

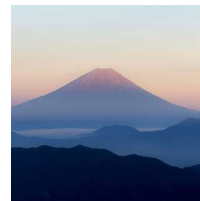
## LILY

### Self-Leveling Geodetic Borehole Tiltmeter

The LILY Self-Leveling Borehole Tiltmeter is a precision, dual-axis sensor package designed for specialized applications and research. Applications include volcanic and tectonic research, hydraulic fracture mapping, micro-deformation monitoring, deep ocean geophysics, and more.

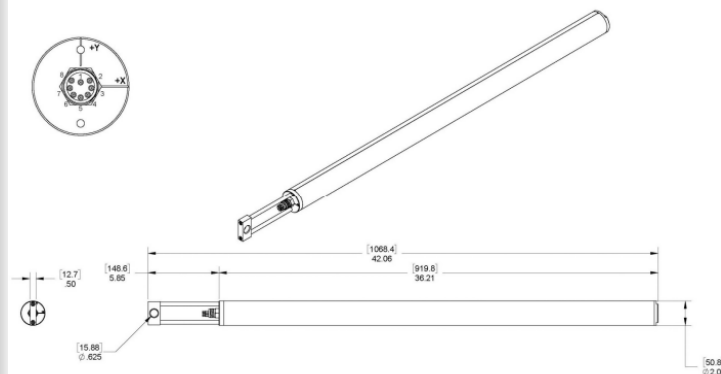
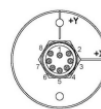
Using a high-precision electrolytic tilt sensor, units deliver resolution to 5 nanoradians; dynamic range is  $\pm 330 \mu\text{radians}$ . Units also feature a  $\pm 10$  deg. leveling range for easy installation downhole. Output is RS232 or RS422 (RS485 full duplex) and includes timestamp and compass bearing. Data can be saved to file externally or to LILY's on-board flash memory (75,000 sample max) using fill/stop or cyclic memory modes.

Units are fully submersible to 3000 psi. Titanium is also available for +5000 psi applications. The culmination of over 30 years of tilt sensor experience and expertise, the LILY represents the pinnacle in precision sensor engineering. Contact Jewell Instruments today for more information about this powerful instrument.



#### APPLICATIONS:

- Volcanic and tectonic research
- Hydraulic fracture mapping
- Micro-deformation monitoring
- Deep ocean geophysics



# PERFORMANCE SPECIFICATIONS

## PERFORMANCE

<b>CHANNELS</b>	X-tilt, Y-tilt, Azimuth, Temperature
<b>DYNAMIC RANGE</b>	$\pm 330$ $\mu$ radians
<b>SELF-LEVELING RANGE</b>	$\pm 10^\circ$
<b>SCALE FACTOR</b>	1 $\mu$ radian/mV
<b>NONLINEARITY (%FRO)<sup>1</sup> max</b>	0.2% of full span
<b>NONREPEATABILITY</b>	Same as resolution under static conditions
<b>RESOLUTION</b>	< 5 nanoradians
<b>FREQUENCY RESPONSE</b>	< 1 Hz
<b>Kz TEMP COEFFICIENT (bias/°C)</b>	$\pm 3$ $\mu$ radian/°C
<b>Ks TEMP COEFFICIENT (%/°C)</b>	$\pm 0.02\%/^\circ\text{C}$
<b>AZIMUTH DETECTION</b>	On-board magnetic compass, 0° to 360° output
<b>OUTPUT</b>	RS232 and RS422 standard (user selectable)
<b>BAUD RATE</b>	9600, 19200 (default), 28800, 57600, 115200, 230400
<b>SAMPLE RATE</b>	User programmable from 10 samples/sec to 1 sample/day
<b>OUTPUT FORMAT</b>	NMEA XDR, Trimble TCM, Ashtech, Simple (Timestamp, X, Y, Temp, Compass, S/N)

## ELECTRICAL & ENVIRONMENTAL

<b>ON-BOARD MEMORY</b>	2 Megabytes nonvolatile Flash memory (64,000 samples)
<b>REAL-TIME CLOCK</b>	Accurate to 10 minutes/year or better
<b>POWER</b>	7 to 28 VDC @ 30 mA (< 10 mA sleep); 250 mV ripple max., reverse polarity protected
<b>OPERATING TEMPERATURE RANGE</b>	-25° to +80°C
<b>STORAGE TEMPERATURE RANGE</b>	-30° to +100°C
<b>WEIGHT</b>	4.5 kg (10 lb)
<b>MATERIALS</b>	Anodized and painted aluminum

### NOTES:

1. Nonlinearity is specified as deviation of output referenced to theoretical sine function value, independent of misalignment

Specifications are subject to change without notice due to continued product development



# ORDERING INFORMATION

**HOW TO ORDER** Model Numbers are comprised of the series, the number of axes, and the angular range.

MODEL #	PART #
LILY 422/232 RoHS	98020-03-ROHS

## Accessories:

PART #	DESCRIPTION
89079-03	Lily Starter Kit: 20 ft. PVC test cable, connectors & 100-240 VAC power transformer for Lily version 98020-03 (RS232 & RS422) Not RoHS Compliant
89070	Extra Lily Test cable, dual-output (RS422 & RS232) w/ 8-socket Neoprene connector, power jack, DB9-sub, 6m (20 ft.) Not RoHS Compliant
00254-02	Transformer, 100-240 VAC to 12VDC, Single-ended, for Analog and Digital Tiltmeters RoHS Compliant
70304	Power/Signal Cable, 10-conductor, 24 AWG, Polypropylene Jacket: 500, 700 & 800 Series Dual Axis Tiltmeters, price per ft.
00389-xxx	Submersible Cable Assy., with flying leads price per foot

850 Perimeter Road Manchester, NH 03103 USA

SENSORS: 800.227.5955

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