



ROAD SURFACE INFRARED TEMPERATURE MONITORING

Introduction

This is an integrated infrared temperature measuring instrument, with its optical system and electronic circuits integrated inside the metal housing. It is equipped with a protective sleeve and an adjustable bracket, to adapt to installation and uninterrupted measurement under various field conditions.

A key advantage of the infrared thermometer is that it measures surface temperature of the target without physical contact, by calculating the intensity of infrared radiation emitted by the target object.

Description

Structural design: The metal housing integrates the optical system and electronic circuits, equipped with a protective sleeve and a 90° adjustable bracket.

Installation & operation: Easy to install in the field, and supports uninterrupted measurement.

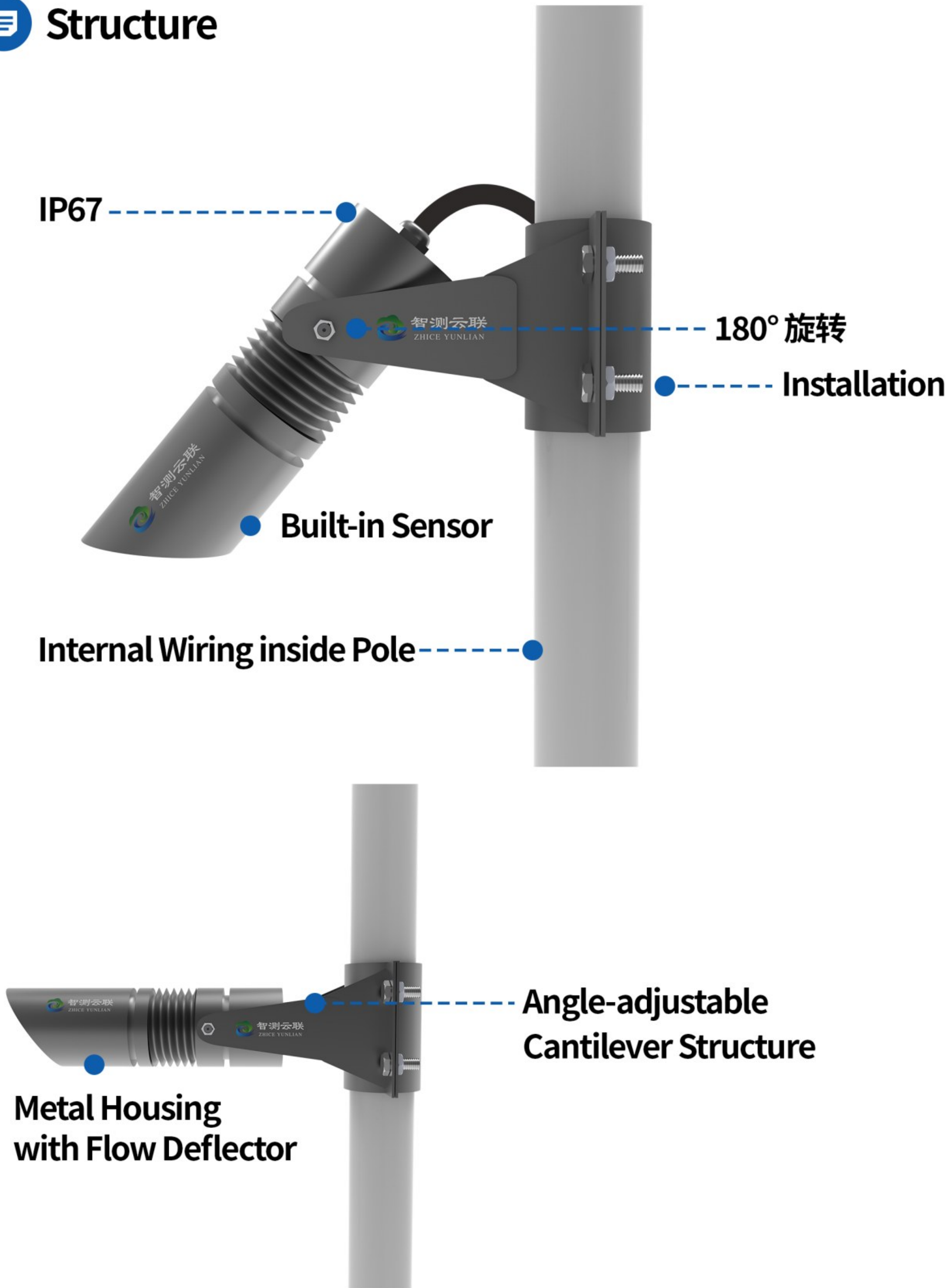
Application scenarios: Temperature monitoring for highway pavement, bridge decks, vegetation canopies, grass surface, topsoil layer and snow cover surface.

