

SLOPE INDICATOR

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Geotechnical and Structural Instrumentation -Volume VI



INCLINOMETERS



DIGITILT DATAMATE II READOUT

The Digitilt DataMate inclinometer readout is compatible with Digitilt inclinometer probes, spiral sensors, and portable tiltmeters. It shows the required depth for each reading and signals when the reading is stable. It also provides easy-to-use routines for validating and correcting readings. A convenient hand-switch permits efficient one-man surveys.

DataMate Manager software is included with the DataMate. This program transfers readings from the DataMate to a PC, generates simple graphs and reports, and provides advanced routines for bias-shift analysis, spiral analysis, and settlement correction.

The DataMate II is functionally compatible with the original DataMate, but provides significantly faster operation, memory for up to 320 surveys, and a USB port.

SPECIFICATIONS

Function: Displays and records readings from Digitilt inclinometer probes, spiral sensors, and portable tiltmeters. Works with metric and English-unit sensors.

Survey Type: 2-pass survey for inclinometer probes; 4-pass survey for spiral sensors or uniaxial probes; manual reading for tiltmeters.

Minimum Reading Interval: 0.5 m or 1 foot.

Maximum Intervals per Survey: 1000.

Memory Capacity: 320 surveys with 100 lines of data each, 160 installation headers.

Operating Time: 16 hours.

Temperature Range: -20 to 50°C (-4 to 122°F).

PART NUMBER

Digitilt DataMate II Readout..... 50310900

DIGITILT INCLINOMETER PROBE

The Digitilt inclinometer probe measures tilt in vertical inclinometer casing. Its twin, force-balanced servo-accelerometers, designed and manufactured by Slope Indicator, are known for their durability, high precision, and rapid response. Readings are obtained with the Digitilt DataMate readout.

The complete specifications for inclinometer system accuracy and technical notes on other inclinometer issues are available at the Slope Indicator web site.

SPECIFICATIONS, METRIC PROBE

Sensor Type: Digitilt accelerometer.

Wheel Base: 500 mm.

Range: ±53° from vertical.

Resolution: 0.02 mm per 500 mm interval.

Repeatability: ±0.01% FS.

System Accuracy: ±6 mm per 50 accumulated readings. Higher accuracy is easily achieved using correction routines provided in DigiPro data reduction software.

Temperature Range: -20 to 50°C.

Size: 26 x 650 mm.

SPECIFICATIONS, ENGLISH PROBE

Sensor Type: Digitilt accelerometer.

Wheel Base: 24".

Range: ±35° from vertical.

Resolution: 0.0012" per 24" interval.

Repeatability: ±0.01% FS.

System Accuracy: ±0.3" per 50 accumulated readings. Higher accuracy is easily achieved using correction routines provided in DigiPro data reduction software.

Temperature Range: -4 to 122°F.

Size: 1 x 30".

PART NUMBERS

Digitilt Probe, Metric 50302510

Digitilt Probe, English 50302500

DIGITILT CONTROL CABLE

Digitilt control cable is used to control the depth of the inclinometer probe. Durable and easy to handle, the cable provides excellent dimensional stability, stays flexible in cold weather, and resists chemicals and abrasion.

SPECIFICATIONS

Metric Graduations: Yellow marks at 0.5 m intervals, red marks at 1 m intervals, and numerics at 5 m intervals.

English Graduations: Yellow marks at 2-foot intervals, red marks and numerics at 10 foot intervals.

Construction: Steel strain wire core, six conductors, multiple binder layers, embedded torsion braid, and Polyurethane cable jacket and depth marks. Cable diameter is 10 mm (0.4 inch).

PART NUMBERS

Control Cable, 30 m 50601030

Control Cable, 50 m 50601050

Control Cable, 100 m 50601100

Control Cable, 100' 50601002

Control Cable, 150' 50601003

Control Cable, 300' 50601004

Cables are also available in custom lengths.

PULLEY ASSEMBLY

The pulley assembly is clamped to the top of the inclinometer casing. It helps the operator maintain consistent depth control and also protects the control cable from abrasion.

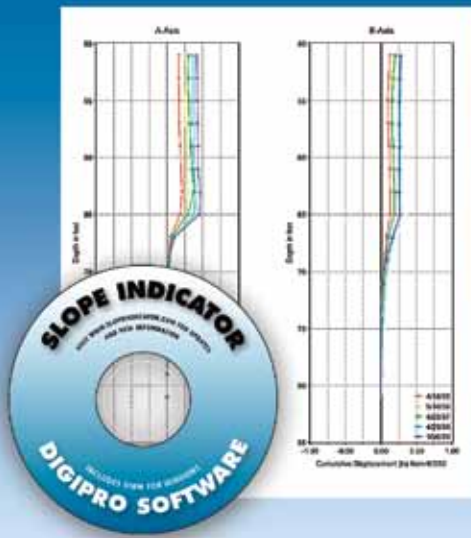


PART NUMBERS

Pulley for 48 and 70 mm casing 51104604

Pulley for 70 and 85 mm casing 51104606

INCLINOMETERS



DIGIPRO FOR WINDOWS

DigiPro software processes and plots data recorded by the Digitilt DataMate readout. It generates high-resolution graphs and stores graph parameters for reuse.

The program also provides correction routines and diagnostic graphs that can improve accuracy and eliminate hours of spreadsheet work.

SPECIFICATIONS

Standard Graphs: Incremental displacement, cumulative displacement, and time displacement plots.

Diagnostic Graphs: Incremental deviation, cumulative deviation, and checksum plots.

Correction Routines: Casing orientation, sensor bias-shift, and sensor rotation. Also processes settlement data and spiral data generated by the DataMate Manager program.

Distribution: Software licenses are available for 1 user, 3 users (standard), and site license. A full-featured trial version of DigiPro can be downloaded from Slope Indicator's web site.

PART NUMBERS

DigiPro for Windows, 1-user	50310001
DigiPro for Windows, 3-user	50310000
DigiPro for Windows, Site	50310002

CABLE REELS

The slip-ring cable reel (right) allows the readout to remain connected while the reel is operated. The storage reel, not shown, keeps cable neat when not in use. Both types of reel have large diameter hubs to prevent cable damage.

PART NUMBERS

Slip-Ring Reel for 200 m (650') cable.....	50503100
Slip-Ring Reel for 300 m (1000') cable	50503300
Storage Reel for 30 m (100') cable.....	50502030
Storage Reel for 70 m (230') cable.....	50502050
Storage Reel for 110 m (360') cable	50502110

QC INCLINOMETER CASING

QC casing is Slope Indicator's most popular style of casing. It offers precision grooves, self-sealing flush joints, and snap-together convenience.

Assembly: Casing sections have built-in couplings that snap together. O-rings ensure that the joint is grout proof. There is no need for solvent cement or tape.

PART NUMBERS 85mm · 3.34" CASING

10' (3.05 m) Section	51150310
5' (1.52 m) Section.....	51150311
Top Cap	51100500
Bottom Cap.....	51150330
Heavy-Duty Bottom Cap.....	51100520
Grout Valve	51100830
Telescoping Section	51150320

PART NUMBERS 70mm · 2.75" CASING

10' (3.05 m) Section	51150210
5' (1.52 m) Section.....	51150211
Top Cap	51101500
Bottom Cap.....	51150230
Heavy-Duty Bottom Cap.....	51101520
Grout Valve	51100820
Telescoping Section	51150220



STANDARD CASING

Slope Indicator's standard casing is widely considered to be the strongest, most reliable casing available. Offered in three diameters, standard casing features precision grooves, flush joints, and strong, injection-molded couplings that provide superior resistance to twisting and bending.

