

# Rosemount™ 3051 Pressure Transmitter

with PROFIBUS® PA Protocol





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# Rosemount™ 3051 Pressure Transmitter

## NOTICE

Read this manual before working with the product. For personal and system safety, and for optimum product performance, make sure you thoroughly understand the contents before installing, using, or maintaining this product.

For technical assistance, contacts are listed below:

### Customer Central

#### Technical support, quoting, and order-related questions.

United States - 1-800-999-9307 (7:00 am to 7:00 pm CST)

Asia Pacific- 65 777 8211

Europe/ Middle East/ Africa - 49 (8153) 9390

### North American Response Center

#### Equipment service needs.

1-800-654-7768 (24 hours—includes Canada)

Outside of these areas, contact your local Emerson™ Process Management representative.

## ⚠ CAUTION

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 Process Management Sales Representative.

## ⚠ WARNING

### Explosions could result in death or serious injury.

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

- In an Explosion-Proof/Flameproof installation, do not remove the transmitter covers when power is applied to the unit.

### Process leaks may cause harm or result in death.

- Install and tighten process connectors before applying pressure.

### 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.



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# Section 1 Introduction

## 1.1 Using this manual

The sections in this manual provide information on installing, operating, and maintaining the Rosemount™ 3051 Pressure Transmitter with PROFIBUS® PA Protocol. The sections are organized as follows:

[Section 2: Configuration](#) provides instruction on commissioning and operating Rosemount 3051 Transmitters. Information on software functions, configuration parameters, and online variables is also included.

[Section 3: Hardware Installation](#) contains mechanical installation instructions, and field upgrade options.

[Section 4: Electrical Installation](#) contains electrical installation instructions, and field upgrade options.

[Section 5: Calibration](#) contains operation and maintenance techniques.

[Section 6: Troubleshooting](#) provides troubleshooting techniques for the most common operating problems.

[Appendix A: Specifications and Reference Data](#) supplies reference and specification data, as well as ordering information.

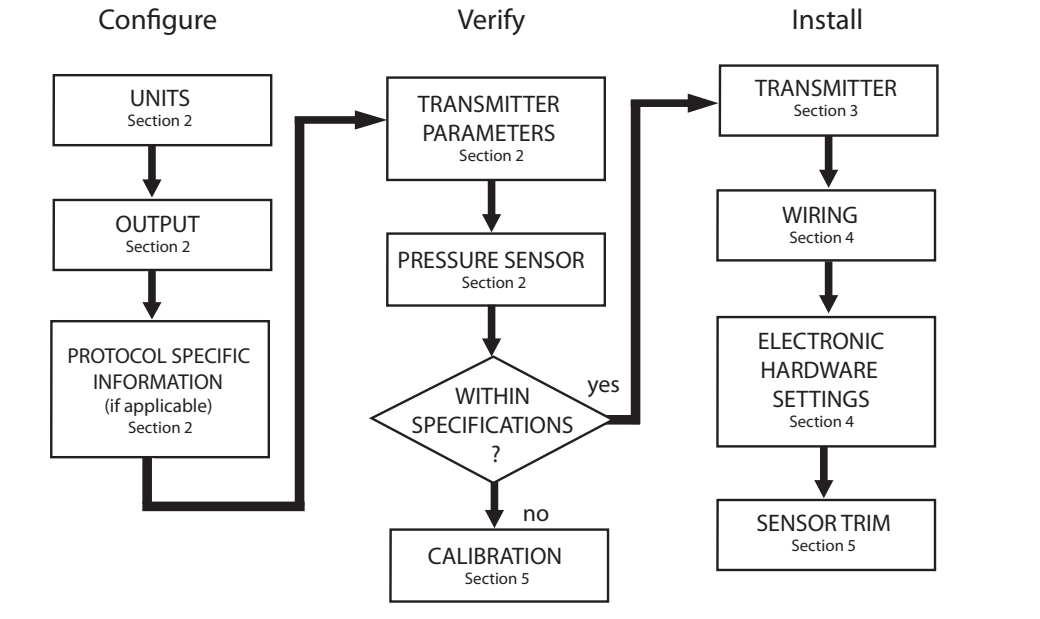
[Appendix B: Product Certifications](#) contains intrinsic safety approval information, European ATEX directive information, and approval drawings.

[Appendix C: Local Operator Interface \(LOI\) Menu](#) contains the complete local operator interface menu.

[Appendix D: PROFIBUS® Block Information](#) contains PROFIBUS block and parameter information.

## 1.2 Models covered

Figure 1-1. Commissioning and Installation Flowchart



The following Rosemount 3051 Pressure Transmitters are covered by this manual:

- Rosemount 3051C Coplanar™ Pressure Transmitter
- Rosemount 3051CD Differential Pressure Transmitter
  - Measures differential pressure up to 2000 psi (137,9 bar)
- Rosemount 3051CG Gage Pressure Transmitter
  - Measures gage pressure up to 2000 psi (137,9 bar)
- Rosemount 3051CA Absolute Pressure Transmitter
  - Measures absolute pressure up to 4000 psia (275,8 bar)
- Rosemount 3051T In-Line Pressure Transmitter

- Rosemount 3051T Gage and Absolute Pressure Transmitter
  - Measures gage pressure up to 10000 psi (689,5 bar)
- Rosemount 3051L Liquid Level Transmitter
  - Provides precise level and specific gravity measurements up to 300 psi (20,7 bar) for a wide variety of tank configurations

**Note**

For Rosemount 3051 with HART® Protocol, see Rosemount 3051 [Reference Manual](#).  
For Rosemount 3051 with FOUNDATION™ Fieldbus, see Rosemount 3051 [Reference Manual](#).

## 1.3 Device revisions

**Table 1-1. Device Revisions**

Date	Software revision	PROFIBUS profile	Compatible files	Manual revision
10/16	2.6.1	3.02	3051 GSD: rmt4444.gsd Profile 3.02 GSD: pa139700.gsd DD: ROPA3__TP_3051.ddl DTM: Pressure_PROFIBUS_3.02_DTM_v1.0.8.exe	DB

## 1.4 Transmitter overview

The Rosemount 3051C Coplanar design is offered for differential pressure (DP), gage pressure (GP), and absolute pressure (AP) measurements. The Rosemount 3051C utilizes Emerson Process Management capacitance sensor technology for DP and GP measurements. Piezoresistive sensor technology is utilized in the Rosemount 3051T and 3051CA measurements.

The major components of the Rosemount 3051 are the sensor module and the electronics housing. The sensor module contains the oil filled sensor system (isolating diaphragms, oil fill system, and sensor) and the sensor electronics. The sensor electronics are installed within the sensor module and include a temperature sensor (RTD), a memory module, and the capacitance to digital signal converter (C/D converter). The electrical signals from the sensor module are transmitted to the output electronics in the electronics housing. The electronics housing contains the output electronics board, the optional local operator interface (LOI) buttons, and the terminal block.

For the Rosemount 3051C design pressure is applied to the isolating diaphragms, the oil deflects the center diaphragm, which then changes the capacitance. This capacitance signal is then changed to a digital signal in the C/D converter. The microprocessor then takes the signals from the RTD and C/D converter calculates the correct output of the transmitter.

## 1.5 Product recycling/disposal

Recycling of equipment and packaging should be taken into consideration and disposed of in accordance with local and national legislation/regulations.



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## Section 2 Configuration

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### 2.1 Section overview

This section contains information on commissioning the Rosemount™ 3051 Pressure Transmitter with PROFIBUS® PA Protocol using either the local operator interface (LOI) or Class 2 Master.

### 2.2 Safety messages

Procedures and instructions in this section may require special precautions to ensure the safety of the personnel performing the operations. Information that raises potential safety issues is indicated by a warning symbol (⚠). Refer to the following safety messages before performing an operation preceded by this symbol.

#### **⚠ WARNING**

##### **Explosions could result in death or serious injury.**

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

- In an Explosion-Proof/Flameproof installation, do not remove the transmitter covers when power is applied to the unit.

##### **Process leaks may cause harm or result in death.**

- Install and tighten process connectors before applying pressure.

##### **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.
- 

### 2.3 Hazardous locations certifications

- ⚠ Individual transmitters are clearly marked with a tag indicating the approvals they carry. Transmitters must be installed in accordance with all applicable codes and standards to maintain these certified ratings. Refer to “Product Certifications” on page 143 for information on these approvals.

## 2.4 Configuration guidelines

The Rosemount 3051 can be configured either before or after installation. Configuring the transmitter on the bench using the LOI or Class 2 Master ensures that all transmitter components are in working order prior to installation.

To configure on the bench, required equipment includes a power supply, an LOI (option M4) or a Class 2 Master with DP/PA coupler, proper cable and terminators.

Verify the Security hardware jumper is set to the *OFF* position in order to proceed with configuration. See [Figure 4-2](#) for jumper location.

### 2.4.1 Profile 3.02 identification number adaptation mode

Rosemount 3051 PROFIBUS Profile 3.02 devices are set to Identification Number Adaptation mode (0127) when shipped from the factory. This mode allows the transmitter to communicate with any PROFIBUS Class 1 Master with either the generic Profile GSD (9700) or Rosemount 3051 specific GSD (4444).

### 2.4.2 Block modes

When configuring a device with the LOI, the output status will change to *Good – Function Check* to alert hosts that the transmitter is not in standard operation mode.

When configuring a device with a Class 2 Master, blocks must be set to *Out of Service (OOS)* to download parameters that could affect the output. This prevents the Class 1 Master from seeing a jump in output without a status change. Setting the blocks *OOS* and back into *Auto* might be done automatically using the Class 2 Master when using the Rosemount 3051 DD or DTM™, if no additional action is required when configuring the device. Verify the block mode is set back to *Auto*.

### 2.4.3 Configuration tools

The Rosemount 3051 can be configured using two tools: LOI and/or Class 2 Master.

The LOI requires option code M4 to be ordered. To activate the LOI, push either configuration button located under the top tag of the transmitter. See [Table 2-1](#) and [Figure 2-1](#) for operation and menu information. See [Appendix C: Local Operator Interface \(LOI\) Menu](#) for a complete LOI menu tree.

Class 2 Masters require either DD or DTM files for configuration. These files can be found at [EmersonProcess.com/Rosemount](http://EmersonProcess.com/Rosemount) or by contacting your local Emerson Process representative. Some configurations steps may need to be completed in offline mode or using the LOI.

The remainder of this section covers the configuration tasks using the applicable configuration tool.

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#### Note

Instructions in this section use the language found in the Class 2 Master or LOI. See [Appendix D: PROFIBUS® Block Information](#) to cross reference parameters between the Class 2 Master, LOI and PROFIBUS specification.

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## 2.5 Basic setup tasks

The following tasks are recommended for initial configuration of the Rosemount 3051 PROFIBUS Device.

### 2.5.1 Assign address

The Rosemount 3051 is shipped with a temporary address of 126. This must be changed to a unique value between 0 and 125 in order to establish communication with the Class 1 Master. Usually, addresses 0–2 are reserved for masters, therefore transmitter addresses between 3 and 125 are recommended for the device.

Address can be set using either:

- LOI – see [Table 2-1](#) and [Figure 2-1](#)
- Class 2 Master – see respective Class 2 Master manual for setting instrument addresses

### 2.5.2 Pressure configuration

The Rosemount 3051 ships with the following settings:

- Measurement type: Pressure
- Engineering units: Inches H<sub>2</sub>O
- Linearization: None
- Scaling: None

Each of these parameters can be set using,

- LOI – see [Table 2-1](#) and [Figure 2-1](#)
- Class 2 Master – see [Pressure configuration using Class 2 Master](#)



#### Pressure unit parameters

The LOI was designed to automatically set the following parameters when selecting a Pressure Unit:

- Measurement type: Pressure
- Linearization (Transducer Block): None
- Scaling: None

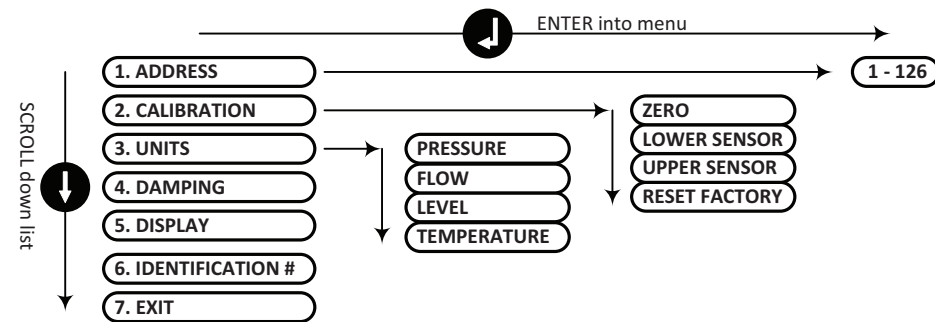
See Flow or Level Configuration for defaults when configuring with the LOI.

**Table 2-1. LOI Operation**

Button	Action	Navigation	Character entry	Save?
	Scroll	Moves down menu categories	Changes character value <sup>(1)</sup>	Changes between Save and Cancel
	Enter	Select menu category	Enters character and advances	Saves

1. Characters flash when they can be changed.

Figure 2-1. LOI Menu



**Note**

See [Appendix C: Local Operator Interface \(LOI\) Menu](#) for a more detailed LOI menu and unit list.

### Pressure configuration using Class 2 Master

1. From the *Basic Setup* >> *Units* >> *Primary Value* >> *Primary Value Type* dropdown, select **Pressure**.
2. Select units.

**Note**

Pressure units in steps [2a](#), [2b](#), and [2c](#) must match.

- a. From the *Basic Setup* >> *Units* >> *Primary Value* >> *Scale In (Transducer Block)* >> *Unit (Secondary Value 1)* dropdown, select engineering unit.
  - b. From the *Basic Setup* >> *Units* >> *Primary Value* >> *Unit (PV)* dropdown, select engineering unit.
  - c. From the *Basic Setup* >> *Units* >> *Output Signal (Analog Input Block)* >> *Unit (Out Scale)* dropdown, select engineering unit.
3. Enter scaling.

**Note**

Scaling is done in the Transducer Block.

- a. In the *Basic Setup* >> *Units* >> *Primary Value* >> *Scale In (Transducer Block)* field, enter upper and lower values (this value should correspond to the unit selected in step [2a](#)).
  - b. In the *Basic Setup* >> *Units* >> *Primary Value* >> *Scale Out (Transducer Block)* field, enter upper and lower values (this value should correspond to the unit selected in step [2b](#)).
4. Verify Analog Input (AI) Block.

**Note**

Scaling should not be repeated in the AI Block. To ensure no additional scaling is being done on the AI Block, set the lower values in steps [4a](#) and [4b](#) to 0 and the upper values to 100.

- a. In the *Basic Setup >> Units >> Process Value Scale (Analog Input Block)* field, enter upper and lower values (this value should correspond to the unit selected in step 2b).
- b. In the *Basic Setup >> Units >> Output Signal (Analog Input Block)* field, enter upper and lower values (this value should correspond to the unit selected in step 2c).
- c. From the *Basic Setup >> Units >> Output Signal (Analog Input Block) >> Linearization Type* dropdown, select **No Linearization**.

## 2.6 Detailed setup tasks

The following tasks explain how to configure the Rosemount 3051 for Flow or Level measurement and how to configure additional parameters found in the device.

### 2.6.1 Flow configuration

#### LOI

To configure the Rosemount 3051 for Flow measurement with the LOI, select **UNITS >> FLOW**. When configuring Flow units, the following parameters are set:

- Measurement type: Flow
- Linearization (Transducer Block): Square Root

During unit configuration, the user defines scaling, units and low flow cutoff per the application requirements. See [Appendix C: Local Operator Interface \(LOI\) Menu](#) for detailed menu for further scaling help.

#### Note

The LOI assumes a zero based scaling (minimum pressure = minimum flow = zero) for Flow applications in order to improve configuration efficiency. Class 2 Masters can be used if non-zero based scaling is required. Low flow cutoff has a default value of 5.0%. Low Flow cutoff can be set to 0% if required.

#### Class 2 Master

To configure the transmitter for a flow application, use the flow output in the Transducer Block.

#### Flow configuration using Class 2 Master

1. From the *Basic Setup >> Units >> Primary Value >> Primary Value Type* dropdown, select **Flow**.
2. Select units.

#### Note

Flow units in steps 2b and 2c must match.

- a. From the *Basic Setup >> Units >> Primary Value >> Scale In (Transducer Block) >> Unit (Secondary Value 1)* dropdown, select engineering unit.
  - b. From the *Basic Setup >> Units >> Primary Value >> Unit (PV)* dropdown, select engineering unit.
  - c. From the *Basic Setup >> Units >> Output Signal (Analog Input Block) >> Unit (Out Scale)* dropdown, select engineering unit.
3. Enter scaling.

---

**Note**

Scaling is done in the Transducer Block.

---

- a. In the *Basic Setup >> Units >> Primary Value >> Scale In (Transducer Block)* field, enter upper and lower values (this value should correspond to the unit selected in step 2a).
- b. In the *Basic Setup >> Units >> Primary Value >> Scale Out (Transducer Block)* field, enter upper and lower values (this value should correspond to the unit selected in step 2b).

4. Verify Analog Input (AI) Block.

---

**Note**

Scaling should always be done in the Transducer Block. Ensure the AI Block is always set to no linearization for flow applications. To ensure no additional scaling is being done on the AI Block, set the lower values in steps 4a and 4b to 0 and the upper values to 100.

---

- a. In the *Basic Setup >> Units >> Process Value Scale (Analog Input Block)* field, enter upper and lower values (this value should correspond to the unit selected in step 2b).
- b. In the *Basic Setup >> Units >> Output Signal (Analog Input Block)* field, enter upper and lower values (this value should correspond to the unit selected in Step 2c).
- c. From the *Basic Setup >> Units >> Output Signal (Analog Input Block) >> Linearization Type* dropdown, select **No Linearization**.

## 2.6.2 Square Root of DP Configuration

The Rosemount 3051 has two Pressure output settings: Linear and Square Root. Activate the square root output option to make output proportional to flow.

To configure the transmitter to output square root of differential pressure, a Class 2 Master must be used.

Square Root configuration using Class 2 Master

1. From the *Basic Setup >> Units >> Primary Value >> Primary Value Type* dropdown menu, select pressure.
2. Select Units.

---

**Note**

Pressure units in steps 2a, 2b, and 2c must match.

---

- a. From the *Basic Setup >> Units >> Primary Value >> Scale In (Transducer Block) >> Unit (Secondary Value 1)* dropdown, select engineering unit.
- b. From the *Basic Setup >> Units >> Primary Value >> Unit (PV)* dropdown, select engineering unit.
- c. From the *Basic Setup >> Units >> Output Signal (Analog Input Block) >> Unit (Out Scale)* dropdown, select engineering unit.

3. Enter scaling.

---

**Note**

Scaling is done in the Transducer Block. No scaling required for pressure measurement.

---

- a. In the *Basic Setup >> Units >> Primary Value >> Scale In (Transducer Block)* field, enter upper and lower values (this value should correspond to the unit selected in step 2a).
  - b. In the *Basic Setup >> Units >> Primary Value >> Scale Out (Transducer Block)* field, enter upper and lower values (this value should correspond to the unit selected in step 2b).
4. Verify Analog Input (AI) Block.

---

**Note**

Scaling should not be repeated in the Analog Input Block. To ensure no additional scaling is being done on the AI Block, set the lower values in steps 4a and 4b to 0 and the upper values to 100.

---

- a. In the *Basic Setup >> Units >> Process Value Scale (Analog Input Block)* field, enter upper and lower values (this value should correspond to the unit selected in step 2b).
- b. In the *Basic Setup >> Units >> Output Signal (Analog Input Block)* field, enter upper and lower values (this value should correspond to the unit selected in step 2c).
- c. From the *Basic Setup >> Units >> Output Signal (Analog Input Block) >> Linearization Type* dropdown, select **Square Root**.

## 2.6.3 Level configuration

### LOI

To configure the Rosemount 3051 for Level measurement with the LOI, select **UNITS >> LEVEL**. When configuring Level units, the following parameters are set:

- Measurement type: Level
- Linearization (Transducer Block): None

During unit configuration, the user defines scaling and units per the application requirements. See [Appendix C: Local Operator Interface \(LOI\) Menu](#) for detailed menu for further scaling help.

### Class 2 Master

To configure the transmitter for a level application, use the level output in the Transducer Block.

#### Level configuration using Class 2 Master

1. From the *Basic Setup >> Units >> Primary Value >> Primary Value Type* dropdown, select **Level**.
2. Select units.

---

**Note**

Level units in steps 2b, and 2c must match.

---

- a. From the *Basic Setup >> Units >> Primary Value >> Scale In (Transducer Block) >> Unit (Secondary Value 1)* dropdown, select engineering unit.
  - b. From the *Basic Setup >> Units >> Primary Value >> Unit (PV)* dropdown, select engineering unit.
  - c. From the *Basic Setup >> Units >> Output Signal (Analog Input Block) >> Unit (Out Scale)* dropdown, select engineering unit.
3. Enter scaling.

---

**Note**

Scaling is done in the Transducer Block.

---

- a. In the *Basic Setup >> Units >> Primary Value >> Scale In (Transducer Block)* field, enter upper and lower values (this value should correspond to the unit selected in step 2a).
  - b. In the *Basic Setup >> Units >> Primary Value >> Scale Out (Transducer Block)* field, enter upper and lower values (this value should correspond to the unit selected in step 2b).
4. Verify Analog Input (AI) Block.

---

**Note**

Scaling should not be repeated in the AI Block. To ensure no additional scaling is being done on the AI Block, set the lower values in steps 4a and 4b to 0 and the upper values to 100.

---

- a. In the *Basic Setup >> Units >> Process Value Scale (Analog Input Block)* field, enter upper and lower values (this value should correspond to the unit selected in step 2b).
- b. In the *Basic Setup >> Units >> Output Signal (Analog Input Block)* field, enter upper and lower values (this value should correspond to the unit selected in step 2c).
- c. From the *Basic Setup >> Units >> Output Signal (Analog Input Block) >> Characterization Type* dropdown, select **No Linearization**.

## 2.6.4 Damping

User-selected damping will affect the transmitters ability to respond to changes in the applied process. The Rosemount 3051 has a default damping value of 0.0 seconds applied in the analog input (AI) block.

Damping can be set using,

- LOI – see [Table 2-1](#) and [Figure 2-1](#)
- Class 2 Master – see [Damping configuration using Class 2 Master](#)

### Damping configuration using Class 2 Master

1. In the *Basic Setup >> Damping >> Filter Time Const* field, enter value (in seconds).

## 2.6.5 Process alerts

Process alerts activate an output alert status when the configured alert point is exceeded. A process alert will be transmitted continuously if the output set points are exceeded. The alert will reset once the value returns within range.

Process Alert parameters are defined as follows

- Upper alarm: Changes Output Status to Good – Critical Alarm – Hi Limit
- Upper warning: Changes Output Status to Good – Advisory Alarm – Hi Limit
- Lower warning: Changes Output Status to Good – Advisory Alarm – Lo Limit
- Lower alarm: Changes Output Status to Good – Critical Alarm – Lo Limit
- Alarm hysteresis: Amount the output value must pass back into range before alarm is cleared.

### Example

Upper alarm = 100 psi. Alarm hysteresis = 0.5%. After activation at 100 psi, the alarm will clear once the output goes below 99.5 psi = 100 – 0.5 psi.

Process alerts can be set using a Class 2 Master.

## Process alert configuration using Class 2 Master

1. Enter process alerts.
  - a. In the *Basic Setup* >> *Output* >> *Output Limits* >> *Upper Limit Alarm Limits* field, enter upper alarm value.
  - b. In the *Basic Setup* >> *Output* >> *Output Limits* >> *Upper Limit Warning Limits* field, enter upper warning value.
  - c. In the *Basic Setup* >> *Output* >> *Output Limits* >> *Lower Limit Alarm Limits* field, enter lower alarm value.
  - d. In the *Basic Setup* >> *Output* >> *Output Limits* >> *Lower Limit Warning Limits* field, enter lower warning value.
  - e. In the *Basic Setup* >> *Output* >> *Output Limits* >> *Limit Hysteresis* field, enter a percent of range value.

## 2.6.6 LCD display

The LCD display connects directly to the electronics board which maintains direct access to the signal terminals. A display cover is provided to accommodate the display.

The display always indicates the transmitter output (Pressure, Flow or Level) as well as abbreviated diagnostic status when applicable. Sensor temperature and pressure are optional variables that can be configured using LOI or Class 2 Master. When turned on, the display will alternate between the selected variables.

For LCD display configuration using,

- LOI – see [Table 2-1](#) and [Figure 2-1](#) on page 8
- Class 2 Master – see [LCD display configuration using Class 2 Master](#)

## LCD display configuration using Class 2 Master

In *Basic Setup* >> *Display Variables* >> *Local Operator Interface (LOI)* >> *Display Selection*, select the process variables to be shown on the local display.

## 2.6.7 Security

The Rosemount 3051 has a hierarchy of security features. The security jumper on the electronics board (or optional LCD display) provides the highest level of security. With the jumper in the ON position, all writes to the transmitter will be disabled (including writes from the LOI or a Class 2 Master).

See [Section 4: Electrical Installation](#) for details on jumper configuration.

## 2.6.8 LOI security

To prevent unauthorized changes, either set the security jumper to *ON* and/or set an LOI password (Refer to “[Configure security and simulation](#)” on page 36). The LOI password requires a user to enter a non-zero four digit password at the transmitter in order to operate the LOI.

These parameters can be set using a Class 2 Master.

### LOI security configuration using Class 2 Master

1. To turn on the LOI password, enter value in the *Basic Setup >> Display Variables >> Local Operator Interface (LOI) >> Password* field.
2. To turn off the LOI password, enter 0 in the *Basic Setup >> Display Variables >> Local Operator Interface (LOI) >> Password* field.

---

#### Note

Security jumper must be in the off position for the LOI to operate. The password appears after the LOI is activated using the local configuration buttons.

---

## 2.6.9 Simulation

The Rosemount 3051 has a simulation jumper located on the electronics board (or optional LCD display) that must be set to the *ON* position in order to simulate.

With the AI Block simulation enabled, the actual measurement value has no impact on the OUT value or the status.

### Simulation configuration using Class 2 Master

1. Set the simulation jumper to on.
2. To enable simulation, select the following in *Basic Setup >> Simulation*:
  - a. Select **Enabled**.
  - b. Enter *Simulation Value*.
  - c. Select **Simulation Status**.
  - d. Select **Transfer**.
3. To disable simulation, select the following in *Basic Setup >> Simulation*:
  - a. Select **Disabled**.
  - b. Select **Transfer**.
4. Set the simulation jumper to off.



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## Section 3 Hardware Installation

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Rosemount 305, 306 and 304 Manifolds .....	page 25
Liquid level measurement .....	page 31

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### 3.1 Section overview

The information in this section covers installation considerations for the Rosemount™ 3051 Pressure Transmitter with PROFIBUS® PA Protocol. A Quick Start Guide is shipped with every transmitter to describe pipe-fitting, wiring procedures and basic configuration for initial installation.

### 3.2 Safety messages

Procedures and instructions in this section may require special precautions to ensure the safety of the personnel performing the operations. Information that raises potential safety issues is indicated by a warning symbol (⚠). Refer to the following safety messages before performing an operation preceded by this symbol.

#### **⚠ WARNING**

##### **Explosions could result in death or serious injury.**

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

- In an Explosion-Proof/Flameproof installation, do not remove the transmitter covers when power is applied to the unit.

##### **Process leaks may cause harm or result in death.**

- Install and tighten process connectors before applying pressure.

##### **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.
- 

### 3.3 Installation considerations

Measurement accuracy depends upon proper installation of the transmitter and impulse piping. Mount the transmitter close to the process and use a minimum of piping to achieve best accuracy. Keep in mind the need for easy access, personnel safety, practical field calibration, and a suitable transmitter environment. Install the transmitter to minimize vibration, shock, and temperature fluctuation.

---

**Important**

Install the enclosed pipe plug (found in the box) in unused conduit opening. Engage a minimum of five threads to comply with explosion-proof requirements. Use a minimum of five threads engaged to comply with explosion-proof requirements. See [“Conduit entry threads” on page 17](#) for additional requirements.

For material compatibility considerations, see Material Selection [Technical Note](#).

---

### 3.3.1 Mechanical considerations

#### Steam service

For steam service or for applications with process temperatures greater than the limits of the transmitter, do not blow down impulse piping through the transmitter. Flush lines with the blocking valves closed and refill lines with water before resuming measurement.

#### Side mounted

When the transmitter is mounted on its side, position the coplanar flange to ensure proper venting or draining. Mount the flange as shown in [Figure 3-8 on page 22](#), keeping drain/vent connections on the bottom for gas service and on the top for liquid service.

### 3.3.2 Environmental considerations

Best practice is to mount the transmitter in an environment that has minimal ambient temperature change. The transmitter electronics temperature operating limits are  $-40$  to  $185$  °F ( $-40$  to  $85$  °C). Refer to [Appendix A: Specifications and Reference Data](#) that lists the sensing element operating limits. Mount the transmitter so that it is not susceptible to vibration and mechanical shock and does not have external contact with corrosive materials.

## 3.4 Installation procedures

### 3.4.1 Mount the transmitter

For dimensional drawing information, refer to [“Dimensional drawings” on page 132](#).

#### Process flange orientation

Mount the process flanges with sufficient clearance for process connections. For safety reasons, place the drain/vent valves so the process fluid is directed away from possible human contact when the vents are used. In addition, consider the need for a testing or calibration input.

#### Housing rotation

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

1. Loosen the housing rotation set screw using a  $\frac{5}{64}$ -in. hex wrench.
2. Turn the housing left or right maximum up to  $180^\circ$  from its original position.<sup>(1)</sup>

1. The Rosemount 3051C original position aligns with “H” side; Rosemount 3051T original position is the opposite side of bracket holes.

---

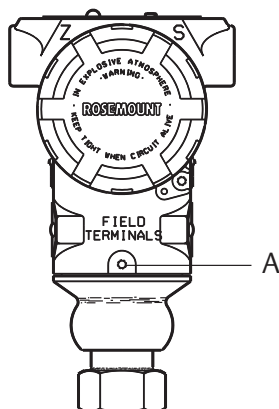
**Note**

Over rotating can damage the transmitter.

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3. Re-tighten the housing rotation set screw to no more than 7 in-lbs when desired location is reached.
- 

**Figure 3-1. Housing Rotation**



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

---

## Terminal side of electronics housing

Mount the transmitter so the terminal side is accessible. Clearance of 0.75-in. (19 mm) is required for cover removal. Use a conduit plug in the unused conduit opening.

## Circuit side of electronics housing

Provide 0.75-in. (19 mm) of clearance for units with out an LCD display. If LCD display is installed, mount for clear visibility. Three inches of clearance is required for LCD display cover removal.

## Conduit entry threads

For NEMA® 4X, IP66, and IP68 requirements, use thread seal (PTFE) tape or paste on male threads to provide a watertight seal.

## 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.

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

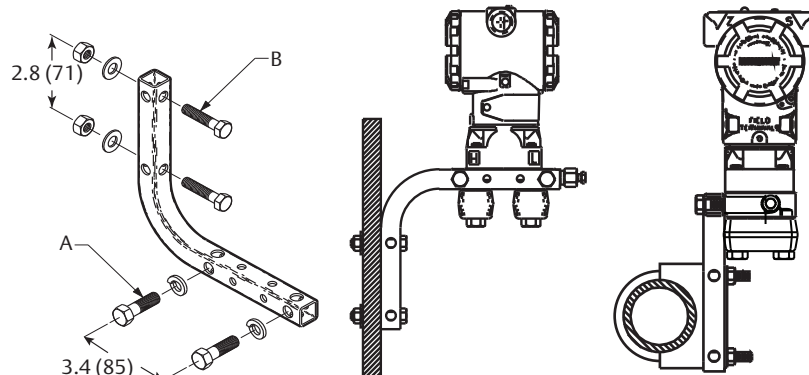
## Mounting brackets

Rosemount 3051 may be panel-mounted or pipe-mounted through an optional mounting bracket. Refer to [Table 3-1](#) for the complete offering and see [Figure 3-2](#) through [Figure 3-6](#) on pages 18 and 20 for dimensions and mounting configurations.

Table 3-1. Mounting Brackets

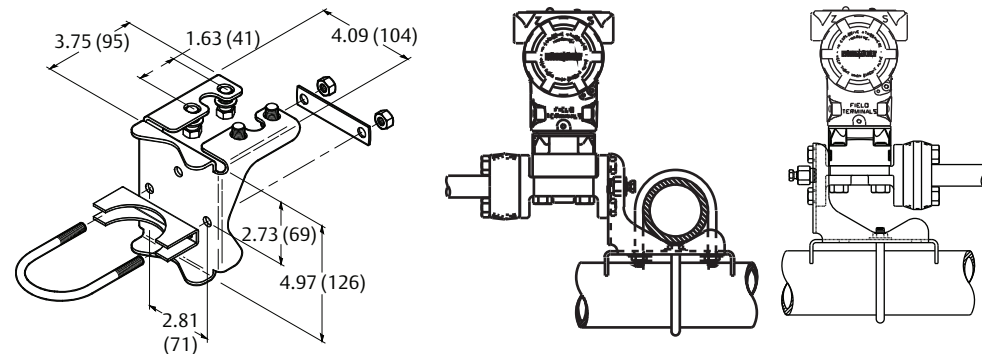
Option code	Process connections			Mounting			Materials			
	Coplanar	In-line	Traditional	Pipe mount	Panel mount	Flat Panel mount	CS bracket	SST bracket	CS bolts	SST bolts
B4	X	X		X	X	X		X		X
B1			X	X			X		X	
B2			X		X		X		X	
B3			X			X	X		X	
B7			X	X			X			X
B8			X		X		X			X
B9			X			X	X			X
BA			X	X				X		X
BC			X			X		X		X

Figure 3-2. Mounting Bracket Option Code B4



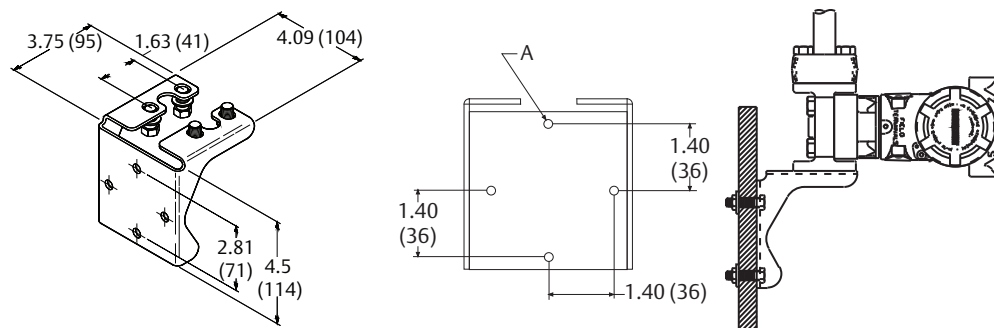
A.  $\frac{3}{8}$ -16  $\times$  1 $\frac{1}{4}$ -in. bolts for mounting to transmitter  
 B.  $\frac{5}{16}$   $\times$  1 $\frac{1}{2}$ -in. bolts for panel mounting (not supplied)  
 Dimensions are in inches (millimeters).

Figure 3-3. Mounting Bracket Option Codes B1, B7, and BA



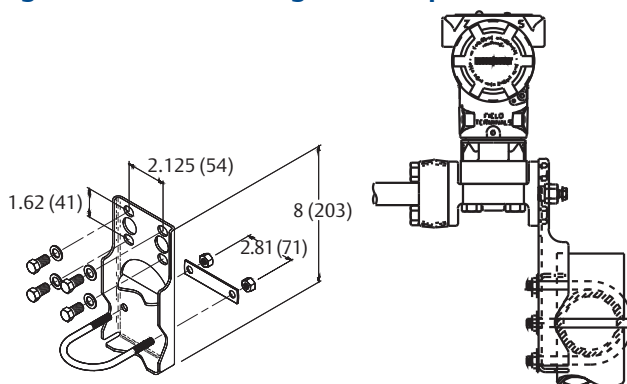
Dimensions are in inches (millimeters).

**Figure 3-4. Panel Mounting Bracket Option Codes B2 and B8**



A. Mounting holes 0.375 diameter (10)  
Dimensions are in inches (millimeters).

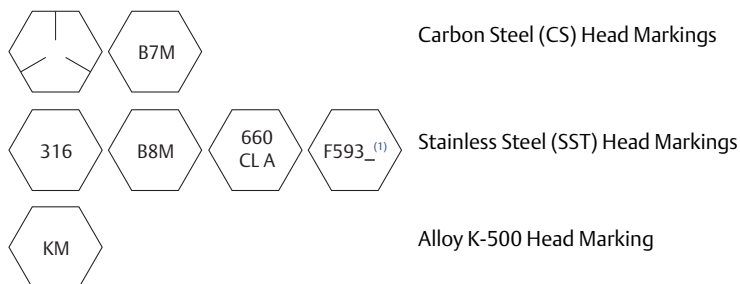
**Figure 3-5. Flat Mounting Bracket Option Codes B3 and BC**



Dimensions are in inches (millimeters).

