



# SmartSolutions™ Expansion Kit

## Condition Monitoring and Preventative Maintenance



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

- Sensors with proven wireless connectivity and seamless communication to Cloud Data Services
- Configurable dashboards with default alarms assist in data-driven decisions and solutions
- Out-of-box ready to acquire data in 30 minutes or less
- Mix and Match sensor types to customize the system for your application

### The turn-key, essential solution to scale predictive maintenance initiatives

This kit provides the basic platform needed to implement a comprehensive monitoring system for your industrial applications. Easily deploy IIOT solutions for monitoring the health of rotating machines, material levels, pressurized systems, and many other aspects of your operation with one system and a few short minutes for setup and installation. Unlock insights into your processes with the Banner Cloud Data Services platform and industrial grade products. Create Dashboards and Alerts that help automate the maintenance checks inside your facility.

### Kit includes:

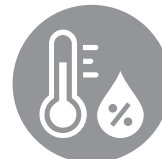


Wireless Gateway



Prepaid Banner Cloud Data Services

### Sold Separately:



Banner Wireless Sensors

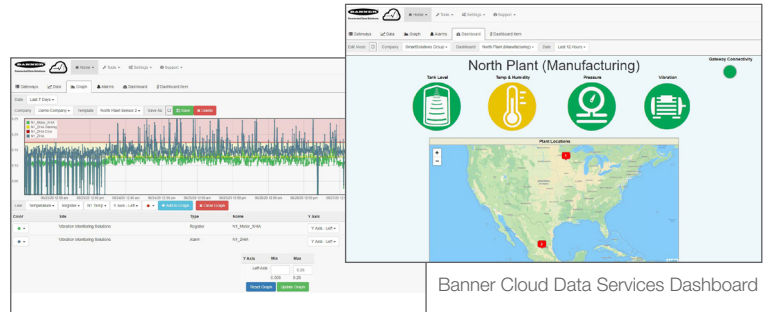
# SmartSolutions™ Expansion Kit Series

## Scale Your IIoT System with Banner

### Kit Features:

- Connect a total of 40 sensor nodes for your specific application needs
- Preconfigured gateway provides time-saving Direct-to-Cloud functionality
- Wireless Gateway options rated for indoor and outdoor (IP67) applications
- Proven secure and reliable communications between sensors and the gateway
- 900 MHz ISM Radio for up to 50 times larger range than Bluetooth
- On-board display for wireless sensor network commissioning

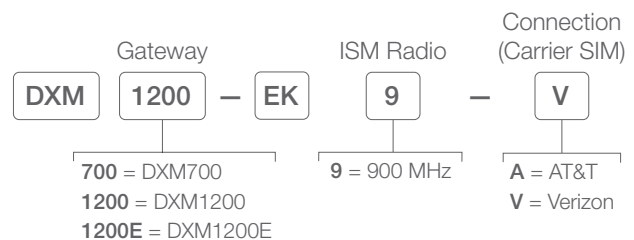
### Acquire insights with one Direct-to-Cloud Solution



Banner Cloud Data Services Dashboard

### The SmartSolutions™ Expansion Kit 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™ Expansion Kit Series provides the nexus of technologies needed to evaluate and scale the Industrial Internet of Things (IIoT) within an enterprise.



"This helped us scale our preventative maintenance program quickly! We captured the ROI within days of implementation."

Bruce G. - Plant Manager

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

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

### Wireless Gateways



### All-in-One Sensor Nodes



# DXM1200E Expansion Kit

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 nodes to the wireless network and the device arrives preconfigured for ethernet communication to Banner Cloud Data Services.

- ISM local radio network in 900 MHz frequency band
- Equipped with IP67-rated housing for use in challenging environments
- 24 V DC Power Supply included within SmartSolutions™ Expansion Kit
- Embedded cellular device provides optional connection to Verizon or AT&T carriers
- Internal cellular antenna ensures reliable data transmission in all conditions
- External ISM radio antenna for increased reception or extension
- Use default Ethernet connection or enable Cellular Data Services in minutes



