

Wireless Multi-Sensor for Machinery Condition Monitoring

Vibration, sound & ultrasound, temperature and magnetic field in one compact sensor with internal signal processing, Wi-Fi and PoE Ethernet



Wear, unbalance, misalignment, poor lubrication and electrical faults show up early as changes in vibration, noise, temperature or magnetic field. This compact multi-sensor records all of these parameters at the measuring point, processes the signals internally and transfers the results wirelessly via Wi-Fi or by cable via Ethernet with PoE.

It can be used as a mobile instrument for inspection rounds with a smartphone or tablet, or installed permanently as an autonomous monitor with alarm output. Modbus/TCP lets you integrate measured parameters and alarms directly into existing automation and monitoring systems.

Typical machinery

Pumps, fans, compressors, separators, electric motors, generators, gearboxes and other rotating equipment, on board and ashore.



Detectable Faults

- Unbalance and eccentricity of rotors
- Shaft misalignment
- Looseness and cracks in machine components
- Damage and misalignment of gears and belts
- Damage and fouling on turbines and fans
- Rolling bearing damage and lubrication deficits
- Electrical faults in motors and generator windings
- Critical speeds and resonances
- Cavitation, leaks in compressed-air and gas systems
- Partial discharges in insulators, transformers and drives

Key Features

5 measurands in one sensor

3D vibration, sound/ultrasound, temperature, magnetic field and speed detection

System integration

Modbus/TCP, 4–20 mA output, digital alarm output, phase marker input

Mobile operation

Built-in Li-Ion battery, approx. 8 h average operating time, smart power management

Autonomous monitoring

Interval recording, on-board diagnostics, alarm thresholds with relay output

Wireless and wired

Wi-Fi 802.11 b/g/n (WPA2) plus Ethernet 10/100 with PoE

Rugged and compact

Hard-anodized aluminium housing, IP67, 40 × 42 × 27 mm, 110 g

Easy measuring point ID

QR code or NFC tag on each magnetic base, automatic sensor configuration

Scalable by license

Extend frequency range, ultrasound, memory and monitoring as needs grow

Operating Modes

Mobile inspection rounds

Smartphone or tablet as user interface. The sensor is attached to magnetic bases at each measuring point. Measurement settings are selected automatically. Raw signals are stored and synchronised with cloud or server, so you can run additional analyses later.

Permanent and autonomous monitoring

The sensor wakes at set intervals, records time waveforms, calculates diagnostic parameters and checks alarm thresholds. Alarms switch the built-in relay and trigger immediate data transfer. Notifications can be sent by SMS or e-mail via the cloud platform.

Technical Specifications

Vibration		Inputs and outputs (M8 connector)	
3D MEMS accelerometer	±16 g max., 0 to 6.4 kHz Noise ≤ 75 µg/√Hz (±2 g range)	Phase marker input	2.5 to 30 V, input resistance 30 kΩ
1D MEMS accelerometer, Z-axis OPTION	±50 g, 0 to 15 kHz, 24-bit Noise ≤ 25 µg/√Hz (±50 g range)	Digital output	NO contact (relay), max. 28 V
Sound and ultrasound		Analog output	4–20 mA current loop
MEMS microphone OPTION	15 Hz to 51.2 kHz Max. 120 dB SPL (20 Pa) SNR ≥ 76 dB at 19 kHz	Aux. power output	3.3 V, 10 to 70 mA for external sensors
Magnetic field and temperature		Power supply	
Magnetic field sensor	Range 3 T, resolution 0.01 mT Frequency range up to 10 kHz (X-axis)	External supply	5.0 to 5.5 V DC, min. 600 mA, or PoE
Temperature sensor	-30 to +110 °C	Battery (standard)	Li-Ion 3.7 V / 1200 mAh (INR 18350), UN38.3 Integrated 5 V / 550 mA charger
Measurement channels		Battery (alternative)	Li-SOCl ₂ 3.6 V / 2100 mAh
Channels 1–6	1–3: vibration Z / Y / X · 4: microphone 5: magnetic field X · 6: rotational speed	Operating time	Approx. 8 h average (mobile use)
Communication and software		Environment	
Wireless	Wi-Fi IEEE 802.11 b/g/n, WPA2 2.4 to 2.4835 GHz, max. 19.5 dBm (11b) Can be disabled	Operating / storage temp.	-10 to +70 °C (Li-Ion battery) -20 to +90 °C (Li-SOCl ₂ battery)
Wired	Ethernet 10/100Base-TX PoE IEEE 802.3af/at	Humidity	10 to 100 % RH
Protocols	Modbus/TCP, TCP/IP	Protection	IP67, dust-tight, immersion resistant (with protected microphone channel)
Software	Mobile app, PC software, cloud and on-premise server platform Optional: API, Matlab functions, custom software	Mechanical	
		Dimensions	40 × 42 × 27 mm (W × H × D)
		Weight	110 g
		Housing	Hard-anodized aluminium alloy
		Connectors	2 × M8 (Ethernet/PoE; power and I/O)
		Mounting	M6 screw (min. 47 mm), magnetic base, glued mounting pad
		Calibration	M5 thread for vibration calibration
		User interface	Keypad with status LEDs (power, Wi-Fi, connection, alarm)
		Conformity	
		CE	RED 2014/53/EU, EMC 2014/30/EU, LVD 2014/35/EU, RoHS 2015/863/EU

Optional Licenses

License	Function
Precision vibration	Additional Z-axis sensor up to 15 kHz and ±50 g with 24-bit processing, for earlier detection of bearing and gear damage
Sound and ultrasound	Acoustic channel 15 Hz to 51.2 kHz for noise measurement, bearing lubrication, leak detection, cavitation and partial discharge
Data acquisition	8 GB internal memory, unattended interval recording of time waveforms, automatic upload to server
Autonomous monitoring	On-board calculation of diagnostic parameters, alarm thresholds, relay output and Modbus/TCP data provision

Due to continuous product development, specifications are subject to change without notice. The microphone channel is not protected against liquid ingress. In wet environments, seal the channel or close it with an M3 screw.