**Rakstore XY-MD02**

# Rakstore XY-MD02 SHT20 Temperature and Humidity Transmitter Module User Manual

Model: XY-MD02

## 1. Product Overview

The Rakstore XY-MD02 is an industrial-grade temperature and humidity transmitter module. It integrates a high-precision SHT20 sensor and communicates via RS485 using the Modbus-RTU protocol. This module is designed for reliable and accurate environmental monitoring in various applications.

**Key Features:**

- Industrial-grade chip and SHT20 sensor for high reliability and precision.
- RS485 output signal.
- Supports Modbus-RTU protocol and custom common protocol.
- Wide power supply range: DC 5V-30V.
- Temperature accuracy: ±0.5°C (at 25°C).
- Humidity accuracy: ±3%RH.

## 2. Package Contents

Upon opening the package, verify that all components are present and undamaged.

- 1 x XY-MD02 Temperature and Humidity Transmitter Module

If any items are missing or damaged, please contact customer support.

## 3. Specifications

| Parameter | Value |
|---|---|
| Model | XY-MD02 |

| | |
|---|---|
| Sensor Type | SHT20 |
| Power Supply | DC 5V-30V |
| Output Signal | RS485 |
| Communication Protocol | Modbus-RTU, Custom Common Protocol |
| Temperature Accuracy | ±0.5℃ (at 25℃) |
| Humidity Accuracy | ±3%RH |
| Dimensions | 66mm x 46mm x 29mm (approximate) |

## 4. Setup and Installation

### 4.1 Physical Installation

The XY-MD02 module supports standard 35mm DIN rail installation. Ensure the module is securely clipped onto the DIN rail in a location free from excessive vibration, direct sunlight, or extreme temperatures.

