

# Rosemount™ 3051 Pressure Transmitter and 3051CF Series Flow Meter

with 4-20 mA HART® and 1-5 Vdc Low  
Power Protocol



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# 1 About this guide

This guide provides basic guidelines for Rosemount 3051 Transmitters. It does not provide instructions for configuration, diagnostics, maintenance, service, troubleshooting, Explosion-Proof, Flame-Proof, or intrinsically safe (I.S.) installations. Refer to the Rosemount 3051 [Reference Manual](#) for more instructions. This guide is also available electronically on [Emerson.com/Rosemount](https://www.emerson.com/Rosemount).

## 1.1 Safety messages

Before installing the transmitter, confirm the correct device driver is loaded on the host systems.

Procedures and instructions in this section may require special precautions to ensure the safety of the personnel performing the operations.

### **⚠ WARNING**

#### **Explosions**

Explosions could result in death or serious injury.

Installation of this transmitter in an explosive environment must be in accordance with the local, national, and international standards, codes, and practices.

Before connecting a handheld communicator in an explosive atmosphere, ensure that the instruments in the loop are installed in accordance with intrinsically safe or non-incendive field wiring practices.

In an explosion-proof/flameproof installation, do not remove the transmitter covers when power is applied to the unit.

#### **Process leaks**

Process leaks could result in death or serious injury. Process leaks may cause harm or result in death. Process leaks may cause harm or result in death.

Install and tighten process connectors before applying pressure.

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

#### **Electrical shock**

Electrical shock could cause death or serious injury. Electrical shock can result in death or serious injury. Electrical shock can result in death or serious injury.

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

**⚠ WARNING****Conduit/cable entries**

Unless marked, the conduit/cable entries in the transmitter housing use a ½–14 NPT thread form. Entries marked “M20” are M20 × 1.5 thread form. On devices with multiple conduit entries, all entries will have the same thread form. Only use plugs, adapters, glands, or conduit with a compatible thread form when closing these entries.

When installing in a hazardous location, use only appropriately listed or Ex certified plugs, glands, or adapters in cable/conduit entries.

**Physical access**

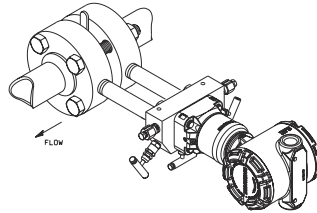
Unauthorized personnel may potentially cause significant damage to and/or misconfiguration of end users’ equipment. This could be intentional or unintentional and needs to be protected against.

Physical security is an important part of any security program and fundamental to protecting your system. Restrict physical access by unauthorized personnel to protect end users’ assets. This is true for all systems used within the facility.

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## 2 Mount the transmitter

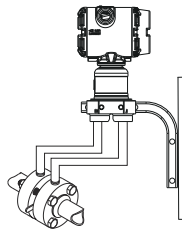
### 2.1 Liquid flow applications



#### Procedure

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

### 2.2 Gas flow applications



#### Procedure

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

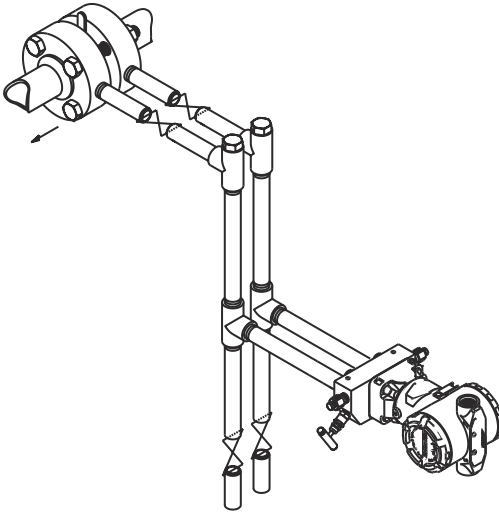
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#### Note

Bracket required to support the transmitter and the 1/4-in. tubing going into the transmitter.

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## 2.3 Steam flow applications

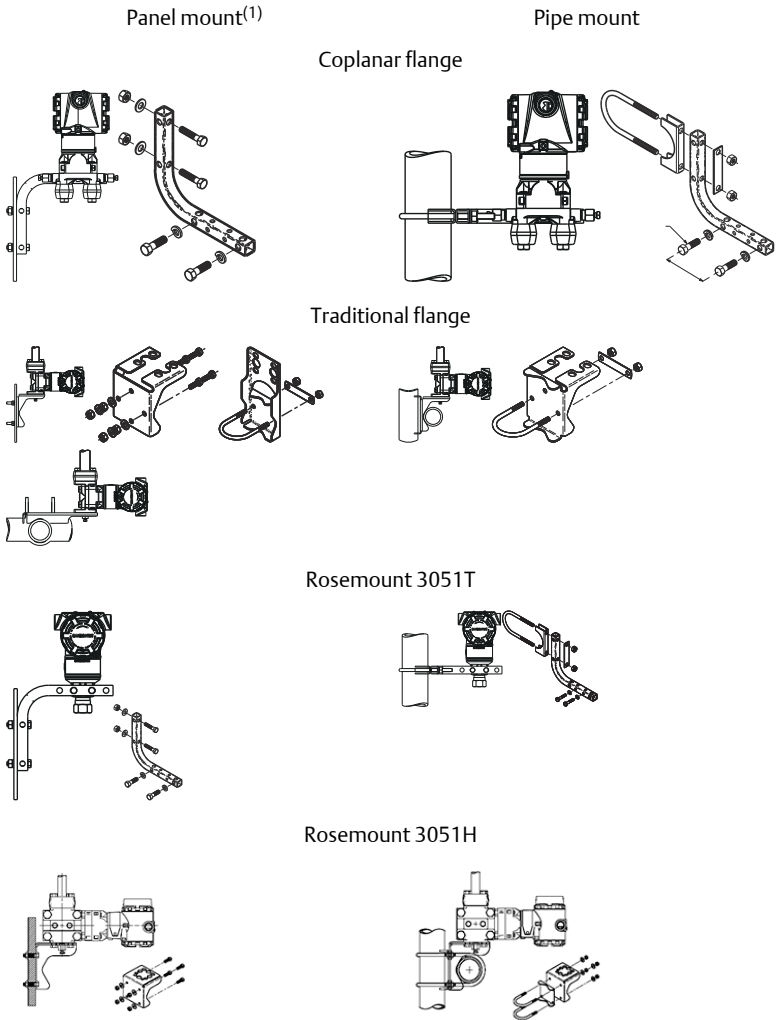


### Procedure

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

## 2.4 Panel and pipe mount

**Figure 2-1: Panel and Pipe Mounting**

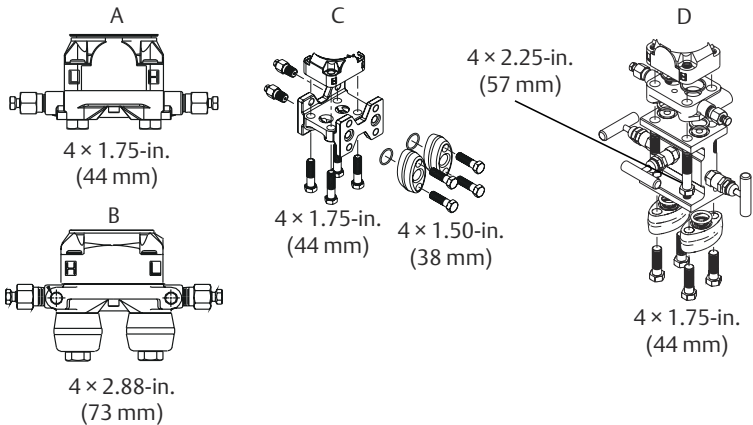


(1) 5/16 x 1½ panel bolts are customer supplied.

## 2.5 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 as spare parts. [Figure 2-2](#) illustrates common transmitter assemblies with the bolt length required for proper transmitter assembly.

**Figure 2-2: 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 2-1](#). If bolt material is not shown in [Table 2-1](#), contact the local Emerson representative for more information.

### 2.5.1 Bolt installation

#### Note

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.


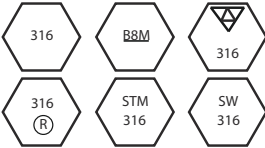
#### Procedure

1. Finger-tighten the bolts.



2. Torque the bolts to the initial torque value using a crossing pattern (see [Table 2-1](#) for torque values).
3. Torque the bolts to the final torque value using the same crossing pattern (see [Table 2-1](#) for torque values).
4. Verify that the flange bolts are protruding through the isolator plate before applying pressure.

