

MastMinder User manual - Regular Lithium Battery



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Safety and Warning

The Regular series LiFePO4 battery system installation, operation, maintenance should follow important recommendations in this manual:

The equipment shall be installed by the professional trained staff.

Battery maintenance should be carried out by the experienced professionals and should be aware of the preventive measures on the potential harm of the battery.

Note: Be careful of the risk of electric shock for large current in case of battery short circuit, pay attention to the following points during operation:

- Remove watches, rings or other metal objects
- Use tools with insulated handles
- Do not place tools or metal objects on the battery

Do not directly access to the battery system to the mains grid power outlet.

Do not put the battery system into fire; do not use or store the battery near to a high temperature source.

Do not use liquid or other objects placed into the battery system. Do not open or cut the battery, do not hit, throw or step on the battery.

When charging the battery module from power plant to charge the battery be sure to adhere to charge and discharge parameter settings given in this manual.

The output interface of the system is still voltage when grid power cut, avoid electric shock or short circuit when operation. Please check if the box is damaged. If damaged, please immediately notify the supplier

If you find leaking liquid or white powder residue on product, prohibit operation.

Please take care of the following marks

				
Warning	Electricity danger	Protecting your eyes	Watch Short-circuits	With adults custody
				UN38.3
Read the manual	Fire forbidden	Circle used	Do not put batteries into dustbin	The product has passed the UN38.3 authentication

According to UN38.3, batteries cannot be shipped fully charged, so after installation, the batteries should be fully charged before use.

Product Introduction

Regular series lithium battery system is 48V system for communications back-up type LiFePO₄ (lithium iron phosphate) battery products, the system uses the advanced LiFePO₄ battery technology with the benefit of long cycle life, small size, light weight, safety and environmental protection, and has a strong environmental adaptability, it is ideal for harsh outdoor environments.

The system also integrates a smart battery management and monitoring module, support for remote centralized monitoring to meet the requirements of unattended. Therefore, the Regular series lithium battery can fully meet the backup power supply requirements of the access network equipment, mobile communications equipment, transmission equipment, micro base stations and microwave communication equipment.



Regular series telecom LFP battery

Product Feature

- ◆ 15+ years of design life, 19" rack mounting module design;
- ◆ Direct Lead Acid Battery (AGM/GEL) replacement for 48V 50Ah/100Ah/150Ah/200Ah;
- ◆ Faster charge, 1 hour of charging can provide up to 90% charge;
- ◆ High energy density and conversion efficiency;
- ◆ Excellent high and low temperature operation;
- ◆ High cycle times and longer service life of >3000 cycles @100% DOD;
- ◆ Can support paralleling use for increased requirement;
- ◆ Safety in use: Intelligent, user friendly BMS inside,
- ◆ No explosion, No fire;
- ◆ Intelligent automatic protection for overcharge, over discharge and temperature conditions;
- ◆ Ultra-low self-discharge rate <1.5%/month;
- ◆ No maintenance required throughout the lifetime;
- ◆ Great power saver;
- ◆ Superior DOD (100%) over lead acid batteries;
- ◆ RS485 communication output, and RS232, CAN, SNMP optional;
- ◆ BMS with internal cell balancing function to ensure long service life;
- ◆ Excellent high temperature performance, ultra-low decay rate when operating in harsh environment;

Main application

- ◆ Network Telecommunication Facilities
- ◆ OSP
- ◆ Terminal of FTTX
- ◆ Access network system
- ◆ Indoor distribution system
- ◆ Telecom BTS
- ◆ Integrated outdoor power cabinet
- ◆ Internet data center (IDC)
- ◆ Common Bonding Network (CBN)
- ◆ Isolated Bonding Network (IBN)

Parameter and Dimension

Cell and Battery Pack Voltages

Lithium Iron Phosphate (LiFePO ₄) Nominal Voltage	Lead-Acid Equivalent Nominal Voltage
Cell = 3.2V	Cell = 2.0V
12.8V – 4 cells in series	12V
25.6V – 8 cells in series	24V
38.4V – 12 cells in series	36V
48.0V – 15 cells in series	48V
51.2V – 16 cells in series	48V

Parameter of 48V Battery (15 cells in series):

Model	LV4850-T	LV48100-T	LV48150-T	LV48200-T
Cell in series	15 cells in series			
Nominal voltage	48VDC			
Rated capacity	50Ah	100Ah	150Ah	200Ah
Rated reserved energy	2400Wh	4800Wh	7200Wh	9600Wh
Standard charging current	10A	20A	30A	40A
Maximum charging current	50A	100A	100A	100A
Maximum charging voltage	54.7VDC			
Standard discharging current	10A	20A	30A	40A
Maximum continuous discharging current	50A	100A	100A	100A
Cut-off voltage of discharging	40.5VDC			
Charging temperature range	0°C~60°C			
Discharging temperature range	-20°C~60°C			
Storage temperature	-20°C~60°C			
Dimension (W×L×H)	483*480*133mm	483*480*177mm	483*580*200mm	483*680*225mm
Weight	26.0kg	45.0kg	58.0kg	73.0kg

Parameter of 51.2V Battery (16 cells in series):

Model	LV4850-T	LV48100-T	LV48150-T	LV48200-T
Cell in series	16 cells in series			
Nominal voltage	51.2VDC			
Rated capacity	50Ah	100Ah	150Ah	200Ah
Rated reserved energy	2560Wh	5120Wh	7680Wh	10240Wh
Standard charging current	10A	20A	30A	40A
Maximum charging current	50A	100A	100A	100A
Max Charging voltage	58.4VDC			
Standard discharging current	10A	20A	30A	40A
Maximum continuous discharging current	50A	100A	100A	100A
Cut-off voltage of discharging	43.2VDC			
Charging temperature range	0°C~60°C			
Discharging temperature range	-20°C~60°C			
Storage temperature	-20°C~60°C			
Dimension (W×L×H)	483*480*133mm	483*480*177mm	483*580*200mm	483*680*225mm
Weight	27.0kg	48.0kg	61.0kg	76.0kg

Layout

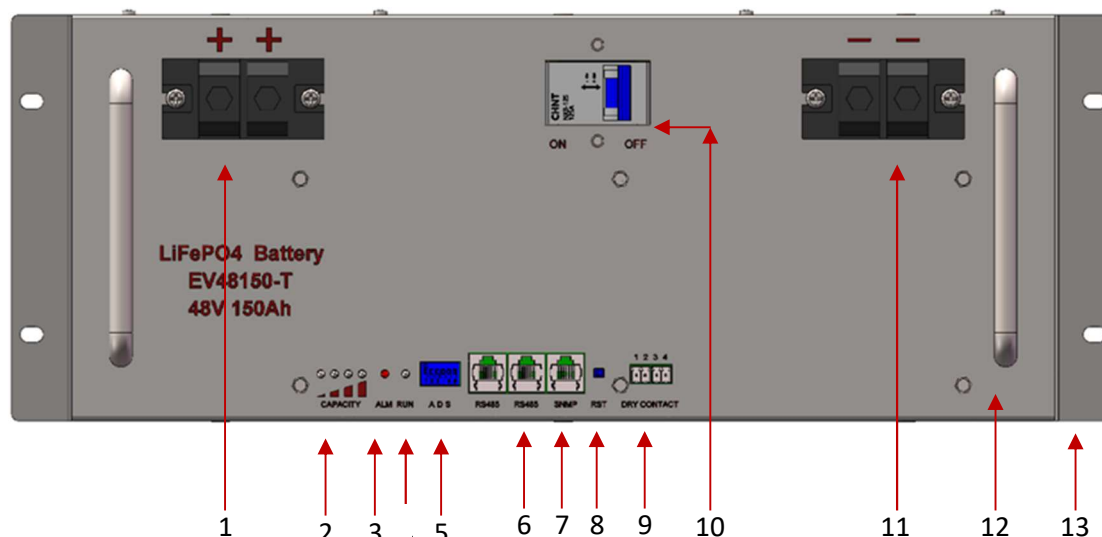


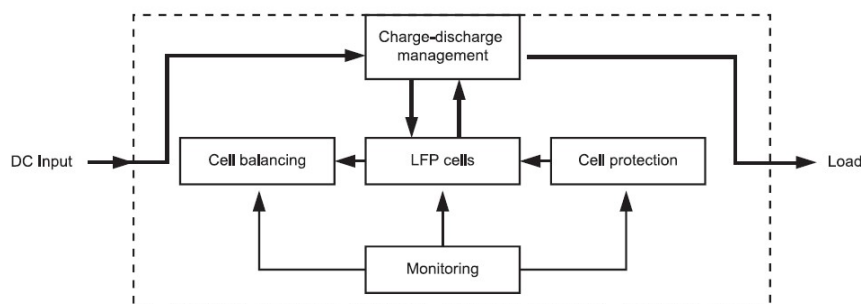
Table - Instruction for Layout of Front Panel:

No.	Description	Functions	Detailed Information
1	Positive Terminal	Positive Output	Type F-M6 x 2pcs
2	SOC	Indicators for capacity	SOC is short for state of charge. There are four green LED lights in front panel indicating SOC. Each SOC LED light represents 25% of rated capacity. Detailed information is shown in Annexed Table
3	ALM	Indicator for alarms	There is one red LED light in front panel indicating alarms. Detailed information is shown in Annexed Table
4	RUN	Indicator for running status	There is one green LED light in front panel indicating running status. Detailed information is shown in Annexed Table 1.2.
5	ADS Dip switch	Address communication of	ADS are applicable to modules connected in parallel. ADS consist of six binary bits. Detailed information is shown in Annex 2.
6	RS485	communication port	It is adopting RS485 series port communication pattern to upload data. Contents of data transmit include BMS parameters, battery running status, alarms, etc. Communication of modules connected in parallel is available through RS485
7	SNMP	communication port	SNMP Remote monitoring; RS232/CAN communication port support optional
8	RST	Reset button	Press RESET button when abnormality occurs to assure stability of battery performance. Wake up battery. Close battery.

9	Dry contact	Dry contact indicators	Optional function. Support two-way dry contact output, normally open in normal state, and close when abnormality occurs. Dry contact 1: BMS system has protection, fault and alarm; Dry contact 2: The BMS system is protected or faulty.
10	MCB	Micro circuit breaker	Physical isolation
11	Negative Terminal	Negative Output	Type F-M6 x 2pcs
12	Handle	Handle	The handle is used to push and pull the battery easily from battery cabinet. Not recommended to use handle for carrying the battery.
13	Side mounting	Wall-hanging installation	The side mounting is used for wall-hanging the battery.
14	LCD	Display battery information	Optional

Working Principle

The Regular Series lithium battery system mainly includes Lithium battery pack, battery protection, cell balancing unit, monitoring module and charge-discharge management module for optional. Its schematic diagram shown in Figure



LFP cells	Chemical power, energy storage and power supply components.
Cell protection	Protect LFP cells against overcharge, over discharge, over current, over temperature, short circuit
Cell balancing	Equalization LFP cells for cells unbalanced
Monitoring	Support centralized monitoring system (optional according to customer requirements)
Anti-theft function	Support 3 type Anti-theft function optional Type 1: Communication anti-theft function Type 2: Gyroscope anti-theft function Type 3: GPS anti-theft function
Fire protection function	Support Aerosol-Fire-Extinguisher module optional
Parallel function	Regular model support 15 batteries in parallel. Optional 31 batteries in parallel function before manufacture.

Regular series battery working principle:

The DC power input, after it is filtered, it is divided into two circuits, one circuit directly supplies the load, another circuit charges the lithium battery. When charge power is on, the system supplies the loads and charging the lithium batteries; When charge power is off, the lithium batteries supply DC power to the load, to ensure uninterrupted power supply to power system.

Battery Management System (BMS)

Smart BMS technology is adopted for the battery modules to assure smart automatic management.

Features of BMS are shown as below:

Battery modules can be monitored remotely.

Parameters and status of rectifiers and AC/DC distributions can be detected and controlled.

This device has excellent electromagnetic compatibility.

The BMS used for the battery modules of Regular series battery complies with outdoor power plant operation, with no interference to each other.

- The BMS can provide protection against over-charge, over-discharge, over-temperature, over-current, short-circuit, etc., to ensure a reliable safe and operational life.
- With patented cell balancing technology, the BMS provides high efficiency for cell balancing and prolongs system operational life.
- Configuration flexibility, support max 15pcs battery in parallel connection to expansion. (31pcs batteries in parallel is optional)
- Supports remote monitoring via SNMP (optional).

Battery Installation

Un-boxing & Inspection

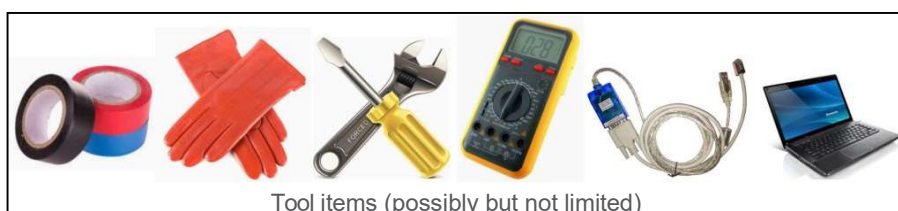
Please study this manual before installation.

