



VibrationSensor VS 3000

Description

The VibrationSensor VS 3000 is a sensor for detecting vibration acceleration of machines. Measurement signals are transferred to a condition monitoring system, such as the HYDAC MachineConditionMonitoring System MCMS 2000, for example.

The compact and robust stainless steel housing makes the VS 3000 suitable for use in many industries. In addition to standard and premium variants and various sizes and electrical connections, the VS 3000 series is optimally enhanced by a specifically tailored line of accessories for mechanical machine integration.

Applications

- Measuring the vibration acceleration of machines
- Sensor for detecting component failures, imbalances and misalignment in machines in combination with HYDAC Condition Monitoring or vibration monitoring system
- Rolling and slide bearing applications such as gear units, generators, electric motors, compressors, pumps, fans, agitators, centrifuges, rollers, spindles, machine tools, climate systems and dryers in production and processes plants
- Tool for implementing modern industrial maintenance strategies

The advantages to you

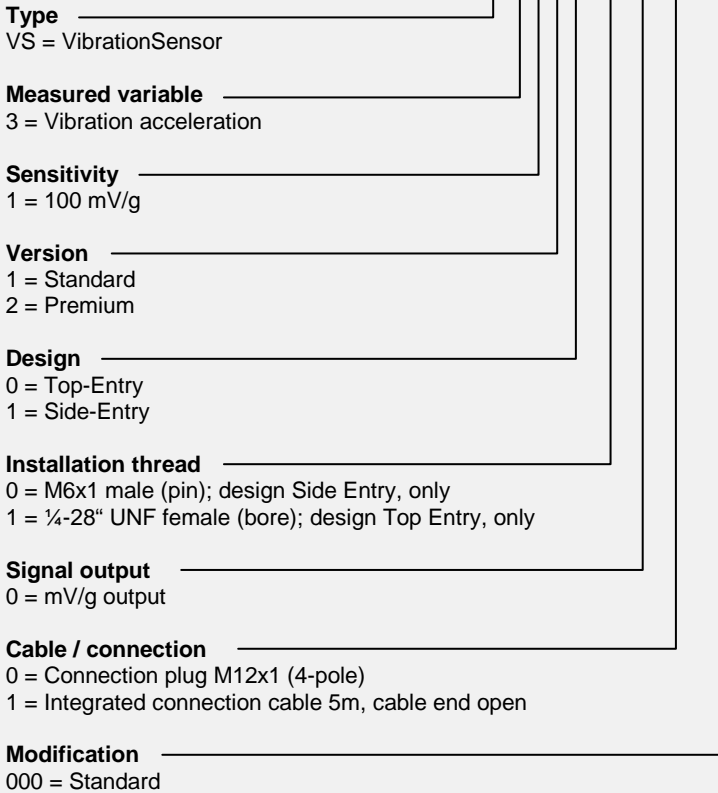
- Wide industry and application focus
- Compact design
- Direct connection to HYDAC Condition Monitoring Systems using M12x1 plug-in connections
- Simple connection to commercial vibration monitoring systems thanks to IEPE technology (comparable to ICP®)
- Also suitable for installation in fluids thanks to a higher protection class
- Also available as a premium variant with lower sensitivity to cross acceleration

