



TEMPERATURE AND HUMIDITY SENSOR

Introduction

Zhice Yunlian multi-channel intelligent temperature and humidity monitor supports up to 4 probes connected simultaneously, enabling synchronous temperature and humidity monitoring across multiple areas.

Equipped with an intuitive display screen, it shows real-time readings and timestamps without additional external devices.

With built-in wireless communication, it can remotely upload data to the cloud platform, support mobile data viewing, and track the route & operating status of mobile assets such as refrigerated trucks.

Function

Multi-channel synchronous monitoring: Up to 4 temperature and humidity probes can be connected at the same time to monitor data in separate spaces, meeting the demand for distributed monitoring across multiple areas.

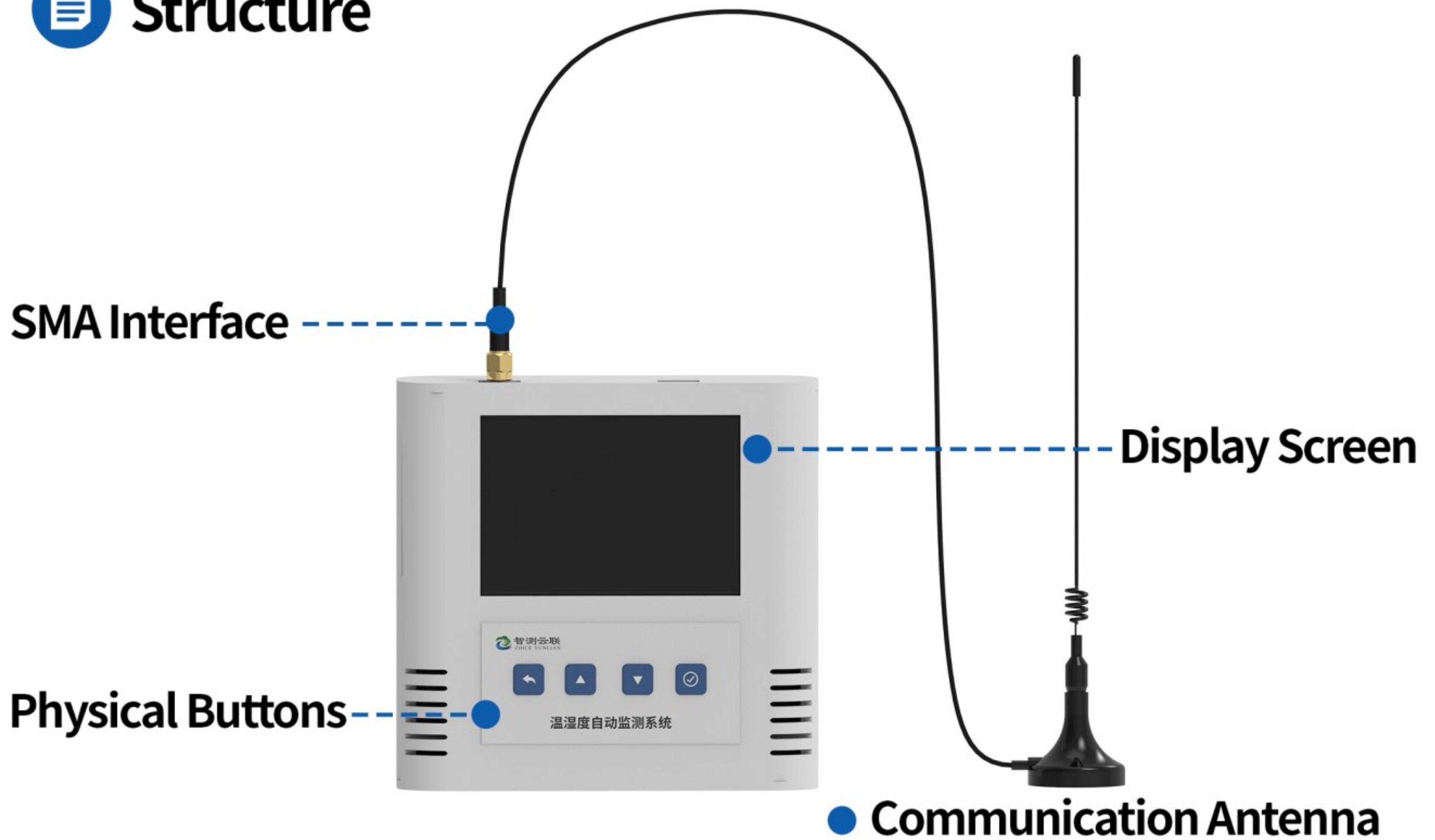
Real-time data visualization: The host display directly shows temperature/humidity values, time and other information of each monitoring point, with no extra external equipment required for on-site viewing.

Remote data transmission: The host can switch to wireless communication mode to upload data to the cloud platform or management system for anytime, anywhere access. It also supports operation track and status tracking for mobile equipment such as refrigerated trucks.

Safe and stable monitoring: Through continuous data acquisition, it triggers timely alarms when values are abnormal, avoiding cargo deterioration or equipment damage caused by environmental fluctuations.



Structure



Extended Probes



A wide range of extended probes are available to cover different scenario requirements:

- Basic models suit conventional environmental monitoring.
- Functional models adapt to complex conditions (e.g. windproof, waterproof).
- Special models fit scenarios such as high temperature or fixed installation requirements.

They can be flexibly selected to meet temperature and humidity monitoring needs in various fields.

