Premium
Powering Your Challenge

PDR-110K

110kW AC/DC POWER SHELF – 800VDC OUTPUT

GENERAL FEATURES:

- 110kW output, regulated 800Vdc bus
- 3-phase input 311 … 528Vac L-L
- Rated input 415 … 480Vac L-L
- 6 × 18.5kW hot-pluggable rectifiers
- Hot-pluggable controller
- Parallel operation up to 6 shelves
- 3RU, front-to-back airflow
- Variable-speed fans
- Monitoring and telemetry via RJ45
- Field firmware upgrade (bootloader)
- -5 … +45°C operating range
- Up to 3050m altitude
- MTBF ≥300,000h



Part number	Input voltage range [Vac L-L]	Output voltage nom. [Vdc]	Output power max. [kW]	Rectifier modules	Height [RU]
PDR-110K	311 … 528	800	110	6 × 18.5kW	3

Several references are subjected to special MOQs and lead times. Please consult Premium's Sales Dept. and web site.

INPUT	
Input voltage range	311 … 528Vac line-to-line
Rated input voltage range	342 … 480Vac line-to-line
Input configuration	3-phase + PE
Input frequency	50 / 60Hz (operating range 47 … 63Hz)
Max. current per input feed phase	100A × 2
OUTPUT	
Output voltage	810Vdc at no load, 790Vdc at 100% load
Rated output power	110kW at 415 … 528Vac; 100kW at 311 … 415Vac
Ripple and noise	≤8Vp-p
Voltage regulation accuracy	±0.25% at 100% load
Voltage adjustment rate	±3%
Parallel operation	Current sharing between shelves, up to 6 shelves
RECTIFIER MODULES	
Quantity	6 per shelf
Rated power per module	18.5kW
Hot plug	Supported
Current sharing	Supported
CONTROL AND MONITORING	
Function	Power shelf monitoring and control, telemetry
Communication	RJ45 network connector
Battery backup unit (BBU) interface	Supported
Controller	Hot-pluggable
ENVIRONMENTAL	
Operating temperature	-5 … +45°C
Transportation temperature	-40 … +60°C
Storage temperature	-40 … +60°C
Operating humidity	8 … 85%, non-condensing
Storage humidity	5 … 95%, non-condensing
Altitude	0 … 3050m (derating required above 3050m)
RELIABILITY	
MTBF	≥300,000h
COMPLIANCE	
Safety	Designed to meet cULus and CE requirements
Environmental	Designed to meet RoHS
MECHANICAL	
Dimensions (D × W × H)	830 × 438 × 131mm
Height	3RU (133.35mm rack space)
Weight	≤38kg without rectifier modules
Cooling	Front-to-back airflow, internal variable-speed fan control
Installation	Power shelf rack installation
Maintenance	Hot-pluggable rectifier modules and controller
Protection degree	IP20
Output connector	800Vdc output connector

ORDERING CODES

Part Number	Input range	Output voltage	Output power	Rectifier modules	Height
PDR-110K	311-528Vac L-L	800Vdc	110kW	6 × 18.5kW	3RU

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DESCRIPTION

The PDR-110K is a 3RU modular power shelf that converts a three-phase AC supply into a regulated 800Vdc bus for AI and high-density server racks in data centers. One shelf delivers up to 110kW from six hot-pluggable 18.5kW rectifier modules, managed by a hot-pluggable controller.

Distributing power at 800Vdc instead of a low-voltage bus reduces the current for the same power by a factor of about 15: at 110kW the shelf output carries approximately 139A (at 790Vdc), while a 52Vdc bus would need about 2,115A. Lower current allows smaller busbars and cables and reduces conduction losses in the rack.

INPUT AND POWER RATING

The shelf accepts a three-phase + PE supply from 311 to 528Vac line-to-line, 50/60Hz (operating range 47 … 63Hz). Full 110kW output is available from 415 to 528Vac; from 311 to 415Vac the rating is 100kW. The maximum current per input feed phase is 100A × 2.

OUTPUT AND REGULATION

The output voltage is 810Vdc at no load and 790Vdc at full load, with ±0.25% regulation accuracy at 100% load and ripple and noise ≤8Vp-p. Power is delivered through a dedicated 800Vdc output connector.

MODULARITY AND SCALABILITY

Each rectifier module can be inserted or removed during operation, and the modules share the load within the shelf. For higher power, up to six shelves can operate in parallel with current sharing, for a total of up to 660kW.