Technical details

	VS 3X10 (Top Entry, Standard)	VS 3X20 (Top Entry, Premium)	VS 3X11 (Side Entry, Standard)	VS 3X21 (Side Entry, Premium)
Input parameter and technical properties				
Input parameter	Acceleration (in g)			
Area of application	± 80 g			
Sensitivity (nominal 80 Hz at 22°C)	100 mV/g ± 10%			
Frequency range	- 2.0 Hz – 10 kHz ± 5% - 1.5 Hz – 12 kHz ± 10% - 0.8 Hz – 15 kHz ± 3 dB			
Resonance frequency (nominal)	30 kHz		21 kHz	
Isolation	Sensor basis isolated			
Cross sensitivity	< 5 %			
Output parameter				
Analog output	Depending on the selected signal amplification and the evaluation range (e.g. 0 ... 10 V DC)			
Mechanical construction				
Design	Top-Entry		Side-Entry	
Housing material	Stainless steel			
Sensor elements / design	Piezo- resistive / compression	Piezo- resistive / shear principle	Piezo- resistive / compression	Piezo- resistive / shear principle
Tightening torque	8 Nm			
Installation thread	¼-28" UNF female		M6x1 male	
Weight	106 grams (nominal)	140 grams (nominal)	185 grams (nominal)	205 grams (nominal)
Ambient conditions				
Operating temperature range	-55...140°C	-55...130°C	-55...140°C	-55...130°C
Shock resistance	5000 g			
CE - mark	EMV: EN61326-1:2013			
Protection class to DIN 40050	IP 67			
Supply voltage and electrical connection				
Supply voltage	18 ... 30 V DC			
Noise	0.1 mg maximum			
Current consumption	0.5 mA to 8 mA			
Bias voltage	10 ... 12 V DC			
Settling time	2 seconds			
Output impedance	200 Ohm maximum			
Electrical isolation	>10 ⁸ Ohm with 500 V			
Electrical connection	- VS 3XXX-X-X-0/-XXX: M12x1 plug (4-pole) - VS 3XXX-X-X-1/-XXX: Integrated, oil-resistant cable 5m, Cable end open			

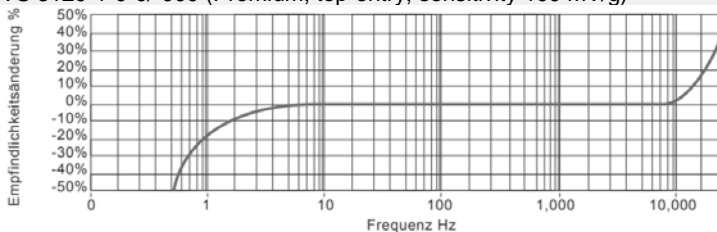
Model code

VS 3 1 1 0 - 0 - 0 - 0 / -000

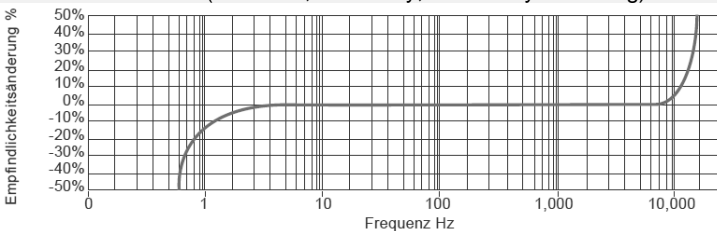


Typical frequency response

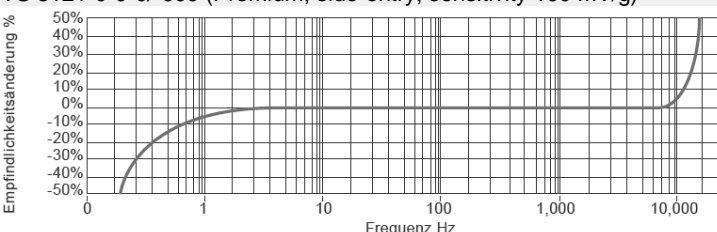
VS 3110-1-0-0/-000 (Standard; top-entry; sensitivity 100 mV/g) and
VS 3120-1-0-0/-000 (Premium; top-entry; sensitivity 100 mV/g)



VS 3111-0-0-0/-000 (Standard; side-entry; sensitivity 100 mV/g)



VS 3121-0-0-0/-000 (Premium; side-entry; sensitivity 100 mV/g)



Scope of delivery

- Acceleration sensor VS 3000, ready for connection
- Set screw: 1/4-28" UNF, M6x1, M8x1 (1 piece each; for sensors in Top Entry design only)
- Operating and maintenance instructions

Accessories

Designation	Part no.
Connection cable sensors	
ZBE30-05* Connection cable, Coupling / plug 5-pole, length = 5 m	6040852
ZBE30S-10* Connection cable, Coupling / plug 5-pole, length = 10 m	3729098
XXXXXXXXXX Connecting Adapter, M12x1, 5-pol.	on request

*Also suitable for sensors with 4-pole connection socket, such as ICP® acceleration sensors

Installation accessories

XXXXXXXXXX Threaded screw set	on request
XXXXXXXXXX Magnet adapter (rod support) Pull 20kg 1/4-28" UNF (f) on Ø32mm	on request
XXXXXXXXXX Installation adapter (stick) 1/4-28" UNF (f) on Ø19mm	on request

