

Instrument Datasheet

Wire Deformers

DESCRIPTION

Wire Deformometers are designed to monitor changes in the distance between two anchor points. Typical applications include monitoring cracks or displacements in civil structures.

Electrical Wire Deformeters are analog devices with either vibrating wire or potentiometer transducers.

A stainless steel wire connects the transducer to the opposing anchor.

The USB Wire Deformer is a digital device that records readings from a rotary potentiometer. A steel wire connects the device to the opposing anchor.

APPLICATIONS

- ✓ Monitoring rock movement in rockfalls or topple landslides
- ✓ Automatic monitoring of small structural joint
- ✓ Monitoring convergence or deformation of ancient walls in historical buildings

FEATURES

- ✓ Electrical deformeters are available with either vibrating wire or potentiometer transducers.
- ✓ USB deformer stores displacement and temperature data in its built-in data logger.

ELECTRICAL DEFORMETERS

The mounting plate holds the transducer at one end and a pulley at the other end. A stainless steel wire connects the transducer to the opposing anchor. The pulley allows the transducer and anchor to be mounted on different planes, even perpendicular surfaces, up to 10 m apart.

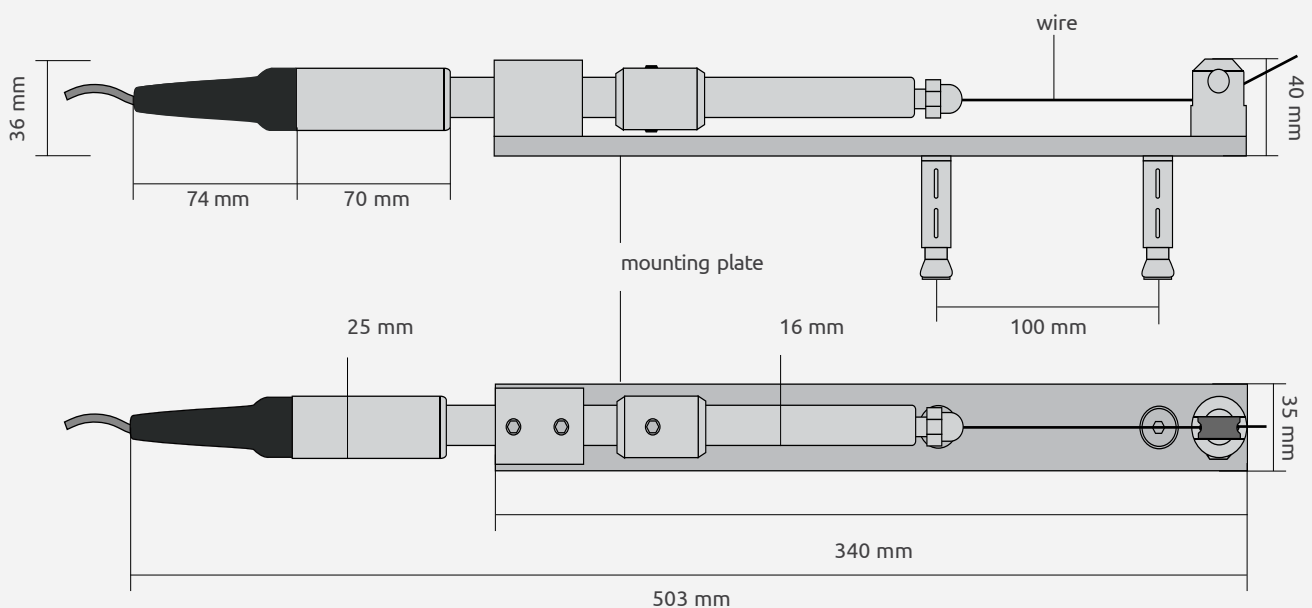
A spring in the transducer housing keep the steel wire in tension. To obtain better accuracy, we strongly recommend to perform a site-calibration procedure as suggested in the user manual.

