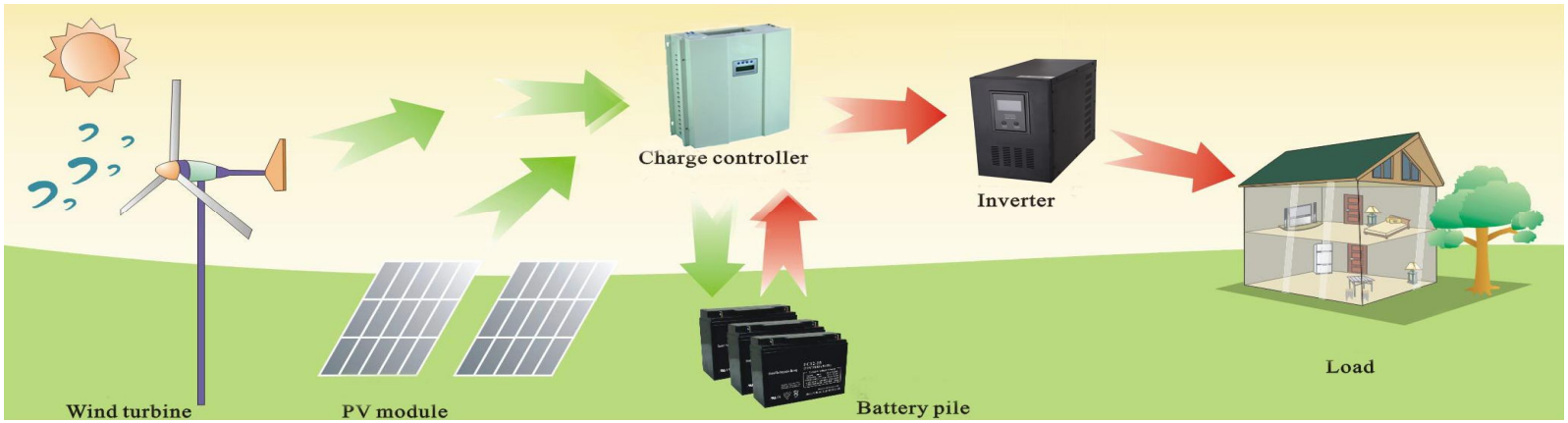
*Please read the manual before installation

Professional Wind & Solar Hybrid Controller Manual



Notes:

- Thank you very much for purchasing our controller, please read the user manual carefully before installation and use the product and keep it with due care.
- Receive the product should firstly check whether the controller is damaged during the transportation. If you found the problem, please contact our company or the transport company immediately.
- The installation must be done by experienced technicians .The process must be strictly in accordance with the user manual to ensure that the product can work properly.
- Don't use the controller without batteries.
- Don't cut off the connection of controller and batteries when controller is working normally.
- Make sure the power connections are tightened to avoid excessive heating from a loose connection, and confirm the cables are suitable for system.
- Please avoid to use controller in long-term corrosive gas and moist environment. Do not put it in wet, rain, exposure, severe dust, shock, corrosion and strong electromagnetic interference environment.
- Keep children away from equipment.
- Do not open the controller to repair it by yourself.

Catalogue

➢ 1 Technical Specification

Item No.	**TG10-24**	**TG10-48**
Rated Battery Voltage	24V	48V
Rated Wind Power	1kW	
Maximum Wind Turbine Input Power	1.5kW	
Rated Solar Charge Current	10A	
Max. solar input voltage	160V	
Under voltage (Low)	20.4V(adjustable)	40.8V(adjustable)
Under voltage recovery voltage (Rlow)	23.0V(adjustable)	46.5V(adjustable)
Over voltage(Full)	29.4V (adjustable)	58.8V(adjustable)
Over voltage recovery voltage (RFull)	26.4V(adjustable)	52.8V(adjustable)
Float voltage (Flot)	27.0V (adjustable)	54.0V(adjustable)
Wind dump load rotate speed(Rota)	500RPM(adjustable)	
Wind pole logarithm(Pole)	10D(adjustable)	
Wind charging range	DC (10-80)V	DC (20-100)V
Wind start charging voltage (CutIn)	Boost: 10V(adjustable); Buck: None	Boost: 20V(adjustable); Buck: None
Wind dump load voltage(Vmax)	Boost: 40V(adjustable); Buck: 80V(adjustable);	Boost: 60V(adjustable); Buck: 100V(adjustable);
Dump load device	Build-in	
Dump load control mode	Over rotate speed limiting, Over voltage limiting, Over current limiting ,PWM	
Wind Charging Mode	MPPT(Boost & Buck) & PWM	
Solar Charging Mode	PWM	
Display Mode	LCD	
Display Parameters	**Battery**: voltage; charging current; Percentage of battery power. **Wind**: voltage; charging current; rotate speed; output current; output power **Solar**: voltage; charging current. **System**: state; generated energy; error code	
Working Temperature & Humidity	-20~+55°C/35~85%RH(Non-condensing)	
Quiescent Power Drain	≤3W	

Protection Function	**Battery**: over-discharge protection; over-charge protection; anti-reverse connection. **Wind**: Over rotate speed protection, over voltage protection, over current protection.
Controller Size (L*W*H)	450 *423*175MM
Package Size (L*W*H)	510*545*250MM
Net Weight	15.5KGS
Gross Weight	17KGS
Optional Function (Debug Port)	RS232
	RS485

