Power the World with Green Energy

# WIND ON-GRID CONTROLLER

## User's Manual


| Keep it safe after reading |
| --- |
| ●Please read it carefully and pay attention to safety matters before operation。<br>●Conserve the manual at hand, you can refer to it anytime you like。 |

QINGDAO GREEF NEW ENERGY EQUIPMENT CO.,LTD

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# 1. Safety Instructions

**Improper use may result in potential electric shock hazards or burns. This manual contains important instructions that should be followed during installation and maintenance. Please read these instructions carefully before use and keep them for future reference.**

## 1.1 General Safety Instructions

**WARNING:**
To reduce the risk of fire, branch-circuit over-current protective devices (OCPD) are required for circuits connected to the Inverter.
The trip current for over current for AC and DC isolator is recommended to be 110%-125% of inverter rated current.
The rated voltage OCPD should be higher than local grid voltage.

**CAUTION:**
Risk of electric shock from energy stored in capacitors of the Inverter. Do not remove cover until 5 minutes after disconnecting all sources of supply. Service technician only. Warranty may be voided if any unauthorized removal of cover.

**CAUTION:**
The surface temperature of the inverter can reach up to 75℃ (167 F).
To avoid risk of burns, do not touch the surface when inverter is operating.
Inverter must be installed out the reach of children.

## 1.2 Notice For Use

On-Grid Controllers are manufactured in accordance with applicable safety and technical guidelines. Please be sure to install and use the On-Grid Controller when the following conditions are met:

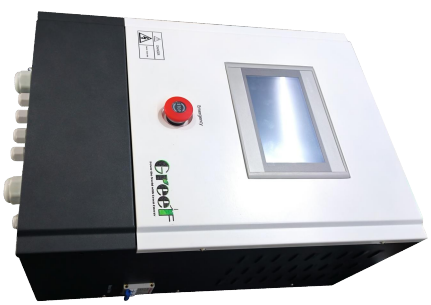
1. Permanent installation is required.
2. The electrical installation must comply with all applicable regulations and standards.
3. The On-Grid Controller must be used according to the instructions in this manual.
4. The On-Grid Controller must be installed in accordance with the technical specifications.
5. To start the On-Grid Controller, please confirm the correctness of the line connection; to stop the On-Grid Controller, please cut off all AC input power.

## 2. Introduction

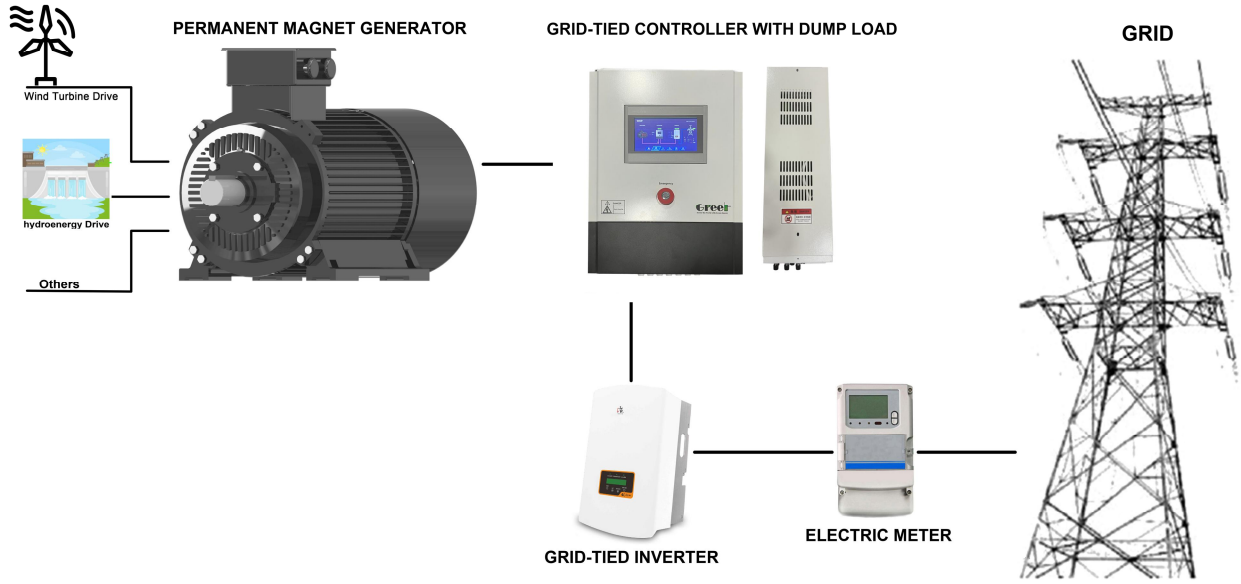
Since the start of the company, we have been passionate believers in our mission to provide cheaper, reliable electricity through the power of renewable energy.

The On-Grid Controller of our company rectifies the AC power supply to DC power supply. It is mainly used in generators with relatively stable output, and is especially widely used in permanent magnet generator systems under various driving modes. It has the remarkable characteristics of small size, light weight and high cost performance.


The power generation system using On-Grid Controllers has the advantages of simplicity, high efficiency and good stability. Our company can provide professional power generation system solutions, design and manufacture the best complete set of energy power generation equipment for customers, and reduce customer costs.



