Civil and Construction Automation Solution

Structure, settlement, displacement, inclination, stress and strain monitoring automatic solution

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Company Profile

ZHYQ is based in Melbourne, Australia, specializes in sensor technology and product design, development, sales and technical support to build and ensure high reliability and timely customized solutions for customers. With the advantage of having our own production facilities in China, we aim to serve international customers from more than 50 countries with reliable technology and excellent service.

Our product range includes:

Sensors and transmitters for measuring pressure, weight, force and weighing.

Sensors and transmitters for pressure, differential, temperature and concentration measurements. Structural health monitoring and highway weighing systems for Bridges, subways and tunnels Industry 4.0 wireless sensor network systems.

About Our Manufacturer

Shanghai Zhaohui Pressure Apparatus Co., Ltd. (ZHYQ) is our leading professional manufacturer in the industrial of pressure, flow, temperature, liquid level and Internet of Things (IoT). ZHYQ found in 1999. We are an ISO9001 (2015) Quality management certificated company, we acquired the certificates of CMC, Ex, MA, CE, RoHS and more. We are qualified for 7 Invention patents and more than 70 utility model patent technologies.

Why choose ZHYQ ?

- Expert technical advice from our highly experienced and trained staff
- 15,000㎡ plant, annual output 200,000 pieces transmitters
- Nearly 60 national invention patents and utility model patents
- ISO 9001: 2015 accredited quality systems
- CMC, Ex, MA, CE, RoHS, ATEX, SIL certification
- High-tech enterprises, Shanghai "specialized special new" enterprises
- The first in the industry to obtain a high-range 500MPa metering license
- Efficient and complete production line of monocrystalline silicon sensor

Industrial Application

Applied in civil engineering construction, railway, road, water conservancy and other engineering fields of quality acceptance and later operation of the whole life cycle process.

Engineering detection technology refers to the use of automatic acquisition equipment to test the strain, stress, deformation and other structural parameters embedded or installed on the structure in the construction process or the operation of the structure. Evaluate the construction quality and safety of the structure or the operation status of the structure to ensure the quality and safe operation of the structure.

APPLICATION

Catalog

Monocrystalline Silicon Hydro Leveling Sensor
PT124B-226E

Product Information：

Monocrystalline silicon hydro leveling sensor is an important ground-level detecting sensor in the static leveling ritual monitoring engineering settlement system; Static leveling system is a precision instrument which can measure the change of liquid level settlement relative to liquid level height between two or more points. Static leveling system is generally installed on the base platform of the height of the measured object, usually using modular automatic measurement unit to collect data, through wired or wireless communication and computer connection, so as to realize automatic observation.

Feature:
MEMS monocrystalline silicon technology;
High accuracy and repeatability;
Strong anti-jamming performance, automatic temperature compensation;
IP66 protective, quickly suitable for various conditions;
Independent IP, no need system;
Standard interface, no need system calibration;

Application:
Dam;
Nuclear power station;
High-rise building;
Tunnel;
Bridge;
Underground Construction;
Geological settlement;

Product Information：

Model：	PT124B-226E
Measuring Range：	0～500mmH2O；0～1000mmH2O；0～1500mmH2O；0～2500mmH2O；
Output Signal：	RS485
Accuracy：	0.05%F.S
Input：	9～24V DC
Protection：	IP67
Pressure Medium：	water, anti-freezing solution, Silicone Oil
Connection：	Water Proof 4 Pin Plug