Item No.	TG15-24	TG15-48	TG15-96	TG15-120	TG15-220	TG15-240
Rated Battery Voltage	24V	48V	96V	120V	220V	240V
Rated Wind Power	1.5kW					
Maximum Wind Turbine Input Power	2.2kW					
Rated Solar Charge Current	10A					
Max. solar input voltage	160V		360V		360V	
Under voltage (Low)	20.4V (adjustable)	40.8V (adjustable)	80.0V(adjustable)	102.0V (adjustable)	185.0V (adjustable)	204.0V(adjustable)
Under voltage recovery voltage (Rlow)	23.0V (adjustable)	46.5V (adjustable)	92.0V(adjustable)	115.0V (adjustable)	210.0V (adjustable)	230.0V(adjustable)
Over voltage(Full)	29.4V (adjustable)	58.8V (adjustable)	117.0V(adjustable)	147.0V (adjustable)	265.0V (adjustable)	288.0V(adjustable)
Over voltage recovery voltage (RFull)	26.4V(adjustable)	52.8V (adjustable)	105.0V(adjustable)	132.0V (adjustable)	240.0V (adjustable)	260.0V(adjustable)
Float voltage (Flot)	27.0V (adjustable)	54.0V (adjustable)	108.0V(adjustable)	135.0V (adjustable)	250.0V (adjustable)	270.0V(adjustable)
Wind dump load rotate speed(Rota)	500RPM(adjustable)					
Wind pole logarithm(Pole)	10D(adjustable)					
Wind charging range	DC (10-80)V	DC (20-100)V	DC (40-180)V	DC (55-300)V	DC (100-300)V	DC (100-300)V
Wind start charging voltage (CutIn)	Boost: 10V(adjustable); Buck: None	Boost: 20V(adjustable); Buck: None	Boost: 40V(adjustable); Buck: None	Boost: 55V(adjustable); Buck: None	Boost: 100V(adjustable); Buck: None	Boost: 100V(adjustable); Buck: None
Wind dump load voltage(Vmax)	Boost: 40V(adjustable); Buck: 80V(adjustable);	Boost: 60V(adjustable); Buck: 100V(adjustable);	Boost: 120V(adjustable); Buck: 180V(adjustable);	Boost: 150V(adjustable); Buck: 300V(adjustable);	Boost: 150V(adjustable); Buck: 300V(adjustable);	Boost: 150V(adjustable); Buck: 300V(adjustable);
Dump load device	Build-in					
Dump load control mode	Over rotate speed limiting, Over voltage limiting, Over current limiting ,PWM					
Wind Charging Mode	MPPT(Boost & Buck) & PWM					
Solar Charging Mode	PWM					

Display Mode	LCD
Display Parameters	**Battery**: voltage; charging current; Percentage of battery power. **Wind**: voltage; charging current; rotate speed; output current; output power **Solar**: voltage; charging current. **System**: state; generated energy; error code
Working Temperature & Humidity	-20~+55℃/35~85%RH(Non-condensing)
Quiescent Power Drain	≤3W
Protection Function	**Battery**: over-discharge protection; over-charge protection; anti-reverse connection. **Wind**: Over rotate speed protection, over voltage protection, over current protection.
Controller Size (L*W*H)	450 *423*175MM
Package Size (L*W*H)	510*545*250MM
Net Weight	15.5KGS
Gross Weight	17KGS
Optional Function	RS232
	RS485

Item No.	TG20-48	TG20-96	TG20-120	TG20-220	TG20-240
Rated Battery Voltage	48V	96V	120V	220V	240V
Rated Wind Power	2kW				
Maximum Wind Turbine Input Power	3kW				
Rated Solar Charge Current	10A				
Max. solar input voltage	160V	360V		360V	
Under voltage (Low)	40.8V(adjustable)	80.0V(adjustable)	102.0V(adjustable)	185.0V(adjustable)	204.0V(adjustable)
Under voltage recovery voltage (Rlow)	46.5V(adjustable)	92.0V(adjustable)	115.0V(adjustable)	210.0V(adjustable)	230.0V(adjustable)
Over voltage(Full)	58.8V(adjustable)	117.0V(adjustable)	147.0V(adjustable)	265.0V(adjustable)	288.0V(adjustable)
Over voltage recovery voltage (RFull)	52.8V(adjustable)	105.0V(adjustable)	132.0V(adjustable)	240.0V(adjustable)	260.0V(adjustable)
Float voltage (Flot)	54.0V(adjustable)	108.0V(adjustable)	135.0V(adjustable)	250.0V(adjustable)	270.0V(adjustable)
Wind dump load rotate speed(Rota)	500RPM(adjustable)				
Wind pole logarithm(Pole)	10D(adjustable)				
Wind charging range	DC (20-100)V	DC (40-180)V	DC (55-300)V	DC (100-300)V	DC (100-300)V
Wind start charging voltage (CutIn)	Boost: 20V(adjustable); Buck: None	Boost: 40V(adjustable); Buck: None	Boost: 55V(adjustable); Buck: None	Boost: 100V(adjustable); Buck: None	Boost: 100V(adjustable); Buck: None
Wind dump load voltage(Vmax)	Boost: 60V(adjustable); Buck: 100V(adjustable);	Boost: 120V(adjustable); Buck: 180V(adjustable);	Boost: 150V(adjustable); Buck: 300V(adjustable);	Boost: 150V(adjustable); Buck: 300V(adjustable);	Boost: 150V(adjustable); Buck: 300V(adjustable);
Dump load device	Build-in				
Dump load control mode	Over rotate speed limiting, Over voltage limiting, Over current limiting ,PWM				
Wind Charging Mode	MPPT(Boost & Buck) & PWM				
Solar Charging Mode	PWM				
Display Mode	LCD				

Display Parameters	**Battery**: voltage; charging current; Percentage of battery power. **Wind**: voltage; charging current; rotate speed; output current; output power **Solar**: voltage; charging current. **System**: state; generated energy; error code
Working Temperature & Humidity	-20~+55°C/35~85%RH(Non-condensing)
Quiescent Power Drain	≤3W
Protection Function	**Battery**: over-discharge protection; over-charge protection; anti-reverse connection. **Wind**: Over rotate speed protection, over voltage protection, over current protection.
Controller Size (L*W*H)	450 *423*175MM
Package Size (L*W*H)	510*545*250MM
Net Weight	15.5KGS
Gross Weight	17KGS
Optional Function	RS232
	RS485

Item No.	TG30-48	TG30-96	TG30-120	TG30-220	TG30-240
Rated Battery Voltage	48V	96V	120V	220V	240V
Rated Wind Power	3kW				
Maximum Wind Turbine Input Power	4.5kW				
Rated Solar Charge Current	10A				
Max. solar input voltage	160V	360V		360V	
Under voltage (Low)	40.8V(adjustable)	80.0V(adjustable)	102.0V(adjustable)	185.0V(adjustable)	204.0V(adjustable)
Under voltage recovery voltage (Rlow)	46.5V(adjustable)	92.0V(adjustable)	115.0V(adjustable)	210.0V(adjustable)	230.0V(adjustable)
Over voltage(Full)	58.8V(adjustable)	117.0V(adjustable)	147.0V(adjustable)	265.0V(adjustable)	288.0V(adjustable)
Over voltage recovery voltage (RFull)	52.8V(adjustable)	105.0V(adjustable)	132.0V(adjustable)	240.0V(adjustable)	260.0V(adjustable)
Float voltage (Flot)	54.0V(adjustable)	108.0V(adjustable)	135.0V(adjustable)	250.0V(adjustable)	270.0V(adjustable)
Wind dump load rotate speed(Rota)	500RPM(adjustable)				
Wind pole logarithm(Pole)	10D(adjustable)				
Wind charging range	DC (20-100)V	DC (40-180)V	DC (55-300)V	DC (100-300)V	DC (100-300)V
Wind start charging voltage (CutIn)	Boost: 20V(adjustable); Buck: None	Boost: 40V(adjustable); Buck: None	Boost: 55V(adjustable); Buck: None	Boost: 100V(adjustable); Buck: None	Boost: 100V(adjustable); Buck: None
Wind dump load voltage(Vmax)	Boost: 60V(adjustable); Buck: 100V(adjustable);	Boost: 120V(adjustable); Buck: 180V(adjustable);	Boost: 150V(adjustable); Buck: 300V(adjustable);	Boost: 150V(adjustable); Buck: 300V(adjustable);	Boost: 150V(adjustable); Buck: 300V(adjustable);
Dump load device	Build-in				
Dump load control mode	Over rotate speed limiting, Over voltage limiting, Over current limiting ,PWM				
Wind Charging Mode	MPPT(Boost & Buck) & PWM				
Solar Charging Mode	PWM				
Display Mode	LCD				

