

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

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



**Contents**

About this guide..... 3

Mounting the transmitter..... 6

Rotate housing..... 14

Set the switches..... 15

Connect the wiring and power up..... 17

Verifying configuration..... 22

Trimming the transmitter..... 26

Safety Instrumented Systems (SIS)..... 28

Product certifications..... 32

# 1 About this guide

This guide provides basic installation guidelines for Rosemount 3051 Transmitters.

Refer to [Rosemount 3051 Pressure Transmitter Manual](#) for instructions about:

- configuration
- diagnostics
- maintenance
- service
- troubleshooting
- explosion-proof
- flameproof
- intrinsically safe installations

This guide and the referenced manual are also available on [Emerson.com/global](https://www.emerson.com/global).

## 1.1 Safety messages

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

### **⚠ WARNING**

#### **Explosions**

Explosions could result in death or serious injury.

Installation of device in an explosive environment must be in accordance with appropriate local, national, and international standards, codes, and practices. Review for any restrictions associated with a safe installation.

Before connecting a communication device in an explosive atmosphere, ensure that the instruments 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 transmitter.

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**⚠ WARNING****Process leaks**

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.

**⚠ WARNING****Electrical shock**

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****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 in protecting your system. Restrict physical access by unauthorized personnel to protect end users' assets. This is true for all systems used within the facility.

**⚠ 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.

## NOTICE

### **Conduit/cable entries**

Unless otherwise marked, the conduit/cable entries in the housing enclosure use a ½-14 NPT form. Only use plugs, adapters, glands, or conduit with a compatible thread form when closing these entries.

Entries marked M20 are M20 × 1.5 thread form. On devices with multiple marked M20 entries, all entries will have the same thread form.

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

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## 2 Mounting the transmitter

### ⚠ WARNING

Process connection temperatures above +185 °F (+85 °C) require a limited ambient temperature, reduced by a 1:1.5 ratio.

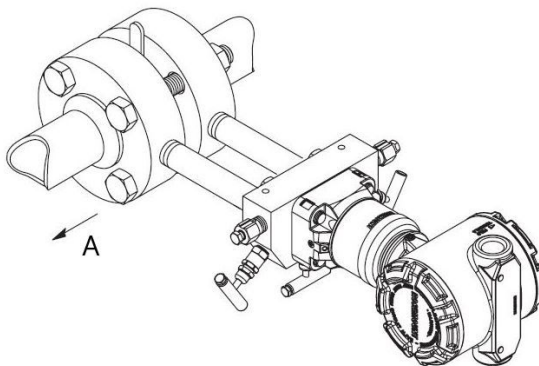
Consider process connection and ambient temperatures when installing the transmitter with hazardous location certifications. See [Table 2-1](#).

**Table 2-1: Intrinsically Safe/Increased Safety**

Process connection temperature	Maximum ambient temperature
-76 to +185 °F (-60 to +85 °C)	+158 °F (+70 °C)
+185 to +250 °F (+85 to +121 °C)	+158 to +60 °F (+70 to +16 °C) <sup>(1)</sup>

(1) Maximum ambient temperature is reduced by 1.5 degree for 1 degree temperature rise in the process connection temperature beyond +185 °F (+85 °C).

### 2.1 Mount the transmitter in a liquid flow application

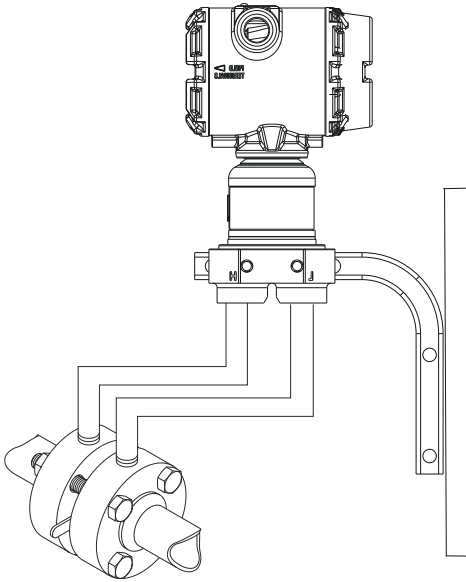


A. Flow

#### Procedure

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

## 2.2 Mount the transmitter in a gas flow application



### NOTICE

A bracket is required to support the transmitter and the 1/4-inch tubing going into the transmitter.

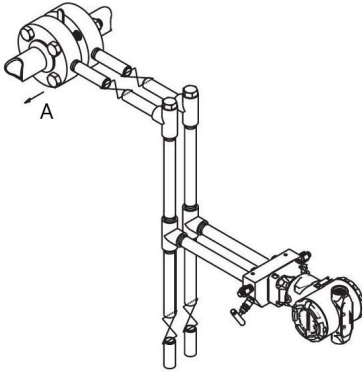
### Procedure

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

## 2.3 Steam flow applications

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**Figure 2-1: Steam Flow Application**