Please inspect the package before un-boxing, if there is any **damage** in the appearance, contact with the supplier as soon as possible.

This device shall be installed and operated by professionals.

Preparation for Installation

- Batteries shall not be placed in direct sunshine or close to heat source.
- Batteries shall be installed in place with good ventilation to assure enough heat dissipation.
- Batteries shall be placed in are with clean ambient and low humidity.
- Heavy weight shall not be placed on any cable.
- Following are the tools possibly but not limited are use for installation:



Tool items (possibly but not limited)

Installation of Battery Modules

Battery modules of Regular series batteries are applicable to installation in cabinets and wall-hanging.

Cabinet installation

Insert battery module into cabinet, and fix two handles of battery module with cabinet rack using 4pcs M6 screws.

Wall-hanging installation

Wall-hanging installation also can be adopted, fix two handles of battery module with triangle rack on the wall using 4pcs M6 screws.

Battery Connection

1. Single battery connection

Connect positive terminal '+' of battery output with positive copper bar of power plant, and negative terminal '-' with negative copper bar or power switch.

2. Batteries Parallel Connection

If multi battery modules will be connected in parallel, please take note of follows:

- The battery modules connected no more than 15 in parallel.
- The minimum spacing between batteries is 10mm.
- Connect positive terminal '+' of battery output of each battery module with positive copper bar of power plant, and negative terminal '-' with negative copper bar of power plant or power switch separately.
- Length of cable between battery module and power plant shall be less than 2.0m. To make sure similar voltage drops of cable for each battery.
- Length of all positive and negative cables should be the same when in parallel connection.
- Use the communication cable that comes with the battery to connect one by one through the RS485 communication port.



Layout of
paralleling
connection
for Regular
Series
Batteries

3. Power on for battery module

When installation is accomplished, battery module is in dormant state. Once power is on for the power plant and battery module, battery will go into normal running status, and discharge/charge will be available.

Parameter settings for lithium battery modules in power plant are shown in Table 3-1.

4. RS485 communication connection

- If there is only one battery module in operation, communication between battery module and computer can available through RS485.
- If there are more than one battery modules in operation, parallel communication can be available using RS485.
- Communication protocols for RS485 are shown in Annex 3.

Battery Work Mode Instruction

Basic work mode

1. Charge Mode

When the BMS detects that the external charging voltage is greater than or equal to 48V, and the cell voltage and temperature are both within the charging range, it will turn on the charging MOSFET for charging. When the charging current reaches the effective charging current, the charging mode is entered. In charge mode, both charge and discharge MOSFETs are turned on.

2. Discharge Mode

When the BMS detects that the load is connected, the cell voltage and temperature are within the dischargeable range, and the discharge current reaches the effective discharge current, it enters the discharge mode.

3. Standby Mode

When the above two modes are not satisfied, it enters standby mode.

4. Sleep Mode

After the normal standby time, the battery triggers under-voltage protection, executes the button shutdown or the host computer executes the shutdown command, the BMS enters the sleep (shutdown) mode.

Wake-up conditions from sleep mode: 1. Charge activation; 2. Press key to power on;

5. Buzzers

The buzzer function can be enabled or disabled by the host computer, and the factory default is disabled.

6. Description of the reset key

When the BMS is in the sleep state, press the button for 1S and then release it, the BMS board is activated, and the LED indicator lights start from the "L4" light for 0.5 seconds.

When the BMS is active, press the button 3S-6S and release it, the BMS board is put to sleep, and the LED indicators light from the "RUN" light for 0.5 seconds in sequence.

When the BMS is in the active or dormant state, press the button for 15 seconds and release it, the BMS board is reset, and the LED lights start from the "L1" light for 0.5 seconds.

7. Sleep and wake up

Sleep

When any of the following conditions are met, the system enters a low-power mode:

- The individual under-voltage protection or the overall under-voltage protection has not been released within 30 minutes.
- Release the button after pressing the button for 3 seconds.
- The minimum cell voltage is lower than the sleep setting voltage (default value 3150mV), and the duration reaches the sleep delay time (default value 1440 minutes) (at the same time, no communication and no charge and discharge current are satisfied).
- Forced shutdown through the host computer software.

Before entering the sleep mode, make sure that the P-terminal is not connected to an external voltage; otherwise it will not be able to enter the low power consumption mode.

Wake up

When the system is in low-power mode and meets any of the following conditions, the system will exit the low-power mode and enter the normal operation mode:

- Connect to the charger, the output voltage of the charger must be greater than or equal to 48V.
- Press the button for 1 second and release the button.

Battery Charging Settings

Charging Parameter of 48V Battery (15 cells in series):

Model	LV4850-T	LV48100-T	LV48150-T	LV48200-T
Standard charging current	10A	20A	30A	40A
Maximum charging current	50A	100A	100A	100A
Boost/ Equalization charging voltage	54 - 54.7VDC			
Float charging voltage	51.5 - 52VDC			
Recommended charge method	CC-CV			
Condition to float charge	0.05C			
Equalization charge duration	NA			
Condition to equalization charge	NA			
Temperature compensation for charge	NA			
Low temperature alarm in charging	2°C (adjustable)			
Low temperature protection in charging	0°C (adjustable)			
High temperature alarm in charging	50°C (adjustable)			
High temperature protection in charging	55°C (adjustable)			

Note:

1. Switch off "Equalization charge" option.
2. Rectifier parameter shall be set according to specific site requirement based on battery units used.
3. If there are more than 2 batteries connected in parallel then the max. Charge current and discharge current is recommended to be 0.5C.

Charging Parameter of 51.2V Battery (16 cells in series):

Model	LV4850-T	LV48100-T	LV48150-T	LV48200-T
Standard charging current	10A	20A	30A	40A
Maximum charging current	50A	100A	100A	100A
Boost/ Equalization charging voltage	57.6 - 58.4VDC			
Float charging voltage	55 - 55.5VDC			
Recommended charge method	CC-CV			
Condition to float charge	0.05C			
Equalization charge duration	NA			
Condition to equalization charge	NA			
Temperature compensation for charge	NA			
Low temperature alarm in charging	2°C (adjustable)			
Low temperature protection in charging	0°C (adjustable)			
High temperature alarm in charging	50°C (adjustable)			
High temperature protection in charging	55°C (adjustable)			

Note:

1. Switch off "Equalization charge" option.
2. Rectifier parameter shall be set according to specific site requirement based on battery units used.
3. If there are more than 2 batteries connected in parallel then the max. Charge current and discharge current is recommended to be 0.5C.

Battery Discharging Settings

Discharging Parameter of 48V Battery (15 cells in series):

Model	LV4850-T	LV48100-T	LV48150-T	LV48200-T
Standard discharging current	10A	20A	30A	40A
Maximum continuous discharging current	50A	100A	100A	100A
Low voltage alarm	44VDC			
Recovered of Low voltage alarm	46VDC			
Cut-off voltage of discharging	40.5VDC			
Recovered voltage after cut-off protection	48VDC			
Recommended LLVD	47VDC			
Recommended BLVD	43.2VDC			
Recovered LLVD voltage	50VDC			
Low temperature alarm in discharging	2°C			
Low temperature protection in discharging	-20°C			
High temperature alarm in discharging	50°C			
High temperature protection in discharging	60°C			

Discharging Parameter of 51.2V Battery (16 cells in series):

Model	LV4850-T	LV48100-T	LV48150-T	LV48200-T
Standard discharging current	10A	20A	30A	40A
Maximum continuous discharging current	50A	100A	100A	100A
Low voltage alarm	47VDC			
Recovered of Low voltage alarm	49VDC			
Cut-off voltage of discharging	43.2VDC			
Recovered voltage after cut-off protection	51VDC			
Recommended LLVD	50VDC			
Recommended BLVD	46VDC			
Recovered LLVD voltage	53VDC			
Low temperature alarm in discharging	2°C			
Low temperature protection in discharging	-20°C			
High temperature alarm in discharging	50°C			
High temperature protection in discharging	60°C			

Battery Storage

Recommended storage temperature range: 0°C to 40°C.

Maximum storage temperature range: -20°C to 60°C.

Storage battery should be at 50%-80%SOC.

Recharge charge before using to recover capacity loss of self-discharge during storage and transport.

Recharge battery during long-term storage for self-discharge. Recharge program as follow table:

0°C-30°C	Every 6 months	1) Charge with 0.2C to 100%SOC 2) Discharge with 0.2C to 0%SOC 3) Charge with 0.2C per module for 4 hours
30°C-40°C	Every 3 months	

Storage battery over 40°C or under 0°C will reduce battery life,

Storage battery in dry and low temperature, well ventilated place

Battery performance degradation after long-term storage, please shorten shelf time as possible as you can.

According to UN38.3, batteries cannot be shipped fully charged, so after installation, the batteries should be fully charged before use.

Maintenance

Proper maintenance will prolong the life of a battery and will aid in assuring that it can satisfy its design requirements. A good battery maintenance program will serve as a valuable aid in determining the need for battery replacement. The users must consider their application and reliability needs if maintenance procedures, other than those recommended in this document, are used. Battery maintenance should be performed by personnel knowledgeable of batteries and the safety precautions involved.

- The battery shall be recharged every three months if in long time storage
- Please clean the dust by the dust collector when dust is accumulated on vent
- Please use clean and dry cloth/fabric to clean up the cabinet, if need further cleaning, please use neutral cleanser. Alcohol or ammonia synthesis is forbidden.
- Carrying shall be handled gently, prevent from severe compact
- Prevent battery from splashing liquid
- Suggest inspect the tighten of output screw every two years

Troubleshooting and Solutions

Troubles	Troubleshooting	Solutions
Battery cannot discharge	Protection against under-voltage	Charge battery
	Protection against over-temperature or under-temperature (cell temperature is lower than -20°C or higher than 70°C)	Regulate cell temperature in the range of -20°C to 70°C for discharge
	Battery output is short circuit	Relieve short circuit and charge battery
	Protection against over current	Remove some unimportant load and charge battery
	System failure	Shutdown system and call maintenance service
Battery cannot charge	Battery is fully charged. Normal charge management	Do not need to solve
	Protection against over voltage	Do not need to solve
	Protection against over-temperature or under-temperature (cell temperature is lower than -10°C or higher than 70°C)	Regulate cell temperature in the range of 0°C to 55°C for charge
	System failure	Shutdown system and call maintenance service
All LED indicators on	System failure	Shutdown system Call for maintenance service
Communication failure	Fault of communication cable	Inspect communication cable
	Halt of System communication management	Press RESET button
	System failure	Shutdown system Call for maintenance service

Different flash status of LED indicators represents corresponding running status or alarms. Detailed information is shown Annex 1.

Annex1- Instructions for LED Flash

1. Definition of indicator lights:

					
SOC				ALM	RUN

SOC: State of charge

ALM: Alarm

RUN: Work status

2. SOC LED Indicators Description:

Status	Charge				Discharge			
SOC	L1●	L2●	L3●	L4●	L1●	L2●	L3●	L4●
0~25%	Flash 2	○	○	○	●	○	○	○
25~50%	●	Flash 2	○	○	●	●	○	○
50~75%	●	●	Flash 2	○	●	●	●	○
75~100%	●	●	●	Flash 2	●	●	●	●
RUN	●				Flash 3			

Note: ● mean light on, ○ mean light off.

3. RUN Indicators Description:

Note: ● mean light on, ○ mean light off.

System state	Abnormal event	SOC				ALM	RUN
		●	●	●	●	●	●
Shutdown		○	○	○	○	○	○
Standby	Normal	Display according to battery level				○	Flash 1
	Alarm	Display according to battery level				Flash 2	Flash 1
Charge	Normal	Display according to battery level The highest indication LED flash 2				○	●
	Over voltage alarm	Display according to battery level The highest indication LED flashes 2				Flash 2	●
	Over temperature alarm	Display according to battery level The highest indication LED flashes 2				Flash 2	●
	Over voltage protection	Display according to battery level				○	●
	Over current protection	Display according to battery level The highest indication LED flashes 2				○	●
	Temperature protection	○				●	○
Discharge	Normal	Display according to battery level				○	Flash 3
	Alarm	Display according to battery level The highest indication LED flashes 3				Flash 2	Flash 3
	Under voltage protection	Display according to battery level				Flash 2	○

	Over current, short circuit, temperature, reverse connection, protection	○	●	○
Fault	NTC Fault, MOS Fault, Reverse connection, protection	○	●	○

Flashing instructions

Flash	●	○
Flash1	0.25S	3.75S
Flash2	0.5S	0.5S
Flash3	0.5S	1.5S

Annex2- Instructions for ADS Dip Switch

ADS Dip Switch is applicable to modules connected in parallel. ADS consists of six binary bits, the first four binary bits is for battery address setting.

