# RK600-09 Portable soil moisture measurement recorder

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## 1 、Product description

Soil is the main material basis for plants to survive. The quality of the soil environment is directly related to the growth of plants. Providing necessary nutrients for plants is the key to our high yield and income. With the rapid development of science and technology in today's society, traditional experience and judgment can no longer meet the needs of the times. Various intelligent soil monitoring equipment has been introduced one after another, which can comprehensively, scientifically and truly reflect the soil changes in the monitored area, and can provide timely and accurate monitoring points. The soil moisture status of the soil provides important basic information for agricultural disaster reduction and drought relief.

The soil moisture recorder professionally produced by Ruiyica Technology Co., Ltd. has the functions of data acquisition, storage, transmission and management. It is the core component of automatic soil moisture measurement. It can connect 32 parameters at the same time, and can be set by touch screen and color LCD display. , can continuously, stably and reliably monitor and display soil conditions for a long time, and is efficient and accurate, providing important analysis data for agricultural planting. It can also communicate with the server through wired or wireless connections, and the communication protocol can be used for secondary development.

### Specifications

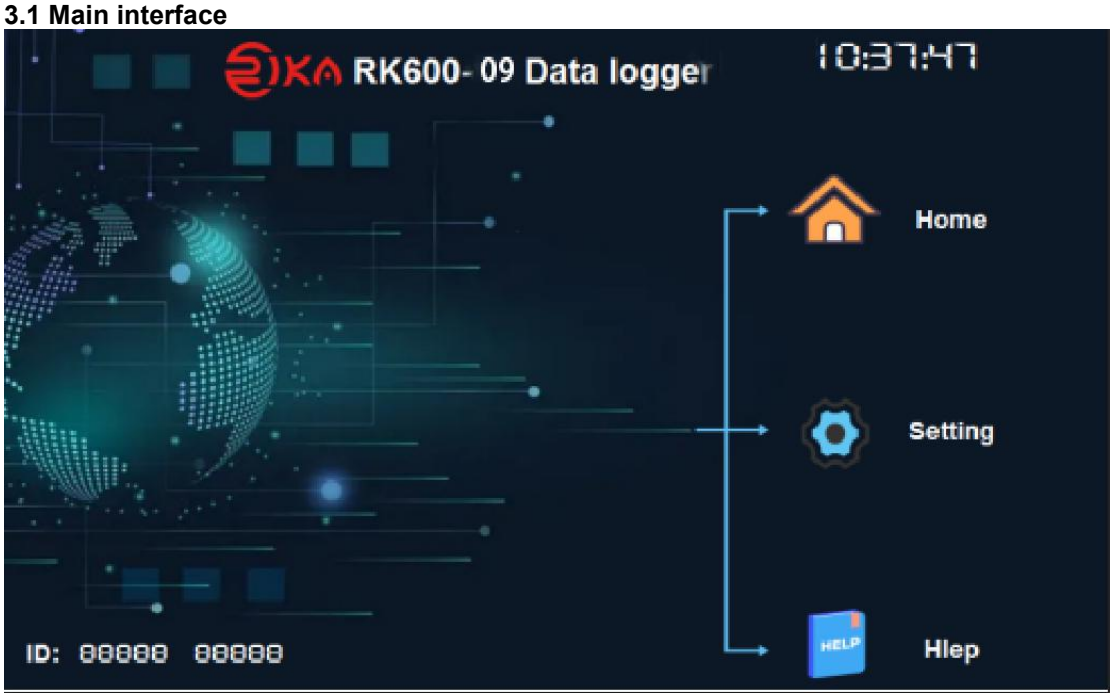
| ITEM | Technical Specifications |
|---|---|
| Display | 7” color backlit touchscreen |
| Operating system | Android4.0.3 |
| Screen sleep | Support |
| Backlight adjustable | Support |
| Communication status indication | Support |
| Internal memory | 64M, data is stored every hour, can be stored for 6 years; data is stored every 10 minutes, can be stored for 1 year; data is stored every 1 minute, can be stored for 3 months |
| Sensor interface | Waterproof connector |
| Communication Interface | RS485, Ethernet, GPRS/2G/3G/4G, WIFI |
| | LoRa (Optional) |
| | Zigbee (Optiona) |
| Communication protocol | Modbus-Rtu |
| Power supply | Solar power, DC12-24V, AC100-240V |
| Built-in battery | 12.5VDC, 12AH |
| Monitoring parameters | 32 max. |
| Logging interval | 1-240 minutes can be set |
| U_ disk download | Support |
| Relay output | Customizable |
| Average power consumption | <3.5W |
| CPU | ARM Cortex-A8 (720MHZ) |
| Electrostatic discharge | Class 4, ±8kV |
| Operating temperature | -40-+75℃ |
| Shock | 10-25Hz (X,Y,Z 2g@30min) |
| FCC | Class A |
| CE | EN55022 & EN55024 |
| Product Size | 400*500*200mm, Support solar power |
| Protection class | IP55 |

