

GEOKON

TRUSTED MEASUREMENTS®

Geotechnical + Structural Instrumentation + Data Acquisition

- Bridges
- Dams
- Embankments
- Foundations + Excavations
- Geogrids + Geotextiles
- Groundwater
- Landfills
- Mines + Tailings Dams
- Nuclear Waste Repositories
- Piles + Caissons
- Pipelines
- Slope Stability
- Tunnels
- Wind Turbines



About **GEOKON**

Measurements You Can Trust

GEOKON, now an employee owned company, is a recognized world leader in the manufacture of geotechnical + structural instrumentation.

Since 1979, GEOKON sensors have provided excellent long-term stability and proven reliability for protracted measurements in adverse environments.

GEOKON has been awarded ISO 9001:2015 registration from both ANSI•ANAB, USA and UKAS of Great Britain.

GEOKON products are supported by an experienced team of factory-trained associates ready to assist with instrument design, selection and installation.

GEOKON is committed to providing exceptional customer service to meet the needs of our clients.

GEOKON

TRUSTED MEASUREMENTS®

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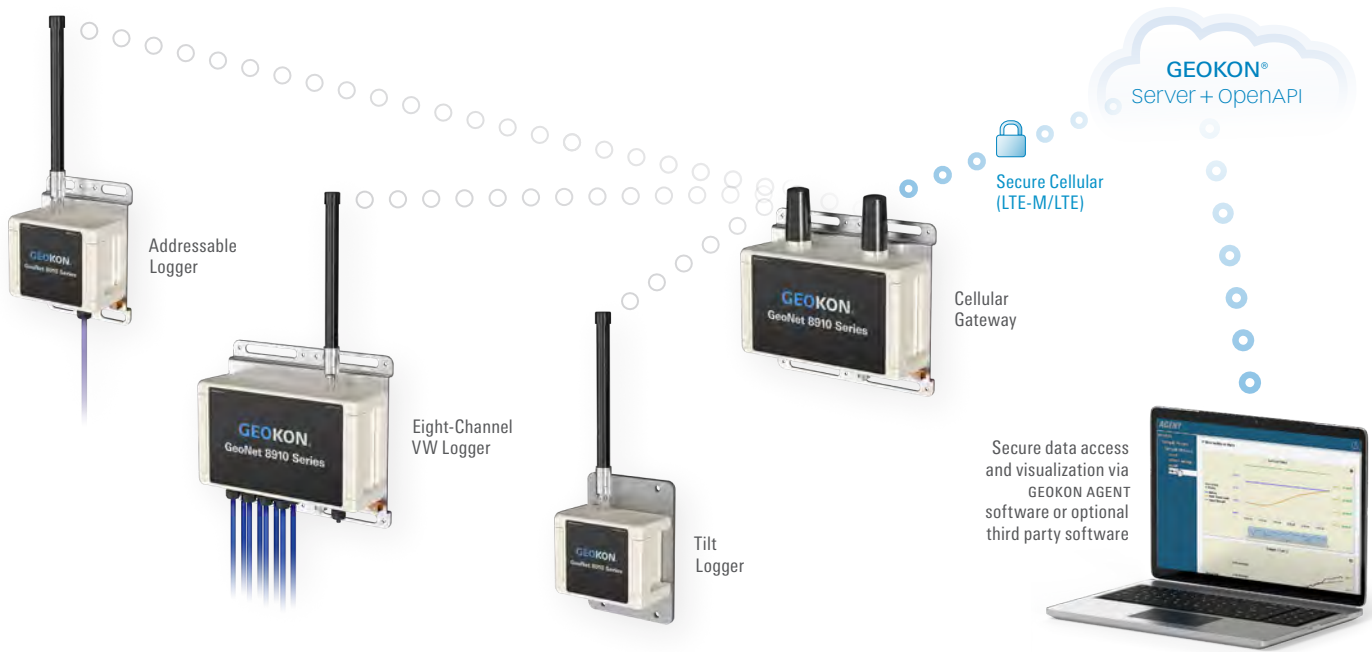
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GEONET

WIRELESS DATA HOSTING SYSTEM



Features

- Effortless system configuration
- Seamless data retrieval and conversion
- Versatile data visualization options
- Stand-alone datalogger functionality
- Enterprise deployment options
- Available with LoRa® radios and LoRaWAN® compatibility
- IP 68 rated enclosures (Model 8910 Series)

Key Monitoring Applications

- Groundwater monitoring
- Tailings dams
- Mining/slope stability
- Historical structures
- Structural monitoring of buildings, excavations, bridges and tunnels



find out more at: www.geokon.com/dataloggers

PIEZOMETERS

geokon.com/
Piezometers



Piezometers are intended primarily for long-term measurements of fluid depths and pore pressures in standpipes, boreholes, embankments, and pressure vessels. Applications typically fall under one of two categories, monitoring the patterns of water flow or providing an index of soil or rock mass strength. Monitoring pore water pressure is essential in differentiating a soil's total stress from its effective stress.

GENERAL USE

Standard 4500S VW | ER



- Dimensions (L × Ø):
133 × 19 mm (5.2 × 0.75")
- Ranges: 350 kPa–3 MPa (VW)

Low Pressure 4500AL VW



- Dimensions (L × Ø):
133 × 25 mm (5.2 × 1")
- Ranges: 70, 170 kPa

Vented 4500SV VW | ER



- Dimensions (L × Ø):
146 × 19 mm (5.75 × 0.75")
- Ranges: 350, 700 kPa (VW)

Vented Low Pressure 4500ALV VW



- Dimensions (L × Ø):
133 × 25 mm (5.2 × 1")
- Ranges: 70, 170 kPa

EMBANKMENT DAMS

Heavy Duty 4500HD VW



- Dimensions (L × Ø):
203 × 38 mm (8 × 1.5")
- Ranges: 70 kPa–7.5 MPa

RCC DAMS

Heavy Duty 4500SH VW



- Dimensions (L × Ø):
194 × 25 mm (7.6 × 1")
- Ranges: 350 kPa–20 MPa

PUSH-IN

Drive Point 4500DP VW



- For EW drill rods
- Dimensions (L × Ø):
187 × 33 mm (7.4 × 1.3")
- Ranges: 70 kPa–3 MPa

Drive Point 4500DPCT VW



- For CPT drill rods
- Dimensions (L × Ø):
218 × 51 mm (8.6 × 2")
- Ranges: 350 kPa–2 MPa

UPLIFT AND HYDRAULIC LINES

Pressure Transducer 4500H VW | ER



- With 1/4-18 NPT female thread
- Dimensions (L × Ø): 140 × 25 mm
or 32 mm (5.5 × 1" or 1.3")
- Ranges: 70 kPa–3 MPa (VW)

Pressure Transducer 4500HH VW



- With 7/16-20 medium pressure
60° cone female thread
- Dimensions (L × Ø):
143 × 25 mm (5.6 × 1")
- Ranges: 5–100 MPa

Vented Pressure Transducer 4500HV VW



- With 1/4-18 NPT female thread
- Dimensions (L × Ø): 140 × 25 mm
or 32 mm (5.5 × 1" or 1.3")
- Ranges: 70 kPa–3 MPa

CORROSIVE ENVIRONMENT

Inconel 4500INCO VW



- With dual O-ring seal
- Dimensions vary with range
- Range: 70 kPa–20 MPa

Titanium 4500TI VW



- All-welded construction
- Dimensions (L × Ø): 125 mm
or 168 mm × 25 mm (5 or 6.6 × 1")
- Range: 350 kPa–10 MPa

MULTILEVEL

Multilevel 4500M VW



- Borehole Ø: 100–150 mm (4–6")
- Nominal borehole oversize
capacity: +30 mm (1.2")
- Ranges: 70 kPa–7.5 MPa

TECH KEY

Vibrating Wire | VW

- Long-term monitoring
- Long cable requirements
- Adverse environments

Electronic Resistance | ER

(Available on Request)

- Dynamic response



STANDPIPES

Small Diameter 4500B VW



- For automating standpipes
- Dimensions (L x Ø):
133 x 18 mm (5.2 x 0.7")
- Standpipe Ø: 19 mm (0.75")
- Ranges: 350 kPa–3 MPa

Small Diameter 4500C VW



- For automating standpipes
- Dimensions (L x Ø):
Length: 165 x 11 mm (6.5 x 0.4")
- Standpipe Ø: 12 mm (0.5")
- Ranges: 350, 700 kPa

Vented Small Diameter 4500BV VW



- For automating standpipes
- Dimensions (L x Ø):
Length: 133 x 18 mm (5.2 x 0.7")
- Standpipe Ø: 19 mm (0.75")
- Ranges: 350 kPa–2 MPa

