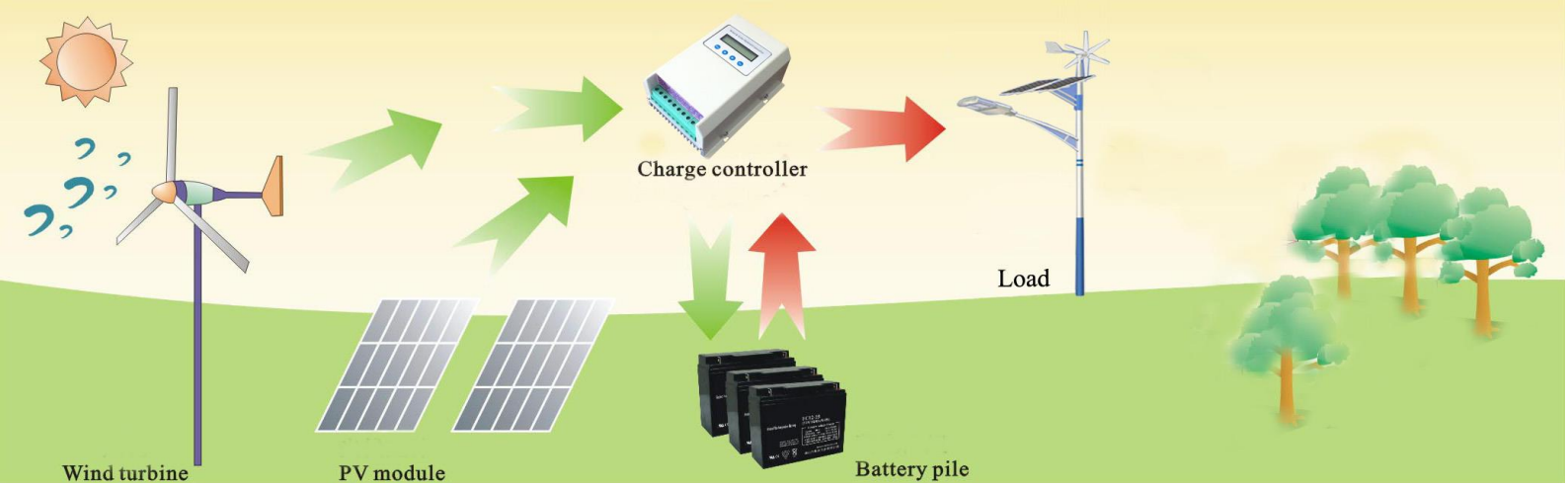
**Please read the manual before installation*

Professional V r Manual



1. 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 first 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.
- ✧ Controller should avoid long-term corrosive gas and moist environment. Do not put this product 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.

2. Catalogue

3. Technical Specification

Item No.	TGWS10-24	TGWS10-48
Rated Battery Voltage	24V	48V
Rated Wind Turbine Power	1kW	
Maximum Wind Turbine Input Power	1.5kW	
Rated Solar Charge Current	10A	
Over-discharge Voltage	20.4V(adjustable)	40.8V(adjustable)
Over-discharge Recovery Voltage	23.0V(adjustable)	46.5V(adjustable)
Over-charge Voltage	29.4V (adjustable)	58.8V(adjustable)
Over-charge Recovery Voltage	26.4V(adjustable)	52.8V(adjustable)
Floating Voltage	27V (adjustable)	54V(adjustable)
Dump-load Start Voltage	100V(adjustable)	100V(adjustable)
Dump-load Start Rotate Speed	500RPM(adjustable)	
Wind Turbine Charging Voltage	10V(adjustable)	20V(adjustable)
Wind Turbine Charging Mode	MPPT and PWM	
Solar Charging Mode	PWM	
Control Dump-load Mode	Over rotate speed limiting, Over voltage limiting,Over current limiting ,PWM	
Display Mode	LCD	
Display Parameters	wind power , wind voltage , wind current , wind turbine rotate speed ,PV power , PV voltage , PV current , battery voltage , battery power ,charge current, over voltage ,under voltage ,system state ,etc	
Working Temperature & Humidity	-20~+55°C/35~85%RH(Without Condensation)	
Quiescent Power Drain	<3W	
Protection Function	Solar reverse-charging protection , solar reverse-connection battery over charge protection, battery over-discharge battery reverse-connection protection, wind turbine automatic brake, wind turbine manual brake	
Communication (Optional)	RS232 or RS485	
Storage (Optional)	USB data logging	
Controller Size (L*W*H)	423 *450*175MM	
Package Size (L*W*H)	510*545*250MM	
Gross Weight	17KGS	

Item No.	TGWS14-24	TGWS15-48	TGWS20-96	TGWS20-120	TGWS20-220	TGWS20-240
Rated Battery Voltage	24V	48V	96V	120V	220V	240V
Rated Wind Turbine Power	2kW					
Maximum Wind Turbine Input Power	3kW					
Rated Solar Charge Current	10A					
Over-discharge Voltage	20.4V(adjustable)	40.8V (adjustable)	80.0V (adjustable)	102V (adjustable)	185V (adjustable)	204V (adjustable)
Over-discharge Recovery Voltage	23.0V(adjustable)	46.5V (adjustable)	92.0V (adjustable)	115V (adjustable)	210V (adjustable)	230V (adjustable)
Over-charge Voltage	29.4V (adjustable)	58.8V (adjustable)	115.0V (adjustable)	144V (adjustable)	265V (adjustable)	288V (adjustable)
Over-charge Recovery Voltage	26.4V(adjustable)	52.8V (adjustable)	105.0V (adjustable)	130V (adjustable)	240V (adjustable)	260V (adjustable)
Floating Voltage	27V (adjustable)	54V (adjustable)	110.0V (adjustable)	135V (adjustable)	250V (adjustable)	270V (adjustable)
Dump-load Start Voltage	100V (adjustable)	100V (adjustable)	200V (adjustable)	200V (adjustable)	300V (adjustable)	300V (adjustable)
Dump-load Start Rotate Speed	500RPM(adjustable)					
Wind Turbine Charging Voltage	10V (adjustable)	20V (adjustable)	40V (adjustable)	50V (adjustable)	100V (adjustable)	100V (adjustable)
Wind Turbine Charging Mode	MPPT and PWM					
Solar Charging Mode	PWM					
Control Dump-load Mode	Over rotate speed limiting, Over voltage limiting,Over current limiting ,PWM					
Display Mode	LCD					
Display Parameters	wind power , wind voltage , wind current , wind turbine rotate speed ,PV power , PV voltage , PV current , battery voltage , battery power ,charge current, over voltage ,under voltage ,system state ,etc					
Working Temperature & Humidity	-20~+55°C/35~85%RH(Without Condensation)					
Quiescent Power Drain	<3W					
Protection Function	Solar reverse-charging protection , solar reverse-connection battery over charge protection, battery over-discharge battery reverse-connection protection, wind turbine automatic brake, wind turbine manual brake					
Communication (Optional)	RS232 or RS485					
Storage (Optional)	USB data logging					
Controller Size (L*W*H)	423 *450*175MM					
Package Size (L*W*H)	510*545*250MM					
Gross Weight	17KGS					

Item No.	TGWS20-48	TGWS20-96	TGWS20-120	TGWS20-220	TGWS20-240
Rated Battery Voltage	48V	96V	120V	220V	240V
Rated Wind Turbine Power	2kW				
Maximum Wind Turbine Input Power	3kW				
Rated Solar Charge Current	10A				
Over-discharge Voltage	40.8V (adjustable)	80.0V (adjustable)	102V (adjustable)	185V (adjustable)	204V (adjustable)
Over-discharge Recovery Voltage	46.5V (adjustable)	92.0V (adjustable)	115V (adjustable)	210V (adjustable)	230V (adjustable)
Over-charge Voltage	58.8V (adjustable)	115.0V (adjustable)	144V (adjustable)	265V (adjustable)	288V (adjustable)
Over-charge Recovery Voltage	52.8V (adjustable)	105.0V (adjustable)	130V (adjustable)	240V (adjustable)	260V (adjustable)
Floating Voltage	54V (adjustable)	110.0V (adjustable)	135V (adjustable)	250V (adjustable)	270V (adjustable)
Dump-load Start Voltage	100V (adjustable)	200V (adjustable)	200V (adjustable)	300V (adjustable)	300V (adjustable)
Dump-load Start Rotate Speed	500RPM(adjustable)				
Wind Turbine Charging Voltage	20V (adjustable)	40V (adjustable)	50V (adjustable)	100V (adjustable)	100V (adjustable)
Wind Turbine Charging Mode	MPPT and PWM				
Solar Charging Mode	PWM				
Control Dump-load Mode	Over rotate speed limiting, Over voltage limiting,Over current limiting ,PWM				
Display Mode	LCD				
Display Parameters	wind power , wind voltage , wind current , wind turbine rotate speed ,PV power , PV voltage , PV current , battery voltage , battery power ,charge current, over voltage ,under voltage ,system state ,etc				
Working Temperature & Humidity	-20~+55°C/35~85%RH(Without Condensation)				
Quiescent Power Drain	<3W				
Protection Function	Solar reverse-charging protection , solar reverse-connection battery over charge protection, battery over-discharge battery reverse-connection protection, wind turbine automatic brake, wind turbine manual brake				
Communication (Optional)	RS232 or RS485				
Storage (Optional)	USB data logging				
Controller Size (L*W*H)	423 *450*175MM				
Package Size (L*W*H)	510*545*250MM				
Gross Weight	17KGS				

