

Monitoring Product Selection Manual

01

TECHNOLOGY GEOTECHNICAL MONITORING SENSORS



Tilt Monitoring

High-precision Bluetooth sliding inclinometer

The sliding inclinometer innovatively uses a smartphone as the data collection device, connected wirelessly via Bluetooth, combined with a reading instrument app to quickly achieve data collection, analysis, calculation, and mapping functions. Simultaneously, using a cloud platform to separate field and office work greatly improves work efficiency.



Advantages

- The ultra-high-precision inclinometer probe boasts world-leading accuracy and stability. The mobile data collection software is equipped with an automatic collection mode, enabling one person to complete on-site data collection.
- The data collection speed is fast, with a typical collection time of up to 5 minutes for a 30-meter inclinometer hole. It adopts low-power Bluetooth data transmission, with a battery life of up to 80 hours.
- The cable reel is waterproof and can still operate normally under severe weather conditions and working conditions.
- The collected data is directly synchronized to the cloud, allowing real-time viewing of measured values, single changes, and cumulative changes on the web page. The quality of data measurement is intelligently evaluated.

Parameters

Function Type	Single-axis Sliding Inclinometer System	Dual-axis Sliding Inclinometer System
Product Model	RDIS 1030S	RDIS 1030D
System Net Weight	7.5kg	7.5kg
Number of Sensors	MEMS*1	MEMS*2
Rod Length	0.75 m	0.75 m
Guide Wheel Base	0.5 m	0.5 m
Measurement Range	A-axis $\pm 30^\circ$	A-axis $\pm 30^\circ$, B-axis $\pm 30^\circ$
Resolution	A-axis 0.005 mm	A-axis 0.005 mm, B-axis 0.005 mm
Repeatability	$\pm 0.003^\circ$	$\pm 0.003^\circ$
Battery Continuous Working Time	80 hours	80 hours
Operating Temperature	-20 ~ 70°C	-20 ~ 70°C
Main Material	Stainless steel	Stainless steel

In Place Inclinometer (IPI)

IPI is widely used in scenarios such as landslide prevention, construction monitoring in architectural engineering, and dams, to monitor deep horizontal displacements beneath the surface. The inclinometer tube is installed vertically underground, and the displacement and deformation of the inclinometer tube caused by stratum movement are measured using a fixed inclinometer system within the inclinometer tube.

In response to the numerous issues present in fixed inclinometer systems, we have conducted extensive upgrades and research and development. While maintaining the cost-effective advantage of domestic products, we have significantly improved the measurement accuracy and stability of the products, reduced the weight of the rod body, and utilized a data cloud platform for wireless data reading, storage, and sharing, greatly enhancing the user experience.



Advantages

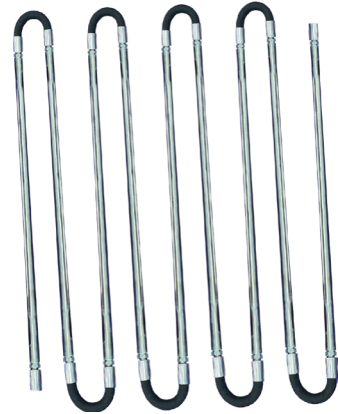
- Utilize the data acquisition system and AI intelligent analysis software to effortlessly achieve real-time automation.
- Without manual intervention and capable of repeated use, it ensures the safety of critical projects.
- A three-axis high-precision sensor can easily and automatically generate vertical or horizontal displacement curves.
- Built-in temperature compensation, waterproof to 3MPa (equivalent to a water depth of 300 meters).

Parameters

Function Type	In-Place Inclinometer System
Product Model	RIP1025S
System Net Weight	1kg
Number of Sensors	MEMS*1
Rod Length	0.79 m
Guide Wheel Base	0.5 m - 1 m
Measurement Range	$\pm 15^\circ/\pm 30^\circ$
Resolution	0.005 mm @500mm
Repeatability	$\pm 0.001^\circ$
Operating Temperature	-20 ~ 70°C
Main Material	Carbon fiber and aluminum alloy

Shape Displacement Array (SAA)

This inclinometer is a multi-segment, flexible and pliable three-dimensional measurement system. The measurement units are connected segment by segment, featuring standardization, batch availability, and ease of maintenance. It can be assembled on-site according to the depth requirements of different measurement holes, and the total length of the flexible inclinometer can be freely spliced, truly achieving reusability, quick maintenance, and ease of transportation.



Advantages

- Temperature zone compensation/data stability, accurate direction/reliable precision, offset correction/torsion correction.
- Online transmission/real-time analysis, secondary development/platform compatibility, segmented design/reusability.

Parameters

Function Type	Flexible Inclinometer
Working Principle	MEMS Accelerometer
Measurement Direction	2-Dimensional (X, Y axis)
Angular Range	0~360°
Angular Resolution	Better than $\pm 0.0003^\circ$ ($\pm 1.08''$) ($\pm 0.000005\text{rad}$)
Displacement Resolution	Better than 0.005mm @500mm / segment
System Stability	Better than $\pm 0.5\text{mm}$ (32m)
Measurement Accuracy	$\pm 0.002^\circ$ (0.0006% F.S.) (0.02mm @500mm)
Radial Compressive Strength	560kgf
Connecting Rod Coaxiality	0.5mm
Material	Stainless steel
Temperature Measurement Accuracy	Better than $\pm 0.2^\circ\text{C}$
Anti-torsion Correction Accuracy	Better than $\pm 1^\circ$
Temperature Recording	Real-time temperature recording (per segment)
Tensile Strength Guarantee	550kgf
Waterproof Guarantee	Underwater 200m (2MPa)
Operating Environment	-40~60°C (Humidity $\leq 95\%$)
Magnetic Field Interference	Unaffected (No impact)

Wireless Tiltmeter

The ultra-low-power wireless tilt sensor is a miniaturized smart digital tilt sensor, independently developed and produced, specifically designed for structural tilt monitoring. Equipped with a disposable dry battery, it can automatically enter a low-power sleep mode, boasting an exceptionally long low-power standby time and featuring remote control and management capabilities.