*A. Flow*

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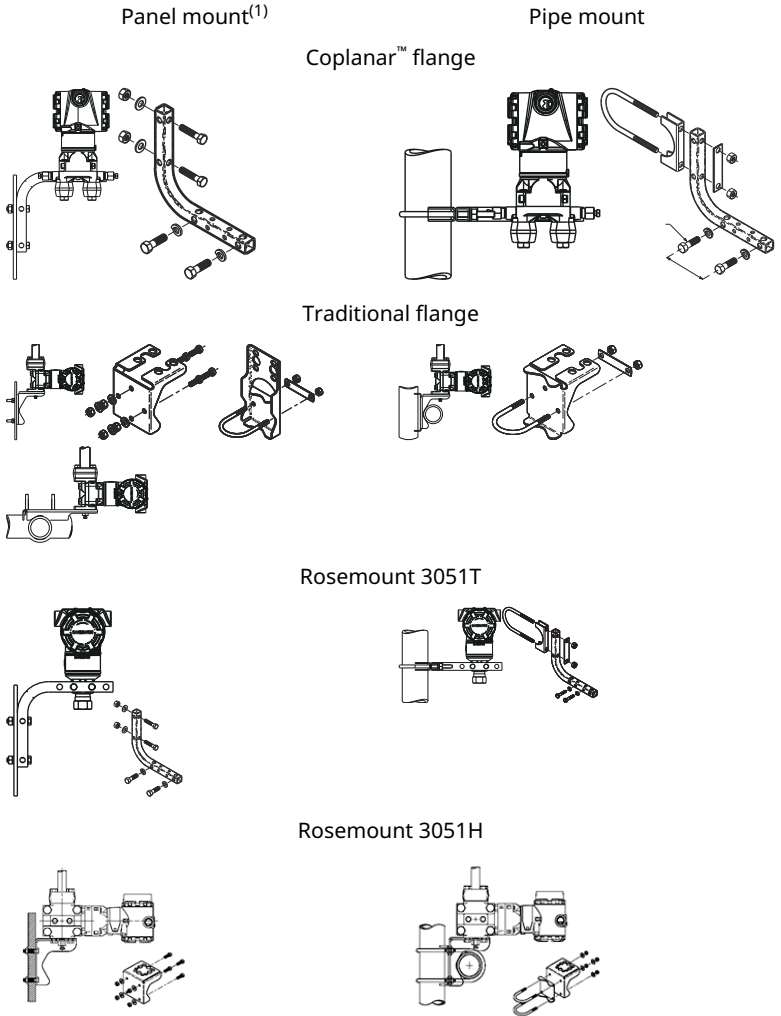
### **Procedure**

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 2-2: Panel and Pipe Mounting**



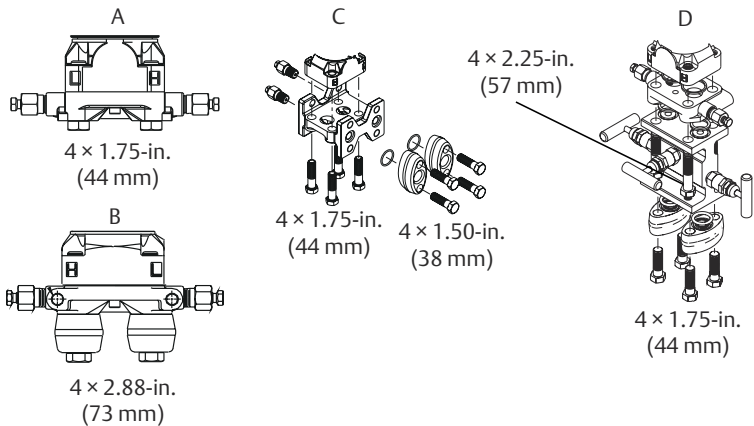
*(1) 5/16 x 1 1/2 panel bolts are customer-supplied.*

## 2.5 Bolting considerations

If the transmitter installation requires assembly of the process flanges, manifolds, or flange adapters, use the following 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 2-3](#) illustrates common transmitter assemblies with the bolt length required for proper transmitter assembly.

**Figure 2-3: 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 2-2](#). If bolt material is not shown in [Table 2-2](#), contact your local Emerson representative for more information.

### 2.5.1 Install bolts

#### NOTICE

Carbon steel bolts do not require lubrication, and the stainless steel bolts are coated with a lubricant to ease installation. Do not apply any additional lubricant 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.

**Note**

See [Table 2-2](#) for torque values.


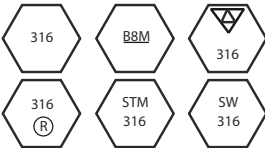
3. Torque the bolts to the final torque value using the same crossing pattern.

**Note**

See [Table 2-2](#) for torque values.

4. Verify the flange bolts are protruding through the isolator plate before applying pressure.

**Table 2-2: 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

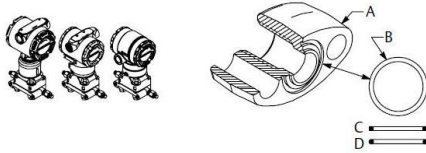
## 2.6 O-rings with flange adapters

**⚠ 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 in [Figure 2-4](#).

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**Figure 2-4: O-ring location: Rosemount 3051S/3051/2051**


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

**Note**

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.

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## 2.7 Environmental seal for housing

For NEMA<sup>®</sup> 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.

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

## 2.8 In-line gauge transmitter orientation

The low side pressure port (atmospheric reference) on the in-line gauge transmitter is located in the neck of the transmitter, behind the housing.

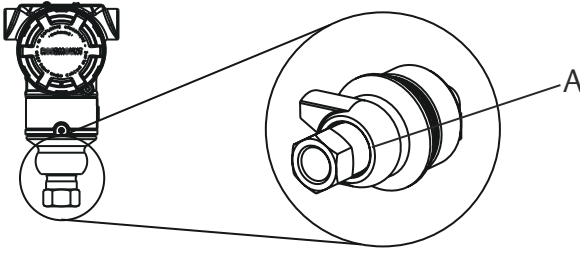
The vent path is 360° around the transmitter between the housing and sensor. (See [Figure 2-5](#).)

To allow fluids to drain away, keep the vent path free of any obstruction, including but not limited to:

- paint
- dust
- lubrication

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**Figure 2-5: In-line Gauge Low Side Pressure Port**



*A. Pressure port location*

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### 3 Rotate housing

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

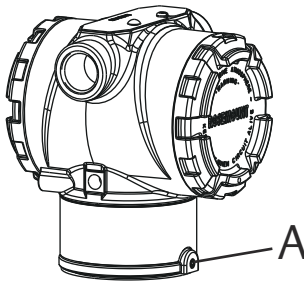
#### Procedure

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

#### NOTICE

Over-rotating will damage the transmitter.

**Figure 3-1: Housing Rotation**



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

<sup>(2)</sup> Rosemount 3051C original position aligns with H side; Rosemount 3051T original position is the opposite side of the bracket holes.

## 4 Set the switches

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.

