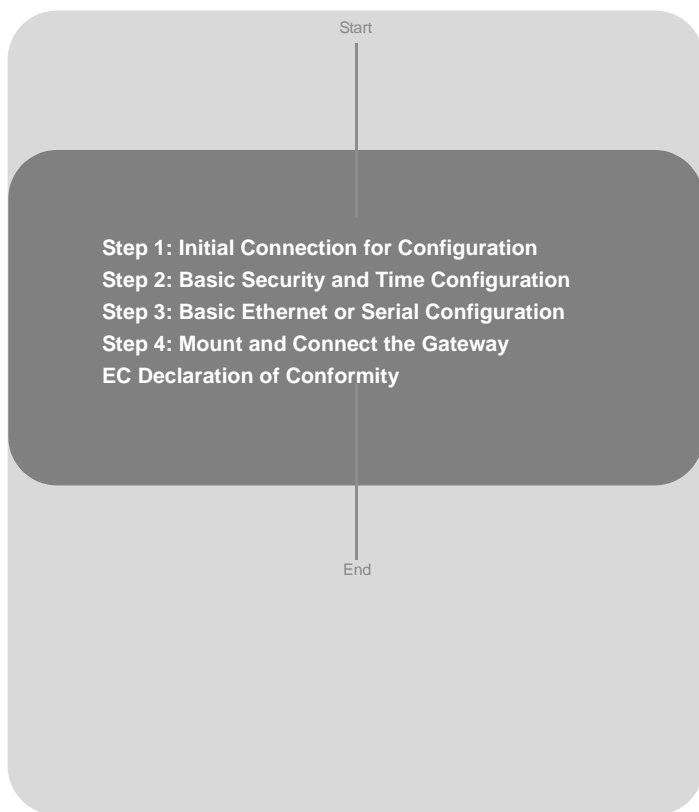


1420 Wireless Gateway



Discontinued Product



EMERSON
Process Management

1420 Wireless Gateway

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IMPORTANT NOTICE

This installation guide provides basic guidelines for the 1420 Wireless Gateway. It does not provide instructions for detailed configuration, diagnostics, maintenance, service, troubleshooting, or installations. Refer to the 1420 Wireless Gateway reference manual (document number 00809-0100-4420) for more instruction. The manual and this QIG are also available electronically on www.rosemount.com.

WARNING

Explosions could result in death or serious injury:

Installation of this device in an explosive environment must be in accordance with the appropriate local, national, and international standards, codes, and practices. Please review the Hazardous Locations Certifications for any restrictions associated with a safe installation.

Electrical shock can result in death or serious injury

- Avoid contact with the leads and terminals. High voltage that may be present on leads can cause electrical shock.

WARNING

Explosion Hazard

Do not disconnect equipment when a flammable or combustible atmosphere is present.

IMPORTANT NOTICE

The 1420 Wireless Gateway should be installed before installing any other wireless devices. This will result in a simpler and faster network installation.

