HMA

GEOTECHNICAL

SINCE 1966

Introduction

Geotechnical Systems Australia (GSA) was founded in March 1987 to design, manufacture and distribute geotechnical instrumentation for the geotechnical and mining industries. Now forming the Geotechnical division of the HMA Group the company designs, manufactures and installs not only its own equipment but also those imported from its global partners.

HMA Geotechnical is the only Australian Supplier of geotechnical instrumentation to provide quality assurance, product liability, professional engineering staff and instrumentation consultation. Our team pride themselves on their technical knowledge, hands on experience, flexibility and responsiveness to client needs.

We work with you to design and manufacture standard or customised products to offer complete turnkey packages covering all industrial environment requirements which will deliver quality data. Our experience, together with our manufacturing and calibration facilities allow us to precisely engineer an innovative geotechnical instrumentation application specific solution. Our facilities incorporate quality management system to ISO 9001.

Through our team of locally certified and factory trained technicians we can provide lifetime support on all products. Our service team provide in-house repair, on site commissioning and calibration, as well as long term service contracts. Our markets extend from Australasia through the Pacific Rim to Asia and Africa. We have local offices in Australia, New Zealand, Indonesia and South Africa.

Industries

- MINING & MINERALS
- CEMENT & QUARRY
- CIVIL & INFRASTRUCTURE
- ENVIRONMENTAL
- WASTE & WATER
- RAIL & TRANSPORT
- MARINE & OFFSHORE

Field & Workshop Services

HMA Geotechnical workshop services:

- Manufacturing conventional and custom-built instruments to suit civil, geotechnical and mining instrumentation projects
- Assembling mechanical and electrical parts for field installation works
- Wiring and programming data loggers and automatic data acquisition systems
- Calibration and testing of Vibrating Wire Piezometers, Inclinometer Probes, Hydraulic Pressure Cells, Potentiometric Extensometers and Pneumatic Instruments
- Repair and warranty services for all sale products
- Free technical advice during instrumentation program planning, pre and post instrumentation system installation

HMA Geotechnical offers field works & services including:

- Field installation and supervision for geotechnical instrumentation projects
- Monitoring and safety surveillance for structures, embankments, tunnels, underground spaces and mines
- Evaluation of existing systems
- Technical consultancy for instrumentation designs
- Integration of new instruments into existing systems
- On site repairs of existing systems
- Performing on site tutorial sessions with respect to instrument installation, operation, maintenance and safety
- Hiring services for field operations including:
- Borehole cameras
- Point load testing apparatus
- Inclinometer and twistmeter systems
- Handheld readouts and dataloggers for geotechnical instruments
- Water level meters

Water & Bore Monitoring

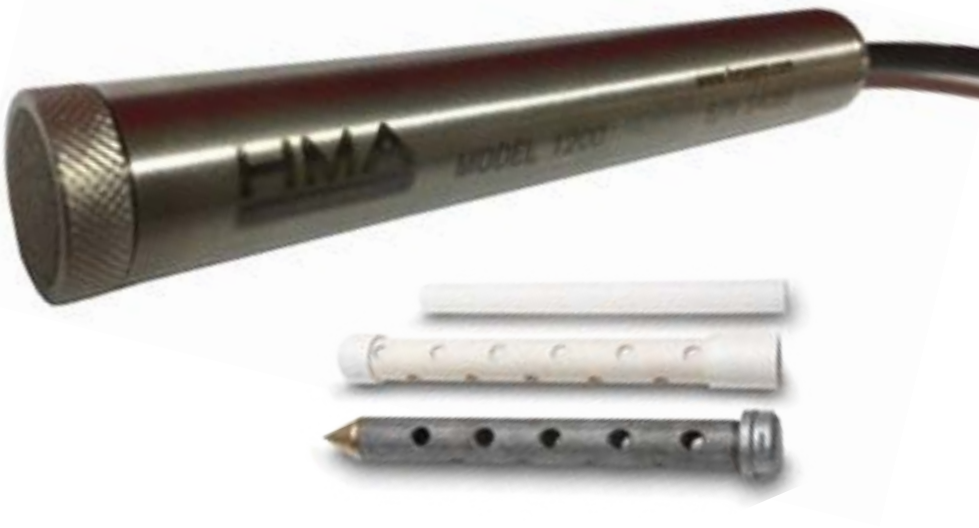
Pore Water

Standpipe or Casagrande Piezometers are economical systems allowing manual water level reading and water sampling if required.

