



# SmartSolutions™ Starter Kit HVAC Monitoring



**Validate with data. Provide Savings. Increase Value.**

- Products with proven wireless communication and integrated cellular connectivity
- Configurable dashboards with default alarms assist in data-driven decisions and solutions
- Battery-powered devices for convenient installation
- Durable IP-rated sensors and gateways

**The turn-key, essential solution to kick-start predictive maintenance initiatives**

The HVAC StarterKit has all the essential sensors you need to monitor the critical components of your HVAC unit. The kit includes a Vibration and Temperature sensor that is ideal for monitoring the condition of your fan or motor assembly. The Temperature Probe can be applied to discharge air units or bound to the high or low coolant lines with the included mounting strap. The pressure sensor has the ideal range for monitoring the pressure in your coolant suction and discharge lines. Expand the system with additional sensors as they are released for monitoring other critical HVAC applications.

**Kit includes:**



Pressure Monitoring Sensor



Vibration Monitoring Sensor



Temperature Monitoring Sensor



Wireless Gateway



Prepaid Cellular and Banner Cloud Data Services

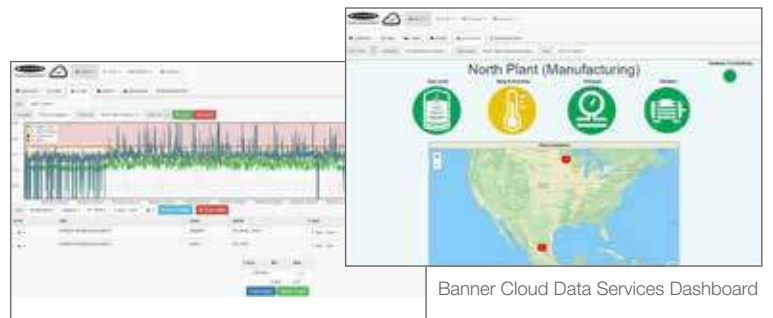
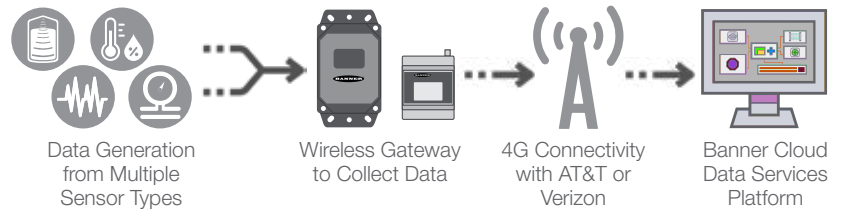
# SmartSolutions™ StarterKit

## Begin Your IIoT Journey with Banner

### Kit Features:

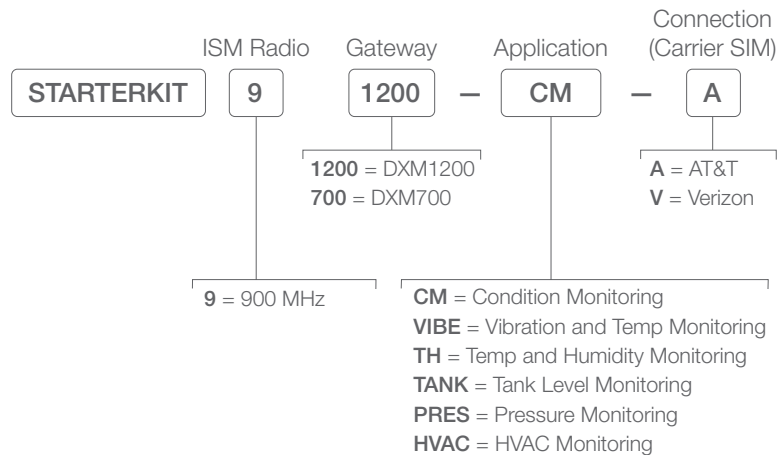
- Join a total of 10 sensor nodes for specific facility application needs
- Preconfigured gateway provides time-saving Direct-to-Cloud functionality
- Wireless Gateway options for indoor and outdoor asset monitoring and communication
- Proven secure and reliable communications between sensors and the gateway (FHSS)
- 900 MHz ISM Radio for up to 50 times larger range than Bluetooth
- LCD user interface for sensor-binding process

### Acquire insights with one Direct-to-Cloud Solution



### The SmartSolutions™ StarterKit Series

Designed to enable owners of assets and processes to obtain actionable insights that will solve industrial challenges delivered in a robust and easily deployable solution. From high-grade sensing hardware and gateways, to trusted network connectivity and intuitive software, the SmartSolutions™ StarterKit Series provides the entire stack of technologies needed to evaluate the Industrial Internet of Things (IIoT) within an enterprise.



