

# Rosemount™ Wireless ET410 Corrosion and Erosion Transmitter



## Safety messages

This guide provides basic guidelines for the installation of the Rosemount™ Wireless Corrosion and Erosion Transmitter and is available electronically on [Emerson.com](https://www.emerson.com). It does not provide instructions for configuration, diagnostics, maintenance, service, troubleshooting or intrinsically safe (IS) installations. Failure to follow these installation guidelines could result in death or serious injury. Only qualified personnel should perform the installation.

### **WARNING**

#### **Explosion**

Death or serious injury

Installation of this transmitter in an explosive environment must be in accordance with the appropriate local, national, and international standards, codes, and practices. Review the *Product certifications* section of the *Quick Start Guide* for any restrictions associated with a safe installation.

Before connecting a CC21 to a transmitter, ensure the correct low voltage permits have been obtained.

The power module may be replaced in a hazardous area. Only fit Rosemount approved BP20E power modules.

### **WARNING**

#### **Magnetic hazard**

Death or serious injury

This device contains magnets which could be harmful to pacemaker wearers.

The strong magnets used in the magnetic fixture can lead to serious hand injuries unless personnel are careful.

### **WARNING**

#### **Electrostatic hazard**

Death or serious injury

The power module has surface resistivity greater than one gigaohm and must be properly installed on the wireless device. Care must be taken during transportation to and from the point of installation to prevent a potential electrostatic charging hazard.

The transmitter's polymer enclosure has surface resistivity greater than one gigaohm. Care must be taken during transportation to and from the point of installation to prevent a potential electrostatic charging hazard.

### **WARNING**

#### **Physical access**

Unauthorized personnel may potentially cause significant damage to and/or misconfiguration of end users' equipment. This could be intentional or unintentional and needs to be protected against.

Physical security is an important part of any security program and fundamental in protecting your system. Restrict physical access by unauthorized personnel to protect end users' assets. This is true for all systems used within the facility.

## NOTICE

### Shipping considerations for wireless products.

The unit was shipped without the power module installed. Prior to re-shipment, ensure that the power module has been removed.

Each device contains two "D" size primary lithium-thionyl chloride battery cells. Primary lithium batteries are regulated in transportation by the U.S. Department of Transportation, and are also covered by IATA (International Air Transport Association), ICAO (International Civil Aviation Organization), and ARD (European Ground Transportation of Dangerous Goods). It is the responsibility of the shipper to ensure compliance with these or any other local requirements. Consult current regulations and requirements before shipping.

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## Contents

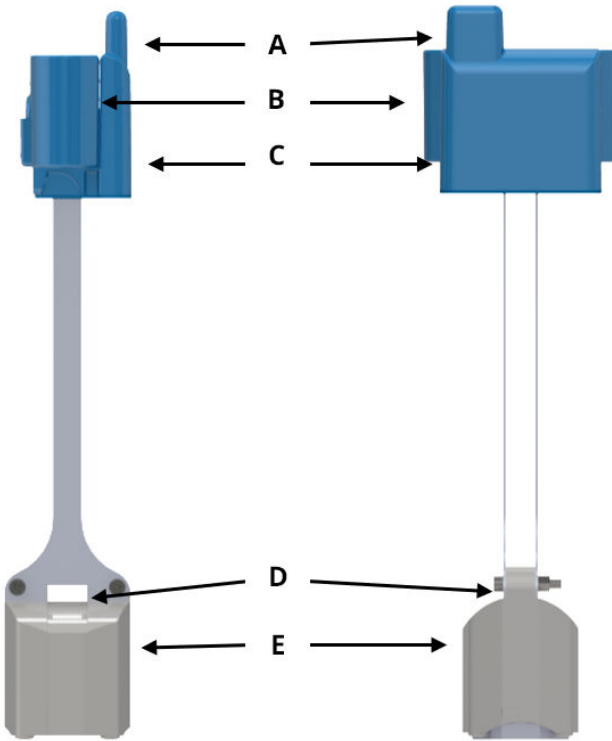
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# 1 Product overview

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**Figure 1-1: Rosemount Wireless ET410 Corrosion and Erosion Transmitter**



- A. Antenna
  - B. Power module
  - C. Head
  - D. Strap slot
  - E. Foot
-

## 1.1 What's in the box

### Mounting hardware option T01

Pipe strap up to 40-inch diameter pipe and one strap tensioner.

- Rosemount ET410 Transmitter (with protective cap)
- BP20E Power module
- A4 Stainless Steel Strap 138 in. (3.5 m)
- Strap tensioner
- Lanyard kit: 6.6 ft. (2 m) 316 stainless steel lanyard with looped end and cable lock

### Mounting hardware option B02

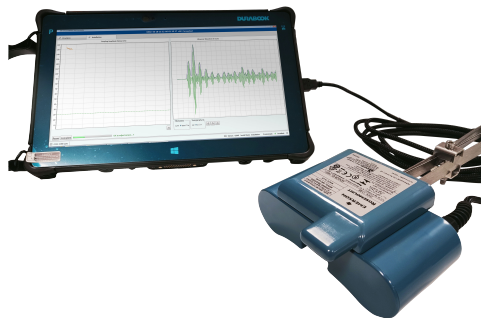
Magnetic mount, vessel mount

- Rosemount ET410 Transmitter (with protective cap)
- BP20E Power module
- Magnetic mount
- Brackets and fittings (already fitted to transmitter)
- 5 x Lanyard kit (for safety-securing transmitter and magnetic fixture)

## 1.2 Required equipment

In order to install the transmitter, you need the following equipment from an IK220 installation kit:

- Tablet PC with installation application software
- CC21 interface



**⚠ WARNING****Explosion**

The tablet PC is not intrinsically safe. A site-specific permit may be required for its use.

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## 1.3 Required tooling

**Separate tooling for strap option**

Tooling is supplied in the IK220 installation kit.

- Tin snips (used to cut the fixing strap to the correct length)
- Flathead screwdriver or wrench and socket (to tighten the fixing strap)
- 2.5-mm. hex key (for power module retaining bolts)

## 1.4 Alternative installation options

**Optional tooling**

To decrease installation time, an electric screwdriver or wrench may be used instead of the supplied tools, if preferred. This is not included in IK220 installation kit.

## 2 Preparing for installation

### Prerequisites

Before commissioning the Rosemount ET410 and powering it with a BP20E power module, verify the Emerson Wireless Gateway is installed and functioning properly.

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### Note

Power up wireless devices in order of proximity from the gateway, beginning with the closest device, then working outward from the gateway. This results in a simpler and faster network formation.

To ensure new devices are able to join the network faster, enable Active Advertising on the gateway.

For more information, see the [Emerson Wireless 1410S Gateway](#).

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### Procedure

1. Identify the location where the transmitter is to be installed.
2. Ensure all cladding and insulation is removed around the circumference of the pipe at the transmitter location.

The dimension drawing in [Figure 2-1](#) provides guidance on how much pipe should be exposed.

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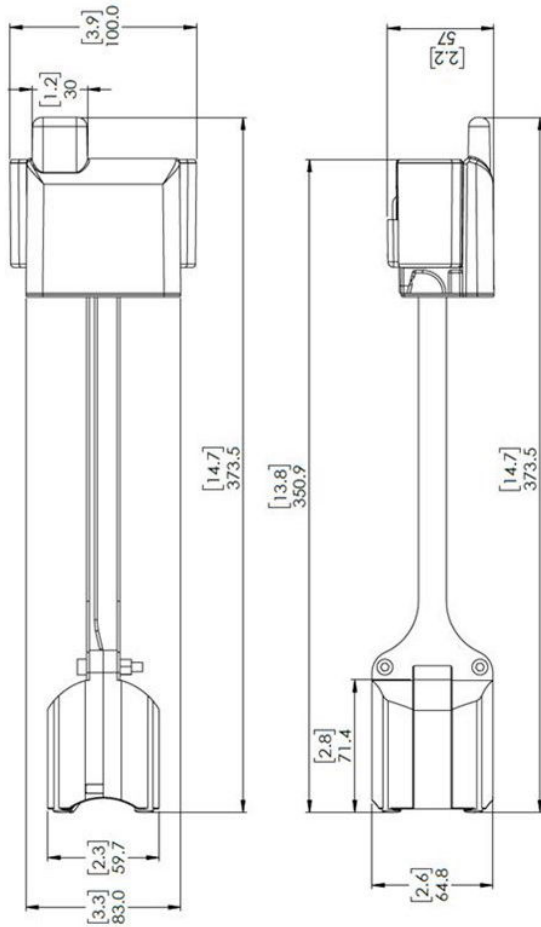
### Note

Cladding or insulation can be replaced after the transmitter installation is completed, provided that the head of the transmitter remains outside of the insulation. Insulation materials can be installed around the transmitter as desired and according to local procedures.