## 2. Interface display


Soil moisture series sensor access

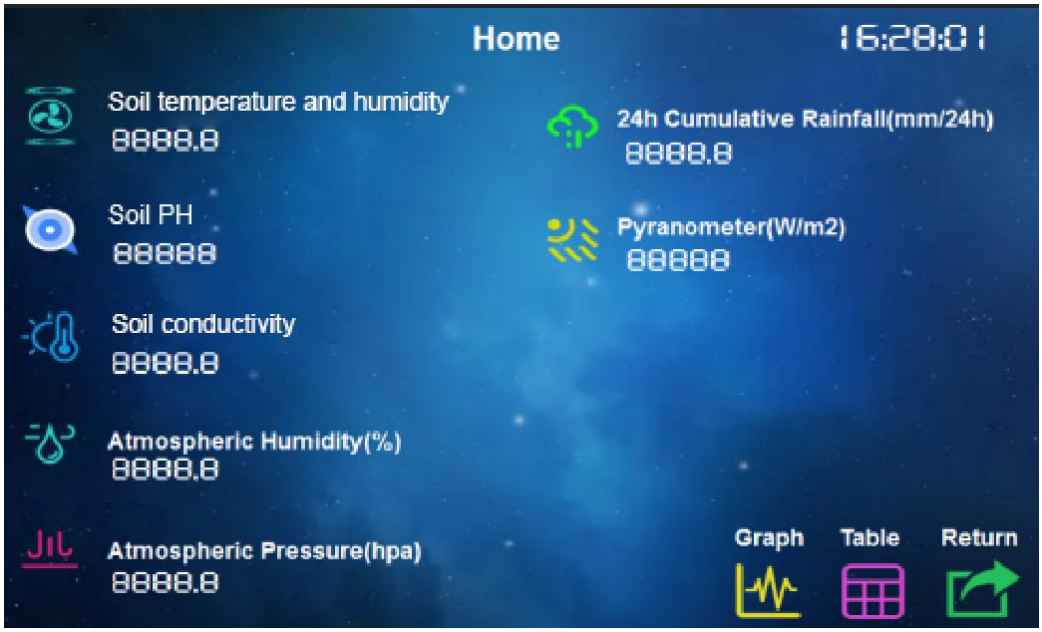
## 3. Display interface and menu

### 3.1 Main interface



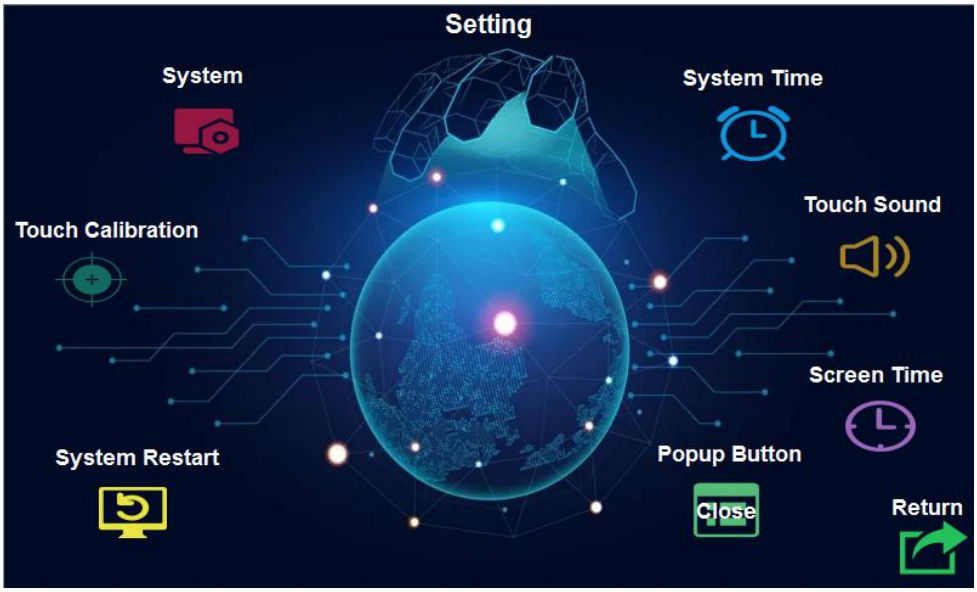

Main interface information:
HOME icon button: View real-time data, historical data tables and curves, download historical data.
Setting icon button: enter the recorder setting interface
Help icon button: You can view help information.
ID: Cloud data ID number.

### 3.2 Home page




After entering the HOME interface, you can view real-time sensor data.
