Quick Start Guide
00825-0100-4102, Rev CB
June 2016

Rosemount™ 2051 Pressure Transmitter and Rosemount 2051CF DP Flowmeters

with *Wireless*HART® Protocol

EMERSON
Process Management

NOTICE

This guide provides basic guidelines for Rosemount 2051 Wireless Transmitters. It does not provide instructions for configuration, diagnostics, maintenance, service, troubleshooting or intrinsically safe (I.S.) installations. Refer to the Rosemount 2051 Wireless Reference Manual for more instruction. This manual is also available electronically on EmersonProcess.com/Rosemount.

⚠ WARNING

Explosions could result in death or serious injury.

Installation of this transmitter in an explosive environment must be in accordance with the appropriate local, national, and international standards, codes, and practices. Review the approvals section of the Rosemount 2051 Wireless Reference Manual for any restrictions associated with a safe installation.

- Before connecting a HART®-based communicator in an explosive atmosphere, make sure the instruments in the loop are installed in accordance with intrinsically safe or non-incendive field wiring practices.

Process leaks may cause harm or result in death.

- To avoid process leaks, only use the o-ring designed to seal with the corresponding flange adapter.

Electrical shock can result in death or serious injury.

- Avoid contact with the leads and the terminals. High voltage that may be present on leads can cause electrical shock.

⚠ CAUTION

Shipping considerations for wireless products:

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

Each power module contains one “D” size primary lithium-thionyl chloride battery. 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.

Contents

1.0 Wireless considerations

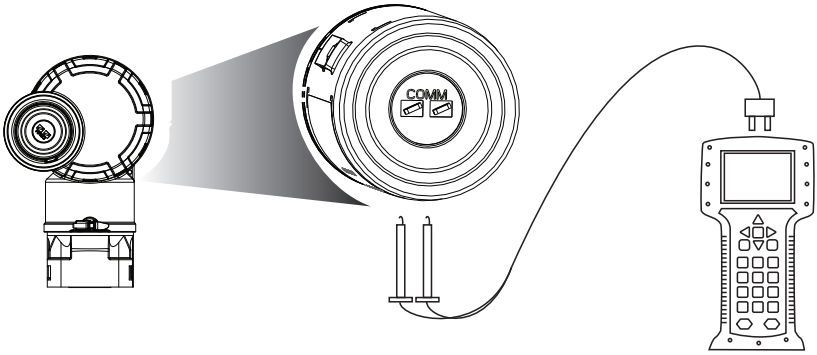
1.1 Power up sequence

The power module should not be installed on any wireless device until the Emerson™ Smart Wireless Gateway (Gateway) is installed and functioning properly. This transmitter uses the green power module (order model number 701PGNKF). 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 Emerson Smart Wireless Gateway Reference Manual.

1.2 Connecting the transmitter with a Field Communicator

In order for the Field Communicator to interface with the Rosemount 2051 Wireless Transmitter, the power module must be connected. This transmitter uses the green power module (order model number 701PGNKF). Figure 1 shows how to connect the Field Communicator to the transmitter. Open the power module compartment to hook up the leads.

Figure 1. Field Communicator Connections

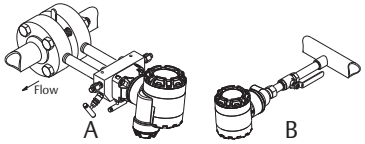


2.0 Mount the transmitter

2.1 Mounting in liquid applications

1. Place taps to the side of the line.
2. Mount beside or below the taps.
3. Mount the transmitter so the drain/vent valves are oriented upward.