## Flange bolts

The Rosemount 3051 can be shipped with a coplanar flange or a traditional flange installed with four 1.75-in. flange bolts. Mounting bolts and bolting configurations for the coplanar and traditional flanges can be found on [page 21](#). Stainless steel bolts supplied by Emerson™ Process Management are coated with a lubricant to ease installation. Carbon steel bolts do not require lubrication. No additional lubricant should be applied when installing either type of bolt. Bolts supplied by Emerson are identified by their head markings:



1. The last digit in the F593\_ head marking may be any letter between A and M.

## Bolt installation

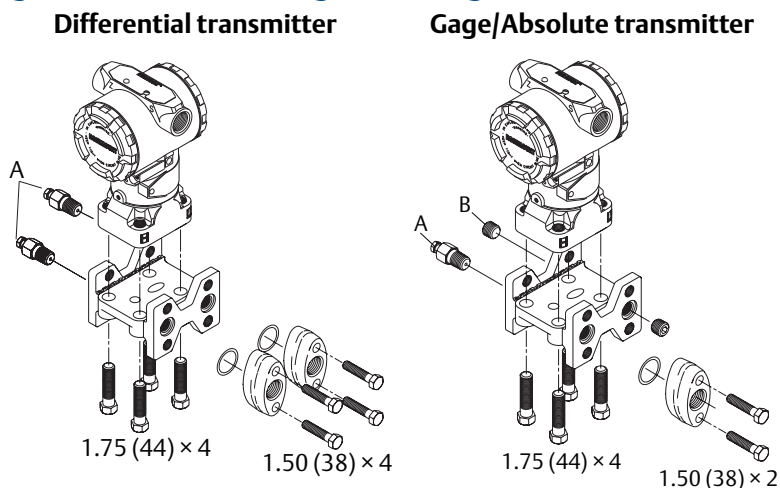
⚠ Only use bolts supplied with the Rosemount 3051 or sold by Emerson as spare parts for the Rosemount 3051 Transmitter. Use the following bolt installation procedure:

1. Finger-tighten the bolts.
2. Torque the bolts to the initial torque value using a crossing pattern (see [Table 3-2](#) for torque values).
3. Torque the bolts to the final torque value using the same crossing pattern.

**Table 3-2. Bolt Installation Torque Values**

Bolt material	Initial torque value	Final torque value
CS-ASTM-A445 Standard	300 in-lb (34 N-m)	650 in-lb (73 N-m)
316 SST—Option L4	150 in-lb (17 N-m)	300 in-lb (34 N-m)
ASTM-A-193-B7M—Option L5	300 in-lb (34 N-m)	650 in-lb (73 N-m)
Alloy 400—Option L6	300 in-lb (34 N-m)	650 in-lb (73 N-m)

**Figure 3-6. Traditional Flange Bolt Configurations**

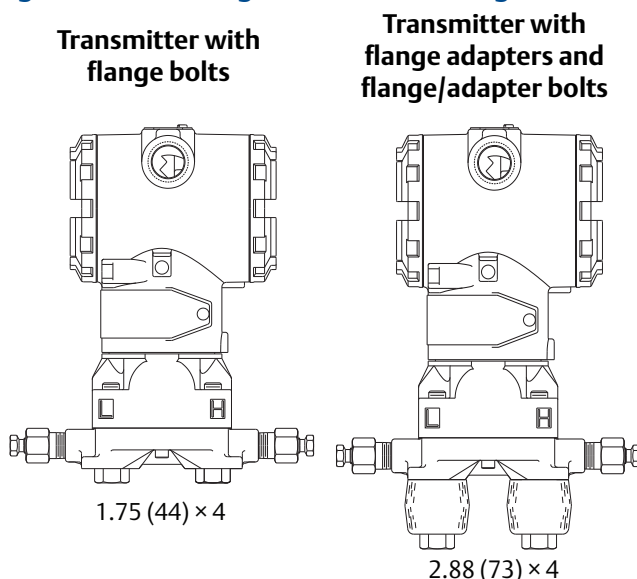


A. Drain/vent

B. Plug

Dimensions are in inches (millimeters).

**Figure 3-7. Mounting Bolts and Bolt Configurations for Coplanar Flange**



Dimensions are in inches (millimeters).

Description	Qty	Size (in. [mm])
<b>Differential pressure</b>		
Flange bolts	4	1.75 (44)
Flange/adaptor bolts	4	2.88 (73)
<b>Gage/absolute pressure <sup>(1)</sup></b>		
Flange bolts	4	1.75 (44)
Flange/adaptor bolts	2	2.88 (73)

1. Rosemount 3051T Transmitters are direct mount and do not require bolts for process connection.

## 3.4.2 Impulse piping

### Mounting requirements

Impulse piping configurations depend on specific measurement conditions. Refer to Figure 3-8 for examples of the following mounting configurations:

#### Liquid flow measurement

- Place taps to the side of the line to prevent sediment deposits on the transmitter's process isolators.
- Mount the transmitter beside or below the taps so gases can vent into the process line.
- Mount drain/vent valve upward to allow gases to vent.

#### Gas flow measurement

- Place taps in the top or side of the line.
- Mount the transmitter beside or above the taps so liquid will drain into the process line.

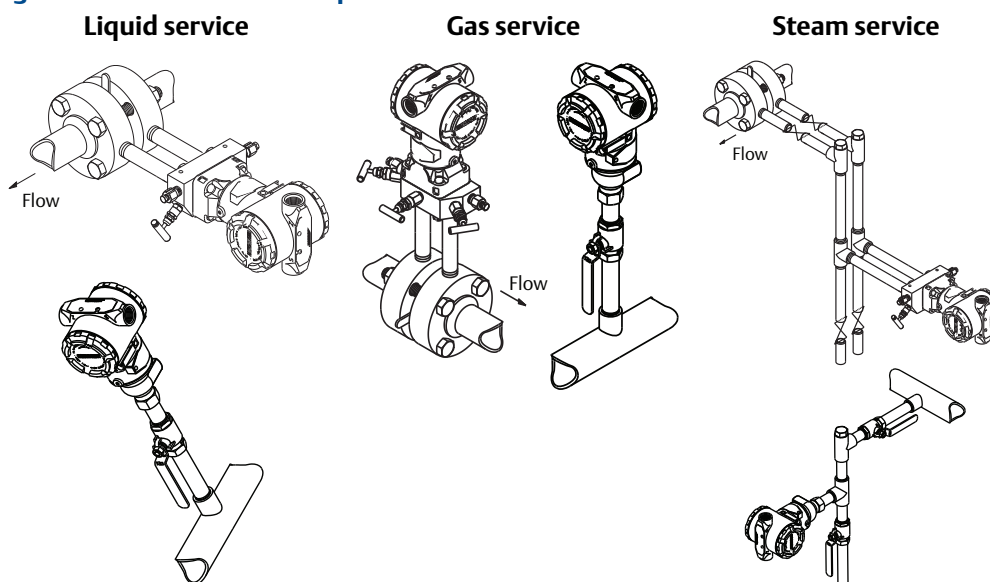
### Steam flow measurement

- Place taps to the side of the line.
- Mount the transmitter below the taps to ensure that the impulse piping will stay filled with condensate.
- In steam service above 250 °F (121 °C), fill impulse lines with water to prevent steam from contacting the transmitter directly and to ensure accurate measurement start-up.

#### Note

For steam or other elevated temperature services, it is important that temperatures at the process connection do not exceed the transmitter's process temperature limits.

**Figure 3-8. Installation Examples**



### Best practices

The piping between the process and the transmitter must accurately transfer the pressure to obtain accurate measurements. There are five possible sources of error: pressure transfer, leaks, friction loss (particularly if purging is used), trapped gas in a liquid line, liquid in a gas line, and density variations between the legs.

The best location for the transmitter in relation to the process pipe is dependent on the process. Use the following guidelines to determine transmitter location and placement of impulse piping:

- Keep impulse piping as short as possible.
- For liquid service, slope the impulse piping at least 1 in/ft (8 cm/m) upward from the transmitter toward the process connection.
- For gas service, slope the impulse piping at least 1 in/ft (8 cm/m) downward from the transmitter toward the process connection.
- Avoid high points in liquid lines and low points in gas lines.
- Make sure both impulse legs are the same temperature.
- Use impulse piping large enough to avoid friction effects and blockage.
- Vent all gas from liquid piping legs.



- When using a sealing fluid, fill both piping legs to the same level.
- When purging, make the purge connection close to the process taps and purge through equal lengths of the same size pipe. Avoid purging through the transmitter.
- Keep corrosive or hot (above 250 °F [121 °C]) process material out of direct contact with the sensor module and flanges.
- Prevent sediment deposits in the impulse piping.
- Maintain equal leg of head pressure on both legs of the impulse piping.
- Avoid conditions that might allow process fluid to freeze within the process flange.

### 3.4.3 Process connections

#### Coplanar or traditional process connection

⚠ Install and tighten all four flange bolts before applying pressure, or process leakage will result. When properly installed, the flange bolts will protrude through the top of the sensor module housing. Do not attempt to loosen or remove the flange bolts while the transmitter is in service.

#### ⚠ Flange adapters

Rosemount 3051DP and GP process connections on the transmitter flanges are 1/4–18 NPT. Flange adapters are available with standard 1/2–14 NPT Class 2 connections. The flange adapters allow users to disconnect from the process by removing the flange adapter bolts. Use plant-approved lubricant or sealant when making the process connections. Refer to “[Dimensional drawings](#)” on [page 132](#) for the distance between pressure connections. This distance may be varied  $\pm 1/8$ -in. (3.2 mm) by rotating one or both of the flange adapters.

To install adapters to a coplanar flange, perform the following procedure:

1. Remove the flange bolts.
2. Leaving the flange in place, move the adapters into position with the O-ring installed.
3. Clamp the adapters and the coplanar flange to the transmitter sensor module using the larger of the bolts supplied.
4. Tighten the bolts. Refer to “[Flange bolts](#)” on [page 19](#) for torque specifications.

Whenever removing flanges or adapters, visually inspect the PTFE O-rings. Replace with O-ring designed for Rosemount transmitter if there are any signs of damage, such as nicks or cuts. Undamaged O-rings may be reused. If you replace the O-rings, retorque the flange bolts after installation to compensate for cold flow. Refer to the process sensor body reassembly procedure in [Section 6: Troubleshooting](#).

⚠ When compressed, PTFE O-rings tend to “cold flow,” which aids in their sealing capabilities.

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#### Note

PTFE O-rings should be replaced if the flange adapter is removed.

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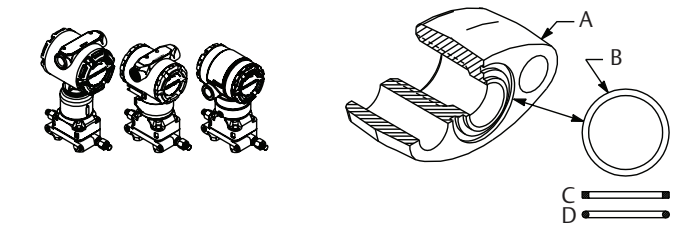
## O-rings

The two styles of Rosemount flange adapters (Rosemount 1151 and Rosemount 3051S/3051/2051) each require a unique O-ring. Use only the O-ring designed for the corresponding flange adapter.

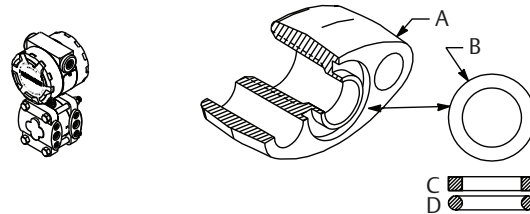
### ⚠ WARNING

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 designed for its specific flange adapter, as shown below:

Rosemount 3051S/3051/2051



Rosemount 1151



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

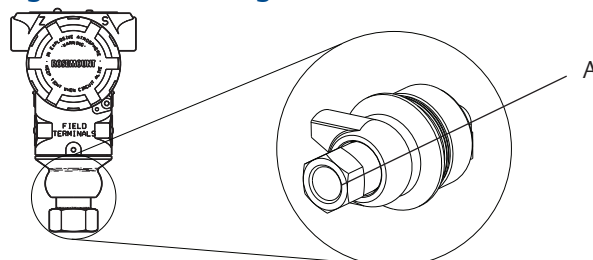
## 3.4.4 In-line process connection

### In-line gage transmitter orientation

The low side pressure port on the in-line 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 3-9).

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

**Figure 3-9. In-line Gage Low Side Pressure Port**



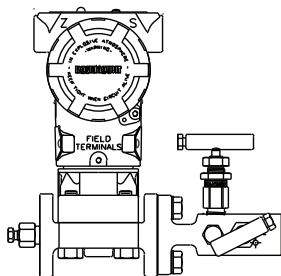
- A. Low side pressure port (atmospheric reference)

## 3.5 Rosemount 305, 306 and 304 Manifolds

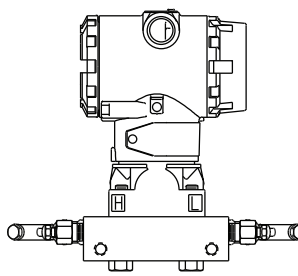
The Rosemount 305 Integral Manifold is available in two designs: traditional and coplanar. The traditional Rosemount 305 Integral Manifold can be mounted to most primary elements with mounting adapters in the market today. The Rosemount 306 Integral Manifold is used with the Rosemount 3051T In-line Transmitters to provide block-and-bleed valve capabilities of up to 10000 psi (690 bar).

Figure 3-10. Manifolds

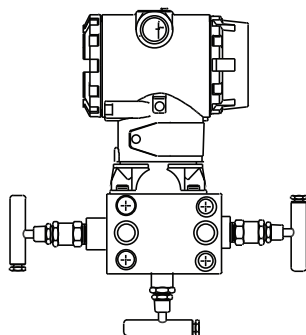
Rosemount 3051C and  
Rosemount 304 Conventional



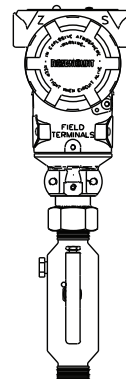
Rosemount 3051C and  
Rosemount 305 Integral Coplanar



Rosemount 3051C and  
Rosemount 305 Integral Traditional




Rosemount 3051T and  
Rosemount 306 In-line



### 3.5.1 Rosemount 305 Integral Manifold installation procedure

To install a Rosemount 305 Integral Manifold to a Rosemount 3051 Transmitter:

1.  Inspect the PTFE sensor module O-rings. Undamaged O-rings may be reused. If the O-rings are damaged (if they have nicks or cuts, for example), replace with O-rings designed for Rosemount transmitter.

#### Important

If replacing the O-rings, take care not to scratch or deface the O-ring grooves or the surface of the isolating diaphragm while you remove the damaged O-rings.

2. Install the integral manifold on the sensor module. Use the four 2.25-in. manifold bolts for alignment. Finger tighten the bolts, then tighten the bolts incrementally in a cross pattern to final torque value. See “Flange bolts” on page 19 for complete bolt installation information and torque values. When fully tightened, the bolts should extend through the top of the sensor module housing.

- If the PTFE sensor module O-rings have been replaced, the flange bolts should be re-tightened after installation to compensate for cold flow of the O-rings.

**Note**

Always perform a zero trim on the transmitter/manifold assembly after installation to eliminate mounting effects.

## 3.5.2 Rosemount 306 Integral Manifold installation procedure

The Rosemount 306 Manifold is for use only with a Rosemount 3051T In-line Transmitter.



Assemble the Rosemount 306 Manifold to the Rosemount 3051T In-line Transmitter with a thread sealant.

## 3.5.3 Rosemount 304 Conventional Manifold installation procedure

To install a Rosemount 304 Conventional Manifold to a Rosemount 3051 Transmitter:

- Align the conventional manifold with the transmitter flange. Use the four manifold bolts for alignment.
- Finger tighten the bolts, then tighten the bolts incrementally in a cross pattern to final torque value. See “Flange bolts” on page 19 for complete bolt installation information and torque values. When fully tightened, the bolts should extend through the top of the sensor module housing.
- Leak-check assembly to maximum pressure range of transmitter.

## 3.5.4 Manifold operation

### **⚠ WARNING**

Improper installation or operation of manifolds may result in process leaks, which may cause death or serious injury.

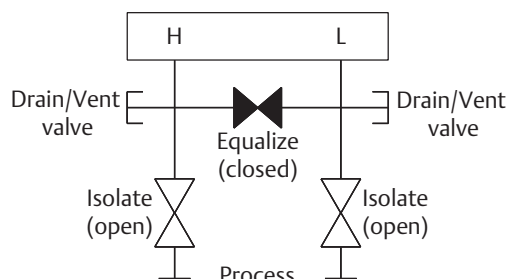
Always perform a zero trim on the transmitter/manifold assembly after installation to eliminate any shift due to mounting effects. See “Sensor trim” on page 44.

## Coplanar transmitters

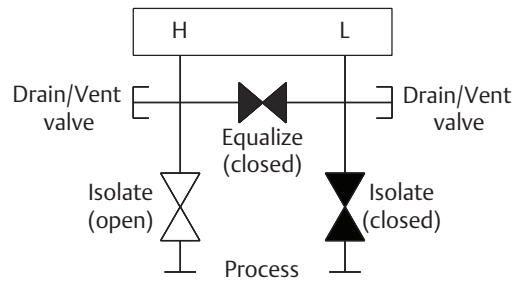
### 3-valve and 5-valve manifolds

#### Performing zero trim at static line pressure

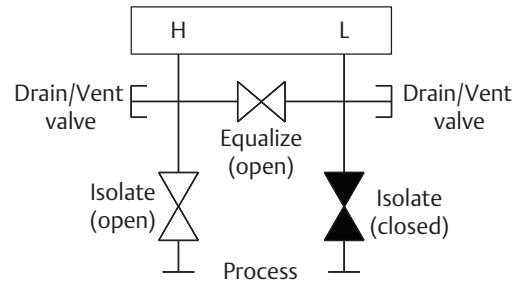
In normal operation the two isolate (block) valves between the process ports and transmitter will be open and the equalize valve will be closed.



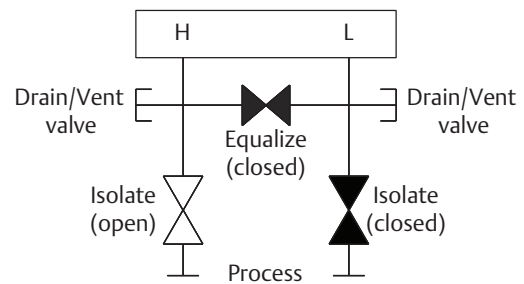
1. To zero trim the transmitter, close the isolate valve on the low side (downstream) side of the transmitter.



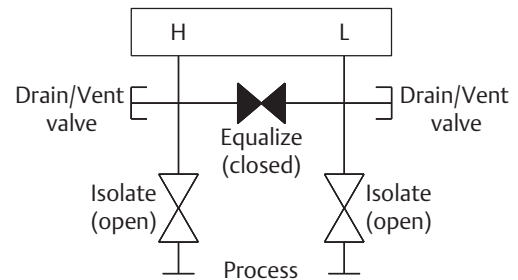
2. Open the equalize valve to equalize the pressure on both sides of the transmitter. The manifold is now in the proper configuration for performing a zero trim on the transmitter.



3. After performing a zero trim on the transmitter, close the equalize valve.



4. Finally, to return the transmitter to service, open the low side isolate valve.



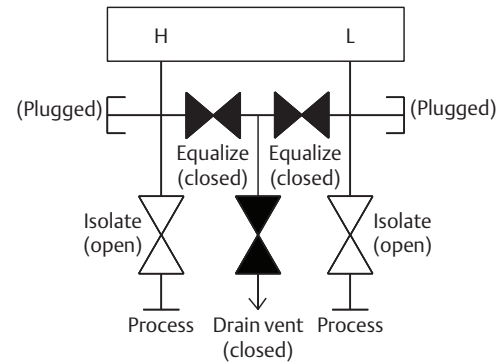
## 5-valve natural gas manifold

### Performing zero trim at static line pressure

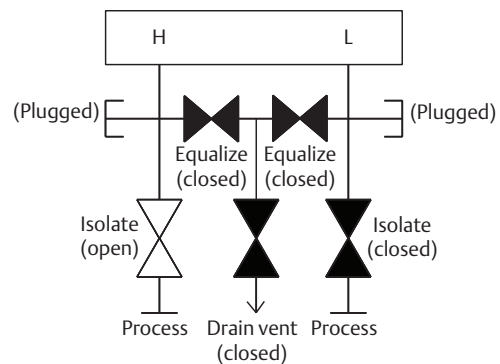
5-valve natural gas configurations shown:

In normal operation, the two isolate (block) valves between the process ports and transmitter will be open, and the equalize valves will be closed. Vent valves may be opened or closed.

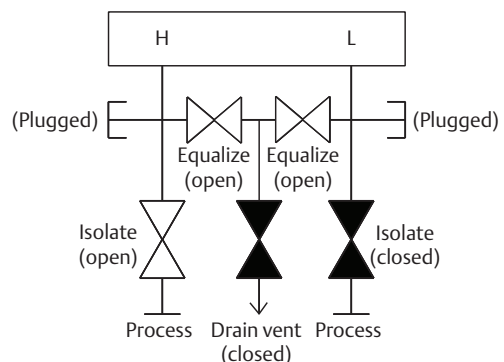
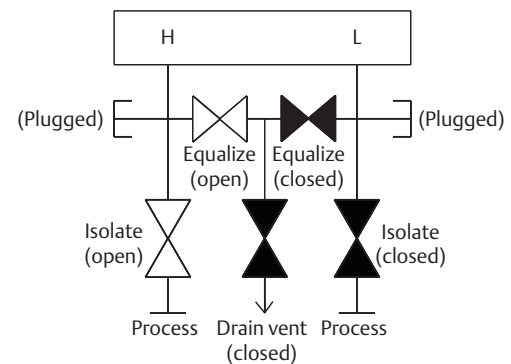
1. To zero trim the transmitter, first close the isolate valve on the low pressure (downstream) side of the transmitter and the vent valve.



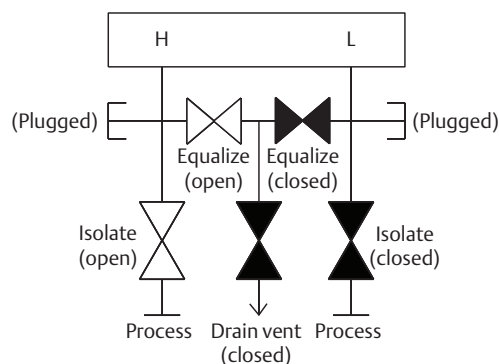
2. Open the equalize valve on the high pressure (upstream) side of the transmitter.



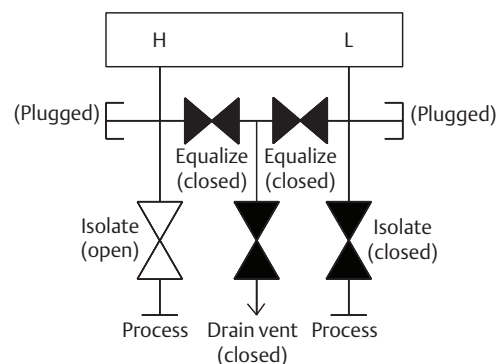
3. Open the equalize valve on the low pressure (downstream) side of the transmitter. The manifold is now in the proper configuration for performing a zero trim on the transmitter.



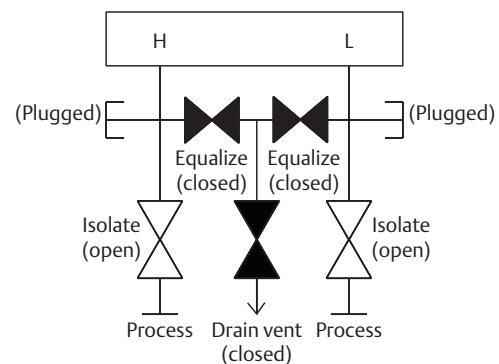
- After performing a zero trim on the transmitter, close the equalize valve on the low pressure (downstream) side of the transmitter.



- Close the equalize valve on the high pressure (upstream) side.



- Finally, to return the transmitter to service, open the low side isolate valve and vent valve. The vent valve can remain open or closed during operation.

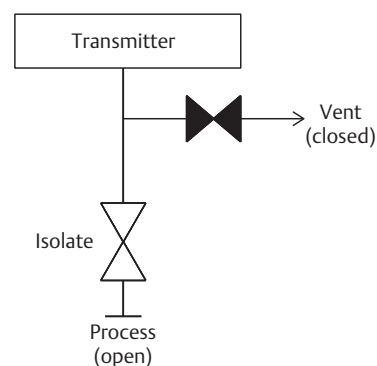


## In-line transmitters

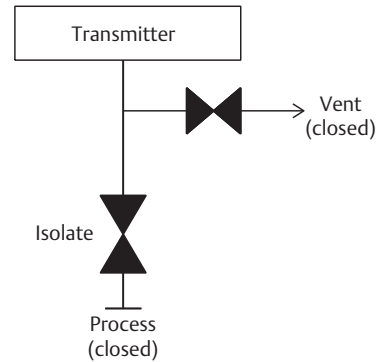
### 2-valve and block and bleed style manifolds

#### Isolating the transmitter

In normal operation the isolate (block) valve between the process port and transmitter will be open and the test/vent valve will be closed. On a block and bleed style manifold, a single block valve provides transmitter isolation and a bleed screw provides drain/vent capabilities.




1. To isolate the transmitter, close the isolate valve.

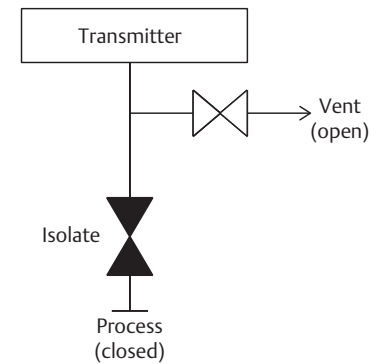


2. To bring the transmitter to atmospheric pressure, open the vent valve or bleed screw.

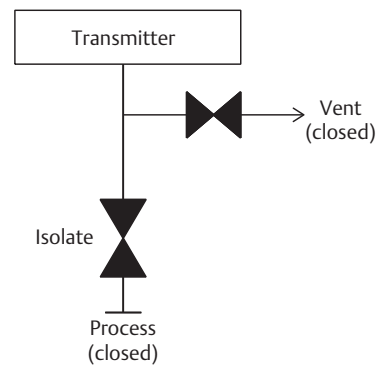
**Note**

A 1/4-in. male NPT pipe plug may be installed in the test/vent port and will need to be removed with a wrench in order to vent the manifold properly.

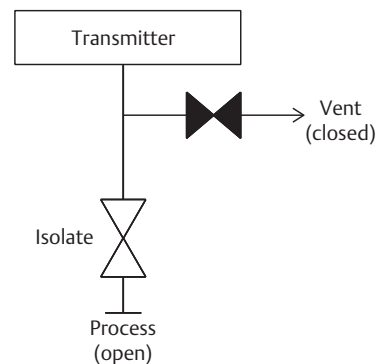
 Always use caution when venting directly to atmosphere.



3. After venting to atmosphere, perform any required calibration and then close the test/vent valve or replace the bleed screw.



4. Open the Isolate (block) valve to return the transmitter to service.





## Adjusting valve packing

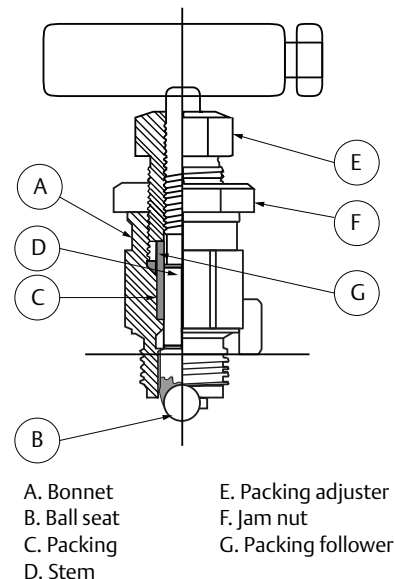
Over time, the packing material inside a Rosemount manifold may require adjustment in order to continue to provide proper pressure retention. Not all Rosemount manifolds have this adjustment capability. The Rosemount manifold model number will indicate what type of stem seal or packing material has been used.

The following steps are provided as a procedure to adjust valve packing:

1. Remove all pressure from device.
2. Loosen manifold valve jam nut.
3. Tighten manifold valve packing adjuster nut  $1/4$  turn.
4. Tighten manifold valve jam nut.
5. Re-apply pressure and check for leaks.

Above steps can be repeated, if necessary. If the above procedure does not result in proper pressure retention, the complete manifold should be replaced.

**Figure 3-11. Valve Components**



## 3.6 Liquid level measurement

Differential pressure transmitters used for liquid level applications measure hydrostatic pressure head. Liquid level and specific gravity of a liquid are factors in determining pressure head. This pressure is equal to the liquid height above the tap multiplied by the specific gravity of the liquid. Pressure head is independent of volume or vessel shape.

### 3.6.1 Open vessels

A pressure transmitter mounted near a tank bottom measures the pressure of the liquid above.

Make a connection to the high pressure side of the transmitter, and vent the low pressure side to the atmosphere. Pressure head equals the liquid's specific gravity multiplied by the liquid height above the tap.

Zero range suppression is required if the transmitter lies below the zero point of the desired level range. Figure 3-12 shows a liquid level measurement example.

### 3.6.2 Closed vessels

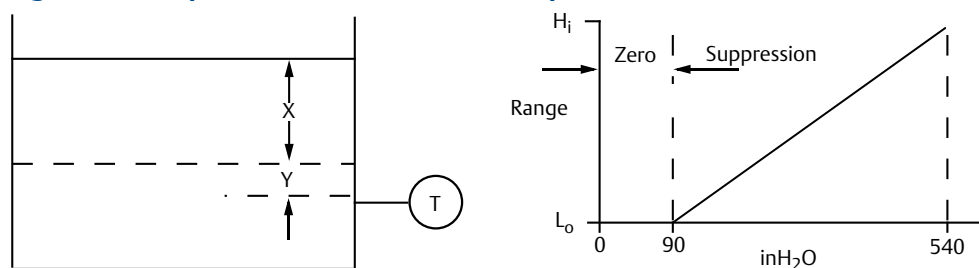
Pressure above a liquid affects the pressure measured at the bottom of a closed vessel. The liquid specific gravity multiplied by the liquid height plus the vessel pressure equals the pressure at the bottom of the vessel.

To measure true level, the vessel pressure must be subtracted from the vessel bottom pressure. To do this, make a pressure tap at the top of the vessel and connect this to the low side of the transmitter. Vessel pressure is then equally applied to both the high and low sides of the transmitter. The resulting differential pressure is proportional to liquid height multiplied by the liquid specific gravity.

#### Dry leg condition

Low-side transmitter piping will remain empty if gas above the liquid does not condense. This is a dry leg condition. Range determination calculations are the same as those described for bottom-mounted transmitters in open vessels, as shown in Figure 3-12.

**Figure 3-12. Liquid Level Measurement Example**



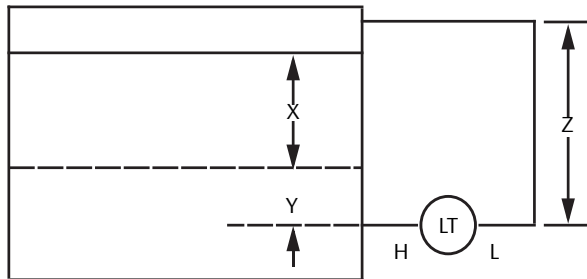
Let **X** equal the vertical distance between the minimum and maximum measurable levels (500-in.).  
 Let **Y** equal the vertical distance between the transmitter datum line and the minimum measurable level (100-in.).  
 Let **SG** equal the specific gravity of the fluid (0.9).  
 Let **h** equal the maximum head pressure to be measured in inches of water.  
 Let **e** equal head pressure produced by **Y** expressed in inches of water.  
 Let **Range** equal **e** to **e + h**.  
 Then  $h = (X)(SG)$   
 $= 500 \times 0.9$   
 $= 450 \text{ inH}_2\text{O}$   
 $e = (Y)(SG)$   
 $= 100 \times 0.9$   
 $= 90 \text{ inH}_2\text{O}$   
**Range** = 90 to 540 inH<sub>2</sub>O

## Wet leg condition

Condensation of the gas above the liquid slowly causes the low side of the transmitter piping to fill with liquid. The pipe is purposely filled with a convenient reference fluid to eliminate this potential error. This is a wet leg condition.

The reference fluid will exert a head pressure on the low side of the transmitter. Zero elevation of the range must then be made. See Figure 3-13.

Figure 3-13. Wet Leg Example



Let **X** equal the vertical distance between the minimum and maximum measurable levels (500-in.).  
Let **Y** equal the vertical distance between the transmitter datum line and the minimum measurable level (50-in.).  
Let **z** equal the vertical distance between the top of the liquid in the wet leg and the transmitter datum line (600-in.).

Let **SG<sub>1</sub>** equal the specific gravity of the fluid (1.0).

Let **SG<sub>2</sub>** equal the specific gravity of the fluid in the wet leg (1.1).

Let **h** equal the maximum head pressure to be measured in inches of water.

Let **e** equal the head pressure produced by **Y** expressed in inches of water.

Let **s** equal head pressure produced by **z** expressed in inches of water.

Let **Range** equal **e - s** to **h + e - s**.

Then **h = (X)(SG<sub>1</sub>)**

$$= 500 \times 1.0$$

$$= 500 \text{ in H}_2\text{O}$$

**e = (Y)(SG<sub>1</sub>)**

$$= 50 \times 1.0$$

$$= 50 \text{ in H}_2\text{O}$$

**s = (z)(SG<sub>2</sub>)**

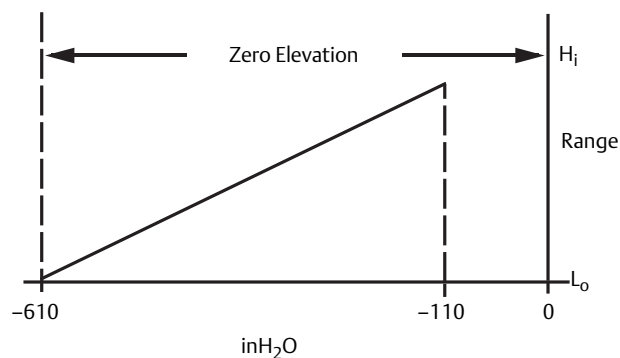
$$= 600 \times 1.1$$

$$= 660 \text{ in H}_2\text{O}$$

**Range = e - s** to **h + e - s**.

$$= 50 - 660 \text{ to } 500 + 50 - 660$$

$$= -610 \text{ to } -110 \text{ in H}_2\text{O}$$

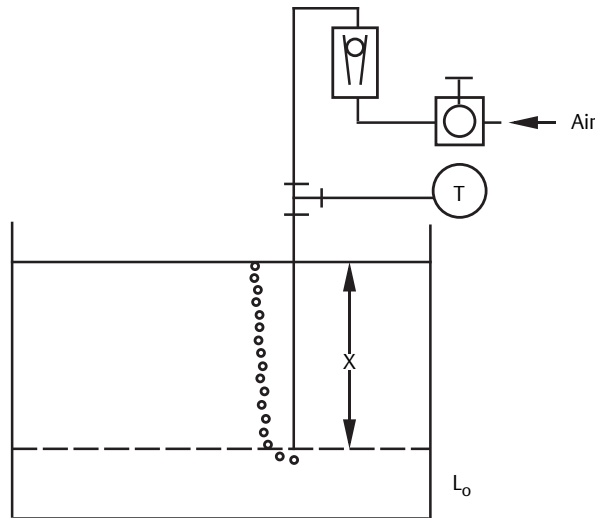


## Bubbler system in open vessel

A bubbler system that has a top-mounted pressure transmitter can be used in open vessels. This system consists of an air supply, pressure regulator, constant flow meter, pressure transmitter, and a tube that extends down into the vessel.

Bubble air through the tube at a constant flow rate. The pressure required to maintain flow equals the liquid's specific gravity multiplied by the vertical height of the liquid above the tube opening. Figure 3-14 shows a bubbler liquid level measurement example.

**Figure 3-14. Bubbler Liquid Level Measurement Example**



Let **X** equal the vertical distance between the minimum and maximum measurable levels (100-in.).