Assembly: Casing sections and couplings are glued together, riveted, and then sealed with mastic and tape.

PART NUMBERS 85mm · 3.34" CASING

10' (3.05 m) Section	51100100
5' (1.52 m) Section.....	51100105
Coupling	51100200
Cap.....	51100500
Heavy-Duty Bottom Cap.....	51100520
Grout Valve	51100830
Telescoping Section	51106400
Pop Rivet AD44H	51103301

PART NUMBERS 70mm · 2.75" CASING

10' (3.05 m) Section	51101100
5' (1.52 m) Section.....	51101105
Coupling	51101200
Cap.....	51101500
Heavy-Duty Bottom Cap.....	51101520
Grout Valve	51100820
Telescoping Section	51107400
Pop Rivet AD42H	51003303

PART NUMBERS 48mm · 1.9" CASING

5' (1.52 m) Section, Self-Coupling.....	51102305
Cap.....	51102500
Grout Valve.....	51104000



INCLINOMETERS

CPI CASING

CPI casing features precision grooves, self-sealing couplings, and rapid assembly. Its oversize, injection-molded couplings can withstand twisting and bending. CPI casing can be used in weather that is too cold for snap or glue couplings. It is also suitable for temporary installations that require repeated assembly and disassembly.

Assembly: The coupling is pressed onto the casing section and a nylon shear wire is inserted to lock the joint. An O-ring inside the coupling makes the joint grout proof.

PART NUMBERS 85mm · 3.34" CASING

10' (3.05 m) Section	57500100
5' (1.52 m) Section.....	57500105
Coupling.....	57500200
Heavy-Duty Bottom Cap.....	51100520
Grout Valve	51100830
Telescoping Section	57506400

PART NUMBERS 70mm · 2.75" CASING

10' (3.05 m) Section	57501100
5' (1.52 m) Section.....	57501105
Coupling.....	57501200
Heavy-Duty Bottom Cap.....	51101520
Grout Valve	51100820
Telescoping Section	57507400

SHEAR WIRE CASING

Shear Wire casing is a cold-weather alternative to QC casing. It provides precision grooves, self-sealing flush joints, and rapid assembly. Shear Wire casing can be disassembled, but is not designed for repeated disassembly.

Assembly: Casing sections have integral couplings. Sections are pressed together and a nylon shear wire is inserted to lock the joint. An O-ring makes the joint grout proof.

PART NUMBERS 85mm · 3.34" CASING

10' (3.05 m) Section	51160310
5' (1.52 m) Section.....	51160311
Top Cap	51100500
Bottom Cap.....	51160330
Heavy-Duty Bottom Cap.....	51100520
Grout Valve	51100830
Telescoping Section	51160320

PART NUMBERS 70mm · 2.75" CASING

10' (3.05 m) Section	51160210
5' (1.52 m) Section.....	51160211
Top Cap	51101500
Bottom Cap.....	51160230
Heavy-Duty Bottom Cap.....	51101520
Grout Valve	51100820
Telescoping Section	51160220

EPIC CASING

EPIC casing can be cut and coupled anywhere along its length, making it easy to extend and easy to repair. Its strong, oversize couplings withstand twisting and bending.

Assembly: Casing sections and couplings are glued together, riveted, and sealed with mastic and tape.

PART NUMBERS 70mm · 2.75" CASING

10' (3.05 m) Section	51111100
Coupling.....	51111200
Cap.....	51111500
Heavy-Duty Bottom Cap.....	51101520
Grout Valve	51100820
Telescoping Coupling.....	51111400
Pop Rivet AD46H	51003310

CASING ANCHORS

The casing anchor is installed in place of the bottom cap. Activated before the borehole is grouted, the anchor prevents the casing from floating upwards. The casing anchor can also be supplied with a grout valve.

PART NUMBERS

Anchor for 85 mm · 3.34" Casing.....	51104385
Anchor for 70 mm · 2.75" Casing.....	51104370
Anchor + Grout Valve, 85 mm Casing.....	51104485
Anchor + Grout Valve, 70 mm Casing.....	51104470

GROUT MIXES FOR INCLINOMETERS

HARD & MEDIUM SOILS

Portland Cement	94 lb · 40 kg (1 bag)	1
Water	30 gal · 100 ℓ	2.5
Bentonite	25 lb · 12 kg	0.3

SOFT SOILS

Portland Cement	94 lb · 40 kg (1 bag)	1
Water	75 gal · 264 ℓ	6.6
Bentonite	39 lb · 16 kg	0.4

Use these mixtures as a starting point. Mix water and cement first, so you can control the strength of the grout. Then add bentonite as needed until the mixture has the consistency of heavy cream. The amount of bentonite needed varies with water type, temperature, and agitation. The 28-day strength of the hard/medium mix is about 100 psi, and the strength of the soft mix is about 4 psi.



IN-PLACE INCLINOMETERS



IPI SENSORS

In-place inclinometer sensors are used with data loggers to provide continuous monitoring of critical locations. The sensors, which are available in vertical or horizontal versions, are linked together to span the zones where deformation may occur. A separate signal cable is required for each sensor.

SPECIFICATIONS

Sensor Type: MEMS.

Range: $\pm 10^\circ$.

Resolution: 9 arc seconds (0.04 mm/m).

Repeatability: ± 22 arc sec (± 0.1 mm/m).

Temperature Range: -20 to 70°C .

Maximum Gauge Length: 3 meters.

Casing Required: 70 mm or 85 mm.

PART NUMBERS

Vertical IPI Sensor, Uniaxial..... 57804221
 Vertical IPI Sensor, Biaxial 57804222
 Horizontal IPI Sensor, Uniaxial..... 56804123
 Signal Cable..... 50613527

HORIZONTAL DIGITILT PROBE

The horizontal inclinometer probe (below) is used in horizontal inclinometer casing to provide settlement profiles. Specifications and gauge lengths are similar to those of the vertical Digitilt probe. An adaptor, supplied with the probe, allows wheels to be set for operation in either 70 mm or 85 mm casing.

PART NUMBERS

Horizontal Probe, Metric..... 50303510
 Horizontal Probe, English 50303500



SERIAL IPI SENSORS

Serial IPI sensors include signal cable and connectors to join each sensor to the next, effectively reducing the number of signal cables to just one. This makes installation easier and simplifies wiring to the data logger. The signal cable accommodate gauge lengths to three meters and are supplied with heavy-duty, waterproof connectors that can withstand many connects and disconnects. Sensors are easily added or removed from the serial chain.

SPECIFICATIONS

Sensor Type: MEMS with serial circuitry.

Range: $\pm 10^\circ$.

Resolution: 9 arc seconds (0.04 mm/m).

Repeatability: ± 22 arc sec (± 0.1 mm/m).

Temperature Range: -20 to 70°C .

Maximum Gauge Length: 3 meters.

Connector: Waterproof to 700 bar (10,000 psi).

