

4-20 mA Vibration Sensor Model 125 Top Connector

Main Characteristics

- Velocity (RMS, Peak) or Acceleration (RMS, Peak)
- Dynamic output available : Velocity or Acceleration
- IP67 with associated cable (B=2, 3 only)

Competitive advantage

- Price
- Low cost IP67 overmolded M12 cable assembly
- M12 overmolded cable assembly is available through local electronic distributor
- M12 offers compatibility with sensors used in automation.

Description

The hermetic sealed 4-20 mA loop powered industrial accelerometer model 125 is design to monitor the vibration in harsh industrial environment. It uses the industry standard 4-20mA Loop that interfaces directly with PLC, DCS and 4-20mA monitor. Large choice of output (velocity, acceleration, RMS, equivalent Peak) and frequency range will help to fit almost every customer requirements. Their compact size allows for installation in tight places. The dynamic signal output (acceleration or velocity) can allow spectral vibration measurements.

Typical applications

Vibrations measurement in the rugged environments of industrial machinery monitoring. It allows continuous trending of overall machine vibration.

Ordering information model 125.01

To order, specify model number, options and suffix :

125.01- AAAA - B (CC-DD) - Options - Accessories

AAAA : Full Scale (=20mA)

- AR05 : Acceleration RMS 5g (3Hz to 10kHz ±10%)
- AR10 : Acceleration RMS 10g (3Hz to 10kHz ±10%)*
- AR20 : Acceleration RMS 20g (3Hz to 10kHz ±10%)
- AR50 : Acceleration RMS 50g (3Hz to 10kHz ±10%)

- AP05 : Acceleration Peak 5g (3Hz to 10kHz ±10%)
- AP10 : Acceleration Peak 10g (3Hz to 10kHz ±10%)
- AP20 : Acceleration Peak 20g (3Hz to 10kHz ±10%)
- AP50 : Acceleration Peak 50g (3Hz to 10kHz ±10%)

- VR10: Velocity RMS 10 mm/s (3Hz to 1000 Hz ±10%)*
- VR11: Velocity RMS 0.5 ips (3Hz to 1000 Hz ±10%)
- VR20: Velocity RMS 20 mm/s (3Hz to 1000 Hz ±10%)
- VR21: Velocity RMS 1 ips (3Hz to 1000 Hz ±10%)
- VR51: Velocity RMS 2 ips (3Hz to 1000 Hz ±10%)

- VP10: Velocity Peak 10 mm/s (3Hz to 1000 Hz ±10%)*
- VP11: Velocity Peak 0.5 ips (3Hz to 1000 Hz ±10%)
- VP20: Velocity Peak 20 mm/s (3Hz to 1000 Hz ±10%)
- VP21: Velocity Peak 1 ips (3Hz to 1000 Hz ±10%)
- VP51: Velocity Peak 2 ips (3Hz to 1000 Hz ±10%)

Note : Peak is based on the true RMS value of vibration. For a sine wave, the equivalent peak output is 1.414 times the RMS. value.

B : Connector / Integral cable

- 1 : *MIL-C-5015, glass seal
- 2 : *M12 glass seal
- 3 : *M12 epoxy sealed
- 5 : Integral cable
- 7 : Integral cable with stainless steel overbraid protection
- 8 : Integral cable with stainless steel protection conduit



Model 125.01-AAAA-2 with Overmolded M12 cable assembly

Option 5, 7, 8 needs additional information :(CC-DD)
Options 5, 7, 8 are not stocked. Leadtime : 2 to 4 weeks.

CC : Cable Type (only integral cable B=5, 7, 8)

- 01 : Polyurethane twisted pair cable (90°C)
- 02 : Teflon FEP twisted pair Cable (200°C)
- 03 : Radox twisted pair cable (120°C, halogen free)
- 12 : Teflon FEP twisted triple Cable (200°C). For DA/DV option.
- 13 : Radox twisted triple (halogen free). For DA/DV option
- 31 : *Polyurethane 4 conductors cable (90°C). For DA/DV option

DD : length in metre (only integral cable B=5, 7, 8)

Options :

Housing thread (Standard thread : M6x1)

- H1 : M16x2 (quick mouting + 120° positioning) (Not stocked)
 - H2 : Quick fit mounting (Not stocked)
 - H7 : 1/4" 28 UNF-2A. (Not stocked)
- option H2 and H1 are recommended for integral cable.
option H7 is available for North American market.

