

# 3-PHASE WYE (Y) CONNECTION 277/480 VAC INPUT / 12 VDC OUTPUT

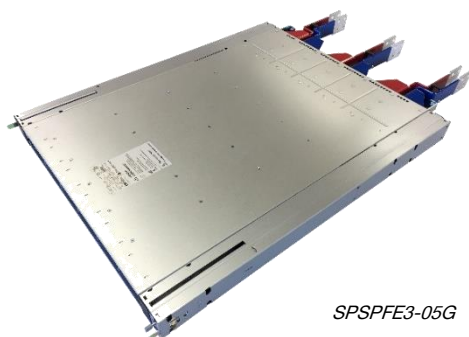
## AC-DC POWER SHELVES SPSPFE3-05G, SPSPFE3-06G, SPSPFE3-08

SPSPFE3-0XG power-shelf solutions provide rectification, system management, and power distribution, while maintaining high reliability and offering flexibility for future expansion.

The power shelf can be configured with up to six hot-swap capable PFE3000-12-069RA AC/DC-DC power supplies that convert 3-phase (3W+N+PE) AC mains power into a main output of 12 VDC for powering intermediate bus architectures (IBA) in high performance and reliability servers, routers, and network switches.

The shelf is compatible with the Open Compute Rack Design.

The shelf has an optional slot for Network Attached Controller for providing control functions and monitoring through a 10/100 MB base Ethernet port and can be connected directly to the data center management network.



SPSPFE3-05G



SPSPFE3-06G



SPSPFE3-08

### Key Features & Benefits

- Two 3-Phase inputs (3W+N+PE), one AC inlet powers 3 power modules
- Modules are hot-swap capable
- Modules support I<sup>2</sup>C communication interface for control, programming and monitoring with Power Management Bus protocol
- Modules implement the following protections:  
Overtemperature, output overvoltage and output overcurrent
- RoHS Compliant
- Available for OCP V1 and V2 bus-bar style connection
- Overall dimensions: 535 x 47 x 859.5 mm (21.06 x 1.85 x 33.84 in)

### Applications

- High Performance Servers
- Routers
- Switches



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## 1. GENERAL BEL POWER SHELF REFERENCE TABLE

			INPUT					
			AC (Y) 277/480 VAC	AC (Y) 240/415 VAC	AC (Δ) 208 VAC	AC (1-Phase) 3x 230 VAC	- 48 VDC	+380 VDC
OUTPUT	+12 VDC	Triple Busbar Straight	<b>SPSPFE3-05G</b>	SPSPFE3-15*	SPSPFE3-09	-	SPSPFF3-03*	SPSPFE3-13*
		Single Busbar Straight	<b>SPSPFE3-06G</b>	SPSPFE3-16*	SPSPFE3-10	SPSTET4-02	SPSPFF3-02*	SPSPFE3-12*
		Single Busbar Offset <sup>1</sup>	<b>SPSPFE3-08</b>	SPSPFE3-14*	SPSPFE3-11	-	SPSPFF3-01	SPSPFE3-07
	+48 VDC	Single Busbar Offset Short <sup>2</sup>	SPSTET4-01	SPSTET4-11	SPSTET4-03*	-	N/A	SPSTET4-04*
		Single Busbar Offset Long <sup>1</sup>	SPSTET4-07	SPSTET4-12	-	-	N/A	-
		Single Busbar Straight Long	SPSTET4-09	SPSTET4-13	-	-	N/A	-
		Triple Busbar Straight Long	SPSTET4-08	SPSTET4-14	-	-	N/A	-
	+380 VDC	Connector Type	SPSTET4-05*	-	SPSTET4-06*	-	-	N/A

<sup>1</sup> Mates with V2<sup>2</sup> Mates with V2 shallow rack

\* Available on request requiring short design cycle.

## 2. ORDERING INFORMATION

MODEL	AC INPUT (WYE CONFIGURATION)	DC OUTPUT	# OF BUSBAR BLADES	CONTROLLER
SPSPFE3-05G	3-phase, 200 – 277 / 346 – 480 VAC	12 VDC	Triple Straight	No
SPSPFE3-05CG	3-phase, 200 – 277 / 346 – 480 VAC	12 VDC	Triple Straight	NAC1006-01
SPSPFE3-06G	3-phase, 200 – 277 / 346 – 480 VAC	12 VDC	Single Straight	No
SPSPFE3-06CG	3-phase, 200 – 277 / 346 – 480 VAC	12 VDC	Single Straight	NAC1006-01
SPSPFE3-08	3-phase, 200 – 277 / 346 – 480 VAC	12 VDC	Single Offset	No
SPSPFE3-08C	3-phase, 200 – 277 / 346 – 480 VAC	12 VDC	Single Offset	NAC1006-01

## 3. TECHNICAL DATA

PARAMETER	DESCRIPTION / CONDITION
AC Input	3-phase, 200-277 / 346-480 VAC Line to Line input with Neutral line <sup>1</sup>
AC Inlet Configuration	3 power modules are powered from one AC inlet
Auxiliary AC Outlet	3 pcs low power AC outlet providing 230 / 277 VAC output with max. 6 A – 10 A, Protected by T 10 A – F 15 A / 500 VAC Fuse (serviceable) When T <sub>A</sub> : +45 °C to +55 °C, Output load current must be derated to 75%
Redundant Configuration	3+3 or 5+1 configuration
Rated Power 1	8700 W (3+3 configuration) <sup>2</sup>
Rated Power 2	14400 W (5+1 configuration) <sup>2</sup>
Output Connection	SPSPFE3-05G: 3 sets of output blades for +12 VDC output (each set of blades has max.585 A) SPSPFE3-06G: 1 set of output blade for +12 VDC output SPSPFE3-08: 1 set of output blade for +12 VDC output
Standby Output	60 W (Standby output 12 V / 5 A)
Communication	I <sup>2</sup> C Power Management Bus
NAC1006-01	Network Attached Controller: Ethernet – SNMPv3 / HTTP

<sup>1</sup> Power modules are connected Line to Neutral.<sup>2</sup> Rated Power is reduced as per current share accuracy characteristic. See PFE3000-12-069RA Datasheet.

#### 4. SAFETY WARNING

The user assumes all responsibility and liability for proper and safe handling of the goods. Further, the user indemnifies Bel Power Solutions Inc. from all claims arising from the handling or use of the goods. Persons handling the product(s) must have electronics training and observe good engineering practice standards.

**CAUTION:** Multiple power source. Disconnect all power cords before servicing.

#### 5. REFERENCE DOCUMENTS

DOCUMENT NUMBER	DESCRIPTION
BCD.00297	PFE3000-12-069RA Datasheet
BCM.00177	PFE3000-12-069RA Installation Instruction
BCD.00923	PFE3600-12-069RA Datasheet
BCM.00488	PFE3600-12-069RA Installation Instruction
BCA.00070	PFE3000-12-069RA / PFE3600-12-069RA Power Management Bus Communication Manual
BCD.00926	NAC1006-01 Datasheet
BCA.00178	SPSPFE3-0XG Communication Manual
BCM.00444	SPSPFE3-05G / SPSPFE3-06G Installation Instruction
BCM.00516	SPSPFE3-08 Installation Instruction
PCA9547PW	PCA9547PW Datasheet from NXP

### 6. OVERVIEW

Each power shelf model is a 10U height power shelf. It can be configured with up to six hot-swap capable PFE3000-12-069RA AC/DC-DC power supplies that convert standard AC mains power into a main output of 12 VDC for powering intermediate bus architectures (IBA) in high performance and reliability servers, routers, and network switches.

