

Modular Battery Rack System

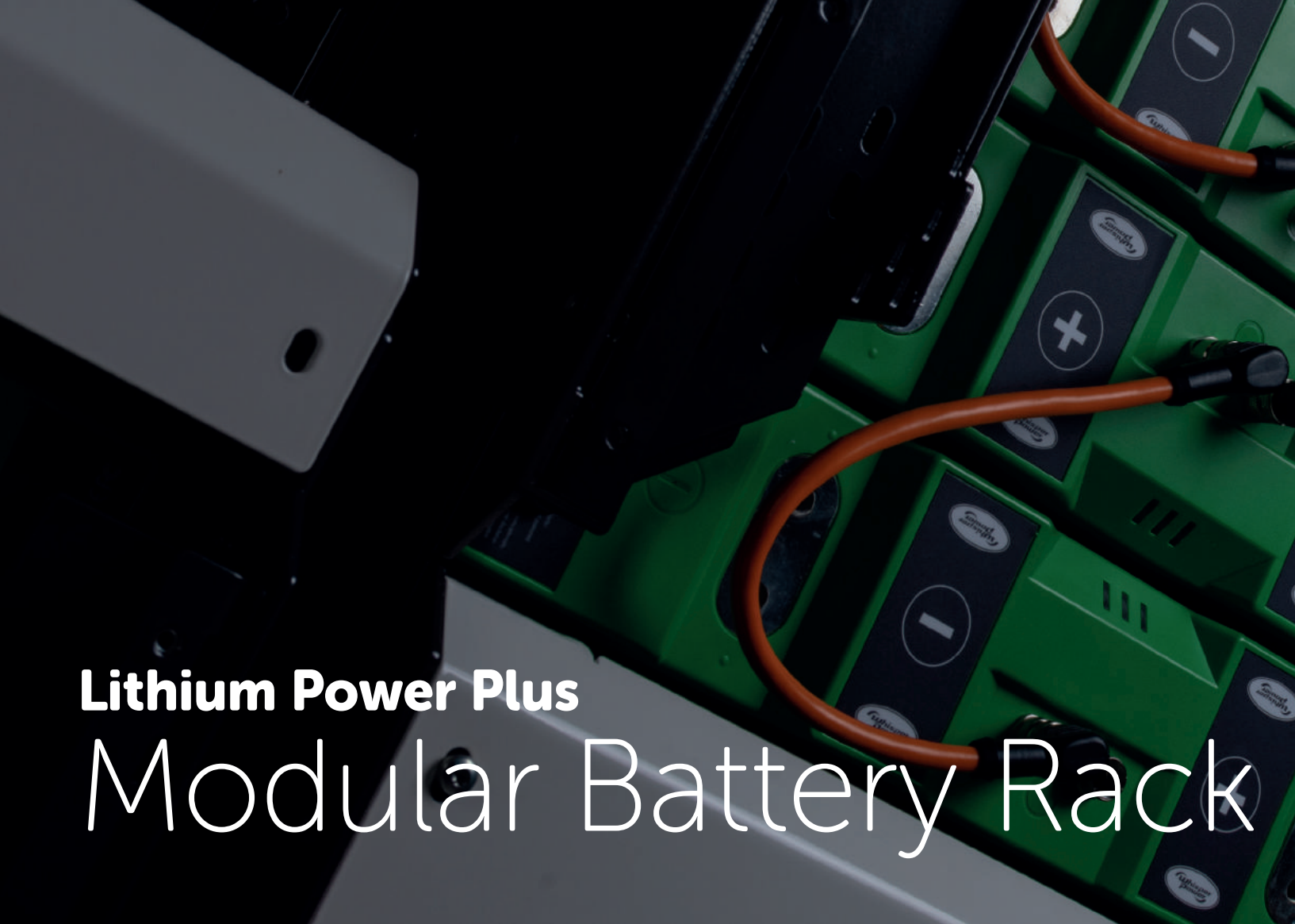
Lithium Power Plus



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Lithium Power Plus

Modular Battery Rack



Enjoy Green Energy

Modular Battery **Rack System**

The days of choosing lead-acid batteries or niCAD batteries for backup storage or to operate inverters are over. Lithium batteries are the sustainable and suitable alternative for DC power systems, inverter/generator replacement solutions or supplementary systems for peak/energy shaving purposes.