Casing Required: 70 mm or 85 mm.

PART NUMBERS

Vertical IPI Sensor, Uniaxial 57804621L
 Vertical IPI Sensor, Biaxial 57804622L
 Horizontal IPI Sensor, Uniaxial 57804623L

SPIRAL SENSOR

The spiral sensor (not shown) measures the twist of installed casing and is recommended for deep installations. Readings are taken with the Digitilt DataMate. The spiral sensor operates in both 70 mm • 2.75" casing and 85 mm • 3.34" casing.

PART NUMBERS

Spiral Sensor, Metric..... 50900115
 Spiral Sensor, English 50900100

M-LOGGER FOR MEMS SENSORS

M-Loggers are used to monitor Slope Indicator MEMS sensors. They are also compatible with EL-SC sensors. Simple to use and economical to deploy, M-Loggers can be placed close to sensors, enhancing reliability and keeping cable costs down. Each M-Logger can monitor up to 16 sensors.

The M-Logger can communicate directly to a PC, to a radio or cellular modem via cable to the RS232 port of the M-Logger. It may be configured to send data to Atlas via an IP Modem.

SPECIFICATIONS

Function: The M-Logger is a data logger for Slope Indicator MEMS and EL SC sensors.

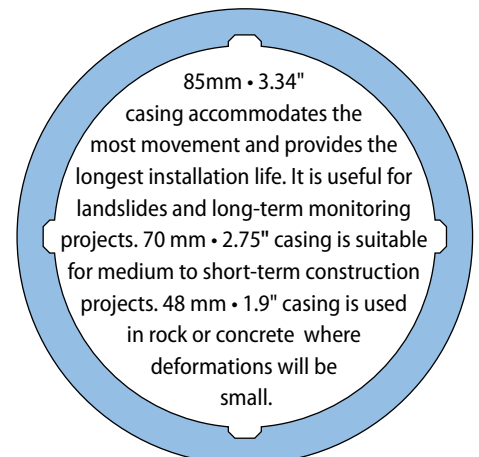
Memory: Non-volatile flash memory holds 7,900 records for each sensor. Each record includes time and date, A and B axis tilt readings, and temperature reading.

Power In: Nominal 12V dc (8 to 15 V dc).

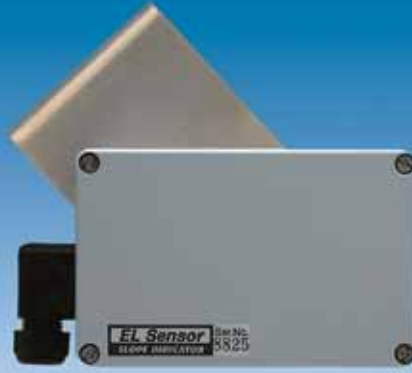
Environmental: Temperature rated for -20 to $+50^\circ\text{C}$. Logger normally housed in enclosure.

PART NUMBERS

M-Logger..... 58810100



TILTMETERS



PORTABLE TILTMETER

The portable tiltmeter is used with tilt plates to monitor changes in the inclination of a structure. The economical tilt plates can be mounted horizontally or vertically on the structure. The tiltmeter is carried from plate to plate to obtain measurements. The tiltmeter employs Slope Indicator's reliable Digitilt accelerometer. Readings are obtained with the Digitilt DataMate readout.

SPECIFICATIONS, METRIC TILTMETER

Sensor type: Digitilt accelerometer.
Range: $\pm 53^\circ$.
Resolution: 8 arc seconds.
System Repeatability: ± 50 arc seconds.
Temperature Range: -20 to $+50^\circ\text{C}$.

SPECIFICATIONS, ENGLISH TILTMETER

Sensor type: Digitilt accelerometer.
Range: $\pm 35^\circ$.
Resolution: 10 arc seconds.
System Repeatability: ± 50 arc seconds.
Temperature Range: -4 to $+122^\circ\text{F}$.

SPECIFICATIONS, TILT PLATE

Size: 140 mm (5.5") diameter.
Material: Bronze.
Mounting: Epoxy glue or screws.

PART NUMBERS

Metric Tiltmeter..... 50304410
 English Tiltmeter..... 50304400
 Tilt Plate 50307300
 Tilt Plate Cover..... 50307350
 Epoxy Compound 50305500

EL TILT SENSOR

The EL tilt sensor is used to monitor changes in the inclination of a structure. It features a high-resolution, narrow-angle sensor and a single-anchor mounting bracket that rotates 360 degrees to permit installation on a ceiling, floor, or wall. Readings are obtained with an M-Logger, other data logger or the EL Data Recorder.

SPECIFICATIONS

Sensor type: Uniaxial electrolytic tilt sensor works directly with Campbell Scientific data loggers. The signal conditioned SC version provides compatibility with other data loggers and with the EL Data Recorder.
Range: ± 40 arc minutes.
Resolution: 1 arc second.
Repeatability: ± 3 arc seconds.
Temperature Range: -20 to 50°C .
Size: 125 x 80 x 59 mm (5 x 3.2 x 2.3").

PART NUMBERS

EL Tiltmeter..... 56802100
 EL Tiltmeter SC..... 56802120
 Rotating L-Bracket..... 56801350K
 Expansion Anchor..... 5780312
 Groutable Anchor..... 57803130K
 Signal Cable..... 50612804
 Signal Cable for SC Version 50613527

EL NULLING DEVICE

When a narrow-angle EL tiltmeter or EL beam sensor is installed, it should be adjusted so that its output is null or near zero. The EL nulling device makes this task easy.

Red, yellow, and green LEDs guide the user in adjusting the sensor. When the output of the sensor is null, the green LED is illuminated.

The EL nulling device is compatible with both standard and signal-conditioned sensors.

PART NUMBER

EL Nulling Device..... 56803300

MEMS MONOPOD TILTMETER

The MEMS tiltmeter measures tilt over a range of $\pm 10^\circ$ from vertical and is available in uniaxial and biaxial versions. Signal Conditioning makes the tiltmeter compatible with most data loggers.

The tiltmeter is fixed to the structure via an angle bracket that can be welded to steel or bolted to an anchor set into concrete or rock. Readings are obtained with a data logger or the EL Data Recorder.

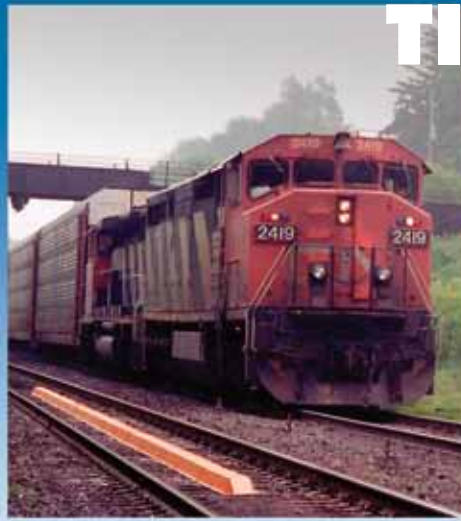
SPECIFICATIONS

Sensor Type: MEMS (Micro Electro-Mechanical Systems) sensor for tilt readings and a 3K Ohm thermistor for temperature readings.
Range: $\pm 10^\circ$.
Resolution: 9 arc seconds.
Repeatability: ± 22 arc seconds.
Size: 32 x 190 mm (1.25 x 7.5").

