

Rosemount™ 2051 Pressure Transmitter and Rosemount 2051CF Series Flow Meter

with PROFIBUS® PA Protocol



Safety messages

This guide provides basic guidelines for installing the Rosemount 2051 Transmitter. It does not provide instructions for configuration, diagnostics, maintenance, service, troubleshooting, explosion-proof, flameproof, or intrinsically safe (IS) installations.

⚠ WARNING

Explosions could result in death or serious injury.

Installation of this transmitter in an explosive environment must be in accordance with the appropriate local, national, and international standards, codes, and practices. Review the *Product certifications* section of the *Quick Start Guide* for any restrictions associated with a safe installation.

Before connecting a handheld communicator 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.

Process leaks may cause harm or result in death.

Install and tighten process connectors before applying pressure.

Do not attempt to loosen or remove flange bolts while the transmitter is in service.

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.

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

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

⚠ WARNING

Replacement equipment or spare parts not approved by Emerson for use as spare parts could reduce the pressure retaining capabilities of the transmitter and may render the instrument dangerous.

Use only bolts supplied or sold by Emerson as spare parts.

NOTICE

Improper assembly of manifolds to traditional flange can damage sensor module.

For safe assembly of manifold to traditional flange, bolts must break back plane of flange web (bolt hole) but must not contact sensor module housing.

⚠ 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

The products described in this document are NOT designed for nuclear-qualified applications. Using non-nuclear qualified products in applications that require nuclear-qualified hardware or products may cause inaccurate readings. For information on Rosemount nuclear-qualified products, contact your local Emerson Sales Representative.

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1 Mounting the transmitter

⚠ WARNING

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

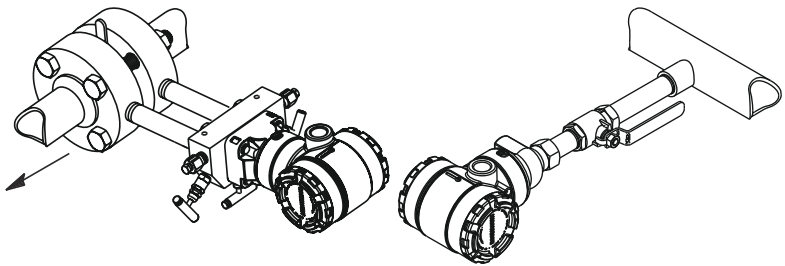
Consider process connection and ambient temperatures when installing the transmitter with hazardous location certifications. See [Table 1-1](#).

Table 1-1: 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) ⁽¹⁾

(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).

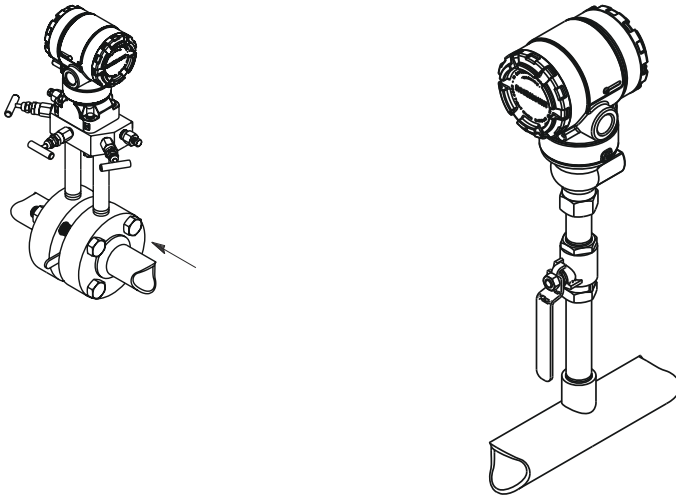
1.1 Mount the transmitter in liquid applications



Procedure

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

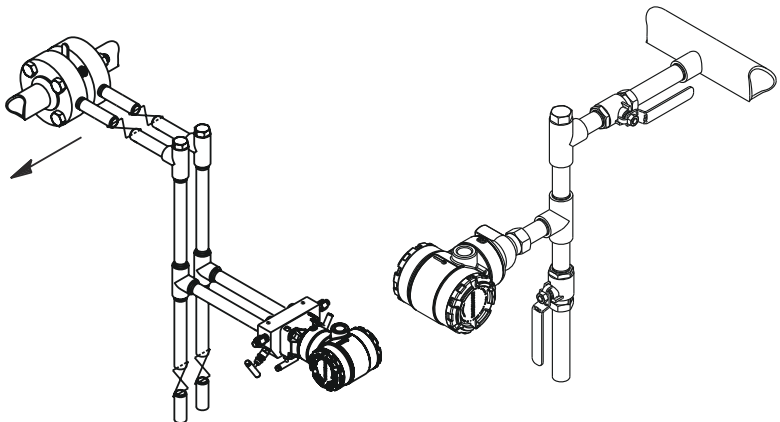
1.2 Mount the transmitter in gas applications



