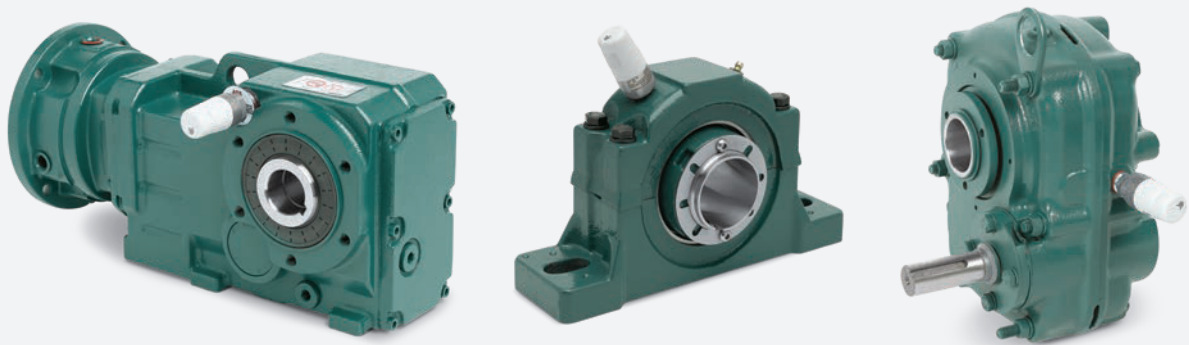




MECHANICAL POWER TRANSMISSION

# Dodge Smart Sensor

For mechanical products



# Dodge Smart Sensor for mechanical products

Changes in temperature and vibration can indicate potential problems in mounted bearings and gear reducers. Yet understanding the health of these mechanical products is often overlooked, leaving problems unnoticed until failure occurs. Dodge now makes it easier and safer to know how your products feel.

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

**The Dodge Smart Sensor for mechanical products** is an easy-to-use, wireless sensor which monitors the health of Dodge Dodge mechanical products, allowing users to reduce downtime, improve reliability, and operate safely.

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

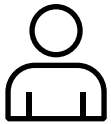


# Do your mechanical products talk to you?

## This is why they should



### Traditional way



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

Not knowing the health of your mechanical products 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 Dodge Smart Sensor



#### Increased safety

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

#### Increased productivity

Trending data helps to develop patterns for monitoring 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 downtime

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

# Easy to use

## Wireless

Sensor is battery operated, no wiring, special tools or special software required.



## Easy installation

Dodge mechanical products come sensor ready with drilled, threaded, and plugged installation holes. The sensor is installed by removing the plug and threading the sensor into the provided receptacle.



## Retrofitting – no problem

Adapters designed to accept smart sensor are available for easy installation in the field. The gearing adapters replace one of several oil fill plugs with a blind plug. The sensor adapter for bearings replaces the standard grease fitting in the housing, allows for easy installation of the sensor, and provides a grease port for continued hand lubrication of the bearing.



## Easy activation

The sensor is activated by pressing the LED activation switch.



**Complimentary access to Dodge**  
for data trending





# Easy to use

## No matter where you are

Machinery is working even when you are not. Advanced condition monitoring is now hand held through the Smart Sensor Platform app. Designed with ease in mind, the app allows you to get up to date information on all mechanical products at any time, no matter where you are. Simply download Dodge 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

Health is displayed with a traffic light icon to quickly show users the state of that product.

### Push notifications

When conditions change, you want to be the first to know. Dodge 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 mechanical products can be scheduled and recorded in the app, providing an easy to access record of service.

