

Piezoelectric Acceleration/Velocity Sensors

PAS-10x, PVS-11x

The PAS / PVS is a piezoelectric vibration sensor family, with PAS models measuring acceleration and PVS models measuring velocity, designed for absolute vibration monitoring of rotating machinery in harsh industrial environments.

KEY FEATURES

- Acceleration (PAS) or velocity (PVS) measurement
- Wide frequency response
- High bias voltage stability at elevated temperatures
- IEPE two-wire interface (constant current supply)
- Hermetically sealed stainless-steel housing (IP68)
- Electrical isolation with internal Faraday shielding
- Industrial-grade design for harsh environments

MONITORING SOLUTIONS



Shaft & bearing vibration

TYPICAL APPLICATIONS



Hydrogenerators



Pumps, fan, cooling towers...



Gas & steam turbines



DESCRIPTION

The hermetic sealed industrial piezoelectric accelerometer/velocimeter are designed to monitor the vibration in harsh industrial environment. It uses the industry standard @ICP 2-wire voltage transmission technic with a 4 mA minimum constant current supply. Signal ground is isolated from the mounting surface and

outer case to prevent ground loops. Faraday shielding will limit sensitivity to ESD to a minimum.

Annular shear mode design prevents from thermal transient and from spurious signal from high transverse vibrations. Low noise electronic and temperature compensated design will ensure accurate results over the complete temperature range.

The sensor provides a voltage output proportional to the vibration acceleration across the two transmission wires. The DC standing voltage is used for OK detection and the dynamic voltage for vibration monitoring.

Optional features such as a 4–20 mA processed TRMS output (acceleration or velocity) or a voltage output proportional to temperature are available on request; please contact your MC-monitoring sales representative for more informations.

GLOBAL SPECIFICATIONS

OPERATION

Sensor models

• Top cable exit	PAS-101 M1	PAS-101 M5	PVS-111
• Side cable exit	PAS-103 M1	PAS-103 M5	PVS-113
Measuring principle	Piezoelectric annular shear mode with built-in electronic (all models)		
Measuring parameter	Acceleration	Acceleration	Velocity
Electrical grounding	Isolated from machine ground (all models)		
Shielding	Internal Faraday shielding (all models)		
Isolation case to shield	100M Ω (all models)		
Sensitivity	100mV/g	500mV/g	100mV/ips 4mV/mm/s
Sensitivity max error	$\pm 5\%^1$	$\pm 5\%$	$\pm 10\%^1$
Output impedance	50 Ω nominal (all models)		
Output bias voltage	+12V _{DC}	+12V _{DC}	+10V _{DC}
Residual noise (24°C)			
• 1(2.5)Hz to 25kHz	300 μ g rms	25 μ g rms	100 μ in/s rms
• 1(10)Hz	30 μ g	2.4 μ g	10 μ in/s rms
PxS-1x1 Frequency response			
• $\pm 10\%$	1 to 9 000Hz	0.4 to 1 600Hz	2.5 to 3 500Hz
• ± 3 dB	0.5 to 14 000Hz	0.2 to 3 700Hz	1.9 to 7 000Hz
PxS-1x3 Frequency response			
• $\pm 10\%$	1 to 6 000Hz	0.4 to 1 600Hz	2.5 to 3 500Hz
• ± 3 dB	0.5 to 10 000Hz	0.2 to 3 700Hz	1.9 to 7 000Hz
Mounted resonant frequency	25kHz nominal	16kHz nominal	16kHz nominal
Dynamic range	80g pk	10g pk	1250 mm/s pk
Transverse sensitivity	< 5% max of nominal sensitivity at 20Hz, 5g (all models)		
Linearity	$\pm 1\%$ max (all models)		
Warm up time	< 1s	< 10s	< 5s

¹ Increased to $\pm 10\%$ with integral cable (order code CC = xx).

Power supply

• Constant current source	+2 to +10mA _{DC}
• Voltage	+22 to +28V _{DC}
• Protection	Built-in overvoltage and reverse polarity protection

ENVIRONMENTAL

Sensor models

• Top cable exit	PAS-101 M1	PAS-101 M5	PVS-111
• Side cable exit	PAS-103 M1	PAS-103 M5	PVS-113
Temperature range (continuous operation)	−55°C to +120°C	−55°C to +90°C	−55°C to +120°C
Humidity / Enclosure	Hermetically sealed		
Acceleration limit			
• Shock	5 000g pk		
• Continuous vibration	500g pk		
Base strain sensitivity	0.0002g pk/ μ strain		
ESD protection	> 40V		
EMC emission	EN50081-1, EN50081-2		
EMC immunity	EN50082-1, EN50082-2		

