Rosemount™ Wireless ET310C Corrosion Transmitter

with Rosemount Permasense™ technology

The Rosemount ET310C Wireless Corrosion Transmitter provides direct measurement of wall thickness, the most accurate indication of asset integrity. The transmitter utilizes patented signal processing to measure any corrosion mechanism on any metal, supported by best-in-class material and temperature compensation. These features combine to offer industry-leading measurement repeatability and sensitivity in field conditions.

- Gain visibility to health of critical piping with a non-intrusive, easy to install corrosion management system

- Increase uptime by proactive maintenance on corroding piping, pairing with Plantweb Insight™ for long term tracking and actionable alerts

- Backed by proven experience in wireless field instrumentation and expert technical support from Emerson

ROSEMOUNT™

EMERSON™

Emerson wireless solution

IEC 62591 (*Wireless*HART®) ... 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, then data will continue to flow because the device has other established paths.

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

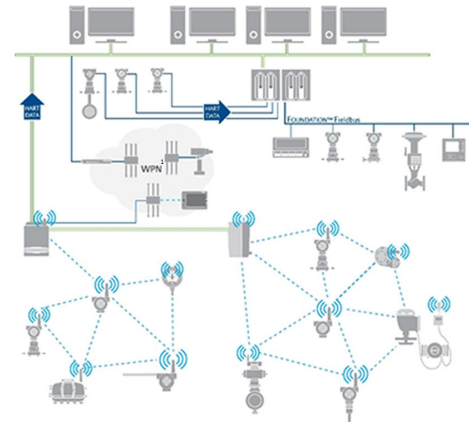- Direct Sequence Spread Spectrum (DSSS) technology delivers high reliability in challenging radio environment

Figure 1: Web plant network

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® Transmission Control Protocol/Internet Protocol (TCP/IP), Modbus Remote Terminal Unit (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 login, password reset requirements, automatic lockout, and password expiration requirements.

Rosemount ET310C Wireless Corrosion Transmitter

Fixed asset integrity monitoring
- Reliably detects thinning wall thickness in piping through an ultrasonic sensor

- May be used on metal with continuous service temperatures up to 320 °F (160 °C)

Reliable data in challenging environments
- Plantweb Insight™ software 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.

- Optimized to measure across all common pipe metallurgies.

Mounting flexibility
- Directly mount to existing 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.

- *Wireless*HART® creates a self-forming and self-managing wireless mesh, delivering continuous wall thickness measurements of the highest integrity and accuracy.

Ordering information

Specifications and options

The purchaser of the equipment must specify and select the product materials, options, or components.

Model code

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 2.

Figure 2: Model code example

$$\underline{\text{XXX}\ \ \text{X}\ \text{XXX}\ \text{X}\ \text{X}\ \text{XX}}\qquad\underline{\text{XXX}\ \ \text{XXX}\ \text{XX}}$$
$$\qquad\qquad\quad 1\qquad\qquad\qquad\qquad 2$$

1. Required model components (choices available on most)

2. Additional options (variety of features and functions that may be added to products)

Optimizing lead time

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

Required model components

Typical model number

Description
ET310 X C WA3 WP6 C01

Model

Code	Description	
ET310	Wireless Corrosion Transmitter	★

Output

Code	Description	
X	Wireless	★

Measurement type

Code	Description	
C	C version: measurement range 0.08-0.31 in. (2-8 mm)	★

Product certifications

Code	Description	
NA	No approvals	★
I1	ATEX Intrinsic Safety	★
I2	Brazil Intrinsic Safety	★
I3	China Intrinsic Safety	★
I5	USA Intrinsically Safe	★
I6	Canada Intrinsically Safe	★
I7	IECEx Intrinsic Safety	★
IM	Technical Regulations Customs Union (EAC) Intrinsic Safety	★
IP	Korea Intrinsic Safety	★
IW	India Intrinsic Safety	★

Wireless update rate, operating frequency, and protocol

Code	Description	
WA3	User configurable update rate, 2.4 GHz DSSS, IEC 62591 (*Wireless*HART® protocol)	★

Omni-directional wireless antenna and SmartPower™ solutions

Code	Description	
WP6	Internal antenna, compatible with corrosion power module (standard power module included)	★

Mounting hardware

Code	Description	
C01	Pipe strap up to 8-in. pipe diameter	★

Specifications

Functional specifications

Output

IEC 62591 (*Wireless*HART®) 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 on Omni-directional wireless antenna and SmartPower™ solutions) antenna: Maximum of 10.3 mW (10.3 dBm) Equivalent, Isotropically Radiated Power (EIRP)

Accuracy

Table 1: Thickness Measurements

Feature	Value
Measurement repeatability	0.0004 in. (10 μm)[1]
Resolution	0.00004 in. (1μm)[2]

[1]   *Repeatability is defined as the standard deviation of repeated thickness measurements at a location experiencing no metal loss and at constant temperature over the measurements.*

[2]   *Resolution is defined as the resolution of the thickness measurement stored in the software.*

Table 2: Surface Temperatures

Feature	Value
Accuracy	18 °F (10 °C)
Repeatability	Within 4 °F (2 °C)

Physical specifications

Application requirements

Pipe diameter compatibility

Minimum NPS 2, Maximum NPS 8 (8 in.)