PART NUMBERS

MEMS Tiltmeter, Uniaxial..... 57803101
 MEMS Tiltmeter, Biaxial 57803102
 Signal Cable..... 50613527





EL BEAM SENSOR

The EL tilt sensor may be configured as a beam sensor with the addition of an optional bracket and beam. The resulting EL beam sensor is used to monitor changes in the inclination of a structure. When linked end to end, beam sensors can be used to monitor differential movements. The resulting data provides both profiles of deformation and absolute displacement data. The horizontal beam sensor configuration monitors settlement and heave. Readings are obtained with a data logger and then retrieved and forwarded to the web-based Atlas Monitoring system for automated processing.

The M-Logger can monitor one multiplexer with 16 EL-SC sensors, or one EL-SC sensor connected directly.

SPECIFICATIONS

Sensor type: Uniaxial electrolytic tilt sensor compatible with Campbell Scientific data loggers. The signal conditioned SC version provides compatibility with other data loggers and with the EL Data Recorder.

Range: ± 40 arc minutes.

Resolution: 1 arc sec (0.005 mm/m).

Repeatability: ± 3 arc sec (± 0.015 mm/m).

Temperature Range: -20 to 50° C.

PART NUMBERS

EL Tilt Sensor	56802100
EL Tilt Sensor SC	56802120
Omni Bracket	56801355K
1 meter Beam	56801612
2 meter Beam	56801614
3 meter Beam	56801616
Spare End-Bracket	56801815
Signal Cable	50612804
Signal Cable for SC Version.....	50613527

TRACK MONITORING

Track monitoring systems help maintain railroad safety by monitoring settlement and twist. The systems are installed on railroad tracks that cross landslides or washout areas. They are also installed on tracks affected by nearby construction activities. Readings are obtained with a Campbell Scientific data logger and then processed and displayed on a PC.

SPECIFICATIONS, SETTLEMENT SENSOR

Sensor type: Tilt sensor.

Range: $\pm 10^\circ$.

Resolution: 9 arc sec (0.04 mm/m).

Repeatability: ± 22 arc sec (± 0.1 mm/m).

Temperature Range: -20 to 70° C.

SPECIFICATIONS, TWIST SENSOR

Sensor type: Tilt sensor.

Range: $\pm 10^\circ$.

Resolution: 9 arc sec (0.04 mm/m).

Repeatability: ± 22 arc sec (± 0.1 mm/m).

Temperature Range: -20 to 70° C.

PART NUMBERS

Track Settlement Sensor	96806350
Track Twist Sensor	96806450
Stainless Tubing, 3 m (10')	16804250
End-Anchor.....	96806351
Signal Cable.....	50613527

BASSETT CONVERGENCE SYSTEM

The BCS provides continuous monitoring of a tunnel section. The systems are typically installed at critical locations in mass transit tunnels to monitor for potential damage from nearby construction activities.

The BCS easily accommodates normal tunnel traffic, and tolerates vibration, temperature changes, and electromagnetic emissions. Readings are obtained with a Campbell Scientific data logger and are then processed and displayed with BCSWin software.

SPECIFICATION, SYSTEM ACCURACY

Typical accuracy of a seven-point system with a 10.5 m (35') perimeter is ± 0.5 mm (± 0.02 ").

SPECIFICATIONS, SHORT ARM SENSOR

Sensor type: Uniaxial tilt sensor.

Range: $\pm 10^\circ$.

Resolution: 9 arc seconds.

Linearity: 0.3 mm/m at 20° C.

Temperature Range: -20 to 70° C.

SPECIFICATIONS, LONG ARM SENSOR

Sensor type: Uniaxial tilt sensor.

Range: $\pm 2^\circ$.

Resolution: 3.6 arc seconds.

Linearity: 0.1 mm/m at 20° C.

Temperature Range: -20 to 70° C.



Special beam sensor configuration with integral EL sensor. Upon request only.

PIEZOMETERS



VW PIEZOMETER

The VW piezometer is used to monitor pore-water pressure. Its high sensitivity allows it to be directly grouted in, eliminating the need for a sand filter zone and a bentonite seal. This greatly simplifies same-hole installation of multiple piezometers or piezometers with inclinometer casing. Readings are obtained with a VW readout or data logger.

Information about the grout-in method of installation is available at the Slope Indicator web site: www.slopeindicator.com.

SPECIFICATIONS

Sensor Type: Vibrating wire.

Resolution: 0.025% FS.

Accuracy: ±0.1% FS for 3.5 and 7 bar sensors, ±0.3% FS for 17 and 35 bar sensors.

Temperature Range: -20 to 80° C.

Size: 19 x 197 mm (0.75 x 7.75").

Cable: 4-wire, shielded, polyurethane jacket.

PART NUMBERS

0.7 bar (10psi) piezometer	52611610
1.8 bar (25psi) piezometer	52611625
3.5 bar • 50 psi piezometer.....	52611020
7 bar • 100 psi piezometer.....	52611030
17 bar • 250 psi piezometer	52611040
35 bar • 500 psi piezometer	52611050
Signal Cable.....	50613524

PIEZOMETERS WITH CABLE

3.5 bar • 50 psi piezometers

Piezometer with 15 m • 50' cable..... 52611028

Piezometer with 30 m • 100' cable 52611024

Piezometer with 45 m • 150' cable 52611027

Piezometer with 60 m • 200' cable 52611026

7 bar • 100 psi piezometers

Piezometer with 30 m • 100' cable 52611033

Piezometer with 45 m • 150' cable 52611034

Piezometer with 60 m • 200' cable 52611035

Piezometer with 90 m • 300' cable 52611036

PUSH-IN VW PIEZOMETER

The push-in VW piezometer is pushed into soft clays to monitor pore-water pressure. The top of the piezometer is threaded to accept a drill-rod adaptor. Readings are obtained with a VW readout or data logger.

PART NUMBERS

3.5 bar • 50 psi piezometer.....	52621020
7 bar • 100 psi piezometer.....	52621030
17 bar • 250 psi piezometer	52621040
35 bar • 500 psi piezometer	52621050
Signal Cable.....	50613524

HEAVY-DUTY VW PIEZOMETERS

This piezometer features a strong double wall housing and is normally supplied with armored signal cable.

PART NUMBERS

3.5 bar (50 psi) Piezometer.....	52610520
7 bar (100 psi) Piezometer.....	52610530
17 bar (250 psi) Piezometer.....	52610540
35 bar (500 psi) Piezometer.....	52610550
Signal Cable, Armored.....	50613586

VENTED VW PIEZOMETER

The vented VW piezometer is used to monitor changes in water levels. It features a large diameter vent tube for quick response to changes in atmospheric pressure and a large-capacity, low-maintenance desiccant chamber that keeps the vent tube dry for three to six months.

SPECIFICATIONS

Sensor Type: Vibrating wire.

Resolution: 0.025% FS.

Calibration Accuracy: ±0.1% FS.

Temperature Range: -20 to 80° C.

Size: 29 x 191 mm (1.25 x 7.5").

Cable: 4-wire, shielded, with 10 mm (0.25") vent tube, bundled in polyurethane jacket.

