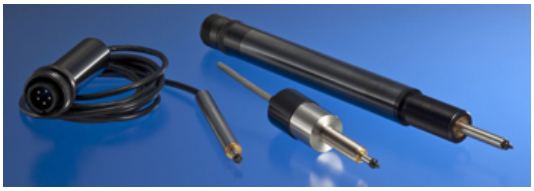


Deluxe Displacement Sensors

General Description

LVDT sensors are used for applications where a high level of sensitivity and accuracy is required. For applications requiring a more coarse measurement the Basic Displacement sensor offered by SMT is recommended.

Series 350 LVDT Transtek Displacement Sensor

DC Gaging LVDT - Spring loaded spindle with precision linear variable differential transformer. Designed for excellent linearity and high sensitivity. Typically used for stucco or masonry crack monitoring.

Series 353 LVDT Transtek Displacement Sensor

This LVDT can be used for example for crack monitoring of a building by measuring the relative movement of two building parts separated by a crack.

Features

Series 350-0010 Gaging LVDT Sensor

- Working range ±0.05 inch (1.27mm)
- Mechanical travel 0.14 inch (3.56mm)

Series 353-0000 Gaging LVDT Sensor

- Working range ±0.5 inch (12.7mm)
- Mechanical travel 1.25 inch (31.8mm)

- High sensitivity
- Non-linearity <5%
- Compatible with A3 and WiDAQ dataloggers.

Ordering Information	
Series 350 LVDT - High Resolution	DS-350
Series 353 LVDT - High Resolution	DS-353

Structure Monitoring Technology

Deluxe Displacement Sensor Datasheet

Model 3501 LVDT with Mounting Bracket

Series 350-0010 Electrical Characteristics	
Nominal FS Output (5V Input)	±1VDC
Linearity	±0.5%
Output Impedance	2500Ω
Resolution (with A3/WiDAQ)	0.00005” (0.00127mm)

Environmental	
Operating Temperature	-54° to 93°C

Mechanical	
Working Range	±0.05 inch (1.27mm)
Mechanical travel	0.14 inch (3.56mm)
Connector	MS3101A-14S-5P. Mates with MS3101A-14S-5S.

Specifications are subject to change without notice

Mounting

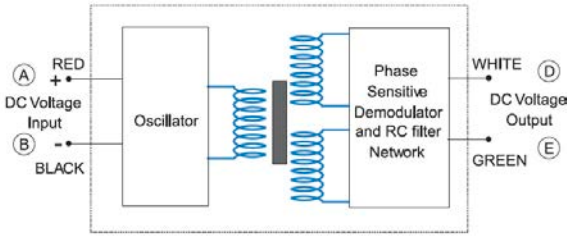
Example of mount secured to masonry. Used for monitoring crack expansion and contraction

IP54 rated enclosure or seal required to be placed over assembly.

Datalogger Connectivity

Connect to A3 or WiDAQ expansion board differential voltage input.

MS3101A-14S-5S cable required to interface to LVDT connector.

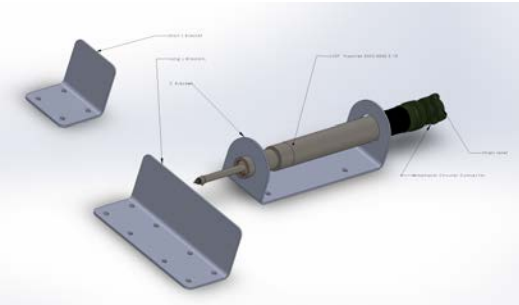


Inputs	350 Pin	Function
+	RED	Power
G	BLACK	Ground
V1+	WHITE	Voltage+
V1-	GREEN	Voltage-

- Polarity must be observed for proper function. Reversal will not damage the unit.
- For best accuracy, calibrate with designated A3 or WiDAQ.

SMT Research Ltd. – 158-628 East Kent Ave South, Vancouver, BC V5X 0B2 – Tel: 778.373.2070 – Fax: 204.474.7453
Website: www.smtresearch.ca Email: info@smtresearch.ca RS-1115 Rev C

Model 353 LVDT with Mounting Bracket



Series 353-0010 Electrical Characteristics	
Nominal FS Output (5V Input)	±3 VDC
Linearity	±0.5%
Output Impedance	5500Ω
Resolution (with A3 or WiDAQ)	0.00005” (0.00127mm)

Environmental	
Operating Temperature	-54° to 93°C

Mechanical	
Working Range	±0.5 inch (12.7mm)
Mechanical travel	1.25 inch (31.8mm)
Connector	MS3101A-14S-5P. Mates with MS3101A-14S-5S. Or use SMT supplied connector

Specifications are subject to change without notice

Mounting

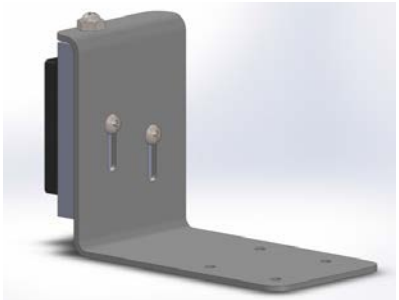
Custom brackets are designed to make it possible to position the LVDT probe in the effective linear range of movement. In this area the typical nonlinearity of the voltage and displacement is less than 0.5%.

