LS - Vibration Sensor

Electrodynamic vibration sensor based on the seismic principle

Used for measurement of absolute bearing and housing vibration

Robust design proven in the field of machine monitoring for turbines, generators, blowers and pumps, etc.

Temperature range 100°C / 200°C

Replacement for numerous common models such as AEG / EPRO, etc.

Technical data

	LS 100	**LS 200**
Input size	Vibration speed	Vibration speed
Frequency range	4.5 to 1000 Hz	10 to 1000 Hz
Measurement direction	Version H: Horizontal +/- 5°	Version H: Horizontal +/- 5°
	Version V: Vertical +/- 10°	Version V: Vertical +/- 10°
Sensitivity	28.5 mV/mm/s	16.7 mV/mm/s
Oscillation amplitude	max. ±2 mm	max. ±2 mm
Vibration acceleration	max. 45 m/s²	max. 45m/s²
Natural frequency at 20 °C	4.5 Hz	10 Hz
Measurement error	+/- 5 %	+/- 5 %
Ambient temperature max.	Sensor element 100°C	Sensor element 200°C
	Harting connector 80°C	Harting connector 80°C
Internal resistance	Sensor: 1800 Ω (at 20°C)	Sensor: 670 Ω
		Total (plug): 1250 Ω
Inductance	29 mH/kHz	29mH/kHz
Capacitance incl. cable (3 m)	Wire shield: 900 pF	Wire shield: 900pF
	Conductor protective sleeve: 280pF	Conductor protective tubing: 280pF
	Shield protective sleeve: 350pF	Shield protective sleeve: 350pF
Mounting thread	M10 x 12mm	M10 x 12mm
Nominal tightening torque	45 Nm	45 Nm
Housing material	Stainless steel	Stainless steel
Weight	Approx. 1.0 kg with packaging	Approx. 1.0 kg with packaging
Dimensions	Sensor: see drawing	Sensor: see drawing
	With packaging: L x W x H	With packaging: L x W x H
	330 x 230 x 110 mm	330 x 230 x 110 mm
Transport and storage	Temperature range: -40...+100 °C	Temperature range: -40...+200 °C

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Function

The sensors operate according to the seismic measurement method and consist of two parts. One part is the sensor housing with a permanent magnet, which is mounted on a bearing block or similar and thus vibrates together with the object being measured. The second part is the seismic (stationary) mass, which is suspended in the sensor housing on diaphragm springs and serves as a reference for measuring the vibration velocity when the sensor is operating above the resonance frequency. A measuring coil wound around the seismic mass detects the movement in the magnetic field and generates a voltage proportional to the vibration velocity.

Application

The sensor is used to measure absolute vibrations of machines and systems in the frequency range above its natural frequency up to well beyond 1000 Hz. The sensor operates based on a seismic (electrodynamic) vibration element and generates a voltage signal output proportional to the vibration velocity of the movement. In conjunction with an electronic evaluation board / signal converter the sensor is suitable for continuous monitoring of machines and turbo equipment in accordance with standards VDI 2056 and DIN/ISO 3945.

The stainless-steel housing and the shielded heavy duty PTFE connection cable inside a stainless-steel protective hose with open ends or alternatively a heavy-duty Harting connector makes this sensor particularly resistant to harsh mechanical and aggressive environments. Thanks to its fully encapsulated design and high output signal, the sensor is particularly suitable for robust industrial use, even at elevated temperatures applications such as turbines, generators, blowers and pumps inside power stations and other industrial plants.

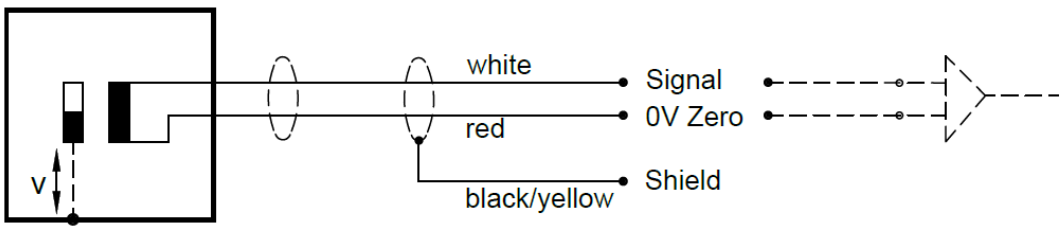
Installation

The sensor is supplied for either horizontal or vertical installation and may only be operated in the specified measuring direction. The LS vibration sensor cannot be disconnected from the cable as the cable is permanently fixed to the sensor. The M10 connection thread, designed as a blind hole with 12mm depth, can be adapted to all connection variants, such as flange, M8, or inch thread, using various adapters. Cable lengths can be manufactured as required.

Scope of delivery / accessories

The sensor is supplied as a pure measuring transducer including M10 grub screw and sealing washers. Connection adapters for M8 and M10 are included in the standard supply. Other types and versions can be manufactured or customized according to customer requirements upon request.

Electrical connection and pin assignment



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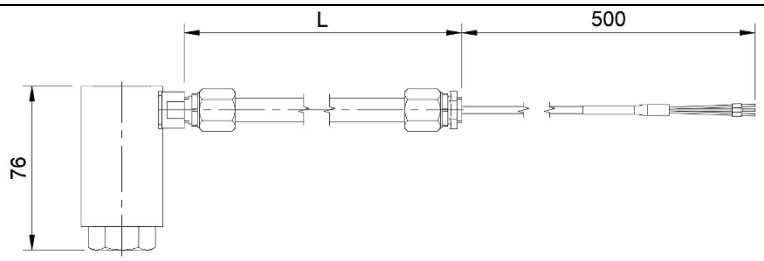
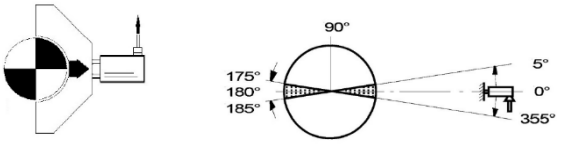
Installation / Dimensions

Standard lengths: L = 5m L = 10m L = 12m + 20m cable	
Polarity Horizontal: With the illustrated direction of movement, a positive polarity signal is produced at the white wire.	
Polarity Vertical: With the illustrated direction of movement, a positive polarity signal is produced at the white wire.	

Versions	Image
Standard: Cable with flexible metallic armor and protective PU shielding	
On Request: Only Cable with cable	
On Request: Stainless steel armor With heavy-duty connector