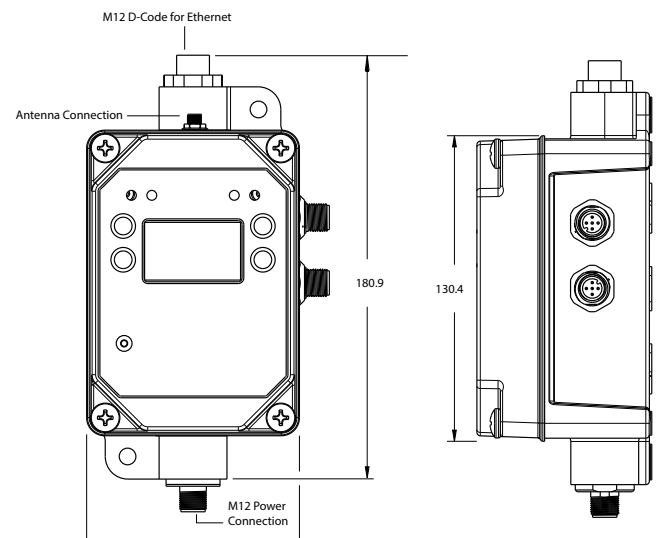
Models	Description
DXM1200E-EK9-V	ISM 900 MHz Radio; preconfigured device detection and ethernet communication; Verizon cellular module & SIM included
DXM1200E-EK9-A	ISM 900 MHz Radio; preconfigured device detection and ethernet communication; AT&T cellular module & SIM included

## Specifications

Supply Voltage	12 to 30 V DC (use only with a suitable Class 2 power supply (UL) or a Limited Power Source (LPS) (CE) power supply)
Construction	Polycarbonate
Environmental Rating	IEC IP67
Operating Conditions	-20 to +60 °C (-4 to +140 °F)
Security Protocol	TLS, SSL, HTTPS
Push to Cloud Rate	Once every 5 minutes (ethernet connection) [default] Once every 10 minutes (cellular connection)
900 MHz Compliance	FCC ID UE3RM1809: FCC Part 15, Subpart C, 15.247 IC: 7044A-RM1809 IFT: RCPBARM13-2283
Certifications	

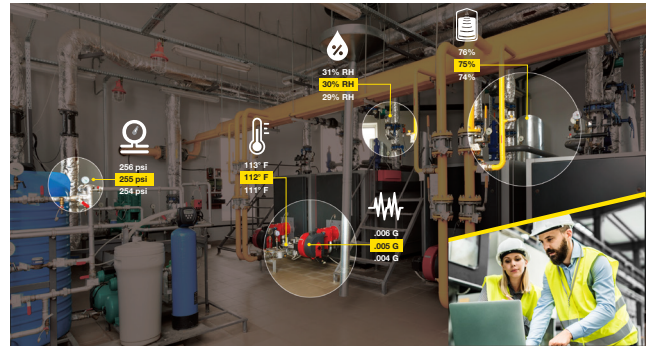
## Support Literature

216539	Sure Cross® DXM1200-Bx Wireless Controller Instruction Manual
196719	Sure Cross® DXM1200-Bx Wireless Controller Datasheet



# Sensor Nodes to Customize your Expansion Kit

Use the simple binding process to join up to 40 sensor nodes per Gateway that monitor tank level, ambient temperature and humidity, the health of rotating machines and pressurized systems.



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 Vibration Sensor Node

Models	Radio Frequency	Inputs & Outputs
<b>DX80N9Q45VA-BK</b>	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
<b>DX80N9Q45VTP</b>	ISM Radio Band	900 MHz	Vibration and temperature detection
<b>QM30VT1</b>	1-Wire Serial	—	



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

Models	Radio Frequency	Measurement Range	Inputs
<b>DX80N9Q45THA</b>	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
<b>DX80N9Q45TA</b>	900 MHz ISM Band	-20 to +105 °C (-4 to +221 °F)	Temperature



## All-in-One Dual Temperature Probe Sensor Node

Models	Radio Frequency	Measurement Range	Inputs
<b>DX80N9Q45DT</b>	900 MHz ISM Band	-20 to +105 °C (-4 to +221 °F)	Temperature



# Sensor Nodes to Customize your Expansion Kit (continued)



## 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 Differential Pressure Sensor Node

Models	Radio Frequency	Pressure Range	Inputs
DX80N9Q45DPS	900 MHz ISM Band	±2 inches of water column (±0.5 kPa)	Low pressure differential sensor



## All-in-One Current Sensor Node

Models	Radio Frequency	Measurement Range	Inputs
DX80N9Q45CT	900 MHz ISM Band	0-20 Amps or 0-150 Amps	Amperage (Two Current Transformers Included)