Acceleration Dynamic Output: DA

- 100 mV/g +30% for VRXX, VPXX, AR05, AP05
 - 10mV/g +30% for AR10, AR20, AR50, AP10, AP20, AP50.
- DA is not available for MIL-C-5015 2-pin connector (B=1).

Velocity Dynamic Output: DV

- 100 mV/ips +30% for VRXX and VPXX
- DV is not available for MIL-C-5015 2-pin connector (B=1).

Special Agency Approval

- X1 : Atex approved (July 2009)

Accessories:

- M6 : M6x1 mounting stud
- M7 : 1/4" 28 UNF 2A mounting stud
- M8 : M8x1.25 mounting stud
- W6 : Swivel adaptor

Special Engraving :

- Add ZXX at the end of the part number.
- XX is a number supplied by VibraSens

*Most Popular model (in stock) :

- 125.01-VR10-3-DA // 125.01-VR21-3-DA
- 125.01-AR20-3-DA

Ordering example :

- 125.01-VR10-3-DA-M6 4-20mA sensor, FS=10mm/s RMS, M12 top connector, Dynamic acceleration output

Specifications (24°C)

Dynamic

Sensitivity	No vibration 4 mA
	Full scale (see AAAA ordering information) 20 mA ±2%
	Note : Equivalent Peak is based on the true RMS value of vibration. For a sine wave, the equivalent peak output is 1.414 times the RMS. value.
Accuracy (Repeatability)	2%
Frequency response	See AAAA ordering information
Mounted Resonant frequency	25 kHz Nom
Transverse response sensitivity (20Hz, 5g)	<5%
Linearity	±1% Max
Turn on time, 4-20 mA loop	< 15 Sec

Option : Dynamic acceleration (DA)

Sensitivity	See ordering information
Dynamic	25 g for 100 mV/g output
	250 g for 10 mV/g output
Power	Need 4-20 mA loop, no constant current source is needed, DC bias=2.6V.
Frequency response	±10 % : 3 to 9000 Hz
	±3 dB : 1 to 14000 Hz

Option : Dynamic velocity (DV)

Sensitivity	See ordering information
Dynamic	1.5 ipsft
Power	Need 4-20 mA loop, no constant current source is needed.
Frequency response	±10 % : 3 to TBD Hz
	±3 dB : 1 to TBD Hz

Electrical

Electrical Grounding	Isolated from machine ground
	Internal Faraday shielding (fig. 1)
Isolation(Case to shield)	100 MΩ Min
Capacitance to ground	70 pF Nom
Maximum Loop resistance	R1 Max=(Vdc power - 10V)/20mA
Minimum R1 wattage	Watt min=0.0004xR1
Power requirements for two wire loop	Voltage : +10 to +30 VDC
Protection : Overvoltage	Yes
	: Reverse polarity
	Yes

Environmental

Temperature, operating continuous	
max. loop current =10mA	-55 to 120 °C (-65 to 250 °F)
max. loop current =20mA	-55 to 90 °C (-65 to 212 °F)
Humidity / Enclosure	
B=1, 2	Not affected, hermetically sealed, 1E-8storr./ls
B=3	IP67, epoxy sealed
Acceleration limit : Shock	2 500g peak
	: Continuous vibration
	250g peak
Mean time between failure (MTBF)	10 Years Nom
ESD Protection	> 40 V
Safety	EN 61010-1 and IEC 1010-1
EMC emission	EN 50081-1, EN 50081-2
EMC immunity (1)	EN 50082-1, EN 50082-2

Physical

Dimensions	
B=1	Fig. 1a
B=2	Fig. 1b
B=3	Fig. 1c
B=5	Fig. 1e
B=6	Fig. 1f
Design	PZT Ceramic
Weight	85 gr Nom (3.0 Oz)
Connector	
B=1	MIL-C-5015 glass seal, Type MS3143 10SL-4P
B=2	M12 glass seal, IEC 60947-5-2
B=3	M12 epoxy seal, IEC 60947-5-2
Material	AISI 316L, DIN 1.4404 (Stainless steel)
Housing thread	Fig 1h
Mounting torque (M6, M7, M8 suffix)	2,4 N.m (21 in-lbs)

Accessories, supplied

Calibration supplied	
	DA or DV if applicable

Accessories, not supplied

Cable assembly	
MIL connector (B=1), Polyurethane cable	10.01-B01-A01-01-Length
MIL connector (B=1), FEP Teflon cable	10.01-B01-A01-02-Length
M12 connector B=2, 3 Polyurethane cable	10.01-E01-A01-31-Length
PU or FEP Armored cables are also available. See Model 10.01.	

