

## Product Specification Report

|                           |                      |                                 |
|---------------------------|----------------------|---------------------------------|
| 供应商 (Supplier Name):      |                      | IGEN TECH CO.,Ltd.              |
| 供应商料号 (Supplier ):        |                      | 86-0010-052                     |
| 客户名称 (Customer Name):     |                      | /                               |
| 客户料号 (Customer Part No):  |                      | 2603010072                      |
| 产品名称 (Product Name):      |                      | Stick Logger                    |
| 产品型号 (Product Type):      |                      | LS4G-4-C                        |
| 固件版本 (Firmware Version) : |                      | LS4GN-221XX-V1.0.C (2022-07-22) |
| 逆变器型号 (Inverter Type):    |                      | /                               |
| 生效日期 (Effective date):    |                      | 2022. 8. 22                     |
| 客户确认 (Customer Approval)  |                      | 供应商确认 (Supplier Approval)       |
| 确认人<br>(Confirmed By)     | 审核人<br>(Approved By) |                                 |
|                           |                      |                                 |

## 一、list

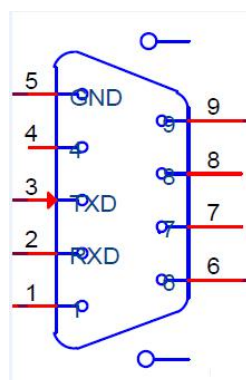
The data acquisition rod (4G) mainly collects and records the working state and power generation of the inverter for long-term and effective monitoring of the photovoltaic power generation system. The acquisition rod can be connected to a single inverter through a serial port, and receive various information of the photovoltaic system from the inverter end. At the same time, the wheat photovoltaic system cloud platform can provide powerful data support for the collection rod. The acquisition rod sends the data to the monitoring platform, and the real-time status and historical data of the photovoltaic system can be presented in the form of charts, which are intuitive, clear and easy to understand

## 二、Basic parameter

| classify            | parameter                     | value                                                           |
|---------------------|-------------------------------|-----------------------------------------------------------------|
| Wireless parameters | Wireless frequency band       | LTEFDD: B2/B4/B5/B12/B13/B14/B66                                |
|                     | Antenna option                | External rod antenna                                            |
| Hardware parameter  | Data interface                | RS485                                                           |
|                     | Operating voltage             | DC5V-12V                                                        |
|                     | Working power                 | 3.5W                                                            |
|                     | Indicator light               | Connect the signal light with the inverter                      |
|                     |                               | Signal light of connecting to the server                        |
|                     |                               | One-lane network indicator                                      |
|                     | Data storage                  | 8MBYTE FLASH                                                    |
|                     | SIM card                      | Micro SIM card slot +SIM card                                   |
|                     | Operating temperature         | -30℃~+70℃                                                       |
|                     | Working humidity              | 10%-90% relative humidity, no condensation                      |
|                     | Storage temperature           | -45℃~+90℃                                                       |
|                     | Storage humidity              | <40%                                                            |
|                     | Protection class              | IP65                                                            |
|                     | External interface            | Large air head                                                  |
| Software parameter  | Number of connected inverters | One                                                             |
|                     | Serial communication rate     | Default configuration 9600bps (adjustable from 1200-115200 BPS) |
|                     | Data acquisition interval     | 5 minutes by default (1-15 minutes optional)                    |
|                     | User configuration            | AT+ instruction set                                             |
|                     |                               | Remote server                                                   |
|                     | Firmware upgrade              | Remote upgrade                                                  |
|                     | other                         | Real-time control, breakpoint resume                            |