Casagrande Piezometer Tip 4590



- Riser pipe Ø: 127 mm (0.5"), 191 mm (0.75"), 254 mm (1")
- Lengths: 349 mm (13.7"), 501 mm (19.7"), 654 mm (25.7")
- Effective filter area: 30.8 in² (198.7 cm²), 49.5 in² (319.4 cm²), or 68.1 in² (439.4 cm²)

Water Level Meter 101



- 10 mm (3/8") tape, markings every 1 mm or 1/100'
- Probe Dimensions (L x Ø):
190 x 14 mm (7.5 x 0.6")
- Length: 30–600 m (100–2000')

STREAMS, FLUMES, WEIRS

Vented Pressure Transducer 4580-2V VW



- Available on request
- Low pressure, with 1/4-18 NPT female thread
- Dimensions (L x Ø):
165 x 38 mm (6.5 x 1.5")
- Ranges: 17, 35 kPa

Vented Pressure Transducer 4580-3V VW



- Available on request
- Low pressure, vented, with 1/4-18 NPT female thread
- Dimensions (L x Ø):
165 x 64 mm (6.5 x 2.5")
- Range: 7 kPa

Weir Monitor System 4675LV VW



- Precision water level measurement
- Dimensions vary with range
- Ranges: 150–1500 mm (6–60")

ATMOSPHERIC CORRECTION

Barometer 4580-1 VW



- Dimensions (L x Ø):
110 x 63 mm (4.3 x 2.5")
- Range: 200 mbar

ELEVATED TEMPERATURES

High Temperature 4500HT VW



- For use in oil recovery systems and geothermal applications
- Dimensions vary with range
- Ranges: 350 kPa–100 MPa

SPECIAL APPLICATIONS

Custom Piezometers



- Piezometers can be customized to meet your needs
- Our staff will work with you throughout the process
- Common customizations include pressure range, filters, adapters, specialty cables, etc.

INCLINOMETERS

geokon.com/
Inclinometers



Inclinometers monitor inclination relative to casing axes, as well as with respect to gravity. Inclination measured over the length of the instrument shows the deviation of one end relative to the other, creating a profile of the casing. Changes in the casing profile over time provide a deformation measurement of the casing, which can assist in defining subsurface horizontal deformation.

TUNNELS + UNDERGROUND

Vertical In-Place Inclinometer String 6140



MEMS

- For remote, continuous, automatic monitoring of lateral movements
- Traditional wheeled design for consistent azimuth direction
- Site adjustable string lengths
- Up to 500 sensors per string
- Casing groove Ø: 58–90 mm (2.3–3.5")
- Range: $\pm 90^\circ$ ($\pm 30^\circ$ calibrated)

Vertical In-Place Inclinometer System 6180



MEMS

- For remote, continuous, automatic monitoring of lateral movements
- Lengths: 0.5, 1, 2, 3 m (2, 5, or 10')
- Casing groove Ø: 58–90 mm (2.3–3.5")
- Range: $\pm 90^\circ$ ($\pm 30^\circ$ calibrated)

Horizontal In-Place Inclinometer System 6185



MEMS

- For remote, continuous, automatic monitoring of ground movements and differential settlements
- Lengths: 0.5, 1, 2, 3 m (2, 5, or 10')
- Casing groove Ø: 58–90 mm (2.3–3.5")
- Range: $\pm 90^\circ$ ($\pm 30^\circ$ calibrated)

DAMS, TAILINGS, SLOPES, LANDSLIDES

Digital Inclinometer System GK-604D



MEMS

- For measuring lateral movements
- Maximum cable length: 500 m (1640')
- Casing groove Ø: 48–89 mm (2–3.5")
- Range: $\pm 90^\circ$ ($\pm 30^\circ$ calibrated)

Vertical In-Place Inclinometer String 6140



MEMS

- For remote, continuous, automatic monitoring of stability and lateral deformations
- Traditional wheeled design for consistent azimuth direction
- Site adjustable string lengths
- Up to 500 sensors per string
- Casing groove Ø: 58–90 mm (2.3–3.5")
- Range: $\pm 90^\circ$ ($\pm 30^\circ$ calibrated)

Vertical In-Place Inclinometer System 6180



MEMS

- For remote, continuous, automatic monitoring of stability and lateral deformation
- Lengths: 0.5, 1, 2, 3 m (2, 5, or 10')
- Casing groove Ø: 58–90 mm (2.3–3.5")
- Range: $\pm 90^\circ$ ($\pm 30^\circ$ calibrated)

Vibrating Wire In-Place Inclinometer 6300



VW

- For remote, continuous, automatic monitoring of stability and lateral deformation
- Sensor dimensions (L × Ø): 187 × 32 mm (7.4 × 1.25")
- For use with Model 6500 Inclinometer casing
- Range: $\pm 10^\circ$

CASING

ABS Casing 6650



- Dimensions (ID × OD): 59 × 70 mm (2.3 × 2.75")
- Lengths: 1.5, 3 m (5, 10')

Glue-Snap ABS Casing 6400



- Dimensions (ID × OD): 59 × 70 mm (2.3 × 2.75") or 73 × 85 (2.9 × 3.3")
- Lengths: 1.5, 3 m (5, 10')

Fiberglass Casing 6500



- Dimensions (ID × OD): 67 × 70 mm (2.6 × 2.75")
- Lengths: 1, 1.5, 3 m (3.3, 5, 10')

SPECIAL APPLICATIONS

Custom Inclinometers

- Inclinometers can be customized to meet your needs
- Our staff will work with you throughout the process
- Common customizations include sensor length, sensor spacing, materials, etc.

TECH KEY

- Vibrating Wire | VW
- Long-term monitoring
 - Long cable requirements
 - Adverse environments

- Micro-Electro-Mechanical Systems | MEMS
- High sensitivity
 - Long-term stability
 - High resistance to shock loads

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STRAIN GAUGES

geokon.com/
Strain-Gauges



A strain gauge is a sensor that measures strain, typically on a structural element. The sensor's output varies with applied force. The change in gauge output can be used to determine changes in applied force on the structural element. In geotechnical applications, there are two main types of strain gauges, externally mounted on a structure and embedded in the concrete of a structure.

CONCRETE EMBEDMENT

Standard 4200

VW

- Standard Embedment type
- Length: 153 mm (6")
- Ranges: 3,000, 5,000, 10,000 $\mu\epsilon$

Standard Low Modulus 4200L

VW

- For measuring curing strains
- Length: 153 mm (6")
- Range: 3,000 $\mu\epsilon$

Miniature 4204

VW

- For laboratory use
- Length: 102 mm (4")
- Range: 3,000 $\mu\epsilon$

Miniature 4202

VW

- For laboratory use
- Length: 51 mm (2")
- Ranges: 3,000, 5,000, 10,000 $\mu\epsilon$

Miniature Low Modulus 4202L

VW

- For measuring curing strains
- Length: 51 mm (2")
- Range: 3,000 $\mu\epsilon$

High Temperature 4200HT

VW

- For short-term exposure
- Length: 153 mm (6")
- Range: 3,000 $\mu\epsilon$

Long Base Length 4210

VW

- For large aggregate concrete
- Length: 250 mm (10")
- Range: 3,000 $\mu\epsilon$

Sister Bar 4911

VW

- Installed alongside structural rebar
- Length: 914 mm (36")
- Range: 3,000 $\mu\epsilon$ (VW, ER)

Rebar Strainmeter 4911A

VW

- Welded in-line with structural rebar
- Length: 1105 mm (44")
- Range: 3,000 $\mu\epsilon$

Deformation Meter 4430

VW

- For use in RCC dams
- Tied to rebar cage
- Length: 335–1210 mm (13.2–47.6")
- Ranges: 25, 50, 100, 150, 300 mm (1, 2, 4, 6, 12")

CONCRETE + MASONRY

Standard 4000B

VW

- With groutable mounting blocks
- Length: 150 mm (6")
- Ranges: 3,000, 5,000, 10,000 $\mu\epsilon$

Long Base Length 4050B

VW

- With groutable mounting blocks
- Length: 300 mm (12")
- Range: 3,000 $\mu\epsilon$

Strain Transducer ST-350

ER

- Bolted to structure
- Length: 76 mm (3")
- Range: $\pm 4,000 \mu\epsilon$
($\pm 2,000 \mu\epsilon$ calibrated)

TECH KEY

Vibrating Wire | VW

- Long-term monitoring
- Long cable requirements
- Adverse environments

Electronic Resistance | ER

(Available on Request)

