

4-20 mA Vibration Transmitter, Top connector

Main Characteristics

- Can monitor machine as low as 180 RPM.
- Annular shear mode
(better than obsolete compression design)
- Velocity or Acceleration (RMS, Peak) output
- Dynamic output available : Velocity or Acceleration
- Temperature output available (10 mV/°C)
- Dual case isolation with Faraday shield
- Submersible version (150 metres) with associated IP68 over-molded cable
- life time hermetic sealing warranty (M12/Mil glass seal connector)
- ISO 10816 (or new ISO 20816) compliant.

Competitive advantage

- Compare to obsolete compression design, annular shear piezoelectric sensors can monitor machine vibration down to 180 RPM. They are also less sensitive to base strain and are immune to thermal transient and cable motion.
(compression design can only monitor machine as low as 600 RPM)..
- Resistant to shock (magnet mounting) thanks to protected Mosfet transistor input.
- ESD and reverse wiring protection.
- The glass seal hermetic connector protects the piezoelectric disc and the electronic from harmful environmental influences, significantly increasing their reliability and lifetime. Associated with low cost IP68 overmolded M12 cable assembly it is a perfect solution for submersible application down to 150 metres. Sensors sealed with epoxy will leak after few temperature cycles.
- M12 connector (4-Pin) offers compatibility with numerous sensors used in automation. M12 overmolded cable assemblies are available from many cable manufacturers around the world. Mil cordset are expensive because they are only available from vibration sensor manufacturer. Moreover the 2-Pin mil connector doesn't allow for optional out like temperature or acceleration.

Description

The hermetic sealed 4-20 mA loop powered industrial accelerometer model 125 is designed 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.



Model 125.01-AAAA-2

Typical applications

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

Approvals



Revision History

June 2008 : Released
Sept 2016 : DA frequency response is same as 4-20 mA output.

Ordering information

To order, specify model number, options, accessories and suffix :

125.01- AAAA - B - TT - HH - YY

AAAA : Full Scale (=20mA)

AR01	Acceleration RMS 01g (3Hz to 10kHz ±10%)
AR05	Acceleration RMS 05g (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%)
AR100	Acceleration RMS 100g (3Hz to 10kHz ±10%)
AP01	Acceleration Peak 01g (3Hz to 10kHz ±10%)
AP05	Acceleration Peak 05g (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%)
AP100	Acceleration Peak 100g (3Hz to 10kHz ±10%)
VR10	Velocity RMS 10 mm/s (3Hz to 1000 Hz ±10%)
VR20*	Velocity RMS 20 mm/s (3Hz to 1000 Hz ±10%)
VR25	Velocity RMS 25 mm/s (3Hz to 1000 Hz ±10%)
VR50	Velocity RMS 50 mm/s (3Hz to 1000 Hz ±10%)
VR100	Velocity RMS 100 mm/s (3Hz to 1000 Hz ±10%)
VR11	Velocity RMS 0.5 ips (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%)
VR101	Velocity RMS 4 ips (3Hz to 1000 Hz ±10%)
SR10	Velocity RMS 10 mm/s (10Hz to 1000 Hz ±10%)
SR20*	Velocity RMS 20 mm/s (10Hz to 1000 Hz ±10%)
SR25*	Velocity RMS 25 mm/s (10Hz to 1000 Hz ±10%)
SR50	Velocity RMS 50 mm/s (10Hz to 1000 Hz ±10%)
SR100	Velocity RMS 100 mm/s (10Hz to 1000 Hz ±10%)
SR11	Velocity RMS 0.5 ips (10Hz to 1000 Hz ±10%)
SR21*	Velocity RMS 1 ips (10Hz to 1000 Hz ±10%)
SR51	Velocity RMS 2 ips (10Hz to 1000 Hz ±10%)
SR101	Velocity RMS 4 ips (10Hz to 1000 Hz ±10%)
VP10	Velocity Peak 10 mm/s (3Hz to 1000 Hz ±10%)
VP20	Velocity Peak 20 mm/s (3Hz to 1000 Hz ±10%)
VP25	Velocity Peak 25 mm/s (3Hz to 1000 Hz ±10%)
VP50	Velocity Peak 50 mm/s (3Hz to 1000 Hz ±10%)
VP100	Velocity Peak 100 mm/s (3Hz to 1000 Hz ±10%)
VP11	Velocity Peak 0.5 ips (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%)
VP101	Velocity Peak 4 ips (3Hz to 1000 Hz ±10%)
SP10	Velocity Peak 10 mm/s (10Hz to 1000 Hz ±10%)
SP20	Velocity Peak 20 mm/s (10Hz to 1000 Hz ±10%)
SP25	Velocity Peak 25 mm/s (10Hz to 1000 Hz ±10%)
SP50	Velocity Peak 50 mm/s (10Hz to 1000 Hz ±10%)
SP100	Velocity Peak 100 mm/s (10Hz to 1000 Hz ±10%)
SP11	Velocity Peak 0.5 ips (10Hz to 1000 Hz ±10%)

