

# **WiSen® Solar Unit**

## **User Manual**

**Wuxi Wisen Innovation Co., Ltd.**

**July 2021**

## Revision History and Clarification

Rev.	Issue Date	Revisions	Written By	Revised By
V1.0	07/12/2021	1 <sup>st</sup> Issue	Xiaoyan Huang	Dr. Yan Wu

### Document Definition:

It defines the specifications (i.e., introduction, technical features, deployment and maintenance methods) of the WiSen® Battery Unit. It is responsible to:

- Supply extend DC power for Gateway or node;

### Scope:

Customer Site Project Managers and Engineers, Wisen Service Engineers, etc.

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# 1. Product Introduction



WiSen® Solar Unit is one of the key products in our patented WiSen® geotechnical safety monitoring system.

The WiSen® Solar Unit supply external DC power for Gateway or node

Our product has IP66 and is designed to work in a tough environment. It is small in size, reliable in performance, easy for maintenance.

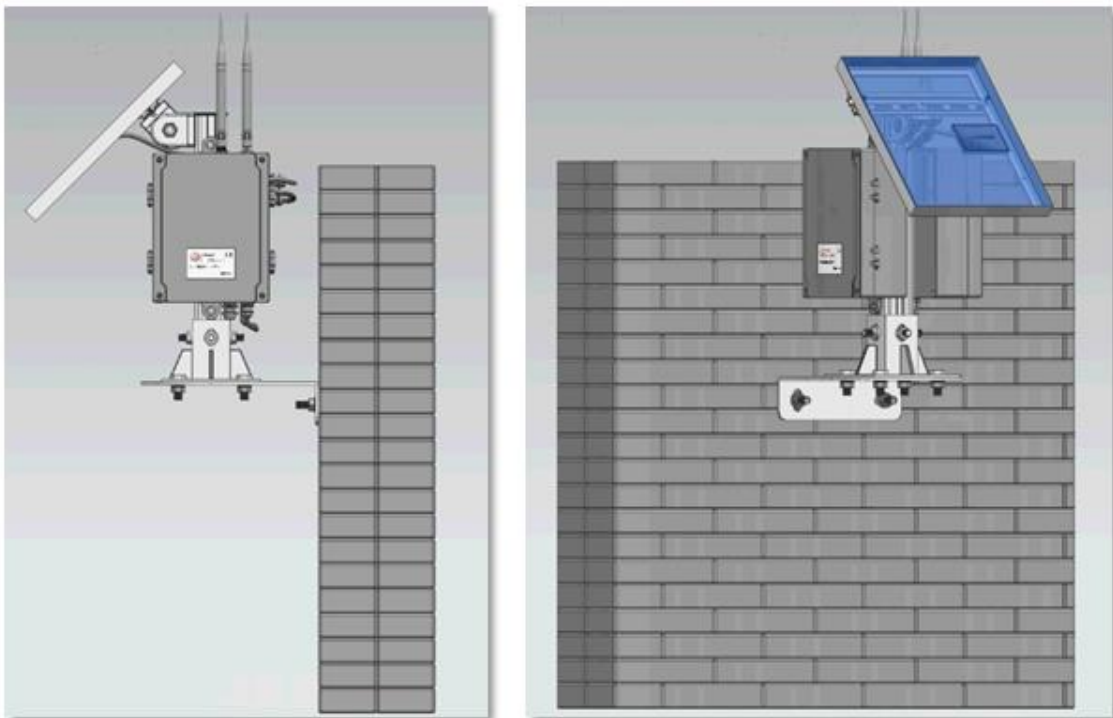


Figure 1. Solar unit – Overview.