# SmartSolutions™ Expansion Kit

## Condition Monitoring and Preventative Maintenance



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

- Sensors with proven wireless connectivity and seamless communication to Cloud Data Services
- Configurable dashboards with default alarms assist in data-driven decisions and solutions
- Out-of-box ready to acquire data in 30 minutes or less
- Mix and Match sensor types to customize the system for your application

### The turn-key, essential solution to scale predictive maintenance initiatives

This kit provides the basic platform needed to implement a comprehensive monitoring system for your industrial applications. Easily deploy IIOT solutions for monitoring the health of rotating machines, material levels, pressurized systems, and many other aspects of your operation with one system and a few short minutes for setup and installation. Unlock insights into your processes with the Banner Cloud Data Services platform and industrial grade products. Create Dashboards and Alerts that help automate the maintenance checks inside your facility.

### Kit includes:



Wireless Gateway



Prepaid Banner Cloud Data Services

### Sold Separately:



Banner Wireless Sensors

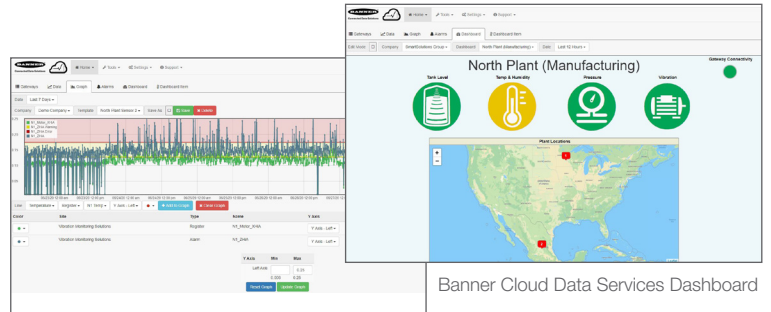
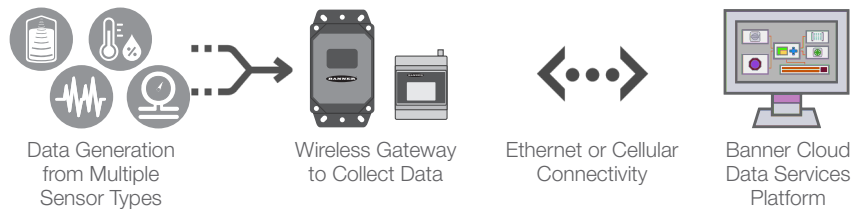
# SmartSolutions™ Expansion Kit Series

## Scale Your IIoT System with Banner

### Kit Features:

- Connect a total of 40 sensor nodes for your specific application needs
- Preconfigured gateway provides time-saving Direct-to-Cloud functionality
- Wireless Gateway options rated for indoor and outdoor (IP67) applications
- Proven secure and reliable communications between sensors and the gateway
- 900 MHz ISM Radio for up to 50 times larger range than Bluetooth
- On-board display for wireless sensor network commissioning

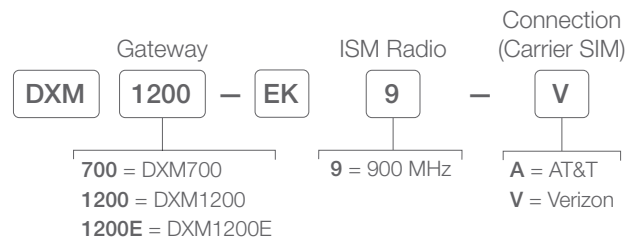
### Acquire insights with one Direct-to-Cloud Solution



Banner Cloud Data Services Dashboard

### The SmartSolutions™ Expansion Kit 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™ Expansion Kit Series provides the nexus of technologies needed to evaluate and scale the Industrial Internet of Things (IIoT) within an enterprise.



"This helped us scale our preventative maintenance program quickly! We captured the ROI within days of implementation."

Bruce G. - Plant Manager

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

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

### Wireless Gateways



### All-in-One Sensor Nodes



# DXM1200 Expansion Kit

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 nodes to the wireless network and the device arrives preconfigured for ethernet communication to Banner Cloud Data Services.