Pneumatic Piezometers are suited to short term monitoring of low pore pressures.

Vibrating Wire Piezometers, simple to read, instant response. Ideal for where automatic data acquisition is required.

Fibre Optic Piezometers for hazardous environments.

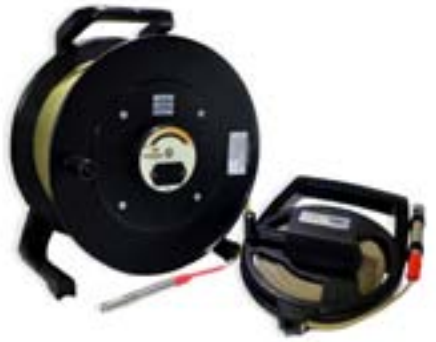


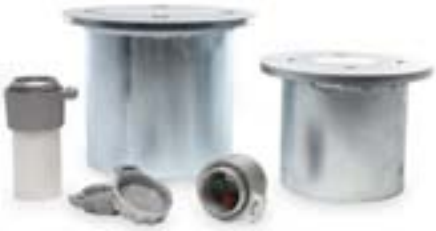
Ground Water

Large range of equipment for monitoring and physically protecting monitoring wells.

Data loggers are also available for use in monitoring water levels either above ground or in-hole systems.

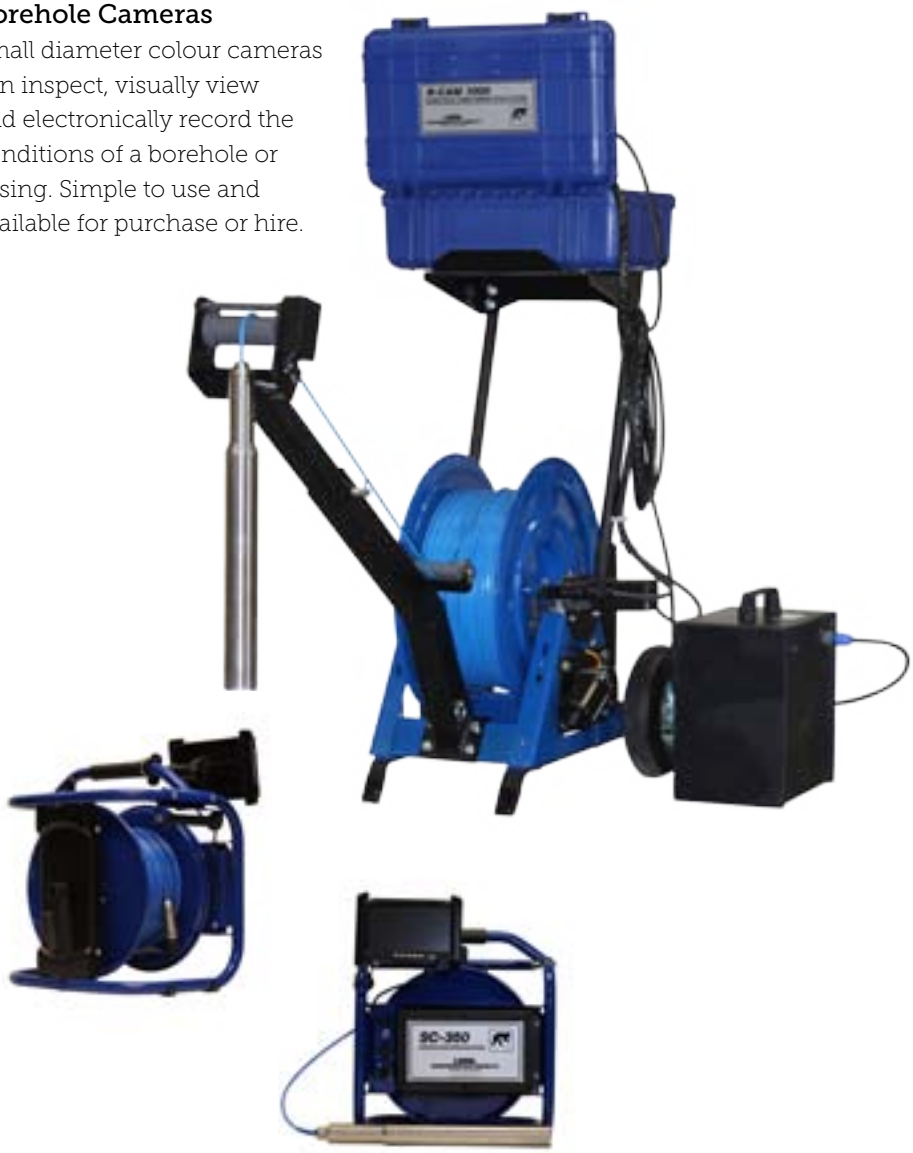
Water level indicators and whistles also available to manually record static water levels.