STEP 1: INITIAL CONNECTION FOR CONFIGURATION

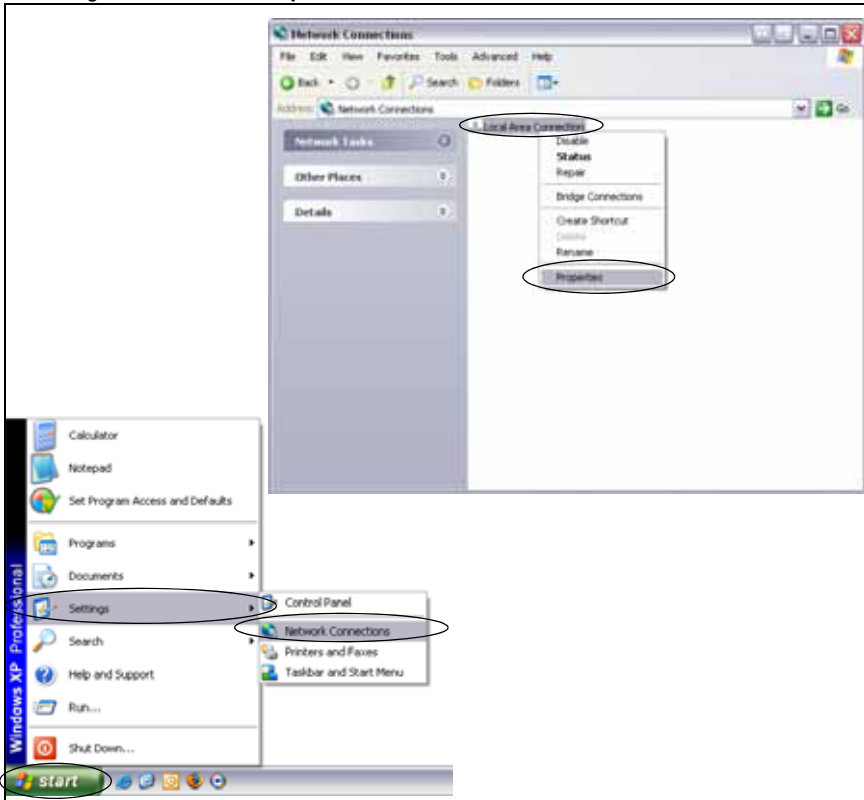
To configure the 1420 Wireless Gateway, a local connection between a PC/laptop and the 1420 Wireless Gateway must be established.

NOTE:

If a PC/laptop from another network is used, carefully record the current IP address and other settings so the PC/laptop can be returned to its original network when configuration of the 1420 is finished.

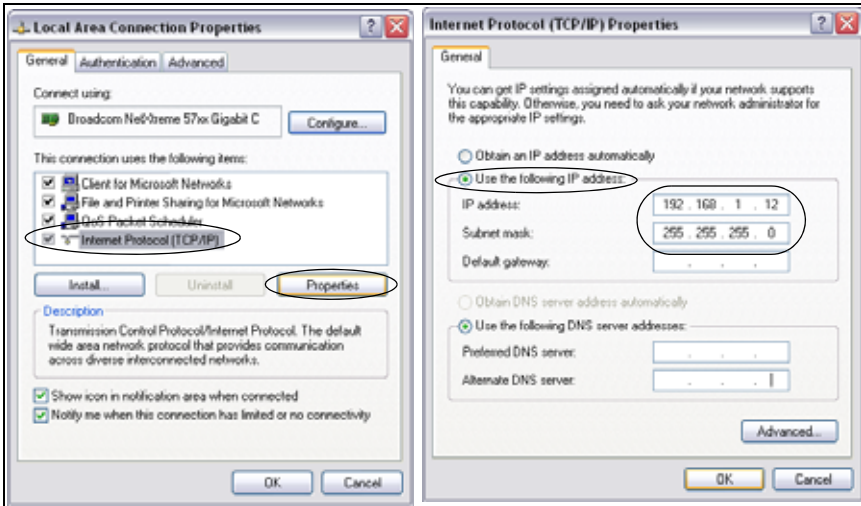
Perform the following steps to establish a local connection with the 1420 Wireless Gateway:

1. On the PC/laptop, install the Java Plug-in found on the CD provided with the 1420. The Plug-in can also be found at <http://java.com/>
2. Under Network Connections:
 - a. Select **Local Area Connection**
 - b. Right click to select **Properties**.

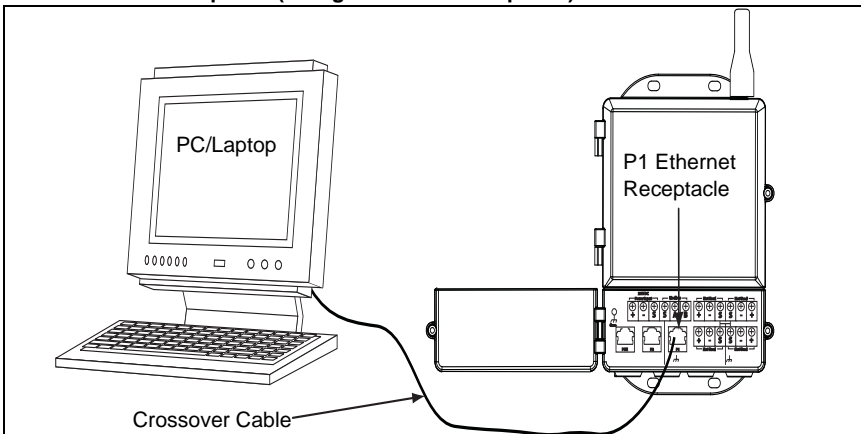


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- c. Select **Internet Protocol (TCP/IP)**, then click the **Properties** button
- d. Select the **Use the following IP address** button and set the IP address to **192.168.1.12**
- e. Set the **Subnet Mask** to **255.255.255.0**



