Rosemount™ 3051 Pressure Transmitter and Rosemount™ 3051CF Series Flow Meters

with 4-20 mA HART® Revision 5 and 7 Protocol
Safety messages

**Note**  
Before installing the transmitter, confirm the correct device driver is loaded on the host systems. See System readiness.

**NOTICE**  
This guide provides basic guidelines for Rosemount™ 3051 Transmitters. It does not provide instructions for configuration, diagnostics, maintenance, service, troubleshooting, Explosion-proof, Flameproof, or intrinsically safe (I.S.) installations. Refer to Rosemount 3051 HART® Revision 5 and 7 Reference Manual for more instructions. This manual is also available electronically at Emerson.com/Rosemount.

**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 Product certifications for any restrictions associated with a safe installation.
- Before connecting a handheld communicator in an explosive atmosphere, ensure 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 unit.

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.

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.

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.

**CAUTION**  
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 x 1.5 thread form. On devices with multiple conduit entries, all entries will have the same thread form.
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1 System readiness

1.1 Confirm HART® Revision capability

- If using HART based control or asset management systems, confirm the HART capability of those systems prior to transmitter installation. Not all systems are capable of communicating with HART Revision 7. You can configure this transmitter for either HART Revision 5 or 7.

- For instructions on how to change the HART revision of your transmitter, see Switch HART® revision mode

1.2 Confirm correct device driver

- Verify the latest Device Driver (DD/DTM) is loaded on your systems to ensure proper communications.

- Download the latest DD at Emerson.com or Fieldbus.org.

- Within Table 1-1, use the device revision numbers to find the correct Device Driver.

<table>
<thead>
<tr>
<th>Device revision(1)</th>
<th>Host</th>
<th>Device driver (DD)(2)</th>
<th>DD download web address</th>
<th>Device driver (DTM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>All</td>
<td>DD4: DD Rev 1</td>
<td>Fieldbus.org</td>
<td>Emerson.com</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>DD5: DD Rev 1</td>
<td>Fieldbus.org</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emerson</td>
<td>AMS V 10.5 or higher: DD Rev 2</td>
<td>Emerson.com</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emerson</td>
<td>AMS V 8 to 10.5: DD Rev 1</td>
<td>Emerson.com</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emerson</td>
<td>375/475: DD Rev 2</td>
<td>Easy upgrade utility</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>All</td>
<td>DD4: DD Rev 3</td>
<td>Fieldbus.org</td>
<td>Emerson.com</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td>DD5: NA</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emerson</td>
<td>AMS V 10.5 or higher: DD Rev 6</td>
<td>Emerson.com</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emerson</td>
<td>AMS V 8 to 10.5: DD Rev 4</td>
<td>Emerson.com</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emerson</td>
<td>375/475: DD Rev 6</td>
<td>Easy upgrade utility</td>
<td></td>
</tr>
</tbody>
</table>

(1) FOUNDATION Fieldbus device revision can be read using a FOUNDATION Fieldbus capable configuration tool.
Device driver file names use device and DD revision. To access functionality, the correct device driver must be installed on your control and asset management hosts and on your configuration tools.
2 Transmitter installation

2.1 Mount the transmitter

Figure 2-1: Panel Mount Coplanar Flange
5/16 x 1½ panel bolts are customer supplied.

Figure 2-2: Pipe Mount Coplanar Flange
Figure 2-3: Panel Mount Traditional Flange

Figure 2-4: Pipe Mount Traditional Flange

Figure 2-5: Panel Mount Rosemount 3051T
Figure 2-6: Pipe Mount Rosemount 3051T
2.1.1 Mount the transmitter in liquid applications

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

*Figure 2-7: Mounting the Transmitter in Liquid Applications*

![Mounting the Transmitter in Liquid Applications](image)

2.1.2 Mount the transmitter in gas applications

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

*Figure 2-8: Mounting the Transmitter in Gas Applications*

![Mounting the Transmitter in Gas Applications](image)
2.1.3 Mount the transmitter in steam applications

**Procedure**

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

![Figure 2-9: Mounting the Transmitter in Steam Applications](image)

2.1.4 Install bolts

If the transmitter installation requires assembly of the process flanges, manifolds, or flange adapters, follow the 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 2-10 illustrates common transmitter assemblies with the bolt length required for proper transmitter assembly.
Figure 2-10: 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 a local Emerson representative for more information.

Carbon steel bolts do not require lubrication, and the stainless steel bolts are coated with a lubricant to ease installation. However, do not apply additional lubricant when installing either type of bolt.

Table 2-1: Torque Values for the Flange and Flange Adapter Bolts

<table>
<thead>
<tr>
<th>Bolt material</th>
<th>Head markings</th>
<th>Initial torque</th>
<th>Final torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon Steel (CS)</td>
<td><img src="image" alt="B7M" /></td>
<td>300 in-lb</td>
<td>650 in-lb</td>
</tr>
<tr>
<td>Stainless Steel (SST)</td>
<td><img src="image" alt="316" /></td>
<td>150 in-lb</td>
<td>300 in-lb</td>
</tr>
</tbody>
</table>

Use the following bolt installation procedure:
**Procedure**

1. Finger tighten the bolts.
2. Torque the bolts to the initial torque value using a crossing pattern.
   See Table 2-1 for initial torque value.
3. Torque the bolts to the final torque value using the same crossing pattern.
   See Table 2-1 for final torque value.
4. Verify the flange bolts are protruding through the sensor module bolt holes before applying pressure.

