

Digital Display Integrated Contact Displacement Sensor Instructions

1. Notes

When using this instrument, please comply with the specifications, functions and precautions in the instruction manual. Exceeding the scope of use will affect the safety performance of the instrument.

2. Product content introduction

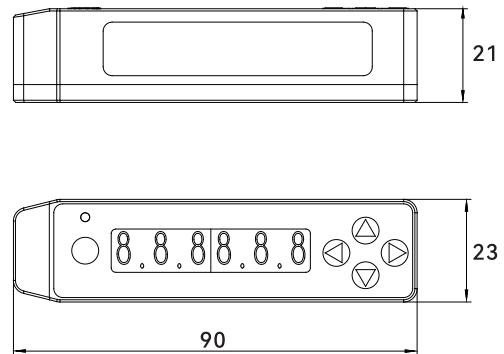
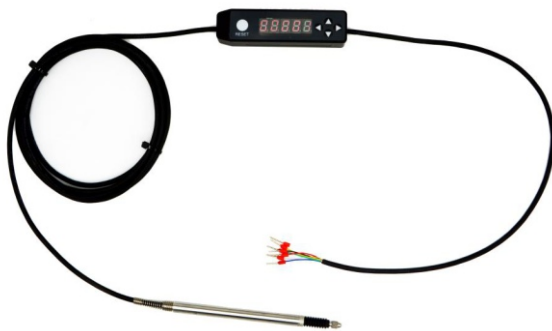


The digital integrated contact displacement sensor can be used for the measurement of displacement, vibration, thickness and runout. The sensor data can be displayed on the screen in real time. It is equipped with MODBUS protocol RS485 interface and IO interface as standard.

3. Technical specifications

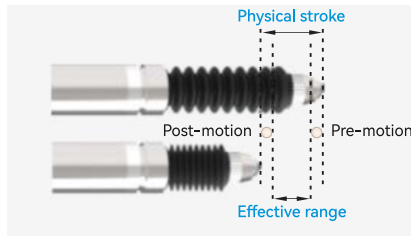
| | |
|-------------------------|---|
| Product Type | Digital integrated contact displacement sensor |
| Compatible Sensor Range | Rebound type 2mm/ 5mm/10mm/air push type 10mm reed type, etc. |
| Resolution | 0.1μm |
| Repeat Accuracy | < 1μm |
| Supply Voltage | DC12V |
| Operating Temperature | -10~60°C |
| Storage Temperature | -20~70°C |
| Product Size | 90x23x21(mm) |
| Wire Length | 2m+1m(output line 1m) |
| Installation Method | Standard DIN rail |
| Remarks | If you need other range sensors, please communicate with sales in advance |

4. Size and line sequence description



Display box size

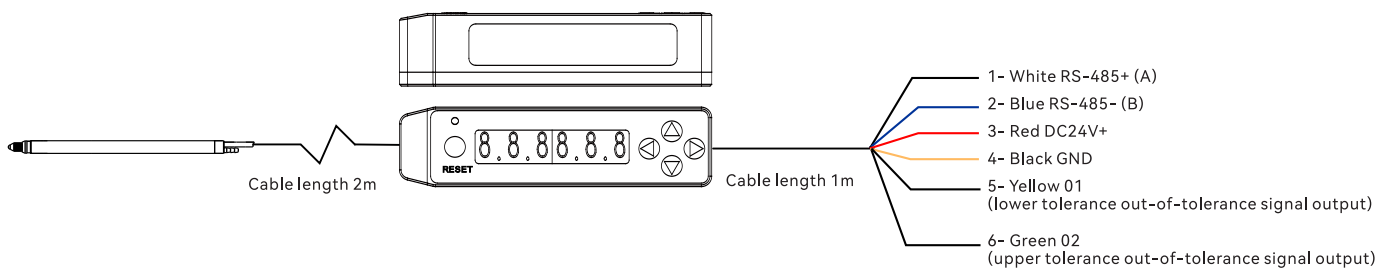
Unit: mm



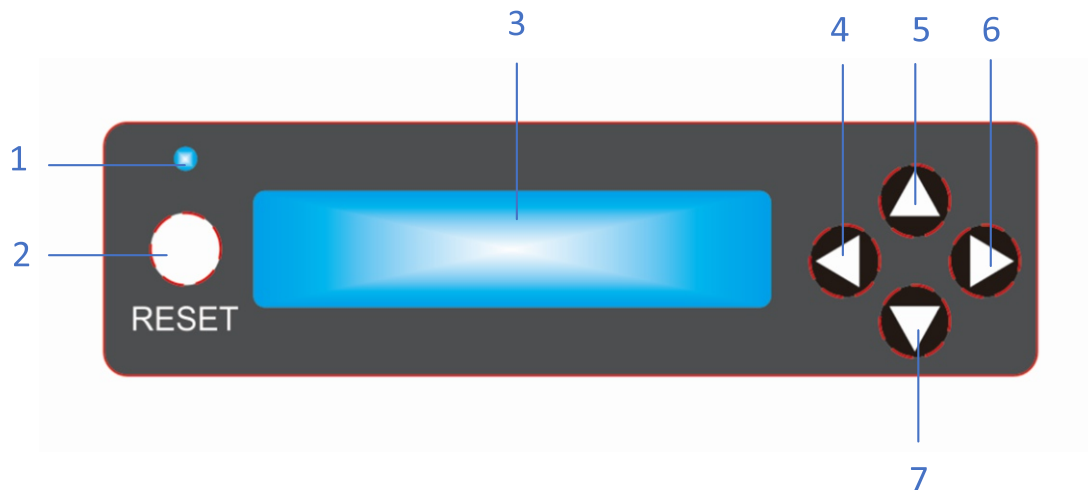
Sensor stroke size

Select the appropriate range according to the tolerance of the workpiece being measured.

