

Emerson™ Wireless Gateway 1410D Gateway

with 781 Field Link



WirelessHART

Safety messages

NOTICE

This guide provides basic guidelines for the Emerson Wireless 1410 and 1410D Gateway. It does not provide instructions for diagnostics, maintenance, service, or troubleshooting. Refer to the [Emerson Wireless Gateway 1410 Reference Manual](#) for more information and instructions. The manuals and this guide are available electronically on [Emerson.com](#). This device complies with Part 15 of the Federal Communications Commission (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 7.9 in. (20 cm) from all persons.

⚠ WARNING

Explosions could result in death or serious injury.

- Do not make or break any connections to the Gateway while circuits are live unless area is known to be non-hazardous.
- 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 approvals section of this manual for any restrictions associated with a safe installation.
- Avoid contact with the leads and terminals. High voltage that may be present on leads can cause electrical shock.

⚠ WARNING

Potential electrostatic charging hazard

The Gateway enclosure is plastic. Use care in handling and cleaning when in explosive environments to avoid an electrostatic discharge.

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1 Wireless planning

Power up sequence

The Gateway should be installed and functioning properly before power modules are installed in any wireless field devices. Wireless field devices should also be powered up in order of proximity from the Gateway beginning with the closest. This will result in a simpler and faster network installation.

Antenna position

The antenna should be positioned vertically and be approximately 6 ft. (2 m) from large structures or buildings to allow for clear communication to other devices.

Mounting height

For optimal wireless coverage, the remote antenna is ideally mounted 15–25 ft. (4.6–7.6 m) above ground or 6 ft. (2 m) above obstructions or major infrastructure.

2 Personal computer (PC) requirements

Operating system (optional software only)

For security setup, Microsoft® supported Windows™ operating systems are acceptable. Some examples are shown below:

- Microsoft Windows Server 2019 (Standard Edition), Service Pack 2
- Windows 10 Enterprise, Service Pack 1

Applications

Configuration of the Gateway is done through a secure web interface. Recent versions of the following browsers are supported:

- Chrome™ browser
- Mozilla Firefox®
- Microsoft Edge

Hard disk space

AMS Wireless Configurator	6.5 GB
Security Setup Utility (SSU)	400 MB

3 Initial connection and configuration

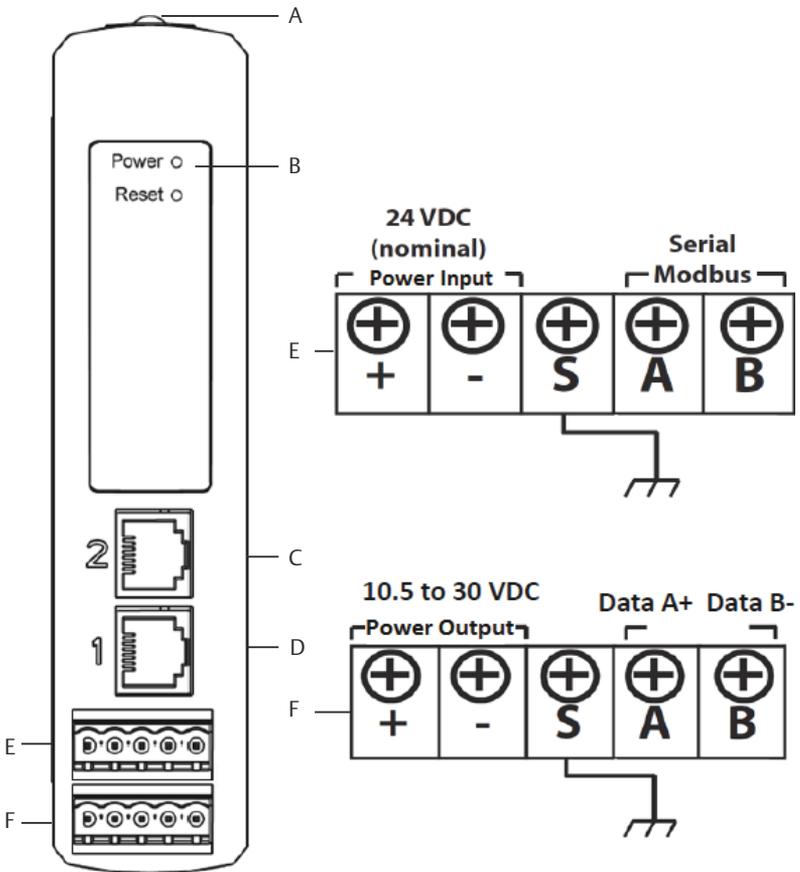
To configure the Gateway, a local connection between a personal computer (PC), Mac, or laptop and the Gateway needs to be established.

The Emerson 1410 and 1410D are operationally equivalent, and the following instructions are applicable to both models.

Powering the Gateway

For the 1410D, bench top power will be needed to power the Gateway by wiring a 10.5–30 Vdc (20–30 Vdc if a 781 is connected with intrinsically safe [IS] barriers to the 1410D) power source, with a capacity of at least 250 mA to the power terminals.