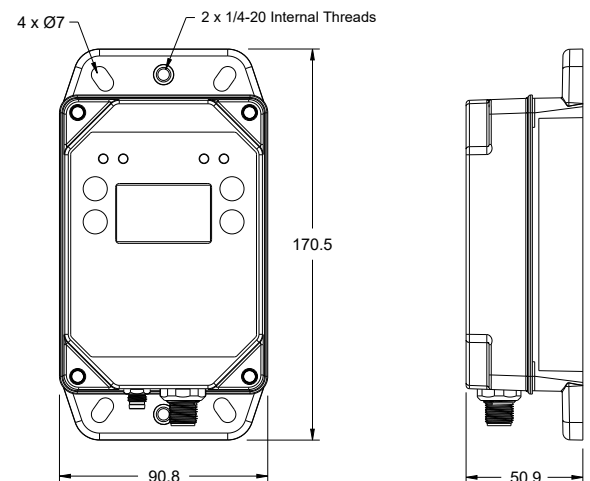
- ISM local radio network in 900 MHz frequency band
- Equipped with IP67-rated housing for use in challenging environments
- 24 V DC Power Supply included within SmartSolutions™ Expansion Kit
- Embedded cellular device provides optional connection to Verizon or AT&T carriers
- Internal radio and cellular antennas ensure reliable data transmission in all conditions
- Use default Ethernet connection or enable Cellular Data Services in minutes



Models	Description
DXM1200-EK9-V	ISM 900 MHz Radio; preconfigured device detection and ethernet communication; Verizon cellular module & SIM included
DXM1200-EK9-A	ISM 900 MHz Radio; preconfigured device detection and ethernet communication; AT&T cellular module & SIM included

Specifications	
Supply Voltage	12 to 30 V DC (use only with a suitable Class 2 power supply (UL) or a Limited Power Source (LPS) (CE) power supply)
Construction	Polycarbonate
Environmental Rating	IEC IP67
Operating Conditions	-20 to +60 °C (-4 to +140 °F)
Security Protocol	TLS, SSL, HTTPS
Push to Cloud Rate	Once every 5 minutes (ethernet connection) [default] Once every 10 minutes (cellular connection)
900 MHz Compliance	FCC ID UE3RM1809: FCC Part 15, Subpart C, 15.247 IC: 7044A-RM1809 IFT: RCPBARM13-2283
Certifications	

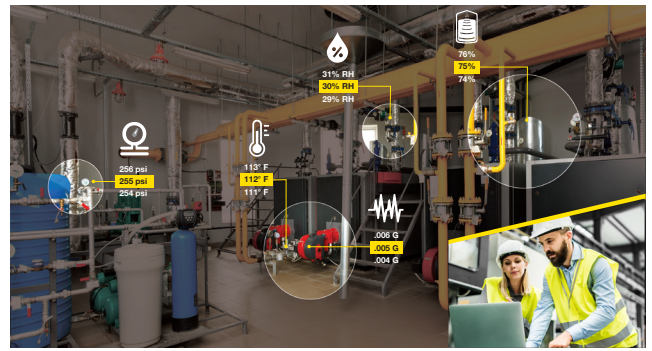
Support Literature	
216539	Sure Cross® DXM1200-Bx Wireless Controller Instruction Manual
196719	Sure Cross® DXM1200-Bx Wireless Controller Datasheet





# Sensor Nodes to Customize your Expansion Kit

Use the simple binding process to join up to 40 sensor nodes per Gateway that monitor tank level, ambient temperature and humidity, the health of rotating machines and pressurized systems.



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 Vibration Sensor Node

Models	Radio Frequency	Inputs & Outputs
<b>DX80N9Q45VA-BK</b>	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
<b>DX80N9Q45VTP</b>	ISM Radio Band	900 MHz	Vibration and temperature detection
<b>QM30VT1</b>	1-Wire Serial	—	



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

Models	Radio Frequency	Measurement Range	Inputs
<b>DX80N9Q45THA</b>	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
<b>DX80N9Q45TA</b>	900 MHz ISM Band	-20 to +105 °C (-4 to +221 °F)	Temperature



## All-in-One Dual Temperature Probe Sensor Node

Models	Radio Frequency	Measurement Range	Inputs
<b>DX80N9Q45DT</b>	900 MHz ISM Band	-20 to +105 °C (-4 to +221 °F)	Temperature

# Sensor Nodes to Customize your Expansion Kit (continued)



## 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 Differential Pressure Sensor Node

Models	Radio Frequency	Pressure Range	Inputs
DX80N9Q45DPS	900 MHz ISM Band	±2 inches of water column (±0.5 kPa)	Low pressure differential sensor



## All-in-One Current Sensor Node

Models	Radio Frequency	Measurement Range	Inputs
DX80N9Q45CT	900 MHz ISM Band	0-20 Amps or 0-150 Amps	Amperage (Two Current Transformers Included)



