ABB

MECHANICAL POWER TRANSMISSION

ABB Ability™ Smart Sensor
For mounted bearings

DODGE®

ABB Ability Smart Sensor for mounted bearings

Changes in temperature and vibration can indicate potential problems in mounted bearings. Yet understanding the health of the bearing is usually overlooked, leaving problems unnoticed until the bearing fails. ABB now makes it easier and safer to know how your bearing feels.

The ABB Ability Smart Sensor for mounted bearing is an easy-to-use, wireless sensor which monitors the health of your ABB Dodge mounted bearings, allowing users to reduce downtime, improve reliability, and operate safely.

ABB Ability connects you to the power of the Industrial Internet of Things (IIoT). ABB offers a unique digital advantage by combining connectivity and data analytics with our expertise to make your operations efficient, predictable and safe.

- Increased safety
- Increased productivity
- Reduced maintenance
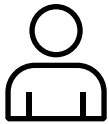- Eliminated unplanned stops
- Easy to use

https://new.abb.com/mechanical-power-transmission/mounted-bearings/smart-sensor-for-mounted-bearings

Do your bearings talk to you?
This is why they should

Traditional way

Routine maintenance introduces safety hazards as employees are working around rotating equipment or trying to reach bearings that are difficult or dangerous to access.

Not knowing the health of your bearings leaves you at risk for untimely equipment failure, which can lead to process interruption, unplanned downtime, and lost revenue.

Maintenance is a routine schedule based on a combination of experience, training and "this is how we always do it".

The user has little visibility of when component failure may occur.

With ABB Ability Smart Sensor

Increased safety

The ability to monitor bearings remotely allows maintenance and other relevant personnel to safely get a health check of the bearing without touching equipment.

Increased productivity

Trending data helps to develop patterns for monitoring of performance and ability to predict replacement.

Reduced maintenance

Maintenance can now be planned according to actual needs rather than based on generic schedules.

Eliminate unplanned stops

Warnings on decreasing health status allow you to plan maintenance before there is a problem and the system is down.

Easy to use

Wireless
The ABB Ability Smart Sensor for mounted bearings is designed for quick and easy installation and activation. Sensor is battery operated, no wiring, special tools or special software required.

Easy installation
Dodge mounted bearings come sensor ready with drilled, threaded, and plugged installation holes. The ABB Ability smart sensor for mounted bearings is installed by removing the plug and threading the sensor into the provided receptacle.

Retrofitting – no problem
With special adapter sensor installation on existing Dodge bearings is easy, simple and keep original functionality of grease stud.

Easy activation
The sensor is activated by pressing the LED activation switch.

Complimentary access to ABB Ability
for data trending

Easy to use
No matter where you are

Machinery is working even when you are not. Advanced conditional monitoring is now hand held through the Smart Sensor App. Designed with ease in mind, the app allows you to get up to date information on all bearings at any time, no matter where you are. Simply download ABB Ability Smart Sensor App for any iOS or Android based device.

Intuitive interface
The simple, graphical interface is easy to use and understand.

Traffic light system
Bearing health is displayed with a traffic light icon to quickly show users the state of that bearing.

Push notifications
When conditions change, you want to be the first to know. ABB Ability allows you to get notifications based on your preferences.

Constant communication
When events happen, everyone in the organization can know. This also allows records of who closes the events and what comments are made.

Event log
All maintenance performed on a bearing can be scheduled and recorded in the app, providing an easy to access record of service for each bearing.

Asset identification
Each bearing is registered through a part number, which provides a reference when it comes time to replace.

Access in remote locations
When bearings are located in difficult to reach locations, out of mobile device range, sensor data can be automatically sent thru Bluetooth Low Energy to the ABB Ability platform using a Gateway.

Twenty Smart Sensors can be connected to one Gateway.