PHYSICAL

Sensor models

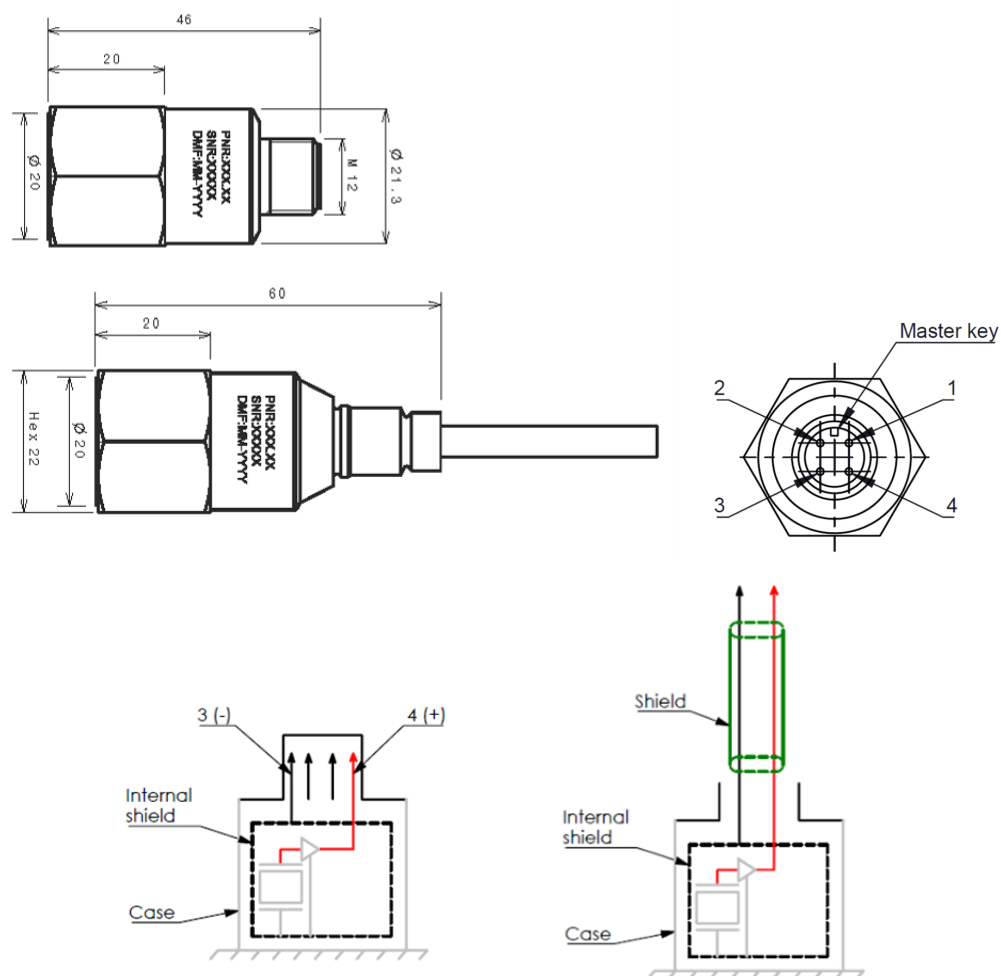
• Top cable exit	PAS-101 M1	PAS-101 M5	PVS-111
• Side cable exit	PAS-103 M1	PAS-103 M5	PVS-113
Body material	Stainless steel DIN 1.4401 (all models)		
Weight (sensor only)			
• Top cable exit	85gr	95gr	85gr
• Side cable exit	155gr	165gr	165gr
Mounting screw	M6		
Mounting torque	2.4Nm		