Figure 2. Liquid Applications

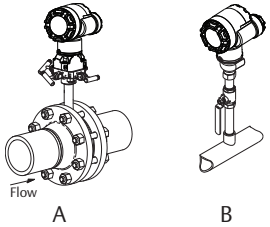


A. Coplanar
B. In-line

2.2 Mounting in gas applications

1. Place taps in the top or side of the line.
2. Mount beside or above the taps.

Figure 3. Gas Applications

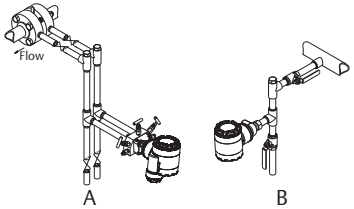


A. Coplanar
B. In-line

2.3 Mounting in steam applications

1. Place taps to the side of the line.
2. Mount beside or below the taps.
3. Fill impulse lines with water.

Figure 4. Steam Applications



A. Coplanar
B. In-line

2.4 Attaching mounting brackets

Figure 5. Panel and Pipe Mount

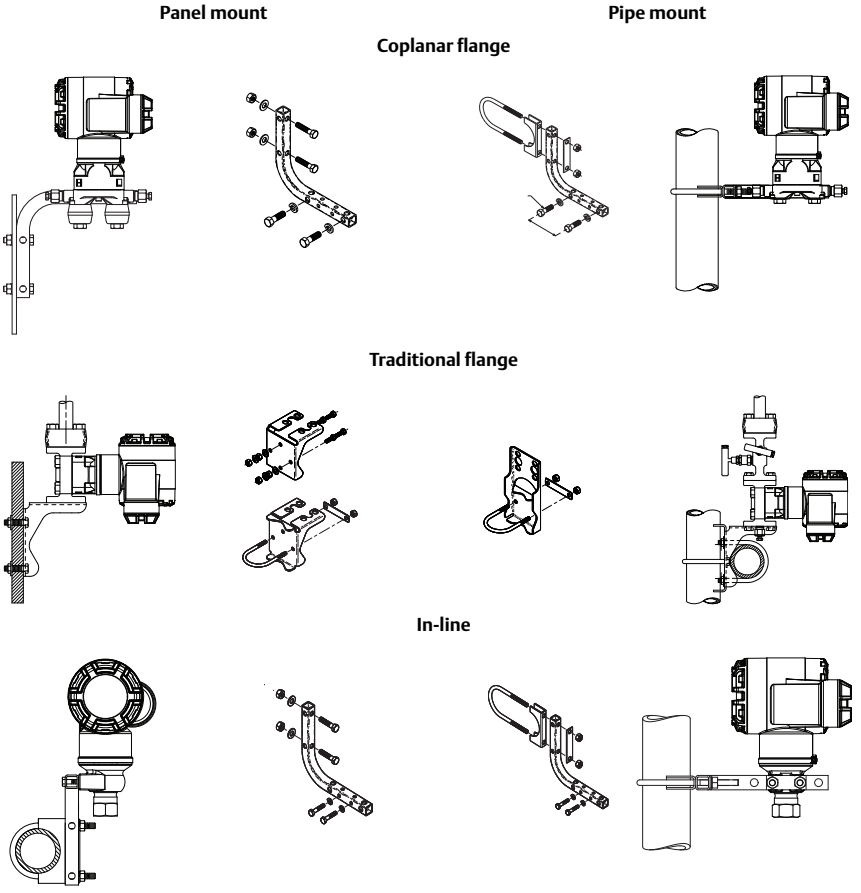
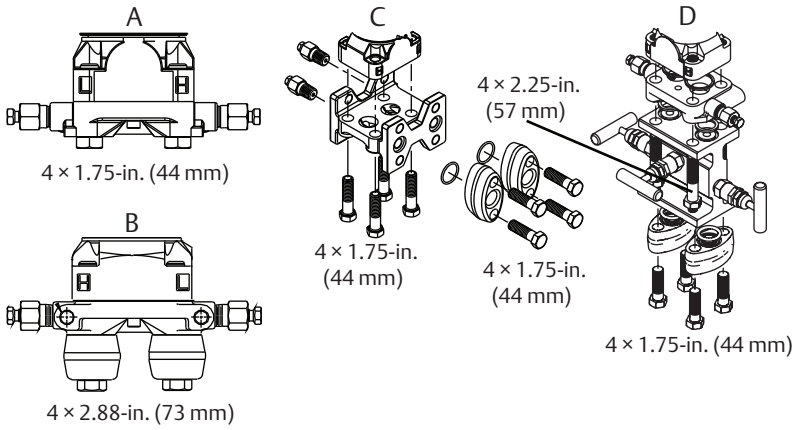


Figure 6. Common Transmitter Assemblies



A. Transmitter with coplanar flange
B. Transmitter with coplanar flange and optional flange adapters
C. Transmitter with traditional flange and optional flange adapters
D. Transmitter with coplanar flange and optional manifold and flange adapters

Bolts are typically carbon steel or stainless steel. Confirm the material by viewing the markings on the head of the bolt and referencing Table 1 on page 1-7. If bolt material is not shown in Table 1, contact a local Emerson Process Management representative for more information.