### ⚠ WARNING

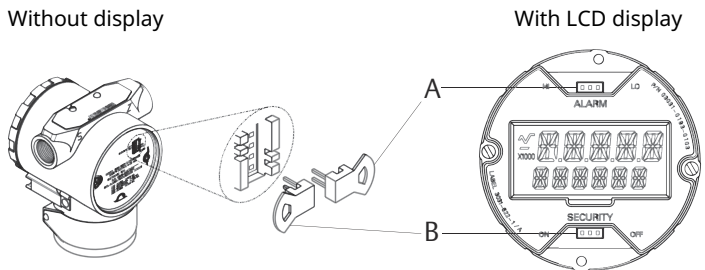
Do not remove the instrument cover in explosive atmospheres when the circuit is live.

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.

### ⚠ WARNING

The cover must be fully engaged to comply with explosion-proof requirements.

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



- A. **Alarm** switch
- B. **Security** switch

**Note**

Units with the graphical LCD display have jumpers in the same location as units without an LCD display.

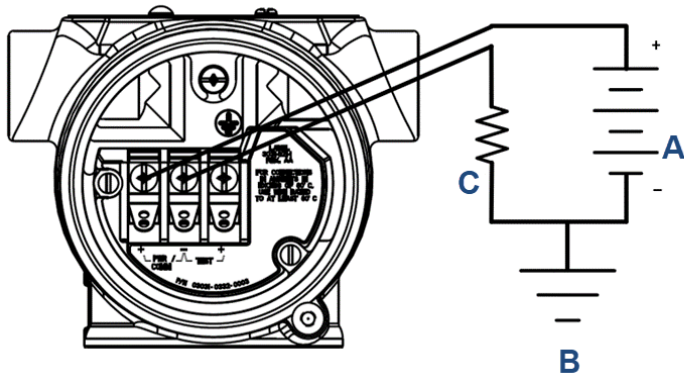
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## 5 Connect the wiring and power up

Figure 5-1 shows wiring connections necessary to power a Rosemount 3051 Transmitter and enable communications with a communication device.

**Figure 5-1: Transmitter Wiring Diagrams**



- A. Power supply
- B. Ground
- C. Resistor

**Table 5-1: Power Supply and Resistance Needs by Communicator Type**

Communicator	Power supply	Resistor
AMS Device Manager	≥ 16.6 Vdc	≥ 250 Ω
AMS Trex (HART®)	≥ 16.6 Vdc	≥ 250 Ω
AMS Trex (HART + pwr)	None	None
AMS Device Configurator Bluetooth® App	≥ 10.5 Vdc	None
Quick Service buttons	≥ 10.5 Vdc	None
Local operator interface (LOI)	≥ 10.5 Vdc	None

Resistance and power requirements vary based on the interface type used to communicate with the device. See [Table 5-1](#) for specific loop power and resistance needs.

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.

### NOTICE

Emerson does not recommend using a pin or a ferrule wire, as the connection may be more susceptible to loosening over time or under vibration.

4. Ensure proper grounding.

### NOTICE

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. Use shielded twisted pair cable 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.

## NOTICE

Installation of the transient protection terminal block does not provide transient protection unless the transmitter enclosure is properly grounded.

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### 5.1 Run ground signal wiring

#### **⚠ WARNING**

Do not run signal wiring in conduit or open trays with power wiring or near heavy electrical equipment.

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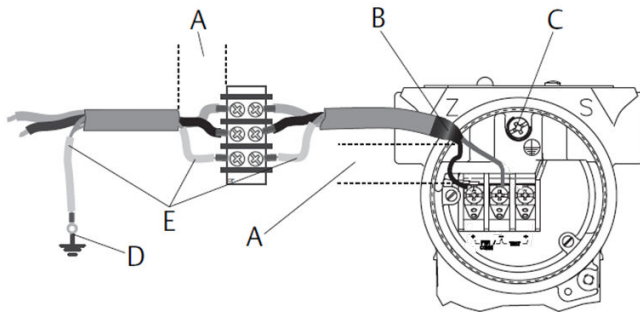
Grounding terminations are provided on the outside of the electronics housing and inside the terminal compartment. Use these terminations when transient protect terminal blocks are installed or to fulfill local regulations. See [Step 2](#) for more information on how the cable shield should be grounded.

#### **Procedure**

1. Remove the field terminals housing cover.

2. Connect the wiring pair and ground as indicated in [Figure 5-2](#). Ensure the wiring is:
  - Trimmed close and insulated from touching the transmitter housing.
  - Continuously connected to the termination point.
  - Connected to a good earth ground at the power supply end.

**Figure 5-2: 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.

## NOTICE

Emerson recommends tightening the cover until there is no gap between the cover and the housing.

4. Plug and seal unused conduit connections.

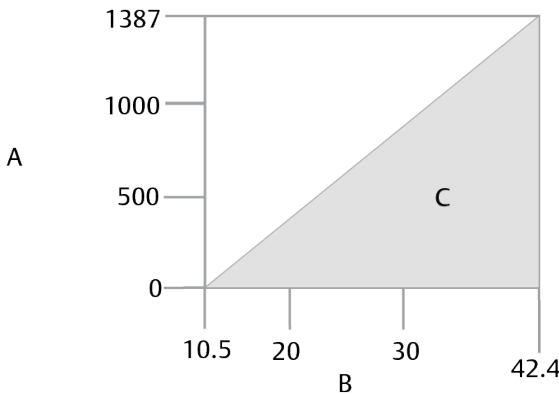
## 5.2 Power supply for a 4-20 mA HART® communication device

The transmitter operates on 10.5 to 42.4 Vdc at the terminal. The DC power supply must provide power with less than two percent ripple. Loops with a 250 Ω resistance require a minimum of 16.6 V.

**Note**

The transmitter must have a minimum of 250 Ω to communicate with a communication device. If you are using a single power supply to power more than one transmitter, ensure the power supply used and the circuitry common to the transmitters do not have more than 20 Ω of impedance at 1200 Hz.

**Figure 5-3: Load Limitation**



Maximum loop resistance = 43.5 x (power supply voltage - 10.5)

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

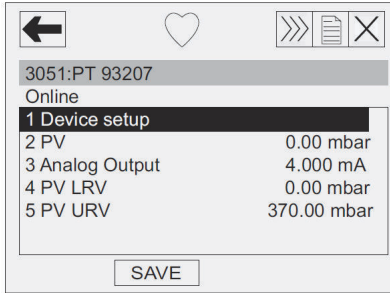
The total resistance load is the sum of the resistance of the signal leads and the load resistance of the controller, indicator, intrinsically safe (IS) barriers, and related pieces. If you use IS barriers, then include the resistance and voltage drop.

