

4-20 mA Vibration Transmitter, Top connector

Main Characteristics

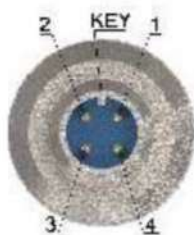
- Atex Approved for zone 0, 1, 2. (Pending)
- Improved velocity version with bandwidth from 3Hz to 1000 Hz ($\pm 10\%$). Can monitor machine as low as 150 RPM
- Dynamic (acceleration or/ Velocity) output available
- Temperature output available (10 mV/ $^{\circ}$ C)
- Submersible version down to 150 metres available with integral polyurethane and FEP cable.
- Life time hermetic sealing warranty with M12 & Mil glass seal connector
- ISO 10816 (or new ISO 20816) compliant.
- Reliable measurement with vibration as high as 100 & 500 g peak. Most competitors have electronic saturation as low as 40 g peak..

Competitive advantage

- No false trips thanks to improved capacitive MEMs sensor. Allowed Machine maximum vibration could be as high as 100 g peak and even 500 g peak depending on full scale version.
- Resistant to shock (magnet mounting)
- ESD and reverse wiring protection.
- The glass seal hermetic connector (option B=1, 2) protects the electronic from harmful environmental influences, significantly increasing their reliability and lifetime.
- Thanks to all stainless steel IP67 M12 connector (option B=3) an IP68 solution is possible when connected to an overmolded M12 cordset. It is then a perfect cost sensitive solution for a harsh environment.
- M12 connector (4-Pin) offers compatibility with numerous sensors used in automation.
- Large choice of submersible integral cable with stainless steel overbraid or conduit.

Description

The 4-20 mA loop powered industrial accelerometer model VT100.I is designed to monitor the vibration in harsh industrial environments. It uses the industry standard 2-wire 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) can also allow spectral vibration measurements.



Model VT100.I.420.M124

Typical applications

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

Approvals



M12 glass seal (B=2)

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

Associated cable
 VTM 124/2M
 Brown (+) White (-)
 Raw Output DA between Black (+) and White (-)
 Temperature (T0 option) between Black (+) and Blue (-)

Specifications (24°C)

Dynamic

Sensitivity	No vibration	4 mA ±5%
	Full scale 100mm/s RMS	20 mA ±5%
Transverse response sensitivity (20Hz, 5g)		<5%
Linearity		±1% Max
Turn on time, 4-20 mA loop		< 10 Sec

Electrical

Electrical Grounding	Isolated from machine ground
Isolation(Case to shield)	100 MΩ Min
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=3, 5, 7, 8	Epoxy sealing
Acceleration limit	
Shock	2 500g peak
Continuous vibration	500g peak

Physical

Weight with connector	70 gr Nom (2.5 Oz)
Material	AISI 316L, DIN 1.4404 (Stainless steel)

European Directive

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

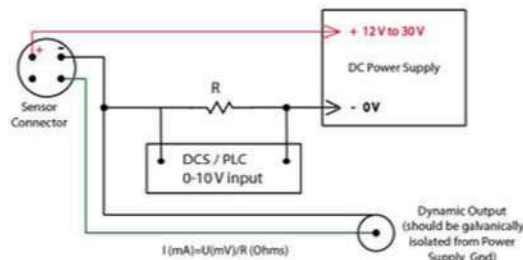
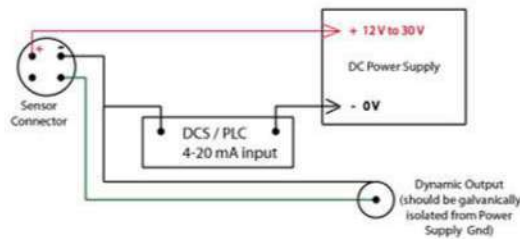
Wiring

INSTALLATION WITH DYNAMIC OUTPUT OPTION (DA)

4-20mA INPUT CARD

Attach positive(+) input from the power supply to Pin +, on to the sensor, and the negative(-) input from the power supply to pin - of the sensor. Data sheets gives color of the wires for Pin +, Pin - and Dynamic output.