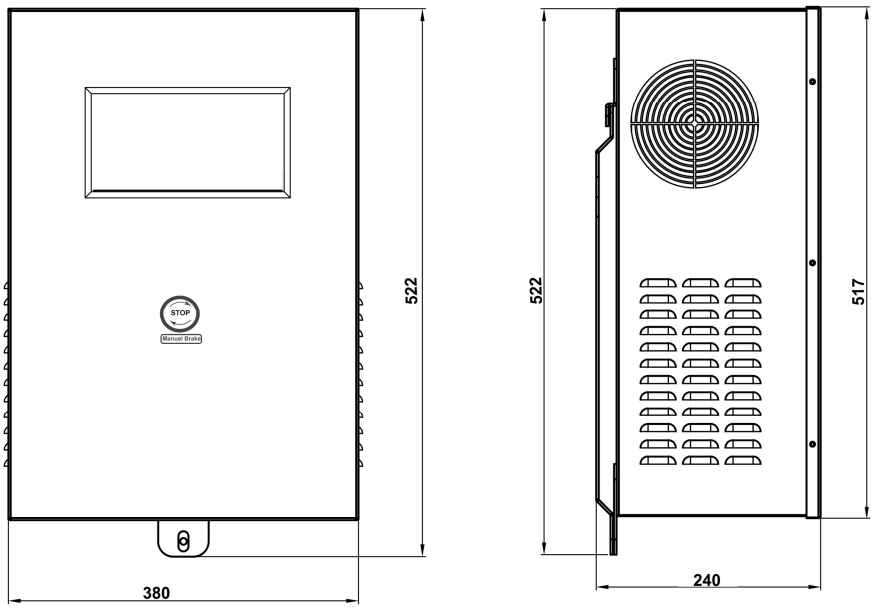
## 2.1 Wind power generation system and High-power grid-connected system

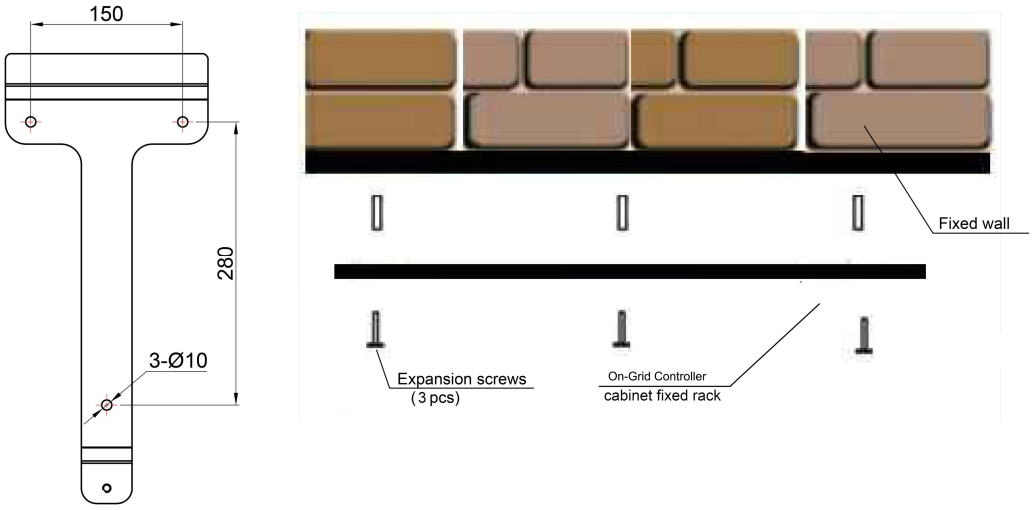



## 3. Select a Location for the On-Grid Controller

**To select a location for the On-Grid Controller, the following criteria should be considered:**

1. The On-Grid Controller is designed to work in extreme temperatures. The ambient operating temperature range is from -25℃ to 60℃.
2. A minimum 900mm clearance between the bottom of the On-Grid Controller and the ground are recommended.
3. Adequate ventilation must be provided if the On-Grid Controller is to be installed in a confined space.






Wall mounting hole position

**Please choose M8 expansion bolts, the quantity is 3 pcs. Wall-mount the On-Grid Controller, after hanging it, please tighten the fixing screw in the middle of the bottom of the box.**

**NOTE:**
Nothing should be stored on or placed against the inverter.

**NOTE:**
Heat sink must be Out of Reach of Children.

**In order to ensure good performance and long-term working life, choose the installation location of the system should also pay attention to the following conditions to protect the system from damage:**

(1) Corrosive gas or liquid

(2) Salt /oil mist

(3) Mechanical shock, vibration

(4) High humidity

(5) Extreme cold and heat (which can be used in the appropriate ambient temperature range: -10 ℃ ~ 50 ℃)

(6) Electromagnetic noise (such as: welding machine, high power equipment)