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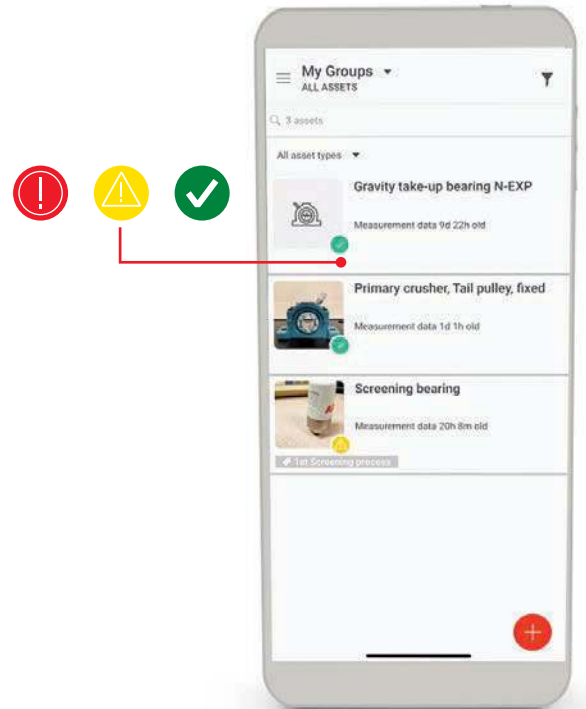
Safe to use
Cyber security

ABB understands the importance of protecting your data, and we take this responsibility seriously. The ABB Ability Smart Sensor for mounted bearings adheres to strict security measures to ensure that the health of your bearings is all you need to worry about.

Data ownership
• You own all of your data.
• Your data cannot be accessed by anyone outside your company unless you have authorized them in the portal.
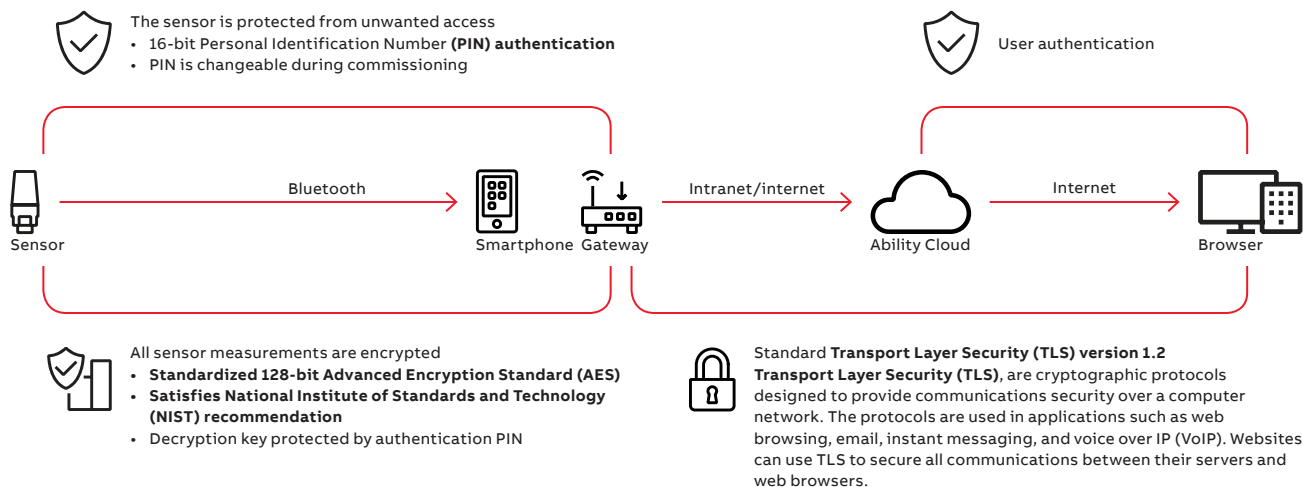
The sensor is protected from unwanted access
• 16-bit Personal Identification Number (PIN) authentication
• PIN is changeable during commissioning as well as during normal sensor usage (Default PIN is 0000)
• PIN throttling prevents brute-force attacks

All sensor measurements are encrypted
• By recommendation of National Institute of Standards and Technology (NIST)
• Decryption key is protected by authentication PIN

Secure communication system overview

The sensor is protected from unwanted access
• 16-bit Personal Identification Number **(PIN) authentication**
• PIN is changeable during commissioning

User authentication

Bluetooth

Intranet/internet

Internet

Sensor   Smartphone Gateway   Ability Cloud   Browser

All sensor measurements are encrypted
• **Standardized 128-bit Advanced Encryption Standard (AES)**
• **Satisfies National Institute of Standards and Technology (NIST) recommendation**
• Decryption key protected by authentication PIN

Standard **Transport Layer Security (TLS) version 1.2 Transport Layer Security (TLS),** are cryptographic protocols designed to provide communications security over a computer network. The protocols are used in applications such as web browsing, email, instant messaging, and voice over IP (VoIP). Websites can use TLS to secure all communications between their servers and web browsers.

