

GROWATT



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**Growatt THOR 20DS-P
DC EV Charging station
user manual**

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Thank you for choosing Growatt !

THOR series intelligent DC EV Charging station is a device that provides high-efficiency, safe and stable DC power supply for electric vehicles, which has a friendly man-machine interface and integrates corresponding functions of control, billing, communication and security protection. The mode charging equipment uses OCPP 1.6JSON open protocol for communication with back-office server, thus to realize functions such as reservation and network payment via mobile APP. Diversified communication options, including wired Ethernet, WIFI, 4G wireless, are provided for customers to conveniently connect the device to a charging network.

We sincerely hope that this product can meet your needs, and we welcome and value your feedback and suggestions on the performance and function of the product. We will continuously improve the quality of our products and services.

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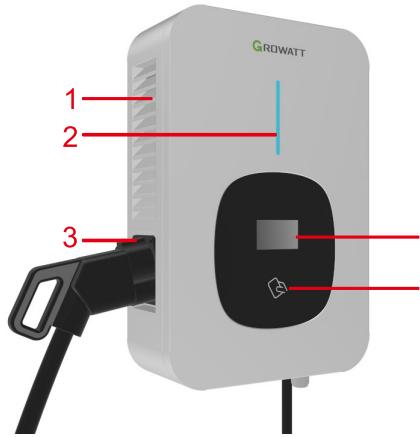
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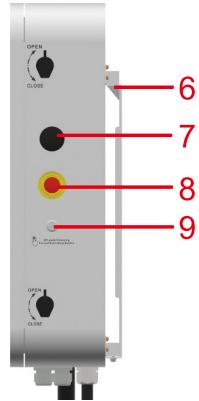
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1 Product Description

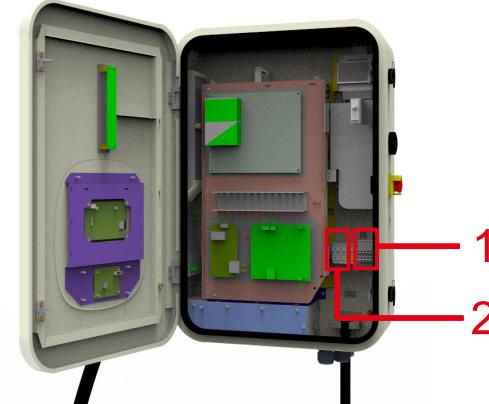
Internal view and terminal definition



- 1. Air intake;
- 2. LED indicator;
- 3. Charging connector
- 4. HMI;(opt)
- 5. RFID reader;



- 6. Mounting bracket;
- 7. WIFI/4G antenna;
- 8. Emergency stop button;
- 9. Start or stop button;



- 1. AC input terminal block. Terminal definition is (①PE;②L1;③L2; ④L3;) from left to right ;
- 2. Terminal block for CT/meter wiring. The terminal definition is:
485A/485B is RS485 terminal for meter connection;
Ia+/Ia- , Ib+/Ib- , Ic+/Ic- is for CT connection;

Explanation of LED indicators behaviors:

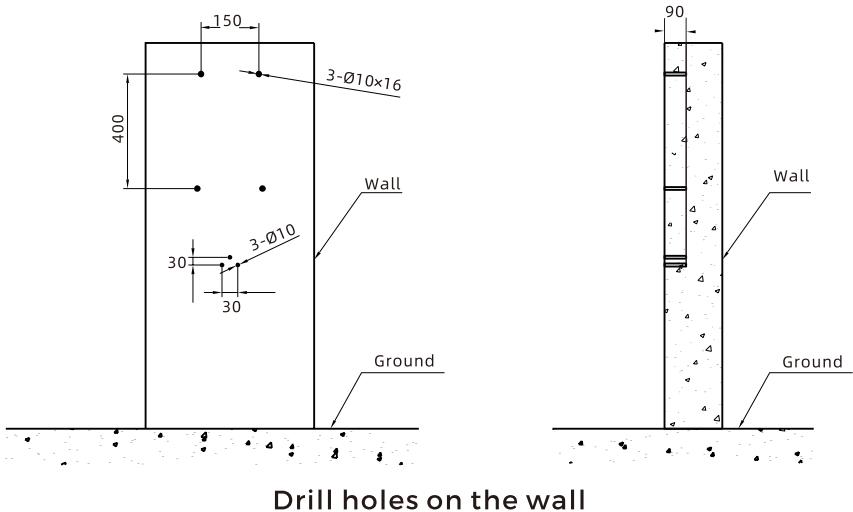
Blue- Standby(The charging equipment can only be used when the blue light lit);
Red Steady on/Flashing-Fault;
Green Steady on-Charging in process;
Green Flashing-Establishing communication;
Yellow Flashing-System initializing.