Borehole Cameras

Small diameter colour cameras can inspect, visually view and electronically record the conditions of a borehole or casing. Simple to use and available for purchase or hire.



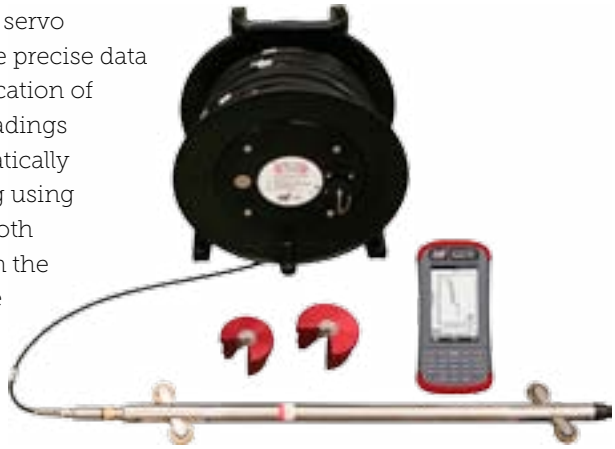
Inclination

ShapeAccelArray (SAA)

Comprises of continuous strand inclination monitoring segments each consisting of 3 MEMS (micro electrical mechanical sensors) that can be further resolved to measure displacements. Used vertically to track magnitude and direction of lateral deformation in 2 dimensions, and horizontally to monitor vertical deformation. Can also be configured to monitor tunnel perimeter cross sectional displacements.

Biaxial Inclinometer

Monitors the inclination of embankments and structures. The Inclinometer Probe is passed along the length of a grooved Inclinometer Casing, which is placed in the borehole or attached to the structure. Uses digital servo accelerometers to provide precise data on the magnitude and location of lateral displacements. Readings are displayed and automatically stored for data processing using a PDA that utilises Bluetooth Communication between the Inclinometer Probe/cable reel and PDA unit.

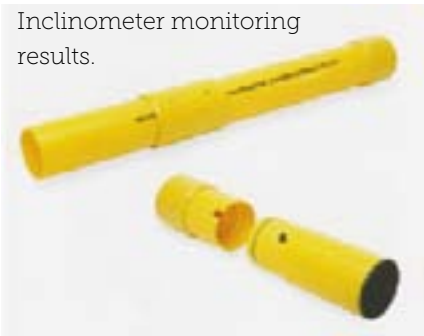


Tilt Sensor

Designed to be externally mounted to a structure allowing the structure to be monitored for inclination deviation which in turn can be used to determine horizontal and vertical displacements.

Inclinometer Casing

ABS polymer Inclinometer Casing is self-aligning and has self-coupling connections. Quick and simple assembly with accurately machined grooves allows for ease of installation resulting in quality Inclinometer monitoring results.

