SMI-D Analog Inclinometer

Features

- Extremely Rugged
- Lower cost than traditional Force-Balanced Inclinometers
- High Accuracy
- Greater precision than MEMS technologies
- ±5V DC Output
- Dual Power Input
- RoHS Compliant

Application

- Aerospace
- Military
- Robotics
- Academic Research
- Geotechnical Monitoring
- Track Monitoring and Testing
- Vehicle Wheel Alignment

Introduction

Input Ranges From ±3° to ±90° Rugged, High Precision, Low Cost, Dual-Ended Power Input Inclinometer. The Emerald Series inclinometer is a low cost, high precision inclinometer designed with higher accuracy sensor than comparable MEMS devices. Applications include robotics, construction equipment, industrial measurement and control, and precision machining. All Emerald Series inclinometers are RoHS compliant.

Performance specifications

Static/dynamic

Input range (°)	±3	±14.5	±30	±45	±60	±90
Full Range Output (FRO) VDC ±0.5%[1]	±5	±5	±5	±5	±5	±5
Non-linearity % FRO maximum[2]	0.05	0.02	0.02	0.02	0.04	0.05
Scale Factor, Volts/g, nominal:	95.5	20.0	10.0	7.1	5.8	5
Scale Factor Temp. Sensitivity (SFTS), PPM/°C max	100	100	100	100	100	100
Bandwidth (-3 dB), Hz nominal:	5	5	5	5	5	5
Output Axis Misalignment (° max)	0.25	0.50	0.50	0.50	0.50	0.50
Pendulous Axis Misalignment, ° max	0.25	0.50	0.50	0.50	0.50	0.50
0° Output, Volts range	±0.05	±0.05	±0.05	±0.05	±0.05	±0.05
0° Output Temp. Sensitivity, Volts/°C maximum	0.0070	0.0017	0.0010	0.0008	0.0007	0.0007
Resolution & Threshold, µradians maximum[3]	3.5	3.5	3.5	3.5	3.5	3.5

Electrical

Number of Axes	1
Input Voltage Range, (VDC)	±12 to ±18
Input Current, mA, max	40
Output Impedance, Ohms, nom	10
Noise, Vrms, Maximum	0.002

Environmental

Operating Temp Range	-55°C to +85°C
Storage Temp Range	-60°C to +90°C
Shock	500g, 1 msec, ½ sine

Enclosure

Seal	IP65

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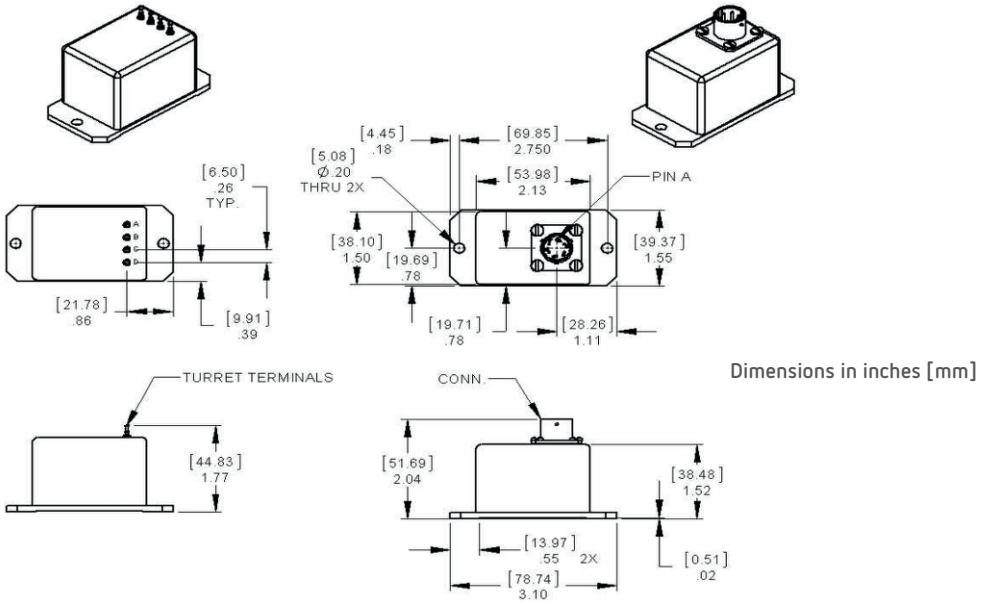
Notes

1. Full Range is defined "from negative full input angle to positive full input angle."
2. Nonlinearity is specified as deviation of output referenced to theoretical sine function value, independent of misalignment.
3. Full Resolution is achieved with noise reduction techniques.

Custom Capabilities

- 15 to 30V single-ended input option available
- Pigtail and Connector alternative options available
- Custom ranges and bandwidths available

Outline Diagram



Dimensions in inches [mm]

Pin Out (Options: C-connector, P-Pin)

Pin option

A	Positive input power
B	Power/signal common
C	Negative input power
D	Signal

Connector Option

A	Positive input power
B	Power/signal common
C	Negative input power
D	Signal
E	n/c
F	n/c

Ordering information

Connector Version		Pin Version	
Model #	Part #	Model #	Part #
SMIC-D-3	02550308-001	**SMIP-D-3**	02550307-001
SMIC-D-14.5	02550308-002	**SMIP-D-14.5**	02550307-002
SMIC-D-30	02550308-003	**SMIP-D-30**	02550307-003
SMIC-D-45	02550308-004	**SMIP-D-45**	02550307-004
SMIC-D-60	02550308-005	**SMIP-D-60**	02550307-005
SMIC-D-90	02550308-006	**SMIP-D-90**	02550307-006

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