Sherborne Sensors

PRODUCT CATALOGUE

Global leaders in sensor design and manufacture for acceleration, inclination and load

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.

WWW.SHERBORNESENSORS.COM

Sherborne Sensors specialise in:

- High precision Inclinometers, Accelerometers & Load Cells
- Servo, MEMS and Strain Gauge Technology
- Remote monitoring, realtime, high precision and harsh environment applications
- Custom designed sensors and systems for specific applications

Certified System ISO 9001 AS 9100 QMI-SAI Global

CE

LLOYD'S REGISTER QUALITY ASSURANCE ISO9001

UKAS QUALITY MANAGEMENT 001

NOVA METRIX

Overview

About Sherborne Sensors

Sherborne Sensors is an ISO9001 and AS9100D certified global leader in the design, development, manufacture and supply of high precision inclinometers, accelerometers, load cells, instrumentation and accessories for test and measurement, industrial, manufacturing, R&D, aerospace and defence applications globally.

The Company maintains a manufacturing and sales offices in the UK and North America, with representation globally. The core technologies used in our products are industry standards that have been continually improved upon over several decades to expand the capabilities, performance and reliability of each sensor product.

Applications

Remote Monitoring Applications

All-weather radio telemetry systems designed to provide high accuracy remote angle measurement data for applications including transportation, shipping, continuous monitoring, installation & commissioning and manufacturing.

Realtime & High Precision Measurement Applications

Extremely sensitive, rugged transducers deigned to provide horizontal angle or vertical deviation measurements with virtually infinite resolution for test & measurement, R&D, industrial, process control, OEM and manufacturing applications.

Harsh Environment Applications

IP67 Hermetically sealed devices for use in challenging agricultural, automotive, industrial, chemical, testing and manufacturing environments.

Product Range

Inclinometers

Inclinometers are available with specifications to support very high accuracy and precision applications. Ranges vary from +/-1 degree to +/-90 degrees. A variety of form factors, connection styles, materials of construction, output formats, and application specific devices are available in single, dual and tri-axial configurations, using both conventional servo mechanical and MEMS technologies.

Accelerometers

Accelerometers are available in ranges from +/- 0.1g up to several hundred g. Both conventional servo mechanical and MEMS technologies are available in single, dual, and tri-axial configurations. Optional electronics, enclosures for multiple sensors, materials of construction and a range of IP ratings are available.

Load Cells

Sherborne Sensors load cells are available in ranges from 0.3N (0.07lb) to over 587 kN(132 lb). All products are high performance systems using advanced strain gage technologies.

WTS- Wireless Telemetry System

Wirelessly transmits a wide range of sensor outputs from Sherborne Sensors Load Cells and Inclinometers up to 200m (650 ft), or further using range extender (WTS-AR) and receive using a range of base stations, handhelds, displays and other outputs. Excellent battery life of up to 5 years and high accuracy measurement.

ILSC – In Line Signal Conditioners

A range of in line signal conditioners converting a standard load cell output into 0-10V, 4-20mA. Enables use of long cables and direct connection to PLC's, data loggers and displays.

Amplifiers, Displays, Digital Converters & Controllers

LCA, LCB digital load cell amplifiers, SMW weighing indicators and controllers, SMP indicator for temperature, speed and potentiometer. All with analogue, relay and data outputs.

Accessories - Junction Boxes & Displays

Accessories for Sherborne Sensors' various product families.

High Precision Inclinometers

Inclinometers are available with specifications to support very high accuracy and precision applications. Operational ranges vary from +/-1 degree to +/-90 degrees. A variety of form factors, connection styles, materials of construction, output formats, and application specific devices are available in single and dual axis configurations, using both conventional servo mechanical and MEMS technologies. Certain products are now offered with total error band specifications.

Typical applications include: Antenna Positioning; Munition Fire Control Systems; Rail Line Maintenance and Repair; Steel Casting; Wind Tunnels and Oil and Gas Drilling.