The I<sup>2</sup>C communication is routed through an I<sup>2</sup>C Multiplexer (NXP PCA9547PW). PSU Modules support I<sup>2</sup>C communication interface for control, programming and monitoring with the Power Management Bus protocol.

The shelf has a slot for network attached controller (NAC) for providing control functions and monitoring through a 10/100 MB base Ethernet port and can be connected directly to the data center management network. It is hot-pluggable and supplied via the 12 V standby provided by the power supplies in the shelf. The controller can be configured through a web interface; the monitoring and control functions are accessed through SNMPv3.

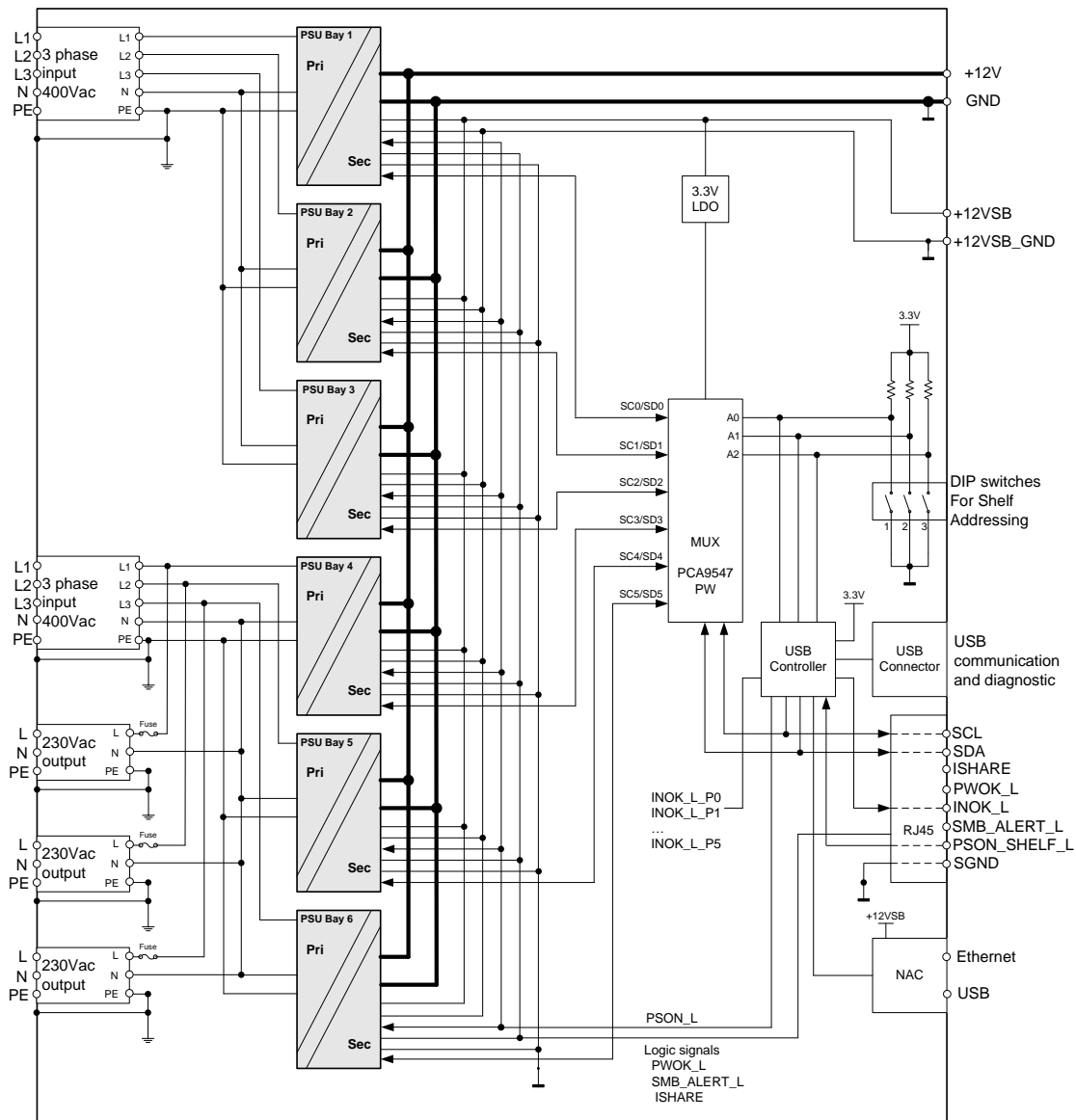


Figure 1. Block Diagram

### 7. INPUT SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	MIN	NOM	MAX	UNIT
<b>Input Connector (J106, J107)</b>					
AC Nominal Input Voltage	Line to Line input		400 / 480		VAC
AC Input Voltage Ranges	Line to Neutral input	180		300	VAC
Max Input Current	Per line			23	Arms
Input Frequency		47	50 / 60	63	Hz

### 8. OUTPUT SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	MIN	NOM	MAX	UNIT
<b>Main Output V1 (Output Bus Bar)</b>					
Nominal Output Voltage			12.3		VDC
Voltage Regulation		-5		+5	% Vout nom
Nominal Output Power 1	3+3 configuration, $T_a < 45^\circ\text{C}$			8700	W
Derated Output Power 1	3+3 configuration, $T_a = 55^\circ\text{C}^3$			6525	W
Nominal Output Power 2	5+1 configuration, $T_a < 45^\circ\text{C}$			14400	W
Derated Output Power 2	5+1 configuration, $T_a = 55^\circ\text{C}^3$			10800	W
Nominal Output Current 1	3+3 configuration, $T_a < 45^\circ\text{C}$			707	ADC
Derated Output Current 1	3+3 configuration, $T_a = 55^\circ\text{C}^3$			530	ADC
Nominal Output Current 2	5+1 configuration, $T_a < 45^\circ\text{C}$			1171	ADC
Derated Output Current 2	5+1 configuration, $T_a = 55^\circ\text{C}^3$			878	ADC

<b>Standby Output VSB (J23)</b>					
Output Voltage			12		VDC
Voltage Regulation		-5		+5	% Vout nom
Output Power				60	W
Output Current				5	ADC