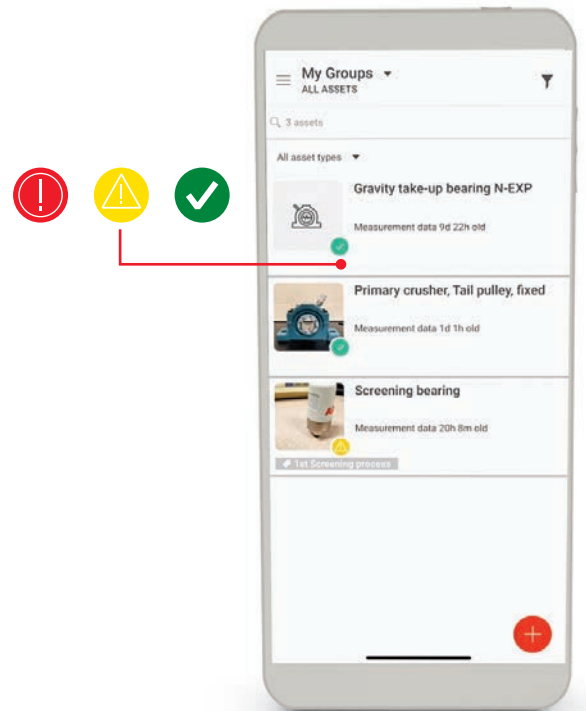
### Asset identification

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

### Access in remote locations

When mechanical products are located in difficult to reach locations or out of mobile device range, sensor data can be automatically sent via Bluetooth Low Energy to the Dodge platform using a Gateway.

Twenty Smart Sensors can be connected to one Gateway.



# Safe to use

## Cyber security

Dodge understands the importance of protecting your data, and we take this responsibility seriously. The Dodge Ability Smart Sensor for mechanical products adheres to strict security measures to ensure that the health of your mechanical products are 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.

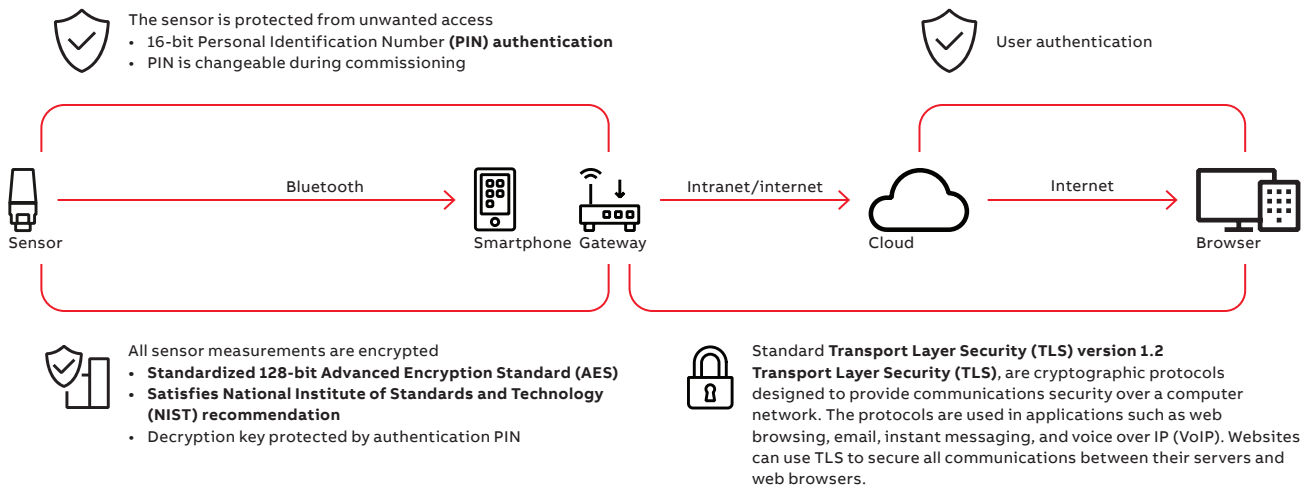
### The sensor is protected from unwanted access