"Took no time to install, paid for itself and made me look good. Thanks!"

Matt M. - Sr Facility Manager

### Designed to get up to speed quickly and scale with ease

The SmartSolutions™ StarterKit can deliver value in minutes, not hours or days. Add any additional industrial grade All-In-One Sensor Node to the StarterKit to adapt the kit for specific requirements of the application or facility.

### Wireless Gateways



DXM1200 (Sealed)

DXM700

### All-in-One Sensor Nodes



Vibration

Temp/Humidity

Tank Level

Pressure

Temp Probe

# DXM1200 Wireless Gateway




Banner's Wireless Gateway is an industrial wireless device that facilitates Industrial Internet of Things (IIoT) applications. As a communications gateway, it offers seamless connectivity by hosting a robust ISM radio network for local wireless devices used to acquire and transmit data from assets within the industrial environment. The intuitive on-board display is used to bind the radios to the wireless network and an internal cellular modem provides a preconfigured connection to a 4G LTE network.

- ISM local radio network available in 900 MHz frequency band
- Equipped with IP67-rated housing for use in challenging environments
- DC Power Supply included within SmartSolutions™ StarterKit
- Embedded cellular connection with Verizon or AT&T carriers
- Internal radio and cellular antennas for damage protection
- Ethernet connection available



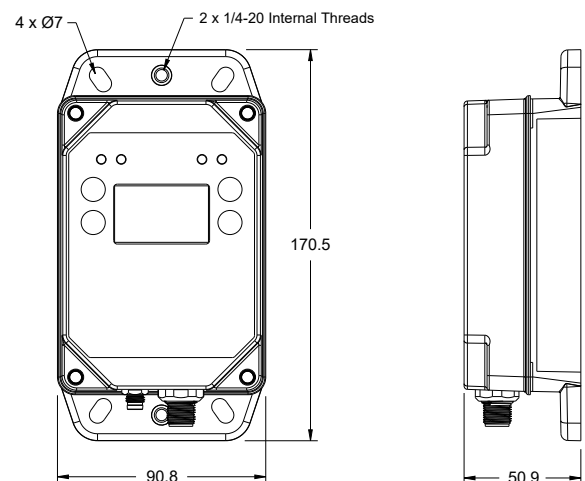
Models	Description
DXM1200-B1R1-SK-V	ISM 900 MHz Radio; preconfigured device detection with Verizon cellular module & SIM
DXM1200-B1R1-SK-A	ISM 900 MHz Radio; preconfigured device detection with AT&T cellular module & SIM

## Specifications

<b>Supply Voltage</b>	12 to 30 V DC (use only with a suitable Class 2 power supply (UL) or a Limited Power Source (LPS) (CE) power supply)
<b>Construction</b>	Polycarbonate
<b>Environmental Rating</b>	IEC IP67
<b>Operating Conditions</b>	-20 to +60 °C (-4 to +140 °F)
<b>Security Protocol</b>	TLS, SSL, HTTPS
<b>Push to Cloud Rate</b>	Once every 10 minutes
<b>900 MHz Compliance</b>	FCC ID UE3RM1809: FCC Part 15, Subpart C, 15.247 IC: 7044A-RM1809 IFT: RCPBARM13-2283
<b>Certifications</b>	  

## Support Literature

<b>216539</b>	Sure Cross® DXM1200-Bx Wireless Controller Instruction Manual
<b>196719</b>	Sure Cross® DXM1200-Bx Wireless Controller Datasheet



# Q45TA All-in-One Temperature Probe Sensor Node

The Q45TA All-in-One Thermistor Sensor Node combines a temperature sensor probe with reliable, field-proven, wireless architecture into one package that eliminates the need for ordering multiple components and reducing the physical size of the device. This sensor node provides the temperature data needed to make critical shutdown decisions when temperature becomes dangerously high. A non-invasive add-on for industries that need to track manufacturing tolerances and provide data to customers.