## 6 Verifying configuration

### 6.1 Communication device user interface

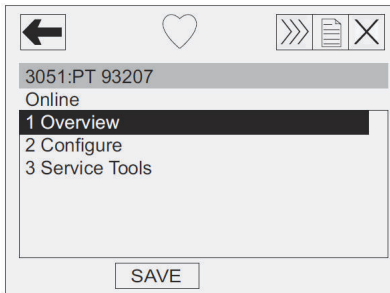
See [Table 6-1](#) for the traditional interface - Device Revision 3 and Device Driver (DD) Revision 2 fast keys.

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



See [Table 6-2](#) for the device dashboard - Device Revision 3 and DD Revision 6 fast key sequence.

**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**

Function	Fast key sequence
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

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

Function	Fast key sequence
Sensor Trim Points	1, 2, 3, 3, 5
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



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

Function	Fast key sequence
<b>Sensor Temperature/Trend</b> (Rosemount 3051S)	2, 2, 1, 6
✓ <b>Tag</b>	2, 2, 6, 1,1
✓ <b>Transfer Function</b>	2, 2, 1, 3
<b>Transmitter Security (Write Protect)</b>	2, 2, 5, 1
✓ <b>Units</b>	2, 2, 1, 1
<b>Upper Sensor Trim</b>	3, 4, 1, 1
<b>Zero Trim</b>	3, 4, 1, 3

## 7 Trimming the transmitter

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### Note

Emerson ships transmitters 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 transmitter zero adjustment buttons

The zero trim will affect the 4–20 mA value, the HART® Primary Variable (PV), and the display value.

#### 7.1.1 Zero trim using the communication device

If zero offset is within 3 percent of upper range limit (URL), follow the instructions below.

This zero trim will affect the 4–20 mA value, the HART® Primary Variable (PV), and the display value.

#### Procedure

1. Equalize or vent the transmitter and connect communication device.
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 Zero trim using the transmitter zero adjustment buttons

You can use the transmitter zero adjustment buttons to set the lower range value (LRV) to the pressure applied to the transmitter.

This adjustment will affect the 4–20 mA value only.

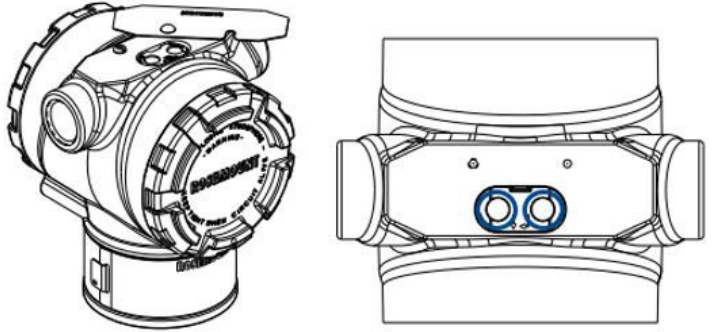
#### Procedure

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 or Quick Service Buttons**



## 8 Safety Instrumented Systems (SIS)

For safety certified installations, refer to the [Rosemount 3051 Pressure Transmitter Manual](#) for installation procedure and system requirements.

### 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.

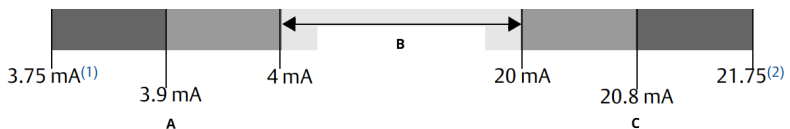
### 8.2 Configuration

Use any HART®-compliant master to communicate with and verify transmitter configuration.

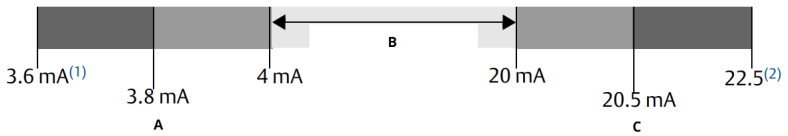
User-selected damping will affect the transmitter's ability to respond to changes in the applied process. The damping value + response time must not exceed the loop requirements.

1. Transmitter output is not safety-rated during the following: configuration changes, multidrop, loop test. Use alternative means to ensure process safety during transmitter configuration and maintenance activities.
2. Distributed control system (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: Rosemount Alarm Level**



- A. Low saturation
- B. Normal operation
- C. High saturation

**Figure 8-2: NAMUR Alarm Level**

- A. Low saturation
- B. Normal operation
- C. High saturation

**Note**

The 3.6 and 22.5 mA levels shown for the Rosemount alarm level indicate 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 position.

## 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/en-us/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 Pressure Transmitter Reference Manual](#) for additional information.

#### Proof test 1<sup>(3)</sup>

This proof test will detect 59.6 percent of DU failures not detected by the transmitter's automatic diagnostics.

#### Procedure

1. Execute the **Master Reset** command to initiate start-up diagnostics.
2. Enter the milliampere value representing a high alarm state.
3. Check the reference meter to verify the mA output corresponds to the entered value.

<sup>(3)</sup> This test will detect approximately 94.6 percent of possible DU failures in the transmitter.

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

### Proof test 2

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

<b>Visual inspection</b>	Not required.
<b>Special tools</b>	Not required.

### 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 Pressure Transmitter Reference Manual](#) to calibrate.

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#### Note

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

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### Postrequisites

Report all failures detected by the transmitter diagnostics or by the proof-test. You can submit feedback electronically at [Emerson.com/Rosemount/Report-A-Failure](https://www.emerson.com/Rosemount/Report-A-Failure)

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

## 8.4 Reference

### Specifications

You must operate the transmitter in accordance to the functional and performance specifications provided in the [Rosemount 3051 Pressure Transmitter Product Data Sheet](#).