Advantages

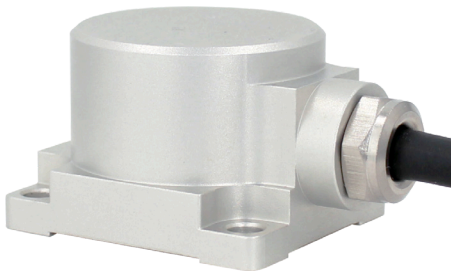
- There is no obstruction between the node and the base station, and the node can be deployed anywhere within a 1km range of the base station without affecting communication (the communication range can be customized up to a maximum of 5km according to requirements).
- The wireless inclination measurement node is powered by a battery and designed with low power consumption, ensuring a service life of two years.

Parameters

Function Type	Wireless Tilt Sensor
Measurement Range	$\pm 90^\circ$
Measurement Axis	X-Y mutually perpendicular
Accuracy	0.003°
Resolution	0.0005°
Operating Temperature	-40~85°C
Sampling Frequency	Once per hour (customizable), continuous for 2 years
Power Supply	Battery
Other Output Data	Temperature, Battery Voltage
Auto Sleep Mode	Supported
Scheduled Wake-up	Supported
MTBF (Mean Time Between Failures)	≥ 90000 hours
Electromagnetic Compatibility	According to GB/T 17626
Insulation Resistance	$\geq 100\text{ M}\Omega$
Dimensions (L x W x H)	L88 x W60 x H40mm (Excluding antenna)
Battery Life	Continuous for 2 years

Accelerometer

The three-axis accelerometer is a widely used series of acceleration sensors independently developed and produced by Ritz-Burbach, suitable for applications in vibration testing, impact testing, and various other fields.



Advantages

- It boasts a sturdy structure, low power consumption, and excellent deviation stability.

Parameters

Function Type	Accelerometer
Output Voltage	0~5V
Supply Voltage	9~36V
Shock Resistance	2000G
Operating Temperature	-40°C ~ +85°C
Storage Temperature	-40°C ~ +85°C

Displacement Monitoring

Laser rangefinder

The binocular long-range laser rangefinder can quickly measure, automatically focus, measure distance and angle, and provide more intuitive data reading with precise calculation of the average value.



Advantages

- It boasts a wide measurement range, high accuracy, and multiple measurement modes.

Parameters

Function Type	Laser Rangefinder
Product Model	T5KI
Measurement Range	20~5000m
Ranging Error	±0.5m
Distance Gating	Step size of 10m
Measurement Success Rate	98%
Repetition Frequency	1/6~1/3Hz (10~20 times / min)
Compass Accuracy	±1°
Inclinometer Accuracy	±0.1 degrees (within ±25 degrees)
Measurement Function	Stores 1000 measurement data points
Receiving Aperture	Φ30mm
Sight Field of View	6.5°
Sight Magnification	7X
Wavelength	1.064μm
Light Source	Nd:YAG
Output Energy	≥5mJ

GNSS Monitoring System

The independently developed GNSS receiver is a professional instrument specifically designed for high-precision surface displacement and settlement monitoring. It fully meets the needs of various monitoring projects (such as geological disasters, mining, water conservancy, dams, slopes, etc.), as well as the construction of monitoring base stations. It is suitable for long-term monitoring in field environments.



Advantages

Monitoring parameters: Capable of outputting high-precision observations of surface displacement, acceleration, and inclination.

Operating mode: Supports dynamic adjustment of monitoring frequency and MEMS sensor triggering function.

Data format: Supports the upload of RTCM32 raw data and real-time kinematic (RTK) result data.

Communication mode: Supports 4G, NB-IOT/Lora, a/4G/WIFI, and Bluetooth.

Parameters

Function Type	GNSS
Operating Voltage	12V~36 V
Instantaneous Maximum Current	≤5A
Operating Current	10mA~ 120mA
Rated Power Consumption	Less than 1.2W
Operating Temperature	-40°C~85°C
Operating Humidity	95%RH
Static Accuracy	Horizontal accuracy: $\pm (2.5+0.5 \times 10^{-6} \times D)$ mm
	Vertical accuracy: $\pm (5.0+0.5 \times 10^{-6} \times D)$ mm
Dynamic Accuracy	Horizontal accuracy: $\pm (8.0+ 1.0 \times 10^{-6} \times D)$ mm
	Vertical accuracy: $\pm (15.0+ 1.0 \times 10^{-6} \times D)$ mm
Data Sampling Frequency	1Hz/2Hz/5Hz/ 10Hz/20Hz Optional
Interface Communication Method	RS232 , 4G/NB-IOT/ Radio communication
Protection Class	IP68
Shock / Vibration	Can withstand 2m free fall
Differential Data	RTCM3.2

Rope displacement sensor

Depending on the application, the rope displacement sensor can be referred to as a crack meter or a rope electronic ruler. It boasts a compact structure, a long measurement range, a small installation space, and high measurement accuracy. It is commonly used in scenarios such as crack monitoring and displacement measurement.