Graph:View the data graph within 24 hours.
Table:View historical data table.

### 3.3 Setting interface




After entering the Setting interface,you can set the recorder parameters.
System:Enter the Android system settings interface.

System Time:set system time.

Touch Sound:Turn button sounds off or on.

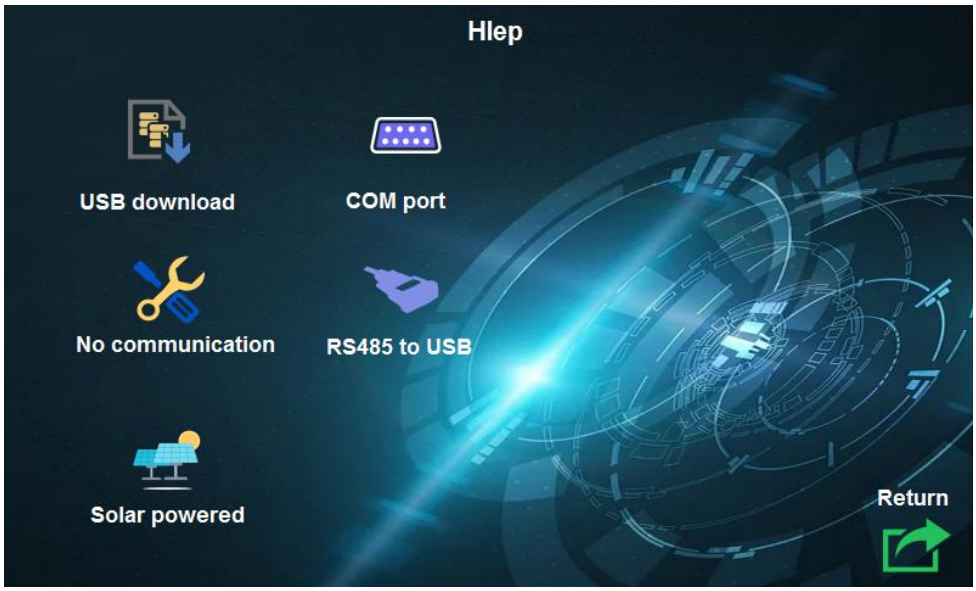
Screen Time:Screen saver interval.

Popup Button:Newsletter popup button.

Touch Calibration:touch screen calibration.

System Restart:Restart the recorder.