Procedure

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

1.3 Mount the transmitter in steam applications



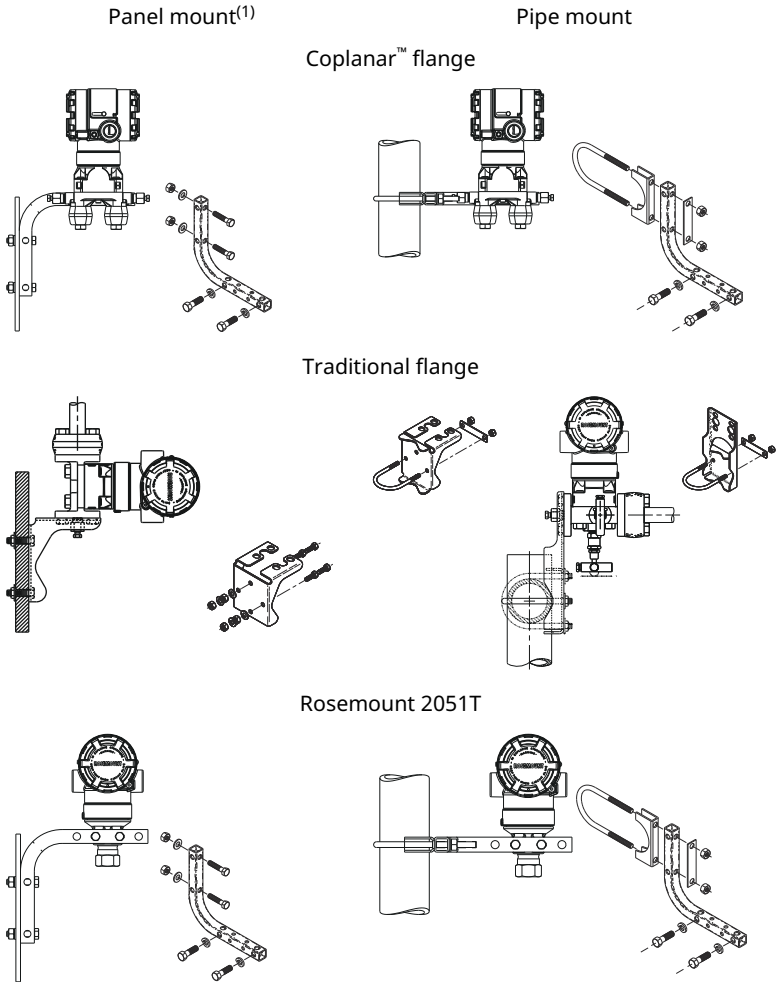
Procedure

1. Place taps to the side of the line.
2. Mount the transmitter beside or below the taps.

3. Fill impulse lines with water.

1.4 Panel and pipe mounting

Figure 1-1: Panel and Pipe Mounting



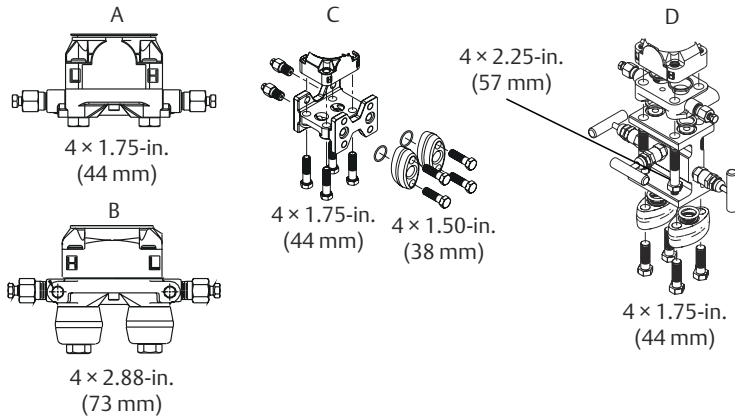
(1) 5/16 × 1½ panel bolts are customer supplied.

1.5 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 transmitter.

Use only bolts supplied with the transmitter or sold by Emerson as spare parts. [Figure 1-2](#) illustrates common transmitter assemblies with the bolt length required for proper transmitter assembly.

Figure 1-2: Common Transmitter Assemblies



- A. Transmitter with Coplanar™ flange
- B. Transmitter with Coplanar flange and optional flange adapters
- C. Transmitter with traditional flange and optional flange adapters
- D. Transmitter with Coplanar flange and optional manifold and flange adapters

Bolts are typically Carbon Steel (CS) or Stainless Steel (SST). Confirm the material by viewing the markings on the head of the bolt and referencing [Table 1-2](#). If bolt material is not shown in [Table 1-2](#), 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 any additional lubricant when installing either type of bolt.

Procedure

1. Tighten the bolts by hand.
2. Torque the bolts to the initial torque value using a crossing pattern.


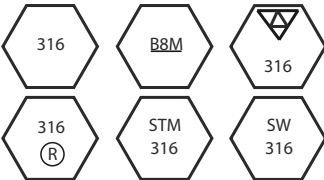
See [Table 1-2](#) for initial torque value.

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

See [Table 1-2](#) for final torque value.

4. Verify the flange bolts are protruding through the sensor module bolt holes before applying pressure.

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

Bolt material	Head markings	Initial torque	Final torque
CS		300 in-lb	650 in-lb
SST		150 in-lb	300 in-lb

1.6 O-rings

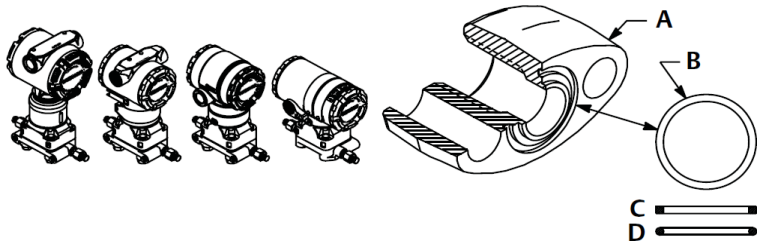
The two styles of Rosemount flange adapters (Rosemount 3051/2051/2024/3095) each require a unique O-ring (see [Figure 1-3](#)). Use only the O-ring designed for the corresponding flange adapter.

⚠ 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 1-3](#). When compressed, PTFE O-rings tend to cold flow, which aids in their sealing capabilities.

Figure 1-3: O-rings for Rosemount 3051S, 3051, 2051, 3001, 3095, and 2024



- A. Flange adapter
- B. O-ring
- C. PTFE based
- D. Elastomer

NOTICE

If the flange adapter is removed, then the PTFE O-rings must be replaced.