Figure 3-1: Emerson 1410D Gateway Wiring



- A. DIN rail clip
- B. Power light. During normal operation the power indicator will be green.
- C. Ethernet port 2. When this port is activated, the factory Internet protocol (IP) address is 192.168.2.10. See [Table 3-1](#)
- D. Ethernet port 1. When this port is activated, the factory IP address is 192.168.1.10. See [Table 3-1](#)
- E. Emerson 1410 power and serial connections. Black terminal included in the box.
- F. Emerson Wireless 781 Field Link power and data connections. Black terminal included in box.

3.1 Establishing a connection

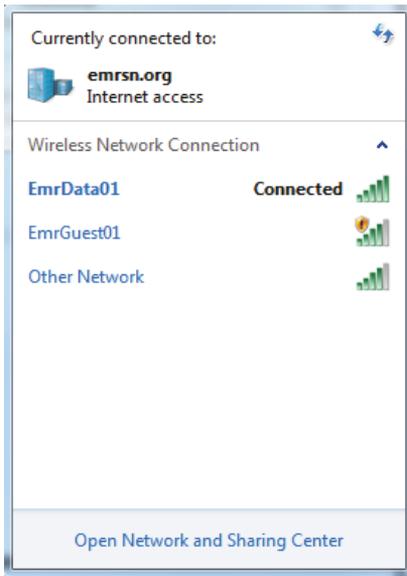
Connect the personal computer (PC) or laptop to the Ethernet 1 (primary) receptacle on the Gateway using an Ethernet cable.

3.1.1 Connect with Windows™ 7

Procedure

1. Click the **Internet Access** icon on the bottom right of the screen.

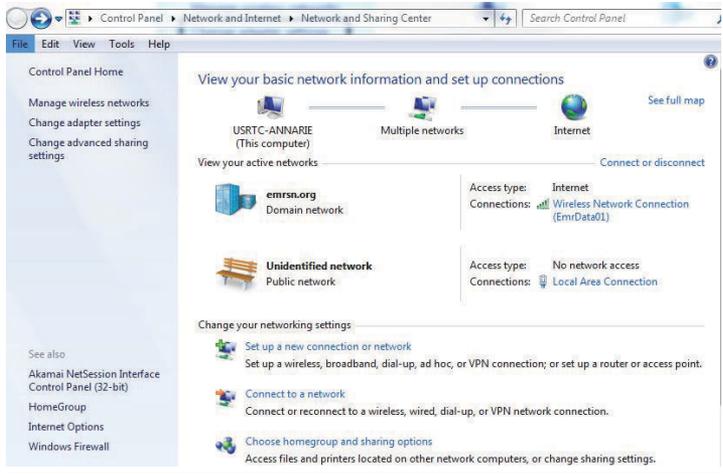
Figure 3-2: Internet access



2. Select **Open Network and Sharing Center**.

3. Select **Local Area Connection**.

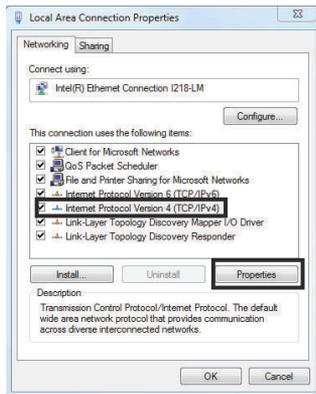
Figure 3-3: Local Area Connection



4. Select **Properties**.

5. Select **Internet Protocol Version 4 (TCP/IPv4)**; then select **Properties**.

Figure 3-4: Internet Protocol Version 4 (TCP/IPv4)



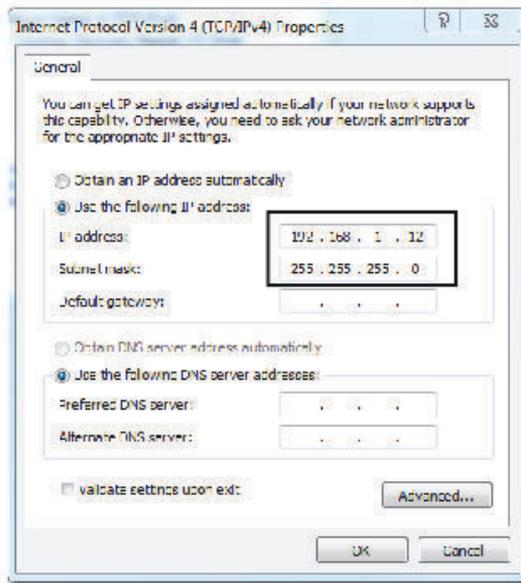
Note

If the personal computer (PC)/laptop is from another network, record the current IP address and other settings, so the

PC/laptop can be returned to the original network after the Gateway has been configured.

6. Select **Use the following IP address.**
-

Figure 3-5: IP Address



7. Enter an IP address in the **IP address** field:
 - Enter 192.168.1.12
 - DeltaV Ready: enter 10.5.255.12
8. In the **Subnet mask** field, enter 255.255.255.0.
9. Select **OK** for both the **Internet Protocol (TCP/IP) Properties** window and the **Local Area Connection Properties** window.