**Table 2-1: Torque Values for the 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

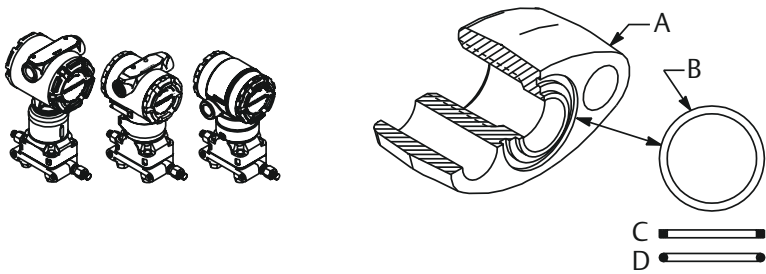
## 2.6 O-rings with flange adapters

### ⚠ WARNING

Failure to install proper flange adapter O-rings may cause process leaks, which can result in death or serious injury. The two flange adapters are distinguished by unique O-ring grooves. Only use the O-ring that is designed for its specific flange adapter, as shown below.

**Figure 2-3: O-ring Location**

Rosemount 3051S/3051/2051



- A. Flange adapter
- B. O-ring
- C. PTFE-based profile (square)
- D. Elastomer profile (round)

Whenever the flanges or adapters are removed, visually inspect the O-rings. Replace them if there are any signs of damage, such as nicks or cuts. If you replace the O-rings, re-torque the flange bolts and alignment screws after installation to compensate for seating of the PTFE O-ring.

## 2.7 Environmental seal for housing

For NEMA® 4X, IP66, and IP68 requirements, use thread sealing (PTFE) tape or paste on male threads of conduit to provide a water and dust tight seal. Consult factory if other ingress protection ratings are required.

Always ensure a proper seal by installing the electronics housing cover(s) so that metal contacts metal. Use Rosemount O-rings.

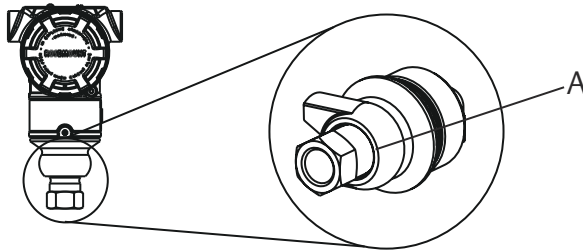
For M20 threads, install conduit plugs to full thread engagement or until mechanical resistance is met.

## 2.8 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 360° around the transmitter between the housing and sensor. (See [Figure 2-4](#).)

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

**Figure 2-4: In-line Gage Low Side Pressure Port**



*A. Pressure port location*

### 3 Housing rotation

To improve field access to wiring or to better view the optional LCD display:

#### Procedure

1. Loosen the housing rotation set screw using a 5/64-in. hex wrench.
2. Turn the housing left or right up to a maximum of 180 ° from its original position.<sup>(3)</sup>
3. Re-tighten the housing rotation set screw to a maximum of 7 in-lb when desired location is reached.

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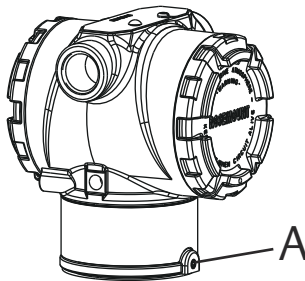
#### Note

Over-rotating will damage the transmitter.

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**Figure 3-1: Housing Rotation**



A. Housing rotation set screw (5/64-in.)

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<sup>(3)</sup> Rosemount 3051C original position aligns with "H" side; Rosemount 3051T original position is the opposite side of the bracket holes.

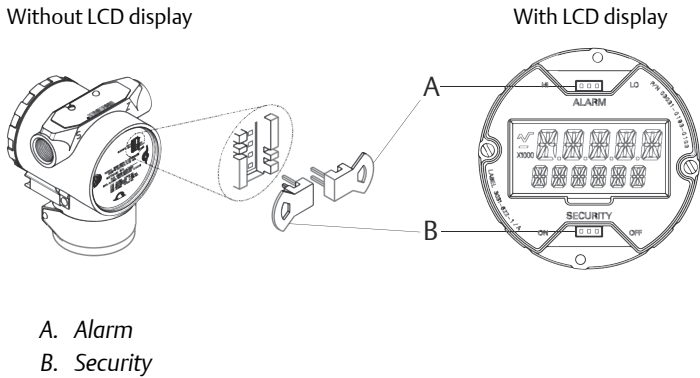
## 4 Set the jumpers

If alarm and security jumpers are not installed, the transmitter will operate normally with the default alarm condition alarm *high* and the security *off*.

### Procedure

1. If the transmitter is installed, secure the loop, and remove power.
2. Remove the housing cover opposite the field terminal side. Do not remove the instrument cover in explosive atmospheres when the circuit is live.
3. Reposition the jumper. Avoid contact with the leads and the terminals. See [Figure 4-1](#) for the location of the jumper and the *ON* and *OFF* positions.
4. Reattach the transmitter cover. The cover must be fully engaged to comply with explosion-proof requirements.

**Figure 4-1: Transmitter Electronics Board**



## 5 Connect the wiring and power up

Figure 5-1 shows wiring connections necessary to power a Rosemount 3051 and enable communications with a handheld communicator.

Use the following steps to wire the transmitter:

### Procedure

1. Remove the housing cover on the field terminals side.
2. Connect the positive lead to the “+” terminal (PWR/COMM) and the negative lead to the “-” terminal.
3. Ensure full contact with terminal block screw and washer. When using a direct wiring method, wrap wire clockwise to ensure it is in place when tightening the terminal block screw.

The use of a pin or a ferrule wire terminal is not recommended as the connection may be more susceptible to loosening over time or under vibration.

4. Ensure proper grounding.

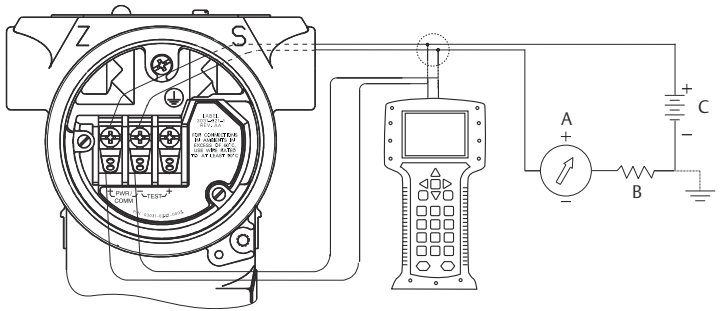
It is important that the instrument cable shield:

- Be trimmed close and insulated from touching the transmitter housing
- Be connected to the next shield if cable is routed through a junction box
- Be connected to a good earth ground at the power supply end

Do not connect the powered signal wiring to the test terminals. Power could damage the test diode in the test connection. Shielded twisted pair cable should be used for best results. Use 24 AWG or larger wire and do not exceed 5,000 ft (1500 m).

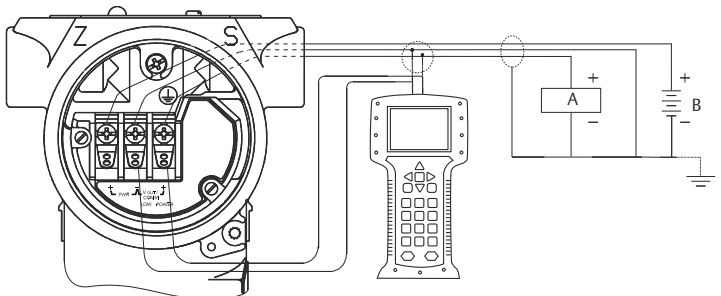
5. Plug and seal unused conduit connections.
6. If applicable, install wiring with a drip loop. Arrange the drip loop so the bottom is lower than the conduit connections and the transmitter housing.
7. Replace the housing cover.

**Figure 5-1: Transmitter Wiring Diagrams (4–20 mA)**



- A. Current meter
- B.  $R_L \geq 250\Omega$
- C. 24 Vdc supply

**Figure 5-2: Low Power Transmitter Wiring**



- A. Voltmeter
- B. 6–12 Vdc supply

**Note**

Installation of the transient protection terminal block does not provide transient protection unless the Rosemount 3051 case is properly grounded.

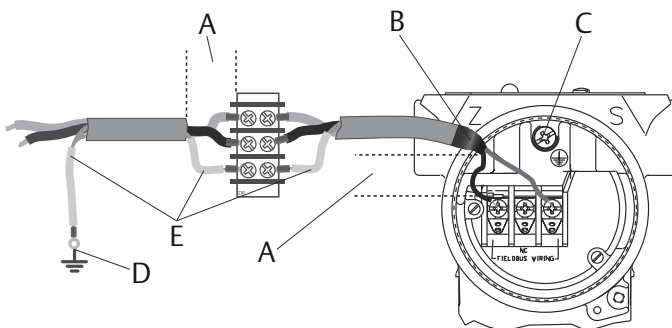
## 5.1 Signal wiring grounding

Do not run signal wiring in conduit or open trays with power wiring, or near heavy electrical equipment. Grounding terminations are provided on the outside of the electronics housing and inside the terminal compartment. These grounds are used when transient protect terminal blocks are installed or to fulfill local regulations. See [Step 2](#) for more information on how the cable shield should be grounded.