Monocrystalline Silicon Hydro Leveling Sensor
PT124B-226E
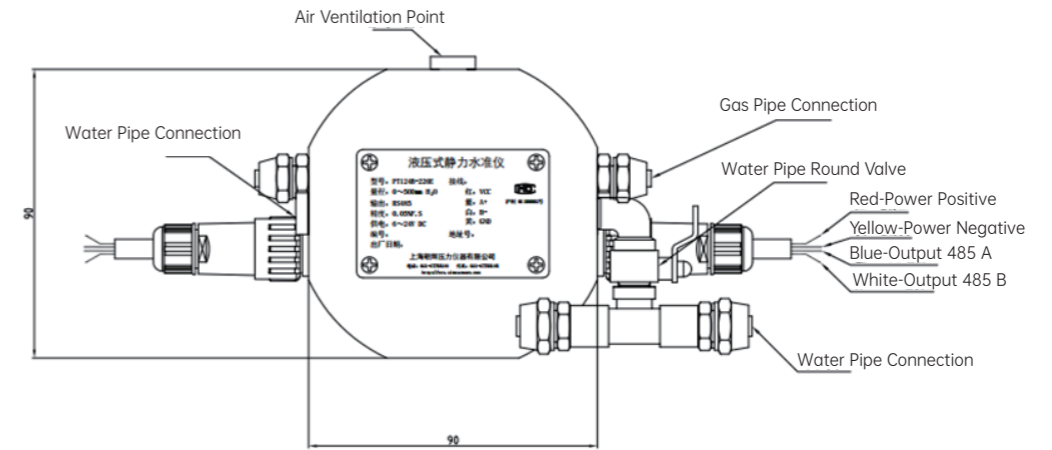
Monocrystalline Silicon Hydro Leveling Sensor is consisted by data collector, fundamental static level and monitoring point static level, through the level of the installation frame, data transmission cable, liquid pipe and fixed accessories, dry pipe and liquid composition. Installation methods can be divided into two types: flat installation of pier and wall side installation, which are selected according to site conditions and design requirements.
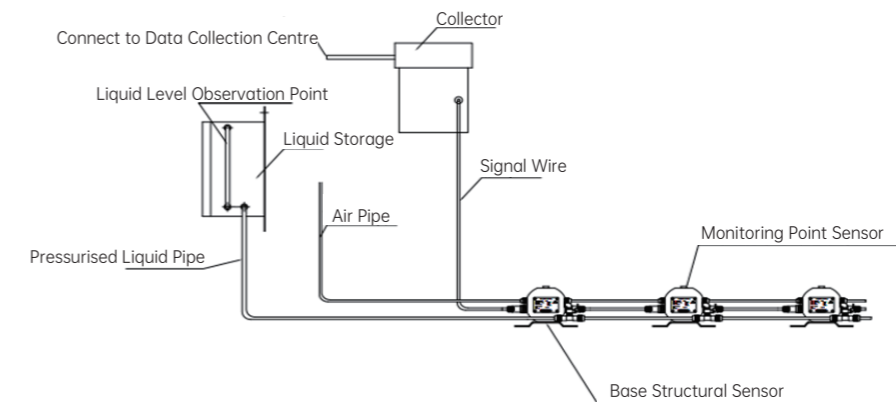
Biaxial inclination sensor
PT124B-QJ

Product Information：

Biaxial inclination sensor is a high precision instrument invented by ZHYQ. The measuring range can reach ±90º. The sensor will be switched to sleeping mode when not working for power saving. It can then switch back to working mode remotely.

Feature:
High precision baxial;
Great temperature stability;
Suitable for long-term outdoor monitoring;
Aluminium alloy casing;
Protection grade IP67;

Application:
Geological measurement;
Tunnel monitor;
Building monitor;
Composite pipe work;
Subway construction;
Wind tower and signal tower monitor;

Product Information：

Model：	PT124B-QJ
Measuring Range：	±30°
Resolution：	0.001
Accuracy：	0.005@0°~±3° 0.01@±3°~±6° 0.02@±6°~±15°
Cross-axis Accuracy：	±1%
Zero temperature drift：	±0.002°/℃
Refresh Time：	30ms
Initial starting Speed：	0.5ms
Zero Accuracy：	±0.05
Input：	24VDC（8~36VDC)
Quiescent Operation Current：	20mA
Working Temperature：	-40~85℃