3.1.2 Connect with Windows™ 10

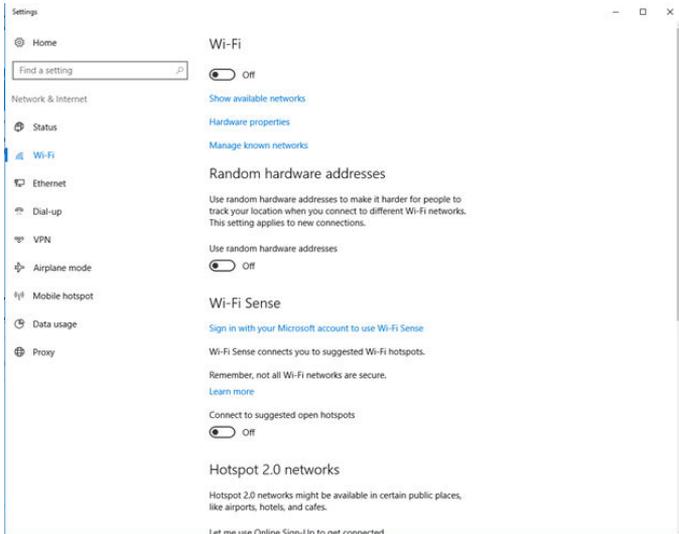
Procedure

1. Select the **Network** icon in the lower right corner.

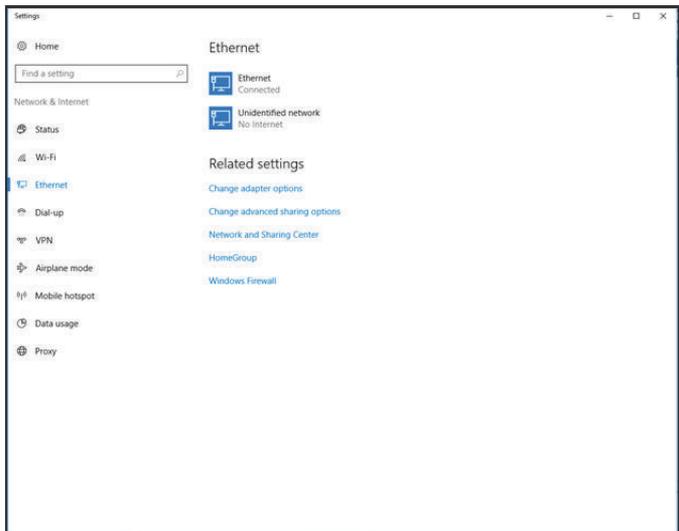


2. Select **Network settings**.

3. Select **Ethernet** on the left hand side of the **Network Settings** dialog.



4. Select **Change adapter options**.



5. See [Step 4](#) through [Step 9](#) from [Connect with Windows™ 7](#) instructions.

Note

Connecting to the Gateway's secondary Ethernet port will require different network settings.

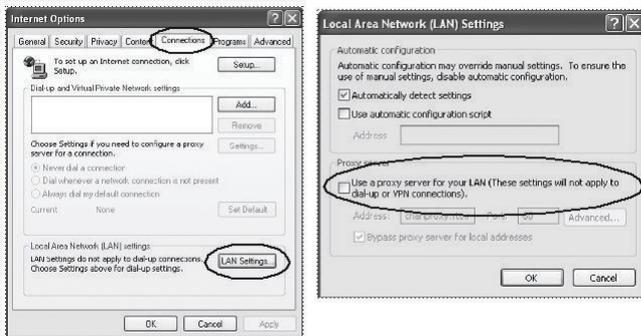
Table 3-1: Transmission control protocol/Internet protocol (TCP/IP) network settings

Ethernet connection	Gateway	Personal computer (PC)/laptop/tablet	Subnet
Ethernet 1	192.168.1.10	192.168.1.12	255.255.255.0
Ethernet 2	192.168.2.10	192.168.2.12	255.255.255.0

3.1.3 Disable proxies

Procedure

1. Open web browser.
2. Navigate to **Tools** → **Internet Options** → **Connections** → **LAN Settings**.
This may be a different process for other browsers.
3. Under **Proxy server**, deselect **Use a proxy server...**



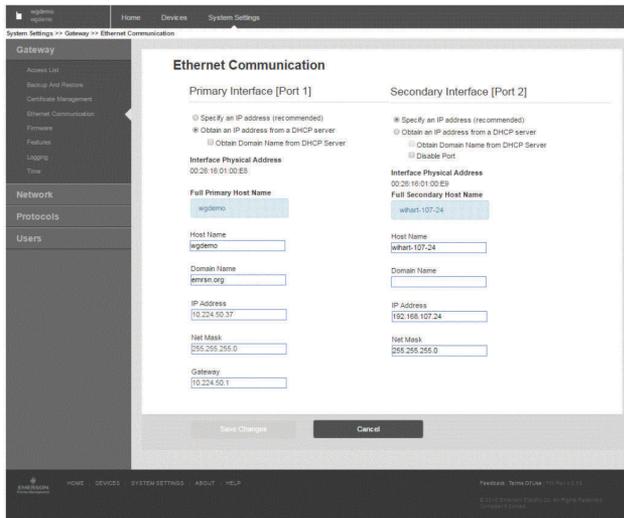
3.2 Configure the Gateway

Procedure

1. Access the default web page for the Gateway at `https://192.168.1.10`
 - a) Log on as **Username:** admin.
 - b) Type in **Password:** default.



