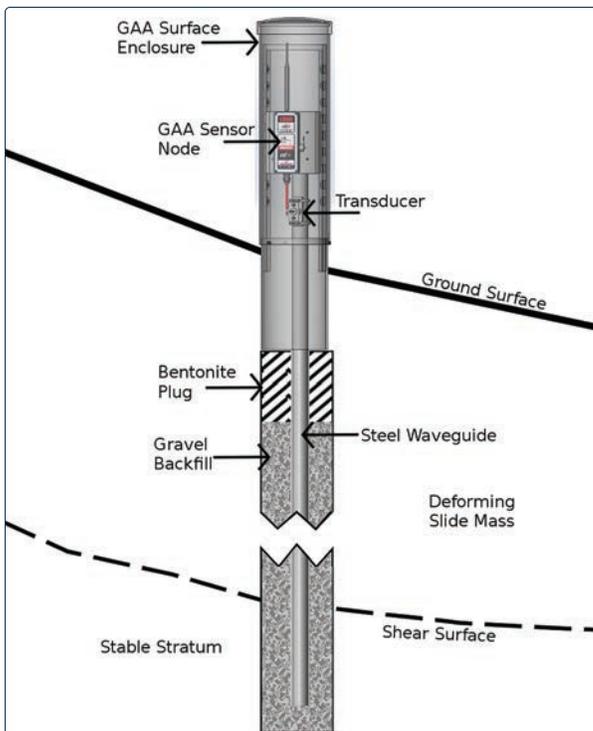




GAA2820 Data Logger shown equipped with an antenna for use in an L900 RSTAR system (automated data collection). The radio antenna is easily screwed into a connector at the top of the GAA2820.



Cross-Section of a GAA Installation

	PRODUCT CATEGORY:
	INCLINOMETERS + TILT SENSORS

Geo-Acoustic Aware (GAA) Slope Monitoring System

Geo-Acoustic Aware (GAA) is a low-cost, reliable solution for the spatial infill of ground movement data instead of traditional instrumentation (Inclinometers, ShapeArray) at shallow depths, and to allow for early warning of movement. It is used in conjunction with Inclinometers, In-Place Inclinometers, ShapeArray (SAA), piezometers, weather sensors, and other instruments to monitor slow to moderate slope movement rates in landslides, roads and highways, pipelines and tailings dams.

The sensor is attached to a steel pipe (waveguide) in a borehole backfilled with packed angular gravel. The GAA sensor detects acoustic emission stress waves generated by inter-particle friction. Increases in acoustic emission stress waves indicate accelerating slope movement. The sensor is connected to the GAA2820 Data Logger for real-time monitoring.

Acoustic emission stress waves are counted by the data logger during the reading interval (1 hour recommended) and the recorded value is the sum of the waves during this period. This recorded value is called Ring Down Count (RDC). RDC/hour is correlated to the landslide velocity scale presented by Cruden & Varnes (1996)*. The RDC represents an approximation of movement velocity and order of magnitude changes in RDC represents acceleration of the ground.

GAA boasts increased range over other solutions. In cases of large displacement where traditional instrumentation will exceed their range, GAA can measure, record and transmit data as the waveguide continues to deform in the ground (>500 mm displacement).

The waveguide and data logger are simple to install. The data logger setup and future data collection is done using a laptop. RST's DT Logger Host Software is also included.

Wireless communication via the RSTAR network allows the data to be combined with other data sets and boasts a large open country Hub-to-Node range. View the RSTAR brochure for complete details.

> APPLICATIONS

A low-cost solution that can be used for spatial infill of data from traditional instruments in landslides, roads and highways, pipelines and tailings dams.

> FEATURES

HARDWARE:

Robust construction.	4MB memory.
1 lithium 'D' cell provides years of battery life.	-40°C to 60°C (-40°F to 140°F) operating range.
Includes radio for incorporation into an RSTAR system.	
100-year memory backup.	Weather resistant NEMA 4X (IP65) enclosure.

SOFTWARE:

- User friendly Windows® host software included at no additional cost.
- Compatible with most spreadsheet software.
- Data stores in CSV format, and opens in Microsoft® Excel.

*Cruden, D.M., Varnes, D.J., 1996, Landslide Types and Processes, Special Report, Transportation Research Board, National Academy of Sciences, 247-36-75
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GAA Slope Monitoring System

SPECIFICATIONS + ORDERING

	PRODUCT CATEGORY:
	INCLINOMETERS + TILT SENSORS



SPECIFICATIONS

GENERAL	
ITEM	SPECIFICATION
Reporting Units	Ring Down Count (RDC)
Memory Records	Up to 600,000 records including time, RDC
Power Source	Lithium 'D' cell battery
Battery Life	Up to 1.5 years (assuming 1 hour reading frequency) / 4 memory fills depending on temperature and use
Communication	RSTAR, USB (for setup)
Dimensions	190 x 75 x 55 mm (7.48 x 2.95 x 2.17 in.)
Temperature Range	-40°C to 60°C (-40° to 140°F)
Enclosure	NEMA 4X (IP65)
MEMORY	
Memory Size	4MB
Data Transfer	2,300 data points per second
Interval Mode	1 hour recommended (optional 15 minutes)
Time Format	Month / day / year Hour / minute / second
Memory Full Behaviour	"Wrap around" or "fill & stop" option



The GAA2820 Slope Monitoring System is housed in an 8 in. Secondary Enclosure which can be ordered separately. The enclosure uses an 11 mm nut driver to secure the removable cover.

ORDERING

ITEM	PART #
GAA Surface Assembly (includes sensor and mount, data logger, antenna and secondary enclosure)	GAA2820
Waveguide (3 m length, and threaded)	GAA150410
Waveguide Coupling	GAA1504C