<b>Auxiliary AC Outlet (J123, J124, and J125)</b>					
AC Output Voltage (J123)	L1 to Neutral		230 / 277		VAC
AC Output Voltage (J124)	L2 to Neutral		230 / 277		VAC
AC Output Voltage (J125)	L3 to Neutral		230 / 277		VAC
AC Output Current (J123)	L3 to Neutral			6	Arms
AC Output Current (J124, J125)	L1, L2 to Neutral			10	Arms
Fuse Protection per Line (F123)	Serviceable (10 A / 500 VAC Time Lag fuse)				
Fuse Protection per Line (F124, F125)	Serviceable (15 A / 500 VAC Fast-Acting fuse)				

**NOTE:** When  $T_a$ : +45 °C to +55 °C, Output load current must be derated to 75%.

<sup>3</sup> Linear derating at  $T_a > 45^\circ\text{C}$  is based per module, see PFE3000-12-069RA datasheet

## 7.1 PROTECTION (PER MODULE)

PARAMETER	DESCRIPTION / CONDITION	MIN	NOM	MAX	UNIT
Input Fuses (L+N)	Not user accessible, quick-acting (F)		25		A
OV Threshold $V_I$		13.6	14.2	14.8	VDC
OV Latch Off Time $t_I$				1	ms
OV Threshold $V_{SB}$		13.3	13.9	14.5	VDC
OV Latch Off Time $V_{SB}$				1	ms
Current Limitation	$T_a < 45^\circ\text{C}$ $T_a = 55^\circ\text{C}$	248 186		274 212	A
Current Limit Blanking Time	Time to latch off when in over current	20	22	24	ms
Current Limit During Short Time Overload $I_I$	Maximum duration 20ms, per module	292	300	308	A
Max Short Circuit Current $I_I$	$I_I < 3\text{ V}$ , per module			350 <sup>4</sup>	A
Short Circuit Latch Off Time	Time to latch off when in short circuit		10		ms
Current Limitation $V_{SB}$	Per module	6		9	A
Current Limit Blanking Time	Time to hit hiccup when in over current			1	ms
Over Temperature on Critical Points	Inlet Ambient Temperature PFC Primary Heatsink Temperature Secondary Sync Mosfet Temperature Secondary OR-ing Mosfet Temperature			60 80 115 125	$^\circ\text{C}$

## 7.2 INTERFACE & CONTROL SIGNALS

The PWOK\_L is an open collector output of all modules and they are interconnected (wired-OR) within the shelf and this signal is fed to the signal connector. PWOK\_L is low when there is at least one module in operation. SMB\_ALERT\_L is also wired-OR already in the shelf. Sink current must not exceed 4 mA on each of these signals.

The internal INOK\_L\_Px signal of each individual module is fed to the backplane microcontroller for modules synchronized AC startup. This allows the shelf to start up with load > 3000 W during AC application. The microcontroller provides an INOK\_L output signal. INOK\_L is low when there is at least one module supplied with correct input voltage.

PSON\_SHELF\_L signal is an internally pulled-up input signal (3.3 V) to enable / disable the main output V1 of the Shelf. This active-low pin is also used to clear any latched fault condition. This is similar to the PSON\_L on the PSU level. PSON\_SHELF\_L is currently bypassed in ON\_OFF\_CONFIG command. A pull up resistor of 10 k $\Omega$  to 3.3 V within the shelf provides the high level voltage for the PWOK\_L, INOK\_L and SMB\_ALERT\_L signals.

The Power Shelf V1 output is capable to be operated in redundant mode by interconnecting the ISHARE on J20. Please consult BPS Technical Representative for details.

RJ45 PIN OUTS (J20)	FUNCTION	DESCRIPTION
1 <sup>5</sup>	SCL	I2C clock signal line
2 <sup>5</sup>	SDA	I2C data signal line
3	ISHARE	V1 Current share bus
4	PWOK_L	Power OK signal output: active-low
5	INOK_L	Input OK signal: active-low
6	SMB_ALERT_L	SMB Alert signal output: active-low
7	PSON_SHELF_L	Power Shelf on input: active-low
8	SGND	Signal ground

Table 1. I2C Interface and Signal Connector (RJ45) Pin Out

<sup>4</sup> Limit doesn't include effects of main output capacitive discharge

<sup>5</sup> External Pull-up resistor should be 2 – 5 k $\Omega$  to ensure SMBUS compliant signal rise times

### 7.3 I2C COMMUNICATION

The PSU Modules are set to a fixed I2C Address (0x20). Power Management Bus communication for the PSU Modules are described in more detail in document BCA.00070. The I2C communication to the PSU Modules are routed through an I2C Multiplexer. The I2C MUX Control Register needs to be configured so that the I2C frames are routed to the correct PSU Module. Refer to the I2C MUX datasheet for additional information.

The I2C MUX and backplane controller addresses are configurable via DIP Switches (SW1);

The PSON function of the shelf can also be controlled by a Power Management Bus command sent to the backplane Controller, see document BCA.00178 for further information and the table below.

COMMAND		ACCESS	DATA BYTES	COMMENTS
Code	Name			
0x01	OPERATION	Byte R/W	1	Supported Values: 0x00 = Unit Off 0x80 = Unit On (Default)
0x02	ON_OFF_CONFIG	Byte R/W	1	Supported Values: 0x19 (Default) 0x01, 0x11, 0x15, 0x1D

**NOTE:** A setting in the ON\_OFF\_CONFIGURATION register doesn't survive a power cycle. See also the Power Management Bus protocol definition.

### 7.4 I2C ADDRESSING (SHELF)

The shelf default MUX address is 0xEE and Controller address is 0x5E. When DIP switch (SW1) is in "ON" position means 0, "OFF" Position means 1.

POSITION 1	POSITION 2	POSITION 3	MUX ADDRESS (IN HEX)	CONTROLLER ADDRESS (IN HEX)
ON	ON	ON	0xE0	0x50
OFF	ON	ON	0xE2	0x52
ON	OFF	ON	0xE4	0x54
OFF	OFF	ON	0xE6	0x56
ON	ON	OFF	0xE8	0x58
OFF	ON	OFF	0xEA	0x5A
ON	OFF	OFF	0xEC	0x5C
OFF	OFF	OFF	0xEE	0x5E

**NOTE:** Communication Manual of shelf, see document BCA.00178.

Table 2. DIP Switch Setting (SW1)

### 7.5 NETWORK ATTACHED CONTROLLER

The Network Attached Controller (NAC1006-01) is a shelf level controller providing monitoring and control functions through a 10/100 MB base Ethernet port and can be connected directly to the data center management network. It is hot-pluggable and supplied via the 12 V redundant standby provided by the power supplies in the shelf. The controller can be configured through a web interface; the monitoring and control functions are accessed through SNMP.

See BCD.00926 for NAC1006-01 Datasheet.

## 7.6 CONTROL LEDs

Each PSU front-end module has 2 LEDs to indicate status condition. LED number one is green and indicates AC power is on or off, while LED number two is bi-colored: green and yellow and indicates DC power presence or fault situations.

