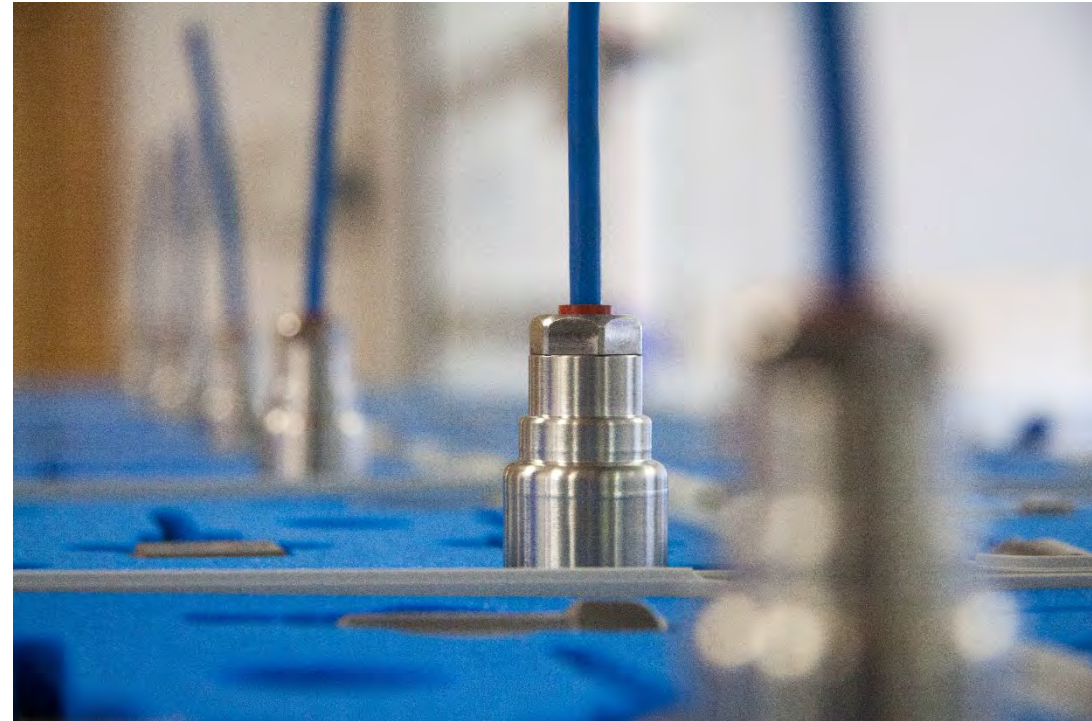




# Contents

## Chapters:

- Who are Hansford Sensors?
- Our products
- Applications
- Practical tips
- Where are our products used?



# Why Hansford Sensors

- Over 50 years of experience.
- Application knowledge.
- Comprehensive product range.
- Cost effective solutions.
- Worldwide technical support.
- ISO 9001 certified.
- Custom designed products.
- Lifetime warranty.
- International partners.
- Worldwide supplier.



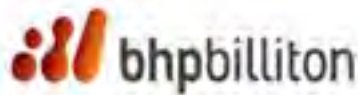


# Global

Hansford Sensors operates globally. As well as having our head office based in the UK we have offices all over the world. We also have key partners based in 40 countries.



# Our current market



# Quality

- We pride ourselves on producing outstanding quality products, to provide our customers with reliability and accuracy.
- Quality management system.
- BS EN ISO 9001:2015 certification.
- The percentage of returned products, due to defects, is less than 0.01% of total output.
- The 'in process failures' account for less than 0.5% of total output.
- BS EN ISO/IEC 80079-34:2011 certification.
- All products are RoHS and REACH compliant.



# Certifications





# Lifetime warranty

- Hansford Sensors' products are guaranteed against defects.\*
- In the event of failure we will promptly repair or replace the defective components without charge.\*
- Our no questions guarantee means we will replace the part immediately, without waiting for the defective part to be returned.\*

*\*subject to specific exclusions*





# AC vs 4-20mA Accelerometers

70%

## AC Accelerometers

**Used with a data collector**

Used on higher value assets -  
wind turbines, cooling towers, critical machinery.