### 2.1.5 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.

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

### 2.1.6 Inline gage transmitter orientation

The low side pressure port (atmospheric reference) on the inline gage transmitter is located in the neck of the transmitter, behind the housing. The vent path is 360 degrees around the transmitter between the housing and sensor (see Figure 2-11).

Keep the vent path free of any obstruction, such as paint, dust, and lubrication, by mounting the transmitter so that the process can drain away.

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**Figure 2-11: Inline Gage Low Side Pressure Port**

![Figure 2-11: Inline Gage Low Side Pressure Port](image-url)

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A. Low side pressure port (atmospheric reference)
### 2.1.7 Install high pressure coned and threaded connection

The transmitter comes with an autoclave connection designed for pressure applications. Follow the steps below to properly connect the transmitter to your process.

**Procedure**

1. Apply a process-compatible lubricant to the gland nut threads.
2. Slip the gland nut onto the tube; then thread the collar onto the tube end.
   - The collar is reverse threaded.
3. Apply a small amount of process-compatible lubricant to the tube cone to help prevent galling and facilitate sealing. Insert the tubing into the connection and tighten finger-tight.
4. Tighten the gland nut to a torque of 25 ft-lb.

**Need help?**

A weep hole has been designed into the transmitter for safety and leak detection. If fluid begins to leak from the weep hole, isolate the process pressure, disconnect the transmitter, and reseal until the leak is resolved.

### 2.2 Rotate housing

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

**Figure 2-12: Transmitter Housing Set Screw**

![Figure 2-12: Transmitter Housing Set Screw](image)

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

**Procedure**

1. Loosen the housing rotation set screw using a 5/64-in. hex wrench.
2. **CAUTION**

   **Transmitter damage**
   
   Over rotating can damage the transmitter.
   
   Do not rotate the transmitter more than 180°.
Turn the housing left or right up to 180° from its original position.\(^{(1)}\)

3. Re-tighten the housing rotation set screw to no more than 7 in-lb. when it reaches the desired location.

### 2.3 Set the switches

Use the following procedure to change the switch configuration.

Set **Alarm** and **Security** switch configuration before installation as shown in Figure 2-13.

**Figure 2-13: Transmitter Electronics Board**

![Transmitter Electronics Board Diagram](image)

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

- The **Alarm** switch sets the analog output alarm to High or Low. The default alarm is High.

- The **Security** switch allows (unlocked symbol) or prevents (locked symbol) any configuration of the transmitter. The default security is off (unlocked symbol).

**Procedure**

1. If the transmitter is installed, secure the loop and remove power.

\(^{(1)}\) Rosemount™ 3051C original position aligns with "H" side; Rosemount 3051T original position is the opposite side of bracket holes.
2. **WARNING**

**Explosions**

Explosions could result in death or serious injury.

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

Remove the housing cover opposite the field terminal side.

3. Slide the Security and Alarm switches into the preferred position with a small screwdriver.

4. **WARNING**

**Explosions**

Explosions could result in death or serious injury.

Fully engage the cover to comply with explosion-proof requirements.

Reattach the transmitter cover.

### 2.4 Wire and power up

Use the following steps to wire the transmitter:

**CAUTION**

**Equipment damage**

Power could damage the test diode in the terminal block.

Do not connect the powered signal wiring to the test terminals.

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

Do not run signal wiring in conduit or open trays with power wiring or near heavy electrical equipment.
Figure 2-14: Transmitter Wiring Diagrams (4-20 mA)

A. 24 Vdc supply
B. $R_l \geq 250$
C. Current meter (optional)

Use shielded twisted pair cable for best results. Use AWG or larger wire that does not exceed 5,000 ft. (1500 m) in length. 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.

**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. Tighten the terminal screws to ensure full contact with the 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.

**Note**

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

4. Ground housing to fulfill local grounding regulations.
5. Ensure proper grounding.

**Important**

The instrument cable must be:

a. Trimmed close and insulated from touching the transmitter housing.

b. Connected to the next shield if cable is routed through a junction box.
c. Connected to a good earth ground at the power supply end.

If you need transient protection, refer to Grounding for transient terminal block for grounding instructions.

6. Plug and seal unused conduit connections.
7. Replace the housing cover.

Figure 2-15: Wiring

A. Minimize distance.
B. Trim shield and insulate.
C. Protective grounding terminal.
D. Insulate shield.
E. Connect shield back to the power supply ground.

2.4.1 Grounding for transient terminal block

Ground termination is provided on the outside of the electronics housing and inside the terminal compartment. Use these grounds when you install the transient protection terminal blocks. Emerson™ recommends using 18 AWG or larger wire to connect housing ground to earth ground (internal or external).

If you haven't wired the transmitter for power up and communication, follow the steps in Wire and power up. When you have finished wiring the transmitter, refer to Figure 2-15 for internal and external transient grounding locations.
2.5 Verifying configuration

Verify the configuration using any HART® capable configuration tool or LOI option code M4.

This section includes configuration instructions for a Field Communicator and LOI. See Rosemount™ 3051 Reference Manual for instruction on configuring with AMS Device Manager.

2.5.1 Verify configuration with a Field Communicator

You must install a Rosemount™ 3051 DD on the Field Communicator to verify configuration.

