Modular Power Rack & Battery Charger

FPS 2R Stand-alone PR (48V, 36V & 24V)

The FPS 2R stand-alone power rack is designed to be an easy to place, cost-effective, high efficient Battery Charger and DC power solution. It can be house 2 pieces Flatpack S modules, and up to max. 3 units can be easily be stacked together. Due to its small size, flexible mounting options and reliability, this unit is a key for future needs.

2 modules / Stand-alone Rack
1U high when Install Horizontal

FEATURES :

- Compact, Small & Short (274mm depth)
- High Efficiency
- Hot Pluggable Modules

  FPS 48V 1000W ; FPS 48V 1800W

  FPS 36V 1000W ; FPS 24V 1000W
- ORing Protection on Output
- Easy to Place
- Easy to Expand
- Easy to Connect
- Optional Controller

Vertical install

Up to max 3 units
can be stacked

FlatpackS 48V
1000W & 1800W module

FlatpackS 36V
1000W module

FlatpackS 24V
1000W module

Compack Controller

FlatpackS 2R 1U Power Rack

48V / 36V / 24V

Model	FPS 2R power rack
Part number	241122.903
INPUT DATA	
Maximum voltage	300 V_{AC} / 400V_{DC} [1)]
Maximum current	12A_{rms} per feed [1)]
Mains configuration	230V_{AC}, 2 x single phase + PE (individual feed)
Mains connection	Flying leads 1,5mm^2 length 2 meter
Frequency	45 to 66Hz
OUTPUT DATA	
Maximum voltage	60V_{DC}
Maximum current	85A
Connections	M6 cable lug
CONTROL & MONITORING	
Controller options (external)	Compack Smartpack S, Smartpack 2
Interface	RJ45 for paralleling units and connect controller
Alarm connection	3-pin (NC-C-NC), galvanic isolated, max 60V_{DC} / 100mA
MECHANICAL DATA	
Dimensions	See figures on next page for details
Weight	0,910kg
MOUNTING	
For wall mount or mounting plate. The unit can be mounted horizontally or vertically left or right. Up to 3 Power Racks can be stacked.	
DESIGN STANDARDS	
Electrical safety	UL60950-1 2ed / IEC60950-1
EMC	ETSI EN 300 386 V.1.6.1 EN 61000-6-2 EN 61000-6-3 EN 61000-6-4 EN 61000-6-1
Environment	ETSI EN 300 019-2-1 (Cl.1.2) ETSI EN 300 019-2-2 (Cl.2.3) ETSI EN 300 019-2-3 (Cl 3.2)
Vibration	According to DNV 2,4

