

April 2025

MastMinder MM-481200 V2 6KW Modular Solar System Installation Manual

For following systems

- 6KW with 24 solar modules

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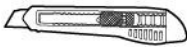
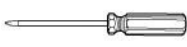
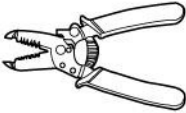
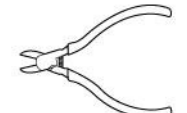
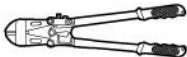
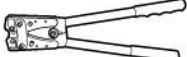
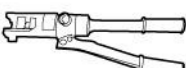
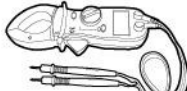
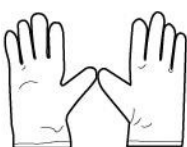
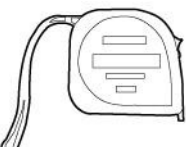
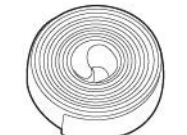
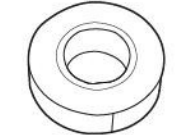
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1 Installation Preparations

Tools

Use tools with insulated handles. The following table is for reference only.

Table 1-1 Installation tools and instruments

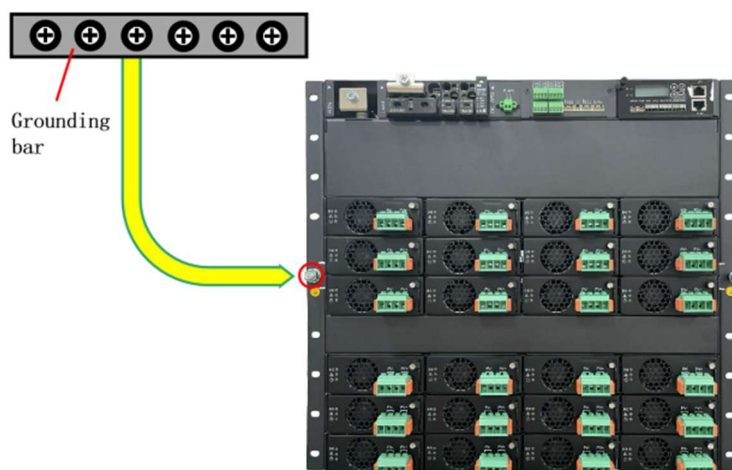
				
Utility knife	Marker	Phillips screwdriver	Flat-head screwdriver	Torque wrench
				
Combination wrench	Adjustable wrench	Socket wrench	Torque screwdriver	Wire stripper
				
Diagonal pliers	Wire clippers	Power cable crimping tool	Hydraulic pliers	Heat gun
				
Clamp meter	ESD wrist strap	ESD gloves	Protective gloves	Steel measuring tape
				
Heat shrink tubing	PVC insulation tape			

1.1 Unpacking and Acceptance

- Check whether the packing cases are intact. If a packing case is severely damaged or wet, identify the cause and report the issue to the supplier.
- Unpack the cases.
- Check the quantity of components against the packing lists attached to the packing cases. If the quantity differs from that specified on the packing lists, identify the cause and report the issue to the supplier.

1.2 Installing a Protective Ground Cable

Figure 1-2 Installing a protective ground cable



1.3 Installing a Solar Module

- Remove the filler panel from the solar module slot.
- If the solar module is damaged, report the issue to the supplier.
- The solar module slot presents a risk of electric shock. Do not touch the slot with your hands.
- High temperature is generated around the air exhaust vent when the solar module is running. Do not touch the vent with your hands or cover the vent with cables or other objects.
- Loosen the screw towards the left.
- Draw the buckle downwards.
- Gently push the solar module into its slot along the guide rails.
- Push the buckle upwards.
- Tighten the screw towards the right to secure the buckle.