Display Parameters	**Battery**: voltage; charging current; Percentage of battery power. **Wind**: voltage; charging current; rotate speed; output current; output power **Solar**: voltage; charging current. **System**: state; generated energy; error code
Working Temperature & Humidity	-20~+55℃/35~85%RH(Non-condensing)
Quiescent Power Drain	≤3W
Protection Function	**Battery**: over-discharge protection; over-charge protection; anti-reverse connection. **Wind**: Over rotate speed protection, over voltage protection, over current protection.
Controller Size (L*W*H)	450 *423*175MM
Package Size (L*W*H)	510*545*250MM
Net Weight	15.5KGS
Gross Weight	17KGS
Optional Function	RS232
	RS485

➢ 2 Universal Function

◆ **Adaptive Impedance Matching of Wind Turbine & Load**

Wind Turbine, battery and load all have internal resistance. According to impedance matching principle, only when input. Impedance equals to output impedance, power utilization would be maximal, and the energy utilization will be improved to the utmost extent by adaptive impedance matching of controller.

◆ **Control mode of Wind Turbine Open Circuit & Dump-loading; Over Rotate Speed Limiting, Over Voltage & Over current Limiting**

Traditional wind solar hybrid controller: When total current of wind & solar is higher than limiting current, battery power increases. The excess energy will be dumped by PWM. Wind turbine rotate speed lower. And the excess energy is consumed in mosfets or resistance. This leads wind turbine to heat, shortens wind turbine and controller's working life.

This professional wind solar hybrid controller :When total current of wind & solar is higher than limiting current, battery power increases .PWM duty cycle of charging circuit is decreased until charging is finished .When charging finished. Current circuit disconnected, wind turbine has no load, In order to prevent wind turbine from a very quick rotate speed, This professional controller provides the function of over rotate speed limiting and over voltage limiting, Once the rotate speed or voltage exceeds what you set on the controller, the controller will start PWM smart dump-loading automatically. Prevent wind turbine from working in unloading state for long time. This is good for both wind turbine and controller.

◆ **Battery Maximum Charging Current Smart Limiting**

Traditional wind solar hybrid controller: different wind solar hybrid systems need different capacity batteries, different capacity batteries have different maximum current, traditional wind solar hybrid controller has no settings for batteries maximum charging current , or have wrong settings , leads over current , shortens batteries using life .

This professional wind solar hybrid controller: User can set the capacity of battery, the professional controller can calculate the maximum charging current intelligently according to users settings, protect batteries.

◆ **Manual Brake**

◆ **Using or not using wind turbine to charge battery could be set manually**

User can choose whether use wind turbine to charge the battery. Set wind "M-SW: ON". Wind turbine charging is normal. Set wind "M-SW: OFF". Wind turbine charging is prohibited. Before connecting the wind turbine, user could first set wind "M-SW: OFF" manually to prevent sparks.

◆ **Using or not using solar panel to charge battery could be set manually**

User can choose whether use solar panel to charge the battery. Set solar "M-SW: ON", Solar panel charging is normal. Set solar "M-SW: OFF", Solar panel charging is prohibited. Before connecting the solar panels. User could firstly set solar "M-SW: OFF" manually to prevent sparks.

◆ **LCD display multi-level menu; intelligent button settings;**

The controller with LCD screen supports multi-level menu viewing. Users could set lots of parameters through buttons. The design of this controller is humanized.

➢ 3 Optional Function

◆ Boost Function

- **Wind turbine output voltage intelligent boost**

The boost module starts automatically when the wind turbine voltage is lower than battery voltage, ensure that the wind turbine normally charges the battery. The boost module shuts off automatically when the wind turbine voltage is higher than battery voltage.

- **Impedance matching self-adaption**

Due to internal resistance of wind turbine, battery, load, According to the impedance matching principle, the wind Turbine will have maximum power utilization rate and maximum power output only when the input impedance equals to output impedance, with impedance matching self-adaption .This controller enhances energy efficiency.

◆ Buck Function

- **Wind turbine output voltage intelligent buck**

The buck module starts automatically when the wind turbine voltage is higher than battery voltage, the controller real-time tracks maximum power of wind turbine and real-time limits the current of wind turbine .To solve the problem of overheating of wind turbine.

- **Wind Turbine Max Current Tracking (MCT) and Max Power Point Tracking (MPPT)**

When wind is in the breeze, load will slow down wind turbine rotate speed, thus reducing wind turbine output power. With MCT and MPPT, Keep wind turbine output power on the maximum balance point of wind power utilization. Combine with boost-buck circuit, improve the utilization coefficient of wind energy.

- **Impedance matching self-adaption**

Due to internal resistance of wind turbine, battery, load, According to the impedance matching principle, the wind turbine will have maximum power utilization rate and maximum power output only when the input impedance equals to output impedance, with impedance matching self-adaption .This controller enhances energy efficiency.

◆ Boost & Buck Function in one

- **Wind turbine output voltage intelligent boost**

The boost module starts automatically when the wind turbine voltage is lower than battery voltage, ensure that the wind turbine normally charges the battery. The boost module shuts off automatically when the wind turbine voltage is higher than battery voltage.

- **Wind turbine output voltage intelligent buck**

The buck module starts automatically when the wind turbine voltage is higher than battery voltage, the controller real-time tracks maximum power of wind turbine and real-time limits the current of wind turbine. To solve the problem of overheating of wind turbine.

- **Wind Max Current Tracking (MCT) and Max Power Point Tracking (MPPT)**

When wind is in the breeze, load will slow down wind turbine rotate speed, thus reducing wind turbine output power. With MCT and MPPT, Keep wind turbine output power on the maximum balance point of wind power utilization. Combine with boost-buck circuit, improve the utilization coefficient of wind energy.