- f. Select **OK** for each of the settings windows that have opened.
3. Using the supplied crossover Ethernet cable, attach your PC/laptop to the 1420's **P1 Ethernet Receptacle (far right Ethernet receptacle).**

**WARNING**

Do not connect to the Power Over Ethernet (POE) port. This port supplies power and could potentially damage the PC/laptop.

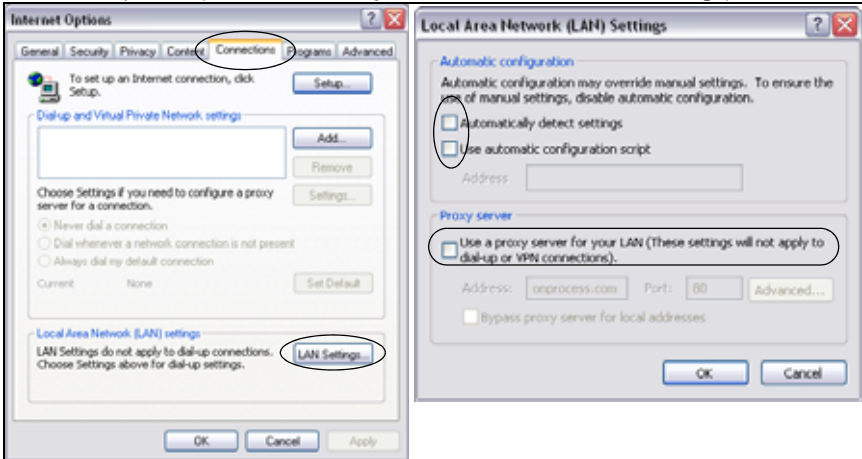
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4. Open a standard web browser (Internet Explorer, Mozilla Firefox or similar).
5. Uncheck proxies (**Tools>Internet Options>Connections>LAN Settings**)



6. Access the 1420's default web page at <https://192.168.1.10>



- a. Log on as User: **admin**
- b. Password: **default**



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c. Click **Yes** to proceed through the Security Alert



The 1420 Home Page will appear as shown below



STEP 2: BASIC SECURITY AND TIME CONFIGURATION

To configure the basic security of the 1420 Wireless Gateway, perform the following steps.

1. Navigate to **Setup>Security>User Accounts**
2. Set and confirm new passwords for each of the access levels

The screenshot shows the '1420 Wireless Gateway' web interface. The left sidebar contains a tree view with 'Setup' expanded, and 'Security' > 'New account' selected. The main content area is titled 'Passwords' and features a yellow warning icon and text: 'Warning: Use caution when changing the administrator password. If the administrator password is lost, you will not be able to setup the 1420.' Below the warning are four password configuration sections, each with 'New' and 'Confirm' fields:

- New Administrator Password
- New Maintenance Password
- New Operator Password
- New Executive Password

A 'Submit' button is located at the bottom left of the main content area.

3. Click **Submit**
4. Navigate to **Setup>Time**

The screenshot shows the '1420 Wireless Gateway' web interface with the 'Time Setup' page. The left sidebar shows 'Setup' > 'Time' selected. The main content area displays the current time comparison:

Your PC's time	11/17/06 09:41:26.921
1420 time (systemtest2)	11/17/06 09:42:11.629
Difference	0 days 00:00:44.908

Below the table, the 'Method used to set time' section has three radio button options: 'Network Time Protocol (NTP)', 'Set with PC time' (which is selected), and 'Manual entry'. A 'Submit' button is at the bottom left.

5. Select method and click **Submit**

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STEP 3: BASIC ETHERNET OR SERIAL CONFIGURATION**To configure the 1420 for an Ethernet Network:**

Table 3: Ethernet Communication Settings on page 17 is available to assist in recording the necessary information.