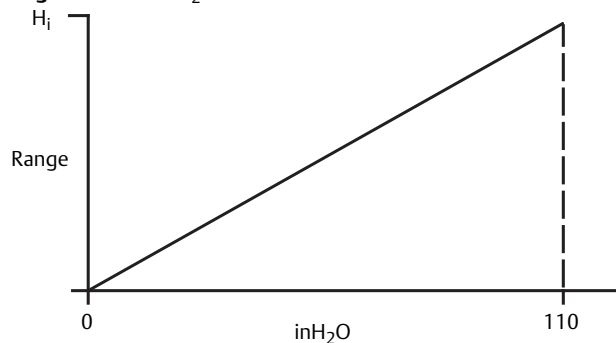
Let **SG** equal the specific gravity of the fluid (1.1).

Let **h** equal the maximum head pressure to be measured in inches of water.

Let **Range** equal **zero** to **h**.

$$\begin{aligned} \text{Then } h &= (\mathbf{X})(\mathbf{SG}) \\ &= 100 \times 1.1 \\ &= 110 \text{ inH}_2\text{O} \end{aligned}$$

**Range** = 0 to 110 inH<sub>2</sub>O



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## Section 4 Electrical Installation

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LCD display .....	page 36
LCD display with local operator interface (LOI) .....	page 36
Configure security and simulation .....	page 36
Electrical considerations .....	page 37

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### 4.1 Section overview

The information in this section covers installation considerations for the Rosemount™ 3051 Pressure Transmitter with PROFIBUS® PA Protocol. A Quick Start Guide is shipped with every transmitter to describe pipe-fitting, wiring procedures and basic configuration for initial installation.

### 4.2 Safety messages

Procedures and instructions in this section may require special precautions to ensure the safety of the personnel performing the operations. Information that raises potential safety issues is indicated by a warning symbol (⚠). Refer to the following safety messages before performing an operation preceded by this symbol.

#### **⚠ WARNING**

##### **Explosions could result in death or serious injury.**

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

- In an Explosion-Proof/Flameproof installation, do not remove the transmitter covers when power is applied to the unit.

##### **Process leaks may cause harm or result in death.**

- Install and tighten process connectors before applying pressure.

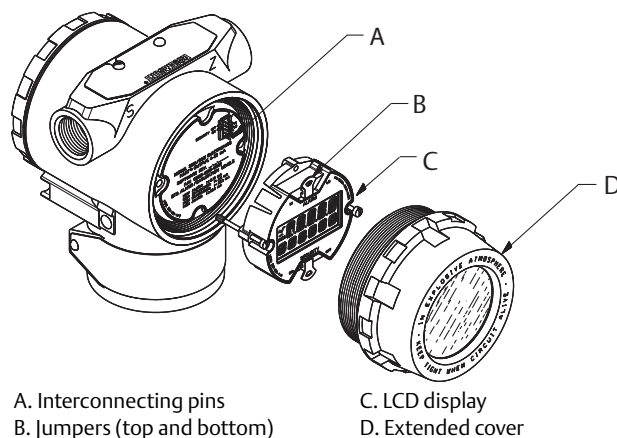
##### **Electrical shock can result in death or serious injury.**

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

## 4.3 LCD display

Transmitters ordered with the LCD display option (M5) are shipped with the display installed. Installing the display on an existing Rosemount 3051 requires a small instrument screwdriver.

Figure 4-1. LCD Display



## 4.4 LCD display with local operator interface (LOI)

Transmitters ordered with the LCD display with LOI option (M4) are shipped with the display and local configuration buttons installed. The configuration buttons are located under the top tag as indicated by the sticker. See [Table 2-1](#) for LOI operation. Upgrading to an LOI transmitter requires installation of a new electronics board, configuration buttons and LCD display (if not previously ordered).

## 4.5 Configure security and simulation

### 4.5.1 Security (write protect)

There are four security methods with the Rosemount 3051 Transmitter:

1. Security jumper: prevents all writes to transmitter configuration, including use of the LOI.
2. Software Write Protection: prevents all writes to the transmitter configuration using a Class 2 Master.
3. Disable Local Operator Interface: prevents changes to transmitter range points using local configuration buttons.
4. LOI password: Requires a four-digit password before changes can be made locally.

You can prevent changes to the transmitter configuration data with the write protection jumper. Security is controlled by the security (write protect) jumper located on the electronics board or LCD display. Position the jumper on the transmitter circuit board in the *ON* position to prevent accidental or deliberate change of configuration data.

If the transmitter write protection jumper is in the *ON* position, the transmitter will not accept any “writes” to its memory.

**Note**

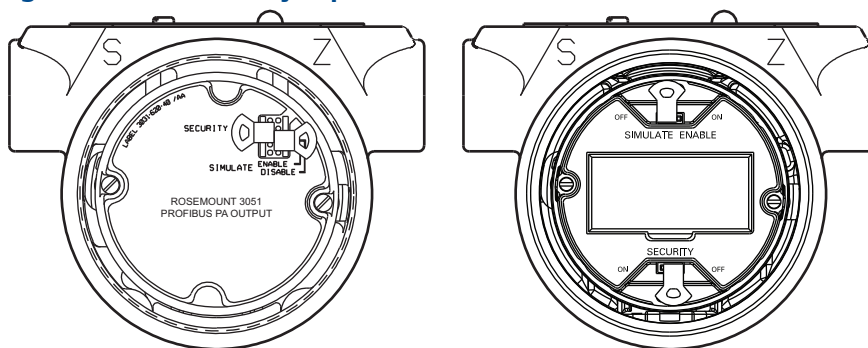
If the security jumper is not installed, the transmitter will continue to operate in the security *OFF* configuration.

## 4.5.2 Simulate

The Rosemount 3051 has a simulate jumper located on the electronics board (or optional LCD display) that must be set to the *ON* position in order to activate simulate mode using a Class 2 Master.

See [Section 2: Configuration](#) for details on *Simulate* mode.

**Figure 4-2. Transmitter Jumper Locations**



## 4.6 Electrical considerations

Make sure all electrical installation is in accordance with national and local code requirements.

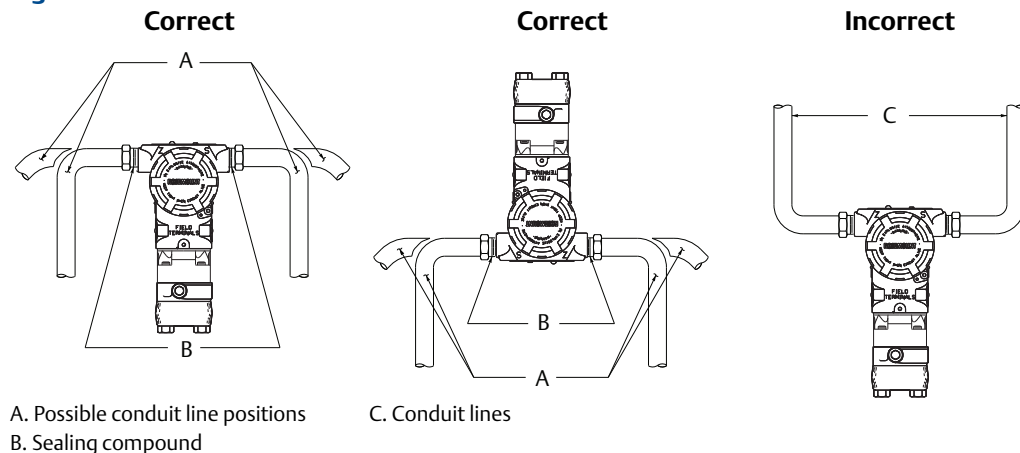
### 4.6.1 Conduit installation

Recommended conduit connections are shown in [Figure 4-3](#).

**⚠ CAUTION**

If all connections are not sealed, excess moisture accumulation can damage the transmitter. Make sure to mount the transmitter with the electrical housing positioned downward for drainage. To avoid moisture accumulation in the housing, install wiring with a drip loop, and ensure the bottom of the drip loop is mounted lower than the conduit connections or the transmitter housing.

**Figure 4-3. Conduit Installation**



## 4.6.2

### Wiring

See [Figure 4-5](#) for a basic PROFIBUS PA system configuration.

Use the following steps to wire the transmitter:

1. Remove the housing cover on the FIELD TERMINALS side.
2. Connect the power leads to the terminals indicated on the terminal block label (See [Figure 4-4](#)).
  - Power terminals are polarity insensitive - connect positive or negative to either 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.

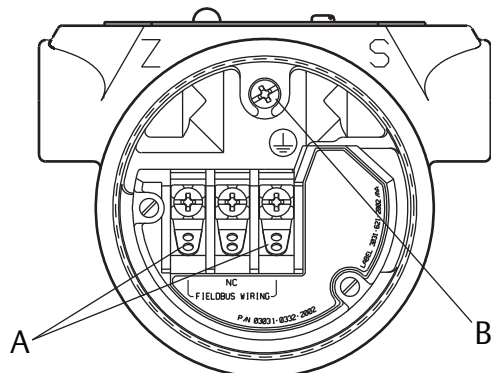
#### Note

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

4. Ensure proper grounding (See [Figure 4-6](#)). It is important 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
5. Plug and seal unused conduit connections.
6. If applicable, install wiring with a drip loop. See [Figure 4-3](#).
7. Replace the housing cover.

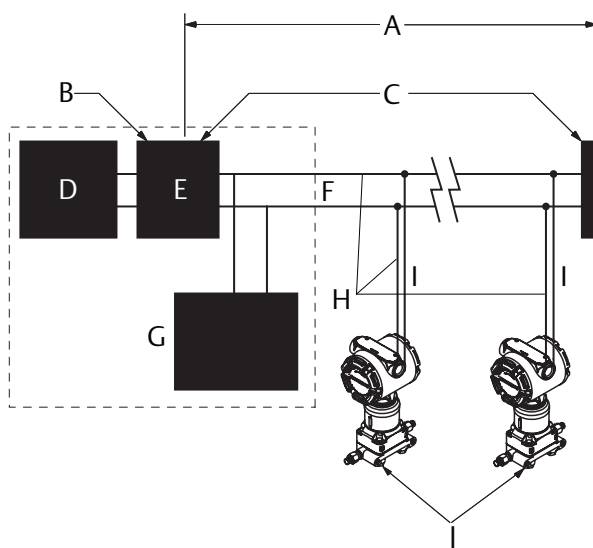


Figure 4-4. Rosemount 3051 PROFIBUS Terminal Block



A. Power terminals  
B. Ground terminal  
Note: "NC" is a No Connect terminal (do not use).

Figure 4-5. Basic PROFIBUS PA System Configuration



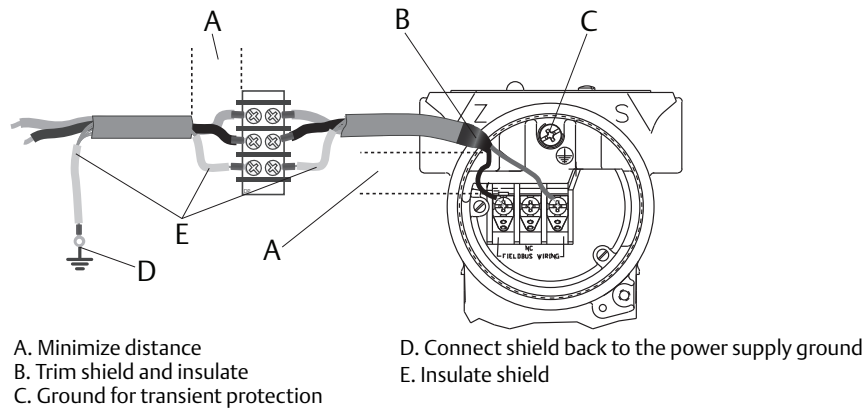
A. 6234 ft (1900 m) max (depending upon cable characteristics)  
B. Integrated power conditioner and filter  
C. Terminators  
D. Power supply  
E. DP/PA coupler/link  
F. Trunk  
G. DP network  
H. Signal wiring  
I. Spur  
J. PROFIBUS PA device

### 4.6.3 Signal wiring grounding

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

1. Remove the field terminals housing cover.
2. Connect the wiring pair and ground as indicated in [Figure 4-6](#). 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 4-6. Wiring**



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

## Power supply

The dc power supply should provide power with less than two percent ripple. The transmitter requires between 9 and 32 Vdc (between 9 and 17.5 Vdc for FISCO) at the terminals to operate and provide complete functionality.

## Power conditioner

The DP/PA Coupler/Link often includes an integrated power conditioner.

## Grounding

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

## Shield wire ground

Grounding techniques for shield wire usually require a single grounding point for shield wire to avoid creating a ground loop. The ground point is typically at the power supply.

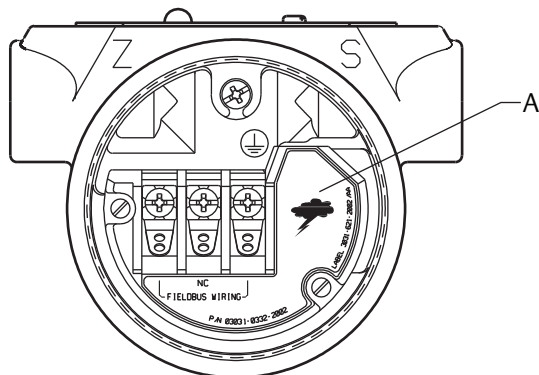
### 4.6.4

## Transient protection terminal block

The transmitter will withstand electrical transients of the energy level usually encountered in static discharges or induced switching transients. However, high-energy transients, such as those induced in wiring from nearby lightning strikes, can damage the transmitter.

The transient protection terminal block can be ordered as an installed option (Option Code T1 in the transmitter model number) or as a spare part to retrofit existing Rosemount 3051 Transmitters in the field. See “Other spare parts” on page 121 for spare part numbers. The lightning bolt symbol shown in Figure 4-7 identifies the transient protection terminal block.

Figure 4-7. Wiring with Transient Protection



A. Transient protection symbol

---

**Note**

The transient protection terminal block does not provide transient protection unless the transmitter case is properly grounded. Use the guidelines to ground the transmitter case. Refer to “Grounding” on page 42.

Do not run the transient protection ground wire with signal wiring as the ground wire may carry excessive current if a lightning strike occurs.

---

## 4.6.5 Grounding

⚠ Use the following techniques to properly ground the transmitter signal wiring and case.

### Signal wiring

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

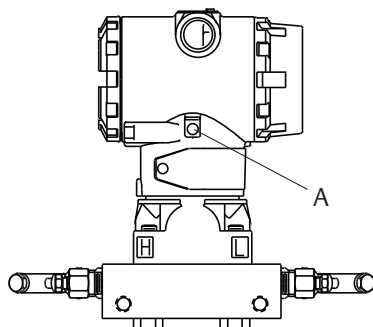
### Transmitter case

Always ground the transmitter case in accordance with national and local electrical codes. The most effective transmitter case grounding method is a direct connection to earth ground with minimal impedance. Methods for grounding the transmitter case include:

- Internal ground connection: The internal ground connection screw is inside the FIELD TERMINALS side of the electronics housing. This screw is identified by a ground symbol ( $\oplus$ ). The ground connection screw is standard on all Rosemount 3051 Transmitters. Refer to Figure 4-4.
- External ground assembly: This assembly is included with the optional transient protection terminal block (option code T1), and it is included with various hazardous location certifications. The external ground assembly can also be ordered with the transmitter (option code V5), or as a spare part. See “Other spare parts” on page 121. Refer to Figure 4-8 for location of the external ground screw.

---

**Figure 4-8. External Ground Assembly**



A. External ground assembly

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**Note**

Grounding the transmitter case using threaded conduit connection may not provide sufficient ground continuity.

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## Section 5 Calibration

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Zero trim .....	page 46
Sensor trim .....	page 46
Recall factory trim .....	page 47
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### 5.1 Section overview

This section contains information on calibrating the Rosemount™ 3051 Pressure Transmitter with PROFIBUS® PA Protocol using either the local operator interface (LOI) or a Class 2 Master.

### 5.2 Safety messages

Procedures and instructions in this section may require special precautions to ensure the safety of the personnel performing the operations. Information that raises potential safety issues is indicated by a warning symbol (⚠). Refer to the following safety messages before performing an operation preceded by this symbol.

#### **⚠ WARNING**

##### **Explosions could result in death or serious injury.**

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

- In an Explosion-Proof/Flameproof installation, do not remove the transmitter covers when power is applied to the unit.

##### **Process leaks may cause harm or result in death.**

- Install and tighten process connectors before applying pressure.

##### **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.
-

---

## 5.3 Calibration overview

Calibration is defined as the process required to optimize transmitter accuracy over a specific range by adjusting the factory sensor characterization curve located in the micro-processor. This is done by performing one of the following procedures,

### 5.3.1 Zero trim

A single-point offset adjustment. It is useful for compensating for mounting position effects and is most effective when performed with the transmitter installed in its final mounting position.

When performing a zero trim with a manifold, refer to [“Manifold operation” on page 26](#).

---

#### Note

Do not perform a zero trim on absolute pressure transmitters. Zero trim is zero based, and absolute pressure transmitters reference absolute zero. To correct mounting position effects on absolute pressure transmitters, perform a lower trim within the sensor trim function. The lower trim function provides an offset correction similar to the zero trim function, but it does not require zero-based input.

---

### 5.3.2 Sensor trim

A two-point sensor calibration where two end-point pressures are applied, and all output is linearized between them. Always adjust the lower trim value first to establish the correct offset. Adjustment of the upper trim value provides a slope correction to the characterization curve based on the lower trim value. The trim values allow you to optimize performance over your specified measuring range at the calibration temperature. Sensor trimming requires an accurate pressure input – at least four times more accurate than the transmitter – in order to optimize performance over a specific pressure range.

---

#### Note

The Rosemount 3051 has been carefully calibrated at the factory. Trimming adjusts the position of the factory characterization curve. It is possible to degrade performance of the transmitter if any trim is done improperly or with inaccurate equipment.

---

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#### Note

Rosemount 3051C Range 4 and Range 5 Transmitters require a special calibration procedure when used in differential pressure applications under high static line pressure. See [“Compensating for line pressure” on page 48](#).

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### 5.3.3 Recall factory trim

A command that allows the restoration of the as-shipped factory settings of the sensor trim. This command can be useful for recovering from an inadvertent zero trim of an absolute pressure unit or inaccurate pressure source.

## 5.4 Determining calibration frequency

Calibration frequency can vary greatly depending on the application, performance requirements, and process conditions. Use the following procedure to determine calibration frequency that meets the needs of your application:

1. Determine the performance required for your application.
2. Determine the operating conditions.
3. Calculate the total probable error (TPE).
4. Calculate the stability per month.
5. Calculate the calibration frequency.

### Sample calculation for a standard Rosemount 3051C

**Step 1:** Determine the performance required for your application.

Required performance: 0.20% of span

**Step 2:** Determine the operating conditions.

Transmitter: Rosemount 3051CD, Range 2 (URL=250 inH<sub>2</sub>O [623 mbar])

Calibrated span: 150 inH<sub>2</sub>O (374 mbar)

Ambient temperature change: ±50 °F (28 °C)

Line pressure: 500 psig (34,5 bar)

**Step 3:** Calculate total probable error (TPE).

$$TPE = \sqrt{(\text{ReferenceAccuracy})^2 + (\text{TemperatureEffect})^2 + (\text{StaticPressureEffect})^2} = 0.117\% \text{ of span}$$

Where:

Reference accuracy = ± 0.065% of span

Ambient temperature effect =  $\pm \left( \frac{0.0125 \times \text{URL}}{\text{Span}} + 0.0625 \right) \% \text{ per } 50 \text{ }^\circ\text{F} = \pm 0.0833\% \text{ of span}$

Span static pressure effect<sup>(1)</sup> = 0.1% reading per 1000 psi (69 bar) = ±0.05% of span at maximum span

1. Zero static pressure effect removed by zero trimming at line pressure.

**Step 4:** Calculate the stability per month.

$$\text{Stability} = \pm \left( \frac{0.020 \times \text{URL}}{\text{Span}} \right) \% \text{ of span for 10 years} = \pm 0.0028\% \text{ of span per month}$$

**Step 5:** Calculate calibration frequency.

$$\text{Calibration frequency} = \frac{(\text{Required performance} - \text{TPE})}{\text{Stability per Month}} = \frac{(0.2\% - 0.117\%)}{0.0028\%} = 30 \text{ months}$$

## 5.5 Zero trim

---

### Note

The transmitter PV at zero pressure must be within 10% x Upper Sensor Limit (USL) of zero in order to calibrate using the zero trim function.

---

### LOI

1. Enter *Calibration* >> *Zero* menu.
  - a. Verify measurement is within 10% × LSL of zero.
  - b. Save.

### Class 2 Master

1. To set the Transducer Block to Out of Service, select the following:
  - a. From the *Basic Setup* >> *Mode* >> *Transducer Block* >> *Target* dropdown, select **Out of Service**.
  - b. Select **Transfer**.
2. To calibrate the sensor, select the following in *Basic Setup* >> *Calibration*:
  - a. In the *Lower Calibration Point* field, enter **0**.
  - b. Adjust pressure source to zero pressure.
  - c. Verify Pressure Trimmed Value is stable and within 10% × LSL of zero.
  - d. Select **Transfer**.
3. To set Transducer Block to **Auto**, select the following:
  - a. From the *Basic Setup* >> *Mode* >> *Transducer Block* >> *Target* dropdown, select **Auto**.
  - b. Select **Transfer**.

## 5.6 Sensor trim

---

### Note

Use a pressure input source that is at least four times more accurate than the transmitter, and allow the input pressure to stabilize for ten seconds before entering any values.

---

### LOI

1. Enter *Calibration* >> *Lower* menu.
  - a. Enter trim unit and value.
  - b. Verify measurement is stable.
  - c. Save.
2. Enter *Calibration* >> *Upper* menu.
  - a. Enter trim unit and value.
  - b. Verify measurement is stable.
  - c. Save.



## Class 2 Master

1. To set the Transducer Block to **Out of Service**, select the following:
  - a. From the *Basic Setup >> Mode >> Transducer Block >> Target Mode* dropdown, select **Out of Service**.
  - b. Select **Transfer**.
2. Set the lower sensor calibration, select the following in *Basic Setup >> Calibration*:
  - a. In the *Lower Calibration Point* field, enter value.
  - b. Adjust pressure source to desired pressure.
  - c. Verify Pressure Trimmed Value is stable.
  - d. Select **Transfer**.
3. Set the upper sensor calibration, select the following in *Basic Setup >> Calibration*:
  - a. In the *Upper Calibration Point* field, enter value.
  - b. Adjust pressure source to desired pressure.
  - c. Verify Pressure Trimmed Value is stable.
  - d. Select **Transfer**.
4. To set Transducer Block to **Auto**, select the following:
  - a. From the *Basic Setup >> Mode >> Transducer Block >> Target Mode* dropdown, select **Auto**.
  - b. Select **Transfer**.

## 5.7 Recall factory trim

### 5.7.1 LOI

1. Enter *Calibration >> Reset* menu.
  - a. Save.

### 5.7.2 Class 2 Master

1. To set the Transducer Block to Out of Service, select the following:
  - a. From the *Basic Setup >> Mode >> Transducer Block >> Target* dropdown, select **Out of Service**.
  - b. Select **Transfer**.
2. To Recall the Factory Trim select the following in *Basic Setup >> Calibration >> Factory Recall*:
  - a. Select **Factory Settings**.
  - b. Select **Transfer**.
3. To set Transducer Block to *AUTO*, select the following:
  - a. From the *Basic Setup >> Mode >> Transducer Block >> Target* dropdown, select **Auto**.
  - b. Select **Transfer**.

## 5.8 Compensating for line pressure

### 5.8.1 Range 2 and 3

The following specifications show the static pressure effect for the Rosemount 3051 Range 2 and 3 Pressure Transmitters used in differential pressure applications where line pressure exceeds 2000 psi (138 bar).

#### Zero effect

$\pm 0.1\%$  of the upper range limit plus an additional  $\pm 0.1\%$  of upper range limit error for each 1000 psi (69 bar) of line pressure above 2000 psi (138 bar).

#### Example

Line pressure is 3000 psi (207 bar) for Ultra performance transmitter.

Zero effect error calculation:

$\pm(0.05 + 0.1 \times [3 \text{ kpsi} - 2 \text{ kpsi}]) = \pm 0.15\%$  of the upper range limit

#### Span effect

Refer to “Line pressure effect per 1000 psi (68,95 bar)” on page 63.

### 5.8.2 Range 4 and Range 5

Rosemount 3051 Range 4 and 5 Pressure Transmitters require a special calibration procedure when used in differential pressure applications. The purpose of this procedure is to optimize transmitter performance by reducing the effect of static line pressure in these applications. The Rosemount 3051 Differential Pressure Transmitters (Ranges 1, 2, and 3) do not require this procedure because optimization occurs in the sensor.

Applying high static pressure to Rosemount 3051 Range 4 and 5 Pressure Transmitters causes a systematic shift in the output. This shift is linear with static pressure; correct it by performing the “Sensor trim” on page 44.

The following specifications show the static pressure effect for Rosemount 3051 Range 4 and Range 5 Transmitters used in differential pressure applications:

#### Zero effect

$\pm 0.1\%$  of the upper range limit per 1000 psi (69 bar) for line pressures from 0 to 2000 psi (0 to 138 bar)

For line pressures above 2000 psi (138 bar), the zero effect error is  $\pm 0.2\%$  of the upper range limit plus an additional  $\pm 0.2\%$  of upper range limit error for each 1000 psi (69 bar) of line pressure above 2000 psi (138 bar).

#### Example

Line pressure is 3000 psi (3 kpsi).

Zero effect error calculation:

$\pm(0.2 + 0.2 \times [3 \text{ kpsi} - 2 \text{ kpsi}]) = \pm 0.4\%$  of the upper range limit

## **Span effect**

Correctable to  $\pm 0.2\%$  of reading per 1000 psi (69 bar) for line pressures from 0 to 3626 psi (0 to 250 bar)

The systematic span shift caused by the application of static line pressure is  $-1.00\%$  of reading per 1000 psi (69 bar) for Range 4 transmitters, and  $-1.25\%$  of reading per 1000 psi (69 bar) for Range 5 transmitters.



## Section 6 Troubleshooting

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### 6.1 Section overview

This section contains information on how to troubleshoot the Rosemount™ 3051 Pressure Transmitter with PROFIBUS® PA Protocol.

### 6.2 Safety messages

Procedures and instructions in this section may require special precautions to ensure the safety of the personnel performing the operations. Information that raises potential safety issues is indicated by a warning symbol (⚠). Refer to the following safety messages before performing an operation preceded by this symbol.

#### **⚠ WARNING**

##### **Explosions could result in death or serious injury.**

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

- In an Explosion-Proof/Flameproof installation, do not remove the transmitter covers when power is applied to the unit.

##### **Process leaks may cause harm or result in death.**

- Install and tighten process connectors before applying pressure.

##### **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.
-

## 6.3 Service support

To expedite the return process outside of the United States, contact the nearest Emerson™ Process Management representative.

Within the United States, call the Emerson Process Management Instrument and Valve Response Center using the 1-800-654-RSMT (7768) toll-free number. This center, available 24 hours a day, will assist you with any needed information or materials.

The center will ask for product model and serial numbers, and will provide a Return Material Authorization (RMA) number. The center will also ask for the process material to which the product was last exposed.

### ▲ CAUTION

Individuals who handle products exposed to a hazardous substance can avoid injury if they are informed of and understand the hazard. The product being returned will require a copy of the required Material Safety Data Sheet (MSDS) for each substance must be included with the returned goods.

Emerson Process Management Instrument and Valve Response Center representatives will explain the additional information and procedures necessary to return goods exposed to hazardous substances.

## 6.4 Diagnostics identification and recommended action

The Rosemount 3051 PROFIBUS device diagnostics can be used to warn a user about a potential transmitter error. There is a transmitter error if the output status reads anything but *Good* or *Good - Function Check*, or the LCD display reads *SNSR* or *ELECT*. Use [Table 6-1](#) to identify what diagnostic condition exists based on the combination of errors under the *How to Identify* columns. Start with the physical block diagnostic extension and use primary value and temperature status to identify the diagnostic condition. If a box is blank, it is not necessary to identify that diagnostic condition. Once condition is identified, use the *What to do* column to remedy the error.

**Table 6-1. Diagnostics Identification and Recommended Action**

Diagnostics	How to identify			What to do
	Class 1 or 2 Master	Class 2 Master		
Diagnostic condition	Physical block diagnostic extension	Primary value status	Temperature status	Recommended action
PV Simulation Enabled	Simulate Active	N/A	N/A	1. Check the simulation switch. 2. Replace the electronics.
Pressure beyond sensor limits	Sensor Transducer Block Error	Bad, sensor failure, underflow/overflow	N/A	1. Verify the applied pressure is within the range of the pressure sensor. 2. Check for impulse line plugging or leaks. 3. Replace the sensor module.

**Table 6-1. Diagnostics Identification and Recommended Action**

Diagnostics	How to identify			What to do
	Class 1 or 2 Master	Class 2 Master		
Diagnostic condition	Physical block diagnostic extension	Primary value status	Temperature status	Recommended action
Module Temperature Beyond limits	Sensor Transducer Block Error	N/A	Uncertain	1. Verify the sensor temperature is between -45 and 90 °C. 2. Replace the sensor module.
Sensor Module Memory Failure		Bad, out of service (OOS)	N/A	1. Replace sensor module.
No Sensor Module Pressure Updates		Bad, sensor failure, constant	N/A	1. Check cable connection between sensor module and electronics. 2. Replace electronics. 3. Replace sensor module.
No Device Temperature Updates		N/A	Bad	1. Check cable connection between sensor module and electronics. 2. Replace electronics. 3. Replace sensor module.
Circuit Board Memory Failure	Memory Failure or Non Volatile Memory Integrity Error	N/A	N/A	1. Replace electronics.
LOI button stuck	LOI Button Malfunction	N/A	N/A	1. Check if button is stuck under housing. 2. Replace buttons. 3. Replace electronics.

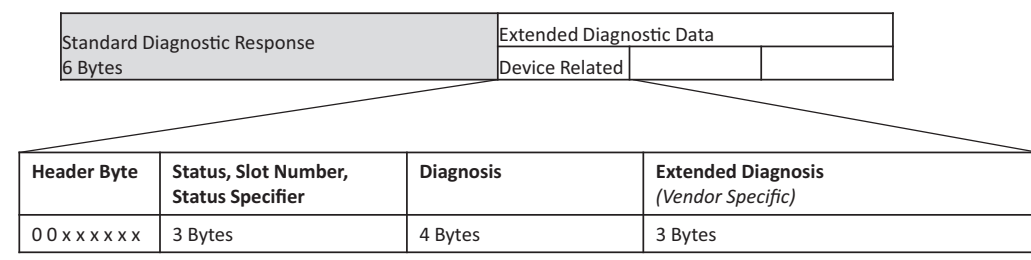
## 6.4.1 Extended diagnostics identification with Class 1 Master

If using a Class 1 Master to identify physical block diagnostic extensions, see [Figure 6-1](#) and [Figure 6-2](#) for diagnostic bit information. [Table 6-2](#) and [Table 6-3](#) list the diagnostic description for each bit.

### Note

A Class 2 Master will automatically decode bits and provide diagnostic names.

**Figure 6-1. Extended Diagnostics Identification**



**Figure 6-2. Diagnoses and Extended Diagnoses Bit Identification<sup>(1)</sup>**

		Byte 1								Byte 2							
Bit	Unit_Diag_Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
		31	30	29	28	27	26	25	24	39	38	37	36	35	34	33	32
		Byte 3								Byte 4							
Bit	Unit_Diag_Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
		47	46	45	44	43	42	41	40	55	54	53	52	51	50	49	48

		Byte 1								Byte 2							
Bit	Unit_Diag_Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0
		63	62	61	60	59	58	57	56	71	70	69	68	67	66	65	64
		Byte 3															
Bit	Unit_Diag_Bit	7	6	5	4	3	2	1	0								
		79	78	77	76	75	74	73	72								

1. Unit\_Diag\_Bit is located in GSD file.

**Table 6-2. Device Related Diagnosis Descriptions**

Byte-Bit	Unit_Diag_Bit <sup>(1)</sup>	Diagnostic description
2-4	36	Cold Start
2-3	35	Warm Start
3-2	42	Function Check
3-0	40	Maintenance Alarm
4-7	55	More Information Available

1. Unit\_Diag\_Bit is located in GSD file.

**Table 6-3. Extended Diagnosis Descriptions<sup>(1)</sup>**

Diagnostic extension Byte-Bit	Unit_Diag_Bit <sup>(1)</sup>	Diagnostic description
1-4	28	Simulate Active
1-7	63	Other
2-0	64	Out-of-Service
2-1	65	Power-Up
2-2	66	Device Needs Maintenance now
2-4	68	Lost NV Data
2-5	69	Lost Static Data
2-6	70	Memory Failure
3-1	73	ROM Integrity Error



Diagnostic extension Byte-Bit	Unit_Diag_Bit <sup>(1)</sup>	Diagnostic description
3-3	75	Non-Volatile Memory Integrity Error
3-4	76	Hardware/Software Incompatible
3-5	77	Manufacturing Block Integrity Error
3-6	78	Sensor Transducer Block Error
3-7	79	LOI Button Malfunction is detected

1. Unit\_Diag\_Bit is located in GSD file.

## 6.5 PlantWeb™ and NE107 diagnostics

Table 6-4 describes the recommended status of each diagnostic condition based on PlantWeb and NAMUR NE107 recommendations.

**Table 6-4. Output Status**

Name	PlantWeb alert category	NE107 category
PV Simulation Enabled	Advisory	Check
LOI button pressed	Advisory	Good
Pressure beyond sensor limits	Maintenance	Failure
Module Temperature Beyond limits	Maintenance	Out of spec
Sensor Module Memory Failure	Failure	Failure
No Sensor Module Pressure Updates	Failure	Failure
No Device Temperature Updates	Failure	Out of spec
Circuit Board Memory Failure	Failure	Failure
LOI button stuck	Failure	Failure

## 6.6 Alert messages and fail safe type selection

Table 6-5 defines the output status and LCD display messages that will be driven by a diagnostic condition. This table can be used to determine what type of fail safe value setting is preferred. Fail safe type can be set with a Class 2 Master under *Fail Safe >> Fail Safe Mode*.

**Table 6-5. Alert Messages**

Diagnostic	Output status (based on fail safe type)			LCD display
	Use fail safe value	Use last good value	Use wrong calculated value	LCD display status
PV Simulation Enabled	Depends on simulated value/status	Depends on simulated value/status	Depends on simulated value/status	N/A
LOI button pressed	Good, function check	Good, function check	Good, function check	N/A


**Table 6-5. Alert Messages**

Diagnostic	Output status (based on fail safe type)			LCD display
	Name	Use fail safe value	Use last good value	Use wrong calculated value
Pressure beyond sensor limits	Uncertain, substitute set	Uncertain, substitute set	Bad, process related, maintenance alarm	SNSR
Module Temperature Beyond limits	Uncertain, substitute set	Uncertain, process related, no maintenance	Uncertain, process related, no maintenance	SNSR
Sensor Module Memory Failure	Bad, passivated	Uncertain, substitute set	Bad, maintenance alarm	SNSR
No Sensor Module Pressure Updates	Uncertain, substitute set	Uncertain, substitute set	Bad, process related, maintenance alarm	SNSR
No Device Temperature Updates	Uncertain, process related, no maintenance	Uncertain, process related, no maintenance	Uncertain, process related, no maintenance	SNSR
Circuit Board Memory Failure	Bad, passivated	Bad, passivated	Bad, passivated	ELECT
LOI button stuck	Bad, passivated	Bad, passivated	Bad, passivated	ELECT

**Table 6-6. Output Status Bit Definition**

Description	HEX	DECIMAL
Bad - passivated	0x23	35
Bad, maintenance alarm, more diagnostics available	0x24	36
Bad, process related - no maintenance	0x28	40
Uncertain, substitute set	0x4B	75
Uncertain, process related, no maintenance	0x78	120
Good, ok	0x80	128
Good, update event	0x84	132
Good, advisory alarm, low limit	0x89	137
Good, advisory alarm, high limit	0x8A	138
Good, critical alarm, low limit	0x8D	141
Good, critical alarm, high limit	0x8E	142
Good, function check	0xBC	188

## 6.7 Disassembly procedures

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

### 6.7.1 Remove from service

Follow these steps:

1. Follow all plant safety rules and procedures.
2. Isolate and vent the process from the transmitter before removing the transmitter from service.
3. Remove all electrical leads and disconnect conduit.
4. Remove the transmitter from the process connection.
  - The Rosemount 3051C Transmitter is attached to the process connection by four bolts and two cap screws. Remove the bolts and separate the transmitter from the process connection. Leave the process connection in place and ready for re-installation.
  - The Rosemount 3051T transmitter is attached to the process by a single hex nut process connection. Loosen the hex nut to separate the transmitter from the process. Do not wrench on neck of transmitter.
5. Do not scratch, puncture, or depress the isolating diaphragms.
6. Clean isolating diaphragms with a soft rag and a mild cleaning solution, and rinse with clear water.
7. For the Rosemount 3051C, when removing the process flange or flange adapters, visually inspect the PTFE O-rings. Replace the O-rings if they show any signs of damage, such as nicks or cuts. Undamaged O-rings may be reused.