	LSOC/P	LSW	DSIC	WTS	T935	LSI
Description	Servo Rugged Industry Standard	Servo Rugged Industry Standard	Digital Output Rugged Servo	Wireless Advanced Tilt System	Servo Rugged Small Form Factor Voltage Output	Gravity Referenced
Range (°)	±1 to ±90	±1 to ±90	±5 to ±60	±5 to ±60	±1 to ±90	±3 to ±90
Full Range Output	±5Vdc	±5Vdc	RS485 ASCII	Angle	+/- 5Vdc 4-20 mA	±5Vdc
Supply Voltage (Vdc)	±12 to ±18	±12 to ±18	+9 to +18 or +18 to +36	Integral Battery	±12 to ±18	±12 to ±18
Resolution	0.1 to 4.0 arc-second	0.1 to 4.0 arc-second	0.001°	0.003° to 0.006°	0.1 to 4.0 arc-second	0.2 to 4.0 arc-second
Thermal Zero Shift (% FRO/°C)	0.003 - 0.05	0.003 - 0.05	Accuracy of 0.08 degrees or better across entire compensated temperature range	0.007	0.003 - 0.05	0.003 - 0.03
Thermal Sensitivity (% reading/°C)	0.006 - 0.04	0.006 - 0.04		0.007	0.006 - 0.05	0.006 - 0.03
Non-linearity (%FRO max)	0.02 - 0.05	0.02 - 0.05		0.05	0.02 - 0.08	0.02 - 0.05
-3dB Frequency (Hz)	10 to 55	10 to 55	20 Max	5	10 to 55	15 to 55
Operating Temperature Range (°C)	-18 to +70	-18 to +70	-40 to +80	-20 to +60	-18 to +70	-18 to +70
Mechanical Shock Limit (g) half sine	1,500	1,500	1,000	1,000	1,500	500
Connection	Connector or solder pin	Connector or solder pin	Connector	Wireless	Solder Pin	Solder Pin
Features	Single or Dual Axis ±5Vdc or 4-20mA output options fluid filled	Single or Dual Axis ±5Vdc or 4-20mA output options fluid filled	Single or dual axis defined total error dynamic filter fluid filled	Remote on/off no communication license battery & display options	Single or dual axis stainless steel housing fluid filled	Servo with ±5Vdc output & 2 supply options
Options	Mating connectors power supplies indicator displays	Mating connectors power supplies indicator displays	Mating connectors baseplate	Alkaline and rechargeable Li-ion batteries display and base stations	Wire harnesses power supplies indicator displays	Power supplies & indicator displays
Integrated System Solution Available	Yes	Yes	Yes	No	Yes	Yes

"We have tried working with several other inclinometer manufacturers over the last few years, and could never find a company that cared to make the effort to truly understand our business, and the demands placed on us by our customers. Based on their initial proposal, we worked with Sherborne Sensors extensively to determine the most appropriate sensor for our application. I can't say enough about how pleased we are to have them as a valued supplier."

Rob Olenoski, Vice President, International Cybernetics Corporation.

Accelerometers

Accelerometers are available in ranges from +/- 0.1g up to several hundred g, with a focus on accuracy, reliability, frequency response and repeatability across the product line. Both conventional servo mechanical and MEMS technologies are available in single, dual and tri-axial configurations.

Optional electronics, enclosures for multiple sensors, materials of construction and a range of IP ratings are available.

Typical applications include: Flight Control; Structural Health Monitoring; Crash Recorders and Rail Car Motion Control.

	A215/220	A260	A320	A545	A640
Description	Servo Force Balance Industry Standard	Servo Force Balance 28Vdc Flight Applications	Servo Rugged Ultra Low Range	Advanced MEMS mV Output	Advanced MEMS Voltage Output
Range (g)	±1 to ±20	±1 to ±20	±0.1 to ±2	±2 to ±200	±1 to ±20
Full Range Output (Vdc)	±5	±5	±5 or ±10	±15mV	± 5
Supply Voltage	±15Vdc	+16 to +32	±15	+5	+6 to +32
Resolution (% FRO)	<0.0005	<0.0005	<0.0005	<0.005	<0.0005
Thermal Zero Shift (± % FRO/°C)	0.002	<0.002	0.005 to 0.03	<0.06	0.06 to 0.12
Thermal Sensitivity (± % FRO/°C)	0.02	0.02	0.006 to 0.03	0.06	0.06
Non-linearity (± %FRO max)	0.05 to 0.10	0.05 - 0.10	0.01 - 0.02	0.5	0.5
-3dB Frequency (Hz)	90 to 150	90 to 150	20 to 60	700 to 6,000	5 to 600
Operating Temperature Range (°C)	-55 to +95	-55 to +95	-18 to +70	-40 to +105	-40 to +100
Mechanical Shock (g) half Sine	100	100	1,500	1,000	200
Connection	Connector or Solder Pin	Connector	Connector or solder pin	Solder Pin	Connector or Solder Pin
Features	Miniature or standard form factor with 1g bias option	Single ended supply & 1g bias options aerospace applications	±5Vdc or 4-20mA output options fluid filled	Single, dual or tri-axial versions available	1g Bias option replacement for Schaevitz A400 series
Options	Mating connectors power supplies indicator displays	Mating connectors indicator displays low pass filters	Mating connectors power supplies indicator displays	Indicator displays	Mating connectors indicator displays

By incorporating Sherborne Sensors' custom linear servo accelerometer technology into their proprietary SHM data collection device, STRAAM's experts can say whether a structure transfers loads as designed. Michael Horodniceanu, president of New York City Metropolitan Transportation Authority Capital Construction, has tested the STRAAM service for both constant monitoring and structural analysis of fragile buildings. Notes Horodniceau, "This is a great tool that will allow us to look at buildings differently. It takes a lot of the guesswork out of it," he says. "We are very excited about continuing to use this system."

