Smart Wireless Gateway

- Gateway connects wireless self-organizing networks with any host system
- Easy configuration and management of self-organizing networks
- Easy integration into control systems and data applications through serial and Ethernet connections
- Seamless integration into AMS® Device Manager and DeltaV™ automation system
- Greater than 99% reliability with industry proven security
- Smart Wireless capabilities extends the full benefit of PlantWeb® architecture to previously inaccessible locations

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Smart Wireless Gateway

Flexible Connectivity Options and Easy Device Configuration

Host Integration with DeltaV™ and Ovation®
- Gain real-time information on process and assets with intuitive operator interface
- Native interface between control system and gateway

Flexible Integration
- Smart Wireless Gateway connects legacy hosts, Serial Modbus®, and Ethernet or OPC output

Complete Asset Management with AMS Device Manager
- Manage predictive diagnostics from wired and wireless field devices to identify problems before the process is affected
- Streamline wireless device configuration through Smart Wireless Gateway

Device Specifications
- Update rate: User Selectable 4, 8, 16, 32 second or 1 to 60 minutes
- Network Size: Up to 100 devices
- Output: Ethernet, Modbus, OPC, Serial, HART-IP
- Approvals: FM, CSA, ATEX, IECEx

Other Interfaces
- Web interface and AMS Wireless Configurator are standard with every gateway for set-up and initial configuration of wireless devices
- Data historian connectivity for documentation and compliance information
IEC 62591 (*WirelessHART™*)... The Industry Standard

**Self-Organizing, Adaptive Mesh Routing**
- No wireless expertise required, network automatically finds the best communication paths
- Network continuously monitors paths for degradation and repairs itself
- Adaptive behavior provides reliable, hands-off operation and simplifies network deployments, expansion, and reconfiguration
- Supports both star and mesh topologies

**Industry Standard Radio with Channel Hopping**
- Standard IEEE 802.15.4 radios
- 2.4 GHz ISM band sliced into 16 radio-channels
- Time Synchronized Channel Hopping to avoid interference and increase reliability
- Direct sequence spread spectrum (DSSS) technology delivers high reliability in challenging radio environment

**Self-Healing Network**
- The self-organizing, self-healing network manages multiple communication paths for any given device. If an obstruction is introduced into the network, data will continue to flow because the device already has other established paths. The network will then lay in more communication paths as needed for that device.

**Seamless Integration to Existing Hosts**
- Transparent and seamless integration
- Same control system applications
- Gateways connect using industry standard protocols
## Ordering Information

**Table 1. 1420 Smart Wireless Gateway Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery.

The Expanded offering is subject to additional delivery lead time.

<table>
<thead>
<tr>
<th>Model</th>
<th>Product Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1420</td>
<td>Smart Wireless Gateway</td>
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<table>
<thead>
<tr>
<th>Power Input</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard Input</strong></td>
</tr>
<tr>
<td>A</td>
</tr>
</tbody>
</table>

### Ethernet Communications - Physical Connection

<table>
<thead>
<tr>
<th><em>Standard Input</em></th>
<th><strong>Standard</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1(1)(2)</td>
<td>Ethernet</td>
</tr>
<tr>
<td>2(3)(4)</td>
<td>Dual Ethernet</td>
</tr>
</tbody>
</table>

**Expanded**

| 3(5)(6)            | Fiber Optic Ethernet |

### Wireless Update Rate, Operating Frequency, and Protocol

<table>
<thead>
<tr>
<th><em>Standard Input</em></th>
<th><strong>Standard</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>A3</td>
<td>User Configurable Update Rate, 2.4 GHz DSSS, WirelessHART</td>
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</table>

### Serial Communication

<table>
<thead>
<tr>
<th><em>Standard Input</em></th>
<th><strong>Standard</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>None</td>
</tr>
<tr>
<td>A(7)</td>
<td>Modbus RTU via RS485</td>
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</tbody>
</table>

### Ethernet Communication - Data Protocols

<table>
<thead>
<tr>
<th><em>Standard Input</em></th>
<th><strong>Standard</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Webserver, Modbus TCP/IP, AMS Ready</td>
</tr>
<tr>
<td>4</td>
<td>Webserver, Modbus TCP/IP, AMS Ready, OPC</td>
</tr>
<tr>
<td>5(8)</td>
<td>DeltaV Ready</td>
</tr>
<tr>
<td>6(8)</td>
<td>Ovation Ready</td>
</tr>
<tr>
<td>7(9)</td>
<td>HART-IP</td>
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</table>