1. Determine 1420 Ethernet Port for connecting to Ethernet Network

If using a wired connection, use Port 1 (P1)

IT/Process Control Network Administrator or Technician can provide the following:

- a. 1420 fixed IP Address or DHCP Host Name
- b. Netmask (Subnet Mask)
- c. Gateway

BEST PRACTICE:

Keep these values in a secure location not accessible by unauthorized personnel.

2. Configure 1420 Ethernet IP settings
 - a. Access the 1420 with **Administrator** access
 - b. Navigate to **Setup>Internet Protocol>Address**

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Internet Protocol Address

Primary Interface

☒ Obtain an IP address from a DHCP server
☒ Obtain Domain Name from DHCP server
☐ Specify an IP address

Hostname	
Domain Name	
IP Address	192.168.1.10
Netmask	255.255.255.0
Gateway	192.168.1.1

- c. Enter configuration information determined above

3. To complete configuration without a firewall, click **Submit** and proceed with 1420 Restart when prompted.

STEP 3 CONTINUED...

To configure the 1420 for a Serial connection:

is available to assist in recording the necessary information.

1. Configure 1420 Serial Communication Settings
 - a. Access the 1420 Web Interface with **Administrator** access
 - b. Navigate to **Setup>Modbus>Communication**
 - c. Click **Enable Modbus**

The screenshot shows the 'Modbus Communication' configuration page for the 1420 Wireless Gateway. The 'Enable Modbus' checkbox is checked and circled. The page is divided into two main sections: 'Modbus TCP Port' and 'Modbus RTU Port'. The 'Modbus TCP Port' section includes fields for 'Modbus TCP Port' (502), 'Modbus Slave Address (1-247)' (1), 'Baud Rate' (19200), 'Parity' (None), 'Stop Bits' (1), 'Response delay time (ms)' (0), 'Unmapped register read response?' (Zero fill), 'Unmapped register write response?' (Ok), and 'Write behavior' (Synchronous). The 'Modbus RTU Port' section includes fields for 'Floating point representation' (Float), 'Use swapped floating point format?' (Yes), 'Incorporate value's associated status as error?' (Yes), 'Value reported for error (floating point)' (NaN), 'Value reported for error (rounded and native integer)' (32767), 'Scaled floating point maximum integer value' (32767), 'Use global scale gain and offset?' (Yes), 'Global scale gain' (1), and 'Global scale offset' (0). The page also includes a 'Submit' button at the bottom.

- d. Configure the 1420 Modbus Communication settings to match the Host Modbus settings

NOTE:

Modbus communications will fail if they are not configured identically on the Host and the 1420.

- e. Click **Submit** and proceed with restart
2. When configuration is completed, disconnect the PC/laptop from the 1420 and return the PC/laptop to its previous network settings.

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STEP 4: MOUNT AND CONNECT THE GATEWAY**Integral Antenna with the 1420 on a Mast**

The optimal installation of the 1420 Wireless Gateway is on a pole approximately 1.8 meters above the top of the exterior wall of a building. The following hardware and tools are needed:

- Pipe mount with holes spaced 3.06 inches (78 mm) apart horizontally and 11.15 inches (283 mm) apart vertically.
- Two 3.06 inch (78 mm) by $\frac{5}{16}$ inch U-bolts
- $\frac{1}{2}$ inch wrench

Mount the gateway by doing the following:

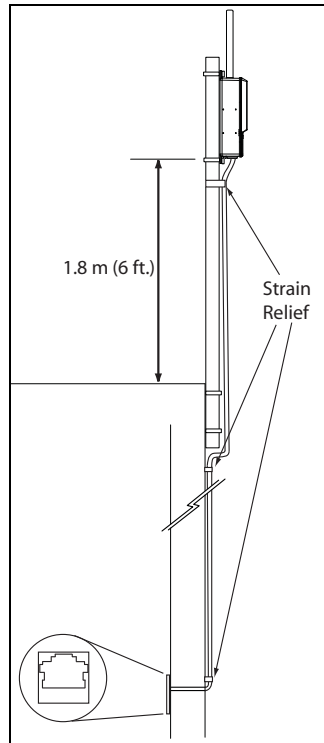
1. Insert one U-bolt around the pipe and through the top mounting holes of the pipe mount and the 1420, and another U-bolt through the bottom mounting holes of the pipe mount and the 1420.
2. Using a $\frac{1}{2}$ inch socket-head wrench, fasten the nuts to the U-bolts and tighten.

