

Shijiazhuang Maxwell Technology Co., Ltd

MXR100040B Charger Module

User Manual

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CONTENT

Chapter 1 MXR100040B Charger Module Overview	- 3 -
1.1 Specifications	- 3 -
1.2.1 Hot-plugging	- 4 -
1.2.2 . Current sharing	- 4 -
1.2.3 AC input Power limiting	- 4 -
1.2.4 Output constant power control.....	- 6 -
1.2.5 Temperature derating	- 6 -
1.2.6 Output current configuration	- 6 -
1.2.7 Output voltage adjustment	- 6 -
1.2.8 Input over/under voltage protection	- 6 -
1.2.9 Output overvoltage protection	- 6 -
1.2.10 Over temperature protection	- 7 -
1.2.11 Internal bus fault protection	- 7 -
1.2.12 Short circuit protection	- 7 -
1.2.13 Background communication failure	- 7 -
Chapter 2 Structure and Installation	- 7 -
2.1 Structure	- 7 -
2.1.1 Front Panel	- 7 -
2.1.2 Terminal Definitions	- 10 -
2.1.3 Label & Barcode	- 10 -
2.1.4 Dimensions	- 11 -
Chapter 3 Installation & Using	- 11 -
3.1 Safety Precautions and Operational Requirements	- 11 -
3.1.1 Safety Precautions	- 11 -
3.1.2 Announcement	- 12 -
3.1.3 Relevant operating requirements	- 12 -
3.1.4 Identifier protection	- 12 -
3.2 Installation	- 13 -
3.2.1 Charging module system terminal assembly specification	- 13 -
3.2.2 Fan unit Air flow direction	- 15 -
3.2.3 Charging Module Installation	- 15 -
3.3 Use	- 17 -
3.3.1 Operating environment:	- 17 -
3.3.2 System exhaust air volume and fan selections requirement:	- 17 -
Chapter 4 Module Wiring Harness And Sockets	- 20 -
4.1 Input/Output power cable and communication cable	- 20 -
4.1.1 Input power cable	- 20 -
4.1.2 Ouput power cable	- 21 -
4.1.3 Black and white twisted communication cable	- 21 -
4.2 Matching terminals package	- 21 -
4.2.1 Input Connector	- 21 -
4.2.2 Output Connector	- 22 -
4.2.3 Output Adapter Board	- 22 -
4.2.4 Mounting screws	- 23 -
4.2.5 Wiring Harness Power Terminals	- 23 -
Chapter 5 Maintenance Guide	- 24 -
5.1 Troubleshooting and handling suggestions	- 24 -
5.2 Module replacement	- 25 -
Appendix I Toxic and Harmful Substance or Elements Indentification	- 27 -

Chapter 1 MXR100040B Charger Module Overview

1.1 Specifications

Table1-1 Charger Module Parameters

Item	Specifications
Basic Specifications	
Dimensions	85mm(H)×360mm(W)×459mm(D)
Weight	≤20kg
Efficiency(full load)	>95.5%
Standby Power Consumption	13W+/-0.5W
Cooling Mode	Fan cooling
Communication Method	CAN bus
Parallel Modules Quantity	≤60pcs
Indicator	Green: normal operation Yellow: alarm Red: fault LED digital tube
Input Characteristics	
Input Voltage	260Vac~530Vac , three phase + PE
Input Current	<80A
Grid Frequency	45Hz~65Hz
Power Factor	≥0.95(8kw≤output power≤20kw); ≥0.98(20kw≤ output power≤40kw)
ITHD	≤5%(20kw≤ output power≤40kw)
Output Characteristic	
Voltage Range	100Vdc~1000Vdc
Current Range	0A~133.3 A (continuously regulated)
Rated Current	40A
Voltage stabilized accuracy	≤±0.5%(100V-1000V, 0~20MHz)
Current stabilized accuracy	≤±1% (output current 20% rated current ~ 100% rated current value)
Current Sharing Imbalance	≤±3%
Ripple Peak to Peak	≤1%(voltage stabilization status, input voltage 323Vac~530Vac, output voltage 200Vdc~1000Vdc, output current 0~rated current)
Environmental Specifications	
Operating Temperature	-40°C~+75°C, output derating above 50°C

Storage Temperature	-40°C~+75°C
Relative Humidity	≤95%RH, Non-condensing
Altitude	No derating below 2000m, When the altitude is above 1000m, it needs to set the actual altitude value, the working temperature decreases by 1°C for each additional 100 m
MTBF	>500,000 hours
EMC	
Emission	CLASS B Reference standard: IEC 61000-6-3
Immunity	CLASS B Reference standard: IEC 61000-6-1
Certification	
CE/TUV	IEC61851-1
TUVus	UL2202
Others	
Startup Time	Output startup time 3~8s
Insulation Resistance	The insulation resistance between the DC part, the AC part to the shell, and the AC part to the DC part is ≥10MΩ
Dielectric Strength	The AC input terminal has a DC voltage of 4242V on the CAN line for 1 minute, no voltage breakdown flashover, and the steady-state leakage current is less than 10 mA; The 2121V DC voltage between the AC input terminal and the shell is 1 minute, no breakdown, no arcing, and the steady-state leakage current is less than 10 mA; AC input terminal to DC output terminal 2121V DC voltage for 1 minute, no breakdown, no flashover phenomenon, steady-state leakage current is less than 10 mA; The DC output terminal has a 2121V DC voltage to the housing for 1 minute, no breakdown, no arcing, and the steady-state leakage current is less than 10 mA; DC input terminal to CAN line 4242V DC voltage for 1 minute, no voltage breakdown flashover, steady-state leakage current is less than 10 mA; CAN wire to the shell with 707V DC voltage for 1 minute, no breakdown, no arcing, and steady-state leakage current less than 10 mA;
ROHS	R6

1.2 Function Details

1.2.1 Hot-plugging

Hot-plugging charging modules, easy installation and maintenance.

1.2.2 . Current sharing

Automatic current sharing between modules, current imbalance less than 3%.

1.2.3 AC input Power limiting

The relationship between output power and input voltage is shown in Figure 1-1. When input voltage is between 323Vac~530Vac (hysteresis less than 15V), module can output maximum power.

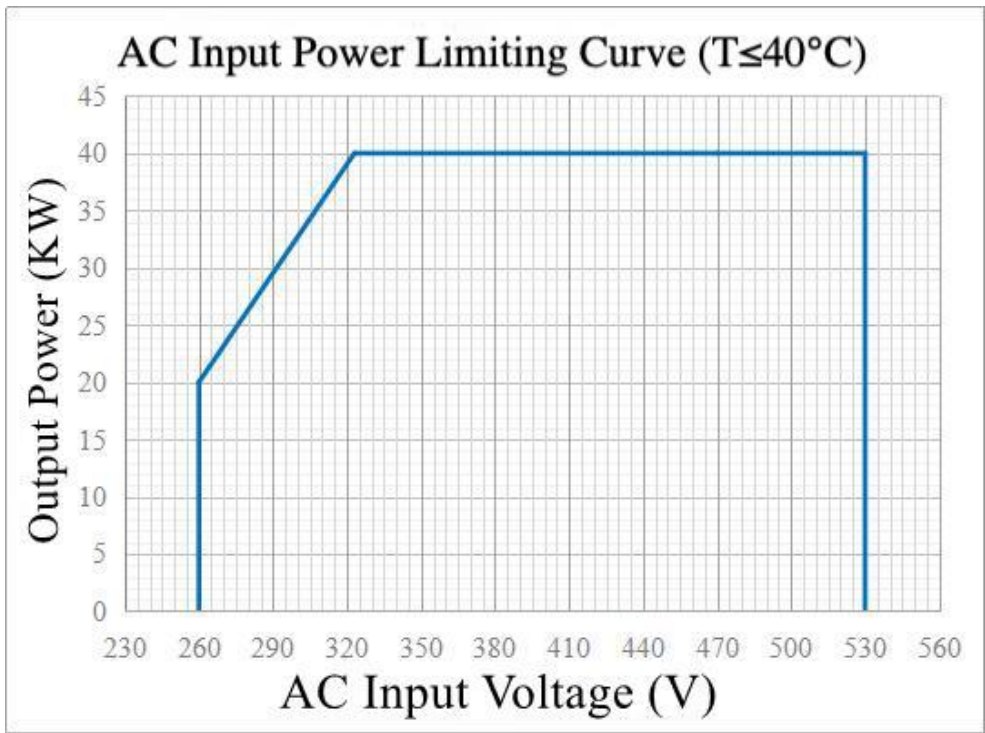


Figure 1-1 AC Input Power Limiting Curve

1.2.4 Output constant power control

At the rated input voltage of the charging module, the allowable output power is 40kW, and the relationship between output voltage and output current is shown in Figure 1-2.

