

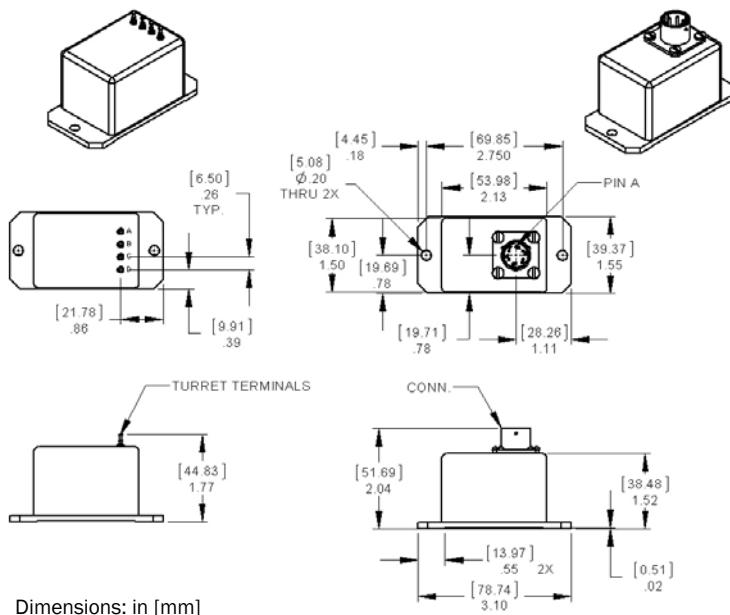
## SMI SERIES

### Single-Axis Analog Inclinometer

The Jewell SMI Single-Axis Analog Inclinometer series are rugged, high precision force-balanced inclinometers. These RoHS compliant inclinometers are available in three different versions (D, L, & S Series), with either a connector or a pin option, and varying input and output specifications in order to meet your needs.

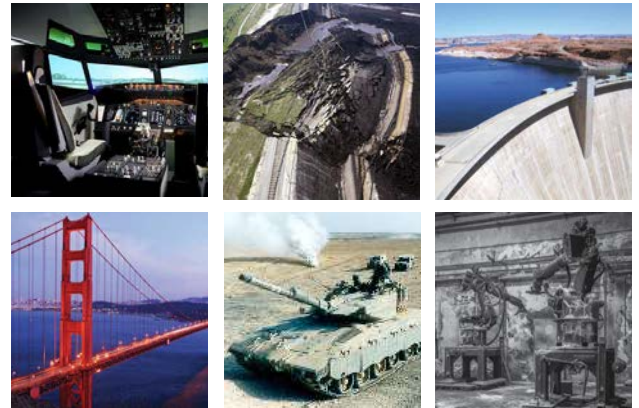
#### FEATURES:

- Rugged Design
- Lower Cost than Traditional Forced-Balance Inclinometers
- High Resolution
- Greater Precision than MEMS Technologies
- $\pm 5V$  DC,  $0-5V$  DC, and  $4-20mA$  Outputs Available
- Single-Ended and Dual Power Inputs Available
- RoHS Compliant



## JEWELL EMERALD SERIES

The Jewell Emerald Series inclinometer is a low cost, inclinometer designed with higher precision than comparable MEMS devices.



#### APPLICATIONS:

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

# SMI-D: $\pm 5V$ OUTPUT

The Jewell SMI series version D is a rugged, high precision **dual-ended** power input inclinometer. This version features a  $\pm 5V$  DC output and input ranges from  $\pm 3^\circ$  to  $\pm 90^\circ$ . Available with either a connector or a pin option.

