Quick Start Guide
00825-0100-6129, Rev AC
November 2024

Rosemount™ Wireless Dam Monitor (WDM)

Special

IEC

WirelessHART

ROSEMOUNT™

EMERSON

Rosemount WDM

Rosemount WDM Hardware Revision	1
HART® Device Revision	1
Device Install Kit/DD Revision	Device Revision 1, DD Revision 1 or higher

NOTICE

This guide provides basic information for the Rosemount WDM special. It does not provide instructions for detailed configuration, diagnostics, maintenance, service, troubleshooting, or installations

⚠ WARNING

Failure to follow these installation guidelines could result in death or serious injury.

Ensure only qualified personnel perform the installation.

Explosions could result in death or serious injury.

Before connecting a Field Communicator in an explosive atmosphere, make sure the instruments are installed in accordance with intrinsically safe or non-incendive field wiring practices

Verify that the operating atmosphere of the transmitter is consistent with the appropriate hazardous locations certifications.

This device complies with Part 15 of the Federal Communication Commission (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 8 in. (20 cm) from all persons.

The black power module may be replaced in a hazardous area. The black power module has surface resistivity greater than one giga-ohm and must be properly installed in the wireless device enclosure. Care must be taken during transportation to and from the point of installation to prevent electrostatic charge build-up

NOTICE

Shipping considerations for wireless products (lithium batteries: Black Power Module, model number 701PBKKF):

The unit was shipped without the power module installed. Prior to re-shipment, ensure that the power module has been removed.

Each black power module contains two “C” size primary lithium batteries. Primary lithium batteries are regulated in transportation by the U. S. Department of Transportation, and are also covered by IATA (International Air Transport Association), ICAO (International Civil Aviation Organization), and ARD (European Ground Transportation of Dangerous Goods). It is the responsibility of the shipper to ensure compliance with these or any other local requirements. Consult current regulations and requirements before shipping.

⚠ WARNING

Refer to the *Product certifications* section of this Quick Start Guide documentation when using the RFID tag (option code Y3) for required installation conditions.

Contents

1 Functionality

The intended use of this WDM special is to provide a solution for real-time monitoring of applications in underground water level and pressure management of an embankment dam to determine the stability of its structure. An Impress strain gauge pressure sensor is connected directly to the WDM which excites the sensor and measures the output. The WDM converts the measured voltage to a pressure reading in PSI, meters of water or other units and wirelessly transmits the reading as well. This solution eliminates the need for solar panels and associated costly materials making it an inexpensive and easy solution.

1.1 Wireless considerations

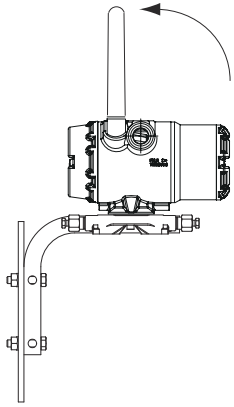
Power up sequence

The Rosemount WDM Special and all other wireless devices should be installed only after the Wireless Gateway (“Gateway”) has been installed and is functioning properly. Wireless devices should also be powered up in order of proximity from the Gateway, beginning with the closest. This will result in a simpler and faster network installation. Enable active advertising on the Gateway to ensure new devices join the network faster. For more information, see the Gateway Reference Manual.

Antenna position

The special is offered with both the external antenna (WK1) and the extended range antenna (WM1). The antenna should be positioned vertically, either straight up or straight down, and it should be approximately 3 ft. (1 m) from any large structure, building, or conductive surface to allow for clear communication to other devices.

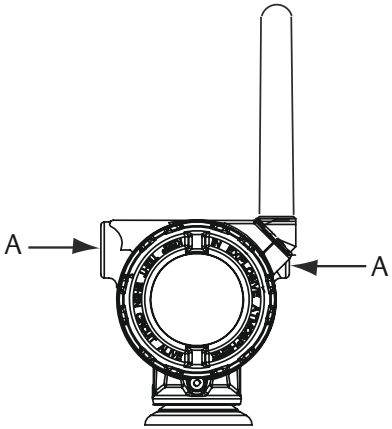
Figure 1-1: Antenna Position



Conduit entry

Upon installation, ensure each conduit entry is either sealed with a conduit plug using approved thread sealant, or has an installed conduit fitting or cable gland with appropriate threaded sealant.