## 2. System Structure Layout

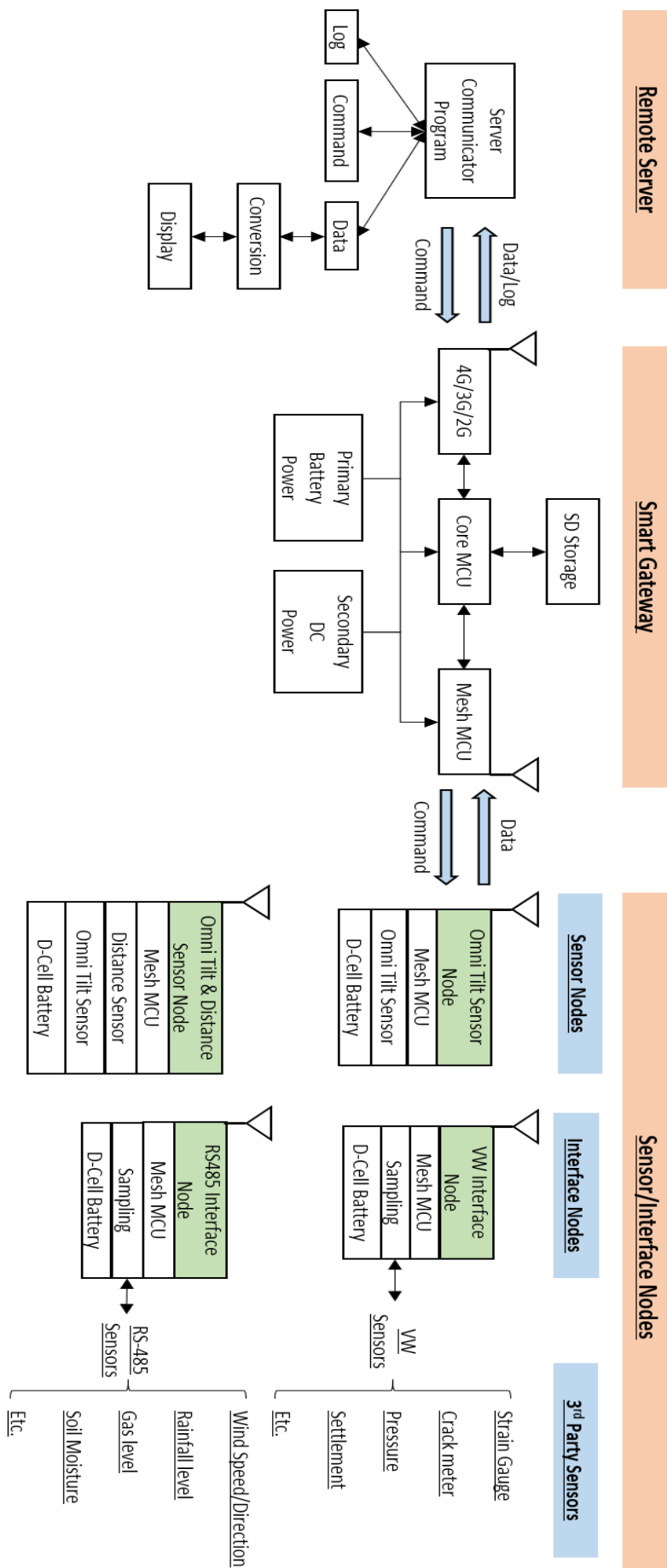


Figure 2. System Structure Layout.

### 3. Node & Radio Features

#### Node Features:

Basics	
Battery Power	Rechargeable Package (LiFePO4)
DC Output Voltage	11.2V-14.6V
Capacity when fully charged	5AHr
Solar Panel	10W
Single Re-charging Duration	8-12Hr
L x W x H	180 x 140 x 60mm (without bracket)
Weight	2.2kg
Industrial Standard	
Casing and Painting Materials	Aluminium-Alloy Die Castings 12 (Epoxy Polyester Powder Coating)
IP Rating	>= IP66
Operating Temperature	-35 to 65°C

