Premium
Powering Your Challenge

FDS-3K

3 kW Parallelable High efficiency single phase rectifier for industrial environments

GENERAL FEATURES:

Designed for industrial environment
High input-output isolation
Adjustable output voltage
PMBus communication protocol
Active current sharing
Input, Output & Alarm LEDs
Hot plug technology
Hot swap technology
Remote monitoring
Parallelable (with RMS-18K)
Efficiency up to 93%



3 YEAR WARRANTY INDUSTRY

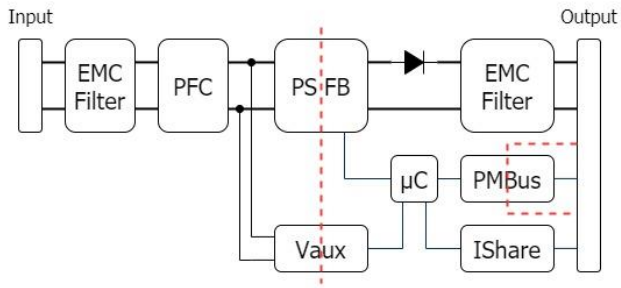
ROHS REACH

Specifications are subject to change without notice. These products are not intended for use as critical components in life support or nuclear systems.
Compliance notice — This product has been individually tested and verified to meet the standards and directives listed in this datasheet. When used as part of an equipment or system, verification of the final equipment compliance lies with the integrator/customer. In particular, when operating multiple units in parallel to increase total power, the integrator/customer must ensure that all applicable system-level requirements (e.g., EMC, safety, or any other applicable) are met, including any additional assessment required.

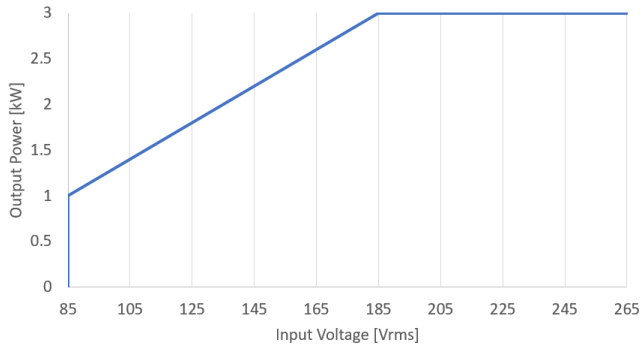
INPUT	
AC input voltage (nominal)	230 Vac
AC input voltage (range)	90…265 Vac
AC input frequency (range)	45 … 65 Hz
Power factor	>0.94 (50% Load)
Efficiency	>89 % (25% Load) >93 % (100% Load)
OUTPUT	
Output type	DC
Default output voltage	125Vdc
Output voltage adjustment	86 … 157 Vdc
Maximum output current	20 A(1)
Current sharing	Parallel Active
Static voltage regulation	< ±1 % typical
Dynamic voltage regulation	< ±1 % (Δ 20%-100%-20% Load)
Response time / Stabilization time	< 10 ms (Δ 20%-100%-20% Load)
Ripple (BW: 20mHz)	< 90 mVpp
Noise (BW: 20MHz)	< 200 mVpp
ENVIRONMENTAL	
Storage temperature	-40ºC … 85ºC
Operating temperature range	-10ºC ... 60ºC(2)
Cooling	Internal forced air controlled
Maximum Relative humidity	95% with no condensation
Installation height	up to 4000m (Power derating -1%/100m from 2000 to 4000m)
MTBF	250.000h @ 25°C according to EN29500 (except fan)
EMC	
Emission according to	EN 61000-6-4 EN 61000-3-2
Immunity according to	EN-61000-6-2
SAFETY	
Safety according to	EN62368-1
Dielectric strength Input-Output	2000Vac, 50Hz, 1min.
Dielectric strength Input-Earth	4000Vac, 50Hz, 1min.
Dielectric strength Output-Earth	2000Vac, 50Hz, 1min.
MECHANICAL	
Approximate weight	<4.1kg
Protection degree	IP20
Dimensions (Width x Height x Depth)	67mm x 130mm x 400mm
CONTROL	
Alarm and Signaling	PMBus to NP-5603 (System Controller)
LEDs	Vin OK: Green Vout OK: Green Alarm: Red
PROTECTIONS	
Against overloads and short-circuits	Current limiting
Over-temperature	Shutdown
Over-voltage protection	Shutdown

