RS-485 Signal Conditioner for Electrolytic Tilt Sensors
Part Number: 1-6200-008

ALCYON ÉLECTRONIQUE

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Operating Specifications[1]

Communications	RS-485
Analog Input Resolution	16 bits (10 bits oversampled)
Operating Range	0% to 100% of sensor range
Supply Voltage	3.3 V DC to 5 V DC
Supply Current	9 mA @ 5 V DC, 6 mA @ 3.3 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

Dimensions

Housing	None
Electrical Connections	7 Pin,2.54 mm (0.1") spacing
Weight	4 g
Length	32 mm (1.25")
Width	32 mm (1.25")
Hole Center	27 mm (1.05")

RS-485 Commands (assume default address 99)

*9911#	X axis output (0 to 65535)
*9921#	Y axis output (0 to 65535)
*9941#	Temperature output (0 to 1023)
*9980#	Read product information
*9981Axx#	Change address to xx (01 to 99)
*9982D#	Read user information
*9984Z#	Set current position as zero
*9984R#	Clear saved zero position
*9988Rx#	Change baud rate to x (1 to 6)
*9989B#	Reset to factory default settings

Note: See the 1-6200-008 manual for additional commands and details.

Electrical Connections

J1 Pin 1 (+5)	Supply (+)
J1 Pin 2 (C)	Supply (-)
J1 Pin 3 (C)	Ground
J1 Pin 4 (B)	RS-485 B (-)
J1 Pin 5 (A)	RS-485 A (+)
J1 Pin 6 (C)	Ground
J1 Pin 7 (C)	Ground
L1	Dual axis sensor connection
J3	Single axis sensor x axis connection
J4	Single axis sensor y axis connection

Benefits

- Very low power consumption
- Simple integration
- Excellent resolution and repeatability of measurements
- Superior performance in extreme temperatures and environments
- Excellent customer support
- Manufactured in the United States of America

[1] Visit www.frederickscompany.com for a list of definitions.

Description

The 1-6200-008 RS-485 signal conditioner can be used with any Fredericks electrolytic tilt sensor. This signal conditioner can be connected to a dual axis tilt sensor or 1 or 2 single axis tilt sensors to provide single or dual axis position measurement over the sensor's range.

Fredericks 0717 series wide range sensors can be mounted directly to the PCB for a complete inclinometer solution. Single axis sensors must be mounted externally to the PCB and connected with wires.
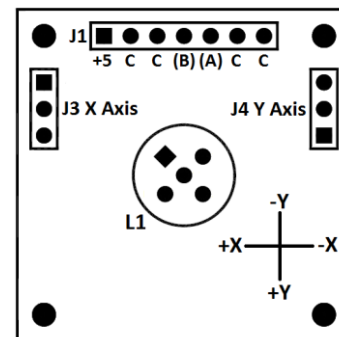
A detailed list of compatible sensors can be found on page 2 in the Related Products section.

Applications

- Recreational vehicle leveling (also known as an RV, caravan, camper van, or motorhome)
- Construction vehicles
- Geotechnical and structural monitoring
- Laser leveling
- Machine tool leveling
- Rail track monitoring
- Satellite positioning

View a full list of applications on The Fredericks Company website at www.frederickscompany.com.

Pin Diagram and Direction of Measurement

Note that the direction of measurement only applies when a dual axis sensor is mounted on the PCB.

Certifications and Ratings

- RoHS Compliant

Converting Temperature Values

The board temperature output is a 10 bit value (0 to 1023). To convert that value to a temperature in °C, use the following equation:

Temperature in °C = (((output/1023)*supply voltage)-0.5)/0.01

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RS-485 Information

Baud Rate (default 9600)	1200 to 38400
Data Bits	8
Parity	None
Stop Bits	1
Address (default 99)	01 to 99
Maximum Signal Conditioners on Bus	32

Related Products

Dual Axis Electrolytic Sensors - Metal	
0717-4318-99	±60˚ range, ±0.1˚ repeatability
0717-4319-99	±50˚ range, ±0.1˚ repeatability
0717-4313-99	±50˚ range, ±0.05˚ repeatability
0717-4315-99	±60˚ range, ±0.05˚ repeatability

Single Axis Electrolytic Sensors - Metal	
0703-0711-99	±3˚ range, ±0.001˚ repeatability
0703-1602-99	±25˚ range, ±0.005˚ repeatability