Table 2-2 shows Fast Key sequences for the latest DD. For Fast Key sequences using legacy DD’s, contact your local Emerson™ representative.

**Note**
Emerson recommends installing the latest DD to access the complete functionality. Visit Emerson.com/Field-Communicator for information on updating the DD library.

Verify device configuration using the Fast Key sequences in Table 2-2.

**Table 2-2: Device Revision 9 and 10 (HART® 7), DD Revision 1 Fast Key Sequence**

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

<table>
<thead>
<tr>
<th>Function</th>
<th>Fast Key sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HART 7</td>
</tr>
<tr>
<td>✓ Alarm and saturation levels</td>
<td>2, 2, 2, 5, 7</td>
</tr>
<tr>
<td>✓ Damping</td>
<td>2, 2, 1, 1, 5</td>
</tr>
<tr>
<td>✓ Range values</td>
<td>2, 2, 2</td>
</tr>
<tr>
<td>✓ Tag</td>
<td>2, 2, 7, 1, 1</td>
</tr>
<tr>
<td>✓ Transfer function</td>
<td>2, 2, 1, 1, 6</td>
</tr>
<tr>
<td>✓ Units</td>
<td>2, 2, 1, 1, 4</td>
</tr>
<tr>
<td>Burst mode</td>
<td>2, 2, 5, 3</td>
</tr>
<tr>
<td>Custom display configuration</td>
<td>2, 2, 4</td>
</tr>
<tr>
<td>Date</td>
<td>2, 2, 7, 1, 4</td>
</tr>
<tr>
<td>Descriptor</td>
<td>2, 2, 7, 1, 5</td>
</tr>
<tr>
<td>Digital to analog trim (4-20 mA output)</td>
<td>3, 4, 2</td>
</tr>
<tr>
<td>Disable configuration buttons</td>
<td>2, 2, 6, 3</td>
</tr>
<tr>
<td>Rerange with keypad</td>
<td>2, 2, 2, 1</td>
</tr>
</tbody>
</table>
Table 2-2: Device Revision 9 and 10 (HART® 7), DD Revision 1 Fast Key Sequence (continued)

<table>
<thead>
<tr>
<th>Function</th>
<th>Fast Key sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>HART 7</td>
</tr>
<tr>
<td>Loop test</td>
<td>3, 5, 1</td>
</tr>
<tr>
<td>Lower sensor trim</td>
<td>3, 4, 1, 2</td>
</tr>
<tr>
<td>Message</td>
<td>2, 2, 7, 1, 6</td>
</tr>
<tr>
<td>Scaled D/A trim (4-20 mA output)</td>
<td>3, 4, 2</td>
</tr>
<tr>
<td>Sensor temperature/trend (3051S)</td>
<td>3, 3, 3</td>
</tr>
<tr>
<td>Upper sensor trim</td>
<td>3, 4, 1, 1</td>
</tr>
<tr>
<td>Digital zero trim</td>
<td>3, 4, 1, 3</td>
</tr>
<tr>
<td>Password</td>
<td>2, 2, 6, 5</td>
</tr>
<tr>
<td>Scaled variable</td>
<td>3, 2, 2</td>
</tr>
<tr>
<td>HART Revision 5 to HART Revision 7 switch</td>
<td>2, 2, 5, 2, 3</td>
</tr>
<tr>
<td>Long tag&lt;sup&gt;(1)&lt;/sup&gt;</td>
<td>2, 2, 7, 1, 2</td>
</tr>
<tr>
<td>Find device&lt;sup&gt;(1)&lt;/sup&gt;</td>
<td>3, 4, 5</td>
</tr>
<tr>
<td>Simulate digital signal&lt;sup&gt;(1)&lt;/sup&gt;</td>
<td>3, 4, 5</td>
</tr>
</tbody>
</table>

<sup>(1)</sup> Only available in HART Revision 7 mode.

2.5.2 Verify configuration with LOI

You can use the optional LOI to commission the device. The LOI is a two-button design with internal and external buttons. The internal buttons are located on the display of the transmitter, while the external buttons are located underneath the top metal tag.

To activate the LOI, push any button. The bottom corners of the display show LOI button functionality. See Table 2-3 and Figure 2-16 for button operation and menu information.
Figure 2-16: Internal and External LOI Buttons

A. Internal buttons
B. External buttons

Note
See Figure 2-18 to confirm external button functionality.

Table 2-3: LOI Button Operation

<table>
<thead>
<tr>
<th>Button</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left</td>
<td>No</td>
<td>SCROLL</td>
</tr>
<tr>
<td>Right</td>
<td>Yes</td>
<td>ENTER</td>
</tr>
</tbody>
</table>
2.5.3 **Switch HART® revision mode**

If the HART configuration tool is not capable of communicating with HART Revision 7, the Rosemount™ 3051 loads a generic menu with limited capability. To switch the HART revision mode from the generic menu:

Go to **Manual Setup → Device Information → Identification → Message**.

- To change to HART Revision 5, enter `HART5` in the Message field.
- To change to HART Revision 7, enter `HART7` in the Message field.

**Note**

See Table 2-2 to change HART revision when the correct device driver is loaded.

2.6 **Trim the transmitter**

Emerson™ calibrates the devices at the factory. Once they are installed, Emerson recommends performing a zero trim on gage and differential pressure transmitters to eliminate error due to mounting position or static pressure effects. You can perform a zero trim using either a Field Communicator or configuration buttons.

