Model R-1420 Wireless Gateway

Features:
- Connects Cosasco® Wireless devices and other WirelessHART™ transmitters to any host system
- Easy system integration via Ethernet and serial connections
- Easy configuration via web interface
- High integrity security and reliability
- Supports up to 100 wireless devices
- FM, CSA, ATEX, IECEx, China Type n, TIIS Type n approved

The R-1420 Wireless Gateway manages and connects Cosasco Wireless System devices including, Microcor® Wireless Transmitters (MWT’s), Quicksand™ Wireless Transmitter (QWT), Corrater® Wireless Transmitters (CWT), Cosasco® Wireless Extenders (WE) and other WirelessHART transmitters to a host system through a high security spread spectrum communication network. The gateway is easily configured through a web interface and provides connection to the host system through OPC, Modbus over IP, and Modbus serial interface. The R-1420 Wireless Gateway is ideal for monitoring corrosion systems because of its flexibility and for adding monitoring points that were previously uneconomical.

When used only for Corrosion Management Systems, the gateway serves as a direct connection to RCS’s Intelligent Interface Unit for smaller scale systems and ICMS3™ Integrated Corrosion Management System for medium to large scale systems. The Gateway is scalable supporting up to 100 Wireless Transmitters/Extenders or a combination of Cosasco Wireless devices and other WirelessHART devices. The Wireless Gateway is certified for Class I, Div2, Zone 2.

The Wireless Gateway provides industry leading security, scalability, and data reliability. Layered security ensures that the network stays protected. Additional Cosasco Wireless devices or other WirelessHART devices can be added at anytime. There is no need to configure communication paths because the Gateway manages the network automatically. This feature also ensures that WirelessHART field devices have the most reliable path to send data.
Cosasco® Wireless devices and other Smart Wireless Devices are quickly and easily installed without the time and expense required for wiring. Once installed metal loss and computed corrosion rate is read from the Gateway directly into your DCS/SCADA system, an RCS ICMS3-Amulet Corrosion Management System for larger scale systems, or RCS Intelligent Interface Unit for smaller scale systems.
Specifications

Functional Specifications

Input Power
24 V dc, 500 milliamps required to power the Smart Wireless Gateway module (Included)

Radio frequency power output from Antenna
Maximum of 10 mw (10 dBm) EIRP
Maximum of 40 mw (16 dBm) EIRP for WNZ
High gain option

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
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 is approximately 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).

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
IEG62591 (WirelessHART) 2.4 - 2.5 GHz DSSS

Maximum Network Size
100 wireless devices @ 8 sec.
50 wireless devices @ 4 sec.
25 wireless devices @ 2 sec.
12 wireless devices @ 1 sec.

Supported Device Update Rates
1, 2, 4, 8, 16, 32 seconds or 1-60 minutes

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.

Third Party Certification
Wurldtech: Achilles Level 1 certified for network resiliency.

National Institute of Standards and Technology (NIST):
**Product Certifications**

**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. RCS 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 < Ta < 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 < Ta < 60 °C)  
CSA Enclosure Type 4X

**European Union Directive Information**

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

**European Certification**

N1  
ATEX Type n  
See note below  
Certificate Number: Baseefa 07ATEX0056X  
ATEX Marking: Ex II 3 G  
EEEx nA IIIC T4 (-40 °C < Ta < 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 II 3 G  
EX tD A 22 IP66 T135 (-40 °C < Ta < 60 °C)  
Maximum working Voltage = 28V

N7  
IECEx Type n  
See note below  
Certificate Number: IECEx BAS 08.0012X  
Ex nA IIIC T4 (-40 °C =< Ta =< 60 °C)  
Maximum working Voltage = 28V

**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.

**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.

**Combinations of Certifications**

KD Combination of N5, N6, and N1.