30%

## 4-20mA Accelerometers

**Used with a PLC**

Used on lower value assets -  
fans, pumps, motors, less critical machinery.

## Common uses

## AC Accelerometers

## For use with data collectors

- Imbalance
- Misalignment
- Bearing condition
- Cavitation
- Looseness
- Gear defects, belt problems etc



## 4-20mA Accelerometers

For use with PLC's

- Imbalance
- Misalignment
- Bearing condition

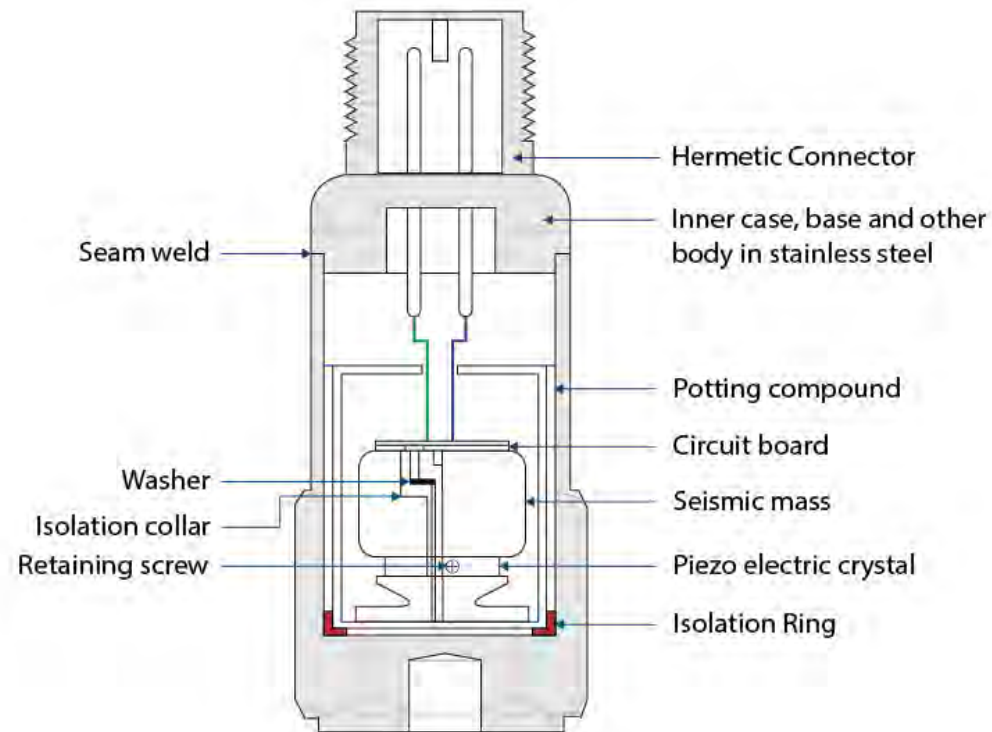


# Our products



# Vibration Sensors – compression accelerometer

What is inside a compression sensor?





# Compression accelerometer options

- Choice of sensitivities: 10mV/g to 1,000mV/g.
- Frequency response: typically 2Hz to 10kHz (F improvement available).
- Connector or cable.
- Operating temperature range: -55°C to +140°C.
- High temperature to 250°C.
- Submersible IP68.
- Dual output with temperature.
- Choice of mounting configurations.