For instructions on trimming the transmitter with AMS Device Manager, see the Rosemount™ 3051 HART® Revision 5 and 7 Reference Manual.
Note
When performing a zero trim, ensure that the equalization valve is open and all wet legs are filled to the correct level.

⚠️ CAUTION

Emerson does not recommend zeroing an absolute transmitter, Rosemount 3051CA or 3051TA models.

Choose your trim procedure.

1. Analog zero trim: Sets the analog output to 4 mA.
   - Also referred to as rerange, it sets the lower range value (LRV) equal to the measured pressure.
   - The display and digital HART output remains unchanged.

2. Digital zero trim: Recalibrates the sensor zero.
   - The LRV is unaffected. The pressure value will be zero (on display and HART output). 4 mA point may not be zero.
   - This requires that the factory calibrated zero pressure is within a range of 3% of the URL (0 + 3% x URL).

Example

URV = 250 inH₂O

Applied Zero Pressure = +0.03 x 250 inH₂O = +7.5 inH₂O (compared to factory settings). The transmitter will reject values outside this range.

2.6.1 Trim with a Field Communicator

Procedure

1. Connect the Field Communicator.
   - See Wire and power up for instructions.

2. Follow the HART® menu to perform the desired zero trim.

Table 2-4: Zero Trim Fast Keys

<table>
<thead>
<tr>
<th>Fast Key Sequence</th>
<th>Analog zero (set 4 mA)</th>
<th>Digital zero</th>
</tr>
</thead>
<tbody>
<tr>
<td>3, 4, 2</td>
<td>3, 4, 1, 3</td>
<td></td>
</tr>
</tbody>
</table>
2.6.2 Trimming with configuration buttons

You can perform a zero trim using one of the three possible sets of external configuration buttons located under the top tag.

To access the configuration buttons, loosen the screw and slide the tag on the top of the transmitter. Confirm the functionality using Figure 2-18.

Figure 2-18: External Configuration Buttons

Use the following procedures to perform a zero trim:

Trim with LOI (option M4)

Procedure

1. Set the transmitter pressure.
2. See Figure 2-17 for the operating menu.
   - To perform an analog zero trim, select Rerange.
   - To perform a digital zero trim, select Zero Trim.

Trim with analog Zero and Span (option D4)

Procedure

1. Set the transmitter pressure.
2. Press and hold the Zero button for two seconds to perform an analog zero trim.
3 Safety instrumented systems installation

For safety certified installations, refer to the Rosemount™ 3051 HART® Revision 5 and 7 Reference Manual for installation procedure and system requirements.
4  **Product certifications**

Rev 2.8

4.1  **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).

4.2  **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).

4.3  **North America**

4.3.1  **E5 USA Explosionproof (XP) and Dust-Ignitionproof (DIP)**

**E5**

<table>
<thead>
<tr>
<th>Ranges 1-5</th>
<th>FM16US0121</th>
</tr>
</thead>
<tbody>
<tr>
<td>(HART)  Certificate</td>
<td></td>
</tr>
<tr>
<td>Markings</td>
<td>XP CL I, DIV 1, GP B, C, D; DIP CL II, DIV 1, GP E, F, G; CL III; T5 (–50 °C ≤ Ta ≤ +85 °C); Factory Sealed; Type 4X</td>
</tr>
<tr>
<td>Range 6</td>
<td>1053834</td>
</tr>
<tr>
<td>(HART/ Fieldbus/ PROFIBUS) Certificate</td>
<td></td>
</tr>
<tr>
<td>Markings</td>
<td>XP Class I, Division 1, Groups B, C, and D, T5, (–50 °C ≤ Ta ≤ +85 °C) Suitable for Class I, Zone 1, Group IIIB+H2, T5; DIP Class II and Class III, Division 1, Groups E, F, and G, T5, (–50 °C ≤ Ta ≤ +85 °C); Type 4X; Factory Sealed; Single Seal (See drawing 03031-1053)</td>
</tr>
</tbody>
</table>
4.3.2  I5 USA Intrinsic Safety (IS) and Nonincendive (NI)

**Range 1-5 (HART) Certificate**

- **Certificate**: FM16US0120X
- **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 °C ≤ T_a ≤ +70 °C) [HART], T4 (−50 °C ≤ T_a ≤ +60 °C) [Fieldbus/PROFIBUS]; Type 4X

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

1. The Model 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 Model 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**

- **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 °C ≤ T_a ≤ +70 °C), T5 (−60 °C ≤ T_a ≤ +40 °C) Fieldbus/PROFIBUS: T4 (−60 °C ≤ T_a ≤ +60 °C)

4.3.3  IE USA FISCO

**Range 1-5 (HART) Certificate**

- **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 °C ≤ Ta ≤ +60 °C); Type 4X

Special Conditions for Safe Use (X):

1. The Model 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 Model 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


Markings

IS Class I, Division 1 Groups A, B, C, D, T4 (-60 °C ≤ Ta ≤ +60 °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)
4.3.5  E6 Canada Explosionproof, Dust-Ignitionproof and Division 2

Certificate  1053834


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 °C ≤ Ta ≤ +85 °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)