- Dynamic response



STEEL STRUCTURES

Standard 4000A

VW

- Arc weldable
- Length: 150 mm (6")
- Ranges: 3,000, 5,000, 10,000 $\mu\epsilon$

Miniature 4150A

VW

- Arc weldable
- Length: 51 mm (2")
- Ranges: 3,000, 5,000, 10,000 $\mu\epsilon$

Long Base Length 4050

VW

- Arc weldable
- Length: 300 mm (12")
- Range: 3,000 $\mu\epsilon$

Spot Weldable 4100

VW

- Standard
- Length: 51 mm (2")
- Ranges: 3,000, 5,000, 10,000 $\mu\epsilon$

Spot Weldable 4150

VW

- Low profile version
- Length: 51 mm (2")
- Ranges: 3,000, 5,000, 10,000 $\mu\epsilon$

Strain Transducer ST-350

ER

- Bolted to structure
- Length: 76 mm (3")
- Range: $\pm 4,000 \mu\epsilon$
($\pm 2,000 \mu\epsilon$ calibrated)

SOIL

Soil Extensometer 4435

VW

- With flanges at each end, enabling assembly in series
- Length: 335–1210 mm (13.2–47.6")
- Ranges: 25, 50, 100, 150, 300 mm (1, 2, 4, 6, 12")

Deformation Meter 4430

VW

- For embedment in soil embankments
- Length: 335–1210 mm (13.2–47.6")
- Ranges: 25, 50, 100, 150, 300 mm (1, 2, 4, 6, 12")

STEEL STRANDS (TENDONS)

Strandmeter 4410

VW

- With clamps to suit tendon diameter
- Length: 203 mm (8")
- Range: 15,000 $\mu\epsilon$

PLASTICS AND FIBERGLASS

Surface Mount 4151

VW

- With groutable mounting pins
- Length: 51 mm (2")
- Ranges: 3,000, 5,000, 10,000 $\mu\epsilon$

SPECIAL APPLICATIONS

Custom Strain Gauges



- Strain Gauges can be customized to meet your needs
- Our staff will work with you throughout the process
- Common customizations include gauge length, materials, mounting options, temperature range, etc.

DISPLACEMENT TRANSDUCERS

geokon.com/
Displacement-Transducers



Displacement transducers are designed to measure linear movement between two points. These sensors play a crucial role in tracking positional changes within an object, structure, or over a certain area. They come in various measurement ranges tailored to the type and magnitude of displacement being measured.

GENERAL USE

Embedment Jointmeter 4400



VW

- Expansion or contraction of a joint
- Strains in tendons and steel cables
- Movement across surface cracks and joints
- Closures in underground excavations, tunnels, etc.
- Displacements associated with landslides
- Movement of boulders, snow, etc., on unstable slopes
- Length: 441–569 mm (17.4–22.4")
- Ranges: 12.5–250 mm (0.5–10")

Deformation Meter 4430



VW

- Expansion or contraction of joints
- Borehole elongation or shortening
- Closures in underground excavations, tunnels, etc.
- Displacements associated with landslides
- Movement of boulders, snow, etc. on unstable slopes
- Length: 335–1210 mm (13.2–47.6")
- Ranges: 25–300 mm (1–12")

CONSTRUCTION JOINTS

Crackmeter 4420



VW

- For measuring movement across the joint
- Anchors are bolted, welded, or bonded in place
- Midrange length: 318–645 mm (12.5–25.4")
- Ranges: 12.5–500 mm (0.5–20")

Micro Crackmeter 4422



VW

- For limited access and/or unobtrusive installation
- With mounting studs and groutable anchors
- Length: 122 mm (4.8")
- Range: 4 mm (± 2 mm) (0.15" (± 0.08 ")

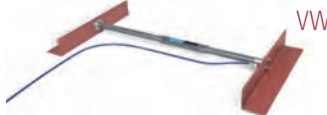
Mechanical 3D Crack Meter 4415



- Manually measure displacement/expansion across cracks in three directions
- Anchor (L \times \varnothing): 150 \times 12 mm (6 \times 0.5")
- Ranges: ± 12.5 , ± 25 , ± 50 mm (± 0.5 , 1, 2")

DAMS + EMBANKMENTS

Soil Extensometer 4435



VW

- For measuring horizontal strain in earthfill or rockfill dams
- With flanged ends enabling assembly in series
- Length: 335–1210 mm (13.2–47.6")
- Ranges: 25–300 mm (1–12")

TUNNELS

Convergence Meter 4425



VW

- For monitoring closures in tunnels, underground excavations, etc.
- With groutable or rockbolt expansion anchors
- Length: 710–1615 mm (28–63.6") (including eye hook assembly)
- Ranges: 12.5–150 mm (0.5–6")

LARGE DISPLACEMENTS

Long Range Displacement Meter 4427



VW

- For measuring landslides, or the movement of boulders, snow, etc. on unstable slopes
- Enclosure dimensions (L \times W \times H): 610 \times 152 \times 152 mm (24 \times 6 \times 6")
- Ranges: 1, 2 m (3.3, 6.5') without resetting

GEOGRIDS

Crackmeter 4420



VW

- With clamps to match geogrid
- Midrange length: 318–645 mm (12.5–25.4")
- Ranges: 12.5–500 mm (0.5–20")

STEEL STRANDS (TENDONS)

Strandmeter 4410



VW

- With clamps to suit tendon diameter
- Length: 203 mm (8")
- Range: 15,000 $\mu\epsilon$

SPECIAL APPLICATIONS

Custom Instruments



- Displacement transducers can be customized to meet your needs
- Our staff will work with you throughout the process
- Common customizations include waterproofing, high-temperature operation, corrosion resistance, specialty cables, etc.

TECH KEY

- Vibrating Wire | VW
- Long-term monitoring
- Long cable requirements
- Adverse environments

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Extensometers are high-precision instruments designed to monitor displacement, deformation, or strain. The extensometer is a critical performance device and a key monitoring instrument to measure soil and rock masses' behavior, stability, and movement.

GENERAL USE

Rod Type Borehole Extensometer (MPBX)

1100

VW



- For measuring ground movements in and around tunnels, open pit mines, retaining walls, etc.
- Also for deformation of dam abutments and foundations, fracturing in underground caverns, subsidence in tunnels and mines, and foundation elevation changes
- Suitable for grouted or ungrouted boreholes oriented in any direction
- Anchor options for soil, rock, or concrete

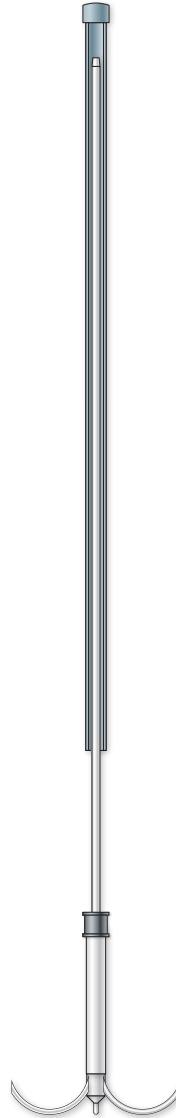
SETTLEMENT AND HEAVE

Magnetic Extensometer 1900



- For measuring settlement or heave of soft ground
- Typically used in or around excavations, foundations, dams, embankments, tunnels, sheet piles, and slurry walls
- Borehole Ø: 102–216 mm (4–8.5")
- Length: 30–200 m (100–300')

Settlement Points 1950



- For measuring vertical movements in foundation soils during and subsequent to construction
- Designed for fills and embankments, foundations, roadways, surcharges, etc.
- Anchor type: hydraulic Borros
- Outer Pipe Ø: 25 mm (1")
- Inner Pipe Ø: 6 mm (0.25")

Settlement Plate System 4625



- For monitoring areas where significant settlement or substantial material displacement is expected
- Plate dimensions: (L × W): 610 × 610 mm (24 × 24")
- Sleeve Ø: 89 mm (3.5")
- Riser pipe Ø: 38 mm (1.5")

