

Analog/RS-232 Signal Conditioner for Electrolytic Tilt Sensors

Part Number: **1-6200-012**

Operating Specifications

Communications	RS-232
Analog Output	0 V DC to 5 V DC
Analog Input Resolution	16 bits
Analog Output Resolution	16 bits
Operating Range	0% to 100% of sensor range
Supply Voltage	7 V DC to 16 V DC
Supply Current	20 mA @ 7 V DC
Operating Temperature	-40 °C to 85 °C
Storage Temperature	-40 °C to 125 °C
Sensors Controlled	1 or 2
Axes of Measurement	1 or 2
Temperature Sensor Range	-40 °C to 125 °C

Physical Characteristics

Housing	None
Electrical Connections	8 Pin, 0.1" spacing
Weight	20 grams
Length	45 mm (1.77")
Width	45 mm (1.77")
Height	12 mm (0.46")

Ordering Information

Part Number	Description
1-6200-012	Signal Conditioner, 1 or 2 Axis, Analog/RS-232

Compatible With

Part Number	Description
0717-4313-99	Tilt Sensor, ±50°, 2 Axis
0717-4315-99	Tilt Sensor, ±60°, 2 Axis
0717-4318-99	Tilt Sensor, ±60°, 2 Axis
0717-4319-99	Tilt Sensor, ±50°, 2 Axis
0717-4321-99	Tilt Sensor, ±40°, 2 Axis
0717-4322-99	Tilt Sensor, ±45°, 2 Axis
0717-4323-99	Tilt Sensor, ±50°, 2 Axis
0703-1602-99	Tilt Sensor, ±25°, 1 Axis
0703-0711-99	Tilt Sensor, ±3°, 1 Axis

Related Products

Part Number	Description
1-6200-005	Signal Conditioner, 1 or 2 Axis, SPI
1-6200-006	Signal Conditioner, 1 or 2 Axis, RS-232
1-6200-007	Signal Conditioner, 1 or 2 Axis, Analog/PWM
1-6200-008	Signal Conditioner, 1 or 2 Axis, RS-485

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Description

The **1-6200-012** RS-232/analog 16-bit signal conditioner can be used with any Fredericks single axis electrolytic tilt sensor. This signal conditioner can be connected to 1 or 2 single axis tilt sensors to provide dual axis position measurement over the sensors' range.

Fredericks **0703-1602-99** mid-range and **0703-0711-99** narrow range sensors can be mounted directly to the PCB for a complete inclinometer solution. The 16-bit ADC input and 16-bit DAC output resolution allow this signal conditioner to provide exceptional accuracy in a variety of applications.

Key Features and Benefits

- Very low power consumption
- Simple integration into a new or existing design
- Excellent resolution and repeatability of measurements
- -40 °C to 85 °C operating temperature for industrial applications
- Live text and video chat technical support

Applications

- [Geotechnical and structural monitoring](#)
- [Construction tools, laser leveling](#)
- [Construction machinery and equipment](#)

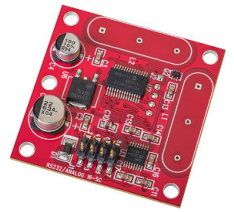
View the full list at www.frederickscompany.com/markets.

RS-232 Settings

Baud Rate	9600 (default, selectable up to 115200)
Data Bits	8
Parity	None
Stop Bits	1

RS-232 Commands

'x' or 'X'	X axis output (0 to 65535)
'y' or 'Y'	Y axis output (0 to 65535)
't' or 'T'	Temperature output (0 to 1023)
's' or 'S'	Output X, Y, temperature at set intervals
'r' or 'R'	Stop timed interval output
'1' to '5'	Set delay (in seconds) for set intervals
'v' or 'V'	Product information and version
'B1' to 'B5'	Set baud rate to: 'B1' – 9600
	'B2' – 19200
	'B3' – 38400
	'B4' – 57600
	'B5' – 115200
'?'	List all commands