### 6.7.2 Remove terminal block


Electrical connections are located on the terminal block in the compartment labeled “FIELD TERMINALS.”

1. Remove the housing cover from the field terminal side.
2. Loosen the two small screws located on the assembly in the nine o'clock and five o'clock positions.
3. Pull the entire terminal block out to remove it.

### 6.7.3 Remove the electronics board

The transmitter electronics board is located in the compartment opposite the terminal side. To remove the electronics board, perform the following procedure.

1. Remove the housing cover opposite the field terminal side.
2. If disassembling a transmitter with a LCD display, loosen the two captive screws visible on the right and left side of the meter display.

3.  Loosen the two captive screws that anchor the board to the housing. The electronics board is electrostatically sensitive; observe handling precautions for static-sensitive components. Use caution when removing the LCD display as there is an electronic pin connector that interfaces between the LCD display and electronics board. The two screws anchor the LCD display to the electronics board and the electronics board to the housing.
4. Using the two captive screws, slowly pull the electronics board out of the housing. The sensor module ribbon cable holds the electronics board to the housing. Disengage the ribbon cable by pushing the connector release.

## 6.7.4 Remove the sensor module from the electronics housing

1. Remove the electronics board (see “Remove the electronics board” on page 57).

---

### Important

To prevent damage to the sensor module ribbon cable, disconnect it from the electronics board before removing the sensor module from the electrical housing.

---

2. Carefully tuck the cable connector completely inside of the internal black cap.

---

### Note

Do not remove the housing until after tucking the cable connector completely inside of the internal black cap. The black cap protects the ribbon cable from damage that can occur when rotating the housing.

---

3. Loosen the housing rotation set screw with a  $\frac{5}{64}$ -in. hex wrench, and loosen one full turn.
4. Unscrew the module from the housing, making sure the black cap and sensor cable do not catch on the housing.

## 6.8 Reassembly procedures


1. Inspect all cover and housing (non-process wetted) O-rings and replace if necessary. Lightly grease with silicone lubricant to ensure a good seal.
2. Carefully tuck the cable connector completely inside the internal black cap; turn the black cap and cable counterclockwise one rotation to tighten the cable.
3. Lower the electronics housing onto the module. Guide the internal black cap and cable through the housing and into the external black cap.
4. Turn the module clockwise into the housing.

---


### Important

Make sure the sensor ribbon cable and internal black cap remain completely free of the housing while rotating. Damage can occur to the cable if the internal black cap and ribbon cable become hung up and rotate with the housing.

---

5.  Thread the housing completely onto the sensor module. The housing must be no more than one full turn from flush with the sensor module to comply with explosion proof requirements.
6. Tighten the housing rotation set screw using a  $\frac{5}{64}$ -in. hex wrench.

## 6.8.1 Attach the electronics board

1. Remove the cable connector from its position inside of the internal black cap and attach it to the electronics board.
2. Using the two captive screws as handles, insert the electronics board into the housing. Make sure the posts from the electronics housing properly engage the receptacles on the electronics board. Do not force. The electronics board should slide gently on the connections.
3. Tighten the captive mounting screws.
4.  Replace the electronics housing cover. The transmitter covers must be engaged metal-to-metal to ensure a proper seal and to meet explosion-proof requirements.

## 6.8.2 Install the terminal block

1. Gently slide the terminal block into place, making sure the two posts from the electronics housing properly engage the receptacles on the terminal block.
2. Tighten the captive screws.
3. Replace the electronics housing cover. The transmitter covers must be fully engaged to meet explosion-proof requirements.

## 6.8.3 Reassemble the Rosemount 3051C process flange

1. Inspect the sensor module PTFE O-rings. Undamaged O-rings may be reused. Replace O-rings that show any signs of damage, such as nicks, cuts, or general wear.

---

### Note

If replacing the O-rings, be careful not to scratch the O-ring grooves or the surface of the isolating diaphragm when removing the damaged O-rings.

---

2. Install the process connection. Possible options include:
  - Coplanar process flange
    - a. Hold the process flange in place by installing the two alignment screws to finger tightness (screws are not pressure retaining). Do not overtighten as this will affect module-to-flange alignment.
    - b. Install the four 1.75-in. flange bolts by finger tightening them to the flange.
  - Coplanar process flange with flange adapters
    - a. Hold the process flange in place by installing the two alignment screws to finger tightness (screws are not pressure retaining). Do not overtighten as this will affect module-to-flange alignment.
    - b. Hold the flange adapters and adapter O-rings in place while installing the four configurations, use four 2.88-in. bolts. For gage pressure configurations, use two 2.88-in. bolts and two 1.75-in. bolts.
  - Manifold
    - a. Contact the manifold manufacturer for the appropriate bolts and procedures.
3. Tighten the bolts to the initial torque value using a crossed pattern. See [Table 6-7](#) for appropriate torque values.

**Table 6-7. Bolt Installation Torque Values**

<b>Bolt material</b>	<b>Initial torque value</b>	<b>Final torque value</b>
CS-ASTM-A445 Standard	300 in-lb (34 N-m)	650 in-lb (73 N-m)
316 SST—Option L4	150 in-lb (17 N-m)	300 in-lb (34 N-m)
ASTM-A-193-B7M—Option L5	300 in-lb (34 N-m)	650 in-lb (73 N-m)
ASTM-A-193 class 2, Grade B8M—Option L8	150 in-lb (17 N-m)	300 in-lb (34 N-m)

**Note**

If replacing the PTFE sensor module O-rings, re-torque the flange bolts after installation to compensate for cold flow.

**Note**

After replacing O-rings on Range 1 transmitters and re-installing the process flange, expose the transmitter to a temperature of 185 °F (85 °C) for two hours. Then re-tighten the flange bolts in a cross pattern, and again expose the transmitter to a temperature of 185 °F (85 °C) for two hours before calibration.

## 6.8.4 Install the drain/vent valve

1. Apply sealing tape to the threads on the seat. Starting at the base of the valve with the threaded end pointing toward the installer, apply two clockwise turns of sealing tape.
2. Tighten the drain/vent valve to 250 in-lb (28.25 N-m).
3. Take care to place the opening on the valve so that process fluid will drain toward the ground and away from human contact when the valve is opened.

# Appendix A Specifications and Reference Data

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## A.1 Performance specifications

This product data sheet covers HART®, Wireless, FOUNDATION™ Fieldbus, and PROFIBUS® PA protocols unless specified.

### A.1.1 Conformance to specification ( $\pm 3\sigma$ [sigma])

Technology leadership, advanced manufacturing techniques, and statistical process control ensure specification conformance to at least  $\pm 3\sigma$ .

### A.1.2 Reference accuracy

Stated reference accuracy equations include terminal based linearity, hysteresis, and repeatability. For Wireless, FOUNDATION Fieldbus and PROFIBUS PA devices, use calibrated range in place of span.

Models	Rosemount 3051 and WirelessHART®
<b>3051C</b>	
Range 5	$\pm 0.065\%$ of span For spans less than 10:1, accuracy = $\pm \left( 0.015 + 0.005 \left[ \frac{URL}{Span} \right] \right) \%$ of Span
Ranges 2–4	$\pm 0.04\%$ of span <sup>(1)</sup> For spans less than 10:1 <sup>(2)</sup> , accuracy = $\pm \left( 0.015 + 0.005 \left[ \frac{URL}{Span} \right] \right) \%$ of Span
Range 1	$\pm 0.10\%$ of span For spans less than 15:1, accuracy = $\pm \left( 0.025 + 0.005 \left[ \frac{URL}{Span} \right] \right) \%$ of Span
Range 0 (CD)	$\pm 0.10\%$ of span For spans less than 2:1, accuracy = $\pm 0.05\%$ of URL
<b>3051CA</b>	
Ranges 1–4	$\pm 0.04\%$ of span <sup>(1)</sup> For spans less than 10:1, accuracy = $\pm \left( 0.0075 \left[ \frac{URL}{Span} \right] \right) \%$ of Span
<b>3051T</b>	
Ranges 1–4	$\pm 0.04\%$ of span <sup>(1)</sup> For spans less than 10:1, accuracy = $\pm \left( 0.0075 \left[ \frac{URL}{Span} \right] \right) \%$ of Span
Range 5	$\pm 0.075\%$ of span For spans less than 10:1, accuracy = $\pm \left( 0.0075 \left[ \frac{URL}{Span} \right] \right) \%$ of Span

Models	Rosemount 3051 and WirelessHART®
<b>3051L</b>	
Ranges 2–4	± 0.075% of span For spans less than 10:1, accuracy = $\pm \left( 0.025 + 0.005 \left[ \frac{URL}{Span} \right] \right)$ % of Span

1. For output code W and M, ±0.065% span.
2. For output code F, for span less than 5:1.

### A.1.3 Flow performance - flow reference accuracy<sup>(1)</sup>

Rosemount 3051CFA Annubar™ Flowmeter		
Ranges 2–3		±1.80% of flow rate at 8:1 flow turndown
Rosemount 3051CFC_A Compact Annubar Flowmeter – Annubar option A		
Ranges 2–3	Uncalibrated	±2.10% of flow rate at 8:1 flow turndown
	Calibrated	±1.80% of flow rate at 8:1 flow turndown
Rosemount 3051CFC_C Compact Orifice Flowmeter – conditioning option C		
Ranges 2–3	β = 0.4	±1.75% of flow rate at 8:1 flow turndown
	β = 0.50, 0.65	±1.95% of flow rate at 8:1 flow turndown
Rosemount 3051CFC_P Compact Orifice Flowmeter – orifice type option P <sup>(2)</sup>		
Ranges 2–3	β = 0.4	±2.00% of flow rate at 8:1 flow turndown
	β = 0.65	±2.00% of flow rate at 8:1 flow turndown
Rosemount 3051CFP Integral Orifice Flowmeter		
Ranges 2–3	β < 0.1	±3.00% of flow rate at 8:1 flow turndown
	0.1 < β < 0.2	±1.95% of flow rate at 8:1 flow turndown
	0.2 < β < 0.6	±1.75% of flow rate at 8:1 flow turndown
	0.6 < β < 0.8	±2.15% of flow rate at 8:1 flow turndown

1. Accuracy over range of use is always application dependent. Range 1 flowmeters may experience an additional uncertainty up to 0.9%. Consult your Emerson Process Management Representative for exact specifications.
2. Applicable to 2- to 12-in. line sizes. For smaller line sizes, see the Rosemount DP Flowmeters and Primary Elements [Product Data Sheet](#).

### A.1.4 Total performance

Total performance is based on combined errors of reference accuracy, ambient temperature effect, and static pressure effect at normal operating conditions (70% of span typical reading, 740 psi (51,02 bar) line pressure).

For ±50 °F (28 °C) temperature changes; 0–100% relative humidity, from 1:1 to 5:1 rangedown

Models	Total performance <sup>(1)</sup>
<b>3051C</b>	
Ranges 2–5	±0.14% of span
<b>3051T</b>	
Ranges 1–4	±0.14% of span
<b>3051L</b>	
Ranges 2–4	Use Instrument Toolkit™ or the QZ option to quantify the total performance of a remote seal assembly under operating conditions.

1. For output code W, F and M, total performance is ±0.15% of span.

### A.1.5 Long term stability

Models	Long term stability
<b>3051C</b>	
Ranges 2–5	±0.2% of URL for 10 years ±50 °F (28 °C) temperature changes, and up to 1000 psi (68,95 bar) line pressure.
3051CD, 3051CG low/draft range	
Ranges 0–1	±0.2% of URL for 1 year
3051CA low range	
Range 1	±0.2% of URL for 10 years ±50 °F (28 °C) temperature changes, and up to 1000 psi (68,95 bar) line pressure.
<b>3051T</b>	
Ranges 1–4	±0.2% of URL for 10 years ±50 °F (28 °C) temperature changes, and up to 1000 psi (68,95 bar) line pressure.



### A.1.6 Dynamic performance

4–20 mA HART <sup>(1)</sup>		FOUNDATION Fieldbus and PROFIBUS PA protocols <sup>(3)</sup>	Typical HART transmitter response time
Total response time ( $T_d + T_c$ ) <sup>(2)</sup> :			<p>Transmitter Output vs. Time</p> <p>Pressure released</p> <p>100%</p> <p>36.8%</p> <p>0%</p> <p>Time</p> <p><math>T_d</math> = Dead time <math>T_c</math> = Time constant Response time = <math>T_d + T_c</math></p> <p>63.2% of total step change</p>
<b>3051C</b>			
Ranges 2–5	100 ms	152 ms	
Range 1	255 ms	307 ms	
Range 0	700 ms	N/A	
<b>3051T</b>	100 ms	152 ms	
<b>3051L</b>	See Instrument Toolkit.	See Instrument Toolkit.	
Dead time ( $T_d$ )	45 ms (nominal)	97 ms	
Update rate <sup>(4)</sup>	22 times per second	22 times per second	

1. Dead time and update rate apply to all models and ranges; analog output only.
2. Nominal total response time at 75 °F (24 °C) reference conditions.
3. Transducer Block response time, Analog Input block execution time not included.
4. Does not apply to wireless (output code X). See “Wireless (output code X)” on page 67 for wireless update rate.

### A.1.7 Line pressure effect per 1000 psi (68,95 bar)

For line pressures above 2000 psi (137,90 bar) and Ranges 4–5, see Rosemount 3051 HART [Reference Manual](#), Rosemount 3051 FOUNDATION Fieldbus [Reference Manual](#), and Rosemount 3051 PROFIBUS PA [Reference Manual](#).

Models	Line pressure effect	
<b>3051CD, 3051CF</b>	<b>Zero error</b>	<b>Span error</b>
Ranges 2–3	±0.05% of URL/ 1000 psi (68,95 bar) for line pressures from 0 to 2000 psi (0 to 137,90 bar)	±0.1% of reading/ 1000 psi (68,95 bar)
Range 1	±0.25% of URL/ 1000 psi (68,95 bar) for line pressures from 0 to 2000 psi (0 to 137,90 bar)	±0.4% of reading/ 1000 psi (68,95 bar)
Range 0	±0.125% of URL/ 100 psi (6,89 bar) for line pressures from 0 to 750 psi (0 to 51,71 bar)	±0.15% of reading/ 100 psi (68,95 bar)

### A.1.8 Ambient temperature effect per 50 °F (28 °C)

Models	Ambient temperature effect
<b>3051C</b>	
Ranges 2–5	±(0.0125% URL + 0.0625% span) from 1:1 to 5:1 ±(0.025% URL + 0.125% span) from 5:1 to 150:1
Range 1	±(0.1% URL + 0.25% span) from 1:1 to 30:1 ±(0.14% URL + 0.15% span) from 30:1 to 50:1
Range 0	±(0.25% URL + 0.05% span) from 1:1 to 30:1
<b>3051CA</b>	
Ranges 1–4	±(0.025% URL + 0.125% span) from 1:1 to 30:1 ±(0.035% URL + 0.125% span) from 30:1 to 150:1
<b>3051T</b>	
Ranges 2–4	±(0.025% URL + 0.125% span) from 1:1 to 30:1 ±(0.035% URL + 0.125% span) from 30:1 to 150:1
Range 1	±(0.025% URL + 0.125% span) from 1:1 to 10:1 ±(0.05% URL + 0.125% span) from 10:1 to 100:1
Range 5	±(0.1% URL + 0.15% span) from 1:1 to 5:1
<b>3051L</b>	See Instrument Toolkit software.

### A.1.9 Mounting position effects

Models	Mounting position effects
3051C	Zero shifts up to $\pm 1.25$ inH <sub>2</sub> O (3,11 mbar), which can be calibrated out. No span effect.
3051CA, 3051T	Zero shifts up to $\pm 2.5$ inH <sub>2</sub> O (6,22 mbar), which can be calibrated out. No span effect.
3051L	With liquid level diaphragm in vertical plane, zero shift of up to $\pm 1$ inH <sub>2</sub> O (2,49 mbar). With diaphragm in horizontal plane, zero shift of up to $\pm 5$ inH <sub>2</sub> O (12,43 mbar) plus extension length on extended units. All zero shifts can be calibrated out. No span effect.

### A.1.10 Vibration effect

Less than  $\pm 0.1\%$  of URL when tested per the requirements of IEC60770-1: 1999 field or pipeline with high vibration level (10–60 Hz 0.21 mm displacement peak amplitude/60–2000 Hz 3g).

### A.1.11 Power supply effect

Less than  $\pm 0.005\%$  of calibrated span per volt change

### A.1.12 Electromagnetic compatibility (EMC)

Meets all industrial environment requirements of EN61326 and NAMUR NE-21<sup>(1)</sup>. Maximum deviation < 1% span during EMC disturbance<sup>(2)</sup>.

1. NAMUR NE-21 doesn't not apply to wireless output code X.
2. During surge event device may exceed maximum EMC deviation limit or reset; however, device will self-recover and return to normal operation within specified start-up time.

### A.1.13 Transient protection (option code T1)

Tested in accordance with IEEE C62.41.2-2002, Location Category B

6 kV crest (0.5  $\mu$ s – 100 kHz)

3 kA crest (8  $\times$  20  $\mu$ s)

6 kV crest (1.2  $\times$  50  $\mu$ s)

## A.2 Functional specifications

### A.2.1 Range and sensor limits

Table A-1. Rosemount 3051CD, 3051CG, 3051CF, and 3051L Range and Sensor Limits

Range <sup>(1)</sup>	Minimum span	Range and sensor limits				
	3051CD, 3051CG, 3051CF, 3051L <sup>(2)</sup>	Upper (URL)	Lower (LRL)			
			3051CD differential 3051CF flowmeters	3051CG gage <sup>(3)</sup>	3051L differential	3051L gage <sup>(3)</sup>
0	0.10 inH <sub>2</sub> O (0,24 mbar)	3.00 inH <sub>2</sub> O (7,45 mbar)	-3.00 inH <sub>2</sub> O (-7,45 mbar)	N/A	N/A	N/A
1	0.50 inH <sub>2</sub> O (1,24 mbar)	25.00 inH <sub>2</sub> O (62,16 mbar)	-25.00 inH <sub>2</sub> O (-62,16 mbar)	-25.00 inH <sub>2</sub> O (-62,16 mbar)	N/A	N/A
2	1.67 inH <sub>2</sub> O (4,15 mbar)	250.00 inH <sub>2</sub> O (621,60 mbar)	-250.00 inH <sub>2</sub> O (-621,60 mbar)	-250.00 inH <sub>2</sub> O (-621,60 mbar)	-250.00 inH <sub>2</sub> O (-621,60 mbar)	-250.00 inH <sub>2</sub> O (-621,60 mbar)
3	6.67 inH <sub>2</sub> O (16,58 mbar)	1000.00 inH <sub>2</sub> O (2,48 bar)	-1000.00 inH <sub>2</sub> O (-2,48 bar)	0.50 psia (34,47 mbar)	-1000.00 inH <sub>2</sub> O (-2,48 bar)	0.50 psia (34,47 mbar)
4	2.00 psi (137,89 mbar)	300.00 psi (20,68 bar)	-300.00 psi (-20,68 bar)	0.50 psia (34,47 mbar)	-300.00 psi (-20,68 bar)	0.50 psia (34,47 mbar)
5	13.33 psi (919,01 mbar)	2000.00 psi (137,89 bar)	-2000.00 psi (-137,89 bar)	0.50 psia (34,47 mbar)	N/A	N/A

1. Range 0 only available with Rosemount 3051CD. Range 1 only available with Rosemount 3051CD, 3051CG, or 3051CF. inH<sub>2</sub>O referenced at 68 °F.
2. For outputs options W and M, minimum span are: Range 1 - 0.50 inH<sub>2</sub>O (1,24 mbar), Range 2 - 2.50 inH<sub>2</sub>O (6,21 mbar), Range 3 - 10.00 inH<sub>2</sub>O (24,86 mbar), Range 4 - 3.00 psi (0,21 bar), Range 5 - 20.00 psi (1,38 bar).
3. Assumes atmospheric pressure of 14.7 psig.

**Table A-2. Rosemount 3051CA and 3051T Range and Sensor Limits**

3051CA				3051T				
Range	Minimum span <sup>(1)</sup>	Range and sensor limits		Range	Minimum span <sup>(1)</sup>	Range and sensor limits		
		Upper (URL)	Lower (LRL)			Upper (URL)	Lower (LRL)(absolute)	Lower <sup>(2)</sup> (LRL)(gage)
1	0.30 psi (20,68 mbar)	30 psia (2,06 bar)	0 psia (0 bar)	1	0.30 psi (20,68 mbar)	30.00 psi (2,06 bar)	0 psia (0 bar)	-14.70 psig (-1,01 bar)
2	1.00 psi (68,94 mbar)	150 psia (10,34 bar)	0 psia (0 bar)	2	1.00 psi (68,94 mbar)	150.00 psi (10,34 bar)	0 psia (0 bar)	-14.70 psig (-1,01 bar)
3	5.33 psi (367,49 mbar)	800 psia (55,15 bar)	0 psia (0 bar)	3	5.33 psi (367,49 mbar)	800.00 psi (55,15 bar)	0 psia (0 bar)	-14.70 psig (-1,01 bar)
4	26.67 psi (1,83 bar)	4000 psia (275,79 bar)	0 psia (0 bar)	4	26.67 psi (1,83 bar)	4000.00 psi (275,79 bar)	0 psia (0 bar)	-14.70 psig (-1,01 bar)
5	N/A	N/A	N/A	5	2000.00 psi (137,89 bar)	10000.00 psi (689,47 bar)	0 psia (0 bar)	-14.70 psig (-1,01 bar)

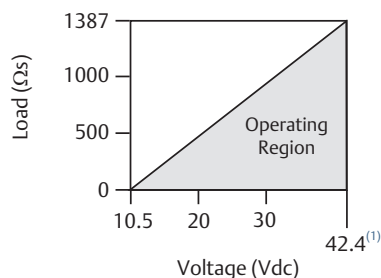
- For output options W and M, minimum span are: Range 2 - 1.50 psi(0,10 bar), Range 3 - 8.00 psi (0,55 bar), Range 4 - 40.00 psi (2,75 bar), Range 5 for Rosemount 3051T - 2000.00 psi (137,89 bar).
- Assumes atmospheric pressure of 14.7 psig.

### Service

Liquid, gas, and vapor applications

#### A.2.2 4–20 mA HART (output code A)

Max. Loop Resistance = 43.5 (Power Supply Voltage – 10.5)



Communication requires a minimum loop resistance of 250 ohms.

- For CSA approval, power supply must not exceed 42.4 V.

### Power supply

External power supply required. Standard transmitter (4–20mA) operates on 10.5–42.4 Vdc with no load.

### Load limitations

Maximum loop resistance is determined by the voltage level of the external power supply described by:

### Indication

Optional two-line LOI/LCD display

### Optional configuration buttons

Configuration buttons need to be specified:

- Digital zero trim (option code DZ) changes digital value of the transmitter and is used for performing a sensor zero trim.
- Analog zero span (option code D4) changes analog value and can be used to rerange the transmitter with an applied pressure.

#### A.2.3 Output

Two-wire 4–20 mA, user selectable for linear or square root output. Digital process variable superimposed on 4–20 mA signal, available to any host that conforms to HART protocol. The Rosemount3051 comes with Selectable HART Revisions. Digital communications based on HART Revision 5 (default) or Revision 7 (option code HR7) protocol can be selected. The HART revision can be switched in the field using any HART based configuration tool or the optional local operator interface (M4).

### Power advisory diagnostics

Power advisory diagnostics pro-actively detect and notify you of degraded electrical loop integrity before it can affect your process operation. Example loop problems that can be detected include water in the terminal compartment, corrosion of terminals, improper grounding, and unstable power supplies.

The device dashboard presents the diagnostics in a graphical, task-based interface that provides single-click access to critical process/device information and descriptive graphical troubleshooting.

### Local operator interface (LOI)

The LOI utilizes a two-button menu with internal and external configuration buttons. Internal buttons are always configured for LOI. External buttons can be configured for either LOI (option code M4), analog zero and span (option code D4) or Digital Zero Trim (option code DZ). See Rosemount 3051 [Reference Manual](#) for LOI configuration menu.

## A.2.4 FOUNDATION Fieldbus (output code F)

### Power supply

External power supply required; transmitters operate on 9.0 to 32.0 V dc transmitter terminal voltage. FISCO transmitters operate on 9.0 to 17.5 V dc.

### Current draw

17.5 mA for all configurations (including LCD display option)

### Indication

Optional two-line LCD display

### FOUNDATION Fieldbus block execution times

Block	Execution time
Resource	N/A
Sensor and SPM Transducer	N/A
LCD Display	N/A
Analog Input 1, 2	20 milliseconds
PID	25 milliseconds
Input Selector	20 milliseconds
Arithmetic	20 milliseconds
Signal Characterizer	20 milliseconds
Integrator	20 milliseconds
Output Splitter	20 milliseconds
Control Selector	20 milliseconds

### FOUNDATION Fieldbus parameters

Links	25 (max.)
Virtual Communications Relationships (VCR)	20 (max.)

### FOUNDATION Fieldbus function blocks (option A01)

#### Resource block

The resource block contains diagnostic, hardware, and electronics information. There are no linkable inputs or outputs to the resource block.

#### Sensor Transducer Block

The sensor Transducer Block contains sensor information and the ability to calibrate the pressure sensor or recall factory calibration.

#### LCD Transducer Block

The LCD Transducer Block is used to configure the LCD display meter.

#### Analog input block

The analog input (AI) function block processes the measurements from the sensor and makes them available to other function blocks. The output value from the AI Block is in engineering units and contains a status indicating the quality of the measurement. The AI Block is widely used for scaling functionality.

#### Input selector block

The input selector (ISEL) function block can be used to select the first good, hot backup, maximum, minimum, or average of as many as eight input values and place it at the output. The block supports signal status propagation.

#### Integrator block

The integrator (INT) function block integrates one or two variables over time. The block compares the integrated or accumulated value to pre-trip and trip limits and generates discrete output signals when the limits are reached.

The INT function block is used as a totalizer. This block will accept up to two inputs, has six options how to totalize the inputs, and two trip outputs.

#### Arithmetic block

The arithmetic (ARTH) function block provides the ability to configure a range extension function for a primary input. It can also be used to compute nine different arithmetic functions including flow with partial density compensation, electronic remote seals, hydrostatic tank gaging, ratio control, and others.

### Signal characterizer block

The signal characterizer (SGCR) function block characterizes or approximates any function that defines an input/output relationship. The function is defined by configuring as many as twenty X,Y coordinates. The block interpolates an output value for a given input value using the curve defined by the configured coordinates. Two separate analog input signals can be processed simultaneously to give two corresponding separate output values using the same defined curve.

### PID block

The PID function block combines all of the necessary logic to perform proportional/integral/derivative (PID) control. The block supports mode control, signal scaling and limiting, feed forward control, override tracking, alarm limit detection, and signal status propagation.

### Control selector block

The control selector function block selects one of two or three inputs to be the output. The inputs are normally connected to the outputs of PID or other function blocks. One of the inputs would be considered normal and the other two overrides.

### Output splitter block

The output splitter function block provides the capability to drive two control outputs from a single input. It takes the output of one PID or other control block to control two valves or other actuators.

### Backup link active scheduler (LAS)

The transmitter can function as a link active scheduler if the current link master device fails or is removed from the segment.

### FOUNDATION Fieldbus diagnostics suite (option code D01)

The Rosemount 3051C FOUNDATION Fieldbus diagnostics suite features SPM technology to detect changes in the process, process equipment, or installation conditions (such as plugged impulse lines) of the transmitter. This is done by modeling the process noise signature (using the statistical values of mean and standard deviation) under normal conditions and then comparing the baseline values to current values over time. If a significant change in the current values is detected, the transmitter can generate an alert.

## A.2.5 PROFIBUS PA (output code W)

### Profile version

3.02

### Power supply

External power supply required; transmitters operate on 9.0 to 32.0 V dc transmitter terminal voltage. FISCO transmitters operate on 9.0 to 17.5 V dc.

### Current draw

17.5 mA for all configurations (including LCD display option)

### Output update rate

Four times per second

### Standard function blocks

#### Analog input (AI Block)

The AI function block processes the measurements and makes them available to the host device. The output value from the AI Block is in engineering units and contains a status indicating the quality of the measurement.

#### Physical block

The physical block defines the physical resources of the device including type of memory, hardware, electronics and diagnostic information.

#### Transducer Block

Contains actual sensor measurement data including the sensor diagnostics and the ability to trim the pressure sensor or recall factory defaults.

### Indication

Optional two-line LCD display

### LOI

The LOI utilizes a two-button menu with external configuration buttons.

## A.2.6 Wireless (output code X)

### Output

IEC 62591 (*WirelessHART*), 2.4 GHz DSSS

#### Wireless radio (internal antenna, WP5 option)

- Frequency: 2.400–2.485 GHz
- Channels: 15
- Modulation: IEEE 802.15.4 compliant DSSS
- Transmission: Maximum of 10 dBm EIRP

### Local display

The optional three-line, seven-digit LCD display can show user-selectable information such as primary variable in engineering units, scaled variable, percent of range, sensor module temperature, and electronics temperature. The display updates based on the wireless update rate.

### Digital zero trim

Digital zero trim (option DZ) is an offset adjustment to compensate for mounting position effects, up to 5% of URL.

### Update rate

User-selectable 1 second to 60 minute

### Wireless sensor module for in-line transmitters

The Rosemount 3051 Wireless Transmitter requires the engineered polymer housing to be selected. The standard sensor module will come with aluminum material. If stainless steel is required, the option WSM must be selected.

### Power module

Field replaceable, keyed connection eliminates the risk of incorrect installation, Intrinsically Safe Lithium-thionyl chloride Power Module with PBT/PC enclosure. Ten-year life at one minute update rate.<sup>(1)</sup>

- Reference conditions are 70 °F (21 °C), and routing data for three additional network devices.  
Note: Continuous exposure to ambient temperature limits of -40 °F or 185 °F (-40 °C or 85 °C) may reduce specified life by less than 20 percent.

## A.2.7 Low Power output

### 1-5 Vdc HART Low Power (output code M)

#### Output

Three-wire 1–5 Vdc (option code C2) user-selectable output. Also user selectable for linear or square root output configuration. Digital process variable superimposed on voltage signal, available to any host conforming to the HART protocol. Low-power transmitter operates on 6–12 Vdc with no load.

#### Power consumption

3.0 mA, 18–36 mW

#### Minimum load impedance

100 kΩ (V<sub>out</sub> wiring)

#### Indication

Optional five-digit LCD display

## A.2.8 Overpressure limits

### Rosemount 3051CD/CG/CF

- Range 0: 750 psi (51,71 bar)
- Range 1: 2000 psig (137,90 bar)
- Ranges 2–5: 3626 psig (250,00 bar)  
4500 psig (310,26 bar) for option code P9

### Rosemount 3051CA

- Range 1: 750 psia (51,71 bar)
- Range 2: 1500 psia (103,42 bar)
- Range 3: 1600 psia (110,32 bar)
- Range 4: 6000 psia (413,69 bar)

### Rosemount 3051TG/TA

- Range 1: 750 psi (51,71 bar)
- Range 2: 1500 psi (103,42 bar)
- Range 3: 1600 psi (110,32 bar)
- Range 4: 6000 psi (413,69 bar)
- Range 5: 15000 psi (1034,21 bar)

For Rosemount 3051L or level flange option codes FA, FB, FC, FD, FP, and FQ, limit is 0 psia to the flange rating or sensor rating, whichever is lower.

**Table A-3. Rosemount 3051L and Level Flange Rating Limits**

Standard	Type	CS rating	SST rating
ANSI/ASME	Class 150	285 psig	275 psig
ANSI/ASME	Class 300	740 psig	720 psig
ANSI/ASME	Class 600	1480 psig	1440 psig
At 100 °F (38 °C), the rating decreases with increasing temperature, per ANSI/ASME B16.5.			
DIN	PN 10-40	40 bar	40 bar
DIN	PN 10/16	16 bar	16 bar
DIN	PN 25/40	40 bar	40 bar
At 248 °F (120 °C), the rating decreases with increasing temperature, per DIN 2401.			

## A.2.9 Static pressure limit

### Rosemount 3051CD only

Operates within specifications between static line pressures of 0.5 psia and 3626 psig (4500 psig [310, 26 bar] for option code P9).

Range 0: 0.5 psia and 750 psig (0,03 bar and 51,71 bar)

Range 1: 0.5 psia and 2000 psig (0,03 bar and 137, 90 bar)

## A.2.10 Burst pressure limits

### Rosemount 3051C, 3051CF Coplanar or traditional process flange

10081 psig (695,06 bar)

### Rosemount 3051T In-line

Ranges 1–4: 11016 psi (759,53 bar)

Range 5: 26016 psig (1793,74 bar)

## A.2.11 Failure mode alarm

### HART 4-20 mA (output option code A)

If self-diagnostics detect a sensor or microprocessor failure, the analog signal is driven either high or low to alert the user. High or low failure mode is user-selectable with a jumper/switch on the transmitter. The values to which the transmitter drives its output in failure mode depend on whether it is configured to standard, NAMUR-compliant, or custom levels (see alarm configuration below). The values for each are as follows:

	High alarm	Low alarm
Default	≥ 21.75 mA	≤ 3.75 mA
NAMUR compliant <sup>(1)</sup>	≥ 22.5 mA	≤ 3.6 mA
Custom levels <sup>(2)</sup>	20.2–23.0 mA	3.4–3.8 mA

1. Analog output levels are compliant with NAMUR recommendation NE 43, see option codes C4 or C5.
2. Low alarm must be 0.1 mA less than low saturation and high alarm must be 0.1 mA greater than high saturation.

### Output code M

If self-diagnostics detect a gross transmitter failure, the analog signal will be driven either below 0.94 V or above 5.4 V to alert the user (below 0.75 V or above 4.4 V for option C2). High or low alarm signal is user-selectable by internal jumper.

### Output code F, W, and X

If self-diagnostics detect a gross transmitter failure, that information gets passed as an alert and a status along with the process variable.

## A.2.12 Temperature limits

### Ambient

-40 to 185 °F (-40 to 85 °C)

With LCD display<sup>(1)(2)</sup>: -40 to 176 °F (-40 to 80 °C)

1. For the output code M and W, LCD display may not be readable and LCD display updates will be slower at temperatures below -22 °F (-30 °C).
2. Wireless LCD display may not be readable and LCD display updates will be slower at temperature below -4 °F (-20 °C).

### Storage<sup>(1)</sup>

-50 to 230 °F (-46 to 110 °C)

With LCD display: -40 to 185 °F (-40 to 85 °C)

With wireless output: -40 °F to 185 °F (-40 °C to 85 °C)

1. If storage temperature is above 85 °C, perform a sensor trim prior to installation.

### Process

At atmospheric pressures and above. See [Table A-4](#).

**Table A-4. 3051 Process Temperature Limits**

Rosemount 3051CD, 3051CG, 3051CF, 3051CA	
Silicone fill sensor <sup>(1)</sup>	
with coplanar flange	-40 to 250 °F (-40 to 121 °C) <sup>(2)</sup>
with traditional flange	-40 to 300 °F (-40 to 149 °C) <sup>(2)(3)</sup>
with level flange	-40 to 300 °F (-40 to 149 °C) <sup>(2)</sup>
with Rosemount 305 integral manifold	-40 to 300 °F (-40 to 149 °C) <sup>(2)</sup>
Inert fill sensor <sup>(1)(4)</sup>	-40 to 185 °F (-40 to 85 °C) <sup>(5)(6)</sup>
Rosemount 3051T (process fill fluid)	
Silicone fill sensor <sup>(1)</sup>	-40 to 250 °F (-40 to 121 °C) <sup>(2)</sup>
Inert fill sensor <sup>(1)</sup>	-22 to 250 °F (-30 to 121 °C) <sup>(2)</sup>
Rosemount 3051L low-side temperature limits	
Silicone fill sensor <sup>(1)</sup>	-40 to 250 °F (-40 to 121 °C) <sup>(2)</sup>
Inert fill sensor <sup>(1)</sup>	-40 to 185 °F (-40 to 85 °C) <sup>(5)</sup>
Rosemount 3051L high-side temperature limits (process fill fluid)	
SYLTHERM™ XLT	-102 to 293 °F (-75 to 145 °C)
Dow Corning® Silicone 704	32 to 401 °F (0 to 205 °C)
D.C. Silicone 200	-49 to 401 °F (-45 to 205 °C)
Inert	-49 to 320 °F (-45 to 160 °C)
Glycerin and water	5 to 203 °F (-15 to 95 °C)
Neobee® M-20	5 to 401 °F (-15 to 205 °C)
Propylene glycol and water	5 to 203 °F (-15 to 95 °C)

1. Process temperatures above 185 °F (85 °C) require derating the ambient limits by a 1.5:1 ratio.
2. 220 °F (104 °C) limit in vacuum service; 130 °F (54 °C) for pressures below 0.5 psia.
3. 3051CD0 process temperature limits are -40 to 212 °F (-40 to 100 °C).
4. Inert fill with traditional flange on Range 0: limits are 32 to 185 °F (0 to 85 °C).
5. 160 °F (71 °C) limit in vacuum service.
6. Not available for 3051CA.