- Measures temperature using 1.8 meter (5.9 ft) thermistor probe
- 3+ years of battery life with simple installation
- Measures building and control processes easily with mounting strap included within the SmartSolutions™ StarterKit
- Temperature sensing range of -20 to 105 °C (-4 to 221 °F)
- Achieves temperature accuracy of ±0.2%



Models*	Radio Frequency	Inputs
DX80N9Q45TA	900 MHz ISM Band	Temperature

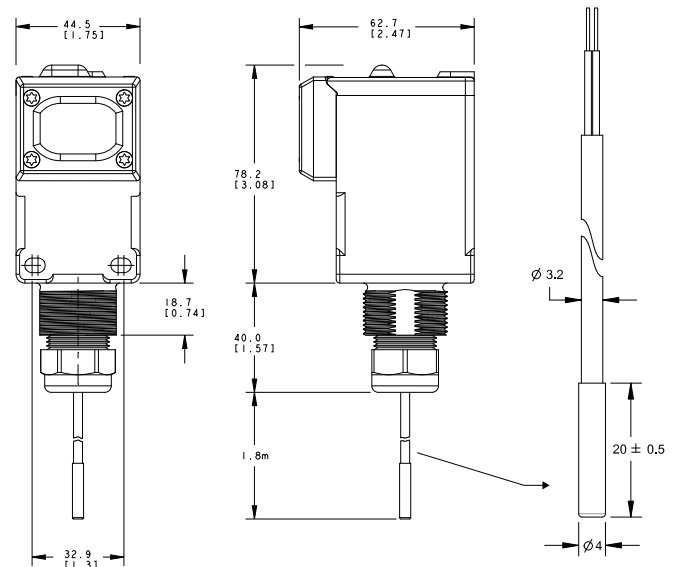
\* Additional sensors available to add to the StarterKit Series. See last page for more information.

## Specifications

<b>Default Sensing Interval</b>	5 Minutes
<b>Construction</b>	Molded reinforced thermoplastic polyester housing, orange-sealed transparent Lexan® cover, molded acrylic lenses, and stainless steel hardware. Designed to withstand 1200 psi washdown.  Thermistor Probe Cable Length: 1.8 m (5.9 ft) Cable Material: PVC Tube/Thermistor: Copper Plated/PS103G2 Range: -20 to 105°C (-4 to 221°F) Accuracy: ±0.2%
<b>Environmental Rating</b>	NEMA 6P, IEC IP67
<b>Operating Conditions</b>	-40 to +70 °C (-40 to +158 °F)
<b>900 MHz Compliance</b>	FCC ID UE3RM1809: FCC Part 15, Subpart C, 15.247 IC: 7044A-RM1809 IFT: RCPBARM13-2283
<b>Certifications</b>	

## Support Literature

217352	Sure Cross® Wireless Q45TA All-in-One Thermistor Sensor Node
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# Q45PS All-in-One Pressure Sensor Node

The Q45PS All-in-One Pressure Sensor combines a media isolated pressure sensor with reliable, field-proven, wireless architecture into one package that eliminates the need for ordering multiple components and reducing the physical size of the device. This solution monitors pressurized systems in remote and hard-to-access locations where implementing a wired solution would be difficult, impractical, or not cost-effective.