Working environment: -55–80°C, 0–100% RH.





 Structure





Parameters

Item	Parameter
Measuring Range	-40 – 70℃
Accuracy	±1% or ±1℃
Distance-to-Spot Ratio (D:S)	8:1
Display Resolution	0.1℃
Response Time	1 second
Working Wavelength	8 – 14μm
Output Mode	RS485
Communication Protocol	ModBus
Working Conditions	-55 – 80℃; 0 – 100%RH
Power Supply Voltage	DC 7-15V
Power Consumption	5mA @ 12VDC (working mode)



Customer Q&A

Customer Question	Explanation
How to choose between wired and wireless transmission?	Wired (RS485) is suitable for short-distance and stable scenarios (e.g. workshops); wireless (LoRa/4G) is suitable for long-distance, mobile and outdoor scenarios (e.g. construction sites).
What is the difference between cloud and local server?	Cloud: No self-built equipment required, supports remote access, but depends on network. Local server: Fully independent data control with fast access, but requires self-maintenance.
Is there a delay when viewing data on multiple terminals?	Under cloud/4G transmission, the viewing delay on PC, mini program and cloud platform is usually within 1-5 seconds; there is basically no delay on local server.
Is data transmission secure?	Transmission is encrypted (e.g. ModBus protocol encryption for RS485, HTTPS for 4G). Cloud and local servers support permission management to prevent data leakage.
Will data be lost when network is disconnected?	The device supports offline caching and resuming transmission. Data is stored locally when offline, and automatically uploaded to the cloud/server after network recovery.
Can multiple terminals view data simultaneously?	Supports simultaneous viewing on PC, mini program and cloud platform, with real-time synchronized data update.
What system is required for the upper computer software?	It normally supports Windows system, no additional environment is needed, and can be used after installing the corresponding client.



Data Transmission

Category	Description
Wired (RS485)	• Core advantages: Strong anti-interference, stable performance, good real-time performance, multi-device networking, no data traffic cost • Main limitations: Requires physical wiring, complex construction, low flexibility • Transmission distance: 1200-2000m (higher rate leads to shorter distance) • Application scenarios: Fixed monitoring points in factories/workshops/parks, industrial strong electromagnetic environment • Selection tips: Works with Modbus protocol. Add 120Ω resistor for distance over 50m, use shielded twisted pair cable
Wireless (LoRa)	• Core advantages: Low power consumption, long distance (25km in open area), strong anti-interference, supports large-scale networking • Main limitations: Requires gateway deployment, gateway failure affects local coverage, low transmission rate • Transmission distance: 2-5km in urban areas, 25km in open areas • Application scenarios: Scattered outdoor monitoring points (construction sites/farmland), long-term battery-powered devices • Selection tips: Suitable for scenarios without mains power supply, plan gateway location in advance
Wireless (4G)	• Core advantages: Wide area coverage, convenient deployment (no gateway required), stable transmission, supports large data volume • Main limitations: Depends on base station signal, requires data traffic fee, higher power consumption than LoRa • Transmission distance: No geographical limit (depends on base station coverage) • Application scenarios: Remote areas, mobile monitoring, high-real-time remote monitoring • Selection tips: Prioritize areas with stable signal, suitable for scenarios without fixed network infrastructure
Wireless (Beidou)	• Core advantages: No network dependency, global coverage, strong anti-interference, suitable for extreme/remote environments • Main limitations: Low transmission rate, relatively high power consumption, communication service fee required • Transmission distance: No geographical limit (global coverage) • Application scenarios: Areas without base stations such as deserts, oceans and mountainous areas, emergency/field monitoring • Selection tips: Preferred for environments without network signal, used with low-power devices