Biaxial inclination sensor
PT124B-QJ

Size：
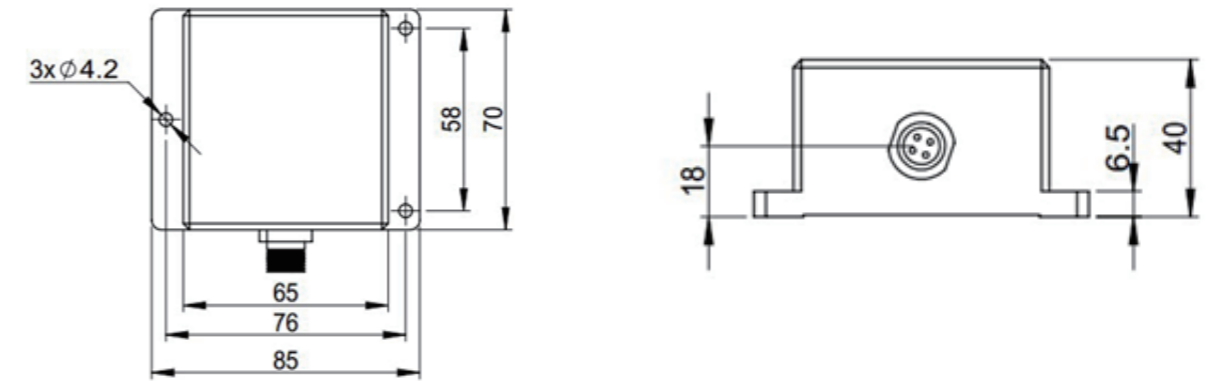
Operating Principle：
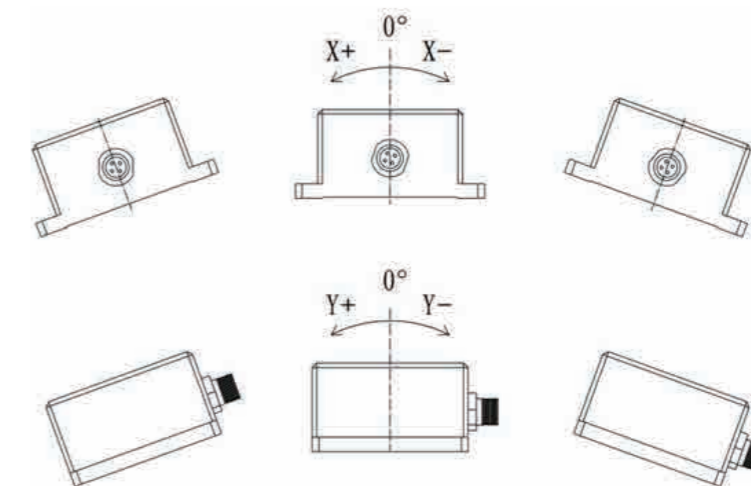
Wireless inclination sensor
PT124B-WXQJ

Installation Instruction :

Real-time Installation

Avoiding Any Angle from Testing Side

Perfection Installation

Sensor

a°

Testing Side

Sensor

A

B

Sensor

Testing Side

Sensor Axis

Testing Side Axis

Sensor

Parallel

Sensor Axis

Testing Side Axis

C

D

Operating Principle :

X−

0°

X+

Y−

0°

Y+
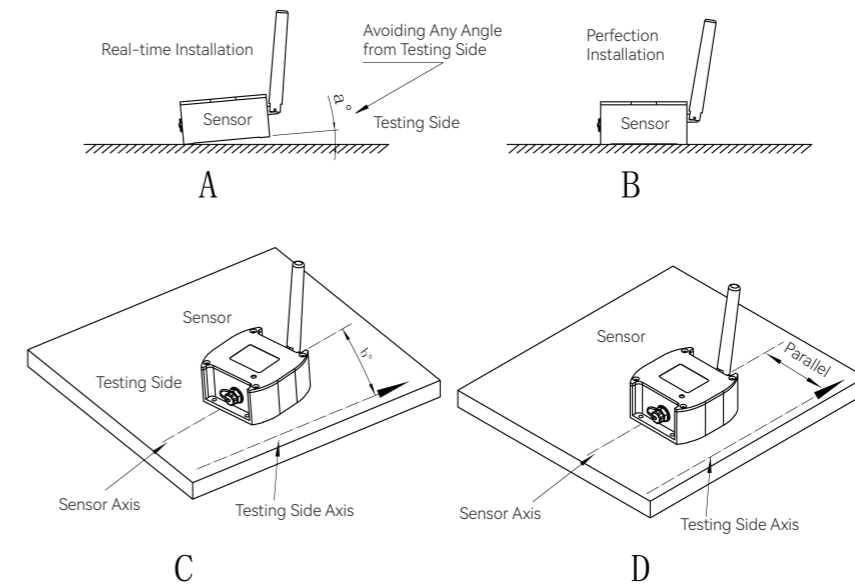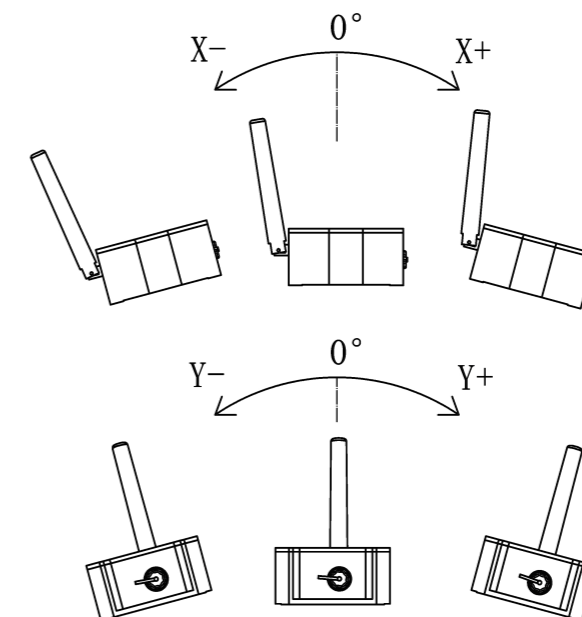
Osmometer
PT124B-227