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**Figure 2-1: Transmitter Dimensions**



**Note**

Dimensions are in [inches] millimeters .

3. Clean the area where the transmitter will touch the pipe to remove any particles that might keep the transducer away from the pipe surface or damage the face of the transducer. A permanent marker may be used to show exactly where each transmitter is to be placed on the pipe.

## 3 Mounting the transmitter with a strap

### 3.1 Mounting the transmitter

If you are using the [strap mounting option](#), perform the tasks in this section.

If you are using the [magnetic fixture](#), skip this section and go to the [Mounting the transmitter with a magnetic fixture](#).

#### **⚠ WARNING**

##### **Personal injury**

Two people are required for this operation. One person secures transmitter placement while the other positions and secures the strap.

Personal protective equipment (PPE) of gloves and safety glasses or full-face visor are recommended.

Cut strap may have sharp edges.

Cutting the strap while it is under tension can result in damage or injury.

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#### **Procedure**

1. Remove the strap tensioner and the strap from the packaging.
2. Feed the strap into one end of the strap tensioner.
3. Using the screwdriver or wrench and socket provided, turn the screw on the tensioner until the end of the strap emerges from under the worm drive.

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##### **Note**

At least 5 turns of the worm-screw are required.

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4. Remove the protective cap from the transmitter.

**⚠ CAUTION**

**Magnetic hazard**

Once the protective cap is removed, the strong magnetic field at the end of the transmitter can suddenly attract other objects, such as tools. This can cause injury as well as damage to the transmitter.

Remove the protective cap only when necessary.

Practice great caution when removing the protective cap.

Before the protective cap is removed, ensure tools and fastenings are kept away from the transmitter.

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5. Carefully place the transmitter on the required location on the pipe.
  6. Verify the transmitter is on the location correctly.
  7. Verify the thermocouple is in contact with the surface.

**⚠ WARNING**

**Personal injury**

One person should secure the transmitter until the strap has been installed.

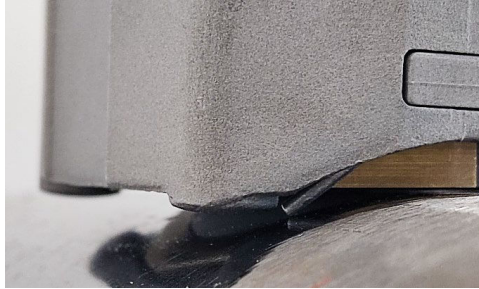
**NOTICE**

The magnets used in the transmitter have a high pull force. To avoid damage, and to get the precise location for each transmitter, initially place the transmitter at an angle to the pipe and the gently lower the transmitter onto the pipe.



## NOTICE

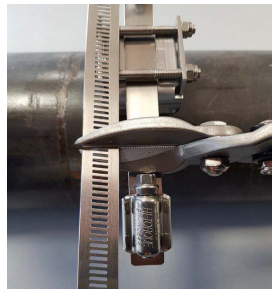
There is also a thermocouple in the foot of the transmitter. When installing, ensure that the thermocouple is in contact with the measurement surface.



8. Feed the strap through the slot hole of the transmitter and around the pipe.



9. If there is an excessive length of spare strap, the excess may be cut off.
10. Lay the strap over the tensioner worm-drive and make the cut just after the screw head.



11. Feed the free end of the strap into the other end of the strap tensioner.

- Using the screwdriver or wrench and socket provided, turn the screw on the tensioner until the end of the strap emerges from the worm-drive.

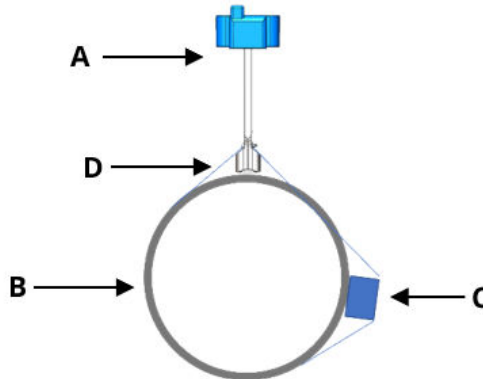
## NOTICE

Do not tension the strap yet.

## NOTICE

At least five turns of the work screw is required.

- Position the strap tensioner so that the strap (D) just touches the pipe (B) between the transmitter (A) and the strap tensioner (C).



- A. Transmitter
- B. Pipe
- C. Strap tensioner
- D. Strap

### Note

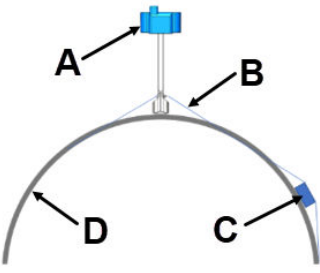


For examples of correct and incorrect installation, information for pipes with different diameters and mounting multiple transmitters on a single strap, refer to [Strap installation considerations](#).

## 3.2 Strap installation considerations

### Positioning on different sized pipes

The relative positions of the strap tensioner and transmitter change depending on the pipe diameter. On pipes with less than a 4 in. (10.2 cm) diameter, position the transmitter and tensioner on opposite sides of the pipe. [Figure 3-1](#) displays placement for different size pipes.

**Figure 3-1: Transmitter and Tensioner Placement**

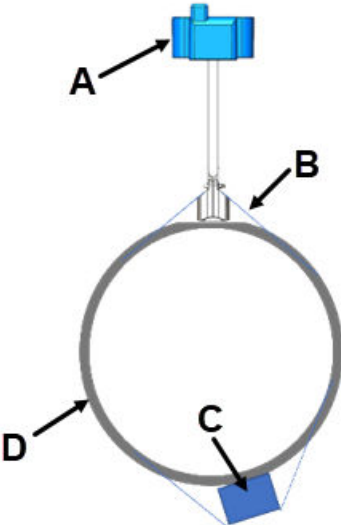
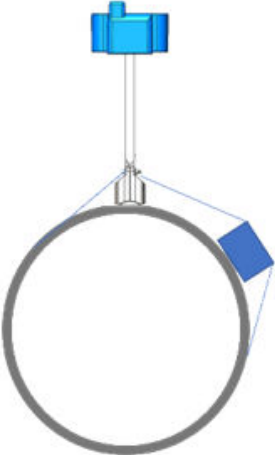
Pipe diameter		
Large pipe	> 4 in. (10.2 cm)	< 4 in. (10.2 cm)
		

- A. Transmitter
- B. Strap
- C. Strap tensioner
- D. Pipe

### Note

If there are obstructions that do not allow for the recommended strap tensioner position relative to the transmitter, then move the strap tensioner away from the transmitter to the closest accessible position.

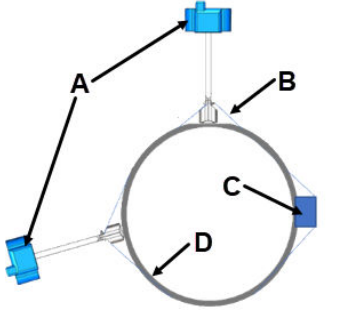
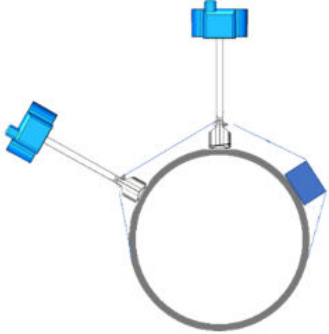
### Incorrect transmitter installation

<b>Contact area is too large. Transmitter and tensioner are too far apart.</b>	<b>No contact area. The transmitter and tensioner are too close together.</b>
	

- A. Transmitter
- B. Strap
- C. Strap tensioner
- D. Pipe

### Mounting multiple transmitters

When mounting multiple transmitters on a single strap, only one tensioner is required. It is important to ensure the strap makes contact with the pipe between each of the transmitters and the tensioner.

