VISION
Communication Gateway
Installation and Operation Manual

Version: 1.1

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1. Notice

Please refer to the following technical data and the installation & operation procedures for the proper installation and operation of the communication gateway. Do not, in any way, attempt to repair communication gateway unit. If there are abnormal operations, please revert to the manufacturer for resolution.

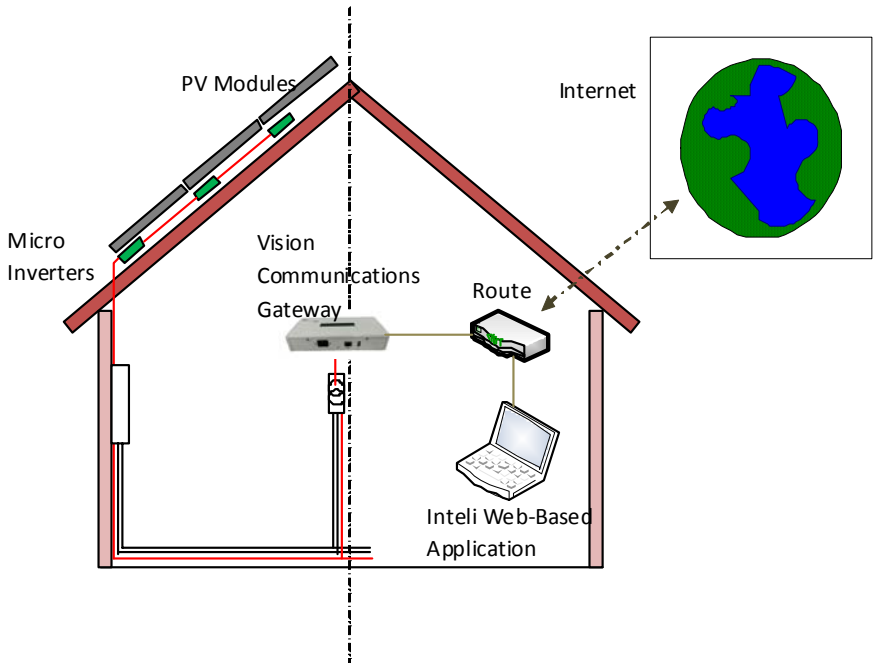
2. Typical Solar System implemented through micro inverters

In a typical photovoltaic implementation using micro inverters, the communication gateway forms an integral part of the overall system solution as it provides the bridge between the energy generation component (photovoltaic modules), power conversion products (micro inverters) and the users.

The micro inverter is part of the integrated solar system whereby each individual micro inverter is paired with one PV module. Therefore, it allows the system to maximize the energy harvesting capabilities of the implementation as well as improving the overall reliability.

In all solar implementation, users will welcome the detailed feedback from the system. Such information are critical as it allows the users to appreciate the relevant operational parameters as well as performance of the overall system solution, thus enabling them to make informed decisions when needs arises.

The Vision communication gateway facilitates the retrieval of the operational parameters and the performance data for this purpose.



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3. The Communication Gateway Installation Guide

3.1 Preparation

Before the installation, please check the following:-

- Choose a location for the communication gateway. It preferred to be near a AC socket that is connected to the output of the micro inverter system.
- A broadband connection
- Broadband router with Ethernet port
- Web browser available in PC

