0 Vdc 3.3 A (VSB_SEL=0), 16.5 W max 3.3 Vdc 5.0 A (VSB_SEL=1), 16.5 W max 12.0Vdc 3.0A, 36 W max			

CAUTIONS & LIMITATIONS

CAUTION

These component level power supplies are intended exclusively for installation within other equipment by an industrial assembly operation or by professional installers. This is a Class 1 power supply; 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, the outputs should not be connected together in any manner which causes the total output voltage to exceed 60 VDC.

PROTECTIVE EARTHING

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

WARNING

Operation of this equipment in a residential environment could cause radio interference.

警告:在居住环境中， 运行此设备可能会造成无线电干扰。

警告:為避免電磁干擾，本產品不應安裝或使用於住宅環境。

ENVIRONMENTAL CONDITIONS

TRANSPORTATION & STORAGE: Ambient Temperature Range: -20 °C to +70 °C
Altitude: 10000 Feet

OPERATION: Ambient Temperature Range: 0 °Cto 45 °C.
Altitude: 10000 Feet

FUSING

Fuse F601 is rated 16 A, 400 Vdc/500 Vac (fast acting).

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 the 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.

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

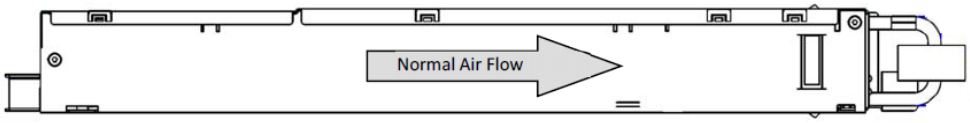
Bel Power Solutions products are not designed, intended for use in, or authorized for use as critical components in life support systems, equipment used in hazardous environments, or nuclear control systems without the express written consent of the respective divisional president of Bel Power Solutions.

TECHNICAL REVISIONS

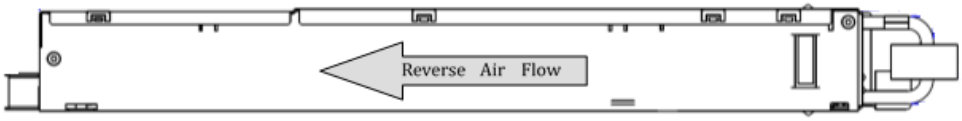
The appearance of products, including safety agency certifications pictured on labels, may change depending on the date manufactured. Specifications are subject to change without notice.

AIR FLOW DIRECTION

For PFE1500-12-054NA, PFE1500-12-054NAC, PFE1500-12-054NAH, SPABRCD-14G, PPC33 A022, PFE1500-12-054NACS457, PFE1500-12-054NACS439, PFE1500-12NAS412, PFE1500-12NACS412, PFE1500-12NAHS412



For PFE1500-12-054RA, PFE1500-12-054RAC, PFE1500-12-054RAH, SPABRCD-15G, PFE1500-12RACS412



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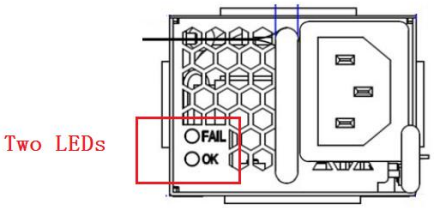
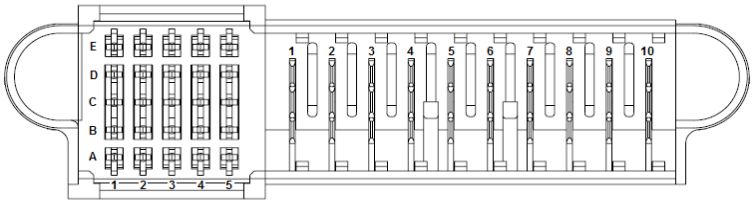
FRONT LEDs



POWER SUPPLY CONDITION	GREEN (OK) LED STATUS	AMBER (FAIL) LED STATUS
No AC power to all power supplies	OFF	OFF
Power Supply Failure (includes over voltage, over current, over temperature and fan failure)	OFF	ON
Power Supply Warning events where the power supply continues to operate (high temperature, high power and slow fan)	OFF	Blinking
AC Present/ 12VSB on (PSU OFF)	Blinking	OFF
Power Supply ON and OK	ON	OFF

OUTPUT CONNECTOR AND PIN DEFINITION



PIN	NAME	DESCRIPTION
Output		
6, 7, 8, 9, 10	V1	+12 VDC main output
1, 2, 3, 4, 5	PGND	Power ground (return)
Control Pins		
A1	VSB	Standby positive output (+3.3/5 V_{SB} or 12 V_{SB})
B1	VSB	Standby positive output (+3.3/5 V_{SB} or 12 V_{SB})
C1	VSB	Standby positive output (+3.3/5 V_{SB} or 12 V_{SB})
D1	VSB	Standby positive output (+3.3/5 V_{SB} or 12 V_{SB})
E1	VSB	Standby positive output (+3.3/5 V_{SB} or 12 V_{SB})
A2	SGND	Signal ground (return)
B2	SGND	Signal ground (return)
C2	HOTSTANDBYEN_H	Hot standby enable signal: active-high
D2	VSB_SENSE_R	Standby output negative sense **(Not used for 12 V_{SB} model)**
E2	VSB_SENSE	Standby output positive sense **(Not used for 12 V_{SB} model)**
A3	APS	I^2C address and protocol selection (select by a pull down resistor)
B3	N/C	Reserved
C3	SDA	I^2C data signal line
D3	V1_SENSE_R	Main output negative sense
E3	V1_SENSE	Main output positive sense
A4	SCL	I^2C clock signal line
B4	PSON_L	Power supply on input (connect to A2/B2 to turn unit on): active-low
C4	SMB_ALERT_L	SMB Alert signal output: active-low
D4	N/C	Reserved
E4	ACOK_H	AC input OK signal: active-high
A5	PSKILL_H	Power supply kill (lagging pin): active-high
B5	ISHARE	Current share bus (lagging pin)
C5	PWOK_H	Power OK signal output (lagging pin): active-high
D5	VSB_SEL	Standby voltage selection (lagging pin) **(Not used for 12 V_{SB} model)**
E5	PRESENT_L	Power supply present (lagging pin): active-low

Additional information about characteristics and application of the products is available from the Bel Power Solutions web site at belfuse.com.