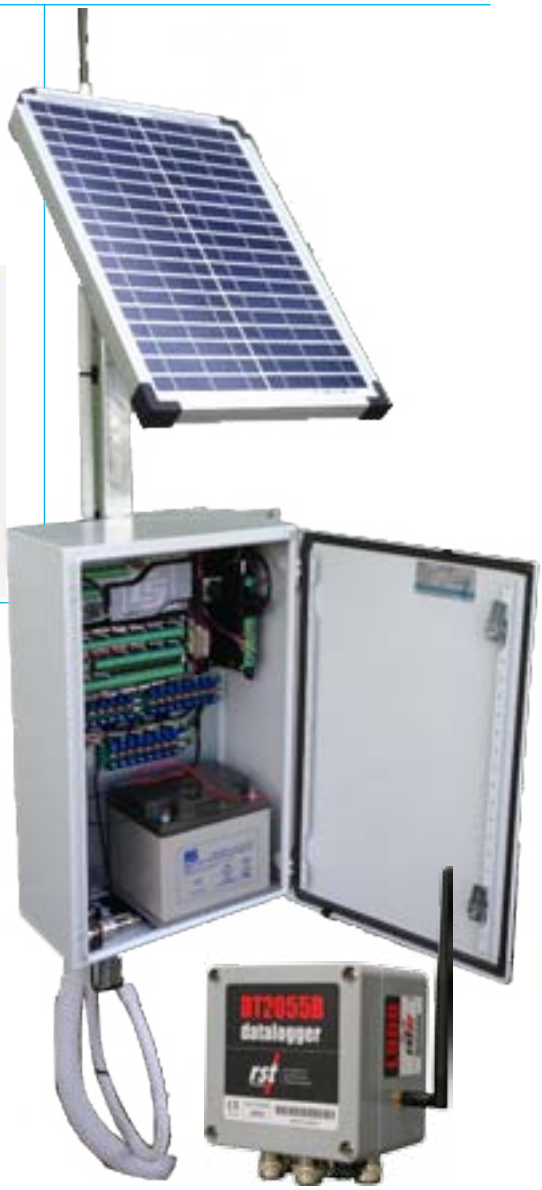


Inplace Inclinometer

Utilises a series of inclination monitoring accelerometers permanently housed within Incinometer Casing and linked together to continually monitor, via the use of a Datalogger, the inclination of a particular inclinometer.

Data Loggers and Readouts

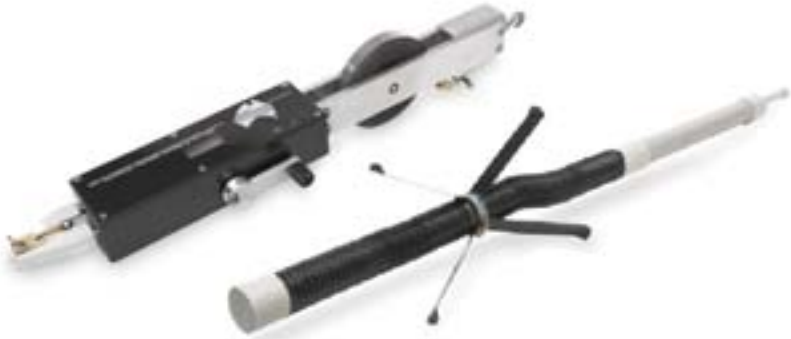
Used to monitor instruments remotely or to provide instantaneous readings, the Dataloggers and Readouts are constructed to withstand the harsh environments found on site. Datalogger enclosures are specifically designed and constructed to meet clients' requirements. Dataloggers allow data to be accessed, displayed and alarmed online or via radio networks. Can be mains, battery or solar powered.

