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1420 Wireless Gateway





1420 Wireless Gateway

Quick Installation Guide 00825-0100-4420. Rev CA June 2007

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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.

Physical Device Revision 1.0 Web Server Revision 3.0.8

Network Revision 1.0

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.

1			Setwork Connections	
1			File Edit View Favorites Tools Advanced Help	~
			🔇 Back 🔹 💭 🔧 Dearch 🏷 Folders 🔛 🛛	
1			Address S Network Connections	🛩 🔁 Go
1			Local Area Connection	
			Network Lasks V Disable Status	
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			Bridge Connections	
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X	0	Help and Support	Laskbar and Start Menu	
Ň		Run		
p	-			
W	0	Shut Down		
	sta			

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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

🕹 Local Area Connection Properties 🛛 🔹 🔀	Internet Protocol (TCP/IP) Properties 🔹 👔 🔀	
Local Area Connection Properties	General You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings. Obtain an IP address automatically Obtain an IP address: IP address: IP address: ISubnet mask: Default gateway:	
Install Uninstall Properties Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.	Obtain DNS server address automatically OUse the following DNS server addresses: Preferred DNS server: Athenet DNS server:	
Show icon in notification area when connected Notify me when this connection has limited or no connectivity OK Cancel	Advanced	

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 P3 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)

Internet Options	Local Area Network (LAN) Settings 🛛 🔹 👔
General Security Privacy Cortet Connections, orgams Advanced Image: Security Privacy Cortet Connection, clock Setup. Image: Security Privacy Cortet Connection, clock Setup. Dial-up and Virtual Private Network settings Image: Consecurity Private Network settings Image: Consecurity Private Network settings On-up and Virtual Private Network settings Image: Consecurity Private Network settings Image: Consecurity Private Network connection is not present Image: One Network (LAN) settings Current None Concel Area Network (LAN) settings LAN Settings do not apply to dai-up connections. Choose Settings above for dai-up settings. Dial Meterset apply to dai-up connections. Choose Settings above for dai-up settings.	Automatic configuration Automatic configuration may override manual settings. To ensure the use of manual settings, disable automatic configuration. Automatic configuration script Address Proxy server Use a proxy server for your LAN (These settings will not apply to dial-up or VPN connections). Address Address OK
6. Access the 1420's default web page at I	nttps://192.168.1.10
🝘 Emerson Process Man	agement, Rosemount Division
File Edit View Favorite:	s Tools Help
3 Back 🔻 🌖 🔺 🚊	🕼 ☆ Favorites 🙆 ዿ

- Address https://192.168.1.10
- a. Log on as User: admin
- b. Password: default

Connect to 192.16	8.1.10	
	GE	
1420 Restricted Acce	255	
User name:	🔮 admin 💌	
Password:	••••••	
	Remember my password	
	OK Cancel	

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c. Click Yes to proceed through the Security Alert



The 1420 Home Page will appear as shown below



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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

EMERSON. Process Management	1420 Wireless Gateway	PlantWeb
	Passwords 🛛 😕 🛔	admin
	Warning Use caution when changing the administrator password. If the administrator password is lost, you we setup the 1420. New Administrator Password Confirm New Maintenance Password Confirm New Operator Password Confirm	ill not be able to
HART	New Executive Password	
* GPCOPC * Contracts	Submit	

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

EMERSON. Process Management	1420 Wireless Gateway			PlantWeb	
192.168.1.10 192.168.1.10 Car Diagnostics Explorer Secury Secury Secury Page Options Restort Apps Arketwork Secury Modbus Secury Restort Apps Arketwork Secury Secury Restort Apps Arketwork Secury Secury Restort Apps Arketwork Secury Restort Apps Arketwork Secury Restort Apps Arketwork Secury Restort Apps Arketwork Secury Restort Apps Restort Ap	Time Setup Vour PC's time 1420 time (systemtest2) Difference Method used to set time Submit	11/17/06 09:41:26.921 11/17/06 09:42:11.829 0 days 00:00:44.908	⊚ Set with PC time	OManual entry	Imin

5. Select method and click Submit

STEP 3: BASIC ETHERNET OR SERIAL CONFIGURATION

To configure the 1420 for an Ethernet Network:

Table 2: Ethernet Communication Settings on page 15 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

