



Intelligent Vibration Analysis Sensor

Sensor Solution for Predictive Maintenance and Process Monitoring

The Intelligent Vibration Analysis Sensor (IVAS) is a compact and robust sensor device equipped with two MEMS acceleration sensors – for high bandwidth and high-resolution vibration measurements – and a precise temperature sensor measuring surface temperature. Furthermore, it integrates seamlessly into existing communication infrastructure and offers the possibility to implement use case specific algorithms on the sensor device. IVAS enables predictive maintenance through vibration-based condition monitoring. By analyzing the frequency spectrum created by machines and other moving parts e.g. in pumps, motors, linear drives or ventilation systems, it is possible to assess the wear of bearings and other components. This effectively allows the prevention of unplanned standstills. For process monitoring, this technique enables an integrated continuous quality control and gives the information to set the optimal process parameters. Thus, IVAS allows to increase efficiency, machine usage and quality – a true foundation stone for connected industry and connected mobile machines!



KEY FEATURES

- ▶ High-bandwidth & high-sensitivity accelerometers and precise temperature sensor
- ▶ Powerful embedded microcontroller (Cortex-M7) for measurement, data-preprocessing and data-analysis & 32MB Flash memory
- ▶ Available communication interfaces (variants)
 - Ethernet
 - Controller Area Network (CAN)
- ▶ Compact and robust industrial housing & connector

BENEFITS

- ▶ Enables the prediction of wear in bearings, drives, machines and other moving parts
- ▶ A robust and compact stainless steel housing, enables IoT applications in harsh industrial environments
- ▶ Digital interfaces for integration into existing systems - no further data acquisition equipment necessary
- ▶ Easy to install, two bores (standard M6 screws) allow a flexible sensor orientation
- ▶ Allows the integration of intelligent data pre-processing and analysis, to ensure cost efficient deployment, without additional measurement equipment
- ▶ Increases efficiency by delivering crucial data for the optimization of maintenance processes
- ▶ With algorithms that can be implemented on the sensor device the optimization of stress on machines, unplanned downtimes, and spoilage production is possible
- ▶ Integrates easily into a wide range of gateways and clouds



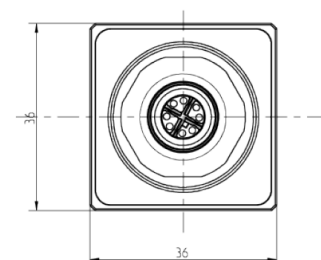
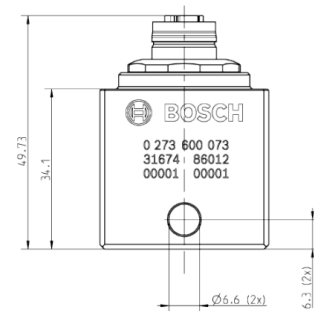
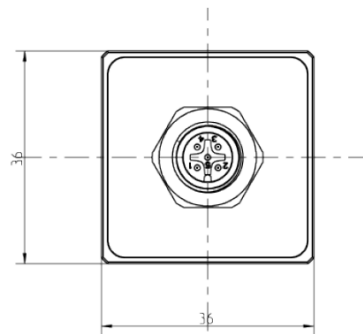
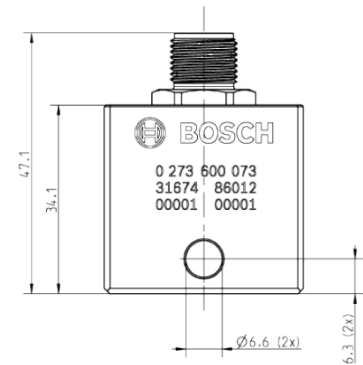
YOUR POTENTIAL USE CASES

- ▶ Process monitoring in production lines
- ▶ Predictive maintenance
- ▶ Condition monitoring of drives, industrial and mobile hydraulics, linear motion components
- ▶ Machine monitoring



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TECHNICAL SPECIFICATION	
Dimensions	36x36x34,1 mm ³ + connector (see drawing)
Weight	190 g
Operating Temperature range	Ethernet: -40°C – 85°C CAN: -40°C – 105°C
Protection grade	IP67 (when cable connected)
Connector	M12 connector
Sensors	
High-Bandwidth Accelerometer (1-axis)	Bandwidth 20 kHz Sampling rate 62.5 kHz Sensitivity 200 mg Range ±400g
High-Sensitivity Accelerometer (3-axis)	Bandwidth 3 kHz Sampling rate 6.4 kHz Sensitivity down to 0.06 mg Range ±2, 4, 8, 16g
Temperature Sensor	under evaluation
Microcontroller	Cortex-M7 with 32MB Flash Memory
Electrical Interfaces	
Ethernet Variant	Power-over-Ethernet (acc. IEEE802.3) Communication Data streaming via UDP/IP Connector M12, 8pole x-coded (acc. IEC 61076-2-109) IEEE802.3 pin assignment
CAN Variant	Power Supply 12V - 24V DC (board net supply) Communication UDS-based services with status parameters Connector M12, 5pole-a-coded (acc. IEC 61076-2-101) CiA 303-1 pin assignment



AVAILABILITY

As of February 2019, the IVAS project is a feasibility study performed with prototypes of the IVAS module. Mass production parts will be available tentatively in Q3/2019.

GET IN CONTACT WITH US!

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