System

The Power of Green





Why lithium?

High quality 12 V Lithium Iron Phosphate (LiFePO₄) cells are the basis for WhisperPower's new lithium storage systems. The new lithium Power Plus Battery Racks are a sustainable and highly energy dense solution to store electrical energy for use "on demand". Due to the specific characteristics of the WhisperPower LFP ferro lithium batteries, the battery pack(s) can be charged and discharged at high amperes.

The added value of WhisperPower

All Lithium battery solutions can be supplied just "as a battery". However, we offer our customers a total solution that eliminates the risk of the user's battery not being charged, discharged or monitored properly. The system approach goes beyond simply supplying a WhisperPower battery charger or combination inverter/charger. If required, we can supply a complete diesel fuel based fast charge system in combination with the Lithium Power Plus rack with integrated BMS, DC bus bar (s) distribution including fuses and an advanced monitoring system that monitors the behavior of the cells inside the battery down to the cell level: WhisperCare.

Sustainable and cleaner for the user

Further electrification to replace or supplement fossil power solutions reduces the carbon footprint on a substantial basis. In addition, large cost savings can be achieved because the fossil power system can be used much more efficiently. A higher upfront investment is recouped within a short time.

For horizontal or vertical installation

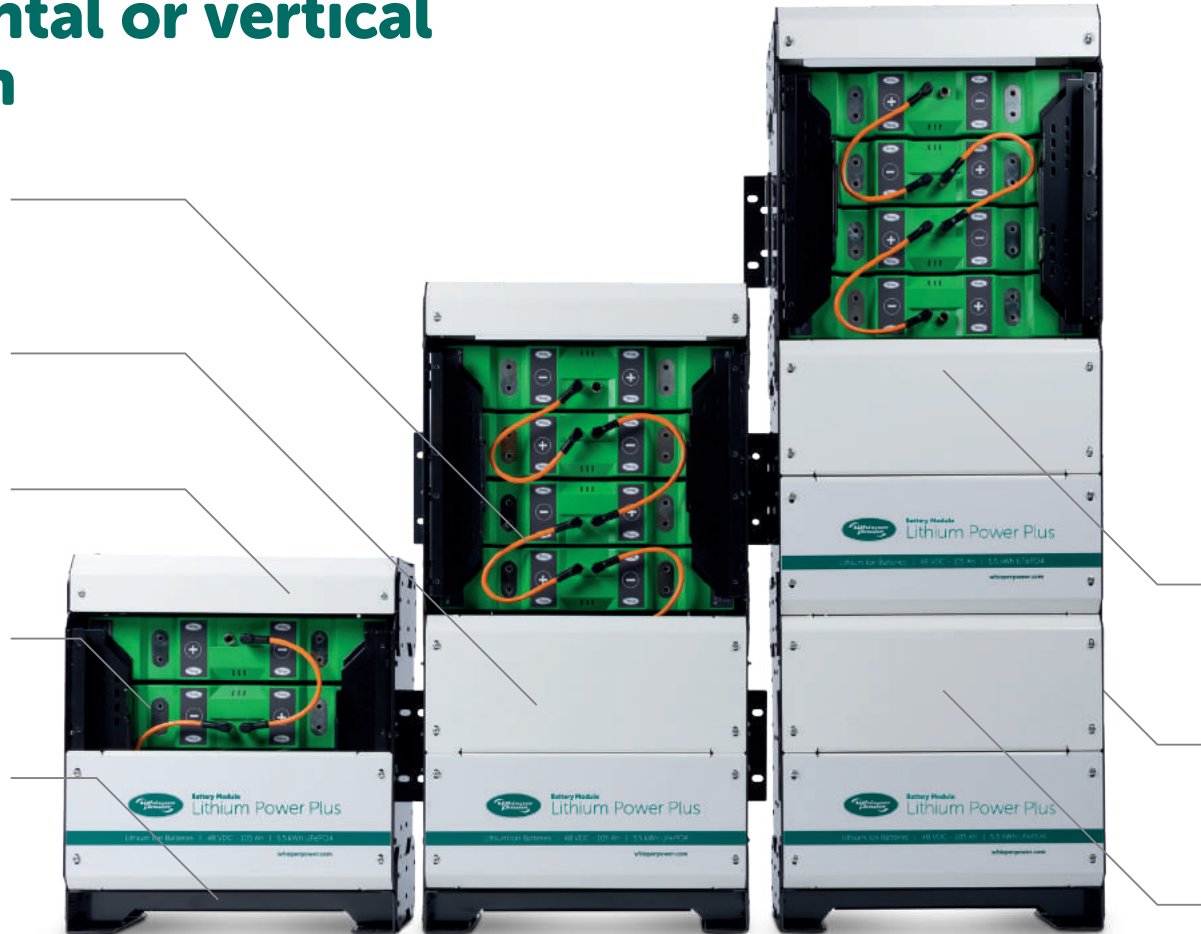
Pre-installed busbars and
interface connections.
BMS integrated

