Product Data Sheet
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Rosemount™ Synchros™ Wireless Repeater



- Enabling seamless expansion of *Wireless*HART® networks at minimal cost, this repeater helps eliminate communication barriers and accelerate deployment in dynamic or remote plant areas.
- Extend network coverage and enhance communication reliability in industrial environments.
- Mounting flexibility and hazardous approvals to meet application requirements.
- Emerson Synchros™ Power Module is replaceable in hazardous environments.

Emerson Synchros™ IIoT Platform

Introduction to Synchros

- Emerson Synchros is an Industrial Internet-of-Things (IIoT) platform that revolutionizes asset and condition monitoring.
- Synchros provides industrial operators with increased accessiblity to measurement points, seamless wireless connectivity starting with *Wireless*HART®, various sensor options, and robust data integration.
- The user-centric platform design ensures easy installation and operation while enabling proactive maintenance, minimizing downtime, and improving operational efficiency.

IEC 62591 (*Wireless*HART®), the industry standard

Self-organizing, adaptive mesh routing

- No wireless expertise required; network automatically establishes the best communication paths.
- The self-organizing, self-healing network manages multiple communication paths for any given device. If an obstruction is introduced into the network, then data will continue to flow because the device already has other established paths. The network will then lay in more communication paths as needed for that device.

Reliable wireless architecture

- Standard Institute of Electrical and Electronics Engineers (IEEE) 802.15.4 radios.
- 2.4 GHz Industrial, Scientific, and Medical (ISM) band sliced into 15 radio channels.
- Time-synchronized channel hopping for increased reliablility and avoidance of interference from other radios, Wi-Fi®, and electromagnetic compatiblity (EMC) sources.
- Direct sequence spread spectrum (DSSS) technology delivers high reliablity in challenging radio environments.

Emerson's wireless devices

Seamless integration via local area networks (LANs) or serial communications to other existing host systems

- Native integration into Ovation™ and DeltaV™[1] is transparent and seamless.
- Gateways interface with existing host systems via LAN or serial communication using industry standard protocols, including OPC DA, OPC UA®, Modbus® Transmission Control Protocol/Internet Protocol (TCP/IP), Ethernet IP & HART®-IP, and Modbus remote terminal unit (RTU).

Layered security keeps your network safe

- All wireless data is 128 bit AES encrypted so your data is kept safe.
- All wireless devices are authenticated so you know exactly what is on your network.
- Complete control of your network using the gateway secure web interface.

Ordering information

Specifications and options

The purchaser of the equipment must specify and select:

- Options
- Mounting hardware and accessories

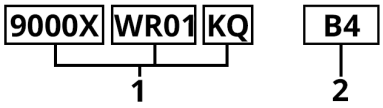
1. *DeltaV currently has limitations with the Emerson 1410S Gateway hardware. DeltaV does not support gateway redundancy and only supports a capacity of up to 100 WirelessHART® devices. Potential alternatives to bring data from 200 units to DeltaV can be performed through Modbus RTU or OPC DA.*

Model codes

Model codes contain the details related to each product.

Exact model codes will vary; an example of a typical model code is shown in Figure 1.

Figure 1: Model Code Example



1. Required model components
2. Additional options

Optimizing lead time

The starred offerings (★) represent the most common options and should be selected for the fastest delivery. The non-starred offerings are subject to additional delivery lead time.

Required model components

Model

Code	Description	
9000X	Emerson Synchros™ Platorm with *Wireless*HART® Technology	★

Sensor module

Code	Description	
WR01	Wireless Repeater	★

Product certifications

Code	Description	
KQ	USA, Canada, IECEx, ATEX; Division 1 & Zone 0 for Gas Intrinsically Safe & Division 2 & Zone 21 for Dust Intrinsically Safe	★
NA	No hazardous location approval; ordinary locations	★

Additional options

Mounting bracket

Code	Description	
B4	Universal "L" remote mounting bracket for 2-in. pipe mounting - stainless steel (SST) bracket and bolts	★

