Submersible Jointmeter Sensor

91706150

This equipment should be installed, maintained, and operated by technically qualified personnel. Any errors or omissions in data, or the interpretation of data, are not the responsibility of Slope Indicator Company. The information herein is subject to change without notification.

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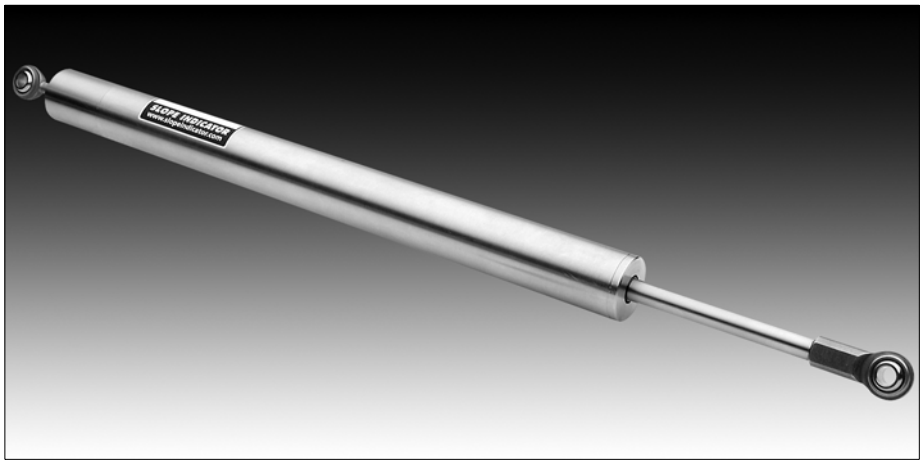
Overview



This displacement sensor is used to monitor movement at joints. The two swivel-equipped ends of the sensor are fixed to user-supplied mounting brackets on opposite sides of the joint. Opening or closing of the joint causes the shaft to extend or contract. A potentiometer inside the body of the sensor outputs a signal that is proportional to the movement of the shaft.

Taking Readings

DataMate MP Readout

These instructions tell how to read the strainmeter sensor using the DataMate MP's manual mode. Please refer to the DataMate MP manual for details of program mode.

1. Connect signal cable as shown in the table below.

2. Switch on. Press ✔ (Manual Mode).

3. Scroll through the list to find "Extensometer RO."

Press ↵ to excite the sensor and display a reading in %FS.

Connecting to Signal Cable

The table below shows how to connect signal cable from the strainmeter to the Bare Wire Adaptor or Universal Terminal Box. Do not use wiring shown in the DataMate MP manual.

Function	Lead Color	BWA
Signal	Blue	1
Excite+	Red	5
Remote Sense+	Green	6
Excite -	Yellow	7
Remote Sense -	Orange	8

Data Reduction

Potentiometer Readings

Each potentiometer has its own serial number and calibration sheet with unique values for sensitivity and zero offset.

1. Find the sensitivity and zero offset values on the calibration sheet.
2. Apply the values as shown below. Note the engineering unit that the coefficients produce (either inches or mm).The resulting reading is the position of the sensor shaft. A larger value indicates extension of the shaft.

$$\text{Reading}_{\text{Engineering Units}} = \frac{\text{Reading} - \text{Zero Offset}}{\text{Sensitivity}}$$

where Reading is the sensor reading in % Full Scale

Acceptance Tests

Introduction

The factory performs the tests below before sensors are shipped.

Isolation Test

1. Set multimeter to highest range.
2. Measure isolation of shield wire or body from conductors. Connect to shield wire or body, and then connect to each wire in turn.
3. Isolation should be greater than 20 Mega ohms.

Sensor Wiring with Shaft Collapsed

1. Set multimeter to 10 k ohm range.
2. Measure across red and blue wires. Reading should be approximately 10 k ohms (+/- 10%).
3. Measure across yellow and blue wires. Reading should be approximately 0 ohms.

Sensor Wiring, with Shaft Extended

1. Set multimeter to 10 k ohm range.
2. Measure across yellow and blue wires. Reading should be approximately 10 k ohms (+/- 10%).
3. Measure across red and blue wires. Reading should be approximately 0 ohm.

Sensor Function

1. Set multimeter to 10 k ohm range.
2. Push shaft all the way in.
3. Measure across yellow and blue wires. Extend shaft slowly. Reading should increase steadily from 0 ohms to approximately 10 k ohms when fully extended.

Excitation Lead Wiring

1. Set multimeter to lowest range. Test values will include the resistance of the 22 gauge wire in the signal cable , which is 5.27 ohms per 100 meters or 1.612 ohms per 100 feet (x 2 for a complete loop).
2. Measure across red and green wire. Reading should be near 0 ohm.
3. Measure across yellow and orange wires. Reading should be near 0 ohm.