Figure 1-2: Conduit Entry



A Conduit entry

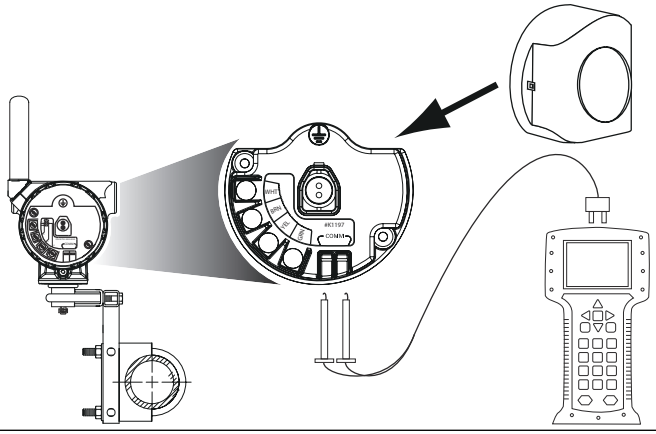
Field Communicator connections

The black power module needs to be installed in the device for the Field Communicator to interface with the Rosemount WDM Special. For HART Wireless Transmitter communication via a Field Communicator, a Rosemount WDM Device Dashboard (DD) is

required. See Configuration for more information regarding the WDM DD.

Refer to Figure 1-3 for connecting the Field Communicator to the Rosemount WDM Special.

Figure 1-3: Connection



2 Physical installation

2.1 Vent tube installation

The vent tube needs to be exposed to atmosphere in a dry environment. During installation, protect the end of the cable from water ingress. Do not remove the cover on the cable until the end is at the point of connection.

Note
The maximum bend radius for polyurethane cable is 1 1/2 inches. If bent further, the vent tube in the cable may kink causing measurement errors.

Follow sensor manufacturer's installation recommendations.

2.2 Wiring terminal block

The terminal block uses color abbreviations for the color wire from the Impress pressure sensor that goes with each terminal lug on the terminal block label (Figure 2-1).

- WHT – White
- BRN – Brown
- YEL – Yellow
- GRN – Green

The four wires from the sensor must be connected to the corresponding colors on the label. Ground according to your facility standard practices.

Ground the sensor cable shield to a ground outside or inside of the transmitter terminal compartment. The cable shield should be trimmed close and insulated to keep it from touching the other sensor wires or terminals.

Only power this device with the 701PBKKF power module and only connect Impress Strain Gauge on the terminals.

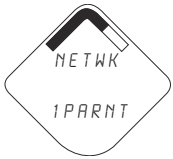
Figure 2-1: Terminal Wire Colors

3 Verify operation

Operation can be verified using four methods at the device via the LCD display, using the Field Communicator, at the Gateway via the Gateway's integrated web server, or using AMS™ Wireless Suite or AMS Device Manager.

3.1 LCD display

During normal operation, the LCD display will show the PV value at the confirmed update rate. Refer to the Reference Manual for error codes and other LCD display messages. Select the **Diagnostic** button to display the *TAG, Device ID, Network ID, Network Join Status, and Device Status* screens.

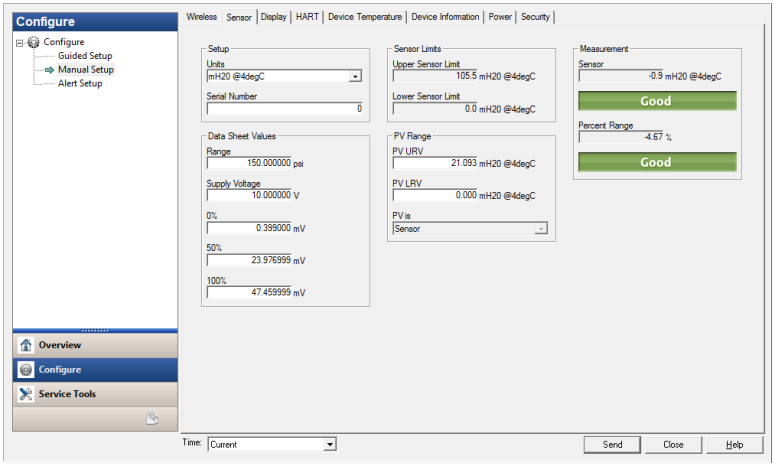
Searching for network	Joining network	Connected with one parent	Connected with two parents
			

3.2 Configuration

For HART Wireless transmitter communication via a Field Communicator or AMS Device Manager, a Rosemount WDM Device Dashboard (DD) is required. Contact the Rosemount Wireless Specialist Team (RMT-NA.SpecialistWireless@Emerson.com) to obtain the DD.