## Procedure

1. Remove the field terminals housing cover.
2. Connect the wiring pair and ground as indicated in [Figure 5-3](#).
  - Be trimmed close and insulated from touching the transmitter housing
  - Continuously connect to the termination point
  - Be connected to a good earth ground at the power supply end

**Figure 5-3: Wiring**



- A. Minimize distance
- B. Trim shield and insulate
- C. Ground for transient protection
- D. Shield connected to power supply ground
- E. Insulate shield

3. Replace the housing cover.  
It is recommended the cover be tightened until there is no gap between the cover and the housing.
4. Plug and seal unused conduit connections.

## 5.2 Power supply for a 4-20 mA HART

The transmitter operates on 10.5-4.2 Vdc at the terminal of the transmitter. The dc power supply should provide power with less than two percent ripple. Loops with a 250  $\Omega$  resistance require a minimum of 16.6 V.

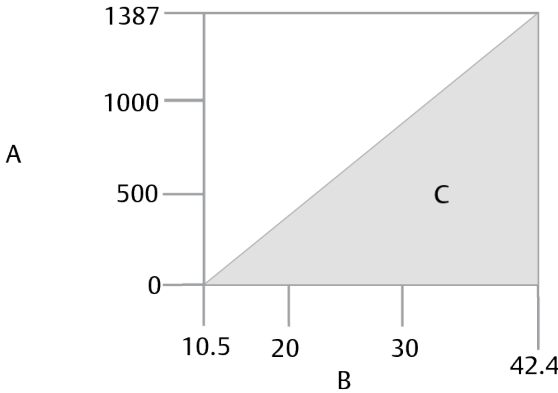
### Note

The transmitter must have a minimum of 250  $\Omega$  to communicate with a Field Communicator. If you are using a single power supply to power more than one Rosemount 3051 Transmitter, make sure the power supply used



and the circuitry common to the transmitters do not have more than 20 Ω of impedance at 1200 Hz.

**Figure 5-4: Load Limitation**



Maximum loop resistance =  $43.5 \times (\text{power supply voltage} - 10.5)$

- A. Load (Ωs)
- B. Voltage (Vdc)
- C. Operating region

The total resistance load is the sum of the resistance of the signal leads and the load resistance of the controller, indicator, I.S. barriers, and related pieces. If you use intrinsic safety barriers, include the resistance and voltage drop.

### 5.3 Power supply for 1-5 Vdc HART Low Power

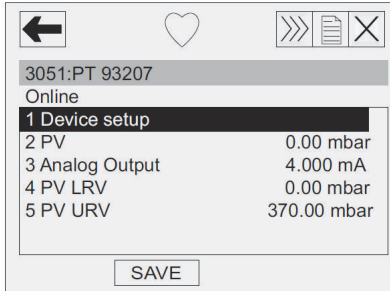
Low power transmitters operate on 6–12 Vdc. The dc power supply should provide power with less than two percent ripple. The  $V_{out}$  load should be 100 kW or greater.

## 6 Verify configuration

### 6.1 Handheld communicator user interface

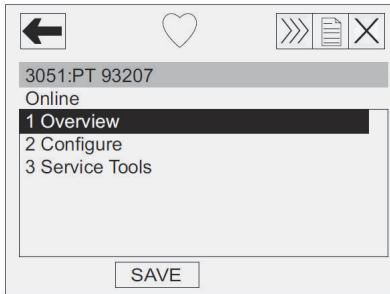
The Traditional Interface - Device Revision 3 and DD Revision 2 Fast Key sequence can be found on page 12.

**Figure 6-1: Traditional Interface - Device Revision 3 and DD Revision 2**



The Device Dashboard - Device Revision 3 and DD Revision 6 Fast Key sequence can be found on [Table 6-2](#).

**Figure 6-2: Device Dashboard - Device Revision 3 and DD Revision 6**



#### Note

A check (✓) indicates the basic configuration parameters. At minimum, these parameters should be verified as part of the configuration and startup procedure.

**Table 6-1: Traditional Interface - Device Revision 3 and DD Revision 2  
Fast Key Sequence**

<b>Function</b>	<b>Fast Key Sequence</b>
Alarm and Saturation Levels	1, 4, 2, 7
Analog Output Alarm Type	1, 4, 3, 2, 4
Burst Mode Control	1, 4, 3, 3, 3
Burst Operation	1, 4, 3, 3, 3
Custom Meter Configuration	1, 3, 7, 2
Custom Meter Value	1, 4, 3, 4, 3
✓ Damping	1, 3, 6
Date	1, 3, 4, 1
Descriptor	1, 3, 4, 2
Digital To Analog Trim (4–20 mA Output)	1, 2, 3, 2, 1
Disable Local Span/Zero Adjustment	1, 4, 4, 1, 7
Field Device Information	1, 4, 4, 1
Full Trim	1, 2, 3, 3
Keypad Input – Rerange	1, 2, 3, 1, 1
Local Zero and Span Control	1, 4, 4, 1, 7
Loop Test	1, 2, 2
Lower Sensor Trim	1, 2, 3, 3, 2
Message	1, 3, 4, 3
Meter Options	1, 4, 3, 4
Number of Requested Preambles	1, 4, 3, 3, 2
Poll Address	1, 4, 3, 3, 1
Poll a Multidropped Transmitter	Left Arrow, 4, 1, 1
Range Values	1, 3, 3
Rerange	1, 2, 3, 1
Scaled D/A Trim (4–20 mA Output)	1, 2, 3, 2, 2
Self Test (Transmitter)	1, 2, 1, 1
Sensor Info	1, 4, 4, 2
Sensor Temperature	1, 1, 4
Sensor Trim Points	1, 2, 3, 3, 5

**Table 6-1: Traditional Interface - Device Revision 3 and DD Revision 2 Fast Key Sequence (continued)**

Function	Fast Key Sequence
Status	1, 2, 1, 1
✓Tag	1, 3, 1
Transfer Function (Setting Output Type)	1, 3, 5
✓Transmitter Security (Write Protect)	1, 3, 4, 4
Trim Analog Output	1, 2, 3, 2
✓Units (Process Variable)	1, 3, 2
Upper Sensor Trim	1, 2, 3, 3, 3
Zero Trim	1, 2, 3, 3, 1

**Table 6-2: Traditional Interface - Device Revision 3 and DD Revision 2 Fast Key Sequence**

Function	Fast Key Sequence
✓Alarm and Saturation Levels	1, 7, 5
Burst Mode Control	2, 2, 4, 1
Burst Option	2, 2, 4, 2
Custom Display Configuration	2, 2, 3
✓Damping	2, 2, 1, 2
Date	2, 2, 6, 1, 4
Descriptor	2, 2, 6, 1, 5
Digital to Analog Trim (4–20 mA Output)	3, 4, 2, 1
Disable Zero & Span Adjustment	2, 2, 5, 2
Rerange with Keypad	2, 2, 2, 1
Loop Test	3, 5, 1
Lower Sensor Trim	3, 4, 1, 2
Message	2, 2, 6, 1, 6
✓Range Values	2, 2, 2
Scaled D/A Trim (4–20 mA Output)	3, 4, 2, 2
Sensor Temperature/Trend (Rosemount 3051S)	2, 2, 1, 6
✓Tag	2, 2, 6, 1, 1
✓Transfer Function	2, 2, 1, 3

**Table 6-2: Traditional Interface - Device Revision 3 and DD Revision 2  
Fast Key Sequence (continued)**

<b>Function</b>	<b>Fast Key Sequence</b>
Transmitter Security (Write Protect)	2, 2, 5, 1
✓Units	2, 2, 1, 1
Upper Sensor Trim	3, 4, 1, 1
Zero Trim	3, 4, 1, 3

## 7 Trim the transmitter

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### Note

Transmitters are shipped fully calibrated per request or by the factory default of full scale (span = upper range limit).

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### 7.1 Zero trim

A zero trim is a single-point adjustment used for compensating mounting position effects. When performing a zero trim, ensure the equalizing valve is open and all wet legs are filled to the correct level.

There are two methods to compensate for mounting effects:

- [Zero trim using the handheld communicator](#)
- [Using the transmitter zero adjustment buttons](#)

#### 7.1.1 Zero trim using the handheld communicator

If zero offset is within 3% of URL, follow the instructions below. This zero trim will affect the 4–20 mA value, the HART PV, and the display value.

#### Procedure

1. Equalize or vent the transmitter and connect Field Communicator.
2. At the menu, input the HART Fast Key sequence (refer to [Table 6-1](#) or [Table 6-2](#)).
3. Follow the commands to perform a zero trim.

#### 7.1.2 Using the transmitter zero adjustment buttons

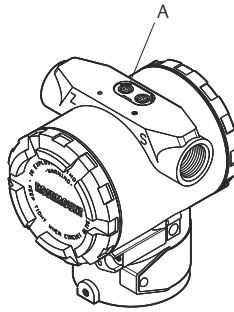
Using the transmitter zero adjustment buttons, the lower range value (LRV) will be set to the pressure applied to the transmitter. This adjustment will affect the 4–20 mA value only. Perform the following steps to perform a rerange using the zero adjustment buttons.

