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, and IECEx approved**

The R-1420 Wireless Gateway manages and connects Cosasco Wireless System devices including, Microcor Wireless Transmitters (MWT’s), Quicksand Wireless Transmitter (QWT), 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)

**Environmental**
Operating Temperature Range: -40 to 140 °F (-40 to 60 °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 is approximately 4,000 ft. (1,524 m)

**Ethernet**
10/100base-TX Ethernet communication port
Protocols: Modbus TCP, OPC, 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, 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 v1, v2, v3

Self-Organizing Network Specifications

**Protocol**
WirelessHART, 2.4 - 2.5 GHz DSSS.

**Maximum Network Size**
100 Devices

**Supported Device Update Rates**
8 sec. to 60 min.

**Network Size/Latency**
100 Devices: up to 10 sec.
50 Devices: up to 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

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.
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 < Ta < 60 °C)

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

Canadian Standards Association (CSA)
N7 IECEx Type n
See note below
Certificate Number: IECEx BAS 08.0012X
Ex nC IIC T4 (-40 °C <= Ta <= 60 °C)
Rated Voltage: 28V

NF IECEx Dust Ignition-proof
Certificate Number: IECEx BAS 07.0013
Ex ID A22 IP66 T135 (-40 °C < Ta < 60 °C)
Vmax = 28V

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)

ND ATEX Dust Ignition-proof
Certificate Number: Baseefa 07ATEX0057
EX tD A 22 IP66 T135 (-40 °C < Ta < 60 °C)
EEEx nA nL IIC T4 T4 (-40 °C < Ta < 60 °C) II 3D
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.

Combinations of Certifications
KD Combination of N5, N6, and N1.
Dimensional Drawings

Smart Wireless Gateway (Dimensions are inches (millimeters))

Lower Cover
Remove for Electrical Connections

2.96 (75)

3.51 (89)

2.93 (74,42)

9.02 (229)

2.81 (71,4)

2.525 (64,14)

12.03 (306)

11.15 (283)

6.72 (171)

4.78 (121)

3.09 (78)

3.99 (101)

1/2 Inch NPT Conduit Connection (4 Places)

Ground Lug

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.
### Ordering Information

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**Code** | **Power Input (included)** |
---|---|
A | 24 VDC, 500 mA |

**Code Ethernet Communications – Physical Connection**

1. Ethernet
2. Dual Ethernet
3. Fiber Optic Ethernet

**Code Wireless Update Rate, Operating Frequency, and Protocol**

A3 | User Configurable Update Rate, 2.4 GHz DSSS, WirelessHART™ |

**Code Serial Communication**

N | None |
A | Modbus RTU via RS485™ |

**Code Ethernet Communication - Data Protocols**

2 | Webserver, Modbus TCP/IP, AMS Ready |
4 | Webserver, Modbus TCP/IP, AMS Ready, OPC |
5 | DeltaV Ready™ |

**Code Product Certifications**

N5 | FM Division 2, Non-incendive |
N6 | CSA Division 2, Non-incendive |
N1 | ATEX Type n |
ND | ATEX Dust Ignition-proof |
N7 | IECEx Type n |
NF | IECEx Dust Ignition-proof |
KD | FM & CSA Division 2, Non-incendive and ATEX Type n |

**Code Adapters**

0 | None |
J1 | CM 20 Conduit Adapter |
J2 | PG 13.5 Conduit Adapter |
J3 | 3/4 NPT Conduit Adapter |

**Code Antenna Options**

0 | None |
WL2 | Remote Omni-Antenna Kit, 50 ft. (15.2 m) cable, Lightning Arrestor |
WL3 | Remote Omni-Antenna Kit, 20 ft. (6.1 m) and 30 ft. (9.1 m) cables, Lightning Arrestor |
WL4 | Remote Omni-antenna Kit, 10 ft. (3.0 m) and 40 ft. (12.2 m) cables, Lightning Arrestor |

**Code Telecommunications Certification Country**

XXX | Enter ultimate destination (country) where Gateway will be installed. |

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. 1300nm Multimode Optical fiber connection with separate SC connectors for Rx and Tx.
6. Includes features of Option 1
7. Convertible to RS232 via adaptor
8. Includes Webserver, Modbus TCP/IP, AMS Ready, OPC.
10. Due to regulations requiring use of RF Spectrum, all wireless devices require certification. Certification labeling will be applied based on ultimate country destination.