Safe to use
Certificates

LED activation switch

Top enclosure	
Material	Thermoplastic
Flammability rating	V-0
UV protection for outside use	

Bottom enclosure	
Material	Stainless steel

Connection type	
Tapered thread	1/8-27 PTF - SAE

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II 1 GD  IECEx  SIR 17.0060X  MFG: YYYY  IP 66          BALDOR ELECTRIC COMPANY
I M1      SIRA 17ATEX2237X  Tamb -30°C to +105°C  SN: NNNNNNNN      Fort Smith, AR 72901 USA
Ex ia I Ma    Ex ia IIC 150°C (T3) Ga    Ex ia IIIC T146°C Da  Model: V1
FCC ID: 2AQVX-SS4MB01 IC: 24215-SS4MB01
CSA18CA70181504  Cl I, Zn 0, AEx ia IIC 150°C Ga  Cl I, Div.1, Grps ABCD
MC 183051 Cl II, Zn 20, AEx ia IIIC T146°C Da  Cl II, Div 1, Grps EFG  Cl III, Div 1    0518
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Third-party hazardous location certified (intrinsically safe)
When it comes to applications in hazardous environments, there's no reason for customers to assume any risk by using a product which is self certified. That's why Smart Sensors for mounted bearings is third party ATEX certified for worry-free use in hazardous environments. All required product markings and documentation are included with each sensor at no additional charge. When it comes to hazardous environments, you can trust ABB Ability Smart Sensor for mounted bearings.

ABB Ability portal

The Smart Sensor for mounted bearings includes complimentary access to the ABB Ability digital platform. This portal allows you to monitor bearing function and analyze data trends, leading to better uptime and ensuring that critical operations run smoothly and consistently.

