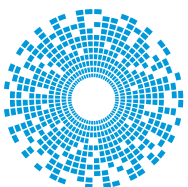


# POWER CONVERSION SOLUTIONS FOR DATA CENTERS & HIGH PERFORMANCE COMPUTING



**bel**

**POWER  
SOLUTIONS &  
PROTECTION**

a bel group

[belfuse.com/power-solutions](http://belfuse.com/power-solutions)

## Bel Solutions for Data Centers & High Performance Computing

Bel Power Solutions offers a variety of power shelves, power supply units, AC and DC power distributions units, system controllers and cable harnesses to address AC and DC, 12 Vout and 48 Vout power conversion needs from the PDU to the CPU.

Through strong cooperation with rack manufacturers and integration partners, Bel Power Solutions can help to provide a complete solution for your data center and high performance computing requirements.

			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	SPSPFE3-05G	SPSPFE3-15*	SPSPFE3-09	-	SPSPFF3-03*	SPSPFE3-13*
		Single Busbar Straight	SPSPFE3-06G	SPSPFE3-16*	SPSPFE3-10	SPSTET4-02	SPSPFF3-02*	SPSPFE3-12*
		Single Busbar Offset <sup>1</sup>	SPSPFE3-08	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.



## V2 Power Shelf

### SPSFCBK-18

The 6600 W stand-alone V2 Power Shelf with a 12.6 VDC main output and a 54 VDC auxiliary output is powered from 3-phase AC line and hosting three 3300 W (N + 1) hot-swappable single phase V2 Power supply units and three 3600 W battery back-up units (BBU).

- Up to six slots:
  - » 3 for 3300 W SPAFCBK-11G PSUs
  - » 3 for 3600 W lithium-ion Battery Backup Units (BBUs)
- Output power 6600 W / 12.6 VDC with active current sharing
- Auxiliary output 600 W / 54 VDC
- Digital control for improved performance
- RS485 communication interface for control, programming & monitoring



PART NUMBER	AC INPUT VOLTAGE [VAC]	OUTPUT VOLTAGE [VDC]	AUXILIARY OUTPUT [VDC]	REDUNDANCY	OUTPUT POWER [W]	HEIGHT
SPSFCBK-18	200 - 277, 3-phase	12.6	54	2+1	6600 600	3 U

## V2 Power Supply & Battery Back-up Unit

### SPAFCBK-11G

Single phase, hot-swappable 3300 W AC/DC V2 power supply unit converts standard AC mains power into a main output of 12.6 VDC.

- 3300 W Power Supply Unit (PSU)
- 3600 W lithium-ion Battery Backup Unit (BBU)
- Parallel operation with active analog current sharing
- Digital control for improved performance
- RS485 Communication interface for control, programming & monitoring



PART NUMBER	INPUT VOLTAGE	OUTPUT [VDC]	AUXILIARY OUTPUT [VDC]	REDUNDANCY	OUTPUT POWER [W]
SPAFCBK-11G	200 - 277 VAC (PFC)	12.6	54	2+1	3300 300

## Power Distribution Units

### AC & DC PDUs

AC PDU is used for distributing AC voltage in power racks. DC PDU is used to distribute DC auxiliary power and monitoring signals in open racks. Different cable length modifications possible.

PART NUMBER	INPUT VOLTAGE [VAC]	INPUT CURRENT	STYLE	PLUG TYPE	SURGE PROTECTION
<b>AC PDU</b>					
YSD.00152 (EU)	240 / 415 VAC, 3-phase	32 A	1 in / 2 out	IEC 60309	Yes
YSD.00162 (US)	277 / 480 VAC, 3-phase	20 A	2 in / 2 out	L22-20P	Yes
YSD.00217 (US)	120 / 208 VAC, 3-phase	30 A	2 in / 2 out	L21-30P	No
YSD.00218 (US)	277 / 480 VAC, 3-phase	30 A	1 in / 2 out	L22-30P	Yes
YSD.00219 (US)	277 VAC, Single -phase	20 A	1 in / 1 out	L7-20P	No
YSD.00222 (US)	120 / 208 VAC, 3-phase	30 A	2 in / 2 out	L21-30P	No
<b>DC PDU</b>					
YSD.00134	54 VDC	32 A	0 in / 2 out	N/A	No