PARAMETER	DESCRIPTION / CONDITION	LED SIGNALING
<b>AC LED</b>	AC Line within range	Solid Green
	AC Line UV condition	Off
<b>DC LED<sup>6</sup></b>	Normal Operation	Solid Green
	PSON_L High	Blinking Yellow (1:1)
	$V_I$ or $V_{SB}$ out of regulation	Solid Yellow
	Over temperature shutdown	
	Output over voltage shutdown ( $V_I$ or $V_{SB}$ )	
	Output under voltage shutdown ( $V_I$ or $V_{SB}$ )	
	Output over current shutdown ( $V_I$ or $V_{SB}$ )	Blinking Yellow/Green (2:1)
	Over temperature warning	
	Minor fan regulation error (>5%, <15%)	

## 7.7 USB CONNECTOR TYPE B (J3)

This is used for Bel Power Diagnostic thru Bel Power Solutions I<sup>2</sup>C Utility GUI. This connection also provides access to FW boot loading of the PSU Modules.

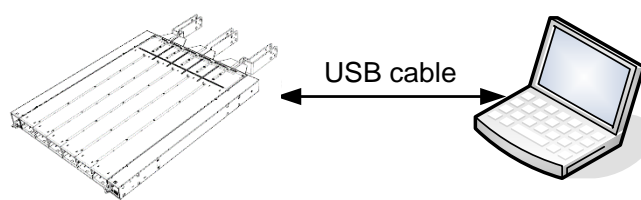


Figure 2. Connection

### WARNING:



The USB interface is NOT galvanically isolated and referenced to the +12V\_GND / SGND lines.

Preferably, use a battery-operated laptop to avoid earth loop issues.

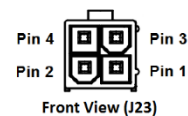
If a desktop computer is being used, there is a risk of generating earth loop currents, therefore the usage of a USB isolator is highly recommended in such a case.

## 7.8 +12VSB CONNECTOR (J23)

+12VSB output is capable of delivering 5 A. The output is protected by a PTC (16R900GF from Littelfuse).

Mating Part: Molex 39-01-2045

PIN OUTS (J23)	FUNCTION	DESCRIPTION
1, 3	VSB_GND	+12VSB return
2, 4	VSB	+12VSB output



<sup>6</sup> The order of the criteria in the table corresponds to the testing precedence in the controller.



### 7.9 AUXILIARY AC OUTLET

The 3 connectors (J123, J124, and J125) are used to provide AC power to the Network Switch Devices. Each connector is connected to one of the LIVE terminals (L1, L2, and L3) and NEUTRAL from the 3-phase input (J107). These are protected by a 10 A / 500 Vac Time Lag fuse on the LIVE terminal (F123) and 15 A / 500 Vac Fast-Acting fuse on the LIVE terminal (F124 and F125). See Safety Warning when servicing the fuse.

When the power shelf is operated at ambient temperature of +45°C to +55°C, the output load current must be derated to 75%.

## 9. SAFETY, REGULATORY AND EMC SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	CRITERION
Agency Approvals	UL 62368-1, 3 <sup>rd</sup> Ed, CAN/CSA-C22.2 No. 62368-1:19 IEC 62368-1:2018 EN 62368-1:2020, A11	Approved
Insulation	Input (L/N) to case (PE) Input (L/N) to output Output to case (PE)	Basic Reinforced Functional
Creepage / Clearance (dc)	Primary (L/N) to protective earth (PE) Primary to secondary	Min. 2.8 / 2.4 mm Min. 5.6 / 4.8 mm
Electrical Strength Test	Input to case Input to output (tested by manufacturer only)	Min. 2500 VDC Min. 5000 VDC
Conducted Emission	EN55022 / CISPR 22: 0.15 ... 30 MHz, QP and AVG	Class A
Radiated Emission	EN55022 / CISPR 22: 30 MHz ... 1 GHz, QP	Class A
Harmonic Emissions (per module)	IEC61000-3-2, Vin = 230 VAC, 50 Hz, 100% Load (per module)	Class A
Acoustical Noise	Sound power statistical declaration (ISO 9296, ISO 7779, IS9295) @ 50% load	60 dBA
AC Flicker	IEC / EN 61000-3-3, d <sub>max</sub> < 3.3%	PASS
ESD Contact Discharge	IEC / EN 61000-4-2, ±8 kV, 25+25 discharges per test point (metallic case, LEDs, connector body)	A
ESD Air Discharge	IEC / EN 61000-4-2, ±15 kV, 25+25 discharges per test point (non-metallic user accessible surfaces)	A
Radiated Electromagnetic Field	IEC / EN 61000-4-3, 10 V/m, 1 kHz/80% Amplitude Modulation, 1 µs Pulse Modulation, 10 kHz...2 GHz	A
Burst	IEC / EN 61000-4-4, level 3 AC port ±2 kV, 1 minute DC port ±1 kV, 1 minute	A
Surge	IEC / EN 61000-4-5 Line to earth: level 3, ±2 kV Line to line: level 2, ±1 kV	A
RF Conducted Immunity	IEC/EN 61000-4-6, Level 3, 10 Vrms, CW, 0.1 ... 80 MHz	A
Voltage Dips and Interruptions (per module)	IEC/EN 61000-4-11 (per module) 1: Vi 230 VAC, 100% Load, Dip 100%, Duration 12 ms 2: Vi 230 VAC, 100% Load, Dip 100%, Duration < 150 ms 3: Vi 230 VAC, 100% Load, Dip 100%, Duration > 150 ms	A V1: B, VSB: A B

## 10. ENVIRONMENTAL SPECIFICATIONS

PARAMETER	DESCRIPTION / CONDITION	MIN	NOM	MAX	UNIT
Operating Temperature	@ full load, up to 4000 m:	0		+35	°C
	@ full load, up to 1800 m:	0		+45	
	@ 75% load, up to 1800 m:	0		+55	
Non-Operating Temperature		-40		+70	°C
Humidity	Operating: @ at 40 °C, non-condensing	7		93	%RH
	Non-Operating: non-condensing	5		95	
Altitude	Operating:			4000	m
	Non-Operating:			13000	
Shock	Operating: 11 ms half-sine shocks in Z axis 10+ve, 10-ve		5		g
	Non-Operating: 11 ms half-sine shocks in Z axis 10+ve, 10-ve		30		
Vibration	Operating: 0.2 g <sub>rms</sub> random	5		500	Hz
	Non-Operating: 1 g <sub>rms</sub> random	2		200	
Acoustic Noise Emissions	@ normal operation, and 50% load sharing			70	dBA
	Fan speed			7000	
Cooling	When equipped with operating PSUs			50	Pa

## 11. CONNECTORS

DESCRIPTION	REFERENCE DESIGNATOR	TYPE	MANUFACTURER	MPN
Input Connector	J106, J107	3-phase input	Positronic Industries	SP5YYE48M0LN9A1/AA-PA1067
USB I2C Connector	J3	USB – B type	Tyco	292304-1
I2C Interface & Signal Connector	J20	RJ45	FCI Connectors	87180-088LF
+12VSB output connector	J23		Molex	39-30-0040
Auxiliary AC Outlet	J123	Single phase output	Molex	172043-0302
Auxiliary AC Outlet	J124, J125	Single phase output	Rong Feng	RF-203P-HP-1.0
Auxiliary AC Outlet Fuse	F123	5 x 20 mm	Bel Fuse Inc.	0ADKC9100-BE
		Time Lag Fuse	Eaton	BK1-S505H-10-R
Auxiliary AC Outlet Fuse	F124, F125	6.3 x 32 mm	Bel Fuse Inc.	0ADEC9150-BE
		Fast-Acting Fuse	Littelfuse Inc.	0505015.MXP