2. Navigate to **System Settings** → **Gateway** → **Ethernet Communication** to enter the network settings.
 - a) Configure a static **IP Address** or set for dynamic host configuration protocol (DHCP) and enter a **Host Name**.



3. Restart application at **System Settings** → **Gateway** → **Backup and Restore** → **Restart Apps**.
-

Note

Resetting applications will temporarily disable communications with field devices.

4. Disconnect the power and Ethernet cable from the Gateway.

4 Physical installation

4.1 Emerson and 1410D mounting

You can snap the device onto a DIN TS35/7.5 or TS35/15 rail system.

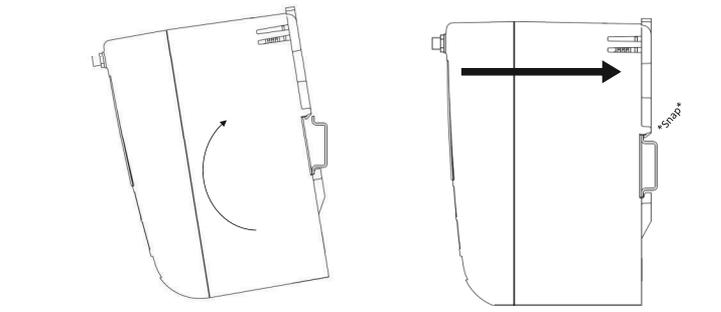
NOTICE

When mounting the device in an electrical enclosure or other location, comply with the appropriate local and national installation codes. Verify that the installer, associated hardware, and installation equipment used have the proper certifications for the specific type of installation being performed. Before installation, verify if local codes require a permit and/or an inspection before energizing. When planning the installation, account for routing the antenna cable within the enclosure.

Procedure

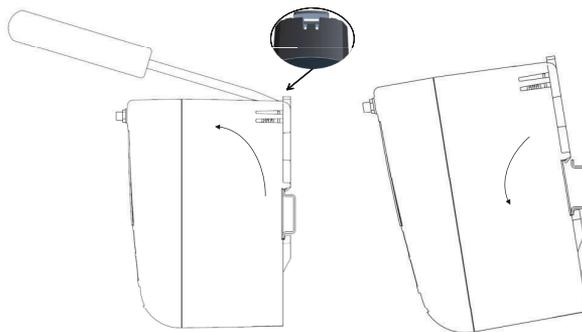
1. Tilt the device at a slight angle allowing the lower lip of the chassis to catch the bottom of the DIN rail.
2. Apply pressure forward to snap the back of the device securely onto the DIN rail.

Figure 4-1: Clip the device onto the DIN rail



3. To remove the device, place a flat or rounded object (such as a screw driver) into the DIN clip and apply a slight pressure downwards on the object.

Figure 4-2: Remove the device from the DIN rail



NOTICE

Do not mount the antenna within a metal enclosure. To avoid damage to sensitive RF components, do not remove protective cap from the Gateway SMA connector until ready to install the antenna.

4. Once the device is released from the DIN rail, pull backwards and down to successfully disengage.

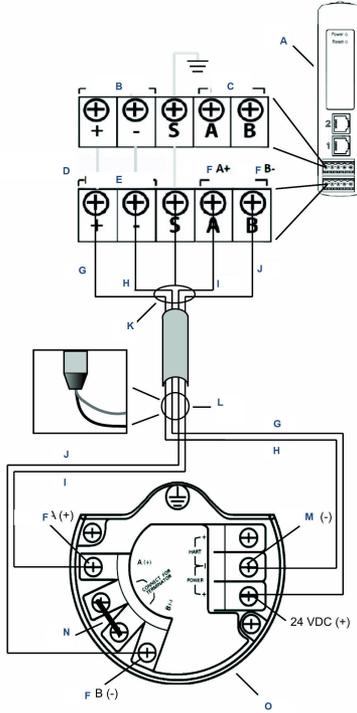
4.2 Connecting the Emerson 1410D with 781

There are two main connection configurations for the 1410D and 781: with and without barriers. The location and hazardous approval option of the 781 determines whether it needs to be installed with barriers.

Installation without barriers

A shielded twisted pair cable is needed for connecting the 1410D and 781 (refer to [Figure 4-3](#)). The 781 can be located up to 656 ft. (200 m) from the 1410D.