Load Cells

Sherborne Sensors load cells are available in ranges from 0.3 N (0.07lb) to over 587kN (132 klb). All products are high performance systems using advanced strain gauge technologies. Our load cells exhibit excellent side load and bending moment compensation, high frequency response, a variety of materials of construction and the ability to customise form factors and ranges to optimise results to meet specific requirements. Typical applications include: Payload Validation; Flight Test Labs; Suspended Loads; Pharmaceuticals/Tablet Manufacturing and Tank Weighing.

	SS2/3	SS5000	SS4000M	U2000	ADW15 Indicator	PSD Indicator
Description	Miniature, Single Point ultra-low force range	Miniature, high-level amplified output	Miniature S-Type universal load cell	Miniature Pancake style, low profile, tension/ compression	Digital indicator. Supplies excitation voltage and displays the output of most strain gage based load cells	Handheld 7 digit LCD display for strain gage and load cell output display
Operating Range	±30g / -60g ±0.07Lbf / -0.13Lbf	250N to 3000N 60Lbf to 650Lbf	±0.01KN to ±50KN ±2Lbf to ±11Klbf	±1KN to ±50KN ±0.2Lbf to ±11Klbf	2klb to 100 klb ±0.07lb or +0.13lb	7 digit LCD display, 8.8mm high digits
Operational Mode	Tension/Compression or Compression Only	Tension	Tension/Compression	Tension/Compression	AC or DC Variants	Battery
Recommended Excitation Voltage (VDC)	5	±10	10	10	10	5
Safe Overload Capacity (% range)	500	150	150	150	150	N/A
Full Range Output (mV/V)	12	±0.15	±2	2	0.5 to 200 mV/V	-50 to +50 mV/V
Non-linearity (%FRO)	-	0.25	0.05	-	-	-
Combined Error (%FRO)	0.5	-	-	0.25	-	-
Compensated Temperature Range (°C)	+14 to +149	-13 to +167	+14 to +140	+32 to +140	-	-
Thermal Zero Shift (± % FRO/°C)	±0.02	±0.02	±0.01	±0.02	-	-
Thermal Sensitivity (± % Reading/°C)	±0.02	±0.02	±0.002	±0.005	-	-
Electrical Connection	Integral cable	Integral cable	Integral cable	Lemo connector	2.5mm saddle field	5 Pin Binder Socket
Environmental Protection	IP51	IP65	IP54	IP54	IP67	To IP65
Features	Ultra low range high frequency response	High level amplified output stainless steel construction	35mm high excellent side load and bending moment compensation	18 mm high excellent side load and bending moment compensation	Isolated inputs and outputs Auto Calibration Peak Hold Auto zero	Handheld suitable for use with strain gage based load cells with an o/p sensitivity up to 50mV/V
Options	-	-	Rod end bearing for tension applications	Mounting base spheri-cal load button double bridge	AC	Serial RS232 port, streaming ASCII for print, remote display and logging

"We used Sherborne Sensors load cells to determine the clamping forces of mounting bolts during the development of our capture torque analyser system. The Sherborne load cells were accurate and robust, plus the service and support we received from Sherborne was excellent."

Kieron Smith, MD of MHH.

Load Cell Accessories

A range of accessories are available to provide excitation voltage and signal measurement.
Our Engineers are pleased to assist you with the best configuration for your application.

In Line Signal Conditioners (ILSC)

In Line Signal Conditioner (ILSC)

- ILSC converts a load cell to a conditioned load cell
- Outputs of 4-20 mA, 0-10 V, 0-5 V, ±10 V
- Small size – 56 x 28 mm excluding glands
- Machined from solid stainless steel
- Waterproof to IP67 NEMA 6

In Line USB (DSCUSB)

- USB strain gauge interface – device appears as a virtual com port. Simple & easy to connect to your strain gauge sensor to PC
- Multiple devices can be used with one PC
- IP50 rated

Logging & Mapping Software

- Software for configuration, calibration, logging and parameter management of the DSCUSB
- Viewing of input with annunciators for integrity
- 2 point calibration by application of known weight or by load cell data

