YieldPoint
Sensing the future

www.yieldpoint.com

d-TILT-EL

YieldPoint's ***d*-Tilt-EL** series is a dual-axis tiltmeter designed for semi-permanent installation in either a borehole or surface application. The technology is based on an electrolytic tilt sensor that has a range of +/- 2° and an on-board digital temperature sensor. Each instrument is individually calibrated with coefficients stored in the micro-controller memory.

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). A Real-time *Plug 'n Play* network of ***d*-TILT-EL** sensors (or any other YieldPoint Instrument) can be built in minutes using DESTINY/IP. Long term, low power, data logging is possible using the low cost d-LOGGER solution.

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

Features:

- *Dual axis Electrolytic tilt sensor +/- 2arc deg range*
- *ASCII encoded RS485 Output signal*
- *Digital Temperature sensor*
- *On-board digital signal processing (Temp. comp. and digital filter)*
- *High Resolution(0.001arc deg) & absolute accuracy (0.025 arc deg)*
- *Robust RS485 output signal transmits over 1000ft*
- *Micro-controller stores sensor ID & Calibration Coeffs. in Flash EEPROM*
- *Suitable for moderate-high resolution applications*
- *High survivability following blasts and vibration*
- *Readout using Manual Interrogation Unit*
- *Automatic sampling using DESTINY/IP over Ethernet or WiFi running TCP/IP*
- *Competitively priced*

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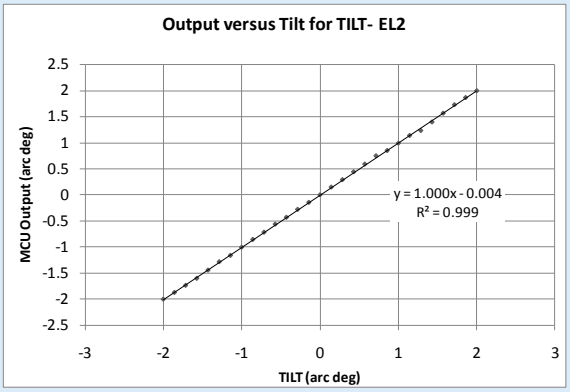
d-TILT-EL

Technology

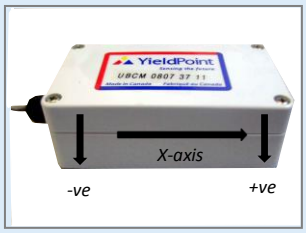
Sensor Technology

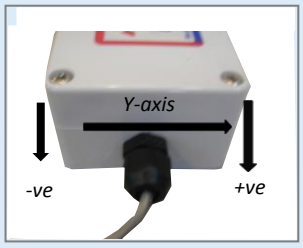
***d*-TILT-EL** is based on electrolytic tilt sensors manufactured by Spectron Glass and Electronics Inc., a world leader in electrolytic tilt sensors. A digital temperature sensor is incorporated for temperature compensation.



*Calibration data for **d-TILT***

d*-TILT EL** is available in both uniaxial (d*[1]TILT-EL**) or biaxial (***d*[2]TILT-EL**) configurations with a range of +/- 2arcdeg and a resolution of 0.001 arcdeg.





*The sign convention for the **d*[2]*TILT-EL***

Telemetry

Signal Processing

Each instrument is individually calibrated and the coefficient written into micro-controller memory. The associated 24 point piecewise linearization results in linearities with 0.25%F.S. (see plot above). A digital temperature sensor(+/-1°C accuracy) provides full temperature compensation over the specified thermal range of –25 to 85°C.

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-EL** instrument can be collected for up to 3 months using the d-Logger data-logger. Alternatively up to four(4) ***d*-TILT-EL** 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.

d-TILT-EL

Applications

***d*-TILT-EL** tiltmeters are designed for moderate-high resolution applications involving borehole or surface deployment. Prospective applications are:

- Slope monitoring
- Monitoring sag of backfill/ paste-fill
- Monitoring rotational failures
- Tailings dams
- Monitoring shear displacement of normal and reverse faults
- Monitoring shear failure of pillars
- Monitoring buckling of pillars
- Monitoring bulkheads
- Roadway deformation in coal-mines
- Monitoring deformation in salt/potash
- Monitoring any failure involving toppling
- Monitoring shear displacement of faults.

*2 x **d²TILT-EL** tilt sensors about to be installed on a bridge in Florida, US, by engineers from Sauls Seismic Inc.*

Specification

Dimensions: 115mm x 65mm x40mm. 10m of leadwire supplied.

Core Technology: Dual axis Electrolytic tilt sensor with on-board microcontroller and digital temperature sensor.

Output Signal: RS485 (9600,8,N,1) ASCII encoded. Aprox. 30chrs /reading.

Tilt. Range (F.S.): +/- 2° Uniaxial and bi-axial

Tilt. Resolution: 0.001 arcdeg,

Tilt .Linearity: typically 0.020% F.S

Tilt. Accuracy: better than +/- 0.05 arc deg.

Temp. Range: -20 – 85°C

Temp Accuracy: +/-1°C

Temp Resolution: 0.1°C

Temp coeff : <0.01%FS/°C (0-50°C)

Long Term drift: <0.1%F.S/yr. based on 1 rdg/hr

To order please specify:

- Uniaxial or Biaxial configuration
- Leadwire length

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