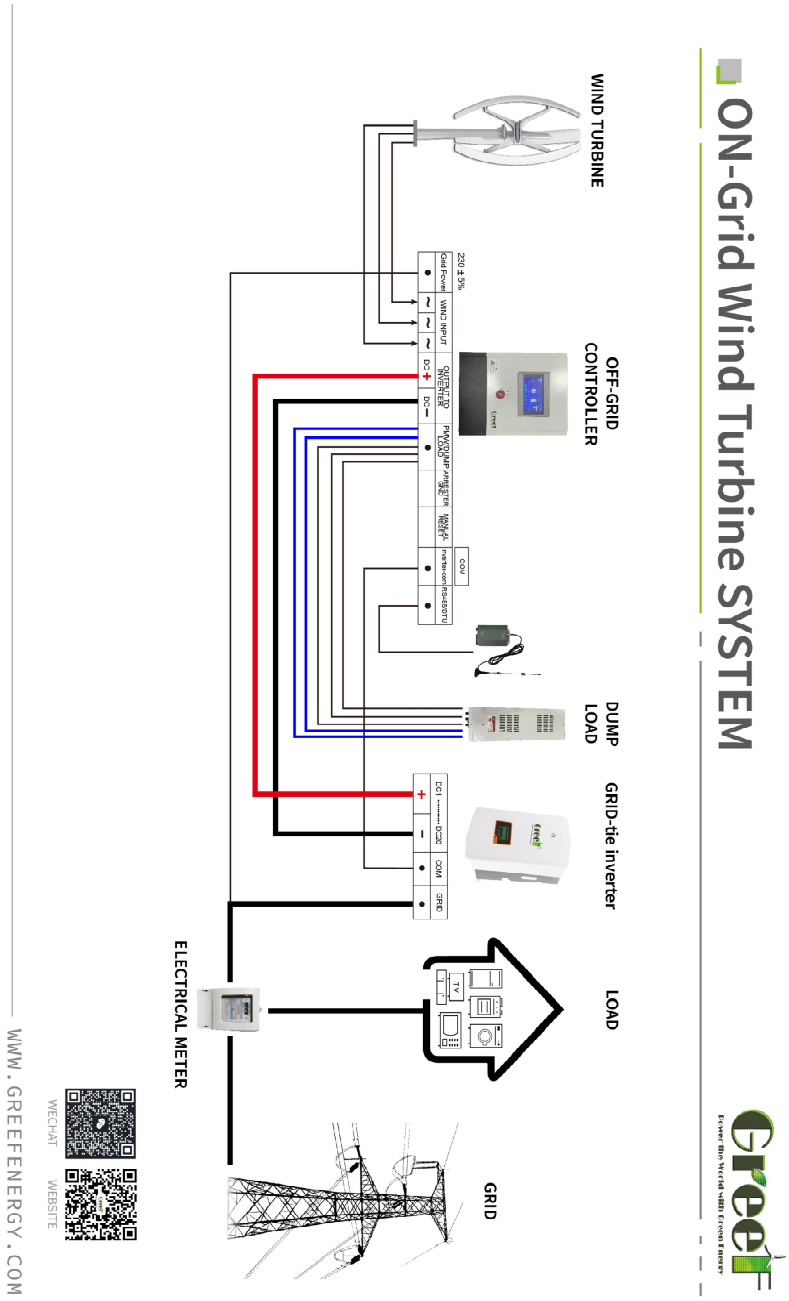
(7) Radioactive material

(8) Flammable items

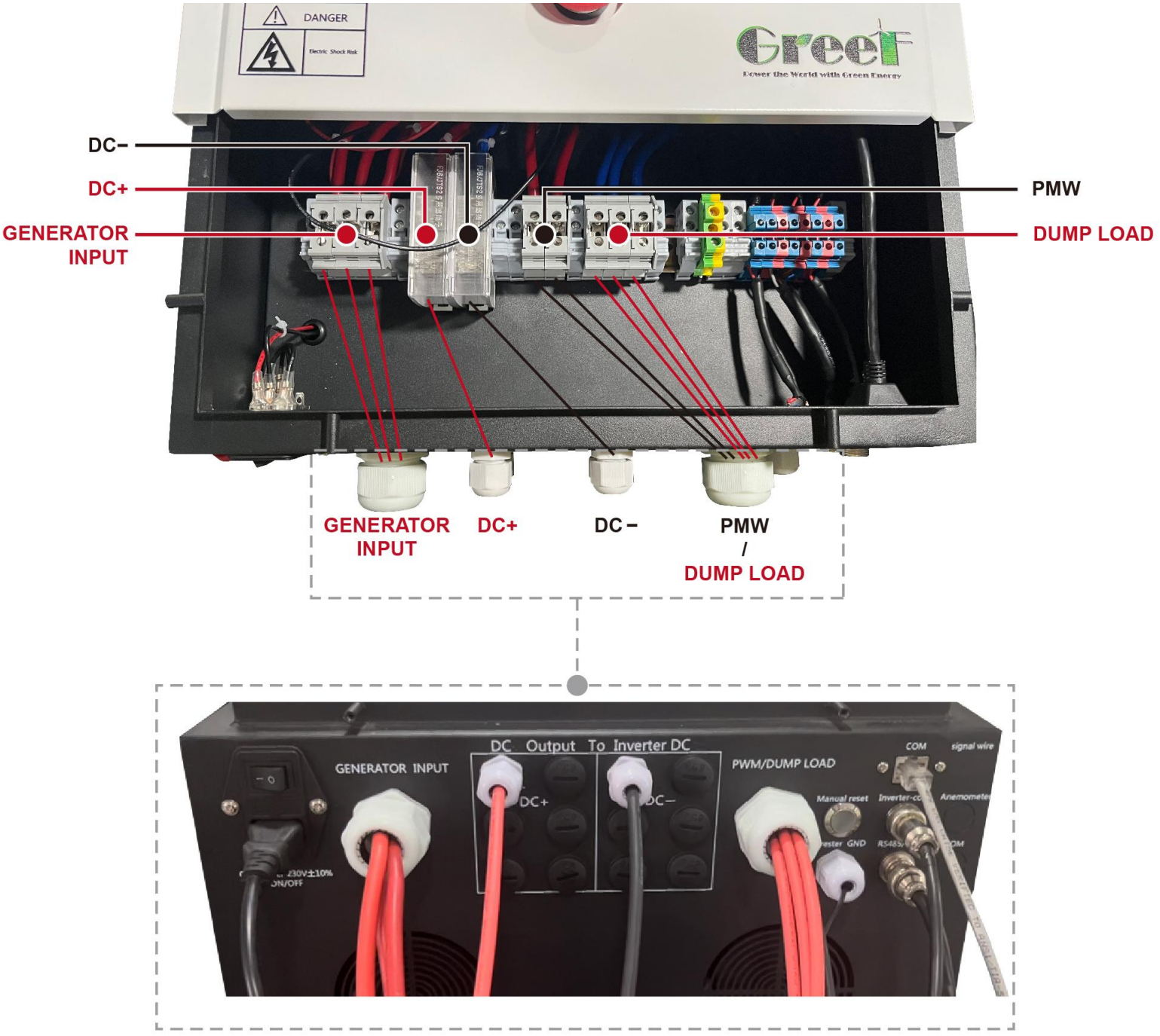
# 4. Grid-connected system wiring

## 4.1 On-Grid Controller input/output terminal wiring

After installing and fixing the On-Grid Controller, connect the interfaces between the electrical devices.