Item No.	TGWS30-48	TGWS30-96	TGWS30-120	TGWS30-220	TGWS30-240
Rated Battery Voltage	48V	96V	120V	220V	240V
Rated Wind Turbine Power	3kW				
Maximum Wind Turbine Input Power	4.5kW				
Rated Solar Charge Current	10A				
Over-discharge Voltage	40.8V (adjustable)	80.0V (adjustable)	102V (adjustable)	185V (adjustable)	204V (adjustable)
Over-discharge Recovery Voltage	46.5V (adjustable)	92.0V (adjustable)	115V (adjustable)	210V (adjustable)	230V (adjustable)
Over-charge Voltage	58.8V (adjustable)	115.0V (adjustable)	144V (adjustable)	265V (adjustable)	288V (adjustable)
Over-charge Recovery Voltage	52.8V (adjustable)	105.0V (adjustable)	130V (adjustable)	240V (adjustable)	260V (adjustable)
Floating Voltage	54V (adjustable)	110.0V (adjustable)	135V (adjustable)	250V (adjustable)	270V (adjustable)
Dump-load Start Voltage	100V (adjustable)	200V (adjustable)	200V (adjustable)	300V (adjustable)	300V (adjustable)
Dump-load Start Rotate Speed	500RPM(adjustable)				
Wind Turbine Charging Voltage	20V (adjustable)	40V (adjustable)	50V (adjustable)	100V (adjustable)	100V (adjustable)
Wind Turbine Charging Mode	MPPT and PWM				
Solar Charging Mode	PWM				
Control Dump-load Mode	Over rotate speed limiting, Over voltage limiting,Over current limiting ,PWM				
Display Mode	LCD				
Display Parameters	wind power , wind voltage , wind current , wind turbine rotate speed ,PV power , PV voltage , PV current , battery voltage , battery power ,charge current, over voltage ,under voltage ,system state ,etc				
Working Temperature & Humidity	-20~+55°C/35~85%RH(Without Condensation)				
Quiescent Power Drain	<3W				
Protection Function	Solar reverse-charging protection , solar reverse-connection battery over charge protection, battery over-discharge battery reverse-connection protection, wind turbine automatic brake, wind turbine manual brake				
Communication (Optional)	RS232 or RS485				
Storage (Optional)	USB data logging				
Controller Size (L*W*H)	423 *450*175MM				
Package Size (L*W*H)	510*545*250MM				
Gross Weight	17KGS				

4. Universal Function

4.1 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 , The energy utilization will be improved to the utmost extent by adaptive impedance matching of controller .

4.2 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 contoller :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 .

4.3 Battery Maximum Charging Current Smart Limiting

- Traditonal 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 user's settings, Protect batteries .

4.4 Manual Brake

4.5 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 .

4.6 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 first set solar.

"M-SW : OFF " manually to prevent sparks .

4.7 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 desigh of this controller is humanized .

5 .Optional Function

5.1 Optional Function 1 : 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.

5.2 Optional Function 2 : 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.

5.3 Optional Function 3 : Boost & Buck 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.

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.

5.4 Optional Function 4 : RS Communication

RS232 or RS485 real time communication

With serial port communication . User can analyse the data from the software installed in the computer.

Procedure could be upgraded by RS232

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

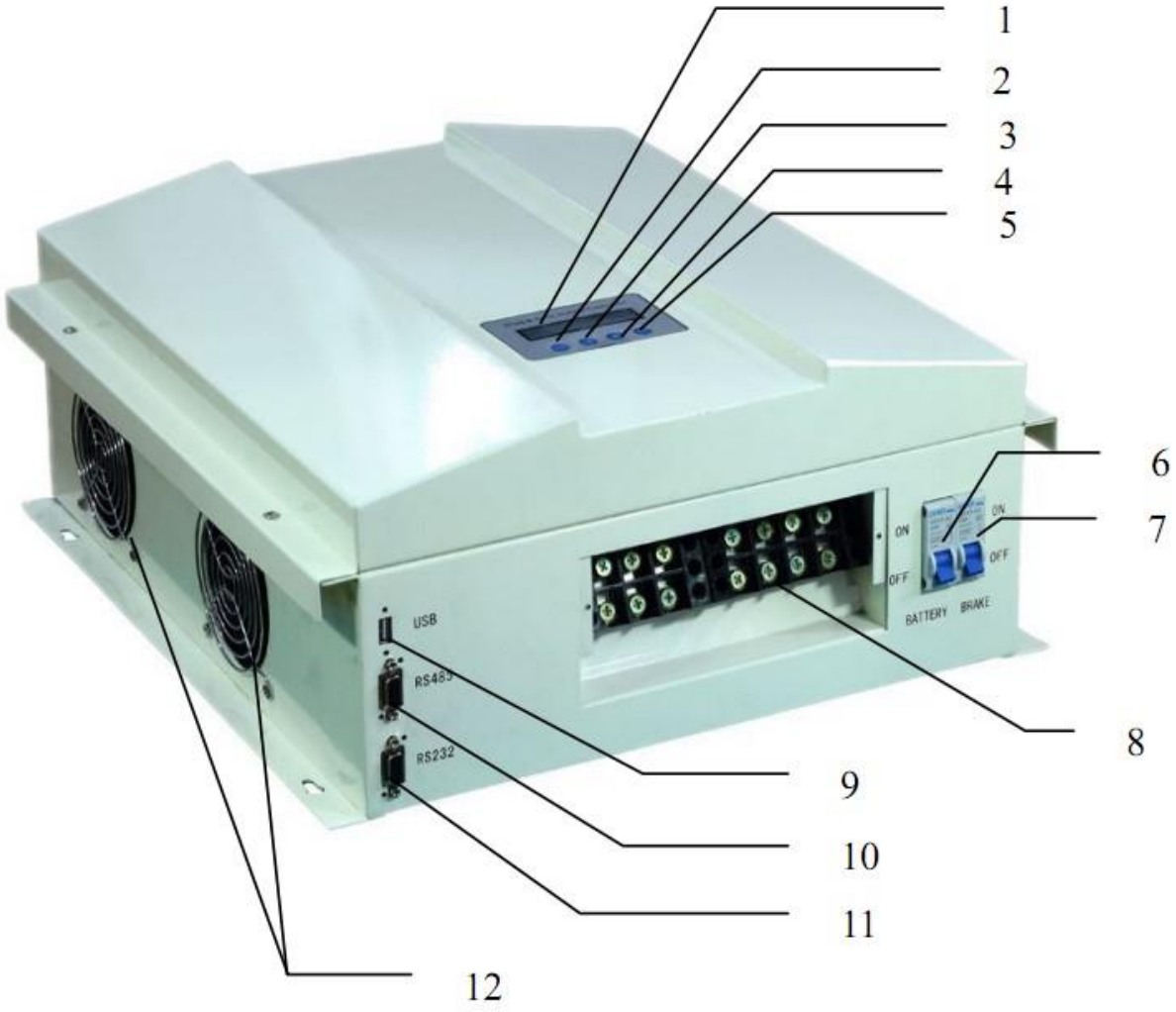
PC and controller both could set parameters

5.5 Optional Function 5 : USB data logging function

All data can be stocked into 8GB USB flash disk . User can check the system information with taking the USB flash disk out of controller.

