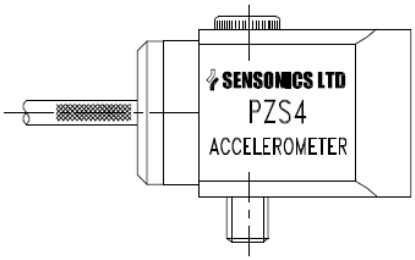
TECHNICAL INFORMATION

CONDITION MONITORING SOLUTIONS

SENSONICS LTD

PZS Series Accelerometer



- Shear mode accelerometer for industrial applications.
- Dual case for high noise immunity.
- Stainless steel hermetically sealed outer case.
- Top or side exit options.
- IEPE 2-wire and +24Vdc / -24Vdc 3-wire options
- Connector or integrated cable options.
- Wide frequency range of operation.
- Suitable for use up to 140 ºC.
- Available with ATEX and IECEx approvals.

The PZS accelerometer consists of a high performance shear mode piezoelectric ceramic assembly available in either a top exit or side exit hermetically sealed housing. The PZS range is suitable for vibration monitoring applications on a wide range of critical rotating machinery and typically mounted on the bearing housing to detect bearing wear and absolute vibration.

The sensor operates on a current-loop principle which permits very long interconnecting cables to be used without loss of measurement accuracy. The standard device sensitivity is 100mV/g with an acceleration measurement range of over 50g which is suitable for most machine monitoring applications.

The piezo-electric shear mode sensor and amplifier are contained within an inner metal enclosure, which is electrically and thermally insulated from the outer stainless steel body. The arrangement prevents the opportunity for earth loops eliminating electrical interference, and in addition minimises thermal shocks and base strain effects. The inner enclosure is connected to the 0V of the two wire system and is therefore an effective electrical screen. External connections are available through a wide range of integral cable and connector options.

Measurement Performance

Measurement Range:	± 70 g peak (±24 Vdc input)
Linearity:	± 1%, or better
Sensitivity:	100 mV/g ± 5 % or ± 10 % options
Temperature Response:	< 8% up to 140 ºc
Frequency range:	0.4 Hz to 10 kHz 0.8 Hz for Ex version 0.1 Hz option available
Transverse Sensitivity:	< 5 %
Electrical Noise Spectral	0.1 mg rms broadband 0.5 Hz 40ug / √Hz 1.0 Hz 36ug / √Hz 2.0 Hz 25ug / √Hz 5.0 Hz 10ug / √Hz 10 Hz 3.9ug / √Hz 100 Hz 0.8ug / √Hz 1 kHz 0.3ug / √Hz
Mounted Resonant Frequency:	>30 kHz

Electrical Interface

Voltage Range:	18.0 – 28.0 Vdc
Current Source Range:	2.0 – 10.0 mA
Output Impedance:	< 100 Ohm
Bias Output Voltage:	+12.0 Vdc ± 20% / -8.5 Vdc
Grounding:	Dual case arrangement with Cable screen not connected at accelerometer end, connect to instrument earth at monitor end.
Maximum Cable Length:	330 m based on 120 pF/m at <10 kHz. 3000 m based on 120 pF/m at <1 kHz Refer to ATEX/IECEx certs for Ex applications
Case Isolation:	>100 MOHM
Settling Time	< 2 sec

Environmental Performance

Operating Temperature Range:	-40 ºC to +140 ºC Permissible to 150 ºC for short periods.
Vibration Limit	200 g peak at 120 Hz for 10 mins
Shock Limit:	5000 g
Sealing:	Fully welded construction with Hermetically sealed integral connector to IP68. Integral cable available to IP66/IP67 or IP68.
Base Strain Sensitivity	0.0001g / uStrain

General Information

Sensing Element:	Piezoelectric Shear Mode PZ-27 lead zirconate titanate
Case Material:	Stainless Steel 303 S31 body (316, Inconel 600/625 options)
Mass	PZS3 Straight 95 grams PZS4 Side Exit 150 grams (excluding cable)
Standards	Compliant to API 670 (with correct options selected)
Mounting Options	M6 x 1.0, M8 x 1.25 & ¼"-28UNF

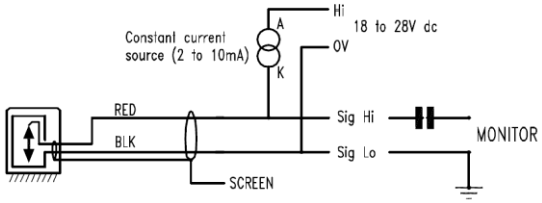
Multi-Agency Approval

ATEX / IECEx	Ex II 1 GD / Ex I M1 Ex ia IIC T4 Ga Ex ia IIIC T130°C Da Ex ia I Ma (-40°C ≤ Ta ≤ +120°C)

