



Sherborne **Sensors**

... the first choice in precision

LSOC / LSOP Inclinometer

DC-Operated, Gravity-Referenced



Sensor design and manufacture from a world leader in load, acceleration and inclination

Sherborne Sensors is a specialist sensor and instrumentation manufacturer that provides solutions for test and measurement, industrial, manufacturing, R&D, aerospace and defence applications globally.

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Sherborne Sensors, a Nova Metrix company **NOVA METRIX**

LSOC / LSOP Servo Inclinometer

The LSO Series is a high precision gravity referenced servo inclinometer that can be used for a wide variety of industrial and military applications. Models are available in a variety of ranges with low impedance output signal. Electrical terminations are via 6 way connector (LSOC) or solder pins (LSOP).

Features

- Fully self-contained connect to a DC power source and a readout or control device for a complete operating system
- High level DC output signal proportional to sine of the angle of tilt
- $\pm 1^\circ$ to $\pm 90^\circ$ ranges available
- Extremely rugged, withstands 1500g shock

Applications

- Ballast transfer systems for offshore barges, ships and other marine applications
- Level control and calibration systems
- Pipeline levelling, setting tilt of grading machines, crane overturning moment alarms, and other heavy duty construction control requirements
- Large machinery installation and other electronic level applications

Specifications by Range @ 20°C							
Range		$\pm 1^\circ$	$\pm 3^\circ$	$\pm 14.5^\circ$	$\pm 30^\circ$	$\pm 47.5^\circ$	$\pm 90^\circ$
Excitation Voltage	Volts dc	± 12 to ± 18					
Current Consumption	mA (nom)	± 15					
Full Range Output (FRO) (see note 1)	Volts dc	± 5					
Output Standardisation	% FRO	± 1					
Output Impedance	Ω	<10					
Output Noise (DC to 10kHz)	V rms (max)	0.002					
Non-Linearity (see note 2)	% FRO (max)	0.05	0.05	0.02	0.02	0.02	0.05
Non-Repeatability	% FRO (max)	0.04	0.02	0.004	0.002	0.002	0.001
Resolution	arc seconds	0.1	0.2	1.0	2.0	2.0	4.0
3 dB Frequency	Hz	10	15	30	40	40	55
Sensitive Axis to Case Misalignment	deg (max)	± 0.1	± 0.15	± 0.25	± 0.5	± 0.5	± 1.0
Cross axis sensitivity (see note 3)	% FRO (max)	0.2					
Zero Offset (see note 4)	Volts dc (max)	± 0.05	± 0.04	± 0.03	± 0.02	± 0.02	± 0.02
Thermal Zero Shift	%FRO/°C (max)	0.05	0.03	0.01	0.005	0.005	0.003
Thermal Sensitivity	%Reading/°C (max)	0.04	0.03	0.01	0.006	0.006	0.006

“The LSO Series are Sherborne Sensors’ most popular Servo Inclinometers. Our global customers rely on the LSO Series accuracy and durability for their applications”



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Environmental Characteristics		
Operating Temperature Range	°C	-18 to 70
Survival Temperature Range	°C	-40 to 70
Constant Acceleration Overload Shock Survival Vibration Endurance Environmental Sealing	g	50
		1500g, 0.5msec, ½ sine
		35g rms, 20 Hz to 2000 Hz sinusoidal
		IP65
EMC Directive	EN61326: 1998	
EMC Emissions	EN55022: 1998	30 MHz to 1 GHz
EMC Immunity	EN61000-4-2: 1995 inc A1: 1998 & A2: 2001	
	EN61000-4-3: 2002	
	EN61000-4-4: 2004	
	EN61000-4-6: 1996 inc A1: 2001	

Notes	
1. Full Range Output is defined as the full angular excursion from positive to negative, i.e. $\pm 90^\circ = 180^\circ$	
2. Non-linearity is determined by the method of least squares.	
3. Cross axis sensitivity is the output of the unit when tilted to full range angle in cross axis	
4. Zero offset is specified under static conditions with no vibration inputs	

How to Order:

Specify model type with appropriate range e.g.

LSOC-14.5 – fitted with connector $\pm 14.5^\circ$ range

LSOP-30 – fitted with solder pins $\pm 30^\circ$ range

Specify Optional Mating Electrical Connector 3CON-0009 with LSOC if required.

Electrical Connections:

Pin A – Supply +15Vdc

Pin B – 0V common

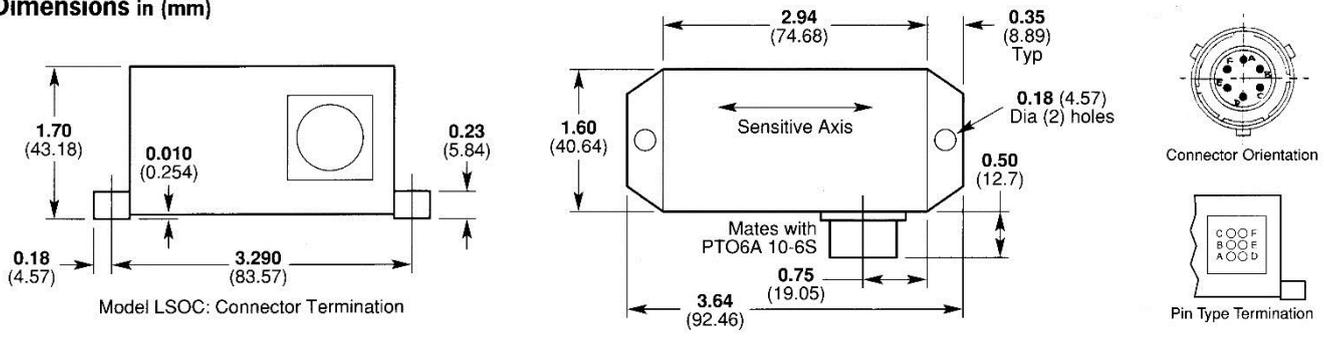
Pin C – Supply - 15Vdc

Pin D – Output

Pin E – Not used

Pin F – Self Test

Dimensions in (mm)



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Accessories

Sherborne Sensors offers a broad range of accessories and services to enhance the performance and capabilities of our sensor products, including:

- line voltage and battery enabled power supplies
- specialized mating connectors
- cable assemblies
- high performance digital displays and universal input indicators
- repair and calibration services for all brands of accelerometers, inclinometers and load cells

Customisation

With extensive in-house engineering capabilities, Sherborne Sensors offers not only a large range of standard sensors but also unique expertise in the design, development and manufacture of specialized sensors and systems that meet specific customer application and performance requirements.

The need to customise our sensors to the specific requirements of an application to ensure they deliver improved safety and efficiency, with optimized cost and return-on-investment is often critical to project success.

Using customer driven elements of sensor design, output and performance, Sherborne Sensors will tailor a device to meet almost any application. Major cost and performance benefits may be realized by specifying a customized sensor where performance and mechanical design are optimally matched to specific application demands.

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