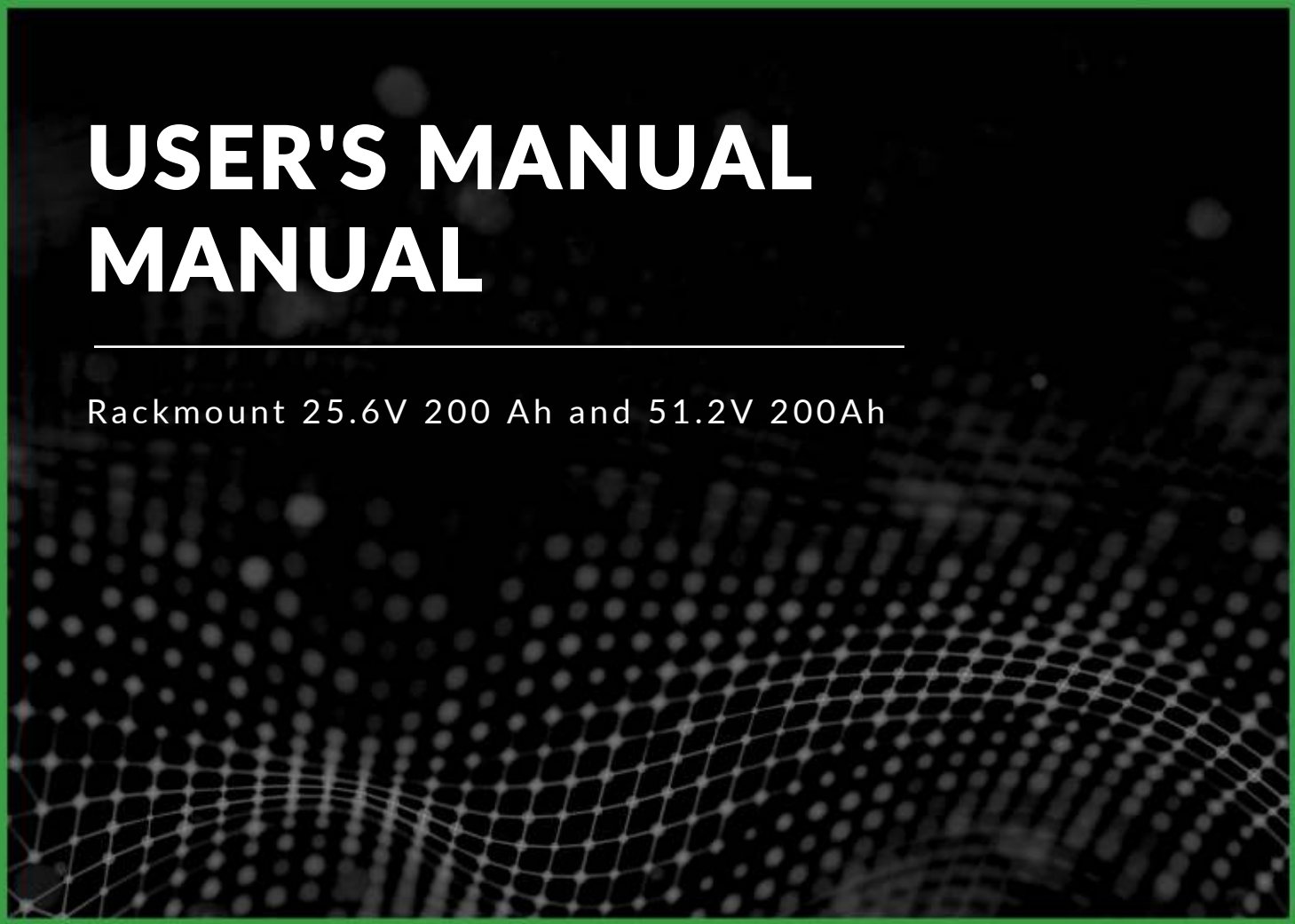
Volthium

Énergie
Energy

USER'S MANUAL
MANUAL

Rackmount 25.6V 200 Ah and 51.2V 200Ah



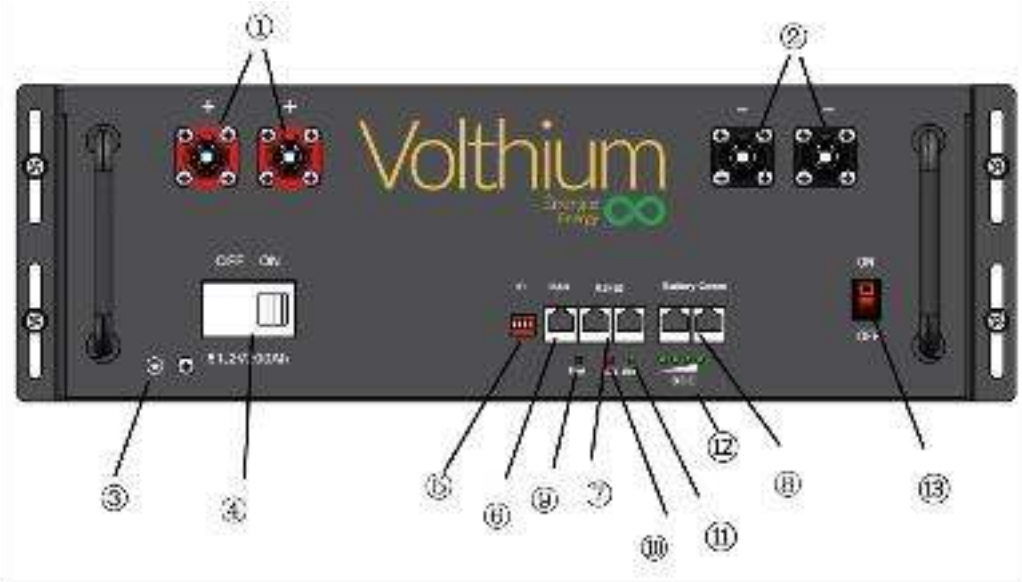
DESCRIPTION

Our Rackmount battery series is composed of 102AH square cell prismatic cells, certified to UL1973, UL1642, CSA UL9540A, IEC62133, IEC62660, and equipped with an internal BMS offering all the electronic protections (over-discharge current, over-charge current, cell monitoring, automatic balancing, cold charge protection and many others).

The batteries are also equipped with a NADER UL1077 physical circuit breaker.

The complete battery assembly has been certified by Intertek and proof of ETL SPE-1000 certification is on the battery.

The 24V batteries are composed of 8 cells in series and the 48V series is composed of 16 LFP cells in series.



NO.	Name	Function	Remarks
1	Terminal	Positive Output	
2	Terminal	Negative Output	
3	GND	GND	
4	MCB	Power Switch	
5	ID	Battery Address	
6	CAN	CAN Port	
7	RS485	RS485 Port	
8	Battery-COMM	Communication Port	
9	Reset	Reset	
10	ALM	ALM LED	

11	RUN	RUN LED	
12	SOC	LED capacity	
13	Switch	Battery ON/OFF	

CHARGING VOLTAGE AND CURRENT

Description	25.6V battery	51.2V battery
Bulk	28V	56V
Absorption (optional)	28V	56V
Float	27.2V	54.4V
Load current per unit	50A	100A
Internal disconnect voltage (BMS)	21.5 - 22.4V	43.2 - 44.7V

TERMINALS

Depending on the configuration chosen at the time of purchase, the batteries can be equipped with M8 connectors (two positive, two negative) or otherwise equipped with Surlok connectors compatible with a gauge from AWG-2 to AWG-1/0.

These are Amphenol brand. The models of terminals attached to the battery ("Receptacle") are "SLPPB35BNO" for the positive and "SLPPB35BNB" for the negative. They are compatible only with a PLUG type terminal of Amphenol Surlok brand with a gauge AWG-2 (35mm).