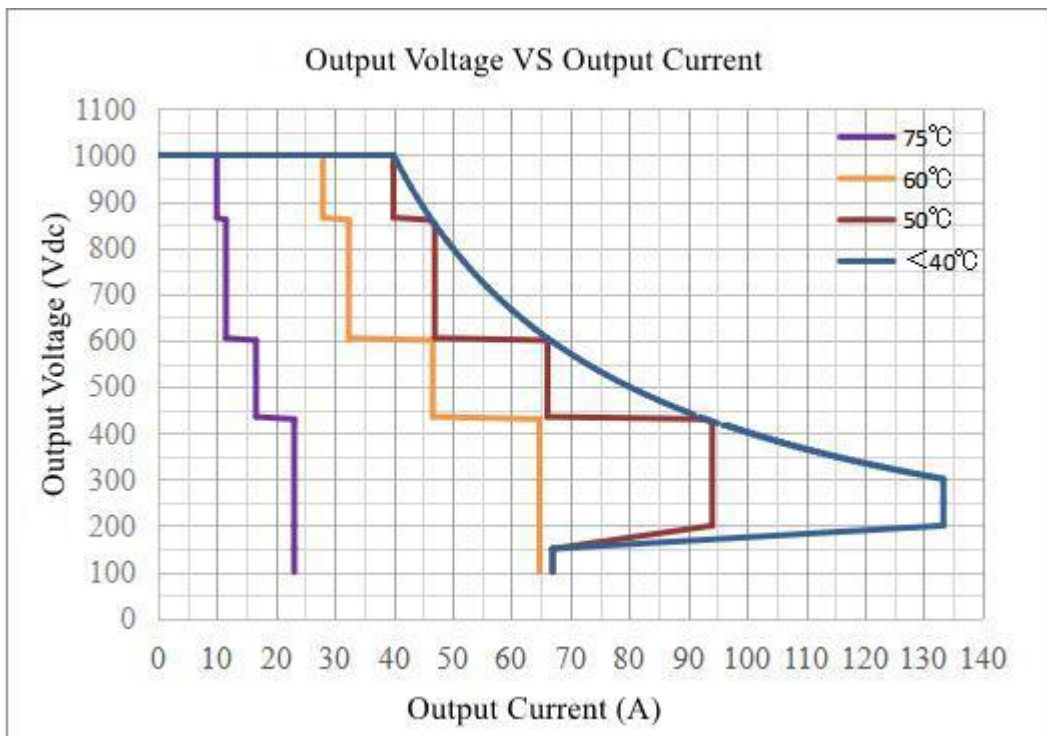


Figure 1-2 Output voltage vs. Output current curve

1.2.5 Temperature derating

Below 40 °C ambient temperature, full power of the module is 40 KW, Max output current is 133.3 A.

When the ambient temperature is 50 °C, the module allowable output power is less than or equal to 40kW, and the maximum output current is 94.1A;

The ambient temperature is 75 °C, the module allowable output power is less than or equal to 10kW, and the maximum output current is 23.15A;

When the ambient temperature is above 75 °C, the output power of the module will drop to 0

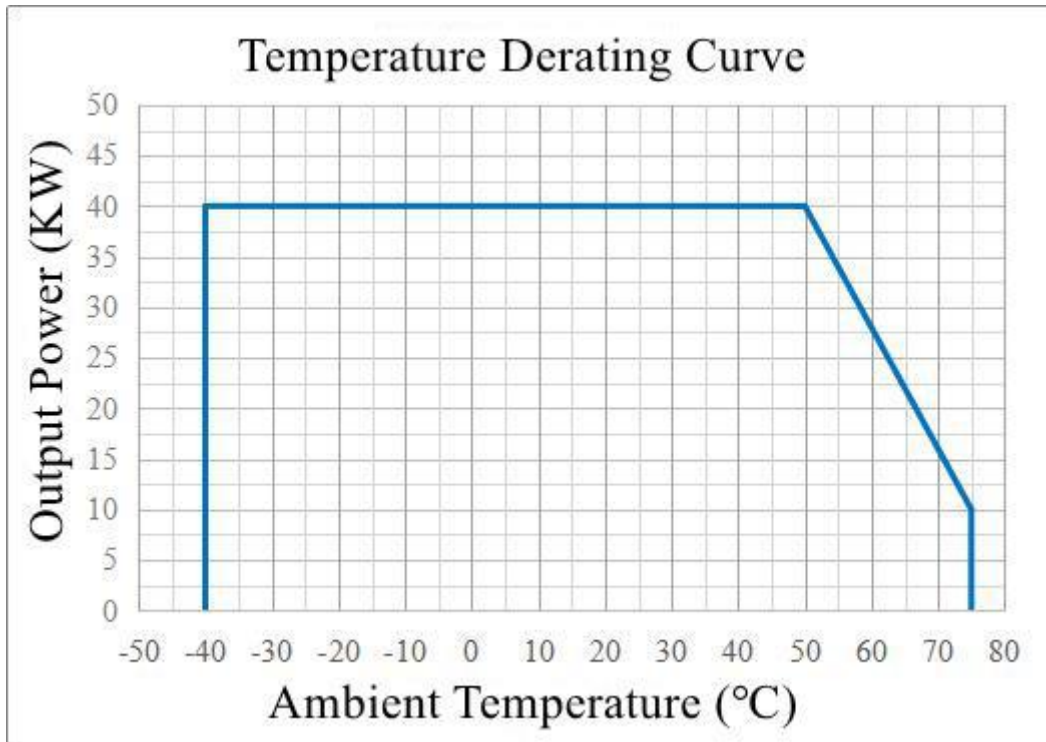


Chart 1-3 Temperature Limiting Power Curve

1.2.6 Output current configuration

Through external monitoring (controller), the module current can be configured continuously between 0A to 133.3 A.

1.2.7 Output voltage adjustment

Through external monitoring (controller), the module output voltage can be adjusted continuously, minimum adjustable pace is 0.1Vdc.

1.2.8 Input over/under voltage protection

When the input voltage of the module is less than 260Vac or greater than 530Vac, the yellow indicator light on the panel will be on, and the module will stop working and no output. When an overvoltage or undervoltage alarm occurs, the module will report the alarm information to the monitor, and the LED digital tube will display the fault code E01.

1.2.9 Output overvoltage protection

MXR100040B has a fixed overvoltage protection point of 1025Vdc and a fixed undervoltage protection point of 95Vdc. The software overvoltage protection point can be set through the monitor(controller), and the range is 100Vdc~1025Vdc, and the default value is 1025Vdc.

After the overvoltage protection, the red indicator (on the panel) will be on, and the LED digital tube displays the fault code E02. You need to disconnect the module from the system to reset before restarting. After the undervoltage protection, the module shuts down, the yellow indicator light on the panel is on, the undervoltage alarm is cleared after 5 seconds, and the module restarts.

1.2.10 Over temperature protection

Over temperature protection point is 75°C. When the ambient temperature is higher than 75°C, the module will automatically shut down, the yellow indicator light on the panel will be on, and the LED digital tube will display the fault code E08. When the ambient temperature returns to the normal range, keep shutting down, and the output is controlled by the upper computer.

1.2.11 Internal bus fault protection

When the internal bus voltage exceeds the over/under voltage protection point or is unbalanced, the module will shut down automatically. At this point, the module will have no output, and the alarm indicator goes on.

1.2.12 Short circuit protection

The module will shut down when a short circuit situation occurs, red indicator goes on and module will report "module failure" to the monitor, LED digital tube shows fault code E05.

1.2.13 Background communication failure

MXR100040B module has a communication interruption, the time exceeds 10s, the module shuts down protection, no voltage output, the yellow indicator light on the panel is on. When the module communication is restored, the yellow indicator light on the panel is off, and the module returns to the default state to work.

Chapter 2 Structure and Installation

2.1 Structure

2.1.1 Front Panel

Indicators, LED digital tubes and buttons on the front panel of the charger module are shown in figure 2-1 and 2-2.



Figure 2-1 Front Panel

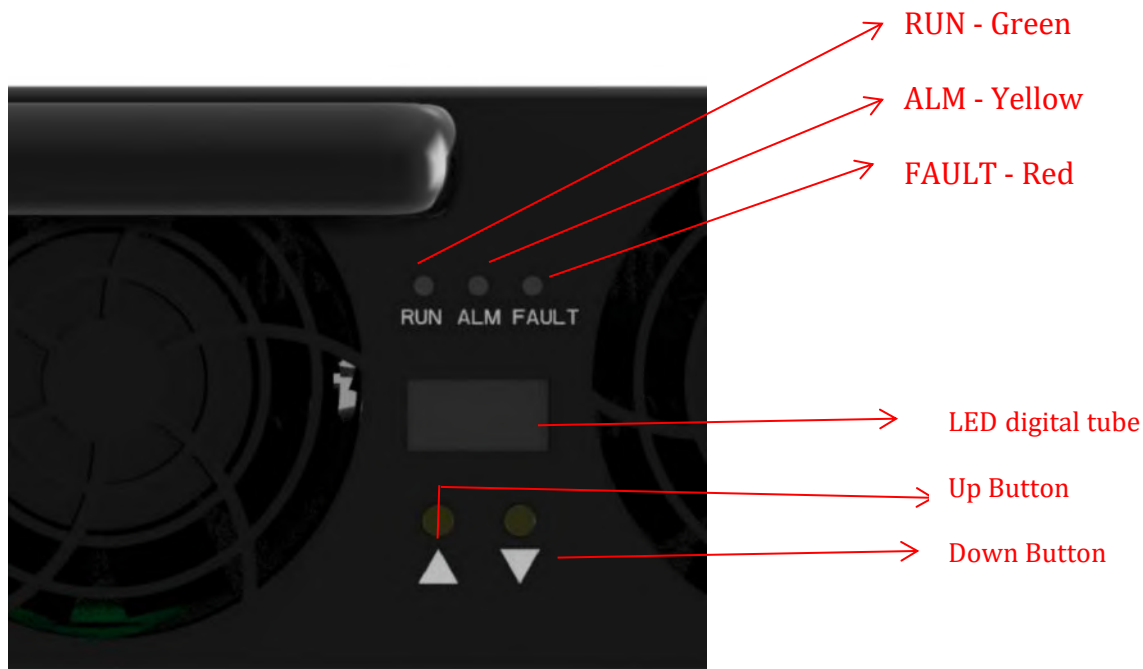


Figure 2-2 Front Panel

There are 3 indicator lights on the front panel (there is no mutually exclusive relationship between the indicator lights, as long as the conditions are met, the three lights can be on at the same time), the indicator lights are described in Table 2-1

Table 2-1 Indicator Descriptions

Indicator	Normal State	Abnormal State	Description
Running Indicator (green)	Steady On	Off	No input power
Alarm Indicator (yellow)	Off	Steady on	AC input fault, over temperature, abnormal bus voltage, output under voltage, duplicated address
	Off	Flashing	Communication interrupted
Fault Indicator (red)	Off	Steady on	Output over-voltage, output short circuit, fan failure, discharge failure, internal over-temperature failure, internal primary and secondary side communication failure, module damage and unrecoverable failure.