- For use in pneumatic and hydraulic systems, HVAC systems, cooling systems, compressors, and chiller applications
- 1.5+ years of battery life with simple installation
- Available in multiple pressure ranges for use in various systems
- Achieves pressure accuracy of  $\pm 1.4\%$  full scale
- $\frac{1}{4}$ -inch NPT thread connection port for use in most applications



Models*	Radio Frequency	Pressure Range	Inputs
DX80N9Q45PS500S	900 MHz ISM Band	0 to 500 PSIG (34 bar)	Integrated pressure sensor

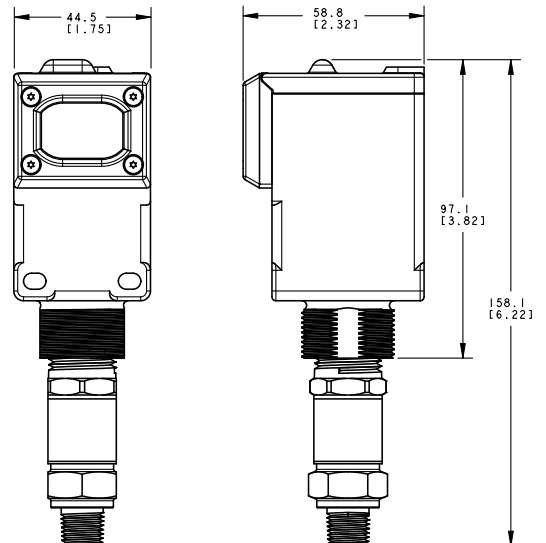
\* Additional sensors available to add to the StarterKit Series. See last page for more information.

## Specifications

<b>Default Sensing Interval</b>	5 Minutes
<b>Performance</b>	Pressure Sensor Range: 0-500 PSIG Proof Pressure: 2x FS Burst Pressure: 3x FS Fatigue Life: > 4 million Cycles Output: 0-5 V DC Accuracy: $\pm 1.4\%$ FS  Pressure Sensor Mechanical Pressure Fitting: $\frac{1}{4}$ "-18 NPT Rating: IP65 Housing: 304 Stainless Steel Wetted Material: 316 Stainless Steel
<b>Construction</b>	Molded reinforced thermoplastic polyester housing, oring-sealed transparent Lexan® cover, molded acrylic lenses, and stainless steel hardware. Designed to withstand 1200 psi washdown.
<b>Environmental Rating</b>	NEMA 6P, IEC IP67
<b>Operating Conditions</b>	-40 to +70 °C (-40 to +158 °F)
<b>900 MHz Compliance</b>	FCC ID UE3RM1809: FCC Part 15, Subpart C, 15.247 IC: 7044A-RM1809 IFT: RCPBARM13-2283
<b>Certifications</b>	 

## Support Literature

216536	Sure Cross® Wireless Q45PS All-in-One Pressure Sensor Datasheet
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# Q45VA All-in-One Vibration Sensor Node

Q45VA devices combine an ISM radio, sensor, and battery power supply into one easy-to-deploy Sensor Node. The Q45VA is a compact industrial-grade device specially designed to analyze vibration and temperature data that can be used to identify and predict failures for rotating machinery.


- Delivers pre-processed high accuracy vibration values for monitoring rotating equipment such as motors, pumps, rotary compressors, exhaust or HVAC fan motors, and spindles.
- Achieves vibration accuracy of  $\pm 10\%$  RMS velocity (in/sec)
- 2+ years of battery life and includes two mounting brackets for simple installation
- Detects vibration characteristics on two axis (radial and axial) and two bands of RMS velocity and High Frequency Acceleration



Models*	Radio Frequency	Inputs & Outputs	Other
DX80N9Q45VA-BK	900 MHz ISM Band	Vibration and temperature detection	Includes BWA-BK-009 and BWA-BK-010 (magnetic) Mounting Brackets

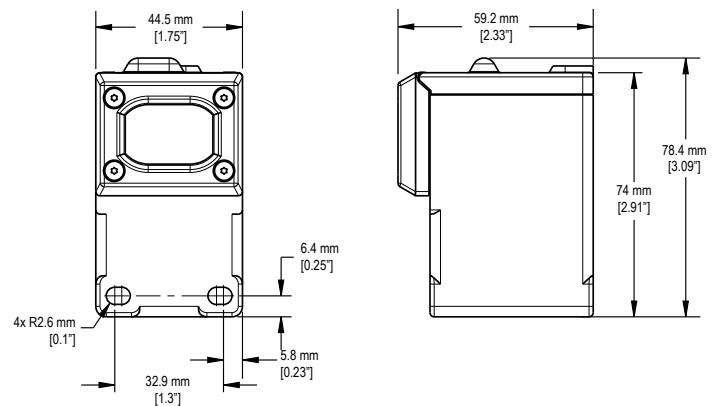
\* Additional sensors available to add to the StarterKit Series. See last page for more information.

