

4-20 mA Vibration Sensor Model 127 Side 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 127 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 127.01

To order, specify model number, options and suffix :

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

AAAA : Full Scale (=20mA)

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

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

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

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

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
 - 5 : *Integral cable
 - 7 : *Integral cable with stainless steel overbraid protection
 - 8 : Integral cable with stainless steel protection conduit
- Option 5, 7, 8 needs additional information :(CC-DD)



Model 127.01-AAAA-2 with Overmolded M12 cable assembly
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 :

Acceleration Dynamic Output DA

- 100 mV/g $\pm 30\%$ for VRXX, VPXX, AR05, AP05
- 10mV/g $\pm 30\%$ for AR10, AR20, AR50, AP10, AP20, AP50.

Velocity Dynamic Output DV

- 100 mV/ips $\pm 30\%$ for VRXX and VPXX
- Note : DA or DV are not available for MIL-C-5015 2-pin connector (B=1).

Agency approval

none

Accessories (Machine thread):

- M6 : M6x1 Bolt, captive, hex socket
- M7 : 1/4" 28 UNF 2A Bolt, captive, hex socket

Special Engraving :

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

*Most Popular model (in stock) :

- 127.01-VR10-2-DA // 125.07-VR21-2-DA
- 127.01-AR20-2-DA

Ordering example :

127.01-VR10-2-DA-M6 4-20mA sensor, FS=10mm/s RMS, M12 glass seal connector

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
Power	250 g for 10 mV/g output
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	100 mV/in/sec
Dynamic	1.5 in/sec
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.....	RI Max=(Vdc power - 10V)/20mA
Minimum RI wattage	Watt min=0.0004xRI
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./s
B=3.....	IP67, epoxy sealed
Acceleration limit : Shock	
.....	2 500g peak
.....	: Continuous vibration.....250g peak
Mean time between failure (MTBF)	
.....	7 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=5	Fig. 1e
B=6	Fig. 1f

Design	PZT Ceramic
Weight	155 gr Nom (5.6 Oz)

Connector

B=1	MIL-C-5015 glass seal, Type MS3143 10SL-4P
B=2	M12 glass seal, IEC 60947-5-2
Material	AISI 316L, DIN 1.4404 (Stainless steel)
Mounting torque (M6, M7).....	2,4 N.m (21 in-lbs)

Accessories, supplied

Calibration supplied

.....	DA or DV if applicable
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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

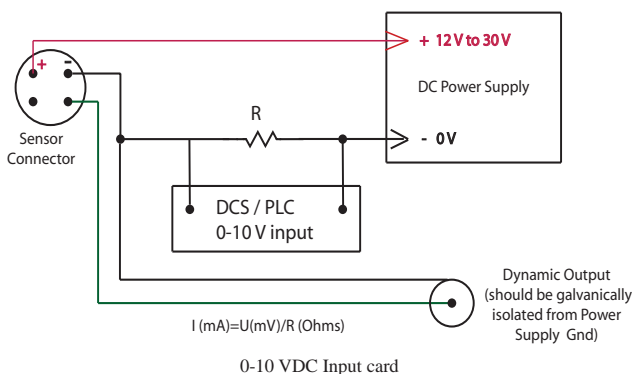
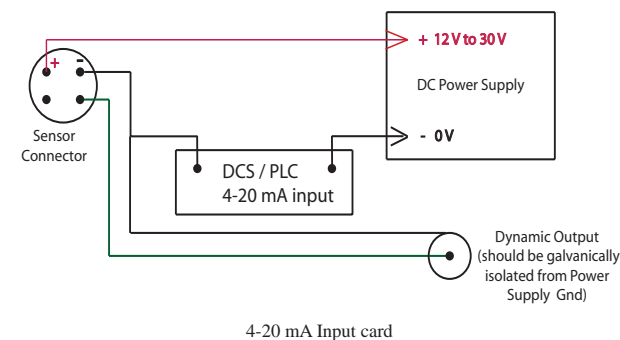
With M12 cable harness: : + = Brown // - = White // DA or DV=Black