2 Packaging list

No.	Name	Qty	Remark
1	DC Charger	1	
2	User manual	1	
3	Quality certificate	1	
4	User card	1	
5	Mounting bracket	1	Already installed on the rear side of the charging equipment
6	Cable holder	1	
7	Hex head expansion bolt, M8*80/304 stainless steel	7	
8	L-shaped Anti-theft Wrench for Plum Blossom Stud Screws, Size M6	1	

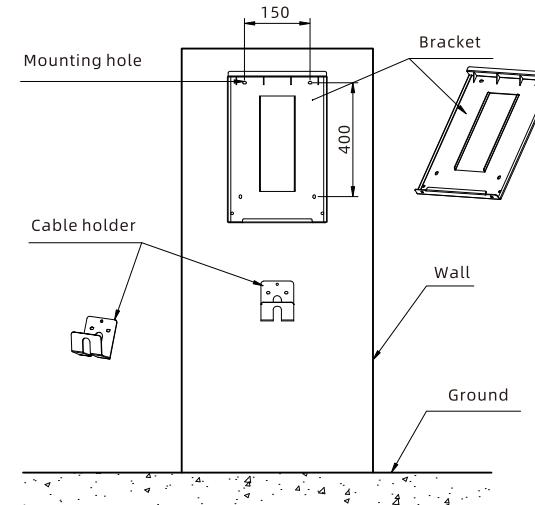
3 Installation and wiring

1. Firstly, according to the specific installation height requirement of the user, determine the installation height of the charging equipment and the installation height of the cable holder. According to the dimensions in the following drawings, drill 4 holes for bracket mounting and 3 holes for cable holder mounting on the wall. Take out the expansion bolts in the packing accessory bag, hammer the expansion bolts into the holes. Remove the nuts and washers for later use.



