Multi-charge Manager

User Manual

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1 About the user manual

1.1 Manual description

Dear user, thank you very much for using the Multi-charge Manager by Shenzhen ATESS Power Technology Co., Ltd. (hereinafter referred to as "ATESS Power Technology").We sincerely hope that this product will meet your needs and expect you give more opinions on the performance and function of the product. The purpose of this manual is to provide users with detailed product information and instructions for installation, operation and maintenance.

1.2 Copyright statement

This user manual is copyrighted by Shenzhen ATESS Power Technology Co., Ltd. (hereinafter referred to as "ATESS Power Technology"). No unit or individual may extract or copy part or all of this user manual without the written permission of the company. Content must not be transmitted in any form, including materials and publications.

1.3 Applicable personnel

This manual is intended for professional technicians who install, commission, and maintain Multi-charge Manager and those who perform daily operations. If necessary, refer to ATESS's corresponding user manual or instruction.

1.4 Manual usage

Please read this manual carefully before using Multi-charge Manager. At the same time, please keep this manual in a safe place so that operators and maintenance personnel can find out. The contents of the manual will be continuously updated and corrected. It is inevitable that there will be slight inaccuracies and errors in the actual contents. User should refer to the actual product purchased. The latest user manual can be downloaded from can also be obtained through ATESS's sales or service channels.

Introduction and installation 2

2.1 The product overview

2.1.1 Appearance

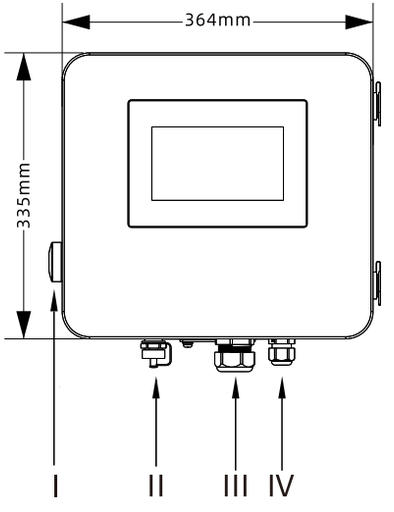


Figure 2-1 Appearance(Unit: mm)

Number	Description
I	WIFI/4G antenna
II	LAN interface
III	Rs485 interface、CT Port、Voltage sampling interface
IV	INPUT

2.1.2 Internal structure

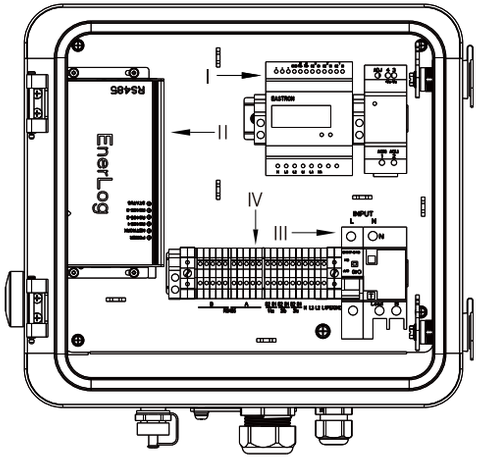


Figure 2-2 Internal structure diagram

Number	Description
I	Meter
II	Enerlog
III	Breaker
IV	Terminal block

The Multi-charge Manager is mainly composed of Enerlog, electricity meter, power supply, breaker and terminal block. The functions of each part are as follows:

1.Enerlog:control core, data communication with charger and electric meter, realize charger power adjustment function and remote monitoring function.

2.Electricity meter: Real-time monitoring of voltage, current, power and other parameters

3.Power supply: Power supply for Enerlog and Meter.

4.Breaker: control the start and shutdown of the electricity meter and power supply.

5.Terminal block: The place where the user wiring.

2.1.2.1 Enerlog Status LED

There are 6 Enerlog status LEDs, which can be used to display the running status of Enerlog.

Number	Name	Description
I	Power	Power indicator light, constant on means power supply is normal.
II	Network	Network light: 1.Off means fail to obtain IP address; 2.Flashing means connecting to the server; 3.On means connection to the server successfully.
III	RS485-1	Flicker Count: Indicates the number of devices connected to and communicating properly.
IV	RS485-2	“On” means connection to the LCD.
V	RS485-3	“On” means connection to the meter.
VI	Status	The running indicator of the system light blinks every 300ms.