Reminder: Please refer to 4.2 for the connection assembly part between plugs.



**Operation steps and methods :**

1. Connect the On-Grid Controller and the grid-connected inverter with the plug of the DC input cable;
2. Connect the output end of the generator to the ``AC INPUT'' interface;
3. Connect as required AC INPUT "The power interface is connected and powered on.
4. Connect Inverter COM and DTU Com

Finally, check whether the connection is secure. Check the system wiring, turn on the equipment after it is completely correct, and then wait for the power generation and grid-connected system to run.



**Important note: Please be patient, the process is expected to take 2-3 minutes.**

**Special attention: When connecting the plug, make sure that the positive(/negative)poles of the output end and the input end are the same.**

## 4.2 On-Grid Controller terminal wiring requirements

First, assemble the "DC input cable connector" that comes with the accessory. You can refer to the following method to complete. According to the connector type of the system equipment, install the plugs on both ends of the output wire.

**Note: 1. The connecting line between the On-Grid Controller and the equipment needs to be purchased by the customer according to actual needs.**

**2. In order to ensure good electrical performance, it is recommended to buy high-quality pure copper wires.**

**Special attention: Please refer to the following selection for the relationship between copper wire size and load current:**

**Copper wire specification:**

**4mm²----------Limited current I<30A**

**6mm²----------Limited current I <40A**

**10mm²----------Limited current I<65A**

**16mm²----------Limited current I<100A**

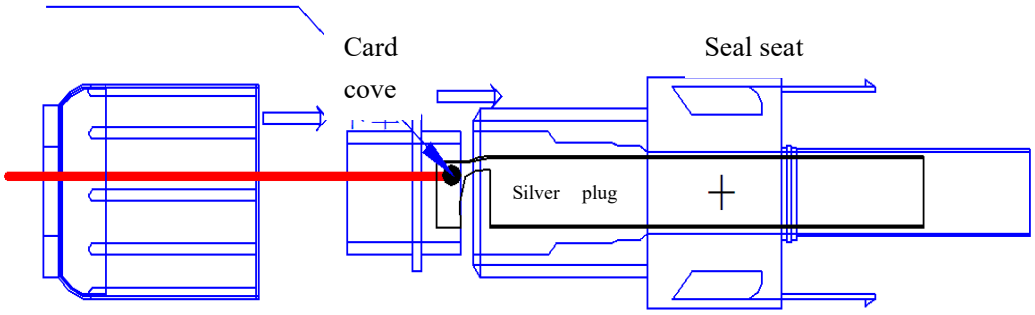
### DC input cable connector assembly instruction:

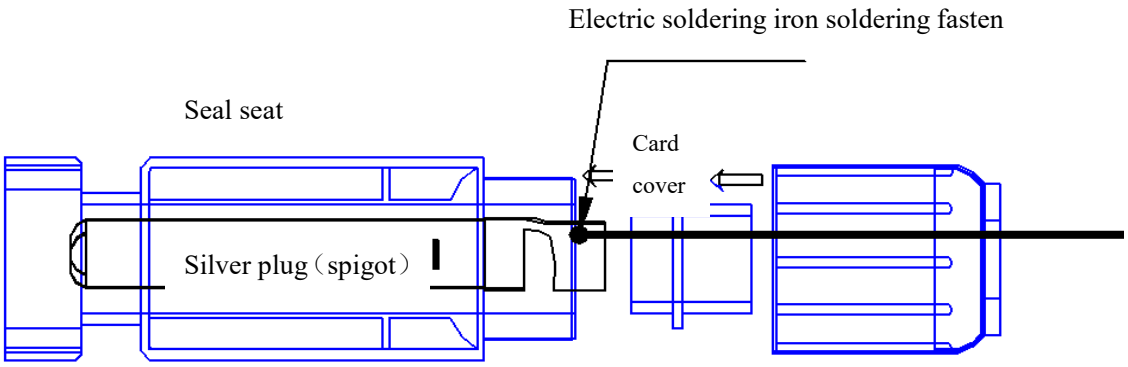
1. Stripped cable jacket 8mm
2. Crimp the cable which is stripped the jacket with silvered plug and the tube
3. After crimping，it must welding firmly with the electric soldering