- 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

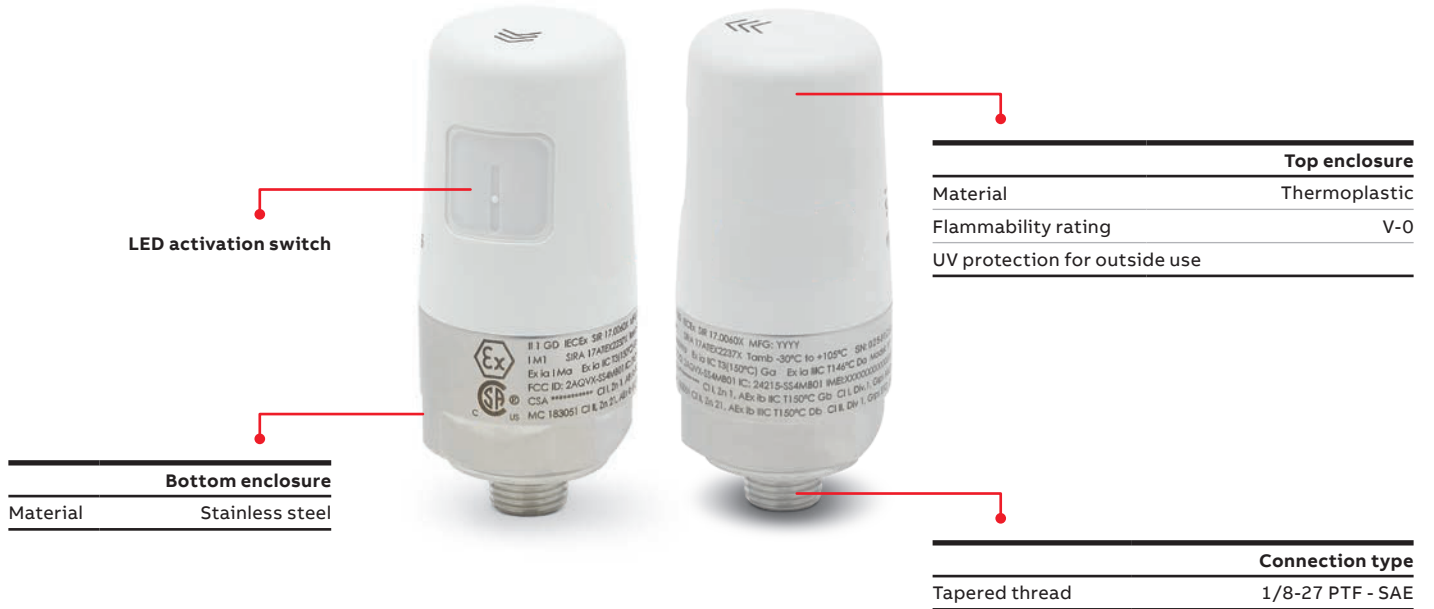
### All sensor measurements are encrypted

- By recommendation of National Institute of Standards and Technology (NIST)
- Decryption key is protected by authentication PIN

### Secure communication system overview



# Safe to use Certificates

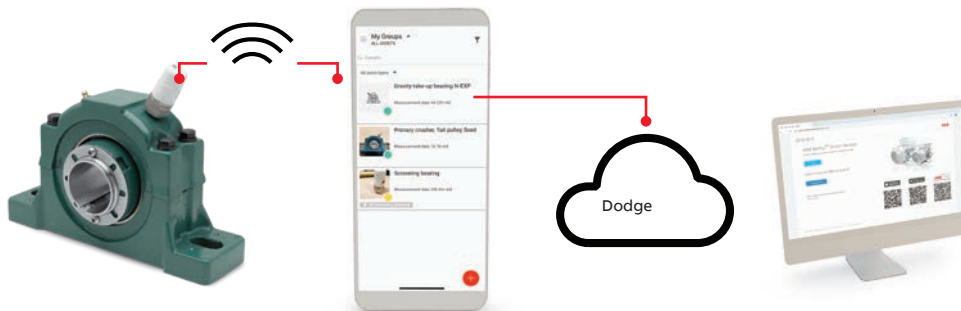


	II 1 GD IECEx SIR 17.0060X MFG: YYYY IP 68 I M1 SIRA 17ATEX2237X Tamb -30°C to +105°C SN: NNNNNNNN Ex Ia I Ma Ex Ia IIC 150°C (T3) Ga Ex Ia IIIC T146°C Da Model: V1 FCC ID: 2AQVX-SS4MB01 IC:24215-SS4MB01 IFT:RCPABV118-2199 CSA19CA70215658 CI I, Zn 0, AEx Ia IIC 150°C Ga CI I, Div.1, Grps ABCD MC 274769 CI II, Zn 20, AEx Ia IIIC T146°C Da CI II, Div 1, Grps EFG CI III, Div 1				ADD 0 0 0 0 0 5 R.S. Bore r1 h, AR 72°01		0518

