ILLUMIVUE™ BY MSTR

Solar-Kit-1

Quick Guide

V1.01

To prevent danger and loss of property, read the following precautions before using the product, and strictly abide by the precautions during use.

Safety Precautions

- This product is mainly intended for outdoor use. When installing this product, please fix all components firmly to avoid dangerous situations such as excessive instantaneous wind force blowing down the solar panel.
- The environment should meet the temperature and humidity requirements, and there should be no obstructions and inflammables around.
- Piercing, striking, mechanical shocks, disassembly, and decomposition of the battery are strictly prohibited.
- It is strictly prohibited to replace or modify the battery and the solar panels by yourself, otherwise danger may occur.
- Please dispose of waste the battery safely and properly. Do not place the battery near any heat source or fire source. Avoid direct sunlight.

Transportation

Basic requirements for battery transportation:

- Lithium batteries and battery packs are classified as hazardous material in Category 9. When transporting this product, please adhere to your local laws and regulations.
- The product should be packaged in boxes for transportation; during transit, it should be protected from severe vibrations, impacts, or compression, as well as from exposure to direct sunlight and rain. The transport may be carried out using vehicles such as cars, trains, and ships.
- In the event of any damage to the packaging (such as piercing or tearing), which exposes the batteries, the shipment should be inspected, and repackaging should be arranged.
- Avoid storing or transporting this product with metal items such as coins, jewelry, and keys.

Storage

Solar Lithium Battery Pack

Item		Standards
Storage temperature	Short term (< 3 months)	−22°F to 140°F
	Long term (> 3 months)	14°F to 104°F
Relative humidity		10% to 90% RH
State of charge (SOC)		40% to 60%

Solar panel

Item		**Description**
Storage temperature	Short term (< 1 month)	−4°F to 158°F
	Medium term (< 3 months)	−4°F to 113°F
	Long term (> 3 months)	−4°F to 86°F
Relative humidity		≤ 75%RH

- The battery pack should be charged every three months during long-term storage.
- Please use a 5V charger for charging; charge for 1.5 to 3 hours to ensure the battery pack is kept with 40% to 60% SOC. Long-term low-voltage status (lower than the overdischarge protection voltage) due to self-discharge will cause fatal damage to the cells.

Installation and Operation

- It is forbidden to put heavy objects on the product or stack the products.
- Avoid mechanical vibration, shock, pressure, and impact.
- When abnormal phenomena (such as smoking or overheating) occur during charging or use of the product, immediately stop the operation and notify the relevant professionals for handling.
- Please follow the instructions in this guide to install the product.

Maintenance and Repair

- Do not use gasoline or other organic solutions to clean this product, If necessary, use a soft and dry cloth to wipe it.
- This product does not include any user-serviceable part. Do not dismantle the product or alter any circuit in it; otherwise, the warranty will be voided. For any quality or technical problems, please contact your dealer.
- We reserve the right to continuously improve the product without prior notice.

1 Packing List

Contact your local dealer if the package is damaged or incomplete. The package contents may vary with device model.

No.	Name	Qty	Unit
1	Solar panel	1	PCS
2	Lithium battery pack	1	PCS
3	Solar O&M module (hereinafter referred to as “O&M module”)	1	PCS
4	Loop	2	PCS
5	Screws	2	Set
6	One-to-two power cable	1	PCS
7	Product documents	1	Set

2 Product Introduction

2.1 Overview

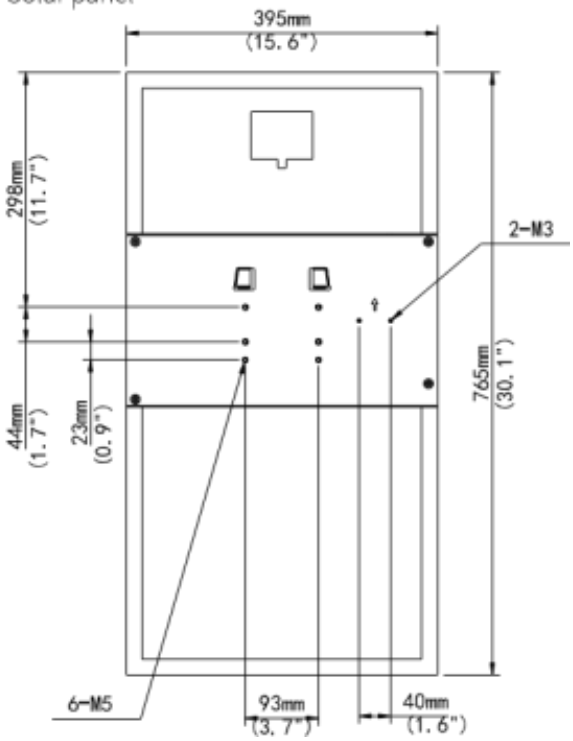
- This product can form a professional integrated solar power system, which is easy to install, easy to use, durable, and highly reliable. Without connecting to the grid, the product can provide a stable and reliable power output for cameras. It is widely applicable to urban construction, road surveillance, rural revitalization, environmental management, water source protection, and construction sites and mountainous areas where power supply is difficult to access.
- The controller of this product utilizes a high-performance controller chip, with power conversion efficiency exceeding 97%, and features multiple protection functions such as high and low battery temperature protection, overcharge protection, undervoltage protection, and constant load voltage, capable of real-time monitoring and battery protection.
- This product uses lithium-iron phosphate batteries and is safe, reliable, has a large capacity and long lifetime (≥4,000 cycles).
- This product is meticulously crafted to ensure stability and reliability even in harsh environments.
- The product comes with a loop for easy pole mount.