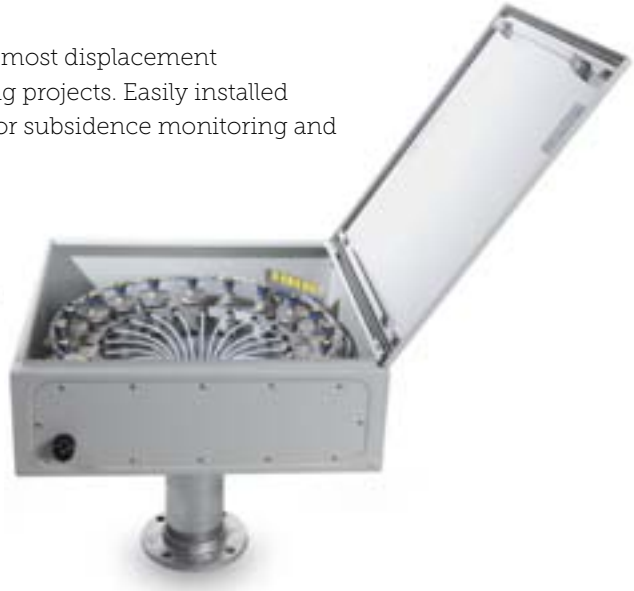


Displacement

Extensometer

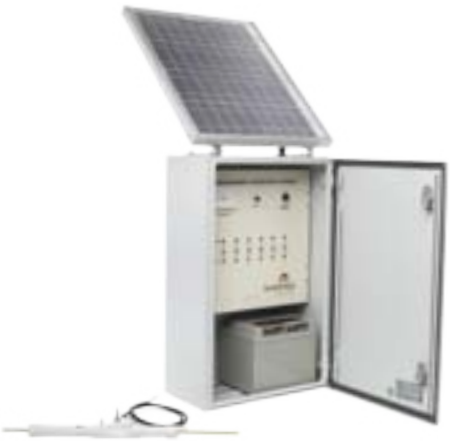
Specialising in a diverse range of multiple point Extensometers to suit most displacement monitoring requirements in addition to open and underground mining projects. Easily installed and connected to Datalogging Systems. Our deep hole range is ideal for subsidence monitoring and have been installed down to 900m in depth with up to 24 anchors.





Displacement Detector System

These behave as an early warning system consisting of a series of tensioned stainless steel wire continually monitoring real time embankment displacement. The wires are connected to a switch system which when a pre-set displacement is exceeded or the wire is broken create an audible/visual alarm to be activated. Up to six sensors monitored continually.

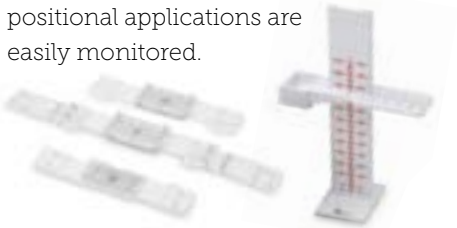


Convergence Monitor

Based on a spring loaded wire mechanism. Measuring a displacement range of 1m but can monitor up to 20m with extension wires. When used with a Readout has an output resolution of 0.1mm. Suitable for remote reading and data logging. Light, small and simple to install.

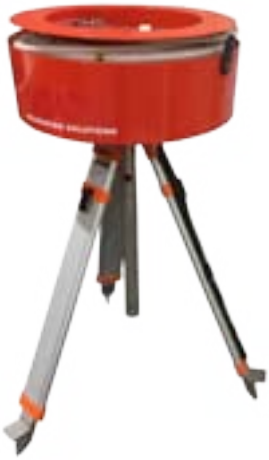
Tell-Tale Crack Monitors

Consists of two plates that overlap for part of their length allowing 2 dimensional monitoring of surface cracks. One plate is calibrated in millimetres and the other is transparent, marked with a hairline cursor. Relationship of the cursor to the scale represents the amount of movement. Range +25mm. Various positional applications are easily monitored.



Hydrostatic Profiler System

Designed to measure horizontal settlement profiles at intervals along a buried/backfilled semi-rigid access tube. By comparing profiles taken at different times, the displacement settlement of the tube can be determined. Supplied with a PDA readout unit. Operating range is +1 to -17m.



