

GPRS TYPE RAIN SENSOR INSTRUCTION MANUAL

**JXBS-7001-YL
Ver1.0**

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CHAPTER1 Product Brief Introduction

1.1 Product Overview

The GPRS rain sensor is a sensor that uses the GPRS network for rainfall transmission. It does not require a special communication line, but can rely on the ubiquitous mobile phone signal network. It is very suitable for outdoor installation and monitoring. The product has excellent waterproof type and can adapt to long-term field work.

This equipment measures the rainfall value in real time and uses the GPRS network for transmission. The device supports regular data collection and active upload to the server platform. The product supports network online configuration and upgrade, SMS query and configure parameters.

Products can be uploaded to our company's permanent free environmental monitoring big data platform. At the same time, our company supports the design of customized environmental monitoring big data platforms and provides local platform deployment functions.

1.2 Functions and Feature

The network transmission of this product adopts stable and reliable GPRS transmission method, mature technology and stable transmission, strong signal and wide coverage.

This product adopts high-sensitivity digital probe imported from Switzerland, with stable signal and high precision. It has the characteristics of wide measurement range, good linearity, good waterproof performance, convenience to use, easy to install, and long distance transfer.

This product is widely used in computer room monitor systems, security engineering, medical and health monitor, necessary monitor systems, smart home systems and other systems.

1.3 Main Parameters

Parameter	Content
DC power supply	9V-24V DC
Product power consumption	<0.4W
Transmission interface	GPRS wireless signal transmission
Setting interface	GPRS network configuration, GSM SMS configuration
Operations Support	China Mobile, China Unicom 2G/3G/4G mobile phone card

1.4 Rainfall Parameters

Parameter	Content
Power supply	12-24V DC
Rainfall measurement range	≤30mm/min
Allowable current	<5mA
Resolution	0.2mm
Error	±2%
Warranty	Complete machine 2 years (probe 1 year)

CHAPTER2 HARDWARE CONNECTION

2.1 Checking Before Equipment Installation

Please check the equipment list before installing the

equipment:

Name	Quantity
High precision sensor	1
GSM rod antenna	1
12V waterproof power supply	1(Optional)
SIM IoT card	1(Optional)
Warranty card/certificate	1

2.2 SIM card Installation

The device is not equipped with a SIM card by default. Users need to install the SIM card by themselves. The SIM card supports China Mobile and China Unicom 2G/3G/4G mobile phone cards. When installing the SIM card, please unscrew the four corners of the device. See the SIM card slot as shown in the figure below, and push the SIM card into the card slot in the specified direction. After installing the SIM card, close the front cover and tighten the screws.

Figure

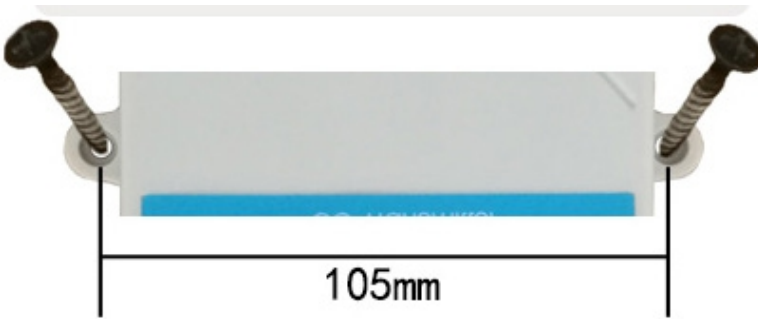
2.3 Device Interface and Installation

The device has two interfaces: a GSM antenna interface and a DC power supply port. The GSM antenna interface is on the side of the device, and the DC power interface is led out from below the sensor.

	Style	Description
Power supply	Round mouth DC head	9-4V DC power supply
Antenna	SMA antenna interface	Connect the GSM antenna

For the convenience of transportation, the GSM antenna is separated from the device. Please screw the antenna to the device before installing. After the antenna is installed, the device can be used after normal power supply.

Figure



The GPRS sensor adopts wall-mounted installation. The installation holes are located in the middle of both sides of the device. The installation hole diameter is less than 4mm, and the hole distance is 105mm. It can be installed with 3mm self-tapping screws.

2.4 Installation Matters

The installation location needs to pay attention to the following:

1. The transmitter should be placed as vertically as possible to ensure that the sensor is below the transmitter when installing on the wall (the font on the transmitter is in the positive direction);
2. The installation height is the human sitting height or the environmental area where measurement is mainly required.

At the same time, please pay attention to the following precautions:

1. Avoid installing in areas that are easy to transfer heat and will directly cause a temperature difference with the area to be measured, otherwise the temperature and humidity measurement will be inaccurate.

2. Install in a stable environment, avoid direct sunlight, stay away from windows, air-conditioning, heating and other equipment, and avoid directly facing windows and doors.

3. Keep away from high-power interference equipment as far as possible to avoid inaccurate measurement, such as inverters/motors.

CHAPTER3 ENVIRONMENTAL MONITORING BIG DATA PLATFORM USAGE

CHAPTER4 REMOTE DEVICE CONFIGURATION

GPRS type sensor has no on-site external interface due to its special characteristics, so this type of sensor can configure the device in two ways: SMS configuration and server remote configuration. The two configuration methods use the same command.

SMS configuration is suitable for quick installation. Customers are recommended to use SMS for configuration during rapid deployment and installation. Customers only need to send configuration information to the device in accordance

with the agreement to configure and get related responses. Server configuration is provided to customers who need secondary development.