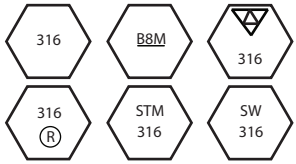
2.5 Bolt installation

1. Carbon steel bolts do not require lubrication and the stainless steel bolts are coated with a lubricant to ease installation. However, no additional lubricant should be applied when installing either type of bolt.
2. Finger-tighten the bolts.
3. Torque the bolts to the initial torque value using a crossing pattern. See Table 1 for initial torque value.
4. Torque the bolts to the final torque value using the same crossing pattern. See Table 1 for final torque value.
5. Verify the flange bolts are protruding through the isolator plate before applying pressure.

2.6 Bolting considerations

If the transmitter installation requires assembly of the process flanges, manifolds, or flange adapters, follow these assembly guidelines to ensure a tight seal for optimal performance characteristics of the transmitters. Use only bolts supplied with the transmitter or sold by Emerson Process Management as spare parts. Figure 6 illustrates common transmitter assemblies with the bolt length required for proper transmitter assembly.

Table 1. Torque Values for the Coplanar Flange and Flange Adapter Bolts

Bolt material	Head markings	Initial torque	Final torque
Carbon Steel (CS)		300 in-lb	650 in-lb
Stainless Steel (SST)		150 in-lb	300 in-lb

2.7 In-line gage transmitter orientation

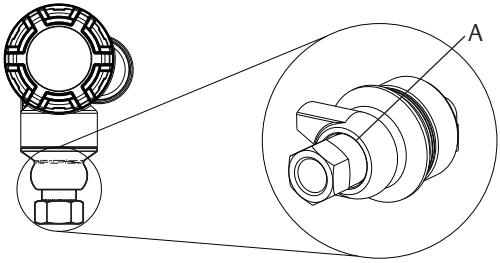
The low side pressure port (atmospheric reference) on the in-line gage transmitter is located in the neck of the transmitter, behind the housing. The vent path is between the housing and sensor of the transmitter. (See Figure 7.)

Keep the vent path free of any obstruction, including but not limited to paint, dust, and lubrication by mounting the transmitter so the process can drain away.

⚠ CAUTION

Keep the vent path free of any obstruction, including but not limited to paint, dust, and lubrication by mounting the transmitter so the contaminants can drain away.

Figure 7. In-line Gage Low Side Pressure Port



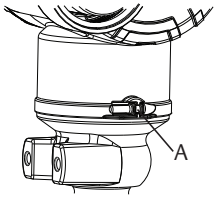
A. Low side pressure port (atmospheric reference)

3.0 Consider housing rotation

To improve visibility of optional LCD display:

1. Loosen the housing rotation screw.
2. First rotate the housing clockwise to the desired location. If the desired location cannot be achieved due to thread limit, rotate the housing counter clockwise to the desired location (up to 360° from thread limit).
3. Re-tighten the housing rotation screw (see Figure 8).

Figure 8. Housing Rotation

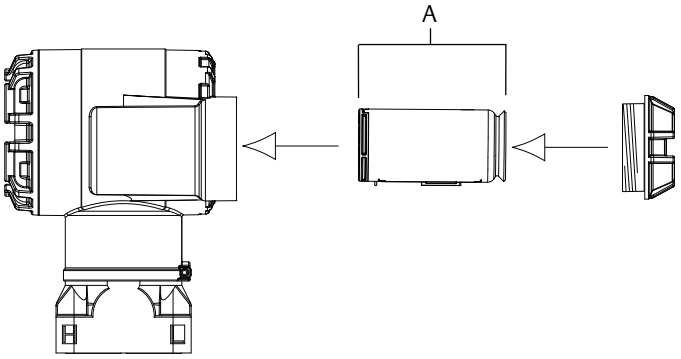


A. Housing rotation screw (5/64-in. hex wrench required)

4.0 Connect the power module

1. Remove the power module cover.
2. Connect the Green power module (see Figure 9).

Figure 9. Power Module



A. Power module

5.0 Trim the transmitter

Devices are calibrated by the factory. Once installed, it is recommended to perform a zero trim on gage and differential pressure transmitters to eliminate error due to mounting position or static pressure effects. A zero trim can be performed using either a Field Communicator or configuration buttons.

For instructions using AMS™ Wireless Configurator, see the Rosemount 2051 Wireless Reference Manual.

Note
When performing a zero trim, ensure the equalization valve is open and all wet legs are filled to the correct level.