Instructions for ADS Dialing				Module No.	Binary Code
1	2	3	4		
OFF	OFF	OFF	OFF	Default ADS	0000
ON	OFF	OFF	OFF	PACK 1	1000
OFF	ON	OFF	OFF	PACK 2	0100
ON	ON	OFF	OFF	PACK 3	1100
OFF	OFF	ON	OFF	PACK 4	0010
ON	OFF	ON	OFF	PACK 5	1010
OFF	ON	ON	OFF	PACK 6	0110
ON	ON	ON	OFF	PACK 7	1110
OFF	OFF	OFF	ON	PACK 8	0001
ON	OFF	OFF	ON	PACK 9	1001
OFF	ON	OFF	ON	PACK 10	0101
ON	ON	OFF	ON	PACK 11	1101
OFF	OFF	ON	ON	PACK 12	0011
ON	OFF	ON	ON	PACK 13	1011
OFF	ON	ON	ON	PACK 14	0111
ON	ON	ON	ON	PACK 15	1111

Instruction of ADS for Parallel Communication:

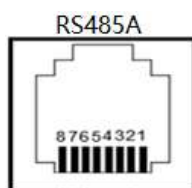
Note: Counting of ADS must begin from 1000, without interruption, or parallel communication cannot be available.

Default 0000 	Pack 1 1000 	Pack 2 0100 	Pack 3 1100 
Pack 4 0010 	Pack 5 1010 	Pack 6 0110 	Pack 7 1110 
Pack 8 0010 	Pack 9 1001 	Pack 10 0101 	Pack 11 1101 
Pack 12 0011 	Pack 13 1011 	Pack 14 0111 	Pack 15 1111 

Annex3- Communication Protocol for RS485

RS485 port in front panel for communication between battery and PC, also for communication between batteries modules connected in parallel.

1. RS485 communication port interface definition:



8P8C vertical RJ45 port

PIN definition:

Pin	Definition
3、 6	RS485A-B
2、 7	RS485A-A
8	GND
4	RS485B-B
5	RS485B-A
1	NC

2. RS485 communication interface description

2.1 RS485A: External communication interface (for communicate with the host, like PC or rectifier etc.), baud rate is 9600, supports MODBUS protocol and MastMinder 1363 protocol.

2.2 RS485B: Battery parallel interface, baud rate is 57600, supports MastMinder 1363 protocol.

Annex4- LCD Menu Instruction

LCD function is optional function.

1. LCD Function

1.1 Reference of real figure



1.2 Display rendering



2. Interface introduction

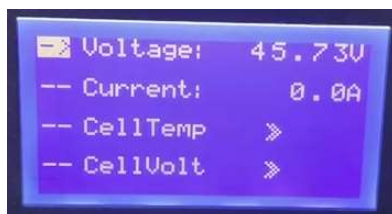
2.1 Main menu

Electricity/dormancy activated, will show the welcome screen, and press the MENU button to enter the main menu page. As shown in the figure below:



2.2 BMS Parameter

When the cursor "->" is point to "BMS Parameter", press ENTER key will enter into the page of "BMS Parameter", As shown in the figure below :



2.2.1 Cell temperature



2.2.2 Cell voltage

--Cell101	2854 mV	--Cell105	2828 mV
--Cell102	2864 mV	--Cell106	2853 mV
--Cell103	2859 mV	--Cell107	2880 mV
--Cell104	2844 mV	--Cell108	2849 mV

--Cell109	2840 mV	--Cell113	2859 mV
--Cell110	2822 mV	--Cell114	2837 mV
--Cell111	2864 mV	--Cell115	2868 mV
--Cell112	2865 mV	--Cell116	2945 mV

SOC	:	100 %
Nominal	:	100.0 AH
Remain	:	100.0 AH
BMS Cycles:	:	0

2.3 Battery status

When the cursor “- >” is point to “Battery Status”, press ENTER key will enter into the page of “Battery Status”, As shown in the figure below :

Status:	IDLE
-- Alarm Status	>
-- Protect Status	>
-- Failure Alarm	>

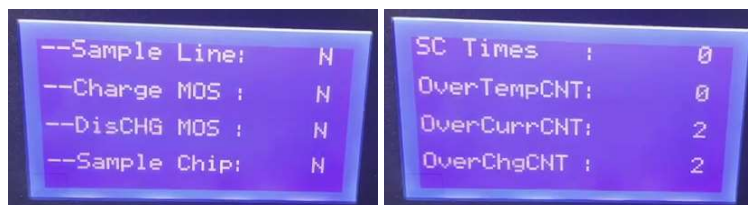
2.3.1 Alarm status

--Over Volt :	NO	--Low SOC :	NO
--Low Volt :	NO	--Diff Volt :	NO
--Over Temp :	NO	--Over Curr :	NO
--Low Temp :	NO	--Reverse :	NO

2.3.2 Protect status

--Over Volt :	NO	--Over Curr :	NO
--Low Volt :	NO	--Short Curr:	NO
--Over Temp :	NO		
--Low Temp :	NO		

2.3.3 Failure alarm



2.4 GYRO status

When the cursor “- >” is point to “GYRO status”, press ENTER key will enter into the page of “GYRO status”, As shown in the figure below :

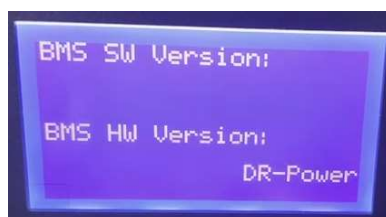


2.5 Version number

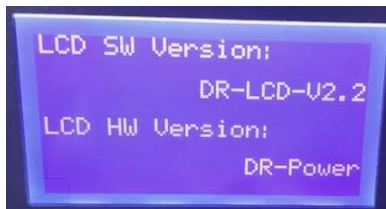
When the cursor “- >” is point to “Version number”, press ENTER key will enter into the page of “Version number”, As shown in the figure below :



2.5.1 BMS Version



2.5.2 LCD Version



3. Key description

- 1) SW1----NEMU, SW2----ENTER, SW3----UP, SW4----ESC.
- 2) Each item is “>” or “-” as a beginning among them “- >” shows the current cursor position press UP key can move the cursor position with “>>” end of the project the content of the said project has not shown, press ENTER key can enter the corresponding page.
- 3) Press ESC key can be returned at the next higher-level directory in any position, press NEMU key can return to the main menu page.
- 4) In a dormant state, press any key, can activate the screen.

4. Dormancy/shutdown

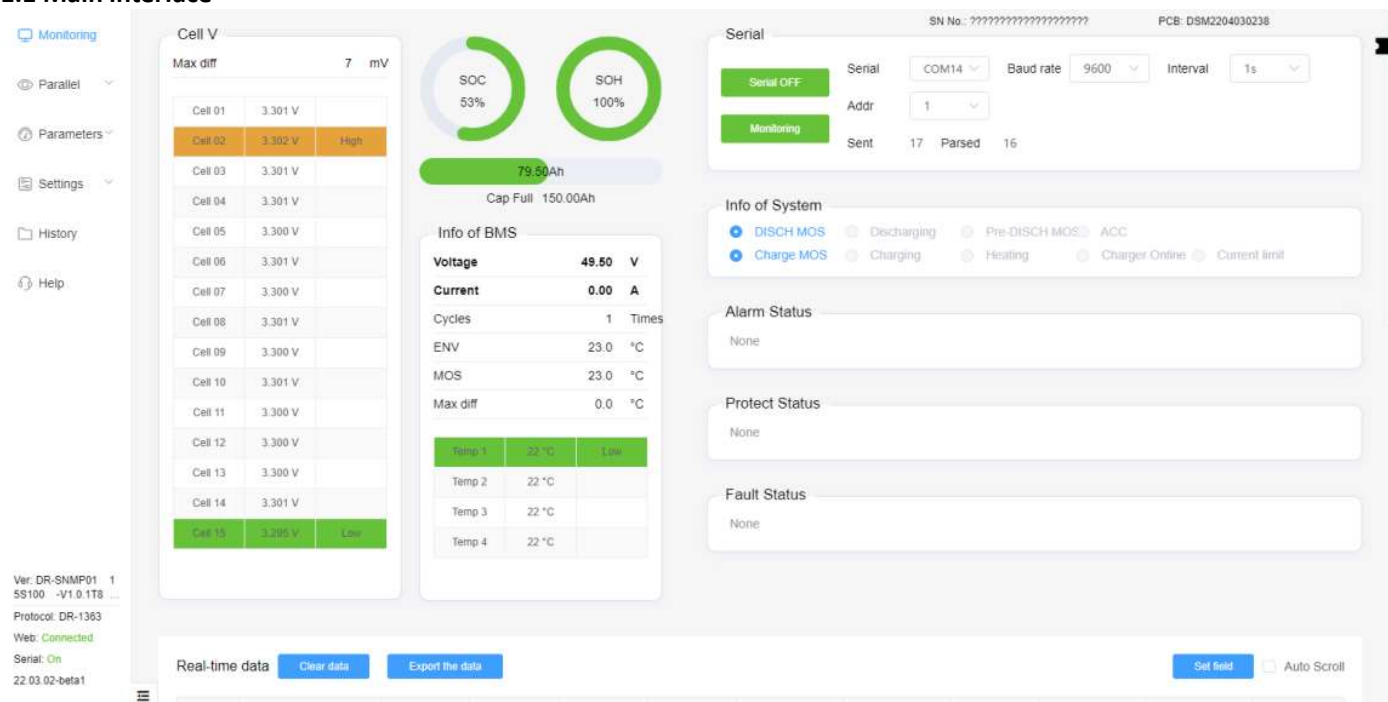
Under normal operation condition, with no keystrokes 1 minute later, LCD will enter a state of dormancy/shutdown. Shutdown/dormancy state press any key screen can be activated.

Annex5- Monitoring Software Instruction

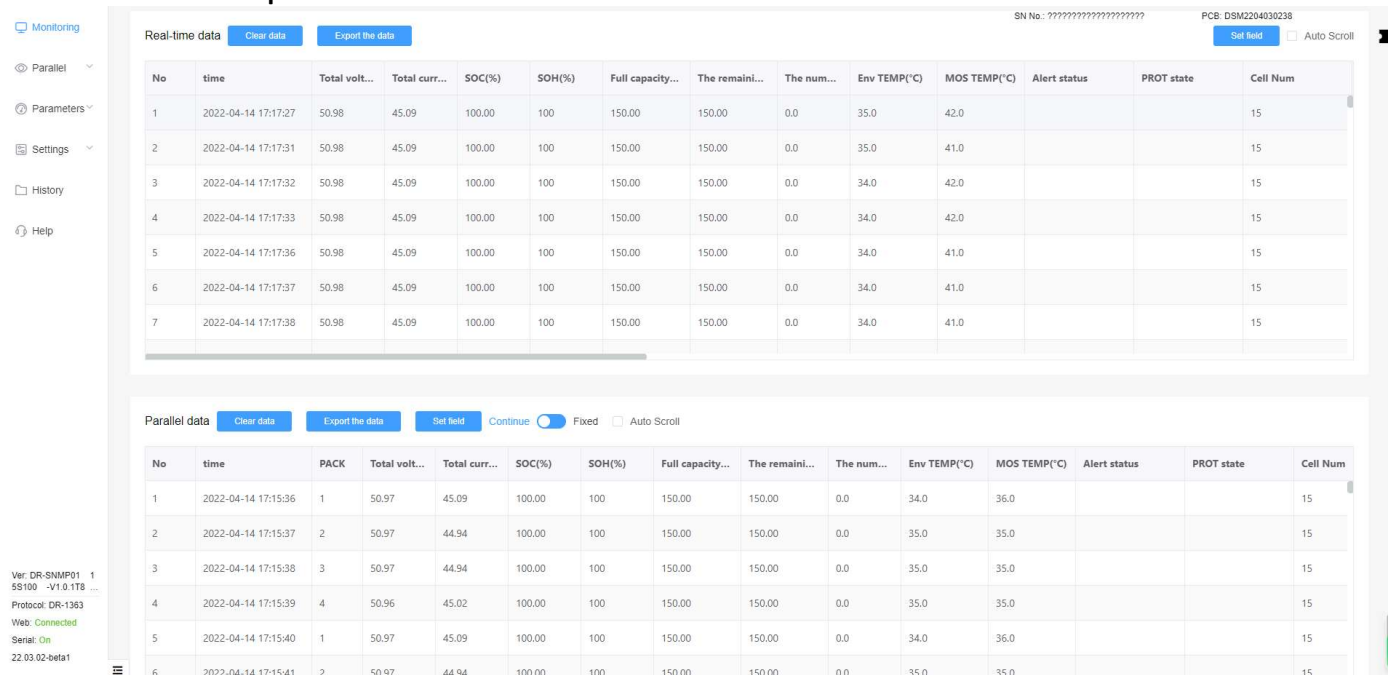
1. Monitoring software interface introduction

MastMinder provides powerful monitoring software for the battery; you can see all the running information of the battery.

