

A typical installation of a crimped TDR cable into a borehole to be filled with grout.



Portable Time Domain Reflectometer (TDR200)

	PRODUCT CATEGORY:
	INCLINOMETERS + TILT SENSORS

Metallic Time Domain Reflectometry

Metallic Time Domain Reflectometry (TDR) is a simple and economical way of detecting and interpreting rock and soil mass response to underground and surface mining using coaxial cables grouted in boreholes. TDR can be used effectively to locate rock and soil mass movements.

TDR involves the installation of a coaxial cable in a borehole filled with grout that matches existing soil or rock conditions. A TDR unit is employed to generate a voltage pulse along the cable and receive reflections. Reflections are generated by cable deformations, abrasions and severing. Crimps at known locations along the cable are used to provide depth datum.

As movement occurs, the reflections along the cable change as the cable deforms. By connecting the TDR200 to a PC through Type A Micro B USB cable, TDR reflections can be interpreted by software, thereby inferring location, type and rate of earth movement. TDR systems can be combined with data loggers and multiplexers to allow remote readings of multiple cables.

> APPLICATIONS

- Monitoring rock and soil movement.
- Monitoring subsidence above abandoned underground mines.
- High wall slope monitoring in open pit mines.
- Determination of cable fault location, i.e. distance to fault.

> FEATURES

- Economical installation and low data acquisition costs.
- Ability to monitor deformation along the entire length of the borehole.
- Can be used with RST's FlexDAQ Data Loggers, GeoViewer Software, and GeoExplorer.

> BENEFITS

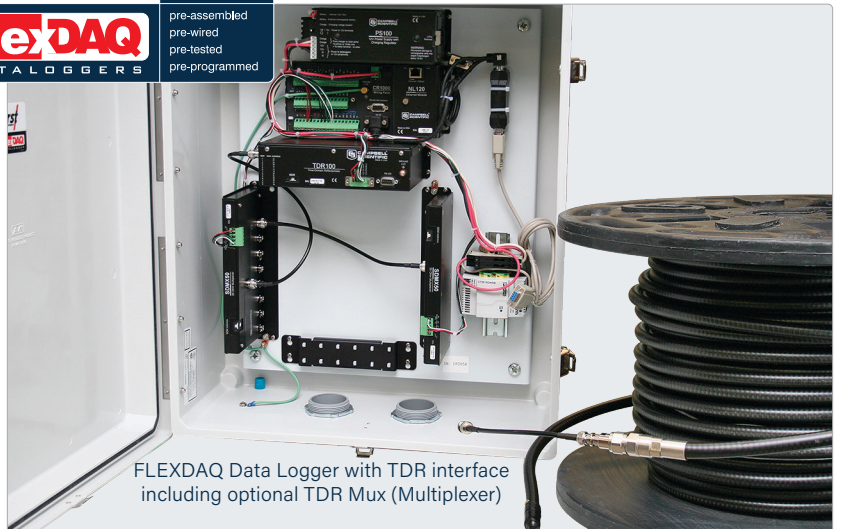
- | | |
|--------------------------|--------------------------------|
| ✓ Increase Safety | ✓ High Accuracy |
| ✓ Cost Effective | ✓ Increase Productivity |

WORKS WITH



READY TO RUN

- pre-assembled
- pre-wired
- pre-tested
- pre-programmed



FLEXDAQ Data Logger with TDR interface including optional TDR Mux (Multiplexer)