Figure 4-3: 1410D and 781 without barriers installation



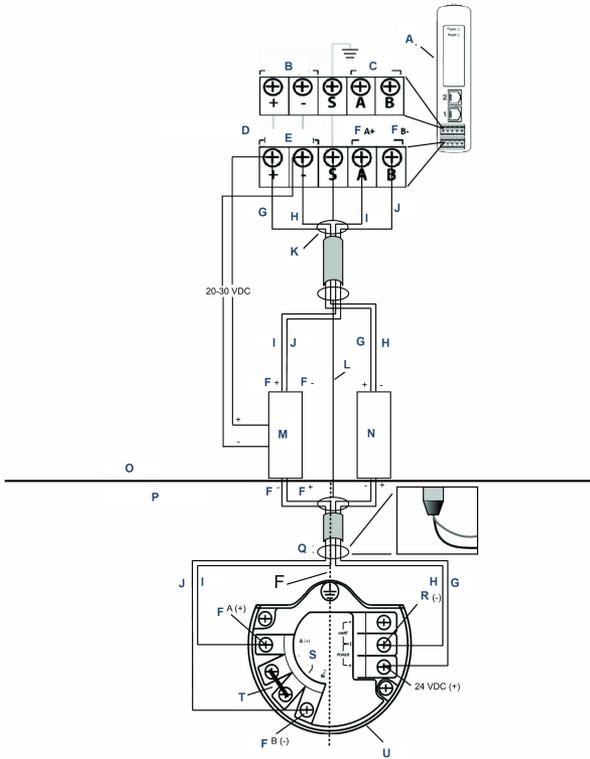
- A. Wireless 1410D Gateway
- B. 10.5 to 30 Vdc power input
- C. Serial Modbus®
- D. Gray line means internal connection
- E. Power outputs
- F. Data
- G. Red
- H. Black
- I. White
- J. Blue
- K. Attach shield pair cable (Belden 3084A or equivalent)
- L. Tape back shield wire and foils
- M. Return
- N. Short these terminals to enable 250 Ω terminating resistor
- O. Wireless 781 Field Link

Installation with barriers

Use these instructions when installing the 781 in a hazardous area there are two intrinsically safe (I) barriers that need to be installed: a power barrier and a signal barrier. The signal and the power are two separate IS circuits, so they must comply with proper IS segregation distance. When using the Emerson recommended barriers the input power of the Gateway should be 20–30 Vdc, with current capacity of at least 330 mA.

The signal barrier needs additional power. You can wire it to the 1410D terminals or to a separate power supply. Make sure power supply is rated to handle power drawn for the barrier. [Figure 4-4](#) and [Figure 4-5](#) show the two variations of powering the signal barrier.

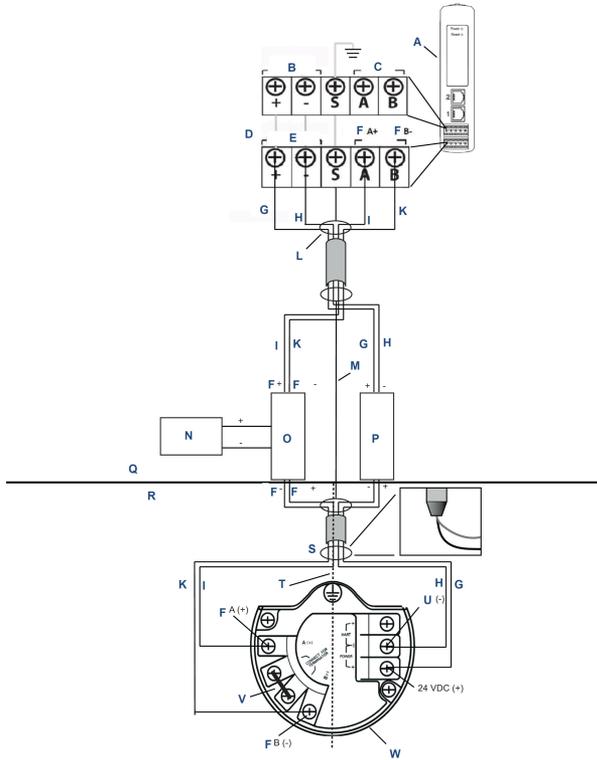
Figure 4-4: 1410D and 781 with Gateway-powered barrier installation



- A. Wireless 1410D Gateway
- B. 20 to 30 Vdc power input
- C. Serial Modbus
- D. Gray line means internal connection
- E. Power outputs
- F. Data
- G. Red
- H. Black
- I. White
- J. Blue
- K. Attach shield pair cable (Belden 3084A)
- L. Shield
- M. Signal barrier
- N. Power barrier
- O. Safe area

- P. Hazardous area*
 - Q. Tape back shield wire and foils*
 - R. IS segregation*
 - S. Return*
 - T. Connect for terminator*
 - U. Short these terminals for 250 Ω*
 - V. Wireless 781 Field Link*
-

Figure 4-5: 1410D and 781 with additional power-supplied barrier installation



- A. Wireless 1410D Gateway
- B. 20 to 30 Vdc power input
- C. Serial Modbus
- D. Gray line means internal connection
- E. Power outputs
- F. Data
- G. Red
- H. Black
- I. White
- J. Blue
- K. Attach shield pair cable (Belden 3084A)
- L. Shield
- M. 20 to 30 Vdc power supply
- N. Signal barrier
- O. Power barrier

- P. Safe area*
 - Q. Hazardous area*
 - R. Tape back shield wire and foils*
 - S. IS segregation*
 - T. Return*
 - U. Short these terminals for 250 Ω*
 - V. Wireless 781 Field Link*
-