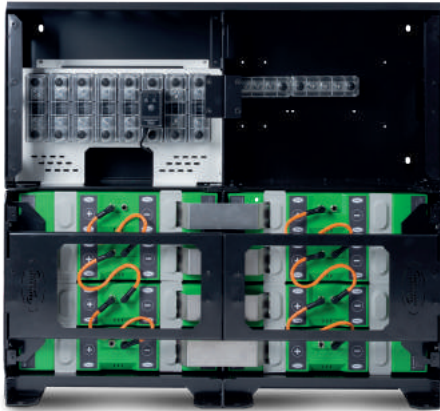
Front Acces

Designed for harsh marine
and mobile use

Plug and Play installation

DC + and - Ready to
connect





Optional: DC distribution cabinet with fuses, bi-stable relays and smart battery interface module (BIM)

Drawer system
for cells

Light weight
Aluminium Rack

DNV Approval
(optional)



Lithium Power Plus modular battery rack system

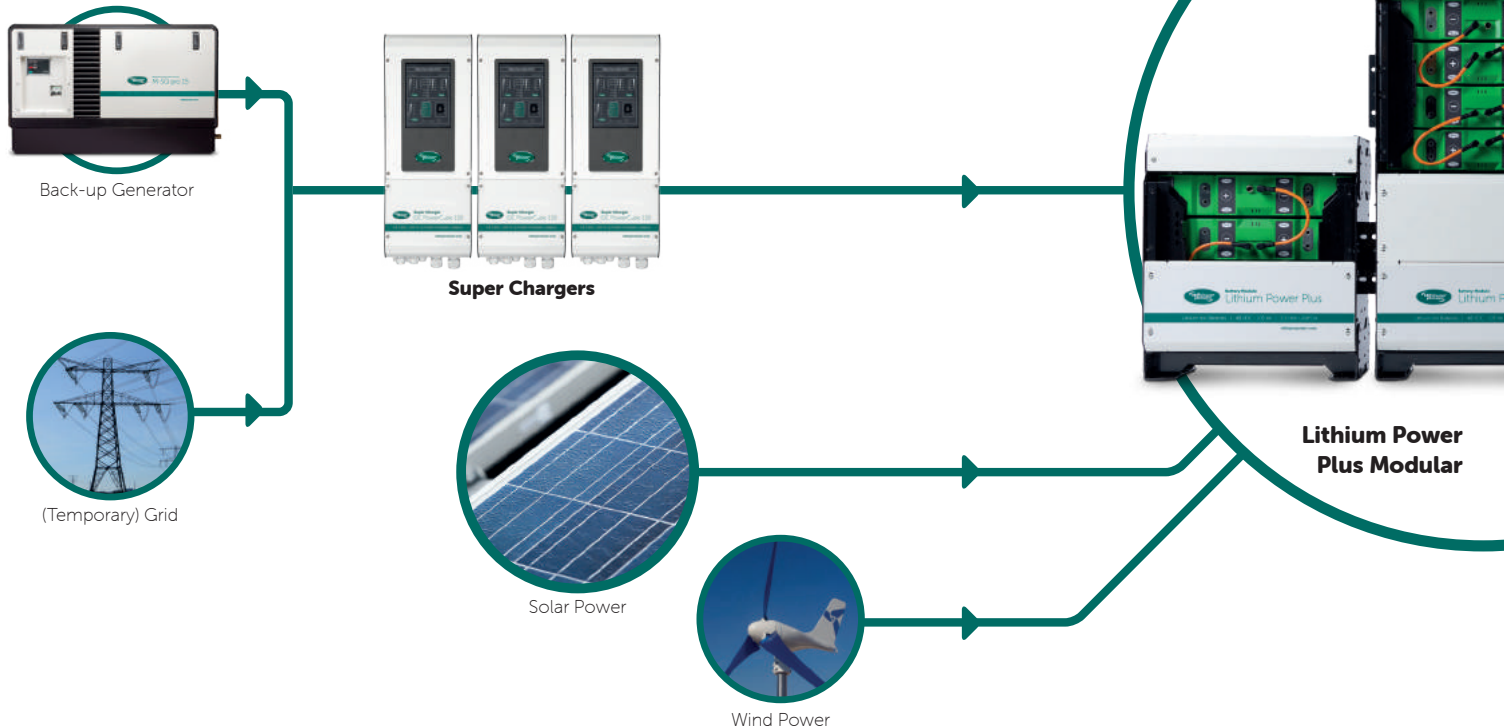
- Light weight, modular rack design
- For horizontal or vertical mounting
- Pre-installed busbars and cabling
- Ready-to-use, + and – ready to connect
- Configurations from 12 – 800 VDC, up to 840 Ah
- Advanced BMS integration with accurate battery monitoring
- Real time and historical cloud-based surveillance (WhisperCare) (optional)
- DNV type approval (optional)
- Safe LiFePO4 chemistry, of the highest density