Mounting hardware

Code	Description	
MH1	Stainless steel mounting band, pipe size ½ in. to 2½ in. (quantity 2)	★
MH2	Stainless steel mounting band, pipe size 3 in. to 4 in. (quantity 2)	★
MH3	Stainless steel mounting band, pipe size 4 in. to 10 in. (quantity 2)	★

Spare parts and accessories

Code	Description
9000X-9000-0001	Synchros™ power module
9000X-9001-0001	O-ring, Synchros cover, silicone
9000X-9004-0001	Stainless steel (SST) mounting band, pipe size ½ in. to 2½ in. (quantity 2)
9000X-9004-0002	SST mounting band, pipe size 3 in. to 4 in. (quantity 2)
9000X-9004-0003	SST mounting band, pipe size 4 in. to 10 in. (quantity 2)
9000X-9006-0001	Universal "L" mounting bracket for 2-in. pipe mounting - SST bracket and bolts

Specifications

Functional specifications

Input N/A

Wireless output IEC 62591 (*Wireless*HART®) 2.4 GHz

Device output Electronics board temperature and Power Module voltage

Humidity limits 0 to 100 percent relative humidity, non-condensing

Measurement update rate User-selectable, 1 minute to 60 minutes (default 5 minutes)[2]

Transmit power Internal antenna: maximum of 10 mW (10 dBm) EIRP

Physical specifications

Material selection

Emerson provides a variety of Rosemount products with various product options and configurations, including materials of construction that can be expected to perform well in a wide range of applications.

The product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product, materials, options, and components for the particular application. Emerson is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product, options, configuration, or materials of construction selected.

2. *Update rate is for the Synchros™ Wireless Repeater device variables only. The repeater is an active participant in the WirelessHART network and routes messages at the descendant's configured update rate.*

Electrical connections

Power module

The device is powered by a field-replaceable, non-rechargeable, intrinsically safe Emerson Synchros™ power module featuring keyed connections that eliminate the risk of incorrect installation.

The Synchros power module contains a lithium-thionyl chloride battery with a polycarbonate and polybutylene terephthalate (PC/PBT) cover.

The device has a power module lifetime rating of ten years with a one-minute update rate at reference conditions.

NOTICE

Reference conditions are at 70 °F (21 °C) and routing data for three additional network devices.

Continuous exposure to ambient temperature limits below –40 or above +185 °F (below –40 or above +85 °C) may reduce specified power module life by up to 20 percent.

Field Communicator terminal connections

HART® clips permanently fixed to communication module

Materials of construction

Enclosure

Cover	Polycarbonate polybutylene terephthalate (PC/PBT), polymer
Sensor housing	Anodized aluminum per MIL-A-8625 Type II
Communication module housing	PC/PBT polymer
Paint	N/A
Cover O-ring	Silicone

Enclosure ratings

Type 4X and IP66/67

Mounting

Device can be installed onto a pipe with banding (MH1- MH3 options) or mounted to a 2-inch pipe (with option code B4).

Weight

Synchros™ device	0.91 lb. (0.41 kg)
B4 bracket	1 lb. (0.5 kg)

Performance specifications

Electromagnetic compatibility (EMC)

Meets all industrial environmental requirements of EN61326. Maximum deviation < 1 percent span during EMC disturbance.

Vibration effect

The Rosemount Synchros™ Wireless Repeater in direct mount[3] configuration is tested to the following specifications with no effect on performance per IEC 61298-3, 2008.

Test type	Test specification	Test profile	
Sinusoidal vibration	IEC 61928-3, 2008 edition	Vibration amplitude	2 g
		Frequency range (Hz)	10 to 1,000
		Displacement peak to peak amplitude (mm)	0.3
		Acceleration amplitude (m/s^2)	20

Temperature range and limits

Operating limit	Storage limit
–40 to +185 °F –40 to +85 °C	–40 to +185 °F –40 to +85 °C

3. *When using direct model optionsMH1-MH3.*

System compatibility notice

Synchros devices communicate over *Wireless*HART® networks and integrate with supported *Wireless*HART gateways. However, while communication is supported, Synchros devices are not visible within Emerson ROC800-series remote operations controllers.