- **Impedance matching self-adaption**

Due to internal resistance of wind turbine, battery, load, According to the impedance matching principle, the wind turbine will have maximum power utilization rate and maximum power output only when the input impedance equals to output impedance, with impedance matching self-adaption. This controller enhances energy efficiency.

◆ Other Optional Function:

- **RS Communication**

RS232 or RS485 real time communication

With serial port communication, you could monitor the whole system, storage and analyze data.

- **Procedure could be upgraded by RS232**

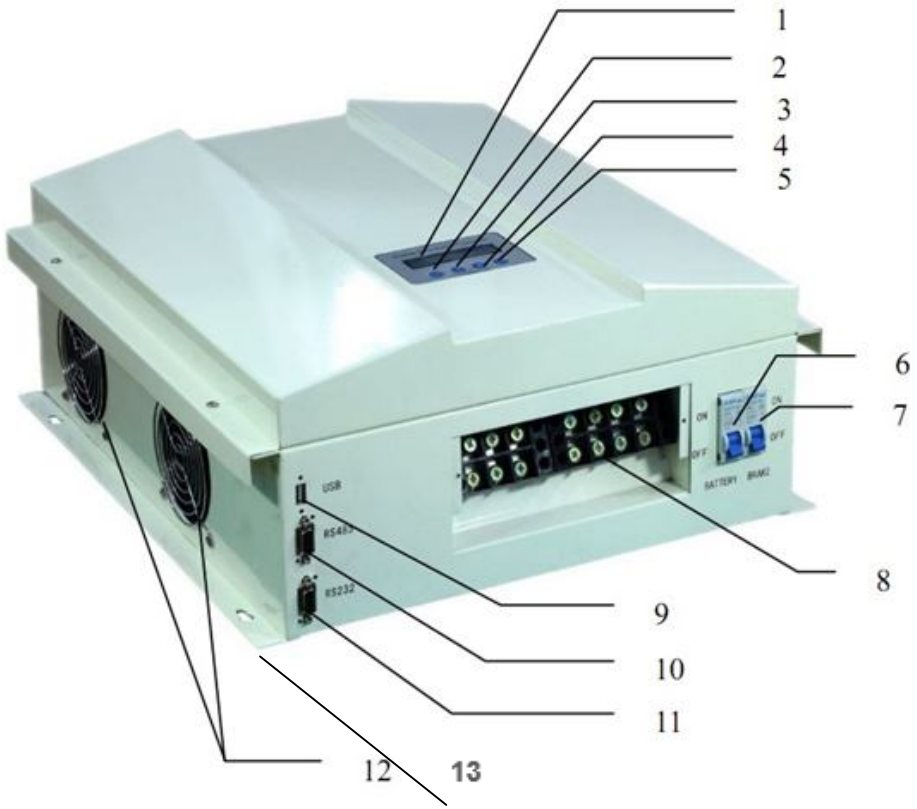
Some customization functions could be altered through upgraded procedure by serial ports.

- **PC and controller both could set parameters**

Connect PC and controller by serial interface. You could set the parameters on PC and controller simultaneously.
Software is free, easy to operate and no need to be installed.

➢ 4 Design & Dimension

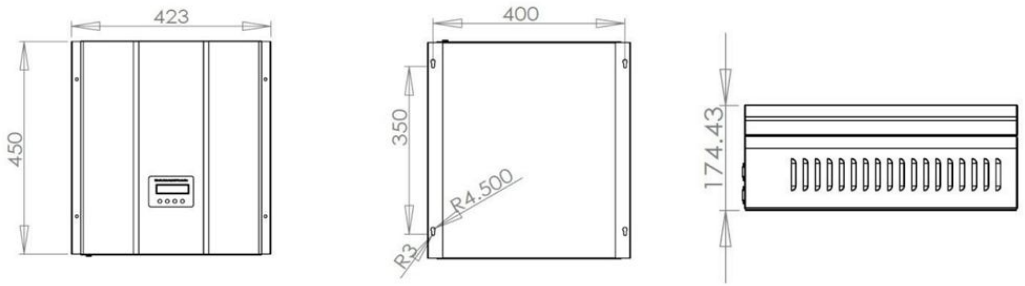
◆ Design



No.	1	2	3	4	5
Name	LCD Screen	Menu	◀	▶	Esc

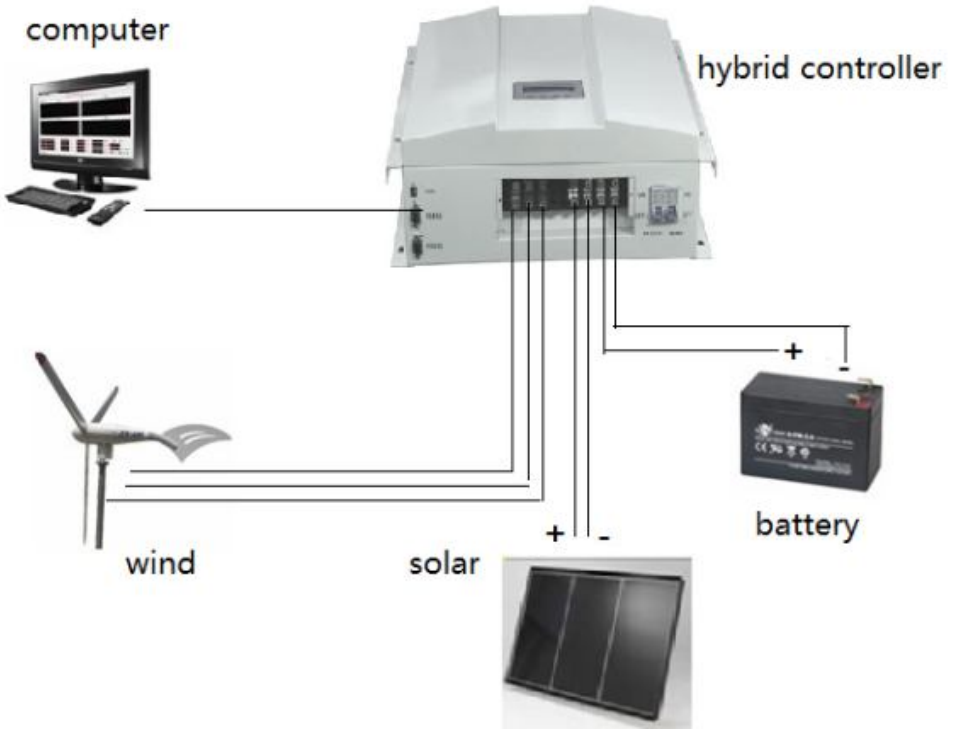
Item	Name	Description
1-5	LCD display panel	A friendly human-computer interaction interface. Running data and configuration parameters are displayed in the LCD screen. Parameters could be set by keys on the panel.
6	Battery switch	Disconnect battery current safely
7	Wind brake switch	Turn on (ON) or turn off (OFF) wind braking
8	Terminal block	Connect wind generator, PV panel, battery and load.
10	RS485 interface	Communication interface. (If don't purchase, no this interface
11	RS232 interface	Communication interface. (If don't purchase, no this interface
12	Resistance cooling fan	This fan rotates when wind generator braking ,cooling the resistances
12	System cooling fan	This fan rotates when charging current is too high, cooling the system
13	Mounting holes	Install controller