Upon which, unpack the unit and check for the following:-

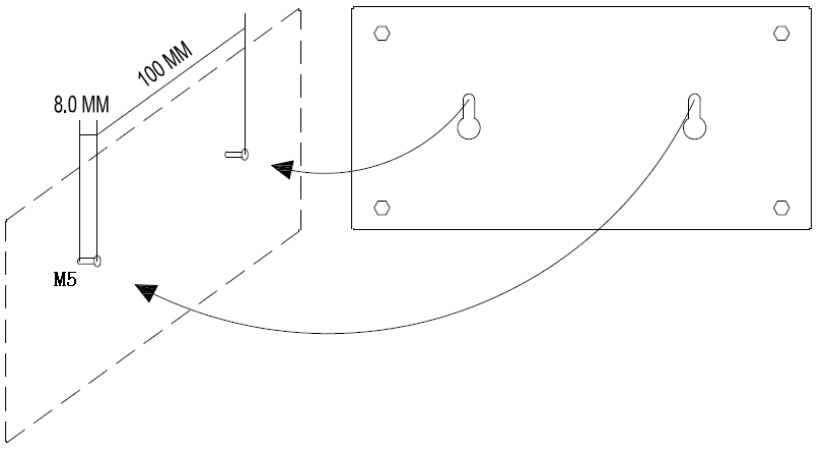
- The Vision communication gateway device
- A set of Ethernet cable
- A set of AC power cord with the correct AC plug

3.2 The Installation Proper

1. **Choose the right location, taking the following into considerations.**
   i. Install the communication gateway in indoors and possibly as close to the PV arrays' load centre as possible. This will help to minimize the reliability issues on communication.
   ii. The Vision communication gateway device can be placed on a table top or wall mounted. To wall mount the device, please see instructions below.

2. **Mount the communication gateway device.**
   i. Fix 2 x M5 bolts (screws or nails) of diameter 4.5mm into the wall.
   ii. Ensure a pitch of 100mm between the M5 bolts.
   iii. Allow an exposure of about 5-8mm of the bolts for the actual mounting of the device, taking into consideration the stress range of the bolts used.

- Vision communication gateway installation and operation manual.



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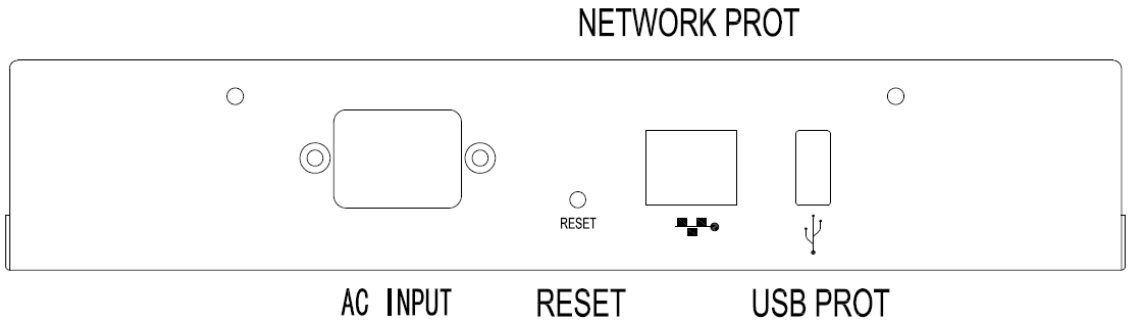
3. **Connect the Ethernet and power cables**
   i. There is a group of cable ports located at the back of the communication gateway device.
   ii. See instructions below and use the ports correctly.