Product Information：

Osmometer comes with wireless Transmission mode. It adopts superb encapsulation technology and perfect assembly process to make sure the products of long-term work under high stability without leakage. The sand control cap in front provides great protection for the sensor behind.The vent tube is connected with testing medium by polymer isolation plug.

Feature:
Wireless NB-IoT communication optional;
Can work under varies extreme weather condition;
Protection grade IP68;
Varies signal output to choose;
Anticorrosion, moisture proof and leakage proof;

Application:
Building Automation；
Metallurgical;
Mechanical;
Environmental Protection;
Technical Performance Medical;
Petrochemical Pipeline Pressure Measurement;
Automatic Control and Test System;

Product Information：

Model：	PT124B-227
Measuring Range：	0~1mH²O~50mH²O
Accuracy：	0.25%FS；0.5%FS
Nonlinearity：	0.2% of Full Measuring Range
Stability：	0.2%FS/year
Output Signal：	RS485，NB-IOT
Input：	24(12~36)VDC (Amplified Signal)
Working Temperature：	0~85℃
Compensation Temperature：	0~65℃
Overload：	150%FS
Material：	304，316 Stainless Steel
Connection：	Ventilation cable (F4 casing with strong corrosion resistance)

Φ 30

155
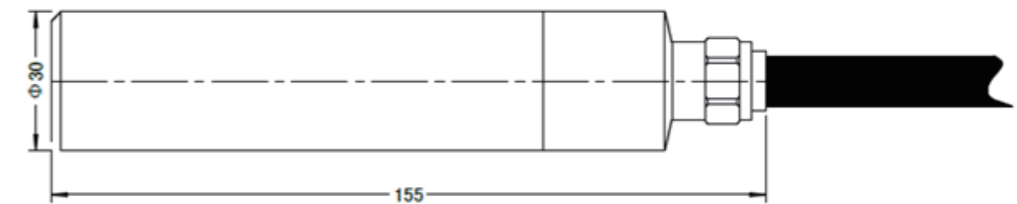
Size:

| Electric Connection	RS485
Wire	Blue 485 +
	Red Power +
	White 485 –
	Yellow Power –

Installation：

Crack Meter
PT124B-LF

Product Information:

High precision wear-resistant linear resistance is used as the core component of PT124B-LF Crack Meter. The main body is a strip linear resistor and the moving part is a metal conductor with low resistivity. Displacement is measured by measuring the position of the metal conductor on the linear resistor.
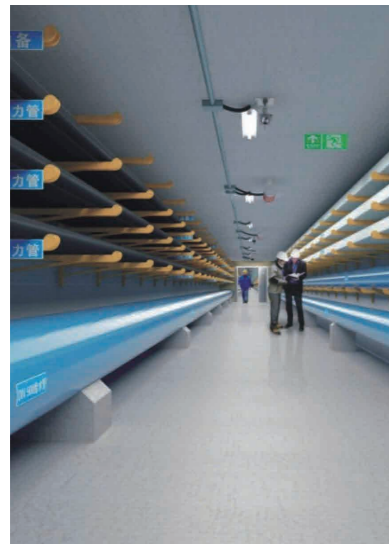
Feature:
Small size and easy installation;
Single unit, no separate parts;
No additional data converter needed;
Easy maintenance;

Application:
The crack meter is used to measure displacement of building, tunnel, subway, wind tower and signal tower constructions and maintenances.