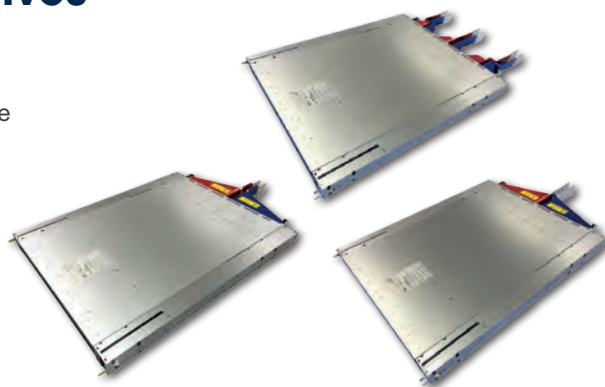


## AC Input and HV DC Input Power Shelves

### SPSPFE3-XX

The 18 kW AC-DC power shelf is capable of hosting up to six hot-swappable platinum / titanium efficiency AC/HVDC to DC power supply units.

- Up to six slots for PFE3000 / PFE3600 / TET3000 PSUs (up to 18 kW)
- Two 3-phase Line to Line AC inputs with Neutral line
- Triple or single busbar for +12 VDC output
- Active power sharing among multiple shelves
- Network Attached Controller (NACx006-01) - optional
- Communication via Ethernet and I<sup>2</sup>C / Power Management Bus
- Modifiable to 19" rack
- Blanking Panel SPSPFE3-BP01G



PART NUMBER	PN with NAC1006-01	AC INPUT VOLTAGE [VAC]	HV DC INPUT VOLTAGE [VDC]	OUTPUT VOLTAGE [VDC]	NO. OF OUTPUT BUSBARS	REDUNDANCY
SPSPFE3-05G	SPSPFE3-05CG	200-277 / 346-480, 3-phase (Y)	N/A	12.3	3 (Straight)	3+3 / 5+1
SPSPFE3-06G	SPSPFE3-06CG	200-277 / 346-480, 3-phase (Y)	N/A	12.3	1 (Straight)	3+3 / 5+1
SPSPFE3-07	SPSPFE3-07C *	N/A	240 - 380	12.3	1 (Offset)	3+3 / 5+1
SPSPFE3-08	SPSPFE3-08C	200-277 / 346-480, 3-phase (Y)	N/A	12.3	1 (Offset)	3+3 / 5+1
SPSPFE3-09	SPSPFE3-09C	208-240 VAC 3-phase (Δ)	N/A	12.3	3 (Straight)	3+3 / 5+1
SPSPFE3-10	SPSPFE3-10C	208-240 VAC 3-phase (Δ)	N/A	12.3	1 (Straight)	3+3 / 5+1
SPSPFE3-11	SPSPFE3-11C	208-240 VAC 3-phase (Δ)	N/A	12.3	1 (Offset)	3+3 / 5+1

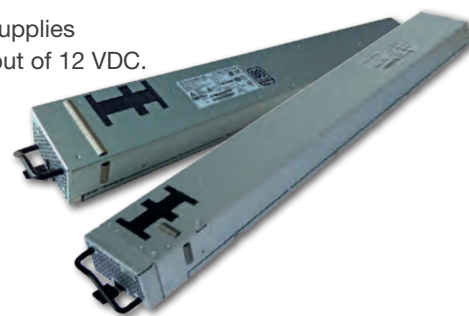
\* NAC2006-01

## Power Supply Units

### PFE3000-12-069RA / PFE3600-12-069RA / TET3000-12-069RA

The power supply units are AC/DC power factor corrected (PFC) and DC to DC power supplies that convert standard AC mains power or high voltage DC bus voltages into a main output of 12 VDC.