- The structure and wiring of this product are design to be waterproof, preventing malfunctions due to short circuits.

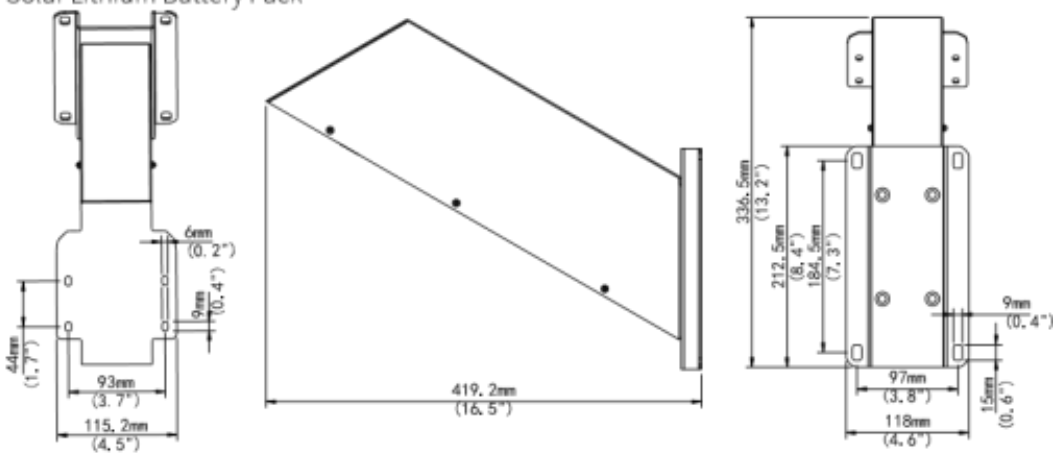
2.2 Appearance and Dimensions

The appearance may vary with device model.

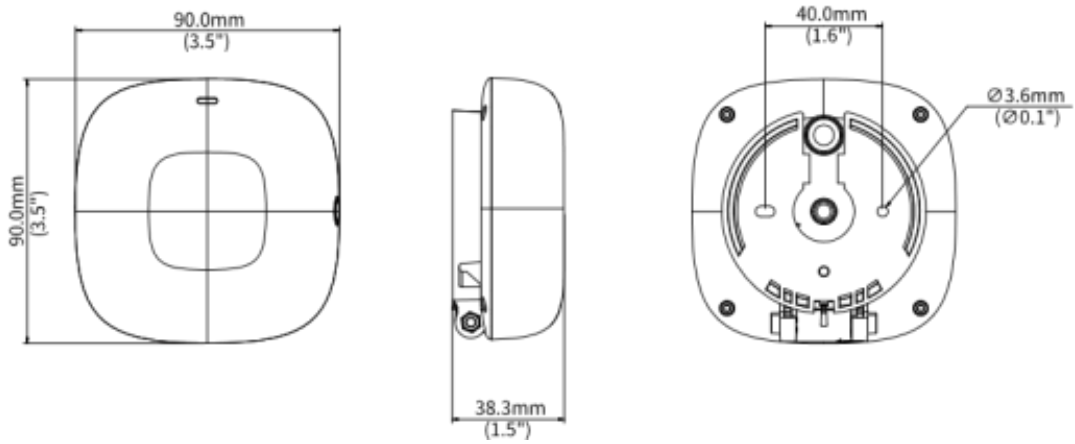
- Solar panel



- Solar Lithium Battery Pack



- Solar O&M Module



3 Technical Specifications

3.1 Solar panel

Model	SOLAR-PANEL
Peak power	60W
Operating voltage	4.5V
Operating current	13.33A
Cell conversion efficiency	≥ 22%
Operating temperature	−4°F to 140°F
Dimensions (W x D x H)	30.12 × 15.55 × 0.98 inches
Weight	6.5kg

3.2 Solar Lithium Battery Pack

Model	SOLAR-BATTERY
Battery capacity	320Wh
Operating voltage	9V to 12.6V
Charging voltage	5V
Maximum discharge current	2A
Operating temperature	-4°F to 131°F (discharge) -4°F to 113°F (charge)
Dimensions	16.50 × 4.65 × 13.25 inches