1.1 Main interface



1.2 Real time data and parallel data



The 'Real-time data' section displays a table with 13 columns: No, time, Total volt..., Total curr..., SOC(%), SOH(%), Full capacity..., The remain..., The num..., Env TEMP(°C), MOS TEMP(°C), Alert status, PROT state, and Cell Num. The data shows 7 rows of real-time readings.

The 'Parallel data' section displays a table with 14 columns: No, time, PACK, Total volt..., Total curr..., SOC(%), SOH(%), Full capacity..., The remain..., The num..., Env TEMP(°C), MOS TEMP(°C), Alert status, PROT state, and Cell Num. The data shows 6 rows of parallel readings.

1.3 Parameter setting

Monitoring Clear Get all Set checked Stop set Reset by default Import param Export param Get all

SN No.: ?????????????????????? PCB: DSM2204030238

Parallel

Parameters

Parameters1

Settings

History

Help

Ver: DR-SNMP01 1
58100 -V1.0.178 ...
Protocol: DR-1363
Web: Connected
Serial: On
22.03.02-beta1

Cell voltage

Over DISCH PROT: 2500, 2750
Over DISCH Alarm: 3050, 2900
Current: 3.3, 3600, 3800
Over C Alarm: 3580, 3340
Over C PROT: 1000, 1000

Overall voltage

Over DISCH PROT: 37.5, 41
Over DISCH Alarm: 48, 46
Current: 49.50, 54, 55.5
Over C Alarm: 52, 50.2
Over C PROT: 1000, 1000

Charging TEMP

Low PROT: 0, 2
Low Alarm: 5, 5
Current: 22, 50, 60
High Alarm: 47, 55
High PROT: 3000, 4000

DISCH TEMP

Low PROT: -20, 2
Low Alarm: -15, 5
Current: 22, 50, 60
High Alarm: 47, 60
High PROT: 3000, 4000

Current 1

Over C 1 PROT: 130, 125
Over C 1 Alarm: 125, 130
Current: 0.00, 125, 130
Over C 1 PROT: 1000, 1000

Current 2

Over C 2 PROT: 150, 140
Over C 2 Alarm: 0.00, 140
Current: 500, 500

Voltage diff

Current: 0.000, 600, 800
Over Alarm: 500, 500
Over PROT: 5000

MOS TEMP

Current: 24.0, 90, 115
Over High Temp Alarm: 87, 89
Over High Temp PROT: 115

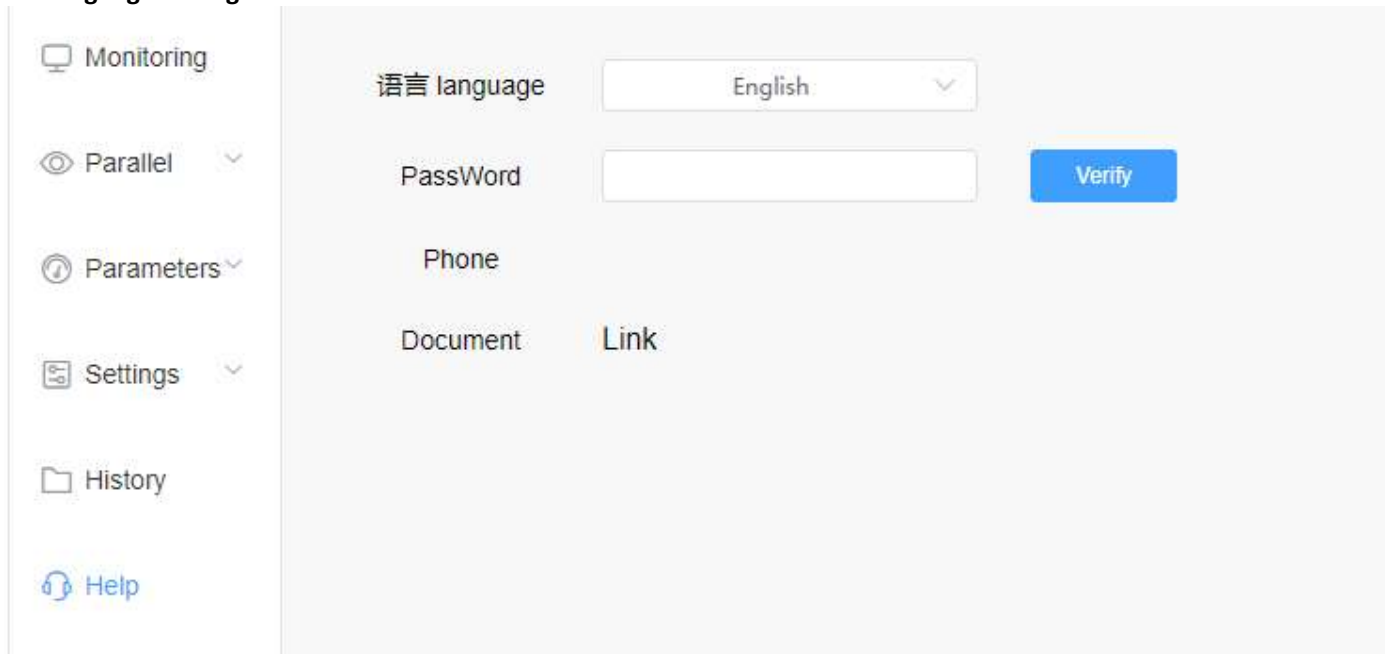
1.4 History

Monitoring Read Data Clear Page Export Data Interval(min) Get Set SN No.: ?????????????????????? PCB: DSM2204030238 Delete Data Set field Auto Scroll

No	PACK	time	EventRecord	Total volt...	Total curr...	SOC(%)	SOH(%)	Full capac...	Env TEMP...	MOS TEM...	Cell Num	battery01	battery02	battery03	battery04	battery05
1	1	2022-04-13 14:36:09	系统启动	49.50	0.00	53.00	100.00	150	28.00	28.00	15	3.304	3.306	3.304	3.304	3.303
2	1	2022-04-09 14:38:42	进入休眠	49.50	0.00	53.30	150.00	150	30.00	31.00	15	3.305	3.311	3.306	3.305	3.304
3	1	2022-04-09 14:33:30	系统启动	49.50	0.00	66.00	100.00	120	30.00	31.00	15	3.305	3.311	3.306	3.305	3.305
4	1	2022-04-09 01:47:30	退出充电	50.30	0.00	67.30	100.00	120	36.00	42.00	15	3.355	3.360	3.357	3.355	3.354
5	1	2022-04-09 00:11:14	进入充电	46.40	14.30	0.10	100.00	120	34.00	35.00	15	3.111	2.800	3.115	3.122	3.122
6	1	2022-04-09 00:11:01	退出充电	46.20	0.00	0.10	100.00	120	34.00	35.00	15	3.104	2.790	3.107	3.114	3.115
7	1	2022-04-09 00:09:00	单体欠压恢复	46.10	3.80	0.00	100.00	120	34.00	35.00	15	3.096	2.754	3.099	3.106	3.107
8	1	2022-04-09 00:08:59	进入充电	46.10	4.80	0.00	100.00	120	34.00	35.00	15	3.096	2.754	3.099	3.106	3.107
9	1	2022-04-08 23:38:30	退出放电	44.60	0.00	0.00	100.00	120	35.00	43.00	15	2.998	2.553	3.010	3.030	3.029
10	1	2022-04-08 23:38:27	单体欠压保护	44.20	-50.40	3.00	150.00	150	35.00	43.00	15	2.972	2.488	2.981	3.003	3.001
11	1	2022-04-08 20:45:52	进入放电	51.10	-29.40	99.90	150.00	150	35.00	35.00	15	3.374	3.373	3.402	3.489	3.556
12	1	2022-04-08 20:45:52	单体过压恢复	51.10	-29.40	99.90	150.00	150	35.00	35.00	15	3.374	3.373	3.402	3.489	3.556
13	1	2022-04-08 20:15:12	退出充电	52.50	0.00	100.00	150.00	150	35.00	35.00	15	3.448	3.484	3.474	3.669	3.796
14	1	2022-04-08 20:15:08	单体过压保护	52.60	19.90	100.00	150.00	150	35.00	35.00	15	3.458	3.496	3.486	3.679	3.805
15	1	2022-04-08 20:14:40	进入充电	51.60	3.80	100.00	150.00	150	35.00	35.00	15	3.413	3.438	3.428	3.530	3.610
16	1	2022-04-08 20:04:14	退出充电	51.60	0.00	100.00	150.00	150	35.00	35.00	15	3.427	3.469	3.427	3.494	3.554

Ver: DR-SNMP01 1
58100 -V1.0.178 ...
Protocol: DR-1363
Web: Connected
Serial: On
22.03.02-beta1

1.5 Language setting



2. How to run monitoring software

Use the RS485 to USB communication cable; connect the No 1 battery RS485 port with the computer USB port.

Note: When multiple batteries are connected in parallel, be sure to set the ADS according to the Annex2, and the batteries have connected through RS485 communication.

2.1 Open the monitoring software

Double click the icon



2.2 Setting

COM setting: choose the right COM port

Baud rate: 9600

Click "Serial ON"

Click "Monitor"

Serial

Serial ON

Serial

COM14

Baud rate:

9600

Interval

1s

Addr

1

Monitor

Sent

135

Parsed

135

Info of System

☒ DISCH MOS

☐ Discharging

☐ Pre-DISCH MOS

☐ ACC

☒ Charge MOS

☐ Charging

☐ Heating

☐ Charger Online

☐ Current limit

Alarm Status

None

Protect Status

None

Fault Status

None

Annex6- SNMP Remote Monitoring Instruction

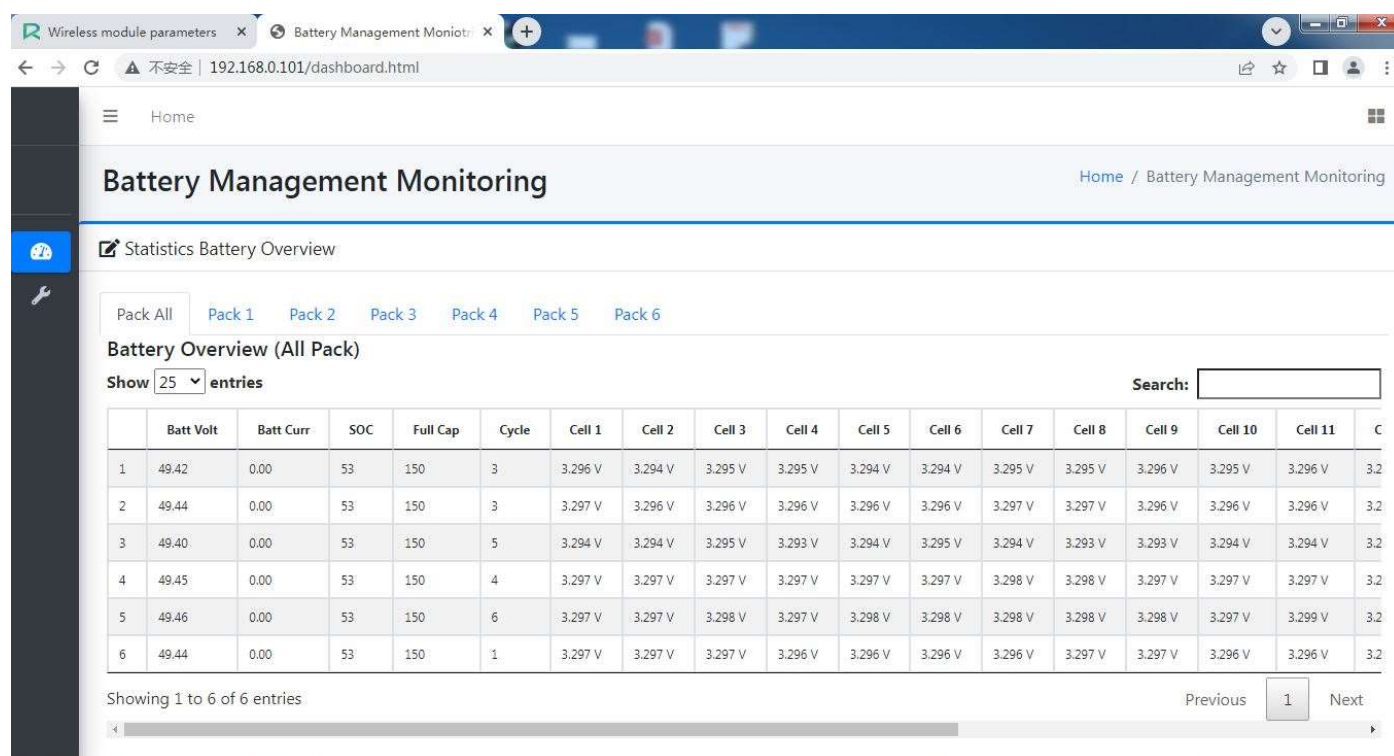
SNMP remote monitoring is optional function;

MastMinder Regular series lithium battery support SNMP remote monitoring function.