Repair

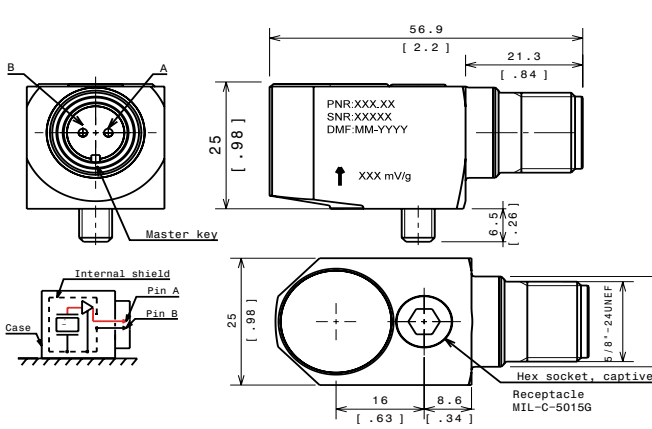
Consult factory for replacement of connector in case of broken or bended pins. Repair of electronic is not possible.

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

Wiring Schematic

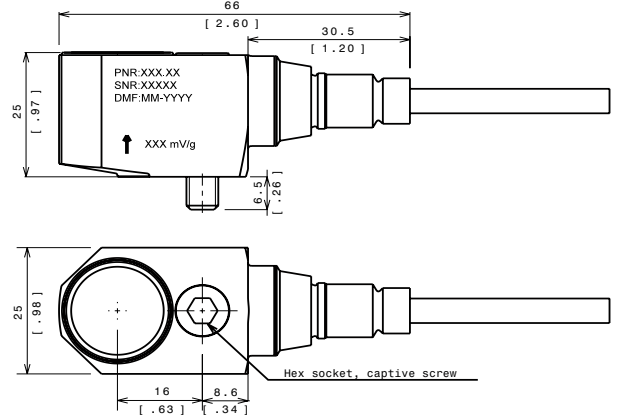


Drawings



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

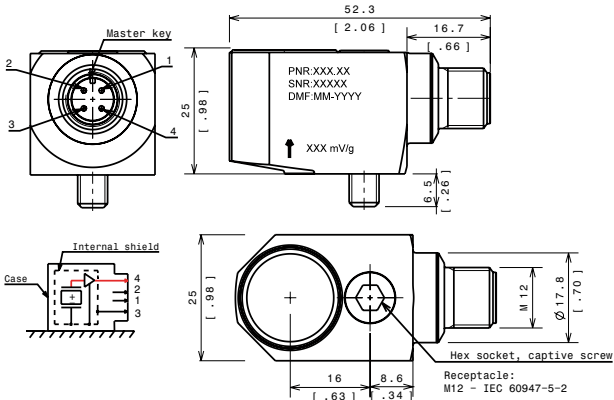
Fig 1a : Outline drawing & Electrical layout for MIL-C-5015 Connector (B=1)



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)



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 / (Temp) : Temperature

Fig 1b : Outline drawing & Electrical layout for M12 Glass seal Connector (B=2)

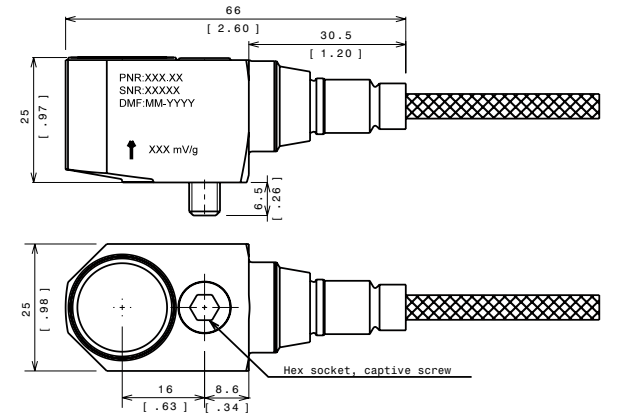


Fig 1e : Outline drawing B=7 (cable with overbraid)
electrical layout : See above B=5