### 11.1. CONNECTOR PIN ASSIGNMENT

#### 3-Phase Input Connector (J106, J107)

MPN: SP5YYE48M0LN9A1/AA-PA1067

Mating Part: SP5YYE1F0091/AA

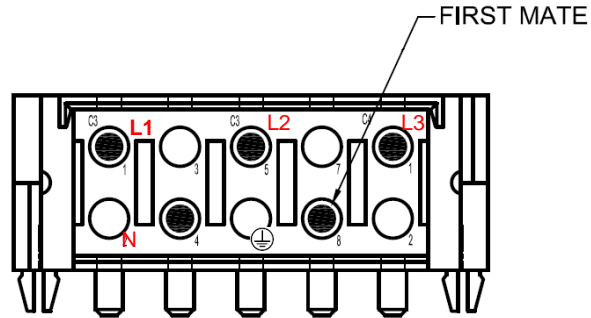


Figure 3. Front View

#### Auxiliary AC Outlet (J123)

MPN: 172043-0302

Mating Part: 172672-2003

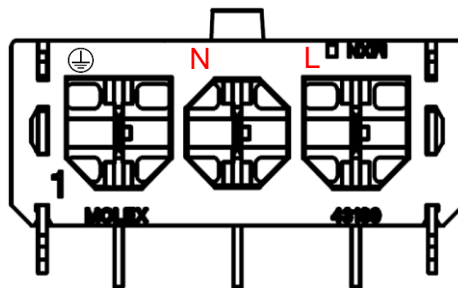


Figure 4. Front View

#### Auxiliary AC Outlet (J124, J125)

MPN: RF-203P-HP-1.0

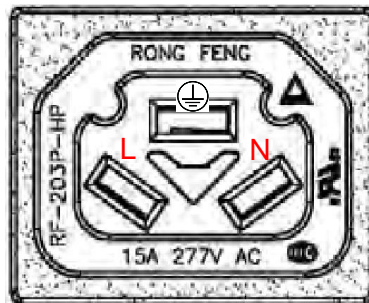


Figure 5. Front View

## 12. MECHANICAL SPECIFICATIONS

PARAMETER	SPSPFE3-0XG
Dimensions (W x H x D)	534.5 x 46.5 x 650 mm (overall: 535 x 47 x 859.5 mm)
Weight (Shelf only)	16 kg
Weight (6 PSU installed)	32 kg