4.4  Europe

4.4.1  E8 ATEX Flameproof and Dust

Certificate  KEMA00ATEX2013X; Baseefa11ATEX0275X


Markings  ☑ II ½ G Ex db IIC T6...T4 Ga/Gb T6 (−60 °C ≤ Ta ≤ +70 °C), T4/T5 (−60 °C ≤ Ta ≤ +80 °C); ☑ II 1 D Ex ta III C T95 °C T500 105 °C Da (−20 °C ≤ Ta ≤ +85 °C)

Table 4-1: Process Temperature

<table>
<thead>
<tr>
<th>Temperature class</th>
<th>Process connection temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>T6</td>
<td>−60 °C to +70 °C</td>
</tr>
<tr>
<td>T5</td>
<td>−60 °C to +80 °C</td>
</tr>
<tr>
<td>T4</td>
<td>−60 °C to +120 °C</td>
</tr>
</tbody>
</table>

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.

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

4.4.2 I1 ATEX Intrinsic Safety and Dust

**Certificate**  BAS97ATEX1089X; Baseefa11ATEX0275X


**Markings**  
- **HART:**  II 1 G Ex ia IIC T5/T4 Ga, T5 (-60 °C ≤ Ta ≤ +40 °C), T4 (-60 °C ≤ Ta ≤ +70 °C)
- **Fieldbus/PROFIBUS:**  II 1 G Ex ia IIC Ga T4 (-60 °C ≤ Ta ≤ +60 °C)
- **DUST:**  II 1 D Ex ta IIIC T95 °C T500 105 °C Da (-20 °C ≤ Ta ≤ +85 °C)

**Table 4-2: Input Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>HART</th>
<th>Fieldbus/PROFIBUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage $U_i$</td>
<td>30 V</td>
<td>30 V</td>
</tr>
<tr>
<td>Current $I_i$</td>
<td>200 mA</td>
<td>300 mA</td>
</tr>
<tr>
<td>Power $P_i$</td>
<td>0.9 W</td>
<td>1.3 W</td>
</tr>
<tr>
<td>Capacitance $C_i$</td>
<td>0.012 µF</td>
<td>0 µF</td>
</tr>
<tr>
<td>Inductance $L_i$</td>
<td>0 mH</td>
<td>0 mH</td>
</tr>
</tbody>
</table>

**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.

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

4.4.3 IA ATEX FISCO

**Certificate**  BAS97ATEX1089X

Markings  II 1 G Ex ia IIC T4 Ga (−60 °C ≤ Ta ≤ +60 °C)

Table 4-3: Input Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Fieldbus/PROFIBUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage $U_i$</td>
<td>17.5 V</td>
</tr>
<tr>
<td>Current $I_i$</td>
<td>380 mA</td>
</tr>
<tr>
<td>Power $P_i$</td>
<td>5.32 W</td>
</tr>
<tr>
<td>Capacitance $C_i$</td>
<td>≤ 5 nF</td>
</tr>
<tr>
<td>Inductance $L_i$</td>
<td>≤ 10 µH</td>
</tr>
</tbody>
</table>

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.

4.4.4  N1 ATEX Type n and Dust

Certificate  BAS00ATEX3105X; Baseefa11ATEX0275X


Markings  II 3 G Ex na IIC T5 Gc (−40 °C ≤ Ta ≤ +70 °C);
II 1 D Ex ta IIC T95 °C T<sub>500</sub> 105 °C Da (−20 °C ≤ Ta ≤ +85 °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.

4.5  International

4.5.1  E7 IECEx Flameproof and Dust

Certificate  IECEx KEM 09.0034X; IECEx BAS 10.0034X

Markings  Ex db IIC T6...T4 Ga/Gb T6(−60 °C ≤ Ta ≤ +70 °C), T4/T5(−60 °C ≤ Ta ≤ +80 °C); Ex ta III T95 °C T500105 °C Da (-20 °C ≤ Ta ≤ +85 °C)

Table 4-4: Process Temperature

<table>
<thead>
<tr>
<th>Temperature class</th>
<th>Process connection temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>T6</td>
<td>−60 °C to +70 °C</td>
</tr>
<tr>
<td>T5</td>
<td>−60 °C to +80 °C</td>
</tr>
<tr>
<td>T4</td>
<td>−60 °C to +80 °C</td>
</tr>
</tbody>
</table>

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.

4.5.2  I7 IECEx Intrinsic Safety

Certificate  IECEx BAS 09.0076X


Markings  HART: Ex ia IIC T5/T4 Ga, T5(−60 °C ≤ Ta ≤ +40 °C), T4 (−60 °C ≤ Ta ≤ +70 °C)

Fieldbus/PROFIBUS: Ex ia IIC T4(−60 °C ≤ Ta ≤ +60 °C)
Table 4-5: Input Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>HART</th>
<th>Fieldbus/PROFIBUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage $U_i$</td>
<td>30 V</td>
<td>30 V</td>
</tr>
<tr>
<td>Current $I_i$</td>
<td>200 mA</td>
<td>300 mA</td>
</tr>
<tr>
<td>Power $P_i$</td>
<td>0.9 W</td>
<td>1.3 W</td>
</tr>
<tr>
<td>Capacitance $C_i$</td>
<td>0.012 µF</td>
<td>0 µF</td>
</tr>
<tr>
<td>Inductance $L_i$</td>
<td>0 mH</td>
<td>0 mH</td>
</tr>
</tbody>
</table>

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)