6. Design & Dimension

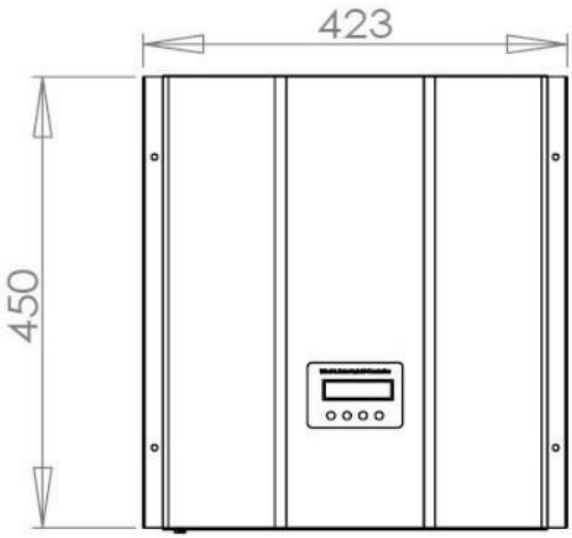
6.1 Design

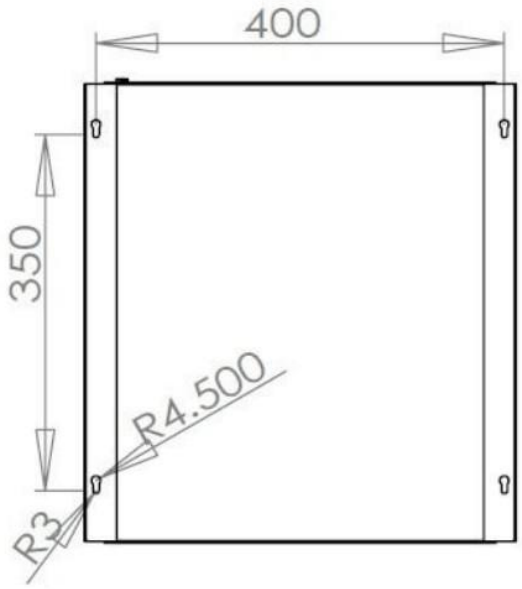


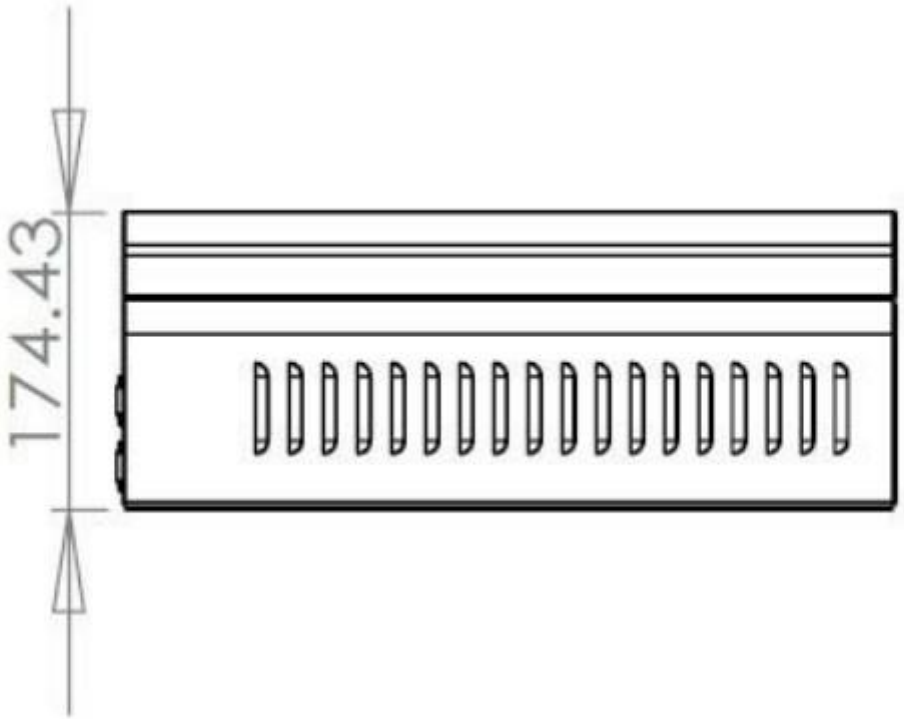
No.	1	2	3	4	5	6
Name	LCD Screen	Menu	◀	▶	Esc	Battery Switch

No.	7	8	9	10	11	12
Name	Brake Switch	Terminal Blocks	USB (optional)	RS485 (optional)	RS232 (optional)	Fans

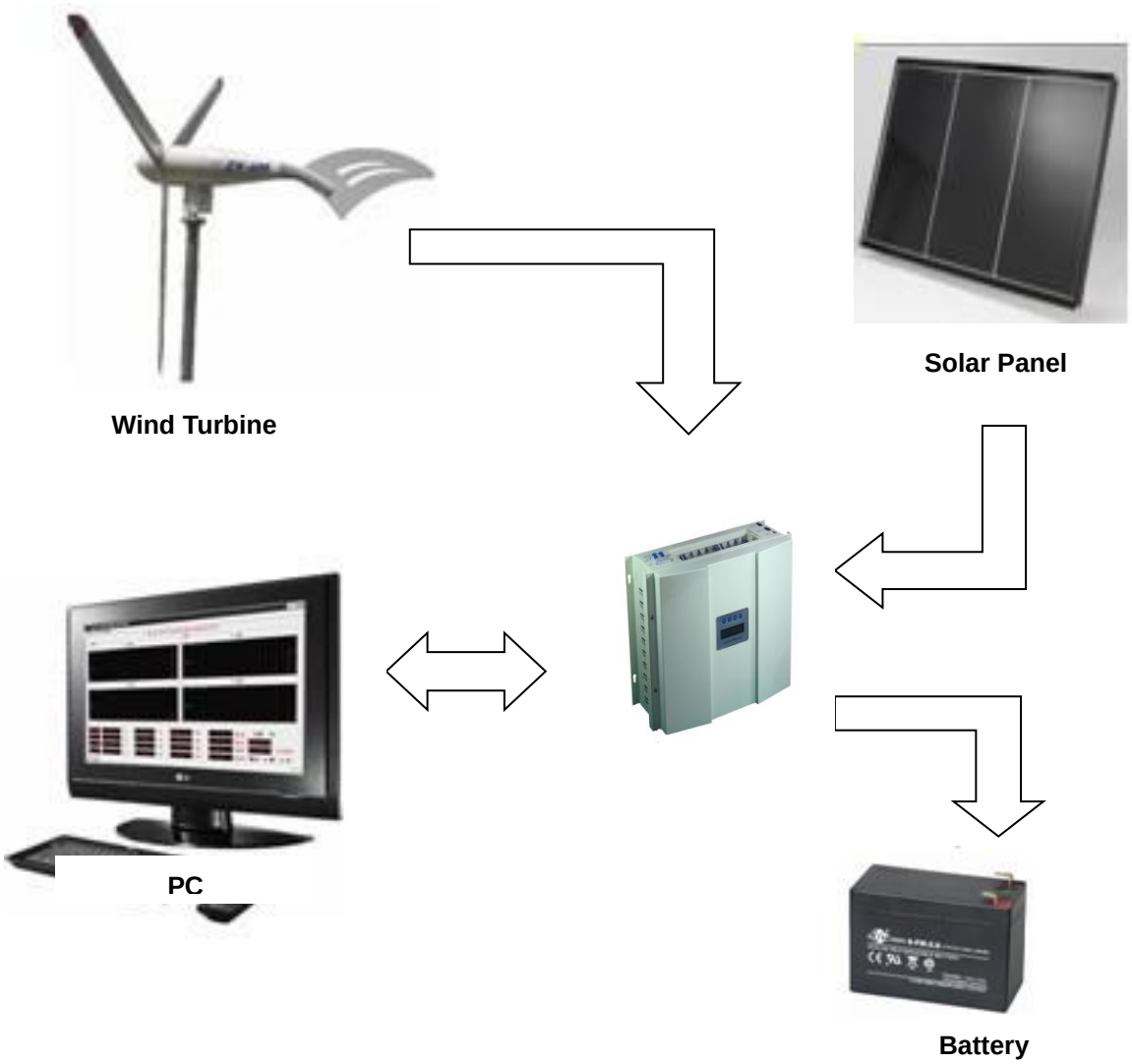
6.2 Dimension







7 System Schematic



8 Installation

8.1 Warning

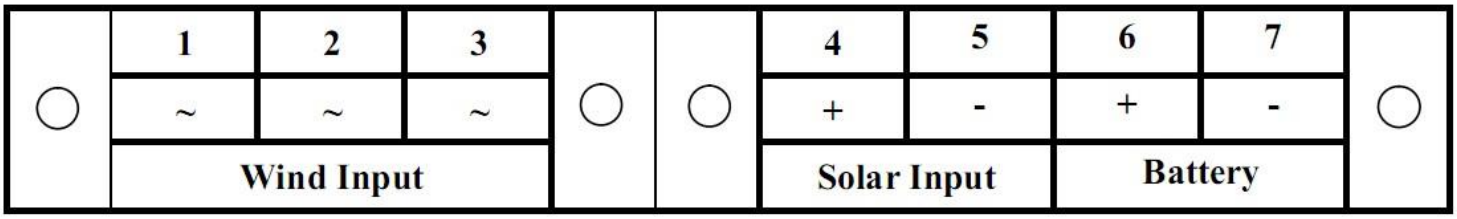
- Pls read this chapter carefully before installation. To make sure the whole process is safe .
- It is important to choose the installation location for controller. Keep the controller away from rain, insolation , put the controller in dry ,ventilated place .
- Metal material placed around the controller is prohibited, if not. may cause battery short circuit .
- There should be enough space around the controller for cooling .
- This controller could only charge to the lead-acid batteries which are in control range of this controller .
- 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.

8.2 Installation Steps

Step 1 : Select Location	Do not install the controller in place where insolate, high temperature and rainy. Pls 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 with 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 setp 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 .

9 Electrical Connection

9.1 Terminal



9.2 Connection steps

Pls do the connections safely and strictly according to the steps below

Step 1 : Before connection . Pls put " BATTERY" Switch to " OFF" . Then , conect battery to Controller's " Batttery "Terminals with cuprum cable which more than 6mm² and less than 1 meter . Although there is reverse connection protection ,But connecting battery reversely is forbidden ! Connection is finished ,Put " BATTERY" Switch to " ON".

Step 2 : To prevent producing sparks while connecting, User are supposed to set wind, solar "M-SW: OFF .

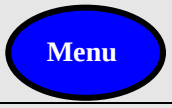
Step 3 : Connect wind turbine to controller's " Wind Input "terminals ,Make sure positive to positive , negative to negative .

Step 4: Connect solar panels to controller's " Solar Input " terminals .Make sure positive to positive, negative to negative .