1.7 Environmental seal for housing

Thread sealing (PTFE) tape or paste on male threads of conduit is required to provide a water/dust tight conduit seal and meets requirements of NEMA® Type 4X, IP66, and IP68. 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.

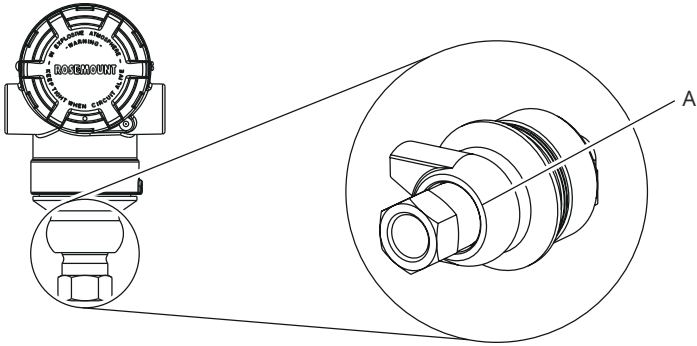
1.8 In-line gauge transmitter orientation

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 1-4](#).

NOTICE

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

Figure 1-4: In-line Gauge Low Side Pressure Port



A. Pressure port location

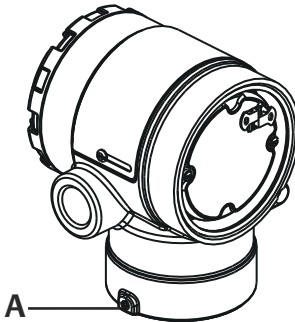
2 Rotate housing

You can rotate the electronics housing up to 180 degrees in either direction to improve field access to wiring or to better view the optional LCD display.

Procedure

1. Loosen the housing rotation set screw using a 5/64-inch hex wrench.

Figure 2-1: Housing Rotation



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

2. Rotate the housing clockwise to the desired location.
3. If the desired location cannot be achieved due to thread limitation, rotate the housing counterclockwise to the desired location (up to 360° from thread limit).
4. Retighten the housing rotation set screw to no more than 7 in-lb when desired location is reached.

3 Setting jumpers and switches

3.1 Security jumper

After the transmitter is configured, you may want to protect the configuration data from unwarranted changes.

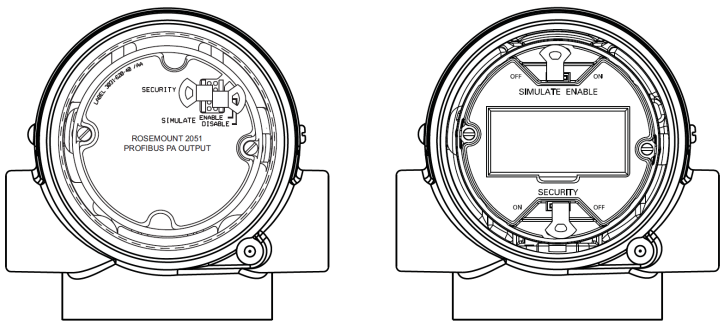
Each transmitter is equipped with a **Security** jumper that can be positioned **ON** to prevent the accidental or deliberate change of configuration data. The jumper is labeled **Security**. The **Security** jumper also prevents changes made using the local operator interface.

3.2 Simulate jumper

The **Simulate** jumper is used in conjunction with the analog input (AI) block.

This jumper is used to simulate the pressure measurement and is used as a lock-out feature for the AI block. To enable the simulate feature, put the jumper in the **ON** position after applying power. This feature prevents the transmitter from being accidentally left in **Simulate** mode.

Figure 3-1: Transmitter Jumper Locations



4 Connect wiring and power up

Procedure

1. Remove the housing cover on the field terminals side.
2. Connect the power leads to the terminals indicated on the terminal block label.
3. Power terminals are polarity insensitive; connect positive or negative to either terminal.
4. 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.

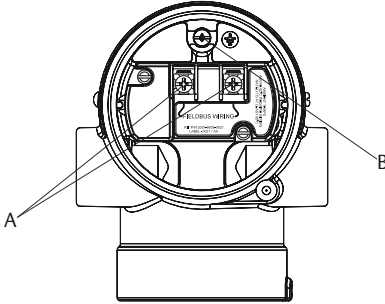
NOTICE

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

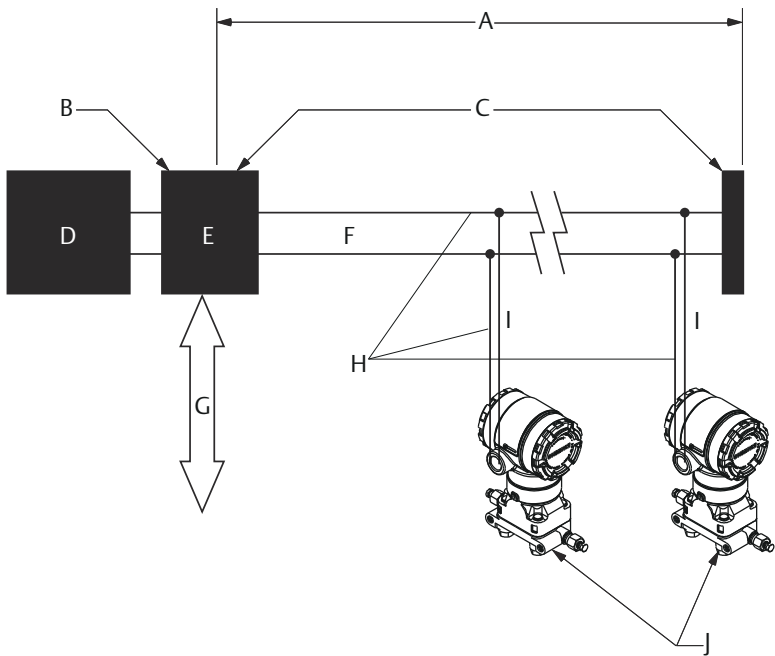
5. Ensure proper grounding.
It is important that the instrument cable shield:
 - Be trimmed close and insulated from touching the transmitter housing.
 - Be connected to the next shield if cable is routed through a junction box.
 - Be connected to a good earth ground at the power supply end.
6. Plug and seal unused conduit connections.
7. 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.
8. Replace the housing cover.