### A.2.13 Humidity limits

0–100% relative humidity

### A.2.14 Turn-on time

Performance within specifications less than two seconds (20.0 seconds for PROFIBUS PA and FOUNDATION Fieldbus protocols) after power is applied to the transmitter.<sup>(1)</sup>

1. Does not apply to Wireless option code X.

### A.2.15 Volumetric displacement

Less than 0.005 in<sup>3</sup> (0,08 cm<sup>3</sup>)

### A.2.16 Damping

#### 4-20 mA HART

Analog output response to a step input change is user-enterable from 0.0 to 60 seconds for one time constant. This software damping is in addition to sensor module response time.

#### FOUNDATION Fieldbus

Transducer Block: User-configurable

AI Block: User-configurable

#### PROFIBUS PA

AI Block only: User-configurable

## A.3 Physical specifications

### A.3.1 Material selection

Emerson provides a variety of Rosemount products with various product options and configurations including materials of construction that can be expected to perform well in a wide range of applications. The Rosemount product information presented is intended as a guide for the purchaser to make an appropriate selection for the application. It is the purchaser's sole responsibility to make a careful analysis of all process parameters (such as all chemical components, temperature, pressure, flow rate, abrasives, contaminants, etc.), when specifying product materials, options, and components for the particular application. Emerson Process Management is not in a position to evaluate or guarantee the compatibility of the process fluid or other process parameters with the product options, configuration, or materials of construction selected.

### A.3.2 Electrical connections

1/2–14 NPT, G1/2, and M20 × 1.5 conduit. The polymer housing (housing code P) has no conduit entries. HART interface connections fixed to terminal block for output code A and to 701P power module for output code X.

### A.3.3 Process connections

#### Rosemount 3051C

1/4–18 NPT on 2 1/8-in. centers

1/2–14 NPT on 2-in., 2 1/8-in., or 2 1/4-in. centers

#### Rosemount 3051L

High pressure side: 2-in., 3-in., or 4-in., ASME B 16.5 (ANSI) Class 150, 300 or 600 flange; 50, 80 or 100 mm, PN 40 or 10/16 flange

Low pressure side: 1/4–18 NPT on flange 1/2–14 NPT on adapter

#### Rosemount 3051T

1/2–14 NPT female

G1/2A DIN 16288 Male (Range 1–4 only)

Autoclave type F-250-C (Pressure relieved 9/16–18 gland thread; 1/4 OD high pressure tube 60° cone; available in SST for Range 5 transmitters only).

#### Rosemount 3051CF

For Rosemount 3051CFA, 3051CFC, and 3051CFP, see Rosemount DP Flowmeters and Primary Elements [Product Data Sheet](#).

### A.3.4 Process-wetted parts

#### Drain/vent valves

316 SST, Alloy C-276, or Alloy 400 material (Alloy 400 not available with Rosemount 3051L)

#### Process flanges and adapters

Plated carbon steel

SST: CF-8M (Cast 316 SST) per ASTM A743

Cast C-276: CW-12MW per ASTM A494

Cast Alloy 400: M-30C per ASTM A494

#### Wetted O-rings

Glass-filled PTFE or Graphite-filled PTFE



### Process isolating diaphragms

Isolating diaphragm material	3051CD 3051CG	3051T	3051CA
316L SST (UNS S31603)	•	•	•
Alloy C-276 (UNS N10276)	•	•	•
Alloy 400 (UNS N04400)	•		•
Tantalum (UNS R05440)	•		
Gold-plated Alloy 400	•		•
Gold-plated 316L SST	•		•

### A.3.5 Rosemount 3051L process wetted parts

#### Flanged process connection (transmitter high side)

##### Process diaphragms, including process gasket surface

316L SST, Alloy C-276, or Tantalum

##### Extension

CF-3M (Cast version of 316L SST, material per ASTM-A743), or Alloy C-276. Fits schedule 40 and 80 pipe.

##### Mounting flange

Zinc-cobalt plated CS or SST

#### Reference process connection (transmitter low side)

##### Isolating diaphragms

316L SST or Alloy C-276

##### Reference flange and adapter

CF-8M (Cast version of 316 SST, material per ASTM-A743)

### A.3.6 Non-wetted parts

#### Electronics housing

Low-copper aluminum or CF-8M (Cast version of 316 SST) Enclosure Type 4X, IP 65, IP 66, IP 68

Housing material code P: PBT/PC with NEMA® 4X and IP66/67/68

#### Coplanar sensor module housing

SST: CF-3M (Cast 316L SST)

#### Bolts

Plated carbon steel per ASTM A449, Type 1

Austenitic 316 SST per ASTM F593

ASTM A193, Grade B7M Alloy steel

Alloy K-500

### Sensor module fill fluid

Coplanar: silicone or Inert Halocarbon

In-line: silicone or Fluorinert™ FC-43

#### Process fill fluid (Rosemount 3051L only)

SYLTherm XLT, Silicone 704, Silicone 200, inert, glycerin and water, Neobee M-20, or propylene glycol and water

#### Paint

Polyurethane

#### Cover O-rings

Buna-N

Silicone (for wireless option code X)

#### Power module

Field replaceable, keyed connection eliminates the risk of incorrect installation, Intrinsically Safe Lithium-thionyl chloride power module with PBT enclosure.

### A.3.7 Shipping weights

Table A-5. Transmitter Weights without Options<sup>(1)</sup>

Transmitter	Rosemount 3051 lb (kg)	Wireless lb (kg)
3051C	6.0 (2,7)	3.9 (1,8)
3051T	3.0 (1,4)	1.9 (0,86)
3051L	Table A-6	Table A-6

1. Transmitter weights include the sensor module and housing only (aluminum for Rosemount 3051 and polymer for wireless).

Table A-6. 3051L Weights without Options

Flange	Flush lb (kg)	2-in. ext. lb (kg)	4-in. ext. lb (kg)	6-in. ext. lb (kg)
2-in., Class 150	12.5 (5,7)	N/A	N/A	N/A
3-in., Class 150	17.5 (7,9)	19.5 (8,8)	20.5 (9,3)	21.5 (9,7)
4-in., Class 150	23.5 (10,7)	26.5 (12,0)	28.5 (12,9)	30.5 (13,8)
2-in., Class 300	17.5 (7,9)	N/A	N/A	N/A
3-in., Class 300	22.5 (10,2)	24.5 (11,1)	25.5 (11,6)	26.5 (12,0)
4-in., Class 300	32.5 (14,7)	35.5 (16,1)	37.5 (17,0)	39.5 (17,9)

**Table A-6. 3051L Weights without Options**

Flange	Flush lb (kg)	2-in. ext. lb (kg)	4-in. ext. lb (kg)	6-in. ext. lb (kg)
2-in., Class 600	15.3 (6,9)	N/A	N/A	N/A
3-in., Class 600	25.2 (11,4)	27.2 (12,3)	28.2 (12,8)	29.2 (13,2)
DN 50/ PN 40	13.8 (6,2)	N/A	N/A	N/A
DN 80/ PN 40	19.5 (8,8)	21.5 (9,7)	22.5 (10,2)	23.5 (10,6)
DN 100/ PN 10/16	17.8 (8,1)	19.8 (9,0)	20.8 (9,5)	21.8 (9,9)
DN 100/ PN 40	23.2 (10,5)	25.2 (11,5)	26.2 (11,9)	27.2 (12,3)

**Table A-7. Transmitter Option Weights**

Code	Option	Add lb (kg)
J, K, L, M	Stainless steel housing (T)	3.9 (1,8)
J, K, L, M	Stainless steel housing (C, L, H, P)	3.1 (1,4)
M4/M5	LCD display for wired transmitter	0.5 (0,2)
M5	LCD Display for Wireless output	0.1 (0,04)
B4	SST mounting bracket for coplanar flange	1.0 (0,5)
B1, B2, B3	Mounting bracket for traditional flange	2.3 (1,0)
B7, B8, B9	Mounting bracket for traditional flange	2.3 (1,0)
BA, BC	SST bracket for traditional flange	2.3 (1,0)
H2	Traditional flange	2.4 (1,1)
H3	Traditional flange	2.7 (1,2)
H4	Traditional flange	2.6 (1,2)
H7	Traditional flange	2.5 (1,1)
FC	Level flange—3-in., Class 150	10.8 (4,9)
FD	Level flange—3-in., Class 300	14.3 (6,5)
FA	Level flange—2-in., Class 150	10.7 (4,8)
FB	Level flange—2-in., Class 300	14.0 (6,3)
FP	DIN level flange, SST, DN 50, PN 40	8.3 (3,8)
FQ	DIN level flange, SST, DN 80, PN 40	13.7 (6,2)
WSM	SST sensor module	1.0 (0,45)
	Power module (701PGNKF)	0.4 (0,18)

## A.4 Options

### A.4.1 Standard configuration

Unless otherwise specified, transmitter is shipped as follows:

Engineering units Differential/Gage	inH <sub>2</sub> O (Range 0, 1, 2, and 3)
Absolute/ Rosemount 3051TA/ Rosemount 3051TG	psi (Range 4 and 5) psi (all ranges)
4 mA <sup>(1)</sup>	0 (engineering units above)
20 mA <sup>(1)</sup>	Upper range limit
Output	Linear
External buttons	None
Flange type	Specified model code option
Flange material	Specified model code option
O-ring material	Specified model code option
Drain/vent	Specified model code option
LCD display	None
Alarm <sup>(1)</sup>	High
Software tag	Blank
Damping:	0.4 seconds <sup>(2)</sup>

1. Not applicable to FOUNDATION Fieldbus, PROFIBUS PA, or Wireless.
2. For Fieldbus protocols, default damping is one second.

### A.4.2 Custom configuration<sup>(1)</sup>

If option code C1 is ordered, the customer may specify the following data in addition to the standard configuration parameters.

- Output information
- Transmitter information
- LCD display configuration
- Hardware selectable information
- Signal selection
- Wireless information
- Scaled variable
- and more

For Rosemount 3051 Pressure Transmitter with HART Protocol, refer to the Rosemount 3051 [Configuration Data Sheet](#).

For Rosemount 3051 Wireless, refer to the Rosemount 3051 Wireless [Configuration Data Sheet](#).<sup>(1)</sup>

1. Not applicable to FOUNDATION Fieldbus or PROFIBUS PA protocols.

### A.4.3 Tagging (3 options available)

- Standard SST hardware tag is wired to the transmitter. Tag character height is 0.125-in. (3,18 mm), 56 characters maximum.
- Tag may be permanently stamped on transmitter nameplate upon request, 56 characters maximum.
- Tag may be stored in transmitter memory. Character limit is dependent on protocol.
  - HART Revision 5: 8 characters
  - HART Revision 7 and Wireless: 32 characters
  - FOUNDATION Fieldbus: 32 characters
  - PROFIBUS PA: 32 characters

### A.4.4 Commissioning tag<sup>(1)</sup>

A temporary commissioning tag is attached to all transmitters. The tag indicates the device ID and allows an area for writing the location.

1. Only applicable to FOUNDATION Fieldbus.

### A.4.5 Optional Rosemount 304, 305 or 306 integral manifolds

Factory assembled to Rosemount 3051C and 3051T Transmitters. Refer to the Rosemount Manifolds [Product Data Sheet](#) for additional information.

### A.4.6 Other seals

Refer to Rosemount DP Level Transmitters and 1199 Diaphragm Seal System [Product Data Sheet](#) for additional information.

### A.4.7 Output information

Output range points must be the same unit of measure. Available units of measure include:

Pressure		
atm	mmHg	MPa <sup>(1)</sup>
mbar	mmH <sub>2</sub> O @ 4 °C <sup>(1)</sup>	kg/m <sup>2</sup> <sup>(2)(1)</sup>
bar	ftH <sub>2</sub> O	ftH <sub>2</sub> O @ 4 °C <sup>(2)(1)</sup>
inH <sub>2</sub> O	inH <sub>2</sub> O @ 60 °F <sup>(1)</sup>	psi
inHg	psf <sup>(2)(1)</sup>	torr
hPa <sup>(2)(1)</sup>	g/cm <sup>2</sup>	cmH <sub>2</sub> O @ 4 °C <sup>(2)(1)</sup>
mHg @ 0 °C <sup>(2)(1)</sup>	kg/cm <sup>2</sup>	mH <sub>2</sub> O @ 4 °C <sup>(2)(1)</sup>
inH <sub>2</sub> O @ 4 °C <sup>(1)</sup>	Pa	ftH <sub>2</sub> O @ 60 °F <sup>(2)(1)</sup>
mmH <sub>2</sub> O	kPa	cmHg @ 0 °C <sup>(2)(1)</sup>

1. Not available with Low Power (output option code M) or PROFIBUS PA (output option code W).
2. Field configurable only, not available for factory calibration or custom configuration (option code C1 "Software configuration").

### A.4.8 Display and interface options

- M4** Digital Display with Local Operator Interface (LOI)
  - Available for 4–20 mA HART and PROFIBUS PA
- M5** Digital Display
  - 2-line, 5-digit LCD display for Low Power output
  - 2-line, 8-digit LCD display for 4–20 mA HART, FOUNDATION Fieldbus and PROFIBUS PA
  - 3-line, 7-digit LCD display for Wireless
  - Direct reading of digital data for higher accuracy
  - Displays user-defined flow, level, volume, or pressure units
  - Displays diagnostic messages for local troubleshooting
  - 90-degree rotation capability for easy viewing

### A.4.9 Configuration buttons

Rosemount 3051 will ship with no buttons unless option D4 (analog zero and Span), DZ (digital zero), or M4 (LOI) for local configuration buttons are specified.

The Rosemount 3051 Wireless Transmitter is available with a digital zero button installed with or without the LCD display.

### A.4.10 Transient protection (option code T1)

Tested in accordance with IEEE C62.41.2-2002, Location Category B

- 6 kV crest (0.5 μs–100 kHz)
- 3 kA crest (8 × 20 μs)
- 6 kV crest (1.2 × 50 μs)

### A.4.11 Bolts for flanges and adapters

- Options permit bolts for flanges and adapters to be obtained in various materials
- Standard material is plated carbon steel per ASTM A449, Type 1

- L4** Austenitic 316 Stainless Steel Bolts
- L5** ASTM A 193, Grade B7M Bolts
- L6** Alloy K-500 Bolts

### A.4.12 Conduit plug

- DO** 316 SST Conduit Plug  
Single 316 SST conduit plug replaces carbon steel plug

#### A.4.13 Rosemount 3051C coplanar flange and Rosemount 3051T bracket option

- B4** Bracket for 2-in. Pipe or Panel Mounting
- For use with the standard coplanar flange configuration
  - Bracket for mounting of transmitter on 2-in. pipe or panel
  - Stainless steel construction with stainless steel bolts

#### A.4.14 Rosemount 3051C traditional flange bracket options

- B1** Bracket for 2-in. Pipe Mounting
- For use with the traditional flange option
  - Bracket for mounting on 2-in. pipe
  - Carbon steel construction with carbon steel bolts
  - Coated with polyurethane paint
- B2** Bracket for Panel Mounting
- For use with the traditional flange option
  - Bracket for mounting transmitter on wall or panel
  - Carbon steel construction with carbon steel bolts
  - Coated with polyurethane paint
- B3** Flat Bracket for 2-in. Pipe Mounting
- For use with the traditional flange option
  - Bracket for vertical mounting of transmitter on 2-in. pipe
  - Carbon steel construction with carbon steel bolts
  - Coated with polyurethane paint
- B7** B1 Bracket with SST Bolts
- Same bracket as the B1 option with Series 300 stainless steel bolts
- B8** B2 Bracket with SST Bolts
- Same bracket as the B2 option with Series 300 stainless steel bolts
- B9** B3 Bracket with SST Bolts
- Same bracket as the B3 option with Series 300 stainless steel bolts
- BA** Stainless Steel B1 Bracket with SST Bolts
- B1 bracket in stainless steel with Series 300 stainless steel bolts
- BC** Stainless Steel B3 Bracket with SST Bolts
- B3 bracket in stainless steel with Series 300 stainless steel bolts

## A.5 Range limits

**Table A-8. Rosemount 3051C Differential/Gage Pressure Transmitter Range Limits**

Units	Range 1 span		Range 2 span		Range 3 span		Range 4 span		Range 5 span	
	min	max	min	max	min	max	min	max	min	max
inH <sub>2</sub> O	0.5	25	2.5	250	10	1000	83.040	8304	553.60	55360
inHg	0.03678	1.8389	0.18389	18.389	0.73559	73.559	6.1081	610.81	40.720	4072.04
ftH <sub>2</sub> O	0.04167	2.08333	0.20833	20.8333	0.83333	83.3333	6.9198	691.997	46.13	4613.31
mmH <sub>2</sub> O	12.7	635.5	63.553	6355	254	25421	2110.95	211095	14073	1407301
mmHg	0.93416	46.7082	4.67082	467.082	18.6833	1868.33	155.145	15514.5	1034.3	103430
psi	0.01806	0.903	0.0902	9.03183	0.36127	36.127	3	300	20	2000
bar	0.00125	0.06227	0.00623	0.62272	0.02491	2.491	0.20684	20.6843	1.37895	137.895
mbar	1.2454	62.2723	6.22723	622.723	24.9089	2490.89	206.843	20684.3	1378.95	137895
g/cm <sup>2</sup>	1.26775	63.3875	6.33875	633.875	25.355	2535.45	210.547	21054.7	1406.14	140614
kg/cm <sup>2</sup>	0.00127	0.0635	0.00635	0.635	0.0254	2.54	0.21092	21.0921	1.40614	140.614
Pa	124.545	6227.23	622.723	62160.6	2490.89	249089	20684.3	2068430	137895	13789500
kPa	0.12545	6.2272	0.62272	62.2723	2.49089	249.089	20.6843	2068.43	137.895	13789.5
torr	0.93416	46.7082	4.67082	467.082	18.6833	1868.33	155.145	15514.5	1034.3	103430
atm	0.00123	0.06146	0.00615	0.61460	0.02458	2.458	0.20414	20.4138	1.36092	136.092

When using a Field Communicator, ±5% adjustment is allowed on the sensor limit to allow for unit conversions.

**Table A-9. Rosemount 3051L Pressure Transmitter Range Limits**

Units	Range 2 span		Range 3 span		Range 4 span		Range 5 span	
	min	max	min	max	min	max	min	max
inH <sub>2</sub> O	2.5	250	10	1000	83.040	8304	553.60	55360
inHg	0.18389	18.389	0.73559	73.559	6.1081	610.81	40.720	4072.04
ftH <sub>2</sub> O	0.20833	20.8333	0.83333	83.3333	6.9198	691.997	46.13	4613.31
mmH <sub>2</sub> O	63.553	6355	254	25421	2110.95	211095	14073	1407301
mmHg	4.67082	467.082	18.6833	1868.33	155.145	15514.5	1034.3	103430
psi	0.0902	9.03183	0.36127	36.127	3	300	20	2000
bar	0.00623	0.62272	0.02491	2.491	0.20684	20.6843	1.37895	137.895
mbar	6.22723	622.723	24.9089	2490.89	206.843	20684.3	1378.95	137895
g/cm <sup>2</sup>	6.33875	633.875	25.355	2535.45	210.547	21054.7	1406.14	140614
kg/cm <sup>2</sup>	0.00635	0.635	0.0254	2.54	0.21092	21.0921	1.40614	140.614
Pa	622.723	62160.6	2490.89	249089	20684.3	2068430	137895	13789500
kPa	0.62272	62.2723	2.49089	249.089	20.6843	2068.43	137.895	13789.5
torr	4.67082	467.082	18.6833	1868.33	155.145	15514.5	1034.3	103430
atm	0.00615	0.61460	0.02458	2.458	0.20414	20.4138	1.36092	136.092

When using a Field Communicator, ±5% adjustment is allowed on the sensor limit to allow for unit conversions.

**Table A-10. Rosemount 3051T Gage and Absolute Pressure Transmitter Range Limits**

Units	Range 1 span		Range 2 span		Range 3 span		Range 4 span		Range 5 span	
	min	max	min	max	min	max	min	max	min	max
inH <sub>2</sub> O	8.30397	831.889	41.5198	4159.45	221.439	22143.9	1107.2	110720	55360	276799
inHg	0.61081	61.0807	3.05403	305.403	16.2882	1628.82	81.441	8144.098	4072.04	20360.2
ftH <sub>2</sub> O	0.69199	69.3241	3.45998	345.998	18.4533	1845.33	92.2663	9226.63	4613.31	23066.6
mmH <sub>2</sub> O	211.10	21130	1054.60	105460.3	5634.66	563466	28146.1	2814613	1407301	7036507
mmHg	15.5145	1551.45	77.5723	7757.23	413.72	41372	2068.6	206860.0	103430	517151
psi	0.3	30	1.5	150	8	800	40	4000	2000	10000
bar	0.02068	2.06843	0.10342	10.3421	0.55158	55.1581	2.75791	275.7905	137.895	689.476
mbar	20.6843	2068.43	103.421	10342.11	551.581	55158.1	2757.91	275790.5	137895	689476
g/cm <sup>2</sup>	21.0921	2109.21	105.461	10546.1	561.459	56145.9	2807.31	280730.6	140614	703067
kg/cm <sup>2</sup>	0.02109	2.10921	0.10546	10.5461	0.56246	56.2456	2.81228	281.228	140.614	701.82
Pa	2068.43	206843	10342.1	1034212	55158.1	551581 1	275791	27579054	1378950 0	6894760 0
kPa	2.06843	206.843	10.3421	1034.21	55.1581	5515.81	275.791	27579.05	13789.5	68947.6
torr	15.5145	1551.45	77.5726	7757.26	413.721	413721	2068.6	206859.7	103430	517151
atm	0.02041	2.04138	0.10207	10.2069	0.54437	54.4368	2.72184	272.1841	136.092	680.46

When using a Field Communicator, ±5% adjustment is allowed on the sensor limit to allow for unit conversions.

**Table A-11. Rosemount 3051C Absolute Pressure Transmitter Range Limits**

Units	Range 1 span		Range 2 span		Range 3 span		Range 4 span	
	min	max	min	max	min	max	min	max
inH <sub>2</sub> O	8.30397	831.889	41.5198	4151.98	221.439	22143.9	1107.2	110720
inHg	0.61081	61.0807	3.05403	305.403	16.2882	1628.82	81.441	8144.098
ftH <sub>2</sub> O	0.69199	69.3241	3.45998	345.998	18.4533	1845.33	92.2663	9226.63
mmH <sub>2</sub> O	211.10	21130	6.35308	635.308	5634.66	563466	28146.1	2814613
mmHg	15.5145	1551.45	1055.47	105547	413.72	41372	2068.6	206860.0
psi	0.3	30	1.5	150	8	800	40	4000
bar	0.02068	2.06843	0.10342	10.342	0.55158	55.1581	2.75791	275.7905
mbar	20.6843	2068.43	103.421	10342.1	551.581	55158.1	2757.91	275790.5
g/cm <sup>2</sup>	21.0921	2109.21	105.27	105.27	561.459	56145.9	2807.31	280730.6
kg/cm <sup>2</sup>	0.02109	2.10921	0.10546	10.546	0.56246	56.2456	2.81228	281.228
Pa	2068.43	206843	10342.1	1034210	55158.1	5515811	275791	27579054
kPa	2.06843	206.843	10.3421	1034.21	55.1581	5515.81	275.791	27579.05
torr	15.5145	1551.45	77.5726	7757.26	413.721	413721	2068.6	206859.7
atm	0.02041	2.04138	0.10207	10.207	0.54437	54.4368	2.72184	272.1841

When using a Field Communicator, ±5% adjustment is allowed on the sensor limit to allow for unit conversions.

## A.6 Ordering information

**Table A-12. Rosemount 3051C Coplanar Pressure Transmitters Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

Model <sup>(1)</sup>	Transmitter type			
3051C	Coplanar Pressure Transmitter			
<b>Measurement type</b>				
D	Differential			★
G	Gage			★
A <sup>(2)</sup>	Absolute			
<b>Pressure range</b>				
	<b>Differential (3051CD)</b>	<b>Gage (3051CG)</b>	<b>Absolute (3051CA)</b>	
1	-25 to 25 inH <sub>2</sub> O (-62,16 to 62,16 mbar)	-25 to 25 inH <sub>2</sub> O (-62,16 to 62,16 mbar)	0 to 30 psia (0 to 2,06 bar)	★
2	-250 to 250 inH <sub>2</sub> O (-621,60 to 621,60 mbar)	-250 to 250 inH <sub>2</sub> O (-621,60 to 621,60 mbar)	0 to 150 psia (0 to 10,34 bar)	★
3	-1000 to 1000 inH <sub>2</sub> O (-2,48 to 2,48 bar)	-393 to 1000 inH <sub>2</sub> O (-0,97 to 2,48 bar)	0 to 800 psia (0 to 55,15 bar)	★
4	-300 to 300 psi (-20,68 to 20,68 bar)	-14.2 to 300 psi (-0,97 to 20,68 bar)	0 to 4000 psia (0 to 275,79 bar)	★
5	-2000 to 2000 psi (-137,89 to 137,89 bar)	-14.2 to 2000 psi (-0,97 to 137,89 bar)	N/A	★
0 <sup>(3)</sup>	-3 to 3 inH <sub>2</sub> O (-7,46 to 7,46 mbar)	N/A	N/A	
<b>Transmitter output</b>				
A <sup>(4)</sup>	4–20 mA with digital signal based on HART Protocol			★
F	FOUNDATION Fieldbus Protocol			★
W <sup>(5)</sup>	PROFIBUS PA Protocol			★
X <sup>(6)</sup>	Wireless (requires wireless options and engineered polymer housing)			★
M <sup>(7)</sup>	Low-Power, 1–5 Vdc with Digital Signal Based on HART Protocol			
<b>Materials of construction</b>				
	<b>Process flange type</b>	<b>Flange material</b>	<b>Drain/vent</b>	
2	Coplanar	SST	SST	★
3 <sup>(8)</sup>	Coplanar	Cast C-276	Alloy C-276	★
4	Coplanar	Alloy 400	Alloy 400/K-500	★
5	Coplanar	Plated CS	SST	★
7 <sup>(8)</sup>	Coplanar	SST	Alloy C-276	★
8 <sup>(8)</sup>	Coplanar	Plated CS	Alloy C-276	★
0	Alternate process connection			★

**Table A-12. Rosemount 3051C Coplanar Pressure Transmitters Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

Isolating diaphragm			
2 <sup>(8)</sup>	316L SST	★	
3 <sup>(8)</sup>	Alloy C-276	★	
4 <sup>(9)</sup>	Alloy 400		
5 <sup>(9)</sup>	Tantalum (available on 3051CD and CG, ranges 2–5 only; not available on Rosemount 3051CA)		
6 <sup>(9)</sup>	Gold-plated Alloy 400 (use in combination with O-ring option code B)		
7 <sup>(9)</sup>	Gold-plated 316 SST		
O-ring			
A	Glass-filled PTFE	★	
B	Graphite-filled PTFE	★	
Sensor fill fluid			
1	Silicone	★	
2 <sup>(9)</sup>	Inert (differential and gage only)	★	
Housing material		Conduit entry size	
A	Aluminum	1/2–14 NPT	★
B	Aluminum	M20 × 1.5	★
J	SST	1/2–14 NPT	★
K	SST	M20 × 1.5	★
P <sup>(10)</sup>	Engineered polymer	No conduit entries	★
D <sup>(11)(12)</sup>	Aluminum	G1/2	
M <sup>(11)(12)</sup>	SST	G1/2	

**Wireless options (requires Wireless output code X and engineered polymer housing code P)**

Wireless transmit rate, operating frequency, and protocol		
WA3	User configurable transmit rate, 2.4GHz WirelessHART	★
Antenna and SmartPower™		
WP5	Internal antenna, compatible with green power module (I.S. power module sold separately)	★

**HART Revision configuration (requires HART Protocol output code A)<sup>(4)</sup>**

HR5	Configured for HART Revision 5	★
HR7	Configured for HART Revision 7	★

**Options (include with selected model number)**

Extended product warranty		
WR3	3-year limited warranty	★
WR5	5-year limited warranty	★



**Table A-12. Rosemount 3051C Coplanar Pressure Transmitters Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

<b>PlantWeb™ control functionality<sup>(13)</sup></b>		
A01	FOUNDATION Fieldbus control function block suite	★
<b>PlantWeb diagnostic functionality</b>		
DA0 <sup>(14)</sup>	Power advisory HART diagnostic	★
D01 <sup>(13)</sup>	FOUNDATION Fieldbus diagnostics suite	★
<b>Alternate flange<sup>(15)</sup></b>		
H2	Traditional flange, 316 SST, SST drain/vent	★
H3 <sup>(8)</sup>	Traditional flange, Alloy C, Alloy C-276 drain/vent	★
H4	Traditional flange, Cast Alloy 400, Alloy 400/K-500 drain/vent	★
H7 <sup>(8)</sup>	Traditional flange, 316 SST, Alloy C-276 drain/vent	★
HJ	DIN-compliant traditional flange, SST, 7/16-in. adapter/manifold bolting	★
FA	Level flange, SST, 2-in., ANSI Class 150, vertical mount 316 SST drain/vent	★
FB	Level flange, SST, 2-in., ANSI Class 300, vertical mount 316 SST drain/vent	★
FC	Level flange, SST, 3-in., ANSI Class 150, vertical mount 316 SST drain/vent	★
FD	Level flange, SST, 3-in., ANSI Class 300, vertical mount 316 SST drain/vent	★
FP	DIN level flange, SST, DN 50, PN 40, vertical mount 316 SST drain/vent	★
FQ	DIN level flange, SST, DN 80, PN 40, vertical mount 316 SST drain/vent	★
HK <sup>(16)</sup>	DIN compliant traditional flange, SST, 10 mm adapter/manifold bolting 316 SST	
HL	DIN compliant traditional flange, SST, 12 mm adapter/manifold bolting 316 SST	
<b>Manifold assembly<sup>(17)</sup></b>		
S5	Assemble to Rosemount 305 Integral Manifold	★
S6	Assemble to Rosemount 304 Manifold or connection system	★
<b>Integral mount primary element<sup>(16)(17)</sup></b>		
S3	Assemble to Rosemount 405 Compact Orifice Plate	★
S4 <sup>(18)</sup>	Assemble to Rosemount Annubar or Rosemount 1195 Integral Orifice	★
<b>Seal assemblies<sup>(17)</sup></b>		
S1 <sup>(19)</sup>	Assemble to one Rosemount 1199 Seal	★
S2 <sup>(20)</sup>	Assemble to two Rosemount 1199 Seals	★
<b>Mounting bracket<sup>(21)</sup></b>		
B4	Coplanar flange bracket, all SST, 2-in. pipe and panel	★
B1	Traditional flange bracket, CS, 2-in. pipe	★
B2	Traditional flange bracket, CS, panel	★
B3	Traditional flange flat bracket, CS, 2-in. pipe	★
B7	Traditional flange bracket, B1 with SST bolts	★
B8	Traditional flange bracket, B2 with SST bolts	★
B9	Traditional flange bracket, B3 with SST bolts	★

**Table A-12. Rosemount 3051C Coplanar Pressure Transmitters Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

BA	Traditional flange bracket, B1, all SST	★
BC	Traditional flange bracket, B3, all SST	★
<b>Product certifications</b>		
E8	ATEX Flameproof and Dust Certification	★
I1 <sup>(22)</sup>	ATEX Intrinsic Safety and Dust	★
IA	ATEX FISCO Intrinsic Safety; for FOUNDATION Fieldbus or PROFIBUS PA protocol only	★
N1	ATEX Type n Certification and Dust	★
K8	ATEX Flameproof, Intrinsic Safety, Type n, Dust (combination of E8, I1 and N1)	★
E4 <sup>(23)</sup>	TIIS Flame-proof	★
E5	FM Explosion-proof, Dust Ignition-Proof	★
I5 <sup>(24)</sup>	FM Intrinsically Safe, Nonincendive	★
IE	FM FISCO Intrinsically Safe; for FOUNDATION Fieldbus or PROFIBUS PA protocol only	★
K5	FM Explosion-proof, Dust Ignition-Proof, Intrinsically Safe, and Division 2	★
C6	CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, and Division 2	★
I6 <sup>(10)</sup>	CSA Intrinsic Safety	★
K6	CSA and ATEX Explosion-proof, Intrinsically Safe, and Division 2 (combination of C6, E8, and I1)	★
E7	IECEX Flameproof, Dust Ignition-proof	★
I7	IECEX Intrinsic Safety	★
N7	IECEX Type n Certification	★
K7	IECEX Flame-proof, Dust Ignition-proof, Intrinsic Safety, and Type n (combination of I7, N7, and E7)	★
E2	INMETRO Flameproof	★
I2	INMETRO Intrinsic Safety	★
IB	INMETRO FISCO intrinsically safe; for FOUNDATION Fieldbus or PROFIBUS PA protocols only	★
K2	INMETRO Flameproof, Intrinsic Safety	★
E3	China Flameproof	★
I3	China Intrinsic Safety	★
N3	China Type n	★
EM	Technical Regulations Customs Union (EAC) Flameproof	★
IM	Technical Regulations Customs Union (EAC) Intrinsic Safety	★
KM	Technical Regulations Customs Union (EAC) Flameproof and Intrinsic Safety	★
KB	FM and CSA Explosion-proof, Dust Ignition Proof, Intrinsically Safe, and Division 2 (combination of K5 and C6)	★
KD	FM, CSA, and ATEX Explosion-proof, Intrinsically Safe (combination of K5, C6, I1, and E8)	★
<b>Drinking water approval<sup>(25)</sup></b>		
DW	NSF drinking water approval	★
<b>Shipboard approvals<sup>(9)</sup></b>		
SBS	American Bureau of Shipping	★
SBV <sup>(26)</sup>	Bureau Veritas (BV)	★

**Table A-12. Rosemount 3051C Coplanar Pressure Transmitters Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

SDN	Det Norske Veritas	★
SLL <sup>(26)</sup>	Lloyds Register (LR)	★
<b>Custody transfer<sup>(14)</sup></b>		
C5	Measurement Canada Accuracy Approval (limited availability depending on transmitter type and range; contact an Emerson Process Management representative)	★
<b>Bolting material</b>		
L4	Austenitic 316 SST bolts	★
L5	ASTM A 193, grade B7M bolts	★
L6	Alloy K-500 bolts	★
<b>Display and interface options</b>		
M4 <sup>(27)</sup>	LCD display with local operator interface	★
M5	LCD display	★
<b>Calibration certificate</b>		
Q4	Calibration certificate	★
QG <sup>(28)</sup>	Calibration certificate and GOST verification certificate	★
QP	Calibration certification and tamper evident seal	★
<b>Material traceability certification</b>		
Q8	Material Traceability Certification per EN 10204 3.1	★
<b>Quality certification for safety<sup>(14)</sup></b>		
QS	Prior-use certificate of FMEDA data	★
QT	Safety certified to IEC 61508 with certificate of FMEDA	★
<b>Configuration buttons</b>		
D4 <sup>(14)</sup>	Analog zero and span	★
DZ <sup>(29)</sup>	Digital zero trim	★
<b>Transient protection<sup>(9)(30)</sup></b>		
T1	Transient protection terminal block	★
<b>Software configuration<sup>(29)</sup></b>		
C1	Custom software configuration (completed Rosemount 3051 <a href="#">Configuration Data Sheet</a> for wired and Rosemount 3051 Wireless <a href="#">Configuration Data Sheet</a> for Wireless required with order)	★
<b>Low power output</b>		
C2	0.8–3.2 Vdc output with digital signal based on HART Protocol (available with output code M only)	★
<b>Gage pressure calibration</b>		
C3	Gage calibration (Rosemount 3051CA4 model only)	★
<b>Alarm levels<sup>(14)</sup></b>		
C4	Analog output levels compliant with NAMUR recommendation NE 43, alarm high	★

**Table A-12. Rosemount 3051C Coplanar Pressure Transmitters Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

CN	Analog output levels compliant with NAMUR recommendation NE 43, alarm low	★
CR	Custom alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet)	★
CS	Custom alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet)	★
CT	Rosemount standard low alarm	★
<b>Pressure testing</b>		
P1	Hydrostatic testing with certificate	
<b>Cleaning process area</b>		
P2	Cleaning for special service	
P3	Cleaning for <1 PPM chlorine/fluorine	
<b>Flange adapters<sup>(31)</sup></b>		
DF	1/2–14 NPT flange adapter(s)	★
<b>Vent/drain valves</b>		
D7	Coplanar flange without drain/vent ports	
<b>Conduit plug<sup>(9)(32)</sup></b>		
DO	316 SST conduit plug	★
<b>RC1/4 RC1/2 process connection<sup>(33)</sup></b>		
D9	RC 1/4 flange with RC 1/2 flange adapter - SST	
<b>Max static line pressure</b>		
P9	4500 psig (310,26 bar) static pressure limit (Rosemount 3051CD Ranges 2–5 only)	★
<b>Ground screw<sup>(9)(34)</sup></b>		
V5	External ground screw assembly	★
<b>Surface finish</b>		
Q16	Surface finish certification for sanitary remote seals	★
<b>Toolkit total system performance reports</b>		
QZ	Remote seal system performance calculation report	★
<b>Conduit electrical connector<sup>(9)</sup></b>		
GE	M12, 4-pin, male connector (eurofast®)	★
GM	A size mini, 4-pin, male connector (minifast®)	★
<b>NACE® certificate<sup>(35)</sup></b>		
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials	★
Q25	Certificate of compliance to NACE MR0103 for wetted materials	★
<b>Typical model number: 3051CD 2 A 2 2 A 1 A B4</b>		

1. Select configuration buttons (option code D4 or DZ) or LOI (option code M4) if local configuration buttons are required.
2. If ordered with Wireless output code X, only Range 1-4, 316L SST diaphragm material (code 2), silicone fill fluid (code 1) and Wireless housing (code P) are available.