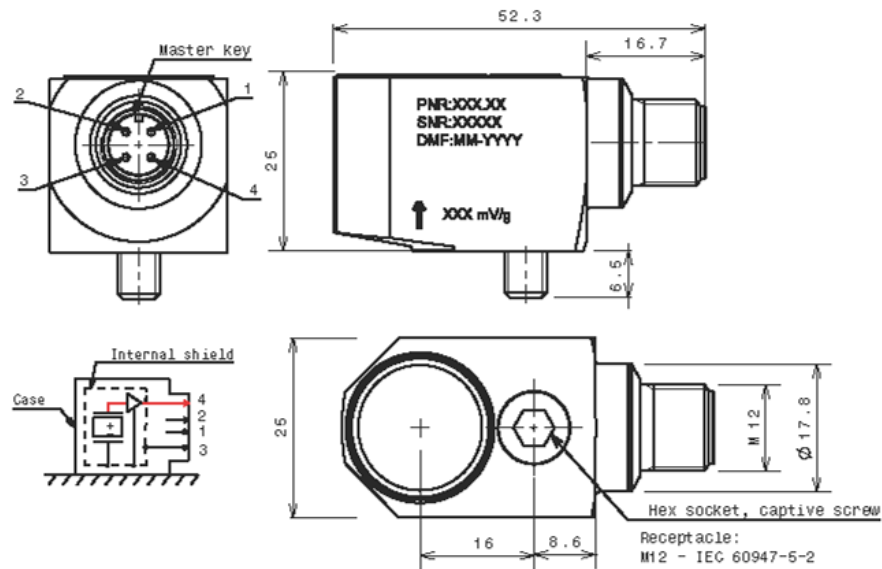
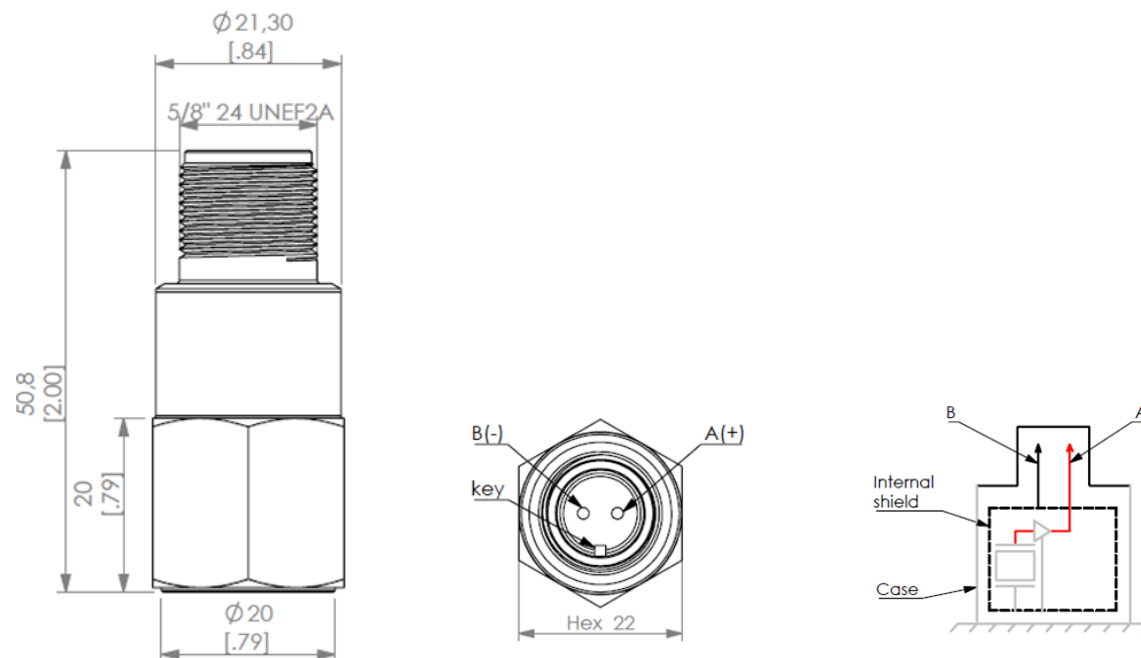
PINOUT