◆ **Dimension**



➢ 5 System Connection

◆ **Overview of System Connection**



➢ 6 Installation

◆ Warning

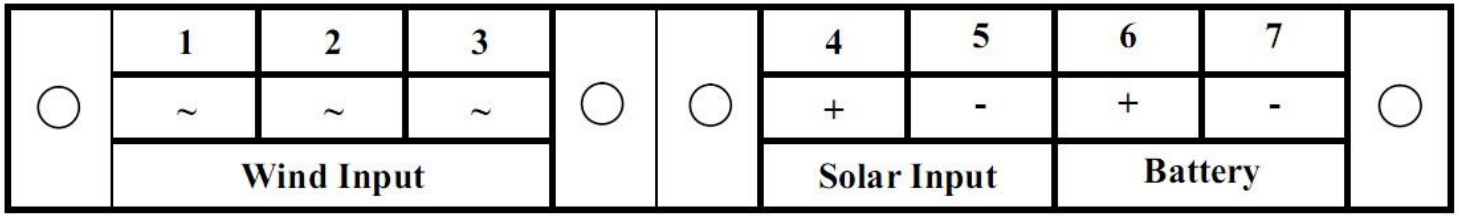
- Please read this chapter carefully before installation. To make sure the whole process is safe.
- Disconnect all sources of power to the controller before installing or adjusting.
- It is important to choose the installation location for controller. Keep the controller away from rain, insolation, put the controller in dry, ventilated place.
- Metal material placed around the controller is prohibited, otherwise, may cause battery short circuit.
- There should be enough space around the controller for cooling.
- Not fully connection and corrosive wire will produce lot of heat .Then wire insulation layer may be melted, lead surrounding material combustion, even fire. So please ensure every connection is secure, to avoid connector loose when moving.

◆ Installation Steps

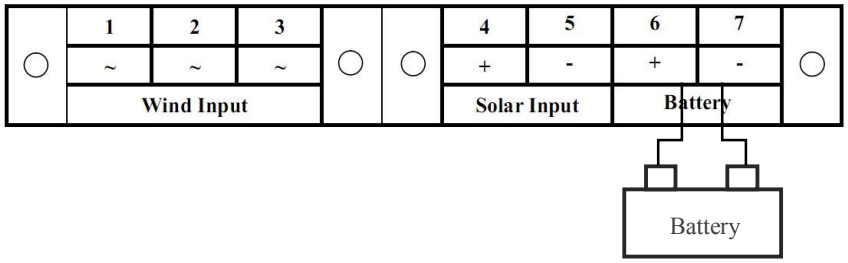
Step 1: Select Location Do not install the controller in place where insolate, high temperature and rainy. Pease keep enough free air around the controller.
Step 2: Inspect Put the controller on the place where it is easy to install and inspect if there is enough space for connections.
Step 3: Mark Mark 4 dots on install surface through controller's 4 open holes.
Step 4: Drill holes Drill 4 holes in the 4 dots which marked in step 3.
Step 5: Fix controller Aim controller's 4 open holes towards the 4 holes which were drilled in step 4. Then fix controller with screw nails.
Step 6: Check Make sure the controller is firmly installed.

➢ 7 Electrical Connection

◆ Terminals



◆ Battery Wiring



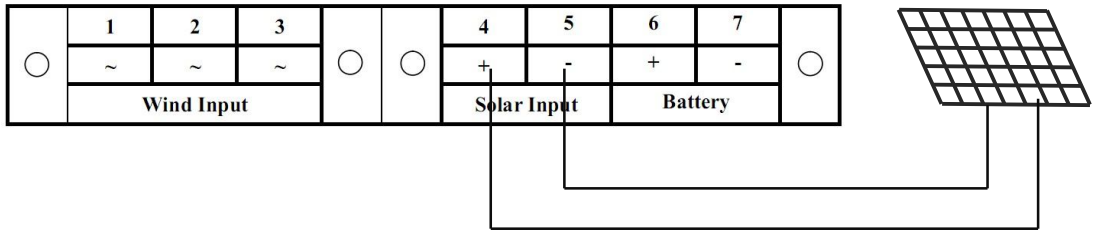
Connect battery positive( ) and negative( ) wires to controller as shown above.

Be careful of avoiding short circuit when wiring the battery.

Before wiring the battery, keep the battery switch of controller (BATTERY) on OFF, Do not switch it to ON untill you confirm the wiring is correct and safe.

Although controller has the protection of battery anti-reverse, but anti-connecting of positive ( ) and negative( ) is forbidden.

◆ Solar Wiring

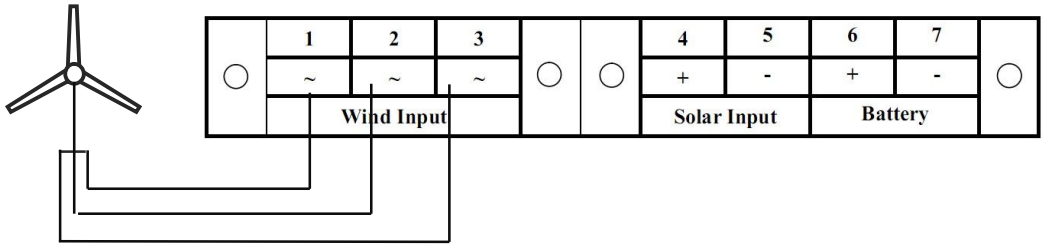


Connect solar positive( ) and negative( ) wires to controller as shown above.

The solar PV array may produce high voltages in sunlight. Be careful of electric shock when wiring.

Although controller has the protection of solar anti-reverse, but anti-connecting of positive ( ) and negative( ) is forbidden.

◆ Wind Generator Wiring



Connect wind generator wires to controller as shown above.