### 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 the Dodge Smart Sensor for mechanical products 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 Dodge Smart Sensor for mechanical products.

# Dodge portal



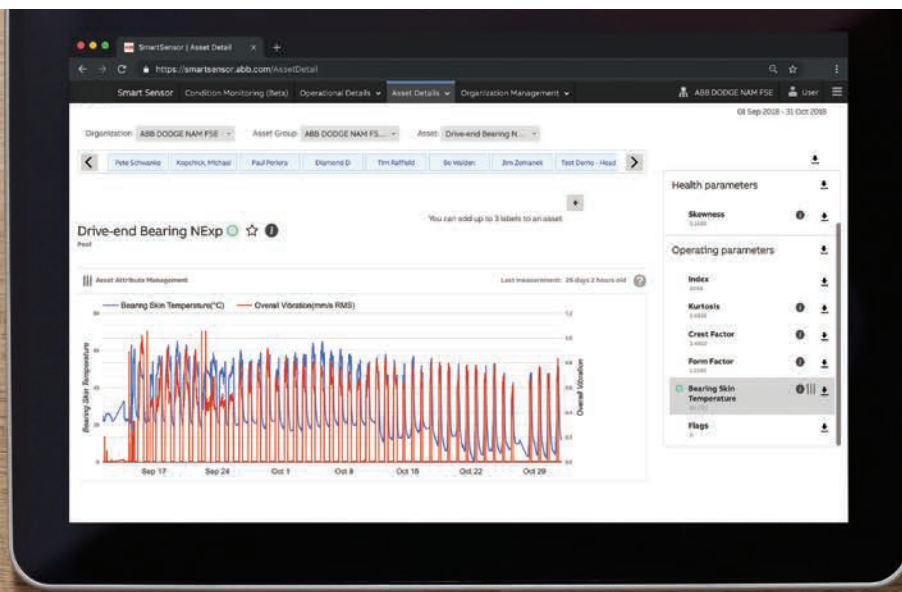
The Smart Sensor for mechanical products includes complimentary access to the Dodge digital platform. This portal allows you to monitor function and analyze data trends, leading to better uptime and ensuring that critical operations run smoothly and consistently.

The sensor uses Bluetooth Low Energy to wirelessly communicate information about the mechanical products 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 Dodge web portal.

## Trending data

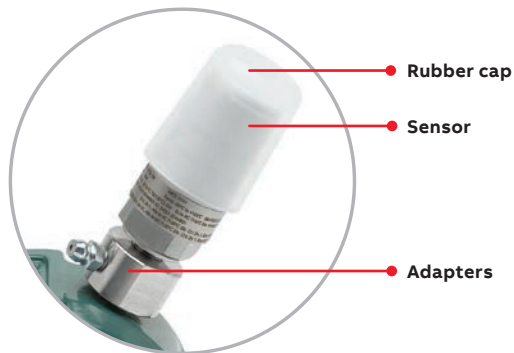
Allows users the ability to zoom in and pin point certain events. Users can customize preferences and plot data relevant to them. This data is available to download to Microsoft Excel.

Advanced algorithms are loaded into Dodge to help direct proper maintenance and decrease unexpected down time.