Product Information:

Model:	PT124B-LF
Measuring Range:	0-25/50mm
Baud Rate:	9600
Accuracy:	0.2mm
Output Signal:	RS485
Working Temperature:	-20~60℃
Connection:	Water Proof 4 Pin Plug
Initial Starting Time:	0.5s
Protection Grade:	IP67
Zero temperature drift:	±0.002°/℃
Input:	9-16V DC

Crack Meter
PT124B-LF

Installation
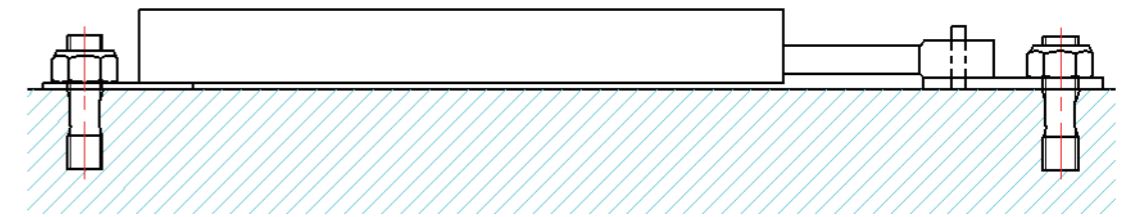
Displacement Sensor
PT124B-WY

Product Information：

Displacement Sensor is supported by RS485 signal output. The sensor has build-in digital acquisition and conversion circuit which compensate the non-linear error. It contains built-in spring and automatic reset. Its low power consumption, high reliability and accuracy is suitable for environments requiring battery power supply. The sensor also supports wireless NB-IoT data transfer.

Feature:
Can work under varies extreme weather condition;
Double Protecting Casing;
Easy installation and maintenance;
Protection grade IP67;
Anti-surge, anti rf, anti-electromagnetic interference;
Varies signal output to choose;

Application:
The crack meter is used to measure displacement of building, tunnel, subway, wind tower and signal tower constructions and maintenances.

参数规格：

Model：	PT124B-WY
Measuring Range：	20ns(PPS)
Accuracy：	-142DBm
Communication：	515 m/s
Output Signal：	RS485
Input：	9-16V DC
Sleep Mode Current：	-40~85℃
Working Temperature：	18288m
Store Temperature：	0.5s
Data Transfer Time：	Flat 3mm，Height 6mm
Protection Grade：	IP67

Displacement Sensor
PT124B-WY

Installation：

5 Pin Plug
Metal Flexible Pipe
φ32
G1/2
φ35
Magnet Point to The Wall
2000
128,5
8,5
12
L
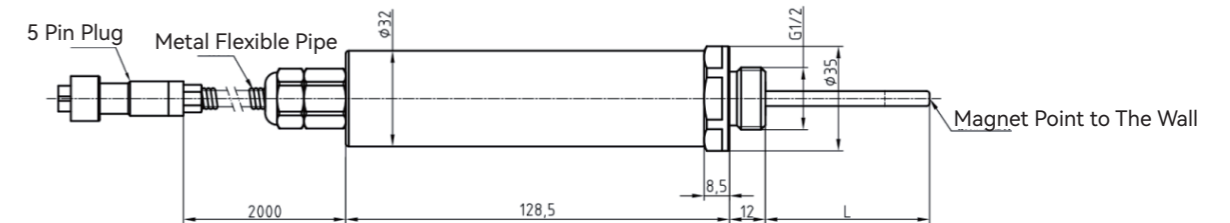
Connection：

Connection Method

1.VCC；
2.SCL；
3.SDA；
4.GND；
5.GND；

Description of transmitter communication protocol:

On the basis of THE I2C protocol, the transmitter is normally in hibernation state. When the transmitter data is read, the measurement request instruction 0xAC is sent first, and the data is read after the transmitter data conversion is completed, and then it enters the sleep state.
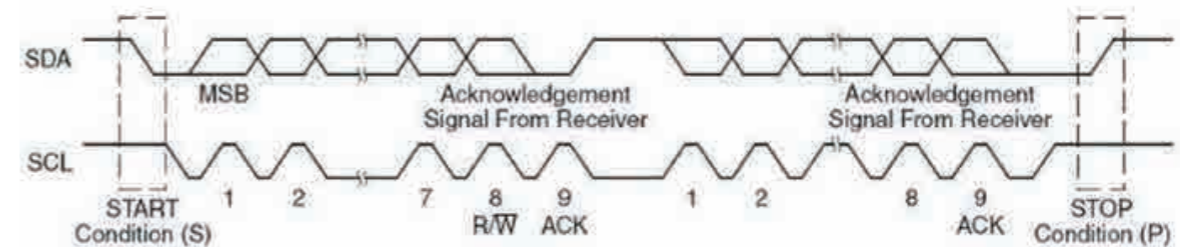
Bolt Pre-tightening Force Sensor
PT7001-LS