Example

Figure 4-1: Terminals



- A. Power terminals*
 - B. Ground terminal*
-

Figure 4-2: Wiring

- A. 6234 ft. (1900 m) maximum (depending on cable characteristics)
- B. Integrated power conditioner and filter
- C. Terminators
- D. Power supply
- E. Differential pressure (DP)/PA coupler/link
- F. Trunk
- G. DP network
- H. Signal wiring
- I. Spur
- J. PROFIBUS® PA device

4.1 Ground signal wiring

⚠ WARNING

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

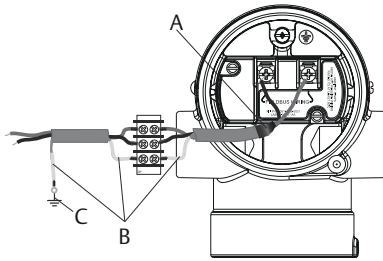
Grounding terminations are provided on the outside of the electronics housing and inside the terminal compartment. These

grounds are used when transient protect terminal blocks are installed or to fulfill local regulations. See [Step 2](#) for more information on how to ground the cable shield.

Procedure

1. Remove the field terminals housing cover.
2. Connect the wiring pair and ground as indicated in [Figure 4-3](#).
The cable shield should:
 - Be trimmed close and insulated from touching the transmitter housing.
 - Continuously connect to the termination point.
 - Be connected to a good earth ground at the power supply end.

Figure 4-3: Wiring



- A. Trim shield and insulate
- B. Insulate shield
- C. Connect shield back to the power supply ground

3. Replace the housing cover.
Emerson recommends tightening the cover until there is no gap between the cover and the housing.
4. Plug and seal unused conduit connections.

4.1.1 Power supply

The DC power supply should provide power with less than two percent ripple. The transmitter requires between 9 and 32 Vdc at the terminals to operate and provide complete functionality.

4.1.2 Power conditioner

The differential pressure (DP)/PA coupler/link often includes an integrated power conditioner.

4.1.3 Grounding

Transmitters are electrically isolated to 500 Vac rms. Signal wiring cannot be grounded.

4.1.4 Shield wire ground

Shield wire usually requires a single grounding point to avoid creating a ground loop. The ground point is typically at the power supply.

5 Basic configuration

5.1 Configuration tasks

You can configure the transmitter using either the local operator interface (LOI), option code M4, or a Class 2 Master (device driver [DD] or DTM™ based).

The two basic configuration tasks for the PROFIBUS® PA pressure transmitter are:

Procedure

1. Assign address.
2. Configure engineering units (scaling).

Note

Emerson sets the Rosemount 2051 PROFIBUS PA Profile 3.02 devices to Identification Number Adaptation mode at the factory. This mode allows the transmitter to communicate with any PROFIBUS PA control host with either the generic Profile GSD (9700) or 2051-specific GSD (3333) loaded on the host; therefore, you do not need to change the transmitter identification number at start-up.

5.1.1 Assign address

Emerson ships the Rosemount 2051 with a temporary address of 126. You must change this to a unique value between 0 and 125 in order to establish communication with the host. Usually, addresses 0–2 are reserved for masters or couplers. Emerson recommends using addresses between 3 and 125.

You can set the address using either:

- Local operator interface (LOI) – see [Table 5-1](#) and [Figure 5-1](#)
- Class 2 Master – see *Class 2 Master* manual for setting address

5.1.2 Configure engineering units

Unless the customer requests otherwise, Emerson ships the Rosemount 2051 Pressure Transmitter with the following settings:

- **Measurement Mode:** Pressure
- **Engineering Units:** inches H₂O
- **Scaling:** None

Confirm or configure engineering units before installation.. You can configure units for pressure, flow, or level measurement.

You can set **Measurement Type, Units, Scaling,** and **Low Flow Cutoff** (when applicable) using either:

- local operator interface (LOI) – see [Table 5-1](#) and [Figure 5-1](#)
- Class 2 Master – see [Table 1](#) for parameter configuration

5.2 Configuration tools



5.2.1 Local operator interface (LOI)

When ordered, you can use the LOI to commission the device. To activate the LOI, push either configuration button located under the top tag of the transmitter. See [Table 5-1](#) and [Figure 5-1](#) for operation and menu information. The **Security** jumper prevents someone from making changes using the LOI.

Note

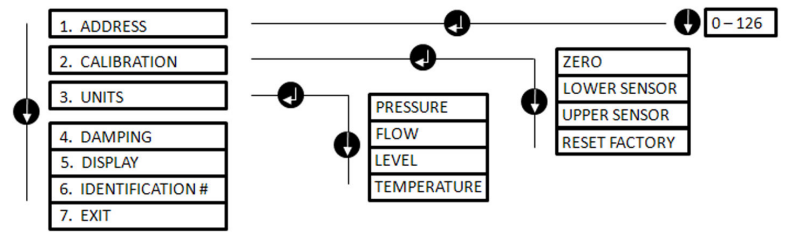
Buttons must be fully engaged ≈ 0.5 in. (10 mm) of travel.