# Product overview

## AC sensors: standard design

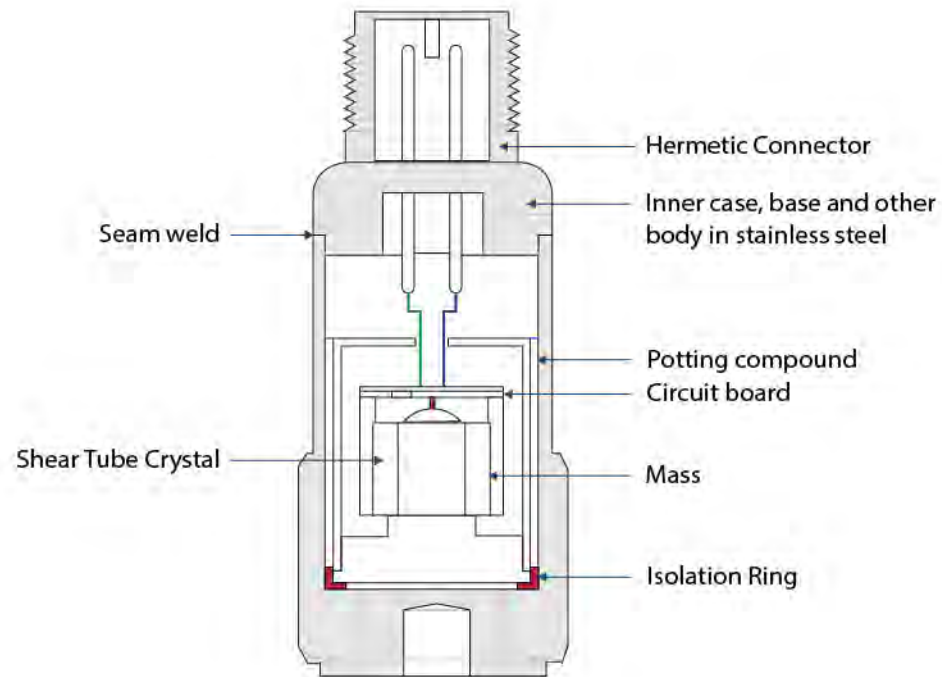
Available in top and side:

- 2 Pin MS
- M12
- Over-braided cable
- Flame retardant
- FEP
- PUR
- Silicon
- HFFR
- Conduit



# Shear accelerometer

What is inside a shear sensor?



# Shear accelerometer options

- Choice of sensitivities: 10mV/g to 1,000mV/g.
- Frequency response: typically 1.5Hz to 10kHz (F improvement available).
- Connector or cable.
- Operating temperature range: -55°C to +150°C.
- Submersible IP68.
- Dual output with temperature.
- Choice of mounting configurations.





# Product overview

AC sensors: premium design

Available in top, side and triaxial:

- 2 Pin MS.
- HFFR
- M12.
- Over-braided cable.
- Flame retardant.
- FEP
- PUR
- Silicon
- Conduit.



# Low power accelerometers

## HS-104 range

- Ultra low power consumption.
- Low voltage.
- Top and side entry available.
- Sealed to IP68.
- Customisable features.
- Triaxial options.



# OEM Capsules

We provide a range of OEM capsules to fit our shear, compression, and low power accelerometers.

- **HS-050 Capsule**
  - Standard from 'compression' accelerometer range.
  - Sealed to IP55.
  - Various frequencies available.
- **HS-070 Capsule**
  - Premium from 'shear' accelerometer range.
  - Sealed to IP55.
  - Various frequencies available.
- **HS-004 Capsule**
  - Ultra low power – from '104' accelerometer range.
  - Sealed to IP55.
  - Various frequencies available.



# Intrinsically safe AC accelerometers

- For use in potentially explosive environments.
- In addition we have ATEX and IEC Ex certification with local approvals in USA, South Africa, India and Australia.
- Our AC accelerometers are ATEX and IEC EX certified for Group I and II and Class I, II, II, Division 1, 2 certification.





# How do 4-20mA accelerometers work?

- Accelerometer receives vibration signal.
- Signal filtered for specified frequency range - for e.g. 0-20mm/sec. This is then converted to proportional current: 4mA represents sensor zero output; 20mA full scale output.
- A PLC or similar system converts the 4-20mA current, back to voltage for further processing.



# Why select a 4-20mA accelerometer?

- **COST EFFECTIVE** - compatible with existing PLC/SCADA systems.
- **ONLINE** - no need for manual data collection.
- **PROVIDES PROTECTION** - provides protection: ideal for alarm outputs.



