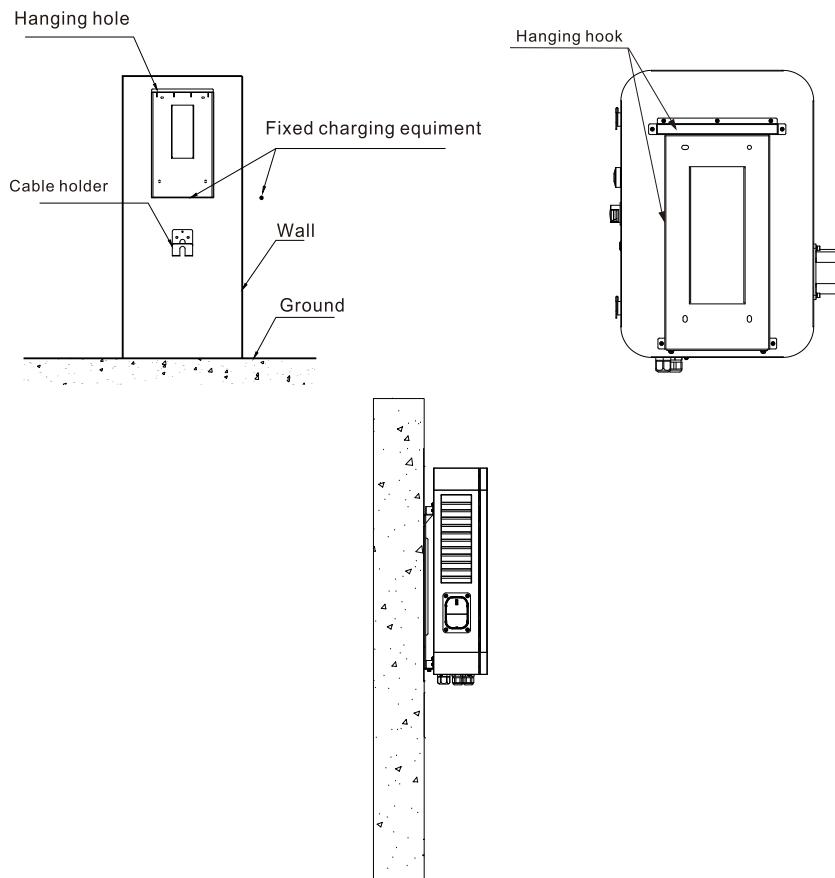
Drill holes on the wall

2. Loosen the 2 screws at the bottom of the charging equipment that fixes the mounting bracket, keep them properly for later use. Place the mounting bracket onto the bolts just installed and screw the nuts and washers. Take out the cable holder and fix it using the same procedure.



Mount the bracket and cable holder

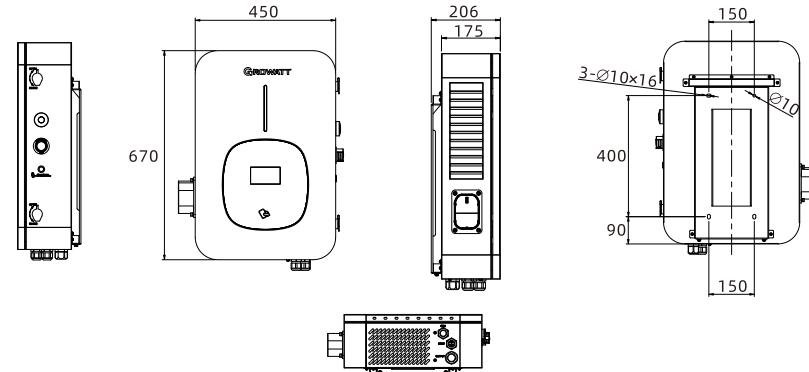
3. After the mounting bracket and cable holder is fixed, place the charging equipment onto the mounting bracket, with the outward bent part inserted to the slot on the rear side of the charging equipment. Lock the charging equipment onto the bracket at the bottom using the 2 screws. The installation is done.



Insert the hanging hooks of the Charging equipment into the hanging holes and Install in place

4. Now prepare for wiring. Use 3 power cables and 1 PE cable, it is suggested to use a 4-core cable (with PE included) for the convenience of using the waterproof cable gland. The live wires shall be at least 6mm^2 , PE shall be greater than 6mm^2 . Open the 2 locks at the right, connect the AC input cables into the corresponding terminals through the cable gland on the bottom right side and fasten them (Refer to the Internal view and terminal definition part for wire connection). Connect the network cable through the hole in front of the AC input cable gland to the RJ45 socket and fasten the waterproof gland. Close and lock the upper cover after checking internal wiring and breaker position. The wiring is then finished.

	L1	L2	L3	PE
Terminal				
Wire	$\geq 6\text{mm}^2$ $\geq \text{AWG}9$	$\geq 6\text{mm}^2$ $\geq \text{AWG}9$	$\geq 6\text{mm}^2$ $\geq \text{AWG}9$	$\geq 6\text{mm}^2$ $\geq \text{AWG}9$



Note:

1. Only professional personnel can do the wiring, connect the AC input wires in correct phase order according to the markings on the terminal block!
2. The PE terminal shall be connected to the Earth firmly and reliably!
3. Turn off the upstream breaker in the distribution panel and the breaker inside the charging equipment before repairing or maintaining!
4. It is recommended to install at least Type A circuit breaker protection at the front of the charger input!

Distribution end RCBO Selection Recommended:

Rated power P: 20kW

Working voltage U: 320Vac~457Vac

Power factor PF: $\text{COS}\phi \geq 0.99$

Rated current: $I_e = P / 1.732 \eta U_e \text{COS}\phi = 21\text{A}$, recommended RCBO rated current: $\geq 39\text{A} = 1.25 * I_e$.