BEST PRACTICE

When mounting outside, best practice is to run the Serial or primary Ethernet cable (P1) directly to the Information System. Use conduit and/or strain relief as necessary.

BEST PRACTICE

When installing cable/conduit, run an ethernet connection from 1420 port P2 to a convenient location indoors (if the 1420 was ordered with Output Code 2). This will simplify future configuration changes.



STEP 4 CONTINUED...

Remote Antenna (Optional)

The remote antenna options provide flexibility for mounting the Gateway based on wireless connectivity, lightning protection, and current work practices.

⚠ WARNING

When installing a remote mount antenna for the Smart Wireless Gateway, use established safety procedures to avoid falling or to avoid contacting high-power electrical lines.

Install remote antenna components for the Smart Wireless gateway in compliance with local and national electrical codes and use best practices for lightning protection.

Before installation, consult with the local area electrical inspector, electrical officer, and work area supervisor.

The Smart Wireless Gateway remote antenna options are specifically engineered to provide installation flexibility while optimizing wireless performance and maintaining local spectrum approvals. Each remote antenna kit contains 50 ft. (15,2 m) of LMR-400 coaxial cable, and a high-gain antenna. To maintain wireless performance and avoid non-compliance with local spectrum regulations, do not change the length or type of coaxial cable, or the antenna type.

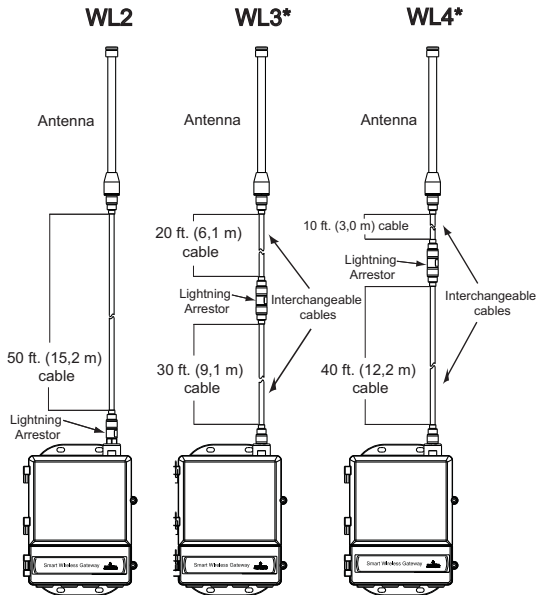
If the remote antenna kit as specified is not used in this document, Emerson Process Management is not responsible for wireless performance, or non-compliance with local spectrum regulations.

Remote mount antenna kits include weather proof tape for use on the cable connections, and a mounting kit for the lightning arrestor and antenna. The following diagram and table describe each remote antenna kit option.

Table 1. Remote Antenna Kit Options

Kit Option	Antenna	Cable 1	Cable 2	Lightning Arrestor
WL2	1/2 Wavelength Dipole Omni-Directional +6 dB Gain	50 ft. (15,2 m) LMR-400	N/A	Head mount, jack to plug Gas discharge tube 0.5 dB insertion loss
WL3	1/2 Wavelength Dipole Omni-Directional +6 dB Gain	30 ft. (9,1 m) LMR-400	20 ft. (6,1 m) LMR-400	In-line, jack to jack Gas discharge tube 0.1 dB insertion loss
WL4	1/2 Wavelength Dipole Omni-Directional +6 dB Gain	40 ft. (12,2 m) LMR-400	10 ft. (3,0 m) LMR-400	In-line, jack to jack Gas discharge tube 0.1 dB insertion loss

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**NOTE**

The coaxial cables on the remote antenna options WL3 and WL4 are interchangeable for installation convenience.

The remote antenna should be located for optimal wireless performance. Ideally, 15 - 25 ft. (4,6 - 7,6 m) above the ground or 6 ft. (2 m) above obstructions or major infrastructure.