2.1.2.2 Meter panel

Figure 2-3 Meter panel

The panel of the meter can display various power parameters: voltage, current, active energy, active power, power factor, and so on. The display interface and setting parameters can be switched through the 4 buttons on the right side of the panel. For details, see section 3.1.

2.1.2.3 Breaker

When the switch is shipped from the factory, it is in the OFF state of the lower dial. After the customer connects all the wires of the Smart Energy Manager, turn the circuit breaker up, so that the circuit breaker is in the ON state, and the meter and Multi-charge Manager will start normally.

2.1.2.4 Terminal block

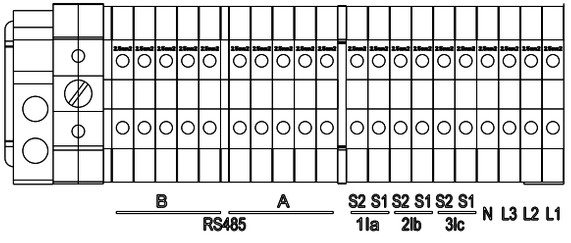
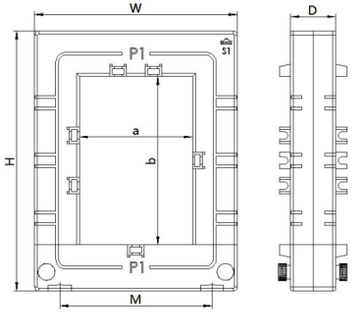


Figure 2-4 Terminal block

The terminal block has a total of 21 wiring ports, from left to right: RS485 interface (PE/GND, 485B, 485A), current transformer interface [1Ia(S1/S2),2Ib(S1/S2), 3Ic (S1/S2)], voltage sampling interface(N, L3, L2, L1).

2.1.2.5 Current transformer

Multi-charge Manager with different system capacity will deliver different type of split current transformers for detecting the current of the grid connected access points in low voltage distribution system. The specifications are as follows:



System capacity	690kW
Current ratio	1000A/5A
Precision degree	0.5
Through the number of turns	1
Outline size (mm) W*H*D*M	144*185*32*108
Through size (mm) a*b	80.5*120

Note:

1. The total power of the charger or the total power of the load in the whole system cannot exceed the system capacity corresponding to the Multi-charge Manager .
2. Under any conditions, the current flowing through the primary side of the current transformer(CT) must not exceed its maximum detection range.
3. The current transformer should not be operated in a high humidity environment.
4. The longest connection distance of the attached CT is 2.5m.

2.2 Operating principle

The Multi-charge Manager works as follows:
1. The grid passes through the charging posts to charge the electric vehicles.
2. When a charging station installs a large number of charging piles, and the load of distribution network fails to meet the requirement that all charging piles at the station work at full power at the same time, intelligent energy management equipment is needed to adjust and control the output power of charging piles so that the electric power used does not exceed the total power of distribution.

Charging station power limit diagram:

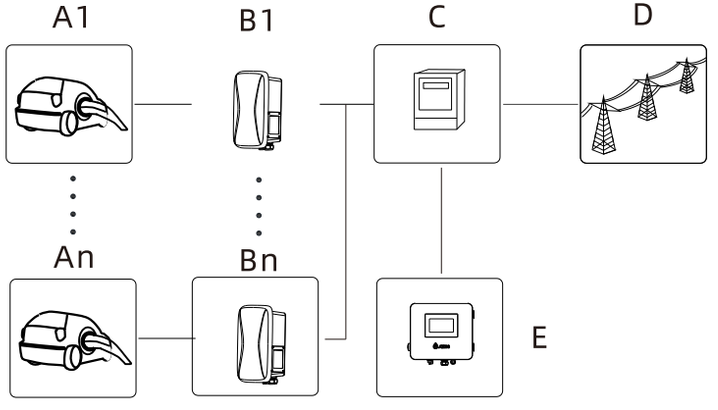


Figure 2-5 Charging station power limit diagram

Symbol	Description	Symbol	Description
A	Vehicle	B	Charger
C	Distribution box	D	Grid
E	Multi-charge Manager		

2.3 Unpacking

Number	Description	Quantity
1	Multi-charge Manager	1
2	CT	3
3	Expansion pipe	5
4	Self-Tapping Screw	5
5	Key	2

2.4 Installation

Refer to the distance between the two wall-hanging holes in the figure below and make five holes in the wall. Insert the plastic expansion tube and lock the self-tapping screw on the plastic expansion tube. Fix the Multi-charge Manager on the wall and complete the installation.