Display and Readout Options

Reading of the sensor signals of the VS 3000 can be done with the help of:

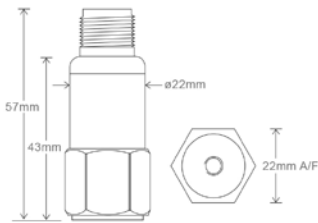
- HYDAC MachineConditionMonitoring System MCMS
- Commercially available vibration monitoring systems equipped with signal inputs for connecting IEPE acceleration sensors (comparable to ICP®)

The measured data are provided as a raw signal and can be evaluated both graphically and in a tabular manner by means of suitable signal analyzers, software algorithms (i.e. Fast Fourier Transformation FFT) and / or by generation of characteristic values.

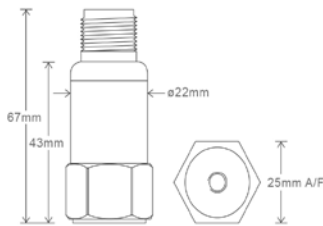
In addition to available software tools for vibration analysis, HYDAC recommends the use of the data analysis software FluMoS expert in conjunction with HYDAC Condition Monitoring systems and solutions for industrial applications such as HYDAC MachineCondition Monitoring System MCMS 2000.

Sensor dimensions

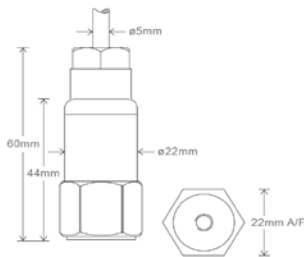
VS 3X10-X-X-0/-XXX



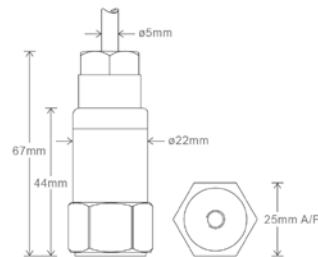
VS 3X20-X-X-0/-XXX



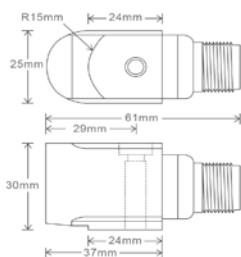
VS 3X10-X-X-1/-XXX



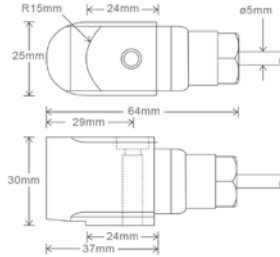
VS 3X20-X-X-1/-XXX



VS 3X11-X-X-0/-XXX and
VS 3X21-X-X-0/-XXX



VS 3X11-X-X-1/-XXX and
VS 3X21-X-X-1/-XXX

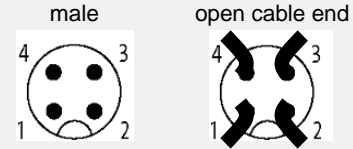


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Electrical Connection

Type VS 3XXX-X-X-0/-XXX:
Plug M12x1, 4-pole, male

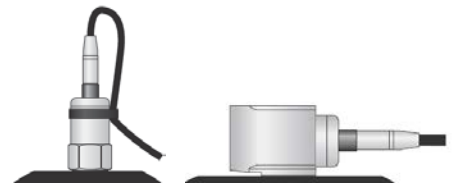
Type VS 3XXX-X-X-1/-XXX:
Open cable end



Pin	Wire	Description
1	Red	No connection
2	White	Supply voltage +
3	Blue	No connection
4	Black	GND (0V)

Installation Instructions

Acceleration sensors are to be mounted with the required tightening torque on a smooth surface. If possible, return the cables to the sensor housing and secure them.



Note:

The information in this brochure relates to the operating conditions and applications described.

In the event of deviating applications and/or operating conditions, please contact the respective department concerned. Subject to technical modifications.

HYDAC FILTER SYSTEMS GMBH

Industriegebiet
D-66280 Sulzbach / Saar
Tel.: +49 (0)6897 / 509-01
Fax: +49 (0)6897 / 509-9046
Internet: www.hydac.com
Email: filtersystems@hydac.com