To provide accurate sensor readings, values from each sensor data sheet need to be configured and stored in the Rosemount WDM Transmitter. Navigate to **Configure** → **Manual Setup** → **Sensor** → **Sensor Setup** → **Data Sheet Values**.

The special configuration items the user will need to enter are those provided (i.e. Range, Supply Voltage, 0%, 50%, and 100%). These values can be found in the custom data sheet sent with each sensor.



The communication status may be verified in the wireless device using the following Fast Key sequence.

Table 3-1: Rosemount WDM Fast Key Sequence

Function	Fast Key sequence	Menu items
Communications	3, 4	Comm, Join Mode, Neighbor Count, Advertisement Count, Join Attempts

3.3 Wireless Gateway

If the Rosemount WDM Special was configured with the Network ID and Join Key and sufficient time for network polling has passed, the transmitter will be connected to the network. To verify device operation and connectivity using the Gateway's web based user interface, navigate to the *Devices* page. This page will also display the transmitter's tag, PV, SV, TV, QV, and Last Update time. Refer to the Gateway Manual Supplement for terms, user fields, and parameters used in the Gateway web based user interface.

Note

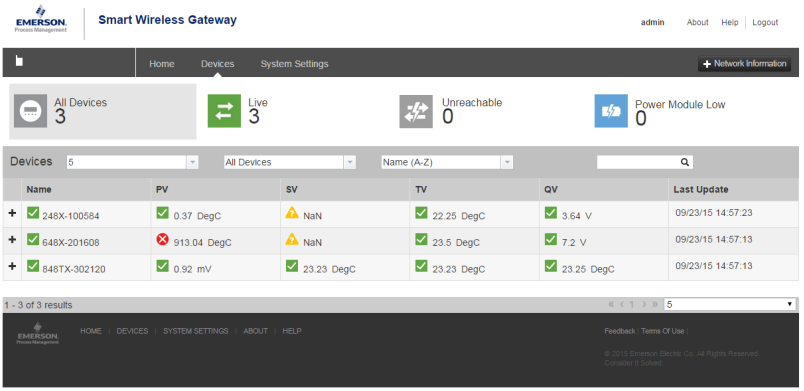
The time to join the new device(s) to the network is dependent upon the number of devices being joined and the number of devices in the current network. For one device joining an existing network with multiple devices, it may take up to five minutes. It may take up to 60 minutes for multiple new devices to join the existing network.

Note

If the device joins the network and immediately has an alarm present, it is likely due to sensor configuration. Check the sensor

wiring (see Power module replacement) and the sensor configuration (see Table 4-2).

Figure 3-1: Gateway Network Settings



4 Troubleshooting

If the device is not joined to the network after power up, verify the correct configuration of the network ID and join key, and verify that *Active Advertising* has been enabled on the Gateway. The network ID and join key in the device must match the network ID and join key of the Gateway.

The network ID and join key may be obtained from the Gateway on the **Setup → Network → Settings** page on the web server (see Figure 3-1). The network ID and join key may be changed in the wireless device by using the following Fast Key sequence.

Table 4-1: Wireless Configuration Fast Key Sequence

Function	Fast Key sequence	Menu items
Wireless Configuration	2, 2, 1	Network ID, Join to Network, Broadcast Info

Table 4-2 lists the Fast Key sequences for common transmitter functions.

Table 4-2: Rosemount WDM Special Fast Key Sequence

Function	Fast Key sequence	Menu items
Device Information	2, 2, 7	Tag, Long Tag, Descriptor, Message, Date
Guided Setup	2, 1	Configure Sensor, Join to Network, Config Advance Broadcasting, Calibrate Sensor
Manual Setup	2, 2	Wireless, Sensor, Display, HART, Device Temperature, Device Information, Power, Security
Wireless Configuration	2, 2, 1	Network ID, Join to Network, Broadcast Info
Sensor Configuration	2, 2, 2, 5	Sensor Data Sheet Values, Units, Serial Number
Sensor Calibration	3, 5, 2	Sensor Value, Sensor Status, Current Lower Trim, Current Upper Trim, Lower Sensor Trim, Upper Sensor Trim, Device Variable Trim Reset

5 Power module replacement

Expected black power module life is 10 years at reference conditions.(1)

When module replacement is required perform the following procedure.