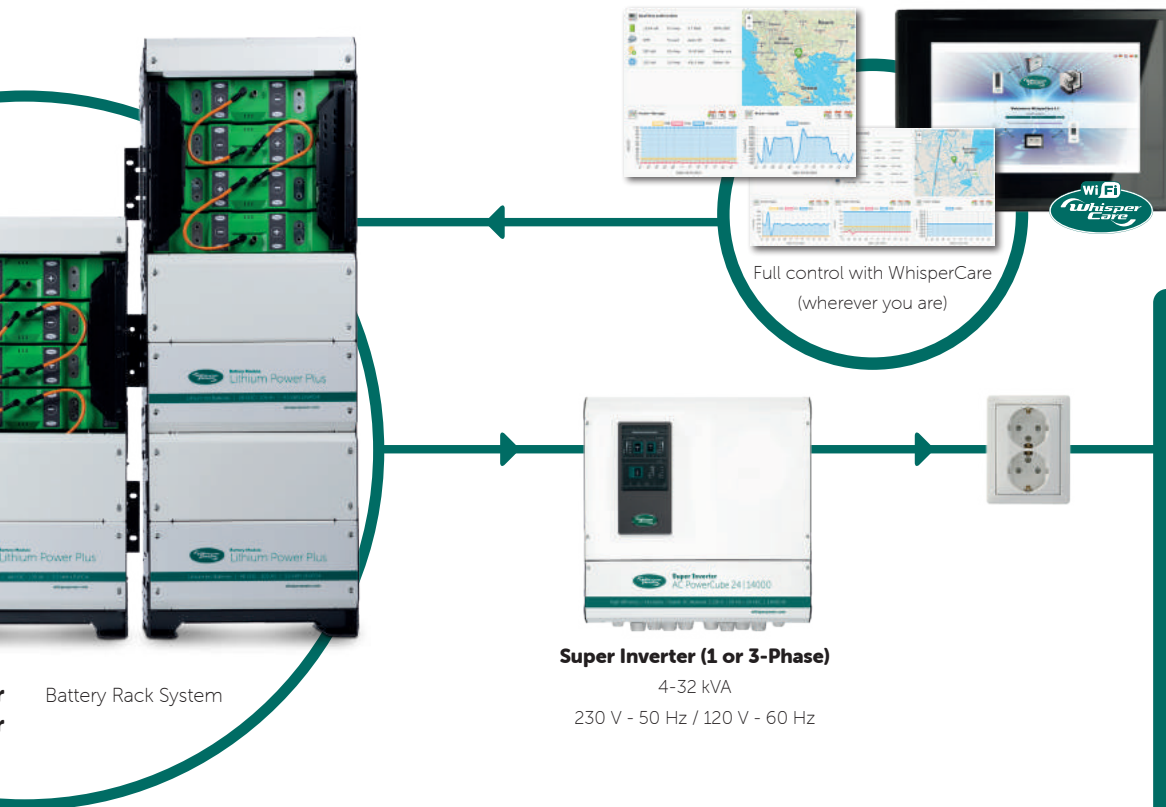
Added Value Services from WhisperPower

- Battery System Design
- Total Power System Design
- Full integration of (fast) chargers, DC – AC inverters, solar power and back-up generators, all from one brand
- Your perfect one stop shop, extended 5 years warranty optional
- Service & support at location on a world wide base

How the total WhisperPower system looks like

OctoPower





Applications

- Durable DC storage solution
- Generator emission reduction
- Peakshaving for power systems
- Electrical power for e-mobility
- Electrical power for e-propulsion

Modular Battery Overview

Lithium Power Plus - 24 VDC

Preliminary specifications. Ask for quotation.

Art. Nr.

	LITHIUM POWER PLUS 24 VDC 5.5 KWH	LITHIUM POWER PLUS 24 VDC 11.1 KWH	LITHIUM POWER PLUS 24 VDC 16.6 KWH
	40290223 - Horizontal 40290203 - Tower/Vertical	40290225 - Horizontal 40290205 - Tower/Vertical	40290226 - Horizontal 40290206 - Tower/Vertical
Technology			
Chemistry	LiFePO4	LiFePO4	LiFePO4
Module configuration (12 V module)	2s2p	2s4p	2s6p
Number of modules	4	8	12
Nominal voltage	24 VDC	24 VDC	24 VDC
Open circuit voltage	26,4 VDC	26,4 VDC	26,4 VDC
Nominal capacity	210 Ah	420 Ah	630 Ah
Nominal energy	5,5 kWh	11,1 kWh	16,6 kWh
Cycle Life DOD 80%	>3500 cycles (at 1C charge/ discharge,80% DoD)		
Self discharge	<3% per month	<3% per month	<3% per month
Weight modules (excl. aluminum cabinet)	40 kg / 88.2 lbs	80 kg / 176.4 lbs	120 kg / 264.6 lbs
Discharge			
Discharge cut-off voltage	21,6 VDC	21,6 VDC	21,6 VDC
Recommended discharge current	105 A (0.5C)	210 A (0.5C)	315 A (0.5C)
Maximum discharge current	210 A (1.0C)	420 A (1.0C)	630 A (1.0C)
Discharge pulse current	420 A (2.0C)	840 A (2.0C)	1260A (2C, 10sec, SOC >60%)
Fuse protection	400 A T-class	2*400A T-class	3*400 A T-class
Charge			
Charge method	CCCV	CCCV	CCCV
Maximum charge voltage	29,8 VDC	29,8 VDC	29,8 VDC
Recommended charge voltage	28,6 VDC	28,6 VDC	28,6 VDC
Recommended charge current	105 A (0.5C)	210 A (0.5C)	315 A (0.5C)
Continuous charge current	210 A (1.0C)	420 A (1.0C)	630 A (1.0C)

