

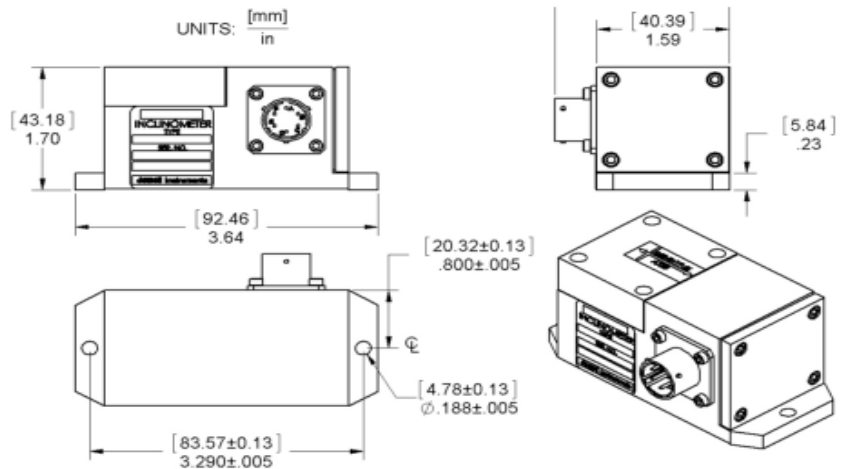
# LSOC/LSOP Series Inclinometer

## Input Ranges From $\pm 1.0^\circ$ to $\pm 90^\circ$ With High Reliability, High Resolution, and Low Non-Linearity

The Jewell **LSOC/LSOP Series** fluid damped, flexure suspension, servo inclinometer is a precision inertial-grade sensing instrument and is Jewell's most robust solution designed to meet the needs of a variety of commercial, industrial, and aerospace applications.



### Outline Diagram



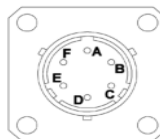
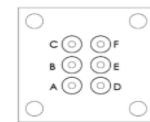
### Features & Benefits

- Extremely high resolution and low hysteresis of less than 0.0005% of full range output.
- Extremely robust designed to withstand shocks in excess of 1500g and vibration of 20 grms.
- Responds to changes of slope as small as 0.000006"/ft.
- High accuracy closed-loop force balanced sensor technology.
- Low white noise spectral density of better than 0.15 $\mu$ V/Sq. Root HZ

### Applications

- Steel processing: continuous casting, electric arc furnace and idle control
- Heavy construction: paving, grading, mining, tunneling, and overturn detection
- Structural monitoring: walls of dams, support, columns, bridges, and others
- Railway: automated train controls, rail leveling and grinding, and rail bed analysis

### Pin Out (Options: C-Connector, P-Pin)



Pin A	Supply +15Vdc
Pin B	0V Common
Pin C	Supply -15Vdc
Pin D	Output
Pin E	Self Test Return
Pin F	Self Test

## Performance Specifications

### STATIC/DYNAMIC

Input Range (°)	± 1.0	± 3.0	± 14.5	± 30.0	± 90.0
Full Range Output (FRO $V \pm 1.0\%^1$ )	± 5.0	± 5.0	± 5.0	± 5.0	± 5.0
Non Linearity (%FRO <sup>2</sup> Max.)	0.05	0.05	0.02	0.02	0.05
Scale Factor (V/g, Nom.)	286.5	95.5	20.0	10.0	5.0
Scale Factor Temp Sens (% reading/°C, Max.)	±0.04	±0.03	±0.01	±0.06	±0.06
Bandwidth (-3db) (Hz, Nom.)	0.5	2.0	15.0	20.0	40.0
Transverse Axis Misalignment (° Max.)	±0.1	±0.15	±0.25	±0.5	±1.00
Output @ 0° Tilt (Bias) (V, Max.)	±0.1	±0.04	±0.02	±0.02	±0.02
0° Output Temp Sensitivity (V/°C, Max.)	±0.005	±0.003	±0.001	±0.0005	±0.0003
Resolution and Threshold (µrad Max.)	1.0	1.0	1.0	1.0	1.0

### ELECTRICAL

Number of Axis	1
Input Voltage (Vdc)	± 12 to ± 18
Input Current (mA, Nom.)	± 15
Output Impedance (Ohms, Nom.)	100
Noise (Vrms, Max.)	0.002

### ENVIRONMENTAL

Operating Temp Range	-20°C to +70°C
Survival Temp Range	-40°C to +70°C
Vibration	20 grms

Shock 1500g, 05 msec, 1/2 sine

- Notes: 1 - Full range is defined as "from negative full input angle to positive full input angle."  
 The Inclinometer output is proportional to the sine of the tilt angle.  
 2 - Referenced to theoretical sine value independent of misalignment.  
 3 - Jewell Instruments recommendations  
 4 - Manufacture is Amphenol or equivalent

### ENCLOSURE

Housing material	Anodized Aluminum
Weight	13 oz. (368.5g)
Protection Class per IEC 529	IP 68
Connector Type <sup>4</sup>	PT02H-10-6P
Mating Connector <sup>3,4</sup>	PT06A-10-6S(SR)
Fastener Size <sup>3</sup>	#8-32 (M4X0.7)
Torque for Steel fasteners <sup>4</sup>	10 inch-lbs. (1.0Nm)
Jewell Connector Part #	62101011-000
Surface Flatness <sup>3</sup>	0.003 (0.0765mm)

## Custom Capabilities

- 4-20mA output signal with single-ended 24 Vdc input
- Internal temperature sensor and thermal modeling for the highest levels of accuracy over a wide temperature range
- Available in LSR Series package configuration for applications requiring a more compact solution
- Factory set zero biasing for non-horizontal measurements
- Solder terminals and flying leads in place of military connector
- Custom input ranges from ±0.5° to ±90° available
- Custom output impedances available
- Custom bandwidths available on certain ranges

## How to Order

LSOC-1	02550278-206
LSOC-3	02550278-207
LSOC-14.5	02550278-208
LSOC-30	02550278-209
LSOC-90	02550278-210
LSOP-1	02550278-201
LSOP-3	02550278-202
LSOP-14.5	02550278-203
LSOP-30	02550278-204
LSOP-90	02550278-205