

Victron Energy Battery System for R/V Paragon

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LFP-Smart 25.6V/200aH Battery



- Chemistry: Lithium Iron Phosphate
- Dimensions: H=237mm (9.3"), W=650mm (25.6"), D=163mm (6.4")
- Weight: 39kg (86 lbs)
- Two in series for 48V nominal bus

LFP-Smart 25.6V/200aH Battery

- Voltage: 25.6Vdc
- Capacity: 200 Amp-Hours
- Energy: 5120 Watt-Hours
- Discharge Current: 200A (max-rec), 400A (abs-max)
- Charge Current: 100A (max-rec), 400A (abs-max)
- Internal BMS
 - Pre-alarm when cell voltages reach user defined voltage (signal can feed a visual or audible alarm device)
 - Disconnect the load when cell voltages reach user defined voltage
 - Disconnect the charger when cell voltages reach 3.75V (or temp is too high)
- Integrated cell monitoring and balancing
 - Attached data cables allow batteries to be daisy chained and info fed to an external Battery Monitor Unit
- Bluetooth enabled
 - Cell voltages, temperatures, and alarm status can be monitored
 - VictronConnect App for phones and smart-devices

Lynx Smart BMS

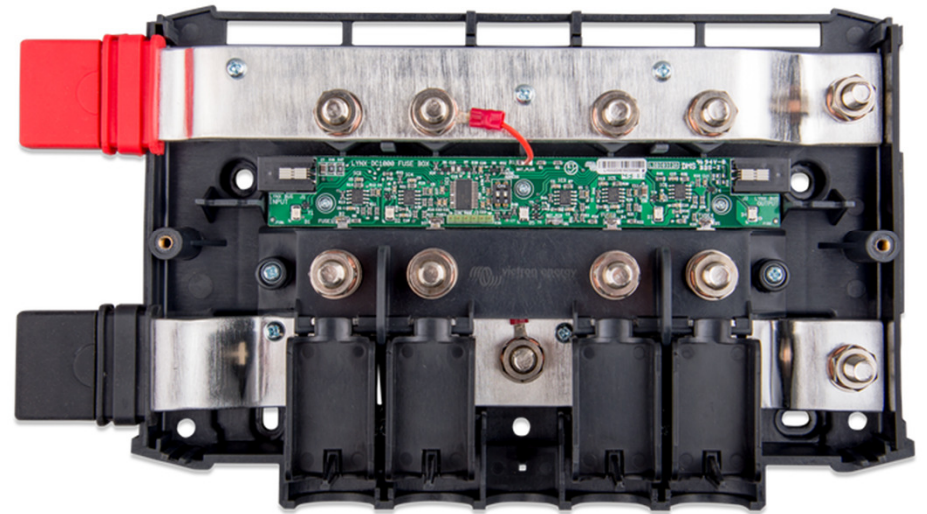


- Dedicated Battery Management System
- Contains
 - Positive & Negative bus bars
 - Battery Management circuitry
 - Contactor
 - Battery Monitor

Lynx Smart BMS

- Battery Management System
 - Monitors State of Charge (SoC) and user-defined Discharge Floor determines when to cutoff discharge to prevent damage to batteries
 - ATC/ATD (Allow to Charge/Allow to Discharge) outputs control Smart Battery Protect modules to control charge and discharge paths
 - Programmable pre-alarm outputs for visual/audio indicators
- Contactor
 - Secondary safety contacts in the event ATC/ATD outputs fail
- System Communication
 - Via Bluetooth and VE.Can to GX devices
- Battery Monitor
 - Built in shunt is used to monitor input/output current to/from batteries