- Platinum / Titanium efficiency
- AC input with power factor correction
- Standby output (always present)
- Hot-swappable
- Parallel operation with active analog current sharing
- Over temperature, output over voltage and output over current protection
- I<sup>2</sup>C communication interface with Power Management Bus protocol

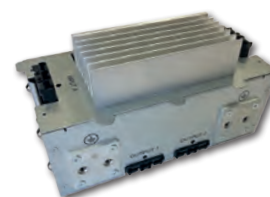


MODEL	AC INPUT VOLTAGE [VAC]	DC INPUT VOLTAGE [VDC]	OUTPUT VOLTAGE [VDC]	STAND-BY OUTPUT VOLTAGE [V]	MAX. OUTPUT POWER [W]	HEIGHT [U]
PFE3000-12-069RA	90 - 300	192 - 400	12.3	12	3000	1
PFE3600-12-069RA	90 - 300	192 - 400	12.3	12	3600	1
TET3000-12-069RA	90 - 300	180 - 410	12.3	12	3000	1

## Power Distribution Unit

### HVDC PDU - YSU.00218

- Input voltage range from 240 to 380 VDC
- Two separate VDC inputs, two 33 A VDC outputs
- Two PE power connections (dual-hole terminal lugs)

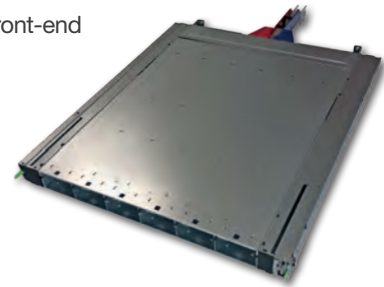


## Power Shelves

### SPSTET4-XX

24 kW AC-DC power shelf SPSTET4 houses up to six 4 kW titanium efficiency AC/DC to DC front-end power supplies that convert single phase AC mains power into a main output of 54.5 VDC.

- Up to six slots for TET4000 / TET4800 PSUs (up to 24 kW)
- Two 3-phase Line to Line AC inputs with Neutral line (3 PSUs are powered from one AC inlet)
- Single busbar for +54.5 VDC output
- Active power sharing among multiple shelves
- Network Attached Controller (NAC1026-01) - optional
- CAN Bus communication interface
- Modifiable to 19" rack
- Blanking Panel SPSPFE3-BP01G



PART NUMBER	PN with NAC1026-01	INPUT VOLTAGE [VAC]	OUTPUT VOLTAGE [VDC]	NO. OF OUTPUT BUSBARS	REDUNDANCY
SPSTET4-01	SPSTET4-01C	200-277 / 346-480, 3-phase	+54.5	1 (Offset Short)	5+1
SPSTET4-07	SPSTET4-07C	200-277 / 346-480, 3-phase	+54.5	1 (Offset Long)	5+1

## Power Supply Units

### TET4000-48-069RAH / TET4800-48-069RA

TET4000-48-069RAH / TET4800-48-069RA are 4000 / 4800 Watt AC-DC power factor corrected (PFC) and DC-DC power supplies that convert standard AC mains power or high voltage DC bus voltages into a main output of 54.5 VDC (42 – 58 VDC).

- Titanium efficiency
- AC input with power factor correction
- Main output 54.5 VDC with programmable voltage set-point 42 - 58 VDC
- Parallel operation with active digital current sharing
- CAN Bus communication interface



PART NUMBER	AC INPUT VOLTAGE [VAC]	DC INPUT VOLTAGE [VDC]	OUTPUT VOLTAGE [VDC]	STAND-BY OUTPUT VOLTAGE [V]	MAX. OUTPUT POWER [W]	HEIGHT [U]
TET4000-48-069RAH	90 - 305	192 - 400	54.5	12 (Optional)	4000	1
TET4800-48-069RA	90 - 305	192 - 400	54.5	12 (Optional)	4800	1

## Power Shelves

### SPSPFF3-XX

The power shelf can be configured with up to six hot-swappable PFF3000-12-069RD DC-DC power supplies that convert -40 to -72 VDC input power into a main output of 12.5 VDC for powering intermediate bus architectures (IBA).