### Failure rate data

The [Failure Modes, Effects, and Diagnostic Analysis \(FMEDA\)](#) report includes failure rates and common cause Beta factor estimates. This report is available at [Emerson.com/global](https://www.emerson.com/global).

### Safety failure values

**Safety accuracy** 0.065 percent

**Safety response time** 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

### 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/global](https://www.emerson.com/global).

### 9.2 Federal Communication Commission (FCC) notice

This device complies with Part 15 of the Federal Communication Commission 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 7.9 in. (20 cm) from all persons. Changes or modification to the equipment not expressly approved by Emerson could void the user's authority to operate the equipment.

### 9.3 Innovation, Science, and Economic Development (ISED) notice

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science, and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions: This device may not cause interference. This device must accept any interference, including interference that may cause undesired operation of the device.

*Cet appareil est conformé à la norme RSS-247 Industrie Canada exempt de licence. Son fonctionnement est soumis aux deux conditions suivantes: (1) cet appareil ne doit pas provoquer d'interférences et (2) cet appareil doit accepter toute interférence, y compris les interférences pouvant causer un mauvais fonctionnement du dispositif.*

### 9.4 NCC notice

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前述合法通信，指依電信管理法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻



## 9.5 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).

### 9.5.1 Functional specifications

<b>Pollution degree</b>	4
<b>Altitude</b>	16,404.2 ft. (5000 m) maximum
<b>Humidity</b>	All models: 0 to 100 percent relative humidity
<b>Supply voltage (VMAX)</b>	4-20 mA (HART®): 42.4 Vdc FOUNDATION™ Fieldbus, PROFIBUS™ PA: 32 Vdc

## 9.6 North America

### 9.6.1 E5 USA Explosion-proof (XP) and Dust-Ignitionproof (DIP)

<b>Certificate</b>	FM16US0121 Range 1-5 (HART® only)
<b>Standards</b>	FM 3600: 2018, FM 3615: 2018, FM 3616: 2011, FM 3810: 2005, ANSI/NEMA® 250: 2008
<b>Markings</b>	XP: CL I, DIV 1, GP B, C, D, T5; DIP: CL II, DIV 1, GP E, F, G; CL III; T5 (-50 °C ≤ T <sub>a</sub> ≤ +85 °C) Type 4X
<b>Certificate</b>	1053834 Ranges 1-6
<b>Standards</b>	FM 3600: 2022, FM 3610: 2021, FM 3615: 2022, FM 3616: 2022, ANSI/UL 61010-1-2019 Third Edition, ANSI-ISA-12.27.01-2022, ANSI/UL 50E (First Edition)
<b>Markings</b>	XP: CL I, DIV 1, GP B, C, D T5; Seal not required DIP: CL II, DIV 1, GP E, F, G; CL III T5; (-50 °C ≤ T <sub>a</sub> ≤ +[85 °C) Type 4X, IP 68 Optional: single seal

### Specific Conditions for Use:

1. The Rosemount 3051 transmitter housing may contain aluminum and is considered a potential risk of ignition by impact or friction. Care must be taken during installation and use to prevent impact and friction.
2. Equipment evaluated for atmospheric pressure range between 80 kPa (0.8 bar) to 110 kPa (1.1 bar).
3. Process temperature limits shall be in accordance with 03031-1053.
4. Flameproof joints are not intended for repair.

### 9.6.2 15 USA Intrinsic Safety (IS) and Nonincendive (NI)

**Certificate** FM16US0120X

Ranges 1-5 (HART® only)

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

**Markings** IS: CL I, DIV 1, GP A, B, C, D T4

CL II, DIV 1, GP E, F, G; CL III

NI: CL 1, DIV 2, GP A, B, C, D; T4

HART:  $(-50\text{ °C} \leq T_a \leq +70\text{ °C})$

FOUNDATION™ Fieldbus/PROFIBUS®-PA:  $(-50\text{ °C} \leq T_a \leq +60\text{ °C})$

Install per 03031-1019.

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.

**Certificate** 1053834

Ranges 1-6

**Standards** FM 3600: 2022, FM 3610: 2018, FM 3611: 2021, ANSI/UL 61010-1-2019 Third Edition, ANSI/UL 60079-0:

2017, ANSI/UL 60079-11: 2013, ANSI-ISA-12.27.01-2022,  
ANSI/UL 50E (First Edition)

**Markings** IS: CL I GP ABCD T4  
IS: CL II GP EFG; CL III T4  
CL I ZN 0 AEx ia IIC T4 Ga  
NI: CL I DIV 2 GP ABCD T4  
 $-76\text{ }^{\circ}\text{F} (-60\text{ }^{\circ}\text{C}) \leq T_a \leq 158\text{ }^{\circ}\text{F} (70\text{ }^{\circ}\text{F})$   
Optional: single seal  
Type 4X IP 68  
INSTALL PER 03031-1024

### Specific Conditions for Use

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.
3. Equipment evaluated for atmospheric pressure range between 80 kPa (0.8 bar) to 110 kPa (1.1 bar).
4. Maximum process temperature limits shall be in accordance with 03031-1053.

### 9.6.3 IE USA FISCO

**Certificate** FM16US0120X  
Ranges 1-5

**Standards** FM 3600: 2011, FM 3610: 2010, FM 3611: 2004, FM 3810: 2005, ANSI/NEMA<sup>®</sup> 250: 2008

**Markings** IS: CL I, DIV 1, GP A, B, C, D T4;  
CL II, DIV 1, GP E, F, G; CL III  
 $-50\text{ }^{\circ}\text{C} \leq T_a \leq +60\text{ }^{\circ}\text{C}$   
FISCO  
Install per 03031-1019  
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.

**Certificate** 1053834

**Standards** FM 3600: 2022, FM 3610: 2018, FM 3611: 2021, ANSI/UL 61010-1-2019 Third Edition, ANSI/UL 60079-0: 2017, ANSI/UL 60079-11: 2013, ANSI-ISA-12.27.01-2022, ANSI/UL 50E (First Edition)

**Markings** IS: CL I GP ABCD T4  
 CL I ZN 0 AEx ia IIC T4 Ga  
 $-60\text{ °C} \leq T_a \leq +70\text{ °C}$   
 FISCO  
 Optional: single seal  
 Type 4X, IP 68  
 Install per 03031-1024.