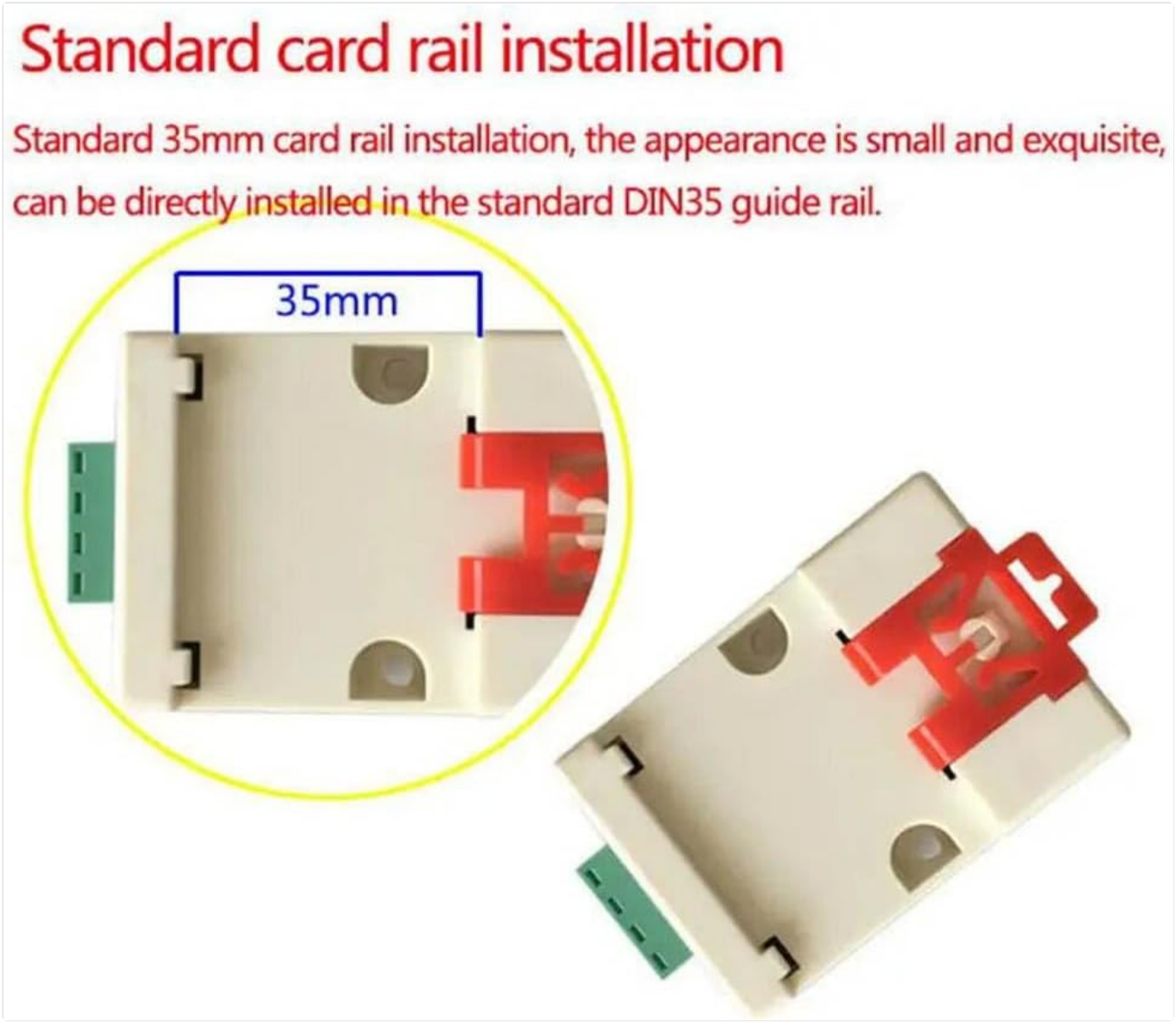


Figure 1: Standard 35mm DIN rail installation. The module features clips for easy mounting onto a DIN35 guide rail.