PRODUCT CODES	D313F025VW	D313F050VW	D313FA2500	D313FA5000
Measuring range	25 mm (1")	50 mm (2")	25 mm (1")	50 mm (2")
Measurement principle	vibrating wire transducer with thermistor		linear potentiometer	
Gauge accuracy: Pol. MPE ⁽¹⁾	< ±0.50% FS	< ±0.30% FS	< ±0.30% FS	< ±0.20% FS
Signal output	frequency (VW), ohm (T)		4-20 mA (current loop)	
Power supply	-		12-24 V DC	
Gauge sensitivity ⁽²⁾	see calibration report			
Operating temperature range	- 20°C +80°C		- 20°C +60°C	
Gauge material and IP Class	stainless steel, IP68 up to 100 kPa (tested in a static condition, upper value on request)			
Wire characteristics	stainless steel, Ø 1 mm, linear thermal expansion $12.5 \times 10^{-6} / ^\circ\text{C} / \text{m}$			
Signal cable	0WE104K00ZH		0WE104K00ZH	
Max. distance to data logger	1000 m			

(1) MPE is the Maximum Permitted Error on the measuring range (FSR). In the Calibration Report, issued for the gauge only without wire, the accuracies are calculated using both linear regression and polynomial correction (\leq Pol. MPE)

(2) Sensitivity is a specific parameter different for every gauge. The sensitivity is calculated during gauge calibration test and inserted into the calibration report.

PHYSICAL FEATURES



USB WIRE DEFORMETER

USB wire deformer consists of a rotary potentiometer, a temperature sensor, and a data logger inside an IP65 aluminium housing.

Stored data are retrieved with a PC, using a miniUSB cable.

PRODUCT CODES

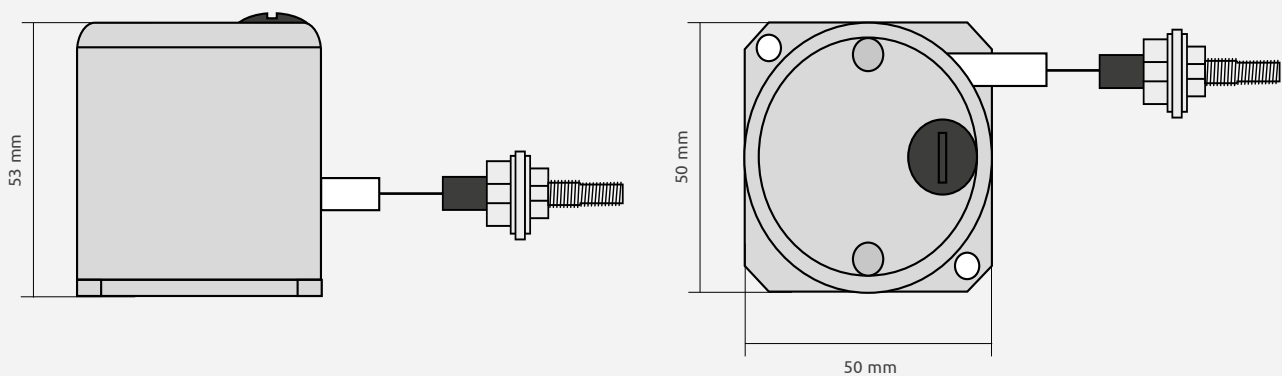
OD314FV8000

Technology	Rotary potentiometer with built-in temperature sensor
Range	80 mm (3")
Resolution	0.003 mm (0.0001")
Accuracy (Linearity+Hysteresis)	< $\pm 0.1\%$ FS
Temperature measuring range	from -20 to +80 °C
Temperature resolution	1°C

DATA LOGGER

A/D converter	15 bit
Storage capacity	> 51000 measurements
Acquisition time interval	programmable from 10 sec to 91 hours
Power supply	3V button battery (CR2032)
Battery life	4 years with 1 reading per hour
Communication interface	mini USB
Operating temperature range	-10 + 60°C
Casing dimensions and protection	50x50 mm base, 53 mm height, IP65

PHYSICAL FEATURES



ACCESSORIES AND SPARE PARTS

0WE102KEOZH 2-WIRE SIGNAL CABLE

2 wire 20 AWG electrical cable with internal Kevlar stress member and LSZH jacket. External diameter 7.7 mm, operating temperature from -30° up to +80°C.

0WE104K00ZH 4-WIRE SIGNAL CABLE

Electrical cable with 2 pairs of 22 AWG wire, with LSZH jacket. External diameter 7.4 mm, operating temperature from -30° up to +80°C.

WRC DATA SOFTWARE 0SWWRC10USB

WRC Data Software Management for logger setup, real-time readings, and data retrieval. PC connects to USB Deformometer via miniUSB cable.

EXAMPLES OF APPLICATION

Electrical deformeter installed on a rock fall



USB wire deformeter mounted on structural joint