LED digital tube can display module output voltage, output current, module address, group number, fault code, module version, grouping mode, operating mode, turn on/off status, etc.

Module has two buttons, up button (▲) and down button (▼). By pressing the button, you can view the module information, and pressing (▲) or (▼) will display in sequence as shown in Figure 2-3.

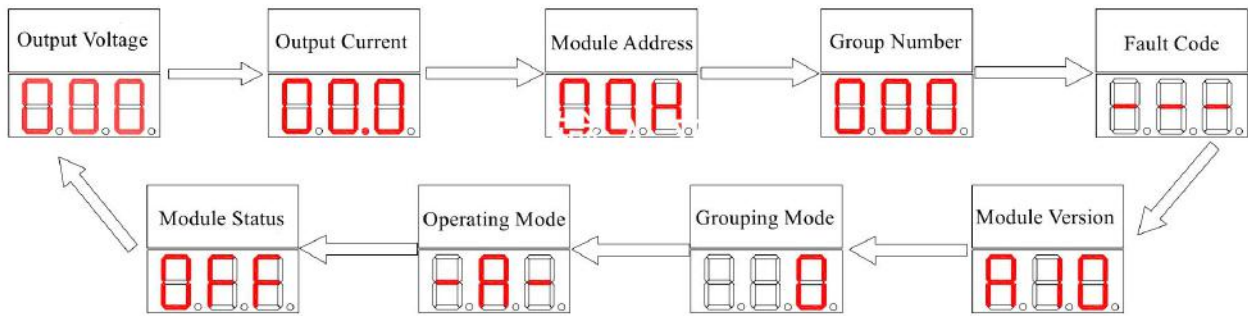


Figure 2-3 Module information display sequence

Through button, it can set module parameters: module address and module group number.(Only when the module address allocation mode is automatic allocation, can the group number of the module be changed by pressing the button).

The steps of setting module parameters are as follows:

1. Press (▲) or (▼) to switch the display to the information interface.
2. Press (▲) or (▼) for about 2.5 seconds, then release, and the display will blinking.
3. Press (▲) or (▼) to change setting.
4. Press (▲) or (▼) for about 2.5 seconds and release to save the data.

It is also available to set the address allocation method to dynamic allocation through monitoring and sending messages. At this time, the module group number can be set by pressing the button. The group number setting range is 00~60, and it is displayed on the panel with the digital tube.

Modify the module address as follows:when the module address allocation mode is fixed allocation, the address is changed from 0x00 to 0x04 as an example to illustrate the setting method.

Firstly, press (▼) to turn to page 3, the interface of 00H will appear, press (▲) or (▼) for about 2.5 seconds to release, the interface will be blinking, then press (▲) for a short time continuously. Press (▲) or (▼) for about 2.5s to save after interface 04H appears.

Modify the module group number as follows: when the module address allocation method is automatic allocation, the group number is changed from 0x000 to 0x004 as an example to illustrate the setting method.

Firstly, press (▼) to turn to page 4, the interface of 000 will appear, press (▲) or (▼) for about 2.5 seconds to release, the interface will be blinking, then press (▲) for a short time continuously. Press (▲) or (▼) for about 2.5s to save after interface 004 appears.

When module appears faults,the LED digital tube will automatically jump to the fault code display page, the module alarm information is displayed on the LED digital tube in the form of fault code, the fault codes are shown in table 2-3.

Table 2-3 Fault code display description

Fault code	Discription
E01	AC overvoltage and undervoltage, phase loss
E02	DC output overvoltage
E03	Unrecoverable No Output Fault
E04	Overheating inside the module
E05	Output short circuit
E06	Fan failure
E07	Discharge failure
E08	Ambient temperature is too high
E09	Communication between primary and secondary sides inside the module is interrupted
E10	Duplicated address

2.1.2 Terminal Definitions

The rear end of the charger module has AC input terminal and DC output terminal. As show in figure 2-4

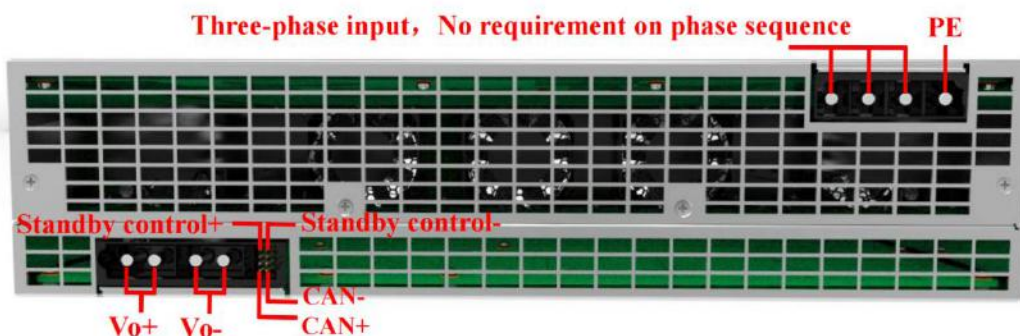


Figure 2-4 Input and output Terminal Appearance

2.1.3 Label & Barcode

Label and Barcode are attached to the top cover of charger module, see figure 2-5.

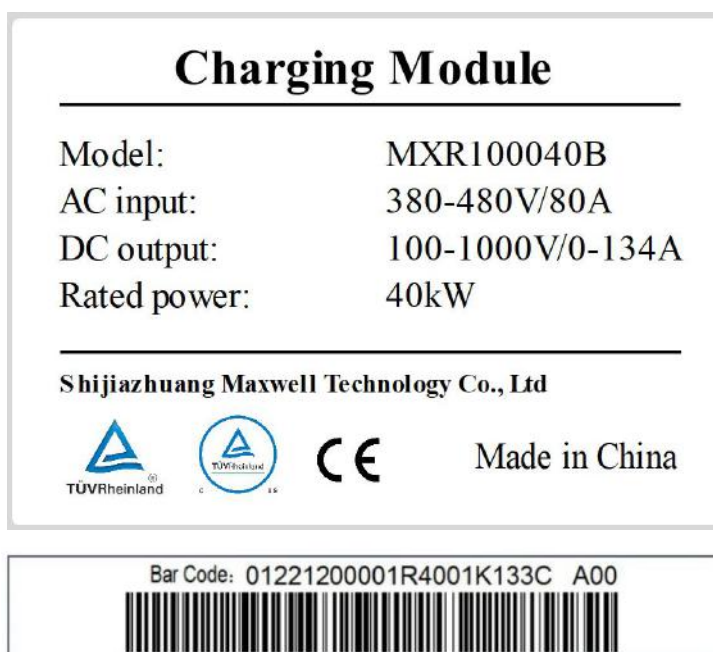


Figure 2-5 Label & Barcode

2.1.4 Dimensions

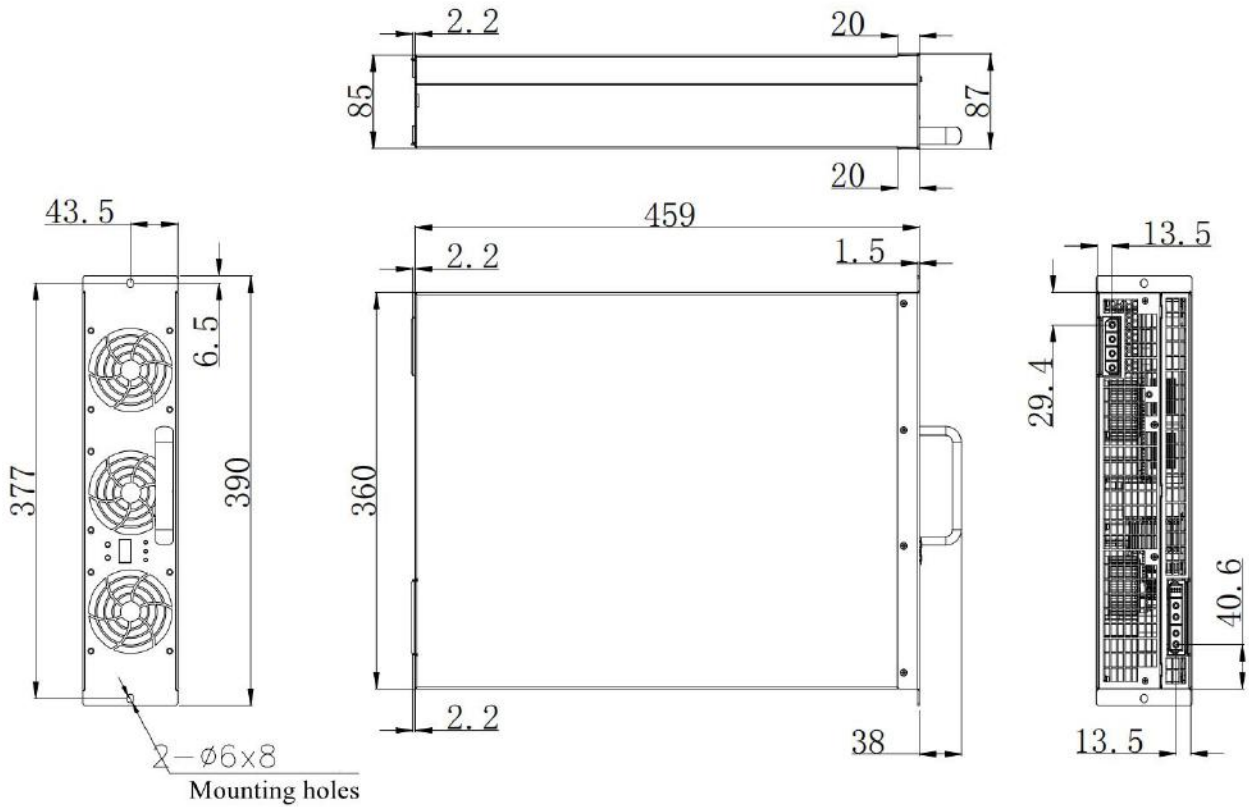


Figure 2-6 Module dimensions (unit: mm)

Chapter 3 Installation & Using

3.1 Safety Precautions and Operational Requirements

3.1.1 Safety Precautions

- When installing, operating, and maintaining the charging module, please read and follow the safety precautions and related operating requirements in this chapter.
- The personnel responsible for installing, operating and maintaining the charging module must be trained to understand various safety precautions and master the correct operation methods before installing, operating and maintaining the charging module.
- In the process of installing the charging module, if any behavior that may cause personal injury or damage to the charging module is found, the installation operator should immediately terminate the operation, report to the relevant person in charge, and take effective protective measures.
- It is forbidden to install and operate the charging module and cables during thunderstorms.
- The tool handles used need to be insulated and protected, or use insulated tools.
- In case of fire, evacuate from the scene and press the fire alarm bell or call the fire alarm.

