Rosemount™ Wireless Permasense ET210 Corrosion Transmitter

- Gain visibility to health of critical piping with a non-intrusive, easy to install corrosion monitoring system
- Increase uptime by proactive maintenance on corroding piping, pairing with Data Manager for long term tracking and actionable alerts
- Backed by proven experience in wireless field instrumentation and expert technical support from Emerson
Emerson's Wireless solution

IEC 62591 (WirelessHART®) ... the industry standard

Self-organizing, adaptive mesh routing

- Backed by Emerson’s proven experience in Wireless field instrumentation and expert technical support.
- The self-organizing, self-healing network manages multiple communication paths for any given device. If an obstruction is introduced into the network, data will continue to flow because the device has other established paths.

Reliable wireless architecture

- Standard IEEE 802.15.4 radios
- 2.4 GHz ISM band sliced into 15 radio-channels
- Time Synchronized Channel Hopping
- Direct sequence spread spectrum (DSSS) technology delivers high reliability in challenging radio environment

Emerson’s Wireless

- Seamless integration to all existing host systems
- Native integration into DeltaV™ and Ovation™ is transparent and seamless
- Gateways interface with existing host systems using industry standard protocols including OPC, Modbus® TCP/IP, Modbus RTU, and EtherNet/IP™

Layered security keeps your network safe

- Ensures data transmissions are received only by the wireless Gateway.
- Network devices implement industry standard Encryption, Authentication, Verification, Anti-Jamming, and Key Management.
- Third party security verification including Achilles and FIPS197, with password strength monitoring, user-based log in, password reset requirements, automatic lockout, password expiration requirements.

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Rosemount Wireless Permasense ET210 Corrosion Transmitter

Corrosion and erosion monitoring
- Reliably detects thinning wall thickness in piping through external coatings using an ultrasonic sensor.
- May be used on metal with continuous service temperatures up to 248 °F (120 °C).

Reliable data in challenging environments
- Data Manager application provides long term pipe thickness status and trending, allowing for proactive maintenance with actionable alerts based on pipe condition.
- Built-in thermocouple monitors pipe surface temperature and allows compensation in the thickness measurement for the most reliable measurement, even in high temperature environments.

Mounting flexibility
- Directly mount to process piping without cutting pipes or changing pipe configurations - allowing for a flexible installation.
- Magnetic design with a stabilization strap means deployment is safe and easy in challenging locations.

Reliable transmitter performance
- Rugged and robust design of the transmitter ensures reliable performance in harsh environments.
- WirelessHART® creates a self-forming and self-managing wireless mesh, delivering continuous wall thickness measurements of the highest integrity and accuracy.
Ordering information

Table 1: Rosemount Wireless Permasense ET210 Corrosion Transmitter Ordering Information

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

<table>
<thead>
<tr>
<th>Model</th>
<th>Product description</th>
<th>★</th>
</tr>
</thead>
<tbody>
<tr>
<td>ET210</td>
<td>Rosemount Wireless Permasense Corrosion Transmitter</td>
<td>★</td>
</tr>
</tbody>
</table>

**Transmitter output**

| X | Wireless | ★ |

**Measurement type**

| 1 | Insight | ★ |

**Product certifications**

| NA | No approval | ★ |
| I1 | ATEX Intrinsic Safety | ★ |
| I5 | USA Intrinsically Safe | ★ |
| I6 | Canada Intrinsically Safe | ★ |
| I7 | IECEx Intrinsic Safety | ★ |

**Wireless update rate, operating frequency and protocol**

| WA3 | User configurable update rate, 2.4 GHz, WirelessHART® | ★ |

**Omni-directional wireless antenna and SmartPower™ solutions**

| WP6 | Internal antenna, compatible with Corrosion Power Module (Standard Power Module included) | ★ |

**Typical model number:** ET210 X 1 NA WA3 WP6

Table 2: Spare Parts and Accessories

<table>
<thead>
<tr>
<th>Part number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BP20E-5100-0001</td>
<td>BP20E Power Module, SGSus-c</td>
</tr>
<tr>
<td>BP20E-5100-0002</td>
<td>BP20E Power Module, ATEX, IECEx</td>
</tr>
<tr>
<td>BP20E-5100-0003</td>
<td>BP20E Power Module, EAC EX</td>
</tr>
<tr>
<td>BP20E-5100-0004</td>
<td>BP20E Power Module, Japan</td>
</tr>
<tr>
<td>IK220-2000-0101</td>
<td>Commissioning kit (SGSus-c)</td>
</tr>
<tr>
<td>IK220-2000-0102</td>
<td>Commissioning kit (ATEX, IECEx, IA)</td>
</tr>
<tr>
<td>IK220-2000-0103</td>
<td>Commissioning kit (EAC)</td>
</tr>
<tr>
<td>IK220-2000-0104</td>
<td>Commissioning kit (CML)</td>
</tr>
<tr>
<td>PERMA-2004-0002</td>
<td>Smart Band, .75 in. (19 mm); 39.37 in. (1 m)</td>
</tr>
<tr>
<td>PERMA-2003-0001</td>
<td>Smart Band buckle, .75 in. (19 mm), ea</td>
</tr>
</tbody>
</table>
 Specifications

**Functional specifications**

**Output**
IEC 62591 (WirelessHART) 2.4 GHz

**Humidity limits**
0-100 percent relative humidity

**Transmit rate**
Every 12 hours by default

**Radio frequency power output from antenna**
Internal (WP option) antenna: Less than 10 mW (10 dBm) EIRP

**Accuracy**

- **Thickness** (1)
  - Reference Accuracy: ±0.3mm
  - Reference Repeatability: ±0.1mm

