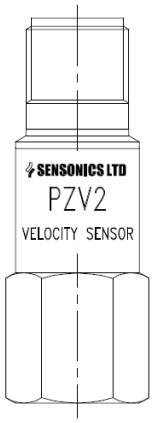
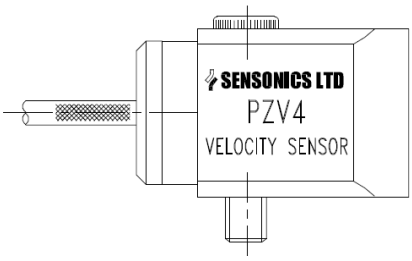
TECHNICAL INFORMATION

CONDITION MONITORING SOLUTIONS

SENSONICS LTD

PZV Series Velocity Vibration Sensor





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

The PZV velocity sensor consists of a high performance shear mode piezoelectric ceramic assembly which incorporates an electronic integration function to provide a velocity vibration output. Available in either a top exit or a side exit hermetically sealed housing, the PZV range is suitable for measuring cyclic vibration a wide range of critical rotating machinery, typically mounted on the bearing housing or casing 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 4 mV/mm/s with a vibration measurement range of over 1500 mm/s peak.

The piezo-electric shear mode sensor, amplifier and integrator 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.

CE Ex

DS 1264

Measurement Performance

Measurement Range:	± 1500 mm/s peak (24 Vdc input)
Linearity:	± 1%, or better
Sensitivity:	4.0 mV/mm/s ± 5 %
Temperature Response:	< 8% up to 140 ºc
Frequency range:	2.0 Hz to 6.0 kHz 1.0 dB response
Transverse Sensitivity:	< 5 %
Electrical Noise Spectral	<0.1 mm/s rms broadband 2.0 Hz 3.0 um/s / √Hz 5.0 Hz 1.5 um/s / √Hz 10 Hz 1.0 um/s / √Hz 50 Hz 0.1 um/s / √Hz 100 Hz 0.03 um/s / √Hz
Mounted Resonant Frequency:	>15 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%
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 □C to +140 □C Permissible to 150 □C 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	0.0002 mm/s / uStrain

General Information

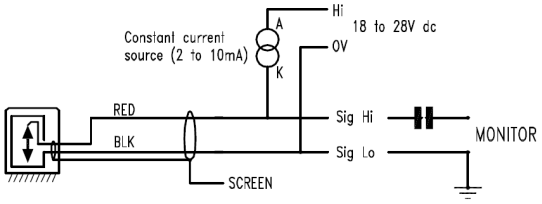
Sensing Element:	Piezoelectric Shear Mode PZ-27 lead zirconate titanate
Case Material:	Stainless Steel 303 S31 body (316, Inconel 600/625 options)
Mass	PZV2 Straight 95 grams PZV4 Side Exit 150 grams (excluding cable)
Mounting Options	M6 x 1.0, M8 x 1.25 & ¼"-28UNF

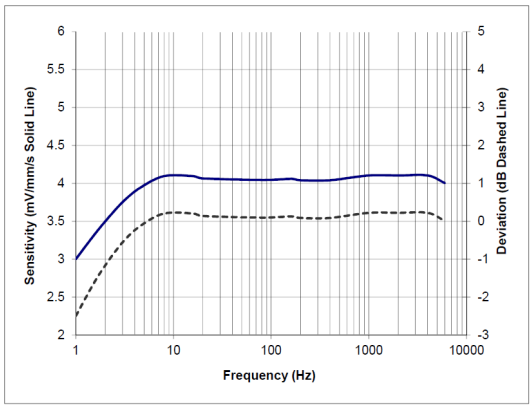
Multi-Agency Approval

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)