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Rohrback Cosasco Systems, Inc. - The World Leader in Corrosion Monitoring Systems  
Specifications subject to change without notice
Dimensional Drawings

Smart Wireless Gateway (Dimensions are inches (millimeters))
Remote Antenna Kit

The Remote 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.
### Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
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<tbody>
<tr>
<td>R-1420</td>
<td>Wireless Gateway</td>
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<table>
<thead>
<tr>
<th>Code</th>
<th>Power Input (included)</th>
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<tbody>
<tr>
<td>A</td>
<td>24 VDC, 500 mA</td>
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<table>
<thead>
<tr>
<th>Code</th>
<th>Ethernet Communications – Physical Connection</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Ethernet (1)(2)</td>
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<tr>
<td>2</td>
<td>Dual Ethernet (3)(4)</td>
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<table>
<thead>
<tr>
<th>Code</th>
<th>Wireless Update Rate, Operating Frequency, and Protocol</th>
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</thead>
<tbody>
<tr>
<td>A3</td>
<td>User Configurable Update Rate, 2.4 GHz DSSS, WirelessHART™</td>
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</table>

<table>
<thead>
<tr>
<th>Code</th>
<th>Serial Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>None</td>
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<tr>
<td>A(5)</td>
<td>Modbus RTU via RS485</td>
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<tr>
<th>Code</th>
<th>Ethernet Communication - Data Protocols</th>
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<tr>
<td>2</td>
<td>Webserver, Modbus TCP/IP, AMS Ready, HART-IP</td>
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<tr>
<td>4</td>
<td>Webserver, Modbus TCP/IP, AMS Ready, HART-IP, OPC</td>
</tr>
<tr>
<td>5(6)</td>
<td>DeltaV Ready</td>
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<tr>
<td>6(6)</td>
<td>Ovation Ready</td>
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<table>
<thead>
<tr>
<th>Code</th>
<th>Product Certifications</th>
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<tbody>
<tr>
<td>N5</td>
<td>FM Division 2, Non-incendive</td>
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<tr>
<td>N6</td>
<td>CSA Division 2, Non-incendive</td>
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<tr>
<td>N1</td>
<td>ATEX Type n</td>
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<tr>
<td>ND</td>
<td>ATEX Dust</td>
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<tr>
<td>N7</td>
<td>IECEx Type n</td>
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<tr>
<td>NF</td>
<td>IECEx Dust</td>
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<tr>
<td>KD</td>
<td>FM &amp; CSA Division 2, Non-incendive and ATEX Type n</td>
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<td>N3</td>
<td>China Type n</td>
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<td>N4</td>
<td>IIS Type n</td>
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<tr>
<th>Code</th>
<th>Redundancy Options</th>
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<tr>
<td>RD(7)(8)</td>
<td>Gateway Redundancy</td>
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<table>
<thead>
<tr>
<th>Code</th>
<th>Adapters</th>
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<tbody>
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<tr>
<td>J1</td>
<td>CM 20 Conduit Adapter</td>
</tr>
<tr>
<td>J2</td>
<td>PG 13 13.5 Conduit Adapter</td>
</tr>
<tr>
<td>J3</td>
<td>¾ NPT Conduit Adapter</td>
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<thead>
<tr>
<th>Code</th>
<th>Antenna Options (9)</th>
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<tbody>
<tr>
<td>WL2</td>
<td>Remote Omni-Antenna Kit, 50 ft. (15.2 m) cable, Lightning Arrestor</td>
</tr>
<tr>
<td>WL3</td>
<td>Remote Omni-Antenna Kit, 20 ft. (6.1m) and 30 ft. (9.1m) cables, Lightning Arrestor</td>
</tr>
<tr>
<td>WL4</td>
<td>Remote Omni-Antenna Kit, 10 ft. (3.0 m) and 40 ft. (12.2 m) cables, Lightning Arrestor</td>
</tr>
<tr>
<td>WN2</td>
<td>High-Gain, Remote Antenna Kit, 25 ft. (7.6m) cable, Lightning Arrestor</td>
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<tr>
<th>Code</th>
<th>Telecommunications Certification Country (10)</th>
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<tbody>
<tr>
<td>XXX</td>
<td>Enter ultimate destination (country) where Gateway will be Installed.</td>
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</tbody>
</table>

1. Single active 10/100 baseT Ethernet port with RJ45 connector.
2. Additional ports disabled.
3. Dual active 10/100 baseT Ethernet ports with RJ45 connectors.
4. Multiple active ports have separate IP addresses, firewall isolation, and no packet forwarding.
5. Convertible to RS232 via adapter not included with Gateway.
6. Includes Webserver, Modbus TCP, AMS Ready, HART-IP, and OPC.
7. Requires the selection of Dual Ethernet option code 2.
8. Not available with Delta V Ready option code 5.

**WN2 cannot be used in the following regions:**

- Argentina
- Korea
- Brunei
- Malaysia
- China
- Nigeria
- Czech Republic
- Russia
- Europe
- South Africa
- India
- Ukraine
- Kazakhstan
- United Arab Emirates

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