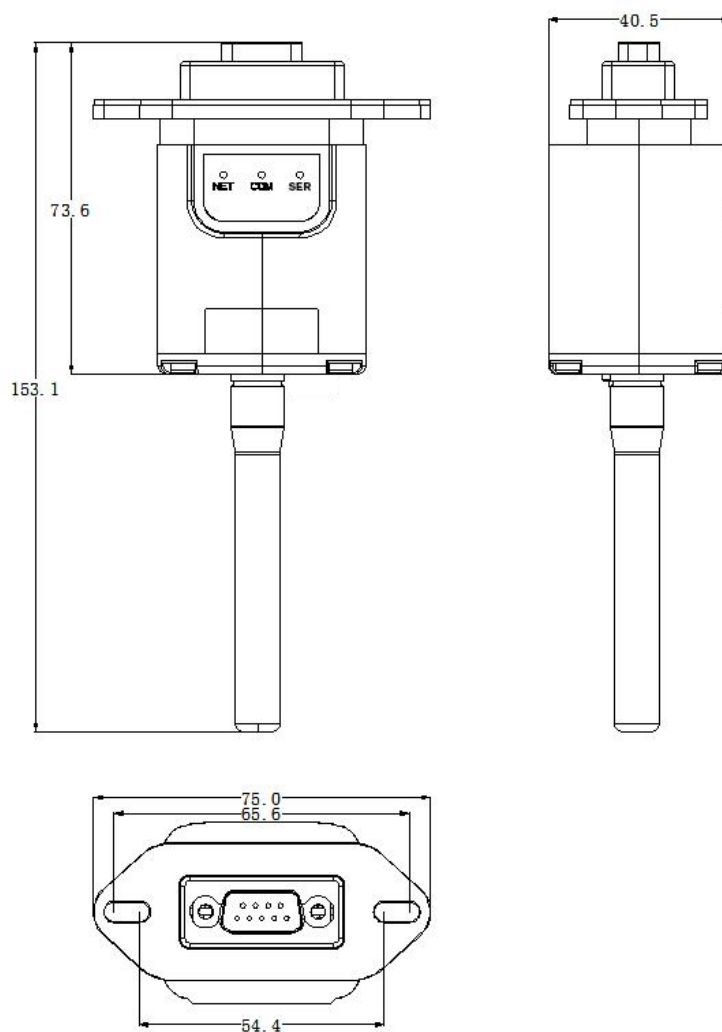
|                      |                 |               |
|----------------------|-----------------|---------------|
| Scope of application | Applicable area | North America |
|----------------------|-----------------|---------------|

## 三、Module interface definition



| Pin       | description      | Network name | type  | description                                                   |
|-----------|------------------|--------------|-------|---------------------------------------------------------------|
| 2         | Received data    | RXD          | I     | RS232 reception (RS485_B wire, TTL_RX)                        |
| 3         | Send data        | TXD          | O     | RS232 transmission (RS485_A line, TTL_TX)                     |
| 1、4、6、7、8 | suspended        | NC           |       | unused                                                        |
| 5         | Power GND        | GND          | Power | External power supply: GND                                    |
| 9         | Power supply VCC | DC_VIN       | Power | External power supply: DC 5V-12V (at least 3.5W power supply) |

## 四：Acquisition rod size (Unit: mm, dimensional accuracy $\pm 2\%$ )



## 五、Physical drawing



### 5.1 Front of the picture



5.2 Back of the picture



5.3 Side View

## 六、Acquisition rod antenna (unit: mm)

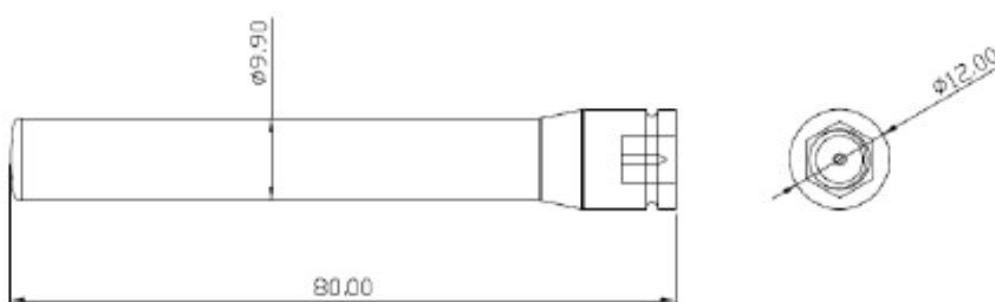


Figure 6.1 Antenna size of acquisition rod

The electrical performance indicators of the acquisition rod antenna are as follows:

| Item classification       | Performance parameter |
|---------------------------|-----------------------|
| Standing wave ratio VSWR  | $\leq 3.0$            |
| Input Impedance- $\Omega$ | 50 $\Omega$           |
| Gain-dBi                  | Up to 3.5dBi          |

|                       |           |
|-----------------------|-----------|
| Working Temperature-℃ | -30℃~+80℃ |
| Antenna Color         | black     |
| Input connector       | SMA       |