**Certificate**  
IECEx TSA 14.0001X

**Standards**  

**Markings**  
Ex ia I Ma ($-60 \, ^\circ C \leq T_a \leq +70 \, ^\circ C$)

Table 4-6: Input Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>HART</th>
<th>Fieldbus/PROFIBUS</th>
<th>FISCO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage $U_i$</td>
<td>30 V</td>
<td>30 V</td>
<td>17.5 V</td>
</tr>
<tr>
<td>Current $I_i$</td>
<td>200 mA</td>
<td>300 mA</td>
<td>380 mA</td>
</tr>
<tr>
<td>Power $P_i$</td>
<td>0.9 W</td>
<td>1.3 W</td>
<td>5.32 W</td>
</tr>
<tr>
<td>Capacitance $C_i$</td>
<td>0.012 µF</td>
<td>0 µF</td>
<td>&lt;5 nF</td>
</tr>
<tr>
<td>Inductance $L_i$</td>
<td>0 mH</td>
<td>0 mH</td>
<td>&lt;10 µH</td>
</tr>
</tbody>
</table>

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.

3. 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.

4.5.3 IG IECEx FISCO

Certificate: IECEx BAS 09.0076X
Markings: Ex ia IIC T4 Ga (-60 °C ≤ Ta ≤ +60 °C)

Table 4-7: Input Parameters

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Fieldbus/PROFIBUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage $U_i$</td>
<td>17.5 V</td>
</tr>
<tr>
<td>Current $I_i$</td>
<td>380 mA</td>
</tr>
<tr>
<td>Power $P_i$</td>
<td>5.32 W</td>
</tr>
<tr>
<td>Capacitance $C_i$</td>
<td>≤ 5 nF</td>
</tr>
<tr>
<td>Inductance $L_i$</td>
<td>≤ 10 µH</td>
</tr>
</tbody>
</table>

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.

4.5.4 N7 IECEx Type n

Certificate: IECEx BAS 09.0077X
Markings: Ex nA IIC T5 Gc (-40 °C ≤ Ta ≤ +70 °C)

Special Condition for Safe Use (X):

1. 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.
4.6 Brazil

4.6.1 E2 INMETRO Flameproof

Certificate  UL-BR 13.0643X


Markings  Ex db IIC T6...T4 Ga/Gb, T6(−60 °C ≤ Ta ≤ +70 °C), T4/T5 (−60 °C ≤ Ta ≤ +80 °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.

4.6.2 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 °C ≤ Ta ≤ +40 °C), T4 (−60 °C ≤ Ta ≤ +70 °C)

Fieldbus/PROFIBUS: Ex ia IIC T4 Ga (−60 °C ≤ Ta ≤ +60 °C)

Table 4-8: Input Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>HART</th>
<th>Fieldbus/PROFIBUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage $U_i$</td>
<td>30 V</td>
<td>30 V</td>
</tr>
<tr>
<td>Current $I_i$</td>
<td>200 mA</td>
<td>300 mA</td>
</tr>
<tr>
<td>Power $P_i$</td>
<td>0.9 W</td>
<td>1.3 W</td>
</tr>
<tr>
<td>Capacitance $C_i$</td>
<td>0.012 µF</td>
<td>0 µF</td>
</tr>
</tbody>
</table>
Table 4-8: Input Parameters (continued)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>HART</th>
<th>Fieldbus/PROFIBUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inductance L&lt;sub&gt;i&lt;/sub&gt;</td>
<td>0 mH</td>
<td>0 mH</td>
</tr>
</tbody>
</table>

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.

4.6.3 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 ≤ Ta ≤ +60 °C)

Table 4-9: Input Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>FISCO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage U&lt;sub&gt;i&lt;/sub&gt;</td>
<td>17.5 V</td>
</tr>
<tr>
<td>Current I&lt;sub&gt;i&lt;/sub&gt;</td>
<td>380 mA</td>
</tr>
<tr>
<td>Power P&lt;sub&gt;i&lt;/sub&gt;</td>
<td>5.32 W</td>
</tr>
<tr>
<td>Capacitance C&lt;sub&gt;i&lt;/sub&gt;</td>
<td>≤5 nF</td>
</tr>
<tr>
<td>Inductance L&lt;sub&gt;i&lt;/sub&gt;</td>
<td>≤10 µH</td>
</tr>
</tbody>
</table>

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.
4.7  China

4.7.1  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 T500 105 °C (-20 °C ≤ Ta ≤ +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：

<table>
<thead>
<tr>
<th>温度组别</th>
<th>环境温度</th>
<th>过程温度</th>
</tr>
</thead>
<tbody>
<tr>
<td>T6</td>
<td>-60 °C ~ +70 °C</td>
<td>-60 °C ~ +70 °C</td>
</tr>
<tr>
<td>T5</td>
<td>-60 °C ~ +80 °C</td>
<td>-60 °C ~ +80 °C</td>
</tr>
<tr>
<td>T4</td>
<td>-60 °C ~ +80 °C</td>
<td>-60 °C ~ +120 °C</td>
</tr>
</tbody>
</table>

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：

<table>
<thead>
<tr>
<th>温度组别</th>
<th>使用环境温度</th>
</tr>
</thead>
<tbody>
<tr>
<td>T6</td>
<td>-50 °C ~ +65 °C</td>
</tr>
<tr>
<td>T5</td>
<td>-50 °C ~ +80 °C</td>
</tr>
</tbody>
</table>