(1) 20A at Vout=133V
(2) Output power derating above +45°C

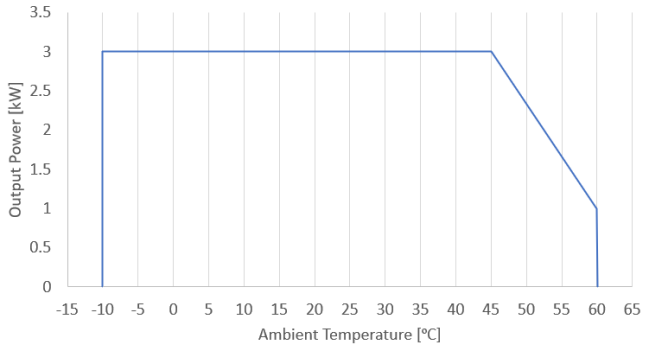
BLOCKS DIAGRAM



POWER DERATING vs INPUT VOLTAGE



POWER DERATING vs AMBIENT TEMPERATURE



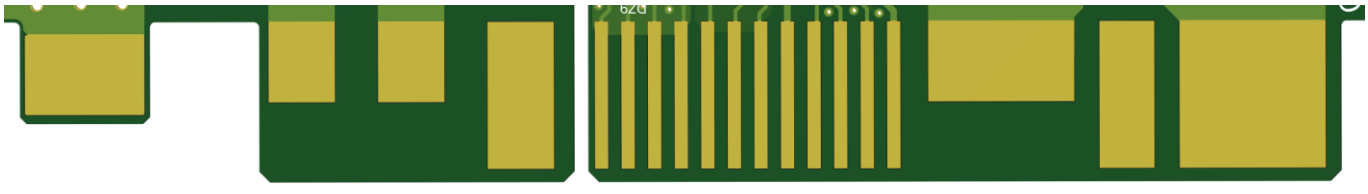
DESCRIPTION

The FDS-3K is a high efficiency 3kW rectifier with galvanic isolation between input and output.
The FDS-3K family can be easily parallelized with up to 24 modules, it requires 4 RMS-18K (19' Subrack) and 1 LMS-5602 (control module) to manage parallelization and communication.
The device is composed by two power stages, the first one is a Power Factor Correction (PFC) and the second a Phase Shifted Full Bridge (PSFB).
The PSFB stage is a digitally controlled converter and allows configuration (via PMBus) of different parameters within the defined limits.
The rectifier has three LEDs for local status indication (Vin OK, Vout OK, ALARM).
The product is protected against over temperature, overvoltage, overcurrent and short-circuits.
The temperature is controlled by a PWM-controlled fan, which extends component lifetime. The fan is easily replaceable.

INSTALLATION

The installation can only be performed using the RMS-18K (19’ Subrack). The RMS-18K allows the installation of 6 FDS-3K with 1 control module (LMS-5602). The system can be extended up to 4 RMS-18K with an output power capacity up to 72kW.
See the connection section for pinout information.
Other type of connection can be designed under request.
The inlet and outlet air must be free of elements that cause an airflow reduction (the minimum recommended distance to other objects is 50mm).
It is necessary to consider the environmental conditions of maximum temperature and altitude since they can limit the maximum output power.

