*Please read the manual before installing

Professional
Wind & Solar Hybrid
Controller Manual

Model: LWSLE400W-12V

Made In China
Rev: 1.0
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 environment.

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.
Catalogue

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General Description

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

- Battery rated voltage: 12V
- Wind input rated power: 300W
- Solar rated input power: 100W
- DC output power: 200W
- Package (L*W*H): 220mm*190mm*120mm
- Weight: 2.4Kg
### TECHNICAL PARAMETERS:

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<th>Model</th>
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<td>Adjustable (6V)</td>
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<td>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</td>
</tr>
<tr>
<td>Working Temperature &amp; Humidity</td>
<td>-20~+55°C/35~85%RH (Without Condensation)</td>
</tr>
<tr>
<td>Quiescent Current</td>
<td>20±2 mA</td>
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<tr>
<td>Protection Function</td>
<td>Solar reverse-charging protection, solar reverse-connection battery over charge protection, battery over-discharge protection, battery reverse-connection protection, lightning protecting, wind turbine current limiting, wind turbine automatic brake and</td>
</tr>
</tbody>
</table>
**Function Description -1**

- **Wind Turbine output voltage intelligent**
  - 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 battery voltage, automatic shut down the Boost module

- **Wind Max current tracking (MCT) and max power point tracking (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 point 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 rotate, 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.

- **Maximum 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 switch by manual, If choose switch off, wind charging is prohibited; if choose on, wind charging is normal; avoid sparks when connections;

- Solar charging able or enable by manual
  - Turn on or turn off the charging switch by manual, If choose switch off, solar charging is prohibited; if choose on, solar charging is normal, avoid sparks when connections;

- Output able or enable by manual
  - Turn on or turn off the charging switch by manual, If choose switch off, DC output is prohibited; if choose on, DC output is normal, avoid sparks when connections;

- RS232/RS485 real time communication
- Update the firmware by RS232
- PC and controller can all set the controller parameter
- Multistage menu display by LCD, intelligent key tone
System schematic

Wind Turbine

Solar Panel

PC

LED

Battery
How to connect
Power on display

Power on

W/PV Controller
LWSL600W-24V

Display the product model

System Initial
Please Wait

System initial

Please Wait

Finish initializing
Enter parameters browsing interface

1.0: 73% Normal
V:25.0V I:4.4A
On the parameters display, press the menu button, enter the main menu.

Press the Esc button return to the first item of the parameters browsing.

1. The battery power, state, voltage and charging current.

2. Night and day state, Solar voltage and charging current.

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

4. Wind turbine output power and current.

5. DC output 1 mode: mode1; light-control-on Volts, light-control-off Volts.

6. DC output 2 mode: mode2; light-control-on Volts, time-control-off time;

7. DC Output power, current;

8. Input total power, solar input power, wind input power;

Press the up or down button, browsing the parameters.
Main menu display

1. Press the menu button, display the system information

2. Press the menu button, display the wind information

3. Press the menu button, display the solar information

4. Press the menu button, display the DC output 1 information

5. Press the menu button, display the DC output 2 information
System information display

Press the Menu button, to be set parameters flashing, enter setup mode, press the up or down button, can change the content. If need to save, please click the Menu button, if not, please press the Esc.

1. Battery capacity

2. Button tone switch

3. Wind turbine voltage Boost switch

Press the Esc button return to the system information.
Wind & solar information display

Press the Menu button, to be set parameters flashing, enter setup mode, press the up or down button, can change the content. If need to save, please click the Menu button, if not, please press the Esc.

Press the Esc button return to the wind information

Press the Esc button return to the solar information

1. Wind max rotate limit
2. Wind number of pole pairs
3. Manual brake switch
4. Wind charge switch by manual
5. Wind max volatage limit

Menu

1. Light-control on voltage
2. Light-control off voltage
3. Solar charge switch by manual

Press the Menu button, to be set parameters flashing, enter setup mode, press the up or down button, can change the content. If need to save, please click the Menu button, if not, please press the Esc.
DC output information display

1. DC output1 mode

2. DC output time-control on time

3. DC output1 time-control off time

4. DC output switch by manual

Press the Menu button, to be set parameters flashing, enter setup mode, press the up or down button, can change the content. If need to save, please click the Menu button, if not, please press the Esc.

Press the Esc button return to the output1 information

5. DC output2 mode

2. DC output2 time-control on time

3. DC output2 time-control off time

3. DC output2 switch by manual

Press the Menu button, to be set parameters flashing, enter setup mode, press the up or down button, can change the content. If need to save, please click the Menu button, if not, please press the Esc.

Press the Esc button return to the output2 information
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 the battery’s negative pole to the negative (-) of “BATTERY” terminal with copper core cable (section surface ≥ 6mm² and length ≤ 1m). Despite the controller 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 switch, 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.

5. Connect the output line of the wind turbine to the “WIND” terminal of the controller.

6. Connect the solar panels to the “SOLAR” terminal of the controller.

7. 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.