3.1.2 Announcement

In the event of any of the following situations, Shijiazhuang Maxwell Technology Co., Ltd has the right not to provide quality assurance.

- Non-professional or untrained personnel shall install and use the charging module.
- Shipping damage
- Damage caused by storage environment conditions which are not meeting the requirements of the user manual.
- Improper product storage, installation and use.
- Failure to follow the operating instructions in the user manual.
- Operate in a harsh environment beyond the description of the product and the manual.
- Operation outside the specified parameter range.
- Unauthorized dismantling, changing the product or modifying the software code.
- Equipment damage caused by abnormal natural environment.
- The warranty period is exceeded, and the warranty service has not been extended.
- Any installation and operating environment beyond those stipulated in relevant international standards.

3.1.3 Relevant operating requirements

- Installation, operation and maintenance must be carried out in accordance with the sequence of steps in the manual.
- Only qualified professionals and strictly trained personnel are allowed to install, operate and maintain the charging module.
- Special insulating tools must be used during installation, operation, and maintenance, such as wearing insulating gloves, safety clothing, safety helmets, and insulating shoes.
- Before installing, operating, and maintaining the charging module, you must wear insulating shoes and gloves, and remove conductive items such as jewelry and watches to avoid electric shock or burns.
- The charging module should be placed in an area away from liquids, and it is forbidden to install it under places prone to water leakage such as air-conditioning outlets, so as to prevent liquid from entering the charging module and causing a short circuit.
- Do not install or remove the power cord while it is live.
- Before installing or removing the power cord, the power switch must be turned off.
- Ensure that all slots are equipped with single boards or filler panels. Cover the terminal area after installation to avoid accidental contact with live parts.

3.1.4 Identifier protection

- There is a barcode on the charging module, which is an important basis for product quality assurance, please do not remove it.

- There is a nameplate label on the charging module, which contains important parameter information related to the product, and artificial alteration and damage are strictly prohibited.

3.2 Installation

3.2.1 Charging module system terminal assembly specification

- The system terminals (input cable terminals, output cable terminals) are installed on the mounting plate of the charger body, as shown in Figure 3-1 and Figure 3-2.

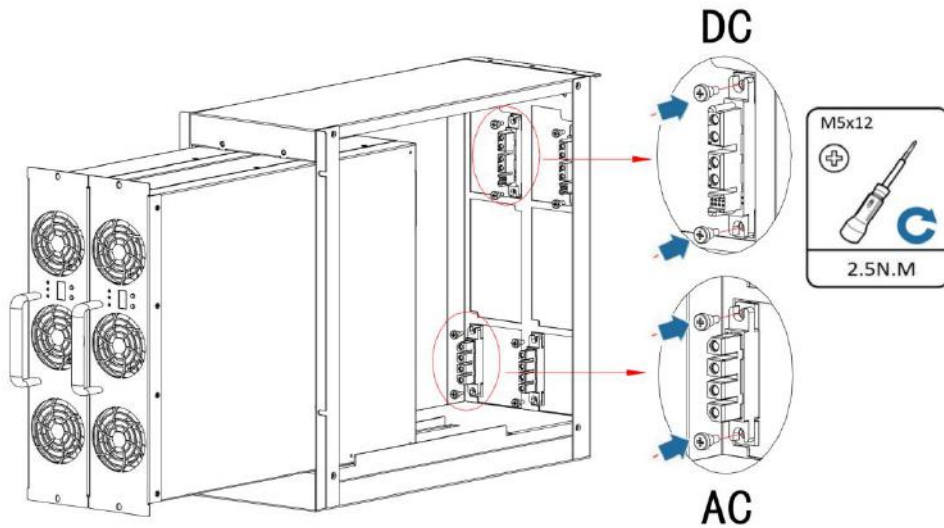


Figure 3-1 System terminals Installation diagram (modules placed sideways)

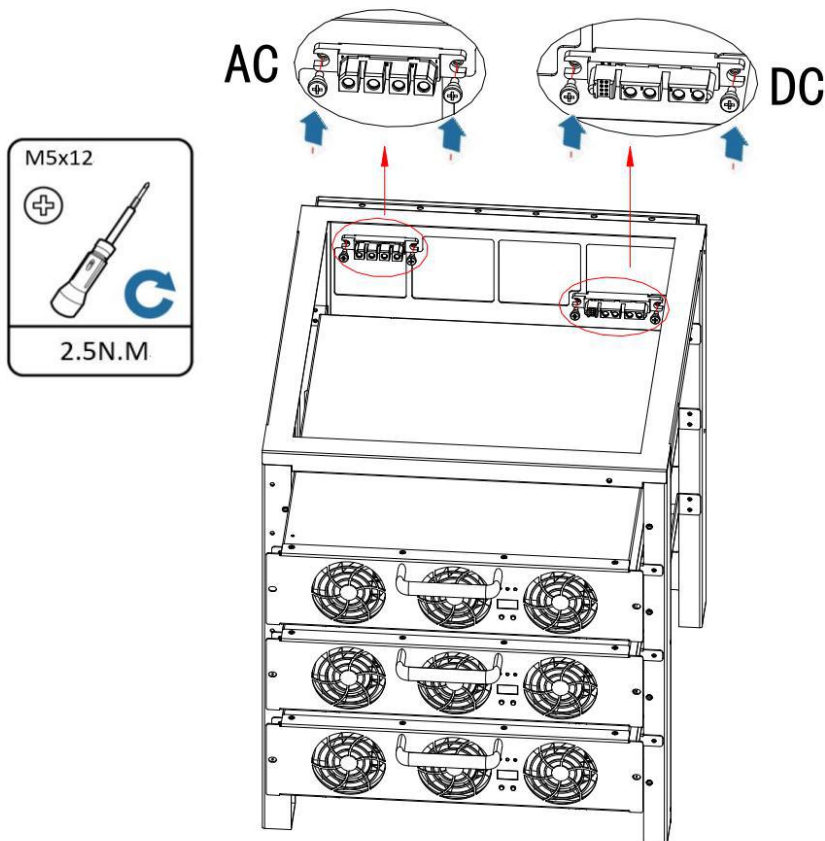


Figure 3-2 System terminals Installation diagram (modules placed flat)

- After the module is assembled on Charger, the module terminal is required to be in close contact with the system terminal without gaps. Ensure that the system terminals and module terminals are connected reliably, as shown in Figure 3-3 and Figure 3-4.