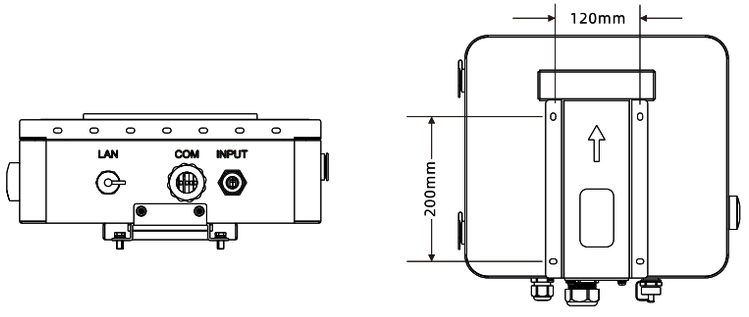


Figure 2-6 Wall-mounting holes(unit: mm)

Note: This product provides a special key for locking the upper cover, and the customer can operate according to the actual situation.

2.5 Wiring instructions

Remove the screws of the front cover, and you can see mark of wiring labels on the bottom. Do the wiring according to figure 2-7.

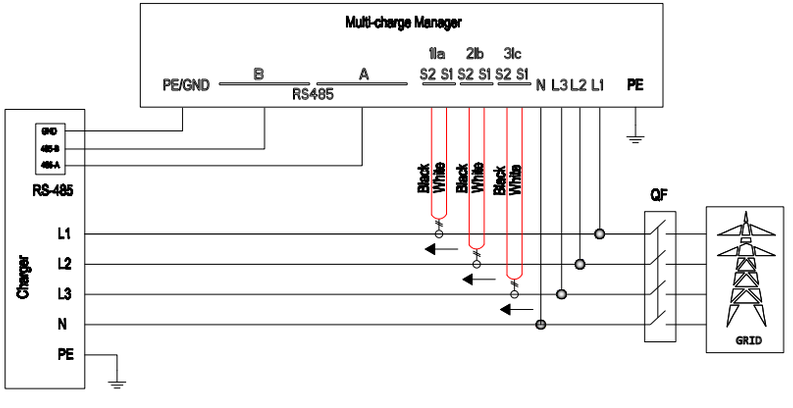


Figure 2-7 Wiring diagram of system

1. Overall wiring

As shown in the figure above, three current transformers and AC voltage sampling lines need to be placed between the load and the grid to detect the power of the grid access point in real time. The Multi-charge Manager is recommended to be installed near the power distribution cabinet and place the CT and AC voltage sampling lines in the power distribution cabinet.

2. RS485 interface

The RS485 interface of the Multi-charge Manager is used to connect the RS485 interface of the charger. The wiring mode of multiple charger can refer to the following figure. The note are as follows:

(1)It is recommended to use shielded twisted pair cable for RS485 wire. The shielding layer is connected to the PE/GND pin of RS485 interface of Multi-charge Manager and charger.

(2)The charger can be connected to a maximum of 32 units, and the reference wiring diagram is wired in a daisy-chain topology.