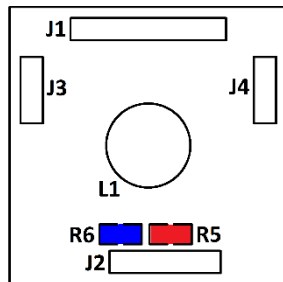| Single Axis Electrolytic Sensors - Glass	
0737-0101-99	±10˚ range, ±0.0006˚ repeatability
0737-1203-99	±0.5˚ range, ±0.0001˚ repeatability
0711-0763-99	±1˚ range, ±0.0008˚ repeatability
0711-0768-99	±3˚ range, ±0.0008˚ repeatability

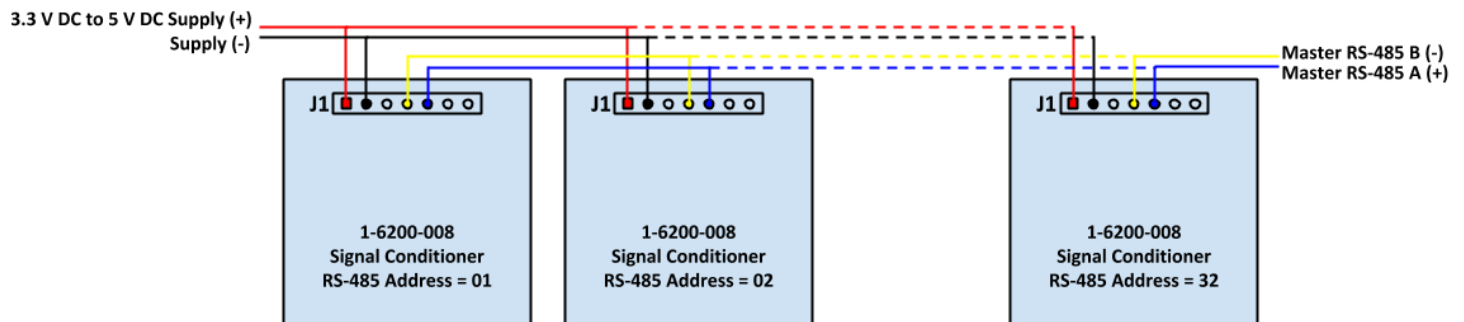| Single Axis Electrolytic Sensors - Glass Encapsulated	
0719-3705-99	±10˚ range, ±0.0006˚ repeatability
0719-3703-99	±0.5˚ range, ±0.0001˚ repeatability
0719-1137-99	±1˚ range, ±0.0008˚ repeatability
0719-1143-99	±3˚ range, ±0.0008˚ repeatability

Board Configuration

The 1-6200-008 signal conditioner can be configured to operate one dual axis sensor or two single axis sensors. This configuration is determined by the resistor values of R5 and R6.

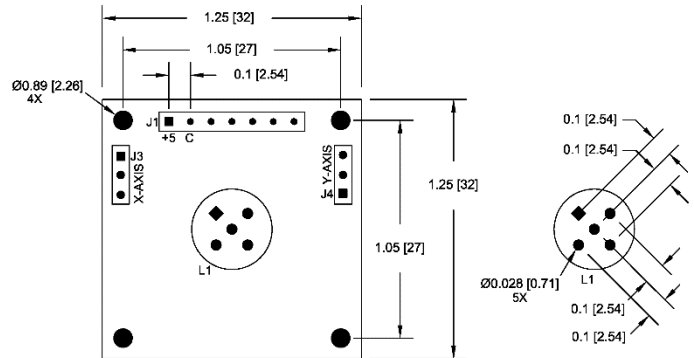For a dual axis sensor: R5 is 10 kΩ, R6 is not installed, sensor is connected to L1.

For single axis sensors: R5 is not installed, R6 is 1 kΩ, and sensors are connected to J3 and J4.

Dimensional Drawings

Example RS-485 Command and Response Byte Values

Retrieve X axis tilt value from a signal conditioner with address 99 which returns 32768 (0° tilt):

Command

Byte	0	1	2	3	4	5
ASCII	*	9	9	1	1	#
Hex	0x2A	0x39	0x39	0x31	0x31	0x23

Response

Byte	0	1	2	3	4	5	6
ASCII	3	2	7	6	8	\<lf>	\<cr>
Hex	0x33	0x32	0x37	0x36	0x38	0x0A	0x0D

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Example RS-485 Bus Configuration