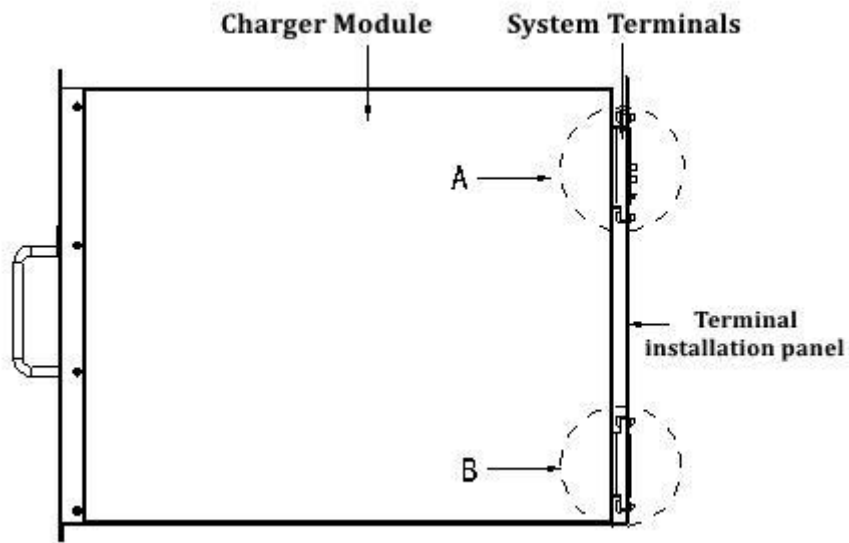


Figure 3-3 System terminal and module terminal insertion diagram

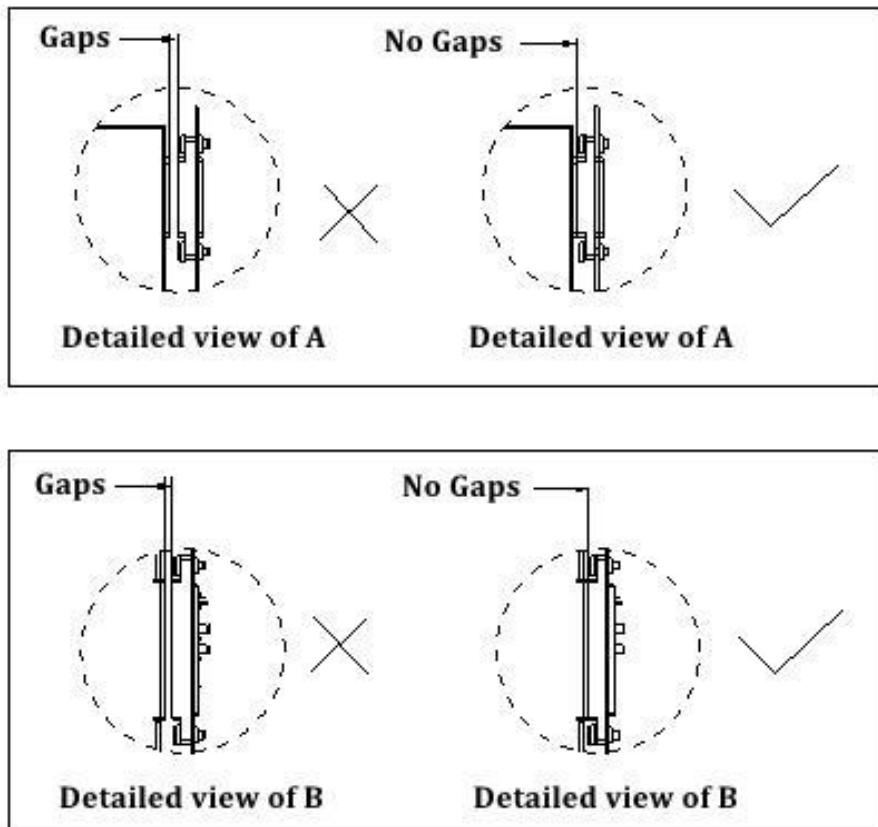


Figure 3-4 Module terminal and system terminal assembly instruction diagram

3.2.2 Fan unit Air flow direction

The charging module is equipped with an internal fan unit for active cooling of the power devices inside the device. Cooling requires a flow rate of 190 m³/h per charging module. Ambient air for air cooling enters from the front of the device and flows out from the rear, as shown in Figure 3-5.

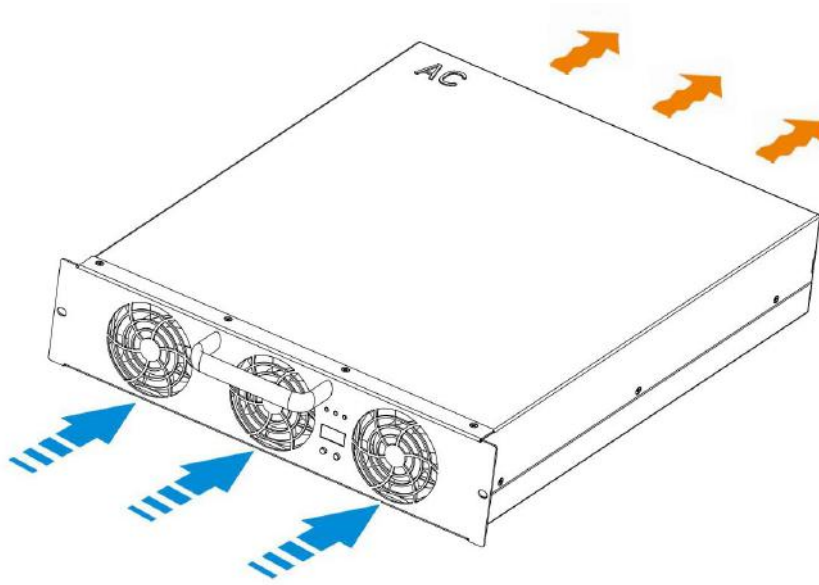


Figure 3-5 Fan unit air flow direction

3.2.3 Charging Module Installation

- Grasp the handle of the charging module with one hand, hold the charging module with the other hand, insert the charging module into the corresponding position of the cabinet, and slowly push the charging module into the slot completely;
- Install (tighten) the two fixing screws to the upper and lower holes of the charging module panel respectively, and fix it on the cabinet;
- Following the above steps, according to the slot position of the charger, install the charging module into the cabinet in sequence from left to right or from top to bottom, as shown in Figure 3-6 and Figure 3-7;
- Turn on charging module AC input circuit breaker;
- Check whether the controller can identify the newly replaced charging module and whether the new charging module can share current with other charging modules. If all items are normal, it indicates that the operation is normal, and the installation is completed.

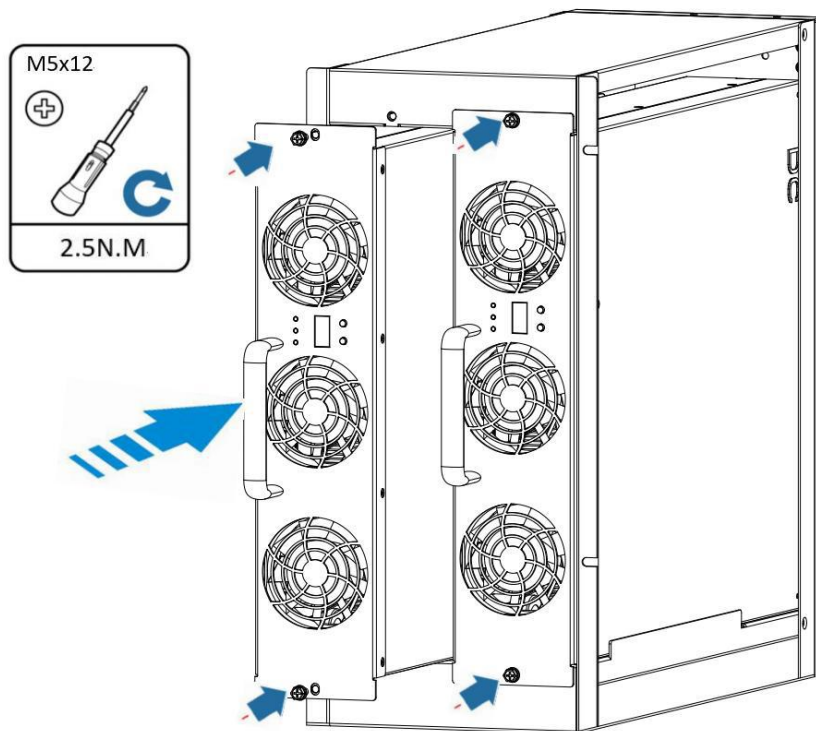


Figure 3-6 Module Installation diagram
(modules placed sideways)

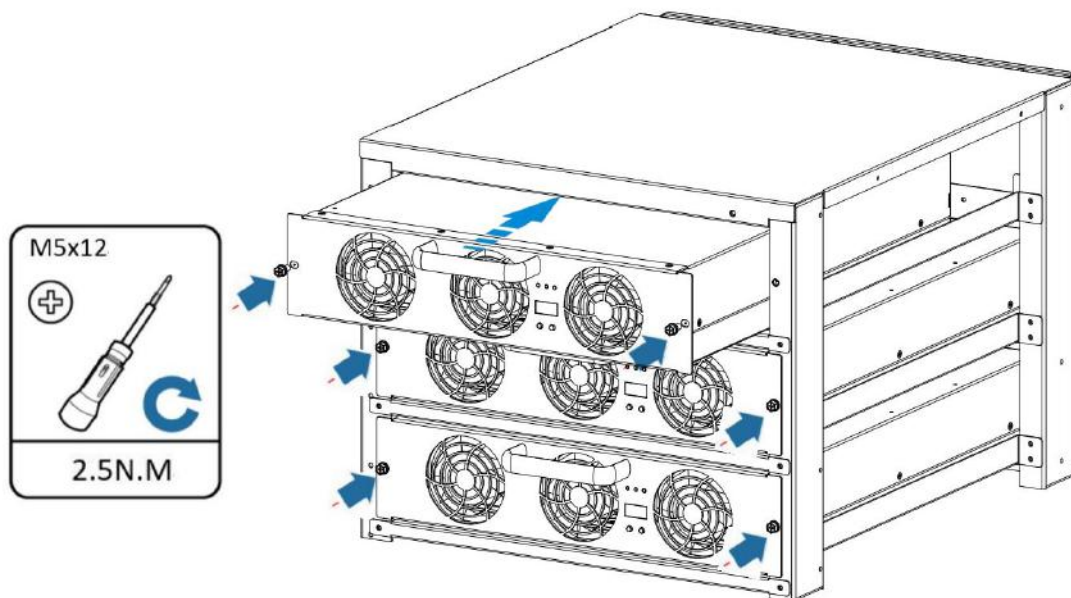


Figure 3-7 Module Installation diagram
(modules placed flat)

3.3 Use

After the charger module is installed in the system cabinet, the system can operate after power up.

3.3.1 Operating environment:

- Overvoltage/installation category: Overvoltage category II.
- Environmental requirements: Pollution level II.

The charging module is installed and used on charging equipment (charger (pile) or charging pile, hereinafter referred to as charging equipment). The charging equipment should meet the environmental protection requirements in chapters 7.3, 8.3, and 8.4 of the standard NB/T33001-2018, and NB/T33008.1-2018 Medium environmental protection, etc.

Level requirements: the protection level for outdoor applications must reach IP54 or above, and the protection level for indoor applications must reach IP30 or above.

Avoid applications in marine environments, outdoor land close to pollution sources, and environments with only simple shelters. If it needs to be used in such environments, the protection level of the charging equipment must reach IP65. Otherwise, it may easily lead to product failure due to the application environment not meeting the requirements. Abnormal product functions or damaged parts are not covered by the product warranty.

Pollution sources are areas within the following radius:

I. 3700m away from areas with high salt content in salt water/air (such as oceans and salt plants).

II. 3000m away from heavy pollution sources such as metallurgy, coal, mining, and thermal power plants.

III. 2000m away from medium pollution sources such as chemical industry, rubber, electroplating and so on.

IV. 1000m away from light pollution sources such as food, leather, and heating boilers.

Avoid applications in environments where there are corrosive and insulation-damaging substances around. If used in such an environment, the protection level of the charging equipment must reach IP65. Otherwise, it may easily lead to product failure and product malfunction due to the application environment not meeting the requirements. Or parts are damaged and are not covered by the product warranty.