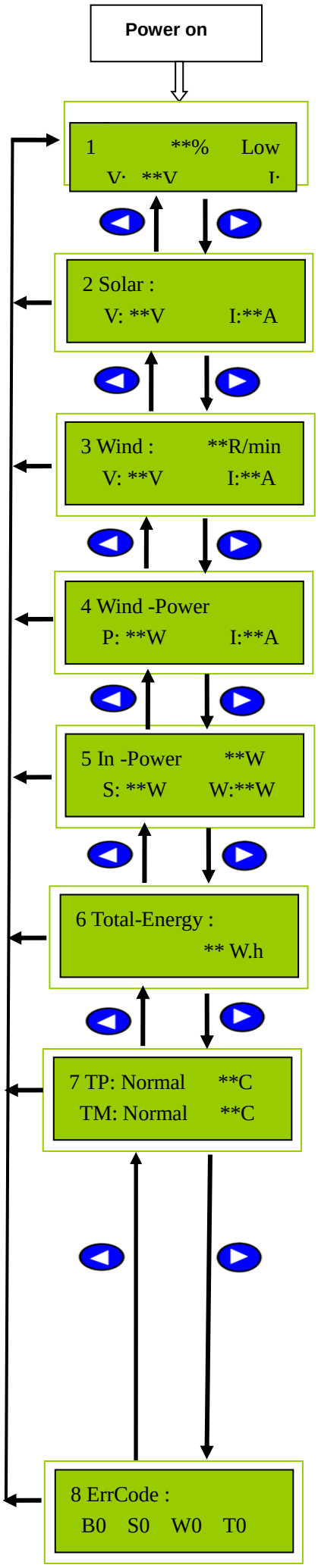
Step 5 : After connecting ,User can do what he wants to do in step 2 to set Wind , Solar " M-SW : ON" . Or you can do the operations on PC through RS232 .

10 Menu Operation

10.1 Buttons

Buttons	Description
	It is used to select menu item and confirm parameter setting
	It is used for left and right page turning in the screen or increase/ decrease number
	It is used for left and right page turning in the screen or increase/ decrease number
	It is used as return/finish function

10.2 Display on LCD Screen ——— Default Interface



1 Battery power:
* % stands for battery power range
Low : Battery low voltage , Normal :Battery normal voltage
Full : Battery full voltage , Float : Battery floating voltage
Ft **S : The countdown of exiting from floating charging

Menu

2 Solar voltage, Solar charging current

Menu

3 Wind turbine rotate speed .
Wind voltage, Wind charging current

Menu

4 Wind power , Wind output current

Menu

5 Total input power
Solar input power ,Wind input power

Menu

6 Total energy generated

Menu

7 TP : Controller working temperature , Normal : Temperature normal
Error : Temperature detection model fault .OTP : Over-heating protection
TM :Mosfet working temperature, Normal : Temperature norm
Error : Temperature detection model fault .OTP :Over-heating protection

Menu

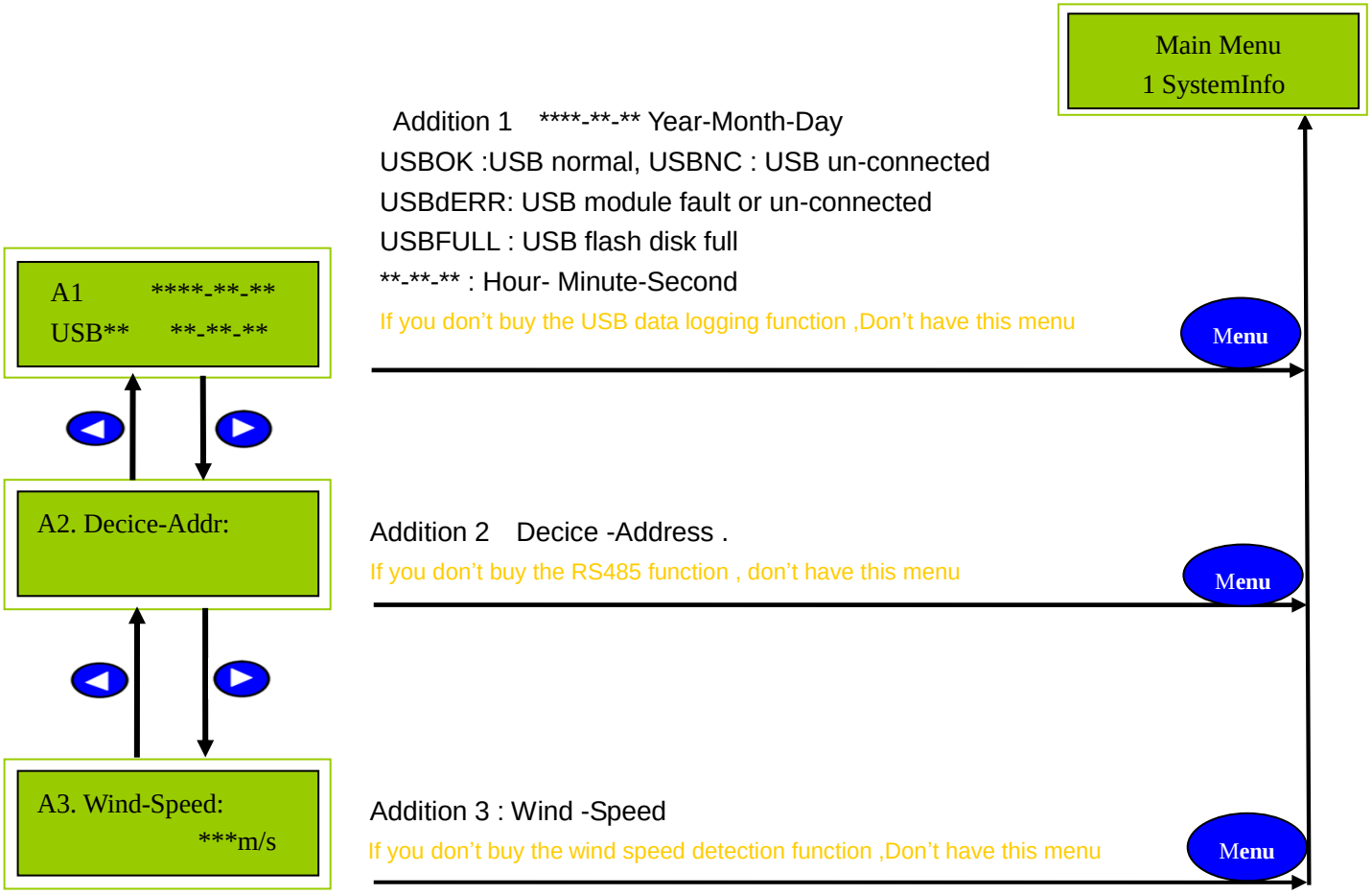
8 Erro Code
B0 : Battery normal , B1 : Battery discharged ,B2: Battery over-charged
S0 : Solar panel normal ,S1 : High PV input voltage , S2: PV charge fault
S3 : PV charge open circuit fault
W0 : Wind turbine normal , W1: manual brake on , W2: Battery fully charged
W3 : Maximum RPM protection , W4 :Vmax protection ,W5: Amax protection
W6: Brake module short-circuit fault
W7: Wind turbine charge module short-circuit fault
W8: Wind turbine charge module open-circuit fault
W9: Too high wind input voltage