#### Procedure

1. Loosen the certifications label screw and slide the label to expose the zero adjustment buttons.
2. Set the 4 mA point by pressing the zero button for two seconds. Verify the output is 4 mA. The optional LCD display will show ZERO PASS.

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**Figure 7-1: Zero Adjustment Buttons**



A. Zero adjustment buttons

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## 8 Safety Instrumented Systems (SIS)

The following section applies to Rosemount 3051C Transmitters used in SIS applications.

### 8.1 Installation

No special installation is required in addition to the standard installation practices outlined in this document. Always ensure a proper seal by installing the electronics housing cover(s) so that metal contacts metal.

The loop must be designed so the terminal voltage does not drop below 10.5 Vdc when the transmitter output is 22.5 mA.

Position the security switch to the ON position to prevent accidental or deliberate change of configuration data during normal operation.

### 8.2 Configuration

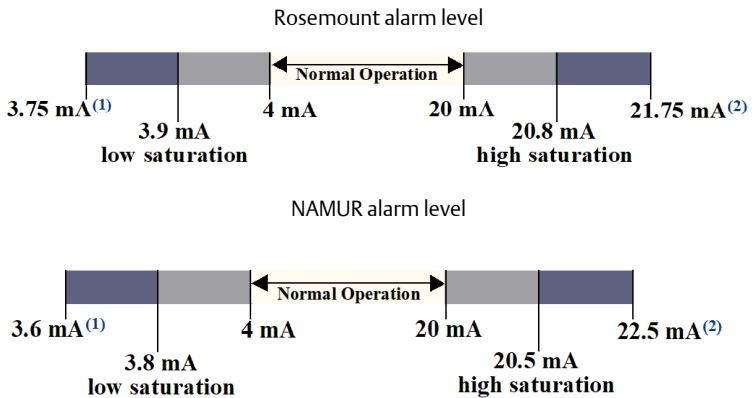
Use any HART-compliant master to communicate with and verify configuration of the Rosemount 3051.

User-selected damping will affect the transmitters ability to respond to changes in the applied process. The damping value + response time must not exceed the loop requirements.

1. Transmitter output is not safety-rated during the following: configuration changes, multidrop, loop test. Alternative means should be used to ensure process safety during transmitter configuration and maintenance activities.
2. DCS or safety logic solver must be configured to match transmitter configuration. [Figure 8-1](#) identifies the two alarm levels available and their operation values. Position the alarm switch to the required HI or LO alarm position.



**Figure 8-1: Alarm Levels**



**Note**

The 3.6 and 22.5 mA levels shown for the Rosemount alarm level indicates transmitter failure. The hardware alarm will be in either the LO or HI position.

**Note**

Some detected faults are indicated on the analog output at a level above high alarm regardless of the alarm switch selection.

## 8.3 Operation and maintenance

### 8.3.1 Proof test and inspection

The following proof tests are recommended. Proof test results and corrective actions taken must be documented at [Emerson.com/Rosemount/Report-A-Failure](https://www.emerson.com/Rosemount/Report-A-Failure) in the event that an error is found in the safety functionality.

Use the Fast Key sequences in [Table 6-1](#) or [Table 6-2](#) to perform a loop test, analog output trim, or sensor trim. See the Rosemount 3051 [Reference Manual](#) for additional information.

#### Proof test 1<sup>(4)</sup>

This proof test will detect 59.6 percent of DU failures not detected by the Rosemount 3051 automatic diagnostics.

#### Procedure

1. Execute the Master Reset command to initiate start-up diagnostics.
2. Enter the milliampere value representing a high alarm state.

*(4) This test will detect approximately 94.6% of possible DU failures in the transmitter.*

3. Check the reference meter to verify the mA output corresponds to the entered value.
4. Enter the milliamper value representing a low alarm state.
5. Check the reference meter to verify the mA output corresponds to the entered value.

### Proof test 2<sup>(5)</sup>

This proof test, when combined with the five-year proof-test, will detect 94.6 percent of DU failures not detected by the Rosemount 3051 automatic diagnostics.

### Procedure

1. Execute the Master Reset command to initiate start-up diagnostics.
2. Perform a minimum two point sensor calibration check using the 4–20 mA range points as the calibration points.
3. Check the reference mA meter to verify the mA output corresponds to the pressure input value.
4. If necessary, use one of the trim procedures available in the Rosemount 3051 [Reference Manual](#) to calibrate.

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### Note

The user determines the proof-test requirements for impulse piping.

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**Visual inspection** Not required.

**Special tools** Not required.

**Product repair** All failures detected by the transmitter diagnostics or by the proof-test must be reported. Feedback can be submitted electronically at [Emerson.com/Rosemount/Report-A-Failure](https://emerson.com/Rosemount/Report-A-Failure)

The Rosemount 3051 is repairable by major component replacement. Follow the instructions in the Rosemount 3051 [Reference Manual](#) for additional information.

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(5) This test will detect approximately 94.6% of possible DU failures in the transmitter.

## 8.4 Reference

### Specifications

The Rosemount 3051 must be operated in accordance to the functional and performance specifications provided in the Rosemount 3051 [Reference Manual](#).

### Failure rate data

The FMEDA report includes failure rates and common cause Beta factor estimates. This report is available at [Emerson.com/Rosemount](https://emerson.com/Rosemount).

### Rosemount 3051 safety failure values

<b>Safety accuracy:</b>	0.065 percent
<b>Safety response time:</b>	100 msec

### Product life

50 years – based on worst case component wear-out mechanisms – not based on wear-out process wetted materials

## 9 Product certifications

Rev 2.9

### 9.1 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](http://Emerson.com/Rosemount).

### 9.2 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).

### 9.3 North America

#### 9.3.1 E5 USA Explosionproof (XP) and Dust-Ignitionproof (DIP)

##### Ranges 1-5 (HART)

**Certificate** FM16US0121

**Standards** FM Class 3600 – 2018, FM Class 3615 – 2018, FM Class 3616 - 2011, FM Class 3810 – 2005, ANSI/NEMA 250 – 2008

**Markings** XP CL I, DIV 1, GP B, C, D; DIP CL II, DIV 1, GP E, F, G; CL III; T5(-50 °C ≤ T<sub>a</sub> ≤ +85 °C); Factory Sealed; Type 4X

##### Range 6 (HART/Fieldbus/PROFIBUS®)

**Certificate** 1053834

**Standards** ANSI/ISA 12.27.01-2003, CSA Std. C22.2 No. 30 -M1986, CSA Std. C22.2 No.142-M1987, CSA Std. C22.2 No. 213 - M1987

**Markings** XP Class I, Division 1, Groups B, C and D, T5, (-50 °C ≤ T<sub>a</sub> ≤ 85 °C) Suitable for Class I, Zone 1, Group IIB+H2, T5; DIP Class II and Class III, Division 1, Groups E, F and G, T5, (-50 °C ≤ T<sub>a</sub> ≤ 85 °C) ; Type 4X; Factory Sealed; Single Seal (See drawing 03031-1053)

#### 9.3.2 I5 USA Intrinsic Safety (IS) and Nonincendive (NI)

##### Range 1-5 (HART)

**Certificate** FM16US0120X

**Standards** FM Class 3600 - 2011, FM Class 3610 - 2010, FM Class 3611 - 2004, FM Class 3810 - 2005, ANSI/NEMA 250 - 2008

**Markings** IS CL I, DIV 1, GP A, B, C, D; CL II, DIV 1, GP E, F, G; Class III; DIV 1 when connected per Rosemount drawing 03031-1019; NI CL 1, DIV 2, GP A, B, C, D; T4 ( $-50\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$ ) [HART], T4 ( $-50\text{ }^{\circ}\text{C} \leq T_a \leq +60\text{ }^{\circ}\text{C}$ ) [Fieldbus/PROFIBUS]; Type 4X

### Special Conditions for Safe Use (X):

1. The Rosemount 3051 Transmitter housing contains aluminum and is considered a potential risk of ignition by impact or friction. Care must be taken into account during installation and use to prevent impact and friction.
2. The Rosemount 3051 Transmitter with the transient terminal block (Option code T1) will not pass the 500 Vrms dielectric strength test, and this must be taken into account during installation.