- Altitude: $\leq 2000\text{m}$ without derating, $>1000\text{m}$, it needs to set the actual altitude value, the working temperature will decrease by 1°C for every 100m rise.
- AC input distribution system: TN or TT System

3.3.2 System exhaust air volume and fan selections requirement:

(1) Calculation of system air volume, there are two methods for system air volume calculation:

Method 1: Calculate according to the total loss of the system

Calculate according to the thermal formula, according to the formula: $V=Q/(CP*\rho*\Delta T)$, CP is the specific heat of the air at the current temperature $\{\text{kJ}/(\text{kg}*\text{K})\}$, and ρ is the air density at the current temperature (kg / m^3) , The current temperature is the average temperature of the incoming and outgoing wind, the temperature difference between the inlet and outlet of the ΔT system (generally 18°C is selected for outdoor cabinets), and Q is the total loss of the system (in kw) (the Q value in areas with strong sunlight also needs to be added with solar radiation). The formula can calculate the system air volume V (m^3/s).

Method 2: Calculate according to the air volume of the module

The air volume of a single module as follows:

The maximum air output of the MXR100040B module is 190CFM ($0.0897 \text{ m}^3 / \text{s}$), then the system air volume $V=n*v$, n is the quantity of system modules, and v is the air volume of a single module.

(2) System fan selection

The system fan selection is determined according to the system air volume V. Its parameters are mainly the maximum air volume and air pressure of the fan. Under the premise that the fan air

pressure matches the system impedance, the maximum air volume of the system fan is equal to 1.5 to 2 times the system air volume, namely $(1.5\sim 2)*V$, if the wind pressure of the fan is high and the system impedance is small, it can be close to 1.5 times; if the wind pressure of the fan is low and the system impedance is large, it can be doubled or even greater than 2 times.

Under normal circumstances, the fan's air pressure is not less than 200Pa, and it can be calculated by 2 times.

3.3.3 Using suggestions for modules installation

The charging module is used in the charger system. The temperature difference ΔT between the module air inlet and the air outlet (including the air inlet and outlet of the charger body) is recommended to not exceed 30°C. The specific test points are shown in the following figure 3-8:

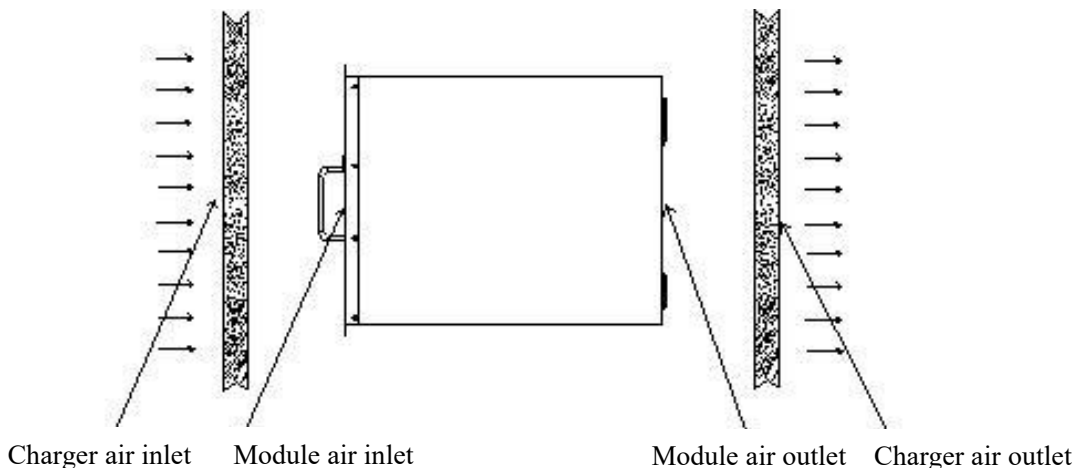


Figure 3-8 Air Inlet and outlet diagram

3.3.4 Recommended air inlet and outlet distance

- The distance between the cabinet dust-proof net and the front panel of the charging module is more than 50mm;
- The distance between the rear end of the charging module and the cooling fan is more than 100mm, and the terminal cable on the system side needs to be bent when installing (a certain distance is required, otherwise the cable will touch the fan), as shown in Figure 3-9.

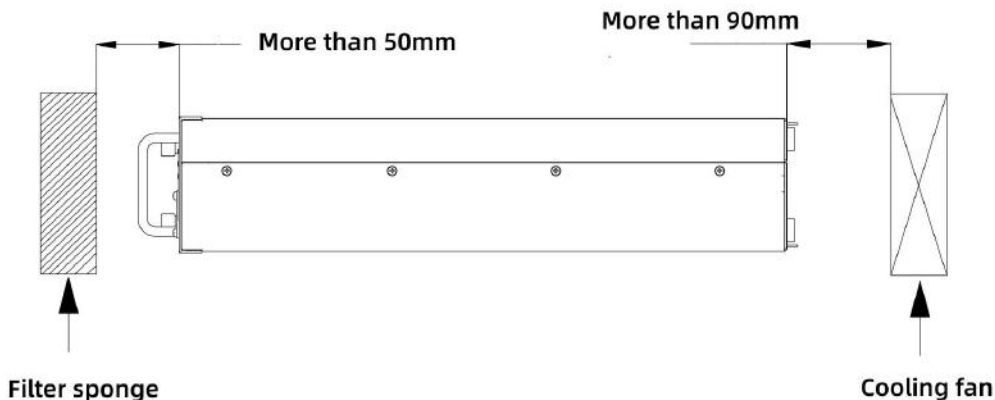


Figure 3-9 Air inlet and outlet distance diagram

3.3.5 Cabling suggestions in the system cabinet

- The power wiring in the cabinet is separated from the CAN communication wiring to avoid mutual space coupling interference;
- The AC incoming line/DC outgoing line of the charging module inside the system should be fixed on the socket frames on both sides, and the air inlet and outlet channels of the module should not be blocked (as shown in Figure 3-10 and Figure 3-11):

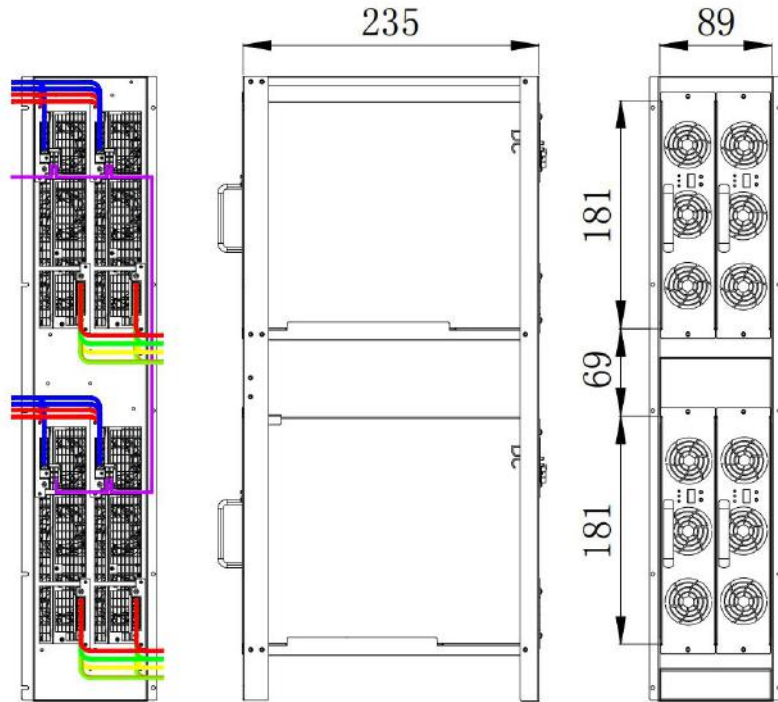


Figure 3-10 Module system wiring diagram (modules placed sideways)

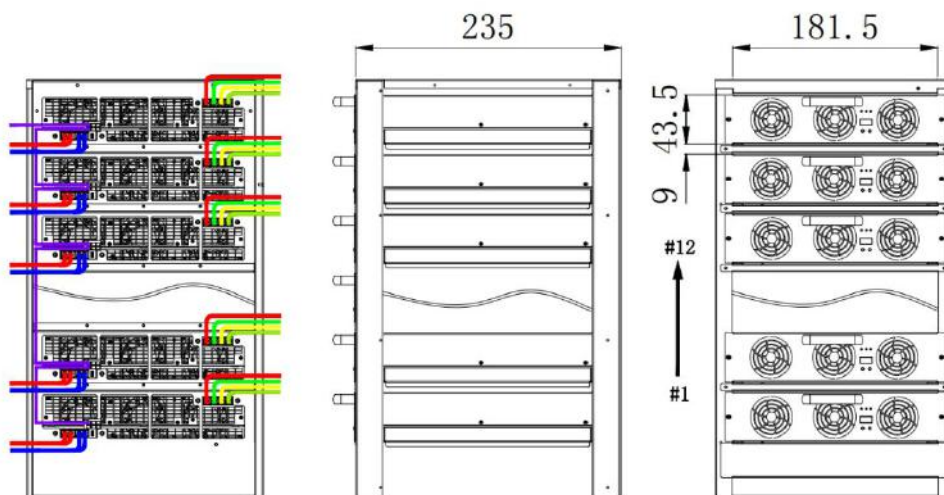


Figure 3-11 Module system wiring diagram (modules placed flat)

- Module AC input power cable, DC output power cable:
AC input power cable: the three phases are red, green, and yellow, and PE is yellow-green (this color is the default color, and the color may vary according to the requirements of different countries/regions), as shown in Figure 4-1 ;
DC output power cable: the red of the DC output power cable is positive (1-2 pin interface), and the black is negative (3-4 pin interface), as shown in Figure 4-2;
- To install the AC input/DC output terminals on the system side in the system subrack, you must use the screws that match the terminals to ensure that there is enough tolerance and floating margin during fastening. The screws are provided together with the matching cables or terminal packages;
- The CAN bus needs to adopt the bus connection method, and a 120Ω resistor needs to be added at both ends of the front and back. The resistance of the CAN bus is 60Ω, and the front side can be placed inside the monitor(controller), as shown in Figure 3-12

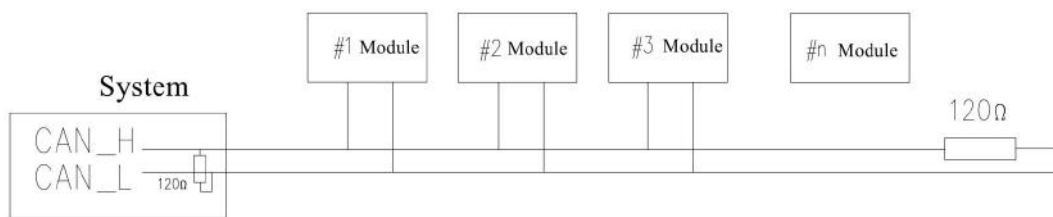


Figure 3-12 System communication wiring connection diagram

- The CAN communication wire on the DC output cable is CAN_L in white and CAN_H in black, as shown in Figure 4-3.

