*Please read the manual  before installing

合肥凌山新能源科技有限公司
HeFei Listen New Energy Technology Co.,Ltd

# Professional Wind & Solar Hybrid Controller Manual

**Model：LWSLE400W-12V**

**Made In China** **Rev:1.0**

# Notes

- 1. Thank you very much for purchasing our controller, please read the use manual carefully before installing and using the products and keep it with due care.
- 2. The installation must be done by experienced technical personnel in the installation operation, the installation process must be strictly in accordance with the use manual to ensure that the product can work properly.
- 3. This product should be avoided long-term exposure to corrosive gas and moisture enviornment.
- 4. Do not put this product in wet, rain, exposure, severe dust, shork, corrosion and strong electromagnetic interference environment.
- 5. Do not open the shell to repair this product by yourself.

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# General Description

- Product name： Professional Wind & Solar Hybrid Controller Manual
- Brand： Listen
- Modle name： **LWSLE400W-12V**

- Battery rated voltage： 12V
- Wind input rated power： 300W
- Solar rated input power： 100W
- DC ouput Power:200W
- package (L*W*H)： 220mm*190mm*120mm
- Weight： 2.4Kg

# Technical parameters

| Model | LWSLE400W-12V |
|---|---|
| Rated Battery Voltage | 12V |
| Rated Wind Turbine Power | 300W |
| Wind Turbine Maximum Input Current | 30A |
| Wind Turbine Maximum Input Power | 400W |
| Unload Voltage(factory default) | 30V(Adjustable) |
| Unload Rotate(factory default) | 400RPM(Adjustable) |
| PV Charge Current | 10A |
| Battery Over-discharge Voltage Shutoff | 10V |
| Battery Over-discharge Recovery | 12V |
| Output Protection Voltage | 16V |
| PV Voltage Of Light-Control On | Adjustable(6V) |
| PV Voltage Of Light-Control Off | Adjustable(6V) |
| Line 1 Rated Output Current | 10A |
| Line 2 Rated Output Current | 10A |
| Line 1 Output Mode(Factory Default) | 1 Modes selection(Light-control on and Light-control off) |
| Line 2 Output Mode(Factory Default) | 2 Modes selection(Light-control on and time-control 5 hours) |
| Control Mode | PWM,MPPT |
| Display Mode | LCD |
| Display Parameters | Wind Turbine Power,Wind Turbine Voltage,Wind Turbine Current,Wind Turbine Rotate.PV Voltage,PV Charge Current,PV Power, Battery Voltage,output power and current.system information |
| Working Temperature &Humidity | -20~+55°C/35~85%RH(Without Condensation) |
| Quiescent Current | 20±2 mA |
| Protection Function | Solar reverse-charging protection , solar reverse-connection battery over charge protection,battery over-discharge battery reverse-connection protection, lightning protecting, wind turbine current limitting, wind turbine automatic brake |
| **In order to serve our customers better.Our company can adjust parameters configuration** | |

# Function Description -1

- Wind Turbine output voltageintelligent boost
  - When the wind turbine voltage is lower than battery voltage , automatic startup the boost module, make the wind turbine recharge the battery
  - When the wind turbine voltage is higher than batter voltage, automatic shut down the boost module
- Wind Max current tracking (MCT)and max power point traking(MPPT)
  - When the wind turbine in the breeze cases, load will make fan speed decreased, thus reduce wind turbine power output. Through the maximum current tracking and maximum power tracking control, the wind turbine worked on the largest energy output point, with boost circuit combination, and improve the wind power utilization.
- Impedance matching self-adaption
  - Due to the wind generators, batteries, load are existing internal resistance, according to the impedance matching principle, only input impedance equals output impedance, power utilization ratio, acquire the biggest high-power. This controller using the impedance matching adaptive, maximum enhance energy efficiency.
- Combine the open wind turbine with dump load prevent over ratate,over voltage,over current
  - Traditional controller: when the wind and solar total current more than limit point current or when the battery is full, redundant energy through the PWM way dump-loading, thereby reducing the wind turbine rotation speed, but now redundant energy consumption in MosFET and wind machine. Make the wind turbine heat, reduce the wind turbine longevity.
  - Professional controller: when the wind and solar total current more than limit point current or when the battery is on the float voltage point,decrease the PWM until you finish charging. When finished , open the charging loop, make wind generators no-load, in order to prevent wind generators propeller racing, this controller provides over-current and over-voltage limit, once wind turbine rotate speed more than setting, controller automatic startup PWM voltage intelligent dump-loading. Avoid wind turbine work in dump-load status long time, increase the controller using life
- Maxmum charging current limiting for battery
  - Traditional controller: there are different wind and solar hybrid system, so the battery capacity is differ, thus the maximum current of battery is differ. While traditional controller recharge current often not set, or set undeserved,so can appear over-current, will reduce battery life.