SP21	Velocity Peak 1 ips (10Hz to 1000 Hz ±10%)
SP51	Velocity Peak 2 ips (10Hz to 1000 Hz ±10%)
SP101	Velocity Peak 4 ips (10Hz 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.

* Most common full scale

B : Connector (Hermeticity is lifetime Warranty)

1	MIL-C-5015, glass seal, Type MS3143 10SL-4P
2	M12 glass seal, IEC 60947-5-2

B (CC-DD) : Integral Cable

5(01-DD)*	90°C Polyurethane cable
5(02-DD)*	200°C Teflon FEP cable
5(03-DD)	120°C Radox Halogen Free cable
5(31-DD)	90°C Polyurethane cable with DA or DV or T0 output
5(12-DD)	200°C Teflon FEP cable with DA or DV output
5(13-DD)	120°C Radox Halogen Free cable with DA or DV output

7(01-DD)	90°C Polyurethane cable with sssl overbraid protection
7(02-DD)*	200°C Teflon FEP cable with sssl overbraid protection
7(03-DD)	120°C Radox Halogen Free cable with sssl overbraid protection
7(12-DD)	200°C Teflon FEP cable with DA or DV output
7(13-DD)	120°C Radox Halogen Free cable with DA or DV output

8(01-DD)*	90°C Polyurethane cable with stainless steel protection conduit
8(02-DD)	200°C Teflon FEP cable with stainless steel protection conduit
8(03-DD)	120°C Radox Halogen Free cable with sssl protection conduit
8(31-DD)	90°C PU cable with DA or DV or T0 output
8(12-DD)	200°C Teflon FEP cable with sssl conduit & DA or DV output
8(13-DD)	120°C Radox cable with sssl conduit & DA or DV output

DD length in metres. Standard length are 2m, 5m, 10m, 15m, 20m, 30m.

* Most common cable

TT : Optional output (only one optional output is possible)

Omitted : no optional output

T0: Temperature output (Not available with Mil-C-5015 2-pin connector)
10 mV/°C. (range +2° to +120°C)

DA: Acceleration Dynamic Output (not available with MIL-C-5015 2-pin connector)
100 mV/g +30% for VRXX, VPXX, AR05, AP05
10mV/g +30% for AR10, AR20, AR50, AP10, AP20, AP50.

DV: Velocity Dynamic Output (not available with MIL-C-5015 2-pin connector)
100 mV/ips +30% for VRXX, VPXX.

HH : Housing thread

Omitted *	M6x1
H7	1/4" 28 UNF-2A

* Most common thread

YY : Agency Approval

Omitted no specific agency approval

OEM or Customer Engraving :

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

Customer Engraving is not allowed for Explosion proof sensor.
OEM should contact VibraSens if they need custom Engraving for Explosion proof sensor.