### 12.1. SPSPFE3-05G MECHANICAL DATA

**NOTE:** Finished good may look different from images.

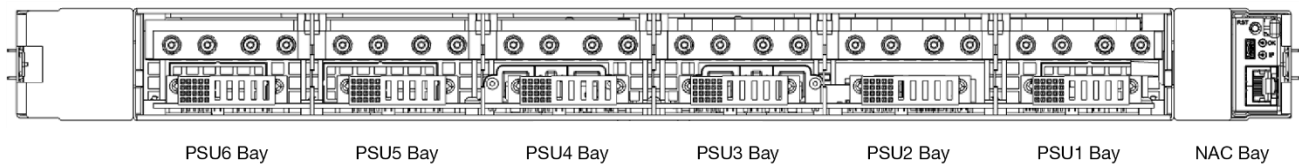


Figure 6. SPSPFE3-05G Front View

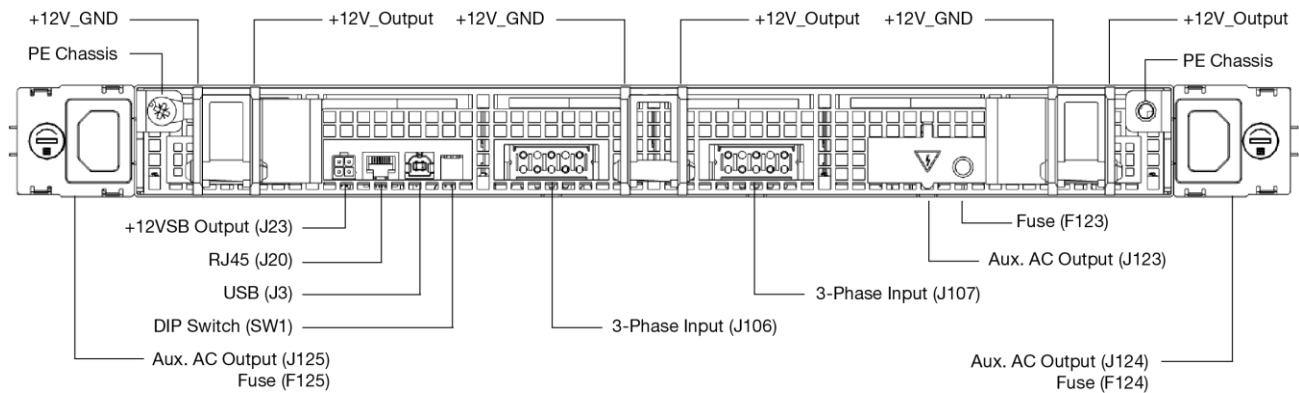


Figure 7. SPSPFE3-05G Rear View

3-PHASE WYE (Y) CONNECTION  
277/480 VAC INPUT / 12 VDC OUTPUT

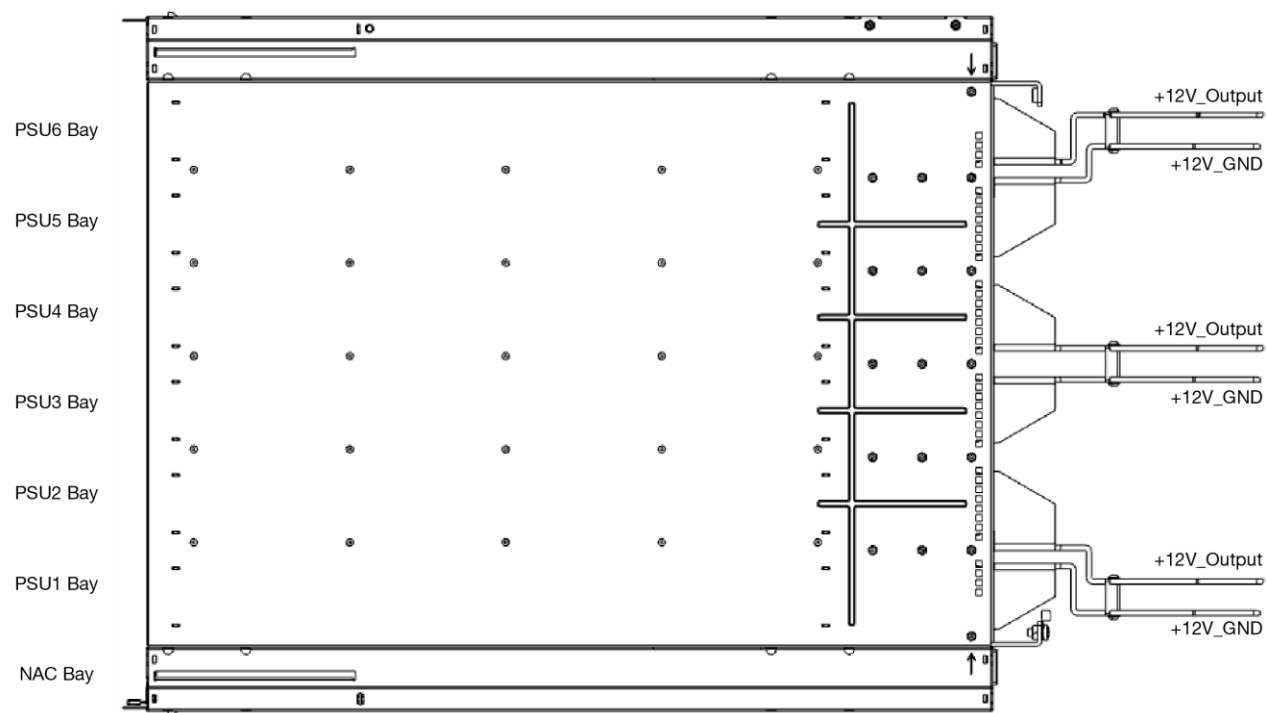


Figure 8. SPSPFE3-05G Top View

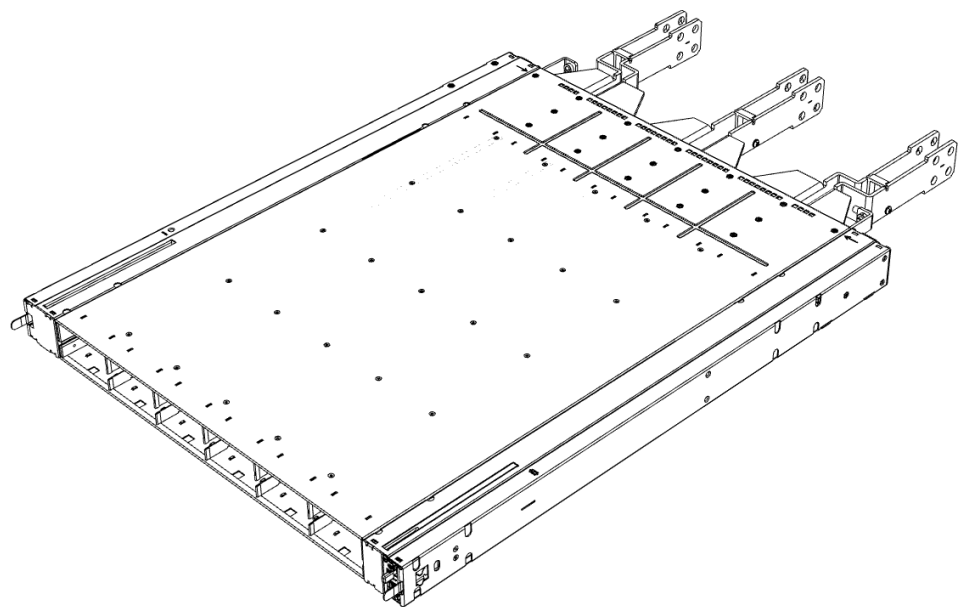


Figure 9. SPSPFE3-05G Isometric View

### 12.2 SPSPFE3-06G MECHANICAL DATA

**NOTE:** Finished good may look different from images.

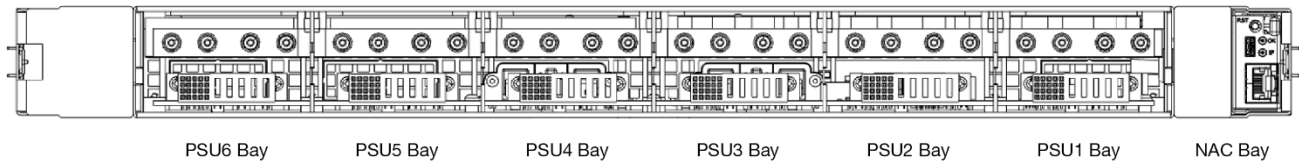


Figure 10. SPSPFE3-06G Front View

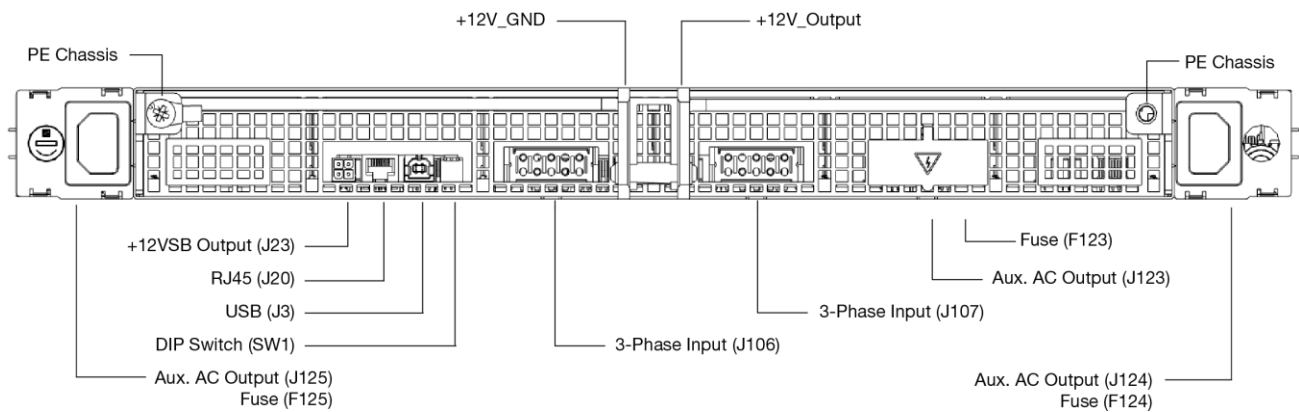


Figure 11. SPSPFE3-06G Rear View

3-PHASE WYE (Y) CONNECTION  
277/480 VAC INPUT / 12 VDC OUTPUT

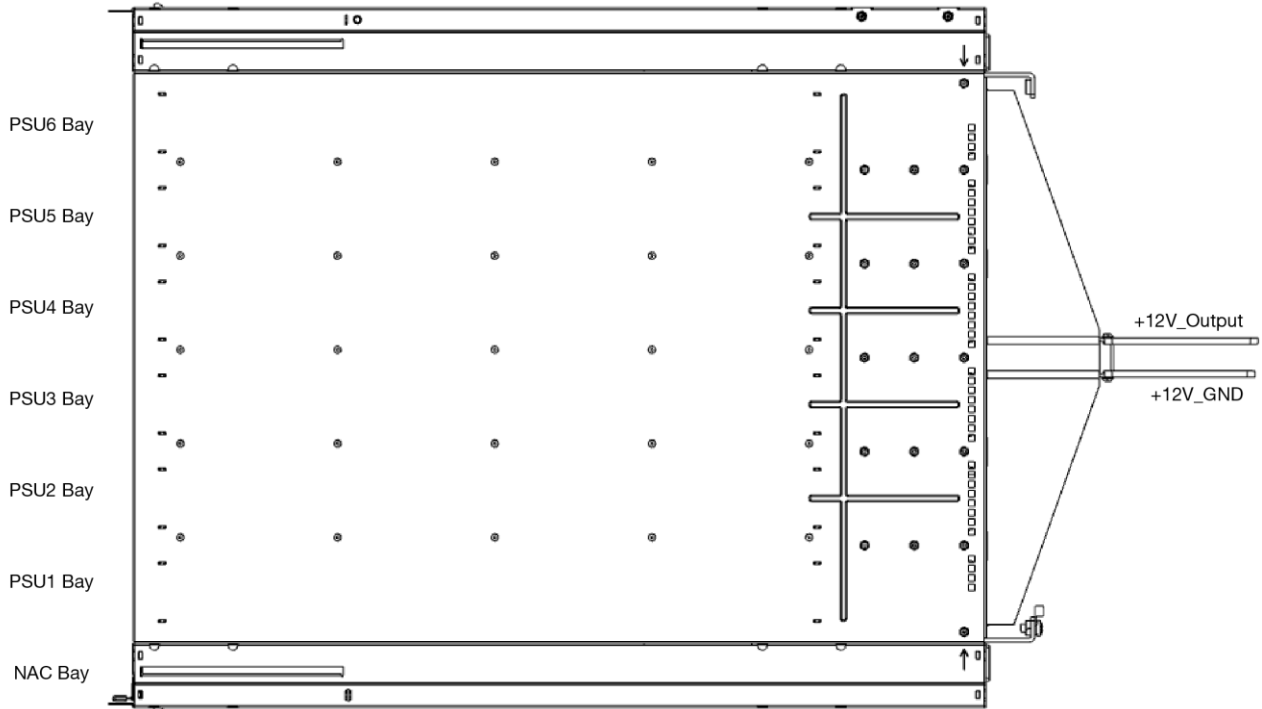


Figure 12. SPSPF3-06G Top View

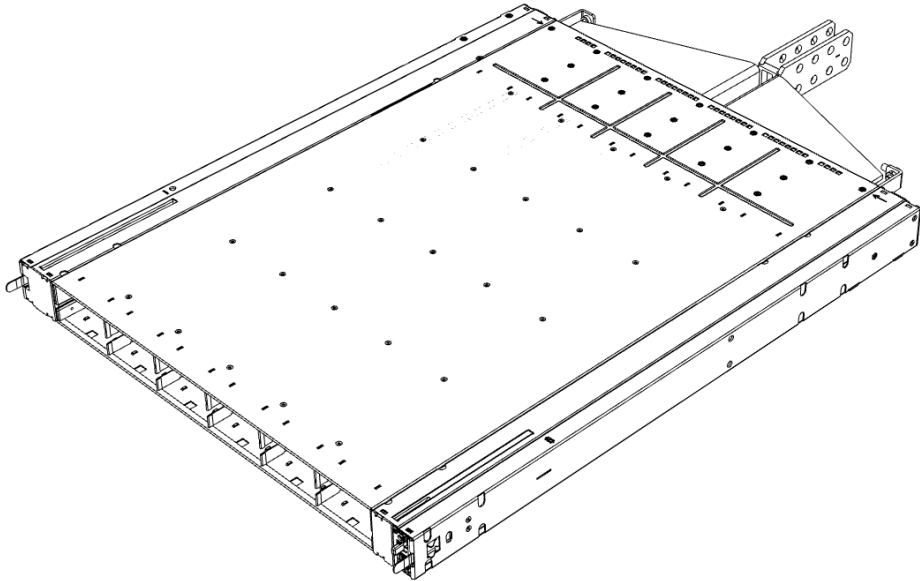


Figure 13. SPSPF3-06G Isometric View

### 12.3 SPSPFE3-08 MECHANICAL DATA

**NOTE:** Finished good may look different from images.

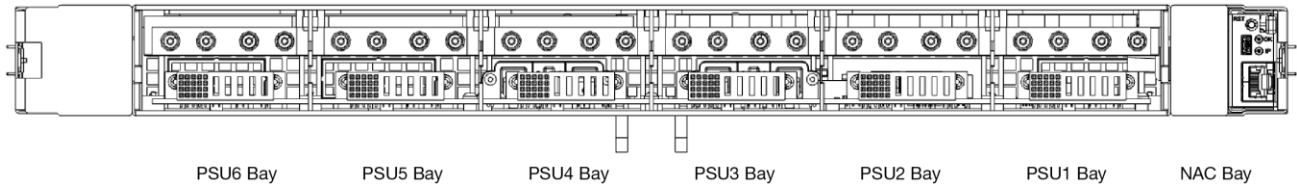


