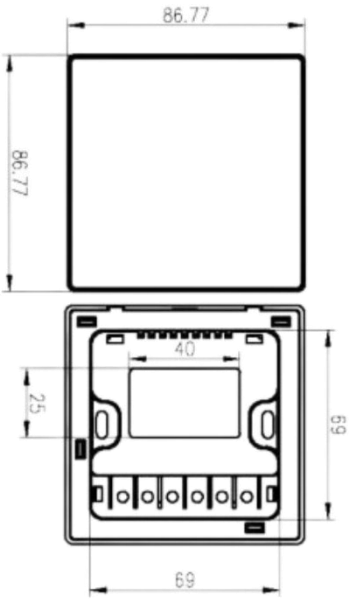
UX-400 Modbus Thermostat

Description

The Modbus thermostat is a sophisticated climate control solution tailored for modern homes and commercial spaces. Engineered for precision, it offers temperature monitoring with an impressive accuracy of ±0.1°C, alongside reliable humidity measurement. Designed for versatility, the thermostat features three fan speed settings and five operational modes: heating, cooling, drying, fan-only, and auto, ensuring optimal comfort in any environment.

For added convenience, the thermostat is equipped with Wi-Fi connectivity, enabling real-time synchronization and remote control through an optional mobile app. Users can easily power the device on or off and have the flexibility to dim or turn off the display without disrupting ongoing operations, making it an energy-efficient and user-friendly choice.

Technical Dimensions



Modbus

Interface

Protocol : RTU (Remote Terminal Unit)

Transmission rate : 9600 bps

8Bit Data/1Stop Bit/No Parity

(optional rate changing from the screen)

Query rate min. : 200ms

Timeout min. : 200ms

Cabling : RS485 two wire bus

Support Functions

1 Read Coil Status
2 Read Input Status
3 Read holding registers
4 Read input register
5 Force Single coil
6 Preset Single register
15 Force multiple coils
16 Preset multiple registers

Feature	Description
Temperature Accuracy	±0.1°C, ensuring precise temperature readings.
Humidity Monitoring	Yes, provides real-time humidity measurements in percentage (0–100%).
Fan Speeds	3 selectable speeds: Speed 1, Speed 2, and Speed 3.
Operational Modes	5 modes: Cooling, Heating, Drying, Fan-Only, and Auto.
Power Control	On/Off functionality via register or mobile app.
Setpoint Range	Adjustable between 16.0°C and 32.0°C (scaled as 160–320 in Modbus register).
Screen Control	Option to turn off the display while keeping the operation active.
Wi-Fi Connectivity	Yes, it supports real-time synchronization and mobile app control.
Mobile App	Optionally, allows remote control and monitoring via Wi-Fi.
Communication Protocol	Modbus RTU compatible with most building automation systems.
Register Data Type	16-bit integers for all control and monitoring parameters.

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Modbus Registers

Register	Hex Address	Decimal Address	Function	Access	Value/Range	Description	Function Code & Data Type
1	0x0001	1	**Temperature**	Read Only	0.1°C precision	Current temperature reading	**04** **16-bit integer**
9	0x0009	9	**Humidity**	Read Only	Percentage (0–100%)	Current humidity reading	**04** **16-bit integer**
33	0x0021	33	**Power (On/Off)**	Read/Write	0 = Off, 1 = On	Turns the thermostat on or off	**03 and 06** **16-bit integer**
34	0x0022	34	**Setpoint**	Read/Write	160–320 (16.0°C–32.0°C)	Desired temperature setpoint	**03 and 06** **16-bit integer**
35	0x0023	35	**Fan Speed**	Read/Write	1 = Speed 1, 2 = Speed 2, 3 = Speed 3	Sets the fan speed	**03 and 06** **16-bit integer**
36	0x0024	36	**Operating Mode**	Read/Write	1 = Cooling, 2 = Heating, 3 = Drying, 4 = Fan-only, 5 = Auto	Sets the operational mode	**03 and 06** **16-bit integer**

Cloud Connection & Device Reset Guide

Checking Cloud Chip Connection

- A **Wi-Fi symbol** will appear on the left side of the logo on the main page.
- If connected to the cloud, the **Wi-Fi symbol will blink**.
- If no connection is established, the blinking will stop, and the Wi-Fi symbol will return to its **default gray mode**.

Connecting to the Cloud

1. Press the **Settings** symbol.
2. Tap the **CLOUD** button.
3. Select **Connect to Cloud** to access the QR code page.
4. Download the **ESP-Rainmaker** app and create an account (or log in with your Google account).
5. Tap the **PLUS** symbol at the top right.
6. Scan the QR code or manually add the device by entering the **prefix name** and **POP**. It must look as below;

otherwise, factory-reset from the cloud setting page.

7. Scan for available networks and connect to **2.4GHz network.**
8. Once connected, your device will appear in the app with name (“Thermostat” its name can be modified).
9. You can share the device and organize it into rooms within the app.

Reset & Restart

To **factory-reset**, **restart the device**, or **reset Wi-Fi credentials**, ***LONG-PRESS*** **the button**.