Weight	10.17 lbs	8.55 lbs

4 Indicator LEDs

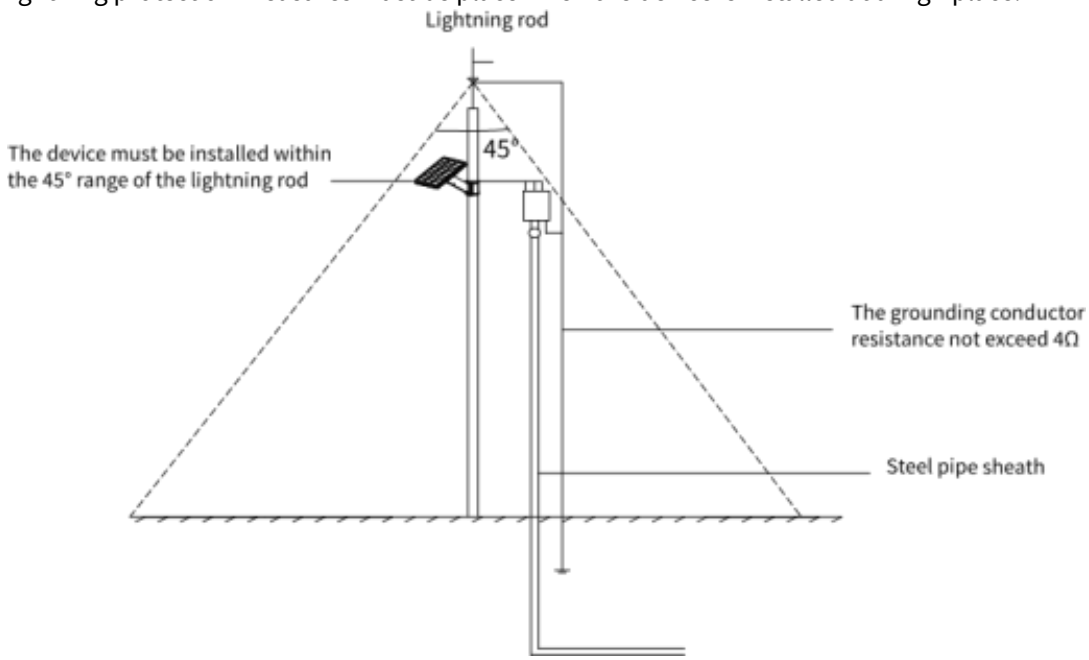
The status indicator LEDs are located on the body of the battery pack, showing the real-time status of the solar panel, battery, and device load.

LED	Type	Status
	Solar panel indicator	• Steady on: Generating power normally • Off: Not generating power
	Lithium battery indicator	• Steady on: Normal battery level. • Fast blinking: Low battery level. • Slow blinking: Charge protection.
	Load indicator	• Steady on: Power output is normal. • Off: No power output.

5 Device Installation

5.1 Lightning Protection Preparation

Lightning protection measures must be place when the device is installed at a high place.



- The device should be installed within the effective range of the lightning rod.
- Outdoor wiring should preferably be routed along the eaves.
- In open areas, sealed steel pipes must be buried for wiring and grounded at a single point. Suspended wiring is strictly prohibited.
- In the case of outdoor installation, please take the necessary protective measures to ensure electrical safety, and install surge protectors as required.
- In areas with severe thunderstorms or high induced voltages (for example, high voltage substations), additional protection devices must be installed, such as high-power lightning protection device, lightning conductor, etc.
- The lightning protection and grounding for outdoor installations and lines must be designed in accordance with the lightning protection requirements of the buildings and must comply with the relevant national and industry standards.
- The system must be connected to a common electrical potential ground. The grounding equipment must meet both the requirements for system interference resistance and electrical safety and must not be short-circuited or mixed with the neutral line of the high-voltage power grid. When the system is grounded separately, the grounding impedance must not exceed 4Ω, and the cross-sectional area of the grounding conductor must be equal to or greater than .98in.^{2}.

5.2 Tools

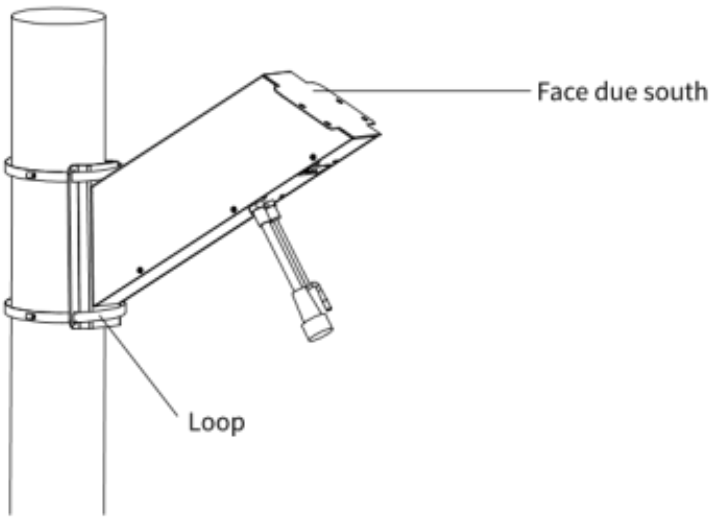
- Please prepare a Phillips screwdriver, insulation tape, waterproof tape, and compass.
- This product is suitable for poles with a diameter within the range of 2.64” to 4.33”. For diameters outside this range, please use an appropriate hose clamp.