Product certifications

Refer to the *Rosemount Synchros™ Wireless Repeater Quick Start Guide* for product certification information.

Dimensional drawings

Dimensions are in inches [millimeters].

Figure 2: Rosemount Synchros™ Wireless Repeater Dimensions

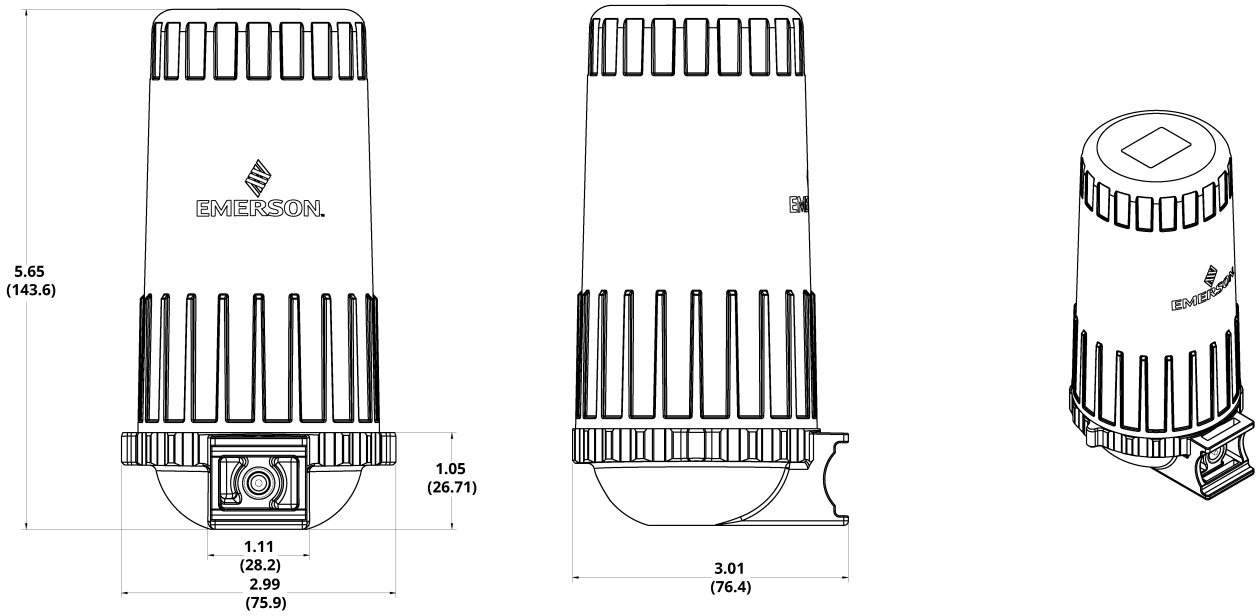


Figure 3: "L" bracket remote mounting configuration (option B4)