Here is an example of a compatible connector (black): "SLPPB35BNB".

Here is an example of a compatible connector (positive): "SLPPB35BNB".

See the last page of this document for full details and model number nomenclature for Surlok. Official connectors are available from DigiKey, Newark and Mouser. The Surlok receptacles used on the battery are UL1977 certified.

CIRCUIT BREAKER

The batteries are equipped with a NADER physical circuit breaker, certified UL1077 and CSA C22.2 No. 235-04, of 125A or 200A (optional).

PARALLELING

When the continuous current of the battery bank exceeds 150A, we suggest the use of a bus bar. Each battery will connect to the bus bar with an AWG-2 cable, and then from the bus bar to your equipment with the cable of your choice.

The batteries can be connected in parallel even if they are not at the same charge level.

Indeed, the batteries are equipped with an incoming charge regulator. That said, if you send the battery a charge current higher than the limit programmed in the BMS (e.g. 154A), the battery will activate its regulator, and the maximum incoming current will be

9 amps. Thus, if a full battery is connected to the empty battery, the latter will automatically activate its integrated regulator. Note that the BMS will deactivate the regulator after 3 minutes, and reactivate it automatically if necessary.

ID ADDRESS PER BATTERY

It is important to define a different address for each battery using the Dip Switches. Each battery has 4 small switches.

Depending on the protocol used, the address assignment may vary. Refer to the diagram below.

COMMUNICATION

Volthium RACK batteries integrate RS485 and CANBUS communication protocols. Through the communication, the batteries will push the charging parameters. The installer can manually enter the charging parameters of the devices,
or configure the devices so that the battery pushes the parameters. The parameters that the battery pushes are conservative and are intended to promote maximum battery life.

- The (default) battery software will push a bulk of 55.0V and a float of 54V.
- The 5 KW batteries will push a current parameter :
  - of recharge at 50 AMP.
  - of discharge at 100 AMP.
- The 10 KW batteries will push a current parameter :
  - of recharging at 90 AMP.
  - of discharge at 150 AMP.

SETTING UP COMMUNICATION TO POPULAR INVERTERS

GROWATT (in RS485)

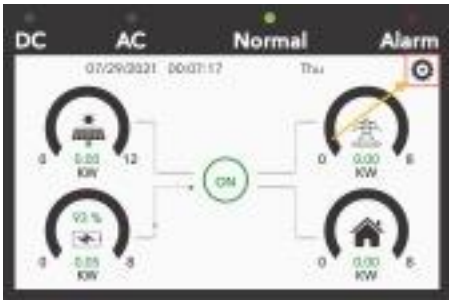
Connect the batteries together via the RS485 ports only. Each battery has two RS485 ports, allowing easy interconnection from one battery to another.

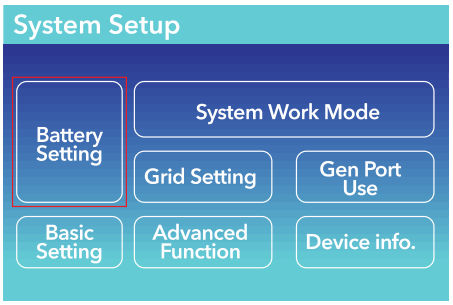
- Set the first (master) battery to ID #2, and the following ones in order (3-4-5-6...).
- No battery has the #1 position, that's normal!
- Connect the battery with ID #2 from its RS485 port to the UPS with a standard network cable.