T0 :Temperature normal ,T1: Mosfet temperature detection model fault

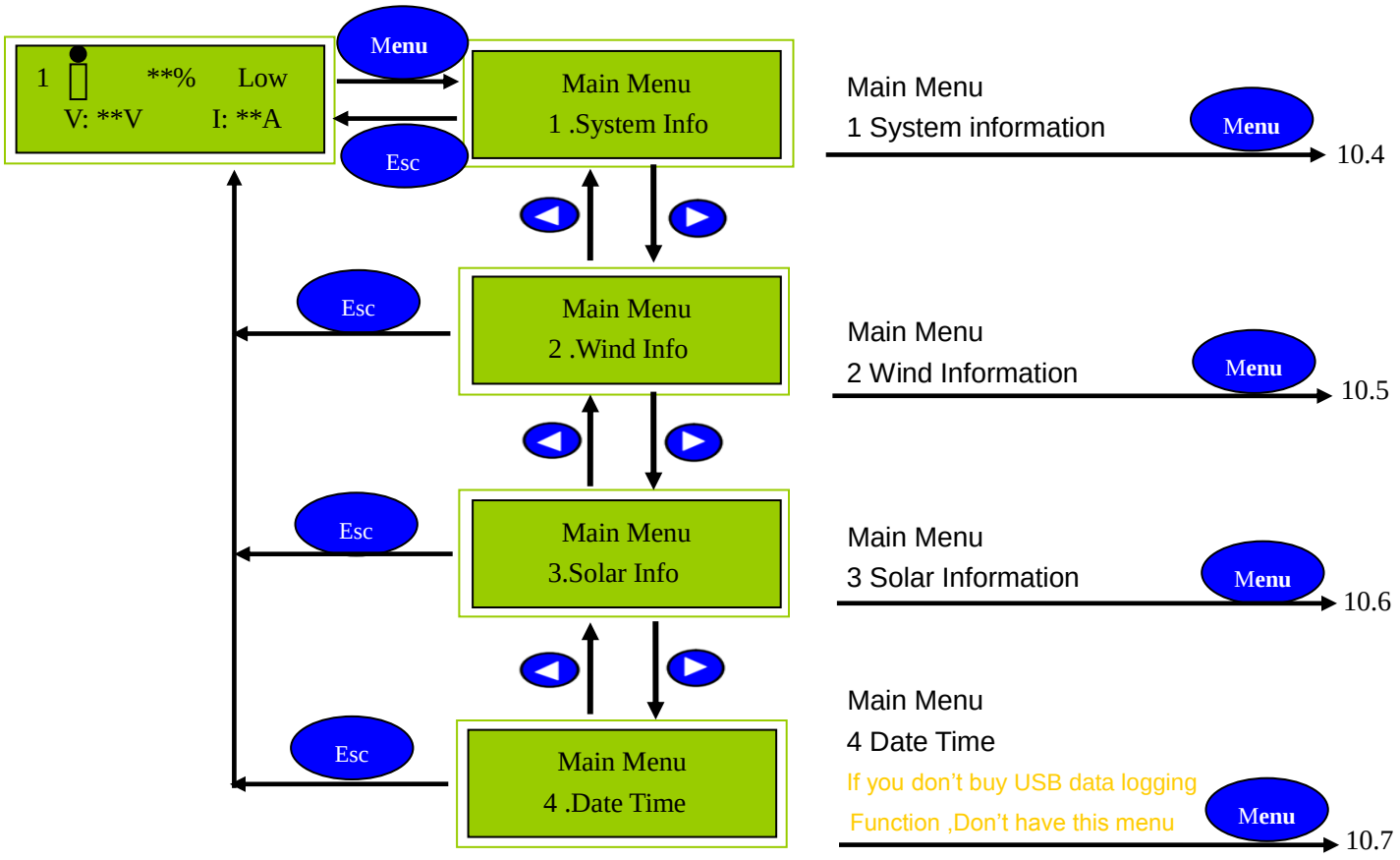
Menu

T2:Mosfet Over-Heating Protection,T6:Conteroller elements temperature detection model fault T7 : Controller elements Over-Heating Protection

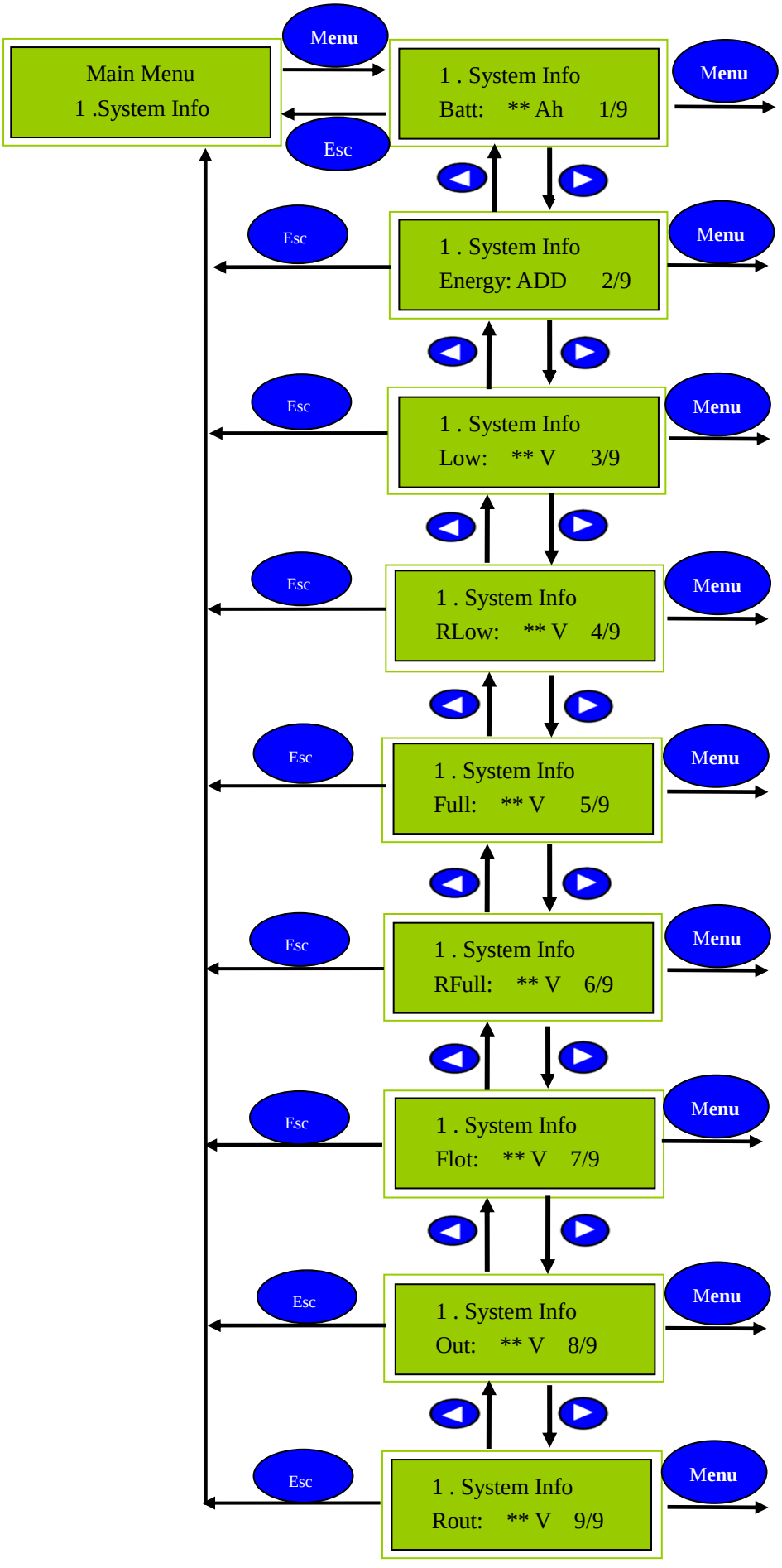
Main Menu
1 System Info



10.3 Display on LCD Screen ——— Main Menu Interface



10.4 Display on LCD Screen ——— System Information



Battery capacity numeric flickers.

Press ▶ and ◀ to increase/decrease the value. Press “Menu” , saved; Press “Esc” , not saved.

“ ADD ”or “CLEAR” “ flickers.

Press ◀ and ◀ to select “ADD” or “ CLEAR”. If choose “CLEAR” and press “Menu”, Total-Energy will be 0. Then it will be“ADD”again.

Over-discharge voltage numeric flickers.

Press ▶ and ◀ to increase/decrease the value. Press “Menu”,saved; Press “Esc” , not saved.

Over-discharge recovery voltage numeric flickers.Press ▶ and ◀ to increase/decrease the value. Press “Menu” , saved; Press “Esc” , not saved.

Over-charge voltage numeric flickers. Press ▶ and ◀ to increase/decrease the value. Press “Menu” saved; Press “Esc” , not saved.

Over-charge recovery voltage numeric flickers.

Press ▶ and ◀ to increase/decrease the value. Press “Menu” , saved; Press “Esc” , not

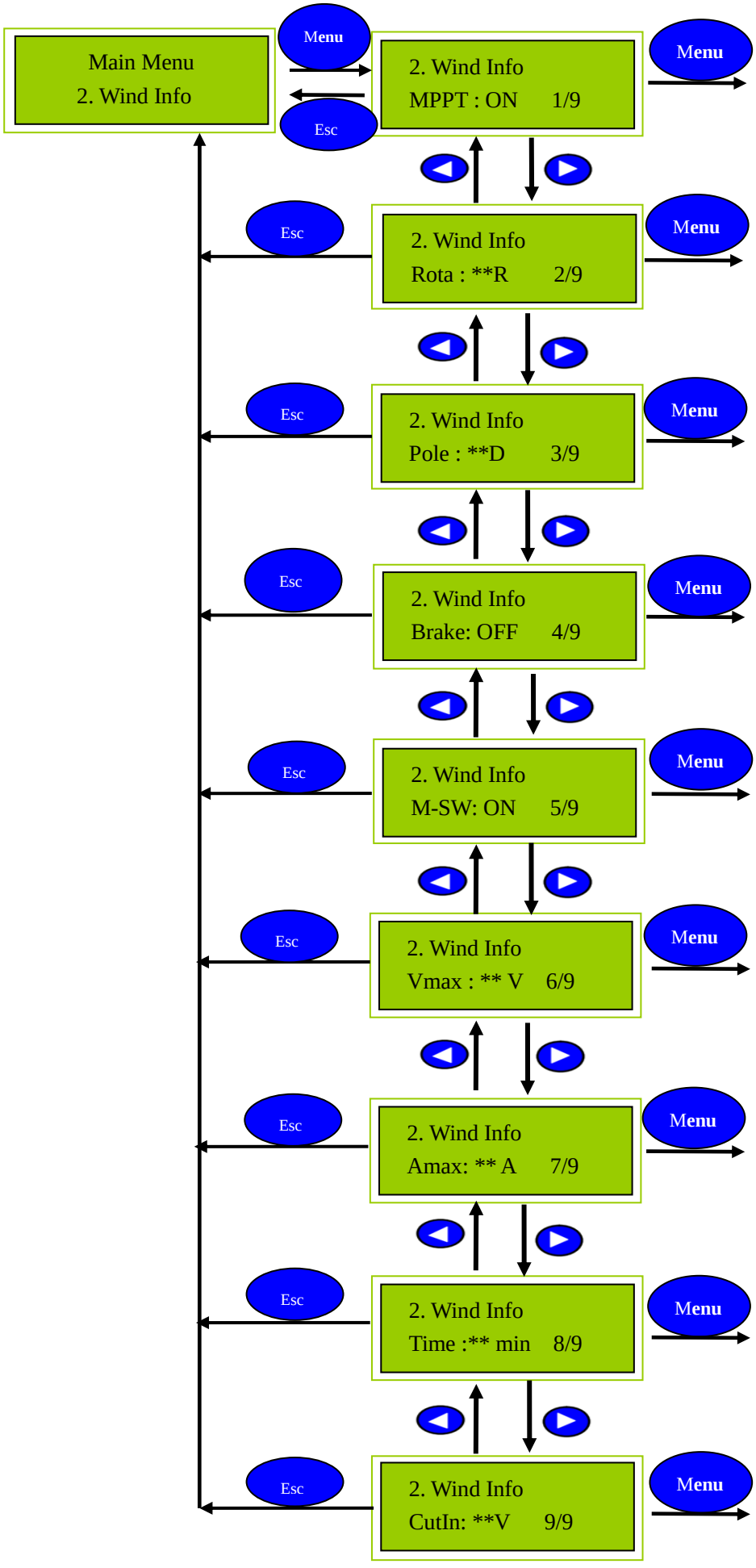
Floating voltage numeric flickers.