Accessories, spares part

Mounting Stud	
M6	191.01-06-06-1
1/4" 28 UNF	191.01-06-16-1
M8	191.01-06-08-1

Standard Wiring color

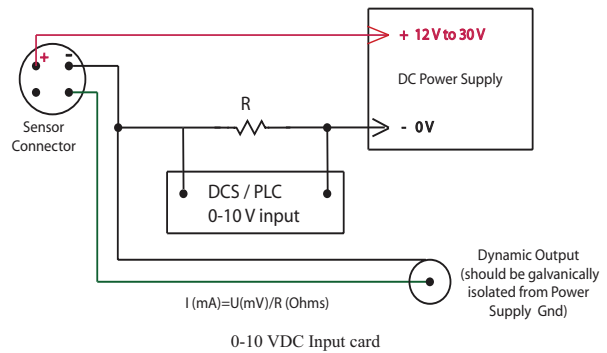
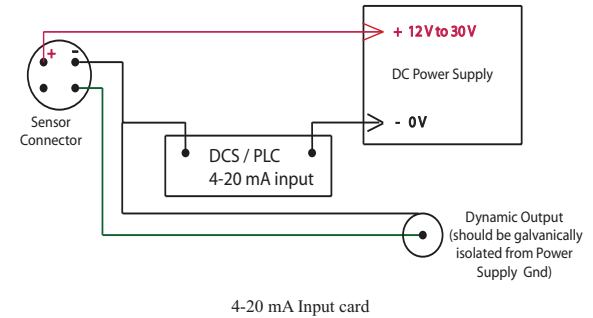
With Mil-C-5015 cable assembly: + = Red // - = White
With M12 cable harness: : + = Brown // - = White // DA or DV=Black

Repair

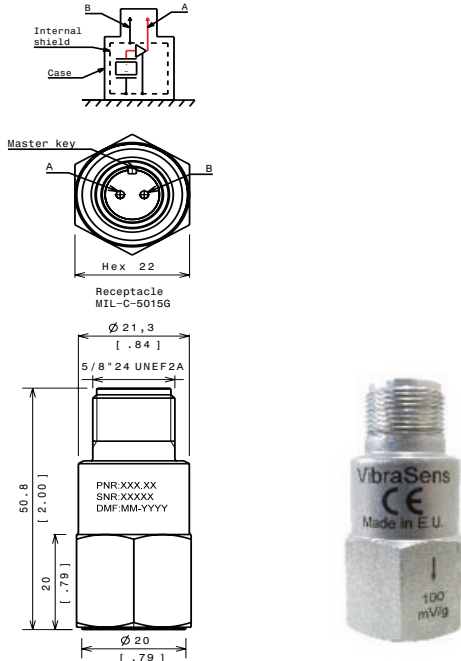
Consult factory for replacement of connector in case of broken or bended pins. Repair of electronic is not possible.

(1) Guaranteed if using accessories listed in this product datasheet only

Wiring Schematic

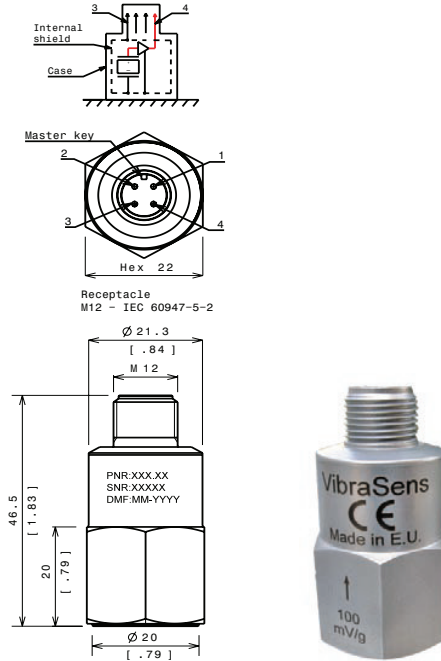


Drawings



Model Number	Pin A	Pin B
Standard, no option	(+)	(-)