Maximum current: $I_{max} = P / 1.732 \eta U_C \text{COS}\phi = 39\text{A}$, recommended RCBO rated current: $\geq 49\text{A} = 1.25 * I_e$

5. Don't replace the adapter!

6. Unauthorized use of extension cords is not allowed!

7. Please don't disassemble the unit unless authorized!

Rated voltage $U_e: 400\text{VAC}$

Efficiency Efficiency $\eta: 94\%$

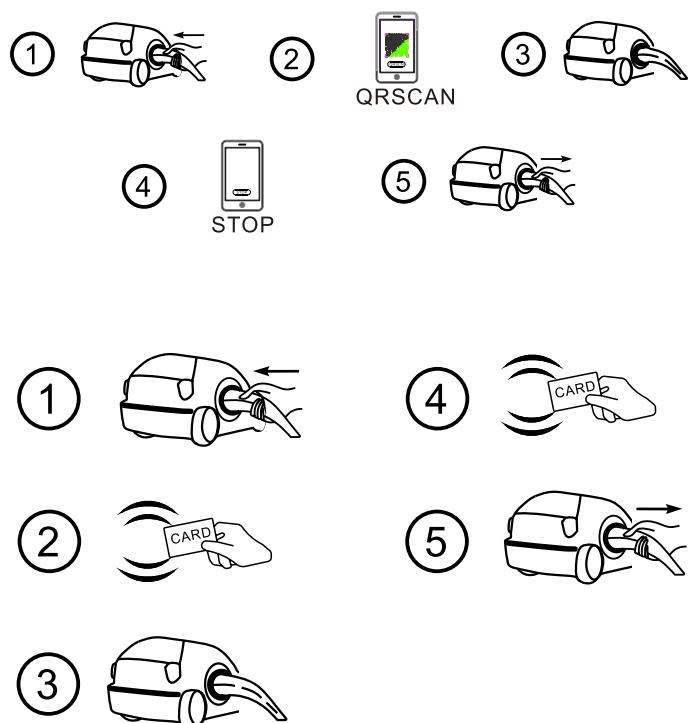
4 Operation instruction and LCD description

4.1 Charging mode and operation

APP/RFID mode:

Initiate or cease charging by scanning QR code using APP or by swiping RFID card.

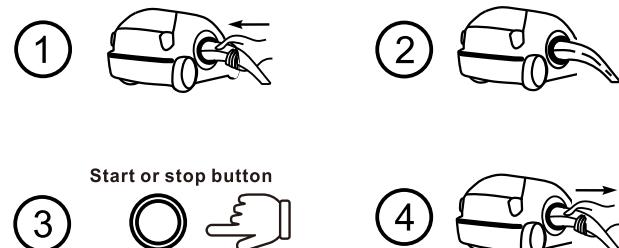
You can also use APP for reservation and payment provided that the back-office server supports such function;



APP/RFID mode operation process flow

Plug&Charge:

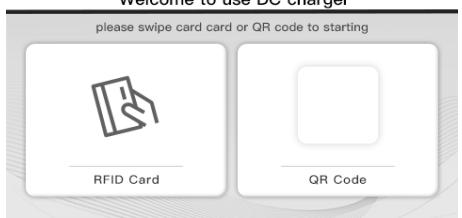
If you want to start/stop the charging, after EV plugged in press the start/stop icon on the right side of the charger.



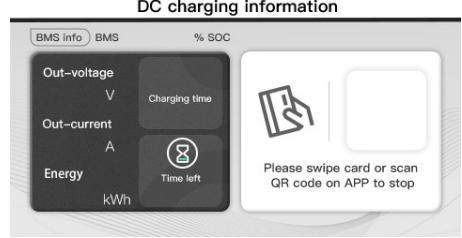
Plug&Charge mode operation process flow

4.2 LCD interface introduction(For LCD version)

The charging equipment is equipped with a 4.3 inch industrial-grade resistor type panel. The display content is as below,

	When powered on for the first time, the Charging equipment will display this page.
	When powered on, the Charging equipment will display this page.

4.3 Appendix: Fault code

	Charging information, which will show the status of the charging equipment, such as standby, charging, fault, etc.
	Charging equipment is being upgraded.

No.	Fault description
1	Emergency stop is pressed!
2	Over temperature fault!
3	Power module communication fault!
4	Meter communication fault!
5	DC output overvoltage fault!
6	DC output overcurrent fault!
7	Waiting for BMS communication timeout!
8	Insulation detection timeout!
9	Insulation detection fault!
10	Battery voltage reverse fault!
11	DC+ Contactor sticking fault!
12	DC- Contactor sticking fault!
13	Plug line disconnection fault!
14	Plug head connection over temperature fault!
15	AC Input Overvoltage!
16	AC Input Undervoltage!
17	BMS communication fault!