Depending of the direction of the relative movement being observed there are various brackets needed. For a relative movement parallel to the wall, for example, a C-bracket is needed to attach the LVDT on one side.

The LVDT, which is quite long and heavy in this case, is attached at two points. The front one has lock nuts to keep it fixed. The second one at the back benefits stability by preventing stress on the device. Here, the device can still slide without much force.

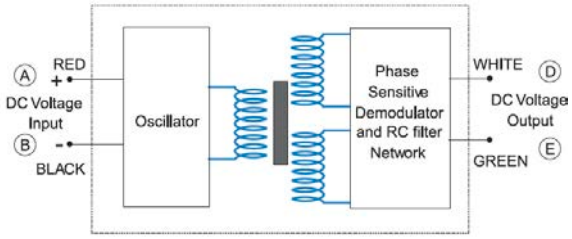
On the other side of the crack an L-shape bracket is attached. In some cases, a long L-bracket is required, e.g. when the movement of interest is not perpendicular to the crack.

For a relative movement perpendicular to the wall a Z-bracket is needed. Long slot as shown below provides the flexibility of vertical movement prior to tightening screws. A screw with lock nuts at the top of the bracket provides more stability to the clamping block which holds the LVDT.



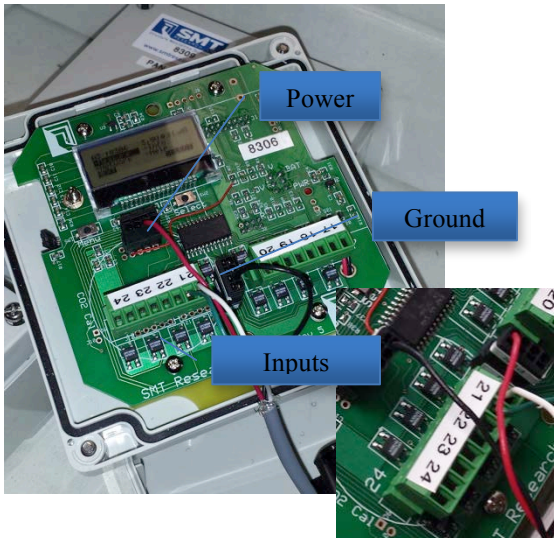
Datalogger Connectivity

Connect to A3 or WiDAQ expansion board differential voltage inputs.



Inputs	Cable	Function
+	RED	Power
G	BLACK	Ground
V1+	GREEN	Voltage+
V1-	WHITE	Voltage-

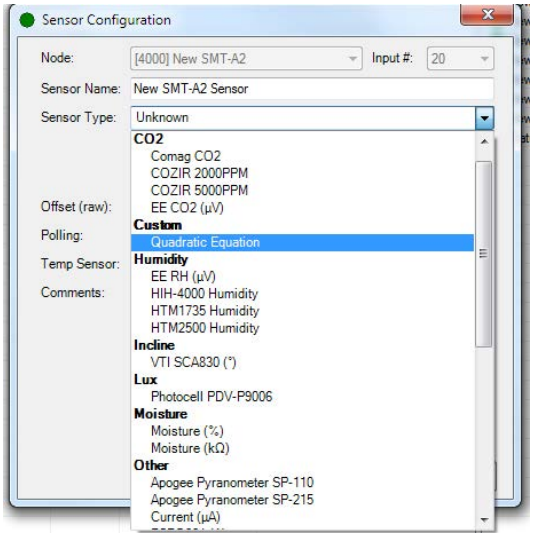
- Polarity must be observed for proper function. Reversal will not damage the unit.
- For best accuracy, calibrate with designated A3 or WiDAQ.



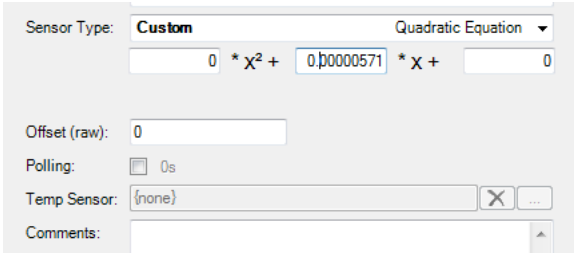
Connect LVDT to A3 as shown above

Gateway Configuration

Right click on the LVDT sensor and select *Configure*. Click on *Sensor Type* drop down menu and select *Quadratic Equation*:



Enter the value 0.00000571 [28.55mm(Max displacement) / 5V] as shown in the following figure:



Calibrate the LVDT

- Perform calibration **after** installation.
- Record at least 5 readings, right click on the sensor and select *Calibrate*.
- Highlight readings by contracting/ expanding the graph and select *Calibrate*.