	LITHIUM POWER PLUS 24 VDC 5.5 KWH	LITHIUM POWER PLUS 24 VDC 11.1 KWH	LITHIUM POWER PLUS 24 VDC 16.6 KWH
Configuration			
Series configuration	Yes, up to 4 max	Yes, up to 4 max	On request
Parallel configuration	Yes, up to 2 max	Yes, up to 2 max	On request
Redundant mode	Yes, using double BIM	Yes, using double BIM	Yes, using double BIM
Environmental			
Operating temperature charge	0°C to 55°C / 32°F to 131°F	0°C to 55°C / 32°F to 131°F	0°C to 55°C / 32°F to 131°F
Operating temperature discharge	-20°C to 55°C / -4°F to 131°F	-20°C to 55°C / -4°F to 131°F	-20°C to 55°C / -4°F to 131°F
Storage temperature	-20°C to 45°C / -4°F to 113°F	-20°C to 45°C / -4°F to 113°F	-20°C to 45°C / -4°F to 113°F
Humidity (Non-condensing)	<95%	<95%	<95%
Mechanical			
Power connections	M10 stud , max 20NM	M10 stud , max 20NM	2*M10 stud , max 20NM
Cable connections	Option: Top or Bottom	Option: Top or Bottom	Option: Top or Bottom
IP-Protection class	IP 66 cell IP20 connection	IP 66 cell IP20 connection	IP 66 cell IP20 connection
Cooling	Natural air convection	Natural air convection	Natural air convection
Module material	PC-ABS UL94-V0	PC-ABS UL94-V0	PC-ABS UL94-V0
Battery case material	Aluminum Powdercoat	Aluminum Powdercoat	Aluminum Powdercoat
Dimensions (l x h x w) mm	480 x 280 x 465 (540) mm	870 x 280 x 465 (540) mm	1260 x 280 x 465 (540) mm
Dimensions (l x h x w) inches	18,9 x 11 x 18,3 (21,3") inches	34,3 x 11 x 18,3 (21,3") inches	49,6 x 11 x 18,3 (21,3") inches
Total weight module plus cabinet	±55-60 kg / 121-132 lbs	±100-110kg / 220-243 lbs	±150-160 kg / 331-353 lbs
Safety			
Battery Management System (BMS)	External WP-BIM module	External WP-BIM module	External WP-BIM module
Balancing	Passive method	Passive method	Passive method
Communication CAN-Bus	Whisperconnect/NMEA2000	Whisperconnect/NMEA2000	Whisperconnect/NMEA2000
EMC: Emission	EN-IEC 61000-6-3:2007/A1:2011/C11:2012		
EMC: Immunity	EN-IEC 61000-6-1:2007	EN-IEC 61000-6-1:2007	EN-IEC 61000-6-1:2007