Lynx Distributor



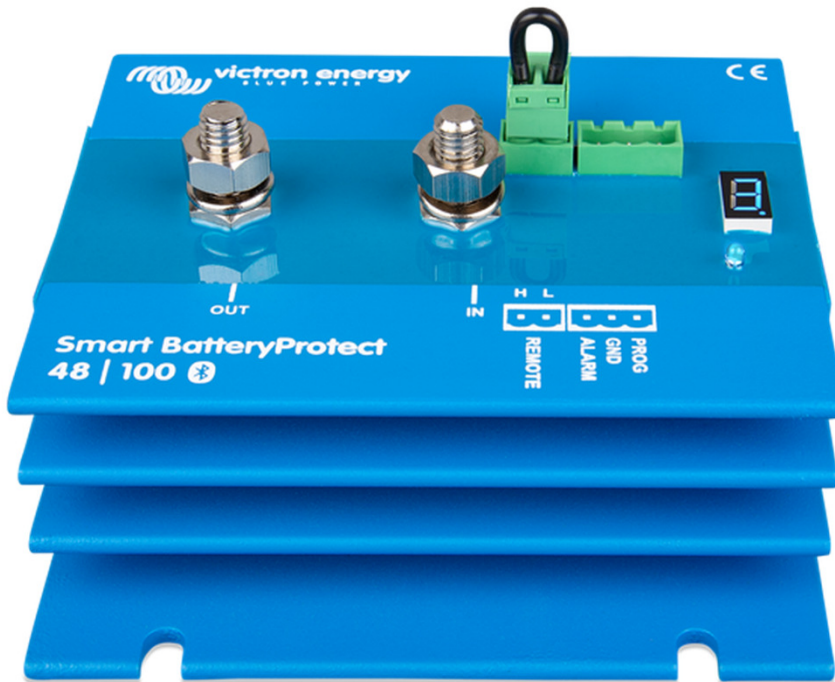
- Plugs into Lynx Smart BMS
- Has 4 fused connections to loads or batteries
- Daisy chained RJ10 cables provide fuse status feedback

Cerbo GX & Touchscreen



- All system components attach to Cerbo GX
- Acts as a Communications Center
 - Victron Remote Management (VRM) via the internet over LAN or WiFi
 - VictronConnect App over Bluetooth
 - Cellular networks (3G & 4G)
 - Direct access via GX Touch (touchscreen)
- Two SPDT relays available for external devices
- Can accept auxiliary inputs
 - Temperature sensors
 - Tank level inputs
 - User defined digital inputs
- NMEA 2000 GPS compatible

Smart Battery Protect 48V/100A



- Primary contactor for loads & chargers
 - Used with SmartBMS ATD & ATC signals
- Uses MOSFETs not electro-mech relays
- Alarm output
 - LED
 - Buzzer
 - External relay
- Bluetooth enabled

Smart Shunt IP65



- Current monitor for individual outputs
 - 500A, 1000A, and 2000A versions
- Communications
 - VE.Direct for GX devices
 - Bluetooth for Victron App on phone
- Aux input
 - 2nd battery
 - Mid-point connection on battery bank
 - Temperature

Skylla 48/25 TG Charger



- Fully automated charger
 - Microprocessor controlled with 3-step charging (Boost, Equalize, Float)
 - Continually monitors battery voltage/current
 - Voltage sense compensates for i2r losses
- Powered from single phase 220 Vac (45-65Hz)
- Temperature compensation
 - Will automatically decrease charging voltage with increased battery temperature
- Mechanical Info
 - H=365mm (14.4"), W=250mm (9.8"), D=257mm (10.1")
 - Weight = 10kg (22 lbs)