Press ▶ and ◀ to increase/decrease the value. Press “Menu” , saved; Press “Esc” , not saved.

This model doesn’t have this function.

This model doesn’t have this function.

10.5 Display on LCD Screen ——— Wind Information



Wind turbine maximum limiting rotate speed numeric flickers. Pres and to increase/decrease the value .Press “Menu” , saved; Press “Esc” , not saved.

Wind turbine magnetic pole numeric flickers. Press and to increase/decrease the value. Press “Menu” , saved; Press “Esc” , not saved.

“ON” or “OFF” flickers. Press and to select “ON” or “OFF”. Press “Menu” , saved; Press “Esc” , not saved.
ON: wind turbine brake is on;
OFF: wind turbine brake is off.

“ON” or “OFF” flickers. Press and to select “ON” or “OFF”. Press “Menu” ,saved; Press “Esc” , not saved.
ON: Wind charging is on; OFF: Wind charging is off.

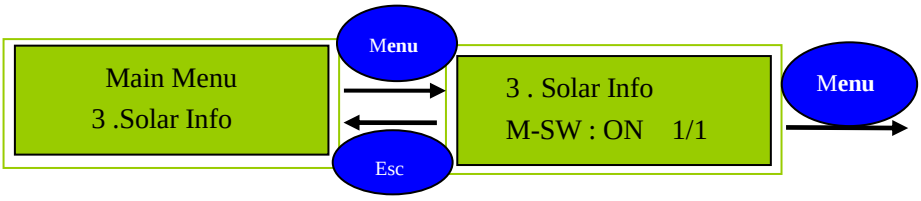
Wind turbine maximum voltage numeric flickers. Press and to increase/decrease the value. Press “Menu”, saved; Press “Esc”,not saved.

Wind turbine maximum current numeric flickers. Press and to increase/decrease the value. Press “Menu” ,saved; Press “Esc” ,not saved.

Self-dumping time numeric flickers. Press and to increase/decrease the value. Press “Menu” saved; Press “Esc” , not saved.

Boost start voltage numeric flickers. Press and to increase/decrease the value. Press “Menu” , saved; Press “Esc” , not saved.

10.6 Display on LCD Screen ——— Solar Information

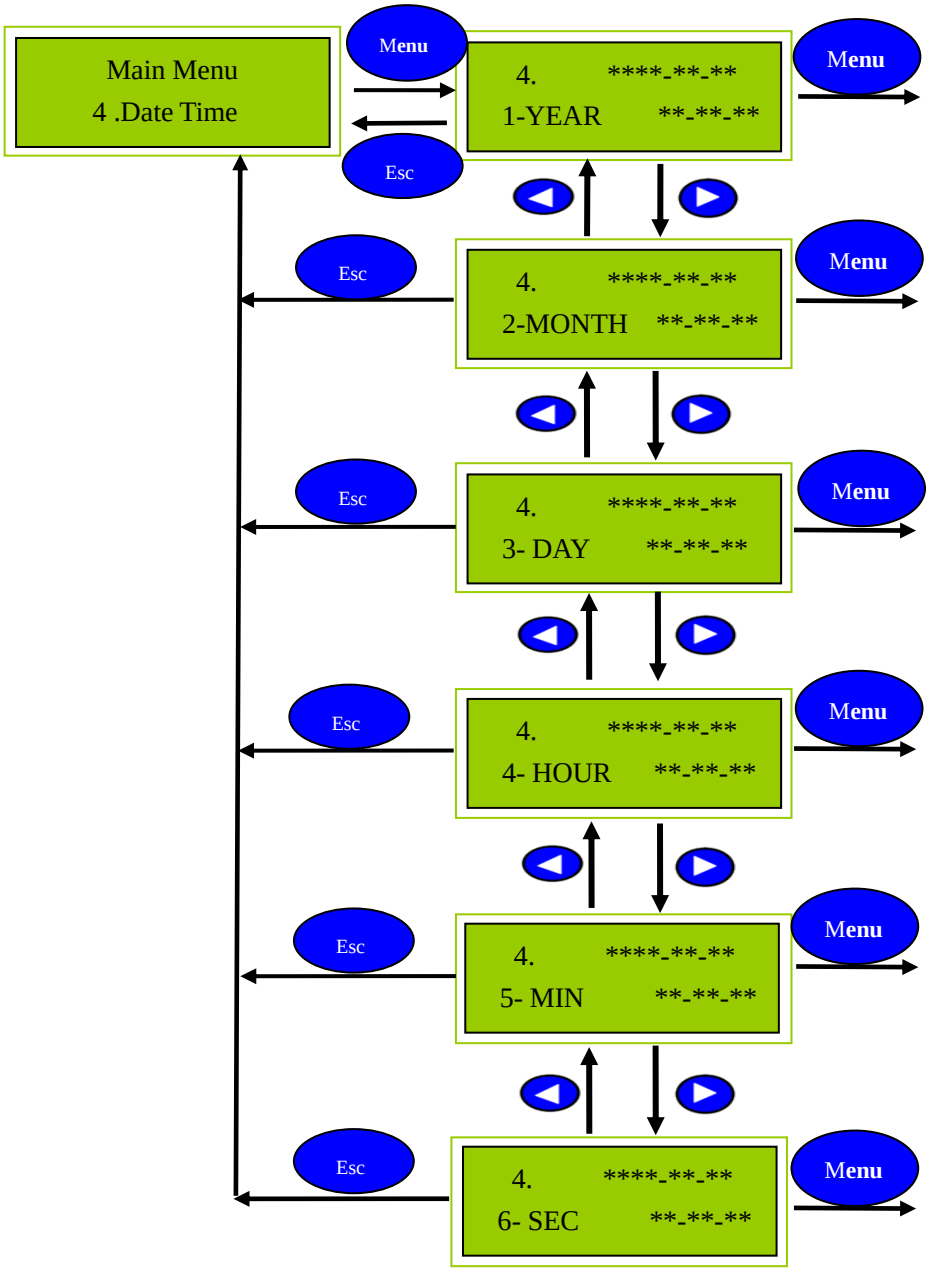


"ON" or "OFF" flickers. Press and to select "ON" or "OFF". Press "Menu" , saved; Press "Esc" , not saved.

ON: Solar charging is on;
OFF: Solar charging is off.

10.7 Display on LCD Screen ———Date Time

If you don't buy USB data logging Function ,Don't have this menu



YEAR numeric flickers. Press and to increase/decrease the value. Press "Menu" , saved; Press "Esc" , not saved.

MONTH numeric flickers. Press and to increase/decrease the value. Press "Menu" , saved; Press "Esc" , not saved.

DAT numeric flickers. Press and to increase/decrease the value. Press "Menu" , saved; Press "Esc" , not saved.

HOUR numeric flickers. Press and to increase/decrease the value. Press "Menu" , saved; Press "Esc" , not saved.

MINUTE numeric flickers. Press and to increase/decrease the value. Press "Menu" , saved; Press "Esc" , not saved.

SECOND numeric flickers. Press and to increase/decrease the value. Press "Menu" , saved; Press "Esc" , not saved.