Table 5-1: LOI Button Operation

Button	Action	Navigation	Character Entry	Save?
	Scroll	Moves down menu categories	Changes character value ⁽¹⁾	Changes between Save and Cancel
	Enter	Selects menu category	Enters character and advances	Saves

(1) Characters blink when they can be changed.

Figure 5-1: LOI Menu



5.2.2 Configure pressure using Class 2 Master

You can download the Rosemount 2051 PROFIBUS® device driver (DD) and DTM™ files at [Software and Drivers](#), or you can contact your local salesperson.

See the *Rosemount 2051 Pressure Transmitter Reference Manual* for flow or level configuration instructions.

Procedure

1. Set blocks to Out of Service.
 - a) Put transducer block into Out of Service mode.
 - b) Put analog input block into Out of Service mode.
2. Select **Measurement Type**.
 - a) Set **Primary Value** type to Pressure.
3. Set **Engineering Units**.

Primary and secondary units must match.
4. Enter **Scaling**.
 - a) Set **Scale In** in transducer block to 0 – 100.
 - b) Set **Scale Out** in transducer block to 0 – 100.
 - c) Set **Primary Variable (PV) Scale** in analog input block to 0 – 100.
 - d) Set **Out Scale** in analog input block to 0 –100.
 - e) Set **Linearization** in analog input block to No Linearization.
5. Set blocks to Auto.
 - a) Set transducer block to Auto mode.
 - b) Set analog input block to Auto mode.

5.3 Host integration

5.3.1 Control host (Class 1)

The device uses condensed status as recommended by the Profile 3.02 specification and NE 107.

See [Rosemount 2051 Pressure Transmitter Reference Manual](#) for condensed status bit assignment information.

The appropriate GSD file must be loaded on the control host - Rosemount 2051-specific (*rmt3333.gsd*) or Profile 3.02 Generic (*pa139700.gsd*). You can find these files on [Emerson.com](https://www.emerson.com) or [Profibus.com](https://www.profibus.com).

5.3.2 Configuration host (Class 2)

You must install the appropriate device driver (DD) or DTM™ file in the configuration host.

Download these files at [Software & Drivers](#).

6 Trimming the transmitter

Emerson calibrates devices at the factory. After installing the device, Emerson recommends performing a zero trim on the sensor to eliminate error due to mounting position or static pressure effects.

You can perform a zero trim using:

- local operator interface (LOI) – see [Table 1](#) and [Figure 1](#)
- Class 2 Master – see [Zero trim using Class 2 Master](#) for parameter settings

6.1 Zero trim using Class 2 Master

Procedure

1. Place the transducer block into Out of Service (OOS) mode.
2. Apply zero pressure to device and allow to stabilize.
3. Go to **Basic Setup** → **Calibration** and set the lower calibration point to 0.0.
4. Place the transducer block to AUTO mode.

7 Product certifications

7.1 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 www.Emerson.com.

7.2 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).

7.2.1 Functional specifications

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

7.3 Hazardous location certification

NOTICE

Device ambient temperature ratings and electrical parameters may be limited to the levels dictated by the hazardous location certificate parameters.

7.4 North America

E5 USA Explosion-proof (XP) and Dust Ignition-proof (DIP)

Certificate	2041384
Standards	FM 3600: 2022, FM 3615: 2022, FM 3616: 2022, ANSI/UL 61010-1-2019 Third Edition, ANSI/UL 12.27.01: 2022 (Fourth Edition), ANSI/UL 50E (First Edition)
Markings	XP CL I, DIV I, GP B, C, & D T5;

Seal not required
 DIP CL II, DIV I, GP E, F, & G; CL III T5;
 T5: (-50 °C ≤ Ta ≤ +85 °C)
 Type 4X, IP 68
 Optional: single seal

Specific Conditions of Use:

1. The Rosemount 2051 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.

I5 USA Intrinsic Safety (IS), Nonincendive (NI)

Certificate	2041384
Standards	FM3600: 2022, FM3610: 2021, FM3611: 2021, ANSI/UL61010-1-2019 Third Edition, ANSI/UL60079-0: 2017, ANSI/UL60079-11: 2013, ANSI/UL12.27.01: 2022 (Fourth Edition), ANSI/UL50E (First Edition)
Markings	IS: CL I GP A, B, C, D T4; CL II GP EFG; CL III T4; CL I ZN 0 AEx ia IIC T4 Ga; NI: CL I DIV 2 GP ABCD T4; (-50 °C ≤ Ta ≤ +70 °C) Install per 02051-1008. Type 4X, IP 68 Optional: single seal

Specific Conditions of Use:

1. The 2051 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. The 2051 with the transient terminal block (Option code T1) will not pass the 500 VRMS dielectric strength test; this must be considered 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.

IE USA FISCO

Certificate	2041384
Standards	FM 3600: 2022, FM 3610: 2021, FM 3611: 2021, ANSI/UL 61010-1-2019 Third Edition, ANSI/UL 60079-0: 2017, ANSI/UL 60079-11: 2013, ANSI/UL 12.27.01: 2022 (Fourth Edition), ANSI/UL 50E (First Edition)
Markings	IS: CL I GP ABCD T4 CL I ZN 0 AEx ia IIC T4 Ga -50 °C ≤ Ta ≤ +60 °C FISCO Type 4X, IP 68 Install per 02051-1008 Optional: single seal

Specific Conditions of Use:

1. The 2051 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. Maximum process temperature limits shall be in accordance with 03031-1053.