TECH KEY

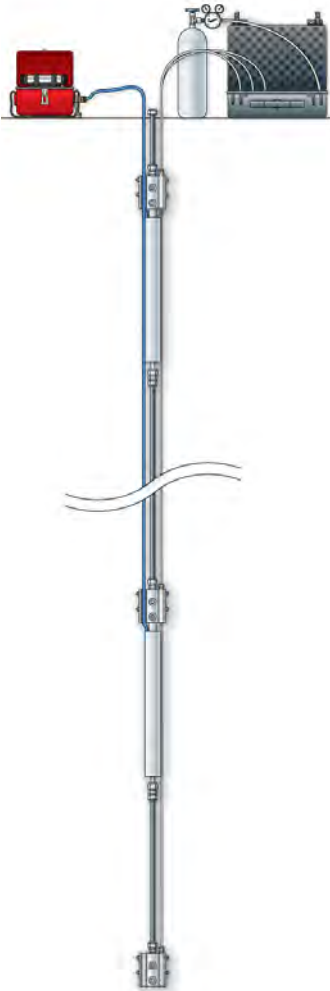
Vibrating Wire | VW

- Long-term monitoring
- Long cable requirements
- Adverse environments



BOREHOLES

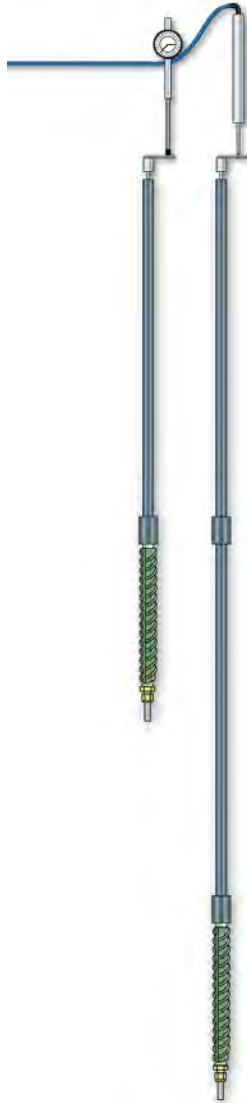
Retrievable Extensometer 1300



- For measuring borehole deformation in piles, concrete, rock, or other materials
- Particularly suited to load testing of concrete piles
- Retrivable and reusable
- Range: 12.5–200 mm (0.5–8")

LOAD TRANSFER

Telltails 1800



- For measuring the pattern of load transfer in piles, drilled shafts, tieback anchors
- Commonly used in piles subjected to static load tests
- System consists of a protective tube, internal rod, and anchor
- Dial indicator or displacement transducer is used for readout

CONVERGENCE

Tape Extensometer 1610



- For measuring small changes in distance between two points
- Typically used in tunnels, mine openings, structures, unstable slopes, etc.
- Accuracy: ± 0.1 mm
- Tape lengths: 20, 30, 50 m (66, 100')

Convergence Meter 4425



VW

- For monitoring closures in underground excavations, tunnels, etc.
- Groutable or rockbolt expansion anchors
- Length: 710–1615 mm (28–63.6") (including eye hook assembly)
- Range: 12.5–150 mm (0.5–6")

SPECIAL APPLICATIONS

Custom Extensometers



- Extensometers can be customized to meet your needs
- Our staff will work with you throughout the process
- Common customizations include custom diameters, bladder anchors, LVDT sensors, mechanical readout, etc.

SETTLEMENT SYSTEMS

geokon.com/
Settlement-Sensors



Liquid settlement systems are designed to measure settlement from one point relative to another at a stable location. A liquid-filled line (tube or pipe) is connected to a pressure sensitive gauge. Relative elevation changes increase or decrease the pressure of the liquid in the lines, this change in pressure is measured by the pressure gauge.

BOREHOLES

Borehole Settlement System

4600
VW



- For measuring surface settlement
- Must be located above bedrock or stable ground
- Sensor dimensions (L × Ø): 280 × 60 mm (11 × 2.4")
- Reservoir dimensions (L × Ø): 305 × 60 mm (12 × 2.4")
- Plate dimensions (L × W × H): 305 × 305 × 6 mm (12 × 12 × 0.25")
- Ranges: 7, 17, 35 m

Borehole Multilevel Settlement System

4600M
VW



- For measuring subsurface settlement
- Must be located above bedrock or stable ground
- Sensors held in place with hydraulic Borros anchors
- Sensor dimensions (L × Ø): 280 × 60 mm (11 × 2.4")
- Reservoir dimensions (L × Ø): 305 × 60 mm (12 × 2.4")
- Plate dimensions (L × W × H): 305 × 305 × 6 mm (12 × 12 × 0.25")
- Ranges: 7, 17, 35 m

TUNNELS, BRIDGES, EXCAVATIONS, ETC.

Multipoint Hydraulic Leveling System

4655 | 3655
VW | ER



- For measuring differential settlements
- Sensor dimensions (L × Ø): 182 × 35 mm (7.2 × 1.4")
- Ranges: 70 kPa (7.14 m) H₂O (VW)
7–35 kPa (0.68–3.57 m) H₂O (ER)

Multilevel Vibrating Wire Settlement System

4675
VW



- For detecting and measuring very small changes of elevation at discrete locations
- Dimensions vary with range
- Ranges: 100–600 mm (4–24")

SETTLEMENT AND HEAVE

Settlement Plate System 4625



- For monitoring areas where significant settlement or substantial material displacement is expected
- Plate dimensions (L × W): 610 × 610 mm (24 × 24")
- Sleeve Ø: 89 mm (3.5")
- Riser pipe Ø: 38 mm (1.5")

TECH KEY

Vibrating Wire | VW

- Long-term monitoring
- Long cable requirements
- Adverse environments

Electronic Resistance | ER

- Dynamic response
- For Data Acquisition Systems unable to read VW sensors



EMBANKMENTS AND FILLS

Vibrating Wire Settlement System

4660
VW



- For remote measurement of settlement in or below fills, surcharges, embankments, etc.
- Plate with sensor cover (L x W x H): 305 x 305 x 51 mm (12 x 12 x 2")
- Ranges: 7, 17 m

Settlement Profiler

4651
VW



- For measuring profiles of heave and settlement beneath fills, embankments, roadways, storage tanks, structures, etc.
- Optional dead end pulley available
- Probe dimensions (L x Ø): 203 x 35 mm (8 x 1.4")
- Max tubing length: 100 m (330')
- Range: 7 m

Hydraulic Overflow Settlement System

4615



- For measuring settlement where settlement cell and readout location are at the same elevation
- Cell dimensions (H x Ø): 450 x 200 mm (17.7 x 8")
- Readout dimensions (L x W x D): 1650 x 250 x 125 mm (65 x 10 x 5")
- Range: 1 m (3.3')

SPECIAL APPLICATIONS

Custom Settlement Systems



- Settlement Systems can be customized to meet your needs
- Our staff will work with you throughout the process
- Common customizations include logger and reservoir integration, reservoirs for harsh environments, specialty cables, etc.

PRESSURE CELLS

geokon.com/
Pressure-Cells



Earth pressure cells provide a direct means of measuring total pressure (soil stress + pore water pressure). Cells are constructed from stainless steel plates welded together around their periphery and filled with hydraulic fluid. A length of stainless-steel tube connects a pressure transducer to the fluid-filled cavity. When external pressures squeeze the plates together, the transducer converts the change in the fluid pressure to an electrical signal.

EARTH FILLS, EMBANKMENTS, AND SOIL

Earth 4800 | 3500 VW | ER



- For measuring soil pressure
- Multiple cells can be used to measure pressure in two or three directions
- Cell dimensions (H × Ø): 7 × 230 mm (0.3 × 9.1")
- Ranges: 70 kPa–20 MPa (VW)

Granular Soil 4815 | 3515 VW | ER



- For measuring soil pressure in granular materials
- Effectively reduces the severity of point loading
- Cell dimensions (H × Ø): 26 × 230 mm (1 × 9.1")
- Ranges: 70 kPa–20 MPa (VW)

Contact 4810 | 3510 VW | ER



- For measuring soil pressure on structures
- Mounted to concrete forms, or to steel/concrete surfaces
- Cell dimensions (H × Ø): 15 × 230 mm (0.6 × 9.1")
- Ranges: 70 kPa–20 MPa (VW)

Push-In 4830 | 3530 VW | ER



- For measurement of total pressures in soils and earth fills
- Threaded end for installation using lengths of pipe or drill rods
- Available with integral piezometer for measurement of effective stress in soils and earth fills
- Dimensions (L × W × H): 610 × 51 × 10 mm (24 × 2 × 0.4")
- Ranges: 70 kPa–5 MPa (VW)

EXCAVATIONS

Jackout 4820 | 3520 VW | ER



- For monitoring soil pressures on diaphragms (slurry) walls
- Dimensions (H × Ø): 152 × 150 mm (6 × 5.9")
- Ranges: 70 kPa–20 MPa (VW)

Hydraulic Jack 4820-6 VW



- For use with Model 4820 or 3520 Jackout pressure cells
- Available with piezometer for measuring pore water pressures
- Ranges: 350 kPa–5 MPa

PILES

Pile Tip 4855 | 3555 VW | ER



- Available on request
- For measuring pile-tip loads in cast-in-place concrete piles (caissons)
- Thickness: ~50 mm (2")
- Diameter to suit the pile
- Ranges: 2–20 MPa (VW)

SPECIAL APPLICATIONS

Custom Pressure Cells



- Pressure Cells can be customized to meet your needs
- Our staff will work with you throughout the process
- Common customizations include temperature range, waterproof coating, remote repressurization, heavy duty housing, etc.