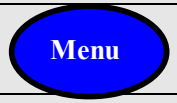
The wind generator could produce high voltages. Be careful of electric shock.
When it is breeze or windless, connection of wind generator and controller would be safer and better. Only when controller is in the state of start-up, high-speed rotate wind generator could be connected.

◆ **Confirm Wiring**

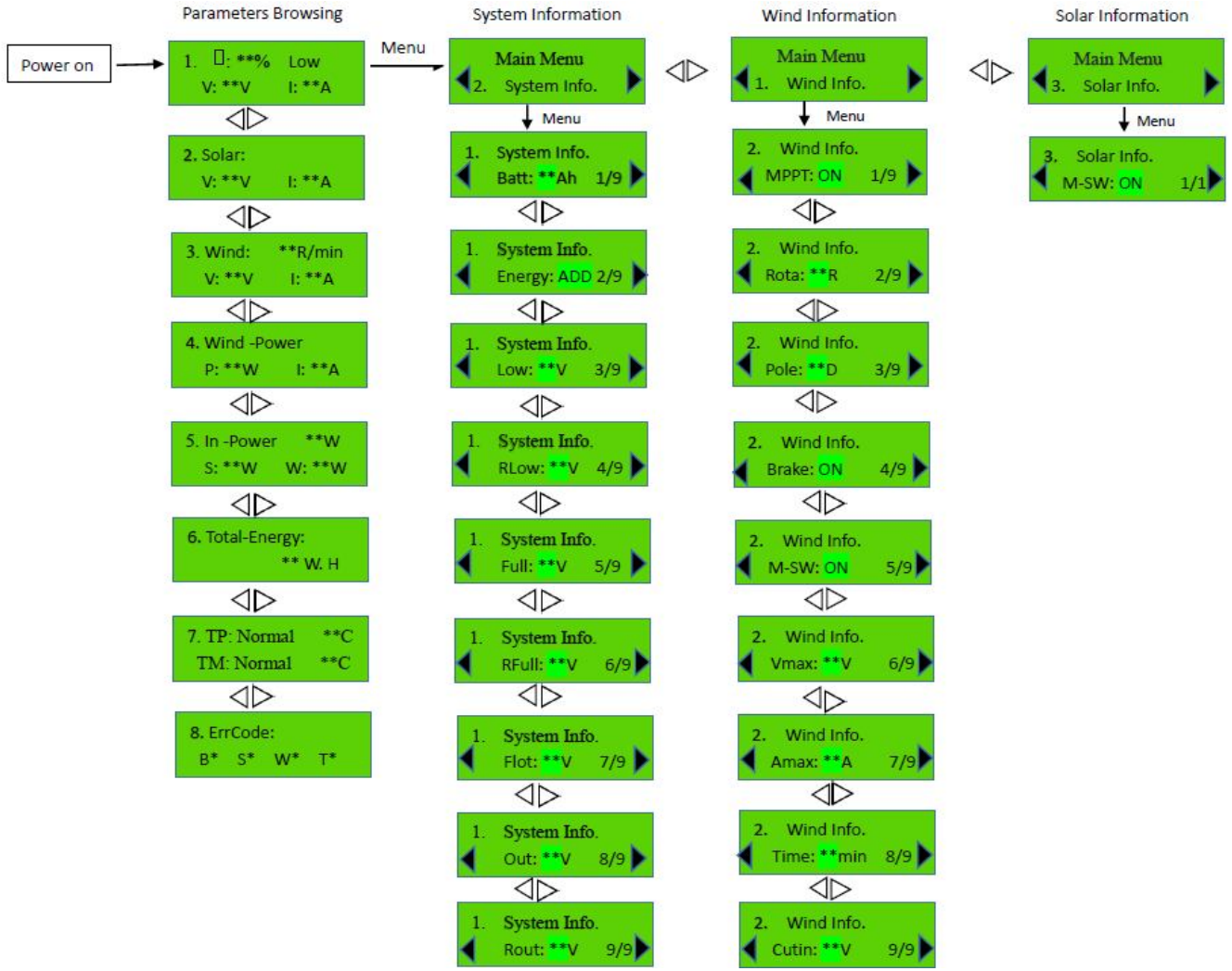
Double-check the wiring. Make sure each connection is correct. Secure no loose and resistive connections

➢ 8 Operation

◆ 8.1 Buttons

Buttons	Description
	Enter into sub-screen and confirm parameter setting.
	For left and right page turning or increase/ decrease the setting value. (Press more than two seconds and change the setting value quickly.
	For left and right page turning or increase/ decrease the setting value. (Press more than two seconds and change the setting value quickly.
	Return to parent screen or cancel the command.

◆ 8.2 Display on LCD Screen



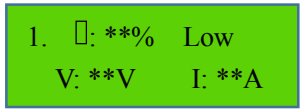
The light green shaded parameters could be set manually by users.

Parameter setting steps:

1. Press “Menu” to enter the setting state, setting value would flash.
2. Press “ ◁ ” to decrease the setting value. Press “ ▷ ” to increase the setting value.
3. After step 2, press “Menu” to save the setting, press “Esc” to back out.

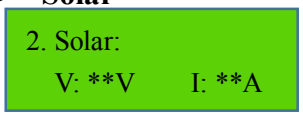
◆ 8.3 Parameters Browsing

- **Battery**



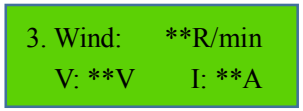
****%** — Percentage of battery power
Right corner have below displays:
Low — Battery power is low **Normal**—Battery power is normal
Full — Battery power is full **Float** — Floating
V — Battery voltage **I** — Battery charging voltage

- **Solar**

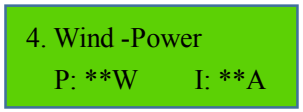


V—Solar voltage
I —Solar charging current

- **Wind**

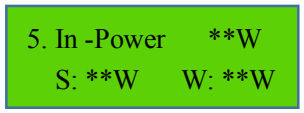


****R/min** — rotating speed of wind generator. Normal working state is this display
Other displays:
W1 ÖBrake —wind generator is manually braked
W2 ÖS** — when battery voltage is greater than "Full", generator is braking. Exit braking "Time" countdown.
W3 ÖS** — when rotate speed of wind generator is greater than "Rota", generator is braking. Exit braking "Time" countdown.
W4 ÖS** — when wind generator voltage is greater than "Vmax", generator is braking. Exit braking "Time" countdown.
W5 ÖS** — when wind generator current is greater than "Amax", generator is braking. Exit braking "Time" countdown.
W* ÖStay — Exit braking "Time" countdown finish, wind generator still stay brake.
"**Full**" could be set in 3.4. "**Rota**", "**Vmax**", "**Amax**", "**Time**" could be set in 3.5.
V—wind output voltage
I— wind output current



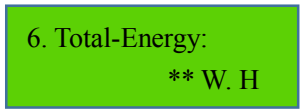
P— wind output power
I— wind output current

- **Input**



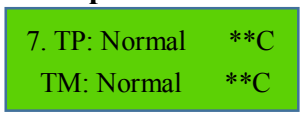
In-Power—total input power. **S** — solar input power. **W** — wind input power

- **Total Generated Energy**



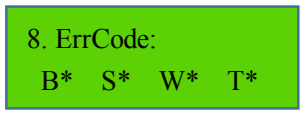
Total-Energy— total generated energy. This value is cumulative. If want to start from 0, set "Ener" in 3.4.