Figure 1-1 Installing a solar module



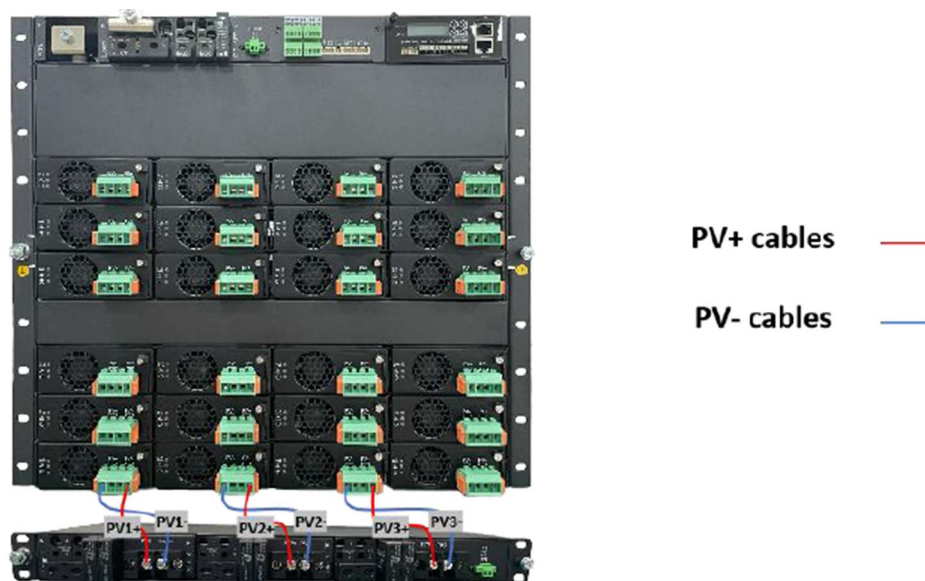
This is a V2 **Low Voltage** type with the characteristics below.

Input Voltage	58~150VDC
Rated Input Voltage	125VDC
Maximum Input Voltage	150VDC
Maximum Input Current	50A

1.4 Installing Cables from PV Module to PV Distribution Unit

- Route the PV input cables.
- Connect one end of the positive PV input cable to the PV+ port of the PV module and the other end to the PV input PV1+ terminal.
- Connect one end of the negative cable to the PV- port of the PV module and the other end to the PV input PV1-terminal.
- Connect one end of the positive PV input cable to the PV+ port of the PV module and the other end to the PV input PV2+ terminal.
- Connect one end of the negative cable to the PV- port of the PV module and the other end to the PV input PV2-terminal.
- Connect one end of the positive PV input cable to the PV+ port of the PV module and the other end to the PV input PV3+ terminal.
- Connect one end of the negative cable to the PV-port of the PV module and the other end to the PV input PV3-terminal.

Figure 1-15 Installing the cables from the PV module to the PV distribution unit

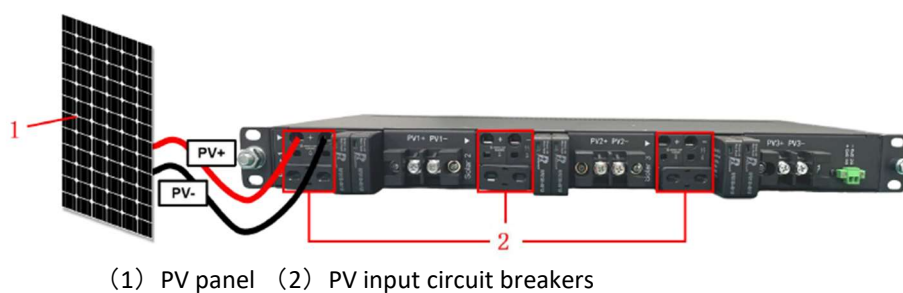


Note: Installing the other cables from the PV module to the PV distribution is same method.

1.4.1 Installing PV Input Cables

- Route the PV input power cable.
- Fasten the PV input power cables to the PV input circuit breaker.

Figure 1-16 Installing PV input power cables



Note: Installing the other cables from the PV module to the PV distribution is same method.

1.4.2 Installing SPD Cables

- Route the SPD cables.
- connect DC SPD+ port and DC SPD- port in series.

Figure 1-14 Installing SPD cables



1.5 Connecting Battery Cables

Before installing, operating, and maintaining batteries, read the battery manufacturer's instructions and comply with their requirements. The safety precautions specified in this document are highly important and require special attention. For more safety precautions, see the instructions provided by the battery manufacturer.

