# VIERATION SENSOR



Italian Sensors Technology

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## VBR series Vibration sensor

## characteristics

- Working frequency: 0...400Hz or 0...1200Hz
- Bus RS485
- Selectable analogue output
- Selectable full range: ± 2g, ± 4 g, ± 8 g, ± 16 g
- AISI316L stainless steel
- 3-axes MEMS



data sheet AP002 02/2017 general catalogue ed. 01/2016 Vibration sensor



- EASY TO USE
- HIGH TECHNOLOGY
- INNOVATIVE PRODUCT
- 100% MADE IN ITALY
- QUALITY PRODUCT

### advantages

- monitoring of machine performances to increase productivity
- preemptive diagnosis to avoid not planned machine stops
- increase of production quality
- detection of machine movements

# applications

- shocks
- damages of mechanical parts
- bearings imbalance
- misalignment of shafts
- out of tolerance joints
- bearings wear

# **QUESTIONS & ANSWERS**

#### What is it a vibration sensor?

Vibration sensors VBR series are devices for machine monitoring. These sensors are ideal for machines with constant or repetitive operating conditions. The VBR sensor can be compared to the measure of a patient's temperature of fever. As the temperature raising indicates an ongoing infection, abnormal vibrations are in fact the first symptom of a potential machinery failure.

#### What can cause abnormal vibrations?

The conditions causing vibrations may include: imbalance of rotating masses, misalignment of shafts, loose components, bearings with damaged rolling elements, damage to blades or gears, incorrect positioning of mechanisms.

Tools and systems for vibration analysis can help identify many serious problems at an early stage, enabling staff to take immediate action.

#### Why use VBR series sensors?

VBR series sensors are a simple and cheap way to monitor machine vibrations. They do not require sophisticated and expensive test programs, or personnel trained ad-hoc. They cannot be used for advanced analysis of vibration profile of the machine, but allow you to monitor the occurrence of abnormal vibration.

# What is the technology behind the sensor?

The sensor contains inside a tri-axial MEMS accelerometer (X - Y - Z) that can monitor machine accelerations on the three axes.

#### Which acceleration range can I monitor?

VBR sensors can be programmed to work with the following scale:  $\pm 2g$ ,  $\pm 4g$ ,  $\pm 8g$ ,  $\pm 16g$ . The frequencies detection ranges are: 0 to 400Hz (VBR1 model) and 0 to 1200Hz (VBR2 model).

#### How can I program the sensor?

The sensor has an RS485 input avai-

lable, through which I can program

all of the sensor characteristics. The

demonstration program for sensor

programming can be downloaded

free of charge from M.D. ftp site.

What are the outputs available?

The sensor has an RS485 output

that allows you to simultaneously

monitor accelerations on three axes

(each channel has a resolution of 16

bits). An analogue output (with a resolution 12bit) is also available, for

which XYZ channel must be selected

Is the M.D. setup program needed

No. The program is provided from

M.D. to facilitate learning and pro-

gramming the sensor, but it is not ne-

cessary for operational use. To use

the sensor any program (eg. Telnet)

that communicates over RS485 can

be enough. The sensor is equipped

with its own set of commands by means of which it can be programmed

and interrogated (for syntax, refer to

Is it possible to monitor an angu-

Yes. It is possible to transform the

acceleration values in angular posi-

tions (resolution 0.1 °). Contact MD

for the correct procedure.

to monitor.

to use the sensor?

the User Manual).

lar position?

•	VBR*/D0-3*
operating voltage	24 Vdc +/- 20%
power consumption	< 1 W
operative range	+/- 16 g (MAX)
resolution	15.62 mg @ +/- 2 g 31.25 mg @ +/- 4 g 62.50 mg @ +/- 8 g 125 mg @ +/- 16 g
detection axes	3 (X, Y, Z)
frequency range	0400 Hz
technology	MEMS (Micro Electro-Mechanical Systems)
digital output	RS-485 (addressable) 57600 Baud rate - 1 bit stop - parity
resolution digital output	16 bit @ RS-485 (complementary to 2) 12 bit @ analogue output
voltage analogue output	05 V / 010 V (programmable)
current analogue output	420 mA / 020 mA / 024 mA (pro- grammable)
load resistor (voltage)	1k1M Ohm
load resistor (current)	100500 Ohm
humidity	< 80 % without freeze
temperature range	-25° C+ 70°C
storage temperature	-30°+90°C without freeze
electrical protections	polarity reversal transient
protection degree	IP 67 (EN60529)
housing material	AISI316L PA12
connections	cable 5 poles pig Tail M12 5 poles
dimensions	M18
weight	100 gr