Advantages

- Compact structure, linear measurement stroke length, small installation space dimensions, and convenient installation and maintenance.
- Multi-strand stainless steel drawstring, corrosion-resistant, economical and practical, high cost-effective.
- The operation count can reach up to 5 million times, with a linear accuracy of $\pm 0.1\%$ and a repeatability accuracy of $\pm 0.01\%$.

Parameters

Function Type	Draw-wire Displacement Sensor
Linear Accuracy	$\pm 0.1\%$
Repeatability Accuracy	$\pm 0.01\%$
Service Life	5 million cycles
Operating Temperature	-40°C~+85°C
Outlet Pulling Force	2~3N
Maximum Operating Speed	1m/S
Draw-wire Diameter	0.8mm
Draw-wire Material	Imported steel wire with outer nylon coating
Draw-wire Box Material	Aluminum alloy surface anti-static interference, pull head is stainless steel
Operating Voltage	5~24V

Vibrating wire displacement sensor

The displacement sensor does not require a separate mounting bracket; it suffices to attach two M6 expansion screws at the sensor installation location.



Advantages

- The principle is intuitive, the structure is simple, the operation is reliable, and the service life is long.
- High sensitivity, wide linear range, and good reproducibility.
- With high resolution, wide application, and remarkable waterproof performance, it is suitable for various applications.
- Structurally symmetric, with recoverable zero points.

Parameters

Function Type	Vibrating Wire Displacement Sensor
Power Supply	15~28VDC
Operating Current	Voltage output type power supply current ≤12mA
Displacement Range	10mm, 25mm, 50mm, 100mm
Linearity Error	±0.5%
Resolution	≤0.1μm (maximum), digital output is 16 bit
Operating Temperature	-25°C ~ +85°C
Temperature Coefficient	Zero point ≤0.01%; Sensitivity ≤0.025%

Multiple-point displacement meter

The vibrating wire multi-point displacement meter consists of (2 to 6) vibrating wire displacement sensors installed inside the installation tube in a reversed manner.



Advantages

- The equipment boasts high precision and portability, enabling multi-point stress and strain detection.

Parameters

Function Type	Multi-point Displacement Meter
Range	20, 50, 100, 200 mm
Points per Hole	2-6 points
Resolution	≤0.04% F·S
Comprehensive Error	≤1.5% F·S
Operating Temperature	-25°C ~ +60°C

Settlement

Magnetic Inductive Level Gauge

Magnetic strain hydrostatic level instrument sensors utilize the magnetostrictive effect to calculate the accurate position of the magnetic field intersection point by detecting the time of the strain pulse signal generated when two different magnetic fields intersect, thereby measuring the height of the liquid level. They are widely used in oil and chemical raw material storage, dam water level, construction, reservoir water level monitoring, and wastewater treatment, etc.



Advantages

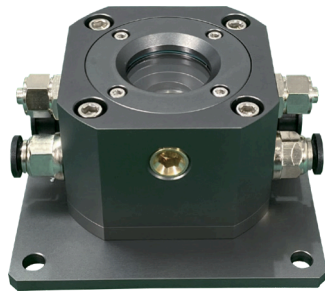
- Latest dedicated magnetostrictive displacement sensor, temperature self-compensating.
- Range of 10cm and 20cm, high accuracy, high cost-performance ratio.

Parameters

Function Type	Magnetostrictive Static Level
Measuring Medium	Water, antifreeze, silicone oil (specify when ordering)
Measurement Method	Magnetostrictive principle
Range	0 ~ 100mm, 0 ~ 300mm, 0 ~ 500mm (Range customizable)
Temperature Range	-40 ~ 100°C
Comprehensive Accuracy	0.1%FS (including temperature drift)
Resolution	0.01mm
Output Signal	RS485-RTU
Supply Voltage	12V DC (12 ~ 30VDC)
Compensation Temperature	-20 ~ 50°C
Medium Temperature	-40 ~ 85°C
Ambient Temperature	-40 ~ 80°C
Electrical Connection	4-core waterproof aviation plug, direct lead
Protection Class	IP67
Housing Material	Aviation aluminum alloy, anodized
Process Connection	Liquid guide tube: Φ10mm PU tube (10x6.5)

Differential Pressure Static Level Meter

A precision instrument that, based on the principle of the communicating vessel, determines the relative change in the liquid surface heights of interconnected storage tanks at the measured points and the reference point (stationary point), and deduces the relative settlement change of each measurement point from the base point.



Advantages

- Imported precision pressure cores, zero point, full scale, temperature compensation, digital integrated amplification board, waterproof, and lightning-proof structural design.
- Resolution up to 0.01mm.

Parameters

Function Type	Differential Pressure Static Level
Measuring Medium	Liquid
Pressure Type	Differential pressure
Pressure Range	0 ~ 200mmH2O, 0 ~ 1000mmH2O, 0 ~ 20mH2O (Customizable within range)
Temperature Range	-40 ~ 100°C
Comprehensive Accuracy	0.1%FS
Resolution	0.01mm
Output Signal	RS485-RTU, 4 ~ 20mA
Supply Voltage	12V DC (7 ~ 30VDC)
Insulation Impedance	≥1000 MΩ / 100VDC
Medium Temperature	-40 ~ 85°C
Relative Humidity	0 ~ 95% RH
Response Time	≤5mS
Overload Pressure	150%FS
Burst Pressure	3 times full scale
Electrical Connection	Waterproof aviation plug, direct lead
Protection Class	IP67, IP68
Connection Cable	4-core waterproof aviation connector
Connection Material	Aviation aluminum alloy, anodized
Process Connection	Liquid guide tube: Φ10mm PU tube / Air guide tube: Φ8mm PU tube / Customizable

Layered Settlement Gauge

The displacement meter of the Layered Settlement Gauge uses the principle of inductive frequency modulation to achieve electrical measurement of non-electrical quantities through changes in the coil's inductance. It is commonly used in the safety monitoring of dams, tunnels, highways, bridges, mines, and civil engineering projects.