Installation of the WL2 Option:

1. Mount the antenna on a 2-in. (0.05 m) pipe mast using the supplied equipment.
2. Attach the lightning arrester to the top of the Gateway.
3. Use the LMR-400 coaxial cable to connect the antenna to the lightning arrester.
4. Seal each connection between the Gateway, lightning arrester, cable, and antenna with the weather proof tape.

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STEP 4 CONTINUED...

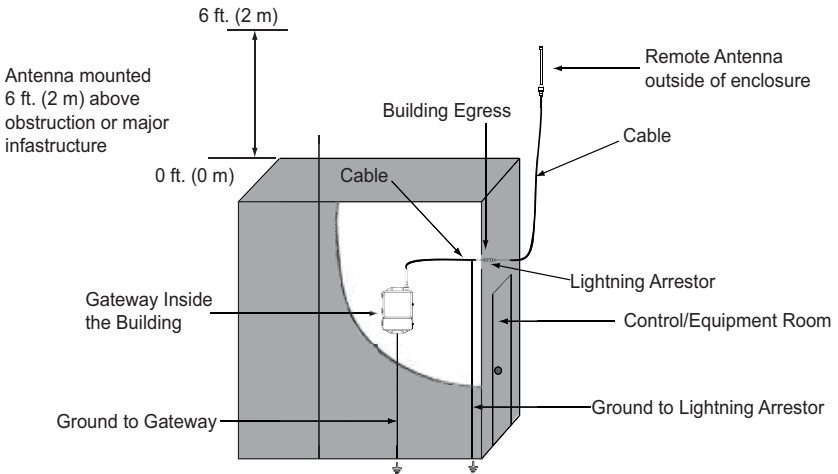
Installation of the WL3/WL4 Option:

1. Mount the antenna on a 2-in. (0.05 m) pipe mast using the supplied equipment.
2. Mount the lightning arrestor using the supplied equipment, minimizing the distance between it and the building egress for optimal lightning protection.
3. Use the LMR-400 coaxial cables to connect the Gateway, lightning arrestor, and antenna.
4. Seal each connection between the Gateway, lightning arrestor, cables, and antenna with the weather proof tape.

Any spare lengths of coaxial cable should be placed in 12-in. (0.3 m) coils.

Ensure that the mounting mast and lightning arrestor are grounded in accordance with local/national electrical codes.

Example of Mounting a Remote Antenna



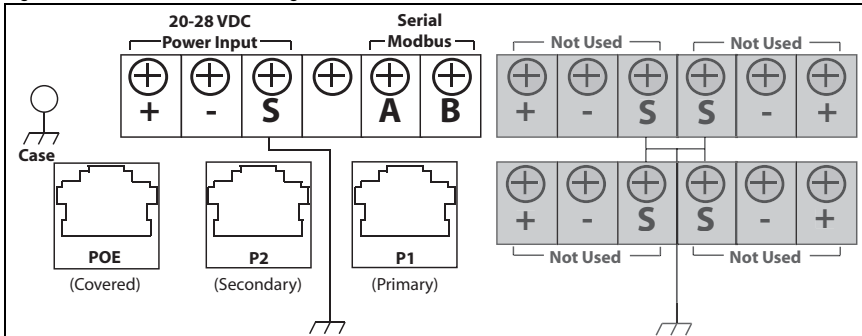
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STEP 4 CONTINUED...

Connect to Information System

1. Wire the 1420 **Primary Ethernet** output or **Serial Output** connection to the Host System **Ethernet** or **Serial** input connections.
2. For Serial connections, connect A to A, B to B and make sure all terminations are clean and secured to avoid wiring connection problems.

Figure 1. 1420 Terminal Block Diagram

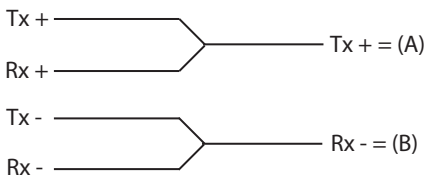
**BEST PRACTICE**

Typically, twisted shielded pair cable is used to wire the Serial connection. Standard practice is to ground the shield on the Serial Host side and leave the shield floating on the 1420 side. Be sure to insulate the 1420 shield to avoid grounding issues.