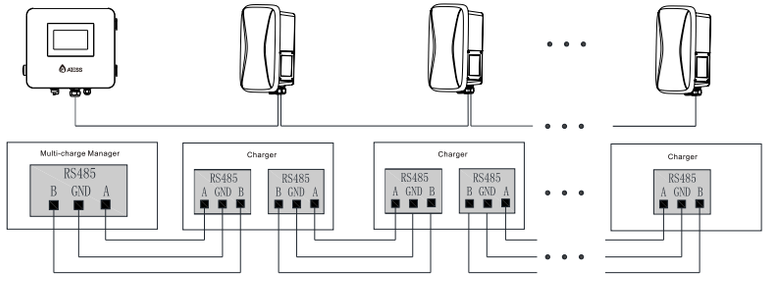


Figure 2-8 RS485 wiring diagram

3. Current transformer interface

There are arrow silk screens on side of the current transformer to distinguish the direction. Refer to Figure 2-7 for wiring. The arrow points in the direction of current outflow:

(1)White line of current transformer 1(CT1) on distribution box L1 is connected to Multi-charge Manager 1la-S1,and black line is connected to 1la-S2.

(2)White line of current transformer 2(CT2) on distribution box L2 is connected to Multi-charge Manager 2lb-S1,and black line is connected to 2lb-S2.

(3)White line of current transformer 3(CT3) on distribution box L3 is connected to Multi-charge Manager 3lc-S1,and black line is connected to 3lc-S2.

Note:

(1)Before the current transformer is installed, it must be connected to the Multi-charge Manager to ensure that there is no open circuit on the secondary side of the transformer.

(2)If the primary busbar on the site is a cable, it can be installed by the professional electricians. If the busbar is a copper busbar, the electrification operation requires a high degree of proficiency for the operator and requires installation protection measures.

(3)When installing the current transformer, no foreign matter such as impurities or dust may fall into the cut surface of the core to avoid affecting the performance of the transformer.

(4)During system configuration, A 120 ohm resistor should be connected between 485-A and 458-B at the end of the 485 bus in the system to match the impedance of the 485 bus.

(5)For example, if using a 100/5A current transformer you will enter 0020, as you need to divide the primary by the secondary to get the ratio (CT rate).

* Please note for the MID approved version device, you will only have one opportunity to set the CT rate.

4. Voltage sampling interface

Refer to Figure 2-7 to connect the voltage sampling line. According to the three-phase four-wires connection mode, L1/L2/L3/N must be connected, otherwise the Smart Energy Manager will not work properly.

5. The single-phase AC power supply needs to be connected to the input end of the leakage switch.

6. RJ45 network cable interface

Pull a network cable from a router with a network and plug it directly into the RJ45 port of the Smart Energy Manager. This interface is used for remote monitoring. For details, see Chapter 5.

7. Ground terminal

In order to ensure the reliable operation and personal safety of the Smart Energy Manager, the grounding terminal on the outer casing must be reliably grounded.

Note: The ground terminal should be waterproof.

2.6 Cable specification

Cable location	Cable cross-sectional area(mm^2)	
	Range	Recommended value
Power wiring	1~2.5(16~14AWG)	2.5(14AWG)
Current transformer	1~2.5(16~14AWG)	2.5(14AWG)
Voltage sampling wiring	1~2.5(16~14AWG)	1(16AWG)
Ground wire	2.5~4(14~12AWG)	4(12AWG)

3 Operation

3.1 Meter operation

3.1.1 Displayed function

There are four buttons on the right of the monitor, they are "ESC (←) V/A" Hz", "↓ (Shift) P" and "ENTER (→) E" from top to bottom. There are two ways to touch the button, long press(press more than two seconds) and short press(press for less than one second).

NO.	Button	Feature	Viewable content(Short press)
1		Short press: display voltage and current,← Long press: ESC	Phase voltage, line voltage, phase current, neutral current, voltage harmonics, current harmonics.
2		Short press: display power factor and frequency,↑ Long press: Alt	Phase (total) frequency, total power factor, phase (total) maximum current demand, In Set up Mode, this is the "Up" button.
3		Short press: display power,↓ Long press: Shift	Phase (total) active power, phase (total) reactive power, phase (total) apparent power, In Set up Mode, this is the "Down" button.
4		Short press: display energy,→ Long press: Enter	Total active power, total reactive power, forward active power, reverse active power, forward reactive power, reverse reactive power, In Set up Mode, this is the the "Enter" or "Right" button.