3. Rosemount 3051CD0 is only available with output code A and X. For output code A, only process flange code 0 (alternate flange H2, H7, HJ or HK), isolating diaphragm code 2, O-ring code A and bolting option L4 are available. For output code X, only process flange code 0 (alternate flange H2), isolating diaphragm code 2, O-ring code A and bolting option L4 are available.
4. Option HR5 configures the HART output to HART Revision 5. Option HR7 configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 or 7 if desired. HART Revision 5 is the default HART output.
5. For local addressing and configuration, M4 (LOI) is required.
6. Available approvals are FM Intrinsically Safe, (option code I5), CSA Intrinsically Safe (option code I6), ATEX Intrinsic Safety (option code I1), IECEx Intrinsic Safety (option code I7) and EAC Intrinsic Safety (option code IM).
7. Only available with C6, E2, E5, I5, K5, KB and E8 product certifications. Not available with GE, GM, SBS, DA0, M4, D4, DZ, QT, HR5, HR7, CR, CS, CT.
8. Materials of Construction comply with recommendations per NACE MR0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments.
9. Not available with Wireless Output (code X).
10. Only available with Wireless Output (code X).
11. Not available with Product certifications options E8, K8, E5, K5, C6, K6, E7, K7, E2, K2, E3, KB, KD.
12. Transmitter conduit entry will be 1/2 NPT and a 1/2 thread adapter will be provided.
13. Only valid with FOUNDATION Fieldbus output code F.
14. Only available with HART 4-20 mA output (code A).
15. Requires 0 code in materials of construction for alternate process connection.
16. Not valid with option code P9 for 4500 psi static pressure.
17. "Assemble-to" items are specified separately and require a completed model number.
18. Process flange limited to coplanar (option codes 2, 3, 5, 7, 8) or traditional (option codes H2, H3, H7).
19. Not valid with option code D9 for RC<sup>1</sup>/2 Adapters.
20. Not valid for option codes DF and D9 for Adapters.
21. Panel mounting bolts are not supplied.
22. Dust approval not applicable to output code X. See "Rosemount 3051 Wireless Pressure Transmitter" on page 150 for Wireless approvals.
23. Only available with output codes A - 4-20mA HART, F - FOUNDATION Fieldbus, and W - PROFIBUS PA. Also only available with G<sup>1</sup>/2 housing thread types.
24. Nonincendive certification not provided with Wireless output option code (X).
25. Not available with Alloy C-276 isolator (code 3), tantalum isolator (code 5), all cast C-276 flanges, all plated CS flanges, all DIN flanges, all Level flanges, assemble-to manifolds (codes S5 and S6), assemble-to seals (codes S1 and S2), assemble-to primary elements (codes S3 and S4), surface finish certification (code Q16), and remote seal system report (code QZ).
26. Only available with product certifications E7, E8, I1, I7, IA, K7, K8, KD, N1, N7
27. Not available with FOUNDATION Fieldbus (output code F), Wireless (output code X), or Low Power output (output code M).
28. Contact an Emerson Process Management representative for availability.
29. Only available with HART 4-20 mA Output (output code A) and Wireless Output (output code X)
30. The T1 option is not needed with FISCO product certifications; transient protection is included in the FISCO product certification codes IA, IB, and IE.
31. Not valid with alternate process connection options S3, S4, S5, and S6.
32. Transmitter is shipped with a 316 SST conduit plug (uninstalled) in place of standard carbon steel conduit plug.
33. Not available with alternate process connection; DIN flanges and level flanges.
34. The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.
35. NACE compliant wetted materials are identified by [Footnote 8](#).

**Table A-13. Rosemount 3051T In-Line Pressure Transmitter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

Model <sup>(1)</sup>	Transmitter type		
3051T	In-line pressure transmitter		
<b>Pressure type</b>			
G	Gage		★
A <sup>(2)</sup>	Absolute		★
<b>Pressure range</b>			
	<b>Gage (3051TG)<sup>(3)</sup></b>	<b>Absolute (3051TA)</b>	
1	-14.7 to 30 psi (-1,01 to 2,06 bar)	0 to 30 psia (0 to 2,06 bar)	★
2	-14.7 to 150 psi (-1,01 to 10,34 bar)	0 to 150 psia (0 to 10,34 bar)	★
3	-14.7 to 800 psi (-1,01 to 55,15 bar)	0 to 800 psia (0 to 55,15 bar)	★
4	-14.7 to 4000 psi (-1,01 to 275,79 bar)	0 to 4000 psia (0 to 275,79 bar)	★
5	-14.7 to 10000 psi (-1,01 to 689,47 bar)	0 to 10000 psia (0 to 689,47 bar)	★
<b>Transmitter output</b>			
A <sup>(4)</sup>	4–20 mA with digital signal based on HART Protocol		★
F	FOUNDATION Fieldbus Protocol		★
W <sup>(5)</sup>	PROFIBUS PA Protocol		★
X <sup>(6)</sup>	Wireless (requires wireless options and engineered polymer housing)		★
M <sup>(7)</sup>	Low-Power 1–5 Vdc with digital signal based on HART Protocol		
<b>Process connection style</b>			
2B	1/2–14 NPT female		★
2C <sup>(8)</sup>	G1/2 A EN 837-1 male (Range 1–4 only)		★
2F <sup>(9)</sup>	Coned and threaded, compatible with autoclave type F-250-C (Range 5 only)		
61 <sup>(9)</sup>	Non-threaded Instrument flange (Range 1–4 only)		
<b>Isolating diaphragm<sup>(10)</sup></b>		<b>Process connection wetted parts material</b>	
2	316L SST	316L SST	★
3	Alloy C-276	Alloy C-276	★
<b>Sensor fill fluid</b>			
1	Silicone		★
2 <sup>(9)</sup>	Inert		★
<b>Housing material</b>		<b>Conduit entry size</b>	
A	Aluminum	1/2–14 NPT	★
B	Aluminum	M20 × 1.5	★
J	SST	1/2–14 NPT	★
K	SST	M20 × 1.5	★

**Table A-13. Rosemount 3051T In-Line Pressure Transmitter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

P <sup>(11)</sup>	Engineered polymer	No conduit entries	★
D <sup>(12)(13)</sup>	Aluminum	G <sup>1</sup> /2	
M <sup>(12)(13)</sup>	SST	G <sup>1</sup> /2	

**Wireless options (requires Wireless output code X and engineered polymer housing code P)**

Wireless transmit rate, operating frequency, and protocol			
WA3	User configurable transmit rate, 2.4GHz WirelessHART		★
Antenna and SmartPower			
WP5	Internal antenna, compatible with green power module (I.S. power module sold separately)		★

**HART Revision configuration<sup>(4)</sup> (requires HART Protocol output code A)**

HR5	Configured for HART Revision 5		★
HR7	Configured for HART Revision 7		★

**Options (include with selected model number)**

Extended product warranty			
WR3	3-year limited warranty		★
WR5	5-year limited warranty		★
PlantWeb control functionality <sup>(14)</sup>			
A01	FOUNDATION Fieldbus control function block suite		★
PlantWeb diagnostic functionality			
DA0 <sup>(23)</sup>	Power advisory HART diagnostic		★
D01 <sup>(14)</sup>	FOUNDATION Fieldbus diagnostics suite		★
Integral assembly <sup>(15)</sup>			
S5	Assemble to Rosemount 306 Integral Manifold		★
Diaphragm seal assemblies <sup>(15)</sup>			
S1	Assemble to one Rosemount 1199 seal		★
Mounting bracket <sup>(16)</sup>			
B4	Bracket for 2-in. pipe or panel mounting, all SST		★
Product certifications			
E8	ATEX Flameproof and Dust Certification		★
I1 <sup>(17)</sup>	ATEX Intrinsic Safety and Dust		★
IA	ATEX Intrinsic Safety for FISCO; for FOUNDATION Fieldbus or PROFIBUS PA protocols only		★
N1	ATEX Type n Certification and Dust		★

**Table A-13. Rosemount 3051T In-Line Pressure Transmitter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

K8	ATEX Flame-proof, Intrinsic Safety, Type n, Dust (combination of E8, I1 and N1)	★
E4 <sup>(18)</sup>	TIIS Flameproof	★
E5	FM Explosion-proof, Dust Ignition-proof	★
I5 <sup>(19)</sup>	FM Intrinsically Safe, Nonincendive	★
IE	FM FISCO Intrinsically Safe; for FOUNDATION Fieldbus or PROFIBUS PA protocols only	★
K5	FM Explosion-proof, Dust Ignition-proof, Intrinsically Safe, and Division 2	★
C6	CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, and Division 2	★
I6 <sup>(11)</sup>	CSA Intrinsic Safety	★
K6	CSA and ATEX Explosion-proof, Intrinsically Safe, and Division 2 (combination of C6, E8, and I1)	★
E7	IECEX Flameproof, Dust Ignition-proof	★
I7	IECEX Intrinsic Safety	★
N7	IECEX Type n Certification	★
K7	IECEX Flameproof, Dust Ignition-proof, Intrinsic Safety, and Type n (combination of I7, N7, and E7)	★
E2	INMETRO Flameproof	★
I2	INMETRO Intrinsic Safety	★
IB	INMETRO FISCO intrinsically safe; for FOUNDATION Fieldbus or PROFIBUS PA protocols only	★
K2	INMETRO Flameproof, Intrinsic Safety	★
E3	China Flameproof	★
I3	China Intrinsic Safety	★
N3	China Type n	★
EM	Technical Regulations Customs Union (EAC) Flameproof	★
IM	Technical Regulations Customs Union (EAC) Intrinsic Safety	★
KM	Technical Regulations Customs Union (EAC) Flameproof and Intrinsic Safety	★
KB	FM and CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, and Division 2 (combination of K5 and C6)	★
KD	FM, CSA, and ATEX Explosion-proof, Intrinsically Safe (combination of K5, C6, I1, and E8)	★
<b>Drinking water approval<sup>(20)</sup></b>		
DW	NSF drinking water approval	★
<b>Shipboard approvals<sup>(9)</sup></b>		
SBS	American Bureau of Shipping	★
SBV <sup>(21)</sup>	Bureau Veritas (BV)	★
SDN	Det Norske Veritas	★
SLL <sup>(21)</sup>	Lloyds Register (LR)	★
<b>Custody transfer</b>		
C5	Measurement Canada Accuracy Approval (Limited availability depending on transmitter type and range. Contact an Emerson Process Management representative.)	★



**Table A-13. Rosemount 3051T In-Line Pressure Transmitter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

<b>Calibration certification</b>		
Q4	Calibration certificate	★
QG <sup>(22)</sup>	Calibration certificate and GOST verification certificate	★
QP	Calibration certification and tamper evident seal	★
<b>Material traceability certification</b>		
Q8	Material Traceability Certification per EN 10204 3.1	★
<b>Quality certification for safety<sup>(23)</sup></b>		
QS	Prior-use certificate of FMEDA data	★
QT	Safety certified to IEC 61508 with certificate of FMEDA	★
<b>Configuration buttons</b>		
D4 <sup>(23)</sup>	Analog zero and span	★
DZ <sup>(24)</sup>	Digital zero trim	★
<b>Display and interface options</b>		
M4 <sup>(25)</sup>	LCD display with Local Operator Interface	★
M5	LCD display	★
<b>Wireless SST sensor module<sup>(11)</sup></b>		
WSM	Wireless SST sensor module	★
<b>Conduit plug<sup>(9)(26)</sup></b>		
DO	316 SST conduit plug	★
<b>Transient terminal block<sup>(9)(27)</sup></b>		
T1	Transient protection terminal block	★
<b>Software configuration<sup>(24)</sup></b>		
C1	Custom software configuration (completed Rosemount 3051 <a href="#">Configuration Data Sheet</a> for wired and Rosemount 3051 Wireless <a href="#">Configuration Data Sheet</a> for Wireless required with order)	★
<b>Low power output</b>		
C2	0.8-3.2 Vdc output with digital signal based on HART Protocol (available with Output code M only)	
<b>Alarm levels<sup>(23)</sup></b>		
C4	Analog output levels compliant with NAMUR recommendation NE 43, alarm high	★
CN	Analog output levels compliant with NAMUR recommendation NE 43, low alarm	★
CR	Custom alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet)	★
CS	Custom alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet)	★
CT	Rosemount standard low alarm	★

**Table A-13. Rosemount 3051T In-Line Pressure Transmitter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

<b>Pressure testing</b>		
P1	Hydrostatic testing with certificate	
<b>Cleaning process area<sup>(28)</sup></b>		
P2	Cleaning for special service	
P3	Cleaning for <1 PPM Chlorine/Fluorine	
<b>Ground screw<sup>(9)(29)</sup></b>		
V5	External ground screw assembly	★
<b>Surface finish</b>		
Q16	Surface finish certification for sanitary remote seals	★
<b>Toolkit total system performance reports</b>		
QZ	Remote seal system performance calculation report	★
<b>Conduit electrical connector<sup>(9)</sup></b>		
GE	M12, 4-pin, male connector (eurofast)	★
GM	A size mini, 4-pin, male connector (minifast)	★
<b>NACE certificate<sup>(30)</sup></b>		
Q15	Certificate of Compliance to NACE MR0175/ISO15156 for wetted materials	★
Q25	Certificate of Compliance to NACE MR0103 for wetted materials	★
<b>Typical model number: 3051T G 5 F 2A 2 1 A B4</b>		

1. Select Configuration Buttons (option code D4 or DZ) or Local Operator Interface (option code M4) if local configuration buttons are required.
2. Wireless output (code X) only available in absolute measurement type (code A) in range 1-5 with 1/2–14 NPT process connection (code 2B), and polymer housing (code P).
3. Rosemount 3051TG lower range limit varies with atmospheric pressure.
4. Option HR5 configures the HART output to HART Revision 5. Option HR7 configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 or 7 if desired. HART Revision 5 is the default HART output.
5. For local addressing and configuration, M4 (LOI) is required.
6. Requires wireless options and engineered polymer housing. Available approvals are FM Intrinsically Safe, (option code I5), CSA Intrinsically Safe (option code I6), ATEX Intrinsic Safety (option code I1), IECEx Intrinsic Safety (option code I7), and EAC Intrinsic Safety (option code IM).
7. Only available with C6, E2, E5, I5, K5, KB and E8 product certifications. Not available with GE, GM, SBS, DA0, M4, D4, DZ, QT, HR5, HR7, CR, CS, CT.
8. Wireless output (code X) only available in G<sup>1</sup>/2 A DIN 16288 Male process connection (code 2C) with range 1-4, 316 SST isolating diaphragm (code 2), silicone fill fluid (code 1) and housing code (code P).
9. Not available with Wireless Output (output code X).
10. Materials of Construction comply with recommendations per NACE MR0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments.
11. Only available with Wireless Output (output code X).
12. Not available with product certifications options E8, K8, E5, K5, C6, K6, E7, K7, E2, K2, E3, KB, KD.
13. Transmitter conduit entry will be 1/2 NPT and a 1/2 NPT to G<sup>1</sup>/2 thread adapter will be provided.
14. Only valid with FOUNDATION Fieldbus output code F.
15. "Assemble-to" items are specified separately and require a completed model number.
16. Panel mounting bolts are not supplied.
17. Dust approval not applicable to output code X. See "Rosemount 3051 Wireless Pressure Transmitter" on page 150 for wireless approvals.
18. Only available with output codes A - 4-20mA HART, F - FOUNDATION Fieldbus, and W - PROFIBUS PA. Also only available with G<sup>1</sup>/2 housing thread types.
19. Nonincendive certification not provided with Wireless output option code (X).

20. Not available with Alloy C-276 isolator (option code 3), assemble-to manifolds (option code S5), assemble-to seals (option code S1), surface finish certification (option code Q16), and remote seal system report (option code QZ).
21. Only available with product certifications E7, E8, I1, I7, IA, K7, K8, KD, N1, N7.
22. Contact an Emerson Process Management representative for availability.
23. Only available with HART 4-20 mA output (output code A).
24. Only available with HART 4-20 mA output (output code A) and Wireless output (output code X).
25. Not available with FOUNDATION Fieldbus (output code F) and Wireless output (output code X) or Low Power (output code M).
26. Transmitter is shipped with 316 SST conduit plug (uninstalled) in place of standard carbon steel conduit plug.
27. The T1 option is not needed with FISCO product certifications; transient protection is included in the FISCO product certification codes IA, IB, and IE.
28. Not valid with alternate process connection S5.
29. The V5 option is not needed with T1 option; external ground screw assembly is included with the T1 option.
30. NACE compliant wetted materials are identified by [Footnote 10](#).

**Table A-14. Rosemount 3051CFA Annubar Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

Model <sup>(1)</sup>	Product description	
3051CFA	Annubar Flowmeter	
<b>Measurement type</b>		
D	Differential Pressure	★
<b>Fluid type</b>		
L	Liquid	★
G	Gas	★
S	Steam	★
<b>Line size</b>		
020	2-in. (50 mm)	★
025	2½-in. (63.5 mm)	★
030	3-in. (80 mm)	★
035	3½-in. (89 mm)	★
040	4-in. (100 mm)	★
050	5-in. (125 mm)	★
060	6-in. (150 mm)	★
070	7-in. (175 mm)	★
080	8-in. (200 mm)	★
100	10-in. (250 mm)	★
120	12-in. (300 mm)	★
140	14-in. (350 mm)	
160	16-in. (400 mm)	
180	18-in. (450 mm)	
200	20-in. (500 mm)	
240	24-in. (600 mm)	
300	30-in. (750 mm)	
360	36-in. (900 mm)	
420	42-in. (1066 mm)	
480	48-in. (1210 mm)	
600	60-in. (1520 mm)	
720	72-in. (1820 mm)	
780	78-in. (1950 mm)	
840	84-in. (2100 mm)	
900	90-in. (2250 mm)	
960	96-in. (2400 mm)	

**Table A-14. Rosemount 3051CFA Annubar Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

<b>Pipe I.D. range</b>		
C	Range C from the <a href="#">Pipe I.D. range codes</a> table	★
D	Range D from the <a href="#">Pipe I.D. range codes</a> table	★
A	Range A from the <a href="#">Pipe I.D. range codes</a> table	
B	Range B from the <a href="#">Pipe I.D. range codes</a> table	
E	Range E from the <a href="#">Pipe I.D. range codes</a> table	
Z	Non-standard <a href="#">Pipe I.D. range codes</a> or line sizes greater than 12-in.	
<b>Pipe material/mounting assembly material</b>		
C	Carbon steel (A105)	★
S	316 stainless steel	★
0	No mounting (customer supplied)	★
G	Chrome-moly grade F-11	
N	Chrome-moly grade F-22	
J	Chrome-moly grade F-91	
<b>Piping orientation</b>		
H	Horizontal piping	★
D	Vertical piping with downwards flow	★
U	Vertical piping with upwards flow	★
<b>Annubar type</b>		
P	Pak-Lok	★
F	Flanged with opposite side support	★
L	Flange-Lok	
G	Gear-Drive Flo-Tap	
M	Manual Flo-Tap	
<b>Sensor material</b>		
S	316 Stainless steel	★
H	Alloy C-276	
<b>Sensor size</b>		
1	Sensor size 1 — line sizes 2-in. (50 mm) to 8-in. (200 mm)	★
2	Sensor size 2 — line sizes 6-in. (150 mm) to 96-in. (2400 mm)	★
3	Sensor size 3 — line sizes greater than 12-in. (300 mm)	★
<b>Mounting type</b>		
T1	Compression or threaded connection	★
A1	ANSI Class 150 RF	★

**Table A-14. Rosemount 3051CFA Annubar Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

A3	ANSI Class 300 RF			★
A6	ANSI Class 600 RF			★
D1	DN PN16 flange			★
D3	DN PN40 flange			★
D6	DN PN100 flange			★
A9 <sup>(2)</sup>	ANSI Class 900 RF			
AF <sup>(2)</sup>	ANSI Class 1500 RF			
AT <sup>(2)</sup>	ANSI Class 2500 RF			
R1	Class 150 RTJ flange			
R3	Class 300 RTJ flange			
R6	Class 600 RTJ flange			
R9 <sup>(2)</sup>	Class 900 RTJ flange			
RF <sup>(2)</sup>	Class 1500 RTJ flange			
RT <sup>(2)</sup>	Class 2500 RTJ flange			
<b>Opposite side support or packing gland</b>				
0	No opposite side support or packing gland (required for Pak-Lok and Flange-Lok models)			★
<b>Opposite side support – required for flanged models</b>				
C	NPT threaded opposite support assembly – extended tip			★
D	Welded opposite support assembly – extended tip			★
<b>Packing gland – required for Flo-Tap models</b>				
	<b>Packing gland material</b>	<b>Rod material</b>	<b>Packing material</b>	
J <sup>(3)</sup>	Stainless steel packing gland/cage nipple	Carbon steel	PTFE	
K <sup>(3)</sup>	Stainless steel packing gland/cage nipple	Stainless steel	PTFE	
L <sup>(3)</sup>	Stainless steel packing gland/cage nipple	Carbon steel	Graphite	
N <sup>(3)</sup>	Stainless steel packing gland/cage nipple	Stainless steel	Graphite	
R	Alloy C-276 packing gland/cage nipple	Stainless steel	Graphite	
<b>Isolation valve for Flo-Tap models</b>				
0	Not applicable or customer supplied			★
1	Gate valve, carbon steel			
2	Gate valve, stainless steel			
5	Ball valve, carbon steel			
6	Ball valve, stainless steel			

**Table A-14. Rosemount 3051CFA Annubar Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

Temperature measurement			
T	Integral RTD – not available with flanged model greater than Class 600	★	
0	No temperature sensor	★	
R	Remote thermowell and RTD		
Transmitter connection platform			
3	Direct-mount, Integral 3-valve manifold– not available with flanged model greater than Class 600	★	
5	Direct -mount, 5-valve manifold – not available with flanged model greater than Class 600	★	
7	Remote-mount NPT connections (1/2-in. NPT)	★	
6	Direct-mount, high temperature 5-valve manifold – not available with flanged model greater than Class 600		
8	Remote-mount SW connections (1/2-in.)		
Differential pressure range			
1	0 to 25 inH <sub>2</sub> O (0 to 62,16 mbar)	★	
2	0 to 250 inH <sub>2</sub> O (0 to 621,60 mbar)	★	
3	0 to 1000 inH <sub>2</sub> O (0 to 2,48 bar)	★	
Transmitter output			
A <sup>(4)</sup>	4–20 mA with digital signal based on HART Protocol	★	
F	FOUNDATION Fieldbus Protocol	★	
W <sup>(5)</sup>	PROFIBUS PA Protocol	★	
X <sup>(6)</sup>	Wireless (requires wireless options and engineered polymer housing)	★	
M <sup>(7)</sup>	Low-Power 1-5 Vdc with digital signal based on HART Protocol		
Transmitter housing material		Conduit entry size	
A	Aluminum	1/2-14 NPT	★
B	Aluminum	M20 × 1.5	★
J	SST	1/2-14 NPT	★
K	SST	M20 × 1.5	★
P <sup>(8)</sup>	Engineered polymer	No conduit entries	★
D <sup>(9)(10)</sup>	Aluminum	G1/2	
M <sup>(9)(10)</sup>	SST	G1/2	
Transmitter performance class			
1	1.8% flow rate accuracy, 8:1 flow turndown, 10-yr. stability	★	

**Wireless options (requires Wireless output code X and engineered polymer housing code P)**

Wireless transmit rate, operating frequency, and protocol		
WA3	User configurable transmit rate, 2.4GHz WirelessHART	★

**Table A-14. Rosemount 3051CFA Annubar Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

<b>Antenna and SmartPower</b>		
WP5	Internal antenna, compatible with green power module (I.S. power module sold separately)	★

**HART Revision configuration<sup>(4)</sup> (requires HART Protocol Output Code A)**

HR5	Configured for HART Revision 5	★
HR7	Configured for HART Revision 7	★

**Options (include with selected model number)**

<b>Extended product warranty</b>		
WR3	3-year limited warranty	★
WR5	5-year limited warranty	★
<b>Pressure testing<sup>(11)</sup></b>		
P1	Hydrostatic testing with certificate	
PX	Extended hydrostatic testing	
<b>Special cleaning</b>		
P2	Cleaning for special services	
PA	Cleaning per ASTM G93 Level D (Section 11.4)	
<b>Material testing</b>		
V1	Dye penetrant exam	
<b>Material examination</b>		
V2	Radiographic examination	
<b>Flow calibration</b>		
W1	Flow calibration (Average K)	
<b>Special inspection</b>		
QC1	Visual and dimensional inspection with certificate	★
QC7	Inspection and performance certificate	★
<b>Surface finish</b>		
RL	Surface finish for low pipe Reynolds number in gas and steam	★
RH	Surface finish for high pipe Reynolds number in liquid	★
<b>Material traceability certification<sup>(12)</sup></b>		
Q8	Material Traceability Certification per EN 10474:2004 3.1	★



**Table A-14. Rosemount 3051CFA Annubar Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

<b>Code conformance<sup>(13)</sup></b>		
J2	ANSI/ASME B31.1	
J3	ANSI/ASME B31.3	
<b>Materials conformance<sup>(14)</sup></b>		
J5	NACE MR-0175/ISO 15156	
<b>Country certification</b>		
J6	European pressure directive (PED)	★
J1	Canadian registration	
<b>Installed in flanged pipe spool section</b>		
H3	Class 150 flanged connection with Rosemount standard length and schedule	
H4	Class 300 flanged connection with Rosemount standard length and schedule	
H5	Class 600 flanged connection with Rosemount standard length and schedule	
<b>Instrument connections for remote mount options</b>		
G2	Needle valves, stainless steel	★
G6	OS and Y gate valve, stainless steel	★
G1	Needle valves, carbon steel	
G3	Needle valves, Alloy C-276	
G5	OS and Y gate valve, carbon steel	
G7	OS and Y gate valve, Alloy C-276	
<b>Special shipment</b>		
Y1	Mounting hardware shipped separately	★
<b>Special dimensions</b>		
VM	Variable mounting	
VT	Variable tip	
VS	Variable length spool section	
<b>PlantWeb control functionality<sup>(15)</sup></b>		
A01	FOUNDATION Fieldbus control function block suite	★
<b>PlantWeb diagnostic functionality</b>		
DA0 <sup>(16)</sup>	Power advisory HART diagnostic	★
D01 <sup>(15)</sup>	FOUNDATION Fieldbus Diagnostics Suite	★
<b>Product certifications</b>		
E8	ATEX Flameproof, Dust	★
I1 <sup>(17)</sup>	ATEX Intrinsic Safety and Dust	★

**Table A-14. Rosemount 3051CFA Annubar Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

IA	ATEX FISCO Intrinsic Safety; for FOUNDATION Fieldbus or PROFIBUS PA protocols only	★
N1	ATEX Type n and Dust	★
K8	ATEX Flameproof, Intrinsic Safety, Type n, Dust (combination of E8, I1 and N1)	★
E5	FM Explosion-proof, Dust Ignition-proof	★
I5 <sup>(18)</sup>	FM Intrinsically Safe, Nonincendive	★
IE	FM FISCO Intrinsically Safe; for FOUNDATION Fieldbus or PROFIBUS PA protocols only	★
K5	FM Explosion-proof, Dust Ignition-proof, Intrinsically Safe, and Division 2 (combination of E5 and I5)	★
C6	CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, and Division 2	★
I6 <sup>(8)</sup>	CSA Intrinsically Safe	★
K6	CSA and ATEX Explosion-proof, Intrinsically Safe, and Division 2 (combination of C6, E8, and I1)	★
E7	IECEX Flameproof, Dust Ignition-proof	★
I7	IECEX Intrinsic Safety	★
N7	IECEX Type n	★
K7	IECEX Flameproof, Dust Ignition-proof, Intrinsic Safety, and Type n (combination of I7, N7 and E7)	★
E2	INMETRO Flameproof	★
I2	INMETRO Intrinsic Safety	★
IB	INMETRO FISCO intrinsically safe; for FOUNDATION Fieldbus or PROFIBUS PA protocols only	★
K2	INMETRO Flameproof, Intrinsic Safety	★
E3	China Flameproof	★
I3	China Intrinsic Safety	★
KB	FM and CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, and Division 2 (combination of K5 and C6)	★
KD	CSA, FM, and ATEX Explosion-proof, Intrinsically Safe (combination of K5, C6, I1, and E8)	★
<b>Sensor fill fluid and O-ring options</b>		
L1 <sup>(19)</sup>	Inert sensor fill fluid Note: Silicone fill fluid is standard.	★
L2	Graphite-filled (PTFE) O-ring	★
LA <sup>(19)</sup>	Inert sensor fill fluid and graphite-filled (PTFE) O-ring	★
<b>Shipboard approvals</b>		
SBS <sup>(19)</sup>	American Bureau of Shipping	★
SLL <sup>(19)(20)</sup>	Lloyds Register (LR)	
<b>Display and interface options</b>		
M4 <sup>(21)</sup>	LCD display with LOI	★
M5	LCD display	★

**Table A-14. Rosemount 3051CFA Annubar Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

<b>Transmitter calibration certification</b>		
Q4	Calibration certificate for transmitter	★
<b>Quality certification for safety<sup>(16)</sup></b>		
QS	Prior-use certificate of FMEDA data	★
QT	Safety certified to IEC 61508 with certificate of FMEDA	★
<b>Transient protection<sup>(19)(22)</sup></b>		
T1	Transient terminal block	★
<b>Manifold for remote mount option</b>		
F2	3-valve manifold, stainless steel	★
F6	5-valve manifold, stainless steel	★
F1	3-valve manifold, carbon steel	
F3	3-valve manifold, Alloy C-276	
F5	5-valve manifold, carbon steel	
F7	5-valve manifold, Alloy C-276	
<b>Lower power output</b>		
C2	0.8-3.2 Vdc output with digital signal based on HART Protocol (available with output code M only)	
<b>Alarm levels<sup>(16)</sup></b>		
C4	NAMUR alarm and saturation levels, high alarm	★
CN	NAMUR alarm and saturation levels, low alarm	★
CR	Custom alarm and saturation signal levels, high alarm	★
CS	Custom alarm and saturation signal levels, low alarm	★
CT	Rosemount standard low alarm	★
<b>Configuration buttons</b>		
D4 <sup>(16)</sup>	Analog zero and span	★
DZ <sup>(23)</sup>	Digital zero trim	★
<b>Ground screw<sup>(19)(24)</sup></b>		
V5	External ground screw assembly	★
<b>Typical model number: 3051CFA D L 060 D C H P S 2 T1 0 0 0 3 2 A A 1</b>		

1. Select configuration buttons (option code D4 or DZ) or LOI (option code M4) if local configuration buttons are required.
2. Available in remote mount applications only.
3. The cage nipple is constructed of 304 SST.
4. Option HR5 configures the HART output to HART Revision 5. Option HR7 configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 or 7 if desired. HART Revision 5 is the default HART output.
5. For local addressing and configuration, M4 (Local Operator Interface) is required.
6. Requires wireless options and engineered polymer housing. Available approvals are FM Intrinsically Safe, (option code I5), CSA Intrinsically Safe (option code I6), ATEX Intrinsic Safety (option code I1), and IECEx Intrinsic Safety (option code I7).

7. Only available with C6, E2, E5, I5, K5, KB and E8 approval. Not available with GE, GM, SBS, DA0, M4, D4, DZ, QT, HR5, HR7, CR, CS, CT.
8. Only available with Wireless output (output code X).
9. Not available with product certifications options E8, K8, E5, K5, C6, K6, E7, K7, E2, K2, E3, KB, KD.
10. Transmitter conduit entry will be 1/2 NPT and a 1/2 NPT to G1/2 thread adapter will be provided.
11. Applies to assembled flowmeter only, mounting not tested.
12. Instrument connections for remote mount options and isolation valves for Flo-Tap models are not included in the material traceability certification.
13. Not available with transmitter connection platform 6.
14. Materials of construction comply with metallurgical requirements within NACE MR0175/ISO for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments.
15. Only valid with FOUNDATION Fieldbus output (output code F).
16. Only available with 4-20 mA HART output (output code A).
17. Dust approval not applicable to output code X. See "[Rosemount 3051 Wireless Pressure Transmitter](#)" on page 150 for Wireless approvals.
18. Nonincendive certification not provided with Wireless output option code (X).
19. Not available with Wireless output (output code X).
20. Only available with product certifications E7, E8, I1, I7, IA, K7, K8, KD, N1, N7
21. Not available with FOUNDATION Fieldbus (output code F) or Wireless output (output code X) or Low Power (output code M).
22. The T1 option is not needed with FISCO product certifications, transient protection is included with the FISCO product certification codes IA, IB, and IE.
23. Only available with 4-20 mA HART output (output code A) and Wireless output (output code X).
24. The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.