Chapter 4 Module Wiring Harness And Sockets

4.1 Input/Output power cable and communication cable

4.1.1 Input power cable

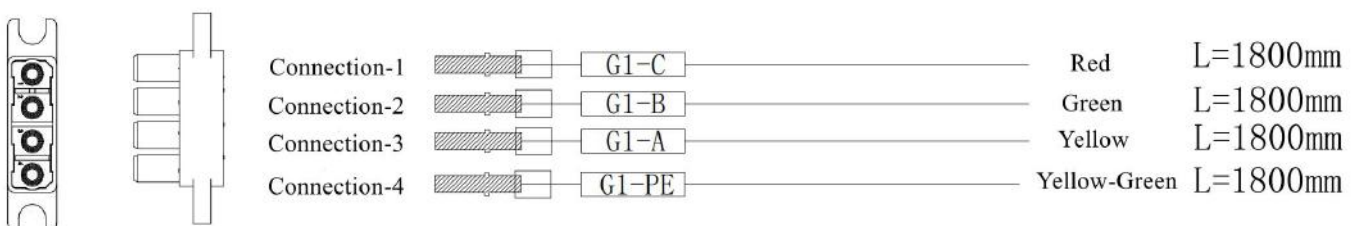


Figure 4-1 AC Input Power Cable

4.1.2 Ouput power cable

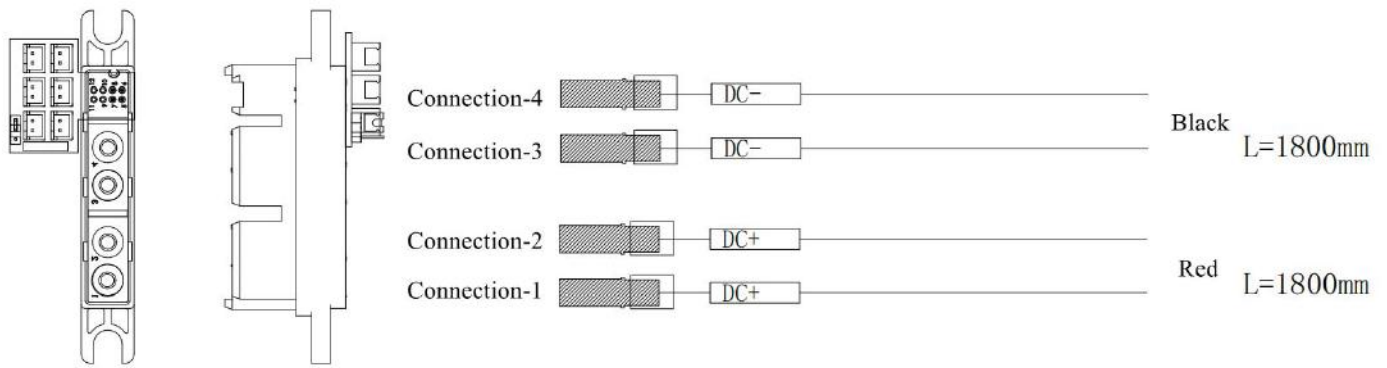


Figure 4-2 DC Onput Power Cable

4.1.3 Black and white twisted communication cable

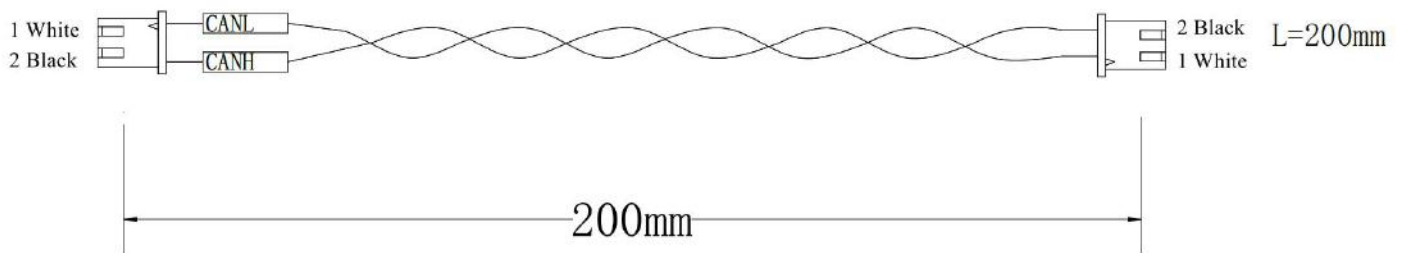


Figure 4-3 Communication Cable

Note: Input/Output Power Cable can be customized according to customer's requirements.

4.2 Matching terminals package

The terminal package belongs to the matching delivery materials of the module, including input and output connectors, wiring harness power terminals, adapter boards, mounting screws and other materials as follows:

4.2.1 Input Connector

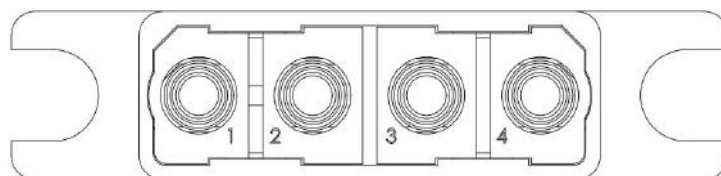


Figure 4-4 Input connector

Table 4-1 Input connector definition

Terminal	Item	Function
1	L3	AC Input
2	L2	AC Input
3	L1	AC Input
4	PE	Connect the system ground terminal

4.2.2 Output Connector

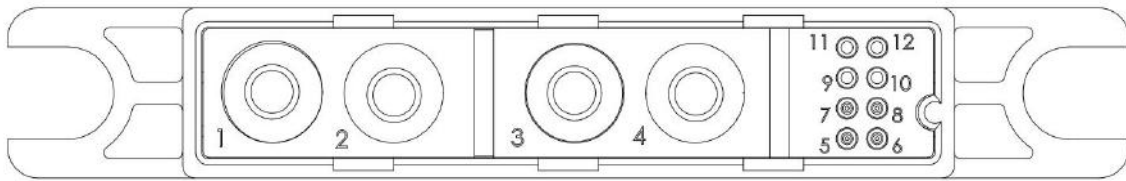


Figure 4-5 Output connector

Table 4-2 Output connector definition

Terminal	Item	Function
1-2	Positive	Connect output positive
3-4	Negative	Connect output negative
5	CAN-H	Connect CAN-H
6	CAN-L	Connect CAN-L

4.2.3 Output Adapter Board

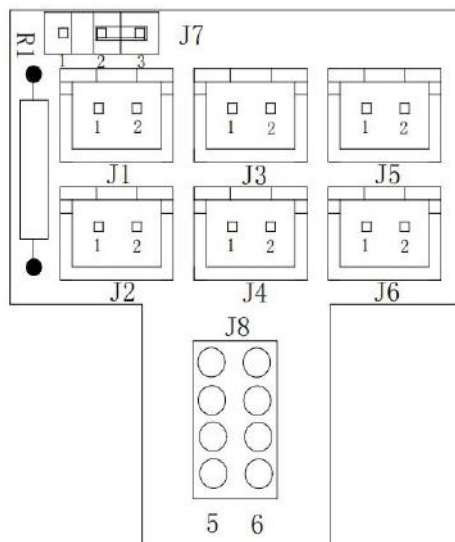


Figure 4-6 Output adapter board

Table 4-3 Output adapter board definition

Terminal	Item	Function
J1-1/J2-1	CAN-L	Connect CAN-L
J1-2/J2-2	CAN-H	Connect CAN-H
J3-1/J4-1	NC	Reserved
J3-2/J4-2	NC	Reserved
J5-J6	NC	Reserved
J7	Short-Circuit Caps	Short connect pin 1 and pin 2 to access 120Ω matching resistor for CAN communication bus, and pin 3 is empty pin NC.