Host Parameters

Module	Function Description
Uplink Communication Interface	4G cellular communication, TCP/IP data upload, supports dynamic domain name resolution. Data can be transmitted to the monitoring platform via plug-in SIM card.
Downlink Communication Interface	Collects data from 4 LoRa temperature and humidity sensors inside the refrigerated compartment via LoRa wireless communication.
Device Dimensions	122mm × 102mm × 36mm
Installation Method	Wall-mounted (with mounting holes), hook-mounted, magnetic adsorption
Power Supply	DC 5-30V, via adapter / charger / 12V vehicle power; built-in rechargeable battery provides approx. 48h operation after power failure.
Built-in Display	4-inch large screen, displays temperature, time, date, battery level, etc.; supports backlight with configurable auto-off time for power saving.
Device Protection	Password protection to prevent unauthorized parameter modification.
Data Transmission Content	Temperature data, cached data, battery level, power status, 2-channel switch signals.
Data Upload Rate	55 groups/second, real-time upload.
Data Storage	Normal recording interval ≥ 1min (customizable, minimum 1min); data auto-resumes transmission after power recovery.
Storage Mode	Auto storage: saves data offline and uploads when network recovers; Permanent storage: remains in storage state continuously.
Bluetooth Printing	Uploads data to the platform via 4G; temperature and humidity receipts can be printed via mobile + Bluetooth printer.
Alarm Function	Audible & visual alarm with buzzer; supports local / SMS / phone / email alarm with configurable thresholds and alarm methods.
Positioning	Optional GPS module for positioning and track tracking, assisting route planning.

123 Parameters

Module	Details
Typical Accuracy	Temperature: $\pm 0.5^{\circ}\text{C}$ (at 25°C) Humidity: $\pm 3\%$ RH (at 60% RH, 25°C)
Measurement Range	Temperature: $-40^{\circ}\text{C} \sim 120^{\circ}\text{C}$ (default: $-40^{\circ}\text{C} \sim 80^{\circ}\text{C}$) Humidity: 0% RH $\sim$ 100% RH
Display Resolution	Temperature: 0.1°C Humidity: 0.1% RH
Operating Environment	$-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$ 0% RH $\sim$ 95% RH (non-condensing)

Probe Selection

Probe Type	Application Scenario
Standard Probe	Daily temperature and humidity monitoring in general indoor environments (offices, ordinary warehouses).
Precision Probe	Scenarios with requirements for appearance and installation finish (laboratories, clean rooms), balancing monitoring accuracy and aesthetics.
High-sensitivity Probe	Scenarios with minor humidity/temperature fluctuations requiring high-precision monitoring (precision instrument workshops, reagent storage rooms).
Honeycomb Probe	Air-circulating environments (ventilation ducts, AC air outlets), improving gas exchange efficiency for accurate data.
Stainless Steel Windproof Probe	Outdoor or high-wind scenarios (outdoor weather stations, open-air warehouses), reducing wind interference.
Metal Waterproof Probe	High-humidity / water-immersion scenarios (aquaculture ponds, bathrooms, outdoor canopies), with waterproof capability.
Waterproof Probe	Humid environments (underground garages, food processing cleaning areas), preventing water vapor intrusion.
High-temperature Probe	High-temperature environments (baking rooms, boiler rooms, high-temperature warehouses), with extended temperature resistance range.
Clamp-on Probe	Temporary installation scenarios (pipeline outer walls, equipment surfaces), enabling fast deployment for monitoring.
4-point Threaded Probe	Threaded joints of pipeline equipment (water pipes, ventilation pipes), for embedded fixed monitoring.
Movable Threaded Probe	Scenarios requiring flexible installation position adjustment (equipment interfaces of different specifications, temporary monitoring points).

Core Functions

Real-time data visualization: The host display directly shows temperature/humidity values, time and other information of each monitoring point, with no extra external equipment required for on-site viewing.

Remote data transmission: The host can switch to wireless communication mode to upload data to the cloud platform or management system for anytime, anywhere access. It also supports operation track and status tracking for mobile equipment such as refrigerated trucks.

Safe and stable monitoring: Through continuous data acquisition, it triggers timely alarms when values are abnormal, avoiding cargo deterioration or equipment damage caused by environmental fluctuations.



Introduction to the upper computer software

Function Category	Specific Description
Core Functions	Realize integrated management of data reception, storage, viewing and analysis in the PC standalone environment
Data Reception and Processing	1. Support data reception via serial port, as well as data processing and visual display 2. Compatible with communication methods such as JSON string and MODBUS485
Parameter Configuration	1. Allow independent setting of data storage time 2. Support custom collection time in MODBUS485 collection mode
Monitoring Parameter Management	Support users to independently add, delete and modify monitoring parameters, including information such as parameter protocols, names and icons
Data Processing Expansion	1. Equipped with data post-processing function 2. Support external running of JAVASCRIPT scripts



Introduction to Cloud Platform

Function Category	Specific Description
Architecture & Access Method	Adopts a CS architecture software platform, supporting direct access and observation via mobile phones and PC browsers without additional software installation
Account & Device Management	Supports multi-account and multi-device login, meeting the collaborative management needs of multiple users and terminals
Data Display Function	1. Provides dashboards for real-time data display and historical data display 2. Supports data curve analysis 3. Supports map display and device information viewing
Data Storage & Stability	Implements cloud data storage based on cloud servers, featuring stability, reliability, easy scalability and load balancing
Alarm & Threshold Management	Supports SMS alarm function, allowing custom alarm threshold settings to respond to abnormal data in a timely manner
Data Processing & Output	1. Supports data export in table format 2. Has data post-processing function 3. Supports external running of JAVASCRIPT scripts to enhance customization capabilities
Data Forwarding Function	Supports data forwarding via multiple protocols, including HJ-212 protocol, TCP forwarding, HTTP protocol, etc.