## Specifications

<b>Default Sensing Interval</b>	5 minutes
<b>Construction</b>	Molded reinforced thermoplastic polyester housing, oring-sealed transparent Lexan® cover, molded acrylic lenses, and stainless steel hardware. Designed to withstand 1200 psi washdown.
<b>Environmental Rating</b>	NEMA 6P, IEC IP67
<b>Operating Conditions</b>	Ambient temperature: $-40$ to $+70$ °C ( $-40$ to $+158$ °F) Contact temperature: $-40$ to $+105$ °C ( $-40$ to $+221$ °F)
<b>Vibration Sensor</b>	Measuring Range: 0 to 46 mm/sec or 0 to 1.8 in/sec RMS Frequency Range: 10 Hz to 4 kHz Accuracy: $\pm 10\%$ at 25 °C Sampling Frequency: 20 kHz (default) Record Length: 8192 points (default) Sample Duration: 0.4 s (default)
<b>Temperature Sensor</b>	Measuring Range: $-40$ to $+105$ °C ( $-40$ to $+221$ °F)
<b>900 MHz Compliance</b>	FCC ID UE3RM1809: FCC Part 15, Subpart C, 15.247 IC: 7044A-RM1809 IFT: RCPBARM13-2283
<b>Certifications</b>	

## Support Literature

205704	Sure Cross® Wireless Q45VA All-in-One Vibration and Temperature Node Data sheet
208986	Q45VA Sensor Mounting Options Quick Start Guide



# Additional Sensor Nodes to Expand your StarterKit

Add additional devices for up to 10 sensor nodes per gateway that monitor tank level, ambient temperature and humidity, the health of rotating machines and pressurized conditions.



Banner Engineering has hundreds of sensor solutions to meet your needs. Please visit [BannerEngineering.com](http://BannerEngineering.com) to discover the right solution for your specialized applications.

## All-in-One Ultrasonic Sensor Node



Models	Radio Frequency	Ultrasonic input Range and Frequency	Inputs
DX80N9Q45UAA	900 MHz ISM Band	Range: 100 mm to 1 m (3.94 in to 39.4 in) Frequency: 240 kHz	Inputs: One Ultrasonic Input, One Thermistor Input
DX80N9Q45UAC	900 MHz ISM Band	Range: 300 mm to 3 m (11.8 in to 118 in) Frequency: 114 kHz	

## All-in-One Pressure Sensor Node



Models	Radio Frequency	Pressure Range	Inputs
DX80N9Q45PS50G	900 MHz ISM Band	0 to 50 PSIG (3.4 bar)	Integrated pressure sensor
DX80N9Q45PS150G	900 MHz ISM Band	0 to 150 PSIG (10 bar)	
DX80N9Q45PS500S	900 MHz ISM Band	0 to 500 PSIG (34 bar)	

## All-in-One Temperature and Humidity Sensor Node



Models	Radio Frequency	Measurement Range	Inputs
DX80N9Q45THA	900 MHz ISM Band	-40 to +85 °C (-40 to +185 °F) 0 to 100% Relative Humidity	Temperature and relative humidity (%)

## All-in-One Temperature Probe Sensor Node



Models	Radio Frequency	Measurement Range	Inputs
DX80N9Q45TA	900 MHz ISM Band	-20 to +105 °C (-4 to +221 °F)	Temperature

## All-in-One Vibration Sensor Node



Models	Radio Frequency	Inputs & Outputs
DX80N9Q45VA-BK	900 MHz ISM Band	Vibration and temperature detection

(BWA-BK-009 and BWA-BK-010 (magnetic) Mounting Brackets included)

## Wireless Node and Compact Vibration Sensor (must be purchased together)



Models	Communication	Radio Frequency	Inputs & Outputs
DX80N9Q45VTP	ISM Radio Band	900 MHz	Vibration and temperature detection
QM30VT1	1-Wire Serial	-	