1) See applicable datasheet for selected rectifiers

Specifications are subject to change without notice

OPTIONAL CONTROLLERS

COMPACK

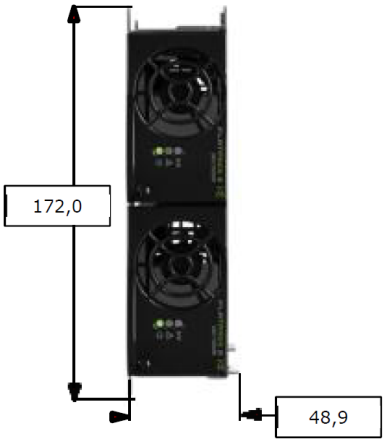
COMPACK
in Interface Kit
PN# 242100.900

FlatpackS 2R 1U Power Rack

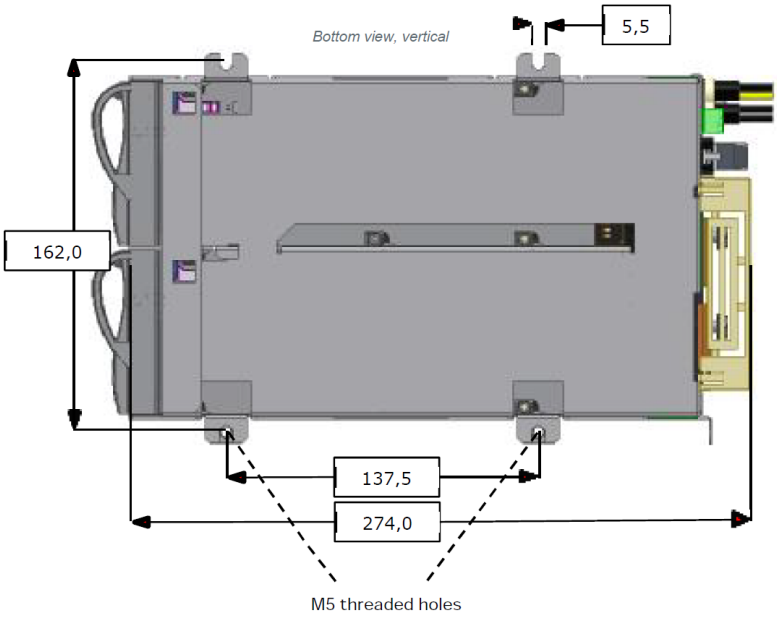
48V / 36V / 24V

DIMENSIONS / LOCATION OF TERMINALS & COM. PORTS

Front view, vertical



Bottom view, vertical



Note: Minimum clearance for airflow at the front and the rear of the unit: 30mm
All dimensions given in mm

Front view, vertical

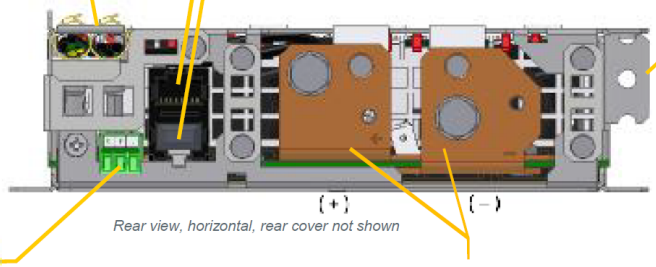
Up to 3 units can be stacked

Mains input:
5 x 1,5mm² flying leads
2m cable

2 x CAN connectors:
RJ45 for connecting
controller/CAN nodes and
paralleling units

End of line resistor

Bracket for strain relief
(Output cables)



Rear view, horizontal, rear cover not shown

Module Alarm

NC C NC

Plug in screw terminals
Flat 3,5mm
Torque: 1Nm

Output terminals:
M6 insert nuts for connecting
cable lug, bolt included
Torque: 6Nm

Note: Contacts shown in alarm mode of operation with
de-energized relay coils (fail safe mode)

ComMax

FlatpackS 48V Rectifiers

Doc 241122.1x5.DS3 – v3

Model	48/1000 HE	48/1800 HE
Part number	241122.105	241122.125
INPUT DATA		
Voltage (nominal)	185 - 270 V_{AC} / 185 - 250 V_{DC} [1]	195 - 277 V_{AC} / 195 - 250 V_{DC} [1]
Voltage (operating range)	85 - 300 V_{AC} / 85 - 250 V_{DC} [1]	85 - 305 V_{AC} / 85 - 250 V_{DC} [1]
Current (maximum) @ nominal input, full load	5.9 A_{RMS}	9.9 A_{RMS}
Frequency	45 - 66 Hz / 15 - 18.5 Hz[2] / 0 Hz[1]	45 - 66 Hz / 0 Hz[1]
Power Factor	> 0.99 at 50% load or more	
Protection	Fuse in L & N, Varistor, Shutdown when input voltage is out of operating range	
OUTPUT DATA		
Voltage (default)	53.5 V_{DC}	
Voltage (adjustable range)	43.5 - 57.6 V_{DC}	
Power (maximum) @ nominal input	1000 W	1800 W
Power @ 85 VAC	420 W	700 W[2]
Current (maximum) @ nominal input	20.9 A (@V_{OUT} < 48V_{DC})	37.5 A (@V_{OUT} < 48V_{DC})
Hold up time, maximum output power	>20ms; output voltage > 41 V_{DC}	>10ms; output voltage > 42 V_{DC}
Current sharing (10 - 100% load)	±5% of maximum current from 10 to 100% load	
Static Voltage regulation (10 - 100% load)	±0.5%	
Dynamic Voltage regulation	±5.0% for 10-90% or 90-10% load variation, regulation time < 50ms	
Ripple	< 150 mV_{PP}, 30 MHz bandwidth	
Protection	ORing FET, Short circuit proof, High temperature protection, Over voltage Shutdown	
OTHER SPECIFICATIONS		
Efficiency	Up to 95.5 %	Up to 95.8 %
Isolation	3.0 kV_{AC} - input to output, 1.5 kV_{AC} - input to earth, 710 V_{DC} - output to earth	
Alarms: Red LED	Low / high input voltage shutdown, High / low temperature shutdown, Rectifier Failure, Overvoltage shutdown on output, Fan failure, Low output voltage alarm, CAN bus failure	
Warnings: Yellow LED	Rectifier in power de-rate mode, Remote output current limit activated, Input voltage out of range, flashing at overvoltage, Loss of CAN communication with controller	
Normal operation: Green LED		
MTBF (Telcordia SR-332 Iss.I method III (a))	>315 000 (@ $T_{ambient}$: 25 °C)	>300 000 (@ $T_{ambient}$: 25 °C)
Operating temp. (5-95% RH n.cond. hum.)	-40 to + 85°C [-40 to +185°F]	-40 to + 85°C [-40 to +185°F]
Max output power de-rates above temp / to	45°C [113°F] / 600W @ 85°C[185°F]	45°C [113°F] / 1000W @ 85°C[185°F]
Storage temperature	-40 to +85°C (-40 to +185°F), humidity 0 - 99% RH non-condensing	
Dimensions[WxHxD] / Weight	72 x 41.5 x 217mm (2.83 x 1.63 x 8.54") / < 850 g (1.9 lbs)	
DESIGN STANDARDS		
Electrical safety	UL 60950-1:2014, EN 60950-1:2006+A11:2009+A1:2010+A12:2011+A2:2013 IEC 60950-1:2013	
EMC	ETSI EN 300 386 v1.5.1, FCC CFR 47 Part 15 EN 61000-6-1:2007 / -3:2007 + A1:2011 / -4:2007 + A1:2011 IEC 61000-6-5:2001	
Environment	ETSI EN 300 019: 2-1 (Class 1.2), 2-2 (Class 2.3) & 2-3 (Class 3.2) RoHS (2011/65/EU) and WEEE (2012/19/EU) compliant	