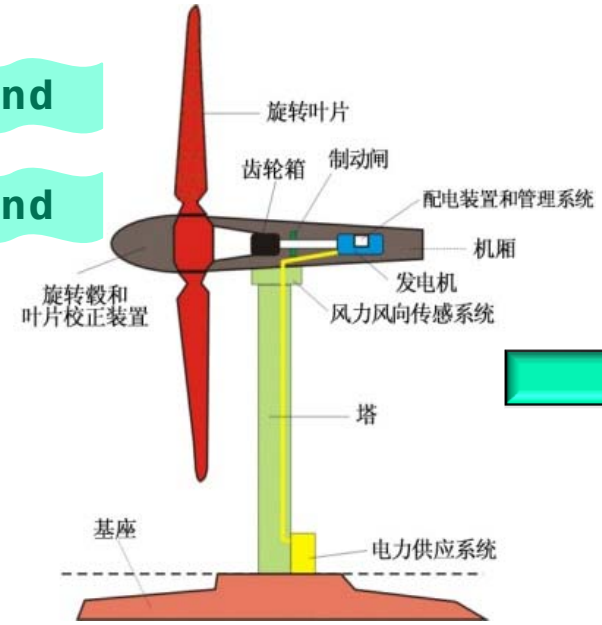
# Function Description -2

- The controller has two DC output specially designed for street light system. Each DC output has 9 modes of controlling output, including:
  - 1.light-control on and light-control off；
  - 2.light-control on and time-control off；
  - 3.time-control on and time-control off；
  - 4.constand on；
  - 5.half –power light-control on and light-off;
  - 6.half-power light-control on and time-control off;
  - 7.half-power time-control on and time-control off;
  - 8.half-power constand on;
  - 9.constand off;
- Manual brake
- Wind turbine charging able or enable by manual
  - Turn on or turn off the charging swith by manual, If choose switch off, wind charging is prohibited ;if choose on, wind charging is nomal; avoid sparks when connections;
- Solar charging albe or enable by manual
  - Turn on or turn off the charging swith by manual, If choose switch off, solar charging is prohibited ;if choose on, solar charging is nomal, avoid sparks when connections;
- Output able or enable by manual
  - Turn on or turn off the charging swith by manual, If choose switch off, DC output is prohibited ;if choose on, DC output is nomal, avoid sparks when connections;
- RS232 /RS485 real time communication
- Update the firmware by RS232
- PC and controller can all set the controller paramete
- Multistage menu display by LCD, intelligent key tone