TUNNEL LININGS. MASS CONCRETE

NATM Style Shotcrete Stress Cell 4850-1 | 3550-1 VW | ER



- For measuring tangential stresses in shotcrete tunnel linings
- Cell dimensions (W × L): 100 × 200 mm (4 × 8")
- Ranges: 7.5, 20, 35 MPa (VW)

NATM Style Shotcrete Stress Cell 4850-2 | 3550-2 VW | ER



- For measuring radial stresses in shotcrete tunnel linings
- Cell dimensions (W × L): 150 × 250 mm (6 × 10")
- Ranges: 2, 3, 5 MPa (VW)

BOREHOLES

Borehole Pressure Cells 3200 VW



- Available on request
- For measuring rock stress changes
- With integral pressure gauge, pressure transducer, or both
- Cell dimensions (L × W × H): 203 × 48 × 13 mm (8 × 1.9 × 0.5")
- Ranges: 20, 35, 75 MPa

TECH KEY

Vibrating Wire | VW

- Long-term monitoring
- Long cable requirements
- Adverse environments

Electronic Resistance | ER
(Available on Request)

- Dynamic response

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LOAD CELLS

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Load-Cells



Load cells are designed around the transference between applied force and material deformation. They are primarily used to monitor compressive or tensile loads, often in conjunction with a hydraulic jack, which applies the load. Load cells can also be utilized to monitor load throughout the life of tiebacks, rockbolts, struts, or other supports.

TIEBACKS AND ROCK BOLTS

Solid Core Load Cell

4900 | 3000
VW | ER



- Particularly suited for long term monitoring
- Typically used in conjunction with bearing plates
- Outer Ø: 64–254 mm (2.5–10")
- Height: 115–153 mm (4.5–6")
- Rated capacities: 100–10,000 kN

Hollow Core Load Cell

4900 | 3000
VW | ER



- Particularly suited for long term monitoring
- Typically used in conjunction with bearing plates
- Outer Ø: 76–254 mm (3–10")
- Inner Ø: 50–153 mm (2–6")
- Height: 76–153 mm (3–6")
- Rated capacities: 100–10,000 kN

Bearing Plate

4901 | 3001



- For use with Models 4900 (VW) and 3000 (ER) Load Cells
- Thickness: 25–75 mm (1–3")
- Inner Ø: 50–150 mm (2–6")

Tension Load Cell

4915
VW



- Available on request
- For monitoring tensile loads in in-line weighing systems
- Transducer (L × Ø): 94 × 19 mm (3.7 × 0.75")
- Rated capacity: 15 kg

Instrumented Rockbolt

4910
VW



- Available on request
- With integral strain gauge
- Bolt size: 25 mm, #8 rebar, and larger
- Length: 300 mm (12")
- Range: 2,500 µε (equivalent to ~27,215 kg in a 25 mm (1") diameter bolt)

Reading Probe

4910-1



- Available on request
- Probe for reading Model 4910 Rockbolt
- Length: 183 cm (6")

SPECIAL APPLICATIONS

Custom Load Cells



- Load Cells can be customized to meet your needs
- Our staff will work with you throughout the process
- Common customizations include temperature range, waterproof coating, remote repressurization, heavy duty housing, etc.

TECH KEY

Vibrating Wire | VW

- Long-term monitoring
- Long cable requirements
- Adverse environments

Electronic Resistance | ER

- Dynamic response
- For Data Acquisition Systems unable to read VW sensors

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DISTRIBUTED FIBER OPTIC SENSORS

geokon.com/
Distributed-Fiber-
Optic-Sensors



Distributed Fiber Optic Sensors (DFOS) provide distributed measurements over the entire length of the sensor. This enables highly detailed monitoring of the entire length of a structure. Measurements of dynamic events are possible with DFOS gauges and the requisite optical interrogator. DFOS sensors can be directly embedded in, or attached to, the structure being monitored.

EMBEDMENT OR SURFACE MOUNT

DFOS Sensor



- For embedment in new structures (concrete or soil) or installation on the surface of existing structures (concrete, steel, composite)
- Measures strain and crack, temperature, and vibrations (strain rate)
- Strain Resolution: $1\ \mu\epsilon$
- Strain Range: $\pm 4\%$ (in compression and tension)
- Diameter: 5, 3, 2 mm (0.2, 0.1, 0.08") (other diameters are available on request)
- Length: Up to 2 km (1.25 mi) (sensors can be connected in series)

DFOS Rebar



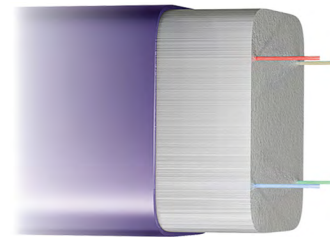
- For embedment in new structures (concrete or soil) or installation on the surface of existing structures (concrete, steel, composite)
- Measures strain and crack, temperature, and vibrations (strain rate)
- Strain Resolution: $1\ \mu\epsilon$
- Strain Range: $\pm 2\%$ (in compression and tension)
- Diameter: 5 mm (0.2") (other diameters are available on request)
- Length: Up to 1 km (0.6 mi) (sensors can be connected in series)

DFOS Graph



- For embedment in new structures (concrete or soil) or installation on the surface of existing structures (concrete, steel, composite)
- Measures strain and crack, and temperature
- Graphite additive gives improved thermal conductivity
- Strain Resolution: $1\ \mu\epsilon$
- Strain Range: $\pm 4\%$ (in compression and tension)
- Diameter: 5, 3, 2 mm (0.2, 0.1, 0.08") (other diameters are available on request)
- Length: Up to 2 km (1.25 mi) (sensors can be connected in series)

DFOS 3D



- Available in laboratory and field versions with different cross-sectional dimensions to meet the requirements of a specific project
- For embedment in new structures (concrete or soil) or installation on the surface of existing structures (concrete, steel, composite)
- Measures strain and crack, and vibrations (strain rate)
- Displacement Resolution: 1 mm
- Displacement Range: Dependent on multiple factors
- Sensor Cross-Section: $20 \times 35\text{ mm}$ ($0.8 \times 1.4\text{''}$) (other dimensions available on request)
- Length: Up to 500 m (1,640 ft.) (sensors can be connected in series)

SURFACE MOUNT ONLY

DFOS Flat



- For installation on steel, concrete, composite, and other structural components
- Measures strain and crack, temperature, and vibrations (strain rate)
- Strain Resolution: $1\ \mu\epsilon$
- Strain Range: $\pm 4\%$ (in compression and tension)
- Dimensions: $2.5 \times 6.5\text{ mm}$ ($0.1 \times 0.25\text{''}$)
- Length: Up to 2 km (1.25 mi) (sensors can be connected in series)

TEMPERATURE

geokon.com/
Temperature



Temperature sensors are designed to measure the temperature of an object or environment. Sensor output varies in accordance with the temperature, and is converted into standard engineering units by a portable readout or data logger. Temperature data plays a critical role in monitoring programs, as significant fluctuations can impact the integrity of the sensors or structures under observation.

BOREHOLES

Thermistor String 3810

TH



- For profiling borehole temperatures
- Dimensions ≤ 16 sensors (L \times \emptyset): 45 \times 16 mm (1.8 \times 0.6")
- Dimensions 17–32 sensors (L \times \emptyset): 64 \times 22 mm (2.5 \times 0.9")
- Range: –20 to +80 °C
- Accuracy: ± 0.2 °C or ± 0.5 °C depending on model

Digital Temperature Sensor String 3810B



- For profiling borehole temperatures
- Dimensions (L \times \emptyset): 146 \times 22 mm (5.7 \times 0.9")
- Terminal sensor (L \times \emptyset): 158 \times 22 mm (6.2 \times 0.9")
- Range: –40 to +80 °C
- Accuracy: ± 0.2 °C

DAMS, CONCRETE, LANDFILLS, ETC.