⚠ CAUTION

It is not recommended to zero an absolute transmitter, Rosemount 2051CA or 2051TA models.

5.1 Trimming with a Field Communicator

1. Equalize or vent the transmitter and connect Field Communicator.
2. At the menu, input the HART Fast Key sequence.
3. Follow the commands to perform a zero trim.

From the *Home* screen, enter the Fast Key sequence.

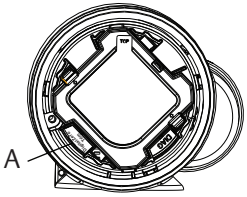
Device Dashboard Fast Keys	2, 1, 2

For connecting with a Field Communicator, refer to Figure 1 on page 3.

5.2 Trimming with digital zero trim button

1. Set the transmitter pressure.
2. Remove the electronics housing cover.
3. Press and hold the **Zero** button for two seconds to perform a digital zero trim.
4. Reinstall transmitter housing cover. Ensure a proper seal by installing the electronics housing cover so the polymer contacts polymer (i.e. no O-ring visible).

Figure 10. Digital Zero Button



A. Digital zero button

Note

A zero trim can also be completed using AMS Wireless Configurator once the device has joined the network.

6.0 Verify transmitter configuration

Operation can be verified in four locations:

- At the device via the Local display (LCD display)
- By using the Field Communicator
- Via the Smart Wireless Gateway's integrated web interface
- Via AMS Wireless Configurator

6.1 Verify transmitter configuration using LCD display

The LCD display will show the output values at the same rate as the wireless update rate. Refer to the Rosemount 2051 Wireless Reference Manual for error codes and other LCD display messages. Press and hold the **Diagnostic** button for at least five seconds to display the *TAG*, *Device ID*, *Network ID*, *Network Join Status*, and *Device Status* screens.

Searching for Network	Joining Network	Connected with Limited Bandwidth	Connected
			

6.2 Verify transmitter configuration using Field Communicator

For HART Wireless transmitter communication, a Rosemount 2051 Wireless Transmitter Device Descriptor is required. For connecting with a Field Communicator, refer to Figure 1 on page 3.

From the *Home* screen, enter the Fast Key sequence.

Device Dashboard Fast Keys	3, 5

Table 2. Device Revision 1, DD Revision 1 Fast Keys

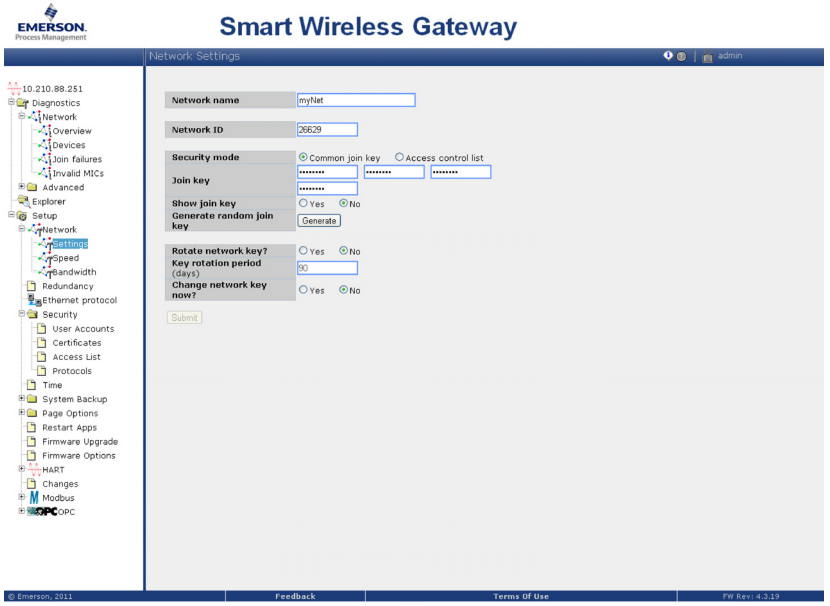
Function	Fast Keys
Tag	2, 1, 1, 1, 1
Date	2, 1, 1, 1, 5
Descriptor	2, 1, 1, 1, 3
Message	2, 1, 1, 1, 4
Long Tag	2, 1, 1, 1, 2
Network ID	2, 2, 1, 1
Join Device to Network	2, 2, 1, 2
Update Rate	2, 1, 4
Range Values	2, 1, 1, 5
Transfer Function	2, 1, 1,6
Units	2, 1, 1, 2
Lower Sensor Trim	3, 5, 1, 1, 2
Upper Sensor Trim	3, 5, 1, 1, 1
Digital Zero Trim	3, 5, 1, 1, 3
Rerange by Applied Pressure	2, 2, 2, 2, 1
Custom Display Configuration	2, 1, 5
Scaled Variable	2, 1, 7, 1
Find Device	3, 5, 2
Simulate Digital Signal	3, 6