# System schematic

wind

wind



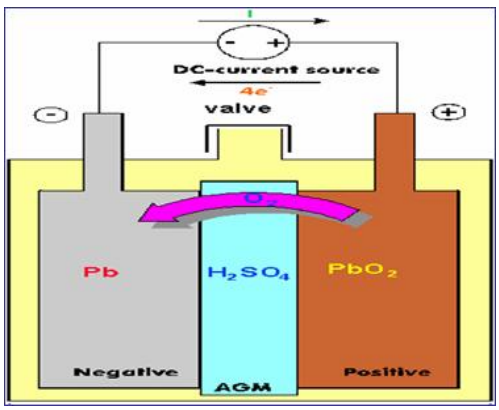

Wind Turbine

sun

Solar Panel

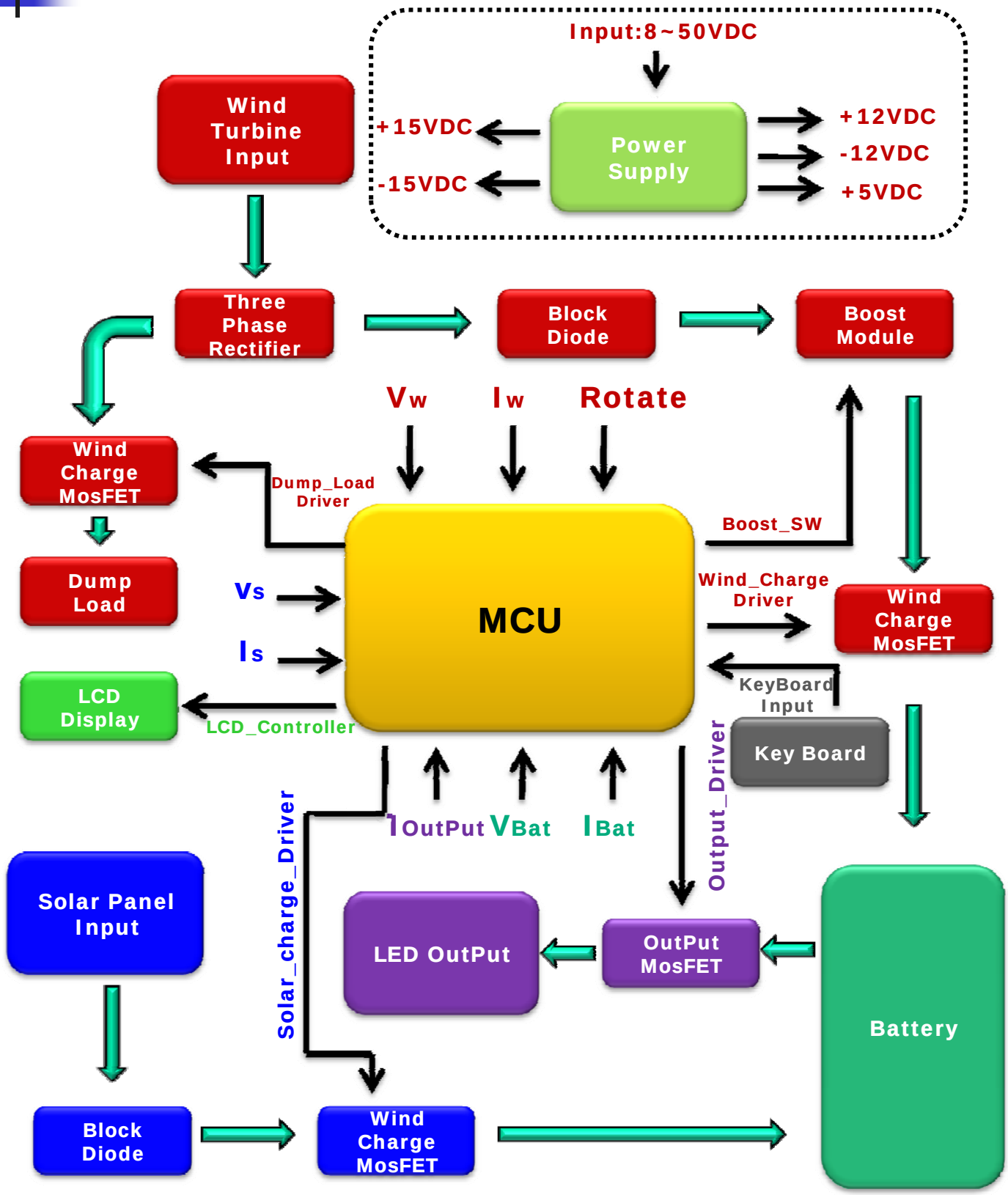
PC

LED

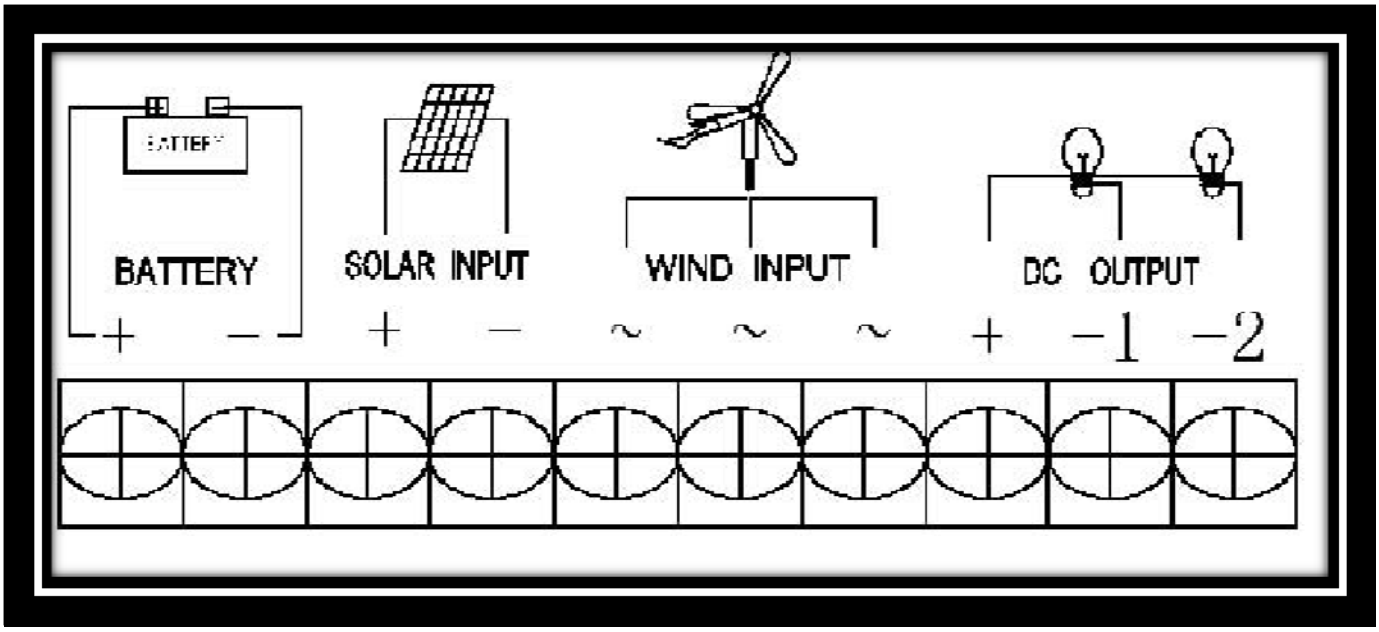



Battery

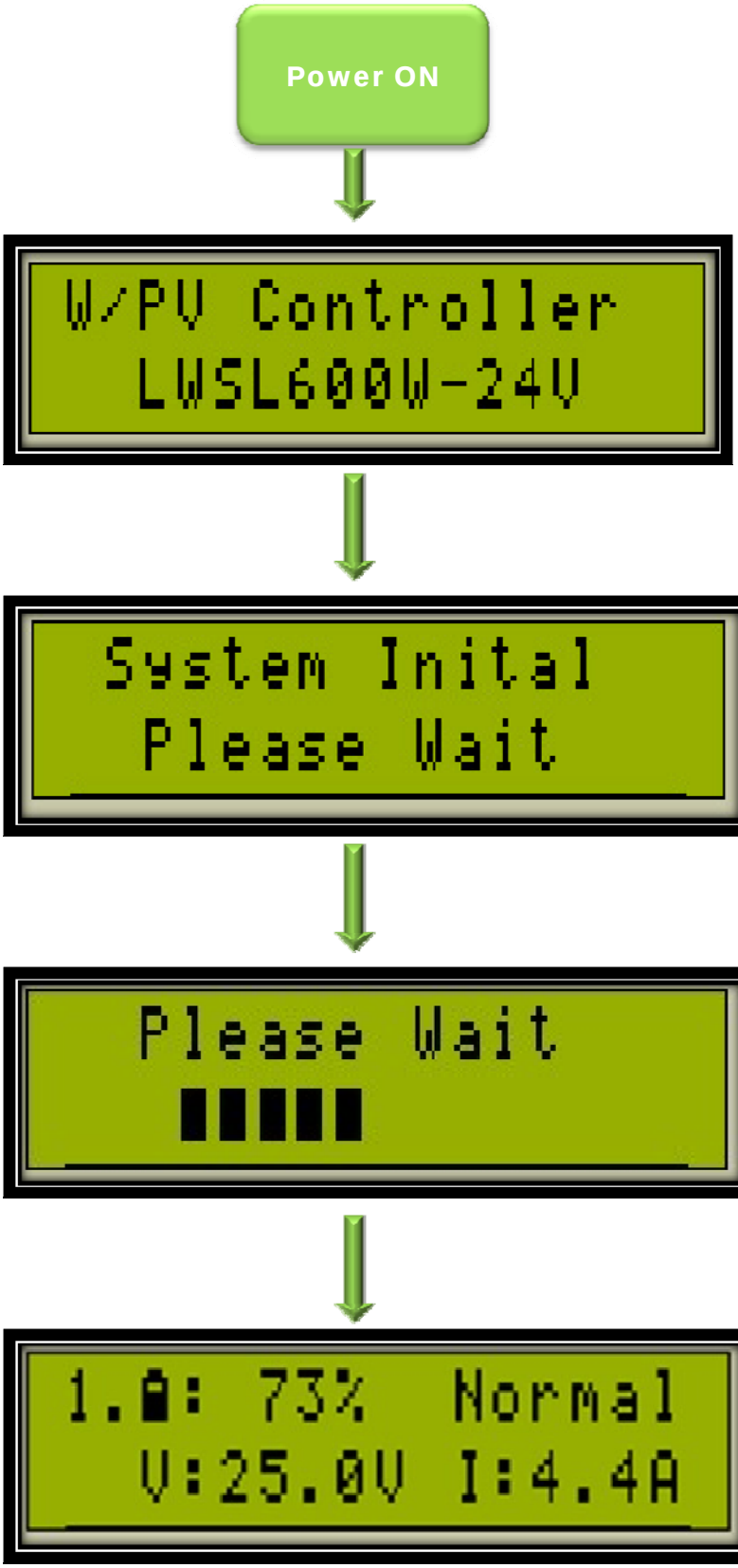
# Block Diagram



# How to connect



# Power on display



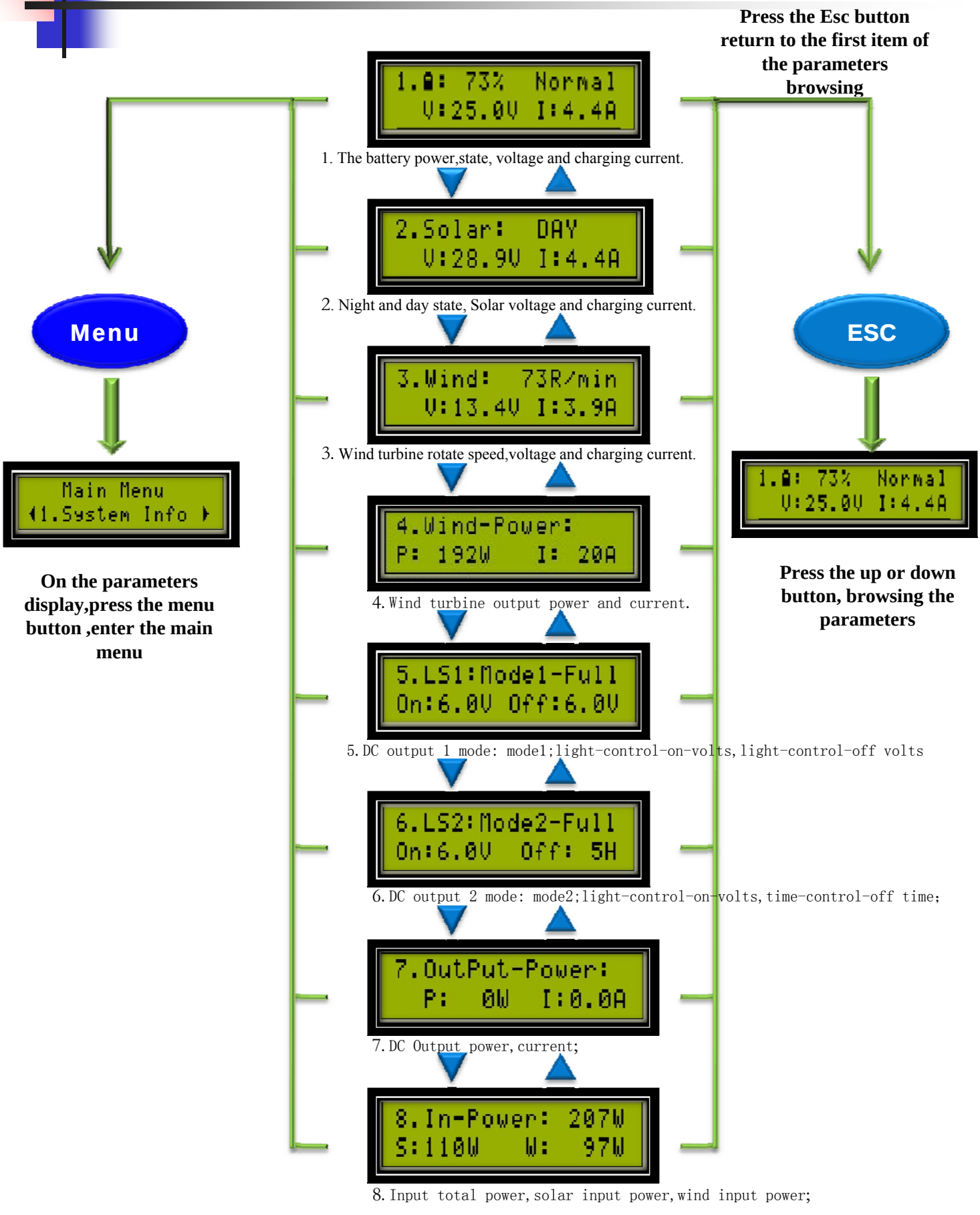

Power on

Display the product model

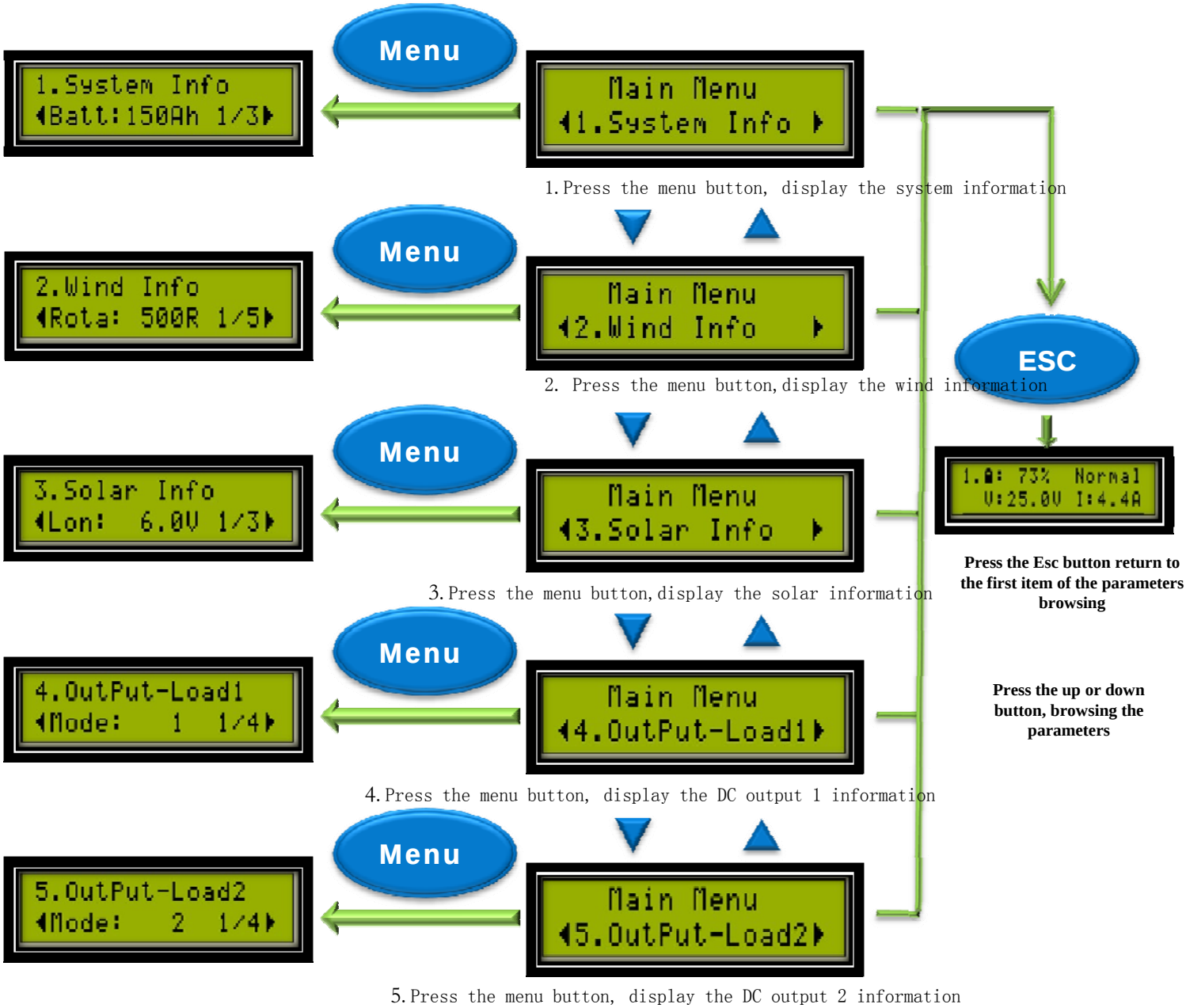
System initial

**Finish initializing**
**Enter parameters**
**browsing interface**

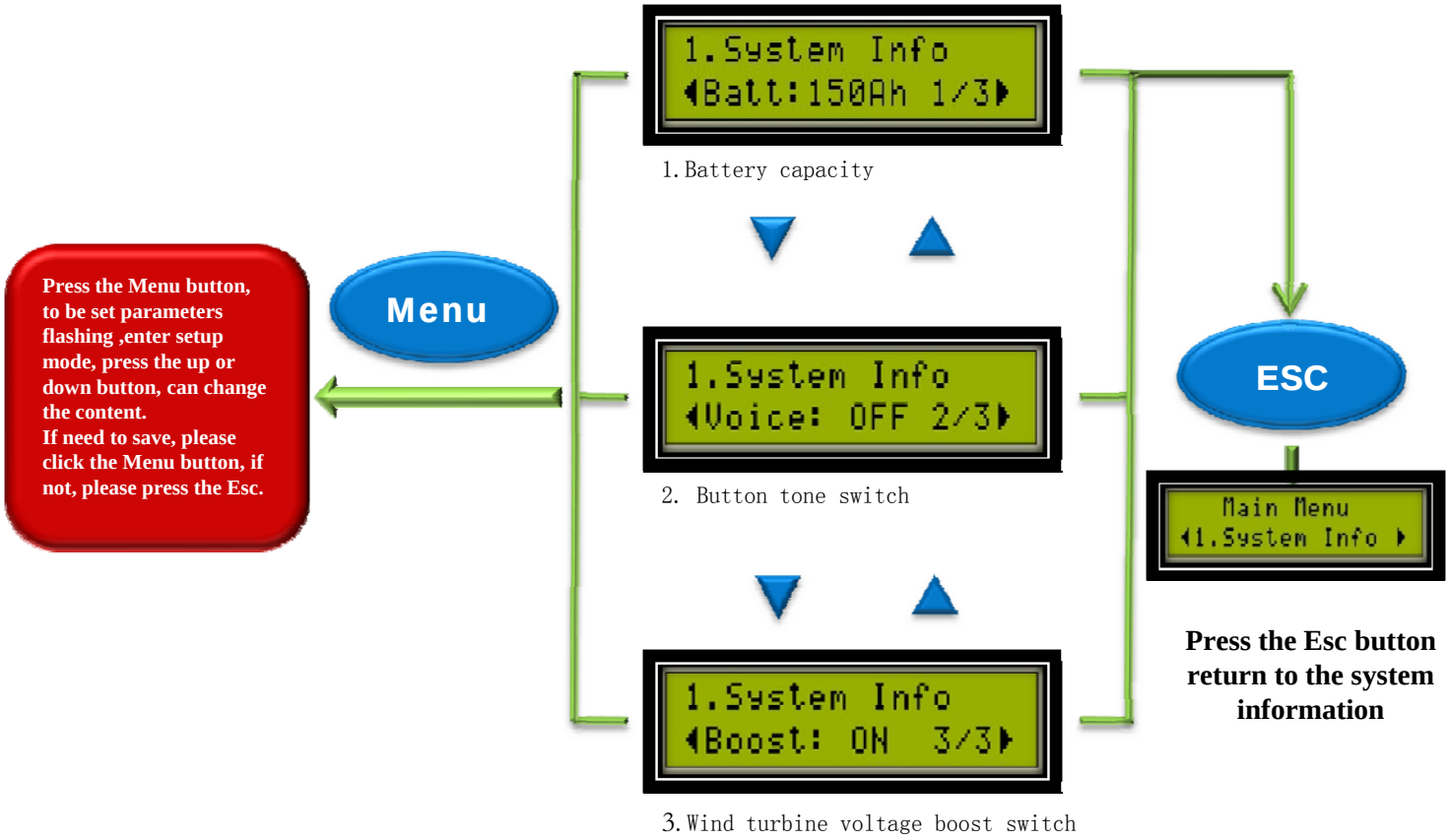