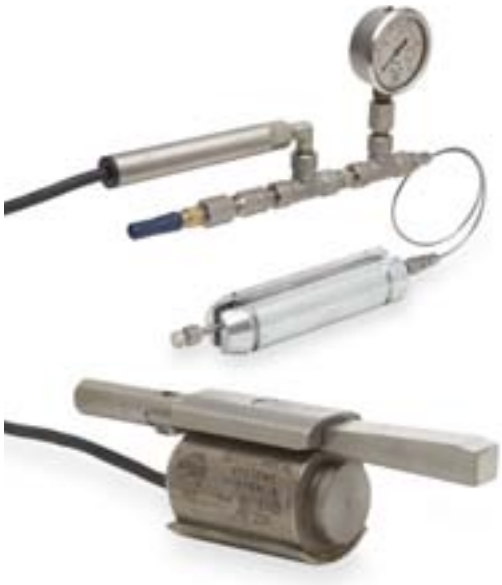
Stress & Strength Monitoring

Point Load

Portable machine suitable for use in the field or laboratory to determine the point load strength index of rocks specimens. Uses a hand operated hydraulic jack for load application, and a strain-gauged load cell with digital readout for load monitoring. Features include peak load function, protective perspex safety screen, platen separation indicator and smooth platen retracting system. Readout range 0 – 50kN, core size up to 75mm diameter. Incorporates a micro-processor for superior load measurement with increased accuracy. Hydraulic version also available.

Rock Stress

Two types of Rock Stress Meters for borehole application are available. Hydraulic type Rock Stress Meters are best suited for coal and soft rock applications these can be read using a bourdon tube pressure gauge or an electronic pressure sensor. Vibrating wire Rock Stress Meter which works on a proving ring principle and are best suited to hard rock applications. Both are installed in specially drilled boreholes and can be read remotely.

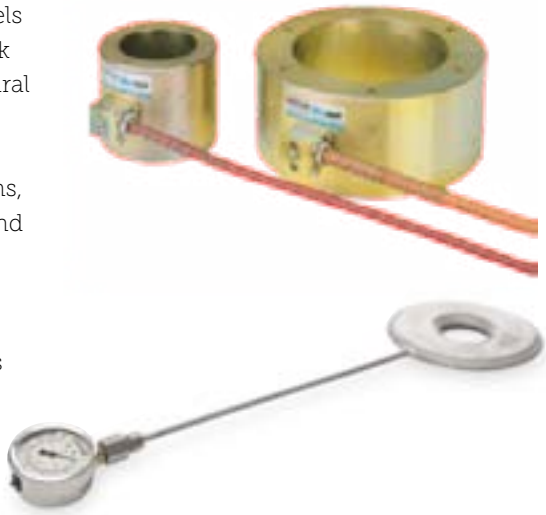


Structural Monitoring

Load Cells can be used in tunnels and excavations to monitor rock bolts, tunnel linings and structural beams.

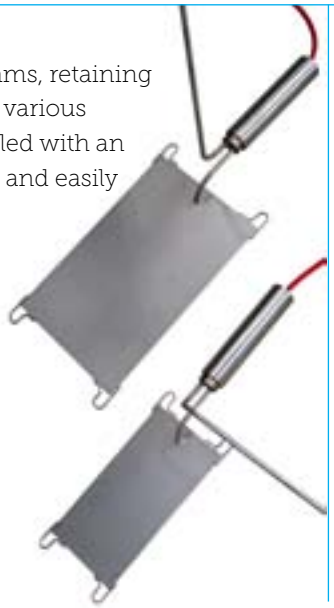
Available in different dimensions, shapes, reading technologies and load ranges.

Load Cells can be used for both dynamic and static applications and can be easily connected to Datalogging systems.



Earth Pressure Monitoring

Measurement of earth pressure in embankments, dams, retaining walls and abutments. Consisting of two flat plates of various sizes, welded together around their periphery and filled with an incompressible fluid. Ideal for long term monitoring and easily connected to automatic data acquisition systems.



Strain Gauges

Vibrating Wire Surface Strain Gauges used in any application to monitor strain in concrete, steel or masonry structures. These can be affixed by spot welding, arc welding or bolting.

Vibrating Wire Embedment Strain Gauge used for measurement of internal strains in prefabricated concrete panels, massed concrete or within shotcrete lined structures.

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HMA GROUP

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HMA-BR-003 (FEB 20)

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