**Table A-15. Rosemount 3051CFC Compact Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

Model <sup>(1)</sup>	Product description	
3051CFC	Compact Flowmeter	
<b>Measurement type</b>		
D	Differential Pressure	★
<b>Primary element technology</b>		
A	Annubar averaging pitot tube	★
C	Conditioning orifice plate	★
P	Orifice plate	★
<b>Material type</b>		
S	316 SST	★
<b>Line size</b>		
005 <sup>(2)</sup>	1/2-in. (15 mm)	★
010 <sup>(2)</sup>	1-in. (25 mm)	★
015 <sup>(2)</sup>	1 1/2-in. (40 mm)	★
020	2-in. (50 mm)	★
030	3-in. (80 mm)	★
040	4-in. (100 mm)	★
060	6-in. (150 mm)	★
080	8-in. (200 mm)	★
100 <sup>(3)</sup>	10-in. (250 mm)	★
120 <sup>(3)</sup>	12-in. (300 mm)	★
<b>Primary element type</b>		
N000	Annubar sensor size 1	★
N040	0.40 beta ratio	★
N050	0.50 beta ratio	
N065 <sup>(4)</sup>	0.65 beta ratio	★
<b>Temperature measurement</b>		
0	No temperature sensor	★
R	Remote thermowell and RTD	
<b>Transmitter connection platform</b>		
3	Direct-mount	★
7	Remote-mount, NPT connections	★

**Table A-15. Rosemount 3051CFC Compact Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

Differential pressure range			
1	0 to 25 inH <sub>2</sub> O (0 to 62,16 mbar)	★	
2	0 to 250 inH <sub>2</sub> O (0 to 621,60 mbar)	★	
3	0 to 1000 inH <sub>2</sub> O (0 to 2,48 bar)	★	
Transmitter output			
A <sup>(5)</sup>	4–20 mA with digital signal based on HART Protocol	★	
F	FOUNDATION Fieldbus Protocol	★	
W <sup>(6)</sup>	PROFIBUS PA Protocol	★	
X <sup>(7)</sup>	Wireless (requires Wireless options and engineered polymer housing)	★	
M <sup>(8)</sup>	Low-Power 1-5 Vdc with digital signal based on HART Protocol		
Transmitter housing material		Conduit entry size	
A	Aluminum	1/2–14 NPT	★
B	Aluminum	M20 × 1.5	★
J	SST	1/2–14 NPT	★
K	SST	M20 × 1.5	★
P <sup>(9)</sup>	Engineered polymer	No conduit entries	★
D <sup>(10)(11)</sup>	Aluminum	G1/2	
M <sup>(10)(11)</sup>	SST	G1/2	
Transmitter performance class			
1	Up to ±1.65% flow rate accuracy, 8:1 flow turndown, 10-year stability	★	

### Wireless options (requires Wireless output code X and engineered polymer housing code P)

Wireless transmit rate, operating frequency, and protocol		
WA3	User configurable transmit rate, 2.4GHz WirelessHART	★
Antenna and SmartPower		
WP5	Internal antenna, compatible with green power module (I.S. power module sold separately)	★

### HART Revision configuration (requires HART Protocol output code A)<sup>(5)</sup>

HR5	Configured for HART Revision 5	★
HR7	Configured for HART Revision 7	★

### Options (include with selected model number)

Extended product warranty		
WR3	3-year limited warranty	★
WR5	5-year limited warranty	★

**Table A-15. Rosemount 3051CFC Compact Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

<b>Installation accessories</b>		
AB	ANSI alignment ring (Class 150) (only required for 10-in. (250 mm) and 12-in. (300mm) line sizes)	★
AC	ANSI alignment ring (Class 300) (only required for 10-in. (250 mm) and 12-in. (300mm) line sizes)	★
AD	ANSI alignment ring (Class 600) (only required for 10-in. (250 mm) and 12-in. (300mm) line sizes)	★
DG	DIN alignment ring (PN16)	★
DH	DIN alignment ring (PN40)	★
DJ	DIN alignment ring (PN100)	★
JB	JIS alignment ring (10K)	
JR	JIS alignment ring (20K)	
JS	JIS alignment ring (40K)	
<b>Remote adapters</b>		
FE	Flange adapters 316 SST (1/2-in. NPT)	★
<b>High temperature application</b>		
HT	Graphite valve packing ( $T_{max} = 850\text{ }^{\circ}\text{F}$ )	
<b>Flow calibration<sup>(12)</sup></b>		
WC	Flow calibration, 3 pt, conditioning orifice option C (all pipe schedules)	
WD <sup>(13)</sup>	Flow calibration, 10 pt, conditioning option C (all schedules), Annubar option A (Schedule 40)	
<b>Pressure testing</b>		
P1	Hydrostatic testing with certificate	
<b>Special cleaning</b>		
P2 <sup>(14)</sup>	Cleaning for special services	
PA	Cleaning per ASTM G93 Level D (Section 11.4)	
<b>Special inspection</b>		
QC1	Visual and dimensional inspection with certificate	★
QC7	Inspection and performance certificate	★
<b>Transmitter calibration certification</b>		
Q4	Calibration certificate for transmitter	★
<b>Quality certification for safety<sup>(15)</sup></b>		
QS	Prior-use certificate of FMEDA data	★
QT	Safety certified to IEC 61508 with certificate of FMEDA	★
<b>Material traceability certification</b>		
Q8	Material traceability certification per EN 10204:2004 3.1	★

**Table A-15. Rosemount 3051CFC Compact Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

Code conformance		
J2	ANSI/ASME B31.1	
J3	ANSI/ASME B31.3	
J4	ANSI/ASME B31.8	
Materials conformance		
J5 <sup>(16)</sup>	NACE MR-0175/ISO 15156	
Country certification		
J1	Canadian registration	
Product certifications		
E8	ATEX Flameproof, Dust	★
I1 <sup>(17)</sup>	ATEX Intrinsic Safety and Dust	★
IA	ATEX FISCO Intrinsic Safety; for FOUNDATION Fieldbus or PROFIBUS PA protocols only	★
N1	ATEX Type n and Dust	★
K8	ATEX Flameproof, Intrinsic Safety, Type n, Dust (combination of E8, I1 and N1)	★
E5	FM Explosion-proof, Dust Ignition-proof	★
I5 <sup>(18)</sup>	FM Intrinsically Safe, Nonincendive	★
IE	FM FISCO Intrinsically Safe; for FOUNDATION Fieldbus or PROFIBUS PA protocols only	★
K5	FM Explosion-proof, Dust Ignition-proof, Intrinsically Safe, and Division 2 (combination of E5 and I5)	★
C6	CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, and Division 2	★
I6 <sup>(9)</sup>	CSA Intrinsically Safe	★
K6	CSA and ATEX Explosion-proof, Intrinsically Safe, and Division 2 (combination of C6, E8, and I1)	★
E7	IECEx Flameproof, Dust Ignition-proof	★
I7	IECEx Intrinsic Safety	★
N7	IECEx Type n	★
K7	IECEx Flameproof, Dust Ignition-proof, Intrinsic Safety, and Type n (combination of I7, N7 and E7)	★
E2	INMETRO Flameproof	★
I2	INMETRO Intrinsic Safety	★
IB	INMETRO FISCO intrinsically safe; for FOUNDATION Fieldbus or PROFIBUS PA protocols only	★
K2	INMETRO Flameproof, Intrinsic Safety	★
E3	China Flameproof	★
I3	China Intrinsic Safety	★
KB	FM and CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, and Division 2 (combination of K5 and C6)	★
KD	CSA, FM, and ATEX Explosion-proof, Intrinsically Safe (combination of K5, C6, I1, and E8)	★



**Table A-15. Rosemount 3051CFC Compact Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

<b>Sensor fill fluid and O-ring options</b>		
L1 <sup>(19)</sup>	Inert sensor fill fluid	★
L2	Graphite-Filled (PTFE) O-ring	★
LA <sup>(19)</sup>	Inert sensor fill fluid and graphite-filled (PTFE) O-ring	★
<b>Shipboard approvals<sup>(19)</sup></b>		
SBS	American Bureau of Shipping	★
SLL <sup>(20)</sup>	Lloyds Register (LR)	
<b>Display and interface options</b>		
M4 <sup>(21)</sup>	LCD display with LOI	★
M5	LCD display	★
<b>Transient protection<sup>(19)(22)</sup></b>		
T1	Transient terminal block	★
<b>Manifold for remote mount option</b>		
F2	3-valve manifold, stainless steel	★
F6	5-valve manifold, stainless steel	★
<b>PlantWeb control functionality<sup>(23)</sup></b>		
A01	FOUNDATION Fieldbus control function block suite	★
<b>PlantWeb diagnostic functionality</b>		
DA0 <sup>(15)</sup>	Power advisory HART diagnostic	★
D01 <sup>(23)</sup>	FOUNDATION Fieldbus diagnostic suite	★
<b>Low power output</b>		
C2	0.8-3.2 Vdc output with digital signal based on HART Protocol (available with output code M only)	
<b>Alarm levels<sup>(15)</sup></b>		
C4	NAMUR alarm and saturation levels, high alarm	★
CN	NAMUR alarm and saturation levels, low alarm	★
CR	Custom alarm and saturation signal levels, high alarm	★
CS	Custom alarm and saturation signal levels, low alarm	★
CT	Rosemount Standard low alarm	★
<b>Ground screw<sup>(19)(24)</sup></b>		
V5	External ground screw assembly	★

**Table A-15. Rosemount 3051CFC Compact Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

Configuration buttons		
D4 <sup>(15)</sup>	Analog zero and span	★
DZ <sup>(25)</sup>	Digital zero trim	★
<b>Typical model number: 3051CFC D C S 060 N 065 0 3 2 A A 1 WC E5 M5</b>		

1. Select configuration buttons (option code D4 or DZ) or LOI (option code M4) if local configuration buttons are required.
2. Available with Primary Element Technology P only.
3. 10-in. (250 mm) and 12-in. (300 mm) line sizes not available with Primary Element Technology A.
4. For 2-in. (50 mm) line sizes the Primary Element Type is 0.6 for Primary Element Technology code C.
5. Option HR5 configures the HART output to HART Revision 5. Option HR7 configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 or 7 if desired. HART Revision 5 is the default HART output.
6. For local addressing and configuration, M4 (LOI) is required.
7. Requires wireless options and engineered polymer housing. Available approvals are FM Intrinsically Safe, (option code I5), CSA Intrinsically Safe (option code I6), ATEX Intrinsic Safety (option code I1), and IECEx Intrinsic Safety (option code I7).
8. Only available with C6, E2, E5, I5, K5, KB and E8 approval. Not available with GE, GM, SBS, DA0, M4, D4, DZ, QT, HR5, HR7, CR, CS, CT.
9. Only available with Wireless output (output code X).
10. Not available with Product certifications options E8, K8, E5, K5, C6, K6, E7, K7, E2, K2, E3, KB, KD.
11. Transmitter conduit entry will be 1/2 NPT and a 1/2 NPT to G1/2 thread adapter will be provided.
12. Available with Primary Element Technology C only.
13. For Annubar option A, consult factory for pipe schedules other than schedule 40.
14. Available with Primary Element Technology C or P only.
15. Only available with HART 4-20 mA Output (output code A).
16. Materials of Construction comply with metallurgical requirements within NACE MR0175/ISO for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments.
17. Dust approval not applicable to output code X. See "Rosemount 3051 Wireless Pressure Transmitter" on page 150 for wireless approvals
18. Nonincendive certification not provided with Wireless output option code (X).
19. Not available with Wireless output (output code X).
20. Only available with product certifications E7, E8, I1, I7, IA, K7, K8, KD, N1, N7
21. Not available with output code F - FOUNDATION Fieldbus or Wireless output (output code X) or Low Power (output code M).
22. The T1 option is not needed with FISCO product certifications, transient protection is included with the FISCO product certification code IA, IB, and IE.
23. Only valid with FOUNDATION Fieldbus (output code F).
24. The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.
25. Only available with 4-20 mA HART Output (output code A) and Wireless output (output code X).

**Table A-16. Rosemount 3051CFP Integral Orifice Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

Model <sup>(1)</sup>	Product description	
3051CFP	Integral Orifice Flowmeter	
<b>Measurement type</b>		
D	Differential Pressure	★
<b>Body material</b>		
S	316 SST	★
<b>Line size</b>		
005	1/2-in. (15 mm)	★
010	1-in. (25 mm)	★
015	1 1/2-in. (40 mm)	★
<b>Process connection</b>		
T1	NPT female body (not available with remote thermowell and RTD)	★
S1 <sup>(2)</sup>	Socket weld body (not available with remote thermowell and RTD)	★
P1	Pipe ends: NPT threaded	★
P2	Pipe ends: beveled	★
D1	Pipe ends: flanged, DIN PN16, slip-on	★
D2	Pipe ends: flanged, DIN PN40, slip-on	★
D3	Pipe ends: flanged, DIN PN100, slip-on	★
W1	Pipe ends: flanged, RF, ANSI Class 150, weld-neck	★
W3	Pipe ends: flanged, RF, ANSI Class 300, weld-neck	★
W6	Pipe ends: flanged, RF, ANSI Class 600, weld-neck	★
A1	Pipe ends: flanged, RF, ANSI Class 150, slip-on	
A3	Pipe ends: flanged, RF, ANSI Class 300, slip-on	
A6	Pipe ends: flanged, RF, ANSI Class 600, slip-on	
R1	Pipe ends: flanged, RTJ, ANSI Class 150, slip-on	
R3	Pipe ends: flanged, RTJ, ANSI Class 300, slip-on	
R6	Pipe ends: flanged, RTJ, ANSI Class 600, slip-on	
<b>Orifice plate material</b>		
S	316 SST	★
H	Alloy C-276	
M	Alloy 400	
<b>Bore size option</b>		
0066	0.066-in. (1.68 mm) for 1/2-in. pipe	★
0109	0.109-in. (2.77 mm) for 1/2-in. pipe	★

**Table A-16. Rosemount 3051CFP Integral Orifice Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

0160	0.160-in. (4.06 mm) for 1/2-in. pipe	★
0196	0.196-in. (4.98 mm) for 1/2-in. pipe	★
0260	0.260-in. (6.60 mm) for 1/2-in. pipe	★
0340	0.340-in. (8.64 mm) for 1/2-in. pipe	★
0150	0.150-in. (3.81 mm) for 1-in. pipe	★
0250	0.250-in. (6.35 mm) for 1-in. pipe	★
0345	0.345-in. (8.76 mm) for 1-in. pipe	★
0500	0.500-in. (12.70 mm) for 1-in. pipe	★
0630	0.630-in. (16.00 mm) for 1-in. pipe	★
0800	0.800-in. (20.32 mm) for 1-in. pipe	★
0295	0.295-in. (7.49 mm) for 1 1/2-in. pipe	★
0376	0.376-in. (9.55 mm) for 1 1/2-in. pipe	★
0512	0.512-in. (13.00 mm) for 1 1/2-in. pipe	★
0748	0.748-in. (19.00 mm) for 1 1/2-in. pipe	★
1022	1.022-in. (25.96 mm) for 1 1/2-in. pipe	★
1184	1.184-in. (30.07 mm) for 1 1/2-in. pipe	★
0010	0.010-in. (0.25 mm) for 1/2-in. pipe	
0014	0.014-in. (0.36 mm) for 1/2-in. pipe	
0020	0.020-in. (0.51 mm) for 1/2-in. pipe	
0034	0.034-in. (0.86 mm) for 1/2-in. pipe	
<b>Transmitter connection platform</b>		
D3	Direct-mount, 3-valve manifold, SST	★
D5	Direct-mount, 5-valve manifold, SST	★
R3	Remote-mount, 3-valve manifold, SST	★
R5	Remote-mount, 5-valve manifold, SST	★
D4	Direct-mount, 3-valve manifold, Alloy C-276	
D6	Direct-mount, 5-valve manifold, Alloy C-276	
D7	Direct-mount, high temperature, 5-valve manifold, SST	
R4	Remote-mount, 3-valve manifold, Alloy C-276	
R6	Remote-mount, 5-valve manifold, Alloy C-276	
<b>Differential pressure ranges</b>		
1	0 to 25 in H <sub>2</sub> O (0 to 62,16 mbar)	★
2	0 to 250 in H <sub>2</sub> O (0 to 621,60 mbar)	★
3	0 to 1000 in H <sub>2</sub> O (0 to 2,48 bar)	★

**Table A-16. Rosemount 3051CFP Integral Orifice Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

Transmitter output		
A <sup>(3)</sup>	4–20 mA with digital signal based on HART Protocol	★
F	FOUNDATION Fieldbus Protocol	★
W <sup>(4)</sup>	PROFIBUS PA Protocol	★
X <sup>(5)</sup>	Wireless	★
M <sup>(6)</sup>	Low-Power 1-5 Vdc with digital signal based on HART Protocol	
Transmitter housing material		Conduit entry size
A	Aluminum	1/2–14 NPT
B	Aluminum	M20 × 1.5
J	SST	1/2–14 NPT
K	SST	M20 × 1.5
P <sup>(7)</sup>	Engineered polymer	No conduit entries
D <sup>(8)(9)</sup>	Aluminum	G1/2
M <sup>(8)(9)</sup>	SST	G1/2
Transmitter performance class		
1	up to ±1.8% flow rate accuracy, 8:1 flow turndown, 10-year stability	★

### Wireless options (requires Wireless output code X and engineered polymer housing code P)

Wireless transmit rate, operating frequency, and protocol		
WA3	User configurable transmit rate, 2.4GHz WirelessHART	★
Antenna and SmartPower		
WP5	Internal antenna, compatible with green power module (I.S. power module sold separately)	★

### HART revision configuration (requires HART Protocol Output Code A)<sup>(3)</sup>

HR5	Configured for HART Revision 5	★
HR7	Configured for HART Revision 7	★

### Options (include with selected model number)

Extended product warranty		
WR3	3-year limited warranty	★
WR5	5-year limited warranty	★
Transmitter body/bolt material		
GT	High temperature (850 °F/454 °C)	
Temperature sensor <sup>(10)</sup>		
RT	Thermowell and RTD	

**Table A-16. Rosemount 3051CFP Integral Orifice Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

<b>Optional connection</b>		
G1	DIN 19213 transmitter connection	★
<b>Pressure testing<sup>(11)</sup></b>		
P1	Hydrostatic testing with certificate	
<b>Special cleaning</b>		
P2	Cleaning for special services	
PA	Cleaning per ASTM G93 Level D (Section 11.4)	
<b>Material testing</b>		
V1	Dye penetrant exam	
<b>Material examination</b>		
V2	Radiographic examination	
<b>Flow calibration<sup>(12)</sup></b>		
WD	Discharge coefficient verification	
<b>Special inspection</b>		
QC1	Visual and dimensional inspection with certificate	★
QC7	Inspection and performance certificate	★
<b>Material traceability certification</b>		
Q8	Material traceability certification per EN 10204:2004 3.1	★
<b>Code conformance<sup>(13)</sup></b>		
J2	ANSI/ASME B31.1	
J3	ANSI/ASME B31.3	
J4	ANSI/ASME B31.8	
<b>Materials conformance<sup>(14)</sup></b>		
J5	NACE MR-0175/ISO 15156	
<b>Country certification</b>		
J6	European pressure directive (PED)	★
J1	Canadian registration	
<b>Transmitter calibration certification</b>		
Q4	Calibration certificate for transmitter	★
<b>Quality certification for safety<sup>(15)</sup></b>		
QS	Prior-use certificate of FMEDA data	★
QT	Safety certified to IEC 61508 with certificate of FMEDA	★

**Table A-16. Rosemount 3051CFP Integral Orifice Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

<b>Product certifications</b>		
E8	ATEX Flameproof, Dust	★
I1 <sup>(16)</sup>	ATEX Intrinsic Safety and Dust	★
IA	ATEX FISCO Intrinsic Safety; for FOUNDATION Fieldbus or PROFIBUS PA protocols only	★
N1	ATEX Type n and Dust	★
K8	ATEX Flameproof, Intrinsic Safety, Type n, Dust (combination of E8, I1 and N1)	★
E5	FM Explosion-proof, Dust Ignition-proof	★
I5 <sup>(17)</sup>	FM Intrinsically Safe, Nonincendive	★
IE	FM FISCO Intrinsically Safe; for FOUNDATION Fieldbus or PROFIBUS PA protocols only	★
K5	FM Explosion-proof, Dust Ignition-proof, Intrinsically Safe, and Division 2 (combination of E5 and I5)	★
C6	CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, and Division 2	★
I6 <sup>(7)</sup>	CSA Intrinsically Safe	★
K6	CSA and ATEX Explosion-proof, Intrinsically Safe, and Division 2 (combination of C6, E8, and I1)	★
E7	IECEX Flameproof, Dust Ignition-proof	★
I7	IECEX Intrinsic Safety	★
N7	IECEX Type n	★
K7	IECEX Flameproof, Dust Ignition-proof, Intrinsic Safety, and Type n (combination of I7, N7 and E7)	★
E2	INMETRO Flameproof	★
I2	INMETRO Intrinsic Safety	★
IB	INMETRO FISCO intrinsically safe; for FOUNDATION Fieldbus or PROFIBUS PA protocols only	★
K2	INMETRO Flameproof, Intrinsic Safety	★
E3	China Flameproof	★
I3	China Intrinsic Safety	★
KB	FM and CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, and Division 2 (combination of K5 and C6)	★
KD	CSA, FM, and ATEX Explosion-proof, Intrinsically Safe (combination of K5, C6, I1, and E8)	★
<b>Sensor fill fluid and O-ring options</b>		
L1 <sup>(18)</sup>	Inert sensor fill fluid	★
L2	Graphite-filled (PTFE) O-ring	★
LA <sup>(18)</sup>	Inert sensor fill fluid and graphite-filled (PTFE) O-ring	★
<b>Shipboard approvals<sup>(18)</sup></b>		
SBS	American Bureau of Shipping	★
SLL <sup>(19)</sup>	Lloyds Register (LR)	

**Table A-16. Rosemount 3051CFP Integral Orifice Flowmeter Ordering Information**

★ The Standard offering represents the most common options. The starred options (★) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

<b>Display and interface options</b>		
M4 <sup>(20)</sup>	LCD display with LOI	★
M5	LCD display	★
<b>Transient protection<sup>(18)(21)</sup></b>		
T1	Transient terminal block	★
<b>PlantWeb control functionality<sup>(22)</sup></b>		
A01	FOUNDATION Fieldbus control function block suite	★
<b>PlantWeb diagnostic functionality</b>		
DA0 <sup>(15)</sup>	Power advisory HART diagnostic	★
D01 <sup>(22)</sup>	FOUNDATION Fieldbus diagnostic Suite	★
<b>Low power output</b>		
C2	0.8-3.2 Vdc output with digital signal based on HART Protocol (available with output code M only)	
<b>Alarm levels<sup>(15)</sup></b>		
C4	NAMUR alarm and saturation levels, high alarm	★
CN	NAMUR alarm and saturation levels, low alarm	★
CR	Custom alarm and saturation signal levels, high alarm	★
CS	Custom alarm and saturation signal levels, low alarm	★
CT	Rosemount standard low alarm	★
<b>Ground screw<sup>(18)(23)</sup></b>		
V5	External ground screw assembly	★
<b>Configuration buttons</b>		
D4 <sup>(15)</sup>	Analog zero and span	★
DZ <sup>(24)</sup>	Digital zero trim	★
<b>Typical model number: 3051CFP D S 010 W1 S 0500 D3 2 A A 1 E5 M5</b>		

1. Select configuration buttons (option code D4 or DZ) or LOI (option code M4) if local configuration buttons are required.
2. To improve pipe perpendicularity for gasket sealing, socket diameter is smaller than standard pipe O.D.
3. Option HR5 configures the HART output to HART Revision 5. Option HR7 configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 or 7 if desired. HART Revision 5 is the default HART output.
4. For local addressing and configuration, M4 (LOI) is required.
5. Requires wireless options and engineered polymer housing. Available approvals are FM Intrinsically Safe, (option code I5), CSA Intrinsically Safe (option code I6), ATEX Intrinsic Safety (option code I1), and IECEx Intrinsic Safety (option code I7).
6. Only available with C6, E2, E5, I5, K5, KB and E8 approval. Not available with GE, GM, SBS, DA0, M4, D4, DZ, QT, HR5, HR7, CR, CS, CT.
7. Only available with Wireless output (output code X).
8. Not available with product certifications options E8, K8, E5, K5, C6, K6, E7, K7, E2, K2, E3, KB, KD.
9. Transmitter conduit entry will be 1/2 NPT and a 1/2 NPT to G1/2 thread adapter will be provided.
10. Thermowell Material is the same as the body material.
11. Does not apply to process connection codes T1 and S1.
12. Not available for bore sizes 0010, 0014, 0020, 0034, 0066, or 0109.



13. Not available with DIN process connection codes D1, D2, or D3.
14. Materials of construction comply with metallurgical requirements within NACE MR0175/ISO for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments.
15. Only available with HART 4-20 mA output (option code A).
16. Dust approval not applicable to output code X. See ["Rosemount 3051 Wireless Pressure Transmitter"](#) on page 150 for wireless approvals
17. Nonincendive certification not provided with Wireless output option code (X).
18. Not available with Wireless output (output code X).
19. Only available with product certifications E7, E8, I1, I7, IA, K7, K8, KD, N1, N7.
20. Not available with FOUNDATION Fieldbus (output code F) or Wireless output (output code X) or Low Power (output code M).
21. The T1 option is not needed with FISCO product certifications, transient protection is included with the FISCO product certification code IA, IB, and IE.
22. Only valid with FOUNDATION Fieldbus output code F.
23. The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.
24. Only available with 4-20 mA output (output code A) and Wireless output (output code X).

**Table A-17. Rosemount 3051L Level Transmitter Ordering Information**

★ The Standard offering represents the most common options. The starred options (H) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

Model <sup>(1)</sup>	Transmitter type			
3051L	Level Transmitter			
<b>Pressure range</b>				
2	-250 to 250 inH <sub>2</sub> O (-621,60 to 621,60 mbar)			★
3	-1000 to 1000 inH <sub>2</sub> O (-2,48 to 2,48 bar)			★
4	-300 to 300 psi (-20,68 to 20,68 bar)			★
<b>Transmitter output</b>				
A <sup>(2)</sup>	4–20 mA with digital signal based on HART Protocol			★
F	FOUNDATION Fieldbus Protocol			★
W <sup>(3)</sup>	PROFIBUS PA Protocol			★
X <sup>(4)</sup>	Wireless (requires Wireless options and engineered polymer housing)			★
M <sup>(5)</sup>	Low-Power 1-5 Vdc with digital signal based on HART Protocol			
<b>Process connection size, material, extension length (high side)</b>				
Code	Process connection size	Material	Extension length	
G0 <sup>(6)</sup>	2-in./DN 50/A	316L SST	Flush mount only	★
H0 <sup>(6)</sup>	2-in./DN 50	Alloy C-276	Flush mount only	★
J0	2-in./DN 50	Tantalum	Flush mount only	★
A0 <sup>(6)</sup>	3-in./DN 80	316L SST	Flush mount	★
A2 <sup>(6)</sup>	3-in./DN 80	316L SST	2-in./50 mm	★
A4 <sup>(6)</sup>	3-in./DN 80	316L SST	4-in./100 mm	★
A6 <sup>(6)</sup>	3-in./DN 80	316L SST	6-in./150 mm	★
B0 <sup>(6)</sup>	4-in./DN 100	316L SST	Flush mount	★
B2 <sup>(6)</sup>	4-in./DN 100	316L SST	2-in./50 mm	★
B4 <sup>(6)</sup>	4-in./DN 100	316L SST	4-in./100 mm	★
B6 <sup>(6)</sup>	4-in./DN 100	316L SST	6-in./150 mm	★
C0 <sup>(6)</sup>	3-in./DN 80	Alloy C-276	Flush mount	★
C2 <sup>(6)</sup>	3-in./DN 80	Alloy C-276	2-in./50 mm	★
C4 <sup>(6)</sup>	3-in./DN 80	Alloy C-276	4-in./100 mm	★
C6 <sup>(6)</sup>	3-in./DN 80	Alloy C-276	6-in./150 mm	★
D0 <sup>(6)</sup>	4-in./DN 100	Alloy C-276	Flush mount	★
D2 <sup>(6)</sup>	4-in./DN 100	Alloy C-276	2-in./50 mm	★
D4 <sup>(6)</sup>	4-in./DN 100	Alloy C-276	4-in./100 mm	★
D6 <sup>(6)</sup>	4-in./DN 100	Alloy C-276	6-in./150 mm	★
E0	3-in./DN 80	Tantalum	Flush mount only	★
F0	4-in./DN 100	Tantalum	Flush mount only	★

**Table A-17. Rosemount 3051L Level Transmitter Ordering Information**

★ The Standard offering represents the most common options. The starred options (H) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

Mounting flange size, rating, material (high side)				
	Size	Rating	Material	
M	2-in.	ANSI/ASME B16.5 Class 150	CS	★
A	3-in.	ANSI/ASME B16.5 Class 150	CS	★
B	4-in.	ANSI/ASME B16.5 Class 150	CS	★
N	2-in.	ANSI/ASME B16.5 Class 300	CS	★
C	3-in.	ANSI/ASME B16.5 Class 300	CS	★
D	4-in.	ANSI/ASME B16.5 Class 300	CS	★
P	2-in.	ANSI/ASME B16.5 Class 600	CS	★
E	3-in.	ANSI/ASME B16.5 Class 600	CS	★
X <sup>(6)</sup>	2-in.	ANSI/ASME B16.5 Class 150	316 SST	★
F <sup>(6)</sup>	3-in.	ANSI/ASME B16.5 Class 150	316 SST	★
G <sup>(6)</sup>	4-in.	ANSI/ASME B16.5 Class 150	316 SST	★
Y <sup>(6)</sup>	2-in.	ANSI/ASME B16.5 Class 300	316 SST	★
H <sup>(6)</sup>	3-in.	ANSI/ASME B16.5 Class 300	316 SST	★
J <sup>(6)</sup>	4-in.	ANSI/ASME B16.5 Class 300	316 SST	★
Z <sup>(6)</sup>	2-in.	ANSI/ASME B16.5 Class 600	316 SST	★
L <sup>(6)</sup>	3-in.	ANSI/ASME B16.5 Class 600	316 SST	★
Q	DN 50	PN 10-40 per EN 1092-1	CS	★
R	DN 80	PN 40 per EN 1092-1	CS	★
S	DN 100	PN 40 per EN 1092-1	CS	★
V	DN 100	PN 10/16 per EN 1092-1	CS	★
K <sup>(6)</sup>	DN 50	PN 10-40 per EN 1092-1	316 SST	★
T <sup>(6)</sup>	DN 80	PN 40 per EN 1092-1	316 SST	★
U <sup>(6)</sup>	DN 100	PN 40 per EN 1092-1	316 SST	★
W <sup>(6)</sup>	DN 100	PN 10/16 per EN 1092-1	316 SST	★
7 <sup>(6)</sup>	4 in.	ANSI/ASME B16.5 Class 600	316 SST	★
1	N/A	10K per JIS B2238	CS	
2	N/A	20K per JIS B2238	CS	
3	N/A	40K per JIS B2238	CS	
4 <sup>(6)</sup>	N/A	10K per JIS B2238	316 SST	
5 <sup>(6)</sup>	N/A	20K per JIS B2238	316 SST	
6 <sup>(6)</sup>	N/A	40K per JIS B2238	316 SST	

**Table A-17. Rosemount 3051L Level Transmitter Ordering Information**

★ The Standard offering represents the most common options. The starred options (H) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

Seal fill fluid (high side)		Specific gravity	Temperature limits (ambient temperature of 70° F [21° C])			
D	Silicone 200	0.93	-49 to 401 °F (-45 to 205 °C)		★	
F	Silicone 200 for Vacuum Applications	0.93	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specifications <a href="#">Technical Note</a> .		★	
L	D.C. Silicone 704 Diffusion Pump Fluid	1.07	32 to 401 °F (0 to 205 °C)		★	
C	D.C. Silicone 704 for Vacuum Applications	1.07	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specifications <a href="#">Technical Note</a> .		★	
R	Silicone 705	1.09	68 to 401 °F (20 to 205 °C)		★	
V	Silicone 705 for Vacuum Applications	1.09	For use in vacuum applications below 14.7 psia (1 bar-a), refer to vapor pressure curves in Rosemount DP Level Fill Fluid Specifications <a href="#">Technical Note</a> .		★	
A	SYL THERM XLT	0.85	-102 to 293 °F (-75 to 145 °C)		★	
H	Inert (Halocarbon)	1.85	-49 to 320 °F (-45 to 160 °C)		★	
G	Glycerin and water	1.13	5 to 203 °F (-15 to 95 °C)		★	
N	Neobee M-20	0.92	5 to 401 °F (-15 to 205 °C)		★	
P	Propylene glycol and water	1.02	5 to 203 F (-15 to 95 °C)		★	
<b>Low pressure side</b>						
	<b>Configuration</b>	<b>Flange adapter</b>	<b>Diaphragm material</b>	<b>Sensor fill fluid</b>		
11 <sup>(6)</sup>	Gage	SST	316L SST	Silicone	★	
21	Differential	SST	316L SST	Silicone	★	
22 <sup>(6)</sup>	Differential	SST	Alloy C-276	Silicone	★	
2A <sup>(7)</sup>	Differential	SST	316L SST	Inert (Halocarbon)	★	
2B <sup>(6)(7)</sup>	Differential	SST	Alloy C-276	Inert (Halocarbon)	★	
31 <sup>(6)</sup>	Tuned-System Assembly with remote seal	None	316L SST	Silicone (requires option code S1)	★	
<b>O-ring</b>						
A	Glass-filled PTFE				★	
<b>Housing material</b>			<b>Conduit entry size</b>			
A	Aluminum		1/2-14 NPT			★
B	Aluminum		M20 × 1.5			★
J	SST		1/2-14 NPT			★
K	SST		M20 × 1.5			★
P <sup>(8)</sup>	Engineered polymer		No conduit entries			★

**Table A-17. Rosemount 3051L Level Transmitter Ordering Information**

★ The Standard offering represents the most common options. The starred options (H) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

D <sup>(9)(10)</sup>	Aluminum	G <sup>1</sup> /2	
M <sup>(9)(10)</sup>	SST	G <sup>1</sup> /2	

**Wireless options (requires Wireless output code X and engineered polymer housing code P)**

Wireless transmit rate, operating frequency, and protocol			
WA3	User configurable transmit rate, 2.4GHz WirelessHART		★
Antenna and SmartPower			
WP5	Internal antenna, compatible with green power module (I.S. power module sold separately)		★

**HART Revision configuration (requires HART Protocol output code A)<sup>(2)</sup>**

HR5	Configured for HART Revision 5		★
HR7	Configured for HART Revision 7		★

**Options (include with selected model number)**

Extended product warranty			
WR3	3-year limited warranty		★
WR5	5-year limited warranty		★
PlantWeb control functionality <sup>(11)</sup>			
A01	FOUNDATION Fieldbus control function block suite		★
PlantWeb diagnostic functionality			
DA0 <sup>(19)</sup>	Power advisory HART diagnostic		★
D01 <sup>(11)</sup>	FOUNDATION Fieldbus diagnostics suite		★
Seal assemblies <sup>(12)</sup>			
S1	Assembled to one Rosemount 1199 Seal		★
Product certifications			
E8	ATEX Flameproof and Dust Certification		★
I1 <sup>(13)</sup>	ATEX Intrinsic Safety and Dust		★
IA	ATEX FISCO Intrinsic Safety; for FOUNDATION Fieldbus or PROFIBUS PA protocols only		★
N1	ATEX Type n Certification and Dust		★
K8	ATEX Flameproof, Intrinsic Safety, Type n, Dust (combination of E8, I1 and N1)		★
E4 <sup>(14)</sup>	TIIS Flameproof		★
E5	FM Explosion-proof, Dust Ignition-proof		★
I5 <sup>(15)</sup>	FM Intrinsically Safe, Nonincendive		★
IE	FM FISCO Intrinsically Safe; for FOUNDATION Fieldbus or PROFIBUS PA protocols only		★
K5	FM Explosion-proof, Dust Ignition-Proof, Intrinsically Safe, and Division 2		★

**Table A-17. Rosemount 3051L Level Transmitter Ordering Information**

★ The Standard offering represents the most common options. The starred options (H) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

C6	CSA Explosion-proof, Dust Ignition-proof, Intrinsically Safe, and Division 2	★
I6 <sup>(8)</sup>	CSA Intrinsic Safety	★
K6	CSA and ATEX Explosion-proof, Intrinsically Safe, and Division 2 (combination of C6, E8, and I1)	★
E7	IECEx Flameproof, Dust Ignition-proof	★
I7	IECEx Intrinsic Safety	★
N7	IECEx Type n Certification	★
K7	IECEx Flameproof, Dust Ignition-proof, Intrinsic Safety, and Type n (combination of I7, N7 and E7)	★
E2	INMETRO Flameproof	★
I2	INMETRO Intrinsic Safety	★
IB	INMETRO FISCO intrinsically safe; for FOUNDATION Fieldbus or PROFIBUS PA protocols only	★
K2	INMETRO Flameproof, Intrinsic Safety	★
E3	China Flameproof	★
I3	China Intrinsic Safety	★
N3	China Type n	★
EM	Technical Regulations Customs Union (EAC) Flameproof	★
IM	Technical Regulations Customs Union (EAC) Intrinsic Safety	★
KM	Technical Regulations Customs Union (EAC) Flameproof and Intrinsic Safety	★
KB	FM and CSA Explosion-proof, Dust Ignition Proof, Intrinsically Safe, and Division 2 (combination of K5 and C6)	★
KD	FM, CSA, and ATEX Explosion-proof, Intrinsically Safe (combination of K5, C6, I1, and E8)	★
<b>Shipboard approvals<sup>(7)</sup></b>		
SBS	American Bureau of Shipping	★
SBV <sup>(16)</sup>	Bureau Veritas (BV)	
SDN	Det Norske Veritas	
SLL <sup>(16)</sup>	Lloyds Register (LR)	
<b>Bolting material</b>		
L4	Austenitic 316 SST bolts	★
L5	ASTM A 193, Grade B7M bolts	★
L6	Alloy K-500 Bolts	★
L8	ASTM A 193 Class 2, Grade B8M bolts	★
<b>Display and interface options</b>		
M4 <sup>(17)</sup>	LCD display with LOI	★
M5	LCD display	★

**Table A-17. Rosemount 3051L Level Transmitter Ordering Information**

★ The Standard offering represents the most common options. The starred options (H) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

<b>Calibration certification</b>		
Q4	Calibration certificate	★
QP	Calibration certificate and tamper evident seal	★
QG <sup>(18)</sup>	Calibration certificate and GOST verification certificate	★
<b>Material traceability certification</b>		
Q8	Material traceability certification per EN 10204 3.1	★
<b>Quality certification for safety<sup>(19)</sup></b>		
QS	Prior-use certificate of FMEDA data	★
QT	Safety certified to IEC 61508 with certificate of FMEDA	★
<b>Toolkit total system performance reports</b>		
QZ	Seal system performance calculation report	★
<b>Conduit electrical connector<sup>(7)</sup></b>		
GE	M12, 4-pin, male connector (eurofast)	★
GM	A size mini, 4-pin, male connector (minifast)	★
<b>Configuration buttons</b>		
D4 <sup>(19)</sup>	Analog zero and span	★
DZ <sup>(20)</sup>	Digital zero trim	★
<b>Transient protection<sup>(7)(21)</sup></b>		
T1	Transient Protection	★
<b>Software configuration</b>		
C1 <sup>(20)</sup>	Custom software configuration (completed Rosemount 3051 <a href="#">Configuration Data Sheet</a> for wired and Rosemount 3051 Wireless <a href="#">Configuration Data Sheet</a> for Wireless required with order)	★
<b>Low power output</b>		
C2	0.8-3.2 Vdc output with digital signal based on HART Protocol (available with output code M only)	
<b>Alarm levels<sup>(19)</sup></b>		
C4	NAMUR alarm and saturation levels, high alarm	★
CN	NAMUR alarm and saturation levels, low alarm	★
CR	Custom alarm and saturation signal levels, high alarm (requires C1 and Configuration Data Sheet)	★
CS	Custom alarm and saturation signal levels, low alarm (requires C1 and Configuration Data Sheet)	★
CT	Rosemount standard low alarm	★
<b>Conduit plug<sup>(7)</sup></b>		
DO	316 SST conduit plug	★

**Table A-17. Rosemount 3051L Level Transmitter Ordering Information**

★ The Standard offering represents the most common options. The starred options (H) should be selected for best delivery. The Expanded offering is subject to additional delivery lead time.