Product Information：

Bolt pre-tightening force sensor is a single chip integrated sensor IC using planar Hall technology. It can measure the piertotum pass density parallel to the chip surface. By integrating signal processing technology, the magnetic flux density of the small magnet rotating on the chip surface (radial magnetization) can be

Feature:
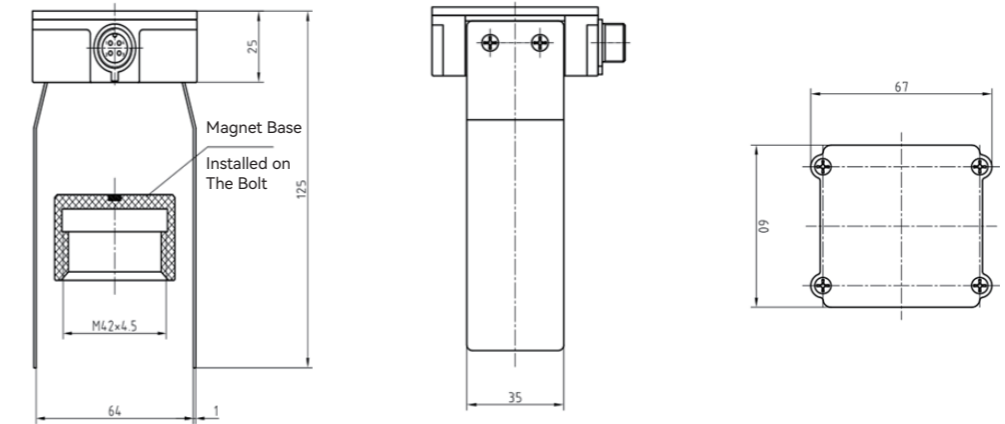Measurement angle up to 360º;
RS485 signal output;

Application:
It is suitable for monitoring the loosening caused by relative displacement between bolts and nuts, such as the connection between large wind power equipment tower barrel, tower crane foundation connection fixed bolt and other large static bolt connection fixed equipment that needs to be monitored.

Product Information：

Model：	PT7001-LS
Measuring Angle：	90º~180º~360º
Angle Accuracy：	±1º
Nonlinearity:：	0.2% of Full Measuring Range
Accuracy：	0.2%FS/Year
Output Signal：	RS485
Input：	24(12~36)VDC (Amplified Signal)

Bolt Pre-tightening Force Sensor
PT7001-LS

Size :

Magnet Base
Installed on
The Bolt

M42×4.5

64   1

25

175

35

67

60

Connection :

Blue   Yellow

Red   White
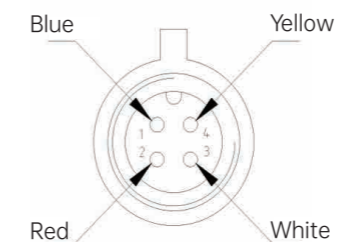
Output Method：

1 . Blue: RS485A+
2 . Red: VCC
3 . White: RS485B−
4 . Yellow: GND

Installation :

0.5-1mm between sensor and magnet

Sensor output Signal Point
Permanent Magnet
Permanent Magnet Base

Nut

Connection A

Bolt

Connection B
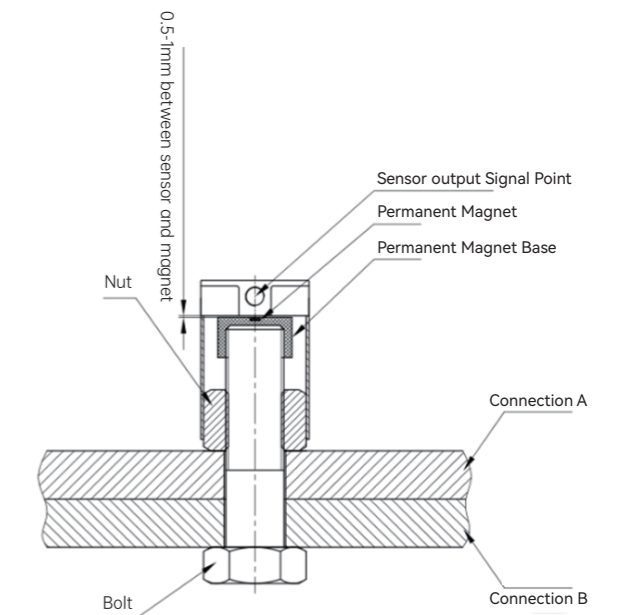
Data Acquisition System
SDG-CJ01