The SNMP function supports remote monitoring in LAN. SNMP supports online remote monitoring of the operation data of each battery, assists the owner to understand the battery status in real time, conducts remote diagnosis, reduces operation and maintenance costs.

1. SNMP monitoring software interface introduction

1.1 Main interface



The screenshot shows the 'Battery Management Monitoring' web interface. The browser address bar displays '192.168.0.101/dashboard.html'. The interface includes a sidebar with navigation options like 'Home', 'Statistics Battery Overview', and 'Pack All'. The main content area shows 'Battery Overview (All Pack)' with a table of battery data. The table has columns for 'Batt Volt', 'Batt Curr', 'SOC', 'Full Cap', 'Cycle', and individual cells (Cell 1 to Cell 11). The data is displayed for 6 entries, showing values for voltage, current, state of charge, capacity, and cycle count for each battery pack and its individual cells.

	Batt Volt	Batt Curr	SOC	Full Cap	Cycle	Cell 1	Cell 2	Cell 3	Cell 4	Cell 5	Cell 6	Cell 7	Cell 8	Cell 9	Cell 10	Cell 11	C
1	49.42	0.00	53	150	3	3.296 V	3.294 V	3.295 V	3.295 V	3.294 V	3.294 V	3.295 V	3.295 V	3.296 V	3.295 V	3.296 V	3.2
2	49.44	0.00	53	150	3	3.297 V	3.296 V	3.296 V	3.296 V	3.296 V	3.296 V	3.297 V	3.297 V	3.296 V	3.296 V	3.296 V	3.2
3	49.40	0.00	53	150	5	3.294 V	3.294 V	3.295 V	3.293 V	3.294 V	3.295 V	3.294 V	3.293 V	3.293 V	3.294 V	3.294 V	3.2
4	49.45	0.00	53	150	4	3.297 V	3.297 V	3.297 V	3.297 V	3.297 V	3.297 V	3.298 V	3.298 V	3.297 V	3.297 V	3.297 V	3.2
5	49.46	0.00	53	150	6	3.297 V	3.297 V	3.298 V	3.297 V	3.298 V	3.298 V	3.298 V	3.298 V	3.298 V	3.297 V	3.299 V	3.2
6	49.44	0.00	53	150	1	3.297 V	3.297 V	3.297 V	3.296 V	3.296 V	3.296 V	3.296 V	3.297 V	3.297 V	3.296 V	3.296 V	3.2

Showing 1 to 6 of 6 entries

Previous 1 Next

1.2 Battery detail data interface

Wireless module parameters x Battery Management Monitor x +

← → ↻ 不安全 | 192.168.0.101/dashboard.html

Home

Battery Management Monitoring

Home / Battery Management Monitoring

Statistics Battery Overview

Pack All Pack 1 Pack 2 Pack 3 Pack 4 Pack 5 Pack 6

Detail Battery Overview (Pack 1)

Global Status	Value
SOC	53 %
SOH	100 %
Remaining Capacity	79 Ah
Full Capacity	150 Ah
Mos Temp	29 °C
Env Temp	29 °C

Detail Status	Value
I Pack	0.00 A
V Pack	49.42 V
V Max Cell	3.30 V
V Min Cell	3.29 V
Temp. Max Cell	26 °C
Temp. Min Cell	25 °C

Battery	Voltage	Temperature
Cell 1	3.296 V	26.0 °C
Cell 2	3.295 V	26.0 °C
Cell 3	3.295 V	26.0 °C
Cell 4	3.294 V	25.0 °C
Cell 5	3.295 V	undefined
Cell 6	3.295 V	undefined
Cell 7	3.294 V	undefined
Cell 8	3.295 V	undefined

Battery	Voltage	Temperature
Cell 9	3.296 V	undefined
Cell 10	3.295 V	undefined
Cell 11	3.295 V	undefined
Cell 12	3.295 V	undefined
Cell 13	3.295 V	undefined
Cell 14	3.296 V	undefined
Cell 15	3.291 V	undefined

Wireless module parameters x Battery Management Monitor x +

← → ↻ 不安全 | 192.168.0.101/dashboard.html

Home

Battery Management Monitoring

Home / Battery Management Monitoring

Statistics Battery Overview

Pack All Pack 1 Pack 2 Pack 3 Pack 4 Pack 5 Pack 6

Detail Battery Overview (Pack 2)

Global Status	Value
SOC	53 %
SOH	100 %
Remaining Capacity	79 Ah
Full Capacity	150 Ah
Mos Temp	29 °C
Env Temp	29 °C

Detail Status	Value
I Pack	0.00 A
V Pack	49.44 V
V Max Cell	3.30 V
V Min Cell	3.29 V
Temp. Max Cell	26 °C
Temp. Min Cell	26 °C

Battery	Voltage	Temperature
Cell 1	3.297 V	26.0 °C
Cell 2	3.297 V	26.0 °C
Cell 3	3.296 V	26.0 °C
Cell 4	3.296 V	26.0 °C
Cell 5	3.296 V	undefined
Cell 6	3.296 V	undefined
Cell 7	3.297 V	undefined
Cell 8	3.296 V	undefined

Battery	Voltage	Temperature
Cell 9	3.296 V	undefined
Cell 10	3.296 V	undefined
Cell 11	3.297 V	undefined
Cell 12	3.296 V	undefined
Cell 13	3.296 V	undefined
Cell 14	3.296 V	undefined
Cell 15	3.293 V	undefined

2. How to run the SNMP monitoring software:

2.1 If batteries are connected in parallel, be sure to set the ADS according to the Annex2, and the batteries have connected through RS485 communication.

2.2 Set the sixth binary of ADS of No.1 battery in ON.

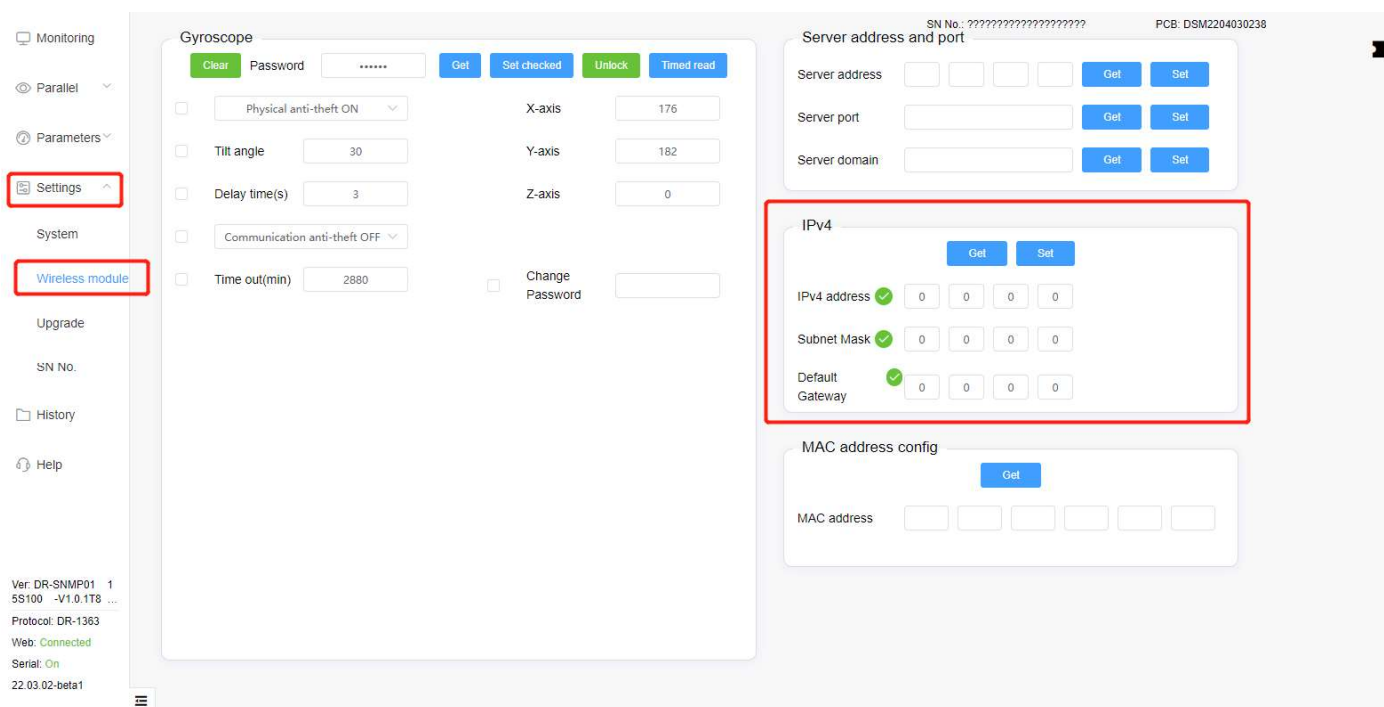


2.3 Connect the battery to computer, and open the monitoring software.
For details, see Annex5.

2.4 Click "Setting" → "wireless module" → "IPv4"

a. Click "Get" (NOTE: "Get" before "Set")

b. Assign an unused IP address to the battery, enter it and save it.



Monitoring

Parallel

Parameters

Settings

System

Wireless module

Upgrade

SN No.

History

Help

Ver: DR-SNMP01 1
5S100 -V1.0.1T8 ...
Protocol: DR-1363
Web: Connected
Serial: On
22.03.02-beta1

Gyroscope

Clear Password ***** Get Set checked Unlock Timed read

Physical anti-theft ON

Tilt angle 30

Delay time(s) 3

Communication anti-theft OFF

Time out(min) 2880

X-axis 176

Y-axis 182

Z-axis 0

Change Password

Server address and port

SN No.: ?????????????????? PCB: DSM2204030238

Server address Get Set

Server port Get Set

Server domain Get Set

IPv4

Get Set

IPv4 address 0 0 0 0

Subnet Mask 0 0 0 0

Default Gateway 0 0 0 0

MAC address config

Get

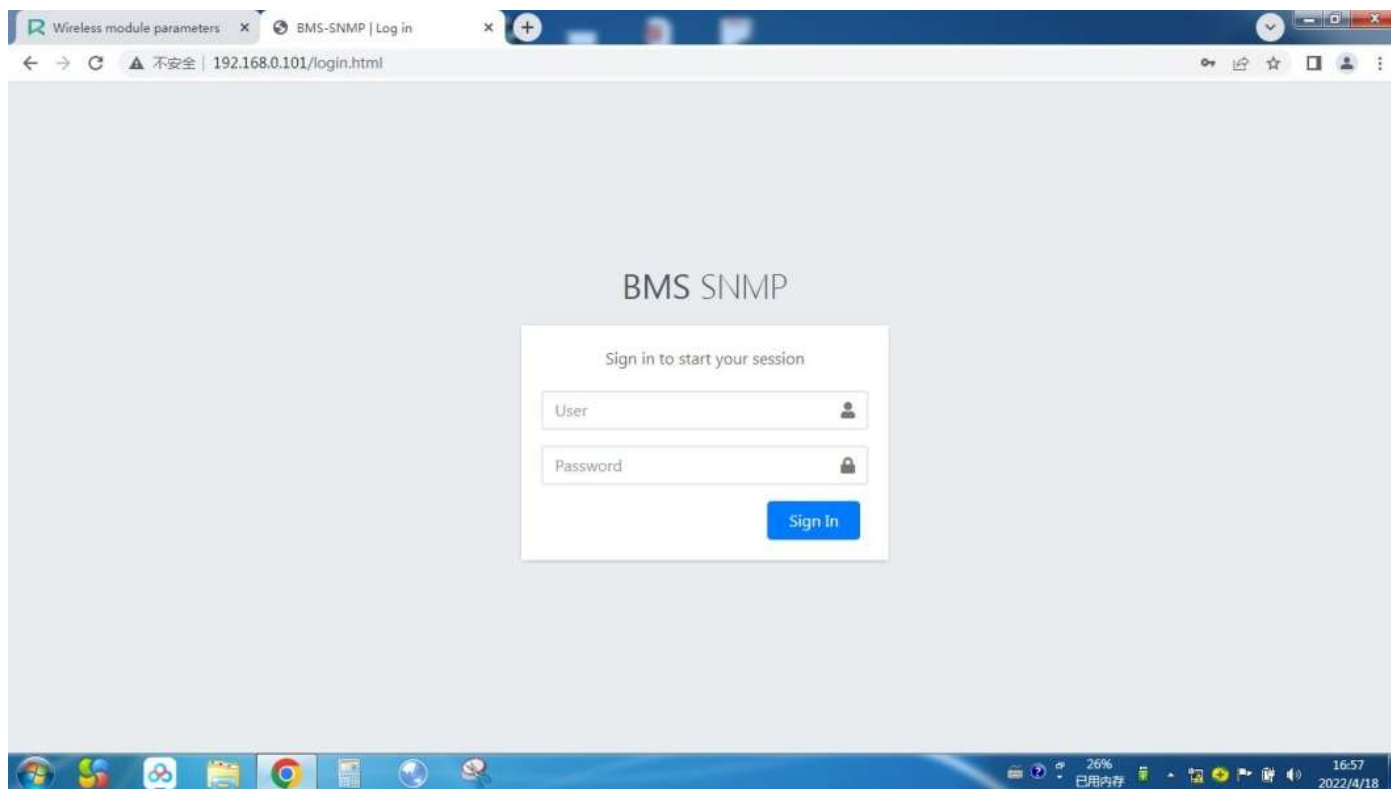
MAC address

2.5 Connect the battery to the router through the battery's SNMP communication port with a straight-through network cable.