5.3 Solar panel & Solar Lithium Battery Pack Installation

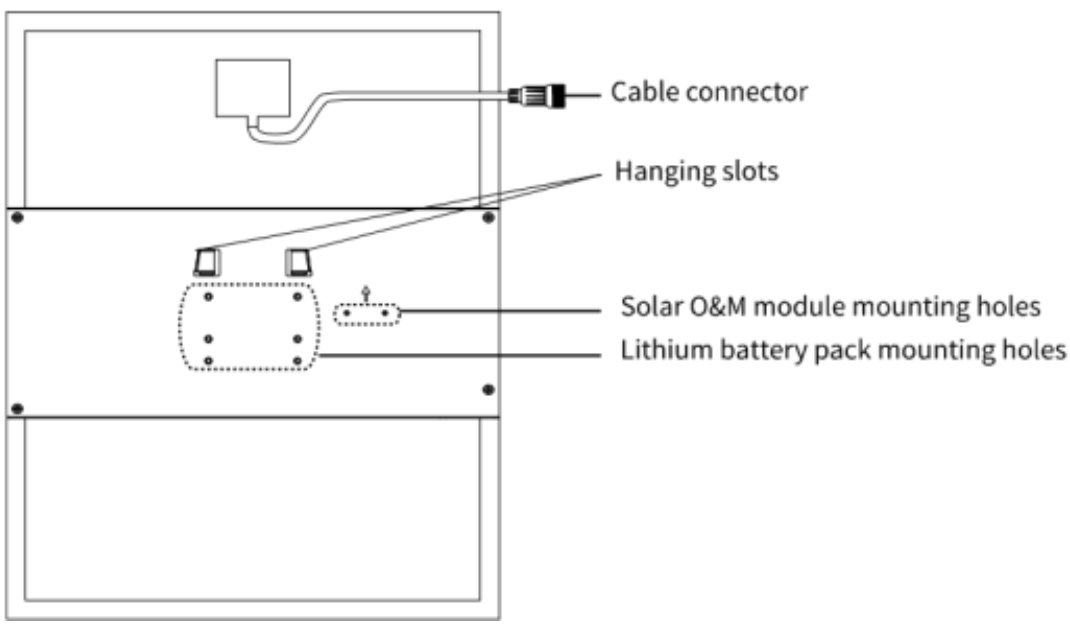
1. Secure the battery pack to the pole using the loop and tighten the loop clockwise.

NOTE!

- There should be no obstructions blocking the solar panel from receiving adequate sunlight.
- Use a compass to orient the solar panel as close to due south as possible.