The physical travel of the sensor has specifications such as 2mm, 5mm, and 10mm, among which the 10mm pre-travel is 0.5mm and the post-travel is 0.3mm.



5. Button Introduction



1. Status light: Displays the detection status;
2. RESET key: Sensor data reset/upper and lower tolerance and correction value settings and save/measurement function switching;
3. Data window: Displays the measured value or set value (in μm);
4. Left key: Set the digit to shift left/turn on the out-of-tolerance buzzer alarm;
5. Up key: Upper tolerance setting mode/tolerance increment, plus 1 each time;
6. Right key: Set the digit to shift right/turn off the out-of-tolerance buzzer alarm;
7. Down key: Lower tolerance setting mode/tolerance decrement, minus 1 each time.

6. Key combination application

1. Switching the measurement function:

In the real-time measurement mode, short press the RESET key, the status light flashes, and the extreme value measurement mode is entered. The data display window displays the real-time displacement value (including the correction value); short press the RESET key again to complete the extreme value measurement, the status light is always on, and the data window displays the extreme value (maximum value - minimum value); short press the RESET key again to exit the extreme value measurement mode, the status light is always on, and the real-time measurement mode is entered. The data window displays the real-time displacement value (including the correction value).

2. Tolerance/correction value setting:

Press and hold the ▲ up key to enter the upper tolerance setting mode. The data window displays the upper tolerance value. At this time, short press ▲ to increase the current data value, short press ▼ to decrease the current data value, short press ◀/▶ to move the data position to the left/right respectively, press the RESET key to save, and return to the real-time measurement mode after 3 seconds.

Press and hold the ▼ down key to enter the lower tolerance setting mode. The data window displays the lower tolerance value. At this time, short press ▲ to increase the current data value, short press ▼ to decrease the current data value, short press ◀/▶ to move the data position to the left/right respectively, press the RESET key to save, and return to the real-time measurement mode after 3 seconds.

Long press the right button ▶ to enter the correction value setting mode. The data window displays the correction value. At this time, short press ▲ to add 1 to the current data digit value, short press ▼ to subtract 1 from the current data digit value, short press ◀/▶ to move the data digit left/right respectively, press RESET to save, and return to real-time measurement mode after 3 seconds.

3. Buzzer on and off

In real-time measurement mode, press ◀ to turn on the buzzer function, and press ▶ to turn off the buzzer function. When the buzzer alarm is turned on, the status light is green and there is no buzzer within the tolerance range. Outside the tolerance range, the status light is red and there is a buzzer. Note: The buzzer alarm function needs to be turned on again after power failure (if necessary).

7. Lead Definition

1) RS-485 signal and pin description

| | |
|-----------|---|
| 1- White | RS-485+ (A) |
| 2- Blue | RS-485- (B) |
| 3- Red | Power positive (24V+) |
| 4- Black | Power negative (GND) |
| 5- Yellow | O1 (lower tolerance out-of-tolerance signal output) |
| 6- Green | O2 (upper tolerance out-of-tolerance signal output) |

2) Serial port settings

Baud rate: 9600 (factory default configuration)

Data bits: 8

Stop bits: 1

Parity check: None

8. MODBUS-RTU protocol

Modbus 485 application instructions:

1. Read the data of the channel collector

The host (PLC) sends 01 03 00 00 00 02 C4 0B

| | |
|-------|---|
| 01 | Slave communication module address (configurable) |
| 03 | Read register function code |
| 00 00 | Collector start address |
| 00 02 | Number of registers to be read |
| C4 0B | CRC check code |

Slave response data: 01 03 04 CE B5 45 74 E7 8A

| | |
|-------|---|
| 01 | Slave communication module address |
| 03 | Read register function code |
| 04 | Return the number of bytes of measured data |
| CE B5 | 32float Measured displacement value 0.1um |
| 45 74 | |
| E7 8A | CRC check code |

Data analysis: 4 bytes are the data of 1 channel. First, swap the high and low bits.

The actual data is: 45 74 CE B5. Converted into 32-bit float, it is: 3916.9um

2. Read data

0X03 Read holding register

| Address | Data | Remark |
|---------|---|------------------------------------|
| 0 | Channel 1, converted data 32-bit float high 16 bits | Float type converted data, unit um |
| 1 | Channel 1, converted data 32-bit float high 16 bits | |
| 50 | Channel 1, converted data 32-bit float high 16 bits | Float type converted data, unit V |
| 51 | Channel 1, converted data 32-bit float high 16 bits | |

3. 0x06 Write a holding register

| Address | Data | Remark |
|---------|-----------------|-----------------------------|
| 16 | Channel 1 clear | 1 = clear, 0 = no operation |

4. General configuration instruction set (RS-485 communication)

| AT command format | Normal feedback | Command meaning |
|-------------------|------------------------------------|--|
| AT+UCAL? | AT+UCAL=OK | Query fitting parameters: AT+UC0L=parameter value |
| AT+UCOL= | AT+UC0L=fitting parameter value | Modify fitting parameters |
| AT+UART? | AT+UART=1,115200, | Query station number and baud rate |
| AT+UART= | AT+UART=station number, baud rate, | Modify station number and baud rate |
| AT+UVER? | AT+UVER=1.0, | Query version number |