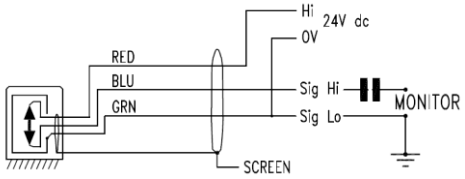
Connections

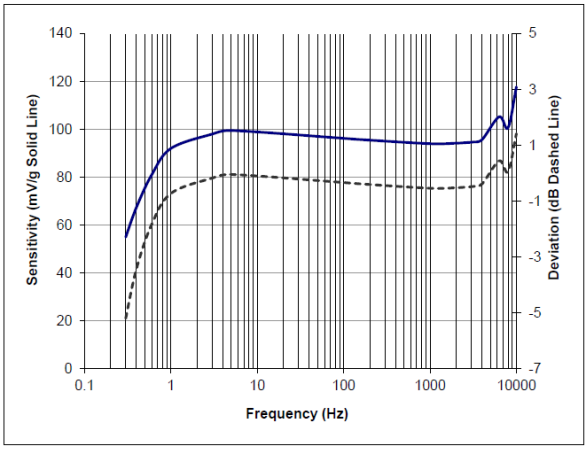
Connector Options	2 / 3 pin MIL-C-5015, M12, BNC
Cable Options	Integral Teflon type, SWA and conduit options PU for IP68 applications