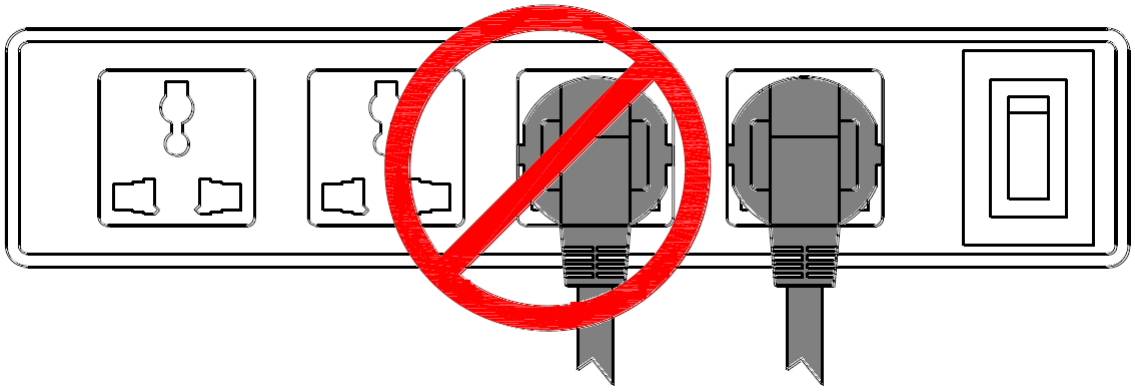


AC INPUT – In addition to the AC power supply, this port is also used for the powerline communications.

NETWORK PORT – This is for Ethernet communication.

USB PORT – This is usually reserved for authorized personnel. It is mainly for programming or any upgrades and not applicable for the users.

WARNING!! DO NOT plug the Vision Communication Gateway into a power strip, surge protector or uninterruptible power supply (UPS). The surge suppression or filtering can substantially diminish the communication performance.



3.3 Setting Up and Obtain the IP address

1. Insert one end of the Ethernet cable into the Ethernet port of the Vision Communication Gateway device.
2. Insert the other end to the Ethernet port in the broadband router.
3. Make sure that the DHCP service is turned on. Once the device is connected to the internet, it will obtain an IP address automatically.
4. If the installation is successful, the following will be shown on the screen of the device.

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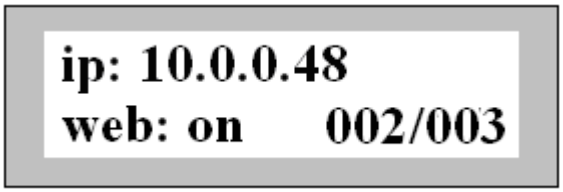
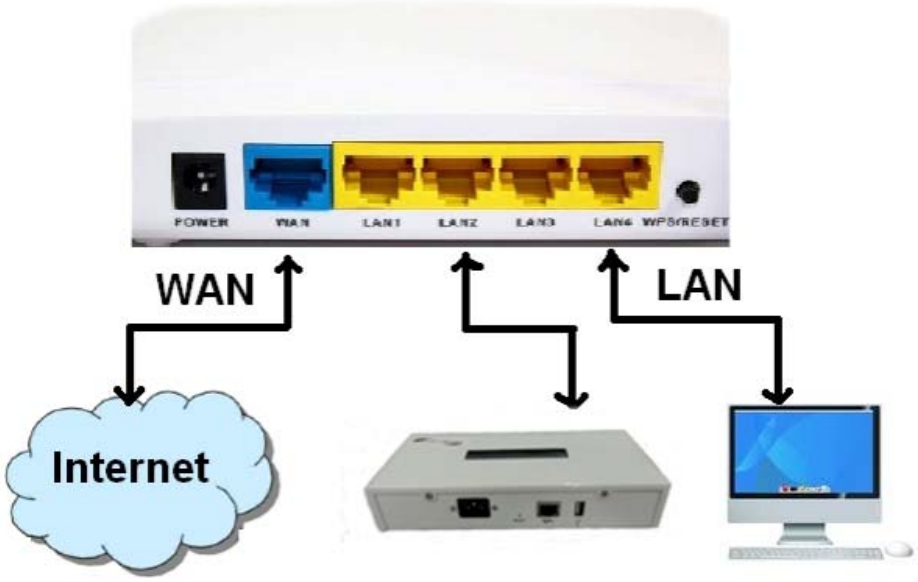
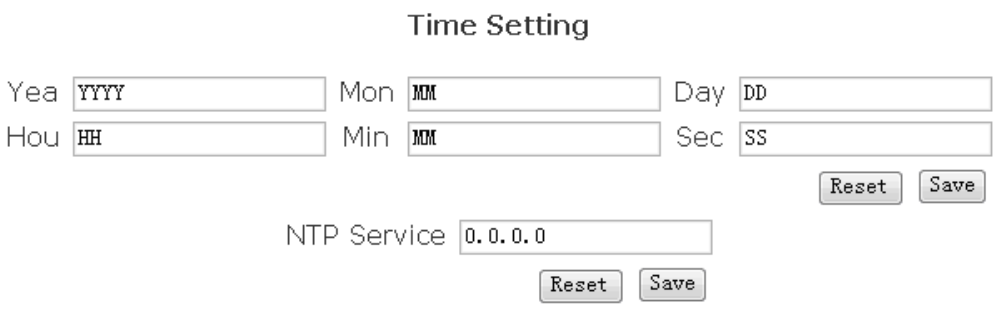