Wiring colors fro standard M12 cable assembly : (4-20mA+) Brown// (4-20mA-) White// (DA orDV) Black// (not connected) Blue



4-20 mA MAXIMUM LOOP RESISTANCE

Maximum loop resistance R can be calculated by $R \text{ (max resistance)} = (V_{\text{supply}} - 10V) * 1000 / 20 \text{ mA}$

DC supply voltage	R (max resistance) (1)	R (Minimum wattage capability) (2)
12 VDC	100 Ω	1/8 watt
24 VDC	700 Ω	1/2 watt
30 VDC	1.0k Ω	1/2 watt

(1) Lower resistance is allowed, greater than 10 Ω recommended.

(2) Minimum R wattage determined by: $(0.0004 \times R)$.

4-20 mA MAXIMUM CABLE LENGTH

With $R=250 \text{ Ohms}$ and 24 VDC supply the maximum distance could be as high as 15 000 metres.

DYNAMIC OUTPUT (DA or DV option)

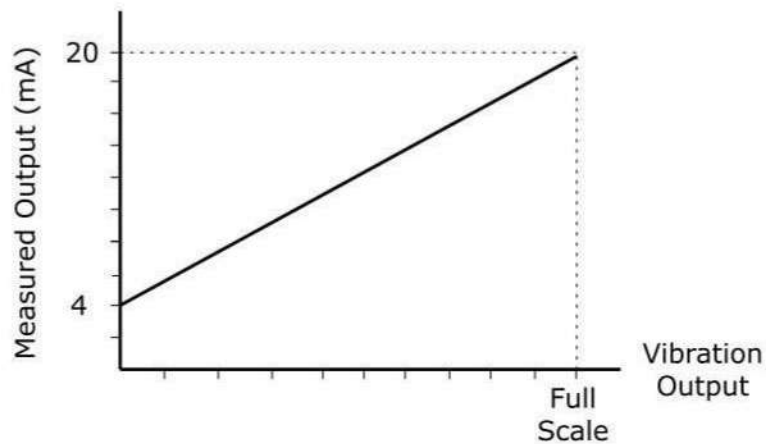
The DV (raw velocity) option includes a 100 mV/ips additional output .

The common for the dynamic output is also the return signal for the 4-20 mA loop wiring. Connecting this pin to 'ground' will usually short out the 4-20 mA loop return resulting in a loss of the 4-20 mA signal. The dynamic output is designed to be used by portable data collectors where no direct connection to ground exists. It can also be used by on-line systems when their signal input is galvanically isolated from ground.

LOOP RESISTANCE CALCULATION

To operate, make sure that all wires are properly connected, then apply power. When reading the current output, use the following table for expected output.

$$Vibration_Output = \frac{Measured_Output(mA) - 4\ mA}{16mA} Full_Scale$$



Example : Sensor with Full Scale = 100 mm/s RMS

Measured	Vibration
4 mA	0 mm/s RMS
8 mA	25 mm/s RMS
12 mA	50 mm/s RMS
16 mA	75 mm/s RMS
20 mA	100 mm/s RMS

Sensor with Full Scale = 10 g RMS

Measured	Vibration
4 mA	0 g RMS
8 mA	2.5 g RMS
12 mA	5 g RMS
16 mA	7.5 g RMS
20 mA	10 g RMS

CAUTION

Power input should not exceed specified limits or damage may result. Power input (+) should not be wired to Dynamic output or damage may result.

MAINTENANCE

There are no customer replaceable parts. The amplifier has been designed for trouble-service under normal operating condition. Voxintech Warrants the equipments for 1 years. Should your instrument require repair, you may contact our customer service representative at info@voxintech.com.