## APPLICATIONS:

- Aerospace
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## PERFORMANCE SPECIFICATIONS

### STATIC/DYNAMIC

INPUT RANGE (°)	$\pm 3$	$\pm 14.5$	$\pm 30$	$\pm 45$	$\pm 60$	$\pm 90$
FULL RANGE OUTPUT (VDC, FRO $\pm 0.5\%$ ) <sup>1</sup>	$\pm 5$					
NONLINEARITY (% FRO) <sup>2</sup> max	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					
BANDWIDTH (-3dB) Hz, nominal	5.0					
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)	$\pm 0.05$					
0° OUTPUT TEMP. SENSITIVITY (Volts/°C) max	0.0070	0.0017	0.0010	0.0008	0.0007	0.0007
RESOLUTION & THRESHOLD ( $\mu\text{rad}$ ) <sup>3</sup>	3.5					

### PIN OUTS

#### PIN OPTION

<b>A</b>	POSITIVE INPUT POWER
<b>B</b>	POWER/SIGNAL COMMON
<b>C</b>	NEGATIVE INPUT POWER
<b>D</b>	SIGNAL

#### CONNECTOR OPTION

<b>A</b>	RED	POSITIVE INPUT POWER
<b>B</b>	WHITE	POWER/SIGNAL COMMON
<b>C</b>	BLACK	NEGATIVE INPUT POWER
<b>D</b>	ORANGE	SIGNAL
<b>E</b>	N/C	N/C
<b>F</b>	BLUE	N/C

#### 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



# PRODUCT SPECIFICATIONS: SMI-D

## ELECTRICAL

<b>NUMBER OF AXES</b>	1
<b>INPUT VOLTAGE RANGE (VDC)</b>	±12 to ±18
<b>INPUT CURRENT (mA, max)</b>	40
<b>OUTPUT IMPEDANCE (Ohms, nom)</b>	10
<b>NOISE (Vrms, max)</b>	0.002

## ENVIRONMENTAL

<b>OPERATING TEMP. RANGE</b>	-55° to +85° C
<b>STORAGE TEMP. RANGE</b>	-60° to +90° C
<b>SHOCK</b>	500g, 1 msec, ½ sine

## ENCLOSURE

<b>SEAL</b>	IP65
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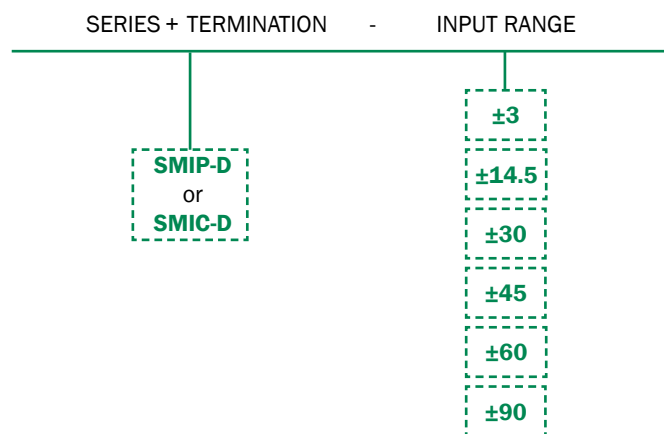
## CUSTOM CAPABILITIES

- D-SERIES**
- Pigtail & Connector alternative options available
  - Custom ranges available

# ORDERING INFORMATION

## HOW TO ORDER

Model Numbers are comprised of the series and connectivity, the series version, and the input range.



	<b>TERMINATION</b>	<b>MODEL #</b>	<b>PART #</b>
<b>±3</b>	PIN	SMIP-D-3	02550307-001
	CONNECTOR	SMIC-D-3	02550308-001
<b>±14.5</b>	PIN	SMIP-D-14.5	02550307-002
	CONNECTOR	SMIC-D-14.5	02550308-002
<b>±30</b>	PIN	SMIP-D-30	02550307-003
	CONNECTOR	SMIC-D-30	02550308-003
<b>±45</b>	PIN	SMIP-D-45	02550307-004
	CONNECTOR	SMIC-D-45	02550308-004
<b>±60</b>	PIN	SMIP-D-60	02550307-005
	CONNECTOR	SMIC-D-60	02550308-005
<b>±90</b>	PIN	SMIP-D-90	02550307-006
	CONNECTOR	SMIC-D-90	02550308-006