**Surface temperature**

- Accuracy: 18 °F (10 °C)
- Repeatability: within 4 °F (2 °C)

**Physical specifications**

**Application requirements**

Pipe diameter: minimum 4 in. (100 mm)

- **Wall thickness:**
  - Minimum (1) 0.16 in. (4 mm)
  - Maximum (2) 3.94 in. (100 mm)

- **Compatible pipe materials:**
  - Carbon steel
  - Duplex Stainless Steel
  - Super Duplex Stainless Steel

- **External coating thickness:**
  - Maximum .040 in. (1 mm)

- **Compatible external coating materials:**
  - Common coatings, including zinc coatings, etc.
  - Consult factory for special coating compatibility

(1) Where the inner surface of the measured pipe/vessel wall is non-uniform or rough, the minimum measurable metal thickness is ¼ in. (6 mm).

(2) For wall thickness greater than 2 in. (50 mm), parameter adjustment at installation is required.

**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 Rosemount 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

(1) Reference accuracy is stated across the range of measurable wall thicknesses on calibrated test blocks with ultrasonic velocity within 2% actual velocity, measured at 68 °F (20 °C). Meeting reference thickness accuracy across the operating temperature range requires velocity is known across the temperature range to within 2%.
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.

**Electrical connections/power module**
- Replaceable, non-rechargeable, Intrinsically Safe lithium-thionyl chloride power module
- Nine-year power module life at reference conditions with BP20E module\(^{(2)}\)

**Field Communicator connections**
Commission the ET210 using CC21 with BP20E not installed

**Materials of construction**
- Housing [PBT/PC]
- Power module housing [PBT/PC]

**Sensor type**
- Single electro-magnetic acoustic transducer (no couplant required)

**Mounting**
Transmitters are directly attached to process piping a magnetic foot. A 3-ft. (.91-m) strap is included to secure the sensor to the pipe.
Alternate methods include mounting the transmitter using pipe clamps up to 570 °F (300 °C)

**Weight**
- Rosemount ET210 with BP20E power module: 1.8 lb. (805 g)
- Rosemount ET210 without power module: 1 lb. (450 g)

**Enclosure ratings**
- IP67\(^{(3)}\)

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**Performance specifications**

**Temperature limits**
- Ambient limit: –40 to 185 °F (–40 to 75 °C)
- Storage limit: –58 to 185 °F (–50 to 75 °C)
- Application continuous temperature: up to 248 °F (up to 120 °C)

**Electro Magnetic Compatibility (EMC)**
Meets all relevant requirements of EN 61326-1: 2013

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**Wireless output specifications**

**Range**
Up to 160 ft. (50 m) line of sight

\(^{(2)}\) Reference conditions are 68 °F (20 °C), transmit rate of 12 hours, and routing data for three additional network devices.
\(^{(3)}\) When mated to the power module.
Product certifications

European Directive Information

A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at Emerson.com/Rosemount.

Telecommunications Compliance

All wireless devices require certification to ensure they adhere to regulations regarding the use of the RF spectrum. Nearly every country requires this type of product certification. Emerson is working with governmental agencies around the world to supply fully compliant products and remove the risk of violating country directives or laws governing wireless device usage.

FCC and IC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: This device may not cause harmful interference. This device must accept any interference received, including interference that may cause undesired operation. This device must be installed to ensure a minimum antenna separation distance of 7.87 in. (20 cm) from all persons.

Ordinary Location Certification

As standard, the Power Module has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by a nationally recognized test laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

North America

The US National Electrical Code® (NEC) and the Canadian Electrical Code (CEC) permit the use of Division marked equipment in Zones and Zone marked equipment in Divisions. The markings must be suitable for the area classification, gas, and temperature class. This information is clearly defined in the respective codes.

USA

Certificate: SGSNA/17/SUW/00281
Markings: CLASS I, DIV 1, GP ABCD, T4, Tamb = -50 °C to +75 °C, IP67
Canada

Certificate: SGSNA/17/SUW/00281
Standards: CAN/CSA C22.2 No. 157-92 (R2012) +UPD1 +UPD2
Markings: CLASS I, DIV 1, GP ABCD, T4, Tamb = -50 °C to +75 °C, IP67

Europe

Certificate: Baseefa15ATEX0146X
Standards: EN IEC 60079-0:2018
EN 60079-11: 2012
Markings: Ex I 1 G, Ex ia IIC T4 Ga, Tamb = -50 °C to +75 °C, IP67

Specific Conditions for Safe Use (X):
1. The plastic mounting foot and enclosure may present a potential electrostatic ignition hazard and must not be rubbed or cleaned with a dry cloth.
2. When fitted with the appropriate high-temperature mounting foot, the equipment may be attached to process pipework at a temperature of up to 120 °C.

International

Certificate: IECEx BAS 15.0098X
Markings: Ex ia IIC T4 Ga, Tamb = -50 °C to +75 °C, IP67

Specific Conditions for Safe Use (X):
1. The plastic mounting foot and enclosure may present a potential electrostatic ignition hazard and must not be rubbed or cleaned with a dry cloth.
2. When fitted with the appropriate high-temperature mounting foot, the equipment may be attached to process pipework at a temperature of up to 120 °C.
Dimensional drawing

Dimensions are in inches (millimeters).