In Line Indicators and Amplifiers

LCA20 Load Cell Amplifier

- Full digital set–up using PC or keypad
- 3 x configurable digital inputs e.g. for autotare, peak hold and reset
- RS485 and RS232 digital data output for communications and printing
- Measurement speeds of 10 / 80 samples per sec
- Factory calibration in mV/V
- 5 V excitation supports up to 10 x 350 R load cells
- Fully isolated 4-20 mA and 0-10 V analogue outputs
- 6 wire input to compensate for barrier and cable losses

Load Cell / Strain Gauge Indicator

- Direct strain gauge input 4.5 digit display
- 4-20 mA & 0 -10 V analogue output
- 2 relay outputs for control and alarm
- Data port RS232 / RS485
- Waterproof to IP65 NEMA 4

Handheld Display (PSD)

- Handheld 7 digit LCD display with peak, trough, net,overload and shunt cal indication
- Battery life of 450 hours in power save mode
- Keys for on/off, range select, peak/valley hold, and gross/net
- Single pass calibration (direct mV/V) with dual range for values such as kg and lb
- Waterproof to IP65 NEMA 4

MADE FOR SIMPLICITY

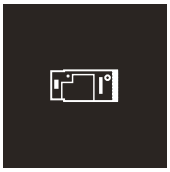
A Wireless Modular System

A modular system to extract the signal from the sensor is available to suit the requested configuration.
Our engineers are available to find the optimal configuration

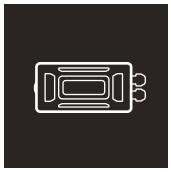
TRANSMITTERS

SENSOR INPUTS

SENSOR TRANSMITTERS



OEM

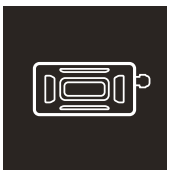


TRANSMITTER MODULES

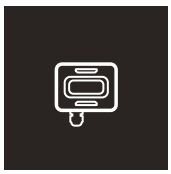
The transmitter modules collect data from a wide range of different sensors including inclinometer, accelerometer, load, pressure, torque, strain, temperature, pulse, potentiometer and 4–20 mA / 0–10 V conditioned sensors.

RECEIVERS

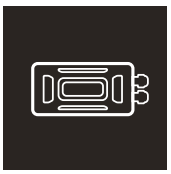
INTERFACES



MODBUS GATEWAY



BASE STATIONS



ASCII SERIAL OUTPUT

PC

PRINTER

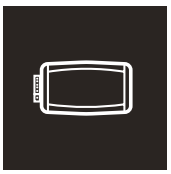
DISPLAY

DISPLAYS

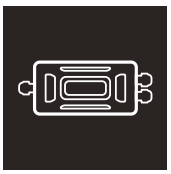
HAND-HELD DISPLAYS

LED DISPLAY

OUTPUT

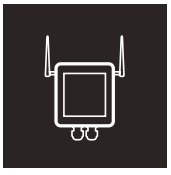


ANALOGUE OUTPUT



RELAY OUTPUT

PRINTER



TRANSMIT TO MOBILE

SERVERS & MOBILE DEVICES

FREE SOFTWARE

TOOLKIT SOFTWARE

VISUALISATION SOFTWARE

ACCESSORIES

BATTERY PACK
ANTENNA OPTIONS
BATTERY CHARGER
REPEATER (extend range by further 400 m)

BUILT FOR ANY ENVIRONMENT

Applications

Sherborne Sensors manufactures and supplies a range of high quality and high precision sensors across a wide range of industries.

SHERBORNE SUPPORTED INDUSTRIES:

AEROSPACE

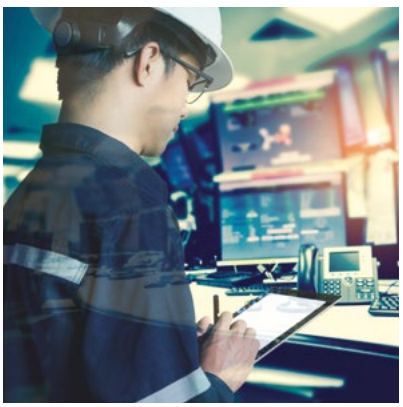
CIVIL ENGINEERING

GEOTECHNICAL

METAL PROCESSING

DEFENSE

MINING & TUNNELLING



TEST & MEASUREMENT

TRANSPORT

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
- Specialised 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 specialised sensors and systems that meet specific customer application and performance requirements.

The ability to customise our sensors to the specific requirements of an application ensures they deliver improved efficiency and safety with optimised cost 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 realised by specifying a customised sensor where performance and mechanical design are optimally matched to specific application demands.

Sherborne Sensors

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