NOTE:

In most systems, A = Tx + and B = Rx -. In some systems, this is reversed. For 4-wire systems, see Figure 2.

Figure 2. Typical Full Duplex (4-wire) to Half Duplex (2-wire) Conversion Diagram



Confirm wiring configuration with host system documentation.

Supply Power

After mounting is complete supply power to the 1420 according to the following steps:

1. Ground the 1420 using suitable grounding methods. There is a case ground lug located near the terminal block, and an external ground lug located near the conduit entries on the bottom of the housing.
2. Connect the 24 V DC power wiring to the Power Input terminals in the 1420. The 1420 requires 500 mA of current.
3. Close the terminal cover and tighten securely.

BEST PRACTICE

Use an uninterruptible power supply (UPS) to ensure that the network is still functional should there be a loss of power.

PRODUCT CERTIFICATIONS

Approved Manufacturing Locations

Rosemount Inc. – Chanhassen, Minnesota, USA

Telecommunication 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.

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 20 cm from all persons.

Ordinary Location Certification for FM

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

North American Certifications

N5 FM Division 2, Non-Incendive

Certificate Number: 3028321

Nonincendive for Class I, Division 2, Groups A, B, C, and D.

Dust Ignition-proof for Class II, III, Division 1,

Groups E, F, and G; Indoors/outdoor locations;

NEMA Type 4X

Temperature Code: T4 (-40 °C < T_a < 60 °C)

Canadian Standards Association (CSA)

N6 CSA Division 2, Non-Incendive

Certificate Number: 1849337

Suitable for Class I, Division 2, Groups A, B, C, and D.

Dust Ignition-proof for Class II, Groups E, F, and G;

Suitable for Class III Hazardous Locations.;

Install per Rosemount drawing 01420-1011.

Temperature Code: T4 (-40 °C < T_a < 60 °C)

CSA Enclosure Type 4X

European Union Directive Information

The EC declaration of conformity for all applicable European directives for this product can be found on the Rosemount website at www.rosemount.com. A hard copy may be obtained by contacting your local sales representative.

(continued on page 16)

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ATEX Directive (94/9/EC)

Emerson Process Management complies with the ATEX Directive.

Electro Magnetic Compatibility (EMC) (2004/108/EC)

Emerson Process Management complies with the EMC Directive.

Radio and Telecommunications Terminal Equipment Directive (R&TTE)(1999/5/EC)

Emerson Process Management complies with the R&TTE Directive



European Certification

N1 ATEX Type n

Certificate Number: Baseefa 07ATEX0056X

ATEX Marking: Ex II 3 G

Ex nA nI IIC T4 (-40 °C < T_a < 60 °C)

Special Conditions for Safe Use (X)

The surface resistivity of the antenna is greater than one gigohm. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.

The Apparatus is not capable of withstanding the 500V insulation test required by Clause 9.4 of EN 60079-15: 2005. This must be taken into account when installing the apparatus.

ND ATEX Dust

Certificate Number: Baseefa 07ATEX0057

Ex tD A 22 IP66 T135 (-40 °C < T_a < 60 °C)

Ex nA nL IIC T4 T4 (-40 °C < T_a < 60 °C) II 3D

V_{max} = 28V

N7 IECEx Type n

Certificate Number: IECEx BAS 07.0012X

Ex nC IIC T4 (-40 °C < T_a <= 60 °C)

Rated Voltage: 28V

Special conditions for safe use (X)

The surface resistivity of the antenna is greater than one gigohm. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.

The Apparatus is not capable of withstanding the 500V insulation test required by Clause 9.4 of EN 60079-15: 2005. This must be taken into account when installing the apparatus.

NF IECEx Dust

Certification Number: IECEx BAS 07.0013

Ex tD A22 IP66 T135 (-40 °C < T_a < 60 °C)

V_{max} = 28V

Combinations of Certifications

KD Combination of N5, N6, and N1.