### Range 1-6 (HART/Fieldbus/PROFIBUS)

**Certificate** 1053834

**Standards** ANSI/ISA 12.27.01-2003, CSA Std. C22.2 No.142-M1987, CSA Std. C22.2. No.157-92

**Markings** IS Class I, II, III, Division 1 Groups A, B, C, D, E, F, and G when connected in accordance with Rosemount drawing 03031-1024, Suitable for Class I, Zone 0 Group IIC; Class I, Division 2, Groups A, B, C, and D; NIFW; Suitable for Class I, Zone 2, Group IIC; HART: T4 ( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$ ), T5 ( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +40\text{ }^{\circ}\text{C}$ )  
Fieldbus/PROFIBUS: T4 ( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +60\text{ }^{\circ}\text{C}$ )  
Type 4X

## 9.3.3 IE USA FISCO

### Range 1-5 (HART)

**Certificate** FM16US0120X

**Standards** FM Class 3600 - 2011, FM Class 3610 - 2010, FM Class 3611 - 2004, FM Class 3810 - 2005

**Markings** IS CL I, DIV 1, GP A, B, C, D when connected per Rosemount drawing 03031-1019 ( $-50\text{ }^{\circ}\text{C} \leq T_a \leq +60\text{ }^{\circ}\text{C}$ ); Type 4X

### Special Conditions for Safe Use (X):

1. The Rosemount 3051 Transmitter housing contains aluminum and is considered a potential risk of ignition by impact or friction. Care must

be taken into account during installation and use to prevent impact and friction.

- The Rosemount 3051 Transmitter with the transient terminal block (Option code T1) will not pass the 500 Vrms dielectric strength test, and this must be taken into account during installation.

### Range 1-6 (HART/Fieldbus/PROFIBUS)

**Certificate** 1053834

**Standards** ANSI/ISA 12.27.01-2003, CSA Std. C22.2 No.142-M1987, CSA Std. C22.2. No.157-92

**Markings** IS Class I, Division 1 Groups A, B, C, D, T4 ( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +60\text{ }^{\circ}\text{C}$ ) when connected in accordance with Rosemount drawing 03031-1024, Suitable for Class I, Zone 0 Group IIC; Type 4X; Factory Sealed; Single Seal (See drawing 03031-1053)

### 9.3.4 C6 Canada Explosionproof, Dust-Ignitionproof, Intrinsic Safety and Nonincendive

**Certificate** 1053834

**Standards** ANSI/ISA 12.27.01-2003, CSA Std. C22.2 No. 30 -M1986, CSA Std. C22.2 No.142-M1987, CSA Std. C22.2. No.157-92, CSA Std. C22.2 No. 213 - M1987

**Markings** Explosionproof for Class I, Division 1, Groups B, C and D; Suitable for Class I, Zone 1, Group IIB+H2, T5 ( $-50\text{ }^{\circ}\text{C} \leq T_a \leq +85\text{ }^{\circ}\text{C}$ );  
Dust-Ignitionproof Class II, III Division 1, Groups E, F, G; T5 ( $-50\text{ }^{\circ}\text{C} \leq T_a \leq +85\text{ }^{\circ}\text{C}$ );  
Intrinsically Safe Class I, Division 1, Groups A, B, C, D when connected in accordance with Rosemount drawing 03031-1024, Temperature Code T4; Suitable for Class I, Zone 0;  
Class I Division 2 Groups A, B, C, and D, T5; Suitable for Class I Zone 2, Group IIC; Type 4X; Factory Sealed; Single Seal (See drawing 03031-1053)

### 9.3.5 E6 Canada Explosionproof, Dust-Ignitionproof and Division 2

**Certificate** 1053834

**Standards** ANSI/ISA 12.27.01-2003, CSA Std. C22.2 No. 30 -M1986, CSA Std. C22.2 No.142-M1987, CSA Std. C22.2 No. 213 - M1987

**Markings** Explosionproof Class I, Division 1, Groups B, C, and D; Suitable for Class I, Zone 1, Group IIB+H2, T5;

Dust-Ignitionproof for Class II and Class III, Division 1, Groups E, F, and G; T5 ( $-50\text{ °C} \leq T_a \leq +85\text{ °C}$ );  
 Class I, Division 2, Groups A, B, C, and D; T5; Suitable for Class I Zone 2, Group IIC; Type 4X; Factory Sealed; Single Seal (See drawing 03031-1053)

## 9.4 Europe

### 9.4.1 E8 ATEX Flameproof and Dust

- Certificate** KEMA00ATEX2013X; Baseefa11ATEX0275X
- Standards Used** EN60079-0:2012 + A11:2013, EN60079-1:2014, EN60079-26:2015, EN60079-31:2009
- Markings**
  - ⊕ II ½ G Ex db IIC T6...T4 Ga/Gb T6 ( $-60\text{ °C} \leq T_a \leq +70\text{ °C}$ ), T4/T5 ( $-60\text{ °C} \leq T_a \leq +80\text{ °C}$ );
  - ⊕ II 1 D Ex ta IIIC T95 °C T<sub>500</sub> 105 °C Da ( $-20\text{ °C} \leq T_a \leq +85\text{ °C}$ )

**Table 9-1: Process Temperature**

Temperature class	Process connection temperature
T6	-60 °C to +70 °C
T5	-60 °C to +80 °C
T4	-60 °C to +120 °C

#### Special Conditions for Safe Use (X):


1. This device contains a thin wall diaphragm less than 1 mm thick that forms a boundary between Category 1 (process connection) and Category 2 (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. During installation, maintenance, and use, the environmental conditions to which the diaphragm will be subjected shall be taken into account. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.


- Some variants of the equipment have reduced markings on the nameplate. Refer to the Certificate for full equipment marking.


### 9.4.2 I1 ATEX Intrinsic Safety and Dust

**Certificate** BAS97ATEX1089X; Baseefa11ATEX0275X

**Standards** EN60079-0:2012 + A11:2013, EN60079-11:2012, EN60079-31:2014

**Markings** HART:  II 1 G Ex ia IIC T5/T4 Ga, T5 (-60 °C ≤ T<sub>a</sub> ≤ +40 °C), T4 (-60 °C ≤ T<sub>a</sub> ≤ +70 °C)

Fieldbus/PROFIBUS:  II 1 G Ex ia IIC Ga T4 (-60 °C ≤ T<sub>a</sub> ≤ +60 °C)

DUST:  II 1 D Ex ta IIIC T95 °C T<sub>500</sub> 105 °C Da (-20 °C ≤ T<sub>a</sub> ≤ +85 °C)

**Table 9-2: Input Parameters**

Parameter	HART	Fieldbus/PROFIBUS
Voltage U <sub>i</sub>	30 V	30 V
Current I <sub>i</sub>	200 mA	300 mA
Power P <sub>i</sub>	0.9 W	1.3 W
Capacitance C <sub>i</sub>	0.012 μF	0 μF
Inductance L <sub>i</sub>	0 mH	0 mH

#### Special Conditions for Safe Use (X):

- The apparatus is not capable of withstanding the 500 V insulation test required by clause 6.3.12 of EN60079-11: 2012. This must be taken into account when installing the apparatus.
- The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion of located in Zone 0.
- Some variants of the equipment have reduced markings on the nameplate. Refer to the Certificate for full equipment marking.

### 9.4.3 IA ATEX FISCO

**Certificate** BAS97ATEX1089X

**Standards** EN60079-0:2012 + A11:2013, EN60079-11:2012

**Markings**  II 1 G Ex ia IIC T4 Ga (-60 °C ≤ T<sub>a</sub> ≤ +60 °C)



**Table 9-3: Input Parameters**

Parameter	Fieldbus/PROFIBUS
Voltage $U_i$	17.5 V
Current $I_i$	380 mA
Power $P_i$	5.32 W
Capacitance $C_i$	$\leq 5$ nF
Inductance $L_i$	$\leq 10$ $\mu$ H



**Special Conditions for Safe Use (X):**

1. The apparatus is not capable of withstanding the 500 V insulation test required by clause 6.3.12 of EN60079-11: 2012. This must be taken into account when installing the apparatus.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion of located in Zone 0.

**9.4.4 N1 ATEX Type n and Dust**

**Certificate** BAS00ATEX3105X; Baseefa11ATEX0275X

**Standards** EN60079-0:2012 + A11:2013, EN60079-15:2010, EN60079-31:2014

**Markings**  II 3 G Ex nA IIC T5 Gc ( $-40\text{ }^\circ\text{C} \leq T_a \leq +70\text{ }^\circ\text{C}$ );  
 II 1 D Ex ta IIIC T95  $^\circ\text{C}$  T<sub>500</sub> 105  $^\circ\text{C}$  Da ( $-20\text{ }^\circ\text{C} \leq T_a \leq +85\text{ }^\circ\text{C}$ )

**Special Conditions for Safe Use (X):**

1. This apparatus is not capable of withstanding the 500 V insulation test that is required by clause 6.8.1 of EN60079-15. This must be taken into account when installing the apparatus.
2. Some variants of the equipment have reduced markings on the nameplate. Refer to the Certificate for full equipment marking.

