ElastiSense DS Installation Guide

ElastiSense Sensors

ElastiSense DS sensors are based on electroactive polymer technology that changes capacitance in direct proportion to the strain applied to the sensor.

Operating Principle

The two ends of the sensor are anchored across a joint or crack. Expansion of the joint extends the sensor, increasing its capacitance. Contraction of the joint allows the sensor to contract, decreasing its capacitance. Internal circuitry outputs capacitance measurements to a datalogger where they are converted to engineering units.

ElastiSense DS-250, DS-100, and DS-50 displacement sensors

Installation

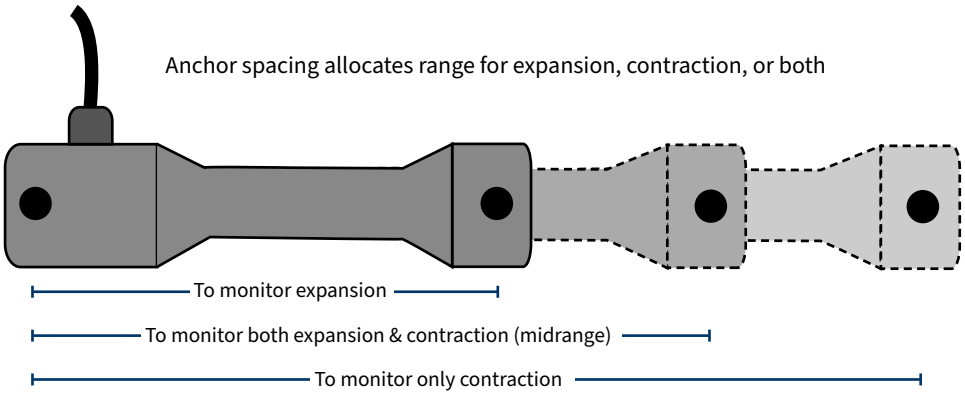
1. Choose locations for sensor and logger. Check that the sensor cable is long enough to reach from the sensor to the logger.

2. Mark locations for anchors. Spacing of anchors allocates the range available to monitor expansion, contraction, or both. See the anchor spacing table at right.

3. Drill holes a minimum of 30 mm (1.2 in) deep. M6 impact anchors typically require a 10 mm (0.4 in) diameter hole.

4. Install the anchors.

5. Install the sensor with washers on top and bottom. Tighten the screws loosely, check that the sensor is straight, then tighten fully.



Sensor	Expansion	Midrange	Contraction
DS-50	140mm (5.5 in)	165mm (6.5 in)	190 mm (7.5 in)
DS-100	225mm (8.9 in)	275 mm (10.8 in)	325 mm (12.8 in)
DS-250	455 mm (17.9 in)	580 mm (22.8 in)	705 mm (27.8 in)

Wiring

1. Route the cable to the node or datalogger.

2. Connect the black wire to GND (Power ground)

3. Connect the red wire to the power supply. The sensor requires 12V min, 24V max.

4. Connect the blue wire to AGND (Analog ground). It can be the same as the power ground.

5. Connect the white wire to an analog (current) input channel.

6. If the sensor is only powered ON during a single measurement, make sure that it is ON for a minimum of 0.5 seconds before each reading.

Color Codes for Sensor Cable	
Black	Ground
Red	Power Supply
White	Analog Output
Blue	Analog Output Ground
Yellow	Reserved
Green	Reserved