



- **Full 360 degree range**
- **Three versions with maximum accuracy of $\pm 0.05^\circ$ and maximum resolution of 0.00549°**
- **Operating temperature range of -30°C to $+55^\circ\text{C}$**
- **Low temperature coefficient**
- **Superior stability compared to low-g accelerometer solutions**

The ISU series of Single-Axis Digital Inclinometers from STT are self-contained, ready-to-use circuit modules which provide real-time digital measurements of angular displacement through a full 360 degree range.

The ruggedized, non-contact capacitive sensor is combined with precision measurement circuitry to provide a costeffective combination of accuracy, range, and operating temperature in an easy to use footprint. The units can be used in a wide variety of applications, accept a standard 5 Volt DC supply, and provide both RS-232 and Pulse Width Modulated (PWM) outputs.

The ISU is a compact, conformal coated circuit board

module which is available in three different accuracy ranges. All of the modules feature a wide operating temperature range of -30 to $+55^\circ\text{C}$ and a storage temperature range of -55 to $+65^\circ\text{C}$. Programmable options include power autoshtutoff and 4-bit addressability allowing multiple ISUs to be 'party-lined' together for applications requiring multiple sensors.

Additional information about interfacing to the ISU inclinometer module is available in Application Note AN-201: Interfacing to an ISU Digital Inclinometer Module, available on the web or from STT upon request.

Specifications			
Parameter	ISU-S (Std. Accuracy)	ISU-H (High Accuracy)	ISU-L (Low Accuracy)
Accuracy			
0° +/-10°	+/- 0.1°	+/- 0.05°	+/- 0.2°
90° +/-10°	+/- 0.1°	+/- 0.05°	+/- 0.2°
Other angles	+/- 0.2°	+/- 0.2°	+/- 0.4°
Resolution			
RS-232 Output	0.00549° Binary, 0.01° ASCII		
PWM Output	0.09°		
Temperature Coefficient			
At 0° or 90° +/-1°	0.006° per °C		
Other angles	0.012° per °C		
Repeatability	+/- 0.1°	+/- 0.05°	+/- 0.2°
Hysteresis ²	0.1°	0.10°	0.2°
Noise	+/- 0.02°	+/- 0.01°	+/- 0.04°
Time Constaant	0.4 seconds, typical		
Frequency response	0.4 Hz, typical (-3dB)		
Angle output Rate	Every 8/15 second (533 msec)		



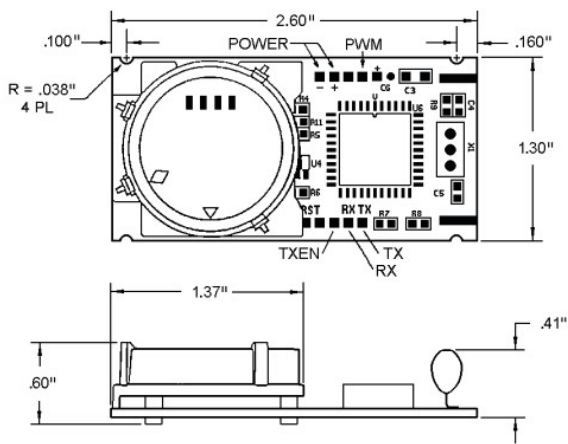
Specifications	
Power Input	
Voltage	5.0 Volts, DC
Current, Operating	2 mA
Current, Sleeping	10 µA
Serial Port	
Protocol	RS-232 (except for voltage levels)
Voltage	5 Volts
Baud Rate	9600 baud
Output Impedance	10KΩ
PWM Output	
Voltage	5 Volts
Frequency	30 Hz, free running
Pulse Width	Varies 49.4µsec per degree

Notes:

1) Specifications subject to change without notice. Specifications are at 77°F (25°C) unless otherwise stated.

2) Average over 360 degrees

Dimensions



Weight	0.8 oz (23 gm)
Temperature Range	
Operating	-22 to +131°F (-30 to +55°C)
Storage	-67 to +149°F (-55 to +65°C)
Humidity Sensitivity	Conformal Coated

ISU Functional Block Diagram