6.3 Verify transmitter configuration using Smart Wireless Gateway

In the Gateway's integrated web interface, navigate to the *Explorer* > *Status* page. This page will show whether the device has joined the network and if it is communicating properly.

Note
It may take several minutes for the device to join the network. See Emerson Smart Wireless Gateway Quick Start Guide for more information.

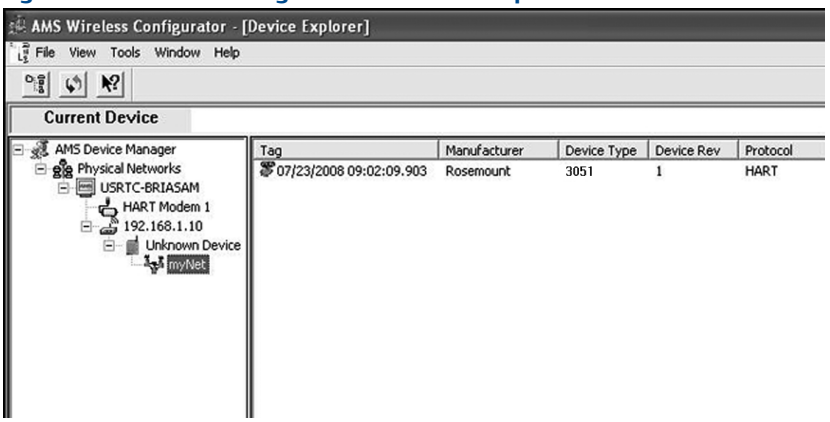
Figure 11. Gateway Network Settings



6.4 Verifying configuration using AMS Wireless Configurator

When the device has joined the network, it will appear in the Wireless Configurator as shown in Figure 12.

Figure 12. Wireless Configurator Network Setup



7.0 Troubleshooting

If the device has not joined to the network after power up, verify the correct configuration of the network ID and join key. Verify the 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 interface (see Figure 11 on page 12). The network ID and join key may be changed in the wireless device by using the following Fast Key sequence. See the Rosemount 2051 Wireless Reference Manual for further troubleshooting.

From the *Home* screen, enter the Fast Key sequence.

Device Dashboard Fast Keys	3, 5

8.0 Product Certifications

Rev 1.0

8.1 European Directive Information

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

8.2 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.

8.3 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.

8.4 Ordinary Location Certification from FM Approvals

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

8.5 Installing in North America

The US National Electrical Code® (NEC) and the Canadian Electrical Code (CEC) permit the use of Division marked equipment in Zones and Zone marked equipment in Divisions. The markings must be suitable for the area classification, gas, and temperature class. This information is clearly defined in the respective codes.

8.6 USA

I5 U.S.A. Intrinsically Safe (IS)
Certificate: FM 3046325
Standards: FM Class 3600 - 2011, FM Class 3610 - 2010, FM Class 3810 - 2005, ANSI/ISA 60079-0 - 2009, ANSI/ISA 60079-11 - 2009, NEMA® 250 - 2003, ANSI/IEC 60529
Markings: IS CL I, DIV 1, GP A, B, C, D T4; CL 1, Zone 0 AEx ia IIC T4; T4 (-40 °C ≤ T_a ≤ +70 °C); when installed per Rosemount drawing 03031-1062; Type 4X/IP66/IP68

Special Conditions for Safe Use (X):

1. The Model 2051 Wireless pressure Transmitter shall only be used with the 701PGNKF Rosemount SmartPower™ Battery Pack.
2. The in-line pressure sensor may contain more than 10% aluminum and is considered a potential risk of ignition by impact or friction. Care must be taken into account during installation and used to prevent impact and friction.
3. The surface resistivity of the transmitter housing is greater than 1 GΩ. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.