PART NUMBERS

1.5 bar • 20 psi piezometer.....	52612402
Desiccant Chamber	52612495
Vented Signal Cable	50614410

CONVERSION FACTORS FOR UNITS OF PRESSURE

bar	kPa	psi	m H ₂ O	ft H ₂ O	atm	millibar	inHg
1	100	14.504	10.197	33.456	0.98692	1000	29.529
0.01	1	0.14504	0.10197	0.33455	0.0098692	10	0.2953
0.068947	6.8947	1	0.70377	2.3089	0.068046	68.948	2.036
0.098068	9.8068	1.4223	1	3.2808	0.096788	97.068	2.8959
0.029891	2.9891	0.43353	0.3048	1	0.0295	29.891	0.88267
1.0133	101.33	14.696	10.332	33.899	1	1013.3	29.921
0.001	0.1	0.014504	0.010197	0.033455	0.00098692	1	0.029529
0.033864	3.3864	0.49115	0.34566	1.1329	0.033421	33.864	1

Example: To convert millibars to psi, find the 1 in the millibar column. The 1 marks the row that contains multipliers to convert millibars to other units. Follow the row to the psi column. The multiplier is 0.014504. Thus you would multiply the millibar value by 0.014504 to convert it to psi. Factors for head of water are derived from water at 4 °C (39.2 °F).

PIEZOMETERS



PNEUMATIC PIEZOMETER

The pneumatic piezometer is used to monitor pore-water pressure. It is an economical, non-electric alternative to the VW piezometer and is read with a pneumatic indicator.

SPECIFICATIONS

- Sensor Type:** Pneumatic.
- Range:** 12 bar • 180 psi.
- Resolution:** 0.001 bar, 0.01 psi when digital gauge is used.
- Accuracy:** Depends on pressure gauge.
- Repeatability:** ±0.25% FS.
- Size:** 25.4 x 76 mm (1 x 3").

PART NUMBERS

Pneumatic Piezometer	51417800
Twin Tubing.....	51416900
Quick Connector.....	51407302
Piezometer with 15m • 50' tubing.....	51417801
Piezometer with 30m • 100' tubing...	51417802
Piezometer with 45m • 150' tubing...	51417803
Piezometer with 60m • 200' tubing...	51417804



MULTI-LEVEL VW PIEZOMETER

Multi-level piezometers (below) are used to monitor pore-water pressure at multiple zones in a borehole. VW piezometers, supplied in multi-level housings, are assembled in-line with PVC pipe and installed downhole. The pipe ensures that the piezometers are placed at precise depths and is also used to deliver the bentonite-cement grout backfill. When the grout cures, each piezometer is isolated from the zones above and below, but remains highly responsive to changes in pore-water pressure at its own elevation.

SPECIFICATIONS

- Housing Diameter:** 71 mm (2.8").
- Pipe Requirement:** 1.25 inch, schedule 40 PVC.

PART NUMBERS

3.5 bar • 50 psi VW piezometer	52611020
7 bar • 100 psi VW piezometer	52611030
Multi-Level Housing	52611100
Signal Cable.....	50613324

WATER LEVEL INDICATOR WITH LASER-MARKED CABLE

The water level indicator is used to obtain depth-to-water measurements in standpipes and wells. Its small-diameter probe and cable fit even small diameter standpipes, and its sensitivity adjustment provides reliable readings in nearly any type of water. The cable is graduated by a laser marking machine, which produces precise and indelible marks.

SPECIFICATIONS

- Probe Diameter:** 9.5 mm (3/8").
- Cable:** Twin steel conductors inside 3.2 mm (1/8") diameter polyurethane jacket with laser marked graduations.
- Reel:** Durable aluminum plate. 180 mm (7") reels have handle. Larger reels have stand.
- Metric Graduations:** 2 mm.
- English Graduations:** 0.01 foot.

PART NUMBERS, METRIC UNIT WLI

WLI, 30 m cable on 180 mm reel.....	51690303
WLI, 30 m cable on 230 mm reel.....	51690300
WLI, 50 m cable on 180 mm reel.....	51690304
WLI, 50 m cable on 230 mm reel.....	51690305
WLI, 100 m cable on 230 mm reel	51690310
WLI, 150 m cable on 280 mm reel	51690315
WLI, 200 m cable on 230 mm reel	51690320
WLI, 300 m cable on 280 mm reel	51690330

PART NUMBERS, ENGLISH UNIT WLI

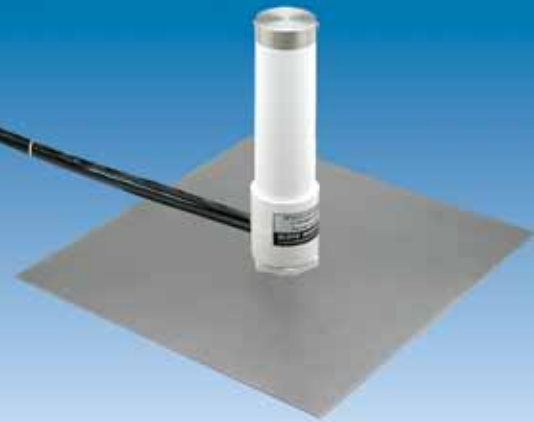
WLI, 100' cable on 7" reel.....	51690010
WLI, 100' cable on 9" reel.....	51690012
WLI, 150' cable on 7" reel.....	51690014
WLI, 150' cable on 9" reel.....	51690015
WLI, 300' cable on 9" reel.....	51690030
WLI, 500' cable on 11" reel	51690050
WLI, 1000' cable on 11" reel.....	51690100

PADDED NYLON CASE

For WLI with 230 mm • 9" reel.....	51671009
For WLI with 280 mm • 11" reels.....	51671000



SETTLEMENT SYSTEMS



SETTLEMENT CELL

The settlement cell is used to monitor a single point for settlement. Readings are obtained with a VW readout or data logger.

SPECIFICATIONS, VENTED VW CELL

Sensor Type: Vibrating wire.
Range: 14 m (47').
Resolution: 0.025% FS.
Repeatability: ±0.25 % FS to ±1% FS.
Temperature Range: -20 to 80° C.

SPECIFICATIONS, SEALED VW CELL

Sensor Type: Vibrating wire.
Range: 33 m (108').
Resolution: 0.025% FS.
Repeatability: ±0.25 % FS to ±1% FS.
Temperature Range: -20 to 80° C.

SPECIFICATIONS, PNEUMATIC CELL

Sensor Type: Pneumatic.
Range: 64 m (210').
Repeatability: ±0.25 % FS to ±1% FS.

PART NUMBERS

VW Vented Settlement Cell.....	52612420
Settlement Plate	51410100
Vented Signal Cable	50614410
Desiccant Chamber	52612495
Tubing	51416950
Reservoir.....	51419500
50 psi VW Sealed Settlement Cell.....	52612020
100 psi VW Sealed Settlement Cell ...	52612030
Settlement Plate for Sealed Cell.....	52630512
Signal Cable.....	50613524
Tubing	51416950
Reservoir.....	51419500
Field Barometer.....	52612070

SONDEX

The Sondex system provides multi-point measurements of settlement or heave along the axis of inclinometer casing. Readings are obtained with the Sondex readout and its laser-graduated cable or a steel tape. The resulting data indicate the settlement at each sensing ring as well as the total settlement.