Vibrating Wire Temperature Sensor 4700

VW



- For measuring temperature
- Dimensions (L \times \emptyset): 130 \times 19 mm (5.1 \times 0.75")
- Range: –20 to +80 °C
- Accuracy: ± 0.5 °C

High Temperature VW Temperature Sensor 4700HT

VW



- For measuring temperature
- Dimensions (L \times \emptyset): 157 \times 19 mm (6.2 \times 0.75")
- Ranges: –40 to +200 °C, –40 to +250 °C
- Accuracy: ± 0.5 °C

Thermistor String 3810

TH



- For profiling temperatures in dam embankments, levees, landfills, glaciers, etc.
- Dimensions ≤ 16 sensors (L \times \emptyset): 45 \times 16 mm (1.8 \times 0.6")
- Dimensions 17–32 sensors (L \times \emptyset): 64 \times 22 mm (2.5 \times 0.9")
- Range: –20 to +80 °C
- Accuracy: ± 0.2 °C or ± 0.5 °C depending on model

Digital Temperature Sensor String 3810B

3810B



- For profiling temperatures in dam embankments, levees, landfills, glaciers, etc.
- Dimensions (L \times \emptyset): 146 \times 22 mm (5.7 \times 0.9")
- Terminal sensor (L \times \emptyset): 158 \times 22 mm (6.2 \times 0.9")
- Range: –40 to +80 °C
- Accuracy: ± 0.2 °C

ROCK, SOIL, CONCRETE, ETC.

Thermistor Probe 3800

TH



- For measuring temperature
- Dimensions (L \times \emptyset): 50 \times 12 mm (2 \times 0.5")
- Range: –20 to +80 °C
- Accuracy: ± 0.2 °C or ± 0.5 °C depending on model

High Temperature Thermistor Probe 3800HT

TH



- For measuring temperature
- Dimensions (L \times \emptyset): 75 \times 19 mm (3 \times 0.75")
- Range: –30 to +230 °C
- Accuracy: ± 0.5 °C

SPECIAL APPLICATIONS

Custom Instruments



- Thermistors and temperature sensors can be customized to meet your needs
- Our staff will work with you throughout the process
- Common customizations include higher accuracy, sensor spacing, special calibrations, etc.

TECH KEY

Vibrating Wire | VW

- Long-term monitoring
- Long cable requirements
- Adverse environments

Thermistor | TH

- Measures minute changes
- Responds quickly
- High degree of stability

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STRESSMETERS

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Stressmeters



Stressmeters are typically utilized to measure in-situ stress in rock formations through direct measurement of strain or pressure on borehole walls. These measurements can assist in evaluating the performance of the surrounding formation and may help inform predictions about how the formation will respond to various forces.

ROCK

Borehole Stressmeter 4300 VW



- For measuring rock stress changes in boreholes ≤ 30.5 m (100')
- Borehole \varnothing : 38, 60, or 76 mm (1.5", 2.4", 3") ± 1 mm (0.04")
- Tension range: 3 MPa
- Compression range: 35–100 MPa (Depends on rock modulus)

Borehole Pressure Cell 3200 VW



- Available on request
- For measuring rock stress changes in boreholes
- With integral pressure gauge, pressure transducer, or both
- Cell dimensions (L \times W \times H): 203 \times 48 \times 13 mm (8 \times 1.9 \times 0.5")
- Ranges: 20, 35, 75 MPa

Biaxial Stressmeter 4350 VW



- Available on request
- For measuring compressive stress changes in rock, salt, or ice
- Available with 3 or 6 radial gauges (6 gauge model includes 2 VW temperature gauges and optional 2 longitudinal gauges)
- Borehole \varnothing : 60 mm (2.4")
- Dimensions (L \times \varnothing): 318 \times 29 mm (12.5 \times 1.1")
- Range: 70 MPa

Borehole Deformation Gauge 5000 VW



- For measuring in situ rock stresses
- For 38 mm (1.5") EX-size diamond drill boreholes
- Overcore depth: 203 mm–15 m (8"–49.2') standard, 25 mm–60 m (1"–196.9') with reverse case and extra cable
- Dimensions (L \times \varnothing): 267 \times 35 mm (10.5 \times 1.4")

CONCRETE

Concrete Stressmeter 4370 VW



- For measuring tensile and compression stresses in mass concrete
- Length: 600 mm (23.6")
- Diameter (OD \times ID): 76 \times 66 mm (3 \times 2.6")
- Range: –3–25 MPa

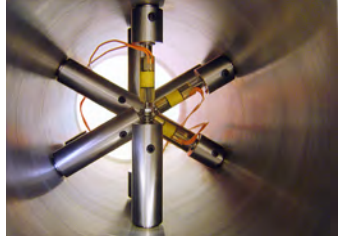
Biaxial Stressmeter 4350 VW



- Available on request
- For measuring compressive stress changes in rock, salt, or ice
- Available with 3 or 6 radial gauges (6 gauge model includes 2 VW temperature gauges and optional 2 longitudinal gauges)
- Borehole \varnothing : 60 mm (2.4")
- Dimensions (L \times \varnothing): 318 \times 29 mm (12.5 \times 1.1")
- Range: 70 MPa

SPECIAL APPLICATIONS

Custom Stressmeters



- Stressmeters can be customized to meet your needs
- Our staff will work with you throughout the process
- Common customizations include cable type and pressure range

TECH KEY

- Vibrating Wire | VW
- Long-term monitoring
 - Long cable requirements
 - Adverse environments

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TILTMETERS + PENDULUMS

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Tiltmeters-Pendulums



Tiltmeters are used to monitor the change in inclination (or rotation) at different points on a structure. These instruments consist of a gravity-sensing element contained within various styles of housing, depending on the application.

BUILDINGS, DAMS, SLOPES + EMBANKMENTS, RETAINING WALLS, RAILROAD TRACKS, OPEN PITS

Tilt Sensor 6190

MEMS



- For measuring vertical or horizontal tilt
- Sensors can be combined into a string
- Sensor dimensions (L x Ø): 180 x 25 mm (7.1 x 1")
- Range: $\pm 90^\circ$ ($\pm 30^\circ$ calibrated)

Tilt Beam 6195

MEMS



- For measuring vertical or horizontal tilt
- Sensors can be combined into a string
- Beam Ø: 25 mm
- Beam lengths: 0.5, 1, 2, 3 m, 2, 5, 10'
- Range: $\pm 90^\circ$ ($\pm 30^\circ$ calibrated)

Vibrating Wire Tiltmeter 6350

VW



- For measuring vertical or horizontal tilt
- Adjustable mounting bracket
- Sensor dimensions (L x Ø): 194 x 32 mm (7.6 x 1.25")
- Range: $\pm 10^\circ$ uniaxial

GeoNet Series Tilt Loggers Multiple Models

MEMS



- For measuring vertical or horizontal tilt
- Secure cloud integration for remote data collection and viewing (On-site also available)
- Enclosure dimensions (L x W x H): 120 x 122 x 91 mm (4.7 x 4.8 x 3.6")
- Range: $\pm 90^\circ$ ($\pm 30^\circ$ calibrated)

HIGH-RISE BUILDINGS, DAMS, BRIDGES

Pendulum System 6850



- For measuring vertical or horizontal tilt of large structures
- High-resolution linear array CCDs (charge coupled devices)
- 2D and 3D models available
- X axis range: 50 mm (2")
- Y axis ranges: 50 mm (2"), 100 mm (4")
- Z axis range: 50 mm (2")

TUNNELS + UNDERGROUND OPENINGS, PIPELINES

Tilt Beam 6195

MEMS



- For measuring vertical or horizontal tilt
- Sensors can be combined into a string
- Beam Ø: 25 mm (1")
- Beam lengths: 0.5, 1, 2, 3 m, 2, 5, 10'
- Range: $\pm 90^\circ$ ($\pm 30^\circ$ calibrated)

SPECIAL APPLICATIONS

Custom Tiltmeters



- Tiltmeters can be customized to meet your needs
- Our staff will work with you throughout the process
- Common customizations include tilt range, temperature range, corrosion resistant housings, specialty cables, etc.

TECH KEY

- Vibrating Wire | VW
- Long-term monitoring
 - Long cable requirements
 - Adverse environments

- Micro-Electro-Mechanical Systems | MEMS
- High sensitivity
 - Long-term stability
 - High resistance to shock loads

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DATA LOGGERS

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Dataloggers



A data logger is a device specifically engineered to monitor and record data, at specified time intervals, of either internal or external sensors. Data loggers are designed to operate autonomously for extended durations with minimal human intervention, making them ideal for deployment in remote environments. Data loggers can function as standalone units, or serve as integral components of larger systems.

