**SenSyr** LLC

Two-Axis Tilt Sensor Board

The Two-Axis Tilt Sensor was designed for human interface applications with TNG interfaces. It measures acceleration (tilt when the board is normal to Earth's gravity). The board utilizes Analog Devices' ADXL202E 2-axis MEMS accelerometer IC (http://www.analog.com/Analog_Root/productPage/productHome/0%2C%2CADXL202%2C00.html) to provide two ± ~1*g* (tilt) outputs. The two axes are in the plane of the PCB and are orthogonal to each other. The outputs are linearly proportional to acceleration (tilt).
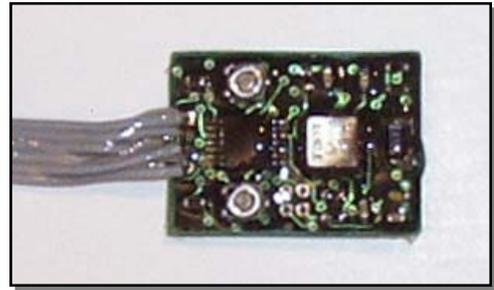
The ADXL202E has a ±2*g* range. The Two-axis Tilt Sensor uses an on-board amplifier to provide some gain so that a ±1*g* signal produces nearly a 0 to 5 volt output. At 0*g* the outputs are approximately 2.5 volts. There are two small single-turn potentiometers that are used to set the center level.

The board normally comes with an attached 6-conductor ribbon cable. The cable length is nominally 4.5 feet (1.4 m). The ribbon cable is terminated in one of two styles: dual 3.5 mm stereo plugs (TNG-3b compatible), or RJ-12 modular connector (TNG-4 compatible). When outfitted with stereo plugs, the tips should be connected to +5 VDC and the shells to ground. The outputs are on the rings. When outfitted with an RJ-12 modular plug, the center two conductors carry the outputs, +5 VDC and ground occupy the outer four conductors in pairs (+5 to the left with the retention prong up).

Components of the 1/8" Stereo Plug

Ground (shell)   Shell   Ring   Tip
Ring
Tip

Ground (shell)   Shell   Ring   Tip
Ring
Tip
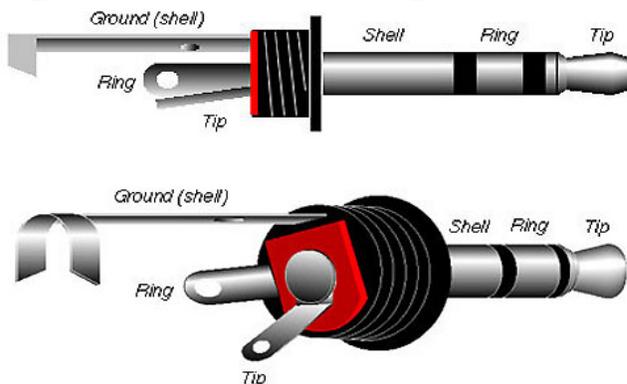
RJ-12 Pin	
1	+5 VDC
2	Ground
3	X output
4	Y output
5	+5 VDC
6	Ground

The boards do not come in an enclosure, but are now shipped encapsulated with a two part urethane coating.

Technical Specifications Summary:

Board Size	0.93" long axis by 0.684" wide. (23.6 x 17.4 mm)
Board Thickness	0.125" (3.175 mm)
Operating Voltage	5 VDC
Operating Current	2 mA maximum
Output Range	0 to 5 V; ± 1g minimum
0g Output Voltage	~ 2.5 VDC (set with single-turn potentiometer)
Connectors	2 3.5mm Stereo Plugs or a single RJ-12 modular plug
RMS Noise	<5 mg
Temperature Effect	±0.5% of output over 0-70°C range
Frequency Response	-3dB: 3.2 Hz

2-AXIS ± 1g
ACCELEROMETER