Low voltage directive	EN 60335-1:2012/AC:2014	EN 60335-1:2012/AC:2014	EN 60335-1:2012/AC:2014
Certifications	CE, FCC, UN 38.3, UL 1642 (Cells), UN ECE R10.06, EN/IEC 62620 (ESTRIN)		
Shipping classification	UN 3480		

Modular Battery Overview

Lithium Power Plus - 48 VDC

Preliminary specifications. Ask for quotation.

	LITHIUM POWER PLUS 48 V 5.5 KWH	LITHIUM POWER PLUS 48 V 11.1 KWH	LITHIUM POWER PLUS 48 V 16.6 KWH	LITHIUM POWER PLUS 48 V 22.2 KWH
Art. Nr.	40290231 - Horizontal 40290211 - Tower/Vertical	40290215 - Horizontal 40290215 - Tower/Vertical	40290236 - Horizontal 40290216 - Tower/Vertical	40290218 - Double Tower/ Vertical
Technology				
Chemestry	LiFePO4	LiFePO4	LiFePO4	LiFePO4
Module configuration (12 V module)	4s1p	4s2p	4s3p	4s4p
Number of modules	4	8	12	16
Nominal voltage	48 VDC	48 VDC	48 VDC	48 VDC
Open circuit voltage	52,8 VDC	52,8 VDC	52,8 VDC	52,8 VDC
Nominal capacity	105 Ah	210 Ah	315 Ah	420 Ah
Nominal energy	5,5 kWh	11,1 kWh	22,2 kWh	22,2 kWh
Cycle Life DOD 80%	>3500 cycles (at 1C charge/ discharge,80% DoD)			
Self discharge	<3% per month	<3% per month	<3% per month	<3% per month
Weight modules (excl. aluminum cabinet)	40 kg / 88.2 lbs	80 kg / 176.4 lbs	120 kg / 264.6 lbs	160 kg / 352.7 lbs
Discharge				
Discharge cut-off voltage	43,2 VDC	43,2 VDC	43,2 VDC	43,2 VDC
Recommended discharge current	52,5 A (0.5C)	105 A (0.5C)	157A (0.5C)	210 A (0.5C)
Maximum discharge current	105 A (1.0C)	210 A (1.0C)	315 A (1.0C)	420 A (1.0C)
Discharge pulse current	210A (2C, 10sec, SOC >60%)	420A (2C, 10sec, SOC >60%)	630A (2C, 10sec, SOC >60%)	840 A (2,0C)
Fuse protection	225A T-class	2*225A T-class	3*225A T-class	600 A T-class
Charge				
Charge method	CCCV	CCCV	CCCV	CCCV
Maximum charge voltage	59,6 VDC	59,6 VDC	59,6 VDC	59,6 VDC
Recommended charge voltage	57,2 VDC	57,2 VDC	57,2 VDC	57,2 VDC
Recommended charge current	52,5 A (0.5C)	105 A (0.5C)	157.5 A (0.5C)	210 A (0.5C)
Continuous charge current	105 A (1.0C)	210 A (1.0C)	315 A (1.0C)	420 A (1.0C)