<p><b>Correct positioning: Strap is in contact with the pipe between the transmitters and the tensioner.</b></p>	<p><b>Incorrect positioning: Strap is not in contact with the pipe between the transmitters and the tensioner.</b></p>
	

- A. Transmitter
- B. Strap
- C. Strap tensioner
- D. Pipe

Use [Table 3-1](#) to determine the maximum number of transmitters that can share the same strap and tensioner for a given pipe size.

**Table 3-1: Maximum Transmitter Quantity**

Pipe size	Pipe diameter			
	NPS 2 to NPS 7	NPS 8 to NPS 14	NPS 16 to NPS 24	NPS 26 to NPS 40
Maximum permitted transmitters per strap	1	2	3	4

**Note**

This also limits the locations you can mount multiple transmitters on a pipe using a single strap. If closer spacings are desired, multiple straps must be used.

### 3.3 Commissioning the transmitter

Commissioning allows the transmitter to securely join a designated network and communicate with a gateway. The IK220 installation kit comes with a commissioning interface (CC21) and a tablet PC with



the installation application installed. The CC21 provides an electronic interface between the ET410 transmitter and the tablet PC during commissioning.

The installation application software is used to:

1. Provision the WiHART network configuration on the transmitter.
2. Monitor the quality of the ultrasonic signal during mechanical installation.

Both of these steps are required to complete the commissioning.

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**Note**

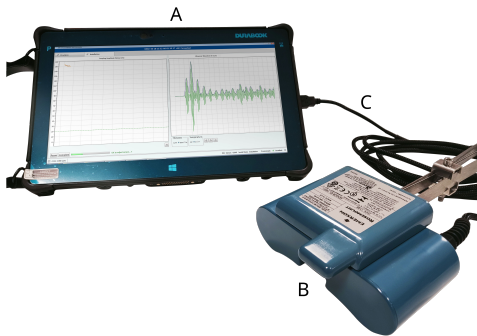
All transmitters connected to the network and gateway must have the same network ID and join key.

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**Procedure**

1. Power up the rugged tablet PC and connect the CC21 commissioning interface to the tablet PC USB port.
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**Figure 3-2: Commissioning Kit**



- A. Tablet PC (running installation tool)  
B. Rosemount Wireless Corrosion and Erosion Transmitter  
C. CC21 USB cable
- 

2. Double-click the installation application desktop icon. Within approximately 10 seconds, the installation tool software should open.
3. Attach the CC21 to the transmitter.
4. In the installation application software:

- a) Verify both the transmitter ID and the transmitter's MAC address, which are displayed at the top of the screen within 10 seconds.
- b) Select the **Provision** tab.
- c) Enter the 5-digit network ID and the 32-hexadecimal (numbers 0-9 and letters A-F) join key.
- d) Click the **Provision** button.  
The system provides confirmation once provisioning is complete.
- e) Ensure the network ID of the gateway is visible in the **Network Discovery** panel.

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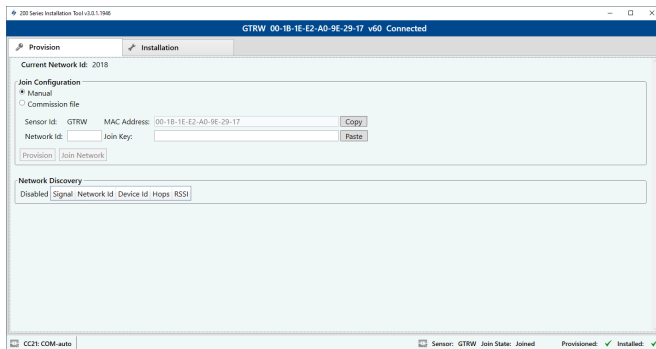
## Note

Joining the device to the network could take several minutes.

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## Figure 3-3: Installation Application Software, *Provision* Tab

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## 3.4 Transmitter installation

### Procedure

1. Click the **Installation** tab in the installation application software.
2. Click the **Start** button and wait for an ultrasonic waveform to download from the transmitter.

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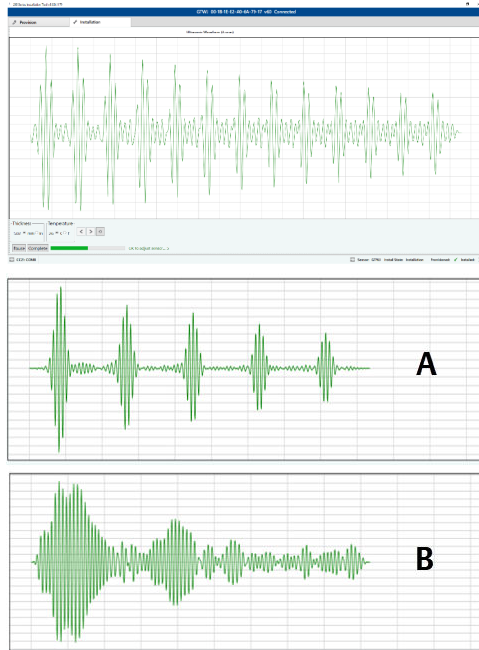
## Note

Waveforms are automatically downloaded every 10 seconds. When a new waveform arrives, the lines briefly become thicker.

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3. Check the quality of the waveform.

**Figure 3-4: Installation Application Software, *Installation* Tab**



- A. Good waveform
- B. Poor waveform

**NOTICE**

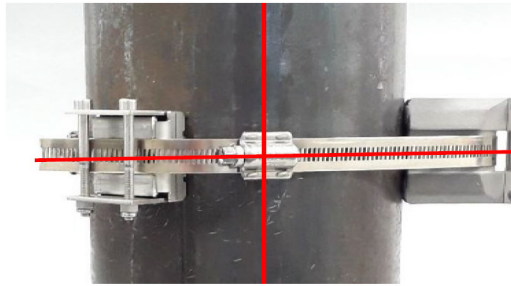
If the signal is poor, move the transmitter to a slightly different position. Do not adjust transmitter location by sliding the device across the measurement surface.

**Note**

The first one or two reflections must be well defined above the noise in the signal. Only one reflection is needed to calculate a thickness.

- 4. Ensure that the measured thickness matches expectations.
- 5. Ensure the strap tensioner, strap, and transmitter(s) are in line before tightening the work-screws on the strap tensioner.

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**Figure 3-5: Correct Strap Alignment**

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**NOTICE**

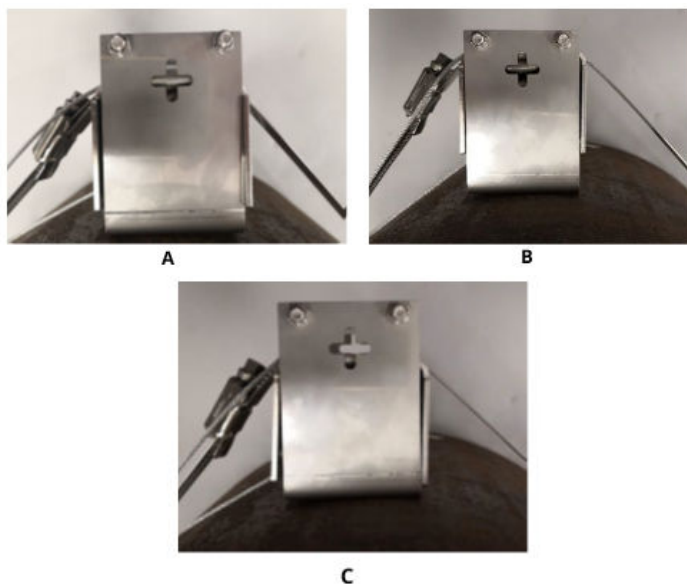
This step is critical to the strap tensioner functioning as intended. Continuously check alignment while performing the following step. As the tensioner is tightened, ensure the transmitter(s), strap and strap tensioner remain in-line.