Procedure

1. Remove the cover and module.
2. Replace the module (part number 701PBKKF) and cover.
3. Tighten to specification and verify operation.

5.1 Handling considerations

The black power module with the wireless unit contains two “C” size primary lithium-thionyl chloride battery (black power module, model number 701PBKKF). Each battery contains approximately 5.0 grams of lithium. Under normal conditions, the battery materials are self-contained and are not reactive as long as the batteries and the pack integrity are maintained. Care should be taken to prevent thermal, electrical or mechanical damage.

Contacts should be protected to prevent premature discharge.

Black power modules should be stored in a clean and dry area. For maximum black power module life, storage temperature should not exceed 86 °F (30 °C).

Note
Continuous exposure to ambient temperature limits of -40 °F or 185 °F (-40 °C or 85 °C) may reduce specified life by less than 20 percent.

Use caution when handling the black power module, it may be damaged if dropped from heights exceeding 20 feet.

⚠ Battery hazards remain when cells are discharged.

5.2 Environmental considerations

As with any battery, local environmental rules and regulations should be consulted for proper management of spent batteries. If no specific requirements exist, recycling through a qualified re-cycler is encouraged. Consult the materials safety data sheet for battery specific information.

(1) Reference conditions are 70 °F (21° C), transmit rate of once per minute, and routing data for three additional network devices.

5.3 Shipping considerations

The unit was shipped without the black power module installed. Remove the module prior to shipping the unit.

6 Product Certifications

6.1 European Directive Information

A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at Emerson.com/Rosemount.

6.2 Telecommunication Compliance

All wireless devices require certification to ensure 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.

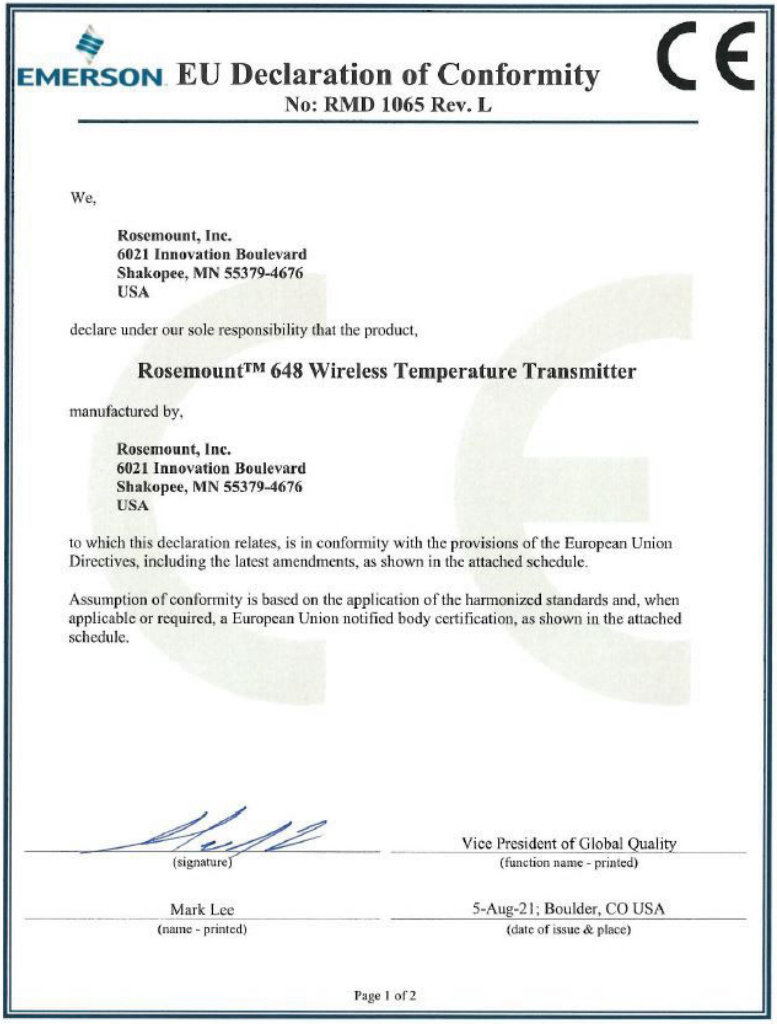
6.3 FCC and IC

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.