E6 Canada Explosion-proof, Dust Ignition-proof

Certificate	2041384
Standards	CAN/CSA C22.2 No. 61010-1-12, CAN/CSA C22.2 No. 94.2-07, CSA C22.2 No. 25-17, CAN/CSA C22.2 No. 30:20, CAN/CSA C22.2 No. 60079-0:19, CAN/CSA C22.2 No. 60079-1:16, ANSI/UL 12.27.01: 2022 (Fourth Edition)
Markings:	XP: CL I, DIV I, GP B,C, D T5; Ex db IIC T5 Gb;

Seal not required
 DIP: CL II, DIV I, GP E, F, & G; CL III T5;
 $-50\text{ }^{\circ}\text{C} \leq T_a \leq +85\text{ }^{\circ}\text{C}$
 Single seal - temp limits 03031-1053
 Type 4X, IP 68

Specific Conditions of Use:

1. The 2051 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).

I6 Canada Intrinsic Safety (IS)

Certificate	2041384
Standards	C22.2 No. 61010-1-12, C22.2 No. 25-17, C22.2 No. 94.2-20 Third Edition, CSA Std C22.2 No. 213-17 + UPD 1 (2018) + UPD 2 (2019) + UPD 3 (2021), CAN/CSA-60079-0:19, CAN/CSA-60079-11:14, ANSI/UL 122701: 2022 (Fourth Edition), ANSI/UL 50E (First Edition)
Markings	IS: CL I GP A, B, C, D T4; CL II GP E, F, G, CL III T4; Ex ia IIC T4 Ga; NI: CL I DIV 2 GP A, B, C, D $-50\text{ }^{\circ}\text{C} \leq T_a \leq +70\text{ }^{\circ}\text{C}$ Install per 02051-1008 Single seal - temp limits per 03031-1053 Type 4X, IP 68

Specific Conditions of Use:

1. The 2051 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. The 2051 with the transient terminal block (Option code T1) will not pass the 500 VRMS dielectric strength test; this must be considered during installation.

- Equipment evaluated for atmospheric pressure range between 80 kPa (0.8 bar) to 110 kPa (1.1 bar).

IF Canada FISCO

Certificate	2041384
Standards	C22.2 No. 61010-1-12, C22.2 No. 25-17, C22.2 No. 94.2-20 Third Edition, CSA Std C22.2 No. 213-17 + UPD 1 (2018) + UPD 2 (2019) + UPD 3 (2021), CAN/CSA-60079-0:19, CAN/CSA-60079-11:14, ANSI/UL 12.27.01:2022 (Fourth Edition), ANSI/UL 50E (First Edition)
Markings:	IS: CL I GP ABCD T4; Ex ia IIC T4 Ga -50 °C ≤ Ta ≤ +60 °C FISCO Install per 02051-1008 Single seal - temp limits per 03031-1053 Type 4X, IP 68

Specific Conditions of Use:

- The 2051 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.
- Equipment evaluated for atmospheric pressure range between 80 kPa (0.8 bar) to 110 kPa (1.1 bar).

7.5 Europe

E1 ATEX Flameproof

Certificate	KEMA 08ATEX0090X
Standards	EN IEC 60079-0: 2018, EN 60079-1: 2014, EN 60079-26: 2015
Markings:	Ⓔ II 1/2 G Ex db IIC T6...T4 Ga/Gb, T6 (-60 °C ≤ Ta ≤ +70 °C), T4/T5 (-60 °C ≤ Ta ≤ +80 °C)

Table 7-1: Process Connection 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.

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

I1 ATEX Intrinsic Safety

Certificate	Baseefa08ATEX0129X
Standards	EN IEC 60079-0: 2018, EN60079-11: 2012
Markings	Ⓔ II 1 G Ex ia IIC T4 Ga (-60 °C ≤ Ta ≤ +70 °C)

Table 7-2: Input Parameters

	HART®	Fieldbus/PROFIBUS®
Voltage U_i	30 V	30 V
Current I_i	200 mA	300 mA
Power P_i	1 W	1.3 W
Capacitance C_i	0.012 μ F	0 μ 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 incapable of withstanding the 500 V isolation from earth test, and this must be taken into account during installation.
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.

IA ATEX FISCO

Certificate	Baseefa08ATEX0129X
Standards	EN IEC 60079-0: 2018, EN60079-11: 2012
Markings	⊕ II 1 G Ex ia IIC T4 Ga (-60 °C ≤ Ta ≤ +60 °C)

Table 7-3: Input Parameters

	FISCO
Voltage U_i	17.5 V
Current I_i	380 mA
Power P_i	5.32 W
Capacitance C_i	0 μ F
Inductance L_i	0 mH

Special Conditions for Safe Use (X):

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding the 500 V isolation from earth test, and this must be taken into account during installation.

- 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.

N1 ATEX Type n

Certificate	Baseefa08ATEX0130X
Standards	EN IEC 60079-0: 2018, EN60079-15: 2010
Markings	⊕ II 3 G Ex nA IIC T4 Gc (-40 °C ≤ Ta ≤ +70 °C)

Special Conditions for Safe Use (X):

- If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding the 500 V electrical strength test as defined in clause 6.5.1 of by EN 60079-15: 2010. This must be taken into account during installation.

ND ATEX Dust

Certificate	Baseefa08ATEX0182X
Standards	EN IEC 60079-0: 2018, EN60079-31: 2014
Markings	⊕ II 1 D Ex ta IIIC T ₅₀₀ 105 °C Da (-20 °C ≤ Ta ≤ +85 °C)

Special Conditions for Safe Use (X):

- If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding the 500 V isolation from earth test, and this must be taken into account during installation.
- Variants with a paint finish must not be installed in a dust-laden airflow.
- 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.