6. Tighten both worm-screws with the flathead screwdriver or the wrench and socket provided, ensuring the tensioner does not slide relative to the pipe. As the worm-screws are tightened, observe the position of the metal plate on top of the spring through the plus-shaped (+) cut-out on the side of the tensioner. The correct tension is set when the plate is aligned with wide part of the middle of the cut-out as shown in [Figure 3-6](#).

**⚠ WARNING****Personal injury**

Take special care not to put fingers under the bolts of the tensioner while the strap is being tensioned.

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**Figure 3-6: Alignment Examples**

- A. *Correct tension – Plate is aligned with the wide part of the cut-out.*
- B. *Incorrect alignment – Plate above the wide part of the cut out, tighten strap.*
- C. *Incorrect alignment – Plate below the wide part of the cut out, loosen strap.*

## NOTICE

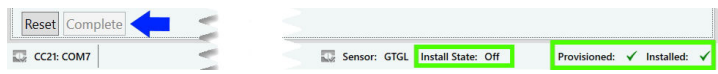
When the worm-screws are tightened, the springs in the tensiometer are compressed. To avoid the strap becoming loose or over-tightened when the pipe temperature changes, it is important that the spring is set to the correct tension. Do not over-tighten the worm-screws.

7. Ensure the metal plate is centered through the plus-shaped (+) cut-outs on both sides of the tensiometer.  
If the metal plate is not centered, either loosen or tighten the worm-screws on either side until metal plate is centered through the plus-shaped cut-outs.
8. Ensure the transmitter is firmly fixed and sitting perpendicular to the pipe as shown in [Figure 3-5](#).

9. When all the adjustments have been completed, make a final check of the waveform quality (refer to [Figure 3-4](#)).
  - If it is poor, slacken off the strap and adjust the transmitter position before returning to [Step 3](#).
  - If the waveform quality is good, continue to [Step 10](#).
10. If there is an excessive length of spare strap, the excess length may be cut and removed.
11. Click the **Complete** button.

Verify the **Install State** is **Off** and **Installed** is selected in the footer of the application.

**Figure 3-7: Installation Tool Screen: Fully Provisioned**



12. Remove the CC21 and fit the power module, tightening the two power module retaining bolts.

Refer to the [Rosemount BP20E Power Module for Wireless Corrosion Transmitter Quick Start Guide](#).

When the power module is fitted, the transmitter automatically restarts and attempts to join the *WirelessHART*<sup>®</sup> Gateway. In a large network of 100 transmitters, 2-6 hours may be needed.

## 3.5 Fitting the lanyard

### **⚠ WARNING**

#### **Falling objects**

Could cause personal injury.

Use supplied lanyard to prevent transmitter falling from heights.

#### **Procedure**

1. Wrap the lanyard around the circumference of the pipe, on top of any cladding.

### **NOTICE**

For pipe diameters exceeding 20 in. (51 cm), lanyards may be linked together. For transmitters in close proximity to each other, a single lanyard may be used.

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**Note**

The 6.6 ft. (2 m) lanyard is sufficient for a pipe diameter up to 20 in. (51 cm). When it is not possible to wrap the lanyard around a pipe, find an alternative attachment point for the lanyard.

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2. Thread the bare end of the wire through the loop in the lanyard to secure it to the pipe.
3. Feed the bare end of the lanyard into the cable lock and push the lock up the lanyard.



**⚠ WARNING**

**Personal injury**

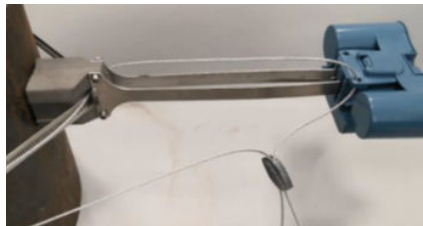
Take special care when the bare end of the lanyard is fed through the tensioner. Do not put fingers under the bolts of the tensioner.

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4. Feed the bare end of the lanyard through the strap tensioner.



5. Feed the bare end of the lanyard through the strap hole of each transmitter, the lanyard hole in the transmitter head and into the return hole of the cable lock.

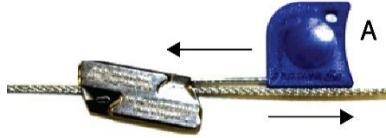


6. Feed the lanyard wire through the cable lock to minimize the slack in the wire.

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**Note**

The lanyard wire can be released from the cable lock using the release key.



A. Release key

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Transmitter installation is complete.



## 4 Mounting the transmitter with a magnetic fixture

### ⚠ WARNING

#### Magnetic hazard

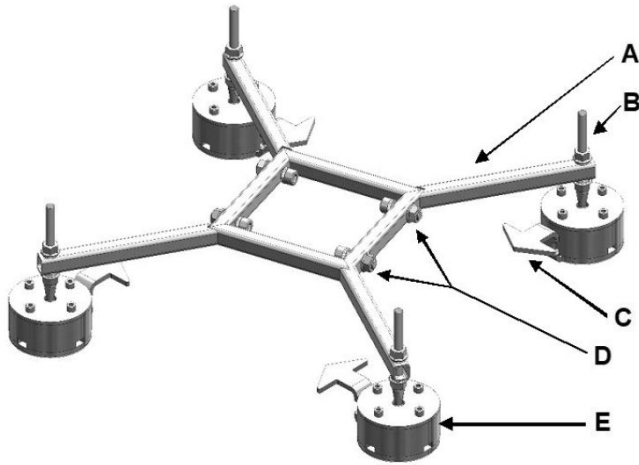
When the protective caps are removed from the magnetic assemblies, the device is equipped with a very strong magnetic pull force.

Use care when handling the magnetic fixture.

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If using a magnetic fixture with the ET410 Wireless Transmitter, follow the topics in this section.

Each magnetic fixture has four magnetic units attached to a frame by ball studs as displayed in [Figure 4-1](#). When fitted with attachment brackets, the ET410 transmitter will come with the mounting brackets preinstalled in [Figure 4-1](#) and sits in the aperture at the center of the magnetic fixture frame and is bolted firmly to it. The ball studs allow the magnetic fixture to accommodate curvatures of 78.7 in. (2 m) diameter or greater. During transportation, the magnetic field is contained by protective caps which are removed during the installation process.

**Figure 4-1: Magnetic Fixture**

- A. *Frame*
- B. *Ball stud*
- C. *Protective cap*
- D. *Transmitter securing bolts*
- E. *Magnetic unit*

## 4.1 Commissioning the transmitter for the magnetic fixture

Commissioning allows the transmitter to securely join a designated network and communicate with a gateway. The IK220 installation kit comes with a commissioning interface (CC21) and a tablet PC with the installation application software installed. The CC21 provides an electronic interface between the ET410 transmitter and the tablet PC during the commissioning.

The installation application is used to complete the following steps:

1. Provision the WiHART network configuration on the transmitter.
2. Monitor the quality of the ultrasonic signal during the mechanical installation.

Both steps are required to complete the commissioning.

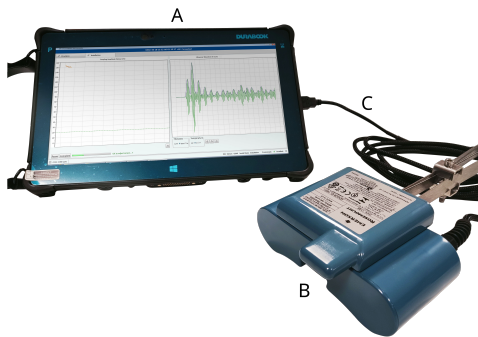
## NOTICE

All the transmitters connected to the network and gateway must have the same network ID and Join Key.