# SmartSolutions™ Expansion Kit

## Condition Monitoring and Preventative Maintenance



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

- Sensors with proven wireless connectivity and seamless communication to Cloud Data Services
- Configurable dashboards with default alarms assist in data-driven decisions and solutions
- Out-of-box ready to acquire data in 30 minutes or less
- Mix and Match sensor types to customize the system for your application

### The turn-key, essential solution to scale predictive maintenance initiatives

This kit provides the basic platform needed to implement a comprehensive monitoring system for your industrial applications. Easily deploy IIOT solutions for monitoring the health of rotating machines, material levels, pressurized systems, and many other aspects of your operation with one system and a few short minutes for setup and installation. Unlock insights into your processes with the Banner Cloud Data Services platform and industrial grade products. Create Dashboards and Alerts that help automate the maintenance checks inside your facility.

### Kit includes:

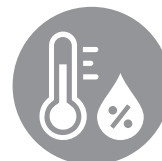


Wireless Gateway



Prepaid Banner Cloud Data Services

### Sold Separately:



Banner Wireless Sensors

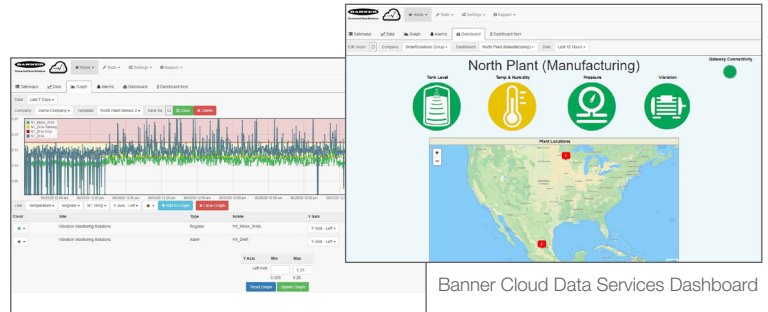
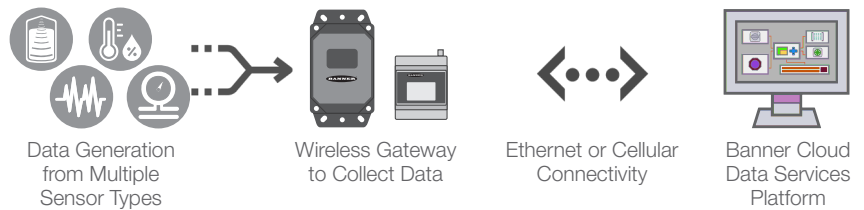
# SmartSolutions™ Expansion Kit Series

## Scale Your IIoT System with Banner

### Kit Features:

- Connect a total of 40 sensor nodes for your specific application needs
- Preconfigured gateway provides time-saving Direct-to-Cloud functionality
- Wireless Gateway options rated for indoor and outdoor (IP67) applications
- Proven secure and reliable communications between sensors and the gateway
- 900 MHz ISM Radio for up to 50 times larger range than Bluetooth
- On-board display for wireless sensor network commissioning

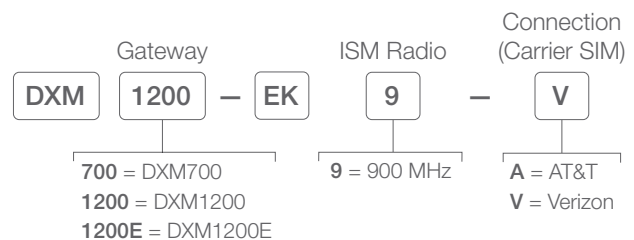
### Acquire insights with one Direct-to-Cloud Solution



Banner Cloud Data Services Dashboard

### The SmartSolutions™ Expansion Kit 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™ Expansion Kit Series provides the nexus of technologies needed to evaluate and scale the Industrial Internet of Things (IIoT) within an enterprise.



"This helped us scale our preventative maintenance program quickly! We captured the ROI within days of implementation."

Bruce G. - Plant Manager

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

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

### Wireless Gateways



### All-in-One Sensor Nodes







# DXM700 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 with the industrial environment. The intuitive on-board display is used to bind the nodes to the wireless network and the device arrives preconfigured for ethernet communication to Banner Cloud Data Services.