positive pole

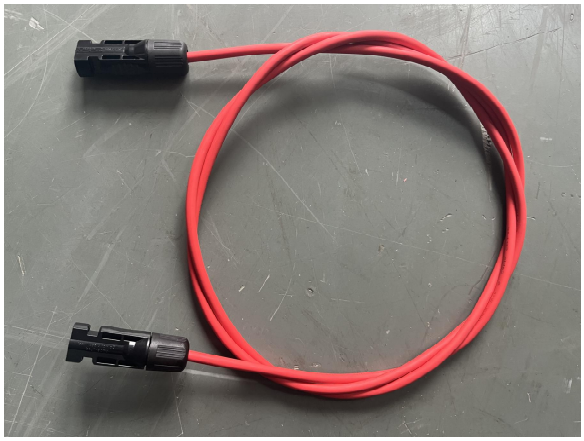
Negative pole

Electric soldering iron soldering fasten



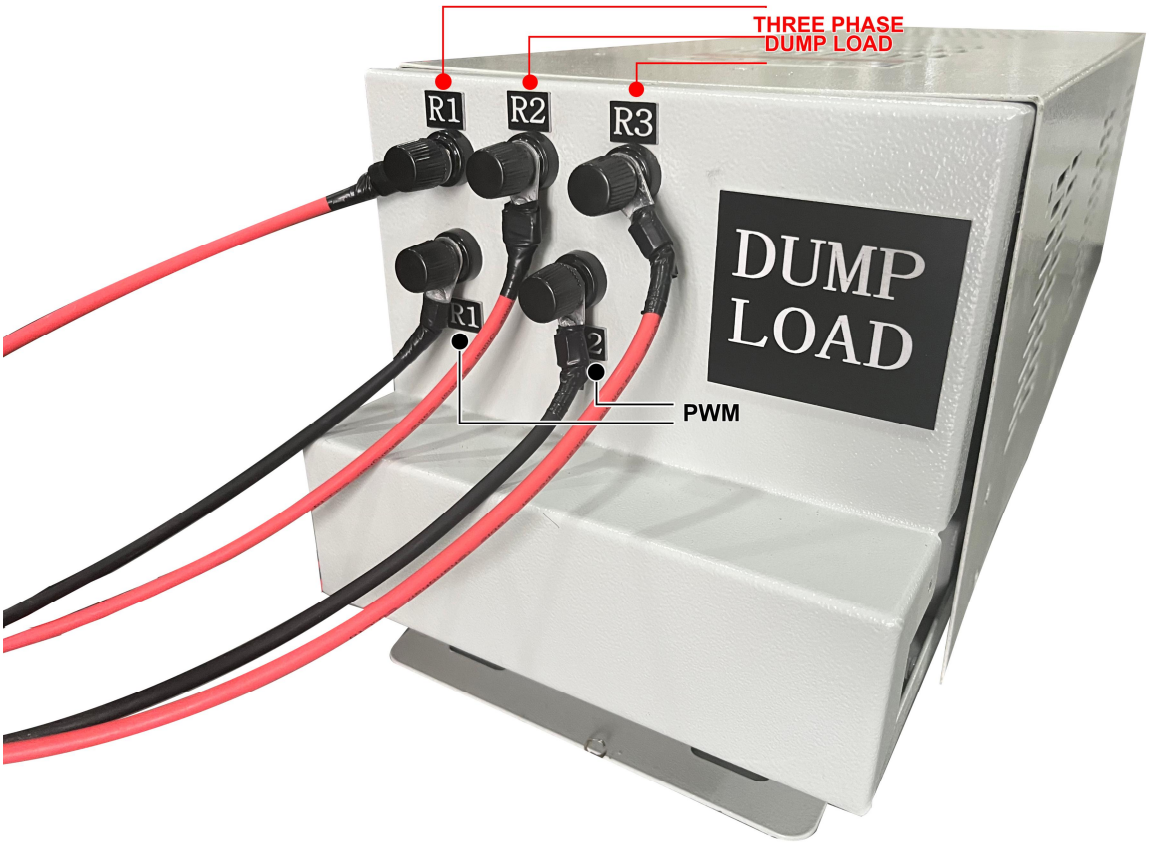

Then ,put the welded plug and casing cable into the screw cap、card cover、 and the seal seat, and insert to the positive and negative pole of the connector. After the cable in place, it should not be able to pull up, and then you can tighten the plastic nut in place,As shown in Figure 9.



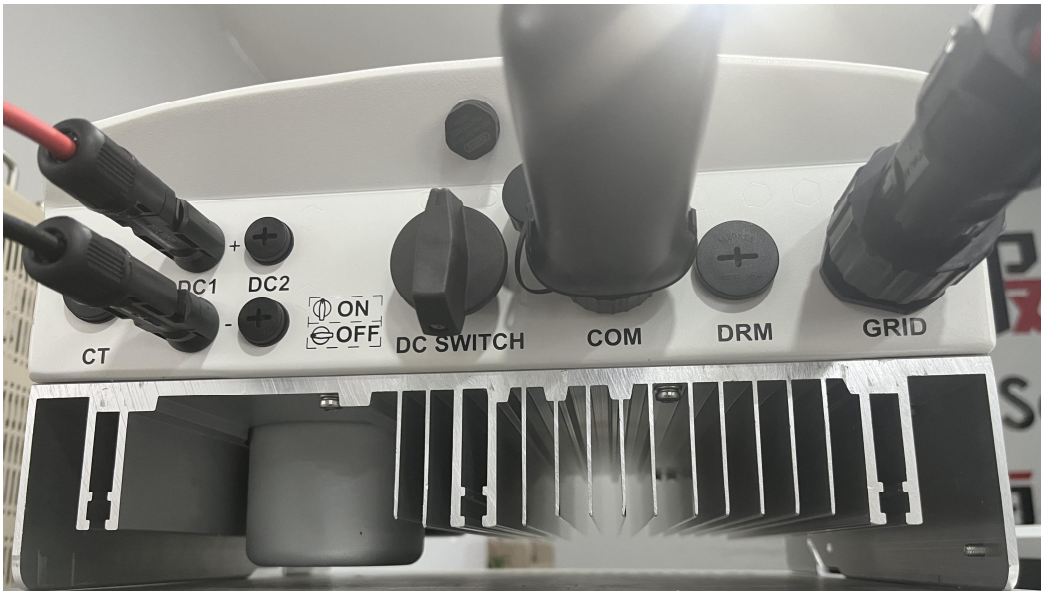
## 4.3 PWM Constant voltage and Three Phase Dump Load Wiring

The PWM ports of the controller output two wires corresponding to the ports of the Dump Load: **R1** and **R2**

The Three Phase Dump Load ports of the controller output three wires corresponding the ports of Dump Load : **R1**, **R2** and **R3**




Finally, Connect the Controller and the grid-connected Inverter with the plug of the DC input cable, and finally check whether the connection is firm. Check the system wiring, turn on the equipment after it is completely correct, and wait for the power generation and grid-connected system to run.