GEONET

LoRa® Network

8910



- Secure, remote data collection and viewing through the cloud
- Compatible with most manufactures' VW sensors and GEOKON addressable sensor strings
- Single, multi-channel, addressable, and tilt data loggers available
- LoRa Radio (LoRaWAN® compatible)
- LTM or LTE Cellular Gateways
- Compatible with any 3rd party LoRaWAN gateway

Mesh Network

8800 | 8900



- Cloud integration for remote data collection and viewing (on-site data collection also available)
- Mesh network can relay data around obstacles
- Compatible with most manufactures' VW sensors and GEOKON addressable sensor strings
- Single, multi-channel, addressable, and tilt data loggers available

Network

Data Loggers 8920 | 8930 | 8950



- Data is collected and transmitted directly to the cloud by each unit
- Secure, remote data collection and viewing through the cloud
- Multiple telemetry options
- Compatible with most manufactures' VW sensors and GEOKON addressable sensor strings
- Single, multi-channel, addressable, and tilt data loggers available

Data Loggers

8940



- Sensor data is collected on-site via a direct connection to the data logger
- Single, multi-channel, addressable, and tilt data loggers available
- Compatible with most manufactures' VW sensors and GEOKON addressable sensor strings

Digital Vibrating Wire Interfaces

8960



- Expands the capacity of multi-channel and addressable data loggers
- Single and multi-channel available
- Multiple load cells and VW sensors can be connected to a single interface (total number of VW gauges cannot exceed interface channel capacity)
- Compatible with most manufactures' VW sensors and with GEOKON addressable sensor strings

MODEL 8600

Data Logger

8600



- Utilizes the Campbell Scientific, Inc. Model CR6 Measurement and Control System
- Primarily for use with vibrating wire sensors (can be special ordered to read MEMS, voltage sensors, Carlson type sensors, etc.)
- Can read up to 96 VW sensors and thermistors or 256 two-wire sensors (requires multiplexers)
- Standard memory capacity of 128 MB (can be expanded using a Micro SD card)

Multiplexer

8032



- Enables automatic switching between connected gauges
- Two configurations available: 16-channels of 4-conductors, or 32-channels 2-conductors
- Dimensions (L x W x H): 342 x 301 x 160 mm (13.5 x 11.9 x 6.3")



CONVERTERS

Addressable Bus Converter

8032-38



- Allows GEOKON RS-485 enabled sensor strings to be read by USB or TTL capable devices (PCs, data loggers, programmable logic controllers, etc.)
- Communication: USB version 1.0 and higher, 5-volt TTL, or inverted 5-volt TTL
- Baud rates: 9600 bps–115.2 kbps (user resettable)
- Dimensions (L × W × H): 89 × 65 × 40 mm (3.5 × 2.5 × 1.6")

VW Frequency to Analog Converter

8020-59



- Allows GEOKON VW sensors to be read by data acquisition systems unable to read VW sensors or frequency signals
- Provides the necessary signal conditioning
- Accuracy: ±0.1% F.S. (0–5 V), ±0.5% F.S. (4–20 mA)
- Dimensions (L × W × H): 111 × 108 × 36 mm (4.4 × 4.25 × 1.4")

SOLAR PANELS

Solar Panels



- For use with GeoNet and Model 8600 Data Loggers
- Charge lead acid or lithium batteries
- Regulated and unregulated panels available

DATA HOSTING + SOFTWARE

GeoNet Wireless Data Hosting

- Provides a high-value, networked data collection option for GeoNet devices
- Sensor data is stored in a secure cloud-based storage platform where it can be accessed through the GEOKON OpenAPI
- Agent software or any compatible third party data visualization software can be used with the GEOKON OpenAPI

Agent Software 8800-GNA



- For configuring GeoNet hardware and performing subsequent data acquisition
- Facilitates hardware configuration, sensor monitoring, data collection, file management, etc.
- Free download on www.GEOKON.com

SPECIAL APPLICATIONS

Custom Data Loggers



- Data loggers can be customized to meet your needs
- Our staff will work with you throughout the process
- Common customizations include cable entry size and quantity, enclosure modification, specialty antennas, etc.

READOUTS

geokon.com/
Readouts



Portable readouts are compact units tailored to work with specific types of external sensors. They are versatile devices that can be used for primary data collection or as diagnostic tools. Capabilities range from basic to advanced and vary with model.

VIBRATING WIRE

Handheld GK-404



- Compatible with GEOKON vibrating wire (VW) gauges and transducers
- Displays the reading in digits, frequency (Hz), period (μ s), and microstrain ($\mu\epsilon$)
- Displays temperature of sensors with integral thermistors
- Accuracy: 0.025% F.S. (VW sensor)
- Dimensions (L x W x H): 120 x 65 x 22 mm (4.7 x 2.6 x 0.9")

Vibrating Wire Analyzer GK-406



- Compatible with GEOKON vibrating wire (VW) gauges and transducers
- Measures the resonant frequency of the wire using VSPECT (VW spectral analysis technology)
- Very fine measurement resolution
- Limits the influence of external noise
- Accuracy: $\pm 0.005\%$ of reading
- Dimensions (L x W x H): 200 x 100 x 58 mm (7.9 x 3.9 x 2.3")

LOAD CELL

Load Cell Readout GK-502



- For reading Model 3000 electrical resistance strain gauge load cells
- Accuracy: $\pm 0.05\%$ F.S. (± 30 digits)
- Dimensions (L x W x H): 165 x 102 x 216 mm (6.5 x 4 x 8.5")
- Range: ± 16 mV ($\pm 31,250$ digits)

Load Cell Multiplexer GK-406-MUX



- Can be used in conjunction with the GK-406 to read GEOKON 3, 4, and 6 gauge load cells
- Allows the GK-406 to calculate the average reading change, apply the gauge factor, and display the load in engineering units
- Dimensions (L x W x H): 135 x 76 x 35 mm (5.3 x 3 x 1.4")

INCLINOMETER

Field PC FPC-3



- For reading GK-604D digital inclinometer probes
- 4 GB memory, 64 GB data storage
- Android 11 (GMS) operating system
- Dimensions (L x W x H): 194 x 92 x 15 mm (7.6 x 3.6 x 0.6")

SURGE PROTECTION

Surge Protection Circuit Board 4999-12



- Protects GEOKON transducers, data loggers, and power supplies from short duration, high voltages surges
- Available with or without a protective enclosure
- Break down voltage: 7.5 V, 16 V, or 30 V (nominal)
- Peak current: 5 kA (20 μ s) max.

TERMINALS + MULTIPLEXERS

Manual Switch Terminal Box 4999



- Facilitates reading multiple vibrating wire sensors with a single readout
- Includes built in surge protection
- Capacity of 4, 8, 16, or 32 sensors
- Dimensions vary by model



APPLICATIONS

GEOKON cables are of the highest quality materials and construction. They are designed to be matched with the appropriate instrument for a variety of geotechnical and hydrological applications.

Standard and specialized cables are available for:

- Typical applications
- High temperature environments
- Extra abrasion resistance
- Heavy duty use

CABLE DESIGN

GEOKON cables are made from individual stranded copper conductors encased in an insulation material. Individual, insulated conductors are twisted into pairs, bundled inside a conductive Mylar-type shielding material and then covered by an outer

jacket made from the most suitable material. In addition, cables may be water blocked, armored, or may contain steel or Kevlar® cables for additional strength, or plastic tubes for circulation fluids, or for venting to atmosphere.

CABLE SHIELDING AND INSULATION

Shielding provides protection from electromagnetic radiation coming from nearby electrical equipment, lightning strikes and fields surrounding power lines, transformers, etc. GEOKON multi-conductor cables are individually shielded and twisted in pairs, which helps minimize common mode interference. Drain wires connected electrically to Mylar-type shields provide a simple means

of connecting all the shields to a common ground. For applications with very high levels of EMI, such as in pumping wells, a special cable with a braided shield can be provided.

Plastic insulation is typically used on the individual copper conductors. Polyethylene or polypropylene insulation is used at normal temperatures and Teflon is most often used for high temperature.

CABLE CONDUCTORS

In general, the number of conductors in a cable is determined by the number of sensors to be connected to the cable, and the number of conductors required by each sensor.

The type of conductor normally used is stranded, 22 AWG tinned copper. Stranded conductors are more flexible than solid conductors, which makes the cable easier to handle during installation.

OUTER JACKETS

GEOKON cable jackets are thicker than regular commercial types, and pressure extruded, which produces cables that are rounder, firmer and easier to grip and seal at the point of entry on the sensor. A wide variety of outer jacket materials is available depending on the end use:

Neoprene: A synthetic rubber compound commonly used for outdoor applications, with good resistance to gasoline, oils etc. Ordinary rubber should never be used.

PVC: A common choice for its good electrical properties and for being waterproof. It should not be used at low temperatures where it becomes brittle.