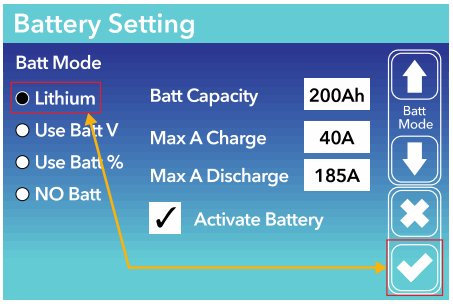
Solark (in CAN)

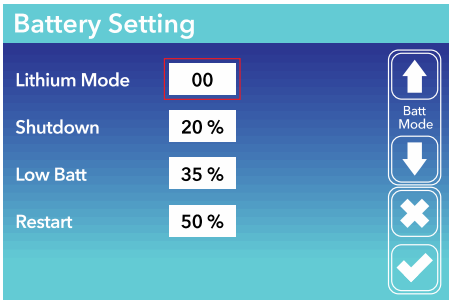
Connect the batteries to each other via the Battery-Comm ports only. Each battery has two "Battery-Comm" ports, allowing easy interconnection from one battery to another.

- Set the first battery (master) to ID #1, and the following ones in order (3-4-5-6...).
- Please make sure you have not used the ID #2 address.
- Connect the battery with ID #1 from its CAN port to the inverter with a standard network cable, to the CAN port of the Solark.
- Switch on the power supply of the Solark with the batteries.
- Please set the battery type so that the UPS can communicate with the BMS of the Volthium battery.

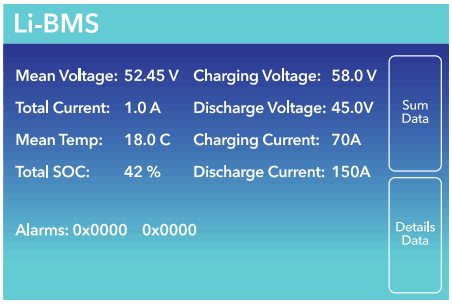








- Wait for 3 minutes and the BMS values will be available on the inverter display.



Schneider (in RS485)

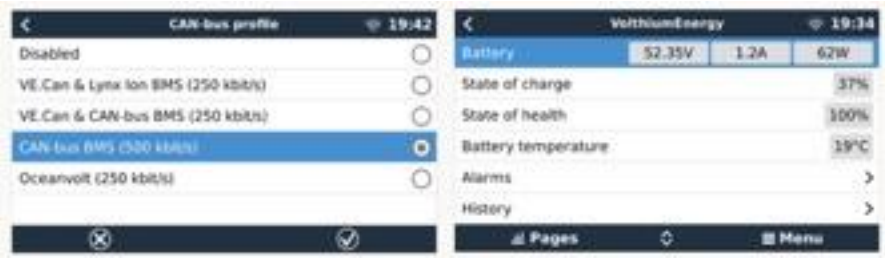
- Update the battery with the Schneider firmware available from Volthium technical service.
  The RS485-USB cable will be necessary.
- Connect the batteries together via the RS485 ports only. Each battery has two RS485 ports, allowing easy interconnection from one battery to another.
- Set the first (master) battery to ID #1, and the following ones in order (2-3-4-5-...).
- Plug a standard network cable into the RS485 port of the battery with ID #1, and cut the other end of the RJ45 cable to strip the white-brown and brown strands (7 and 8).
- Connect the white-brown wire to the RS485-A connector of the Schneider HomeInsight (PIN 9 on the HomeInsight)
- Connect the brown wire to the RS485-B connector of the Schneider HomeInsight (PIN 11 on the HomeInsight)

- In Schneider's online portal, in the green horizontal menu, go to "Setup", then in the left vertical menu, click on "Configuration", then in the on-screen page, click on "Modbus Setting", and set the port speed of "Serial PORT A" to 19,200 baud.
- Still in the Schneider online portal, go to "Setup" in the horizontal menu, press "Device Detection", then enter the "Range" of addresses you have. If you have only one battery, put from 1 to 2 as in the example:

- Press "Close". That's it, the battery will appear in your "Devices".