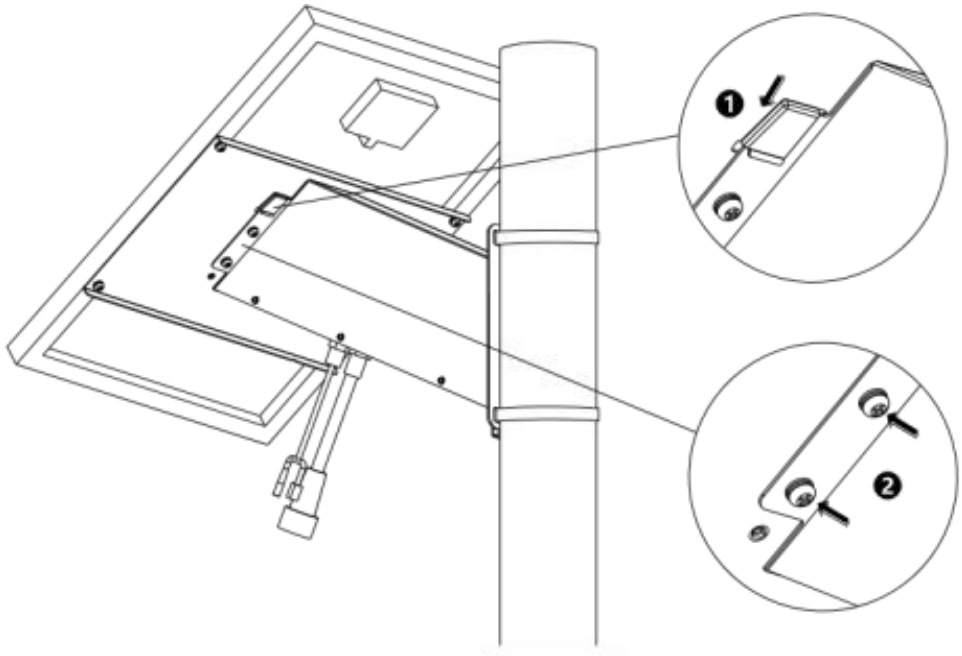


2. Secure the solar panel to the battery pack.

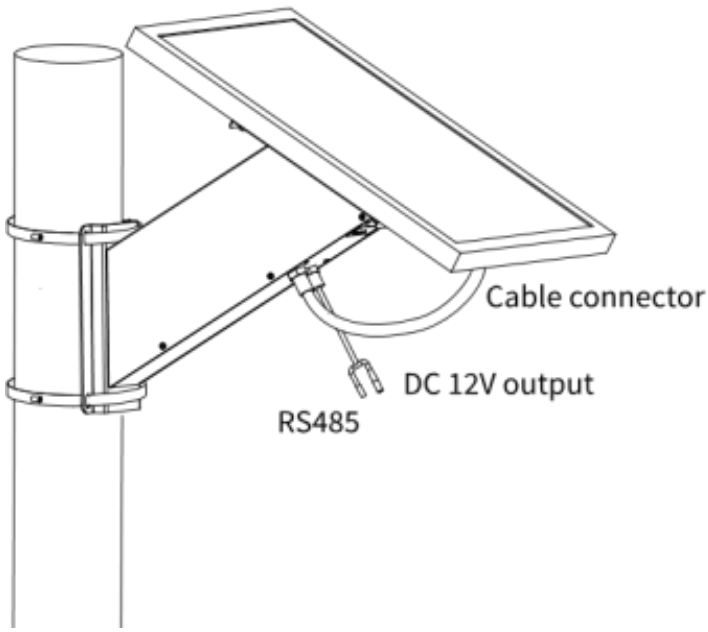


(1) The adapter bracket of the solar panel is secured to the battery pack via the slots.

(2) Secure the four mounting holes on the battery pack cylinder, and tighten the screws clockwise to fix them to the adapter bracket.



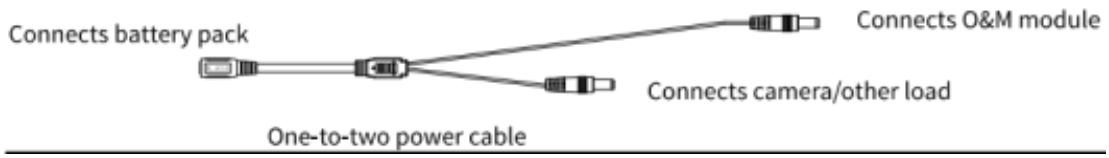
3. Connect the tail cable. Wrap the cable interface with insulation tape and waterproof tape.



- Cable connector: Connects to the solar panel. Connect the solar panel cable connector (4pin) with the battery pack cable connector (4-pin), fasten the plastic nut clockwise. The indicator lights up when the connection is completed.
- DC 12V output: Connects to the camera to power the camera.

NOTE!

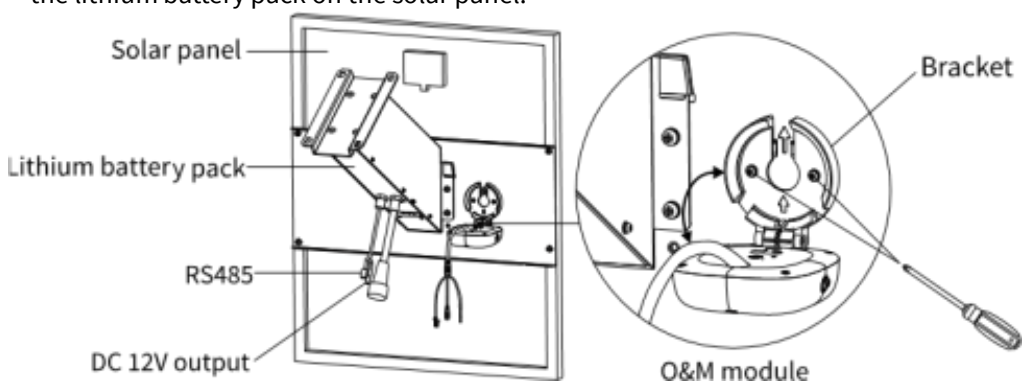
If the O&M module is used, use a one-to-two power cable to power both the camera and the O&M module.



- RS485: Connects to the O&M module's RS485 terminal (RS485_A to RS485_A, and RS485_B to RS485_B).

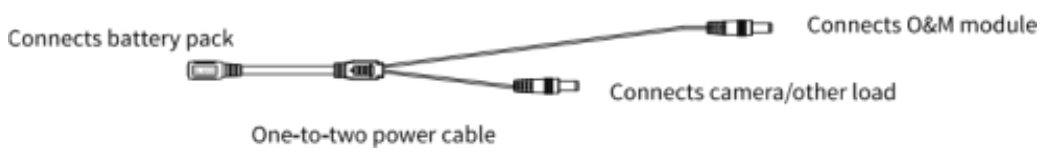
5.4 O&M Module Installation

1. Open the bracket at the bottom of the O&M module, align the arrow on the bracket with that on the solar panel, and insert the screws into the holes and tighten them. Then, install the lithium battery pack on the solar panel.