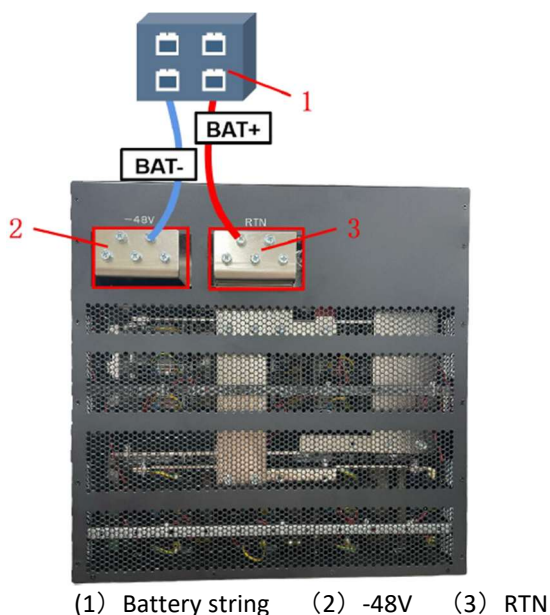
DANGER

- Smoking and sparks are prohibited near batteries.
- Switch off battery circuit breakers before installing batteries.
- Comply with regulations and warnings of the battery manufacturer.
- Use tools with insulated handles, otherwise, batteries may be burnt out and personal injury may occur.
- During battery operations, wear goggles, rubber gloves, and protective clothes.
- Remove conductive articles such as watches, bracelets, and rings.
- If battery acid gets in the eyes, rinse with cold water for more than 15 minutes and seek media advice immediately. If battery acid contacts skin or clothing, wash with soap and water immediately.
- Secure battery cables to a torque specified in battery documentation. Loose connections will result in excessive voltage drop or cause batteries to burn out when the current is large.

Procedure

- Connect negative battery cables to the -48V port on the back of the sub-rack.
- Connect positive battery cables to the RTN port on the back of the sub-rack.
- Ensure that the positive and negative battery cables are correspondingly connected to the positive and negative pole of the port.
- The positive and negative battery cables must be correctly connected, otherwise it will cause damage to the power system.

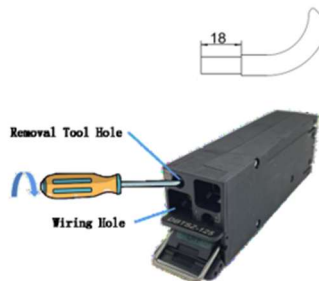
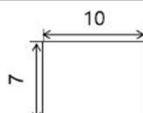
Figure 1-11 Installing battery cables



1.6 Connecting the Load cables

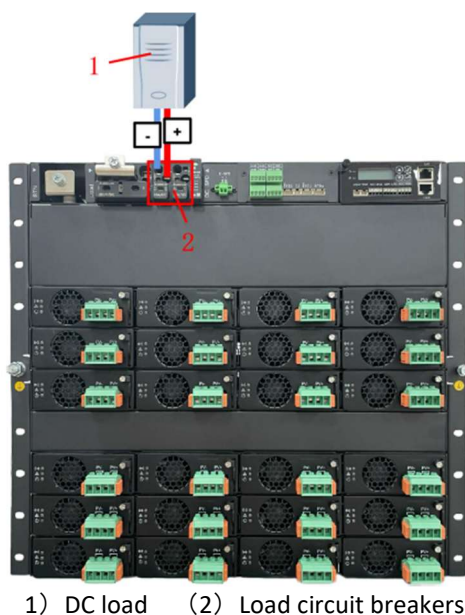
There are both High Capacity & Low-Capacity Load outputs as per below.

Low-Capacity Load Connection below.