Autotransformer 120V:240V



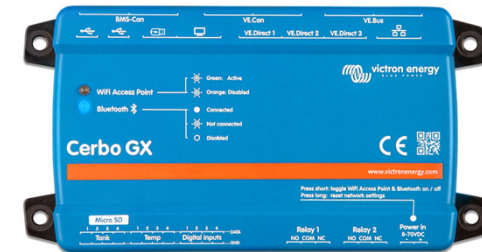
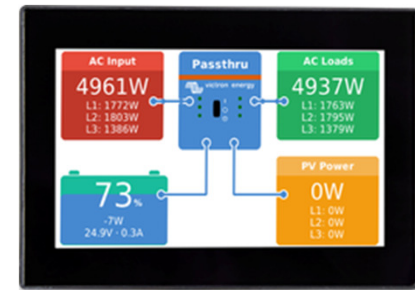
- Configurable
 - Step-Up
 - Step-Down
 - Phase Balancing
- 32A and 100A versions
- Temperature Protection
- Mechanical Info
 - H=424mm (16.7"), W=214mm (8.4"), D=110mm (4.3")
 - Weight = 12.5kg (28 lbs)

VictronConnect App



- Operating Systems
 - Android
 - iOS
 - Windows
 - macOS X
- Features
 - Bluetooth
 - USB
 - Internet/LAN/WiFi

Lynx Interconnected System



Alternator Addition Option

- Victron parts do not support charging 48V batteries
- Would need a 12V:48V DC-DC Converter (Lots of electric noise)

Alternator Addition Option

- MultiPlus 48V/1600VA Inverter/Charger



- Charger Only Mode
 - Generates 230VAC from Paragon Alternator (12Vdc)
 - Has both an AC input and output
 - The generated AC can feed it's own Charger (48Vdc output)
- Temperature compensation
 - Will automatically decrease charging voltage with increased battery temperature
- Mechanical Info
 - H=470mm (18.5"), W=265mm (10.4"), D=120mm (4.7")
 - Weight = 10kg (22 lbs)

Estimated Victron System Cost (Q1 2023)

Description	Victron PN#	(Euros)		(Euros)
		Quan	Unit Price	Item Price
Skylla-TG 48/25 Charger	SDTG4800251	1	1041	1041
Autotransformer 120/240VAC-32A	ITR000100001	1	674	674
MultiPlus 48/1600/20-16	PMP482160000	1	959	959
Lynx Smart BMS 500	LYN034160200	1	1070	1070
Lynx Distributor	LYN060102000	3	250	750
Busbar 150A 2P with 10 Screws + Cover	VBB115021020	2	44	88
Battery Switch 275A	VBS127010010	3	39	117
MIDI Single Fuse Holder	CIP000050001	1	10	10
MIDI 30A, 40A, 50A 48V Rated Fuse	TBD	10	12	120
MIDI 60A, 80A, 100A 48V Rated Fuse	TBD ?	10	14	140
MEGA Single Fuse Holder	CIP000100001	1	13	13
MEGA 125A 48V Rated Fuse	CIP137125010	15	33	495
MEGA 200A 48V Rated Fuse	CIP137200010	15	33	495
Cerbo GX	BPP900450100	1	382	382
GX Touch 70	BPP900455070	1	382	382
GX Touch 70 Wall Mount	BPP900465070	1	35	35
Smartshunt 500A/50mV	SHU050150050	2	146	292
Smart Battery Protect 48V-100A	BPR110048000	3	171	513
Smart Battery LiFePO4 25.6V/200Ah	BAT524120610	2	4400	8800
Cable: Batt BMS M-F Extender 5m (quan 2)	ASS030560500	1	50	50
Cable: VE.Direct 5m (other lengths avail)	ASS030530250	2	18	36
Cable: ShorePower for Charger	TBD	1	500	500
				0
			Euros	16962
Euro : US Dollar	1.05		US Dollars	\$17,810
			Est Tax	\$1,736
			Shipping	\$500
			Total	\$20,047

Solar Panel Addition Option

- SmartSolar Charge Controller (MPPT 150/100-Tr VE.Can)
 - 48V, upto 100A 5800W
 - Up to 98% Efficiency
 - Wired comms: VE.Can and VE.Direct
 - Bluetooth comms
 - Cost: \$950
- BlueSolar Monocrystalline Solar Panels
 - Multiple sizes/wattages available
 - Smallest: 17" x 13", Largest: 78" x 39"
 - Cost: \$42-\$370 per panel