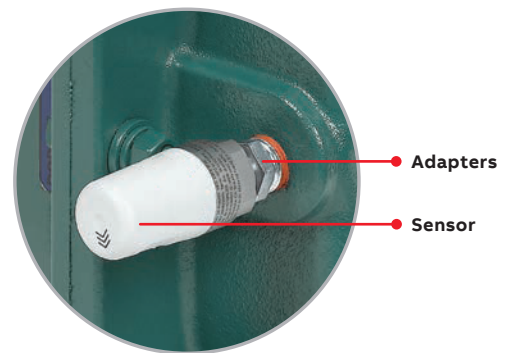


# Part number information

**Bearing**



**Gearing**



Part number	Description
750000	Smart Sensor for mounted bearings
<b>Smart Sensor adapters for mounted bearings</b>	
749904	1/8" - 27 pipe thread adapter
749905	1/4" - 28 straight thread adapter
749915	M6X0.75 adapter
13 7994	1/8"-27 dual for auto lube adapter
<b>Smart Sensor adapters for gearboxes</b>	
966905	3/8" NPT to 1/8" NPSM sensor hardware kit
966906	1/2" NPT to 1/8" NPSM sensor hardware kit
966907	3/4" NPT to 1/8" NPSM sensor hardware kit
<b>Bluetooth Gateway</b>	
749908	Bluetooth Gateway

# Adapter retrofit charts

An adapter is available for retrofitting existing Dodge mechanical products with an Dodge Smart Sensor.

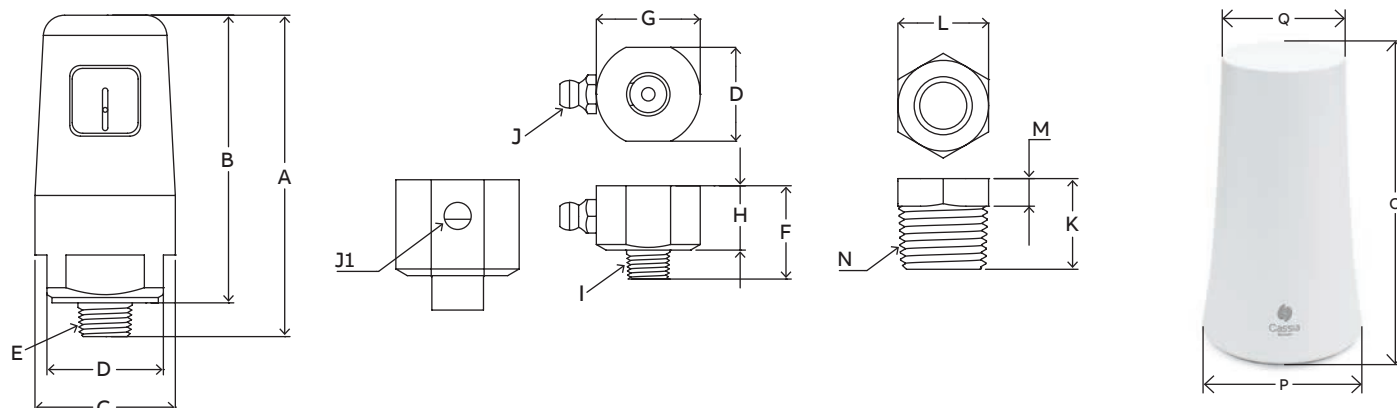
Mounted bearing product	Product description	Sensor adapter compatible	Sensor adapter size		Housing style
			1/8" - 27 adapter PN 749904	1/4" - 28 adapter PN 749905	
Ball bearings	Washdown ball bearings	Yes	No	Yes	Pillow blocks only
Ball bearings	Standard cast iron ball bearings	Yes	204 series and larger	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



Adapter Description and part number	Quantis RHB, ILH and MSM	TXT	TAII	MTA	Maxum XTR	MagnaGear
3/8 NPT to 1/8" P/N: 966905	Sizes 38-128	Sizes 1-4	Sizes 0-3	Sizes 2-3	-	-
1/2 NPT to 1/8" P/N: 966906	-	Sizes 5 & 6	-	-	All sizes	-
3/4 NPT to 1/8" P/N: 966907	Sizes 148-168	Sizes 7-12	Sizes 4-12	Sizes 4-8	-	Sizes 100-920

# Smart Sensor

## Dimensions & installation



Note: Drawings are not to scale.