Parameters

Function Type	Layered Settlement Gauge
Range	50mm ~ 400mm
Resolution	0.01mm ~ 0.1mm
Power Supply	12V
Operating Ambient Temperature	-20°C ~ +80°C
Temperature Measurement Range	-20°C ~ +80°C

Stress-strain monitoring

Vibration String Monitoring System

The vibration string monitoring system is widely used in the safety monitoring of dams, tunnels, highways, bridges, mines, and construction projects, ensuring the safety monitoring.



(4 channels)



(16 channels)

Advantages

- Widely applicable, suitable for measuring axial force, tensile force of rebar, water level, etc. Compact in size, high cost-performance ratio.
- Quickly complete the setup of the monitoring system with simple configuration, achieving online monitoring, data viewing, and data downloading.
- Combined with the self-developed solar power supply system, it can ensure safe monitoring throughout the entire project cycle. No need for manual intervention, reusable.

Parameters

Function Type	4-Channel Vibrating Wire Monitoring System	16-Channel Vibrating Wire Monitoring System
Frequency Measurement Range	1000~5000Hz	1000~5000Hz
Temperature Sensing Element	Thermistor customizable	Thermistor customizable
Sensor Automatic Recognition	Can recognize sensors with coil 50Ω~10kΩ	Can recognize sensors with coil 50Ω~10kΩ
Multiple Excitation Methods	Programmable high-voltage excitation	Programmable high-voltage excitation, Programmable frequency sweep, Intelligent sweep
Signal Quality Assessment	Sampling data quality assessment algorithm, Signal amplitude detection, Signal quality assessment	Sampling data quality assessment algorithm, Signal amplitude detection, Signal quality assessment
High Precision	0.005Hz~0.25Hz	0.005Hz~0.25Hz
Strong Compatibility	Can measure most manufacturers' single-coil vibrating wire sensors, as well as multi-wire sensors	Can measure most manufacturers' single-coil vibrating wire sensors, as well as multi-wire sensors
Power Supply Method	Internal 8.4V rechargeable lithium battery, External typeC 5V charging	9~24V, Optional 5V solar power supply

Rebar Meter

Widely applicable to various concrete engineering projects such as building foundations, piles, underground diaphragm walls, tunnel linings, bridges, slopes, piers, docks, cofferdams, gates, etc., as well as for safety monitoring of deep foundation pit excavation, measuring internal reinforcement stress, anchoring force, pull-out force, etc. of concrete.



Advantages

- Sensor and force transmission rod integrated design, mechanical seal + penetration connection + resin sealant.
- Features high stability, high sensitivity, and reliable waterproof structure, vibration string working principle, digital quantity output, measurement values not affected by cable length.
- Can also measure buried point temperature; good versatility, wide range of application.

Parameters

Function Type	Rebar Meter
Temperature Measurement Range	-25°C ~ 60°C
Temperature Measurement Accuracy	±0.5°C
Allowable Cable Extension Length	≥1000m
Water Seepage Prevention Pressure	≥1.0MPa

Vibration wire strain gauge

Self-developed and produced strain gauges, with high equipment accuracy, are portable and can provide multi-point stress and strain detection, and can also offer various stress and strain detection solutions.



Advantages

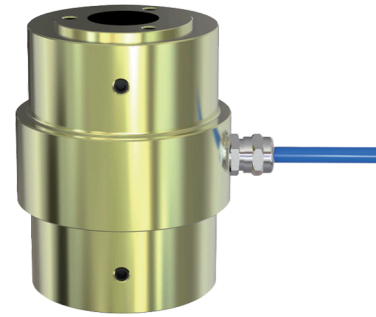
- High equipment accuracy, portable and capable of providing multi-point stress-strain detection.

Parameters

Function Type	Vibrating Wire Strain Gauge
Measurement Range	± 30° (Angle with the vertical)
Resolution	0.0004°
System Accuracy	0.01mm/500mm
Total System Accuracy	±4mm/30m
Linearity	±0.025% (within 30°)
Repeatability	±0.025%
Guide Wheel Base Reference	500mm
Probe Dimensions	Φ30x660mm
Probe Weight	2.35kg
Instrument Weight	1.5kg (including rechargeable battery)
Power Consumption	100mA (without backlight) for 30 hours of continuous use, 200mA (with backlight) for 16 hours of continuous use
Data Grouping	001-50 groups
Power-off Data Retention	Retention time 10 years
Operating Environment	-20°C ~ 60°C
Waterproofing	300m (waterproof and shockproof)
Shock Resistance	20000g (sensitive axis direction, where g is 1 unit of gravitational acceleration)

Anchor Cable Meter

The anchor rope measuring instrument has a reasonable structure, reliable performance, and simple operation. It significantly improves work efficiency compared to manual anchor rope tensioning equipment and is suitable for use in coal mines where there is no gas source underground.



Advantages

Reasonably structured, reliable in performance, and easy to operate.