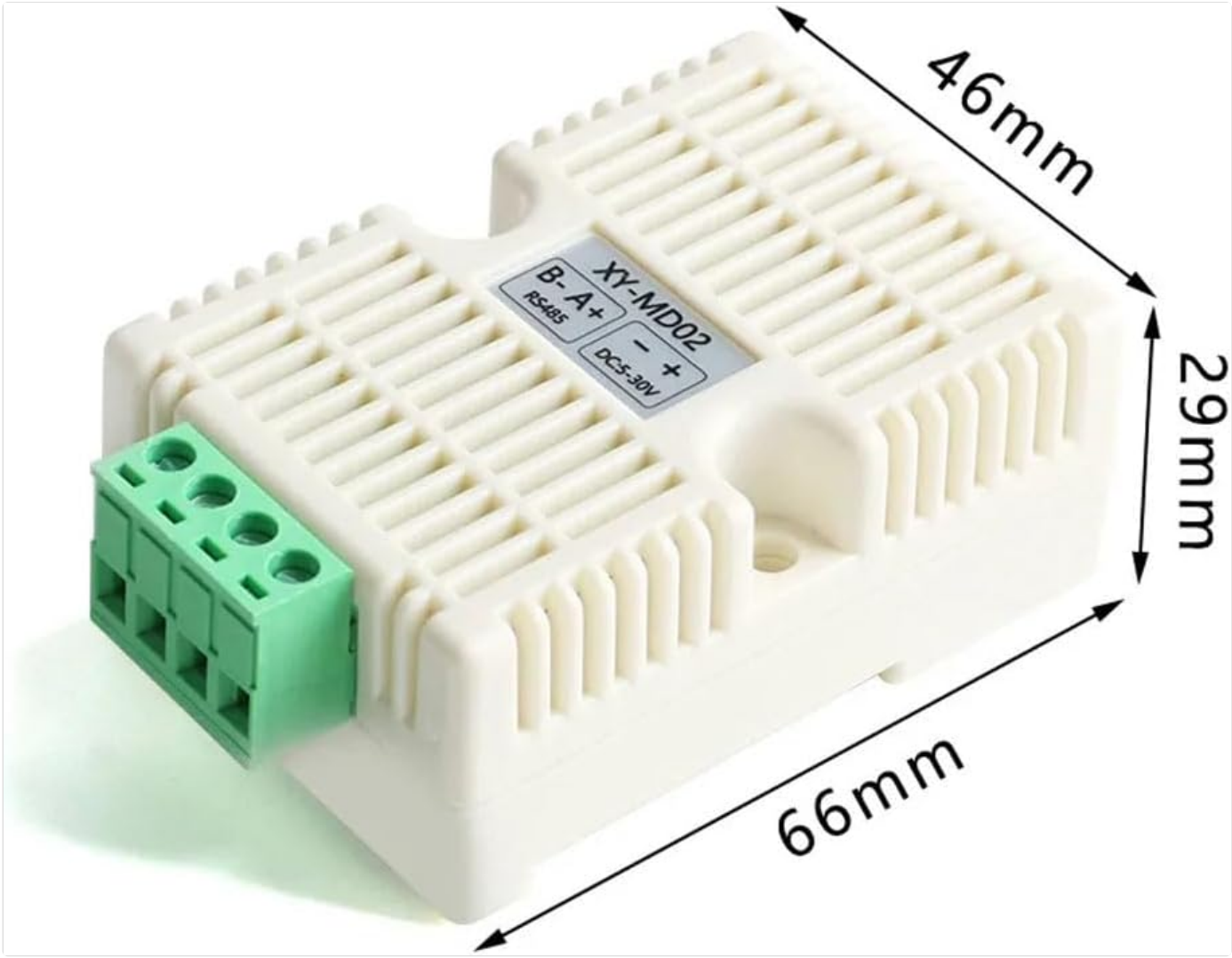


Figure 2: Dimensions of the XY-MD02 module, approximately 66mm x 46mm x 29mm.

## 4.2 Wiring Diagram

Connect the module according to the following wiring diagram. Ensure correct polarity for the power supply and proper connection for the RS485 communication lines.

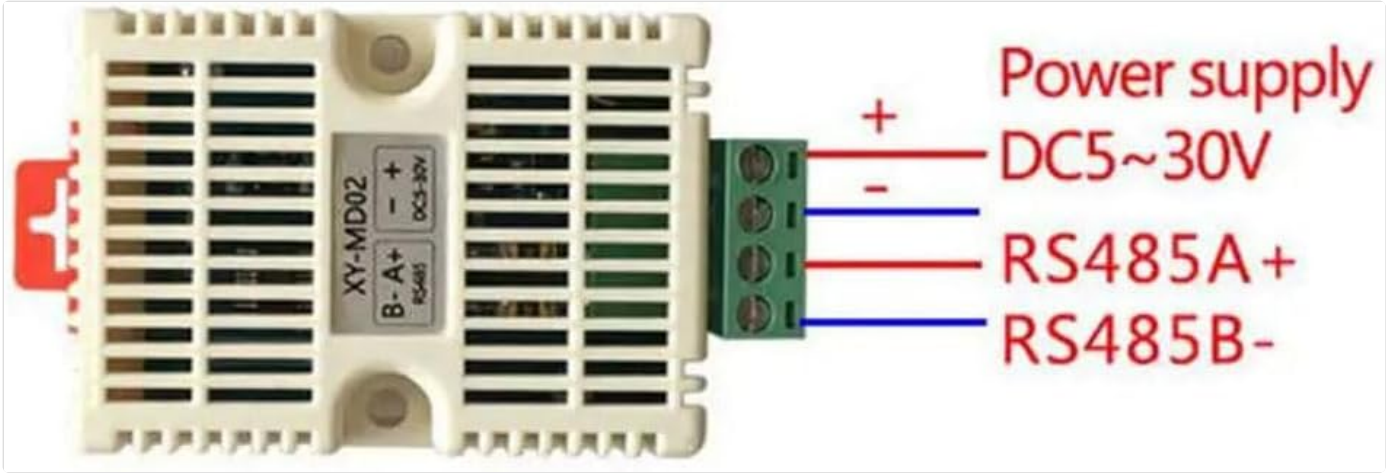


Figure 3: Wiring connections for the XY-MD02 module. Connect DC 5-30V to '+' and '-' terminals, and RS485 A+ and B- to their respective terminals.