- Up to six slots for PFF3000 PSU (up to 14.4 kW)
- Two separate DC inputs (3 PSU are powered from one DC inlet)
- Triple or single busbar for 12.5 VDC output
- Network Attached Controller (NAC2006-01) - optional
- Communication via Ethernet and I<sup>2</sup>C / Power Management Bus
- Modifiable to 19" rack
- Blanking Panel SPSPFF3-BP02G



PART NUMBER	PN with NAC2006-01	INPUT VOLTAGE [VDC]	OUTPUT VOLTAGE [VDC]	NO. OF OUTPUT BUSBARS	STAND-BY OUTPUT [V]	REDUNDANCY
SPSPFF3-01	SPSPFF3-01C	-40 to -72	12.5	1 (Offset)	12	3+3 / 5+1
SPSPFF3-02	SPSPFF3-02C	-40 to -72	12.5	1 (Straight)	12	3+3 / 5+1
SPSPFF3-03	SPSPFF3-03C	-40 to -72	12.5	3 (Straight)	12	3+3 / 5+1

## Power Supply Unit

### PFF3000-12-069RD

PFF3000-12-069RD is a 3 kW hot-swappable DC-DC front-end converter that provides a main output 12.5 VDC from -40 to -72 VDC bus voltages.

- Best-in-class, platinum equivalent efficiency
- Parallel operation with active analog current sharing
- Reverse polarity, over temperature, output overvoltage, and overcurrent protections
- Small Form Factor 69 x 42 x 555 mm
- I<sup>2</sup>C communication interface with Power Management Bus protocol



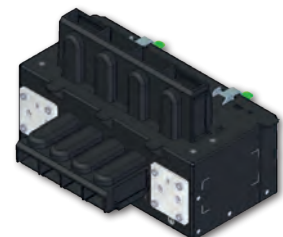
MODEL	INPUT VOLTAGE [VDC]	OUTPUT VOLTAGE [VDC]	OUTPUT CURRENT [A]	STAND-BY OUTPUT VOLTAGE [V]	OUTPUT POWER [W]	HEIGHT [U]
PFF3000-12-069RD	-40 to -72	12.5	244	12	3000	1

## Power Distribution Unit

### DC PDU - YSU.00225

This device has been designed to supply a SPSPFF3-01 shelf (-48 VDC input shelf). Two separate output circuits supply two separate inputs of the shelf. Four connectors, protected with 15 A circuit breakers provide input voltage to auxiliary equipment in the power rack.

- Two separate 48 VDC inputs
- Two high current (250 A) 48 VDC outputs
- Four overcurrent protected -48 VDC 15 A auxiliary outputs



## Network Attached Controller

### NAC Series

The Network Attached Controller is front accessible, hot-swappable 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.

- 3 models available (power shelf dependable)
- 10/100 Mb Ethernet port
- HP Auto MDI/MDI-X to reliably detect and correct crossover cables
- Web interface for easy setup
- SNMPv1/2c/3 protocol with TRAP, SET and GET over Ethernet
- Supports IPv4 and IPv6
- SNTP to synchronize the on-board real time clock
- Directly supplied from shelf standby voltage; low consumption



PART NUMBER	SUITABLE FOR
NAC1006-01	12 V Solutions AC/DC (240 / 277 VAC) Power Shelves
NAC1026-01	48 V Solutions AC/DC (240 / 277 VAC) Power Shelves
NAC2006-01	12 V Solutions HVDC/DC (+380 VDC) Power Shelves DC/DC Solutions (-48 VDC) Power Shelves

## Wiring Harnesses

### Cable Harnesses for AC and DC PDUs

Bel Power Solutions provides various accessories for data centers and high performance computing solutions, including wire harnesses connecting power distribution units to power shelves.