Special attention: When connecting the plug, make sure that the positive(/negative)poles of the output end and the input end are the same

## 4.4 PWM Constant voltage and Three Phase Dump Load function

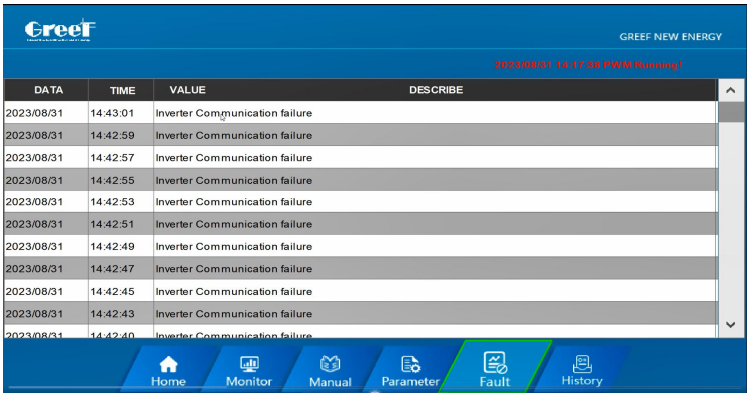



Figure 10

This 2KW ON-GRID Controller have PWM Constant voltage and Three Phase Dump Load function, when the generator running over voltage or over rorate speed, the controller will be warning and the controller will be brake automatically.

When the controller is warning, please stop your generator first, there have two ways to release the brakes, 1.Press the “Manuel Reset” button on the controller,

2. The controller will release brake automatically about 10 minutes, then restart the generator.


## 4.5 ON-GRID Controller and Inverter instructions

1. Make sure all the cables are connected

2. Turn on the AC end of the Inverter, then turn on the power supply switch of Controller and wait for the Inverter to light up, and continue to wait for the Inverter to be connected to the grid after( light is always be green).

3. When the Inverter light is green, turn on the generator to keep running at a low speed to observe whether the operation is normal and continue to increase the speed.

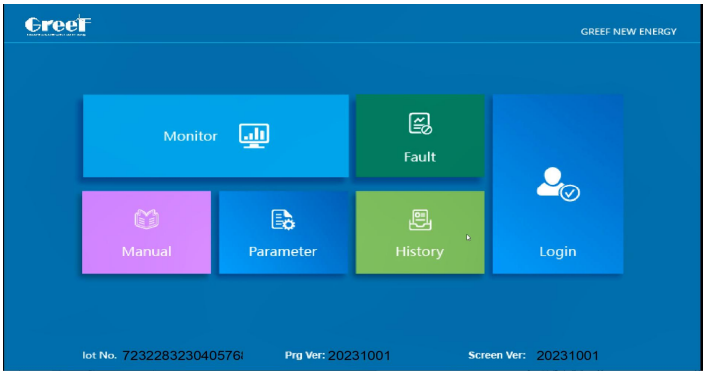
4. Inverter display shows "限载 " means this controller is communication with the Inverter very well，so it is not a problem.