Figure 14. SPSPFE3-08 Front View

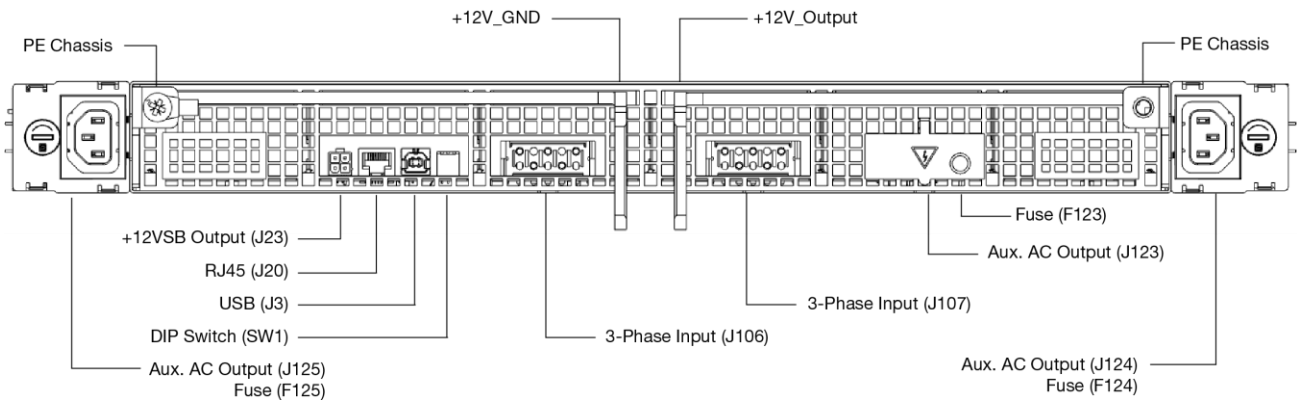


Figure 15. SPSPFE3-08 Rear View



3-PHASE WYE (Y) CONNECTION  
277/480 VAC INPUT / 12 VDC OUTPUT

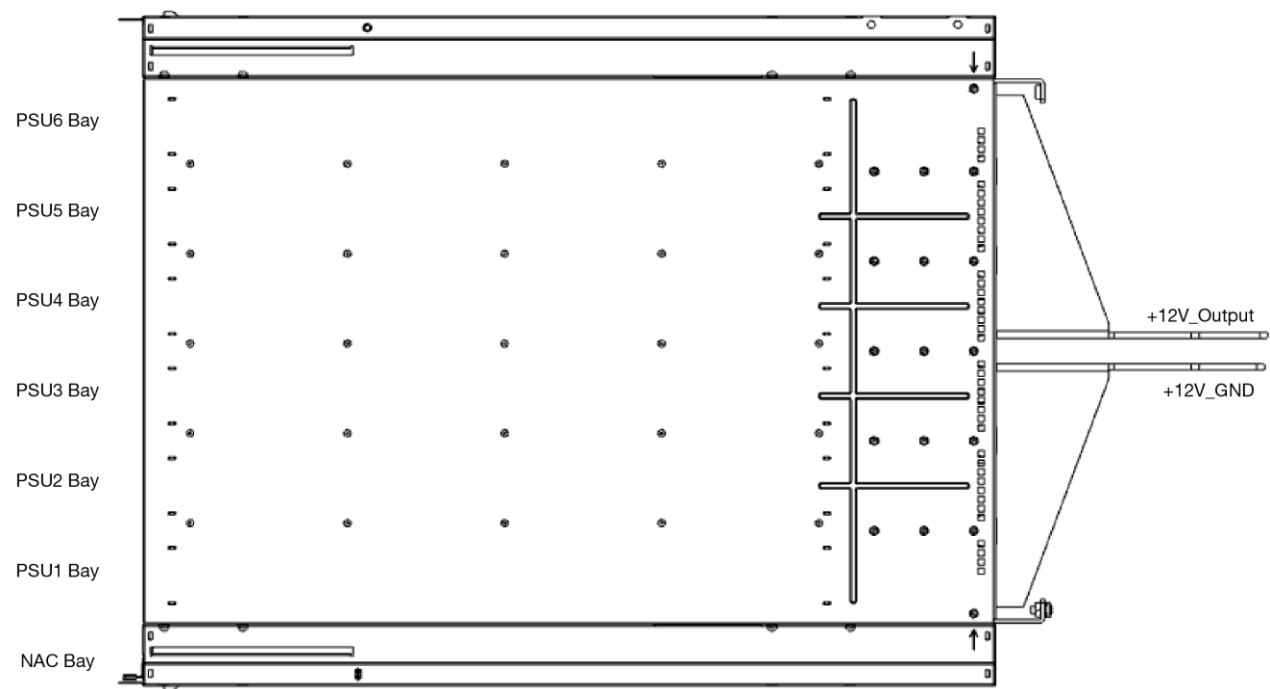


Figure 16. SPSPFE3-08 Top View

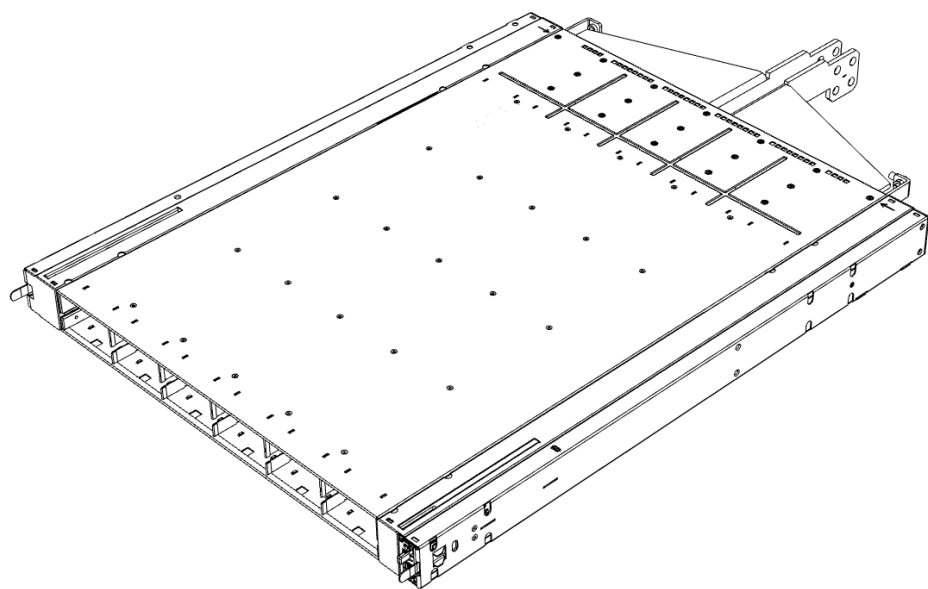

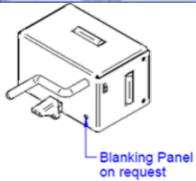


Figure 17. SPSPFE3-08 Isometric View

### 13. ACCESSORIES

ITEM	DESCRIPTION	ORDERING PN	SOURCE
	I <sup>2</sup> C Utility Windows Vista/7/8 compatible GUI to program, control and monitor PFE Front-Ends (and other I <sup>2</sup> C units)	N/A	<a href="http://belfuse.com/power-solutions">belfuse.com/power-solutions</a>
	Blanking Panel	SPSPFE3-BP01G	<a href="http://belfuse.com/power-solutions">belfuse.com/power-solutions</a>

### 14. REVISION HISTORY

REV	DESCRIPTION	PRODUCT VERSION	DATE	AUTHOR
001	PRELIMINARY: Initial Draft	V001	11-30-2016	GS
002	PRELIMINARY: Shelf Input Voltage is configured for 277Vac Update Auxiliary AC Outlet to meet 277Vac Update Fuse on Auxiliary AC Outlet Optional PE connection added	V002	08-31-2017	GS
003	Update Datasheet part number for NAC1006-01. Update Mechanical Drawings PMBus™ changed to Power Management Bus; a disclaimer added to the first page	V003	02-28-2018	VS
004	Network Attached Controller is set to optional. Update Ordering Information. Update Max Input Current. Add note on AC auxiliary output load current. Removed Pending on Safety Agency Approvals	V004	04-24-2018	GS
005	Disclaimer on the first page was removed Power Management Bus needs to be fully spelled out every time it is used with no trademark symbols	V005 V006	04-26-2019	VS
006	Enable Current Share Function of Shelf Pin 3 of Connector J20 used for ISHARE signal	V005 V006	09-30-2019	GS
A	Release to A revision		11-11-2019	GS
B	Adding PN SPSPFE3-08 into the datasheet, datasheet renamed		08-10-2020	VS

For more information on these products consult: [tech.support@psbel.com](mailto:tech.support@psbel.com)

**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.

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