SPECIFICATIONS

Metric Cable Graduations: 2 mm.
English Cable Graduations: 0.01 foot.
 Cable has durable, laser-marked graduations. For highest precision, a steel tape is also used.
Probe Diameter: 43 mm (1.7").
Corrugated Pipe OD: 92 mm (3.6"). This pipe accommodates 70 mm (2.75") inclinometer casing. Corrugated pipe to fit 85 mm casing is also available.

PART NUMBERS

Sondex Readout with 50 m cable.....	50810305
Sondex Readout with 100 m cable	50810310
Sondex Readout with 150 m cable	50810315
Sondex Readout with 150' cable	50810015
Sondex Readout with 300' cable	50810030
Sondex Readout with 500' cable	50810050
Corrugated Pipe for 70 mm Casing.....	50801600
Coupling for Corrugated Pipe.....	50801602
Cap for Corrugated Pipe	50801601

Sensing Ring, Factory Installed	50801800
Sensing Ring, for Installation by User	02842004

SETTLEMENT POINT

The settlement point (not shown) employs a Borros-type anchor and riser pipe to provide single point measurements of settlement. The mechanically expanded anchor is suitable for soft soil. Requires 1" outer and ¼ " inner pipe.

PART NUMBER

Borros-Type Anchor	51808000
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MAGNET EXTENSOMETER

The magnet extensometer provides multi-point measurements of settlement or heave along the axis of inclinometer casing or access pipe. Readings are obtained with the Magnet Extensometer readout and its laser-graduated cable. The resulting data indicate settlement at each magnet as well as the total settlement.

SPECIFICATIONS

Metric Cable Graduations: 2 mm.
English Cable Graduations: 0.01 foot.
 Cable has durable, laser-marked graduations.
Probe Diameter: 16 mm (5/8").

PART NUMBERS

Readout with 30 m cable.....	51817203
Readout with 50 m cable.....	51817205
Readout with 100 m cable	51817210
Readout with 150m cable	51817215
Readout with 100' cable	51817310
Readout with 150' cable	51817315
Readout with 300' cable	51817330
Readout with 500' cable	51817350
Datum magnet for 1" pipe	51817303
Spider magnet for 1" pipe,	51817503
Plate magnet for 1" pipe.....	51817703
Pipe magnet for 1" pipe	91281450
Access Pipe, 1" x 10'	50711408
Telescoping Section, 1" x 10'	50711458
End Cap, 1" pipe.....	50711428

Datum magnet for 70 mm casing	51817346
Spider magnet for 70 mm casing	51817546
Plate magnet for 70 mm casing	51817746
Telescoping Section, 70 mm QC	51150220

Datum magnet for 85 mm casing	51817366
Spider magnet for 85 mm casing	51817566
Plate magnet for 85 mm casing	51817766
Telescoping Section, 85 mm QC	51150320

EXTENSOMETERS



DIGITAL TAPE EXTENSOMETER

The tape extensometer is a portable device used to monitor changes in the distance between reference points that are mounted on the tunnel lining or on the walls of underground openings. The reference points can be bolted, welded, grouted, or mechanically anchored to the structure. The digital display makes the instrument easy to read.

SPECIFICATIONS, METRIC INSTRUMENT

Display Resolution: 0.01 mm.
Repeatability: ± 0.10 mm.
Tape: Steel, 13 mm x 20 m.
Size: 70 x 610 mm.

SPECIFICATIONS, ENGLISH INSTRUMENT

Display Resolution: 0.0005 inch.
Repeatability: ± 0.005 inch.
Tape: Steel, 0.5 inch x 66 feet.
Size: 2.75 x 24 inches.

PART NUMBERS

Metric

Tape Extensometer, 20 m 51811510
 Tape Extensometer, 30 m 51811530

English

Tape Extensometer, 66 ft 51811500
 Tape Extensometer, 100 ft Special Order

Reference Point 51812000
 Groutable Anchor 51804304
 Expansion Anchor 51812050

VW CRACKMETER

The VW crackmeter is used to monitor movement at joints and cracks in concrete structures or rock. Groutable anchors and swivel mounts are included. Readings are obtained with a VW readout or data logger.

SPECIFICATIONS, 60 MM CRACKMETER

Sensor type: Vibrating wire.
Range: 60 mm (2.4") nominal.
Resolution: 0.025% FS.
Repeatability: $\pm 0.5\%$ FS.
Temperature Range: -20 to 80° C.
Nominal Length: 400 mm (15.7").

SPECIFICATIONS, 100 MM CRACKMETER

Sensor type: Vibrating wire.
Range: 100 mm (4") nominal.
Resolution: 0.025% FS.
Repeatability: $\pm 0.5\%$ FS.
Temperature Range: -20 to 80° C.
Nominal Length: 530 mm (21").

PART NUMBERS

Crackmeter, 60 mm Splashproof 52636081
 Crackmeter, 60 mm Waterproof 52636088
 Crackmeter, 100mm Splashproof 52636082
 Crackmeter, 100 mm Waterproof 52636089
 Signal Cable 50613524

ROD EXTENSOMETER

Rod extensometers are installed in boreholes to monitor settlement in foundation soil, subsidence above tunnels, deformations of underground openings, and displacement of retaining structures.

COMPONENTS

Anchors are available in groutable, hydraulic, or packer versions.

Rods are made of fiberglass or stainless steel. Fiberglass rod extensometers are shipped to the site ready to install. Steel rods are assembled on site, but are suitable for deeper anchor depths.

Single and Multi-Point Reference Heads are available in mechanical or electric versions. Mechanical heads are less expensive but require direct access for reading. Electrical heads use displacement sensors and can be read remotely.

Displacement Sensors are available with 50, 60, or 100 mm range.

PART NUMBERS

Single-Point Mechanical Head 51836110
 Multi-Point Mechanical Head 51836120
 Single-Point Electric Head 51836130
 Multi-Point Electric Head 51836140

SOIL STRAINMETER

Soil strainmeters, also known as embankment strainmeters, are installed in series to monitor soil strain in large earth structures. The strainmeter typically employs potentiometer displacement sensors and is available in plastic or stainless steel housings.

JOINTMETERS & PRESSURE CELLS



VW EMBEDMENT JOINTMETER

The VW embedment jointmeter is used to monitor movement at joints in mass-concrete structures. It has a range of 50 mm and is waterproof to 15 bar.

SPECIFICATIONS

- Range:** 50 mm (2")*
- Resolution:** 0.025% FS.
- Calibration Accuracy:** ±0.1% FS.
- Repeatability:** ±0.5% FS.
- Waterproof:** 17 bar (250 psi)*.
- Materials:** 300-series stainless steel.
- Socket Size:** 51 mm diameter, 90 mm long (2 x 3.5"), stainless steel.
- Transducer Housing:** 51 mm diameter, 420 mm long (2 x 16.5"), PVC.

PART NUMBERS

- Jointmeter..... 52632244
- Signal Cable..... 50613524

3-D JOINTMETER SENSOR

Jointmeters are used to monitor movement at joints and cracks. The submersible sensor used in the jointmeter is designed to withstand extended submersion in water to depths of 245 meters.