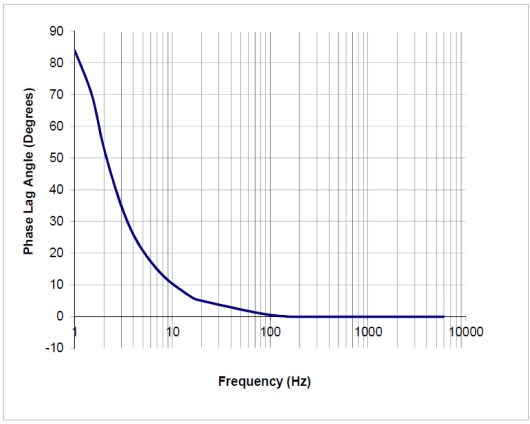
Connections

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





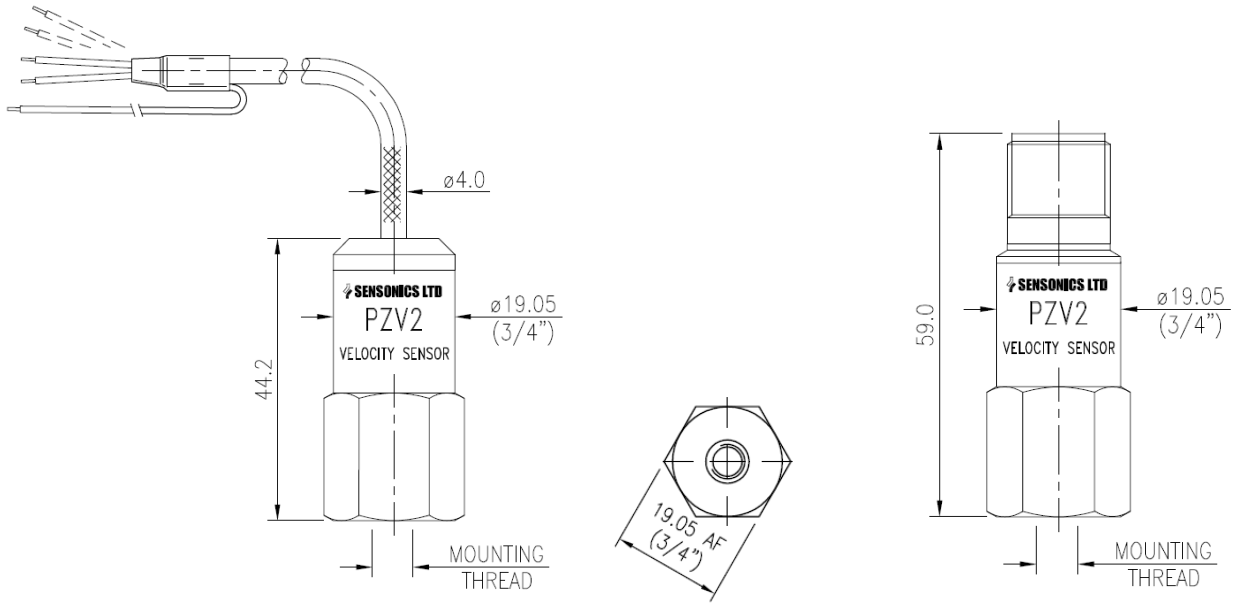
Typical Frequency Response



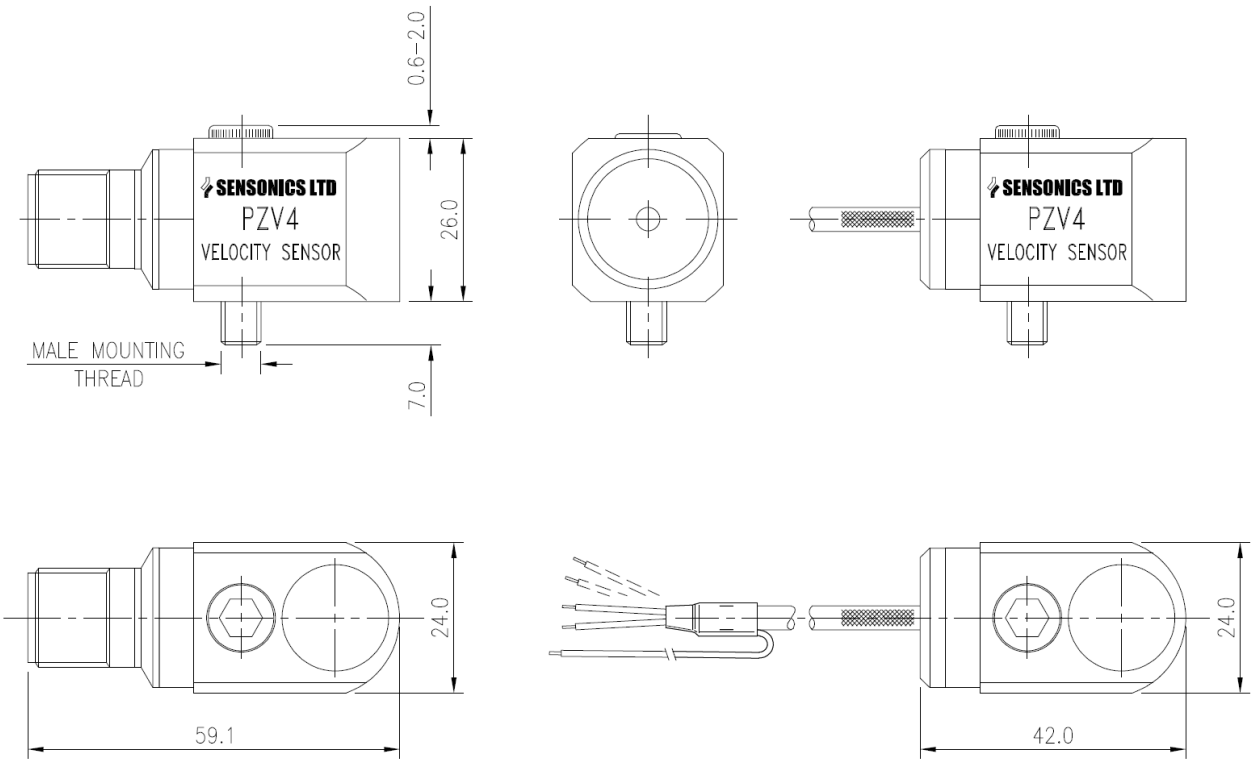
Typical Phase Response

PZV Mechanical Configurations

PZV2 top exit



PZV4 Side Exit



Velocity Sensor Ordering Information

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

Mechanical Configuration
2 - Top Exit
4 - Side Exit

Electrical Configuration
2 – 2 wire IEPE
3 – 3 wire +24Vdc

Connector Method
6A – Integral PVC Cable Unarmoured 80ºC
6B – Integral PVC Cable SWA Armour 80^{0}C
6C – Integral Teflon Cable Unarmoured 140^{0}C
6D – Integral Teflon Cable SWA Armour 140^{0}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 – 4 mV/mm/s ± 5%

Thread type
1 – ¼”-28UNF
2 – M6 x 1.0
3 – M8 x 1.25
4 – M8 Hex Hd Bolt (PZV4 only)
Note:- PZV2 - Female thread, PZV4 - 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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