Recommendation

Signal barrier	GM-International D1061S
Power barrier	Stahl 9176 10-16-00

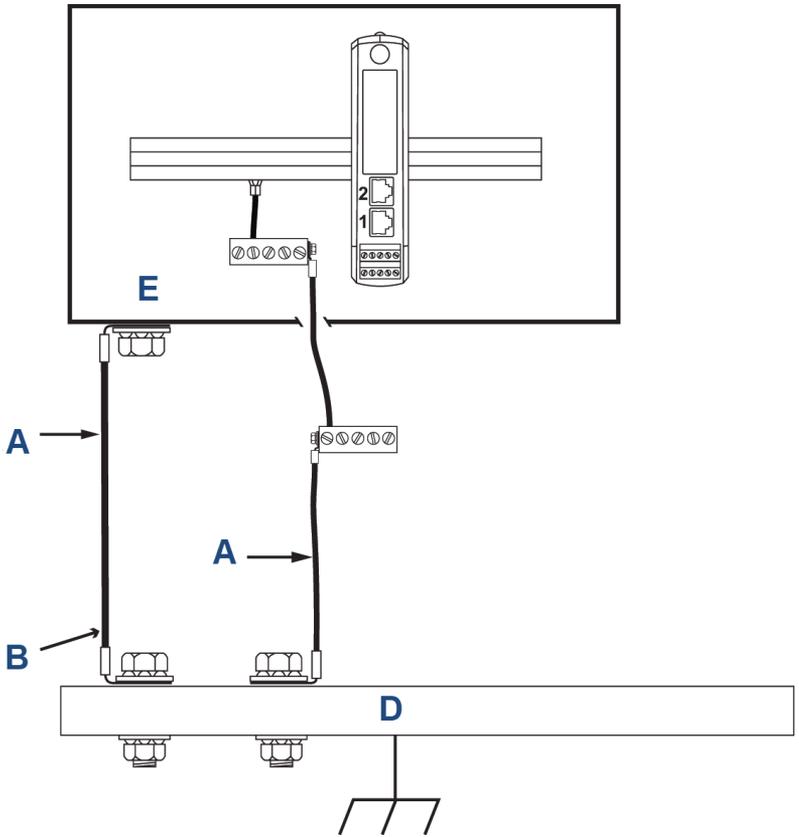
Shield grounding

The shield of the twisted pair cable needs to be grounded using the grounding terminal on the 1410D, and it should be taped back on the 781 side.

1410D grounding

The 1410D DIN rail cabinet must be grounded as well. Emerson recommends A #6 American Wire Gauge (AWG) (4.11 mm European) copper wire bonding connector with the shortest length possible, no sharp bends, and no coiling.

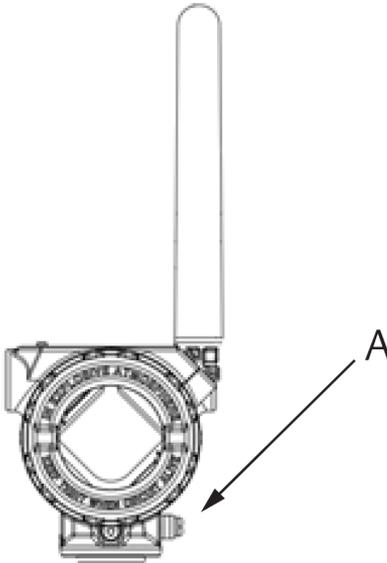
Figure 4-6: 1410D grounding



- A. #6 AWG copper wire
- B. Protective ground
- C. Reference ground (when present)
- D. Earth
- E. May be polymer with grounding plate

781 grounding

Grounding of the electronics enclosure should be done in accordance with local and national installation codes. Grounding is accomplished through the external case grounding terminal.

Figure 4-7: 781 grounding*A. Grounding lug*

Terminating resistances

For best performance, the terminating resistances should be matched across the 1410D, 781, and the signal barrier. The 1410D has an integral 250 Ω terminating resistor. Short the 781 terminator terminals to engage a 250 Ω resistor (see [Figure 4-4](#) and [Figure 4-5](#)). The recommended barriers can also be switched to 250 Ω .

4.3 Connect to the host system

Procedure

1. Wire the Gateway's Ethernet 1 (primary) or Serial Output connection to the host system network or serial input/output (I/O) (see [Figure 3-1](#) for hardware drawings).
2. For serial connections, make sure all terminations are clean and secure to avoid wiring connection problems.

4.4 Best practice

Twisted shielded pair cable is generally used to wire the serial connection, and it is standard practice to ground the shield on the serial host side, leaving the shield floating on the Gateway side.

Insulate the shield to avoid grounding issues.

5 Software installation (optional)

Install Security Setup Utility (only required for secure host connections or OPC-DA communications) and AMS Wireless Configurator as needed.

The Gateway firmware needs to be compatible with host connections being made. Verify that Gateway firmware and host firmware (such as Security Setup Utility [SSU] and Plantweb Insight™) are compatible before commissioning.

You can download Security Setup Utility and AMS Wireless Configurator from [Emerson's Gateway Firmware Upgrade](#). A Guardian account is required to download.

5.1 Install Security Setup Utility (SSU)

Procedure

1. Exit/close all Windows™ programs, including any running in the background, such as virus scan software.
2. Open the SSU software file downloaded from the *Emerson Gateway Firmware Upgrade* page.
3. Follow the prompts.