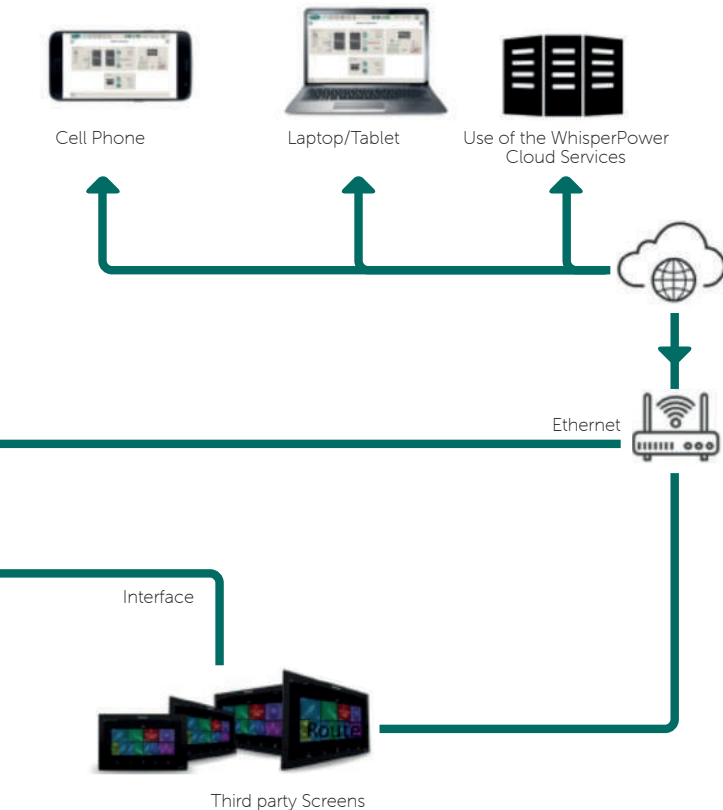
	LITHIUM POWER PLUS 48 V 5.5 KWH	LITHIUM POWER PLUS 48 V 11.1 KWH	LITHIUM POWER PLUS 48 V 16.6 KWH	LITHIUM POWER PLUS 48 V 22.2 KWH
Configuration				
Series configuration	No	No	No	No
Parallel configuration	Yes, up to 4 max	Yes, up to 2 max	No	No
Redundant mode	Yes, using double BIM	Yes, using double BIM	Yes, using double BIM	Yes, using double BIM
Environmental				
Operating temperature charge	0°C to 55°C / 32°F to 131°F	0°C to 55°C / 32°F to 131°F	0°C to 55°C / 32°F to 131°F	0°C to 55°C / 32°F to 131°F
Operating temperature discharge	-20°C to 55°C / -4°F to 131°F	-20°C to 55°C / -4°F to 131°F	-20°C to 55°C / -4°F to 131°F	-20°C to 55°C / -4°F to 131°F
Storage temperature	-20°C to 45°C / -4°F to 113°F	-20°C to 45°C / -4°F to 113°F	-20°C to 45°C / -4°F to 113°F	-20°C to 45°C / -4°F to 113°F
Humidity (Non-condensing)	<95%	<95%	<95%	<95%
Mechanical				
Power connections	M10 stud , max 20NM	M10 stud , max 20NM	M10 stud , max 20NM	M10 stud , max 20NM
Cable connections	Option: Top or Bottom	Option: Top or Bottom	Option: Top or Bottom	Option: Top or Bottom
IP-Protection class	IP 66 cell IP20 connection	IP 66 cell IP20 connection	IP 66 cell IP20 connection	IP 66 cell IP20 connection
Cooling	Natural air convection	Natural air convection	Natural air convection	Natural air convection
Module material	PC-ABS UL94-V0	PC-ABS UL94-V0	PC-ABS UL94-V0	PC-ABS UL94-V0
Battery case material	Aluminum Powdercoat	Aluminum Powdercoat	Aluminum Powdercoat	Aluminum Powdercoat
Dimensions (l x h x w)	480 x 280 x 465 (540) mm	870 x 280 x 465 (540) mm	1260 x 280 x 465 (540) mm	990 x 340 x 920 (995) mm
Dimensions (l x h x w) inches	18,9 x 11 x 18,3 (21,3")	34,3 x 11 x 18,3 (21,3") inches	49,6 x 11 x 18,3 (21,3") inches	39 x 13,4 x 36,2 (39,2") inches
Total weight module plus cabinet	±55-60 kg / 121 - 132 lbs	±100-110kg / 220 - 243 lbs	±150-160 kg / 331 - 353 lbs	±200 kg-210 kg / 441 - 463 lbs
Safety				
Battery Management System (BMS)	External WP-BIM module	External WP-BIM module	External WP-BIM module	External WP-BIM module
Balancing	Passive method	Passive method	Passive method	Passive method
Communication CAN-Bus	Whisperconnect/NMEA2000	Whisperconnect/NMEA2000	Whisperconnect/NMEA2000	Whisperconnect/NMEA2000
EMC: Emission	EN-IEC 61000-6-3:2007/A1:2011/C11:2012			
EMC: Immunity	EN-IEC 61000-6-1:2007	EN-IEC 61000-6-1:2007	EN-IEC 61000-6-1:2007	EN-IEC 61000-6-1:2007
Low voltage directive	EN 60335-1:2012/AC:2014	EN 60335-1:2012/AC:2014	EN 60335-1:2012/AC:2014	EN 60335-1:2012/AC:2014
Certifications	CE, FCC, UN 38.3, UL 1642 (Cells), UN ECE R10.06, EN/IEC 62620 (ESTRIN)			
Shipping classification	UN 3480	UN 3480	UN 3480	UN 3480