The sensor uses Bluetooth Low Energy to wirelessly communicate information about the bearings operational health via your smartphone or bluetooth-gateway to a secure server. Data from the sensor can be displayed graphically on a smart phone, tablet or the ABB Ability web portal.
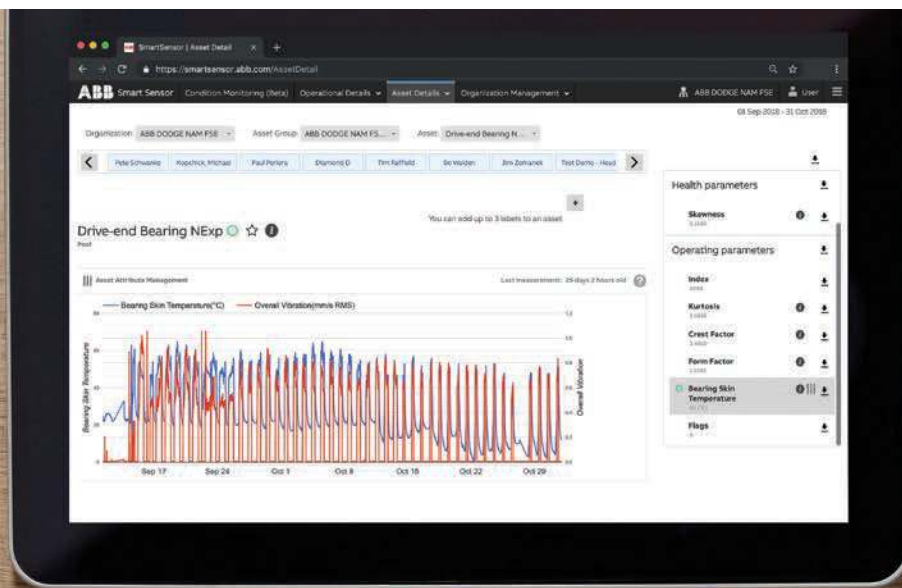
Trending data
Allows users the ability to zoom in and pin point certain events. Users can customize preferences and plot data relevant to them. This data is available to download to Microsoft Excel.
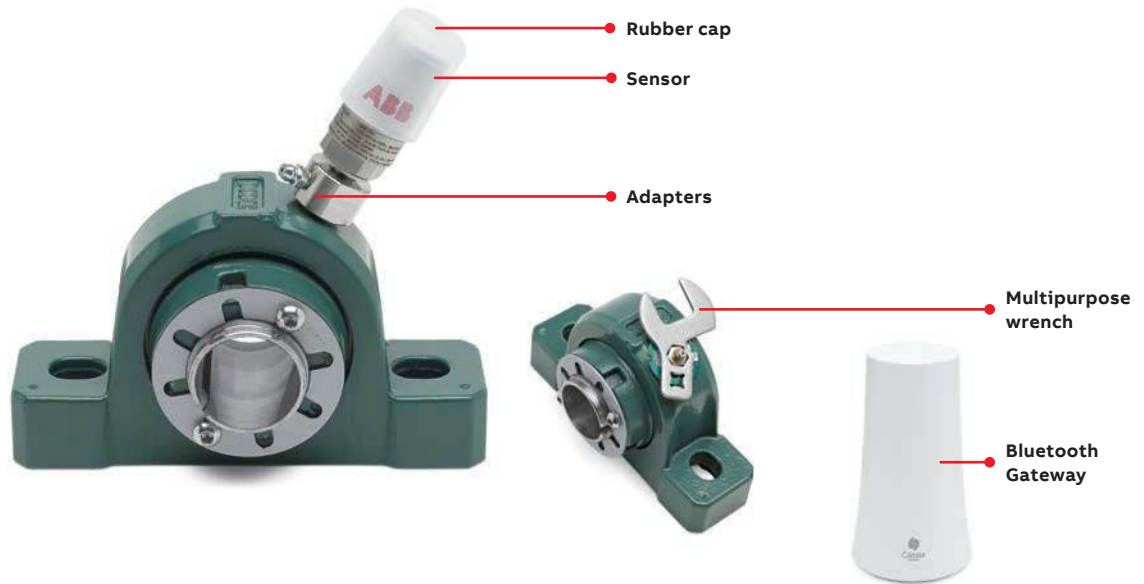
Advanced algorithms are loaded into ABB Ability to help direct proper maintenance and decrease unexpected down time.

https://smartsensor.abb.com/Login

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Part information

- Rubber cap
- Sensor
- Adapters
- Multipurpose wrench
- Bluetooth Gateway

Part number	Part description
750000	Smart Sensor for mounted bearings
749901	Multipurpose wrench
749904	1/8 - 27 pipe thread adapter
749905	1/4 - 28 straight thread adapter
749906	Rubber cap
749908	Bluetooth Gateway

Retrofit chart
An adapter is available for retrofitting existing Dodge mounted bearings with an ABB Ability Smart Sensor.

Mounted bearing product	Product description	Sensor adapter compatible	Sensor adapter size		Housing style
			1/8" - 27 adapter PN 749904	1/4" - 28 adapter PN 749905	
Ball bearings	Washdown ball bearings	Yes	No	Yes	Pillow blocks only
Ball bearings	Standard cast iron ball bearings	Yes	204 series and larger	Yes, for 203 series only	Pillow blocks only
Spherical roller bearings	All spherical roller bearing products	Yes	Yes	No	Pillow blocks only
Tapered roller bearings	Type E	Yes	Yes	No	Pillow blocks only
Tapered roller bearings	Split cap tapered products-Type EXL, Double Interlock®, TAF, Type K, Type C, Special Duty	No			N/A
Plain bearings	Sleevoil® and journal bearings	No			N/A