### Specific Conditions for Use

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. Equipment evaluated for atmospheric pressure range between 80 kPa (0.8 bar) to 110 kPa (1.1 bar).
3. Process temperature limits shall be in accordance with 03031-1053.

#### 9.6.4 C6 Canada Explosion-proof, Dust-Ignitionproof, Intrinsic Safety, and Nonincendive

**Certificate** 1053834

**Standards** CAN/CSA C22.2 No. 61010-1-12, CAN/CSA C22.2 No. 94.2-20, CSA C22.2 No. 25-17, CAN/CSA C22.2 No. 30:20, CAN/CSA C22.2 No. 213-17 +UPD1 (2018)+UPD2 (2019)+UPD3 (2021), CAN/CSA C22.2 No. 60079-0:19, CAN/CSA C22.2 No. 60079-1:16, CAN/CSA-60079-11:14, ANSI-ISA-12.27.01-2021

**Markings** XP: CL I, DIV 1, GP B, C, D T5  
 Ex db IIC T5 Gb

Seal not required  
 ( $-50\text{ }^{\circ}\text{C} \leq T_a \leq +85\text{ }^{\circ}\text{C}$ );  
 DIP: CL II, DIV 1, GP E, F, G; CL III T5;  
 T5:  $-50\text{ }^{\circ}\text{C} \leq T_a \leq +85\text{ }^{\circ}\text{C}$   
 IS: CL I DIV 2 GP ABCD T4  
 T4:  $-60\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$ ;  
 Install per 03031-1024 (IS/NI only)  
 Single seal - temp limits 03031-1053  
 Type 4X, IP68

### Specific Conditions for Use:

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. Equipment evaluated for atmospheric pressure range between 80 kPa (0.8 bar) to 110 kPa (1.1 bar).
3. 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.
4. Flameproof joints are not intended for repair.

## 9.6.5 E6 Canada Explosion-proof, Dust-Ignitionproof, and Division 2

**Certificate** 1053834

**Standards** CAN/CSA C22.2 No. 61010-1-12, CAN/CSA C22.2 No. 94.2-20, CSA C22.2 No. 25-17, CAN/CSA C22.2 No. 30:20, CAN/CSA C22.2 No. 213-17 +UPD1 (2018) +UPD2 (2019) +UPD3 (2021), CAN/CSA C22.2 No. 60079-0:19, CAN/CSA C22.2 No. 60079-1:16, ANSI-ISA-12.27.01-2021

**Markings** XP: CL I, DIV 1, GP B, C, D T5  
 Ex db IIC T5 Gb  
 Seal not required  
 DIP: CL II, DIV 1, GP E, F, G; CL III T5;  
 T5:  $-50\text{ }^{\circ}\text{C} \leq T_a \leq +85\text{ }^{\circ}\text{C}$   
 NI: CL I DIV 2 GP ABCD T4  
 T4:  $-60\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$ ;  
 Single seal - temp limits per 03031-1053

## Type 4X, IP68

**Specific Conditions for Use:**



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. Equipment evaluated for atmospheric pressure range between 80 kPa (0.8 bar) to 110 kPa (1.1 bar).
3. Flameproof joints are not intended for repair.

## 9.7 Europe

### 9.7.1 E8 ATEX Flameproof and Dust

**ATEX Certificate** KEMA00ATEX2013X (Ex db); Baseefa11ATEX0275X (Ex ta)

**Standards Used** EN IEC 60079-0: 2018, EN 60079-1: 2014, EN 60079-26: 2015, EN 60079-31: 2014

**Markings**  II ½ G Ex db IIC T6...T4 Ga/Gb T6  
 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 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	Ambient temperature
T6	-60 °C to +70 °C	-60 °C to +70 °C
T5	-60 °C to +80 °C	-60 °C to +80 °C
T4	-60 °C to +120 °C	-60 °C to +80 °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 1G (process connection) and Category 2G (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 to be repaired.
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.
5. Variants with a paint finish must not be installed in a dust-laden airflow.

## 9.7.2 I1 ATEX Intrinsic Safety and Dust

**Certificate** BAS97ATEX1089X; Baseefa11ATEX0275X

**Standards** EN IEC 60079-0: 2018, EN60079-11: 2012, EN60079-31: 2014

**Markings** IS:  II 1 G Ex ia IIC T4 Ga  
 HART®:  $-60\text{ °C} \leq T_a \leq +70\text{ °C}$   
 Fieldbus/PROFIBUS®:  $-60\text{ °C} \leq T_a \leq +60\text{ °C}$   
 Dust:  II 1 D Ex ta IIIC T<sub>500</sub> 105 °C Da  
 $-20\text{ °C} \leq T_a \leq +85\text{ °C}$

**Table 9-2: Input Parameters**

	HART	Fieldbus/PROFIBUS
Voltage $U_i$	30 V	30 V
Current $I_i$	200 mA	300 mA
Power $P_i$	1.0 W	1.3 W
Capacitance $C_i$	0.012 $\mu$ F	0 $\mu$ F
Inductance $L_i$	0 mH	0 mH

### Specific Conditions of 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 must be taken to protect it from impact or abrasion if located in Zone 0.
3. Some variants of the equipment have reduced markings on the nameplate. Refer to the Certificate for full equipment marking.
4. 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.

### 9.7.3 IA ATEX FISCO

<b>Certificate</b>	BAS97ATEX1089X
<b>Standards</b>	EN IEC 60079-0: 2018, EN60079-11: 2012
<b>Markings</b>	⊕ II 1 G Ex ia IIC T4 Ga -60 °C ≤ T <sub>a</sub> ≤ +60 °C

**Table 9-3: Input 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

### Specific 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 if located in Zone 0.





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

### 9.7.4 N1 ATEX Type n and Dust

**Certificate** BAS00ATEX3105X; Baseefa11ATEX0275X

**Standards** EN IEC 60079-0: 2018, 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 T<sub>500</sub> 105 °C Da  
 $-20\text{ }^{\circ}\text{C} \leq T_a \leq +85\text{ }^{\circ}\text{C}$

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

- The apparatus is not capable of withstanding the 500 V insulation test required by EN 60079-15: 2010. 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 must be taken to protect it from impact or abrasion if located in Zone 0.
- Variants with a paint finish must not be installed in a dust-laden airflow.
- Some variants of the equipment have reduced markings on the nameplate. Refer to the Certificate for full equipment marking.