2 – wire. IEPE



3 – wire, +24 Vdc

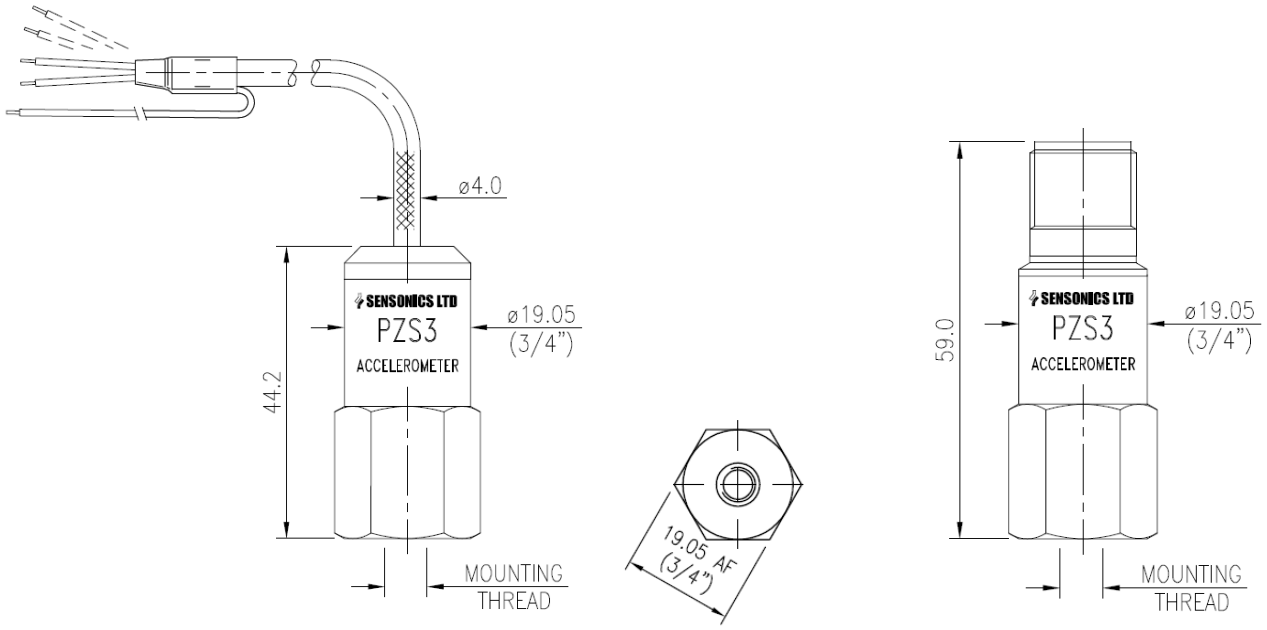




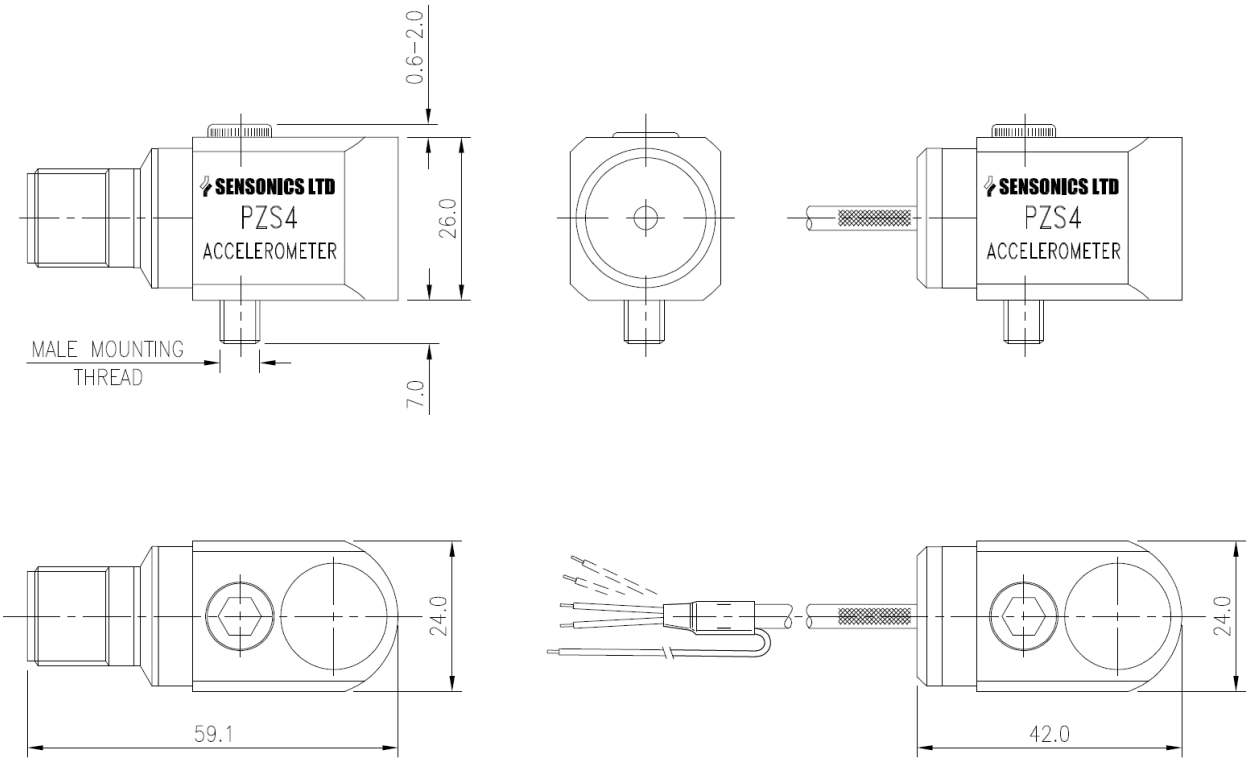
Typical Frequency Response

PZS Mechanical Configurations

PZS3 top exit



PZS4 Side Exit



Accelerometer Ordering Information

PZS [A] - [B] [C C] [D D] [E] [F] [G]

Mechanical Configuration
3 - Top Exit
4 - Side Exit

Electrical Configuration
2 – 2 wire IEPE
8 – 3 wire +24Vdc
4 – 3 wire -24Vdc

Connector Method
6A – Integral PVC Cable Unarmoured 80°C
6B – Integral PVC Cable SWA Armour 80°C
6C – Integral Teflon Cable Unarmoured 140°C
6D – Integral Teflon Cable SWA Armour 140°C
7G - Integral PU Cable, Submersible IP68, 10 Bar
8E - Integral Connection, 2-pin MIL-C-5015
8F - Integral Connector, BNC
8H - Integral Connector, 3-pin MIL-C-5015
8K - Integral Connector, 5-pin M12
9C - Integral Teflon with Convoluted Conduit
PTFE Braided Conduit available for PZS4 - consult sales

Cable Length
05 - Specify in metres (e.g 5m)
5m and **10m** are standard

Output
1 – 100 mV/g ± 10%
2 – 100 mV/g ± 5%
3 – 500 mV/g ± 10% (0.6Hz)
8 – 100 mV/g ± 5% (0.1 Hz)

Thread type
1 – ¼"-28UNF
2 – M6 x 1.0
3 – M8 x 1.25
4 – M8 Hex Hd Bolt (PZS4 only)
Note:- PZS3 - Female thread, PZS4 - Bolt

Multi-Agency Approval
0 - None
1 - ATEX / IECEx

Note
1. Standard options on shorter lead time are highlighted in bold
2. CERT-CAL1 spot frequency (issued as standard)
3. CERT-CAL2 frequency sweep, amplitude and phase (please specify)

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