8.7 Canada

I6 Canada Intrinsically Safe
Certificate: CSA 2526009
Standards: CAN/CSA C22.2 No. 0-M91, CAN/CSA C22.2 No. 94-M91, CSA Std C22.2 No. 142-M1987, CSA Std C22.2 No. 157-92, CSA Std C22.2 No. 60529:05
Markings: Intrinsically Safe for Class I, Division 1, Groups A, B, C, D, T4 when installed per Rosemount drawing 03031-1063; Type 4X/IP66/IP68

8.8 Europe

I1 ATEX Intrinsic Safety
Certificate: Baseefa12ATEX0228X
Standards: EN 60079-0: 2012, EN 60079-11: 2012
Markings: ⟨Ex⟩ II 1 G Ex ia IIC T4 Ga, T4(-40 °C ≤ T_a ≤ +70 °C); IP66/68

Special Conditions for Safe Use (X):

1. The plastic enclosure may constitute a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.
2. The Model 701PGNKF Power Module may be replaced in a hazardous area. The power module has a surface resistivity greater than 1 GΩ 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.

8.9 International

I7 IECEx Intrinsic Safety
Certificate: IECEx BAS 12.0124X
Standards: IEC 60079-0: 2011, IEC 60079-11: 2011
Markings: Ex ia IIC T4 Ga, T4(-40 °C ≤ T_a ≤ +70 °C); IP66/68

Special Conditions for Safe Use (X):

1. The plastic enclosure may constitute a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.
2. The Model 701PGNKF Power Module may be replaced in a hazardous area. The power module has a surface resistivity greater than 1 GΩ 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.

8.10 Brazil

I2 INMETRO Intrinsic Safety
Certificate: UL-BR 13.0534X
Standards: ABNT NBR IEC60079-0:2008, ABNT NBR IEC60079-11:2009
Markings: Ex ia IIC T4 IP66 Ga, T4(-40 °C ≤ T_a ≤ +70 °C)

Special Condition for Safe Use (X):

1. See certificate for special conditions.

8.11 China

I3 China Intrinsic Safety
Certificate: GYJ12.1295X
Standards: GB3836.1-2010, GB3836.4-2010, GB3836.20-2010
Markings: Ex ia IIC Ga T4, -40 ~ 70 °C

Special Condition for Safe Use (X):

1. See certificate for special conditions.

Certificate: GYJ101320X [Flowmeters]
Standards: GB3836.1-2000, GB3836.4-2000
Markings: Ex ia IIC T4

Special Condition for Safe Use (X):