Polyurethane: This material is very resistant to cuts and abrasions making it useful for cables that are subject to repeated rough handling. It is not as

water resistant as PVC but has better low temperature capabilities.

High Density Polyethylene:

An excellent material that is highly resistant to environmental attack and exhibits excellent low temperature characteristics. Unfortunately, like Teflon, the material is so slippery that splicing and potting compounds will not stick to it.

Teflon: This material is essential wherever sensors and cables are subject to high temperature. It has outstanding resistance to environmental attack and has excellent low temperature properties. However, splicing and potting compounds will not adhere to it.

Other: Compounds such as Kevlar or Kapton®, etc. may be required where there is a need for low smoke emissions, flame retardant, or resistance to nuclear radiation.

ARMOR

Armored cables are most often needed for sensors installed in earth embankments or landfills where large forces are exerted on the cable by compaction equipment and earth moving vehicles, and by settlement, "weaving," and sideways spreading of the embankment as it is built. Armored cables should not be con-

nected directly to strain gauges or crackmeters because the stiffness of the cable would pull on the gauge and alter the readings. Armored cable is not necessary in concrete. The armor usually takes the form of a helically laid layer of steel wire. In very severe situations, regular cable may be put inside stainless steel tubing.



VENTED CABLES

Special cables are available which contain plastic tubes inside of them as well as the usual conductors. These tubes can be used to transport air or other fluids. This type is required for

vented piezometers, where a single vent tube allows the inside of the pressure sensor to be connected to the ambient atmosphere to provide automatic barometric compensation.

CABLE SPLICES

A wide range of splices are available to provide waterproof and mechanically strong cable connections.

The splice kits include the requisite electrical connectors and epoxy potting compounds along with detailed instructions for correct implementation.

TECHNICAL SPECIFICATIONS

Model	Conductors	Conductor Insulation	Drain Wire	Cable Jacket ¹	Nominal O.D.	Temperature Range
01-250P0	2-conductor, 1 twisted pair, 22 AWG 7/30	10 mil HDPP	24 AWG	Black PU	6.35 mm (±0.25 mm)	-40 °C to +80 °C
02-156T	4-conductor, 24 AWG, 7/34	10 mil PFA	N/A	316L	4 mm	-40 °C to +300 °C
02-187P6	4-conductor, 2 twisted pairs, 22 AWG 7/30	8 mil HDPP	24 AWG	Blue PU	4.75 mm (±0.25 mm)	-20 °C to +80 °C
02-187V3	4-conductor, 2 twisted pairs, 22 AWG 7/30	8 mil HDPP	24 AWG	Red PVC	4.75 mm (±0.25 mm)	-20 °C to +80 °C
02-250P4	4-conductor, 2 twisted pairs, 22 AWG 7/30	8 mil HDPP	24 AWG	Green PU	6.35 mm (±0.25 mm)	-20 °C to +80 °C
02-250P9LT	4-conductor, 2 twisted pairs, 22 AWG 7/30	8 mil HDPP	24 AWG	Violet PU	6 mm (±0.25 mm)	-40 °C to +80 °C
02-250PEP-2205	4-conductor, 24 AWG Solid	8 mil PTFE	N/A	Duplex 2205	6.35 mm (±0.13 mm)	-150 °C to +300 °C
02-250PEP-316	4-conductor, 24 AWG Solid	8 mil PTFE	N/A	316 SS	6.35 mm (±0.13 mm)	-150 °C to +300 °C
02-250T	4-conductor, 2 twisted pairs, 22 AWG 19/34	10 mil FEP	24 AWG	White Teflon with aluminum polyester foil shielding	5.20 mm (±0.25 mm)	-80 °C to +200 °C
02-250V4	4-conductor, 2 twisted pairs, 22 AWG 7/30	10 mil PP	24 AWG	Green PVC	6.35 mm	-20 °C to +80 °C
02-250V6	4-conductor, 2 twisted pairs, 22 AWG 7/30	10 mil HDPP	24 AWG	Blue PVC	6.35 mm (±0.25 mm)	-20 °C to +80 °C
02-250V6-LSZH	4-conductor, 2 twisted pairs, 22 AWG 7/30	10 mil PP	24 AWG	Blue LSZH	6.35 mm	-40 °C to +80 °C
02-312PS4	4-conductor, 2 twisted pairs, 22 AWG 7/30	10 mil HDPP	24 AWG	Green PU with Braided Shield	8 mm (±0.38 mm)	-20 °C to +80 °C
02-313P9LTD	4-conductor, 2 twisted pairs, 1st pair 24 AWG 7/32, 2nd pair 22 AWG 7/30	1st pair 20 mil FPE, 2nd pair 10 mil SRPVC	24 AWG	Violet PU	8 mm	-40 °C to +80 °C
02-313PI	4-conductor, 2 twisted pairs, 22 AWG 7/30	10 mil HDPP	24 AWG	Black PU with integral SS straining wire	7.95 mm (±0.38 mm)	-20 °C to +80 °C
02-313V6	4-conductor, 2 twisted pairs, 22 AWG 7/30	10 mil HDPP	24 AWG	Blue PVC with Kevlar strain relief	8 mm (±0.38 mm)	-20 °C to +80 °C
02-335VT8	4-conductor, 2 twisted pairs, 22 AWG 7/30	10 mil HDPP	24 AWG	Yellow PU with integral 0.125" Ø PE vent tube	8.50 mm (±0.38 mm)	-20 °C to +80 °C
02-500PE1A	4-conductor, 2 twisted pairs, 22 AWG 7/30	10 mil HDPP	24 AWG	Black PVC Inner; Black MDPE outer, with served armor	12.70 mm (±0.38 mm)	-20 °C to +80 °C
03-250V0	6-conductor, 3 twisted pairs, 24 AWG 7/32	10 mil HDPP	24 AWG	Black PVC	6.35 mm (±0.38 mm)	-20 °C to +80 °C
04-375V9	8-conductor, 4 twisted pairs, 22 AWG 7/30	10 mil HDPP	22 AWG	Violet PVC	9.50 mm (±0.38 mm)	-20 °C to +80 °C
04-375VT1	8-conductor, 4 twisted pairs, 22 AWG	10 mil HDPP	24 AWG	Black PVC with integral PE vent tube	9.50 mm	-20 °C to +60 °C
05-375V12	10-conductor, 5 twisted pairs, 22 AWG 7/30	10 mil HDPP	22 AWG	Tan PVC	9.50 mm (±0.38 mm)	-20 °C to +80 °C
06-312V0	12-conductor, 6 twisted pairs, 24 AWG 7/32	10 mil HDPP	24 AWG	Black PVC	7.95 mm (±0.38 mm)	-20 °C to +80 °C
06-500V7	12-conductor, 6 twisted pairs, 22 AWG 7/30	10 mil HDPP	22 AWG	Orange PVC	12.70 mm (±0.38 mm)	-20 °C to +80 °C
CAB-541	12-conductor, 6 twisted pairs, 20 AWG 7/28	16 mil TPR	22 AWG	Black TPR	11.68 mm	-30 °C to +105 °C
12-625V5	24-conductor, 12 twisted pairs, 22 AWG 7/30	10 mil HDPP	22 AWG	Brown PVC	15.90 mm (±0.38 mm)	-20 °C to +80 °C
17-375P13	17-conductor, 22 AWG 7/30	9 mil PP	N/A	Beige PU	9.53 mm	-40 °C to +80 °C
17-375P7	17-conductor, 22 AWG 7/30	9 mil PP	N/A	Orange PU	9.53 mm	-20 °C to +80 °C
17-375V7	17-conductor, 22 AWG 7/30	9 mil PP	N/A	Orange PVC	9.53 mm	-20 °C to +80 °C
33-500P6	33-conductor, 22 AWG 7/30	9 mil PP	N/A	Blue PU	12.70 mm	-20 °C to +80 °C
33-500V4	33-conductor, 22 AWG 7/30	9 mil PP	N/A	Green PVC	12.70 mm	-20 °C to +80 °C

¹All outer cable jackets are pressure extruded. In addition, other cable jackets are available for special applications.

FEP = Fluorinated Ethylene Propylene (Teflon) | FPE = Foamed Polyethylene | HDPP = High Density Polypropylene | LSZH = Low Smoke Zero Halogen | MDPE = Medium Density Polyethylene | PE = Polyethylene
PFA = Perfluoroalkoxy | PTFE = Polytetrafluoroethylene | PP = Polypropylene | PU = Polyurethane | PVC = Polyvinylchloride | SRPVC = Semi-Rigid PVC | TPR = Thermoplastic Rubber