3.4 Login to local web service and set local time

1. Connect a PC to the router in the same way.
2. Set the IP configuration in the PC to “get IP automatically”.
3. The two IP addresses are now configured and basic Ethernet connection has been established between the PC and the communication gateway device.



4. Open the web browser, type in the IP address of the Vision communication gateway device and log in to the local web service (for details, see “local interface”).
5. Click “Configuration” and enter the configuration page.
6. You can the set the local time manually, or you may enter a local NTP service to obtain the local time and respective time zone automatically.



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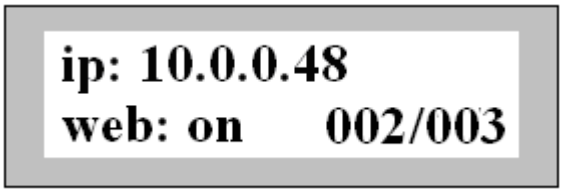
4. Operation

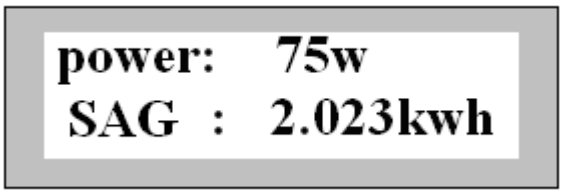
4.1 LCD Screen

The LCD screen is an important window of information. The internet and performance data shown are refreshed in a 5-second interval.

- If the device is connected to the internet, the screen will display the IP address.
- "2/3" indicates that there are 3 micro inverters connected to the communication gateway device but only 2 of them are in proper communication mode.
- The communication between the Vision communication gateway device and the micro inverters are based on half-duplex. It provides a 2-way communication but only one direction at a time (not simultaneously).
- The communication gateway device will initiate the search for the micro inverter and once the in-operation micro inverter established connection, data reporting will start.
- The communication gateway device identifies a micro inverter through the reported data, and if a micro inverter is not in operation, it will be considered off-line.



- On the display data, a normalized screen is below:-



- "POWER" indicates the current output power of the micro inverter.
- "SAG" indicates the total energy harvest of all the connected micro inverters and the value is provided up to the third decimal placing.
- NOTE: SAG refers to "System Agent Generation". "Agent" is used as it refers to the power conversion system that converts the solar energy to the grid electricity.

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4.2 Local Web Service

Users can normally log on to the website to check on the historical energy data of the system. However, if the internet connection is not available, users can also obtain limited data information through the local web service.

In order to access this local web service, the Vision communication gateway device, a router and a PC are required.

1. Connect one end of the Ethernet cable to the communication gateway device, and connect the other end to the PC through the router.
2. Turn on the DHCP service and obtain a dynamic IP address.
3. Ensure the IP address of the communication gateway device is in the same segment with the PC
4. Start up the “Internet Explorer”, key-in the IP address in the address line and initiate the login page.

5. On the login page, click on “Login”, and you will be asked to enter the username and password. The factory default username and password are “Admin” and “1234” respectively.
6. It then brings you to the “Overview” page.
7. The “Overview” page provides a system overview and highlights the current status of the installed PV system.