7.6 International

E7 IECEx Flameproof

Certificate	IECExKEM08.0024X
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Standards	IEC 60079-0: 2017, IEC 60079-1: 2014, IEC 60079-26: 2014
Markings	Ex db IIC T6...T4 Ga/Gb T6 (-60 °C ≤ Ta ≤ +70 °C), T4/T5 (-60 °C ≤ Ta ≤ +80 °C)

Table 7-4: Process Connection 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 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.

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

I7 IECEx Intrinsic Safety

Certificate	IECEx BAS 08.0045X
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Standards IEC 60079-0: 2017, IEC 60079-11: 2011

Marking: Ex ia IIC T4 Ga ($-60\text{ °C} \leq T_a \leq +70\text{ °C}$)

Table 7-5: Input Parameters

	HART®	Fieldbus/PROFIBUS®
Voltage U_i	30 V	30 V
Current I_i	200 mA	300 mA
Power P_i	1 W	1.3 W
Capacitance C_i	12 nF	0 μ 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 incapable of withstanding the 500 V isolation from earth test, and this must be taken into account during installation.
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. The equipment contains thin wall diaphragms. The installation, maintenance, and use shall take into account the environmental conditions to which the diaphragms will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.

IG IECEX FISCO

Certificate IECEX BAS 08.0045X

Standards IEC 60079-0: 2017, IEC60079-11: 2011

Markings Ex ia IIC T4 Ga ($-60\text{ °C} \leq T_a \leq +60\text{ °C}$)

Table 7-6: Input Parameters

	FISCO
Voltage U_i	17.5 V
Current I_i	380 mA
Power P_i	5.32 W
Capacitance C_i	0 nF
Inductance L_i	0 μ H

Special Conditions for Safe Use (X):

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding the 500 V isolation from earth test, and this must be taken into account during installation.
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. The equipment contains thin wall diaphragms. The installation, maintenance, and use shall take into account the environmental conditions to which the diaphragms will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.

N7 IECEx Type n

Certificate	IECEX BAS 08.0046X
Standards	IEC 60079-0: 2017, IEC60079-15: 2010
Markings	Ex nA IIC T4 Gc (-40 °C ≤ Ta ≤ +70 °C)

Special Conditions for Safe Use (X):

1. If fitted with a 90 V transient suppressor, the equipment is not capable of withstanding the 500 V electrical strength test as defined in clause 6.5.1 of IEC60079-15: 2010. This must be taken into account during installation.

7.7 Brazil**E2 Brazil Flameproof**

Certificate	UL-BR 14.0375X (Sorocaba, Sao Pao Paulo, Brazil), UL-BR22.3806X (Shakopee, MN, USA)
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	UL-BR22.3807X (Singapore)
Standards	ABNT NBR IEC 60079-0, ABNT NBR IEC 60079-1, ABNT NBR IEC 60079-26
Markings:	Ex db IIC T6...T4 Ga/Gb IP66, 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 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.

I2 Brazil Intrinsic Safety

Certificate	UL-BR 14.0759X
Standards	ABNT NBR IEC 60079-0: 2013; ABNT NBR IEC 60079-11: 2013
Markings	Ex ia IIC T4 Ga (-60 °C ≤ Ta ≤ +70 °C)

Table 7-7: Input Parameters

	HART®	Fieldbus/PROFIBUS®
Voltage U _i	30 V	30 V
Current I _i	200 mA	300 mA
Power P _i	1 W	1.3 W
Capacitance C _i	12 nF	0
Inductance L _i	0	0

Special Conditions for Safe Use (X):

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding the 500 V insulation from earth test, and this must be taken into account during installation.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane finish; however, care should be taken to protect it from impact and abrasion when located in atmospheres that require EPL Ga.

IB Brazil FISCO

Certificate	UL-BR 14.0759X
Standards	ABNT NBR IEC 60079-0: 2008 + Errata 1: 2011; ABNT NBR IEC 60079-11: 2009
Markings	Ex ia IIC T4 Ga (-60 °C ≤ Ta ≤ +60 °C)

Table 7-8: Input Parameters

	FISCO
Voltage U_i	17.5 V
Current I_i	380 mA
Power P_i	5.32 W
Capacitance C_i	0 nF
Inductance L_i	0 μH

Special Conditions for Safe Use (X):

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding the 500 V insulation from earth test, and this must be taken into account during installation.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane finish; however, care should be taken to protect it from impact and abrasion when located in atmospheres that require EPL Ga.

7.8 China**China Flameproof**

Certificate	GYJ23.1236X; GYJ20.1485X [Flow meters]
Standards	GB/T 3836.1-2021, GB/T 3836.2-2021, GB 3836.20-2010

Markings Pressure transmitter: Ex db IIC T6...T4 Ga/Gb
 Flow meter: Ex d II C T6~T4 Ga/Gb

I3 China Intrinsic Safety

Certificate GYJ22.1834X; GYJ20.1487X [Flow meters]

Standards GB3/T 3836.1-2021, GB/T 3836.4-2021, GB3836.20-2010

Markings Ex ia IIC T4 Ga, FISCO: Ex iaIICT4 Ga, Ex db+ib/ibIICT4 Ga/Gb

7.9 Korea

EP Korea Flameproof

Certificate 12-KB4BO-0342X, 19-KB4BO-0978X

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

Special Conditions for Safe Use (X):

See certificate for special conditions.

IP Korea Intrinsic Safety

Certificate 12-KB4BO-0343X, 13-KB4BO-0207X, 18-KA4BO-0309X

Markings Ex ia IIC T4 (-60 °C ≤ Ta ≤ +70 °C)

Special Conditions for Safe Use (X):

See certificate for special conditions.

7.10 Japan

E4 Japan Flameproof

Certificate CML20JPN112X

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.

7.11 EAC

EM EAC Flameproof

Certificate	EAЭEC KZ 7500525.01.01.00647
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.