4.2.4 Mounting screws

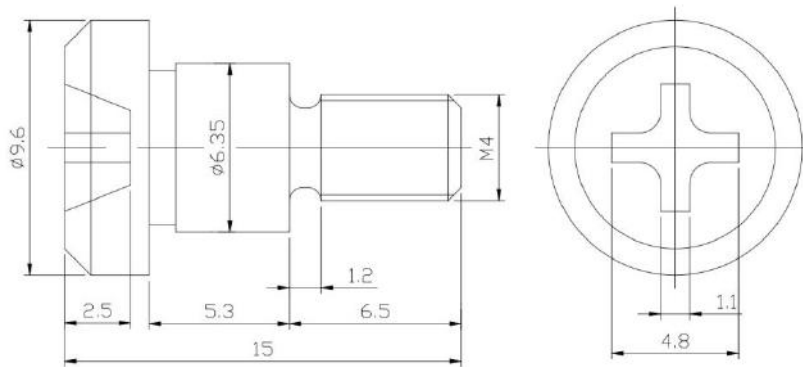


Figure 4-7 Mounting screws dimension (mm)

4.2.5 Wiring Harness Power Terminals

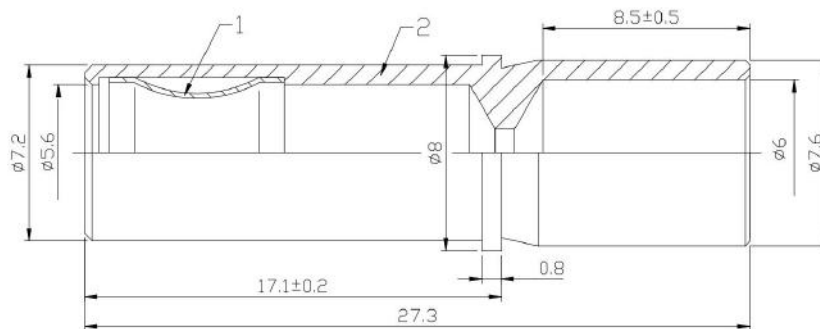


Figure 4-8 Wiring Harness Power Terminal dimension (mm)

The above 5 materials are terminal package accessories. If you need to assemble a complete set of power cables, please refer to Table 4-4 Cable Requirements for wire selection.

Table 4-4 Output cable requirements

Power Cable	Advised specification
DC Output power cable	Withstand voltage 1000Vdc, working temperature -40°C-90°C, conductor cross section 16mm ² flame retardant cable (such as UL1032-6AWG cable)
AC Input power cable	Withstand voltage 600Vac, working temperature -40°C-105°C, conductor cross section 16mm ² flame retardant cable (such as UL1015-6AWG cable)
CAN Communication	Withstand voltage 300Vdc, working temperature -40°C-80°C, conductor cross-sectional area 0.12810mm ² (such as UL1007-24AWG cable)

Chapter 5 Maintenance Guide

5.1 Troubleshooting and handling suggestions

Chart 3-1 Troubleshooting Instructions

Indicator	Description	Analysis	Solution
Run Indicator (Green) off	None	No input voltage	Check the AC input power supply
		Module fault and no power to module	The module is damaged, please contact to manufacture.
Alarm Indicator (Yellow) Steady On	AC Input fault Fault code: E01	AC input voltage is out of normal range	<ul style="list-style-type: none"> ● Make sure the AC input voltage is within module normal input voltage range. ● Check the three-phase input cable for looseness or poor contact
	Environment over temperature protection Fault code: E08	Ambient temperature is too high	Open the air inlet and outlet of the system (Charger body) for ventilation and heat dissipation, check whether the air inlet and outlet are blocked in the use environment, and whether the exhaust air volume of the system meets the requirements.
	Duplicated Address Fault code: E10	Duplicated module address	Observe the address page in the duplicated address module panel, and modify the duplicated address through the panel buttons
Alarm Indicator (Yellow) Blinking	The communication between the module and the upper computer is interrupted	Communication interrupted	<ul style="list-style-type: none"> ● Check communication cable connection ● Check whether there are 120Ω matching resistors connected to both ends of the CAN bus, and power off to measure the resistance of the CAN bus, and the normal value is 60Ω ● If the above two points are normal, then use the CAN analyzer to read the CAN bus message to confirm whether the communication protocol between the system and the module is consistent.
Alarm Indicator (Red) Steady on	Output Over-voltage Fault code: E02	Module output voltage exceeds the output overvoltage setting value	Power off the charging module, check whether the module output overvoltage value has been changed before, confirm that the output voltage of the module delivered is lower than the module output overvoltage setting value, and then restart it. If the fault protection continues, please contact the manufacture.
	Output Short-Circuit Fault code: E05	Module output positive and negative short circuit	Power off the charging module, check whether the positive and negative poles on the output line are short-circuited, and restart after confirming that there is no short-circuit. If the fault protection continues to occur, please contact the manufacturer.
	Fan Fault Fault code: E06	Fan failure	Loose fan cable/fan failure, please contact to Manufacture.

	Discharge Fault Fault code: E07	Discharge fault	Please contact to manufacture.
	Module inside overheating Fault code: E04	Poor air duct	Remove the obstructions from the air inlet/outlet or clean up the accumulated dust.
	Module inside Primary and secondary sides communication interruption Fault code: E09	Communication fault	Check whether the communication of the charging module is normal, and check whether the connection of the communication cable is normal; if the communication is normal but the system is still abnormal, please contact the manufacturer.
	Unrecoverable No-output crash Fault code: E03	Module damaged	Please contact to manufacture.

5.2 Module replacement

After the charging module fault, please replace it as follows:

- Note: After the charging module has been running for a period of time, the shell surface temperature may be very high. When disassembling, please hold the handle firmly and take it out, try not to touch the shell to prevent burns;
- Disconnect the faulty module AC input circuit breaker, and remove the two upper and lower fixing screws on the panel, as shown in Figure 5-1 and Figure 5-2.
- Grasp the faulty module handle and slowly pull it out of the cabinet.
- Grasp the module handle with one hand, hold the module with the other hand, and slowly push the new module into the cabinet to a fixed position.
- Install the two fixing screws to the upper and lower holes of the module panel respectively to fix module.
- Turn on charging module AC input circuit breaker;
- Check whether the monitor(controller) can identify the newly replaced charging module and whether the new charging module can share current with other charging modules. If all items are normal, it indicates that the operation is normal, and the replacing is completed.

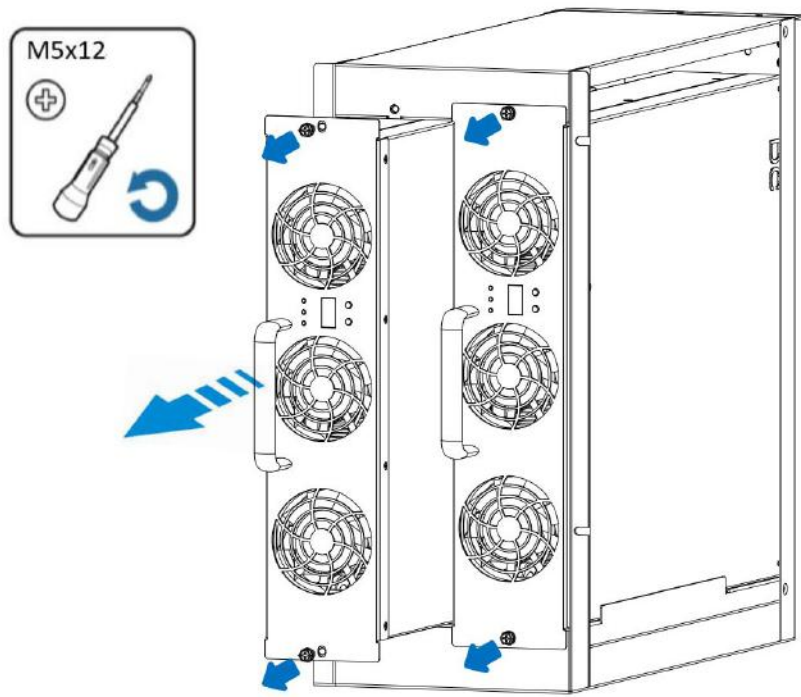


Figure 5-1 Module taking out diagram
(modules placed sideways)

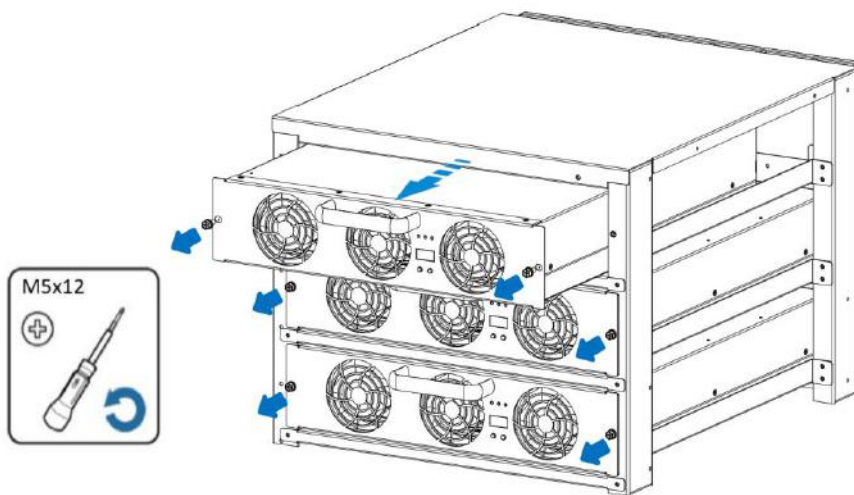


Figure 5-2 Module taking out diagram
(modules placed flat)

Appendix I Toxic and Harmful Substance or Elements Identification

Component	Toxic and harmful substances or elements					
	Lead	Mercury	Cadmium	Hexavalent Chromium	Polybrominated Biphenyl	Polybrominated Diphenyl Ethers
	Pb	Hg	Cd	Cr6+	PBB	PBDE
Fan	X	O	O	O	O	O
Manufactured board	X	O	O	O	O	O
Metals	X	O	O	O	O	O
<p>O: Indicates that the content of the toxic and hazardous substance in all homogeneous materials of the part is below the limit requirement specified in SJ/T 11363—2006.</p> <p>X: Indicates that the content of the toxic or hazardous substance contained in at least one of the homogeneous materials of the part exceeds the limit requirement of SJ/T 11363—2006.</p>						
<p>Explanation on the environmentally friendly use period: The environmentally friendly use period of this product (marked on the product body) refers to the toxic and harmful substances contained in this product from the date of production under normal conditions of use and compliance with the safety precautions of this product. The period during which a substance or element will not cause serious effects on the environment, people and property.</p>						
<p>Scope of application: MXR series charging module.</p>						