### 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)	7/8 (22)	1/8"-27 PTF-SAE

### Smart Sensor adapters for mounted bearings dimensions

Part number	Description	Dimensions				
		F	G	H	I	J, J1
749904	1/8" - 27 pipe thread adapter				1/8" - 27 PTF-SAE	
749905	1/4" - 28 straight thread adapter	0.88 (22)	0.97 (24.61)	0.61 (15.37)	1/4" - 28 UNF-SAE	1/4" - 28 HYD GR FTG
749915	M6X0.75 adapter				M6X0.75 taper thread	
137994	1/8" - 27 dual for auto lube adapter	1.19 (30.16)		0.92 (23.3)	1/8" - 27 PTF-SAE	1/8" - 27 NPT hole

### Smart Sensor adapters for gearboxes dimensions

Part number	Description	Dimensions			
		K	L	M	N
966905	3/8 NPT to 1/8 NPSM sensor hardware kit	0.69 (17.53)	11/16 (17.19)	0.21 (5.33)	3/8" - 18 NPT
966906	1/2 NPT to 1/8 NPSM sensor hardware kit	0.81 (20.57)	7/8 (22.23)	0.25 (6.35)	1/2" - 14 NPT
966907	3/4 NPT to 1/8 NPSM sensor hardware kit	0.93 (23.62)	1-1/16 (26.99)	0.30 (7.62)	3/4" - 14 NPT

### Bluetooth Gateway dimensions

Part number	Description	Dimensions		
		O	P	Q
749908	Bluetooth Gateway	10.20 (259)	5.63 (143)	4.05 (103)

### 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 [dodgeindustrial.com](http://dodgeindustrial.com)

# Technical data

<b>Certification(s)</b>	
	II 1 GD
	I M1
	Ex ia I Ma
	Ex ia IIC 150°C (T3) Ga
EX (hazardous areas)	Ex ia IIIC T146°C Da
	CI I, Zn 0, AEx ia IIC T150°C Ga
	CI I, Div.1, Grps ABCD
	CI II, Zn 20, AEx ia IIIC T146°C Da
	CI II, Div 1, Grps EFG
	CI III, Div 1
IP (Ingress Protection) class	IP 66
<b>Temperature</b>	
Measurement range	-22°F... +185°F (-30°C ... +85°C)
Resolution	1°C
Accuracy	±2°C
<b>Vibration</b>	
Amplitude range	Up to +/- 16G
Frequency range	1 Hz – 1.6 kHz
Detection type	RMS
<b>Wireless communication</b>	
Network standard	Bluetooth Low Energy
Radio standard	IEEE 802.15.1C
Frequency	2402-2480 MHz
Range (nominal)	Up to 70 ft (20 m) via mobile device
<b>Environmental</b>	
Storage temperature	+14°F ... +86°F (-10°C ... +30°C)
Operating temperature	-22°F... +185°F (-30°C ... +85°C)
<b>Power</b>	
Battery type	3.6V LiSOCl <sub>2</sub> cells
	Lithium thionyl chloride cell battery is not replaceable
	-22°F...+122°F (-30°C ... +50°C)
Estimated battery life*	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.
<b>Physical</b>	
Weight	60 grams
Case material	Stainless steel/thermoplastic/silicone
Dimension	60.5mm x 26.4mm
Mounting	Male 1/8" - 27 PTF SAE



# Helpful website



**Smart Sensor app:**

One stop shop for sensor commissioning and condition monitoring for users on the go – app provides easy 'at-a-glance' overview of asset conditioning.



**Apple store**

<https://apps.apple.com/us/app/smart-sensor-platform/id1222531884>







**Dodge Industrial, Inc.**

1061 Holland Road, Simpsonville, SC 29681

+1 864 297 4800

**[dodgeindustrial.com](http://dodgeindustrial.com)**

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