## 9.8 International

### 9.8.1 E7 IECEx Flameproof and Dust

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

**Standards** IEC 60079-0: 2017, IEC 60079-1: 2014-06, IEC 60079-26: 2014-10, IEC 60079-31: 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 T<sub>500</sub>105 °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 °C to +70 °C
T5	-60 °C to +80 °C
T4	-60 °C to +80 °C

**Specific Conditions of Use:**

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 to be repaired.
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.

**9.8.2 I7 IECEx Intrinsic Safety**

<b>Certificate</b>	IECEX BAS 09.0076X
<b>Standards</b>	IEC 60079-0: 2017, IEC60079-11: 2011
<b>Markings</b>	Ex ia IIC T4 Ga HART®: -60 °C ≤ T <sub>a</sub> ≤ +70 °C Fieldbus/PROFIBUS®: -60 °C ≤ T <sub>a</sub> ≤ +60 °C

**Table 9-5: Input Parameters**

	HART	Fieldbus/PROFIBUS
Voltage U <sub>i</sub>	30 V	30 V
Current I <sub>i</sub>	200 mA	300 mA

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

	HART	Fieldbus/PROFIBUS
Power $P_i$	1.0 W	1.3 W
Capacitance $C_i$	0.012 $\mu$ F	0 $\mu$ F
Inductance $L_i$	0 mH	0 mH

**Specific Conditions of Use:**

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 must be taken to protect it from impact or abrasion if located in Zone 0.

**IECEx Mining (Special A0259)**

<b>Certificate</b>	IECEx TSA 14.0001X
<b>Standards</b>	IEC 60079-0: 2011, IEC 60079-11: 2011
<b>Markings</b>	Ex ia I Ma (-60 °C $\leq$ T <sub>a</sub> $\leq$ +70 °C)

**Table 9-6: Input Parameters**

	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

**Specific Conditions of Use:**

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.

### 9.8.3 IG IECEx FISCO

<b>Certificate</b>	IECEX BAS 09.0076X
<b>Standards</b>	IEC 60079-0: 2017, IEC60079-11: 2011
<b>Markings</b>	Ex ia IIC T4 Ga -60 °C ≤ T <sub>a</sub> ≤ +60 °C

**Table 9-7: Input 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

#### Specific Conditions for Safe Use:

- 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 must be taken to protect it from impact or abrasion if located in Zone 0.

### 9.8.4 N7 IECEx Type n

<b>Certificate</b>	IECEX BAS 09.0077X
<b>Standards</b>	IEC60079-0: 2017, IEC60079-15: 2010
<b>Markings</b>	Ex nA IIC T5 Gc (-40 °C ≤ T <sub>a</sub> ≤ +70 °C)

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

- The 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.

## 9.9 Brazil

### 9.9.1 E2 Brazil 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:  $-60\text{ °C} \leq T_a \leq +70\text{ °C}$   
 T4/T5:  $-60\text{ °C} \leq T_a \leq +80\text{ °C}$

#### 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 to be repaired.
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.

### 9.9.2 I2 Brazil 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 ( $-60\text{ °C} \leq T_a \leq +40\text{ °C}$ ), T4 ( $-60\text{ °C} \leq T_a \leq +70\text{ °C}$ )  
 Fieldbus/PROFIBUS®: Ex ia IIC T4 Ga ( $-60\text{ °C} \leq T_a \leq +60\text{ °C}$ )

**Table 9-8: Input Parameters**

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

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

	HART	Fieldbus/PROFIBUS
Current $I_i$	200 mA	300 mA
Power $P_i$	0.9 W	1.3 W
Capacitance $C_i$	0.012 $\mu\text{F}$	0 $\mu\text{F}$
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 must be taken to protect it from impact or abrasion if equipment requires EPL Ga.

**9.9.3 IB Brazil 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  $\leq$  T<sub>a</sub>  $\leq$  +60 °C)

**Table 9-9: Input Parameters**

	FISCO
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 $\mu\text{H}$

**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.

- The enclosure may be made of aluminum alloy and given protective polyurethane paint finish; however, care must be taken to protect it from impact or abrasion if equipment requires EPL Ga.

## 9.10 China

### 9.10.1 E3 China Flameproof

**Certificate** GYJ24.1006X [Transmitters]; GYJ20.1486X [Flow meters]

**Standards** GB/T 3836.1-2021, GB/T 3836.2-2021, GB/T 3836.20-2021, GB/T 3836.31-2021

**Markings** 3051 Series: Ex db IIC T6~T4 Ga/Gb, Ex ta IIIC T200  
105 °C Da (-20 °C ≤ Ta ≤ +85 °C)  
3051CF Series: Ex d IIC T6~T4 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。

- 涉及隔爆接合面的维修须联系产品制造商。
- 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。
- 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

- 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	使用环境温度	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. 用于爆炸性粉尘环境中，产品使用环境温度为： $-20^{\circ}\text{C} \leq \text{Ta} \leq +85^{\circ}\text{C}$
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 d II C, 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。

### 9.10.2 I3 China Intrinsic Safety

**Certificate** GYJ23.1139X; GYJ20.1488X [Flow meters]

**Standards** GB/T 3836.1-2021, GB/T 3836.4-2021, GB/T 3836.31-2021

**Markings** 3051 Series: Ex ia IIC T4 Ga, Ex ta IIIC T<sub>500</sub> 105 °C Da  
3051CF Series: Ex ia IIC T4 Ga, Ex ta IIIC T<sub>500</sub> 105 °C Da

- 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 701PG 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：
    - 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

- 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和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。

7. 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护（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。

### 9.10.3 N3 China Type n

<b>Certificate</b>	GYJ20.1110X
<b>Standards</b>	GB/T 3836.1-2021, GB/T 3836.3-2021
<b>Markings</b>	Ex ec IIC T5 Gc

- 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： $-40^{\circ}\text{C} \leq T_a \leq +70^{\circ}\text{C}$
  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。

## 9.11 Japan

### 9.11.1 E4 Japan Flameproof

**Certificate** CML20JPN1098X

**Markings** Ex db IIC T6...T4 Ga/Gb, T6 (-60 °C ≤ Ta ≤ +70 °C), T5/T4 (-60 °C ≤ Ta ≤ +80 °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 to be repaired.
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.