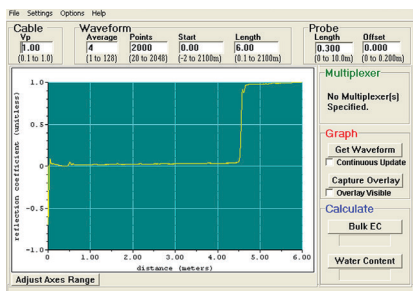
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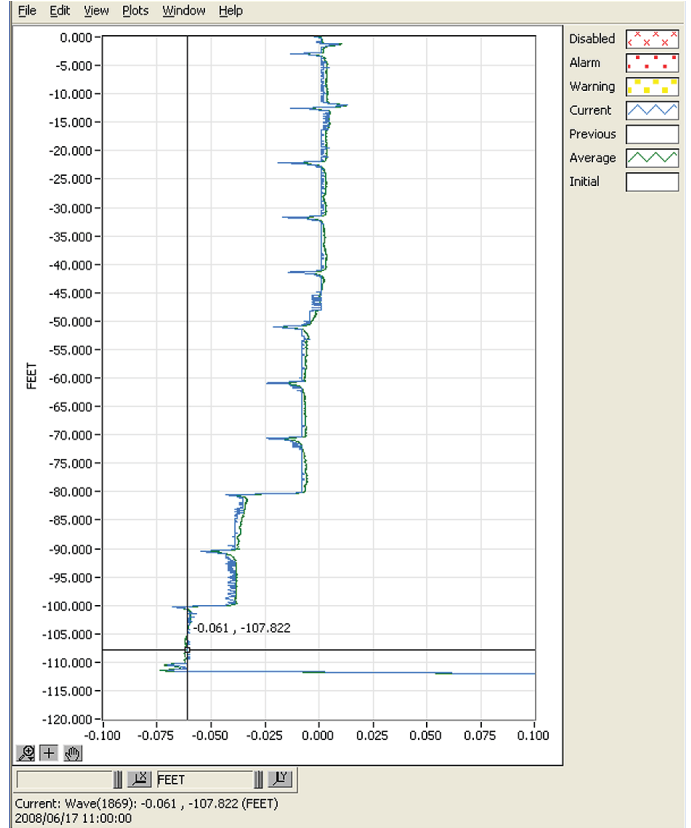
SPECIFICATIONS + ORDERING

SPECIFICATIONS	
ITEM	SPECIFICATION
Tensile Strength	113 kg
Maximum Tensile Force	1100 N (247 lb)
Maximum (Recommended) Clamp Spacing	0.6 / 1 m (2 / 3.25 ft)
Minimum Bending Radius, Single Bending	70 mm (3 in.)
Minimum Bending Radius, Repeated Bending	125 mm (5 in.)
Bending Moment	6.5 Nm (4.79 lb-ft)
Installation Temperature	- 40 to +60 °C (-40 to 140 °F)
Operation Temperature	- 50 to +85 °C (-58 to 185 °F)
Storage Temperature	- 70 to +85 °C (-94 to 185 °F)
Inner Conductor	Copper-Clad Aluminium Wire, 4.8 mm (0.19 in.)
Dielectric	Foam Polyethylene, 11.9 mm (0.47 in.)
Outer Conductor	Corrugated Copper, 13.8 mm (0.54 in.)
Jacket Material	Polyethylene, PE 15.8 mm (0.62 mm)
Weight	0.2 kg/m (0.14 lb/ft)
Characteristic Impedance	50 ± 1 Ω
Relative Propagation Velocity	88%
Capacitance	76 pF/m (23.2 pF/ft)
Inductance	0.19 μH/m (0.058 μH/ft)
Maximum Operating Frequency	8.8 GHz
Jacket Spark Test RMS	8000 V
Peak Power Rating	38 kQ
RF Peak Voltage Rating	1950 V
DC Resistance, Inner Conductor	1.57 Ω/km (0.45 Ω/1000ft)
DC Resistance, Outer Conductor	2.7 Ω/km (0.82 Ω/1000ft)

ORDERING	
ITEM	PART #
TDR Coaxial Cable with Connector Kit	EL810918
FLEXDAQ Data Logger (with TDR200)	Contact RST for details
Portable Time Domain Reflectometer	ELGL3000



TDR Software (above) is included with the FLEXDAQ or Portable versions of the TDR200.



Screenshots above and below showing TDR data in RST's GeoViewer Software (separate brochure at rstinstruments.com)