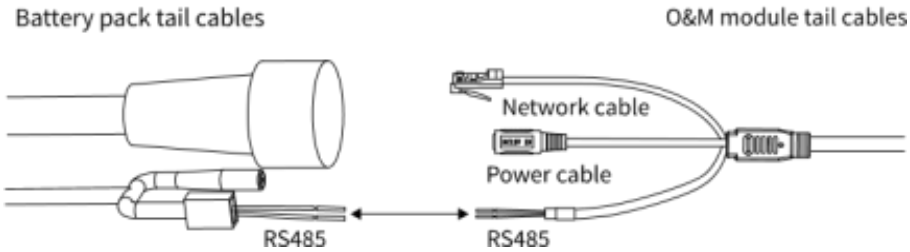


2. Connect the O&M module tail cables.

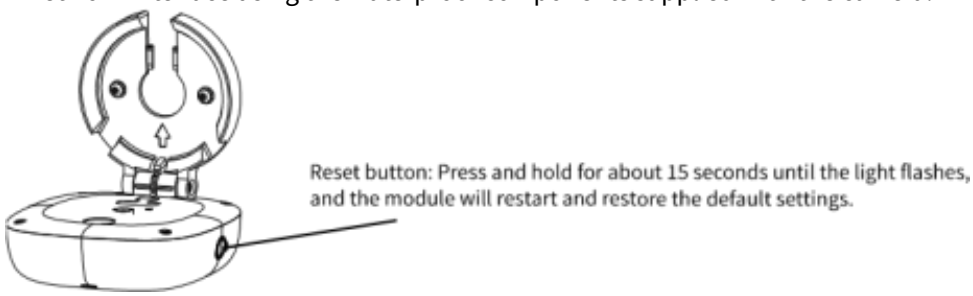
- Network cable: Connect to the network interface of the 4G camera.
- Power cable: Connect to one end of the one-to-two power cable as shown below.



- RS485: Connect to the lithium battery pack's RS485 interface (RS485_A to RS485_A, and RS485_B to RS485_B).



3. Wrap the cable interfaces with insulation tape and waterproof tape, and waterproof the network interface using the waterproof components supplied with the camera.



6 Web Login

Default IP address 192.168.1.30 Default username/password admin/123456	Note: For security, please set a strong password of at least nine characters including uppercase and lowercase letters, digits, and special characters. You are strongly recommended to regularly change the device password and keep it secure to ensure that only authorized users can log in.

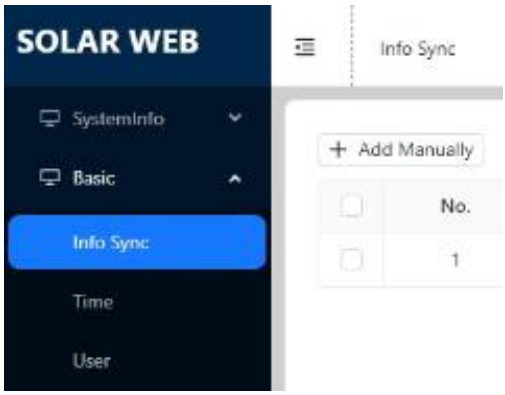
7 (Optional) Loa ⅰ Device Configuration

The solar power system supports the power supply of cameras and O&M modules.

The following describes how to configure the battery percentage OSD for the camera. The figure below is for reference only. The actual interface may vary.

NOTE!

The configuration described in this chapter can be done indoors, after which the device should be installed outdoors.See Device Installationfor detailed installation method.



1. Connect the O&M module to power using a 12V power adapter self-prepared.
2. Enter http://O&M module IP address in the browser, and log in to the solar's Web interface.
3. Go to Basic > Info Sync, click Add Manually to add the powered camera, and enable Battery Percentage OSD.

8 (Optional) Device Remote O&M

You can manage the solar system on the ILV Protect App. Download and install the ILV Protect App in your phone's app store. For detailed operations, see the user manual in the app.

9 FAQ

Symptom	Possible Causes	Suggestion
All LEDs are off.	The battery is not connected to the solar panel.	The solar panel's tail cable acts as a switch for the battery. The battery is activated only when connected to the solar panel. Check whether the battery is connected to the solar panel.
	The battery has no power, and there's no sunlight.	When the sun appears, the solar panel will charge the battery, and the solar panel indicator will turn on.
The load indicator is off, the battery indicator blinks.	The battery has low power level.	When the sun appears, the solar panel will charge the battery, and the battery will start to output power in about 30 minutes.
The solar panel indicator is off when there's sunlight.	The battery has been fully charged.	This is normal (The lithium battery indicator is blinking).
	The battery has a power supply problem.	Check whether the battery's positive and negative terminals are connected correctly.
	The solar panel is obstructed.	Check the solar panel for any foreign objects; check that there are no trees or buildings around the installation point blocking sunlight.
The camera battery drains quickly.	The battery was low when delivered.	Try to install the battery in a sunny day. When the battery is depleted, you'll have to wait till the next sunny day.