### Options (Include with selected model number)

<table>
<thead>
<tr>
<th><strong>Product Certifications</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard</strong></td>
</tr>
<tr>
<td>N5</td>
</tr>
<tr>
<td>N6</td>
</tr>
<tr>
<td>N1</td>
</tr>
<tr>
<td>ND</td>
</tr>
<tr>
<td>N7</td>
</tr>
<tr>
<td>NF</td>
</tr>
<tr>
<td>KD</td>
</tr>
<tr>
<td>N3</td>
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<tr>
<td>N4</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th><strong>Adapters</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard</strong></td>
</tr>
<tr>
<td>J1</td>
</tr>
<tr>
<td>J2</td>
</tr>
<tr>
<td>J3</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Antenna Options</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Standard</strong></td>
</tr>
<tr>
<td>WL2</td>
</tr>
<tr>
<td>WL3</td>
</tr>
<tr>
<td>WL4</td>
</tr>
</tbody>
</table>

**Typical Model Number:** 1420 A 2 A3 A 2 N5
ACCESSORIES AND SPARE PARTS

Table 2. Accessories

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMS® Wireless SNAP-ON™, 1 Gateway License</td>
<td>01420-1644-0001</td>
</tr>
<tr>
<td>AMS Wireless SNAP-ON, 5 Gateway Licenses</td>
<td>01420-1644-0002</td>
</tr>
<tr>
<td>AMS Wireless SNAP-ON, 10 Gateway Licenses</td>
<td>01420-1644-0003</td>
</tr>
<tr>
<td>AMS Wireless SNAP-ON, 5-10 Upgrade Licenses</td>
<td>01420-1644-0004</td>
</tr>
<tr>
<td>Serial Port HART Modem and Cables only</td>
<td>03095-5105-0001</td>
</tr>
<tr>
<td>USB Port HART Modem and Cables only</td>
<td>03095-5105-0002</td>
</tr>
</tbody>
</table>

Table 3. Spare Parts

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spare Kit, WL2 Replacement(1), Remote Antenna, 50 ft. (15,2 m) Cable, and Lightning Arrester</td>
<td>01420-1615-0302</td>
</tr>
<tr>
<td>Spare Kit, WL3 Replacement(1), Remote Antenna, 20/30 ft. (6,1/9,1 m) Cables, and Lightning Arrester</td>
<td>01420-1615-0303</td>
</tr>
<tr>
<td>Spare Kit, WL4 Replacement(1), Remote Antenna, 10/40 ft. (3,0/12,2 m) Cables, and Lightning Arrester</td>
<td>01420-1615-0304</td>
</tr>
</tbody>
</table>

(1) Can not upgrade from integral to remote antenna.
Specifications

Functional Specifications

**Input Power**
- 19.2 - 28.8 Vdc
- 250 mA startup
- 150 mA continuous

**Radio Frequency Power Output from Antenna**
Maximum of 10 mW (10 dBm) EIRP

Environmental

**Operating Temperature Range:**
-40 to 158 °F (-40 to 70 °C)

**Operating Humidity Range:**
10-90% relative humidity

EMC Performance
Complies with EN61326-1:2006.

Antenna Options
- Integrated Omnidirectional Antenna
- Optional remote mount Omnidirectional Antenna

Physical Specifications

**Weight**
10 lb (4.54 kg)

**Material of Construction**
- **Housing**: Low-copper aluminum, NEMA 4X
- **Paint**: Polyurethane
- **Cover Gasket**: Silicone Rubber
- **Antenna**: PBT/PC integrated Omnidirectional Antenna

Certifications
- Class I Division 2 (U.S.)
- Equivalent Worldwide

Communication Specifications

**Isolated RS485**
- 2-wire communication link for Modbus RTU multidrop connections
- Baud rate: 57600, 38400, 19200, or 9600
- Protocol: Modbus RTU
- Wiring: Single twisted shielded pair, 18 AWG. Wiring distance up to 4,000 ft. (1,524 m)

**Ethernet**
- 10/100base-TX Ethernet communication port
- Protocols: Modbus TCP, OPC, HART-IP, https (for Web Interface)
- Wiring: Cat5E shielded cable. Wiring distance 328 ft. (100 m).