**9.5 International**

**9.5.1 E7 IECEx Flameproof and Dust**

**Certificate** IECEx KEM 09.0034X; IECEx BAS 10.0034X

**Standards** IEC60079-0:2011, IEC60079-1:2014-06, IEC60079-26:2014-10, IEC60079-31:2013

**Markings** Ex db IIC T6...T4 Ga/Gb T6( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$ ), T4/T5( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +80\text{ }^{\circ}\text{C}$ ); Ex ta IIIC T95  $^{\circ}\text{C}$  T<sub>500</sub> 105  $^{\circ}\text{C}$  Da ( $-20\text{ }^{\circ}\text{C} \leq T_a \leq +85\text{ }^{\circ}\text{C}$ )

**Table 9-4: Process Temperature**

Temperature class	Process connection temperature
T6	$-60\text{ }^{\circ}\text{C}$ to $+70\text{ }^{\circ}\text{C}$
T5	$-60\text{ }^{\circ}\text{C}$ to $+80\text{ }^{\circ}\text{C}$
T4	$-60\text{ }^{\circ}\text{C}$ to $+120\text{ }^{\circ}\text{C}$

### Special Conditions for Safe Use (X):

1. This device contains a thin wall diaphragm less than 1 mm thick that forms a boundary between EPL Ga (process connection) and EPL Gb (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. During installation, maintenance, and use, the environmental conditions to which the diaphragm will be subjected shall be taken into account. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.
4. Some variants of the equipment have reduced markings on the nameplate. Refer to the Certificate for full equipment marking.

## 9.5.2 I7 IECEx Intrinsic Safety

**Certificate** IECEx BAS 09.0076X

**Standards** IEC60079-0:2011, IEC60079-11:2011

**Markings** HART: Ex ia IIC T5/T4 Ga, T5( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +40\text{ }^{\circ}\text{C}$ ), T4 ( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$ )  
 Fieldbus/PROFIBUS: Ex ia IIC T4( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +60\text{ }^{\circ}\text{C}$ )

**Table 9-5: Input Parameters**

Parameter	HART	Fieldbus/PROFIBUS
Voltage $U_i$	30 V	30 V

**Table 9-5: Input Parameters (continued)**

Parameter	HART	Fieldbus/PROFIBUS
Current $I_i$	200 mA	300 mA
Power $P_i$	0.9 W	1.3 W
Capacitance $C_i$	0.012 $\mu$ F	0 $\mu$ F
Inductance $L_i$	0 mH	0 mH

**Special Conditions for Safe Use (X):**

1. If the apparatus is fitted with an optional 90 V transient suppressor, it is not capable of withstanding the 500 V insulation test required by clause 6.3.12 of IEC 60079-11. This must be taken into account when installing the apparatus.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion of located in Zone 0.

**IECEx Mining (Special A0259)**

<b>Certificate</b>	IECEx TSA 14.0001X
<b>Standards</b>	IEC60079-0:2011, IEC60079-11:2011
<b>Markings</b>	Ex ia I Ma ( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$ )

**Table 9-6: Input Parameters**

Parameter	HART	Fieldbus/ PROFIBUS	FISCO
Voltage $U_i$	30 V	30 V	17.5 V
Current $I_i$	200 mA	300 mA	380 mA
Power $P_i$	0.9 W	1.3 W	5.32 W
Capacitance $C_i$	0.012 $\mu$ F	0 $\mu$ F	<5 nF
Inductance $L_i$	0 mH	0 mH	<10 $\mu$ H

**Special Conditions for Safe Use (X):**

1. If the apparatus is fitted with an optional 90 V transient suppressor, it is not capable of withstanding the 500 V insulation test required by IEC60079-11. This must be taken into account when installing the apparatus.
2. It is a condition of safe use that the above input parameters shall be taken into account during installation.

- It is a condition of manufacture that only the apparatus fitted with housing, covers, and sensor module housing made out of stainless steel are used in Group 1 applications.

### 9.5.3 IG IECEx FISCO

<b>Certificate</b>	IECEx BAS 09.0076X
<b>Standards</b>	IEC60079-0:2011, IEC60079-11:2011
<b>Markings</b>	Ex ia IIC T4 Ga (-60 °C ≤ T <sub>a</sub> ≤ +60 °C)

**Table 9-7: Input Parameters**

Parameters	Fieldbus/PROFIBUS
Voltage U <sub>i</sub>	17.5 V
Current I <sub>i</sub>	380 mA
Power P <sub>i</sub>	5.32 W
Capacitance C <sub>i</sub>	≤ 5 nF
Inductance L <sub>i</sub>	≤ 10 μH

#### Special Conditions for Safe Use (X):

- If the apparatus is fitted with an optional 90 V transient suppressor, it is not capable of withstanding the 500 V insulation test required by clause 6.3.12 of IEC 60079-11. This must be taken into account when installing the apparatus.
- The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion of located in Zone 0.

### 9.5.4 N7 IECEx Type n

<b>Certificate</b>	IECEx BAS 09.0077X
<b>Standards</b>	IEC60079-0:2011, IEC60079-15:2010
<b>Markings</b>	Ex nA IIC T5 Gc (-40 °C ≤ T <sub>a</sub> ≤ +70 °C)

#### Special Condition for Safe Use (X):

- This apparatus is not capable of withstanding the 500 V insulation test required by clause 6.5.1 of IEC 60079-15. This must be taken into account when installing the apparatus.

## 9.6 Brazil

### 9.6.1 E2 INMETRO Flameproof

**Certificate** UL-BR 13.0643X

**Standards** ABNT NBR IEC 60079-0:2013; ABNT NBR IEC 60079-1:2016; ABNT NBR IEC 60079-26:2016

**Markings** Ex db IIC T6...T4 Ga/Gb, T6( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$ ), T4/T5 ( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +80\text{ }^{\circ}\text{C}$ )

#### Special Conditions for Safe Use (X):

1. This device contains a thin wall diaphragm with less than 1 mm thickness that forms a boundary between zone 0 (process connection) and zone 1 (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. Installation, maintenance, and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

### 9.6.2 I2 INMETRO Intrinsic Safety

**Certificate** UL-BR 13.0584X

**Standards** ABNT NBR IEC60079-0:2013, ABNT NBR IEC60079-11:2013

**Markings** HART: Ex ia IIC T5/T4 Ga, T5( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +40\text{ }^{\circ}\text{C}$ ), T4 ( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$ )  
 Fieldbus/PROFIBUS: Ex ia IIC T4 Ga ( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +60\text{ }^{\circ}\text{C}$ )

**Table 9-8: Input Parameters**

Parameter	HART	Fieldbus/PROFIBUS
Voltage $U_i$	30 V	30 V
Current $I_i$	200 mA	300 mA
Power $P_i$	0.9 W	1.3 W
Capacitance $C_i$	0.012 $\mu\text{F}$	0 $\mu\text{F}$

**Table 9-8: Input Parameters (continued)**

Parameter	HART	Fieldbus/PROFIBUS
Inductance $L_i$	0 mH	0 mH

**Special Conditions for Safe Use (X):**

1. If the equipment is fitted with an optional 90 V transient suppressor, it is not capable of withstanding the 500 V insulation test required by ABNT NBR IRC 60079-11. This must be taken into account when installing the equipment.
2. The enclosure may be made of aluminum alloy and given protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if equipment requires EPL Ga.

## 9.6.3 IB INMETRO FISCO

**Certificate** UL-BR 13.0584X**Standards** ABNT NBR IEC60079-0:2013, ABNT NBR IEC60079-11:2013**Markings** Ex ia IIC T4 Ga (-60 °C ≤  $T_a$  ≤ +60 °C)**Table 9-9: Input Parameters**

Parameter	FISCO
Voltage $U_i$	17.5 V
Current $I_i$	380 mA
Power $P_i$	5.32 W
Capacitance $C_i$	≤5 nF
Inductance $L_i$	≤10 μH

**Special Conditions for Safe Use (X):**

1. If the equipment is fitted with an optional 90 V transient suppressor, it is not capable of withstanding the 500 V insulation test required by ABNT NBR IEC 60079-11. This must be taken into account when installing the equipment.
2. The enclosure may be made of aluminum alloy and given protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if equipment requires EPL Ga.