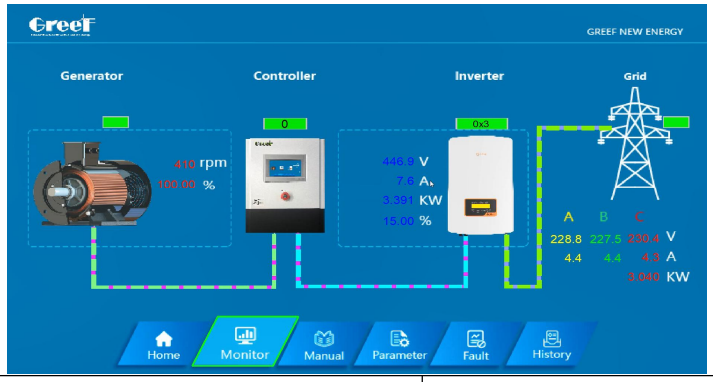
**IMPORTANT :**

**Please don't let generator rotate, until the Inverter operation light is green!**

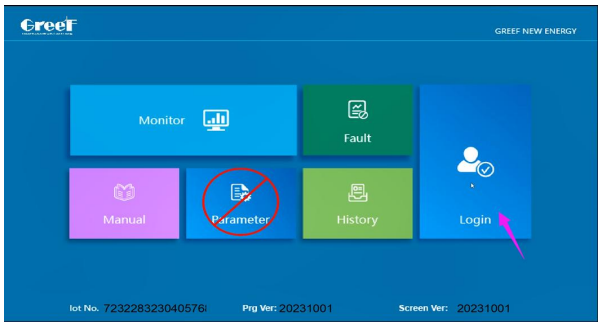
# 5. LCD Touch Screen

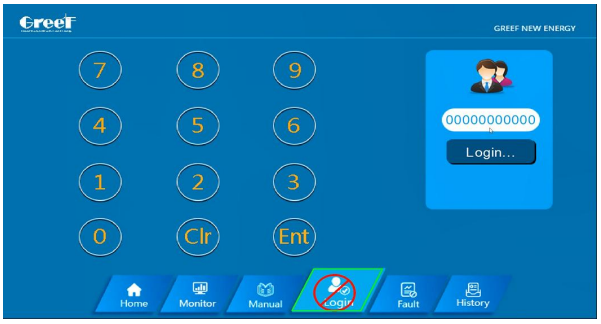
## 5.1 Interface display

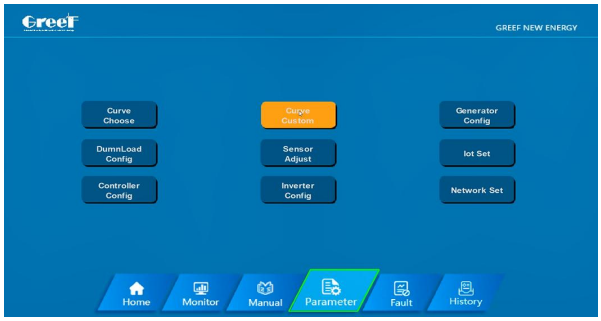


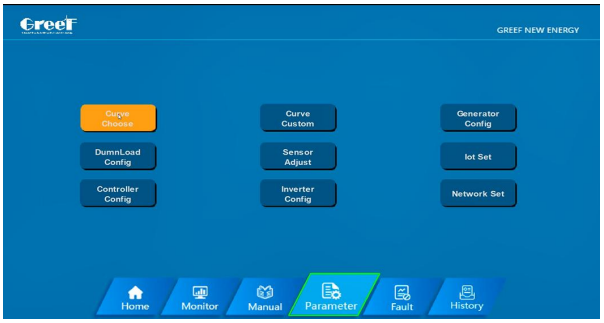

| Function name | Interface display content |
|---|---|
| Monitor |  |
| Information view and display content |   |

## Parameter （Power Curve）

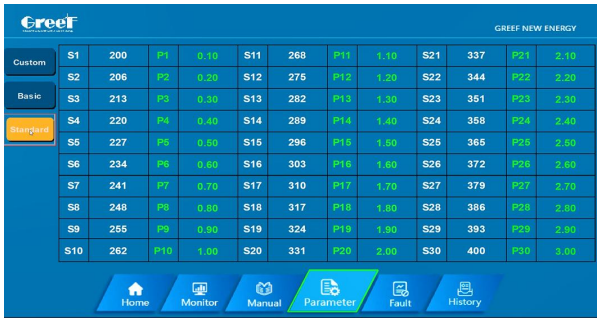


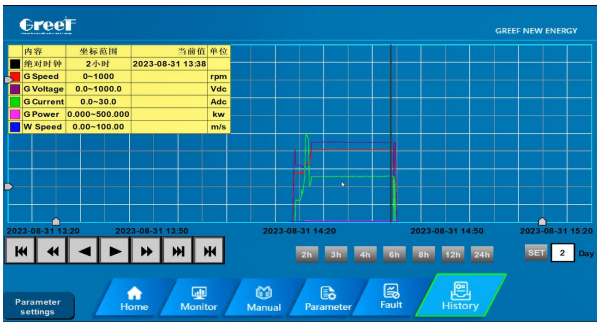



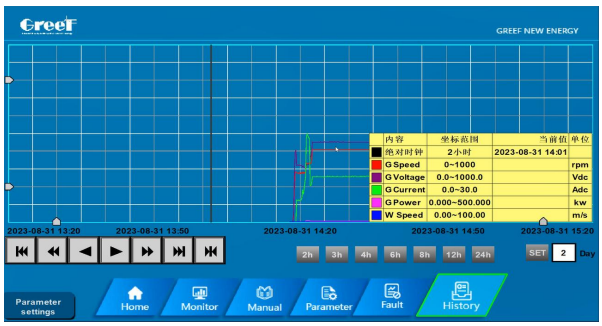





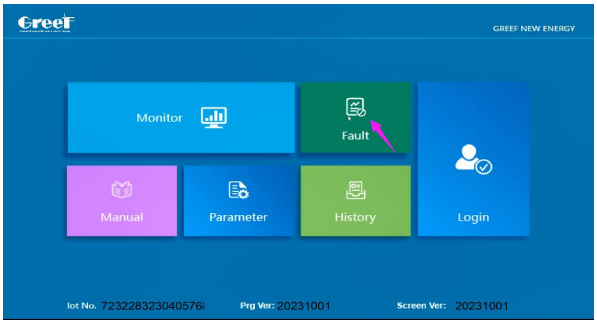


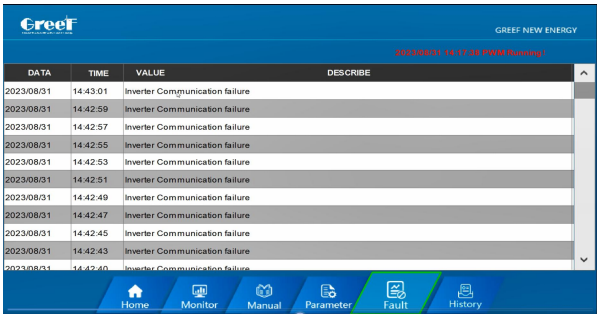

## History




## Fault



**Important note：**

**1. Before shipment, we have adjusted the power curve parameters according to the customer's usage, and only need to connect correctly to use;**

**2. If the customer really needs to set it by themselves, please consult us first, non-professionals please try not Set it yourself.**

**3. If the parameter setting is unreasonable, it will cause the paralysis of the entire grid-connected system.**

## 6.Maintenance

On-Grid Controller does not require any regular maintenance from the user. However, impurities such as dirt may affect the heat accumulation of the inverter and hence its performance.

The dirt on the inverter can be cleaned with a soft brush.

**CAUTION:**
Do not touch the heat sink when the inverter is operating. Some parts may be hot and cause burns. Turn OFF your inverter and let it cool down before you do any maintenance or cleaning of inverter.

The LCD and the LED status indicator lights can be cleaned with a damp cloth if they are too dirty to be read.