- **DC 5-30V:** Connect the positive (+) and negative (-) terminals of your DC power supply.
- **RS485 A+:** Connect to the A+ line of your RS485 network.
- **RS485 B-:** Connect to the B- line of your RS485 network.

***Caution: Incorrect wiring can damage the module. Always verify connections before applying power.***

## 5. Operating Instructions

### 5.1 Communication Protocol

The XY-MD02 module supports the Modbus-RTU protocol. For detailed register addresses and communication commands, refer to the Modbus-RTU protocol documentation specific to this module (typically provided separately or available for download from the manufacturer).
**General Modbus-RTU Parameters:**

- **Baud Rate:** Typically 9600 bps (configurable).
- **Data Bits:** 8.
- **Stop Bits:** 1.
- **Parity:** None (configurable).
- **Slave Address:** Typically 1 (configurable).

The module will begin transmitting temperature and humidity data over the RS485 bus once powered and correctly configured.

### 5.2 Data Reading

To read temperature and humidity data, send Modbus-RTU read holding registers (Function Code 0x03) or read input registers (Function Code 0x04) commands to the module's slave address. The specific register addresses for temperature and humidity values will be outlined in the detailed protocol documentation.
*Example (conceptual):*

- **Temperature Register:** Address X (e.g., 0x0001)
- **Humidity Register:** Address Y (e.g., 0x0002)

The returned values will typically be integer representations that need to be scaled (e.g., divided by 10 or 100) to obtain the actual temperature in °C and humidity in %RH.

## 6. Maintenance

The XY-MD02 module is designed for low maintenance. However, periodic checks can ensure optimal performance:

- **Cleaning:** Keep the sensor area free from dust and debris. Use a soft, dry cloth for cleaning. Do not use abrasive cleaners or solvents.
- **Connections:** Periodically inspect wiring connections to ensure they are secure and free from corrosion.
- **Environment:** Ensure the operating environment remains within the specified temperature and humidity ranges to prevent sensor degradation.

***Warning: Do not attempt to open the module casing as it may void the warranty and expose internal components to damage.***

## 7. Troubleshooting

| Problem | Possible Cause | Solution |
| --- | --- | --- |

| | | |
|---|---|---|
| No power indicator / Module not responding | Incorrect power supply voltage or polarity; Loose power connection. | Verify power supply is within DC 5V-30V. Check wiring for correct polarity (+/-). Ensure connections are secure. |
| No data received via RS485 | Incorrect RS485 wiring (A+/B- reversed); Incorrect communication parameters (baud rate, parity, stop bits); Incorrect slave address; RS485 bus termination issues. | Check A+ and B- wiring. Verify communication parameters match the module's settings. Ensure the correct slave address is used. Add or check termination resistors if on a long bus. |
| Inaccurate readings | Sensor obstructed or dirty; Module exposed to extreme conditions; Sensor damage. | Clean the sensor area. Relocate the module to a more stable environment. If issues persist, the sensor may be damaged and require replacement. |

## 8. Warranty and Support

This Rakstore XY-MD02 module comes with a standard manufacturer's warranty. Please refer to your purchase documentation or contact your retailer for specific warranty terms and conditions.
For technical support, troubleshooting assistance, or inquiries regarding the Modbus-RTU protocol documentation, please contact Rakstore customer service or visit their official website.
**Manufacturer:** RAKSTORE
**Date First Available:** March 20, 2024