In Stock model :

Metric connector

125.01-VR20-2-DA // 125.01-VR21-2-DA // 125.01-SR20-2-DA

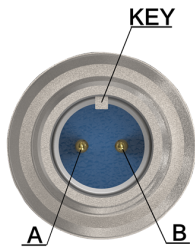
American/UK connector

125.01-VR21-1-H7

Ordering example :

125.01-VR20-2-DA 4-20mA sensor, FS=20mm/s RMS, M12, top connector, Dynamic acceleration output.

Configurations



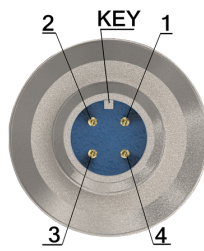
**Mil-C-5015
(B = 1)**

Pin A : (+) Pin B : (-)

Associated cable
10.01-A01-B22-06-Length
: Red (+); White (-)

Associated cable
10.01-A01-B22-02-Length
: Red (+); White (-)

Note: No temperature
option available



**M12 glass seal
(B = 2)**

Pin 1 : (+) Pin 2 : (-)
Temperature Output (T0
option) between Pin 3 (-)
and Pin 4 (+)
Raw Output (DA or DV
option) between Pin 2 (-)
and Pin 4 (+)

Associated cable
10.01-A01-E02-31-Length
Brown (+) White (-)
Raw Output DA or DV
between Black (+) and
White (-)
Temperature (T0 option)
between Black (+) and
Blue (-)



**Integral Cable
B = 5 (CC-DD)**

CC=01, 02 (PU, Teflon)
: White (-); Red (+)

CC=03 (Radox) : White
N°1 (+); White N°2 (-)

CC=12 (Teflon): White
(-); Red (+)
Raw output (DA or DV)
output between Black(+)
and White (-)

CC=13 (Radox) : White
N°1 (+); White N° 2 (-)
Raw output (DA or DV)
between White N°3 (+)
and White N°2 (-)

CC=31 (PU) : Brown
(+); White (-)
Raw output DA or DV
between Black (+) and
White (-)
Temperature output (T0
option) between Black
(+) and Blue (-)

NC: Not connected; (1)
with T0 option



**Integral cable with
overbraid
B = 7 (CC-DD)**

Same wiring color as B=5



**Integral cable with
protection conduit
B = 8 (CC-DD)**

Same wiring color as
B=5

Specifications (24°C)

Dynamic

Sensitivity		
No vibration		4 mA ±5%
Full scale (see AAAA ordering information)		20 mA ±5%
Mounted Resonant frequency		25 kHz Nom
Transverse response sensitivity (20Hz, 5g)		<5%
Linearity		±1% Max
Turn on time, 4-20 mA loop		< 10 Sec
Temperature output T0 (powered by 4-20 mA current loop)		
	Vout=10mV/°C * Temp.(°C)	
	0 VDC at 0°	
	Range+2° to 120°C	
Dynamic acceleration DA (powered by 4-20 mA current loop)		
Sensitivity		10 or 100 mV/g
Frequency response		same as 4-20mA output
Maximum transmission length		10 m
Dynamic		25 g for 100 mV/g output 250 g for 10 mV/g output
Dynamic velocity DV (powered by 4-20 mA current loop)		
Sensitivity		100 mV/ips (4 mV/mm/s)
Frequency response		same as 4-20mA output
Dynamic		1.5 ips

Electrical

Electrical Grounding		Isolated from machine ground Internal Faraday shielding
Isolation(Case to shield)		100 MΩ Min
Capacitance to ground		70 pF Nom
Maximum Loop resistance		Rl Max=(Vdc power - 10V) / 20mA
Minimum Rl wattage		Watt min=0.0004xRl
Power requirements for two wire loop Voltage		+10 to +30 VDC
Protection		
Overvoltage		Yes
Reverse polarity		Yes
ESD Protection		> 40 V

