ABB Ability Smart Sensor for condition monitoring

## Rule-based predictive maintenance with wireless technology

ABB Ability Smart Sensor

ABB Ability™ Smart Sensor is an innovative solution that transforms industrial assets into smart devices by monitoring key operating parameters and providing real-time information about equipment health and performance. The data collected is transmitted to a cloud-based platform for analysis using Bluetooth® Low Energy technology, combining connectivity and data analytics to optimise operational performance.

The ABB Ability™ Smart Sensor converts traditional motors and machinery into wirelessly connected devices that provide valuable insights into equipment condition and performance. This allows users to proactively plan maintenance based on actual needs, extending equipment lifespan, reducing maintenance costs, and minimising unplanned downtime.

A unique feature of the ABB Ability™ Smart Sensor is its capability to monitor motors in hazardous areas, detecting potential problems early through changes in temperature and vibration. This solution makes monitoring motor health easier and safer, improving efficiency and safety in industrial operations.
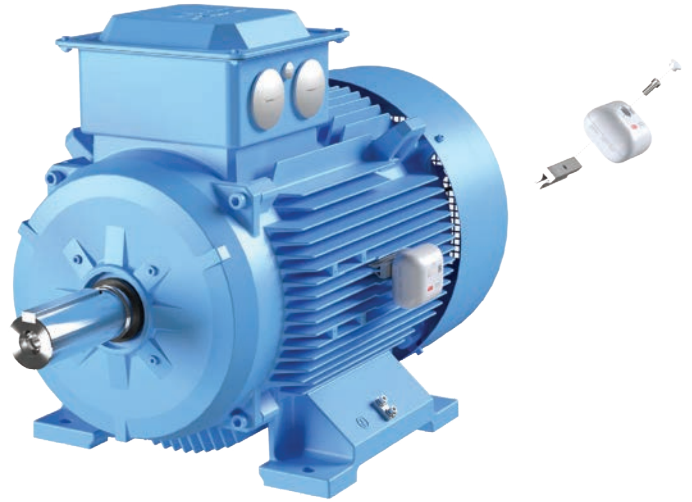
Features

- ATEX, IECEx and NEC 500 certified compliant with the strictest requirements for equipment operating in explosive atmospheres

- Pinpoint detection accuracy – superior sensors enable the detection of even slight anomalies in the equipment's condition at a very early stage

- Long battery life – up to three times longer than most competing designs

- Quick installation and activation for instant monitoring

- Detects vibration and temperature changes as well as changes in motor performance

- Ultrasonic acoustic sensors accurately access bearing conditions

- Onboard sensors calculate energy usage and efficiency

Where can I use an ABB Ability Smart Sensor?

The sensor can easily be installed on new and old motors from many manufacturers. The smart sensor collects data, which is then analysed in the cloud and displayed in an easy-to-use app, enabling technicians to monitor the condition of their industrial motors at a glance and plan required maintenance in advance.
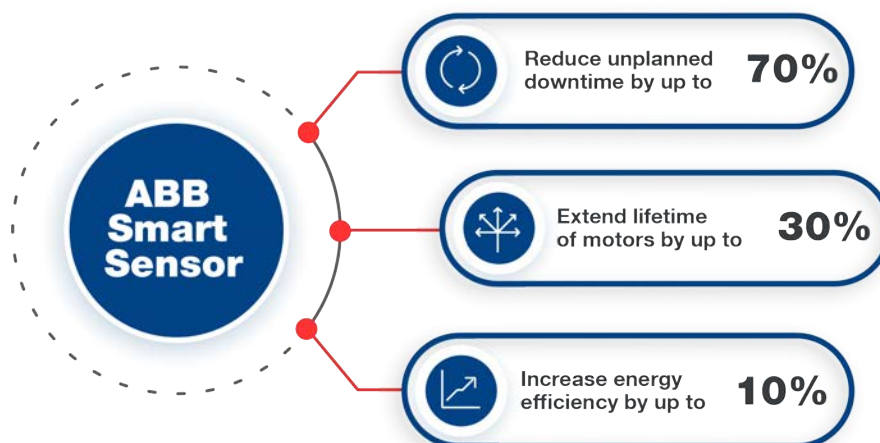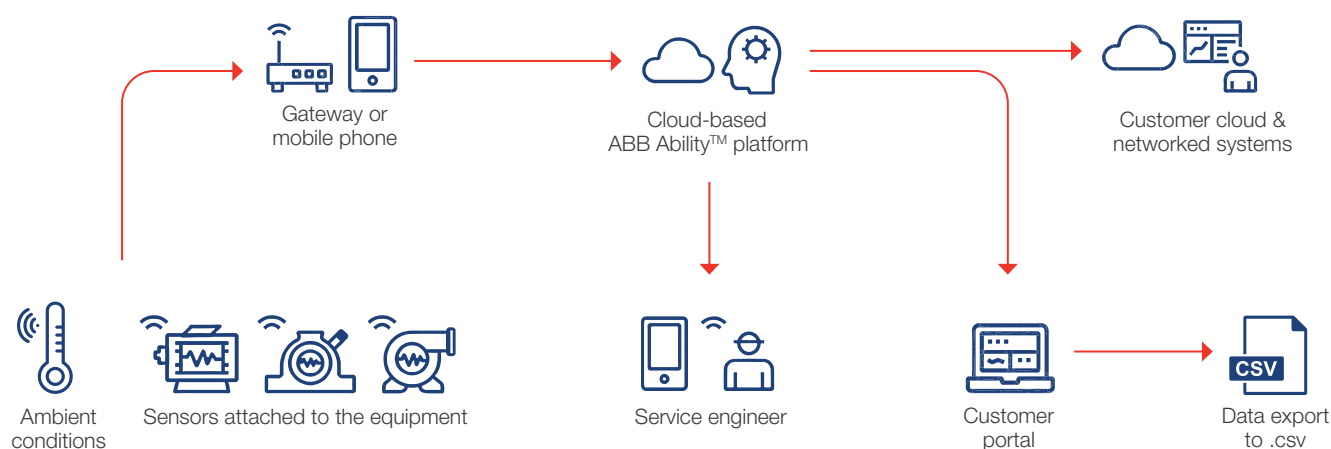
Smart sensor for motors