**NOTE:**
Never use any solvents, abrasives or corrosive materials to clean the inverter.

## 7.Technical Specifications

| Type | GT-PCTC-1.5KW | GT-PCTC-2KW | GT-PCTC-3KW | GT-PCTC-5KW |
|---|---|---|---|---|
| Wind turbine rated power | 1.5KW | 2KW | 3KW | 5KW |
| Wind turbine rated voltage | AC220V-240V | AC220V-240V | AC220V-380V | AC380-450V |
| Function | Rectifier,Control,DC output | | | |
| Automatic protection function | Over voltage protection, Grid cut off protection, Regulated supply output, Arrester | | | |
| Manual function | Manual brake, Reset, Emergency switch | | | |
| Display mode | LCD Touch Screen | | | |
| Display content (larger one) | Generator speed(rpm),Input voltage (Vdc), Input current(Vac) ,Output power(kW), Grid voltage (Vac),Grid current(A), Power generate today(kWh),Power generate this month, Power generate last month, Power generate this year, Power generate last year,Power Curve setting. | | | |
| PWM constant voltage | ⩾400dc | ⩾400dc | ⩾400dc | ⩾700dc |
| Wind turbine 3-phase dump load voltage | 450±5Vdc | 450±5Vdc | 450±5Vdc | 750±5Vdc |
| 3-phase dump load time-lapse | 12-20 min | 12-20 min | 12-20 min | 12-20 min |
| Environment temperature | -30-60°C | | | |
| Relative humidity | ＜90% No condensation | | | |
| Noise (1m) | ＜40dB | | | |
| Degree of protection | IP20(Indoor) IP65 (Outdoors) | | | |
| Cooling method | Forced air cooling | | | |
| Communication interface (optional) | RS485/USB/GPRS/WIFI/Ethernet | | | |
| Size of the controller (mm) | 500*395*270 | 500*395*270 | 500*395*270 | 500*395*270 |
| Controller Weight | 20Kg | 20Kg | 22Kg | 22Kg |
| Dump load Size (mm) | 620*215*190 | 620*215*190 | 620*215*190 | 620*215*190 |
| Dump load Weight | 14Kg | 14Kg | 14Kg | 30Kg |

| Type | GT-PCTC-10KW | GT-PCTC-20KW | GT-PCTC-30KW |
|---|---|---|---|
| Wind turbine rated power | 10KW | 20KW | 30KW |
| Wind turbine rated voltage | AC380-520V | | |
| Function | Rectifier,Control,DC output | | |
| Automatic protection function | Over voltage protection, Grid cut off protection, Regulated supply output, Arrester | | |
| Manual function | Manual brake, Reset, Emergency switch | | |
| Display mode | LCD Touch Screen | | |
| Display content (larger one) | Generator speed(rpm),Input voltage (Vdc), Input current(Vac) ,Output power(kW), Grid voltage (Vac),Grid current(A), Power generate today(kWh),Power generate this month, Power generate last month, Power generate this year, Power generate last year,Power Curve setting. | | |
| PWM constant voltage | ⩾700dc | ⩾700dc | ⩾700dc |
| Wind turbine 3-phase dump load voltage | 750±5Vdc | 750±5Vdc | 750±5Vdc |
| Wind turbine 3-phase dump load time-lapse | 12-20 min | 12-20 min | 12-20 min |
| Environment temperature | -30-60°C | | |
| Relative humidity | ＜90% No condensation | | |
| Noise (1m) | ＜40dB | | |
| Degree of protection | IP20(Indoor) IP65 (Outdoors) | | |
| Cooling method | Forced air cooling | | |
| Communication interface (optional) | RS485/USB/GPRS/WIFI/Ethernet | | |
| Size of the controller (mm) | 550*395*270 | 600*500*1200 | 600*500*1200 |
| Controller Weight | 25Kg | 66Kg | 68Kg |
| Dump load Size (mm) | 690*520*270 | 690*530*520 | 710*890*590 |
| Dump load Weight | 45Kg | 55Kg | 55Kg |

## 8. After-sales Service

**Thank you for choosing " GREEF" new energy products. We always provide a comprehensive range of services before, during and after sales. "GREEF NEW ENERGY guarantee as follows:**

### I. Warranty period:

ON-GRID CONTROLLER is ONE year warranty.

(1) The warranty period is start from the date of on the guarantee card .

(2) Free maintenance services during the warranty period the cost involved be borne by the company, do not charge a fee to customers, free warranty if any damage outside the warranty period, the company will charge a fee for labor costs and materials.

(3) The warranty period, company's quality problems caused by the maintenance of the freight borne by the company. if not under warranty or not quality problem, all the freight &charges by the customer. Tax is should be paid by customer in their own country all the time .

### II. Warranty:

We will provide the approved products for all customers to provide maintenance services. But in order to enable the two sides can enjoy fair

Treatment, for the following reasons for failure or damage, we will not provide free warranty.

(1) When beyond the warranty period;

(2) Disasters, leaving damage to the product caused by accident;

(3) The user-transport, carrying, falling, collision and damage caused by the failure;

(4) The product as user-modification, and other failures caused by improper use and damage;

(5) The users' unmorally operation, like test with other equipment, and caused by the failure;

(6) Customer open and repair device without our guide and cause damage.

### III. Maintenance services implementation:

(1) If your machine meet any problem, please take photos and video to send to our service department and explain the details of the problems. or send to the sales which you contact before.

(2)Our engineers will check the problem, and give you suggestion to solve the problem. Most of the small problem can be solved after engineer guide.

(3)If we find that any parts need to be replacement, we will send the parts to customers. Quality problem we afford products cost &freight for replacement within warranty period.

(4) If a major problem in our products, we will send engineers to provide appropriate support.

### IV. Fees:

For the warranty, we will charge a fee (fee = fee + replacement parts technical service fees), we will provide timely material Price (cost) .