Signal	Integral cable	Ext. cable M12
–	White	Blue
+	Red	Black
Shield	Green	Clear

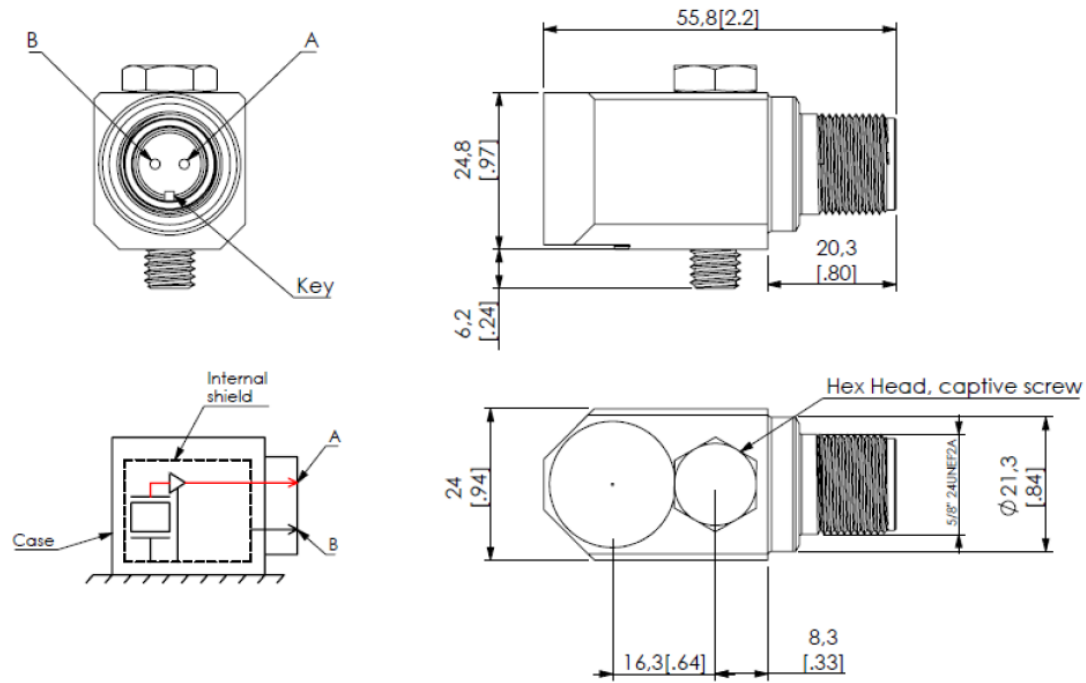
MECHANICAL DRAWING

PAS-101 / PVS-111

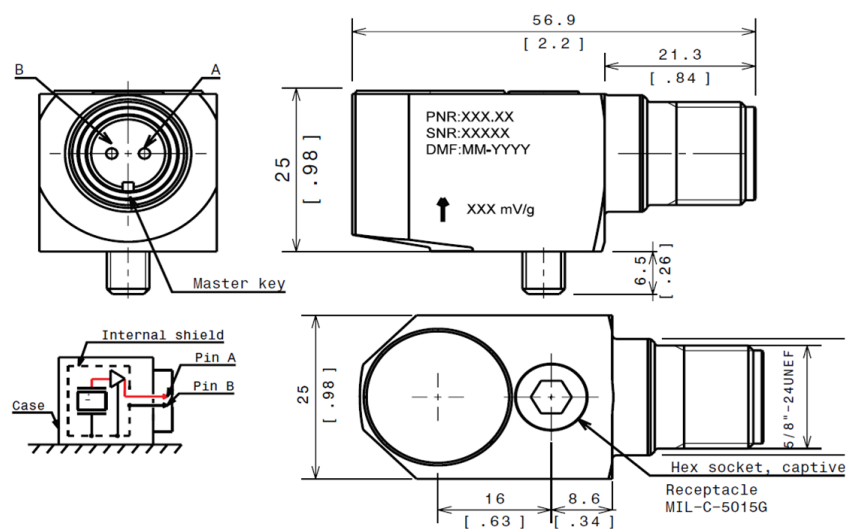


PAS-103 / PVS-113**PAS-101 / PVS-111 WITH MIL GLASS SEAL CONNECTOR**

PAS-103 WITH MIL GLASS SEAL CONNECTOR



PVS-113 WITH MIL GLASS SEAL CONNECTOR



PAS-10X ORDERING INFORMATION

Part type PAS-10x
Ordering Number 01.10**A. BCC DD - F**

A	Exit type	1	Top
		3	Side
B	Installation screw	0	M6 thread
CC	Cable length ¹	00	None
		10	10m
DD	Sensitivity	M1	100mV/g
		M5	500mV/g
F	Glass seal connector	0	M12
		1	MIL-C-5015

Exemple : 01.10**1.000 M1 - 0**: PAS-101 (top exit type), M6 thread, 100mV/g sensitivity, M12 glass seal connector.

PVS-11X ORDERING INFORMATION

Part type PVS-11x
Ordering Number 01.11**A. BCC - F**

A	Exit type	1	Top
		3	Side
B	Installation screw	0	M6 thread
		1	M8 thread
		2	1/4" 28 UNF
CC	Cable length ¹	00	None
		10	10m
F	Glass seal connector	0	M12
		1	MIL-C-5015

Exemple : 01.11**1.000 - 0**: PVS-111 (top exit type), M6 thread, M12 glass seal connector.

¹Available length: 5, 10, 15, 20, 30, 40, 50m (00= Glass Seal Connector see code F).

ACCESSORIES FOR PAS & PVS

Ordering code	Description
01.300.100 DD	PAS/PVS Cable Assembly - M12 / 90°C / Shield Connected
01.300.101 DD	PAS/PVS Cable Assembly - M12 / 90°C / Armored / Shield Connected
01.300.200 DD	PAS/PVS Cable Assembly - MIL / 90°C / Shield Connected
01.300.201 DD	PAS/PVS Cable Assembly - MIL / 90°C / Armored / Shield Connected
01.300.210 DD	PAS/PVS Cable Assembly - MIL / 120°C / Shield Connected
01.300.211 DD	PAS/PVS Cable Assembly - MIL / 120°C / Armored / Shield Connected

DD = Cable length

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Quality certification



Local representative

MC-monitoring SA
Route André Piller 19
CH-1762 Givisiez
+41 58 411 54 00
info@mc-monitoring.com
sales@mc-monitoring.com
www.mc-monitoring.com