Parameters

Function Type	Anchor Load Cell
Operating Temperature	-25°C ~ +60°C
Temperature Measurement Accuracy	±0.5°C
Resolution	≤0.10% F·S
Comprehensive Error	≤1.0% F·S

Soil pressure gauge

Soil pressure gauges are used to measure the soil pressure of fill soil and embankments, etc. The main components are all made of special steel, suitable for use in various harsh environments.



Advantages

Can measure the temperature of buried points; good versatility, wide range of application.

Parameters

Function Type	Earth Pressure Cell
Standard Range	0.35, 0.7, 1, 2, 3, 5MPa
Non-linearity	Linear: ≤0.5%FS; Polynomial: ≤0.1%FS
Resolution	0.04%FS
Temperature Range	-20°C ~ +80°C
Overload Capacity	50%
Pressure Bearing Diameter	230mm

Earth Pressure Cell

The vibration wire load cell (intelligent) is suitable for long-term monitoring of the load bearing capacity of steel supports in hydraulic structures, foundation pits, tunnels, and other structures, and is an effective monitoring device for understanding the load changes of the measured structure. It also simultaneously measures the temperature at the buried points.



Advantages

- The load cell has an automatic temperature compensation function, the temperature correction coefficient is less than the minimum reading, and no temperature correction is required during use.
- The load cell measurement system intelligently identifies information, performs intelligent fault diagnosis, and seamlessly connects to the cloud platform via mobile phone.

Parameters

Function Type	Load Cell
Number of Sensors	4 ~ 6 units
Measurement Range	0 ~ 5000kN (Customizable range)
Resolution	0.05% F·S
Fitting Accuracy	0.5% F·S
Temperature Measurement Range	-40°C ~ +80°C
Temperature Measurement Sensitivity	±0.1°C
Temperature Measurement Accuracy	±0.5°C
Instrument Material	High Carbon Steel

Water Pressure/Water Level

Water level monitoring system

The automatic water level measurement system consists of two parts: the water level measurement sensor and the system controller. The device is based on the principle that the static pressure of the measured liquid is proportional to the liquid height. It uses an isolated sensor to convert the static pressure into an electrical signal, which is then processed by an internal microcontroller and integrated circuit. The signal is temperature-compensated and linearly calibrated using our independently developed calibration system, and finally converted into a digital signal, synchronized to the monitoring cloud platform.



Advantages

- High measurement accuracy.
- Sensor measurement range is customizable (1-100 meters).
- System data collection frequency is adjustable and customizable.
- Wireless data connection, data can be synchronized to the Ritsber monitoring cloud platform.
- Integrated design, plug and play. Accompanied by the independently developed solar power supply system, it can achieve safe monitoring throughout the project cycle.

Parameters

Function Type	Water Level Monitoring System
Power Supply	Solar Power
Rated Power Consumption	<0.1W
Communication Method	4G
Collection Interface	RS485
Communication Baud Rate	9600 (Adjustable)
Sampling Method	Real-time collection, Scheduled collection
Sampling Frequency	Remotely configurable
Operating Temperature	-20°C ~ 70°C

Piezometer

A piezometer is an instrument for measuring and controlling seepage, mainly used for measuring and controlling seepage in liquids. It is widely used in liquid inlet pipes, outlet pipes, pressure vessels, and special experimental equipment, etc. In addition, it can also be used to measure parameters such as fluid flow rate, total volume, and pressure.



Advantages

- High measurement accuracy, sensor measurement range is customizable (1-100 meters). The system data collection frequency is adjustable and customizable.
- Wireless data connection, data can be synchronized to the Ritzberg monitoring cloud platform.
- Integrated design, plug and play, paired with the independently developed solar power supply system, can achieve safe monitoring throughout the project cycle.

Parameters

Function Type	Piezometer
Non-linearity	≤2.0% F·S
Resolution	≤0.2% F·S
Temperature Measurement Accuracy	Within 2°C at -20°C ~ -10°C; Within 0.5°C at -10°C ~ 80°C
Signal Output	Vibrating wire output
Non-repeatability	≤0.5% F·S
Comprehensive Error	≤2.5% F·S
Temperature Measurement Range	-20°C ~ 70°C
Water Pressure Resistance (Full Scale)	1.2 times
Insulation Resistance	≥20MΩ
Frequency Amplitude	≥0.8MV

Radar water level gauge

The equipment represents an innovative application of distance-measuring radar in water level measurement, achieving high-precision water level readings (millimeter-level), compact size, large measurement range (30m), reliable accuracy, stable information, easy installation, and maintenance-free technology; it offers a significant functional upgrade compared to traditional horn-type water level gauges.



Advantages

- Non-contact measurement, no mechanical wear. Small size, light weight, low cost, long life, easy installation.
- Large wavefront, high energy, more measurement points, greatly improving measurement accuracy and reliability. Virtually unaffected by corrosion, foam, atmospheric moisture vapor, temperature and pressure changes. Unattended, all-weather, low power consumption, maintenance-free.
- High signal-to-noise ratio, providing optimal performance even under fluctuating conditions. Measurement range up to 30m, meeting most measurement environments.
- Low transmission power, non-polluting, harmless to humans and the environment.