### 3.4 Help interface



After entering the Help interface,View help documentation.
Suggestion: Before using the recorder, watch the content in the help document, you can quickly understand the functions of the recorder

## 4. Communication Protocol

**4.1 Communication parameters (factory default):**

Baud rate: 9600bps, Data bits:8,Stop bit:1,Check bit:no,Address:0x01

**4.2 Examples for read data(Max to 32 channels)**

**Host Scan Order：**

| Slave id | Function code | Address_H | Address_L | Quantity_H | Quantity_L | CRC_L | CRC_H |
|---|---|---|---|---|---|---|---|
| 0x01 | 0x03 | 0x00 | 0x00 | 0x00 | 0x03 | 0x05 | 0xCB |

**Data Logger Response**

| Slave id | Function code | Number of bytes | Sensors Data | CRC_L | CRC_H |
|---|---|---|---|---|---|
| 0x01 | 0x03 | 0x06 | Data(12 bytes) | 1 byte | 1 byte |

| Address | Number of bytes | Explain | Resolution |
|---|---|---|---|
| **0X0000** | **2** | **Channel 1（1#Soil moisture）** | **0.1** |
| **0X0001** | **2** | **Channel 2（2#Soil moisture）** | **0.1** |
| **0X0002** | **2** | **Channel 3（3#Soil moisture）** | **0.1** |

**Examples:**
**Data Logger Response:**

**01 03 06 03 E8 03 E8 03 E8 CRC CRC**

**1#Soil moisture:(03E8)H=(1000)D,1000/10=100%**

**2#Soil moisture:(03E8)H=(1000)D,1000/10=100%**

**3#Soil moisture:(03E8)H=(1000)D,1000/10=100%**

CE Complies with applicable CE directives.
Specifications subject to change without notice. Version 3.0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# RK330-02T Atmospheric Temperature, Humidity & Pressure Sensor

## Overview

RK330-02T Atmospheric Temperature, Humidity & Pressure Sensor disigned for professional measurement of air temperature, relative humidity & barometric pressure. Sensors are built-in the water-proof and UV resistant shelter. It is widely used in agriculture, forestry, meteorology as well as a climate chamber, warehousing and other environments. This model also can be equipped with radiation shield (RK95-01) to protect the sensors from solar radiation and rain.

## Features

- High sensitivity
- Fast response time
- Long service life
- Low consumption
- Good stability of output
- Strong environmental adaptability
- Integrated temperature humidity air pressure at the same time

## Applications

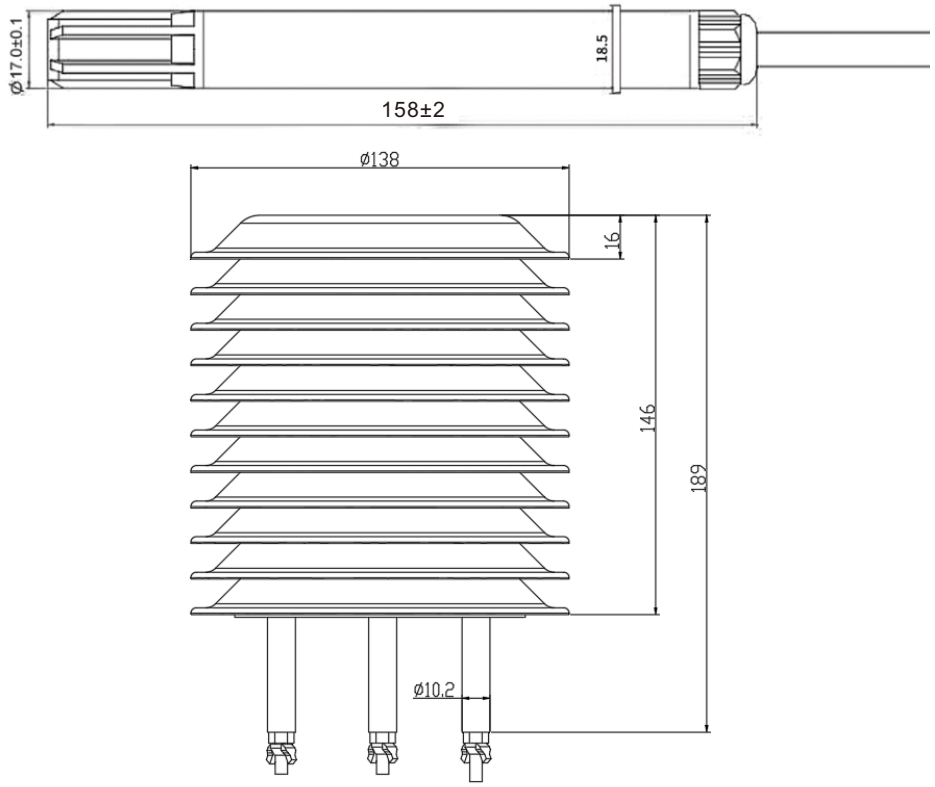
- Environmental monitoring
- Solar farm
- Livestock farm
- Storage room
- Forestry
- Greenhouse
- Agriculture