Smart sensor for pumps

Smart sensor for mechanical products

ABB Ability™ Smart Sensor platform

Gateway or mobile phone

Cloud-based ABB Ability™ platform

Customer cloud & networked systems

Ambient conditions

Sensors attached to the equipment

Service engineer

Customer portal

Data export to .csv

CSV

ABB Smart Sensor

Reduce unplanned downtime by up to **70%**

Extend lifetime of motors by up to **30%**

Increase energy efficiency by up to **10%**

Why invest in a Smart Sensor?

Traditional motor maintenance methods often involve routine maintenance based on experience and training without real-time visibility into the health of the motors. This can result in process interruptions, unplanned downtime, and lost revenue due to untimely equipment failure. Condition monitoring using traditional methods may require multiple sensors with complex wiring, monitoring devices in boxes with power supply, and programming. The ABB Ability™ Smart Sensor is a game-changing solution that empowers industries with the power of industrial IoT. This product offers a unique digital advantage that enables efficient, predictable, and safe operations by converting traditional motors into smart devices and leveraging advanced analytics.

Higher availability

Enables users to detect problems before they occur, allowing for planned maintenance and preventing unplanned downtime. This extends the lifetime of the equipment and ensures higher availability for critical operations.

Improved safety

Easy to install and use, reducing maintenance workers' time on the floor. It is easily attached to motors without wiring, and mounting and configuring the sensors takes minimal time. The sensor is activated using NFC protocol. The Smart Sensor Platform on mobile devices (iOS or Android) provides traffic light icons for quick motor state assessment and notifications when conditions change. All maintenance performed on a motor can be scheduled and recorded in the app.

Predictive maintenance

Enables predictive maintenance by monitoring equipment health and providing early warnings of potential issues. This allows for planned maintenance activities, reducing downtime and maximising equipment availability.

Reduced cost

Helps save money by optimising capital, operating, and energy costs. By leveraging the insights the Smart Sensor provides, plant managers can make informed decisions to upgrade their operations and reduce energy consumption over time.

Cybersecurity protection

Ensures data ownership and protection. Users own all their data, and access to data is restricted to authorised personnel only. The sensor is protected from unwanted access with 16-bit PIN authentication, PIN throttling to prevent brute-force attacks and encryption of all sensor measurements per the National Institute of Standards and Technology (NIST) recommendation. The decryption key is protected by an authentication PIN, ensuring cybersecurity.

Types of smart sensor

	High performance sensor		Standard performance sensor	
Part No.	3AFP9254388	3AFP9242910	3AXD50000823772	3AXD50000823789
Description	G2 high-performance smart sensor with flat mounting kit. Subscription is not included.	G2 high-performance smart sensor with aluminium bracket mounting kit. Subscription is not included.	G2 standard performance smart sensor with flat mounting kit. Subscription is not included.	G2 standard performance smart sensor with flat mounting kit. Subscription is not included.
Battery life	Up to 15 years		Up to 5 years	
Battery type (not replaceable)	C-type		AA-type	
Dangerous goods group	UN3091, Lithium metal batteries / cells-P1970 section I		UN3091, Lithium metal batteries / cells P1970 section III	
Low frequency acceleration measurement (x, y, z direction)	0.1 Hz – 1.5 kHz		0.1 Hz – 1.5 kHz	
High frequency acceleration measurement (z direction)	100 Hz – 20 kHz		N/A	
Magnetic field measurement (x, y, z direction)	0.1-250 Hz, 1 – 1600 µT		0.1-250 Hz, 1 – 1600 µT	
Ultrasoinc sound measurement	100 Hz – 80 kHz, 0.6 mN/m^2 – 20 N/m^2		100 Hz – 80 kHz, 0.6m N/m^2 – 20 N/m	
Communication	Bluetooth® 5.0, Bluetooth® Low Energy or WirlessHART		Bluetooth® 5.0, Bluetooth® Low Energy	
Dimensions (WxDxH) and weight	82 mm x 69 mm x 45 mm, 185 g		75 mm x 58 mm x 33 mm, 130 g	

Subscriptions

|	Smart Sensor 2-year subscription	Smart Sensor 5-year subscription
Part No.	3AFP9191436	3AFP9253864
Description	2 years ABB Ability Smart Sensor Subscription. Subscription enables full functionality for the Smart Sensor platform.	5 years ABB Ability Smart Sensor Subscription. Subscription enables full functionality for the Smart Sensor platform.

Accessories

	Cassia X2000 Bluetooth Gateway	ABB PoE injector
Part No.	3AXD50000872305	3AFP9189167
Description	X2000 extends Bluetooth connectivity up to 400 meters for Bluetooth 4 and 1 kilometer for Bluetooth 5 in open space. Supports Power over Ethernet (PoE) and 12 V DC. X2000 can be used as a Bluetooth and IP gateway. Internet Protocol (IP) backhaul options includes Ethernet, 2.4/5 GHz Wi-Fi and USB cellular modem. All weather-proof, IP66-rated.	48 V ; 24 W Operating Temp: 0 °C to 40 °C PoE injector for Cassia X1000 or X2000 Bluetooth gateway.

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Melbourne

Tasmania

End to End Service
Capabilities
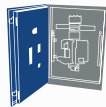
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