1) DC input only allowed when up-stream breaker is rated for the applicable DC input voltage and has a maximum current rating of 32A
2) Power derating 415W@ 15Hz and 450W@16 2/3 Hz

Specifications are subject to change without notice.

ComMax

FlatpackS 36V Rectifier

Doc 241122.235.DS3 – v1

Model	36/1000 HE UI
Part number	241122.235
INPUT DATA	
Voltage (nominal)	185 - 400 V_{DC} / 185 - 275 V_{AC}
Voltage (operating range)	85 - 400 V_{DC} / 85 - 305 V_{AC}
Frequency	DC, 16 2/3 Hz, 45 - 66 Hz
Current (maximum)	5.9 A_{DC} / 5.9 A_{RMS}
Protection	Fuse in Positive & Negative, Reversed polarity insensitive, Shutdown above 420 V_{DC} / 305 V_{AC}
OUTPUT DATA	
Voltage	40 V_{DC}
Voltage (adjustable range)	33[1] - 45 V_{DC}
Power (maximum) @ nominal input	1000 W / 450 W @16 2/3 Hz input
Power (maximum) @ 85 V_{DC} / 85 V_{AC} input	440 W / 440 W
Current (max cont.) @ nominal input	27.8 A (@V_{OUT} < 36 V_{DC})
Hold up time, maximum output power	>10ms; output voltage > 33 V_{DC}
Current sharing (10 - 100% load)	±5% of maximum current from 10 to 100% load
Static Voltage regulation (10 - 100% load)	±0.5%
Dynamic Voltage regulation	±5.0% for 10-90% or 90-10% load variation, regulation time < 50ms
Ripple	< 150 mV_{PP} , 30 MHz bandwidth
Protection	ORing FET Short circuit proof High temperature protection Over voltage Shutdown
OTHER SPECIFICATIONS	
Efficiency	> 95 %
Isolation	4.2 kV_{DC} - input to output 2.25 kV_{DC} - input to earth 710 V_{DC} - output to earth
Alarms: Red LED	Low and high input voltage, High and low temperature shutdown, Rectifier Failure, Overvoltage shutdown on output, Fan failure when fan stops, Low output voltage alarm, CAN bus failure
Warnings: Yellow LED	Rectifier in power de-rate mode, Remote output current limit activated, Input voltage out of range, flashing at overvoltage, Loss of CAN communication with controller
Normal operation: Green LED	
Alarm relay (NO - opens when de-energized)	Opens on Alarms and missing input voltage.
MTBF (Telcordia Issue 3 & Method II Case L1)	>2 700 000 (@ $T_{ambient}$: 25 °C)
Operating temperature (5-95% RH n.cond. hum.) Maximum output power de-rates above temp / to	-40 to + 85°C [-40 to +185°F] 45°C [140°F] / 400W @ 85°C [185°F]
Storage temperature	-40 to +85°C (-40 to +185°F), humidity 0 - 99% RH non-condensing
Dimensions[WxHxD] / Weight	72 x 40 x 217mm[2] (2.84 x 1.57 x 8.54")[2] / < 850 g (1.9 lbs)
DESIGN STANDARDS	
Electrical safety	EN 60950-1:2006+A11:2009+A1:2010+A12:2011
EMC	EN 61000-6-1:2007, -6-2:2005, - 6-3:2007 + A1:2010, - 6-4:2007 + A1:2010 EN 50121-1:2015, -2:2015, -4:2015, -5:2015
Environment	ETSI EN 300 019: 2-1 (Class 1.2), 2-2 (Class 2.3) & 2-3 (Class 3.2) RoHS (2011/65/EU) and WEEE (2012/19/EU) compliant