## Technical Parameter

| Item | Temperature | Humidity | Pressure |
|---|---|---|---|
| Range | -40-60°C | 0-100%RH | 30-110kPa(300-1100hPa) |
| Resolution | 0.1°C | 0.1%RH | 0.1hPa |
| Accuracy(typical) | ±0.2°C | ±2%RH | ±0.1hPa |
| Accuracy(high-precision) only for digital output | ±0.2°C | ±2%RH | ±0.1hPa |
| Supply | 5VDC, 12-24VDC | | |
| Output signal | 4-20mA,0-5V,0-10V,RS485(MODBUS),SDI-12,IIC | | |
| Current consumption | <5mA | | |
| Stability | Temperature:± 0.1℃(2years)； Humidity:±2% RH(2years) | | |
| Operating temperature | -40℃-+80℃ | | |
| Ingress protection | IP65 | | |
| Storage | 10-60℃@20%-90%RH | | |
| Weight(unpacked) | 120g | | |
| Probe material | ABS | | |
| Radiation shield(optional) | RK95-01, 11 plates | | |

## Dimensions

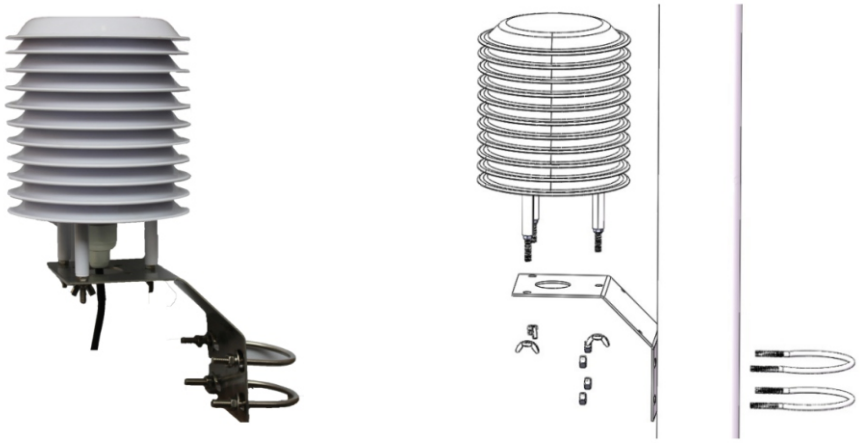
Unit:mm




## Mounting

1. Install the product in stable environment area, avoiding direct sunlight, and keeping it from windows air-conditioning, heating and other equipment. Otherwise it will cause measurement inaccuracies, the installation height should be 1.5m above the ground.

2.Fixing rail is optional.



## Parameter Selection Table

| Remark | Series | Type | Parameter | Output | Cable Length | |
|---|---|---|---|---|---|---|
| RK | | | | | | |
| | 330 | | | | | |
| | | 01 | | | | |
| | | | A | | | Temperature & Humidity |
| | | | B | | | Temperature,Humidity,Pressure |
| | | | C | | | Temperature |
| | | | D | | | Humidity |
| | | | | A | | 4-20mA |
| | | | | B | | 0-5V |
| | | | | C | | 0-10V |
| | | | | D | | RS485 |
| | | | | E | | IIC |
| | | | | F | | SDI-12 |
| | | | | | 3000 | Units:mm（typ） |
| | | | | | ... | Units:mm |

Example: RK330-01AA3000 Parameter: temperature & humidity Output: 4-20mA,cable Length:3m.

| Revision time | Reviser | Current Version | Remarks |
|---|---|---|---|
| 20250403 | Lee | V5. 0 | |