Dimensions & installation
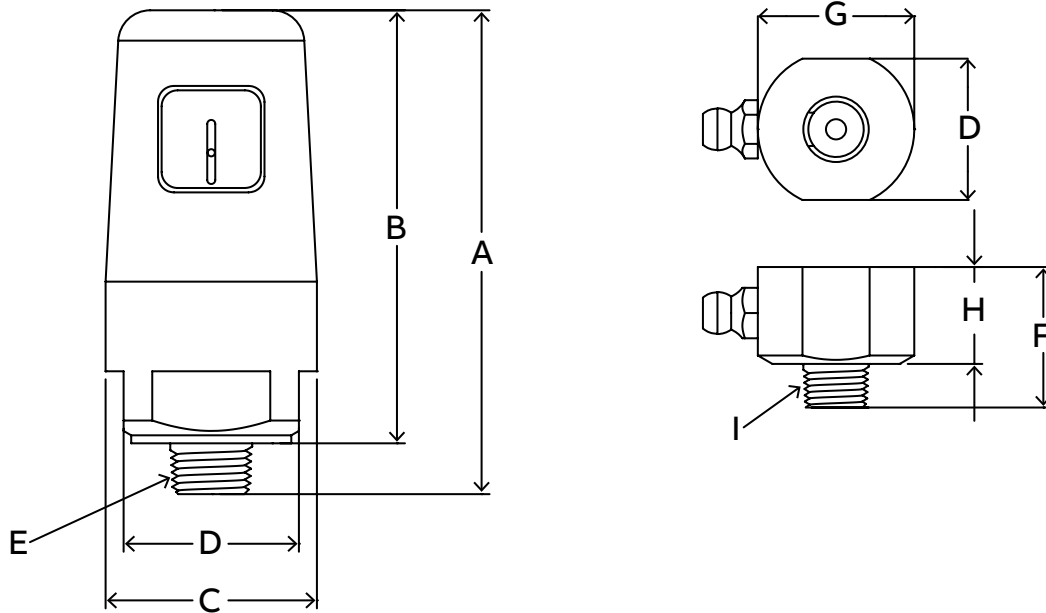
Smart Sensor dimensions

Part number	Description					Dimensions
		A	B	C	D	E
750000	Smart Sensor for mounted bearings	2.38 (60.5)	2.13 (54.14)	1.04 (26.4)	0.88 (22)	1/8"-27 PTF-SAE

Part number	Description				Dimensions
		F	G	H	I
749904	1/8 - 27 pipe thread adapter	0.88 (22)	0.97 (24.61)	0.61 (15.37)	1/8" - 27 PTF-SAE
749905	1/4 - 28 straight thread adapter				1/4" - 28 UNF-SAE

Installation information*

Description	Torque (lb.-in.)
Smart Sensor/ sensor adapter	7 to 12

*Using torque wrench

NOTE: Installation and maintenance instructions for Dodge products available at www.baldor.com

Technical data

Certification(s)	
EX (hazardous areas)	II 1 GD
	I M1
	Ex ia I Ma
	Ex ia IIC 150°C (T3) Ga
	Ex ia IIIC T146°C Da
	Cl I, Zn 0, AEx ia IIC T150°C Ga
	Cl I, Div.1, Grps ABCD
	Cl II, Zn 20, AEx ia IIIC T146°C Da
	Cl II, Div 1, Grps EFG
	Cl III, Div 1
IP (Ingress Protection) class	IP 66
Temperature	
Measurement range	-22°F… +185°F (-30°C … +85°C)
Resolution	1°C
Accuracy	±2°C
Vibration	
Amplitude range	+/- 2g
Frequency range	1 Hz – 1.6 kHz
Detection type	RMS
Wireless communication	
Network standard	Bluetooth Low Energy
Radio standard	IEEE 802.15.1C
Frequency	2402-2480 MHz
Range (nominal)	>26ft (8m) @ line-of-sight
Environmental	
Storage temperature	+14°F … +86°F (-10°C … +30°C)
Operating temperature	-22°F… +185°F (-30°C … +85°C)
Power	
Battery type	3.6V LiSOCl2 cells
	Lithium thionyl chloride cell battery is not replaceable
Estimated battery life*	-22°F…+122°F (-30°C … +50°C)
	2+ years with measurement taken once per hour and data collected once per day by mobile device.
	+123°F…+185°F (+51°C … +85°C)
	1+ year with measurement taken once per hour and data collected once per day by mobile device.
Physical	
Weight	60 grams
Case material	Stainless steel/thermoplastic/silicone
Dimension	60.5mm x 26.4mm
Mounting	Male 1/8" - 27 PTF SAE

ABB

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