# Parameters browsing display



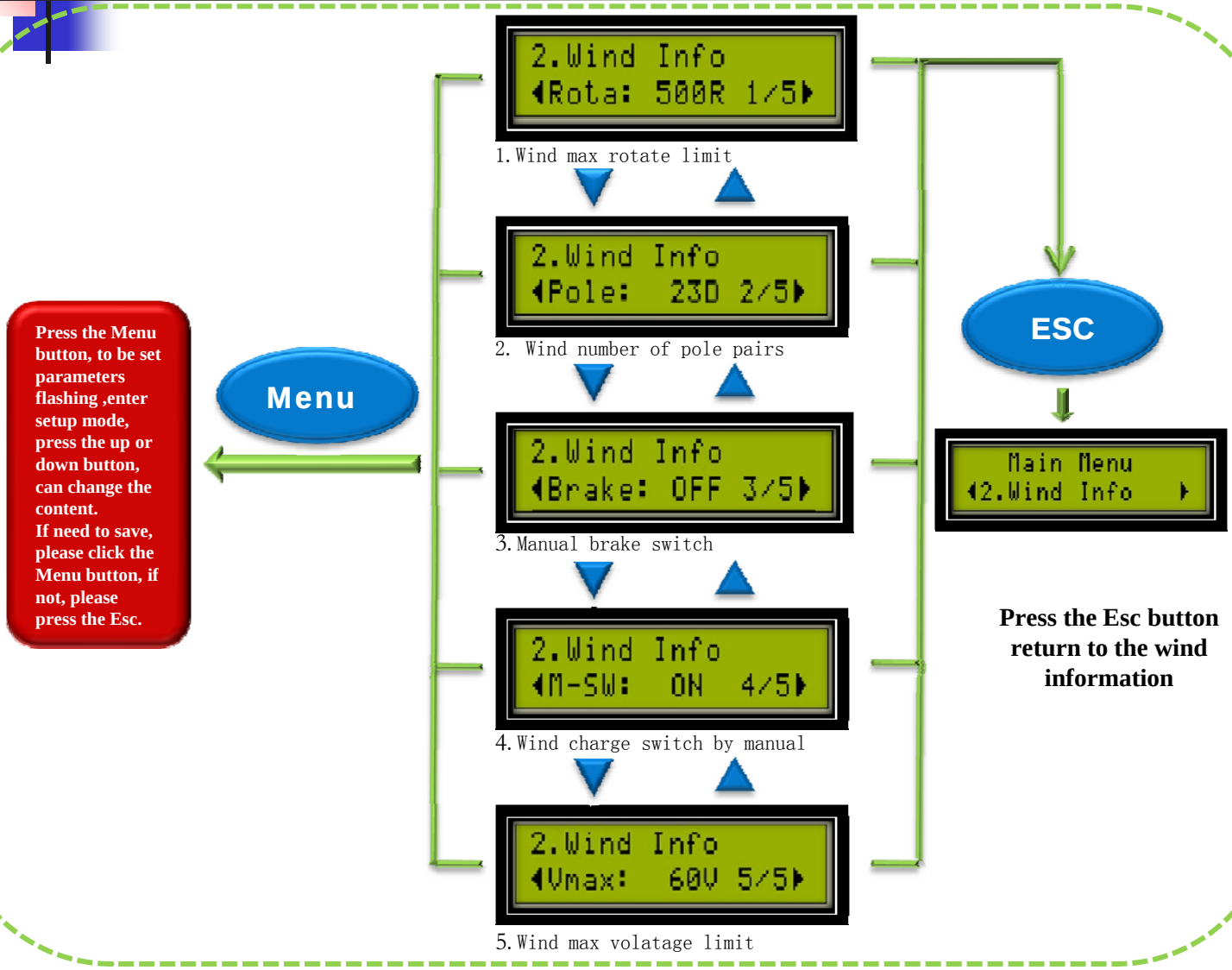
# Main menu display

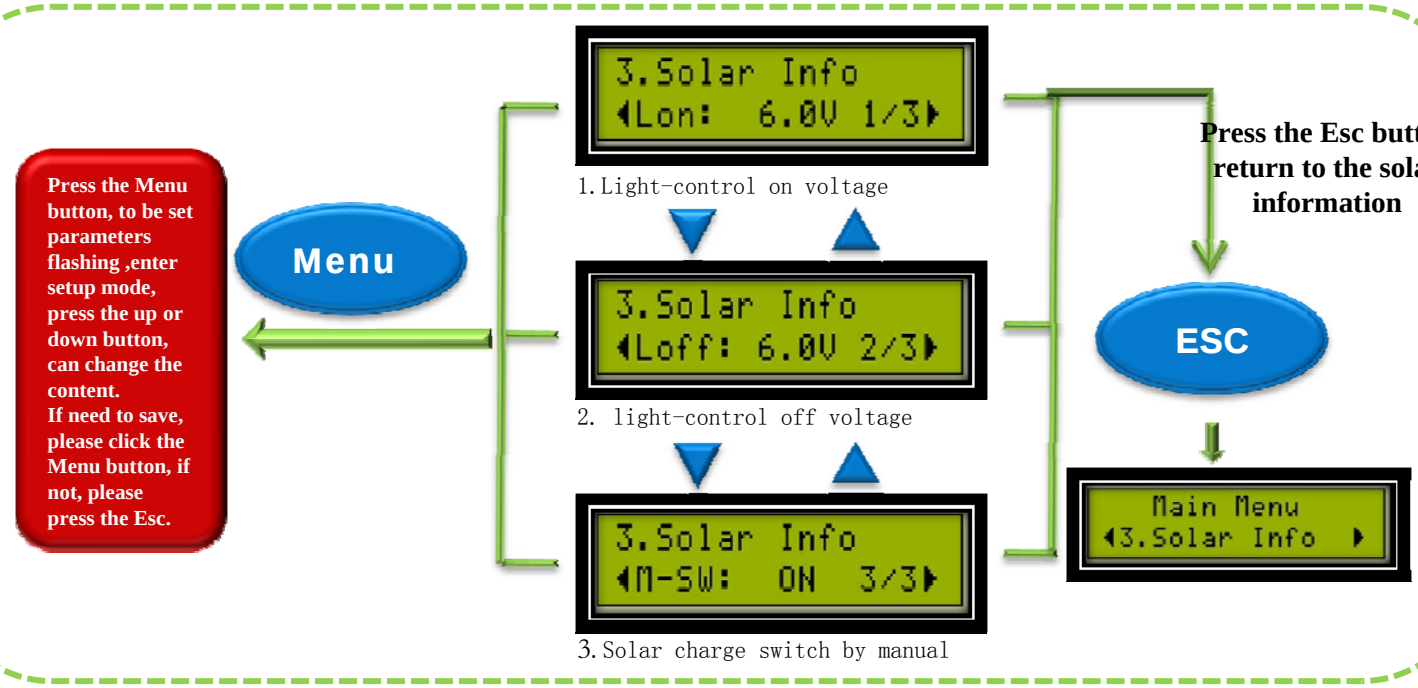


# System information display

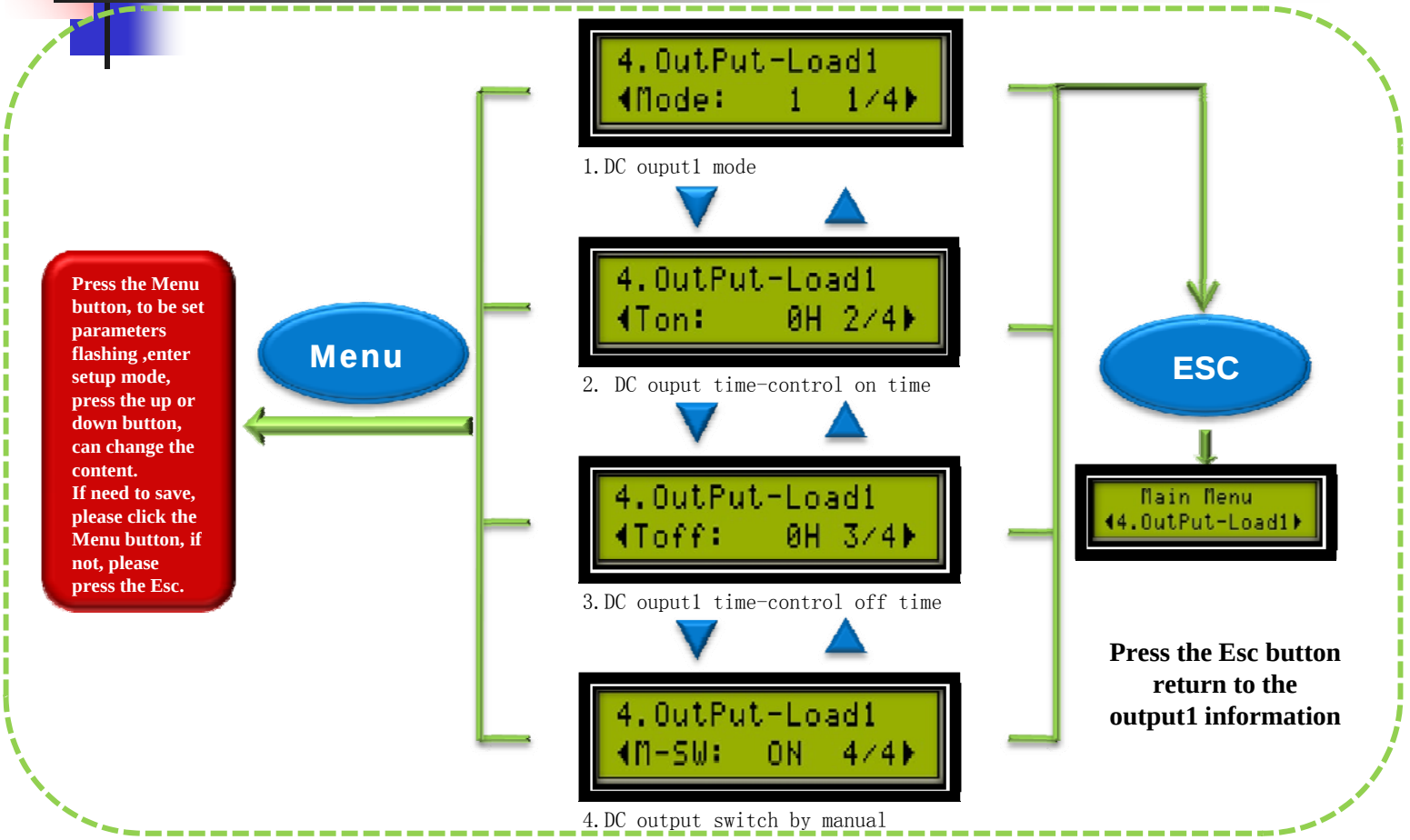


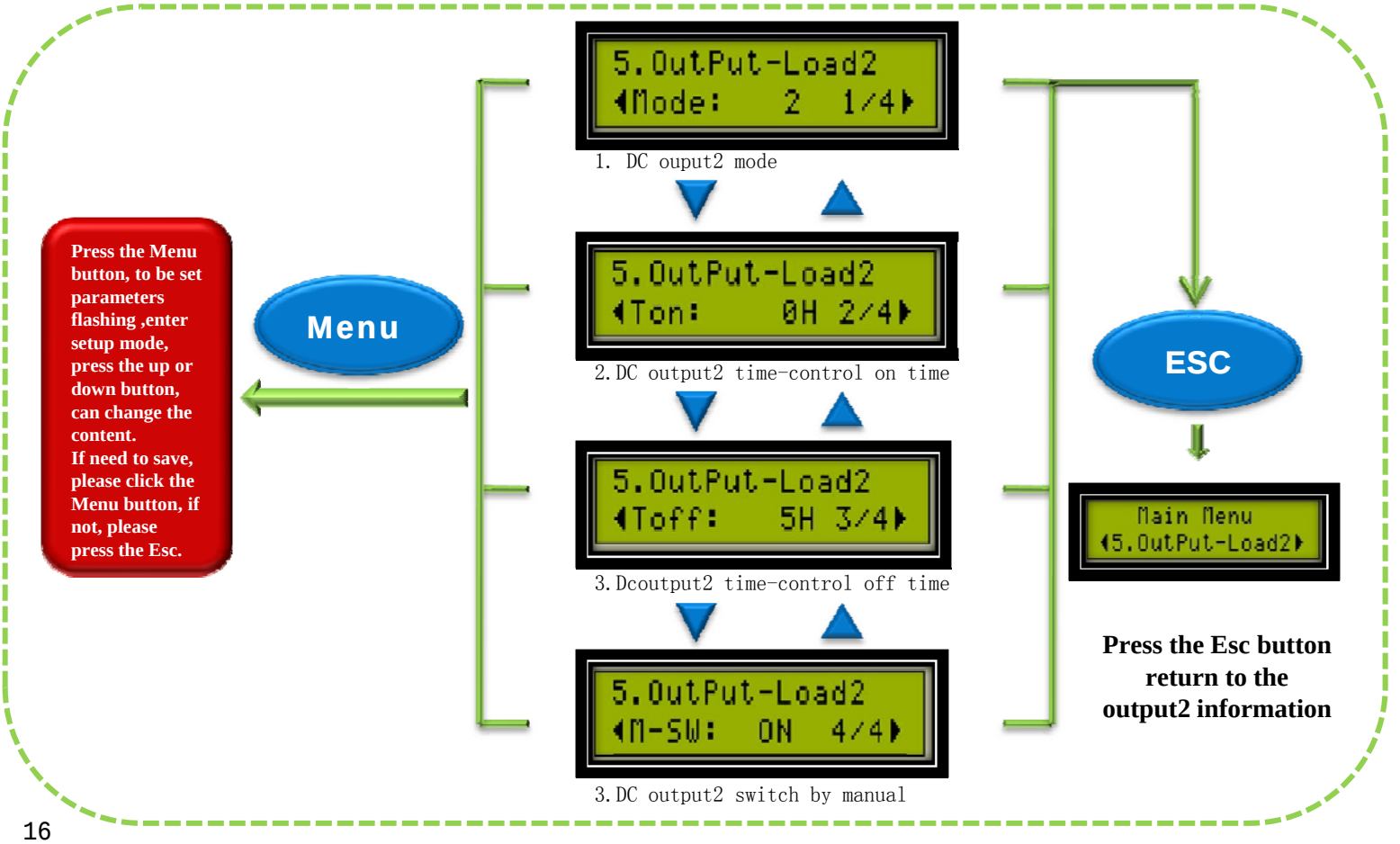
# Wind & solar information display



# DC output information display



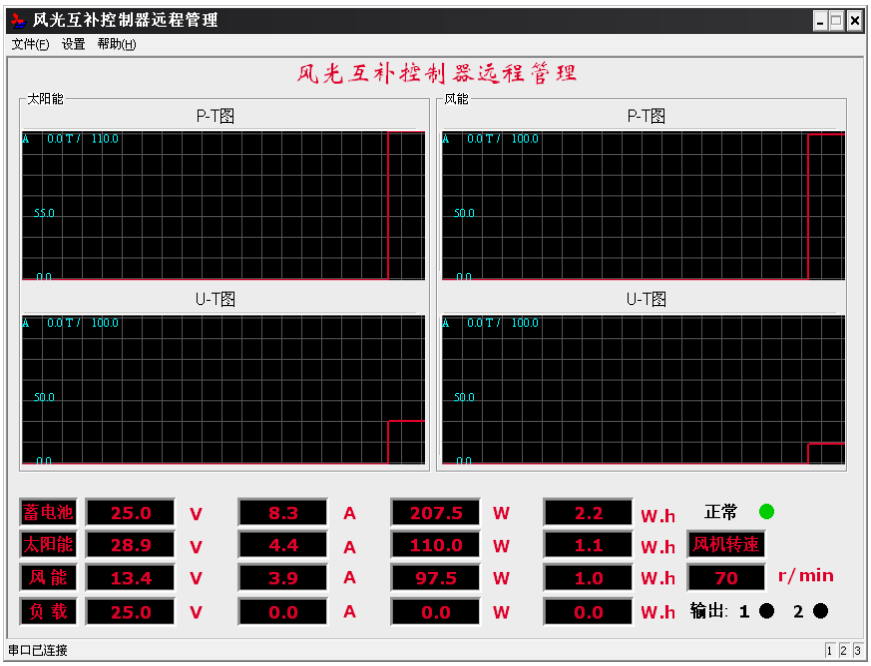
# Installation steps

After the wind/solar hybrid generating system is installed, please connect the controller accurately by the following order .

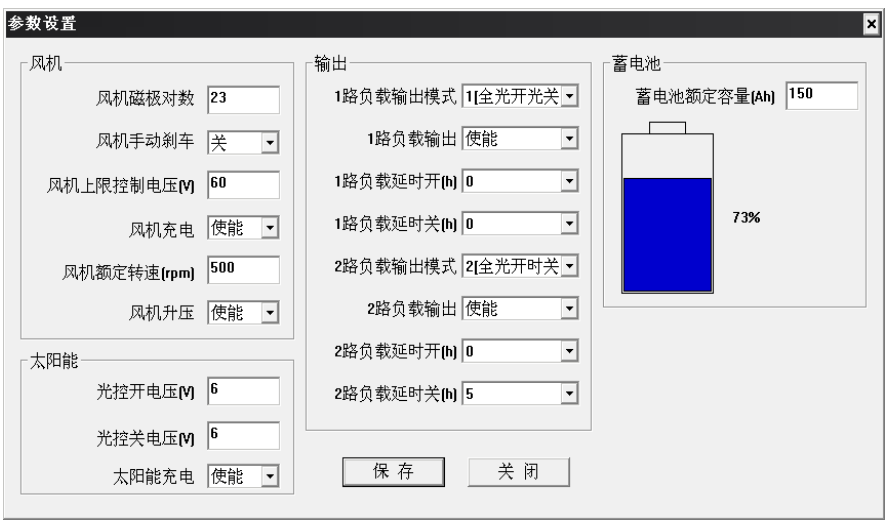