MONITORING AND CONTROL

The controller supervises shelf status and rectifier operation and provides telemetry through an RJ45 Ethernet port (Redfish and SNMP northbound; PMBus/SMBus to the rectifiers), a Web GUI, three-colour status LEDs and a reset button. Controller and rectifier firmware can be upgraded in the field through the bootloader. The shelf also supports a battery backup unit (BBU) interface.

COOLING AND ENVIRONMENT

Cooling is front-to-back forced air with internally controlled variable-speed fans. The shelf operates from -5 to +45°C and up to 3050m altitude (derating required above 3050m), with IP20 protection for installation inside a rack.

RECTIFIER MODULE

MAIN FEATURES:

- 18.5kW rated power (380 … 480Vac)
- 3-phase input 311 … 528Vac L-L
- 800Vdc regulated output
- Efficiency >97% (50 … 100% load)
- PF ≥0.98 (20 … 100% load)
- Hold-up 20ms at 100% load
- Hot-pluggable, current sharing
- Forced-air, front-to-back cooling



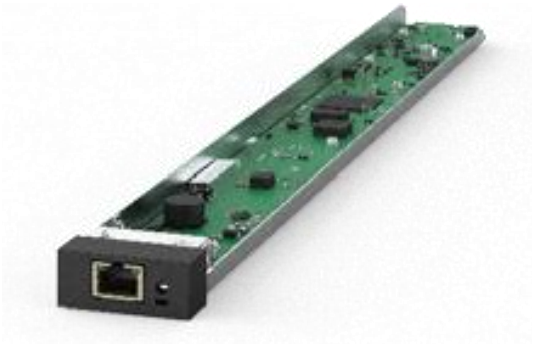
SPECIFICATIONS

Input	3-phase + PE, 311 … 528Vac line-to-line
Rated input voltage	380 … 480Vac line-to-line
Output voltage	800Vdc regulated
Rated power	18.5kW at 380 … 480Vac
Efficiency	>97% at 50 … 100% load
Power factor	≥0.95 at 10 … 20% load; ≥0.98 at 20 … 100% load
Hold-up time	20ms at 100% load
Cooling	Forced air, front-to-back airflow
Hot plug	Supported
Current sharing	Supported

CONTROLLER

MAIN FEATURES:

- Shelf monitoring, control, telemetry
- Ethernet (RJ45), CAN, VCOM, 3 × I²C
- Redfish and SNMP northbound
- PMBus / SMBus southbound
- Web GUI
- Three-colour status LED, reset button
- Field firmware upgrade (bootloader)
- Hot-pluggable



SPECIFICATIONS

Function	Power shelf monitoring and control, telemetry
Communication ports	1 × Ethernet (RJ45), 1 × CAN, 1 × VCOM, 3 × I²C
Northbound protocols	Redfish, SNMP
Southbound protocols	PMBus, SMBus
User interface	Web GUI
Digital inputs	PSU_PRESENT, PMALERT, PSU_AC_LOSS
Digital outputs	6 × RESET_LATCH_FAULT_PSU
Status indication (LED)	Green: power supply OK Yellow: environmental over-temperature warning Red: environmental over-temperature fault
Reset	Reset button
Firmware upgrade	Bootloader, field upgrade of controller and rectifier firmware
Hot plug	Supported

WARRANTY AND GUARANTEE

The warranty corresponds to the regulations in our currently valid general terms and conditions.

INSTRUCTIONS REGARDING DISPOSAL

A basic requirement for the re-use and recycling of used electronic devices is their correct disposal. With the implementation of the electric and electronic device regulation, electronic devices may no longer be disposed of along with ordinary household waste but must be separately collected and recorded by a specialist service. Disposal through a specialist service significantly helps to avoid dangers to people and nature. Therefore, in the case of disposal, we recommend contacting a recognized specialist disposal service.

The product information and specifications may be subject to changes even without prior written notice. The product has been designed for various applications; its suitability lies in the responsibility of each customer. The products are not authorized for use in safety-critical applications without PREMIUM's explicit written consent. A safety-critical application is an application where a failure may reasonably be expected to endanger or cause loss of life, inflict bodily harm or damage property. The applicant shall indemnify and hold harmless PREMIUM, its affiliated companies and its representatives against any damage claims in connection with the unauthorized use of PREMIUM products in such safety-critical applications.