- **Temperature Protection**



TP — controller device working temperature. **TM**— MOS fet temperature
Normal: Temperature is normal. **Error:** Temperature detection module is error. **OTP:** Over-temperature protection. ****C:** **Celsius degree

- **Error Code**

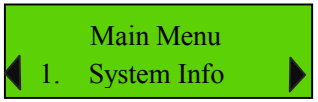


B1—battery under voltage. **B2**—battery over voltage
S1—solar input voltage is high. **S2**—solar charging module short-circuit fault. **S3**—solar charging module open-circuit fault
W1—wind generator is manually braked.
W2—battery voltage is greater than "Full", wind generator brakes
W3—wind generator rotate speed is greater than "Rota", generator brakes. **W4**—wind generator voltage is higher than "Vmax", generator brakes
W5—wind generator current is greater than "Amax", generator brakes. **W6**—brake module short-circuit fault
W7—wind charging module short-circuit fault. **W8**—wind charging module open-circuit fault
W9—wind input voltage is high
T1—controller device detection module fault. **T2**—controller device over-temperature protection
T5—MOS fet detection module fault. **T6**—MOS fet over-temperature protection
*** 0**—normal state

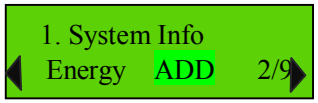
- **RS485** (This is optional function, if not purchase, there is no following display)

Device - Addr— Device address, for Modbus communication

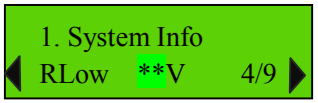
◆ **System Information**



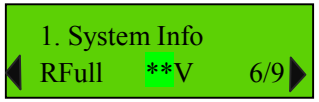
System Info — system information



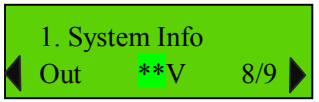
Energy — ADD Energy cumulates. CLEAR Energy clears to 0



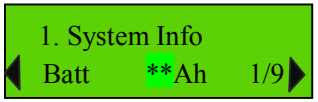
RLow — under voltage recovery



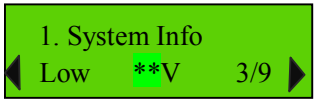
RFull — over voltage recovery



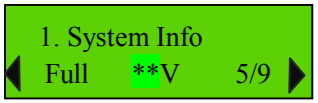
Out — over load protection voltage
This controller has no output.



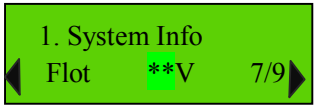
Batt — battery capacity



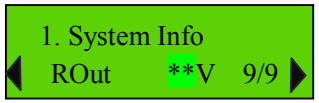
Low — under voltage



Full — over voltage

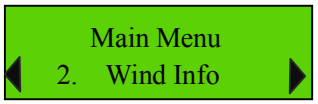


Flot — floating voltage

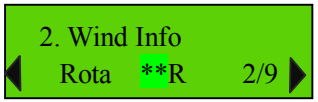


Rout — over load recovery voltage
This controller has no output.

◆ Wind Information

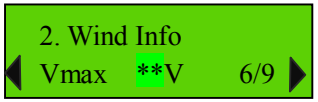


Wind Info — wind information

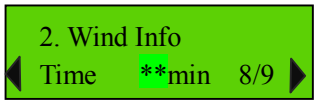


Rota — maximum rotate speed of wind generator.

Brake — manual braking switch
ON: turn on OFF: turn off



Vmax — Maximum voltage of wind

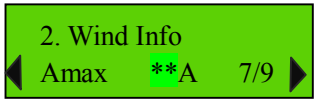


Time — braking time

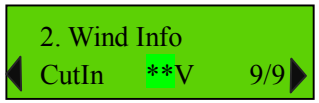
MPPT — wind MPPT function switch.
ON: turn on OFF: turn off
If do not purchase the function of Boost/Buck/Boost & Buck, it would display

Pole — wind generator pole logarithm

M-SW — wind charging manual switch
ON: turn on OFF: turn off

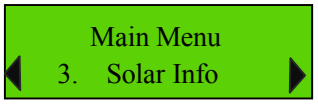


Amax — Maximum current of wind generator



CutIn — wind start charging voltage
If do not purchase the function of Boost or Boost & Buck, it would display

◆ Solar Information

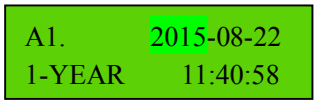


Solar Info — solar information

M-SW — wind charging manual switch
ON: turn on; OFF: turn off

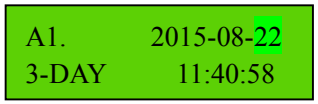
◆ **Date and Time Setting** (If don't purchase the USB function, there is no following display)