- 1. Open the package and ensure whether the equipment is damaged due to transportation or not.
- 2.Connect the battery's positive pole to the positive (+) of "BATTERY" terminal, and connect battery's negative pole to the negative(-) of "BATTERY" terminal with copper core cable(section surface≥6mm2 and length≤1m). Despite the conntroller has the battery reversed protection, but reversing battery is still forbidden!
- 3.When the controller is power on, please turn off the wind charge switch ,solar charge switch and DC output switch to avoid sparks(how to turn off the swith, please reference the menu introduction)
- 4. Connect the DC load to "DC OUTPUT" terminal.One load should be connected to "+" and "-1" of the"DC OUTPUT" terminal and another load should be connected to "+" and "-2" of the "DC OUTPUT"terminal.The mode of load output can be setted according to the requirements of the load .The half-power output is only applicable to LED load.
- Connect the output line of the wind turbine to the "WIND" terminal of the controller.
- Connect the solar panels to the "SOLAR" terminal of the controller.
- Install remote control software, then connect RS232 or 485 interface to computer by data connection.The computer will display the system parameters.Users can set the parameters and the mode of load output by the control software and the key of LCD.

# PC software introduction

- This software does not need to install can use, below is the parameters display interface:




- Display parameters：
  - Battery voltage, charge current, battery gain power and quantity of electricity
  - Solar panel voltage, charge current, solar charge power and quantity of electricity
  - Wind turbine voltage, charge current, wind charge power and quantity of electricity
  - DC output voltage, current, power and quantity of electricity
- Click the software menu bar-setting->parameter setting, Popup parameter setup dialog



# The warranty and after-sales service

- We provided product to the warranty period of one year since it is sold.
- If the product is exceed warranty or damaged by transportation, improper use, human element, force majeure, it is not under warranty.

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