3.1.2 Programming operation

The default communication address of the meter is 001, the default baud rate is 9600 None and the default current ratio is 1000A/5A for 690KW system. If the meter and the Enerlog cannot communicate normally, please confirm whether the communication address and baud rate are set correctly. Enter the setting menu (default password is 1000) for long pressing  ,and then short press  and  to find the option that needs setting. If the corresponding setting option is flashing, you can set by short pressing  and  Otherwise, you need to short press  first. When finished, long press to confirm, then short press several times to exit the setting menu.

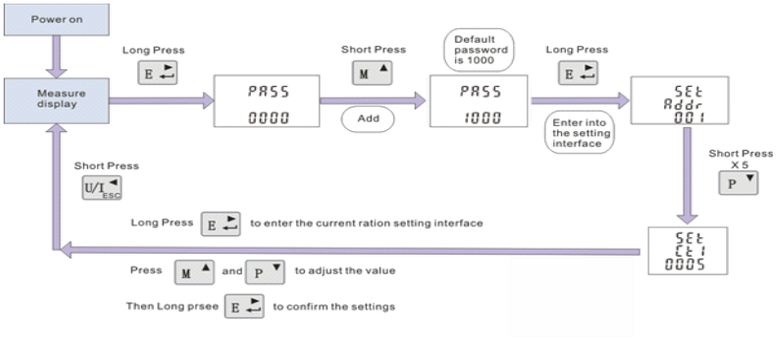
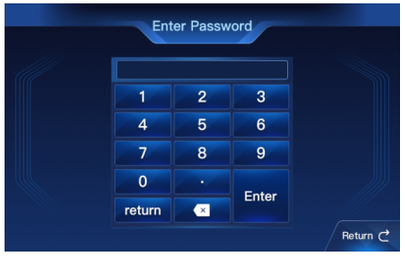
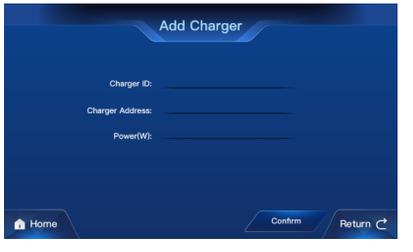


Figure 3-2 Setting examples for current ratio

4 About the user manual

Multi-charge Manager is equipped with a 7 inch industrial-grade resistor type touch panel. The display content is as below.

	The standby page displays the total power of current appliances and the maximum power supported by the grid .
	Parameters page.
	System parameters page Displays the SN number and software version of the machine, and can change the password.
	Password window. Before entering numeric, please first press the text display field to move the cursor there, then you can type in the 4-digit password. A wrong password will cause no response and action. Default:1234

	Display the different states of the charging pile added by the system (charging, idle, fault, disconnected).
	Display the information of the added charger: 1. Number of charging ports 2. Charging capacity, max current, max power, actual voltage, actual current, actual power, Energy, SN number, type (AC/DC) 3. Status:Idle/Prepare/ Charging/ Fault/ Reserved/ Finish/Off-Line
	Add Charge page Add the SN, address and power of the charging pile. Note: The SN and address of the charging pile added by the system must be unique. The address ranges from 1 to 255
	Network parameters page, used to set network related parameters of back-office server .

5 Specification

Multi-charge Manager	
System capacity / Specification	690KW
Input voltage data	
Normal input voltage / range	400VAC 320~480VAC
Normal input frequency / range	50/60Hz 45-55Hz/55-65Hz
AC grid connection type	3P/N/PE
Input current and CT data	
Maximum detection current (CT primary current)	1000A
Maximum input current (CT secondary current)	5A
Current detection accuracy (CT)	0.5
Interfaces	
RS485	Yes
Ethernet	Yes
Charger maximum connection number	32 PCS
Maximum communication distance	Rs485 shielded twisted pair cable : 500m Ethernet cable : 100m
General data	
Dimensions(W/H/D)	364*335*145mm
Weight	8KG
Operating temperature range	-20°C - +50°C
Protection degree	IP 65
Relative humidity	0~95%
Location	Outdoor
Altitude	2000m
Certification	
Safety	CE

Note:

The total power of the charger or the total power of the load in the whole system cannot exceed the system capacity corresponding to the Multi-charge Manager.

Contact us 6

ATESS provides customers with a full range of technical support. Users can contact the nearest ATESS office or customer service point, or they can contact the company's customer service center directly.

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