WhisperCare protects your investment



Special care for the Lithium Power Plus Battery

WhisperCare will be able to send a message (sms or mail) when something occurs within the Lithium battery. Each cell and each stack is monitored separately. The charge devices which includes the WhisperPower generator are always stand by to re-charge the battery automatically.



Advanced Remote Monitoring of the WhisperPower systems

WhisperCare is the online portal that gives the user and any administrator/operator, in case they are allowed to, access to all the main functions of the WhisperPower energy system.

The WhisperCare package includes the following:

1. WhisperPower devices that display the status of the system through WhisperConnect:

- Real time information, from individual product to the complete system
- Historical information about the status of the devices, energy consumption, the state of charge of the battery, the output of charging devices such as solar panels, the WhisperPower back-up generator, etc.
- Remote start/ stop of the generator and adjustments of the power and storage devices

2. A 7 inch TOUCH panel, with which all WhisperPower devices can be controlled, configured and monitored remotely

3. A router for the connection between all system parts and the WhisperCare server

4. The WhisperCare cloud server, collecting and storing all system information for the benefit of the user/ fleetpower manager etc.

5. Connection to other screens, if wishful.

6. Support services, including maintenance, troubleshooting and any repairs, from WhisperPower HQ.

The remote monitoring and control part of WhisperCare 2.0 can be accessed from any device with a web browser



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