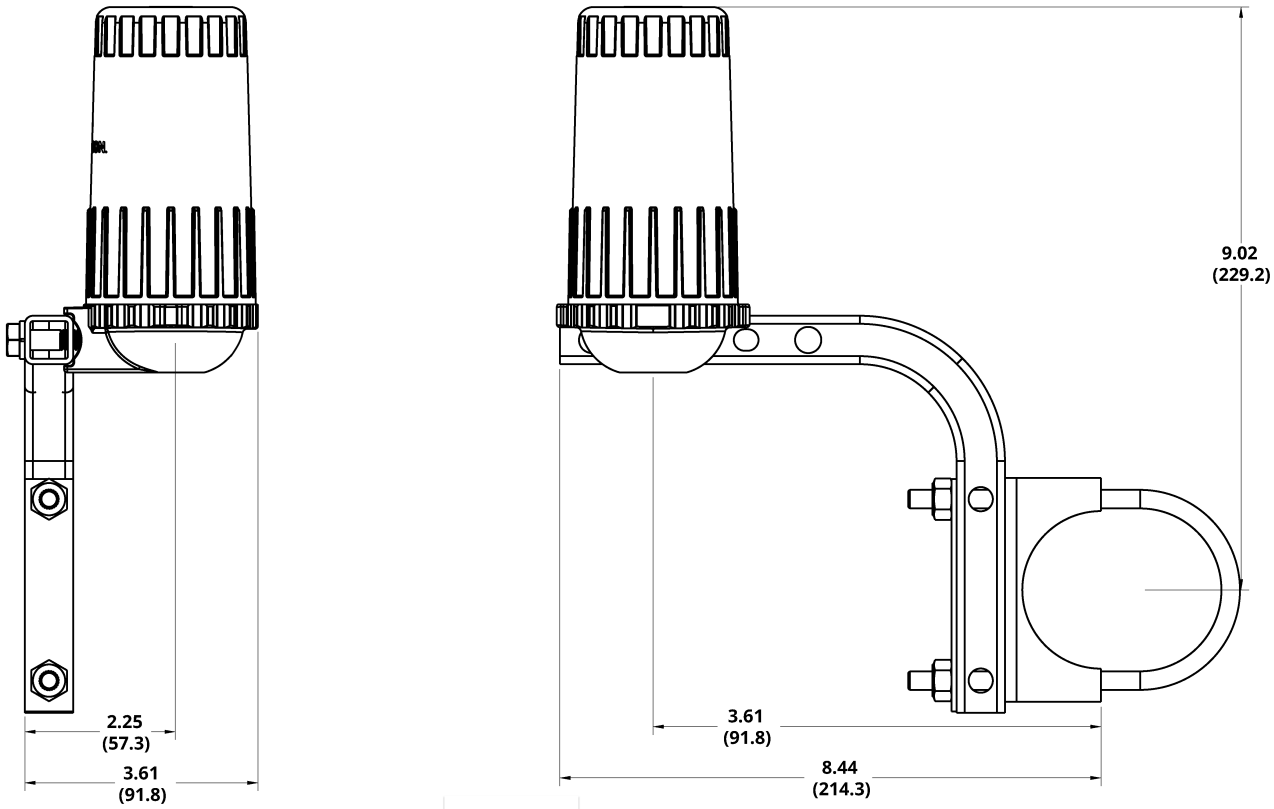
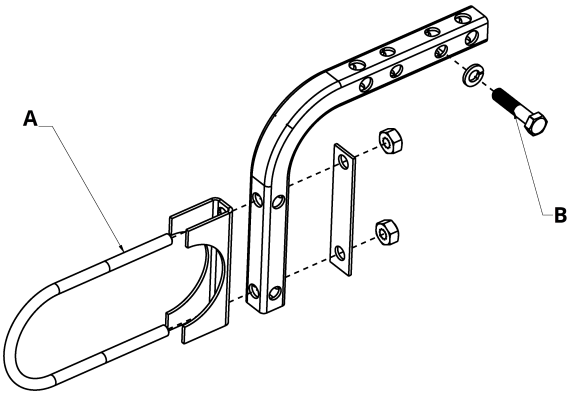


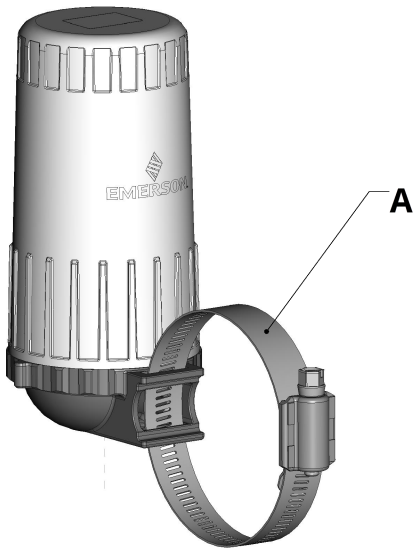
Figure 4: "L" bracket exploded view



A. 2-inch U-bolt for pipe mounting. Thread size: 5/16-18. UNC - 2A

B. 5/16-18 bolt

Figure 5: Direct Pipe Mounting Configuration (Options:MH1-MH3)



A. Use a 5/16.-in. (8 mm) socket or flat head screwdriver.

For more information: Emerson.com

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