### Procedure

1. Power up the rugged tablet PC and connect the CC21 commissioning interface to the tablet PC USB port.

**Figure 4-2: Commissioning Kit**



- A. Tablet PC (running installation tool)
- B. Rosemount Wireless Corrosion and Erosion Transmitter
- C. CC21 (including USB cable)

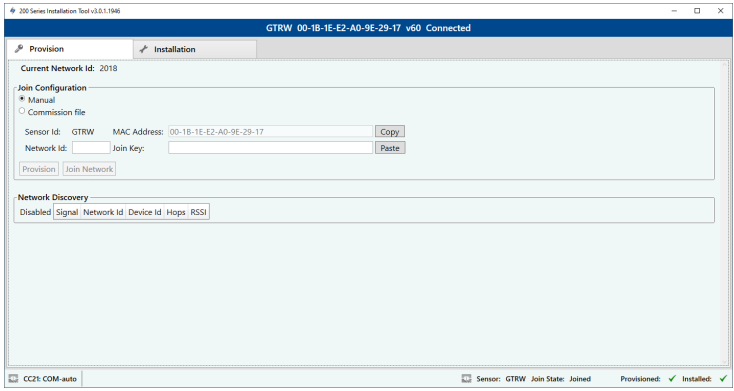
2. Double-click the installation application desktop icon. Within approximately 10 seconds, the installation tool software should open.
3. Attach the CC21 to the transmitter.
4. In the installation application software:
  - a) Verify both the transmitter ID and the transmitter's MAC address, which are displayed at the top of the screen within 10 seconds.
  - b) Select the **Provision** tab.
  - c) Enter the 5-digit network ID and the 32-hexadecimal (numbers 0-9 and letters A-F) join key.
  - d) Click the **Provision** button. The system provides confirmation once provisioning is complete.

- e) Ensure the network ID of the gateway is visible in the **Network Discovery** panel.

**Note**

Joining the device to the network could take several minutes.

**Figure 4-3: Installation Application Software, Provision Tab**



- 5. Cut the cable tie that secures the protective cap to the ET410 transmitter and remove the cap from the transmitter.
- 6. Place the transmitter on the pipe or vessel in the desired location and then, with someone holding it, proceed to the next section.

## 4.2 Checking the waveform quality

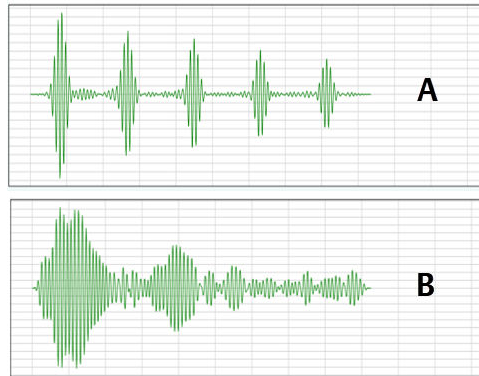
**Procedure**

- 1. Click the **Installation** tab in the installation application software.
- 2. Click the **Start** button and wait for an ultrasonic waveform to download from the transmitter.

**Note**

Waveforms are automatically downloaded every 10 seconds. When a new waveform arrives, the lines briefly become thicker.

- 3. Check the quality of the waveform.

**Figure 4-4: Waveform Quality**

- A. *Good waveform*  
B. *Poor waveform*

**NOTICE**

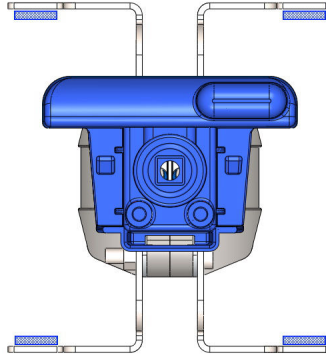
If the signal is poor, move the transmitter to a slightly different position. Do not adjust transmitter location by sliding the device across the measurement surface.

**Note**

The first one or two reflections must be well defined above the noise in the signal. Only one reflection is needed to calculate a thickness.

4. Ensure that the measured thickness matches expectations.
5. If the waveform is poor quality, move the transmitter a little and wait for a new waveform to download. Once there is a good quality waveform, use a permanent marker to mark the vessel at the four slot locations of the brackets as displayed in [Figure 4-5](#) (the blue marks at the top and bottom of the transmitter).

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**Figure 4-5: Marking the Position of the Transmitter**

- 
6. While continuing with the next set of tasks,:
    - a) Take the transmitter off the vessel.
    - b) Put the protective cap back on the transmitter.
    - c) Carefully set the transmitter aside.

### 4.3 Mounting the magnetic fixture and the transmitter

The magnetic fixture installs directly onto the ferromagnetic surface. A magnetic fixture can be installed on a painted surface with a paint thickness of no greater than 0.039 in. (1 mm).

#### **⚠ WARNING**

##### **Pinching hazard**

The strong magnets used in this fixture can pinch hands and fingers.

Two people are required for this operation.

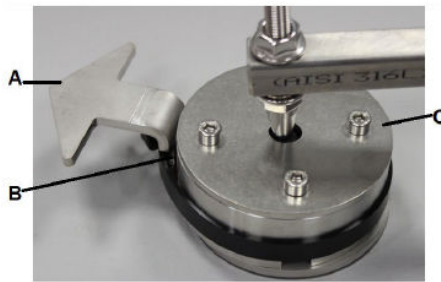
Personal protective equipment (PPE) of gloves and safety glasses or full-face visor are recommended.

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##### **Procedure**

1. Remove the four transmitter securing bolts, washers, and nuts from the center of the frame as displayed in [Figure 4-1](#).
2. Cut the cable ties that secure the protective caps to the four magnet units of the fixture, as displayed in the [Figure 4-6](#), but do not remove the protective caps at this stage.

---

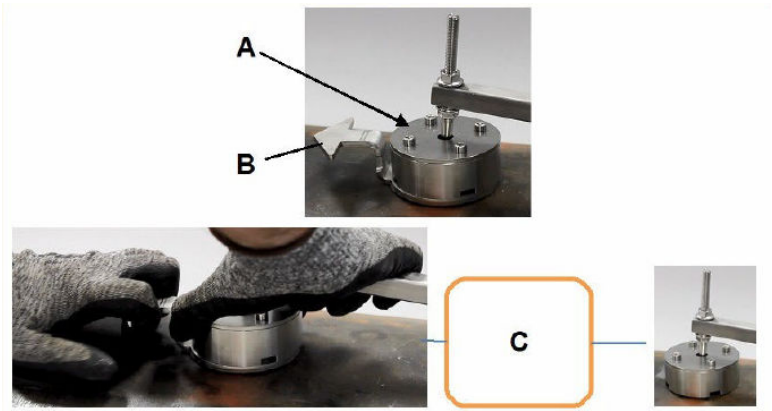
**Figure 4-6: Protective Cap on Magnetic Unit**

- A. Protective cap
  - B. Cable tie
  - C. Magnetic unit
- 

3. Place the magnetic fixture on the vessel, aligning the transmitter and securing bolt holes with the markings made on the vessel as shown in [Figure 4-5](#).
4. Remove the four protective caps from the four magnetic units one at a time, by holding the magnetic unit and sliding the protective cap away from the unit as displayed in the [Figure 4-7](#).

The magnetic fixture does not need to be held after the protective caps are removed.

**Figure 4-7: Protective Cap Removal from Magnetic Unit**



- A. Magnetic unit
- B. Protective cap
- C. Removing protective cap

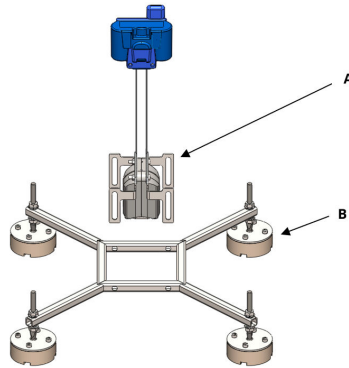
5. Remove the protective cap from the transmitter.
6. Carefully place the transmitter with brackets inside the center of the frame (as shown in [Figure 4-8](#)).

**⚠ WARNING**

One person must hold the transmitter until the transmitter securing bolts are fitted.