# 4-20mA technical details

- HS-420 Series: top entry.
- 4-20mA output proportional to velocity peak/RMS (HS-420 Series).
- 4-20mA output proportional to g pk/pk to pk/RMS (HS-422 Series) for PLC and BMS connection.
- Cable or connector outlet.
- Temp range -25 to +120°C.
- Submersible IP68 sealed option.
- Available with temperature output.
- Choice of mounting threads or studs.
- Frequency response over 2Hz to 1kHz (typical).
- Dual output option (AC) 4-20mA proportional to velocity and AC 'g' for data collection (HS-421 Series).
- Filtering can be added for specific frequency ranges.



# 4-20mA Sensor options

## Technical details

4-20mA Sensor	4-20mA = Acceleration	4-20mA = Velocity	Connector, Filter and Cable options	AC	Temperature
HS-420					
HS-422					
HS-420T/HS-420RT					
HS-422T/HS-422RT					
HS-421					
HS-423					



# Product overview

AC sensors: 4-20mA

Available in top and side:

- 2 Pin MS.
- M12.
- Over-braided cable.
- Flame retardant.
- FEP
- PUR
- Silicon
- Conduit.



# Product overview

Intrinsically safe 4-20mA – vibration and temperature

- For use in potentially explosive environments.
- In addition we have ATEX and IEC Ex certification with local approvals in USA, India and Australia.

Series HS-420I   Series HS-420IT   Series HS-421I   Series HS-422I   Series HS-422IT   Series HS-423I



SGS



# Sensor fixings

We supply a comprehensive range of magnets and studs, to ensure the sensor is mounted to the mounting face correctly.



# Sensor checking kit

- New portable tool designed with the maintenance engineer in mind.
- Simple to use instrument for checking vibration sensors, before and after installation.
- Confirms the bias level of the sensors and checks cable integrity, highlighting any electronic fault or cable damage.
- Simple and quick to test by connecting the probes to the sensor cable, ensuring correct operation of the complete sensor assembly.



# Accelerometer simulator

- Battery powered handheld unit.
- Designed to help installation engineers test vibration monitoring systems with 100mV/g constant current type accelerometers.
- Provides two switched levels of simulated vibration velocity signals: 5mm/s and 20mm/s; allows verification of vibration monitor and alarm circuits.
- The switched vibration levels, and accelerometer power from the monitoring system, are indicated by LEDs.





# Product overview

## Sensor modules



HS-557 Dual output vibration and temperature



HS-429 vibration switch



HS-530 Bearing wear module



HS-510 Trip display module



HS-556 Single channel 4-20mA module



HS-535 Bearing wear module

# Industrial module enclosure

HS-580



# Product overview

## Vibration and temperature monitoring kits



HS-620



HS-630



# Vibration meter kit

## Technical details

- HS-620 or HS-630.
- Velocity/bearing condition.
- ISO 10816-3.
- Re-chargeable battery.
- Mains or in-car charger.
- Sensor/cable fault indicator.
- Display hold function.
- Metric/imperial measurements.
- Temperature option.



# Switch and connection enclosures

To provide complete protection and full connectivity for one or more accelerometers.

- Industrial multi-sensor switch boxes.
- Industrial multi-sensor connection boxes.
- Low cost multi-sensor connection boxes.
- Single point connections.
- Intrinsically safe connection boxes.