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Table 2. Ethernet Port Locations

Settings	Location
1420 Ethernet Port	P1
Information System Switch or Access Point	
Switch or Access Point Ethernet Port	

Table 3. Ethernet Communication Settings

Setting	Value	Options
Use Fixed IP or DHCP?		Fixed or DHCP
Fixed IP Address or DHCP Host Name		XXX.XXX.XXX.XXX or XXXXXXX
Netmask (Subnet Mask)		YYY.YYY.YYY.YYY
Gateway		ZZZ.ZZZ.ZZZ.ZZZ

Table 4. Serial Connectivity Locations

Locations	
Serial Card Location	
Serial Card ID	
Serial Card Termination A (Tx +)	
Serial Card Termination B (Rx -)	

Table 5. Serial Communication Settings

Setting	Value	Options on 1420 (Default in Bold)
Modbus Slave Address		1 - 247
Baud Rate		9600, 19200 , 38400, 57600
Parity		None, Even , Odd
Stop Bits		1 , 2
Response Delay Time		0 ms , Configurable in ms
Unmapped Register Read Response		Zero , Illegal Data
Unmapped Register Write Response		OK , Illegal Data Address
Write Behavior		Synchronous, Queued, Most Current
Floating Point Representation		Float , Round (Integer), Scale
Use Swapped Floating Point Format		Yes, No
Incorporate Value's Associated Status as Error?		Yes, No
Value Reported for Error		NaN , +Inf, -Inf, *Other*
Other Value Reported for Error		32767 , (Any Integer)

Figure 3. EC Declaration of Conformity for 1420 Wireless Gateway

ROSEMOUNT	CE
EC Declaration of Conformity	
No: RMD 1067 Rev. C	
We,	
Rosemount Inc. 8200 Market Boulevard Chanhassen, MN 55317-9685 USA	
declare under our sole responsibility that the product,	
Model 1420 Wireless Gateway	
manufactured by,	
Rosemount Inc. 8200 Market Boulevard Chanhassen, MN 55317-9685 USA	
to which this declaration relates, is in conformity with the provisions of the European Community Directives, including the latest amendments, as shown in the attached schedule.	
Assumption of conformity is based on the application of the harmonized standards and, when applicable or required, a European Community notified body certification, as shown in the attached schedule.	
 (signature)	Vice President of Global Quality (function name - printed)
Timothy J. Layer (name - printed)	March 12, 2009 (date of issue)
	

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Schedule No: RMD 1067 Rev. C

EMC Directive (2004/108/EC)

EN 61326-1: 2006
EN 61326-2-3: 2006

R&TTE Directive (1999/5/EC)

All Models with "Operating Frequency and Protocol Code A1"
EN 301 489-1: V 1.2.1 2002, EN 301 489-17: V1.4.1 2002
EN 60950-1: 2001
EN 300 328 V 1.6.1 (2004-11)



Country	Restriction
Bulgaria	General authorization required for outdoor use and public service
France	Outdoor use limited to 10mW e.i.r.p.
Italy	If used outside of own premises, general authorization is required
Norway	May be restricted in the geographical area within a radius of 20km from the center of Ny-Alesund
Romania	Use on a secondary basis. Individual license required.



All Models with "Operating Frequency and Protocol Code A3"
EN 301 489-1: V 1.2.1 2002, EN 301 489-17: V1.4.1 2002
EN 61010-1: 2001 Second Edition
EN 300 328 V 1.6.1 (2004-11)

ATEX Directive (94/9/EC)

Model 1420 Wireless Gateway

Ex nA nL IIC: Baseefa07ATEX0056X – Type n Certificate
EN 60079-15: 2005

Ex tD A22 IP6X: Baseefa07ATEX0057 – Dust Certificate
EN 61241-1: 2004



ROSEMOUNT



Schedule
No: RMD 1067 Rev. C

ATEX Notified Bodies for EC Type Examination Certificates

Baseefa (2001) Ltd. [Notified Body Number: 1180]
Health and Safety Laboratory Site
Harpur Hill
Buxton, Derbyshire SK17 9JN
United Kingdom

ATEX Notified Body for Quality Assurance

Baseefa (2001) Ltd. [Notified Body Number: 1180]
Health and Safety Laboratory Site
Harpur Hill
Buxton, Derbyshire SK17 9JN
United Kingdom