**Figure 4-8: Transmitter Placement into Magnetic Fixture**

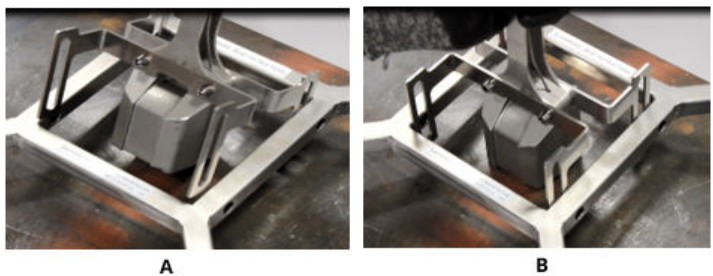


- A. ET410 with brackets
- B. Magnetic fixture

**NOTICE**

The magnets used in the transmitters have a high pull force. To avoid damage and to get the precise location for each transmitter, initially place the sensor at an angle to the vessel and then gently lower onto the surface, as displayed in [Figure 4-9](#).

**Figure 4-9: Transmitter Placement into Vessel**



- A. Place transmitter at an angle to the vessel
- B. Lower transmitter onto the vessel

7. Ensure that the transmitter is perpendicular to and in contact with the vessel, as displayed in the [Figure 4-10](#).

---

**Figure 4-10: ET410 in Contact with Vessel inside Magnetic Fixture**

---

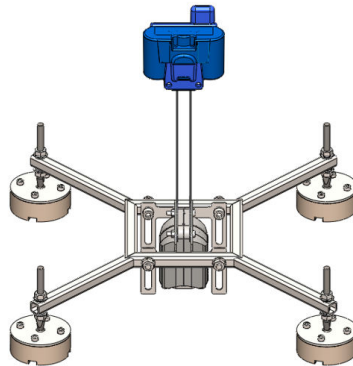


8. Fit the four transmitter securing bolts, gridlock washers, and nuts from magnetic fixture as shown in the [Figure 4-11](#).

---

**Figure 4-11: ET410 Fitted and Secured in Magnetic Fixture**

---



---

**Note**

One nord-lock washer is placed under the bolt head and the other is placed under the nut. Torque to 10.3 ft lb (14 Nm) with the torque wrench and allen key provided.

---

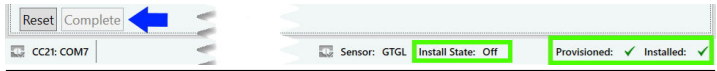
9. Download another waveform and check if the waveform quality is good before proceeding. If necessary, move the magnetic fixture using the instructions in [Removal or repositioning of the magnetic fixture](#), and then continue checking the waveform quality.

## 4.4 Completing the transmitter installation

### Procedure

1. Verify the **Install State** is **Off** and **Installed** is selected in the footer of the application.

**Figure 4-12: Installation Tool Screen: Fully Provisioned**



2. Click the **Complete** button.
3. Remove the CC21 and fit the power module, tightening the two power module retaining bolts. Refer to the [Rosemount BP20E Power Module for Wireless Corrosion Transmitter Quick Start Guide](#).  
When the power module is fitted, the transmitter automatically restarts and attempts to join the *WirelessHART*<sup>®</sup> Gateway. In a large network of 100 transmitters, 2-6 hours may be needed.

## 4.5 Fitting the lanyard for a magnetic fixture install

### ⚠ WARNING

#### Falling objects

Personal injury

Two lanyards must be used to restrain the transmitter and the magnetic mount from accidentally falling. If each lanyard is not long enough, two lanyards can be linked together. For this reason, four lanyards are supplied with each magnetic mount.

### Procedure

1. Find a suitable attachment point for the lanyard that is as short a distance as possible, vertically above the mounting location.
2. If the distance does not allow for an individual lanyard to reach the attachment point, use the loop in one lanyard to link two lanyards together.
3. Thread the bare end of the wire around the fixing point and through the loop in the lanyard to secure the lanyard.

- 4. Feed the end of the lanyard into the cable lock and pull a length through as indicated in the following image.



- 5. Feed the end of the lanyard through the frame of the magnetic fixture as displayed in [Figure 4-13](#).
- 6. Feed the end of the lanyard through the strap slot of the transmitter and into the return hole of the cable lock.
- 7. Adjust the position of the cable lock to reduce slack in the lanyard cable; however, do not pull the cable tight.

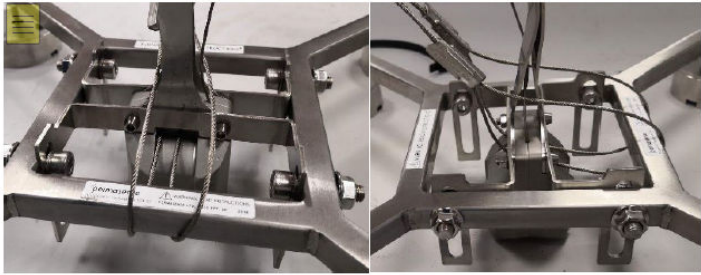
**⚠ WARNING**

**Falling objects**

If the slack is not minimized, the risk of the lanyard snapping increases if the magnetic mount accidentally falls. The assembly could then fall from a height resulting in serious injury.

Minimize slack to reduce risk of serious injury.

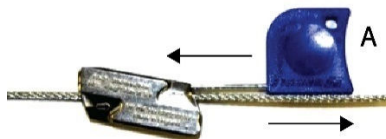
**Figure 4-13: Lanyard Assembly, Magnetic Fixture**



- 8. Repeat [Step 1](#) through [Step 7](#) to fit the second lanyard.

**Note**

The lanyard wire can be released from the cable lock using the release key.



A. Release key

---

The transmitter installation is now complete.

## 5 Maintenance

### 5.1 Service and maintenance

The transmitter is a sealed unit with no user-serviceable parts.

Use the the [Rosemount BP20E Power Module for Wireless Corrosion Transmitter Quick Start Guide](#) as reference if the power module requires changing.

### 5.2 Adjusting the height of the magnetic unit

#### Prerequisites

You may need to adjust the height of the magnetic unit if the magnetic fixture is mounted on a non-spherical or uneven surface.

#### Procedure

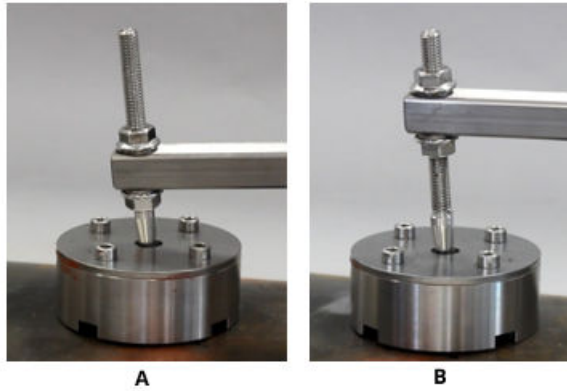
1. Loosen the top and bottom nut on the ball stud that holds the frame in position.

#### NOTICE

A 13 mm as flats (AF) spanner might be required to loosen the bottom nut while holding the ball stud with an 8 mm spanner.

2. Unscrew the top nut to the end of the rod.
3. Raise the frame to the desired height, so that all four magnetic units are sitting comfortably on the vessel surface.
4. Position the bottom nut at the desired height.
5. Using the 13mm spanner to hold the bottom nut, torque the top nut to 10.3 ft lb (14 Nm).

---

**Figure 5-1: Magnetic Unit Adjustment**

- A. *Magnetic unit before adjustment*  
B. *Magnetic unit after adjustment*
- 

## 5.3 Removal or repositioning of the magnetic fixture

### Prerequisites

- Ensure you have the four protective caps for the magnetic fixture and the protective cap for the transmitter.
- One person needs to hold the transmitter in position while the other follows the procedure.