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	Glass seal, Not affected, hermetically sealed, 1E-8 torr.l/s	
B=5, 7, 8	Epoxy sealing	
Acceleration limit		
Shock		2 500g peak
Continuous vibration		250g peak

Physical

Design		ceramic annular shear
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Weight with connector	85 gr Nom (3.0 Oz)
Weight with Integral cable : add sensor weight above + ...	
BB=5(CC-DD)	40gr/m
BB=7(CC-DD)	60 gr/m
BB=8(CC-DD)	105 gr/m
Material	AISI 316L, DIN 1.4404 (Stainless steel)
Mounting torque (M6, M7, M8 suffix)	2,4 N.m (21 in-lbs)

European Directive

EMC Directive	2014/30/EU
Standards	61326-1
RoHS Directive	2011/65/EU
Certificate	101.51-YN_Rohs2

Accessories, supplied

Calibration supplied (tag stick on the box)	4-20mA Loop // DA, DV or T0 if applicable
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Accessories, not supplied

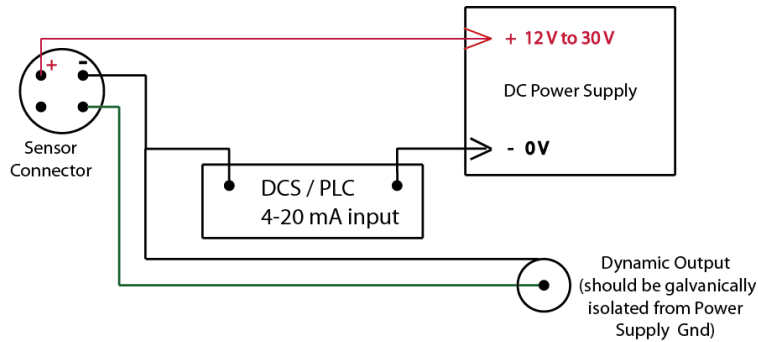
Cable assembly B=1 (Mil connector)	
Polyurethane cable (90°C)	10.01-A01-B22-06-Length
FEP Teflon cable (200°C)	10.01-A01-B22-02-Length
Cable assembly B=2 (M12 connector)	
Polyurethane cable (90°C)	10.01-A01-E02-31-Length
FEP Teflon cable (200°C)	10.01-A01-E61-02-Length
For more cable option see Model 10.01 (specific cable harness).	
Mounting Stud for M6 sensor thread	
M6 machine thread	191.01-06-06-1
1/4" 28 UNF machine thread	191.01-06-16-1
M8 machine thread	191.01-06-08-1
Mounting Stud for 1/4"28 UNF sensor thread (H7 Option)	
M6 machine thread	191.01-16-06-1
1/4" 28 UNF machine thread	191.01-16-16-1
M8 machine thread	191.01-16-08-1
Calibration, single point., A4 certificates	501.01

Repair

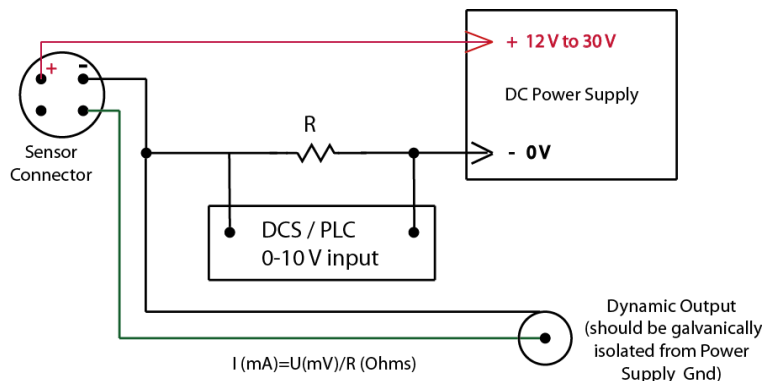
Consult factory for replacement of connector in case of broken or bended pins. Repair of electronic is not possible.

Wiring

4-20 mA Input card



0-10 VDC Input card



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