1. See certificate for special conditions.

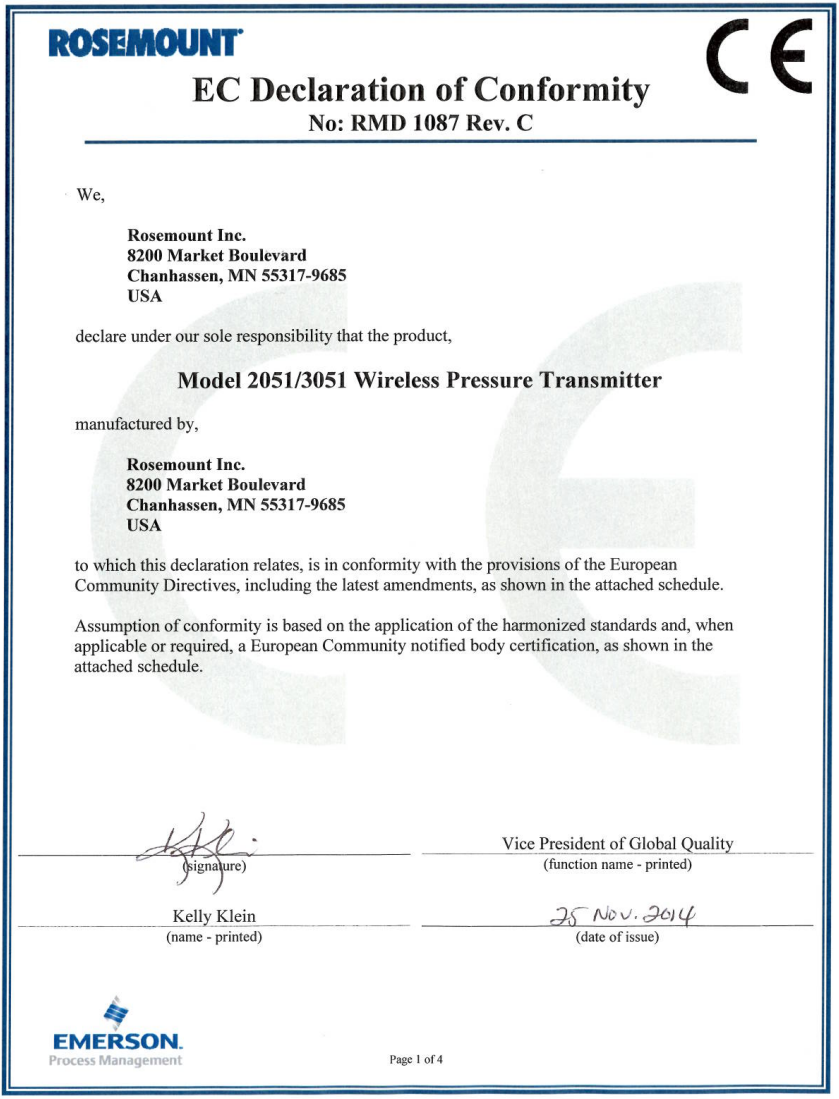
8.12 EAC - Belarus, Kazakhstan, Russia

IM Technical Regulation Customs Union (EAC) Intrinsic Safety
Certificate: RU C-US.ГБ05.B.00390
Markings: 0Ex ia IIC T4 Ga X

Special Condition for Safe Use (X):

1. See certificate for special conditions.

Figure 13. Rosemount 2051 Wireless Declaration of Conformity



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CE

EC Declaration of Conformity

No: RMD 1087 Rev. C

We,

Rosemount Inc.
8200 Market Boulevard
Chanhassen, MN 55317-9685
USA

declare under our sole responsibility that the product,

Model 2051/3051 Wireless Pressure Transmitter

manufactured by,

Rosemount Inc.
8200 Market Boulevard
Chanhassen, MN 55317-9685
USA

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

(signature)

Vice President of Global Quality
(function name - printed)

Kelly Klein
(name - printed)

25 Nov. 2014
(date of issue)

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EC Declaration of Conformity

No: RMD 1087 Rev. C

EMC Directive (2004/108/EC)

All Models

Harmonized Standards: EN 61326-1:2006, EN 61326-2-3:2006

R&TTE Directive (1999/5/EC)

All Models

EN 300 328 V 1.8.1
EN 301 489-17: V2.2.1
IEC 61010-1: 2001

PED Directive (97/23/EC)

Models 3051CA4; 3051/2051CG2, 3, 4, 5; 3051/2051CD2, 3, 4, 5; 3051HD2, 3, 4, 5; 3051HG2, 3, 4, 5; *(also with P9 option)* Pressure Transmitters

QS Certificate of Assessment - EC Certificate No. 59552-2009-CE-HOU-DNV
Module H Conformity Assessment
Non-harmonized Standards Used: ANSI/ISA61010-1:2004, EN60770-1:1999

All other model 3051/2051 Pressure Transmitters

Sound Engineering Practice

Transmitter Attachments: Diaphragm Seal - Process Flange - Manifold

Sound Engineering Practice

Model 3051CFx/2051CFx Flowmeter Transmitters

Refer to Declaration of Conformity DSI1000

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EC Declaration of Conformity

No: RMD 1087 Rev. C

ATEX Directive (94/9/EC)

BAS12ATEX0228X Intrinsic Safety Certificate

Equipment Group II Category 1 G
Ex ia IIC T4 Ga (-40°C ≤ Ta ≤ +70°C)
Harmonized Standards:
EN 60079-0:2012, EN60079-11:2012

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EC Declaration of Conformity

No: RMD 1087 Rev. C

PED Notified Body

Model 3051/2051 Pressure Transmitters

Det Norske Veritas (DNV) [Notified Body Number: 0575]
Veritasveien 1, N-1322
Hovik, Norway

ATEX Notified Bodies for EC Type Examination Certificate

Baseefa [Notified Body Number: 1180]
Rockhead Business Park
Staden Lane
Buxton, Derbyshire
SK17 9RZ United Kingdom

ATEX Notified Body for Quality Assurance

Baseefa [Notified Body Number: 1180]
Rockhead Business Park
Staden Lane
Buxton, Derbyshire
SK17 9RZ United Kingdom

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含有China RoHS管控物质超过最大浓度限值的部件型号列表 Rosemount 2051
List of Rosemount 2051 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	X	O	O	X	O	O
传感器组件 Sensor Assembly	X	O	O	X	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.

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June 2016

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