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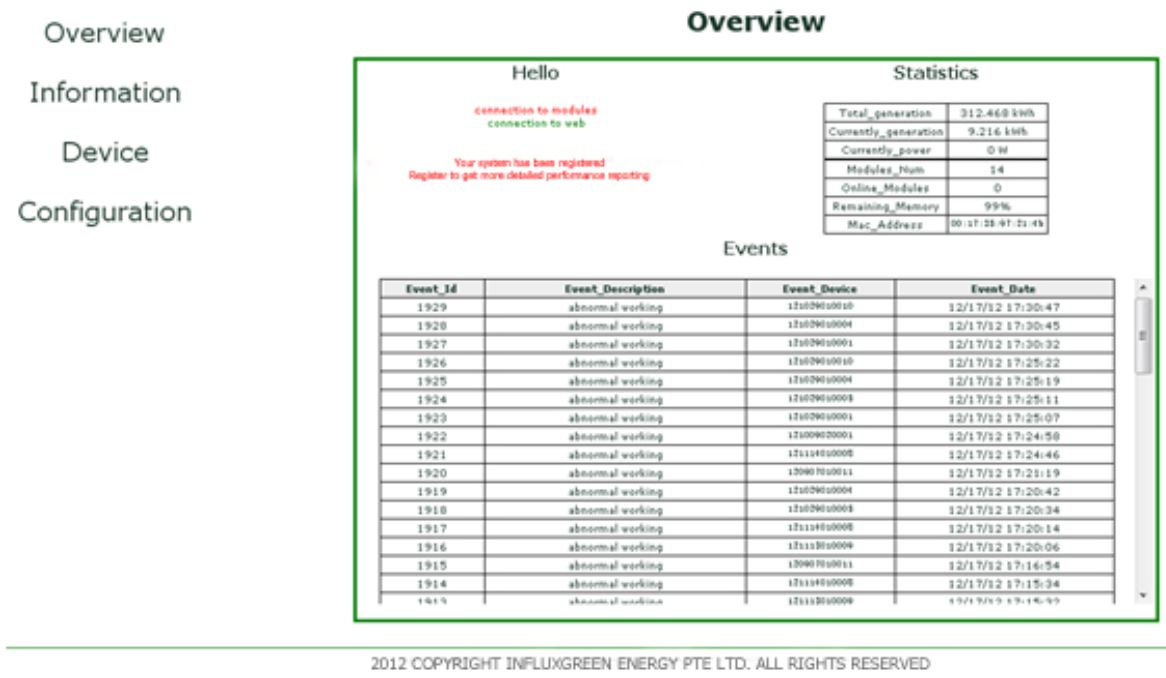
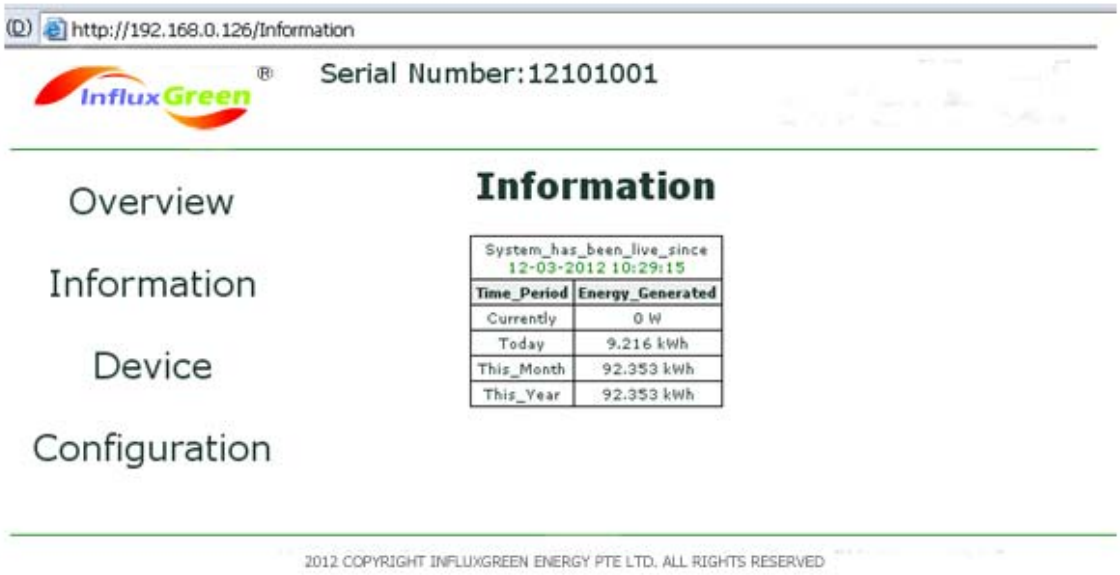
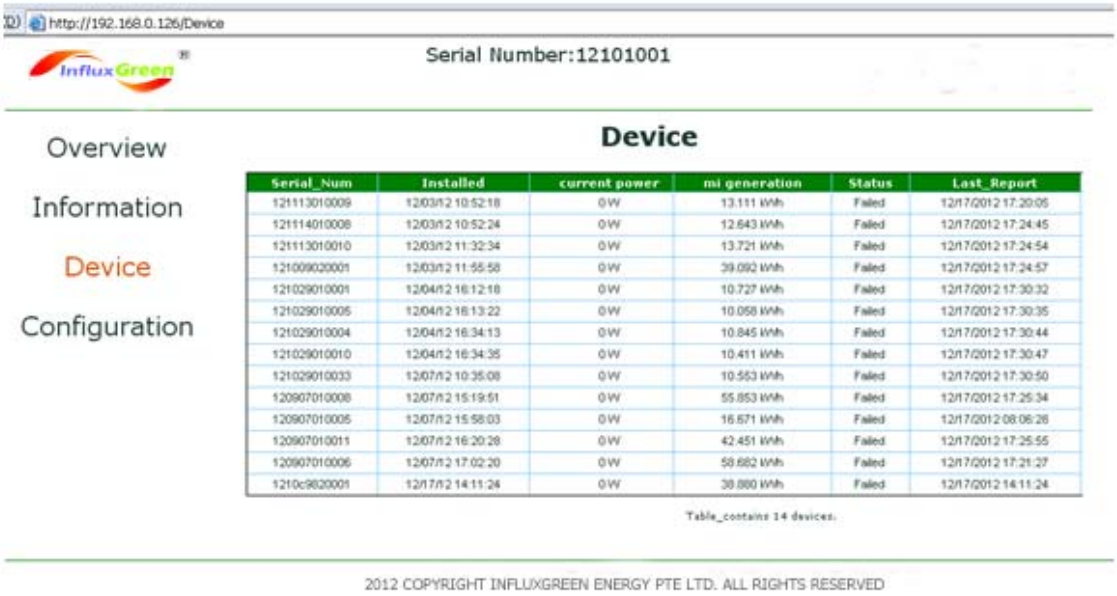