DBTSZ-125			
Connection Area	Bare wire	25~35mm ²	Cabling Diagram:
	Cold-pressed terminal with pre-insulated	10~25mm ²	
	Cold-pressed terminal with not pre-insulated	35mm ²	
	Cross-sectional area of cold-pressed terminal:		
			
	1. Cross-sectional area of cold-pressed terminal: $L \leq 10\text{mm}$, $W \leq 7\text{mm}$. 2. When the cold-pressed terminal is inserted to a depth of 26mm, the diameter of the insulation tube or heat shrink tube must be no more than 12.5mm.		
Insertion Depth	23~25mm		
Stripping Depth	18mm		

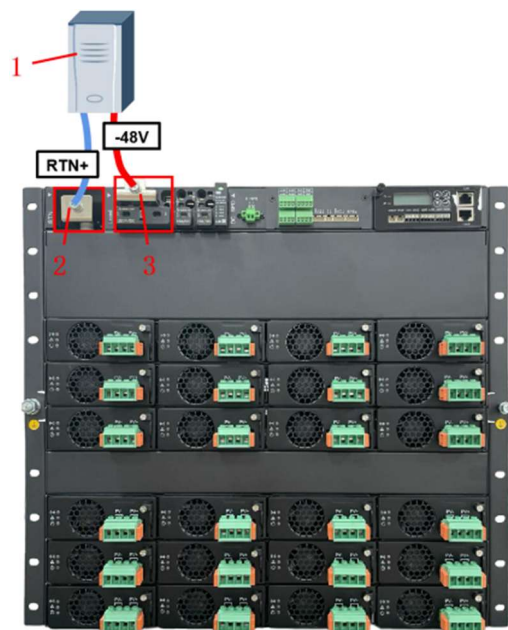
- Connect positive and negative load output cables to the corresponding positive and negative pole of the circuit breakers.
- Ensure that the positive and negative load output cables are correspondingly connected to the positive and negative pole of the circuit breakers.

Figure 1-11 Installing Low-Capacity load output cables



High-Capacity Load Connection below.

- Route the load output cable.
- Fasten the negative load output cable to the load output circuit breaker adapter copper.
- Fasten the load output positive cable to the RTN+ busbar.



(1) DC load (2) RTN+ busbar (3) Load circuit breaker adapter copper

1.7 Attach a LAN Communication Cable

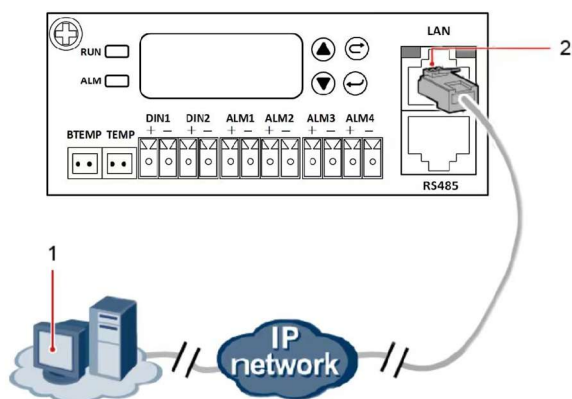
SMU48B provides communication interfaces, as shown in Table 1-2.

Table 1-2 LAN Communication port

Communications Port	Communications Parameter	Communication Protocol
LAN	10M / 100M is adaptive	HTTPS, SNMP

Connect the LAN interface to the monitoring panel, as shown in Figure 1-8.

Figure 1-8 LAN interface connection

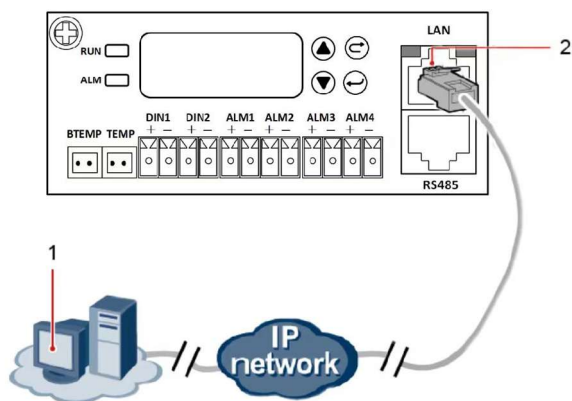


(1) Ethernet terminal equipment (2) LAN port

1.8 Third-party Network Management (over HTTPS, SNMP)

Connect the LAN port to the monitoring panel, as shown in Figure 1-10.

Figure 1-10 Third-party Network Management (over HTTPS, SNMP)



(1) User HTTPS / SNMP terminal (2) LAN port

1.9 Preparing the LAN communications

Connect a laptop to the LAN port above using a standard straight through network cable.