Product Information:

Data Acquisition System supports wireless GPRS. The acquisition system needs sensors that can communicate digital signals. Data acquisition supports encrypted data acquisition and transparent data acquisition. Complete collection and analysis software can meet the needs of different users. The maximum supported sensor number is 25 and maximum communication distance is 500m.

Feature :

Intelligently identify IP addresses;
Actively upload data;
Compatible with a variety of digital sensors;

Application :

The Data Acquisition System is designed specifically for civil engineering industry. The idea is to bring the sensors together into a whole system and make the data collection process easier.

Product Information:

Model:	SDG-CJ01
Baud Rate:	9600bps
Sensitivity:	-142DBm
Speed:	515 m/s
Output Signal:	RS485
Input:	9-16V DC
Working Temperature:	-40~85℃
Satellite position:	18288m
Initial Starting Time:	0.5s
Static:	Flat 3mm, Height 6mm
Protection Grade:	IP67
Zero temperature drift:	±0.002/℃

AUTOMATED MONITORING ACQUISITION SOFTWARE

COMPREHENSIVE ACQUISITION SOFTWARE SUPPORTS ACCESS TO A VARIETY OF SENSORS. ACCORDING TO THE INSPECTION OBJECT OF PROJECT SUPERVISION, THE COMPREHENSIVE COLLECTION AND MANAGEMENT OF ALL HARDWARE EQUIPMENT IS REALIZED. THIS COLLECTION SOFTWARE SUPPORTS THE DISPLAY AND ANALYSIS OF DATA AND SYNCHRONIZES THE COLLECTED DATA TO THE CLOUD PLATFORM FOR DISPLAY ON THE PLATFORM.

Software Features
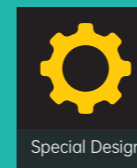
Special Design
Numbers of sensors and data acquisition instruments were designed by different project conditions. All initial data settings can be set as project required.
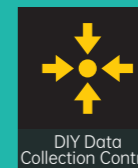
DIY Data Collection Control
Sensors can be selected individually for data collection test. Test can be set for one target in any collection time period.
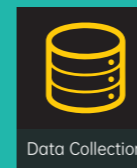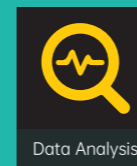
Data Collection
All collected data will be saved in the system for future search. Data are available from 1 day to most recent month.
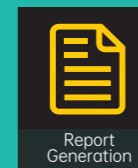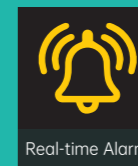
Report Generation
Report can be generated from any time period in .xls form. It is convenient for data analysis and test conclusion.

Data Analysis
Graphical analysis option is available in the system for any data selection.

Real-time Alarm
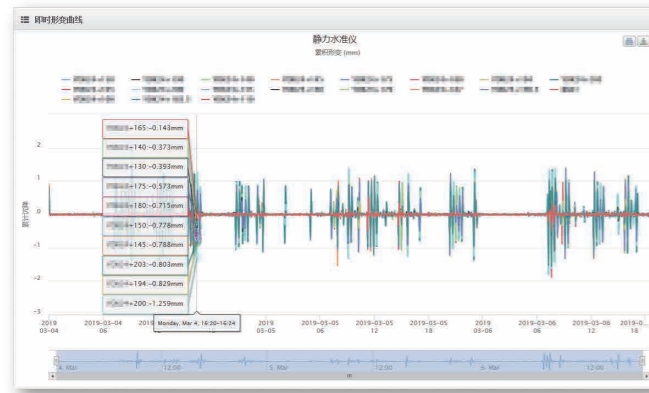Alarm can be set by operators for real-time sensor faulty warning.

System Monitoring

Chart View

Real-time Chart View

All-time Chart View

System Warning Page

Report Generation

Applications