2.6 Open a browser and enter the IP address of the battery.

2.7 Log in



The default login details for first time login are “User” for User and “666666” for password.

2.8 Open the monitoring interface

Wireless module parameters x Battery Management Monitior x +

← → ↻ 不安全 | 192.168.0.101/dashboard.html

Home

Battery Management Monitoring

Home / Battery Management Monitoring

Statistics Battery Overview

Pack All Pack 1 Pack 2 Pack 3 Pack 4 Pack 5 Pack 6

Battery Overview (All Pack)

Show 25 entries Search:

	Batt Volt	Batt Curr	SOC	Full Cap	Cycle	Cell 1	Cell 2	Cell 3	Cell 4	Cell 5	Cell 6	Cell 7	Cell 8	Cell 9	Cell 10	Cell 11	C
1	49.42	0.00	53	150	3	3.296 V	3.294 V	3.295 V	3.295 V	3.294 V	3.294 V	3.295 V	3.295 V	3.296 V	3.295 V	3.296 V	3.2
2	49.44	0.00	53	150	3	3.297 V	3.296 V	3.296 V	3.296 V	3.296 V	3.296 V	3.297 V	3.297 V	3.296 V	3.296 V	3.296 V	3.2
3	49.40	0.00	53	150	5	3.294 V	3.294 V	3.295 V	3.293 V	3.294 V	3.295 V	3.294 V	3.293 V	3.293 V	3.294 V	3.294 V	3.2
4	49.45	0.00	53	150	4	3.297 V	3.297 V	3.297 V	3.297 V	3.297 V	3.297 V	3.298 V	3.298 V	3.297 V	3.297 V	3.297 V	3.2
5	49.46	0.00	53	150	6	3.297 V	3.297 V	3.298 V	3.297 V	3.298 V	3.298 V	3.298 V	3.298 V	3.298 V	3.297 V	3.299 V	3.2
6	49.44	0.00	53	150	1	3.297 V	3.297 V	3.297 V	3.296 V	3.296 V	3.296 V	3.296 V	3.297 V	3.297 V	3.296 V	3.296 V	3.2

Showing 1 to 6 of 6 entries Previous 1 Next

Annex7- Gyroscope Anti-theft Function Instruction

MastMinder have developed advanced gyroscope anti-theft feature for lithium batteries, Solve the pain point of battery theft for user.

Notice: After the battery is installed and the gyroscope function is turned on, it needs to be charged to activate the function for first time.

1. Operation introduction

After battery installation, start the Anti-theft Function, when the battery is working normally and the gyroscope is in the horizontal position, the gyroscope alarm will not be triggered.

When the battery is stolen and the angle difference between the gyroscope and the horizontal plane is greater than 30° (can be set in software) , the gyroscope anti-theft function will be triggered. The gyroscope will send a signal to the BMS, and the BMS will lock the battery so that the battery cannot be discharged, even if the gyroscope is removed, the BMS also will still be locked and unable to discharge.

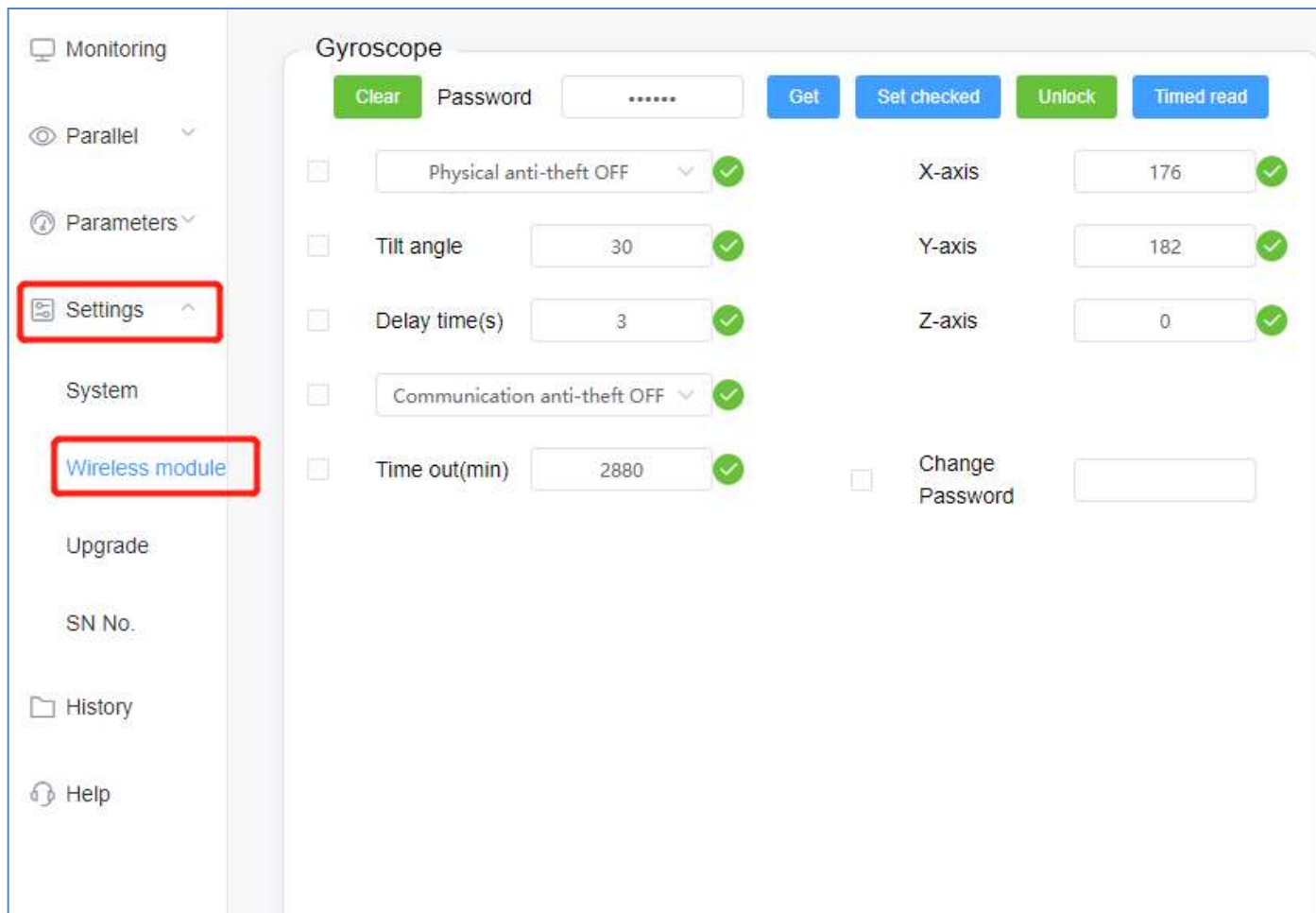
Only the owner can use the software to unlock the battery.

2. Turn ON the “Gyroscope anti-theft function.”

2.1 Connect the battery to the computer.

2.2 Open the monitoring software.

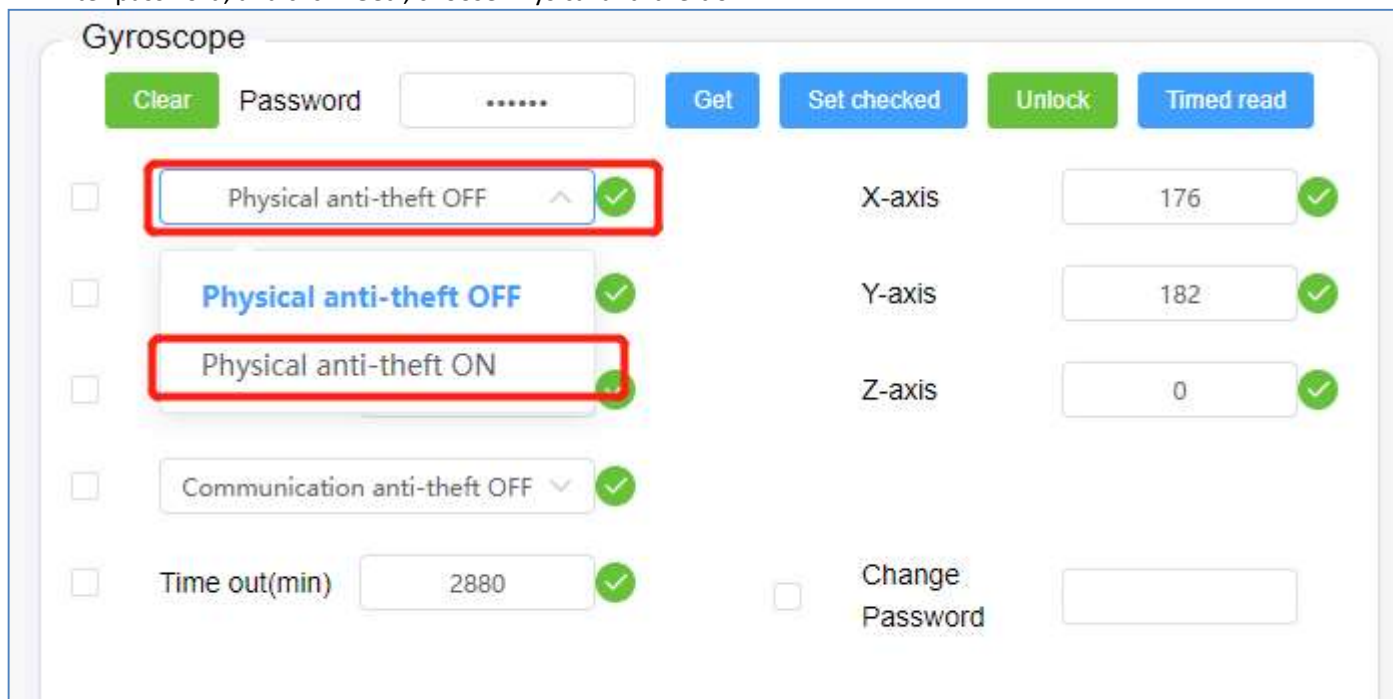
2.3 Click “Setting” → “wireless module”



The screenshot shows the MastMinder monitoring software interface. On the left sidebar, the 'Settings' menu is highlighted with a red box, and the 'Wireless module' option is also highlighted with a red box. The main window displays the 'Gyroscope' settings. At the top, there are buttons for 'Clear', 'Password', 'Get', 'Set checked', 'Unlock', and 'Timed read'. Below these, there are several settings with checkboxes and input fields, each followed by a green checkmark indicating they are active or set correctly:

- ☐ Physical anti-theft OFF (dropdown menu)
- ☐ Tilt angle: 30
- ☐ Delay time(s): 3
- ☐ Communication anti-theft OFF (dropdown menu)
- ☐ Time out(min): 2880
- X-axis: 176
- Y-axis: 182
- Z-axis: 0
- ☐ Change Password