PART NUMBER	LENGTH	DESCRIPTION	CONNECTION
ZLH.01195.0	1.5 m	Three phase (3W+N+PE) 5 core wire harness for WYE application	WYE configured SPSPFE3 and SPSTET4 power shelves. SPSPFE3-05G, SPSPFE3-06G, SPSPFE3-08, SPSPFE3-14, SPSTET4-01, SPSTET4-07, SPSTET4-08
ZLH.01196.0	2.5 m		
ZLH.01164.0	4 m		
ZLH.01198.0	1.5 m	Three phase (3W+PE) 4 core wire harness for DELTA application	DELTA configured SPSPFE3 and SPSTET4 power shelves. SPSPFE3-09, SPSPFE3-11 SPSTET4-03
ZLH.01199.0	2.5 m		
ZLH.01209.0	4 m		
ZLH.01200.0	3 m	Single phase AC power cord for power shelf AC auxiliary outlet. I/P: LS-25 (277 VAC), O/P: LS-60 (250 VAC)	SPSPFE3-05G, SPSPFE3-06G, SPSPFE3-08, SPSPFE3-14 SPSTET4-01, SPSTET4-07, SPSTET4-08
ZLH.01201.0	3 m	Single phase AC power cord for power shelf AC auxiliary outlet. I/P: C14 (250 VAC), O/P: C13 (250 VAC)	SPSPFE3-09, SPSPFE3-11, SPSPFE3-14 SPSTET4-03
ZLH.01202.0	3 m	Single phase AC power cord for power shelf AC auxiliary outlet. I/P: Molex 1726722003, O/P: C13 (250 VAC)	SPSPFE3-05G, SPSPFE3-06G, SPSPFE3-08, SPSPFE3-14, SPSTET4-01, SPSTET4-07, SPSTET4-08
ZLH.01203.0	3 m	Single phase AC power cord for power shelf AC auxiliary outlet. I/P: Molex 1700010104, O/P: C13 (250 VAC)	SPSPFE3-09, SPSPFE3-11 SPSTET4-03
ZLH.01206.0	3 m	Single phase AC power cord for power shelf AC auxiliary outlet. I/P: LS-25 (277 VAC), O/P: LS-26 (277 VAC)	SPSPFE3-05G, SPSPFE3-06G, SPSPFE3-08 SPSTET4-01, SPSTET4-07, SPSTET4-08
ZLH.U1C00.0			
ZLH.U1C07.0		Set of 4 cables: two long, two short	SPSPFF3-01, SPSPFF3-02, SPSPFF3-03
ZLH.U1C08.0			
ZLH.U1C04.0		Set of two long wiring harnesses	SPSPFE3-07, SPSPFE3-12, SPSPFE3-13, SPSTET4-04
ZLH.U1C03.0		Set of two short wiring harnesses	





## About Bel Power Solutions

**Bel Power Solutions & Protection** offers world-class AC-DC and DC-DC power conversion products, value-add solutions, complete box-build solutions and contract manufacturing services, along with a complete portfolio of Electronic Circuit Protection devices.

Bel is a market leader in railway with Melcher™ brand products and technology leaders in the development of high efficiency and high power density front-end products. We support global customers and local markets with strategically located manufacturing and R&D facilities around the world.

Applications of our power conversion devices range from board-mount power to system-level architectures for servers, storage, networking, industrial and telecommunications industries.



**For more information,  
please contact us:**

**North America**  
+1 408 785 5200

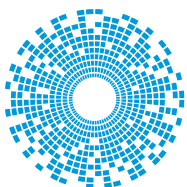
**Asia-Pacific**  
+86 755 2988 5888

**Europe, Middle East**  
+353 61 225 977

[belfuse.com/power-solutions](https://belfuse.com/power-solutions)

BCB.00164\_AE6 High Performance Computing

© Oct 2020 Bel Power Solutions & Protection



**bel** **POWER  
SOLUTIONS &  
PROTECTION**

a bel group



# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Bel Power Solutions:](#)

[SPSTET4-03](#) [SPSTET4-04](#)