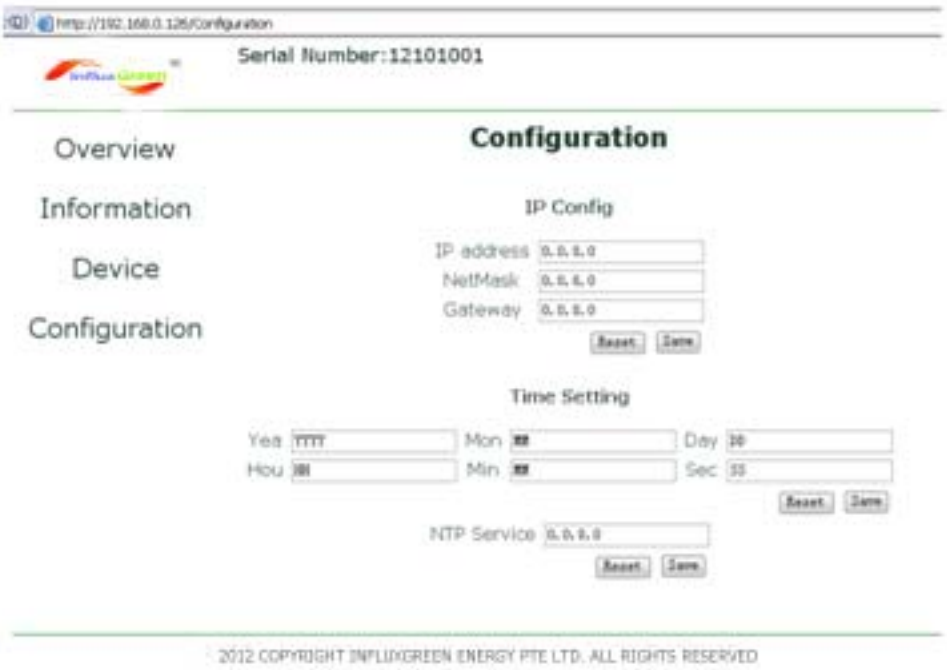
8. In the “Overview” screen, click on “Information” to navigate to the “Information” screen.
9. In the “Information” screen, it highlights the energy harvest information of the installed micro inverter system.