5.2 Install AMS Wireless Configurator

For more information about the Security Setup Utility and AMS Wireless Configurator, see the [Emerson Wireless 1410 Gateway Reference Manual](#).

Procedure

1. Exit/close all Windows™ programs, including any running in the background, such as virus scan software.
2. Open the AMS Wireless Configurator software file downloaded from the *Emerson Gateway Firmware Upgrade* page.
3. Follow the prompts.
4. Allow AMS Wireless Configurator to reboot the personal computer (PC).
Installation will resume automatically after login.
5. Follow the prompts.

6 Verifying operations

To verify operations through the web interface, open a web browser from any personal computer (PC) on the host system network and enter the Gateway Internet protocol (IP) address or dynamic host configuration protocol (DHCP) host name in the address bar.

If the Gateway has been connected and configured properly, the security alert will be displayed, followed by the **Login** screen.

Figure 6-1: Gateway Login screen



The screenshot shows a web interface for logging into a Gateway. The title is "Unlock?". Below the title is a message: "Please enter your password to unlock this section." There are two input fields: "Username" and "Password". Below the input fields is a warning message: "Do not attempt to log on unless you are an authorized user. Unauthorized access will be prosecuted to the fullest extent of the law." At the bottom of the form is a "Login" button.

The Gateway is now ready to be integrated into the host system. If wireless field devices were ordered with the Gateway, Emerson pre-configured them with the same Network ID and Join Key information. Once the field devices are powered, they will appear on the wireless network, and communications can be verified under the **Explore** tab using the web interface. The time needed for the network to form will depend on the number of devices.

For more detailed installation instructions, see the [Emerson Wireless 1410 Gateway Reference Manual](#).

7 Product certifications

Rev 3.4

European Directive information

A copy of the EC Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EC Declaration of Conformity can be found at [Emerson.com](https://www.emerson.com).

Telecommunication 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.

Federal Communications Commission (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 7.9 in. (20 cm) from all persons.

7.1 Ordinary location certification

As standard, the transmitter 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).

7.2 North America

USA

N5	USA Division 2
Certificate	2646342 (CSA)
Standards	CAN/CSA C22.2 No. 0-10, CSA C22.2 No. 213-M1987 (2013), CSA C22.2 No. 61010-1 - 2012, ANSI/ISA-12.12.01 - 2012, UL61010-1, 3rd Edition
Markings	Suitable for CL I, DIV 2, GP A, B, C, D
Temperature Code	T4 (-40 °C ≤ Ta ≤ +70 °C)

Note

- Shall be powered by a class 2 power supply.
- Suitable for dry indoor locations only.
- Equipment must be installed in a suitable tool accessible enclosure subject to the end use application.
- Using the Emerson 1410D and the Smart Wireless Field Link 781 in a hazardous location requires barriers between the two units.

7.2.1 Canada

N6 Canada Division 2

Certificate 2646342 (CSA)

Standards CAN/CSA C22.2 No. 0-10, CSA C22.2 No. 213-M1987 (R2013), CSA C22.2 No. 61010-1 - 2012, ANSI/ISA-12.12.01 - 2012, UL61010-1, 3rd Edition

Markings Suitable for CL I, DIV 2, GP A, B, C, D;
T4 ($-40\text{ °C} \leq T_a \leq +70\text{ °C}$)

Note

- Shall be powered by a class 2 power supply.
- Suitable for dry indoor locations only.
- Equipment must be installed in a suitable tool accessible enclosure subject to the end use application.
- Using the Emerson 1410D and the Smart Wireless Field Link 781 in a hazardous location requires barriers between the two units.

7.3 Europe

N1 ATEX Type n

Certificate Baseefa14ATEX0125X

Standards EN 60079-0: 2012 + A11: 2013, EN 60079-15: 2010

Markings  II 3 G Ex nA IIC T4 Gc, ($-40\text{ °C} \leq T_a \leq +75\text{ °C}$), $V_{MAX} = 30\text{ Vdc}$

Special Conditions for Safe Use (X):

1. The equipment must be installed in an area of not more than Pollution Degree 2 as defined in IEC 60664-1 and in an enclosure that provides a degree of protection of at least IP54

and meets the relevant requirements of EN 60079-0 and EN 60079-15.

2. External connections to the equipment must not be inserted or removed unless either the area in which the equipment is installed is known to be non-hazardous or the circuits connected have been de-energized.
3. The equipment is not capable of withstanding the 500 V electrical strength test as defined in clause 6.5.1 of EN 60079-15: 2010. This must be taken into account during installation.
4. When fitted, the surface resistivity of the remote antenna is greater than 1 GΩ. To avoid electrostatic charge build up, it must not be rubbed with a dry cloth or cleaned with solvents.

Note

Not currently available for 1410D option.