11 PC Software Introduction

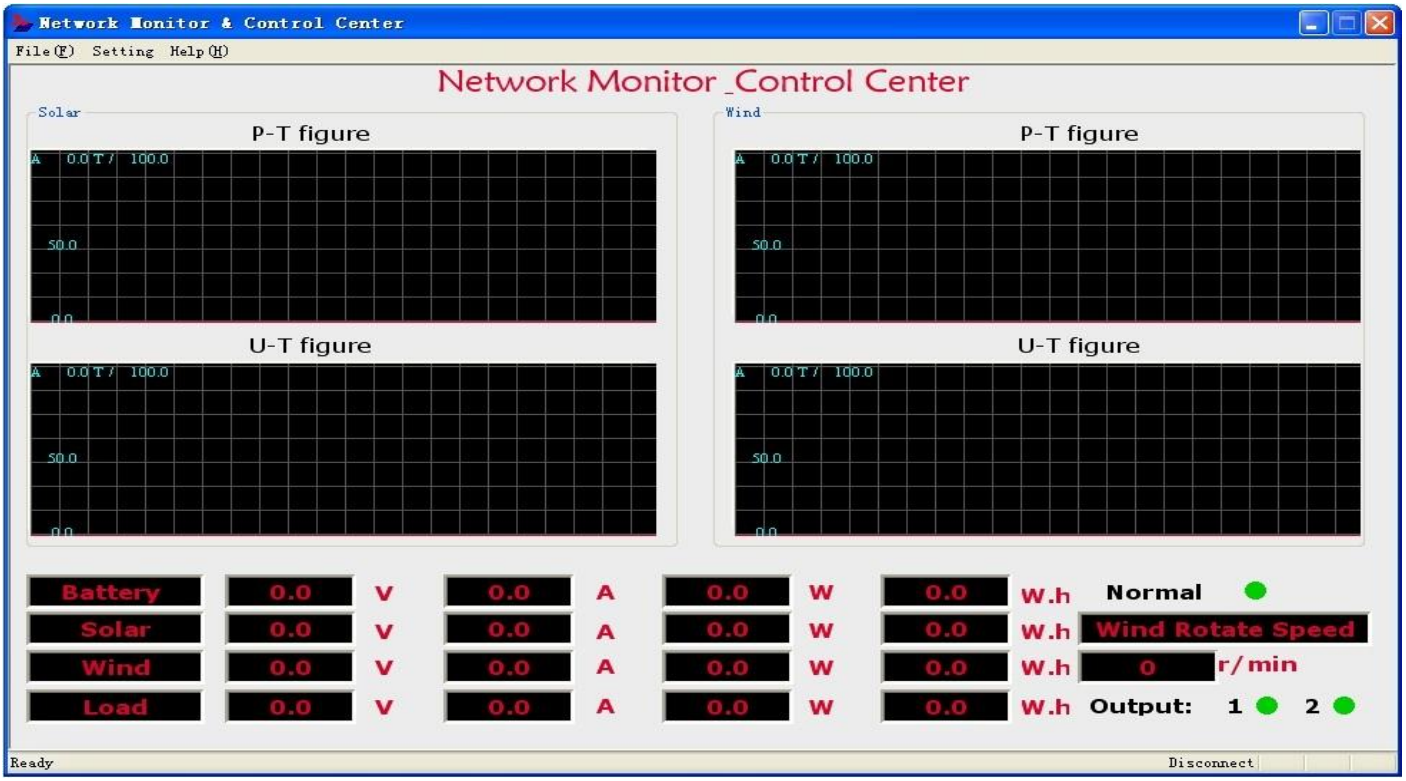
11.1 Software File :

Customer can use this software without installation. The RAR file includes ,database file, user files, detail file and etc. are placed in the same directory. As the picture below:

11.2 Open the software:

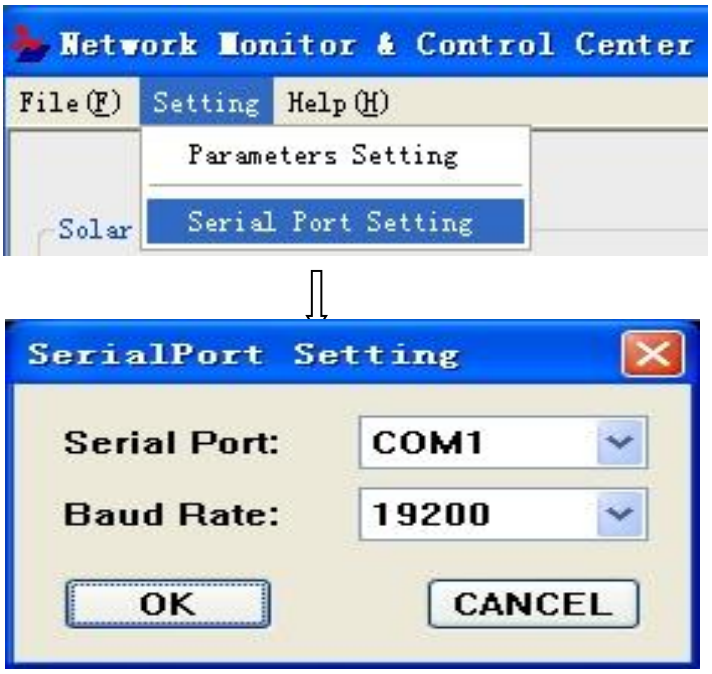
Step 1 : Customer should connect the controller with battery or power supply to start the controller at first

Step 2 : Connect PC and the controller with serial cable . Click and open the RAR file and find the monitoring software. Controller's current state could be real-time monitoring. Step as follows:



11.3 Software Connection configuration :

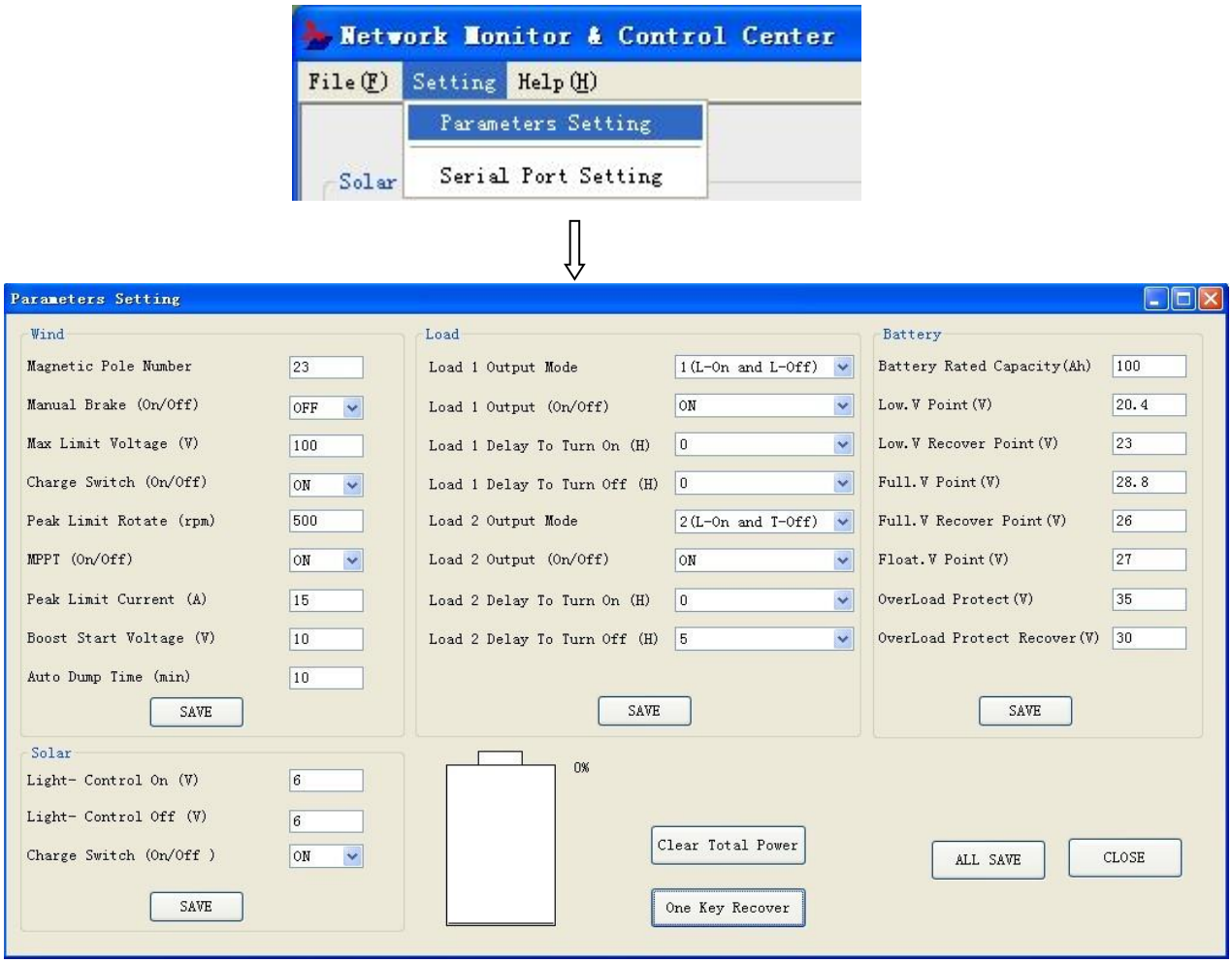
Click “Setting” at first, click “Serial Port Setting” secondly, then serial port number and baud rate could be set. As below:



Remark : If workable port of the computer is COM 2 or COM 3 .customer should set the serial port as COM2 or COM 3. Means customer should set the serial port as the real workable port according to their computer. Press OK after setting .