6.4 Ordinary Location Certification

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

Figure 6-1: Rosemount 648 Wireless Declaration of Conformity



EMERSON

EU Declaration of Conformity

No: RMD 1065 Rev. L

CE

We,

Rosemount, Inc.
6021 Innovation Boulevard
Shakopee, MN 55379-4676
USA

declare under our sole responsibility that the product,

Rosemount™ 648 Wireless Temperature Transmitter

manufactured by,

Rosemount, Inc.
6021 Innovation Boulevard
Shakopee, MN 55379-4676
USA

to which this declaration relates, is in conformity with the provisions of the European Union 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 Union notified body certification, as shown in the attached schedule.

(signature)

Vice President of Global Quality
(function name - printed)

Mark Lee
(name - printed)

5-Aug-21; Boulder, CO USA
(date of issue & place)

Page 1 of 2

EMERSON **EU Declaration of Conformity**

No: RMD 1065 Rev. L

EMC Directive (2014/30/EU)

Harmonized Standards:
EN 61326-1: 2013
EN 61326-2-3: 2013

Radio Equipment Directive (RED) (2014/53/EU)

Harmonized Standards:
EN 300 328 V2.2.2:2019
EN 301 489-1 V2.2.0
EN 301 489-17: V3.2.0
EN 61010-1: 2010
EN 62311: 2008

ATEX Directive (2014/34/EU)

Baseefa07ATEX0011X – Intrinsic Safety Certificate
Equipment Group II, Category 1 G
Ex ia IIC T4/T5 Ga
Equipment Group I, Category 1 M
Ex ia I Ma
Harmonized Standards:
EN IEC 60079-0: 2018
EN 60079-11: 2012

ATEX Notified Body & ATEX Notified Body for Quality Assurance

SGS FIMKO OY [Notified Body Number: 0598]
Takomotie 8
00380 HELSINKI
Finland

Page 2 of 2

含有 China RoHS 管控物质超过最大浓度限值的部件型号列表 Rosemount 648
List of Rosemount 648 Parts with China RoHS Concentration above MCVs

部件名称 Part Name	有害物质 / Hazardous Substances					
	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr +6)	多溴联苯 Polybrominated biphenyls (PBB)	多溴联苯醚 Polybrominated diphenyl ethers (PBDE)
电子组件 Electronics Assembly	X	O	O	O	O	O
壳体组件 Housing Assembly	O	O	O	X	O	O
传感器组件 Sensor Assembly	X	O	O	O	O	O

本表格系依据 SJ/T11364 的规定而制作.
This table is proposed in accordance with the provision of SJ/T11364.

O: 意为该部件的所有均质材料中该有害物质的含量均低于 GB/T 26572 所规定的限量要求.
O: Indicate that said hazardous substance in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

X: 意为在该部件所使用的所有均质材料里，至少有一类均质材料中该有害物质的含量高于 GB/T 26572 所规定的限量要求.
X: Indicate that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.

6.5 Y3 ATEX/IECEx RFID tag approvals

Certificate IECEx EPS 15.0042X, EPS 15 ATEX 1 1011 X

Markings II 2G Ex ia IIC T6/T4 Gb, II 2D Ex ia IIC T80/T130C Db

Conditions of certification

Maximum operating temperature: -58 °F (-50 °C) to +158 °F (+70 °C)

The RFID tags shall never be exposed to high electromagnetic field strengths according to IEC 60079-14.

Electrostatic charges shall be avoided. The tags shall never be used next to strong charge generating processes.

⚠ WARNING

Additional warnings

The plastic enclosure may present a potential electrostatic ignition hazard.

RFID tag has limitations in ambient temperature and zone installation areas (Zones 1 & 21) as compared to the gauge.

Quick Start Guide
00825-0100-6129, Rev. AC
November 2024

For more information: **Emerson.com/global**

ROSEMOUNT™

EMERSON™