### Procedure

1. Remove the four transmitter securing bolts, washers and nuts as displayed in [Figure 5-2](#).

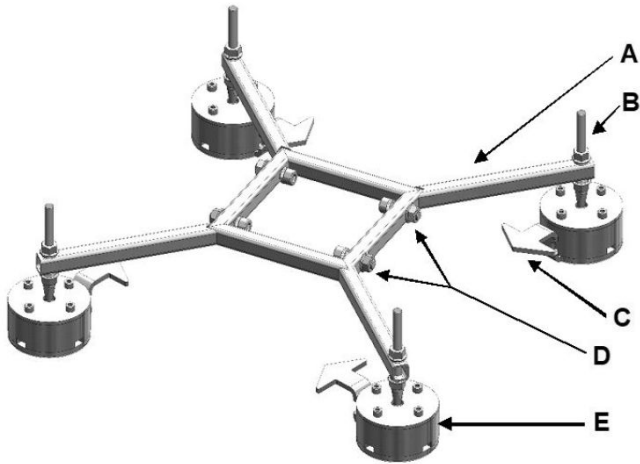
### **⚠ CAUTION**

#### **Personal injury**

Someone must hold the magnetic fixture in position.

---

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**Figure 5-2: Magnetic Fixture**

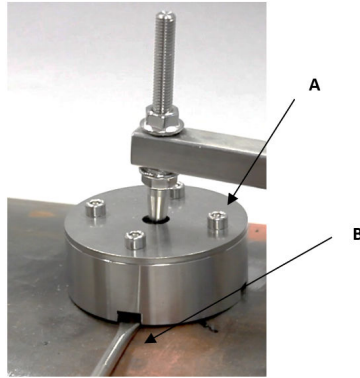
- A. Frame
  - B. Ball stud
  - C. Protective cap
  - D. Transmitter securing bolts
  - E. Magnetic unit
- 

2. Place the protective cap back on the transmitter and set it aside.
3. Slide a flathead screwdriver under one of the magnetic units as displayed in [Figure 5-3](#).



---

**Figure 5-3: Removing the Magnetic Unit**



- A. Magnetic unit
  - B. Flathead screwdriver
- 

4. Turn the screwdriver and lever the magnetic unit up and away from the vessel as displayed in [Figure 5-4](#).
- 

**Figure 5-4: Levering the Magnetic Unit Using a Flathead Screwdriver**



5. Slide the protective cap under the magnetic unit and remove the screwdriver as displayed in [Figure 5-5](#).

**⚠ CAUTION**

**Pinching hazard**

Personal injury

When refitting the protective cap to the magnetic unit, position hands and fingers where the pinching risk is nullified.

**Figure 5-5: Refitting the Protective Cap**



- Slide the magnetic unit all the way onto the protective cap as displayed in [Figure 5-6](#).

**Figure 5-6: Fitted Protective Cap**



- Repeat the process for the remaining three magnetic units.

8. When the protective caps are fitted, the magnetic fixture can be either repositioned or removed.

## 6 Product certifications

### 6.1 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 [www.Emerson.com](http://www.Emerson.com).

### 6.2 Telecommunications compliance

All wireless devices require certification to ensure that 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.

### 6.3 FCC and ISED

#### FCC Notice

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 20 cm from all persons.
- Changes or modification to the equipment not expressly approved by Rosemount, Inc. could void the users authority to operate the equipment.

#### ISED Notice

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- This device may not cause interference.
- This device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme à la norme RSS-247 Industrie Canada exempt de licence. Son fonctionnement est soumis aux deux conditions suivantes:

- cet appareil ne doit pas provoquer d'interférences et.
- cet appareil doit accepter toute interférence, y compris les interférences pouvant causer un mauvais fonctionnement du dispositif.

## 6.4 Ordinary location certification

As standard, the device 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).

## 6.5 North America

The US National Electrical Code<sup>®</sup> (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.

## 6.6 Dangerous goods regulations

The magnets in the sensor are shielded for transportation and meet the IATA Dangerous Goods Regulations for magnetic fields. The sensor is safe for air transportation.

## 6.7 USA

### 6.7.1 I5 USA Intrinsic Safety (IS)

**Certificate:** SGSNA/17/SUW/00281

**Standards:** UL 913 — 8th Edition, Revision Dec 6, 2013

**Markings:** CLASS I, DIV 1, GP ABCD, T4...T1, T<sub>amb</sub> = -50 °C to +75 °C, IP67

## 6.8 Canada

### 6.8.1 I6 Canada Intrinsic Safety (IS)

**Certificate:** SGSNA/17/SUW/00281

**Standards:** CSA C22.2 No. 157-92 (R2012) +Upd1 +Upd2


**Markings:** CLASS I, DIV 1, GP ABCD, T4...T1, T<sub>amb</sub> = -50 °C to +75 °C, IP67

## 6.9 ATEX Intrinsic Safety

### 6.9.1 I1 ATEX Intrinsic Safety

**Certificate:** Baseefa17ATEX0063X

**Standards:** EN IEC 60079-0: 2018  
EN 60079-11: 2012

**Markings:**  II 1 G, Ex ia IIC T4...T1 Ga, T<sub>amb</sub> = -50 °C to +75 °C, IP67

**Warning**      Potential electrostatic charging hazard  
                      Use only with approved power source  
                      See instructions

#### Special Conditions for Safe Use (X):

1. Parts of the mounting foot contain titanium or a titanium alloy. Care must be taken to ensure that the equipment is suitable for the intended mounting location and must be protected against the risk of impact or frictional ignition.
2. The capacitance of the mounting foot will exceed 3pF if the foot is not bonded to earth; this must be taken into account during installation.
3. Plastic on the base of the mounting foot may present a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.
4. The equipment may be attached to process pipework at a temperature of up to 350 °C as follows:
  - a.  $-50\text{ °C} \leq T_a \leq +120\text{ °C}$  for T4
  - b.  $-50\text{ °C} \leq T_a \leq +190\text{ °C}$  for T3
  - c.  $-50\text{ °C} \leq T_a \leq +290\text{ °C}$  for T2
  - d.  $-50\text{ °C} \leq T_a \leq +350\text{ °C}$  for T1

## 6.10 International

### 6.10.1 I7 IECEX Intrinsic Safety

**Certificate:** IECEX BAS 17.0048X

**Standards:** IEC 60079-0: 2017 Edition 7.0, IEC 60079-11: 2011 Edition 6.0

**Markings:** Ex ia IIC T4...T1 Ga, T<sub>amb</sub> = -50 °C to +75 °C, IP67

**Warning:** Potential Electrostatic Charging Hazard  
Use only with approved power source  
See instructions

#### Special conditions for Safe Use (X):

1. Parts of the mounting foot contain titanium or a titanium alloy. Care must be taken to ensure that the equipment is suitable for the intended mounting location and must be protected against the risk of impact or frictional ignition.
2. The capacitance of the mounting foot will exceed 3pF if the foot is not bonded to earth; this must be taken into account during installation.
3. Plastic on the base of the mounting foot may present a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.
4. The equipment may be attached to process pipework at a temperature of up to 350 °C as follows:
  - a.  $-50\text{ °C} \leq T_a \leq +120\text{ °C}$  for T4
  - b.  $-50\text{ °C} \leq T_a \leq +190\text{ °C}$  for T3
  - c.  $-50\text{ °C} \leq T_a \leq +290\text{ °C}$  for T2
  - d.  $-50\text{ °C} \leq T_a \leq +350\text{ °C}$  for T1
5. Enclosures manufactured with Valox V3900WX may present a potential electrostatic ignition hazard and must not be rubbed or cleaned with a dry cloth. See manufacturers documentation for further information.

### 6.10.2 I2 Brazil Intrinsic Safety

**Certificate:** UL-BR 24.0118X

<b>Standards:</b>	ABNT NBR IEC 60079-0:2020, ABNT NBR IEC 60079-11:2017
<b>The manufacturer's type identification:</b>	Mesh Sensor Type ET410
<b>Ex marking:</b>	Ex ia IIC T4...T1 Ga, $T_{amb} = -50\text{ °C to }+75\text{ °C}$
<b>Warning:</b>	Potential Electrostatic Charging Hazard Use only with approved power source See instructions

### Special conditions for Safe Use (X):

1. Parts of the mounting foot contain titanium or a titanium alloy. Care must be taken to ensure that the equipment is suitable for the intended mounting location and must be protected against the risk of impact or frictional ignition.
2. The capacitance of the mounting foot will exceed 3pF if the foot is not bonded to earth; this must be taken into account during installation.
3. Plastic on the base of the mounting foot may present a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.
4. The equipment may be attached to process pipework at a temperature of up to 350 °C as follows:
  - a.  $-50\text{ °C} \leq T_a \leq +120\text{ °C}$  for T4
  - b.  $-50\text{ °C} \leq T_a \leq +190\text{ °C}$  for T3
  - c.  $-50\text{ °C} \leq T_a \leq +290\text{ °C}$  for T2
  - d.  $-50\text{ °C} \leq T_a \leq +350\text{ °C}$  for T1
5. Enclosures manufactured with Valox V3900WX may present a potential electrostatic ignition hazard and must not be rubbed or cleaned with a dry cloth. See manufacturers documentation for further information.