2. 产品外壳设有接地端子，用户在使用时应可靠接地；-20 °C ≤ Ta ≤ +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。


4.7.2 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, 80 °C IP66
3051 CF Series: Ex ia IIC T4/T5 Ga

- 产品安全使用特殊条件:
  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:
1. 产品使用环境温度范围:

<table>
<thead>
<tr>
<th>气体/粉尘</th>
<th>Transmitter output</th>
<th>温度组别</th>
<th>环境温度范围</th>
</tr>
</thead>
<tbody>
<tr>
<td>气体</td>
<td>A, M</td>
<td>T5</td>
<td>-60 °C ~ +40 °C</td>
</tr>
<tr>
<td>气体</td>
<td>A, M</td>
<td>T4</td>
<td>-60 °C ~ +70 °C</td>
</tr>
<tr>
<td>气体</td>
<td>F, W</td>
<td>T4</td>
<td>-40 °C ~ +60 °C</td>
</tr>
<tr>
<td>气体</td>
<td>X</td>
<td>T4</td>
<td>-40 °C ~ +70 °C</td>
</tr>
<tr>
<td>粉尘</td>
<td>A, F, W</td>
<td>T80 °C</td>
<td>-20 °C ~ +40 °C</td>
</tr>
</tbody>
</table>

2. 本安电气参数:

<table>
<thead>
<tr>
<th>Transmitter output</th>
<th>最高输入电压 Ui (V)</th>
<th>最大输入电流 Ii (mA)</th>
<th>最大输入功率 Pi (W)</th>
<th>最大内部等效参数 Ci (nF)</th>
<th>Li (µH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A, M</td>
<td>30</td>
<td>200</td>
<td>0.9</td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>F, W</td>
<td>30</td>
<td>300</td>
<td>1.3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>F, W (FISCO)</td>
<td>17.5</td>
<td>380</td>
<td>5.32</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

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。

3. 该产品必须与已通过防爆认证的关联设备配套共同组成安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。

4. 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。

5. 对于爆炸性粉尘环境，最大输入电压为：

<table>
<thead>
<tr>
<th>Transmitter output</th>
<th>最高输入电压</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>55 V</td>
</tr>
<tr>
<td>F, W</td>
<td>40 V</td>
</tr>
</tbody>
</table>

6. 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。


4.7.3  N3 China Type n

Certificate  GYJ15.1105X  
Standards GB3836.1-2010, GB3836.8-2003  
Markings Ex nA nL IIC T5 Gc (-40 °C ≤ Ta ≤ +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 ≤ Ta ≤ 70 °C
  2. 最高输入电压：

<table>
<thead>
<tr>
<th>Transmitter output</th>
<th>最高输入电压</th>
</tr>
</thead>
<tbody>
<tr>
<td>A, M (3051 Enhanced &amp; 3051 Low Power HART®)</td>
<td>55 Vdc</td>
</tr>
<tr>
<td>F, W</td>
<td>40 Vdc</td>
</tr>
</tbody>
</table>

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。

4.8 Japan
4.8.1 E4 Japan Flameproof

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

**Markings** Ex d IIC T5

4.9 Republic of Korea
4.9.1 EP Republic of Korea Flameproof

**Certificate** 11-KB4BO-0188X [Mfg Singapore]

**Markings** Ex d IIC T6...T4

4.9.2 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]

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

4.10 Technical Regulations Customs Union (EAC)
4.10.1 EM EAC Flameproof

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

**Special Conditions for Safe Use (X):**
See certificate for special conditions.
4.10.2 IM EAC Intrinsically Safe

**Markings**

- **HART**: 0Ex ia IIC T4/T5 Ga X, T4(−60 °C ≤ Ta ≤ +70 °C), T5(−60 °C ≤ Ta ≤ +40 °C)
- **Fieldbus/PROFIBUS**: 0Ex ia IIC Ga X (−60 °C ≤ Ta ≤ +60 °C)

Special Conditions for Safe Use (X)

See certificate for special conditions.

4.11 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

4.12 Conduit plugs and adapters

4.12.1 IECEx Flameproof and Increased Safety

- **Certificate**: IECEx FMG 13.0032X
- **Markings**: Ex de IIC Gb

4.12.2 ATEX Flameproof and Increased Safety

- **Certificate**: FM13ATEX0076X
- **Markings**: Ex II 2 G Ex de IIC Gb

**Table 4-10: Conduit Plug Thread Sizes**

<table>
<thead>
<tr>
<th>Thread</th>
<th>Identification mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>M20 × 1.5</td>
<td>M20</td>
</tr>
<tr>
<td>½ – 14 NPT</td>
<td>½ NPT</td>
</tr>
</tbody>
</table>
Table 4-11: Thread Adapter Thread Sizes

<table>
<thead>
<tr>
<th>Male thread</th>
<th>Identification mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>M20 × 1.5 – 6H</td>
<td>M20</td>
</tr>
<tr>
<td>½–14 NPT</td>
<td>½–14 NPT</td>
</tr>
<tr>
<td>¾–14 NPT</td>
<td>¾–14 NPT</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Female thread</th>
<th>Identification mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>M20 × 1.5 – 6H</td>
<td>M20</td>
</tr>
<tr>
<td>½–14 NPT</td>
<td>½–14 NPT</td>
</tr>
<tr>
<td>G½</td>
<td>G½</td>
</tr>
</tbody>
</table>

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.