SPECIFICATIONS

- Type:** Potentiometer
- Range:** 150 mm (6 inches).
- Resolution:** 0.03 mm FS (0.001"FS).
- Precision:** ±0.15% FS
- Waterproof:** 24 bar (348 psi).
- Temperature Rating:** -20 +50 °C.
- Length:** 590 mm closed, 740 mm fully extended, including swivel joint at each end.

PART NUMBERS

- 3-D Jointmeter Sensor..... 91706150
- Signal Cable..... 50613527

VW EARTH PRESSURE CELL

The VW total pressure cell can be embedded in soil or placed at the interface between a structure and the surrounding earth. Readings are obtained with a VW readout or data logger.

SPECIFICATIONS

- Sensor Type:** Vibrating wire.
- Sensor Resolution:** 0.025% FS.
- Sensor Accuracy:** ±0.5% FS.
- Temperature Range:** -20 to +80° C.
- Size:** 230 x 11 mm (9 x 0.43").

PART NUMBERS

- 3.5 bar (50 psi) 52608220
- 7 bar (100 psi) 52608230
- 17 bar (250 psi)..... 52608240
- 35 bar (500 psi)..... 52608250
- Signal Cable..... 50613524

GOODMAN JACK

The Goodman Jack (left) is used for in-situ investigations of the deformability of rock masses. Two versions are available, one for hard rock, and the other for soft rock. Both versions operate in 3" (76 mm) boreholes. Readings are obtained with the Goodman Jack displacement indicator.

SPECIFICATIONS, HARD ROCK JACK

- Max Bearing Pressure:** 64,000 kPa (9,300 psi).
- Maximum Force:** 703 kN (158,100 lbf).
- Linearity:** ±0.5% to ±1%.
- Temperature Range:** -32 to 60° C.

SPECIFICATIONS, SOFT ROCK JACK

- Max Bearing Pressure:** 38,200 kPa (5,540 psi).
- Maximum Force:** 416 kN (94,200 lbf).
- Linearity:** ±0.5% to ±1%.
- Temperature Range:** -32 to 60° C.

PART NUMBERS

- Goodman Jack, Hard Rock 52100100
- Goodman Jack, Soft Rock..... 52100200



STRAIN GAUGES



EMBEDMENT STRAIN GAUGE

The VW embedment strain gauge is used to monitor strain in reinforced concrete and mass concrete structures. Readings are obtained with a VW readout or data logger.

SPECIFICATIONS

Sensor Type: Vibrating wire.
Range: 3000 microstrain.
Resolution: 1 microstrain.
Accuracy: $\pm 0.1\%$ FS.
Temperature Range: -20 to $+80^\circ\text{C}$.

PART NUMBERS

Embedment Strain Gauge..... 52640226
 Signal Cable..... 50613324

LOAD CELL

The center-hole load cell (right) is used to monitor loads in tiebacks, rock bolts, and cables. Typical applications include proof testing and performance testing of anchor systems. Readings are obtained with a load cell indicator or data logger. Cells are available in a variety of ranges and diameters.

SPECIFICATIONS

Sensor Type: Resistance strain gauge.
Overload Capacity: 100%.
Linearity: 1% FS.
Output: 2.5 mv/v $\pm 10\%$.
Temperature Compensated: -20 to 70°C .

PART NUMBERS

Load Cell, 50 ton 51301050
 Signal Cable..... 50613527

ARC-WELDABLE STRAIN GAUGE

The VW Arc-Weldable strain gauge is used to measure strain in steel or other materials. The gauge is supplied with two weldable mounting blocks. Readings are obtained with a VW readout or data logger.

SPECIFICATIONS

Sensor Type: Vibrating wire.
Range: 3000 microstrain.
Resolution: 1 microstrain.
Accuracy: $\pm 0.1\%$ FS.
Temperature Range: -20 to $+80^\circ\text{C}$.

PART NUMBERS

Arc-Weldable Strain Gauge..... 52640306
 Signal Cable 50613324

SPOT-WELDABLE STRAIN GAUGE

The VW spot-weldable strain gauge is used to monitor strain in steel. The gauge, which is pre-tensioned for easy installation, features a patented, low-profile design that reduces error caused by bending. A VW strain gauge sensor is fixed atop the gauge. Readings are obtained with a VW readout or data logger.

SPECIFICATIONS

Sensor Type: Vibrating wire.
Range: 2500 microstrain.
Resolution: 1 microstrain.
Accuracy: $\pm 0.1\%$ FS.
Temperature Range: -20 to $+80^\circ\text{C}$.
Length: 76 mm (3").
Welder: Spot welder.

PART NUMBERS

Gauge, set Mid-Range 52602100
 Gauge, set for Compressive Strain 52602101
 Gauge, set for Tensile Strain..... 52602102
 VW Strain Gauge Sensor 52623000
 ScotchKote..... 06700019
 3M Mastic Pad 06700180
 Protective Cover, Stainless 52623120
 Signal Cable..... 50613524



READOUTS



VW DATA RECORDER

This vibrating wire readout is designed for utility and economy. No preliminary setup is needed, and its simple two-key operation can be learned in minutes. Quick-connect terminals on the front panel allow direct connection of sensor signal cables and eliminate the trouble of lost or forgotten jumper cables. Easy to use Windows software retrieves readings and saves them in a comma-delimited ASCII file, ready for spreadsheets.

SPECIFICATIONS

Function: Displays and records readings from vibrating wire sensors, thermistors, and RTDs. Transfers readings to PC.

Displayed Units: Hz, Hz², °C, and microstrain units (for the VW spot-weldable strain gauge).

Resolution: 0.01% FS.

Accuracy: ±0.02% of Hz reading.

Batteries: 2 D-cells, 60 hours continuous use.

Temperature Range: -20 to 50°C.

Size: 235 x 190 x 108 mm (9.25 x 7.5 x 4.25").

Weight: 1.5 kg (3.3 lb).

PART NUMBER

VW Data Recorder 52613500

TERMINAL BOXES

Terminal boxes for vibrating wire sensors are available with 6, 12, or 24 positions. The 12-position box can also be used with other types of sensors. A jumper cable is used to connect a readout to the box, and a rotary switch provides access to each position. Jumper cables for vibrating wire sensors are available with VW readouts. Jumpers for other types of sensors can be special-ordered.

PART NUMBERS

Terminal box for 6 VW sensors 57711606

Terminal box for 12 sensors 57711600

Terminal box for 24 VW sensors 97711624

EL / MEMS DATA RECORDER

The EL Data recorder is used to read EL SC and MEMS sensors. No preliminary setup is needed, and its simple two-key operation can be learned in minutes. The front panel has quick-connect wiring terminals for direct connection of sensor signal cables. Easy to use Windows software retrieves readings and saves them in a comma-delimited ASCII file, ready for spreadsheets.

SPECIFICATIONS

Function: Displays and records readings from EL SC and MEMS sensors. Transfers readings to PC.

Displayed Units: Volts, °C.

Resolution: 0.004% FS.

Accuracy: ±0.1% FS.

Batteries: D-cells, 30 hours continuous use.

Temperature Range: -20 to 50°C.

Size: 235 x 190 x 108 mm (9.25 x 7.5 x 4.25").

Weight: 1.5 kg (3.3 lb).