### 6.10.3 IW India Intrinsic Safety

<b>Certificate:</b>	P539096/1
<b>Markings:</b>	Ex ia IIC T4...T1 Ga, $T_{amb} = -50\text{ °C to }+75\text{ °C}$



## 6.11 Japan

### 6.11.1 I4 CML Intrinsic Safety

<b>Certificate:</b>	CML 17JPN2140X
<b>Standards:</b>	JNIOOSH-TR-46-1:2015 JNIOOSH-TR-46-6:2015
<b>Markings:</b>	Ex ia IIC T4...T1 Ga 周囲温度 (Ta) $-50\text{ °C} \leq Ta \leq +75\text{ °C}$ 「警告」-静電気帯電の危険あり- 電池パックは防爆検定品を使用すること。 磁石が含まれています。 取扱説明書を参照すること。

#### Special Conditions for Safe Use (X):

1. Parts of the mounting foot contain titanium or a titanium alloy. Care must be taken to ensure that the equipment is suitable for the intended mounting location and must be protected against the risk of impact or frictional ignition.
2. The capacitance of the mounting foot will exceed 3pF if the foot is not bonded to earth; this must be taken into account during installation.
3. Plastic on the base of the mounting foot may present a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.
4. The equipment may be attached to process pipework at a temperature of up to 350 °C.
5. Enclosure may present a potential electrostatic ignition hazard and must not be rubbed or cleaned with a dry cloth. See manufacturer's documentation for further information.
6. The CC21 Commissioning Cable must only be used in a non-hazardous area – it provides an interface between unspecified non-hazardous area equipment and a mesh sensor. It must not be used to provide power whilst located in a hazardous area.

## 6.12 Korea

### 6.12.1 IP Korea (KCS) Intrinsic Safety

**Certificate:** KGS 17-KA4BO-0478X

**Markings:** 17-KA4BO-0478X



## 6.13 UAE

### 6.13.1 IX ECAS Ex Intrinsic Safety

**Certificate:** 23-11-22700/Q23-11-048835/NB0002





## 6.14 Eurasian Economic Union

### 6.14.1 IM EAC Intrinsic Safety

**Certificate:** KZ 7500525.01.01.00804

**Markings:** 0Ex ia IIC T4..T1 Ga X

## 6.15 EU Declaration of Conformity

 <b>EU Declaration of Conformity</b> 				
We, the manufacturer, <b>Permasense Ltd</b> Alexandra House, Newton Road, Manor Royal, Crawley RH10 9TT, UK				
declare under our sole responsibility that the products, <b>Rosemount™ Wireless Permasense ET410 Corrosion and Erosion Monitoring System</b> to which this declaration relates, is in conformity with the relevant European Union harmonisation legislation.				
<b>EMC Directive (2014/30/EU)</b>	Harmonised standard: EN 61326-1:2013			
<b>RED Directive (2014/53/EU)</b>	Harmonised standard: EN 300 328 v2.2.2  Other standards: EN 301 489-1 v2.2.3 EN 301 489-17 v3.2.4 EN 61010-1:2010 EN 62479:2010			
<b>ATEX Directive (2014/34/EU)</b>	EU type examination certificate: Baseefa17ATEX0063X Ex marking:  II 1G, Ex Ia IIC T4...T1 Ga  Harmonised standards: EN IEC 60079-0: 2018 EN 60079-11: 2012			
SGS Baseefa performed an EU-type examination - the certificate was transferred to SGS Fimko Oy on 11-Nov-2020				
<b>ATEX Notified Body for EU Type Examination Certificate:</b> <b>SGS Fimko Oy</b> (Notified body number 0598) Takomotie 8 FI-00380 Helsinki Finland	<b>ATEX Notified Body for Quality Assurance</b> <b>SGS Fimko Oy</b> (Notified body number 0598) Takomotie 8 FI-00380 Helsinki Finland			
<b>Authorised Representative in Europe and Northern Ireland:</b> Emerson S.R.L., company No. J12/88/2006, Emerson 4 street, Parcul Industrial Tetarom II, Cluj-Napoca 400638, Romania Regulatory Compliance Shared Services Department Email: <a href="mailto:europaeproductcompliance@emerson.com">europaeproductcompliance@emerson.com</a> Phone: +40 374 132 000				
Signed for and on behalf of Permasense Ltd.				
 (Signature)	10 <sup>th</sup> June 2024 (date of issue)	Philip Pakianathan (Name)	Global Engineering and Operations Director (Function)	Crawley, UK (Place of issue)

## 6.16 China RoHS

中国 RoHS 2 - 中国《电器电子产品有害物质限制使用管理办法》，2016 年第 32 号令

China RoHS 2 - Chinese order No. 32, 2016; administrative measures for the restriction of hazardous substances in electrical and electronic equipment

作为总部位于美国密苏里州圣路易斯市艾默生电气公司的一个战略性业务单位及艾默生过程管理的一部分（以下简称“艾默生”），永感<sup>TM</sup>意识到于 2016 年 7 月 1 日生效的中国第 32 号令，即《电器电子产品有害物质限制使用管理办法》（“中国 RoHS 2”），并已设立符合规体系以履行艾默生在第 32 号令项下的相关义务。

Permasense, a strategic business unit of Emerson Electric Co, St. Louis, Missouri and part of Emerson Process Management (“Emerson”), is aware of and has a program to meet its relevant obligations of the Chinese Order No. 32, 2016; Administrative Measures for the Restriction of Hazardous Substances in Electrical and Electronic Equipment (China RoHS 2), which entered into force on 1 July 2016.

艾默生理解中国 RoHS 2 实施的第一阶段须遵守的与产品标识和信息披露等相关的各项要求。作为一个电器电子设备供应商，艾默生确定供应给贵公司的前述型号产品属于中国 RoHS 2 的管理范围。Emerson understands there are numerous requirements with the regulation regarding, among others, marking of product and communications for purpose of the Phase I implementation of China RoHS 2. As a supplier of electrical and electronic equipment, Emerson has determined that the captioned product supplied to your company is within scope of China RoHS 2.

迄今为止，基于供应商所提供的信息，就艾默生所知，下面表格中列明的部件里存在超过最大浓度限值的中国 RoHS 管控物质，且该产品上已做相应标识。

To date, based on information provided by suppliers and to Emerson's best knowledge, the following China RoHS substances are present at a concentration above the Maximum Concentration Values (“MCVs”), have been identified in the following parts, and the product is marked to reflect this.

含有 China RoHS 管控物质超过最大浓度限值的部件型号列  
List of Model Parts with China RoHS Concentration above MCVs

部件名称 Part Name	有害物质 / Hazardous Substances					
	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr +6)	多溴联苯 Polybrominated biphenyls (PBB)	多溴联苯醚 Polybrominated diphenyl ethers (PBDE)
传感器组件 Sensor assembly	X	○	○	○	○	○

本表格系依据 SJ/T 11364 的规定而制作。

This table is proposed in accordance with the provision of SJ/T 11364

○: 意为该部件的所有均质材料中该有害物质的含量均低于 GB/T 26572 所规定的限量要求。

○: Indicate that said hazardous substance in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

X: 意为在该部件所使用的所有均质材料里，至少有一类均质材料中该有害物质的含量高于 GB/T 26572 所规定的限量要求。

X: Indicate that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.









**Quick Start Guide**  
**MS-00825-0100-4209, Rev. AC**  
**November 2024**

For more information: [Emerson.com/global](https://emerson.com/global)

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