10. In the same screen, click on “Device” to navigate to the “Device” screen.
11. In the “Device” screen, it highlights a list of the connected micro inverters, including information like the serial numbers, installation date and time, energy harvested, operational status as well as the latest reporting time.



12. Similarly, you can navigate to the “Configuration” screen by clicking on the “Configuration” tab.
13. In the “Configuration” screen, it allows the user to configure the IP address, system time or time server.



5. Alarm Information

The following is a list of the status and alarms that the micro inverter communicates to the Vision communication gateway.

Status Indication	Description
OK	The micro inverter is in normal working operation
FAILED	There may be a communication fault between the micro inverter and the communication gateway; or the micro inverter is at fault.
PANELS VOLTAGE TOO LOW	The voltage of the solar panels is low
PANELS VOLTAGE TOO HIGH	The voltage of the solar panel is high
OVERTEMPERATURE	The micro inverter has a over-temperature alarm
GRID SIDE OVERCURRENT	There is an over-current detected on the grid side
GRID VOLTAGE ABNORMAL	There is abnormal voltage detected on the grid side
GRID FREQUENCY ABNORMAL	There is abnormal frequency detected on the grid side
ABNORMAL WORKING	The micro inverter stops operation due to abnormal conditions

6. Technical Data

MODEL: VISION COMMUNICATION GATEWAY	
Communication Interface	
Power line	Local Standard
Enternet	10M/100M Auto-sensing, Auto-negotiation
Power Requirements	
AC Outlet	110~240 VAC, 50/60Hz
Power Consumption	2W
Mechanical Data	
Dimensions(WxHxD)	206mm x 100mm x 40mm
Weight	600g
Ambient Temperature Range	0^{o}C to 40^{o}C
Cooling	Nature Convection; No Fans
Enclosure Environmental Rating	Indoor – NEMA 1(IP30)
Features	
Standard Warranty Term	3 Years
Compliance	IEC60950-1, EN60950-1, AS NVX60950

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7. Disposal

Please refer to the WEEE guidelines on the disposal of the used device.

:: WEEE (for Europe)

Disposal of your old appliance

1. When this crossed-out wheeled bin symbol is attached to a product it means the product is covered by the European Directive 2002/96/EC.
2. All electrical and electronic products should be disposed of separately form the municipal waste stream via designated collection facilities appointed by the government or the local authorities.
3. The correct disposal of your old appliance will help prevent potential negative consequences for the environment and human health.
4. For more detailed information about disposal of your old appliance, please contact your city office, waste disposal service or the shop where you purchased the product.

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