Fig 1a : Outline drawing & Electrical layout, B=1 (MIL-C-5015)



Model Number	Pin 1	Pin 2	Pin 3	Pin 4
Standard, no option	(+)	(-)	NC	NC
DA / DV Option	(+)	(-)	NC	DA or DV

(NC) : Not connected
fig 1b : Outline drawing & Electrical layout, B=2 (M12 glass seal)

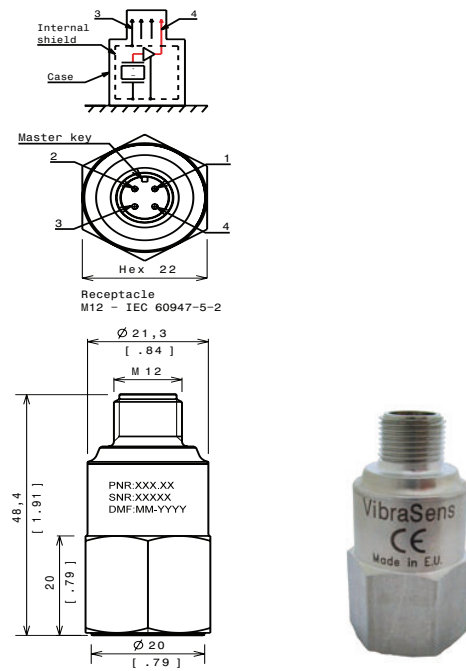


Fig 1c : Outline drawing B=3 (M12 Epoxy)
electrical layout : See above B=2

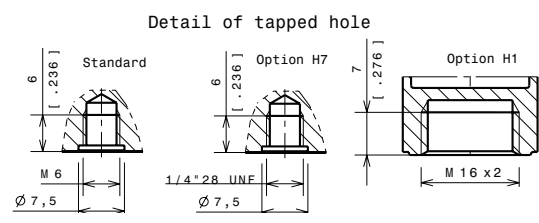
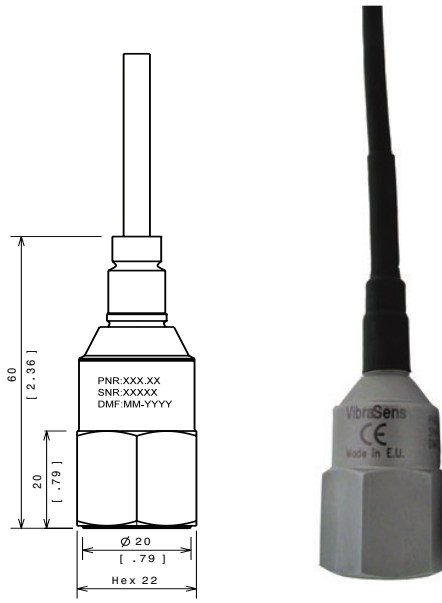


Fig 1h : Housing thread, option H1, H2, H7

CC=01, 02 (PU, Teflon)	White (-) / Red (+)
CC=03 (Radox)	White N°1 (-) / White N°2 (+)
CC=12 (Teflon)	White (-) / Red (+) / Black (DA or DV)
CC=13 (Radox)	White N°1 (-) / White N°2 (+) / White N°3 (DA or DV)
CC=31 (PU)	Blue (NC) / Black (DA/DV) / White (-) / Brown (+)

(NC) : Not connected

Fig 1d : Outline drawing & Electrical layout, B=5 (cable only)

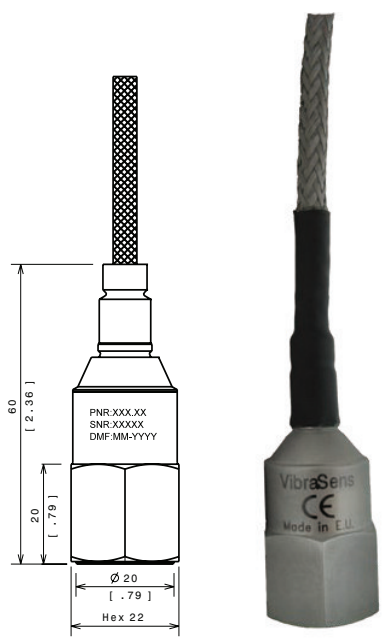


Fig 1e : Outline drawing B=7 (cable with overbraid)
electrical layout : See above B=5