EMERSON. Process Management	Wire	1420 less Gate	way	PlantWeb
	Internet Protocol Address		۹ 🔍	admin 🔒
192.168.1.10 ■ Diagnostics ■ Monitor ■ Explorer ■ Setup ■ Address ■ Security Address ■ Security ■ Security ■ Security	 Primary Interface Primary Interface<			
🛛 🗋 Access List	Hostname			
Protocols	Domain Name			
Time	IP Address	192.168.1.10		
🖲 Page Options	Netmask	255.255.255.0		
Restart Apps	Gateway	192.168.1.1		
₩ Modbus				

- c. Enter configuration information determined above
- 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:

Table 4: Serial Communication Settings on page 15 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

EMERSON. Process Management	1420 Wireless Gateway		
	Modbus Communication	🍳 🎯 📔 🚔 admin	
swtest1420	Enable Modbus		
🖲 🔜 Explorer	Modbus TCP Port	502	
🖻 🔯 Setup	Modbus Slave Address (1-247)	10000 (m)	
● 💐 Network ● 🖳 Internet protocol	Parity	None Even Odd	
🗉 🔲 Security	Stop Bits	⊙1 ○2	
Time	Response delay time (ms)		
획 🚞 System Backup	Unmapped register read response?	Zero fill ○ Illegal data addr	
🖻 🧰 Page Options	Write hebavior	Synchronous O Queued O Most Current	
🛅 Restart Apps		o synemonious o quedea o most carrent	
🖲 😽 HART	Floating point representation	● Float ○ Round ○ Scale	
🖻 M Modbus	Use swapped floating point format?	○ Yes ④ No	
MrCommunication MrMapping	Incorporate value's associated status as error?	⊙ Yes O No	
Trends	Value reported for error (floating point)	O NaN ○ +Inf ○ -Inf ○ Other 32767 O	
	Value reported for error (rounded and native integer)	32767	
	Scaled floating point maximum integer value	65534	
	Use global scale gain and onset?	Ves ON0	
	Global scale gain	0.0	
	Submit		
© Emerson, 2006	Feedback	Terms of Use 1420 HG 3	3.0.8

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.

STEP 4: MOUNT AND CONNECT THE 1420

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 ⁵/16 inch U-bolts
- ¹/₂ inch wrench

Mount the gateway by doing the following:

- 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.
- Using a 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...

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. (see Terminal and Integration Diagram on page 14)
- 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. To see which countries our devices have received certification for use in, see www.rosemount.com/smartwireless.

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.

ATEX Directive (94/9/EC)

Emerson Process Management complies with the ATEX Directive.

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

EN 61326-1: 1997 with amendments A1, A2, and A3- Industrial

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

Emerson Process Management complies with the R&TTE Directive

FM Ordinary Locations Approval

The 1420 Wireless Gateway has been evaluated and approved by FM for ordinary locations.

CE EMC Marking

Compliance with European Union EMC

Hazardous Location Certifications

North American Certifications

N5 FM Division 2

Certificate Number: See Certificate Nonincendive for Class I, Division 2, Groups A,B,C, and D; Dust Ignitionproof for Class II,III, Division 1, Groups E,F, and G; Indoor/outdoor locations; NEMA Type 4X Temperature Code: T4 (-40°C < $T_a < 60°C$)

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Canadian Standards Association (CSA)

N6 CSA Division 2 & Dust Ignitionproof

Certificate Number: See Certificate Suitable for Class I, Division 2, Groups A,B,C,D; Dust Ignitionproof 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 4XEuropean Certification

European Certification

- N1 CENELEC Type n (ATEX) See note below Certificate Number: See Certificate ATEX Marking: Ex II 3 G EEx nA nL IIC T4 (-40°C < T_a < 60°C)
- ND ATEX Dust Ignition-proof Approval Certificate Number: See Certificate Ex tD A22 IP66 T135 (-40 °C< Ta < +60 EEx nA nL IIC T4 (-40 °C < T_a < 60 °C) \bigcirc II 3D Vmax = 28V

IECEx Certification

N7 IECEx Type n

See note below Certificate Number: See Certificate Ex nC IIC T4 (-40°C =< $T_a \le +60°C$) Rated Voltage: 28V

NF IECEx Dust Ignition-proof Approval Certificate Number: See Certificate Ex tD A22 IP66 T135 (-40°C < T_a < 60°C) Vmax = 28V

CONDITIONS OF INSTALLING N1 AND N7:

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.

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Figure 3. Terminal and Integration Diagram

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Table 1. Ethernet Port Locations			
Settings	Location		
1420 Ethernet Port	P1		
Information System Switch or Access Point			
Switch or Access Point Ethernet Port			

Table 2. 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 3. Serial Connectivity Locations

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

Table 4. Serial Communication Se	ettings	
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)

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