	The solar panel is obstructed.	Check the solar panel for any foreign objects; check that there are no trees or buildings around the installation point blocking sunlight. Choose an open area without obstructions to install the device.
	The load has a high power consumption.	Adjust the camera settings to reduce power usage, such as lowering the brightness of the nighttime illumination; replace with higher efficiency loads or switch to a larger solar battery pack with greater capacity.
Camera is offline.	The camera is out of power.	Check if the solar power supply system is providing voltage output; make sure the power lines are properly connected.
	The camera’s antenna is not connected properly.	Check whether the antenna is loose and needs to be tightened.
	Network error.	Remove and reinsert the solar panel's tail cable to restart the entire system.

10 Disclaimer and Safety Warnings

Copyright Statement

No part of this manual may be copied, reproduced, translated or distributed in any form or by any means without prior consent in writing from from our company (referred to as us hereafter).

The product described in this manual may contain proprietary software owned by Illumivue and its possible licensors. Unless permitted by Illumivue and its licensors, no one is allowed to copy, distribute, modify, abstract, decompile, disassemble, decrypt, reverse engineer, rent, transfer, or sublicense the software in any form or by any means.

Export Compliance Statement

Illumivue complies with applicable export control laws and regulations worldwide, including that of the People's Republic of China and the United States, and abides by relevant regulations relating to the export, re-export and transfer of hardware, software and technology. Regarding the product described in this manual, Illumivue asks you to fully understand and strictly abide by the applicable export laws and regulations worldwide.

Privacy Protection Reminder

Illumivue complies with appropriate privacy protection laws and is committed to protecting user privacy. You may want to read our full privacy policy at our website and get to know the ways we process your personal information. Please be aware, using the product described in this manual may involve the collection of personal information such as face, fingerprint, license plate number, email, phone number, GPS. Please abide by your local laws and regulations while using the product.

About This Manual

- This manual is intended for multiple product models, and the photos, illustrations, descriptions, etc, in this manual may be different from the actual appearances, functions, features, etc, of the product.
- This manual is intended for multiple software versions, and the illustrations and descriptions in this manual may be different from the actual GUI and functions of the software.
- Despite our best efforts, technical or typographical errors may exist in this manual. Illumivue cannot be held responsible for any such errors and reserves the right to change the manual without prior notice.
- Users are fully responsible for the damages and losses that arise due to improper operation.
- Illumivue reserves the right to change any information in this manual without any prior notice or indication. Due to such reasons as product version upgrade or regulatory requirement of relevant regions, this manual will be periodically updated. Disclaimer of Liability
- The product described in this manual is provided on an "as is" basis. Unless required by applicable law, this manual is only for informational purpose, and all statements, information, and recommendations in this manual are presented without warranty of any kind, expressed or implied, including, but not limited to, merchantability, satisfaction with quality, fitness for a particular purpose, and noninfringement.
- To the extent allowed by applicable law, in no event shall Illumivue’s total liability to you for all damages for the product described in this manual (other than as may be required by applicable law in cases involving personal injury) exceed the amount of money that you have paid for the product.

- Users must assume total responsibility and all risks for connecting the product to the Internet, including, but not limited to, network attack, hacking, and virus. Illumivue strongly recommends that users take all necessary measures to enhance the protection of network, device, data and personal information. Illumivue disclaims any liability related thereto but will readily provide necessary security related support.
- To the extent not prohibited by applicable law, in no event will Illumivue and its employees, licensors, subsidiary, affiliates be liable for results arising out of using or inability to use the product or service, including, not limited to, loss of profits and any other commercial damages or losses, loss of data, procurement of substitute goods or services; property damage, personal injury, business interruption, loss of business information, or any special, direct, indirect, incidental, consequential, pecuniary, coverage, exemplary, subsidiary losses, however caused and on any theory of liability, whether in contract, strict liability or tort (including negligence or otherwise) in any way out of the use of the product, even if Illumivue has been advised of the possibility of such damages (other than as may be required by applicable law in cases involving personal injury, incidental or subsidiary damage).

Network Security

Please take all necessary measures to enhance network security for your device.

The following are necessary measures for the network security of your device:

- Change default password and set strong password: You are strongly recommended to change the default password after your first login and set a strong password of at least nine characters including all three elements: digits, letters and special characters.
- Keep firmware up to date: It is recommended that your device is always upgraded to the latest version for the latest functions and better security. Visit Illumivue's official website or contact your local dealer for the latest firmware.
- The following are recommendations for enhancing network security of your device:
- Change password regularly: Change your device password on a regular basis and keep the password safe. Make sure only the authorized user can log in to the device.
- Enable HTTPS/SSL: Use SSL certificate to encrypt HTTP communications and ensure data security.
- Enable IP address filtering: Allow access only from the specified IP addresses.
- Minimum port mapping: Configure your router or firewall to open a minimum set of ports to the WAN and keep only the necessary port mappings. Never set the device as the DMZ host or configure a full cone NAT.
- Disable the automatic login and save password features: If multiple users have access to your computer, it is recommended that you disable these features to prevent unauthorized access.