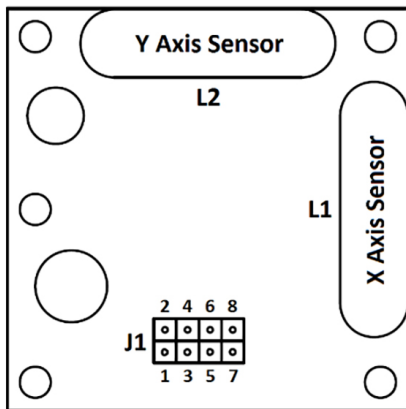
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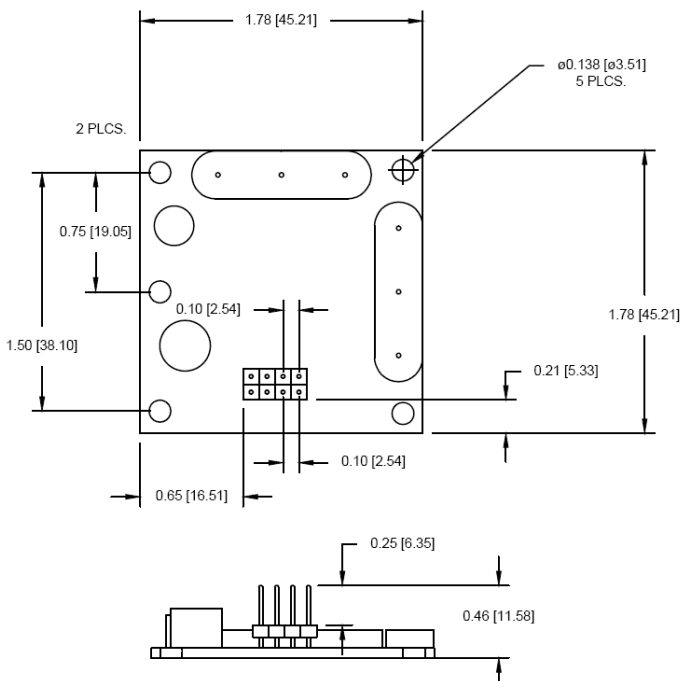
Electrical Connections

J1 Pin 1	RS-232 ground
J1 Pin 2	Analog output ground
J1 Pin 3	Supply voltage (+)
J1 Pin 4	Supply voltage (-)
J1 Pin 5	RS-232 receive (in)
J1 Pin 6	X axis analog out
J1 Pin 7	Y axis analog out
J1 Pin 8	RS-232 transmit (out)
L1 and L2	Single axis sensor connections

Pin Diagram and Direction of Measurement



Dimensional Drawings



Additional Documentation

AN1000	Electrolytic Tilt Sensor Excitation
AN1001	Temperature Compensation of Electrolytic Tilt Sensors
AN1003	Configuring Tera Term to Use with TFC Tilt Products
AN1005	Converting Tilt Angle to Degrees
AN1006	Obtaining Measurements from TFC Signal Conditioners

Certifications and Ratings

- None (PCB sub-assembly)

Company Information

Specialty Manufacturing Services That Promise Precision - Since 1935, The Fredericks Company has been a global provider and U.S. designer and manufacturer of the highest performance tilt and vacuum measurement products on the market, with manufacturing processes that ensure the reliability of our products.

Tilt Measurement Products and Sensors That Set Standards - Fredericks' comprehensive tilt measurement product portfolio offers [electrolytic tilt sensors](#), [inclinometers](#), and [tilt switches](#). Engineered to outperform competing technology, our tilt sensors are accurate and repeatable with excellent resolution. Our tilt measurement products have no planned obsolescence and serve industries ranging from [construction](#) and [RV leveling](#) to aerospace applications and everything in between.

A Partnership That Prioritizes Uptime, Lead Time, and Service - Fredericks guarantees customer satisfaction and our "not too big, not too small" operation is what enables us to offer a true partnership experience. Our dedicated representatives and engineers offer exceptionally responsive service and the fastest lead times in the industry, knowing that uptime is the key to your success. With anytime access to our leadership team and solutions that enhance your products, you will feel the Fredericks difference.

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