The Smart Motor Sensor is a connected sensing module that monitors the status and health of low voltage motors in real time. It relies on temperature, vibration, and magnetic field sensing to diagnose critical motor faults, which enables predictive maintenance so that failure and downtime can be avoided. The diagnostic updates are provided through a web- and mobile-based software platform to enable insightful motor health monitoring to maximize productivity.

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Reduce Overall Costs

- A Smart Motor Sensor (SMS) provides a plug and play, end-to-end solution: no additional investment is required
- Optimize maintenance resource allocation without the need for special expertise
- Reduce unforeseen downtimes
- Avoid catastrophic failures
- Better manage spare parts and stock

Key Advantages

Uses a Unique Learning Process

A quick, easy, and noninvasive installation process accelerates the deployment on any low voltage motor, new or used, even while running.

After the automated learning process is complete, the machine learning algorithms are tailored to each motor.

Delivers Prescriptive Actions

When abnormal behavior is detected, a notification is sent to the mobile app or the web platform specifying the diagnostic, the severity level of the fault, and the recommended actions to avoid downtime.

Diagnoses Electrical and Mechanical Faults

SMS can diagnose a wide range of electrical and mechanical faults, which can originate from these areas:

- Power system
- Stator winding
- Rotor
- Bearing
- Eccentricity
- Motor shaft/balance
- Alignment
- Cooling system
- Mechanical looseness
How Does It Work?

Sensor
The cable-less Smart Motor Sensor measures vibration, electrical, and temperature inputs and sends the data via Wi-Fi to the ADI OtoSense™ AI.

Actionable Insight
The OtoSense AI interprets sensor data to create a snapshot of the motor health and predict electrical and mechanical faults.

Web Platform
A web platform provides status updates on the health of the monitored motors and enables users to view the key operating conditions and characteristics of each motor.

Mobile App
The mobile application enables sensor registration and configuration while also providing real-time notifications and visibility into the health of the motors.

Applications
- 3-phase squirrel cage induction motor.
- Standard low voltage IEC and NEMA motors.
- Frames up to 450 (IEC 60034) or 500 (NEMA MG1), whose power range varies from 0.37 kW to 500 kW.
- Motors driven by any type of device (direct on line (DOL)), by variable frequency drive (VFD), soft starter, and star-delta.
## Technical Specifications

### Physical Characteristics
- Weight: 0.5 kg.
- Case material: ABS.
- Mounting: cooling fins.

### Vibration Measurement
- Amplitude range: ±40 g.
- Frequency range: 1 Hz to 3.1 kHz.
- Data format: waveform, FFT, rms.
- 2-axis vibration: axial and radial.

### Environmental
- Ambient temperature:
  - Operation: -40°C to +60°C.
  - Storage: 50°C maximum to avoid energy leakage from lithium batteries.

### Wireless Communication
- Network standard: Wi-Fi b/g/n.
- Radio standard: IEEE 802.11 b/g/n.
- Frequency: 2.4 GHz.
- Range (nominal): >50 m.

### Power
- Battery type: 4 × replaceable AA lithium batteries.
- Estimated battery lifetime: 1 year.
- The sensor measures the parameters every 20 minutes.

### Certifications/Standards
- CE
- IP Class IP55

### Vibration X Values on Time Waveform

<table>
<thead>
<tr>
<th>Time (s)</th>
<th>Vibration X Values (m/s²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.03</td>
<td>-0.02</td>
</tr>
<tr>
<td>0.06</td>
<td>0.00</td>
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