# Switch and connection enclosures

Painted mild steel



Series HS-SE



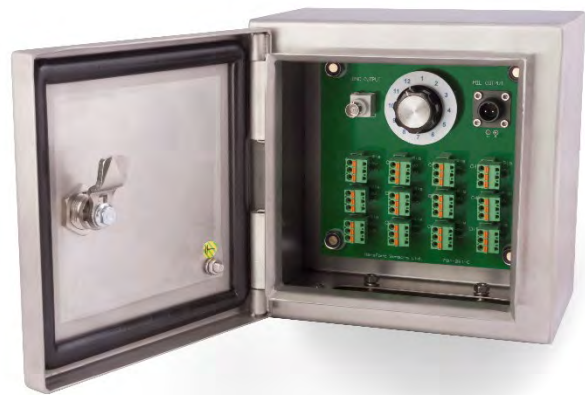
Series HS-SEC



Series HS- CE

# Switch and connection enclosures

Stainless steel



Series HS-SE



Series HS-SEC



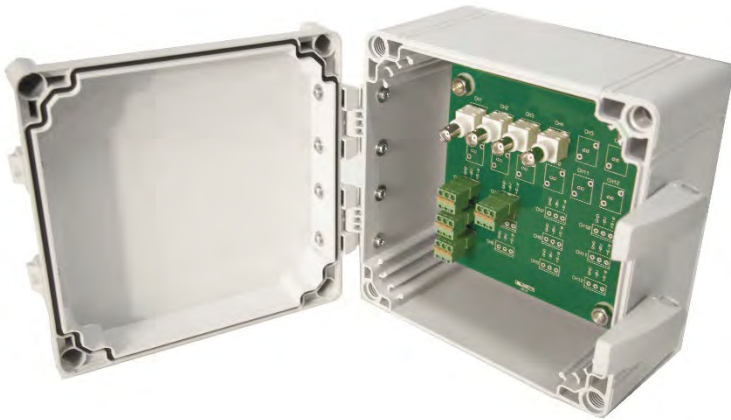
Series HS-SEC-SR



Series HS-SE-SR

# Switch and connection enclosures

Polycarbonate



Series HS-CE



Series HS-SE-PCM



Series HS-BE

# Single point connection

- For remote, permanently mounted sensors
- Allows quick connection to data collector
- Complete with right-angled mounting bracket and socket protection cap (part no: HS-AA002)
- Sealed to IP55
- Easy to install



HS-A002  
Connector Bracket

# Applications





# Vibration modules signal conditioning

## mV/g Accelerometer – technical details



# Vibration modules signal conditioning

## 4-20mA Accelerometer – technical details



# Practical tips

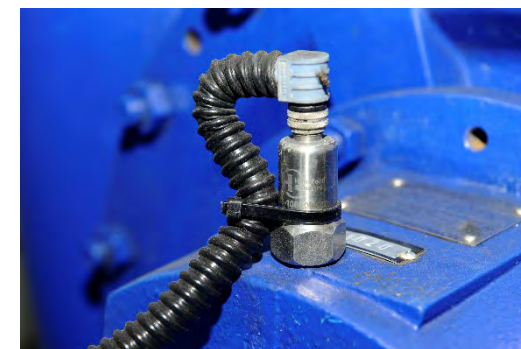
# Practical tips

## Accelerometer mounting techniques

- Mount the accelerometer directly onto the machine surface.
- Ensure the surface is flat, smooth, unpainted, and larger than the base of the accelerometer.
- The area should be clear of grease and oil.
- The sensor should be as close as possible to the source of vibration and at right angles to the axis of rotation.



Isolation Studs



# Where are our products used?





# Industries

Our products are used in a wide range of industries including:

- Metal
- Cement
- Marine
- Paper
- Mining and quarrying
- Wind
- Food and drink
- Pharmaceuticals
- Oil and Gas





# Metal industry

- Furnaces
- Rolling mills
- Presses
- Specialised production machinery



# Cement industry

- Kiln drives
- Crushers
- Screens
- Conveyor belts
- Raw mills
- Elevators
- Separators
- Blowers



# Marine industry

- Pumps
- Fans
- Gearboxes
- Air handling units
- Turbines



# Paper industry

Minimise maintenance activities, while optimising plant availability and uptime.

- Pumps
- Rollers
- Gearboxes
- Motors





# Mining & Quarrying

- Drag lines
- Conveyors
- Ventilation fans



# Wind

Monitor change and ensure availability at all times.

- Alternator
- Gear box
- Blade movement
- Tower sway





# Food and drink

Require optimum condition, which needs a proactive approach to maintenance and condition monitoring.

- Pumps
- Conveyors
- Bottling lines
- Centrifuges



# Pharmaceuticals

- Air handling units
- Motors
- Fans



# Oil and Gas

- Pumps
- Fans
- Cooling towers
- Motors







Thank you