CONNECTION TO VICTRON

- Connect the batteries to each other via the Battery-Comm ports only using standard network cables. Each battery has two "Battery-Comm" ports, allowing easy interconnection from one battery to another.
  - Set the first battery (master) to ID#1, and the following ones in order (3-4-5-6...).
  - Please make sure that you do not use the ID #2 address.
  - Connect the battery with ID #1 from its CAN port to the VenusOS device with a VE.CAN RJ-45 cable to the BMS-CAN port of the VenusOS device from Victron.
- If your VenusOS device does not have a BMS-CAN port, you can use the VE.CAN port as long as you set the port's baud rate in the VenusOS settings (500 kb/s BMS-CAN).
- To do this, navigate to the Venus operating system and go to "Settings" "Services".
  Can-Profile.



- Finally, use a Victron termination connector to close the communication loop. Note that you cannot close the loop on the battery with this termination adapter.

Make your own cable (VE.CAN). Here is the Pin-Out

Description	
Type A: battery side	B-V, Green, B-Orange, Blue, B-Blue, Orange, B-Brown, Brown
VE.Can : Victron equipment	B-green, Green. Orange, B-Brown, B-Orange, Brown, Blue, B-Blue

RS-485 AND SIMULTANEOUS CAN

If you want to use RS-485 communication with a computer in addition to the connection to Victron, then each of the batteries will be connected with 2 straight network cables. The addressing will remain the same. Understand that the RS-485 link is independent of the CAN link.

OPERATING ENVIRONMENT

Type	Required points
Operating temperature	Operating range : -20°C ~+60°C
Storage temperature	-20 °C ~+60 °C
Relative humidity	<95 %
Atmospheric pressure	86kPa~106kPa
Essentials	No conductive dust and corrosive gases, no vibration. Keep away from heat and flame.

OPERATION OF THE SELF-HEATING FUNCTION

Batteries with a self-heating system will activate when an external load is sent to the system and the internal temperature of the battery is below zero. Thus, when the battery is connected to a charger or any other energy source (solar, generator, wind or other), the BMS will first use the incoming current to build up an internal heat of 11°C and then start charging the battery. The power source must be at least 6A for 5Kw batteries and 8A for 10Kw batteries, for the self-heating system to start. The system will be able to make the battery go from -20°C to 11°C in only 2 hours.

The battery never uses its own energy to run the heating system.

PRECAUTIONS

Please read and observe the following conditions of installation and use of the battery, improper installation using the battery may result in personal injury or damage to the product.

1. Do not dispose of the battery in water. Store batteries in a cool, dry environment when not in use.
2. Do not place the battery in a fire or heat the battery to avoid an explosion or other dangerous incidents.
3. When charging the battery, please choose specialized charging equipment and follow the correct procedures, do not use improper chargers.
4. Do not reverse the positive and negative terminals, do not connect the battery directly to the AC power supply, avoid short-circuiting the battery.
5. Do not use batteries from different manufacturers or of different types together, and do not use used batteries with new ones.
6. Do not use the battery if it becomes hot, swells, warps or leaks.
7. Do not pierce the battery with a nail or other sharp object; do not throw, dab or bump the battery.
8. Do not open or attempt to repair the battery when it is defective. **Warranty invalid if the battery is repaired or disassembled.**
9. The batteries are half-charged before shipping, do not use the battery if it is hot, bulging or has an abnormal smell and so on, and inform the service department immediately.
10. If you need to store the battery for a long time, please charge and discharge the battery every three months to ensure the best performance, and the best state of charge for storage is between 50% ~ 60%.
11. Use the battery only within the temperature range defined in the user's manual.
12. The state of charge of the batteries is 50% before shipping, please charge the battery before use.

If you encounter specific technical problems not mentioned above, please contact the technical staff.