2.4 Enter password, and click “Get”, choose Physical anti-theft on.



Gyroscope

Clear Password Get Set checked Unlock Timed read

☐ Physical anti-theft OFF ^ ✓

☐ Physical anti-theft OFF ✓

☐ Physical anti-theft ON ✓

☐ Communication anti-theft OFF v ✓

☐ Time out(min) 2880 ✓

X-axis 176 ✓

Y-axis 182 ✓

Z-axis 0 ✓

☐ Change Password

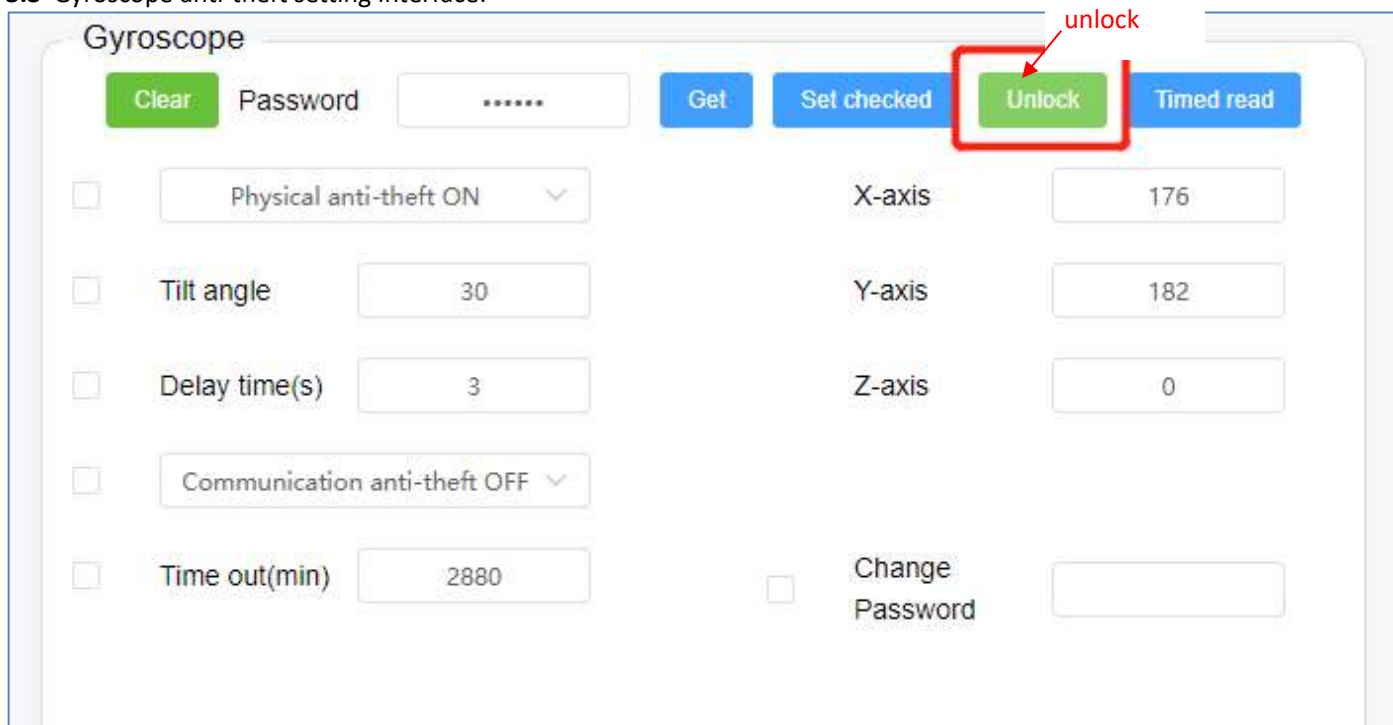
2.5 Click “Set checked”. Gyroscope anti-theft function has been powered on.

3. How to unlock after the anti-theft function is triggered

3.1 Place the battery pack horizontally (the gyroscope is also in a horizontal position at this time).

3.2 Connect the battery pack to the computer and open the BMS monitoring software. Enter the password in the BMS monitoring software, click the “unlock” button, and the battery pack will resume normal charging and discharging.

3.3 Gyroscope anti-theft setting interface:



Gyroscope

Clear Password Get Set checked Unlock Timed read

☐ Physical anti-theft ON v

☐ Tilt angle 30

☐ Delay time(s) 3

☐ Communication anti-theft OFF v

☐ Time out(min) 2880

X-axis 176

Y-axis 182

Z-axis 0

☐ Change Password

Annex8- GPS Anti-theft Function Instruction

1. Introduction

MastMinder Lithium battery GPS module has independent back-ground, can simultaneously carry on the real-time positioning and able to monitor battery parameters. It also has the anti-theft mobile alarm function. It can recognize the remote monitoring and the positioning of the anti-theft function of the battery.

If the battery is moved, GPS can monitor the location and movement trajectory of the battery in real time, helping the owner to quickly retrieve the battery.

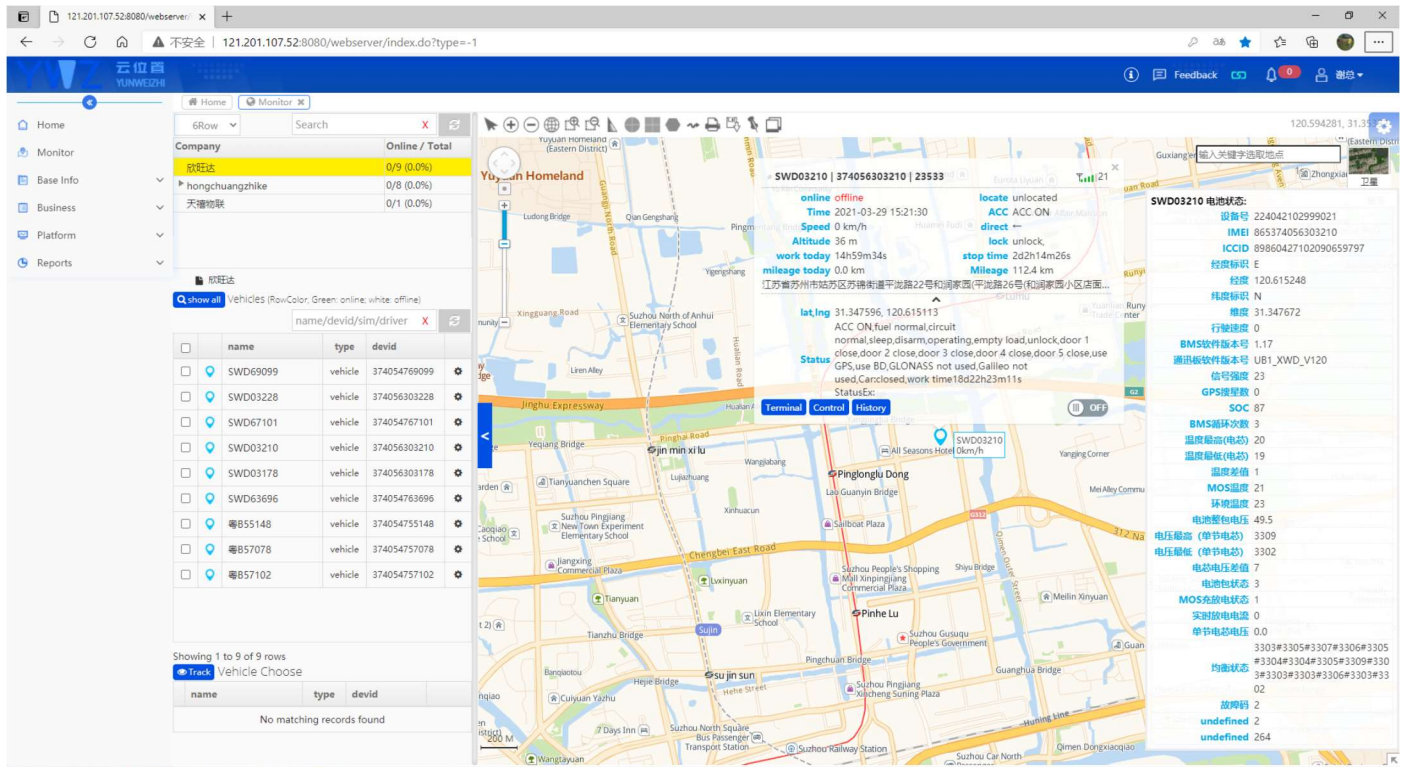
When the battery is in normal working state, the GPS is in low power consumption mode. When the battery is moved, the GPS will sense and wake up, and immediately send a message to the monitoring platform to notify the battery information.

1.1 Hardware



1.2 Monitoring software interface

1.2.1 Main interface - Site Information and Battery ID and Location



121.201.107.52:8080/webserver/ x +

121.201.107.52:8080/webserver/index.do?type=-1

云位置 YUNWEI ZHI

Home Monitor

Company Online / Total

宏旺达 0/9 (0.0%)

宏创达 0/8 (0.0%)

宏通达 0/1 (0.0%)

宏旺达

show all Vehicles (RowColor: Green online; white; offline)

name	type	devid
SWD69099	vehicle	374054769099
SWD03228	vehicle	374056303228
SWD67101	vehicle	374054767101
SWD03210	vehicle	374056303210
SWD03178	vehicle	374056303178
SWD63696	vehicle	374054763696
宏B55148	vehicle	374054755148
宏B57078	vehicle	374054757078
宏B57102	vehicle	374054757102

Showing 1 to 9 of 9 rows

Track Vehicle Choose

name type devid

No matching records found

SWD03210 | 374056303210 | 23533

online offline

Time 2021-03-29 15:21:30

Speed 0 km/h

Altitude 36 m

work today 14h59m34s

mileage today 0.0 km

lat,lng 31.347596, 120.615113

Status ACC ON, fuel normal, circuit normal, sleep, disarm, operating, empty load, unlock, door 1 close, door 2 close, door 3 close, door 4 close, door 5 close, use GPS, use BD, GLONASS not used, Galileo not used, Cancelled, work time 18d22h23m11s

Terminal Control History

SWD03210 电池状态:

设备号 224042102999021

IMEI 865374056303210

ICCID 89860427102090659797

经纬度标识 E

经纬度 120.615248

纬度 31.347672

行驶速度 0

BMS软件版本号 1.17

通讯板软件版本号 UB1_XWD_V120

信号强度 23

GPS卫星数 0

SOC 87

BMS循环次数 3

温度最高(电池) 20

温度最低(电池) 19

温度差值 1

MOS温度 21

环境温度 23

电池最高电压 49.5

电压最高 (单节电压) 3309

电压最低 (单节电压) 3302

电池电压差值 7

电池包状态 3

MOS充电状态 1

实时放电电流 0

单节电压 0.0

3303#3305#3307#3306#3305

均压状态 #3304#3304#3305#3309#330

3#3303#3303#3306#3303#33

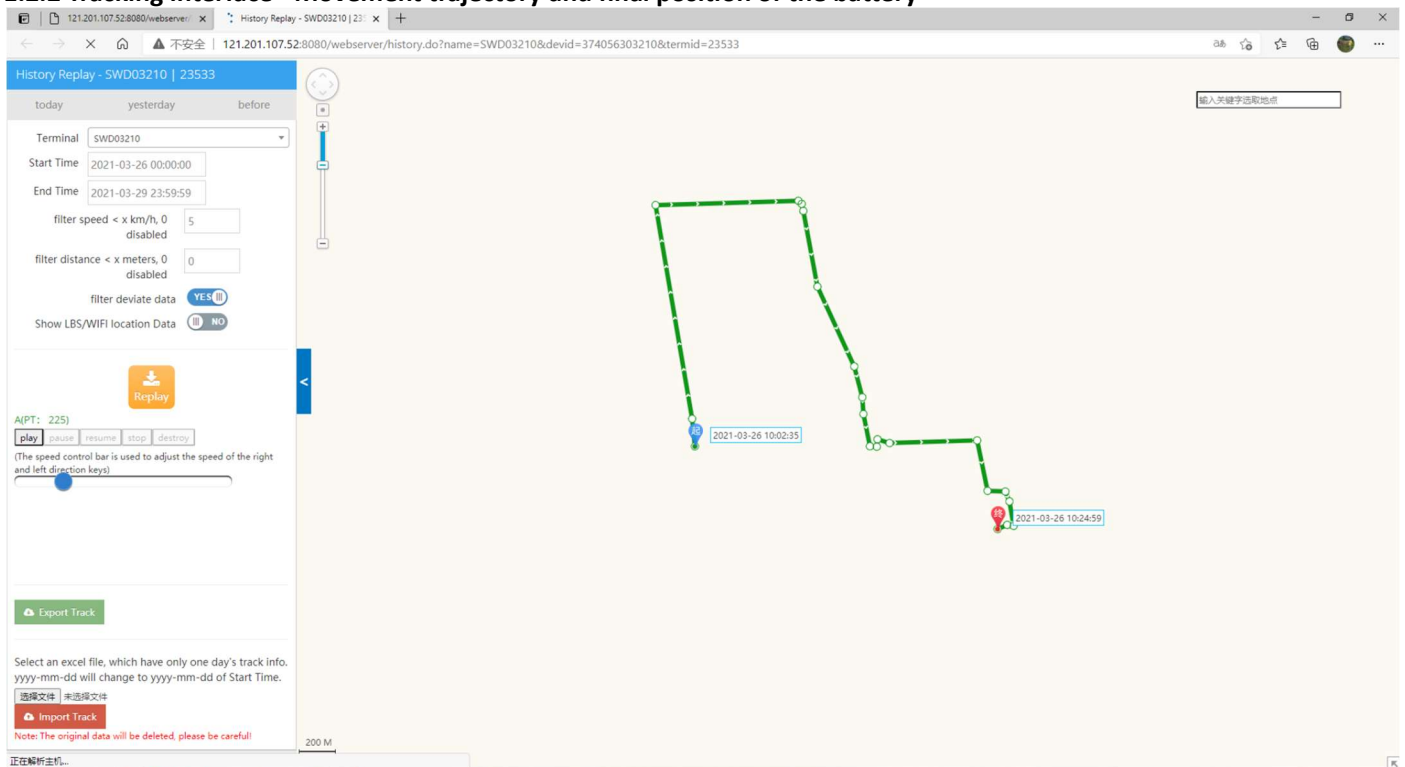
02

故障码 2

undefined 2

undefined 264

1.2.2 Tracking interface - Movement trajectory and final position of the battery



121.201.107.52:8080/webserver/ x +

121.201.107.52:8080/webserver/history.do?name=SWD03210&devid=374056303210&termid=23533

History Replay - SWD03210 | 23533

today yesterday before

Terminal SWD03210

Start Time 2021-03-26 00:00:00

End Time 2021-03-29 23:59:59

filter speed < x km/h, 0 disabled

filter distance < x meters, 0 disabled

filter deviate data YES NO

Show LBS/WIFI location Data

Replay

A(PT: 225)

play pause resume stop destroy

(The speed control bar is used to adjust the speed of the right and left direction keys)

Export Track

Select an excel file, which have only one day's track info. yyyy-mm-dd will change to yyyy-mm-dd of Start Time.