## 9.12 Republic of Korea

### 9.12.1 EP Republic of Korea Flameproof

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

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

### 9.12.2 IP Republic of Korea Intrinsic Safety

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

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

## 9.13 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

## 9.14 Additional certifications

### 9.14.1 SBS American Bureau of Shipping (ABS) Type Approval

**Certificate** 18-HS1814795-PDA

**Intended use** Marine and offshore applications – Measurement of either gauge or absolute pressure for liquid, gas, and vapor.

### 9.14.2 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.

### 9.14.3 SDN Det Norske Veritas (DNV) Type Approval

- Certificate** TAA000004F
- Intended Use** DNV GL rules for classification - ships and offshore units
- Application** **Table 9-10: Location Classes**

Temperature	D
Humidity	B
Vibration	A
Electromagnetic compatibility (EMC)	B
Enclosure	D




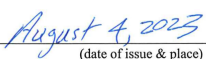
### 9.14.4 SLL Lloyds Register (LR) Type Approval



- Certificate** LR21173788TA
- Application** Environmental categories ENV1, ENV2, ENV3, and ENV5



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

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

# 9.15 EU Declaration of Conformity

	<h2 style="margin: 0;">EU Declaration of Conformity</h2> <p style="margin: 0;">No: RMD 1017 Rev. AJ</p>	
<p>We,</p> <p style="margin-left: 40px;"><b>Rosemount, Inc.</b> 6021 Innovation Blvd. Shakopee, MN 55379 USA</p> <p>declare under our sole responsibility that the product,</p> <p style="text-align: center;"><b>Rosemount 3051 Pressure Transmitters</b></p> <p>manufactured by,</p> <p style="margin-left: 40px;"><b>Rosemount, Inc.</b> 6021 Innovation Blvd. Shakopee, MN 55379 USA</p> <p>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.</p> <p>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.</p>		
 <hr style="border: 0; border-top: 1px solid black;"/> <p>(signature)</p>	<p>Vice President of Global Quality (function)</p>	
<p>Mark Lee (name)</p>	 <hr style="border: 0; border-top: 1px solid black;"/> <p>(date of issue &amp; place)</p>	
<p>Page 1 of 4</p>		

	<b>EU Declaration of Conformity</b> No: RMD 1017 Rev. AJ	
<b>EMC Directive (2014/30/EU)</b> Harmonized Standards: EN 61326-1:2013, EN 61326-2-3:2013		
<b>Radio Equipment Directive (RED) (2014/53/EU)</b> Harmonized Standards: EN 300 328 V2.2.2 EN 301 489-1 V2.2.0 EN 301 489-17 V3.2.4: 2020 EN 61010-1: 2010 EN 62311: 2020		
<b>PED Directive (2014/68/EU)</b>  <b>Rosemount 3051CA4; 3051CD2, 3, 4, 5; 3051HD2, 3, 4, 5; (also with P9 option)</b> QS Certificate of Assessment - Certificate No. 12698-2018-CE-USA-ACCREDIA Module H Conformity Assessment Other Standards Used: ANSI/ISA61010-1:2004  <b>All other Rosemount 3051 Pressure Transmitters</b> Sound Engineering Practice  <b>Transmitter Attachments: Diaphragm Seal, Process Flange, or Manifold</b> Sound Engineering Practice  <b>Rosemount 3051CFx DP Flowmeters</b> See DSI 1000 Declaration of Conformity		
<b>RoHS Directive (2011/65/EU)</b>  <b>Model 3051 Pressure Transmitters</b> Harmonized standard: EN IEC 63000:2018  <b>Does not apply to the following options:</b> - Wireless output code X - Low power output code M		
Page 2 of 4		

 **EU Declaration of Conformity**   
No: RMD 1017 Rev. AJ

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

**BAS97ATEX1089X - Intrinsic Safety**  
Equipment Group II Category 1 G  
Ex ia IIC T5/T4 Ga  
Harmonized Standards Used:  
EN IEC 60079-0: 2018, EN 60079-11: 2012

**BAS00ATEX3105X - Type n**  
Equipment Group II Category 3 G  
Ex nA IIC T5 Gc  
Harmonized Standards Used:  
EN IEC 60079-0: 2018, EN 60079-15: 2010

**Baseefa11ATEX0275X - Dust**  
Equipment Group II Category 1 D  
Ex ta IIIC T<sub>300</sub> 105 °C Da  
Harmonized Standards Used:  
EN IEC 60079-0: 2018, EN 60079-31: 2014

**KEMA00ATEX2013X - Flameproof**  
Equipment Group II Category 1/2 G  
Ex db IIC T6...T4 Ga/Gb  
Harmonized Standards Used:  
EN IEC 60079-0: 2018, EN 60079-1: 2014, EN 60079-26: 2015

Page 3 of 4





# EU Declaration of Conformity

No: RMD 1017 Rev. AJ



## PED Notified Body

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

## 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 FIMKO OY** [Notified Body Number: 0598]  
Takomotie 8  
FI-00380 Helsinki,  
Finland

## ATEX Notified Body for Quality Assurance

**SGS FIMKO OY** [Notified Body Number: 0598]  
Takomotie 8  
FI-00380 Helsinki,  
Finland

## 9.16 China RoHS

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.

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

## 9.17 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.

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**Quick Start Guide**  
**00825-0100-4001, Rev. MD**  
**November 2024**

For more information: [Emerson.com/global](https://emerson.com/global)

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