## 9.7 China

### 9.7.1 E3 China Flameproof

**Certificate** GYJ19.1056X [Transmitters]; GYJ15.1368X [Flow meters]

**Standards** GB3836.1-2010, GB3836.2-2010, GB3836.20-2010, GB12476.1-2013, GB12476.5-2013

**Markings** 3051 Series: Ex d IIC T6 ~ T4 Ga/Gb, Ex tD A20 IP66 T95 °C T<sub>500</sub> 105 °C (-20 °C ≤ T<sub>a</sub> ≤ +85 °C)  
3051CF Series: Ex d IIC T5/T6 Ga/Gb

#### 一、产品安全使用特殊条件

证书编号后缀“X”表明产品具有安全使用特殊条件：涉及隔爆接合面的维修须联系产品制造商。

1. 涉及隔爆接合面的维修须联系产品制造商。
2. 产品使用厚度小于 1mm 的隔膜作为 0 区（过程连接）和 1 区（产品其他部分）的隔离，安装和维护时需严格遵守制造商提供的说明书，以确保安全性。
3. 产品外部涂层可能产生静电危险，使用时须防止产生静电火花，只能用湿布清理。

#### 二、产品使用注意事项

1. 用于爆炸性气体环境中，产品温度组别和使用环境温度之间的关系为：（变送器）

温度组别	环境温度	过程温度
T6	-60 °C ~ +70 °C	-60 °C ~ +70 °C
T5	-60 °C ~ +80 °C	-60 °C ~ +80 °C
T4	-60 °C ~ +80 °C	-60 °C ~ +120 °C

用于爆炸性气体环境中，产品温度组别和使用环境温度之间的关系为：（流量计）

温度组别	使用环境温度
T6	-50 °C ~ +65 °C
T5	-50 °C ~ +80 °C

2. 产品外壳设有接地端子，用户在使用时应可靠接地; -20 °C ≤ T<sub>a</sub> ≤ +85 °C
3. 产品外壳设有接地端子，用户在使用时应可靠接地

4. 安装现场应不存在对产品外壳有腐蚀作用的有害气体。
5. 现场安装时，电缆引入口须选用国家指定的防爆检验机构按检验认可、具有 Ex dIIC, Ex tD A20 IP66 防爆等级的电缆引入装置或堵封件，冗余电缆引入口须用堵封件有效密封。
6. 用于爆炸性气体环境中，现场安装、使用和维护必须严格遵守“断电后开盖！”的警告语。用于爆炸性粉尘环境中，现场安装、使用和维护必须严格遵守“爆炸性粉尘场所严禁开盖！”的警告语。
7. 用于爆炸性粉尘环境中，产品外壳表面需保持清洁，以防粉尘堆积，但严禁用压缩空气吹扫。
8. 用户不得自行更换该产品的零部件，应会同产品制造商共同解决运行中出现的故障，以杜绝损坏现象的发生。
9. 产品的安装、使用和维护应同时遵守产品使用说明书、GB3836.13-2013“爆炸性环境 第 13 部分：设备的修理、检修、修复和改造”、GB/T3836.15-2017“爆炸性环境 第 15 部分：电气装置的设计、选型和安装”、GB/T3836.16-2017“爆炸性环境 第 16 部分：电气装置的检查与维护”、GB50257-2014“电气装置安装工程爆炸和火灾危险环境电力装置施工及验收规范”和 GB15577-2007“粉尘防爆安全规程” GB12476.2-2010“可燃性粉尘环境用电气设备 第 1 部分：用外壳和限制表面温度保护的电气设备 第 2 节 电气设备的选择、安装和维护”的有关规定。

### 9.7.2 I3 China Intrinsic Safety

**Certificate** GYJ13.1362X; GYJ15.1367X [Flow meters]

**Standards** GB3836.1-2010, GB3836.4-2010, GB3836.20-2010, GB12476.1-2000

**Markings** 3051 Series: Ex ia IIC T4/T5 Ga, DIP A20 T<sub>A</sub> 80 °C IP66  
3051 CF Series: Ex ia IIC T4/T5 Ga

- 产品安全使用特殊条件:  
证书编号后缀“X”表明产品具有安全使用特殊条件：
  1. 产品（选用铝合金外壳）外壳含有轻金属，用于 0 区时需注意防止由于冲击或摩擦产生的点燃危险。
  2. 当选择 T1 瞬态抑制端子时，此设备不能承受 GB3836.4-2010 标准中第 6.3.12 条规定的 500V 交流有效值试验电压的介电强度试验。
  3. Transmitter output 为 X 时，需使用由厂家提供的型号为 701PC 的 Smart Power Green Power Module 电池。
  4. 产品外壳含有非金属部件，使用时须防止产生静电火花，只能用湿布清理。
- 产品使用注意事项:



## 1. 产品使用环境温度范围：

气体/粉尘	Transmitter output	温度组别	环境温度范围
气体	A, M	T5	-60 °C ~ +40 °C
气体	A, M	T4	-60 °C ~ +70 °C
气体	F, W	T4	-60 °C ~ +60 °C
气体	X	T4	-40 °C ~ +70 °C
粉尘	A, F, W	T80 °C	-20 °C ~ +40 °C

## 2. 本安电气参数：

Transmitter output	最高输入电压 $U_i$ (V)	最大输入电流 $I_i$ (mA)	最大输入功率 $P_i$ (W)	最大内部等效参数	
				$C_i$ (nF)	$L_i$ ( $\mu$ H)
A, M	30	200	0.9	12	0
F, W	30	300	1.3	0	0
F, W (FISCO)	17.5	380	5.32	5	10

注：Transmitter Output 为 F、W ( FISCO ) 时，本安电气参数符合 GB3836.19-2010 对 FISCO 现场仪表的参数要求。

- 该产品必须与已通过防爆认证的关联设备配套共同组成本安防爆系统方可使用于爆炸性气体环境。其系统接线必须同时遵守本产品 and 所配关联设备的使用说明书要求，接线端子不得接错。
- 该产品与关联设备的连接电缆应为带绝缘护套的屏蔽电缆，其屏蔽层应在安全场所接地。
- 对于爆炸性粉尘环境，最大输入电压为：

Transmitter output	最高输入电压
A	55 V
F, W	40 V

- 安装现场应不存在对产品外壳有腐蚀作用的有害气体。
- 现场安装时，电缆引入口须选用国家指定的防爆检验机构按检验认可、具有 DIP A20 IP66 防爆等级的电缆引入装置、转接头或堵封件，冗余电缆引入口须用堵封件有效密封。

8. 对于爆炸性粉尘环境，现场安装、使用和维护必须严格遵守“爆炸性粉尘场所严禁开盖！”的警告语。
9. 用户不得自行更换该产品的零部件，应会同产品制造商共同解决运行中出现的故障，以杜绝损坏现象的发生。
10. 安装现场确认无可燃性粉尘存在时方可维修。
11. 产品的安装、使用和维护应同时遵守产品使用说明书、GB3836.13-2013“爆炸性环境 第 13 部分：设备的修理、检修、修复和改造”、GB3836.15-2000“爆炸性气体环境用电气设备 第 15 部分：危险场所电气安装（煤矿除外）”、GB3836.16-2006“爆炸性气体环境用电气设备 第 16 部分：电气装置的检查和维修（煤矿除外）”、GB3836.18-2010“爆炸性环境 第 18 部分：本质安全系统”和 GB50257-2014“电气装置安装工程爆炸和火灾危险环境电力装置施工及验收规范”，GB50527-1996“电气装置安装工程爆炸和火灾危险环境电气装置施工验收规范”以及 GB15577-2007“粉尘防爆安全规程”、GB12476.2-2006“可燃性粉尘环境用电气设备 第 1 部分：用外壳和限制表面温度保护的电气设备 第 2 节：电气设备的选择、安装和维护”的有关规定。

### 9.7.3 N3 China Type n

**Certificate** GYJ15.1105X

**Standards** GB3836.1-2010, GB3836.8-2003

**Markings** Ex nA nL IIC T5 Gc (-40 °C ≤ T<sub>a</sub> ≤ +70 °C)

- 产品安全使用特殊条件  
产品防爆合格证号后缀“X”代表产品安全使用有特殊条件：产品不能承受 GB3836.8-2003 标准第 8.1 条中规定的 500V 对地电压试验 1 分钟，安装时需考虑在内。
- 产品使用注意事项
  1. 产品使用环境温度范围为：-40 °C ≤ T<sub>a</sub> ≤ 70 °C
  2. 最高输入电压：

Transmitter output	最高输入电压
A, M (3051 Enhanced and 3051 Low Power HART)	55 Vdc
F, W	40 Vdc

3. 现场安装时，电缆引入口须选用经国家指定的防爆检验机构检验认可的、具有 Ex e 或 Ex n 型的电缆引入装置或堵封件，冗余电缆引入口须用堵封件有效密封。

4. 安装现场确认无可燃性气体存在时方可维修。
5. 用户不得自行更换该产品的零部件，应会同产品制造商共同解决运行中出现的故障，以杜绝损坏现象的发生。
6. 产品的安装、使用和维护应同时遵守产品使用说明书、GB3836.13-2013“爆炸性环境 第 13 部分：设备的修理、检修、修复和改造”、GB3836.15-2000“爆炸性气体环境用电气设备 第 15 部分：危险场所电气安装（煤矿除外）”、GB3836.16-2006“爆炸性气体环境用电气设备 第 16 部分：电气装置的检查和维护（煤矿除外）”、GB50257-1996“电气装置安装工程爆炸和火灾危险环境电力装置施工及验收规范”的有关规定。

## 9.8 Japan

### 9.8.1 E4 Japan Flameproof

**Certificate** TC20577, TC20578, TC20583, TC20584 [HART]; TC20579, TC20580, TC20581, TC20582 [Fieldbus]

**Markings** Ex d IIC T5

## 9.9 Republic of Korea

### 9.9.1 EP Republic of Korea Flameproof

**Certificate** 11-KB4BO-0188X [Mfg Singapore], 19-KA4BO-079X [Mfg USA]

**Markings** Ex d IIC T6...T4 Ga/Gb

### 9.9.2 IP Republic of Korea Intrinsic Safety

**Certificate** 13-KB4BO-0203X [HART – Mfg USA], 13-KB4BO-0204X [Fieldbus – Mfg USA], 10-KB4BO-0138X [HART – Mfg Singapore], 13-KB4BO-0206X [Fieldbus – Mfg Singapore], 18-KA4BO-0354X [HART – Mfg USA], 18-KA4BO-0355X [Fieldbus – Mfg USA]

**Markings** Ex ia IIC T5/T4 (HART); Ex ia IIC T4 (Fieldbus)

## 9.10 Technical Regulations Customs Union (EAC)

### 9.10.1 EM EAC Flameproof

**Markings** Ga/Gb Ex db IIC T4...T6 X, T4/T5(-60 °C ≤ T<sub>a</sub> ≤ +80 °C), T6(-60 °C ≤ T<sub>a</sub> ≤ +70 °C)

#### Special Condition for Safe Use (X):

See certificate for special conditions.