5 Specification

Model	Growatt THOR 20DS-P
Dimension(mm)	450*206*670(W*D*H)
Weight(kg)	38kg
Display	LCD(opt)
Casing material	Stainless steel&acrylic sheet
AC input	
Grid connection	400V, 3 phase
Voltage	AC 320~457V
Current	≤32A
Frequency	50/60Hz
DC output	
Plug type	CCS 2
Voltage	DC150~1000V
Current	0-50A
Voltage-stabilizing accuracy	<±0.5%
Current-stabilizing accuracy	≤±1%
Power factor	≥0.98
Efficiency	≥94%

Ingress protection	IP 54
Working environment	-25°C~+50°C, derate since 50°C
Relative humidity	5%-95%
Altitude	≤2000m, derate for higher than 2000m
Cooling method	Forced air cooling
Remote monitoring	Ethernet/WIFI/4G/485
Payment	APP/RFID(opt)
Standby power	25W
Standards	IEC-62196-1;IEC-62196-3;
Mounting	Wall or Pole
Certificate	CE, UKCA, RCM
Metering accuracy	0.5%
Protection features	
Over /Under voltage of AC output	Yes
Over voltage of DC output	Yes
Over temperature protection	Derate since 55°C; Stop at 75°C
Emergency stop protection	Yes
Lightning protection	Type II

6 Appendix

6.1 Electric diagram

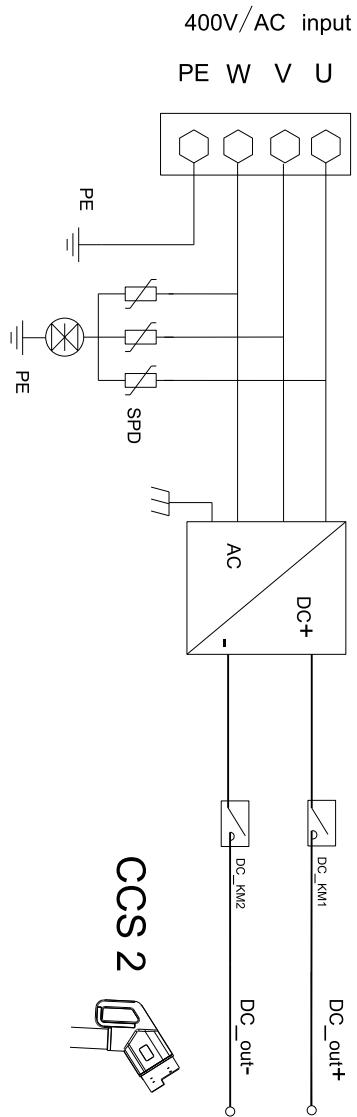


Fig6-1. Main circuit diagram

6.2 Contact

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Service line: +86 755 2998 8492

E-mail: info@ginverter.com

7 Warranty

The warranty period of this product (including hardware and software) is 3 years. If the contract stipulates otherwise, the contract shall prevail. For warranty cases during the warranty period, the customer should present the invoice of the purchase of the product to our service team. At the same time, the nameplate on the product should be clearly visible, otherwise the warranty claim might not be accepted.

Warranty condition

We will repair or replace the product free of charge during the warranty period. The defective machine after replacement shall be owned by us, and the customer shall reserve a certain amount of time for us to repair the faulty machine.

Liability exemption

We reserves the right not to accept the warranty claim if the conditions below happen,

1. No trademark on the product;
2. Warranty period has expired;
3. Fault or damage caused by incorrect installation, by installing the device in a not allowed environment, by improper storage or usage, etc.(e.g. too high or too low temperature, moisture or too try environment, high altitude or unstable voltage/current etc.)
4. Failure or damage caused by the installation repair, modification or disassembly by unauthorized service personnel;
5. Failure or damage caused by using our non-genuine spare parts;
6. Damage or damage caused by accident or human cause (operational error scratching, handling, bumping, access to inappropriate voltage, etc.),or transport damage;
7. Failure or damage caused by force majeure such as natural disasters (such as earthquakes, lightning strikes, fires, etc.)
8. Other failures or damages that are not caused by quality problem of the product or its components.

Statement of liability

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For more information, please contact service@ginverter.com.