STATE OF CHARGE (SOC) AND VOLTAGE WHEN DISCHARGING TO 50AH

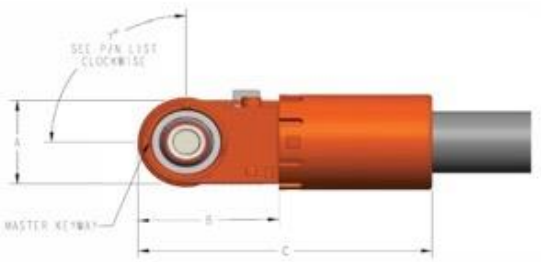
25.6V 200AH - 50A discharge	
SOC	**Voltage**
100 %	27.01
90 %	26.02
80 %	25.98
70 %	25.87
60 %	25.72
50 %	25.66
40 %	25.57
30 %	25.40
20 %	25.14
10 %	24.71
0 %	21.64

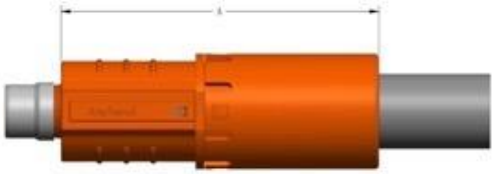
51.2V 200AH - 50A discharge	
SOC	**Voltage**
100 %	54.53
90 %	52.35
80 %	52.29
70 %	52.10
60 %	51.81
50 %	51.7
40 %	51.55
30 %	51.28
20 %	50.85
10 %	50.09
0 %	47.31

Technical Data			
Contact Size	8.0mm	**IP Rating**	IP 67
Current Rating	Up to 250A	**Protection**	Touch Proof
Operating Voltage	1000V AC/DC	**Flammability**	UL 94-V0
Operating Temp	-40°C to 125°C	**Locking**	Spring Locking

The markets and applications for the SurLok Plus™ EMI Version series include but are not limited to the following:

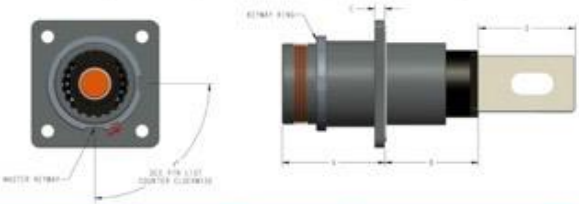
- **EV/HEV**
- **BMS/Energy Storage**
- **Process Control/Automation**
- **Heavy Equipment**





Size	Right Angle Plug Dimensions			
	A	B	C	D
8.0mm	26.2	41.2	86.2	25.8

Size	Straight Plug Dimensions		
	A	B	C
8.0mm	82.5	34.3	30.0



Size	Receptacle Dimensions			
	A	B	C	D
8.0mm	25.15	22.85	2.5	23.5

PLUG

Product Series: SurLok Plus™ EMI Version	Plug		RADSOK® Size		Applicable Cable Size		Backshells		Sealing		Connector Color		Keyway		EMI		HVIL (Optional)	
SLP	P	Right Angle Plug 90°	B	8.0mm	35	35mm² : 150 Amps	B	W/ Backshells	S	IP67 Sealed (W/ Grommet & O-Rings)	O	Orange	0	90°	E	EMI	H	HVIL
											B	Black	1	270°				
	IP	Straight Plug			50	50mm² : 200 Amps	N	W/O Backshells (For Overmolding Only)	N	Non-Sealed	R	Red	2	60°				
					70	70mm² : 250 Amps							3	120°				
													4	150°				

RECEPTACLE

Product Series: SurLok Plus™ EMI Version	Receptacle		RADSOK® Size		Termination Style		Panel Mount		Sealing		Connector Color		Keyway		EMI		HVIL (Optional)	
SLP	R	Receptacle (W/O Keyway)	B	8.0mm	B	Busbar	P	Panel Mount W/ Flange	S	IP67 Sealed (W/ Grommet & O-Rings)	O	Orange	0	90°	E	EMI	H	HVIL
											B	Black	1	270°				
	IR	Receptacle (W/ Keyway)							N	Non-Sealed	R	Red	2	60°				
													3	120°				
													4	150°				