## 4. Terminologies

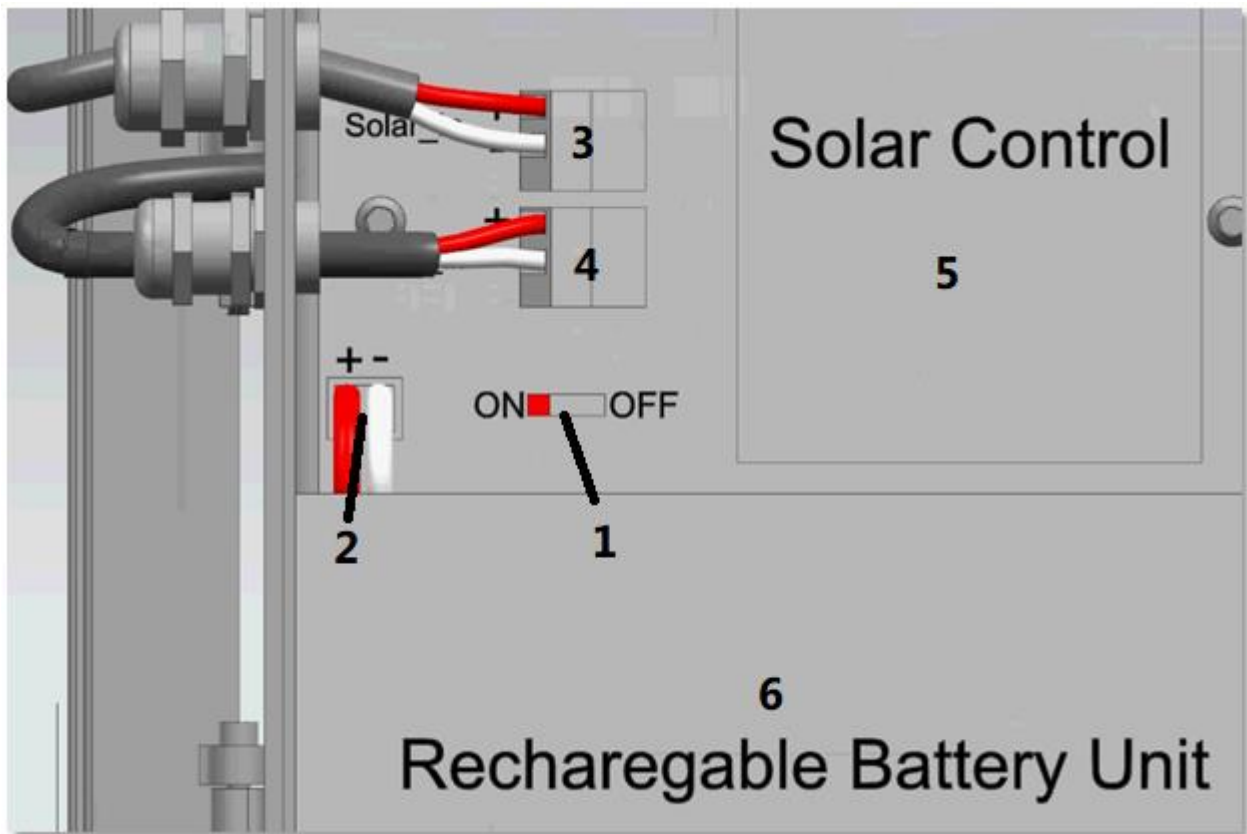


Figure 3. Internal Configuration Terminologies, where:

No.	Terminology
1	On/Off Switch
2	Battery Plugin
3	Solar In
4	DC Out
5	Solar Control
6	Rechargeable Battery Unit

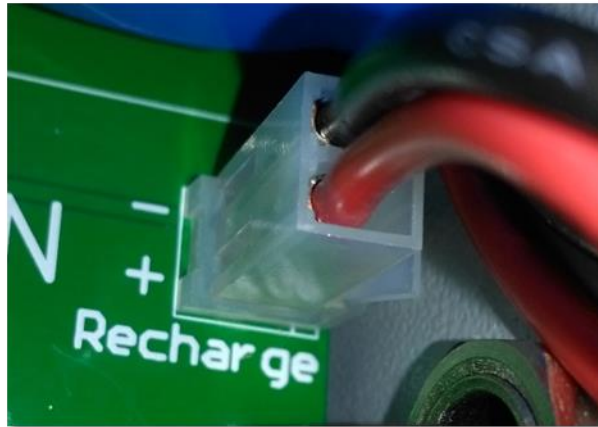
## 5. Operation Procedures



Notice: Take special attention when handling the high capacity battery package;

Installation Procedures:

1. Ensure that the output switch on a solar unit is in “OFF” status before any operation of wiring.
2. Ensure the “+” and “-” wires are connected absolutely correct to the “+” and “-” terminals in the unit, including:
  - A. PCB Recharge “+” & “-” terminals to Rechargeable Battery Unit “+” & “-” plug;



- B. PCB Power\_Out “+” & “-” terminals to B-Gateway “+” & “-” terminals;
  - C. PCB Solar\_In “+” & “-” terminals to External solar panel “+” & “-” terminals.
3. When the wirings are checked, ensure the unit is switched “ON”, so the power output is activated.