选择文件 未选择文件

Import Track

Note: The original data will be deleted, please be careful!

正在解析文件...

200 M

2021-03-26 10:02:35

2021-03-26 10:24:59

121.201.107.52:8080/webserver/ x +

121.201.107.52:8080/webserver/index.do?type=-1

云位置 YUNWEIZHI

Home Monitor Vehicle Manage

add edit delete setting

search company name name/Terminal id search

TID	Icon	name	company	term type	device id	remark	Vehicle brand	creator	create time
23654		SWD69099	欣旺达	vehicle	374054769099			xiezong	2021-03-13 12:18:41
23650		EX66822	everexceed	vehicle	374054766822			xiezong	2021-03-12 15:34:12
23638		EX03202	everexceed	vehicle	374056303202			xiezong	2021-03-11 19:51:13
23637		EX03236	everexceed	vehicle	374056303236			xiezong	2021-03-11 19:04:15
23630		SWD03228	欣旺达	vehicle	374056303228			yus	2021-03-10 18:01:05
23629		SWD67101	欣旺达	vehicle	374054767101			yus	2021-03-10 17:59:18
23535		HC03269	hongchuangzhike	vehicle	374056303269			yus	2021-02-24 16:14:40
23533		SWD03210	欣旺达	vehicle	374056303210			yus	2021-02-24 13:48:10
23532		SWD03178	欣旺达	vehicle	374056303178			yus	2021-02-24 13:47:49
23531		SWD63696	欣旺达	vehicle	374054763696			yus	2021-02-24 13:47:26

Showing 1 to 10 of 18 rows 10 rows per page

1 2

3. Installation and Setup

See GPS installation manual for details.

Annex9- Fire Protection Function Introduction

Fire protection function is optional function

Battery module support installs Aerosol Fire Extinguisher.

1. Fire extinguishing device



2. Working principle

2.1 When a fire occurs, the fire extinguishing device ignites the thermal wire after receiving an open flame.

2.2 The thermal wire burns to activate the aerosol generating agent in the fire extinguishing device

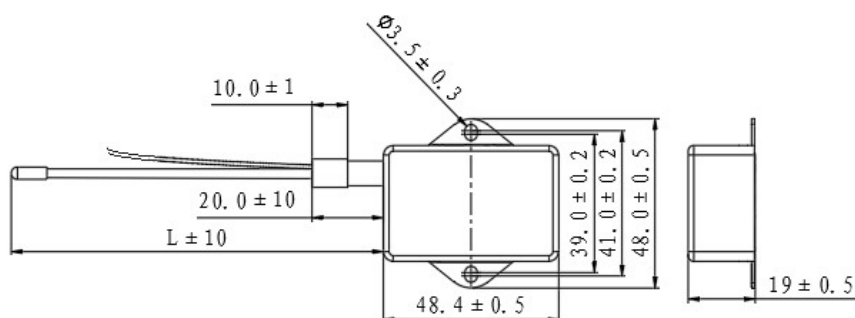
2.3 The aerosol generating agent release the heat through the redox reaction to decomposes the chemical coolant.

2.4 So that the aerosol generating agent and the coolant can jointly participate in the fire extinguishing.

3. Technical parameter

Item	parameter
Model	QRR0.01GW/S
Start method	Hot start
Hot start temperature	$\geq 170^{\circ}\text{C}$
Working environment temperature	$-50^{\circ}\text{C} \sim +90^{\circ}\text{C}$
Ejection delay time	$\leq 1\text{S}$
Fire extinguishing density	$33\text{g}/\text{m}^3$
Weight	$65 \pm 10\text{g}$
Feedback signal	Passive switch signal

4. Structural dimensions



5. Safety warning

5.1 Non-professionals are not allowed to disassemble it without authorization.

5.2 After spraying, do not touch the shell until it cools to prevent burns.

Appendix – Example charging configurations for Solar & Rectifiers

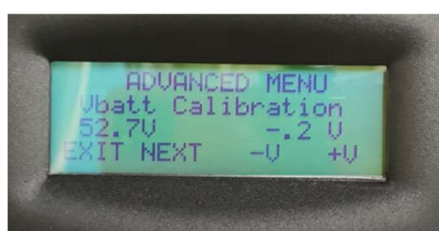
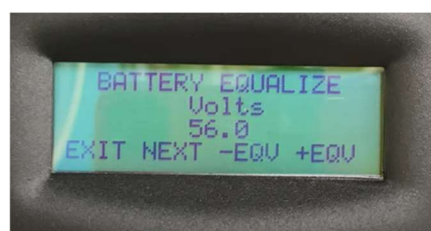
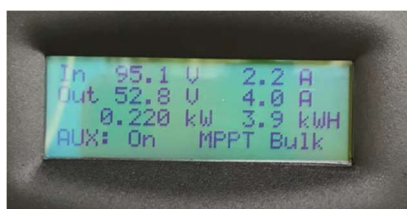
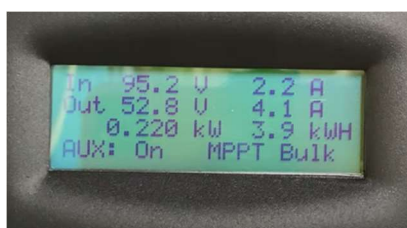
1. Solar – OutBack MX80

16 cell 51.2 Nominal voltage Battery

Below is a link explaining how to set OutBack MX80 controller parameters for a 16-cell 51.2-volt LiFePO4 Lithium battery. Together with major screen shots for clarification.

Basically setting everything to 56.0 Volts with the exception of “Equalize Voltage” which we suggest is set to 58.4 Volts.

<https://www.youtube.com/watch?v=wY6eZK0Wcdg>





2. Rectifier

15 cell 48.0 Nominal voltage Battery

Recommended charging voltage: 52.5 - 53.25V

Recommended cut-off voltage: 44-44.5V

As soon as the equalization conditions are met, the cell charge equalization function is automatically switched on. This condition has already been set by the BMS.

Equalization criteria

Charging current $> 2A$

Cell voltage $> 3.45V$

Cell voltage difference $> 30mV$

When all three conditions are met at the same time, the charge equalization function is activated.

15 cell 48.0 Nominal voltage Battery

Boost Charge Voltage of: 54.0V

Float charge voltage of: 51.7V

16 cell 51.2 Nominal voltage Battery

Boost charge voltage of: 57.6V

Float charge voltage of: 55V

Change from below ...

Basic Parameters				
Charge Parameters				
☐	Boost Charge Voltage	56.4	- +	V (42.0~58.0)
☐	Float Charge Voltage	55.5	- +	V (42.0~58.0)
☐	Charge Current Limit Coefficient	0.40	- +	C (0.05~1.05)
☐	Default Charge Current Limit Coefficient	0.15	- +	C (0.05~1.05)
☐	Load High Temp. Current Limit Enabled	Disable		▼
☐	Battery High Temp. Current Limit Enabled	Disable		▼

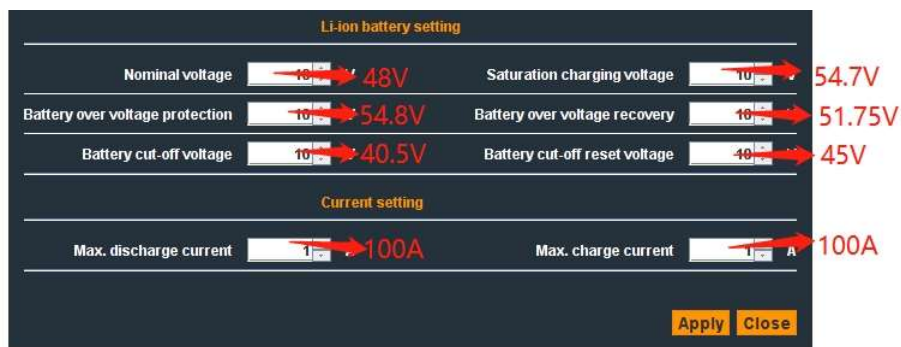
15 cell 48.0 Nominal voltage 150 AH Battery

Nominal Voltage	48 V
Nominal Capacity	150 Ah
Nominal Energy	7200 Wh
Electrical Characteristics	
Recommended Charging Voltage	54-54.7 V
Floating Charging Voltage	51.5-52 V
Recommended Charging Current	50 A-75A
Maximum Discharging Current	100 A
Discharging Cut-off Voltage	40.5 V
Working Voltage Range	40.5-54.7 V
Operating Conditions	
Cycle Life	≥3000 Cycles@100% DOD@25°C
Roundtrip Efficiency	≥98%
Operating Charge Temperature	0°C to +50°C
Operating Discharge Temperature	-20°C to +60°C
Storage Temperature	-20°C to +60°C
Mechanical Characteristics	
Length x Width x Height	483 x 500 x 222 mm
Weight	58.0 Kg
Terminal	M6
Optional Function	
Remote monitoring	SNMP

3. Solar – TP100 MPPT Charge Controller

200 AH 15 cell 48.0 volt EV LiFePO4 Lithium batteries

If using the “Solarmate” App, then use the following –



Li-ion battery setting

Nominal voltage: 48V
 Saturation charging voltage: 54.7V
 Battery over voltage protection: 54.8V
 Battery over voltage recovery: 51.75V
 Battery cut-off voltage: 40.5V
 Battery cut-off reset voltage: 45V

Current setting

Max. discharge current: 100A
 Max. charge current: 100A

Apply Close

Below is a link to download the “Solarmate” App.

https://www.dropbox.com/s/el4ax5h9ru2womn/install_SolarMate_CS_Windows.exe?dl=0

If using the “MpptSolarMonitor_N_V1.2” App, then use the following –

Bat Parameters Set

Select Battery

BatType: **Lithium** Sys. Volt.:

Max. CHG -I: **100** A

Max. Load-I: **100** A

Lead Acid		Lithium Battery	
C. V. Charge:	V	Charge Volt.:	54.7 V
Equalizing V:	V	Nominal Volt.:	48 V
Float Charge:	V	Battery Over:	54.8 V
Equalizing T:	min	Over Recover:	51.75 V
Battery Over:	V	Battery Low:	40.5 V
Over Recover:	V	Low Recover:	45 V
Battery Low:	V		
Low Recover:	V		

Below is a link to download the “MpptSolarMonitor_N_V1.2” App.

<https://www.dropbox.com/scl/fo/6s14jazccl8f1c55a0umj/h?rlkey=9d1tyuki4tanhb2nawykuemdb&dl=0>

15 cell 48.0 Nominal voltage 200 AH Battery

Nominal Characteristics	
Battery Model	LV-48200-B1
Nominal Voltage	48.0 V
Nominal Capacity	200 Ah
Nominal Energy	9600 Wh
Electrical Characteristics	
Recommended Charging Voltage	54.0-54.7 V
Floating Charging Voltage	51.5-52.0 V
Recommended Charging Current	50 – 100 A
Maximum Discharging Current	100 A
Discharging Cut-off Voltage	40.5 V
Working Voltage Range	40.5-54.7 V
Operating Conditions	
Cycle Life	≥3000 Cycles @ 100% DOD
Roundtrip Efficiency	≥98%
Operating Charge Temperature	0°C to +50°C
Operating Discharge Temperature	-20°C to +60°C
Storage Temperature	-20°C to +60°C
Mechanical Characteristics	
Length x Width x Height	483 x 630 x 222 mm
Weight	85 Kg
Terminal	M6
Optional Functionality	
Remote Monitoring	SNMP