Date Time — date and time

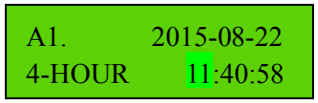


1-YEAR — "year" setting

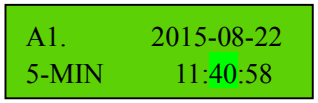
2-MONTH — "month" setting



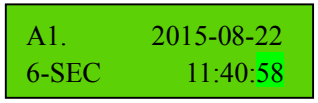
3-DAY — "day" setting



4-HOUR — "hour" setting



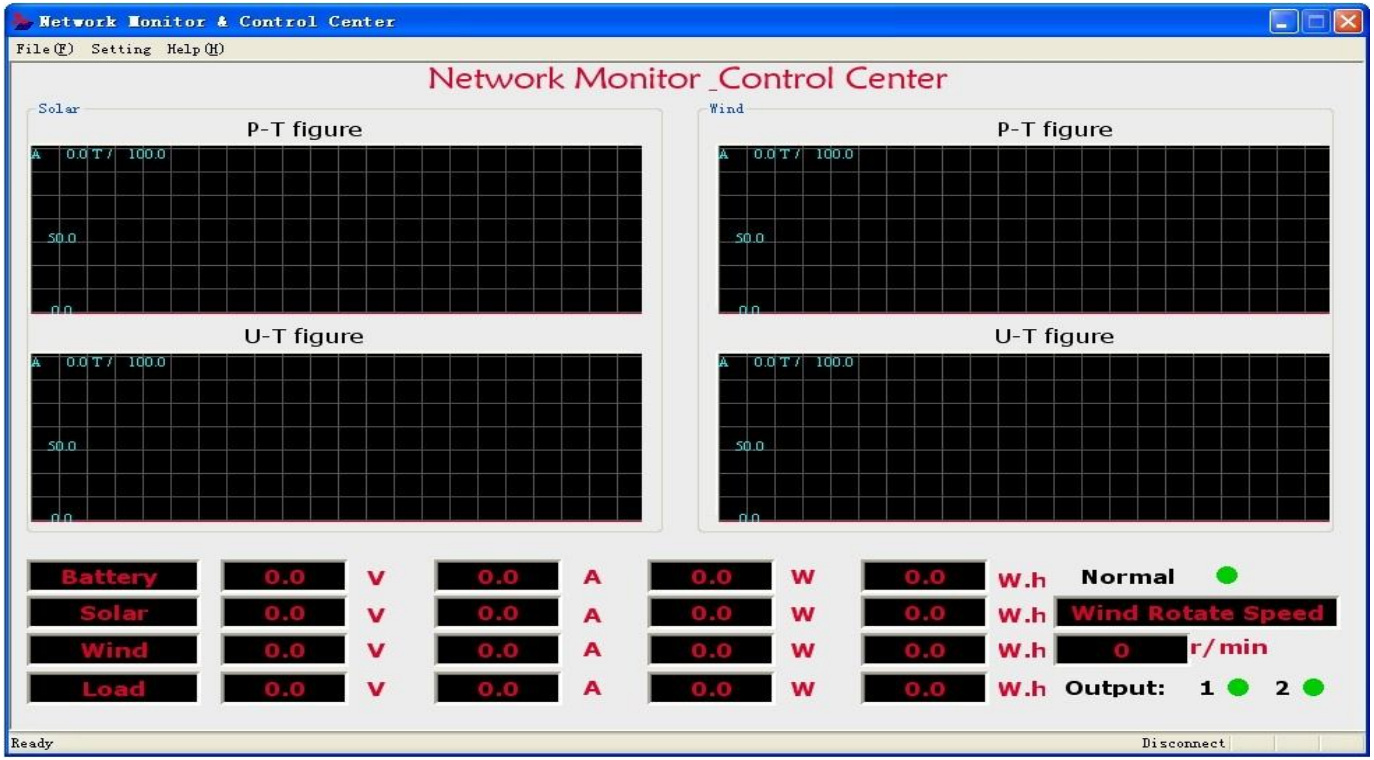
5-MIN — "minute" setting



6-SEC — "second" setting

➢ 9 PC Software Introduction

◆ **Overview of software interface:** The software is easy to operate need not to be installed. You can browse and set parameters on PC through the software. Users could ask the software from sellers.



◆ Contents displayed on browsing interface:

Battery: voltage; charging current; power; power obtained; generated energy obtained.

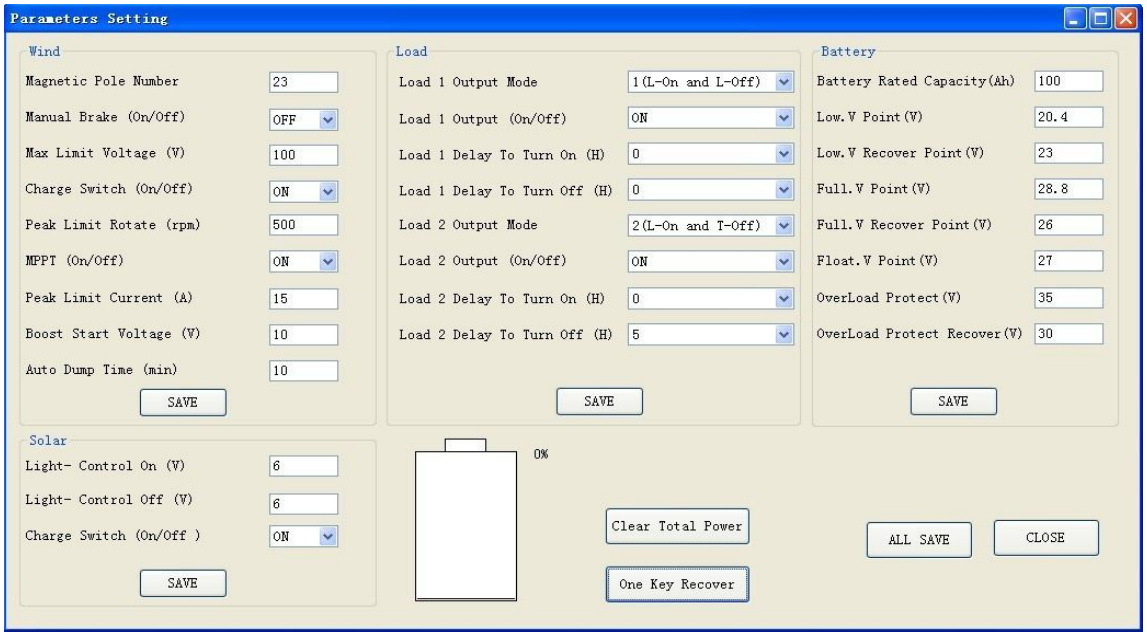
Solar: voltage; charging current; charging power; generated energy.

Wind turbine: voltage; charging current; charging power; generated energy.

Output load: voltage; current; power; output energy.

◆ Software using method could reference to the instruction of software compressed file.

◆ **Parameters Settings:** Click the software menu setting->parameters setting, Popup parameter setup dialog



➢ 10 The Warranty and After-Sales Service

The product is warranted for two years from the date of shipment to the original end user. During warranty period, if failure occurs when the product normal using, our company will repair or replace the failure product. Out of warranty period, we supply repair service, but for charges.

This warranty is only provided to buyers who have bought the product and signed the CI with us, and the warranty is nontransferable.

Our company reserves the right to change products and without notice when products update.

This warranty does not apply under the following conditions:

- Damage by not operating in accordance with user manual.
- Damage by accident, negligence, abuse or improper use.
- Unauthorized product modification or attempted repair.
- Damage occurring during shipment.

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E-mail: info@china-topgrand.com

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