## 9.10.2 IM EAC Intrinsically Safe

**Markings** HART: 0Ex ia IIC T4/T5 Ga X, T4( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$ ), T5( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +40\text{ }^{\circ}\text{C}$ )  
 Fieldbus/PROFIBUS: 0Ex ia IIC T4 Ga X ( $-60\text{ }^{\circ}\text{C} \leq T_a \leq +60\text{ }^{\circ}\text{C}$ )

### Special Condition for Safe Use (X)

See certificate for special conditions.

## 9.11 Combinations

- K2** Combination of E2 and I2
- K5** Combination of E5 and I5
- K6** Combination of C6, E8, and I1
- K7** Combination of E7, I7, and N7
- K8** Combination of E8, I1, and N1
- KB** Combination of E5, I5, and C6
- KD** Combination of E8, I1, E5, I5, and C6
- KM** Combination of EM and IM
- KP** Combination of EP and IP

## 9.12 Conduit plugs and adapters

### 9.12.1 IECEx Flameproof and Increased Safety

**Certificate** IECEx FMG 13.0032X  
**Standards** IEC60079-0:2011, IEC60079-1:2007, IEC60079-7:2006-2007  
**Markings** Ex de IIC Gb

### 9.12.2 ATEX Flameproof and Increased Safety

**Certificate** FM13ATEX0076X  
**Standards** EN60079-0:2012, EN60079-1:2007, IEC60079-7:2007  
**Markings**  II 2 G Ex de IIC Gb

**Table 9-10: Conduit Plug Thread Sizes**

Thread	Identification mark
M20 × 1.5	M20
½ –14 NPT	½ NPT

**Table 9-11: Thread Adapter Thread Sizes**

Male thread	Identification mark
M20 × 1.5 – 6H	M20
½–14 NPT	½ –14 NPT
¾ –14 NPT	¾ –14 NPT
Female thread	Identification mark
M20 × 1.5 – 6H	M20
½–14 NPT	½–14 NPT
G½	G½

**Special Conditions for Safe Use (X):**

1. When the thread adapter or blanking plug is used with an enclosure in type of protection increased safety “e,” the entry thread shall be suitably sealed in order to maintain the ingress protection rating (IP) of the enclosure.
2. The blanking plug shall not be used with an adapter.
3. Blanking plug and threaded adapter shall be either NPT or metric thread forms. G½ thread forms are only acceptable for existing (legacy) equipment installations.

**9.13 Additional certifications**

**9.13.1 SBS American Bureau of Shipping (ABS) Type Approval**

**Certificate** 18-HS1814795-PDA

**Intended use** Marine & Offshore Applications – Measurement of either gauge or absolute pressure for liquid, gas and vapor.

**9.13.2 SBV Bureau Veritas (BV) Type Approval**

**Certificate** 23155

**Requirements** Bureau Veritas rules for the classification of steel ships

**Application** Class notations: AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS; Pressure transmitter type 3051 cannot be installed on diesel engines

**9.13.3 SDN Det Norske Veritas (DNV) Type Approval**

**Certificate** TAA000004F

**Intended Use** DNV GL rules for classification - ships and offshore units

**Application** **Table 9-12: Location Classes**

Temperature	D
Humidity	B
Vibration	A
EMC	B
Enclosure	D

### 9.13.4 SLL Lloyds Register (LR) Type Approval

**Certificate** 11/60002

**Application** Environmental categories ENV1, ENV2, ENV3, and ENV5

### 9.13.5 C5 Custody Transfer - Measurement Canada Accuracy Approval

**Certificate** AG-0226; AG-0454; AG-0477

## 9.14 EU Declaration of Conformity




### EU Declaration of Conformity

No: RMD 1017 Rev. AD

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We,

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

declare under our sole responsibility that the product,

**Rosemount 3051 Pressure Transmitters**

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 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)

Chris LaPoint

---

(name)

20-Dec-19; Shakopee, MN USA

---

(date of issue & place)

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## EU Declaration of Conformity

**No: RMD 1017 Rev. AD**

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**EMC Directive (2014/30/EU)**  
Harmonized Standards: EN 61326-1:2013, EN 61326-2-3:2013

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**PED Directive (2014/68/EU)**

**Rosemount 3051CA4; 3051CD2, 3, 4, 5; 3051HD2, 3, 4, 5; (also with P9 option)**  
QS Certificate of Assessment - Certificate No. 12698-2018-CE-USA-ACCREDIA  
Module H Conformity Assessment  
Other Standards Used: ANSI/ISA61010-1:2004  
*Note – previous PED Certificate No. 59552-2009-CE-HOU-DNY*

**All other Rosemount 3051 Pressure Transmitters**  
Sound Engineering Practice

**Transmitter Attachments: Diaphragm Seal, Process Flange, or Manifold**  
Sound Engineering Practice

**Rosemount 3051CFx DP Flowmeters**  
See DSI 1000 Declaration of Conformity

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**RoHS Directive (2011/65/EU)**

**Models 3051 Pressure Transmitters**  
Harmonized standard: EN 50581:2012

**Does not apply to the following options:**

- Wireless output code X
- Low power output code M

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## EU Declaration of Conformity

No: RMD 1017 Rev. AD

### ATEX Directive (2014/34/EU)

**BAS97ATEX1089X - Intrinsic Safety**

Equipment Group II Category 1 G

Ex ia IIC T5/T4 Ga

Harmonized Standards Used:

EN60079-0:2012 + A11:2013, EN60079-11:2012

**BAS00ATEX3105X - Typen**

Equipment Group II Category 3 G

Ex nA IIC T5 Gc

Harmonized Standards Used:

EN60079-0:2012 + A11:2013, EN60079-15:2010

**BaseeFallATEX0275X - Dust**

Equipment Group II Category 1 D

Ex ta IIIC T95°C T50/105°C Da

Harmonized Standards Used:

EN60079-0:2012 + A11:2013, EN60079-31:2014

**KEMA00ATEX2013X - Flameproof**

Equipment Group II Category 1/2 G

Ex db IIC T6...T4 Ga/Gb

Harmonized Standards Used:

EN60079-0:2012 + A11:2013, EN60079-1:2014, EN60079-26:2015



## EU Declaration of Conformity

No: RMD 1017 Rev. AD

### PED Notified Body

**DNV GL Business Assurance Italia S.r.l.** [Notified Body Number: 0496]  
Via Energy Park, 14, N-20871  
Vimercate (MB), Italy

*Note – equipment manufactured prior to 20 October 2018 may be marked with the previous PED Notified Body number, previous PED Notified Body information was as follows:  
Det Norske Veritas (DNV) [Notified Body Number: 0575]  
Veritasveien 1, N-1522  
Hovik, Norway*

### ATEX Notified Bodies

**DEKRA** [Notified Body Number: 0344]  
Utrechtseweg 310, 6812 AR Arnhem  
P.O. Box 5185, 6802 ED Arnhem  
The Netherlands  
Postbank 6794687

**SGS FIMCO OY** [Notified Body Number: 0598]  
P.O. Box 30 (Särkiniementie 3)  
00211 HELSINKI  
Finland

### ATEX Notified Body for Quality Assurance

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## 9.15 China RoHS table

有害物质成分表  
03031-9021, Rev AB

罗斯蒙特产品型号 3051  
1/10/2020

**含有China RoHS管控物质超过最大浓度限值的部件型号列表 3051**  
*List of 3051 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	0	0	0	0	0
壳体组件 Housing Assembly	0	0	0	0	0	0
传感器组件 Sensor Assembly	X	0	0	0	0	0

本表格系依据SJ/T 11364的规定而制作。

*This table is proposed in accordance with the provision of SJ/T 11364.*

0: 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。

0: 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.

部件名称 Part Name	组装备件说明 Spare Parts Descriptions for Assemblies
电子组件 Electronics Assembly	电子线路板组件 Electronic Board Assemblies 端子块组件 Terminal Block Assemblies 升级套件 Upgrade Kits 液晶显示屏或本地操作界面 LCD or LOI Display
壳体组件 Housing Assembly	电子外壳 Electrical Housing
传感器组件 Sensor Assembly	传感器模块 Sensor Module



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