11.4 Parameters Settings:

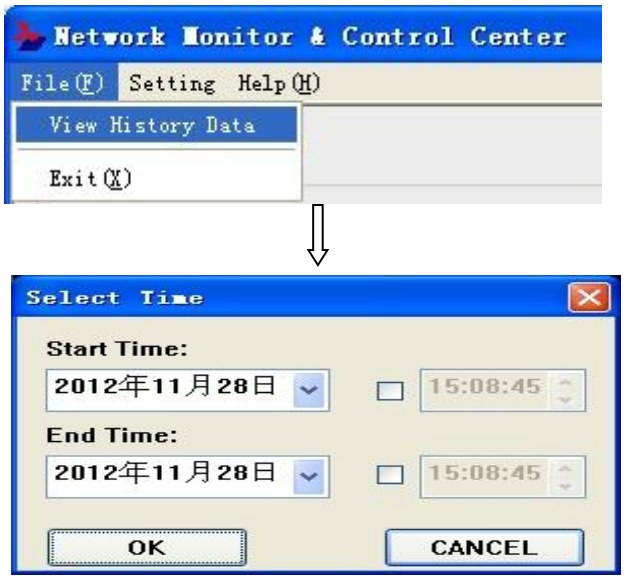
Click “Setting”, and then click “Parameters Setting”, controller parameters could be set from your PC. Just like:



Press “Save ” after setting , Or customer can press “ One Key Recover” if he wants to reset to factory defaults

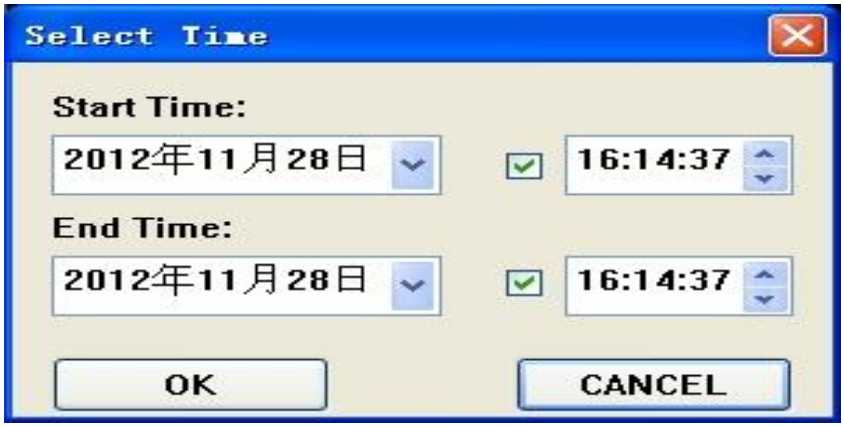
11.5 Data maintenance:

- User could view and analyze the history data by Clicking “File (F)”, then clicking “View History Data”.



- User could view the data of any time, just by choosing “Start Time” and “End Time”.

Also could be used to check more accurate time.



- Select time then click “OK”, the selected data will be backup to the folder “data”. Data is displayed by table form so that make analysis easier.

A2 2012-10-30 10:08:45

	A	B	C	D	E	F	G	H	I	J	K	L
1	Date Time	Battery Voltage (V)	Total Charge Current (A)	Total Charge Power(W)	Solar Voltage (V)	Solar Charge Current (A)	Solar Charge Power(W)	Wind Voltage (V)	Wind Charge Current (A)	Wind Charge Power(W)	Wind Rotate Speed(RPM)	Output Current (A)
2	2012-10-30 10:08:45	49.80	0.00	0.00	0.00	0.00	0.00	41.40	0.00	0.00	42.00	0.00
3	2012-10-30 10:08:46	49.80	0.00	0.00	0.00	0.00	0.00	41.40	0.00	0.00	42.00	0.00
4	2012-10-30 10:08:47	49.80	0.00	0.00	0.00	0.00	0.00	41.40	0.00	0.00	42.00	0.00
5	2012-10-30 10:08:48	49.80	0.00	0.00	0.00	0.00	0.00	41.40	0.00	0.00	42.00	0.00
6	2012-10-30 10:08:49	49.80	0.00	0.00	0.00	0.00	0.00	41.30	0.00	0.00	42.00	0.00
7	2012-10-30 10:08:50	49.80	0.00	0.00	0.00	0.00	0.00	41.20	0.00	0.00	42.00	0.00
8	2012-10-30 10:08:51	49.80	0.00	0.00	0.00	0.00	0.00	41.10	0.00	0.00	42.00	0.00
9	2012-10-30 10:08:52	49.80	0.00	0.00	0.00	0.00	0.00	41.00	0.00	0.00	42.00	0.00
10	2012-10-30 10:08:53	49.80	0.00	0.00	0.00	0.00	0.00	41.00	0.00	0.00	42.00	0.00
11	2012-10-30 10:08:54	49.80	0.00	0.00	0.00	0.00	0.00	40.90	0.00	0.00	42.00	0.00
12	2012-10-30 10:08:55	49.80	0.00	0.00	0.00	0.00	0.00	40.90	0.00	0.00	42.00	0.00
13	2012-10-30 10:08:56	49.80	0.00	0.00	0.00	0.00	0.00	40.90	0.00	0.00	42.00	0.00
14	2012-10-30 10:08:57	49.80	0.00	0.00	0.00	0.00	0.00	40.90	0.00	0.00	42.00	0.00
15	2012-10-30 10:08:58	49.80	0.00	0.00	0.00	0.00	0.00	40.80	0.00	0.00	42.00	0.00
16	2012-10-30 10:08:59	49.80	0.00	0.00	0.00	0.00	0.00	40.80	0.00	0.00	42.00	0.00
17	2012-10-30 10:09:00	49.80	0.00	0.00	0.00	0.00	0.00	40.80	0.00	0.00	42.00	0.00
18	2012-10-30 10:09:01	49.80	0.00	0.00	0.00	0.00	0.00	40.70	0.00	0.00	42.00	0.00
19	2012-10-30 10:09:02	49.80	0.00	0.00	0.00	0.00	0.00	40.60	0.00	0.00	42.00	0.00
20	2012-10-30 10:09:03	49.70	0.00	0.00	0.00	0.00	0.00	40.60	0.00	0.00	42.00	0.00
21	2012-10-30 10:09:04	49.70	0.00	0.00	0.00	0.00	0.00	40.50	0.00	0.00	36.00	0.00
22	2012-10-30 10:09:05	49.70	0.00	0.00	0.00	0.00	0.00	40.40	0.00	0.00	36.00	0.00
23	2012-10-30 10:09:06	49.70	0.00	0.00	0.00	0.00	0.00	40.40	0.00	0.00	36.00	0.00

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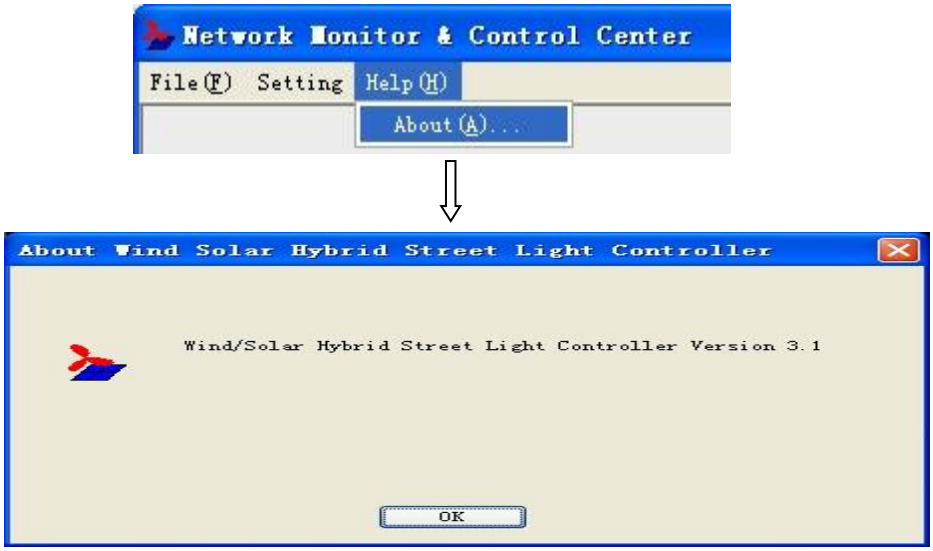
11.6 About Controller:

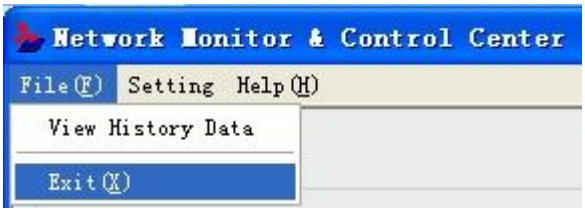
Click “Help (H)” and “About (A)”, you will get product’s information.



11.7 Quitting Software:

Click “File (F)”, and then click “Exit (X)”. Or click  on top right corner.

Other exiting operations which usually used on PC could be used here too.



11.8 About Feedbacks:

Our products could be improved according to your feedbacks. So we will be very pleased to receive your feedbacks about our product. If you are confused when using our products, do not hesitate to contact us.

12 The Warranty & Maintenance

12.1 Warranty

- We provide one year warranty since delivery.
- If the product is exceed warranty or damaged by transportation, improper use, human elements, force majeure, it is not under warranty.

12.2 Maintenance

- The installation and storage should avoid the highly corrosive, high dust, high temperature, and high humidity environment; especially avoid the metals fall into them.
- Periodically clean the cooling fan and check whether it is normal.
- Should be completely cut off the previous level power, shut down for 10 minutes or more, and the capacitor is fully discharged before opening the cover to maintain. (Large-capacity electrolytic capacitor discharge need a certain period of time), demolition careful in order not to damage the parts and components, pay attention to the order of connection. Specific requirements are as follows:
- Periodically clean the dust;
- Check the terminal screws are tightened or not;
- Check if there are overheating left traces and damage to the device;
- Check the wire is aging or not.

Note: Controller does not work properly, you should try to solve according to manual, if it is still not resolved, please contact us. Do not disassemble parts

Hefei Top Green Energy Technology Co.,LTD

Website: www.top-green.cn

Tel：86 -0551-65765201
Fax: 86- 0551-65765203

Email : info@top-green.cn

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