4.13 Additional certifications

4.13.1 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.

4.13.2 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

4.13.3 SDN Det Norske Veritas (DNV) Type Approval

Certificate TAA000004F
**Intended Use**  
DNV GL rules for classification - ships and offshore units

**Application**  
Table 4-12: Location Classes

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>D</td>
</tr>
<tr>
<td>Humidity</td>
<td>B</td>
</tr>
<tr>
<td>Vibration</td>
<td>A</td>
</tr>
<tr>
<td>EMC</td>
<td>B</td>
</tr>
<tr>
<td>Enclosure</td>
<td>D</td>
</tr>
</tbody>
</table>

4.13.4  **SLL Lloyds Register (LR) Type Approval**

**Certificate**  
11/60002

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

4.13.5  **C5 Custody Transfer - Measurement Canada Accuracy Approval**

**Certificate**  
AG-0226; AG-0454; AG-0477
4.14 EU Declaration of Conformity

We,

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

declare under our sole responsibility that the product,

Rosemount™ Models 3051D and 3051G 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 Community Directives, including the latest amendments, as shown in the attached schedule.

Assumption of conformity is based on the application of the harmonized standards and, when applicable or required, a European Community notified body certification, as shown in the attached schedule.

(signature)
Vice President of Global Quality
(function name - printed)
Chris LaPoint
(name - printed)
1-Feb-19; Shakopee, MN USA
(date of issue)
EMC Directive (2014/30/EU)

All Models 3051D and 3051G Pressure Transmitters
EN 61326-1:2013
EN 61326-2-3:2013

PED Directive (2014/68/EU)

Models 3051DP2, 3, 4, 5 with C-276 Isolators or options P7 or P9 Pressure Transmitters
Modult H Conformity Assessment
Other Standards Used: ANSI/ISA61010-1:2004
Note – previous PED Certificate No. 59552-2009-CE-HOU-DNV

All other model 3051D and 3051G Pressure Transmitters
Sound Engineering Practice
Transmitter Attachments: Diaphragm Seal - Process Flange - Manifold
Sound Engineering Practice

ATEX Directive (2014/34/EU)

Model 3051D Pressure Transmitter
Baseefa12ATEX0189X - Intrinsic Safety Certificate
Equipment Group II Category 1 G
Ex ia IIC T4 Ga (-60°C ≤ Ta ≤ +70°C)
Ex ia IIC T5Ga (-60°C ≤ Ta ≤ +40°C)
Harmonized Standards Used:

Baseefa12ATEX0190X - Type n Certificate
Equipment Group II Category 3 G
Ex na IIC T5 Gc (-40°C ≤ Ta ≤ +70°C)
Harmonized Standards Used:
EU Declaration of Conformity
No: RMD 1089 Rev. I

Baseefa12ATEX0191 - Dust Certificate
Equipment Group II Category 1 D
Ex ta IIC T95°C Tso=105°C Da (-20°C ≤ Ta ≤ +85°C)
Harmonized Standards Used:

DEKRA12ATEX0212X - Flameproof Certificate
Equipment Group II Category 1/2 G
Ex db IIC T6 Ga/Gb (-50°C ≤ Ta ≤ +65°C)
T5 Ga/Gb (-50°C ≤ Ta ≤ +70°C)
Harmonized Standards Used:

Model 3051G Pressure Transmitter

BAS00ATEX1166X - Intrinsic Safety Certificate
Equipment Group II Category 1 G
Ex ia IIC T5 Ga (-55°C ≤ Ta ≤ +40°C)
Ex ia IIC T4 Ga (-55°C ≤ Ta ≤ +70°C)
Harmonized Standards Used:

BAS00ATEX3167X - Type n Certificate
Equipment Group II Category 3 G
Ex nA IIC T5 Ge (-40°C ≤ Ta ≤ 70°C)
Harmonized Standards Used:

BAS01ATEX1427 - Dust Certificate
Equipment Group II Category 1 D
Ex tIIC T50°C Tso=60°C Da
Harmonized Standards Used:

KEMA97ATEX2378X Flameproof Certificate
Equipment Group II Category 1/2 G
Ex db IIC T6…T4 Ga/Gb
Harmonized Standards Used:
EU Declaration of Conformity
No: RMD 1089 Rev. I

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 previous PED Notified Body number; previous PED Notified Body information was as follows:
Det Norske Veritas (DNV) [Notified Body Number: 0575]
Veritasveien 1, N-1322
Hovik, Norway

ATEX Notified Bodies for EC Type Examination Certificate

DEKRA [Notified Body Number: 0344]
Meander 1051, 6825 MJ 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

SGS FIMCO OY [Notified Body Number: 0598]
P.O. Box 30 (Särkiniementie 3)
00211 HELSINKI
Finland
## 4.15 China RoHS table

<table>
<thead>
<tr>
<th>部件名称</th>
<th>有害物质 / Hazardous Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>铅 (Pb)</td>
</tr>
<tr>
<td>电子组件</td>
<td>X</td>
</tr>
<tr>
<td>壳体组件</td>
<td>X</td>
</tr>
<tr>
<td>传感器组件</td>
<td>X</td>
</tr>
</tbody>
</table>

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

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

X: 意为在该部件所使用的所有均质材料中，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.