Configuration instructions are divided into basic instructions and parameter instructions. The basic instructions include the most basic network parameter settings, and the advanced instructions include some special instructions such as design reporting intervals.

4.1 Basic Configuration Command

The configuration command includes three parts, the basic format is as follows:

```
@DTU:0000:CGMR?
```

Among them, @DTU: is the regular frame header, all commands must start with @DTU:.

Among them, 0000 is the device configuration password. The default password is 0000, which can be modified by the customer.

After the second colon is the text of the instruction, different instructions have different formats.

Please note that all requests must be sent in strict accordance with the protocol requirements, all in uppercase, lowercase is not recognized. After the command is configured, it can be saved automatically, but it takes time, subject to the received return.

The basic configuration command SMS configuration is

the same as the online configuration command.

4.1.1 Query and Set the Server

Servers are divided into primary server and secondary server. When the device cannot connect to the primary server, it will try to connect to the secondary server. If the secondary server cannot connect, the device will restart and try to connect to the primary server, and then loop until the connection is successful.

Send configuration request:

```
@DTU:0000:DSCADDR:0,TCP,218.242.43.254,108
```

Configure the main server center connection mode as "TCP", the network server address as "218.242.43.254", and the network port as "108".

Send configuration request

```
@DTU:0000:DSCADDR: 1,UDP,kingcomtek.eicp.net,108
```

Configure the connection mode of the secondary server center as "UDP", the domain name of the network server as "kingcomtek.eicp.net", and the network port as "108".

For example:

Send configuration request:

```
@DTU:0000:DSCADDR: 1,UDP,kingcomtek.eicp.net,108
```

The successful configuration module returns:


```
@DTU:0000:DSCADDR: 1,UDP,kingcomtek.eicp.net,108  
OK
```

The configuration failure module returns (the main and secondary center parameters are missing here):

```
@DTU:0000:DSCADDR:TCP,218.242.43.254,108  
ERROR
```

Send inquiry request:

```
@DTU:0000:DSCADDR?
```

The query success module returns:

```
@DTU:0000:DSCADDR?  
+DSCADDR: 0,"TCP" IP/Domain: "218.242.43.254" Port:  
108  
+DSCADDR: 1,"TCP" IP/Domain: "218.242.43.254" Port:  
108
```

The query failed module returns: (here I deliberately write the wrong password)

```
@DTU:1234:DSCADDR?  
ERROR
```

4.1.2 Inquire Signal Quality

In some cases, you can check the signal quality to determine the signal strength of the current environment and the

antenna installation quality.

Send inquiry request:

```
@DTU: 0000:CSQ?
```

The query returns successfully:

```
@DTU: 0000:CSQ?  
+CSQ: 24
```

4.1.3 Configure Device Password

Send configuration request

```
@DTU:0000:PASSWORD:aaaa
```

Change the password 0000 to aaaa.0000 is the default password, aaaa is the new password, and the password length is fixed at 4 digits, which can be numbers or 26 uppercase and lowercase letters. Note: Only if the old password is correct can the new password be configured successfully.

4.1.4 Service Device Password

If you forget your password, you can reset it by sending the following command.

```
@DTU:MMCZ
```

4.1.5 Query service operator

Send request:

```
@DTU: 0000:CSTT?
```

Will request to obtain APN information, for example:

Send inquiry request:

```
@DTU: 0000:CSTT?
```

The query returns successfully:

```
@DTU: 0000:CSTT?  
+CSTT: CMNET,,
```

CMNET means that you use a China Mobile card and it has been recognized.

4.2 Advanced Command

CHAPTER5 ACTIVE ESCALATION PROTOCOL

5.1 Active Reporting Method

The device uses the TCP method to actively report data, and the report uses the Client method. TCP uses a long connection form. The device has a KeepAlive mechanism, which will actively maintain the connection with the service area and perform unlimited disconnection reconnections.

5.2 Basic Composition of the Protocol

The basic components of the protocol are as follows:

```
Frame header (2) + version (1) + device ID (6) + transmission  
Session (4) + command byte (1) + length (2) + content (n) +  
checksum (1)
```

The frame header is 2 bytes, which is fixed as 0xfe 0xdc.

The device version number is 1 byte, which is 0x01 in this protocol.

The device ID is 6 bytes and is fixed inside the factory. Each device has a unique device ID. Customers can use this ID to distinguish different devices.

The transmission session is 4 bytes, designated by the device, and incremented by 1 each time it is sent to identify the transmission sequence of the device.

See below for command byte, length and content.

The checksum is 1 byte. The checksum is not used in this protocol and is fixed at 0 here.

5.3 Proactive Reporting Protocol

The command byte, length, and content of the actively reported command are as follows.

Command byte	Length	Content
0x03	0x30 (48)	Refer to the following data report content

Data report content:

Data 1 content (4 bytes)	Data 2 content (4 bytes)	..	Data 12 content (4 bytes)
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5.4 Proactively Report Protocol Instances

The following is the data actively uploaded by a device:

```
fe dc 01 25 ab 4e a3 25 00 00 00 05 03 00 30 00 00 00 02
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00
```

Among them, fe dc is the fixed frame header, 01-bit version number, the unique id of the device is ab4ea325, the session of this instruction is 00000005, and the length of this

data is 0030, which is 48 bytes.

The first number uploaded is humidity. 000000002 represents rainfall 2. The remaining 1 data are all 00000000 not used, the last 00 checksum.