CONNECTIONS



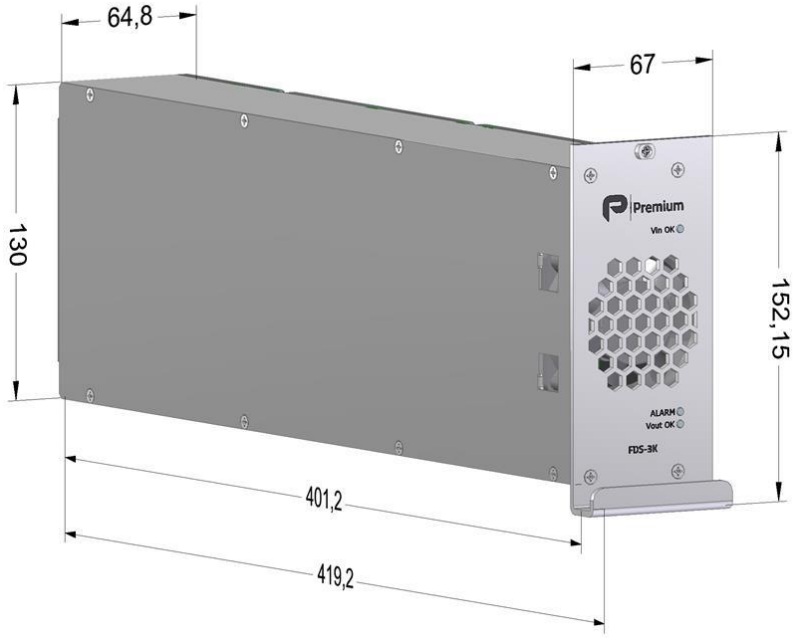
Top view



Bottom view

Pin	Description	Pin	Description	Pin	Description
1	-Vout	13	NC	25	GND
2	-Vout	14	Backplane Address 0	26	Module Address 2
3	NC	15	+V_ISO	27	GND
4	NC	16	GND_ISO	28	Module Address 1
5	+Vout	17	GND_ISO	29	GND
6	+Vout	18	PMBus_SCL	30	Module Address 0
7	GND	19	GND_ISO	31	NC
8	Backplane Address R	20	PMBus_SDA	32	NC
9	RX	21	PMBus ALARM	33	Vin Neutral
10	Backplane Address 2	22	PMBus_CTRL	34	Vin Neutral
11	TX	23	GND	35	Vin Phase
12	Backplane Address 1	24	I_Share	36	Vin Phase

DIMENSIONS



EU, UKCA DECLARATION OF CONFORMITY

The undersigned, representing the following:

Manufacturer: PREMIUM, S. A.,
Address: C/ Dolors Aleu 19-21, 08908 L'Hospitalet de Llobregat, SPAIN

herewith declares that the product:

Type: AC/DC Rectifier
Models: **FDS-3K**

is in conformity with the provisions of the following EU directives and UK legislation:

2014/35/EU SI 2016 No 1101	Low voltage / The electrical equipment (safety) regulations
2014/30/EU SI 2016 No 1091	EMC / Electromagnetic compatibility regulations
2015/863/EU SI 2012 No. 3032	RoHS / Restriction of the use of certain hazardous substances in electrical and electronic equipment

and that standards and/or technical specifications referenced below have been applied:

EN 62368-1: 2014	Safety. Audio/video, information and communication technology equipment
EN 61000-6-2: 2005	Generic standards - Immunity standard for industrial environments
EN 61000-6-4: 2007	Generic standards - Emission standard for industrial environments
EN 61000-6-5: 2015	Generic standards - Immunity for equipment used in power station and substation environment

CE marking year: **2021**; UKCA marking year: **2021**

Notes:

For the fulfillment of this declaration the product must be used only for the aim that has been conceived, considering the limitations established in the instructions manual or datasheet.

L'Hospitalet de Llobregat, 21-10-2021

Albert Sole
Technical Director

PREMIUM S.A. is an ISO9001and ISO14001 certified company by **Bureau Veritas**