

## THE SPECTRE-GMM

### Features:

- *Standard 125mm (5 inch) stroke length up to 250mm(10inch)*
- *High accuracy (0.5% FS) +resolution (0.01% FS) using SPECTRE technology.*
- *Inherently digital*
- *Microcontroller provides output in real world units (mm + °C)*
- *Microcontroller stores sensor ID & Calibration Coeffs. in Flash EEPROM*
- *Digital temperature sensor for accurate compensation*
- *Immunity to hostile environment. Suitable for submerged deployment.*
- *High survivability to shock and vibration*
- *Easy to install and maintain*
- *Low cost readout unit which detects damaged leadwires*
- *Easy to interface with PLC's*
- *Send Data over Ethernet running TCP/IP Leaky-feeder Wireless or ESG seismic system*
- *Competitively priced at \$285 ea.*

YieldPoint's newest state-of-the art GMM uses SPECTRE (Sonic Pulse Extensometer/Contractometer Technology for Rock Engineering) technology to produce a high precision digital instrument comprising a non-contact displacement sensor and digital temperature sensor. An on-board microcontroller provides temperature compensation and outputs a digital signal. Both the resolution (<0.01mm) and accuracy (0.25% linearity typical) are significantly better than for similarly priced technology. The inherently digital form of the signals eliminates the necessity for expensive analog-to-digital conversion and results in low cost readout unit that outputs data in real world units (mm and °C).

The output signal is Frequency modulated which is widely recognized as preferable for the harsh mining environment. The signal can be routinely transmitted over 1000ft of lead-wire.

The SPECTRE-GMM is easy to install by attaching to a 5/8" rock-bolt, but a

range of other assemblies are possible. The device is fully retrievable. The electronics are hermetically sealed and the sensor can be submerged indefinitely.



## Shear Displacement

When deployed as a crackmeter, SPECTRE is one of the few technologies that measure a combination of shear and dilation, which creates opportunities for measuring shear displacement in open pits.

## Manual Readout

Readout can be made using YieldPoint's low cost manual readout box, which performs diagnostics on the leadwires, recognizes the sensor type and ID and outputs the displacement and temperature data in mm and °C.

## Automated Data Retrieval

Clusters of sensors (4 per box) can be polled YieldPoint's DESTINY (Digitally Enabled Sensor Transducer and Instrumentation Network from YieldPoint) technology. This is a low cost, low maintenance RS-485 network (modbus ASCII protocol with TCP/IP bridge), that can save time and money by transmitting data directly to a central control room or an engineer's desktop computer. DESTINY can interface with standard mine-wide communication systems such as Ethernet, Leaky Feeder wireless, or an ESG seismic monitoring system.

## APPLICATIONS.

- Crack-meter for open pits
- Monitoring tunnels and drifts.
- Monitoring intersections wide spans
- Monitoring brows
- Monitoring fill mats
- Monitoring bulkheads

## SPECIFICATION

Borehole size: 30mm+

Range (F.S.): 250mm, 125mm, 100mm or 50mm. Temp: -40 to 125°C

### Core Technology

156mm magnetostrictive + temperature sensor

Output Signal: 0-5V square wave train.

Displ. Range (F.S.): 250mm, 125mm, 100mm or 50mm.

Displ. Resolution: 0.01mm with hand held readout

Displ. Hysteresis: 0.025mm

Displ Repeatability: 0.025mm

Displ. Linearity: typically 0.01mm

Temp. Range: -40 - 125°C

Temp Accuracy: +/- 2°C -Digitally trimmed at 0°C and 25°C

Temp Resolution: 0.1°C