7.4 International

N7 IECEx Type n

Certificate IECEx BAS 14.0067X

Standards IEC 60079-0: 2011, IEC 60079-15: 2010

Markings Ex nA IIC T4 Gc, T4(-40 °C ≤ T_a ≤ +75 °C), V_{MAX} = 30 Vdc

Special Conditions for Safe Use (X):

1. The equipment must be installed in an area of not more than Pollution Degree 2 as defined in IEC 60664-1 and in an enclosure that provides a degree of protection of at least IP54 and meets the relevant requirements of EN 60079-0 and EN 60079-15.
2. External connections to the equipment must not be inserted or removed unless either the area in which the equipment is installed is known to be nonhazardous or the circuits connected have been de-energised.
3. The equipment is not capable of withstanding the 500 V electrical strength test as defined in clause 6.5.1 of EN 60059-15: 2010. This must be taken into account during installation.
4. When fitted, the surface resistivity of the remote antenna is greater than 1 GΩ. To avoid electrostatic charge build-up, it must not be rubbed with a dry cloth or cleaned with solvents.

Note

Currently not available for Emerson 1410D option.

7.5 EAC - Armenia, Belarus, Kazakhstan, Kyrgyzstan, Russia

NM (EAC) Type n

Certificate EAЭC RU C-US.EX01.B.00167/2

Markings 2Ex nA IIC T4 Gc X, T4 ($-40\text{ °C} \leq T_a \leq +75\text{ °C}$), $V_{\text{MAX}} = 30\text{ Vdc}$

Special Condition for Safe Use (X):

1. See certificate for special conditions.

Note

Currently not available for Emerson 1410D option.

7.6 Japan

N4 CML Type n

Certificate CML 17JPN4230X

Markings Ex nA IIC T4 Gc X, T4 ($-40\text{ °C} \leq T_a \leq +75\text{ °C}$), $V_{\text{max}} = 30\text{ Vdc}$, 3 Watts

Special Conditions for Safe Use (X):

1. See certificate for special conditions.

7.7 Emerson 1410 Wireless Gateway Declaration of Conformity

Figure 7-1: Declaration of Conformity

	EU Declaration of Conformity	
No: RMD 1093 Rev. H		
<p>We,</p> <p>Rosemount, Inc. 6021 Innovation Boulevard Shakopee, MN 55379-4676 USA</p> <p>declare under our sole responsibility that the product,</p> <p style="text-align: center;">Rosemount 1410 Wireless Gateway</p> <p>manufactured by,</p> <p>Rosemount, Inc. 6021 Innovation Boulevard Shakopee, MN 55379-4676 USA</p> <p>to which this declaration relates, is in conformity with the provisions of the European Union Directives, including the latest amendments, as shown in the attached schedule.</p> <p>Assumption of conformity is based on the application of the harmonized standards and, when applicable or required, a European Union notified body certification, as shown in the attached schedule.</p>		
 _____ (signature)		Vice President of Global Quality _____ (function)
Mark Lee _____ (name)		5-Aug-21; Boulder, CO USA _____ (date of issue)
Page 1 of 3		

 **EU Declaration of Conformity** 
No: RMD 1093 Rev. H

EMC Directive (2014/30/EU)

Harmonized Standards:
EN 61326-1: 2013

Radio Equipment Directive (RED) (2014/53/EU)

Harmonized Standards:
EN 300 328 V2.2.2:2019
EN 301 489-17: V3.2.0
EN 60950-1: 2006+A11+A12+A1+A2
EN 50371: 2002

ATEX Directive (2014/34/EU)

Baseefa14ATEX0125X – Type n Certificate
Equipment Group II, Category 3 G
Ex nA IIC T4 Gc

Harmonized Standards:
EN 60079-0: 2012 + A11:2013
EN 60079-15: 2010

*A review against EN IEC 60079-0:2018 which is harmonized, shows no significant changes relevant to this equipment so EN 60079-0:2012+A11:2013 continues to represent “State of the Art”.

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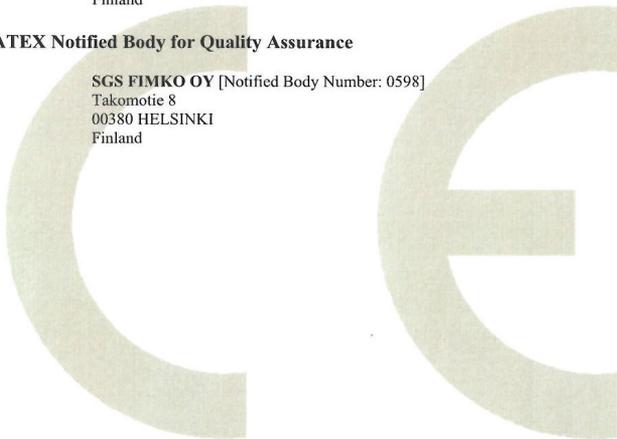
 **EU Declaration of Conformity** 
No: RMD 1093 Rev. H

ATEX Notified Body

SGS FIMKO OY [Notified Body Number: 0598]
Takomotie 8
00380 HELSINKI
Finland

ATEX Notified Body for Quality Assurance

SGS FIMKO OY [Notified Body Number: 0598]
Takomotie 8
00380 HELSINKI
Finland



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Figure 7-2: China RoHS table

含有China RoHS管控物质超过最大浓度限值的部件型号列表 Rosemount 1410
List of Rosemount 1410 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)
电子组件 Electronics Assembly	X	O	O	O	O	O

本表格系依据SJ/T11364的规定而制作。

This table is proposed in accordance with the provision of SJ/T11364.

O: 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。

O: 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.



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

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