Parameters

Function Type	Radar Water Level Meter
Operating Voltage	9~24VDC
Operating Current	30mA (12V)
Transmission Frequency	24GHz
Transmission Power	13dBm
Beam Angle	11°
Operating Temperature	-45°C ~ +85°C
Measuring Range	0.2 ~ 40m
Measurement Accuracy	±3mm (≤10m); ±1cm (>10m)
Resolution	1mm
Startup Time	1s
Communication Interface	RS-485, Standard Modbus Protocol

Protection Class

IP67

Humidity

95% RH, non-condensing

Antenna Type

Planar array antenna

Dimensions (L x W x H)

194mm x 108mm x 40mm

Weight

215g

Level gauge

For measuring water levels in well bores, boreholes, and dam piezometers, and also for artificial observation of water levels in rock and soil engineering, foundation pits, rivers, seas, and lakes.

Advantages

- High precision, easy to use.



Parameters

Function Type	Function Type
Tape Length	50m, 100m
Probe Dimensions	Φ26×125mm
Minimum Reading	1mm
Measurement Accuracy	±1.5mm ~ ±5mm
Power Supply	1 x 9V Alkaline Battery
Operating Temperature	0°C ~ 80°C

02

TECHNOLOGY DATA ACQUISITION DEVICES



Sliding Inclinometer Data Acquisition APP

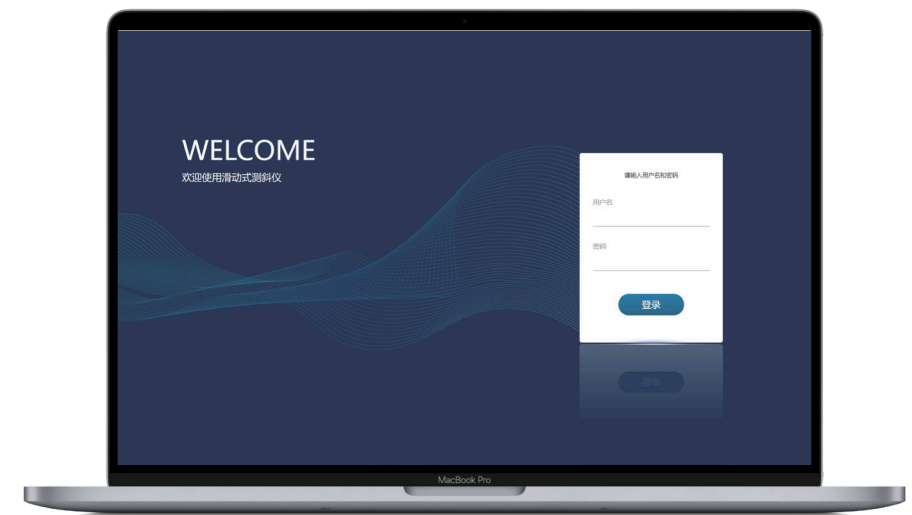
The Inclinometer Data Reader is an APP designed specifically for portable inclinometers. It supports the Android system and interacts with the device via BLE (Bluetooth Low Energy). The APP provides functions such as manual/automatic inclinometer data measurement, data chart display, data export, data sending, data synchronization, and measurement control. Based on extensive practical engineering experience, the measurement workflow has been streamlined and measurement steps simplified, leading to the creation of a unique automatic measurement mode. In this mode, the APP automatically collects data, and the operator only needs to follow the on-screen prompts to operate the inclinometer. This greatly improves data collection efficiency. On-site measurement data is fully captured, and the APP synchronizes the data to the Ruicibo Inclinometer Data Platform. Back-office personnel can simply log in to the data platform using the measurement account to download the data, enabling real-time data access with no delay.



User Interface

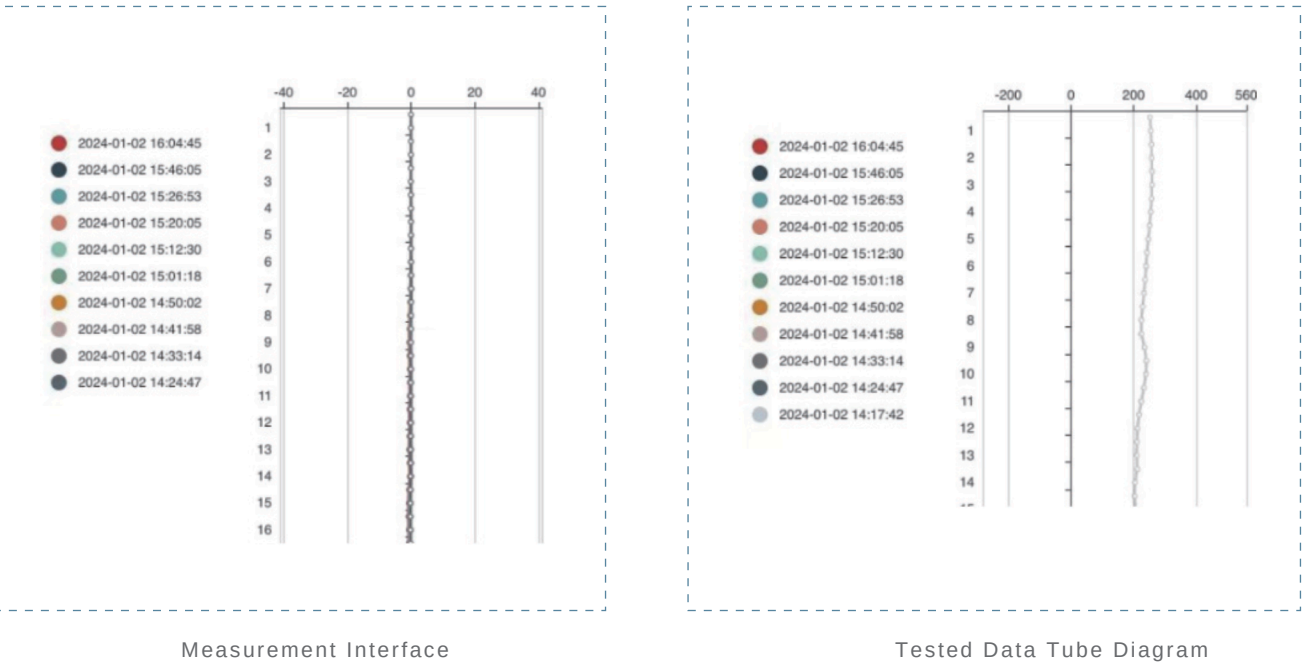


Platform



The Portable Inclinometer Data Reader can be used in conjunction with the Rasber Cloud Platform. The main features of the cloud platform include:

- On-site measurement data from the reader is synchronized and displayed on the cloud platform in real time, with data backed up in the cloud.
- The cloud platform allows users to filter, view, analyze, and create charts from on-site measurement data, presenting the data more intuitively in tables and curves.
- Users can organize data through the cloud platform and export data reports conveniently and efficiently.



Fixed Inclinometer Controller

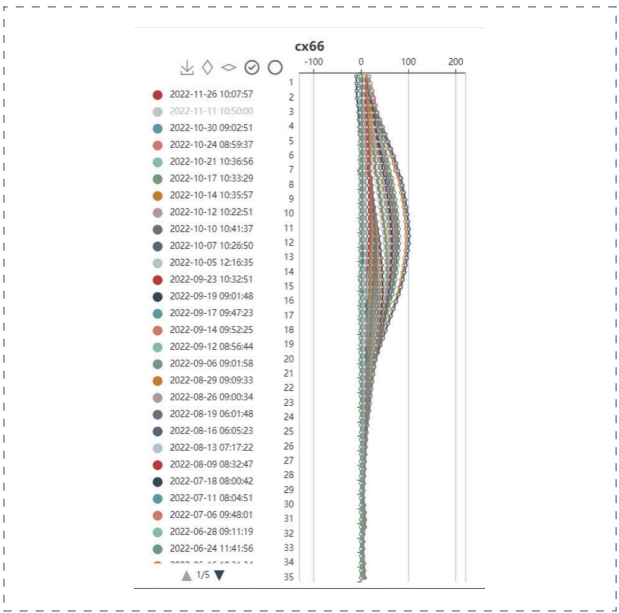
The Fixed Inclinometer Controller is used to collect real-time measurement data from fixed inclinometers and is designed to operate reliably under field geotechnical engineering environmental conditions. The controller's main functions include engineering borehole information sharing, inclinometer borehole depth decrement, comparison between current and previous measurements, supplementary measurement, reference value setting, continuous automatic measurement, threshold warning, real-time cloud platform synchronization, large-capacity data storage, intelligent fault diagnosis, support for multiple data export methods, on-site chart and table generation, and automatic offline shutdown.

Parameters

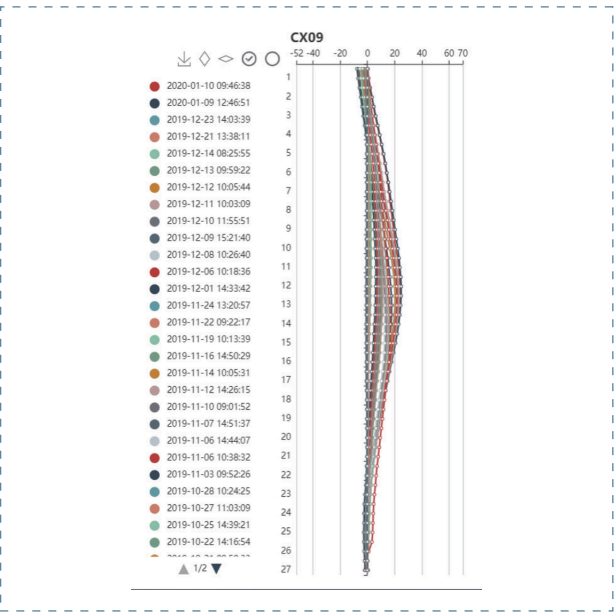
Output Voltage	+12V
Dimensions	21x15x9cm
Storage Humidity	≤80%RH
Storage Temperature	-30 ~ +70°C



Filed Data



Field Data



Field Data

Water Level System Control Terminal

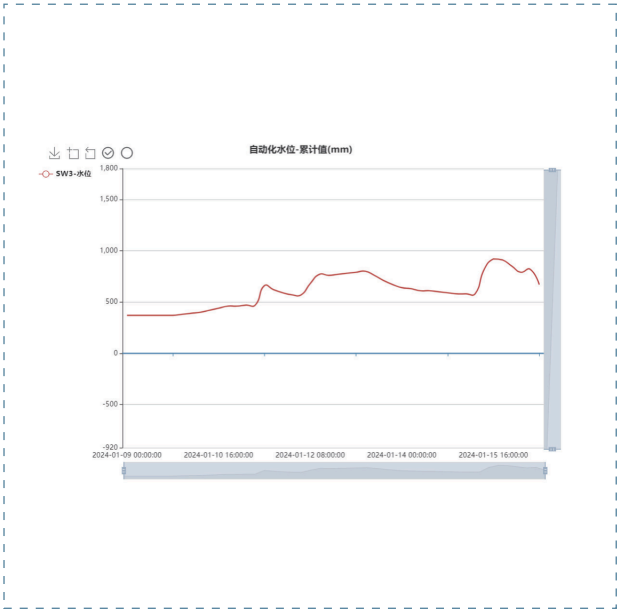
The Fixed Inclinometer Controller is used to collect real-time measurement data from fixed inclinometers and is designed to operate reliably under field geotechnical engineering environmental conditions. The controller's main functions include engineering borehole information sharing, inclinometer borehole depth decrement, comparison between current and previous measurements, supplementary measurement, reference value setting, continuous automatic measurement, threshold warning, real-time cloud platform synchronization, large-capacity data storage, intelligent fault diagnosis, support for multiple data export methods, on-site chart and table generation, and automatic offline shutdown.