IM EAC Intrinsically Safe

Certificate	EAЭEC KZ 7500525.01.01.00647
Markings	0Ex ia IIC T4 Ga X (-60 °C ≤ Ta ≤ +70 °C)

Special Conditions for Safe Use (X):

See certificate for special conditions.

7.12 Combinations

K1	Combination of E1, I1, N1, and ND
K2	Combination of E2 and I2
K5	Combination of E5 and I5
K6	Combination of E6 and I6
K7	Combination of E7, I7, N7, and IECEx Dust

IECEx Dust

Certificate	IEC 60079-0: 2017, IEC 60079-31: 2013
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Standards	IEC 60079-0: 2011, IEC 60079-31: 2008
Markings	Ex ta IIIC T ₅₀₀ 105 °C Da (-20 °C ≤ Ta ≤ +85 °C)

Special Conditions for Safe Use (X):

1. If the equipment is fitted with an optional 90 V transient suppressor, it is incapable of withstanding a 500 V isolation from earth test, and this must be taken into account during installation.

KA	Combination of E1, I1, and K6
KB	Combination of K5 and K6
KC	Combination of E1, I1, and K5
KD	Combination of K1, K5, and K6
KP	Combination of EP and IP
KM	Combination of EM and IM

7.13 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.

7.14 Declaration of Conformity



EU DECLARATION OF CONFORMITY



This declaration of conformity is issued under the sole responsibility of

Rosemount Inc.
6021 Innovation Blvd
Shakopee, MN 55379
USA

that the following products,

Rosemount™ 2051 Series Pressure Transmitters

comply with the provisions of the European Union Directives, including the latest amendments, valid at the time this declaration was signed.


JUNE 27, 2024
Mark Lee | Vice President, Quality | Boulder, CO, USA
(signature & date of issue)
(name) (function) (place of issue)

Authorized Representative in Europe:
Emerson S.R.L., company No. J12/88/2006
Emerson 4 street, Parcul Industrial
Tetaram II, Cluj-Napoca 400638, Romania

Regulatory Compliance Shared Services Department
Email: europaeproductcompliance@emerson.com Phone: +40 374 132 035

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

Note – equipment manufactured prior to 20 October 2018 may be marked with the previous PED Notified Body number; previous PED Notified Body information was as follows: Det Norske Veritas (DNV) [Notified Body Number: 0375] Veritasveien 1, N-1322, Hovik, Norway

ATEX Notified Bodies for EU Type Examination Certificates:
DEKRA Certification B.V. [Notified Body Number: 0344]
Meander 1051, P.O. Box 5185,
6825 MJ ARNHEM 6802 ED ARNHEM
Netherlands Netherlands

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



EU DECLARATION OF CONFORMITY

**EMC Directive (2014/30/EU)**

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

PED Directive (2014/68/EU)

Rosemount 2051CD2, 3, 4, 5 (also with P9 option)
QS Certificate of Assessment - Certificate No. 12698-2018-CE-ACCREDIA
Module H Conformity Assessment

All other Rosemount 2051 Pressure Transmitters
Sound Engineering Practice

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

Rosemount 2051CFx DP Flowmeter
See DSI 1000 Declaration of Conformity

RoHS Directive (2011/65/EU)

Harmonized Standards:
EN IEC 63000:2018
Does not apply to the following options:
- Wireless output code X
- Low power output option code M

ATEX Directive (2014/34/EU)**EU-Type Examination Certificate: Baseefa08ATEX0129X**

Equipment protection by intrinsic safety "i"
Equipment Group II, Category 1 G
Ex ia IIC T4 Ga
Equipment Group II, Category 1/2 G
Ex db+ib/ib IIC T4 Ga/Gb

Harmonized Standards:
EN IEC 60079-0:2018
EN 60079-1:2014
EN 60079-11:2012
EN 60079-26:2015

EU-Type Examination Certificate: Baseefa08ATEX0130X

Equipment protection by type of protection "n"
Equipment Group II, Category 3 G
Ex nA IIC T4 Gc

Equipment protection by increased safety "e"
Equipment Group II, Category 3 G
Ex ec IIC T4 Gc

Harmonized Standards:
EN IEC 60079-0:2018
EN IEC 60079-7:2015+A1:2018
EN 60079-15:2010

EU-Type Examination Certificate: KEMA08ATEX0090X

Equipment protection by flameproof enclosure "d"
Equipment Group II, Category 1/2 G
Ex db IIC T6...T4 Ga/Gb

Harmonized Standards:
EN IEC 60079-0:2018
EN 60079-1:2014
EN 60079-26:2015

EU-Type Examination Certificate: Baseefa08ATEX0182X

Equipment dust ignition protection by enclosure "t"
Equipment Group II, Category 1 D
Ex ta IIIC T₃₀₀105°C Da

Harmonized Standards:
EN IEC 60079-0:2018
EN 60079-31:2014

7.15 China RoHS

有害物质成分表
03031-9021, Rev AB

罗斯蒙特产品型号 **2051**
3/29/2021

含有China RoHS管控物质超过最大浓度限值的部件型号列表 2051
List of 2051 Parts with China RoHS Concentration above MCVs

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

本表格系依据SJ/T11364的规定而制作。

This table is proposed in accordance with the provision of SJ/T11364.

O: 意为该部件的所有均质材料中该有害物质的含量均低于GB/T 26572所规定的限量要求。

O: Indicate that said hazardous substance in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

X: 意为在该部件所使用的所有均质材料里，至少有一类均质材料中该有害物质的含量高于GB/T 26572所规定的限量要求。

X: Indicate that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.

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



Quick Start Guide
00825-0400-4101, Rev. DD
November 2024

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

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ROSEMOUNT™