PART NUMBER

EL / MEMS Data Recorder 56813500

PNEUMATIC INDICATOR

The 256 pneumatic indicator is used to read pneumatic piezometers and settlement cells. It features a precision flowmeter, a return-flow indicator, convenient controls, a large internal tank, and an analog or digital pressure gauge.

SPECIFICATIONS

Function: Reads twin-tube pneumatic transducers.

Accuracy, Digital Gauge: ±0.25% FS.

Accuracy, Analog Gauge: ±0.25% FS.

Pressure Range: 0 to 150 psi (10.3 bar).

Internal Tank: 1.38 liter.

Size: 508 x 457 x 178 mm (20 x 18 x 7").

Weight: 11 kg (24 lb).

PART NUMBERS

256 Indicator with Digital Gauge 51425602

256 Indicator with Analog Gauge 51425601





VW MINILOGGER

The VW MiniLogger is a reliable, low cost data logger designed to monitor a single vibrating wire sensor.

MiniLoggers are ideal for small-scale projects. They are also useful for monitoring sensors that are too remote for economical connection to centralized data acquisition systems.

Windows software supplied with the logger is used to set up logging schedules and retrieve data. Readings are saved to a comma-delimited ASCII file, ready for a spreadsheet.

A wireless option makes it easy to retrieve data when access to loggers is difficult or when frequent retrieval of data is required.

SPECIFICATIONS

Function: Records readings from a vibrating wire sensor and a thermistor or RTD.

Memory: 8,000 readings.

Power: In temperate climates, the two D-cell batteries provide about six months of operation, or two to four months of operation with the wireless option installed.

Temperature Range: -20 to +50° C.

Size: 100 x 100 x 90 mm (4 x 4 x 3.5").

PART NUMBERS

VW MiniLogger.....	52613310
900 MHz Wireless Option	52613356
900 MHz Wireless Base Station	52613450
2.4 GHz Wireless Option.....	52613360
2.4 GHz Wireless Base Station	52613455

VW QUATTRO LOGGER

The VW Quattro Logger is a compact data logger designed to monitor four vibrating wire sensors. Applications are same as the VW Minilogger.

SPECIFICATIONS

Data Storage: Stores 43,000 records for each sensor in secure, non-volatile memory. Each record includes a VW reading, a temperature reading, and the time and date. When memory is full, recording either stops or continues by overwriting the earliest readings, according to user preference.

Power: Three D-cell batteries provide power for six months in moderate temperatures, assuming readings are taken every hour.

Weatherproofing: Quattro Logger electronics are encased in waterproof resin and housed in an IPC66 metal box. Plugs are provided for unused ports.

PART NUMBERS

VW Quattro Logger.....	52614000
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M-LOGGER

M-Loggers are used to monitor Slope Indicator MEMS sensors. They are also compatible with EL-SC sensors. Simple to use and economical to deploy, M-Loggers can be placed close to sensors, enhancing reliability and keeping cable costs down. Each M-Logger can monitor up to 16 sensors. See page 5.

FULL-SIZE DATA LOGGERS

Campbell Scientific data loggers are known for their reliability and work with nearly all sensors used in geotechnical applications.

Most systems are powered by battery, which can be charged by AC mains power or a solar panel. A wide array of data retrieval options is available, including telephone, cellular, and radio modems.

Data from the loggers is directly compatible with the Atlas web-based monitoring system.

Slope Indicator can configure data logger systems and write monitoring programs to customer specifications. Such services significantly reduce the time and expense required to deploy a data acquisition system. Please contact Slope Indicator for more information.

PART NUMBERS

CR800 Data Logger	56700800
CR1000 Data Logger.....	56701000
PS100 Power Supply.....	56703120
AC Adaptor, 90 to 260 V ac.....	56703124
RS-232 Interface Cable	50306869
USB Interface Cable	56704018
ENC 16/18 Enclosure	56705020
AVW200 VW Interface	56701550
AM16/32 Multiplexer.....	56702110
System Integration.....	96700000
Loggernet Software.....	56708020
Custom Programming	96701000



ATLAS WEB-BASED MONITORING

Atlas web-based monitoring software solves the two main problems of data acquisition: the timely processing of data and the timely distribution of results.

Atlas is a fast, reliable, and cost-effective way to process sensor readings and distribute the resulting data. Atlas automatically processes sensor readings, checks for alarm conditions, generates graphs and reports, and makes all of these results available on the web. Users can view and download graphs and data with their web browsers, whether they are at work, at home, at a client's office, or half-way around the world.

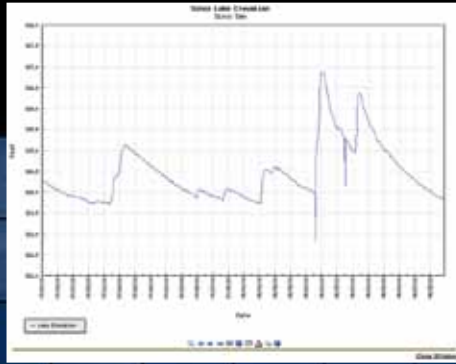
Atlas provides a secure, central location for sensor readings, calibration information, and processing routines, thus ensuring the continuity of the monitoring program, regardless of common events at the work place, such as computer crashes or changes in personnel.

Atlas is available as a web service or as software. The web service offers monthly plans based on the number of sensors to be monitored. Atlas is the easiest and most cost-effective way to deploy web-based monitoring.

Atlas Enterprise is a version of Atlas that organizations can host by themselves. It runs on LANs and WANs and can also run on stand-alone computers.

PART NUMBERS

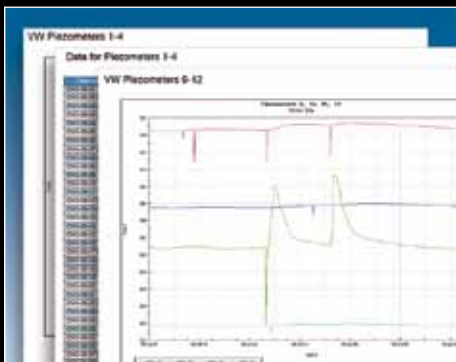
Atlas Activation Fee 58851000
Atlas Monthly Web Service 58851050
Atlas Prepaid Web Service 58851090



PLOTS



PLAN VIEWS



REPORTS

A screenshot of a web-based monitoring interface showing an alarm log table. The table has columns for sensor ID, location, alarm type, and status. The table is filled with data rows, and some rows are highlighted in red and yellow to indicate active or critical alarms. The interface includes a title bar and navigation buttons.

ALARMS

ABOUT DGSI

Durham Geo Slope Indicator designs and manufactures materials testing equipment, geotechnical instruments, and remediation pumps. DGSI has two factories in the US and more than thirty-seven distributors world wide.

DGSI SERVICES & SUPPORT

REPAIR & CALIBRATION

Repair and calibration services are available at the Slope Indicator factory. Call for authorization before sending your instrument.

RENTALS

Rental equipment is available to customers in North America. The inventory is limited, so call in advance to reserve the necessary equipment.

TRAINING

DGSI offers an advanced course for inclinometer users and can also provide training courses for other types of instrumentation.

DATA ACQUISITION SOLUTIONS

DGSI can provide system integration of sensors, data loggers, communications, and web-based monitoring.



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