- ISM local radio network in 900 MHz frequency band
- DIN-rail mounting for use in factory floor and enclosure environments
- DC Power Supply included within SmartSolutions™ Expansion Kit
- Embedded cellular device provides optional connection to Verizon or AT&T carriers
- External radio and cellular antennas for increased reception or extension
- Use default Ethernet connection or enable Cellular Data Services in minutes

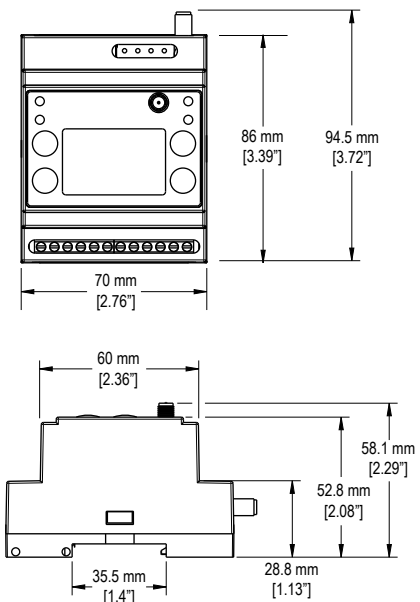


Models	Description
DXM700-EK9-V	ISM 900 MHz Radio; preconfigured device detection and ethernet communication; Verizon cellular module & SIM included
DXM700-EK9-A	ISM 900 MHz Radio; preconfigured device detection and ethernet communication; AT&T cellular module & SIM included

Specifications	
Supply Voltage	12 to 30 V DC (use only with a suitable Class 2 power supply (UL) or a Limited Power Source (LPS) (CE) power supply)
Construction	Polycarbonate; DIN rail mount option
Environmental Rating	IEC IP20
Operating Conditions	-20 to +60 °C (-4 to +140 °F)
Security Protocol	VPN, SSL, HTTPS
Push to Cloud Rate	Once every 5 minutes (ethernet connection) [default] Once every 10 minutes (cellular connection)
900 MHz Compliance	FCC ID UE3RM1809: FCC Part 15, Subpart C, 15.247 IC: 7044A-RM1809 IFT: RCPBARM13-2283
Certifications	 

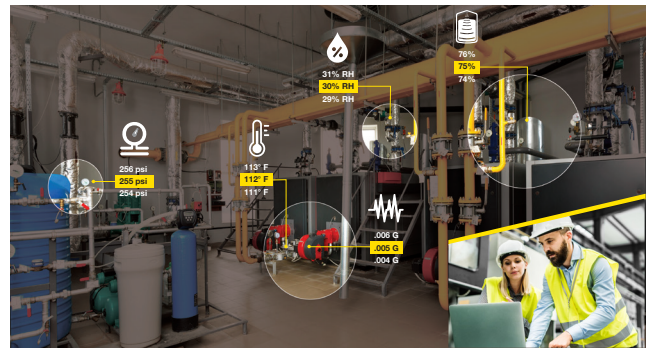
## Support Literature

207894	Sure Cross® DXM700-Bx Wireless Controller Instruction Manual
207893	Sure Cross® DXM700-Bx Wireless Controller Datasheet



# Sensor Nodes to Customize your Expansion Kit

Use the simple binding process to join up to 40 sensor nodes per Gateway that monitor tank level, ambient temperature and humidity, the health of rotating machines and pressurized systems.



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 Vibration Sensor Node

Models	Radio Frequency	Inputs & Outputs
<b>DX80N9Q45VA-BK</b>	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
<b>DX80N9Q45VTP</b>	ISM Radio Band	900 MHz	Vibration and temperature detection
<b>QM30VT1</b>	1-Wire Serial	—	



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

Models	Radio Frequency	Measurement Range	Inputs
<b>DX80N9Q45THA</b>	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
<b>DX80N9Q45TA</b>	900 MHz ISM Band	-20 to +105 °C (-4 to +221 °F)	Temperature



## All-in-One Dual Temperature Probe Sensor Node

Models	Radio Frequency	Measurement Range	Inputs
<b>DX80N9Q45DT</b>	900 MHz ISM Band	-20 to +105 °C (-4 to +221 °F)	Temperature

# Sensor Nodes to Customize your Expansion Kit (continued)



## 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 Differential Pressure Sensor Node

Models	Radio Frequency	Pressure Range	Inputs
DX80N9Q45DPS	900 MHz ISM Band	±2 inches of water column (±0.5 kPa)	Low pressure differential sensor



## All-in-One Current Sensor Node

Models	Radio Frequency	Measurement Range	Inputs
DX80N9Q45CT	900 MHz ISM Band	0-20 Amps or 0-150 Amps	Amperage (Two Current Transformers Included)