Wall thickness

Minimum 0.08 in. (2 mm)

Maximum 0.31 in. (8 mm)

Compatible pipe materials

All metals

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 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

Commissioning

Commission the Rosemount ET310C using the CC21 commissioning communicator, with BP20E not installed.

Materials of construction

Transmitter housing: PBT/PC

Transmitter foot: PPS

Transmitter shoe: Silicone

Power module housing: PBT/PC

Retaining strap: PPS

Sensor type

Single electromagnetic acoustic transducer (no couplant required).

Mounting

Transmitters are directly attached to process piping a magnetic foot. A 3.3 ft. (1 m) strap is included to secure the sensor to the pipe.

Weight

Rosemount ET310C without BP20E power module: 1.3 lb. (0.6 kg)

Rosemount ET310C with BP20E power module: 2.1 lb. (1.0 kg)

Boxed Rosemount ET310C with all accessories: 4.8 lb. (2.2 kg)

Enclosure ratings

IP67[1]

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(1) When transmitter is mated to the power module.

Software compatibility

The device is compatible with Plantweb Insight ™ Non-Intrusive Corrosion application 1.4 and later, and Installation Tool 3 and later (included in the IK220 installation kit).

Contact your Emerson representative to upgrade from earlier software versions.

Performance specifications

Vibration effect

Tested per the requirements of IEC60770-1 field or pipeline with high vibration level (10–60 Hz 0.21 mm displacement peak amplitude/60–2000 Hz 3 g).

Temperature limits

Ambient limit for operation: –40 to 185 °F (–40 to 75 °C)

Storage limit: –58 to 185 °F (–50 to 75 °C)

Measurement location continuous temperature: 32 to 320 °F (0 to 160 °C)

Electromagnetic Compatibility (EMC)

Meets all relevant requirements of EN 61326-1:2013.

Product certification

For Rosemount Wireless ET310 Corrosion Transmitter with Rosemount Permasense™ Technology product certifications, see Rosemount Wireless ET310C Corrosion Transmitter Quick Start Guide.

Dimensional drawing

Dimensions are in inches (mm).

Note
For a BP20E power module, dimension A is 2.3 in. (58 mm) and dimension B is 5.51 in. (140.0 mm).
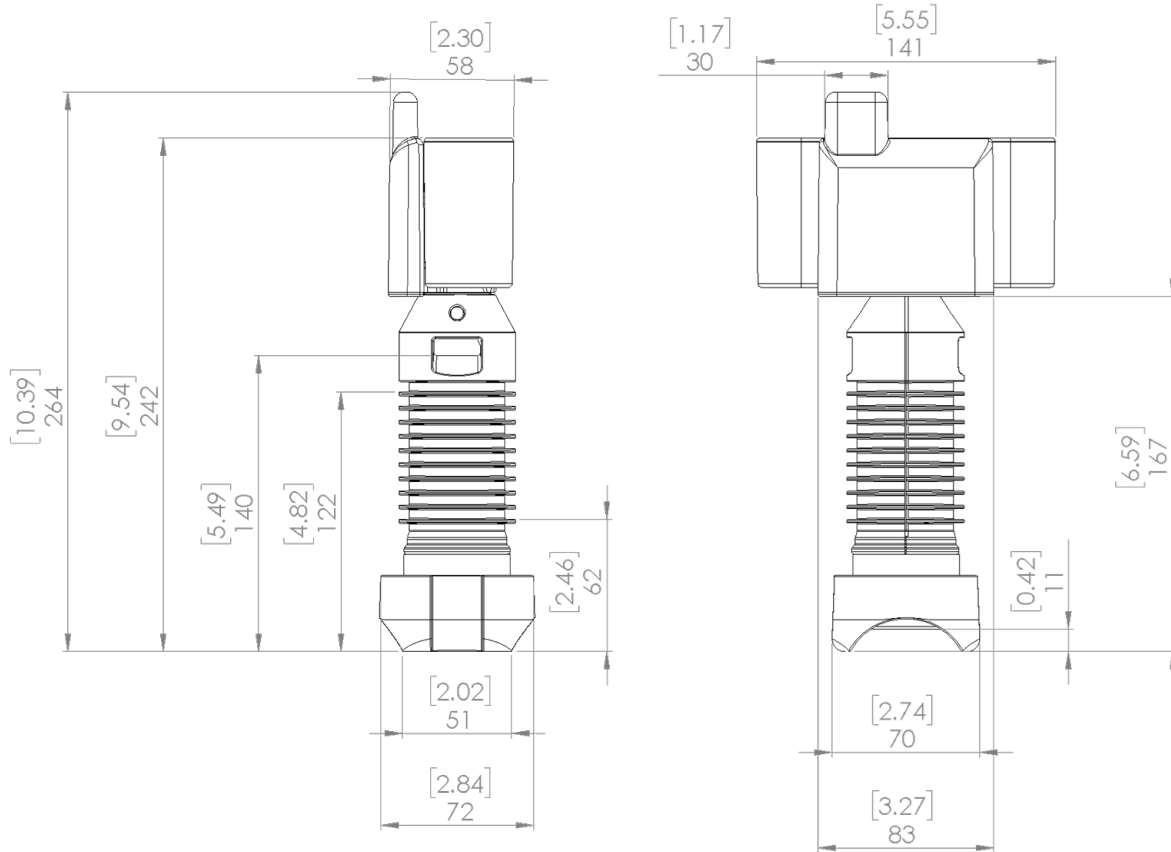
For more information: **Emerson.com/global**

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