1) limited standby operation / needs some load to get to min set voltage
2) including handle depth is 234mm [9.21"] and height 42mm [1.65"]

Specifications are subject to change without notice.

FlatpackS 24V Rectifier

Doc 241122.205.DS3 – v3

Model	24/1000 HE
Part number	241122.205
INPUT DATA	
Voltage (nominal range)	185 $V_{AC/DC}$ - 305 V_{AC} / 300V_{DC}
Voltage (operating range)	85 $V_{AC/DC}$ - 305 V_{AC} / 300V_{DC}
Frequency (nominal / range)	45 - 66 Hz / DC
Maximum current	5.9 A_{RMS}
Power Factor	> 0.99 at 50% load or more
Protection	Fuse Shutdown above 305 V_{AC} / 300 V_{DC}
OUTPUT DATA	
Voltage (default)	26.7 V_{DC}
Voltage (adjustable range)	21.5 - 28 V_{DC}
Max power, nominal input	1000 W
Max power, @ 85 $V_{AC/DC}$	440 W
Max current	41.7 A (@V_{OUT} < 24 V_{DC})
Current sharing	±5% of maximum current from 10 to 100% load
Static voltage regulation (10-100% load)	±0.5%
Dynamic voltage regulation	±5.0% for 10-90% or 90-10% load variation, regulation time < 50ms
Hold up time	>20ms; output voltage > 21 V_{DC}
Ripple	< 150 mV_{PP} , 30 MHz bandwidth
Protection	Blocking OR-ing Diode, Short circuit proof, Over voltage protection and High temperature protection
OTHER SPECIFICATIONS	
Peak Efficiency	92.5 %
Isolation	3.0 kV_{AC} - input and output, 1.5 kV_{AC} - input earth, 0.5 kV_{DC} - output earth
Alarms (Red LED)	Low mains shutdown, High and low temperature shutdown, Rectifier Failure, Overvoltage shutdown on output, Fan failure, Low voltage alarm, CAN bus failure
Warnings (Yellow LED)	Rectifier in power de-rate mode, Remote battery current limit activated, Input voltage out of range, flashing at overvoltage
Normal (Green LED)	Input and output ok
Potential alarm relay (normally closed)	Opens on alarms and mains outage
MTBF (Telcordia SR-232 Iss.3 Meth. II Case L1)	>1 975 044 (@ $T_{ambient}$: 25 °C)
Operating temperature (5 - 95% RH non-cond.)	- 40 - 85°C [-40 - 185°F]
Max output power de-rates above temp / to	45°C [+113°F] / 400 W
Storage temperature	-40 to +85°C (-40 to +185°F), humidity 0 - 99% RH non-condensing
Dimensions[WxHxD] / Weight	72 x 41.5 x 217mm (2.83 x 1.63 x 8.54") / < 850 g (1.9 lbs)
DESIGN STANDARDS	
Electrical safety	EN 60950-1:2006+A11:2009+A1:2010+A12:2011, UL 60950-1:2011
EMC	EN 61000-6-1:2007, -6-2:2005, -6-3:2007 + A1:2011, -6-4:2007 + A1:2011, TS 61000-6-5, EN 300 386:v1.6.1, FCC CFR 47 Part 15:2013
Environment	ETSI EN 300 019: 2-1 (Class 1.2) & 2-2 (Class 2.3) 2011/65/EU (RoHS) & 2012/19/EU (WEEE) Normal operating conditions as per IEC 62040-5-3:2016 clause 4.2. Other operating conditions as per IEC 62040-5-3:2016 clause 4.3, must be advised

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