## 七、LED indicator status description

After the acquisition rod is connected to the inverter, the working state of the acquisition rod can be judged by checking the state of SER lamp, COM lamp and NET lamp. (SER, COM and NET each have only one indicator)

| Indicator mark                                                                      | Indicator meaning                                            | Status description                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | Connection status between the collector and the base station | <ol style="list-style-type: none"> <li>1. On for 200ms/ Off for 1800ms: The 4G module is connected to the base station.</li> <li>2. On for 1800ms/ Off for 200ms: The 4G module is idle.</li> <li>3. On 125ms/ Off 125ms: The 4G module transmits data.</li> <li>4. Off: The 4G module is not running.</li> </ol>                                                                                                                  |
|  | Communication status between the collector and the inverter  | <ol style="list-style-type: none"> <li>1. Steady on: The acquisition rod is connected to the inverter.</li> <li>2. If the indicator is on for 400ms or off for 1,600 ms, the collection rod is initialized.</li> <li>3. On for 400ms/ Off for 400ms: Data is transmitted between the acquisition rod and the inverter.</li> <li>4. If the indicator is off, the acquisition rod fails to communicate with the inverter.</li> </ol> |
|  | Connection status between the collector and the server       | <ol style="list-style-type: none"> <li>1. Steady on: The acquisition rod is connected to the server.</li> <li>2. If the indicator is on for 400ms or off for 1,600 ms, the collection rod is initialized.</li> <li>3. On for 400ms/ Off for 400ms: The acquisition rod fails to connect to the server.</li> </ol>                                                                                                                  |

## 八、Abnormal status and handling of acquisition rod

If platform data is abnormal when the collecting rod is working, please refer to the following table to complete simple troubleshooting according to the LED lamp status. If the fault still cannot be solved or the lamp fault status is not shown in the following table, please contact the after-sales service.

(Note: Please power on the collecting rod for 2 minutes before using the following table for query)

Normal running state of the collecting rod after it is powered on:

1. COM and SER lights start to blink slowly after the acquisition rod is powered on (during the initialization of the acquisition rod);
2. At about 50 seconds, the NET light starts to blink (on for 200ms/ off for 1800ms), and the module starts to register the network;
3. In about 53 seconds, the COM light will flash three times and then it will be steady on, and the communication with the inverter is successful;

4. About 83 seconds after the NET indicator blinks (1800ms/ 200ms off), the network registration is successful, ready to send data;

5. About 150 seconds, NET light flashes (125ms on / 125ms off), COM and SER light is steady on, and the acquisition rod works normally;

Note: The blinking time varies with the network status.

Note 1: During the power-on and startup process of the acquisition rod, the COM and SER lights start to blink slowly (on for 400ms/ off for 1600ms), then the NET lights start to blink quickly (64ms/ off for 800ms), and the NET lights blink slowly (on for 64ms/ off for 2000ms) and the COM and SER lights are steady on. At this time, the acquisition rod works normally.

| NET lamp                                                                          | COM lamp                                                                          | SER lamp                                                                          |                                                                                |                                                                                                                                                                   |                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  |  |  | Fault description                                                              | Cause of failure                                                                                                                                                  | solution                                                                                                                                                                                                                                              |
| free position                                                                     | destroy                                                                           | Arbitrary state                                                                   | The communication between the acquisition rod and the inverter is abnormal     | 1. The connection between the acquisition rod and the inverter is loose.<br>2. The communication rate between the inverter and the acquisition rod does not match | 1. Check whether the connection between the acquisition rod and the inverter is normal, and remove and reinsert the acquisition rod.<br>2. Check whether the communication Settings of the inverter are consistent with those of the acquisition rod. |
| flicker                                                                           | Steady on/blinking                                                                | flicker                                                                           | The communication between the acquisition rod and the base station is abnormal | 1. The SIM card is not charged<br>2. The antenna is abnormal<br>3. 4G signal is weak                                                                              | 1. Check whether the SIM card has sufficient balance.<br>2. Check whether the antenna is damaged or loose.<br>3. If the signal of the base station is faulty, you are advised to replace the sucker antenna.                                          |
| destroy                                                                           | destroy                                                                           | destroy                                                                           | Abnormal power supply                                                          | 1. The acquisition rod is loosely connected to the inverter<br>2. The inverter power is insufficient<br>3. The collection rod is abnormal                         | 1. Check the connection status and reinsert it.<br>2. Check whether the output power of the inverter meets requirements.<br>3. Contact the customer service.                                                                                          |



## 九、Outer packing

### 9.1 Package Label Information

Size 167\*55\*47 (Unit: mm)



## 十、contact information

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### FCC Caution:

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.

Any 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 B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.