Parameters

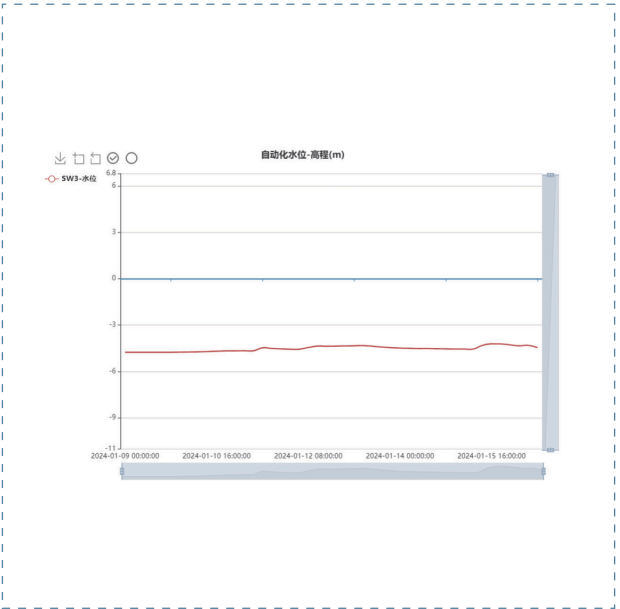
Output Voltage	+12V
Dimensions	21x15x9cm
Storage Humidity	≤80%RH
Storage Temperature	-30 ~ +70°C



Filed Data



Cumulative Displacement



Measured Elevation

Vibrating Wire Monitoring Terminal

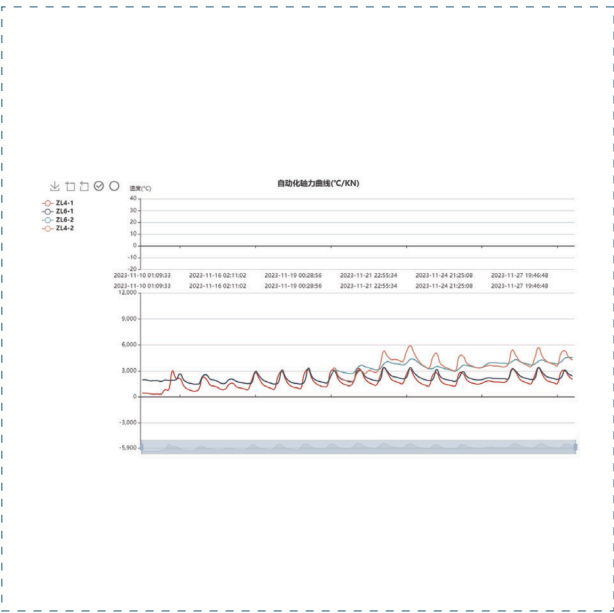


The Vibrating Wire Monitoring System is widely used in safety monitoring of dams, tunnels, highways, bridges, mines, and construction engineering projects, providing reliable protection for safety monitoring.

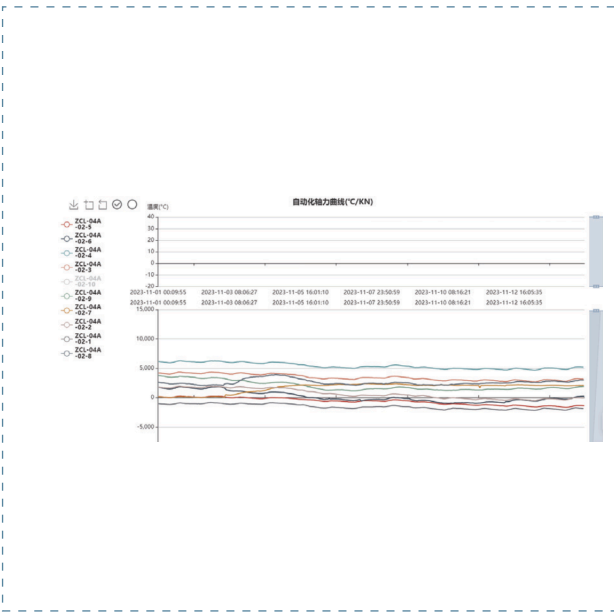
Parameters

Feature	Specification
Frequency Measurement Range	30~12000Hz
Temperature Sensing Element	Thermistor customizable
Sensor Automatic Recognition	Can recognize sensors with coil 50Ω~10kΩ
Multiple Excitation Methods	Programmable high-voltage excitation, Programmable frequency sweep, Intelligent sweep
Signal Quality Assessment	Sampling data quality assessment algorithm, Signal amplitude detection, Signal quality assessment
High Precision	0.005Hz~0.25Hz
Strong Compatibility	Can measure most manufacturers' single-coil vibrating wire sensors, as well as multi-wire sensors
Operating Voltage	9~24V, Optional 5V solar power supply

Filed Data



Field Data



Field Data