Fiber Optic Ethernet (optional)
- 100BaseFx optical Ethernet communication port
- Wavelength: 1300 nm center
- Multimode
- SC connectors
- Protocols: Modbus, TCP, OPC, HART-IP, https (for Web Interface)
- Wiring: 50/125 um or 62.5/125 um fiber, 2.48 miles (4.0 k,) maximum distance.

Modbus
- Supports Modbus RTU and Modbus TCP with 32-bit floating point values, integers, and scaled integers.
- Modbus Registers are user-specified.

OPC
- OPC server supports OPC DA v2, v3

Self-Organizing Network Specifications

**Protocol**
- IEC 62591 (WirelessHART), 2.4 - 2.5 GHz DSSS.

**Maximum Network Size**
- 100 wireless devices @ 8 sec.
- 50 wireless devices @ 4 sec.

**Supported Device Update Rates**
- 4 sec. to 60 min.

**Network Size/Latency**
- 100 Devices: less than 10 sec.
- 50 Devices: less than 5 sec.

**Data Reliability**
>99%

System Security Specifications

**Ethernet**
- Secure Sockets Layer (SSL)- enabled (default) TCP/IP communications

**Smart Wireless Gateway Access**
- Role-based Access Control (RBAC) including Administrator, Maintenance, Operator, and Executive. Administrator has complete control of the gateway and connections to host systems and the self-organizing network.

**Self-Organizing Network**
- AES-128 Encrypted WirelessHART, including individual session keys. Drag and Drop device provisioning, including unique join keys and white listing.

**Internal Firewall**
- User Configurable TCP ports for communications protocols, including Enable/Disable and user specified port numbers. Inspects both incoming and outgoing packets.
Product Certifications

Approved Manufacturing Locations
Rosemount Inc. – Chanhassen, Minnesota, USA
Emerson Process Management GmbH & Co. - Karlstein, Germany
Emerson Process Management Asia Pacific Private Limited - Singapore
Beijing Rosemount Far East Instrument Co., Limited - Beijing, China

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.
Suitable for Class II, III, Division 1,
Groups E, F, and G; Indoors/outdoor locations;
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.

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.

Emerson Process Management complies with the R&TTE Directive

EU Certification
N1 ATEX Type n
Certificate Number: Baseefa 07ATEX0056X
ATEX Marking: Ex nA nL IIC T4 (-40 °C < T_a < 60 °C)
Special condition for safe use (X):
The surface resistivity of the antenna is greater than one gigaohm. 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
ATEX Marking: Ex tb A22 IP66 T135 (-40 °C < T_a < 60 °C)
Maximum working Voltage = 28 V

N7 IECEx Type n
Certificate Number: IECEx BAS 07.0012X
Ex nA nL IIC T4 (-40 °C <= T_a <= 60 °C)
Maximum working voltage = 28 V
Special condition for safe use (X):
The surface resistivity of the antenna is greater than one gigaohm. 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 500 V 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
Certificate Number: IECEx BAS 07.0013
Ex tb A22 IP66 T135 (-40 °C <= T_a <= 60 °C)
Maximum working voltage = 28 V

Combinations of Certifications
KD Combination of N5, N6, and N1.
Figure 1. Smart Wireless Gateway
(Dimensions are in inches (millimeters))

Ground Lug

1/2 inch NPT Conduit Connection (4 Places)

Lower Cover Remove for Electrical Connections

3.51 (89)

2.93 (74.42)

2.96 (75)

9.02 (229)

2.81 (71.4)

2.525 (64.14)

12.03 (306)

11.15 (283)

6.72 (171)

4.78 (121)

3.08 (78)

3.99 (101)

1.59 (40)
Remote Omni-Antenna Kit

The Remote Omni-Antenna kit includes sealant tape for remote antenna connection, as well as mounting brackets for the antenna, Lightning Arrestor, and the Smart Wireless Gateway.

*Lightning protection is included on all the options. WL3 and WL4 provide lightning protection along with the ability to have the gateway mounted indoors, the antenna mounted outdoors, and the lightning arrestor mounted at the building egress.*

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