- Set the computer IP.
(Open the computer's Network and Internet settings - Change adapter options - Ethernet properties - Internet Protocol Version 4 properties - Modify IP address)
The monitoring unit default IP is **192.168.124.100**, so the computer IP needs to be set to 192.168.124.120 for example.
The laptop IP needs to be in the same network segment as the monitoring unit.
- Enter the monitoring IP (192.168.124.100) on any webpage, and complete the login (login account: **admin**, password: **0001**).

User:

Password: 0001

- Check the monitoring interface - parameter setting interface - battery charging parameters are correct.
- The charging parameters can be changed according to the characteristics of the battery.
- Please see example settings in Appendix.

Power System -> Parameter Settings

Information

Battery Info

Active Alarm

History Datas

Parameter Settings

Alarm Settings

System Settings

AC Settings

Input Voltage High: 280 V

Input Voltage Low: 180 V

AC Phase: PH-3

DC Settings

System Voltage High: 58.0 V

System Voltage Low: 45.0 V

Ambient Temper. High: 55 degC

Ambient Temper. Low: -10 degC

Ambient Humidity High: 90 %

Ambient Humidity Low: 5 %

Battery Settings

Float Charge Voltage: 53.0 V

Boost Charge Voltage: 53.0 V

Battery Temper. High: 50 degC

Battery Temper. Low: 0 degC

Charge Current Limit: 0.10 C10

Battery Number: 1

Single Battery Capacity: 100 Ah

Period Boost Charge: Disable

Boost Charge Period: 30 day

Boost Charge Time: 9 hour

Float to Boost Current: 0.05 C

Boost To Float Current: 0.02 C

Temper. Offset: 80 mV/degC

Offset Center: 25 degC

TimingTestEnable: Disable

TimingTestCycle: 60 day

LVD Settings

BLVD Voltage: 48.0 V

BLVD Reconnect Voltage: 50.0 V

LLVD Mode: Voltage

LLVD3 Voltage: 44.0 V

LLVD4 Voltage: 44.0 V

LLVD1 Reconnect Voltage: 50.0 V

LLVD2 Reconnect Voltage: 48.5 V

LLVD3 Reconnect Voltage: 48.5 V

LLVD4 Reconnect Voltage: 48.5 V

LLVD1 Time: 480 min

LLVD2 Time: 480 min

LLVD3 Time: 480 min

LLVD4 Time: 480 min

- Turn on the photovoltaic circuit breaker and check the battery charging, to see if the charging voltage/current is normal.
You can check it through the PC or SNMP.

System Voltage: 50.6 V

System Current: 46 A

Battery Current: 13 A

Battery: Equal Charge

Alarm Status:

AC Input Information

A Phase Voltage: 0 V

B Phase Voltage: 0 V

C Phase Voltage: 0 V

AC Frequency: 50 Hz

DC Information

System Voltage: 50.6 V

System Current: 46 A

Battery Current: 13 A

Battery SOC: 100.9 %

Battery Temp: 25 degC

Ambient Temp: 25 degC

Total Load Power: 2.35 kW

Total Load Energy: 0 kWh

Load1 Current: 46 A

Load2 Current: 0 A

Load3 Current: 0 A

Load4 Current: 0 A

Load1 Energy: 0 kWh

Load2 Energy: 0 kWh

Load3 Energy: 0 kWh

Load4 Energy: 0 kWh

Bat.1 Mid.Volts: 0 V

Bat.2 Mid.Volts: 0 V

Bat.3 Mid.Volts: 0 V

Bat.4 Mid.Volts: 0 V

Rectifier Module

No.	Vin(V)	Vin(A)	Vout(V)	Iout(A)	Temp(degC)	On/Off
1	0.0	0.0	0.00	0.0	0	ON
2	0.0	0.0	0.00	0.0	0	ON
3	0.0	0.0	0.00	0.0	0	ON
4	0.0	0.0	0.00	0.0	0	ON
5	0.0	0.0	0.00	0.0	0	ON
6	0.0	0.0	0.00	0.0	0	ON
7	0.0	0.0	0.00	0.0	0	ON
8	0.0	0.0	0.00	0.0	0	ON
9	0.0	0.0	0.00	0.0	0	ON
10	0.0	0.0	0.00	0.0	0	ON
11	0.0	0.0	0.00	0.0	0	ON
12	0.0	0.0	0.00	0.0	0	ON

