

## d-TILT-SG



**d-TILT-SG** is a fully waterproof in-place tilt sensor based on Analog Devices' MEMS accelerometer technology. It has a wide range (0 to +/-30 arcdeg). The duty-cycle digital signal from the accelerometer is processed by the on-board micro-controller, giving typical accuracies to within 0.025arcdeg, with a resolution of 0.01arcdeg. Each sensor is individually calibrated, and temperature compensated using a digital temperature sensor that is incorporated.

The RS485 output signal is an ASCII encoded message that includes the unique Sensor\_ID, the Sensor\_Type as well as the temperature and tilt data. This eliminates the necessity for expensive analog-to-digital conversion so that the low-cost readout unit outputs data in real world units (arcdeg and °C). Readings can also be made using the USB port of a PC or web-book computer (SensorViewer). Using DESTINY/IP a Real-time *Plug 'n Play* network of **d-TILT-SG** sensors (or any other YieldPoint Instrument) can be built in minutes. Long term, low power, data logging is possible using the low cost d-LOGGER solution.

These features make solutions based on **d-TILT-SG** instruments significantly more cost effective and powerful than those of competing products.

### Features:

- ▲ *Dual axis MEMS Accelerometer +/- 30arc deg range*
- ▲ *On-board digital signal processing*
- ▲ *High Resolution(0.01 arc deg) & absolute accuracy (0.1 arc deg)*
- ▲ *Robust digital RS485 signal can be transmitted over 1000ft without amplification*
- ▲ *Micro-controller stores sensor ID & Calibration Coefficients.*
- ▲ *Suitable for moderate resolution applications*
- ▲ *High survivability following blasts and vibration(accelerometer 1000g)*
- ▲ *Readout using Manual Interrogation Unit.*
- ▲ *Data collection using SLUG data-loggers*
- ▲ *Remote monitoring using DESTINY/IP*
- ▲ *Competitively priced for non-retrievable application*

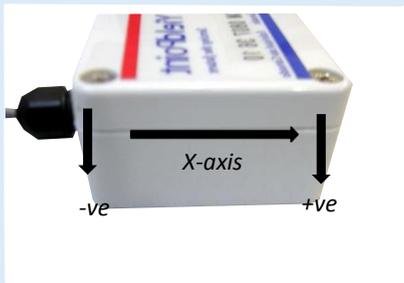
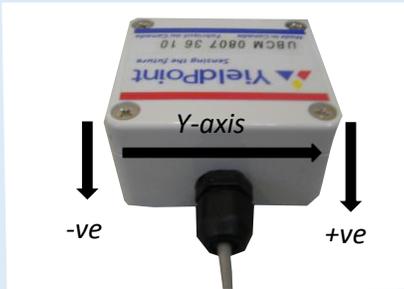
# d-TILT-SG

## Technology

### Sensor Technology

On board signal processing results in a high accuracy (0.025 arc deg) and resolution (0.01 arc deg). A digital temperature sensor(+/-2°C accuracy) provides full temperature compensation over the specified thermal range of -25 - 85°C. Each instrument is individually calibrated (sheets available on request) and the coefficients are stored in memory on the on-board micro-controller.

The sign convention for the two tilt axis is shown below:



The sign convention for  $d^2$ TILT

## Telemetry

### Manual Readout

The RS485 output signal can be transmitted over 1000ft without amplification. Readout using YieldPoint's low cost d-Reader readout unit provides the tilt and temperature data directly in °C and arc deg.

### Automated Data Retrieval

Data from the **d-TILT-SG** instrument can be collected for up to 3 months using the d-Logger data-logger. Alternatively up to four(4) **d-TILT-SG** instruments can be monitored using a single TCP/IP enabled DESTINY (Digitally Enabled Sensor Transducer and Instrumentation Network from YieldPoint) SLAVE. Networking can save time and money by transmitting data directly to a central control room or an engineer's desktop.

Applications	Specification
<p>d-TILT-SG tiltmeters are designed for moderate-high resolution applications involving borehole or surface deployment. Prospective applications are:</p> <ul style="list-style-type: none"><li>▲ Slope monitoring</li><li>▲ Monitoring sag of backfill/ paste-fill</li><li>▲ Monitoring rotational failures</li><li>▲ Tailings dams</li><li>▲ Monitoring shear displacement of normal and reverse faults</li><li>▲ Monitoring shear failure of pillars</li><li>▲ Monitoring buckling of pillars</li><li>▲ Monitoring bulkheads</li><li>▲ Roadway deformation in coal-mines</li><li>▲ Monitoring deformation in salt/potash</li><li>▲ Monitoring any failure involving toppling</li><li>▲ Monitoring shear displacement of faults</li><li>▲ Monitoring Steel sets</li></ul>	<p><b>Dimensions:</b> 65mm x 58mm x 35mm. 10m of leadwire supplied</p> <p><b>Core Technology:</b> 1 dual axis MEMS accelerometers and 1 digital temperature sensor</p> <p><b>Output Signal:</b> -RS485 (9600,8,N,1) ASCII encoded comprising up to 100chr/reading</p> <p><b>Tilt. Range (F.S.):</b> -+/- 30° over two axis</p> <p><b>Tilt. Resolution:</b> - 0.01 arcdeg</p> <p><b>Tilt .Linearity:</b> - typically 0.25% F.S</p> <p><b>Tilt. Accuracy:</b> - better than +/- 0.025 arcdeg.</p> <p><b>Temp. Range:</b>-20 - 85°C</p> <p><b>Temp Accuracy:</b> +/-2°C</p> <p><b>Temp Resolution:</b> 0.1°C</p> <p><b>Thermal Error:</b> &lt;0.5%FS/°C ( 0-50°C for rates &lt;5°C/hr)</p> <p><b>To Order please specify:</b></p> <ul style="list-style-type: none"><li>▲ Leadwire length</li><li>▲ Poly leadwire cover length</li></ul>