  Choose username and password discretely: Avoid using the username and password of your social media, bank, email account, etc, as the username and password of your device, in case your social media, bank and email account information is leaked.
- Restrict user permissions: If more than one user needs access to your system, make sure each user is granted only the necessary permissions.
- Disable UPnP: When UPnP is enabled, the router will automatically map internal ports, and the system will automatically forward port data, which results in the risks of data leakage. Therefore, it is recommended to disable UPnP if HTTP and TCP port mapping have been enabled manually on your router.

- Multicast: Multicast is intended to transmit video to multiple devices. If you do not use this function, it is recommended you disable multicast on your network.
- Check logs: Check your device logs regularly to detect unauthorized access or abnormal operations.
- Isolate video surveillance network: Isolating your video surveillance network with other service networks helps prevent unauthorized access to devices in your security system from other service networks.
- Physical protection: Keep the device in a locked room or cabinet to prevent unauthorized physical access.
- SNMP: Disable SNMP if you do not use it. If you do use it, then SNMPv3 is recommended.

Learn More

You may also obtain security information under Security Response Center at Illumivue's official website. Safety Warnings

The device must be installed, serviced and maintained by a trained professional with necessary safety knowledge and skills. Before you start using the device, please read through this guide carefully and make sure all applicable requirements are met to avoid danger and loss of property.

Storage, Transportation, and Use

- Store or use the device in a proper environment that meets environmental requirements, including and not limited to, temperature, humidity, dust, corrosive gases, electromagnetic radiation, etc.
- Make sure the device is securely installed or placed on a flat surface to prevent falling.
- Unless otherwise specified, do not stack devices.
- Ensure good ventilation in the operating environment. Do not cover the vents on the device. Allow adequate space for ventilation.
- Protect the device from liquid of any kind.
- Make sure the power supply provides a stable voltage that meets the power requirements of the device. Make sure the power supply's output power exceeds the total maximum power of all the connected devices.
- Verify that the device is properly installed before connecting it to power.
- Do not remove the seal from the device body without consulting Illumivue first. Do not attempt to service the product yourself. Contact a trained professional for maintenance.
- Always disconnect the device from power before attempting to move the device.
- Take proper waterproof measures in accordance with requirements before using the device outdoors. Power Requirements
- Install and use the device in strict accordance with your local electrical safety regulations.
- Use a UL certified power supply that meets LPS requirements if an adapter is used.
- Use the recommended cordset (power cord) in accordance with the specified ratings.
- Only use the power adapter supplied with your device.
- Use a mains socket outlet with a protective earthing (grounding) connection.
- Ground your device properly if the device is intended to be grounded. Battery Use Caution
- When battery is used, avoid:

- Extremely high or low temperature and air pressure during use, storage and transportation. - Battery replacement.

  Use the battery properly. Improper use of the battery such as the following may cause risks of fire, explosion or leakage of flammable liquid or gas.

- Replace battery with an incorrect type;
- Dispose of a battery into fire or a hot oven, or mechanically crushing or cutting of a battery;
- Dispose of the used battery according to your local regulations or the battery manufacturer's instructions.

Avertissement de l'utilisation de la batterie

- Lorsque utiliser la batterie, évitez:
- Température et pression d'air extrêmement élevées ou basses pendant l'utilisation, le stockage et le transport.
- Remplacement de la batterie.
- Utilisez la batterie correctement. Mauvaise utilisation de la batterie comme celles mentionnées ici, peut entraîner des risques d'incendie, d'explosion ou de fuite liquide de gaz inflammables.
- Remplacer la batterie par un type incorrect;
- Disposer d'une batterie dans le feu ou un four chaud, écraser mécaniquement ou couper la batterie;
- Disposer la batterie utilisée conformément à vos règlements locaux ou aux instructions du fabricant de la batterie.

Regulatory Compliance

FCC Statements

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Visit http://en.Illumivue.com/Support/Download_Center/Product_Installation/Declaration/ for SDoC. Caution: The user is cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

LVD/EMC Directive

This product complies with the European Low Voltage Directive 2014/35/EU and EMC Directive 2014/30/EU. WEEE Directive–2012/19/EU

The product this manual refers to is covered by the Waste Electrical & Electronic Equipment (WEEE) Directive and must be disposed of in a responsible manner.

Battery Regulation- (EU) 2023/1542

Battery in the product complies with the European Battery Regulation (EU) 2023/1542. For proper recycling, return the battery to your supplier or to a designated collection point.