Solar Module

No.	Vin(V)	Vin(A)	Vout(V)	Iout(A)	Temp(degC)	On/Off
1	387.6	0.3	50.77	59.9	28	ON

- Turn on the load output circuit breaker to supply power to the load, and check whether the load voltage/current is normal.
This can also be checked via SNMP.
- Check if there are any real-time alerts on the monitoring interface.
If there are alerts, please view the real-time alert information and check it.
If necessary, please contact our after-sales technicians.

Power System -> Active Alarm

Active Alarm					
Alarm No.	Alarm Name	Alarm No.	Alarm Name	Alarm No.	Alarm Name
1	AC POWER FAULT	11	-	21	-
2	-	12	-	22	-
3	-	13	-	23	-
4	-	14	-	24	-
5	-	15	-	25	-
6	-	16	-	26	-
7	-	17	-	27	-
8	-	18	-	28	-
9	-	19	-	29	-
10	-	20	-	30	-

2 Verifying the Installation

2.1 Checking Hardware Installation

- Check that all screws, especially those used for electrical connections, are secured. Check that flat washers and spring washers are installed properly.
- Check that solar modules are completely inserted into their respective slots and properly locked.

2.2 Checking Electrical Connections

- Check that all circuit breakers are OFF or all fuses are disconnected.
- Check that flat washers and spring washers are securely installed for all OT terminals and that all the OT terminals are intact and properly connected.
- Check that batteries are correctly installed and that battery cables are correctly connected, and not short circuits exist.
- Check that input and output power cables and ground cables are correctly connected, and not short circuits exist.

2.3 Checking Cable Installation

- Check that all cables are securely connected.
- Check that all cables are arranged neatly and bound properly to their nearest cable ties, and are not twisted or overly bent.
- Check that cable labels are properly and securely attached in the same direction.

3 Appendix – Battery charge settings

Lead acid battery.



AC Settings

Input Voltage High: 280 V Set Input Voltage Low: 180 V Set AC Phase: PH-3 PH-1 Set

DC Settings

System Voltage High: 58.0 V Set System Voltage Low: 45.0 V Set Ambient Temper. High: 55 degC Set Ambient Temper. Low: -10 degC Set

Ambient Humidity High: 90 % Set Ambient Humidity Low: 5 % Set

Battery Settings

Float Charge Voltage: 53.0 V Set **54V** Set Boost Charge Voltage: 53.0 V Set **56.4V** Set Battery Temper. High: 50 degC Set Battery Temper. Low: 0 degC Set

Charge Current Limit: 0.10 C10 Set **0.2C10** Set Battery Number: 1 Set **24** Set Single Battery Capacity: 100 Ah Set **1500Ah** Set

Boost Charge Period: 20 day Set Boost Charge Time: 8 hour Set Float To Boost Current: 0.02 C Set Boost To Float Current: 0.02 C Set Boost To Float Voltage: 50 degC Set

Temper. Offset: 80 mV/degC Set Offset Center: 25 degC Set TimingTestEnable: Disable Set TimingTestCycle: 60 day Set