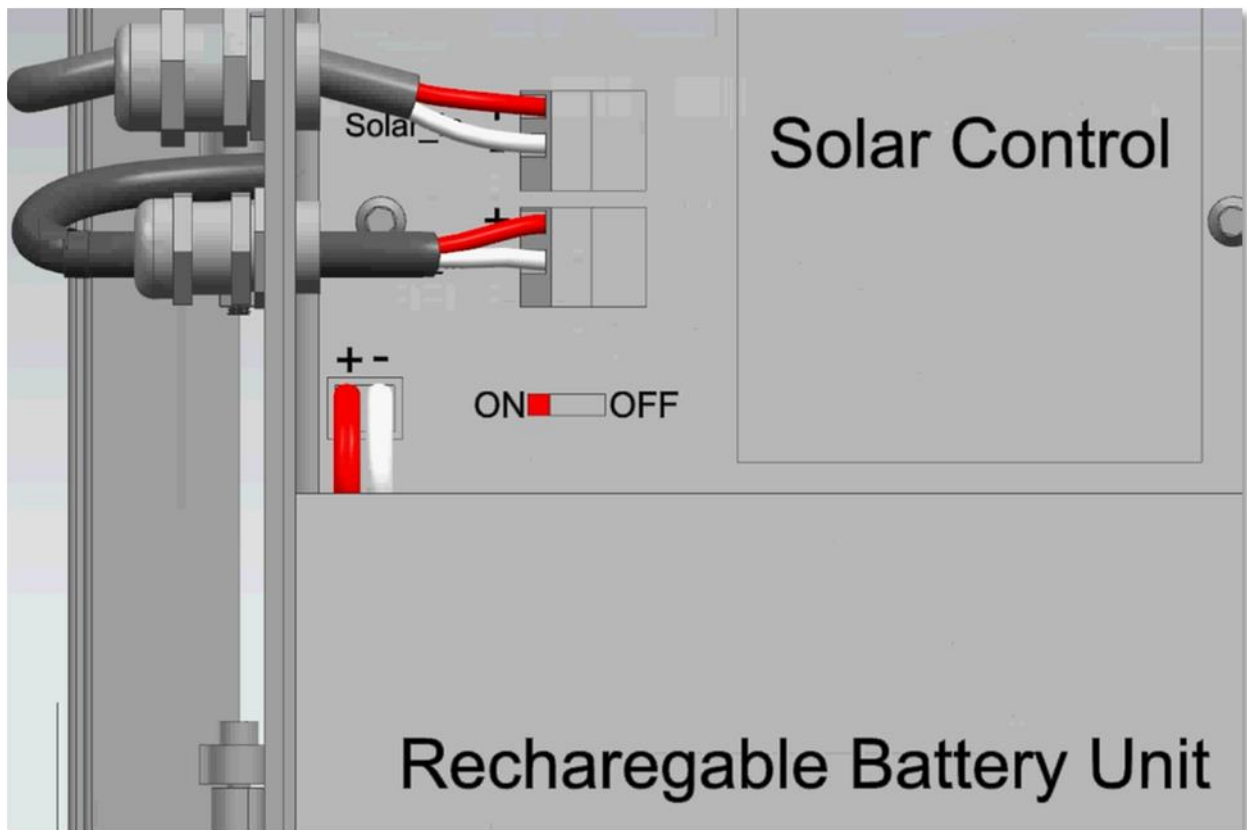


Figure. Solar unit – wiring and ON/OFF switch.



## 6. General Maintenance and Notification



- 1) Our product will use all the possible capacity in a battery down to a stop (minimum) voltage, which has been specified in the Features table. When this occurs, our WiSen protocol will send you a warning then it will use internal batteries until solar unit charge again ;
- 2) If the data from gateway/nodes are shown unexpected results or are not being sent back to the Wisen gateway, then please carry out investigation using the following two stage procedure:
  - A. Remote Inspection of historical data, to identify the following:
    - a) Whether the battery voltage is too low, if yes, please change the battery unit;
  - B. On-site Inspection: If all the above are good, please arrange an on-site inspection to check:
    - a) Whether the unit has visible external damage;
    - b) Check the box lid to see if it is firmly tightened;
    - c) Open the lid, to see whether the battery is firmly plugged in;
    - d) Use a multi-meter to measure the battery voltage. If it is below the stop (minimum) voltage, replace the battery.

### Notices :

- i. Case One: If any change has been made from the list above, please inspect the data from the remote server;
- ii. Case Two: If all the actions from the list above have not cured the problem, please contact Wisen. We will be happy to help.

## 7. Package and Accessories



**Standard:**

No.	Items	Dimension (mm)	Qty.
1	WiSen® Solar Unit	180x140x60	1
2	Cable	1000	1
3	Cap-Hex-Head Screw	M6x14	4
4	User Manual*	Downloadable from WiSen®	

5	Inspection Report*	Visualisation Platform.
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## 8. Safety and Warning



Warning: Please read the following instructions carefully.

### 1) Operation Safety

- Before taking any action, please read all the information provided carefully, and keep the guidance documents safe;
- Ensure that any procedures and installations are correctly carried out. The case and any mountings should be grounded where practicable.
- This product has been designed to meet a certain water-proof level. However, it becomes vulnerable to water ingress when the lid is open or if the cable gland has not been sealed properly.

### 2) Electrical Safety

- To install the battery into a holder, please follow the “+” (positive) and “-” (negative) signs in any Wisen product. Wrong orientation of a battery could potential cause unit damage. Notice: ⚠ The orientation of battery can vary among products.
- When disconnecting the battery, please take special care not to apply excessive force, otherwise the battery holder and the nearby circuitry may be damaged.

### 3) Warning

- The battery in the product has a relatively high capacity, so please take special care during storage and usage.
- This product must not be disassembled under any circumstances, to do so will void the warranty and may leave the product in a dangerous state;
- If all the above are not followed, the manufacturer cannot be held responsible for any damage and injury caused to the users.

### 4) Caution

- Danger of explosion if battery is incorrectly replaced. Replace only with the type recommended by the manufacturer. Observe any warnings specified by the battery manufacturer.
- When disposing of the batteries, please contact your local authorities or dealer and ask for the correct method of

disposal.

## 9. Contact

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