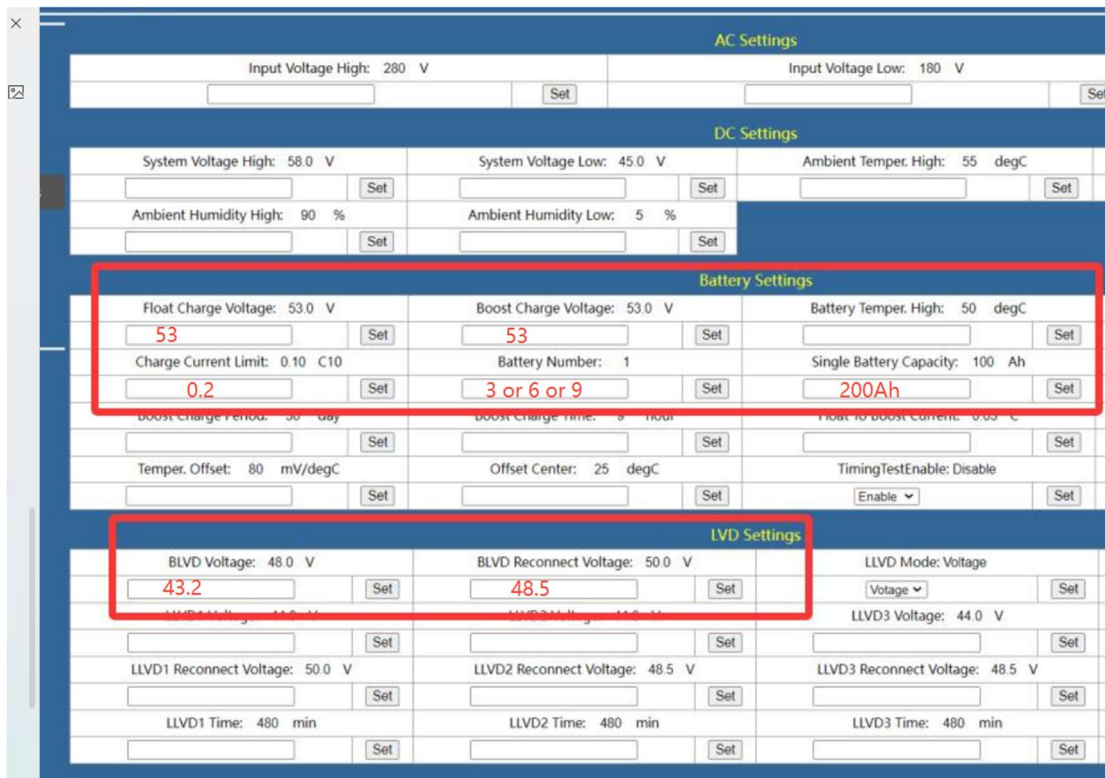
LVD Settings

BLVD Voltage: 48.0 V Set **43.2V** Set BLVD Reconnect Voltage: 50.0 V Set **48V** Set LLVD Mode: Voltage Voltage Set

LLVD1 Reconnect Voltage: 50.0 V Set LLVD2 Reconnect Voltage: 48.5 V Set LLVD3 Reconnect Voltage: 48.5 V Set LLVD4 Reconnect Voltage: 48.5 V Set

LLVD1 Time: 480 min Set LLVD2 Time: 480 min Set LLVD3 Time: 480 min Set LLVD4 Time: 480 min Set

Lithium battery.



AC Settings

Input Voltage High: 280 V Set Input Voltage Low: 180 V Set

DC Settings

System Voltage High: 58.0 V Set System Voltage Low: 45.0 V Set Ambient Temper. High: 55 degC Set Ambient Temper. Low: -10 degC Set

Ambient Humidity High: 90 % Set Ambient Humidity Low: 5 % Set

Battery Settings

Float Charge Voltage: 53.0 V Set **53** Set Boost Charge Voltage: 53.0 V Set **53** Set Battery Temper. High: 50 degC Set Battery Temper. Low: 0 degC Set

Charge Current Limit: 0.10 C10 Set **0.2** Set Battery Number: 1 Set **3 or 6 or 9** Set Single Battery Capacity: 100 Ah Set **200Ah** Set

Boost Charge Period: 30 day Set Boost Charge Time: 8 hour Set Float To Boost Current: 0.02 C Set Boost To Float Current: 0.02 C Set Boost To Float Voltage: 50 degC Set

Temper. Offset: 80 mV/degC Set Offset Center: 25 degC Set TimingTestEnable: Disable Set TimingTestCycle: 60 day Set

LVD Settings

BLVD Voltage: 48.0 V Set **43.2** Set BLVD Reconnect Voltage: 50.0 V Set **48.5** Set LLVD Mode: Voltage Voltage Set

LLVD1 Reconnect Voltage: 50.0 V Set LLVD2 Reconnect Voltage: 48.5 V Set LLVD3 Reconnect Voltage: 48.5 V Set LLVD4 Reconnect Voltage: 48.5 V Set

LLVD1 Time: 480 min Set LLVD2 Time: 480 min Set LLVD3 Time: 480 min Set LLVD4 Time: 480 min Set