Ground screw <sup>(7)(22)</sup>				
V5	External ground screw assembly			★
Lower housing flushing connection options				
	Ring material	Number	Size (NPT)	
F1	316 SST	1	1/4-18 NPT	★
F2	316 SST	2	1/4-18 NPT	★
F3	Alloy C-276	1	1/4-18 NPT	★
F4	Alloy C-276	2	1/4-18 NPT	★
F7	316 SST	1	1/2-14 NPT	★
F8	316 SST	2	1/2-14 NPT	★
F9	Alloy C-276	1	1/2-14 NPT	★
F0	Alloy C-276	2	1/2-14 NPT	★
Lower housing intermediate gasket material				
S0	No gasket for lower housing			★
SY <sup>(23)</sup>	Thermo-Tork TN-9000			★
NACE certificate <sup>(24)</sup>				
Q15	Certificate of compliance to NACE MR0175/ISO 15156 for wetted materials			★
Q25	Certificate of compliance to NACE MR0103 for wetted materials			★
Typical model number: 3051L 2 A A0 D 21 A A F1				

1. Select configuration buttons (option code D4 or DZ) or LOI (option code M4) if local configuration buttons are required.
2. Option HR5 configures the HART output to HART Revision 5. Option HR7 configures the HART output to HART Revision 7. The device can be field configured to HART Revision 5 or 7 if desired. HART Revision 5 is the default HART output.
3. Option code M4 - LCD display with LOI required for local addressing and configuration.
4. Requires wireless options and engineered polymer housing. Available approvals are FM Intrinsically Safe, (option code I5), CSA Intrinsically Safe (option code I6), ATEX Intrinsic Safety (option code I1), IECEx Intrinsic Safety (option code I7) and EAC Intrinsic Safety (option code IM).
5. Only available with C6, E2, E5, I5, K5, KB and E8 approval. Not available with GE, GM, SBS, DA0, M4, D4, DZ, QT, HR5, HR7, CR, CS, CT.
6. Materials of construction comply with metallurgical requirements highlighted within NACE MR0175/ISO 15156 for sour oil field production environments. Environmental limits apply to certain materials. Consult latest standard for details. Selected materials also conform to NACE MR0103 for sour refining environments.
7. Not available with Wireless output (output code X).
8. Only available with Wireless output (output code X).
9. Not available with Product certifications options E8, K8, E5, K5, C6, K6, E7, K7, E2, K2, E3, KB, KD.
10. Transmitter conduit entry will be 1/2 NPT and a 1/2 NPT to G1/2 thread adapter will be provided.
11. Only valid with FOUNDATION Fieldbus output (output code F).
12. "Assemble-to" items are specified separately and require a completed model number.
13. Dust approval not applicable to output code X. See "Rosemount 3051 Wireless Pressure Transmitter" on page 150 for wireless approvals.
14. Only available with output codes A - 4-20mA HART, F - FOUNDATION Fieldbus, and W - PROFIBUS PA. Also only available with G1/2 housing thread types.
15. Nonincendive certification not provided with Wireless output option code (X).
16. Only available with product certifications E7, E8, I1, I7, IA, K7, K8, KD, N1, N7.
17. Not available with FOUNDATION Fieldbus (output code F) or Wireless output (output code X) or Low Power (output code M).
18. Contact an Emerson Process Management representative for availability.
19. Only available with HART 4-20 mA output (output code A).
20. Only available with 4-20 mA HART output (output code A) and Wireless output (output code X).



21. The T1 option is not needed with FISCO product certifications; transient protection is included in the FISCO product certification codes IA, IB, and IE.
22. The V5 option is not needed with the T1 option; external ground screw assembly is included with the T1 option.
23. Gasket provided when lower housing is ordered.
24. NACE compliant wetted materials are identified by [Footnote 6](#).

## A.7 Profibus electronics spare parts ordering information

Model	Spare Part Type
SP3051	Rosemount 3051 Electronics Board Spare Parts
<b>Transmitter Output</b>	
W	Profibus — PA Protocol
<b>Options (include with existing model number)</b>	
<b>Configure Electronics for Configuration Buttons</b>	
CZ1	Configure Electronics for Local Operator Interface
<b>Hardware Upgrade Kits - Buttons (to add Analog Zero and Span, Digital Zero and LOI buttons)</b>	
BZ5	Add External Buttons Hardware for Profibus LOI (for AL housing, LCD Display not included)
BZ6	Add External Buttons Hardware for Profibus LOI (for SST housing, LCD Display not included)
<b>Hardware Upgrade Kits - LCD Upgrade Kit</b>	
M5	Add LCD Display Hardware
<b>Hardware Upgrade Kits - Display Cover</b>	
AB	Add Aluminum Housing Cover with Glass for Display
JK	Add SST Housing Cover with Glass for Display
<b>Typical Model: SP3051 W CZ1</b>	

## A.8 Other spare parts

### Note

- One spare part is recommended for every 50 transmitters.
- Listed by range and process isolator order numbers.

**Table A-18. Rosemount 3051C Gage and Differential Sensor Modules (Minimum Span/Range)**

Material	Gage pressure range	Differential pressure range	Silicone fill	Inert fill
Range 1	-25 to 25 inH <sub>2</sub> O/0.5 inH <sub>2</sub> O	-25 to 25 inH <sub>2</sub> O/0.5 inH <sub>2</sub> O	Part number	Part number
316L SST			03031-1045-0012	03031-1145-0012
Alloy C-276			03031-1045-0013	03031-1145-0013
Alloy 400			03031-1045-0014	03031-1145-0014
Gold-plated Alloy 400			03031-1045-0016	03031-1145-0016
Gold-plated 316 SST			03031-1045-0017	03031-1145-0017
Range 2	-250 to 250 inH <sub>2</sub> O/2.5 inH <sub>2</sub> O	-250 to 250 inH <sub>2</sub> O/2.5 inH <sub>2</sub> O		
316L SST			03031-1045-0022	03031-1145-0022
Alloy C-276			03031-1045-0023	03031-1145-0023
Alloy 400			03031-1045-0024	03031-1145-0024
Tantalum			03031-1045-0025	03031-1145-0025
Gold-plated Alloy 400			03031-1045-0026	03031-1145-0026
Gold-plated 316 SST			03031-1045-0027	03031-1145-0027
Range 3	-407 to 1000 inH <sub>2</sub> O/10 inH <sub>2</sub> O	-1000 to 1000 inH <sub>2</sub> O/10 inH <sub>2</sub> O		
316L SST			03031-1045-0032	03031-1145-0032
Alloy C-276			03031-1045-0033	03031-1145-0033
Alloy 400			03031-1045-0034	03031-1145-0034
Tantalum			03031-1045-0035	03031-1145-0035
Gold-plated Alloy 400			03031-1045-0036	03031-1145-0036
Gold-plated 316 SST			03031-1045-0037	03031-1145-0037
Range 4	-14.2 to 300 psi/3 psi	-300 to 300 psi/3 psi		
316L SST			03031-1045-2042	03031-1145-2042
Alloy C-276			03031-1045-2043	03031-1145-2043
Alloy 400			03031-1045-2044	03031-1145-2044
Tantalum			03031-1045-2045	03031-1145-2045
Gold-plated Alloy 400			03031-1045-2046	03031-1145-2046
Gold-plated 316 SST			03031-1045-2047	03031-1145-2047
Range 5	-14.2 to 2000 psi/20 psi	-2000 to 2000psi/20 psi		
316L SST			03031-1045-2052	03031-1145-2052
Alloy C-276			03031-1045-2053	03031-1145-2053
Alloy 400			03031-1045-2054	03031-1145-2054
Tantalum			03031-1045-2055	03031-1145-2055
Gold-plated Alloy 400			03031-1045-2056	03031-1145-2056
Gold-plated 316 SST			03031-1045-2057	03031-1145-2057

**Note**

- One spare part is recommended for every 50 transmitters.
- Listed by range and process isolator order numbers.

**Table A-19. Rosemount 3051C Absolute Sensor Modules (Minimum Span/Range)**

Material	Absolute Pressure	Silicone fill	Inert fill
<b>Range 1</b>	<b>0 to 30 psia/0.3 psia</b>	<b>Part number</b>	<b>Part number</b>
316L SST		03031-2020-0012	N/A
Alloy C-276		03031-2020-0013	N/A
Alloy 400		03031-2020-0014	N/A
Gold-plated Alloy 400		03031-2020-0016	N/A
Gold-plated 316 SST		03031-2020-0017	N/A
<b>Range 2</b>	<b>0 to 150/1.5 psia</b>		
<b>316L SST</b>		03031-2020-0022	N/A
Alloy C-276		03031-2020-0023	N/A
Alloy 400		03031-2020-0024	N/A
Gold-plated Alloy 400		03031-2020-0026	N/A
Gold-plated 316 SST		03031-2020-0027	N/A
<b>Range 3</b>	<b>0 to 800 psia/8 psia</b>		
316L SST		03031-2020-0032	N/A
Alloy C-276		03031-2020-0033	N/A
Alloy 400		03031-2020-0034	N/A
Gold-plated Alloy 400		03031-2020-0036	N/A
Gold-plated 316 SST		03031-2020-0037	N/A
<b>Range 4</b>	<b>0 to 400 psia/40 psia</b>		
316L SST		03031-2020-0042	N/A
Alloy C-276		03031-2020-0043	N/A
Alloy 400		03031-2020-0044	N/A
Gold-plated Alloy 400		03031-2020-0046	N/A
Gold-plated 316 SST		03031-2020-0047	N/A

<b>Electronics board assemblies</b>	<b>Part number</b>
4-20 mA HART Standard	03031-0001-0002
4-20 mA HART NAMUR compliant	03031-0001-0003
1-5 Vdc HART Low Power	03031-0001-1001
FOUNDATION Fieldbus	03031-0001-2001
<b>LCD display</b>	
<b>LCD display kits</b>	
Fieldbus (FOUNDATION or PROFIBUS PA) - aluminum	03031-0193-0104
Fieldbus (FOUNDATION or PROFIBUS PA) - 316 SST	03031-0193-0112
<b>LCD display only</b>	
Fieldbus (FOUNDATION or PROFIBUS PA)	03031-0193-0105
<b>LOI (includes new electronics board)</b>	
<b>Including LCD display and cover (to upgrade devices without displays)</b>	
PROFIBUS - AL	03031-9030-0001
PROFIBUS - SST	03031-9030-0011
<b>Without an LCD display and cover (to upgrade devices that have displays)</b>	
PROFIBUS - AL	03031-9030-1001
PROFIBUS - SST	03031-9030-1011
<b>Terminal block assemblies</b>	
<b>Fieldbus (Foundation or PROFIBUS PA)</b>	
Standard terminal block	03031-0332-2001
Transient terminal block (option T1)	03031-0332-2002
FISCO terminal block	03031-0332-2005
<b>Electrical housings (without terminal block)</b>	
<b>Standard - aluminum</b>	
1/2-14 NPT conduit entry	03031-0635-0001
M20 conduit entry	03031-0635-0002
G1/2 conduit entry	03031-0635-0004
<b>Standard - 316 SST</b>	
1/2-14 NPT conduit entry	03031-0635-0041
M20 conduit entry	03031-0635-0042
<b>Housing conduit plugs</b>	<b>Part number</b>
1/2 NPT conduit plug	03031-0544-0003
M20 conduit plug	03031-0544-0001
G1/2 conduit plug	03031-0544-0004

<b>Housing covers (include O-ring)</b>	
Field terminal cover - aluminum	03031-0292-0001
Field terminal cover - 316 SST	03031-0292-0002
Fieldbus extended electronics cover - aluminum	03031-0292-0003
Fieldbus extended electronics cover - 316 SST	03031-0292-0004
Fieldbus extended LCD display cover - aluminum	03031-0193-0007
Fieldbus extended LCD display cover - 316 SST	03031-0193-0013
<b>Miscellaneous hardware</b>	
External ground screw assembly (option V5)	03031-0398-0001
<b>Flanges</b>	
<b>Differential coplanar flange</b>	
316 SST	03031-0388-0022
Cast C-276	03031-0388-0023
Cast Alloy 400	03031-0388-0024
Nickel-plated carbon steel	03031-0388-0025
<b>Gage/absolute coplanar flange</b>	
316 SST	03031-0388-1022
Cast C-276	03031-0388-1023
Cast Alloy 40	03031-0388-1024
Nickel-plated carbon steel	03031-0388-1025
Coplanar flange alignment screw (package of 12)	03031-0309-0001
<b>Traditional flange</b>	
316 SST	03031-0320-0002
Cast C-276	03031-0320-0003
Cast Alloy 400	03031-0320-0004
316 SST - DIN Compliant (Option Code HJ)	03031-1350-0012
<b>Level flange, vertical mount</b>	
2 in., Class 150, SST	03031-0393-0221
2 in., Class 300, SST	03031-0393-0222
3 in., Class 150, SST	03031-0393-0231
3 in., Class 300, SST	03031-0393-0232
DIN, DN 50, PN 40	03031-0393-1002
DIN, DN 80, PN 40	03031-0393-1012

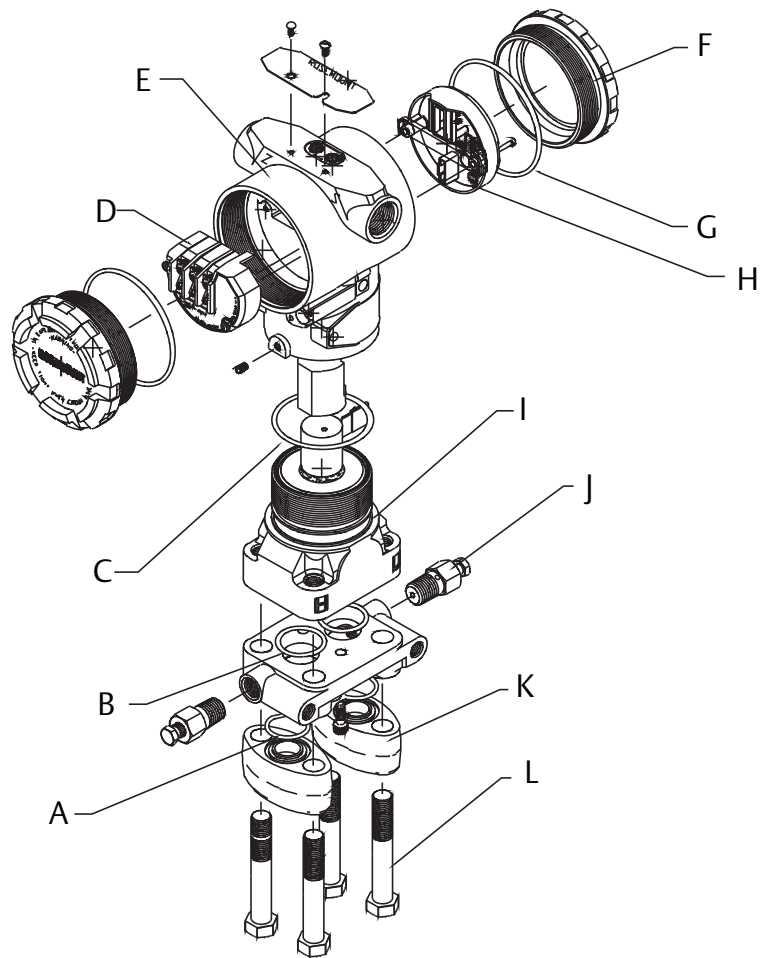
<b>Flange adapter kits (each kit contains parts for one DP transmitter or two GP/AP transmitters)</b>	<b>Part number</b>
<b>CS bolts, glass-filled PTFE O-rings</b>	
SST adapters	03031-1300-0002
Cast Alloy C-276 adapters	03031-1300-0003
Alloy 400 adapters	03031-1300-0004
Nickel-plated carbon steel adapters	03031-1300-0005
<b>SST bolts, glass-filled PTFE O-rings</b>	
SST adapters	03031-1300-0012
Cast Alloy C-276 adapters	03031-1300-0013
Alloy 400 adapters	03031-1300-0014
Nickel-plated carbon steel adapters	03031-1300-0015
<b>CS bolts, graphite-filled PTFE O-rings</b>	
SST adapters	03031-1300-0102
Cast Alloy C-276 adapters	03031-1300-0103
Alloy 400 adapters	03031-1300-0104
Nickel-plated carbon steel adapters	03031-1300-0105
<b>SST bolts, graphite-filled PTFE O-rings</b>	
SST adapters	03031-1300-0112
Cast Alloy C-276 adapters	03031-1300-0113
Alloy 400 adapters	03031-1300-0114
Nickel-plated carbon steel adapters	03031-1300-0115
<b>Flange adapters</b>	
<b>1/2-14 NPT adapters</b>	
316 SST	02024-0069-0002
Cast C-276	02024-0069-0003
Cast Alloy 400	02024-0069-0004
Nickel-plated carbon steel	02024-0069-0005
<b>Socket weld adapters</b>	
316 SST	02024-0069-1002
Cast C-276	02024-0069-1003
Cast Alloy 400	02024-0069-1004

<b>O-ring packages (package of 12)</b>	<b>Part number</b>
Electronics housing, cover	03031-0232-0001
Electronics housing, module	03031-0233-0001
Process flange, glass-filled PTFE (white)	03031-0234-0001
Process flange, graphite-filled PTFE (black)	03031-0234-0002
Flange adapter, glass-filled PTFE (light brown)	03031-0242-0001
Flange adapter, graphite-filled PTFE (black)	03031-0242-0002
<b>Bolt kits—coplanar flange</b>	
<b>Flange bolt kit (44mm [1.75 in.]) (set of 4)</b>	
Carbon steel	03031-0312-0001
316 SST	03031-0312-0002
ASTM A 193, Grade B7M	03031-0312-0003
Alloy K-500	03031-0312-0004
<b>Flange/adapter bolt kit (73mm [2.88 in.]) (set of 4)</b>	
Carbon steel	03031-0306-0001
316 SST	03031-0306-0002
ASTM A 193, Grade B7M	03031-0306-0003
Alloy K-500	03031-0306-0004
<b>Bolt kits—traditional flange</b>	
<b>Differential flange/adapter bolt kit (44mm [1.75 in.]) (set of 8)</b>	
Carbon steel	03031-0307-0001
316 SST	03031-0307-0002
ASTM A 193, Grade B7M	03031-0307-0003
Alloy K-500	03031-0307-0004
<b>Gage/absolute flange/adapter bolt kit (44mm [1.75 in.]) (set of 6)</b>	
Carbon steel	03031-0307-1001
316 SST	03031-0307-1002
ASTM A 193, Grade B7M	03031-0307-1003
Alloy K-500	03031-0307-1004
<b>Conventional manifold/traditional flange bolts</b>	
Carbon steel	Use bolts supplied with manifold
316 SST	Use bolts supplied with manifold
<b>Level flange, vertical mount bolt kit (set of 4)</b>	
Carbon steel	03031-0395-0001
316 SST	03031-0395-0002



<b>Drain/vent valve kits (each kit contains parts for one transmitter)</b>	<b>Part number</b>
<b>Differential drain/vent kits</b>	
316 SST stem and seat kit	01151-0028-0022
Alloy C-276 stem and seat kit	01151-0028-0023
Alloy K-500 stem and Alloy 400 seat kit	01151-0028-0024
316 SST ceramic ball drain/vent kit	03031-0378-0022
Alloy C-276 ceramic ball drain/vent kit	03031-0378-0023
Alloy 400/K-500 ceramic ball drain/vent kit	03031-0378-0024
<b>Gage/absolute drain/vent kits</b>	
316 SST stem and seat kit	01151-0028-0012
Alloy C-276 stem and seat kit	01151-0028-0013
Alloy K-500 stem and Alloy 400 seat kit	01151-0028-0014
316 SST ceramic ball drain/vent kit	03031-0378-0012
Alloy C-276 ceramic ball drain/vent kit	03031-0378-0013
Alloy 400/K-500 ceramic ball drain/vent kit	03031-0378-0014
<b>Mounting brackets</b>	
<b>Rosemount 3051C and 3051L coplanar flange bracket kit</b>	
B4 bracket, SST, 2-in. pipe mount, SST bolts	03031-0189-0003
<b>Rosemount 3051T in-line bracket kit</b>	
B4 bracket, SST, 2-in. pipe mount, SST bolts	03031-0189-0004
<b>Rosemount 3051C traditional flange bracket kits</b>	
B1 bracket, 2-in. pipe mount, CS bolts	03031-0313-0001
B2 bracket, panel mount, CS bolts	03031-0313-0002
B3 flat bracket, 2-in. pipe mount, CS bolts	03031-0313-0003
B7 (B1 bracket, SST bolts)	03031-0313-0007
B8 (B2 bracket, SST bolts)	03031-0313-0008
B9 (B3 bracket, SST bolts)	03031-0313-0009
BA (SST B1 bracket, SST bolts)	03031-0313-0011
BC (SST B3 bracket, SST bolts)	03031-0313-0013

Figure A-1. Spare Parts



- |                                      |                                     |
|--------------------------------------|-------------------------------------|
| A. Flange adapter O-ring             | G. Electronics housing cover O-ring |
| B. Process O-ring                    | H. Electronics board                |
| C. Electronics housing module O-ring | I. Sensor module                    |
| D. Terminal block                    | J. Drain/vent valve                 |
| E. Electronics housing               | K. Flange adapter                   |
| F. Housing cover                     | L. Flange adapter bolts             |

## A.9 Pipe I.D. range codes

For pipes with an Inner Diameter (I.D.) Range/Pipe Wall Thickness not found in this table or with a line size greater than 12-in. (300 mm), choose option code Z and specify the exact pipe dimensions (I.D. and Pipe Wall Thickness) on the Rosemount 3051 [Configuration Data Sheet](#). The Emerson Process Management sizing program will determine this code, based on the application piping.

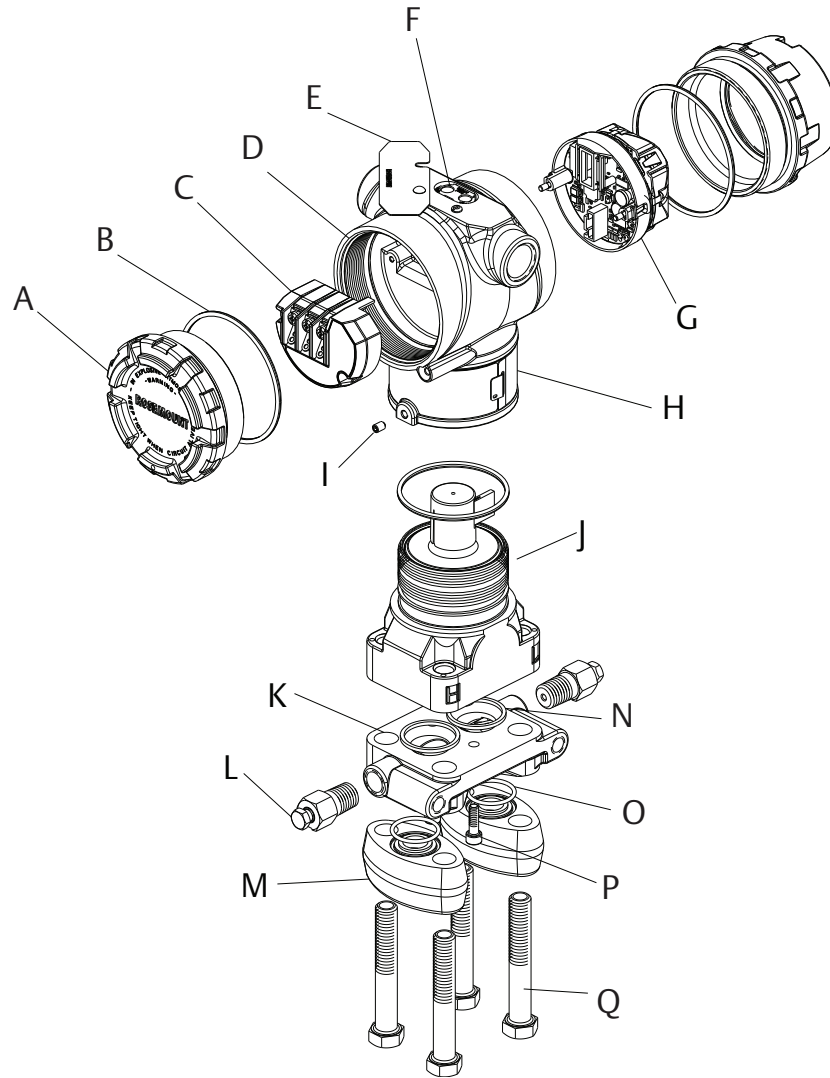
	Line size			I.D. range	Pipe wall thickness		I.D. range code
	Nominal	Max. O.D.	Option code		ANSI pipes	Non-ANSI pipes	
2-in. (50 mm)	2.625-in. (66.68 mm)	020	1.784 to 1.841-in. (45.31 to 46.76 mm)	0.065 to 0.545-in. (1.7 to 13.8 mm)	0.065 to 0.488-in. (1.7 to 12.4 mm)	A	
			1.842 to 1.938-in. (46.79 to 49.23 mm)		0.065 to 0.449-in. (1.7 to 11.4 mm)	B	
			1.939 to 2.067-in. (49.25 to 52.50 mm)		0.065 to 0.417-in. (1.7 to 10.6 mm)	C	
			2.068 to 2.206-in. (52.53 to 56.03 mm)		0.065 to 0.407-in. (1.7 to 10.3 mm)	D	
2½-in. (63.5 mm)	3.188-in. (80.98 mm)	025	2.207 to 2.322-in. (56.06 to 58.98 mm)	0.083 to 0.563-in. (2.1 to 14.3 mm)	0.083 to 0.448-in. (2.1 to 11.4 mm)	B	
			2.323 to 2.469-in. (59.00 to 62.71 mm)		0.083 to 0.417-in. (2.1 to 10.6 mm)	C	
			2.470 to 2.598-in. (62.74 to 65.99 mm)		0.083 to 0.435-in. (2.1 to 11.0 mm)	D	
			2.599 to 2.647-in. (66.01 to 67.23 mm)		0.083 to 0.515-in. (2.1 to 13.1 mm)	E	
3-in. (80 mm)	3.75-in. (95.25 mm)	030	2.648 to 2.751-in. (67.26 to 69.88 mm)	0.083 to 0.563-in. (2.1 to 14.3 mm)	0.083 to 0.460-in. (2.1 to 11.7 mm)	A	
			2.752 to 2.899-in. (69.90 to 73.63 mm)		0.083 to 0.416-in. (2.1 to 10.6 mm)	B	
			2.900 to 3.068-in. (73.66 to 77.93 mm)		0.083 to 0.395-in. (2.1 to 10.0 mm)	C	
			3.069 to 3.228-in. (77.95 to 81.99 mm)		0.083 to 0.404-in. (2.1 to 10.3 mm)	D	
3½-in. (89 mm)	4.25-in. (107.95 mm)	035	3.229 to 3.333-in. (82.02 to 84.66 mm)	0.120 to 0.600-in. (3.0 to 15.2 mm)	0.120 to 0.496-in. (3.0 to 12.6 mm)	B	
			3.334 to 3.548-in. (84.68 to 90.12 mm)		0.120 to 0.386-in. (3.0 to 9.8 mm)	C	
			3.549 to 3.734-in. (90.14 to 94.84 mm)		0.120 to 0.415-in. (3.0 to 10.5 mm)	D	
4-in. (100 mm)	5.032-in. (127.81 mm)	040	3.735 to 3.825-in. (94.87 to 97.16 mm)	0.120 to 0.600-in. (3.0 to 15.2 mm)	0.120 to 0.510-in. (3.0 to 13.0 mm)	B	
			3.826 to 4.026-in. (97.18 to 102.26 mm)		0.120 to 0.400-in. (3.0 to 10.2 mm)	C	
			4.027 to 4.237-in. (102.29 to 107.62 mm)		0.120 to 0.390-in. (3.0 to 9.9 mm)	D	
			4.238 to 4.437-in. (107.65 to 112.70 mm)		0.120 to 0.401-in. (3.0 to 10.2 mm)	E	

	Line size			I.D. range	Pipe wall thickness		I.D. range code
	Nominal	Max. O.D.	Option code		ANSI pipes	Non-ANSI pipes	
	5-in. (125 mm)	6.094-in. (154.79 mm)	050	4.438 to 4.571-in. (112.73 to 116.10 mm)	0.134 to 0.614-in. (3.4 to 15.6 mm)	0.134 to 0.481-in. (3.4 to 12.2 mm)	A
				4.572 to 4.812-in. (116.13 to 122.22 mm)		0.134 to 0.374-in. (3.4 to 9.5 mm)	B
				4.813 to 5.047-in. (122.25 to 128.19 mm)		0.134 to 0.380-in. (3.4 to 9.7 mm)	C
				5.048 to 5.249-in. (128.22 to 133.32 mm)		0.134 to 0.413-in. (3.4 to 10.5 mm)	D
Sensor Size 1	6-in. (150 mm)	6.93-in. (176.02 mm)	060	5.250 to 5.472-in. (133.35 to 138.99 mm)	0.134 to 0.614-in. (3.4 to 15.6 mm)	0.134 to 0.3919-in. (3.4 to 9.9 mm)	A
				5.473 to 5.760-in. (139.01 to 146.30 mm)		0.134 to 0.327-in. (3.4 to 8.3 mm)	B
				5.761 to 6.065-in. (146.33 to 154.05 mm)		0.134 to 0.31-in. (3.4 to 7.9 mm)	C
				6.066 to 6.383-in. (154.08 to 162.13 mm)		0.134 to 0.297-in. (3.4 to 7.5 mm)	D
Sensor Size 2	6-in. (150 mm)	6.93-in. (176.02 mm)	060	5.250 to 5.472-in. (133.35 to 139.99 mm)	0.134 to 1.354-in. (3.4 to 34.4 mm)	0.134 to 1.132-in. (3.4 to 28.7 mm)	A
				5.473 to 5.760-in. (139.01 to 146.30 mm)		0.134 to 1.067-in. (3.4 to 27.1 mm)	B
				5.761 to 6.065-in. (146.33 to 154.05 mm)		0.134 to 1.05-in. (3.4 to 26.7 mm)	C
				6.066 to 6.383-in. (154.08 to 162.13 mm)		0.134 to 1.037-in. (3.4 to 26.3 mm)	D
Sensor Size 1	7-in. (180 mm)	7.93-in. (201.42 mm)	070	6.384 to 6.624-in. (162.15 to 168.25 mm)	0.134 to 0.614-in. (3.4 to 15.6 mm)	0.134 to 0.374-in. (3.4 to 9.5 mm)	B
				6.625 to 7.023-in. (168.28 to 178.38 mm)		0.134 to 0.216-in. (3.4 to 5.5 mm)	C
				7.024 to 7.392-in. (178.41 to 187.76 mm)		0.134 to 0.246-in. (3.4 to 6.2 mm)	D
Sensor 2	7-in. (180 mm)	7.93-in. (201.42 mm)	070	6.384 to 6.624-in. (162.15 to 168.25 mm)	0.134 to 1.354-in. (3.4 to 34.4 mm)	0.134 to 1.114-in. (3.4 to 28.3 mm)	B
				6.625 to 7.023-in. (168.28 to 178.38 mm)		0.134 to 0.956-in. (3.4 to 24.3 mm)	C
				7.024 to 7.392-in. (178.41 to 187.76 mm)		0.134 to 0.986-in. (3.4 to 25.0 mm)	D
Sensor Size 1	8-in. (200 mm)	9.688-in. (246.08 mm)	080	7.393 to 7.624-in. (187.78 to 193.65 mm)	0.250 to 0.73-in. (6.4 to 18.5 mm)	0.250 to 0.499-in. (6.4 to 12.6 mm)	B
				7.625 to 7.981-in. (193.68 to 202.72 mm)		0.250 to 0.374-in. (6.4 to 9.5 mm)	C
				7.982 to 8.400-in. (202.74 to 213.36 mm)		0.250 to 0.312-in. (6.4 to 7.9 mm)	D
				8.401 to 8.766-in. (213.39 to 222.66 mm)		0.250 to 0.364-in. (6.4 to 9.2 mm)	E

	Line size			I.D. range	Pipe wall thickness		I.D. range code
	Nominal	Max. O.D.	Option code		ANSI pipes	Non-ANSI pipes	
Sensor Size 2	8-in. (200 mm)	9.688-in. (246.08 mm)	080	7.393 to 7.624-in. (187.78 to 193.65 mm)	0.250 to 1.47-in. (6.4 to 37.3 mm)	0.250 to 1.239-in. (6.4 to 31.4 mm)	B
				7.625 to 7.981-in. (193.68 to 202.72 mm)		0.250 to 1.114-in. (6.4 to 28.3 mm)	C
				7.982 to 8.400-in. (202.74 to 213.36 mm)		0.250 to 1.052-in. (6.4 to 26.7 mm)	D
				8.401 to 8.766-in. (213.39 to 222.66 mm)		0.250 to 1.104-in. (6.4 to 28.0 mm)	E
	10-in. (250 mm)	11.75-in. (298.45 mm)	100	8.767 to 9.172-in. (222.68 to 232.97 mm)	0.250 to 1.470-in. (6.4 to 37.3 mm)	0.250 to 1.065-in. (6.4 to 27.1 mm)	A
				9.173 to 9.561-in. (232.99 to 242.85 mm)		0.250 to 1.082-in. (6.4 to 27.5 mm)	B
				9.562 to 10.020-in. (242.87 to 254.51 mm)		0.250 to 1.012-in. (6.4 to 25.7 mm)	C
				10.021 to 10.546-in. (254.53 to 267.87 mm)		0.250 to 0.945-in. (6.4 to 24.0 mm)	D
				10.547 to 10.999-in. (267.89 to 279.37 mm)		0.250 to 1.018-in. (6.4 to 25.9 mm)	E
	12-in. (300 mm)	13.0375-in. (331.15 mm)	120	11.000 to 11.373-in. (279.40 to 288.87 mm)	0.250 to 1.470-in. (6.4 to 37.3 mm)	0.250 to 1.097-in. (6.4 to 27.9 mm)	B
				11.374 to 11.938-in. (288.90 to 303.23 mm)		0.250 to 0.906-in. (6.4 to 23.0 mm)	C
				11.939 to 12.250-in. (303.25 to 311.15 mm)		0.250 to 1.159-in. (6.4 to 29.4 mm)	D

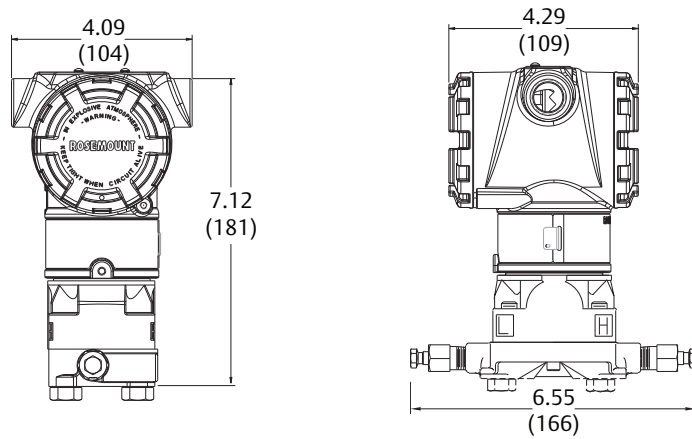
## A.10 Dimensional drawings

Figure A-2. Rosemount 3051C Exploded View



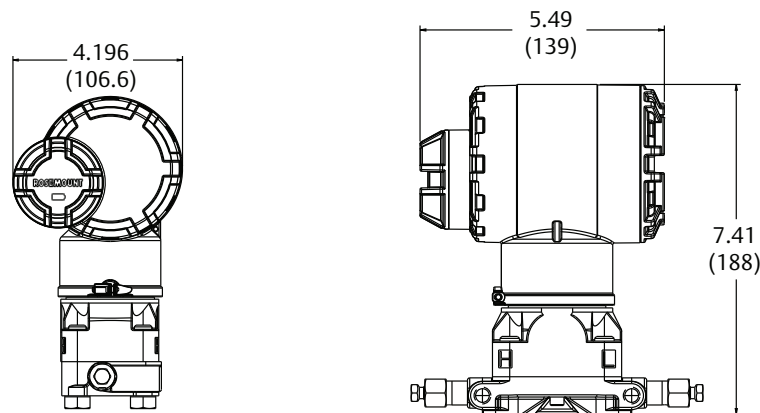
- |  |  |
|--|--|
| A. Cover   | J. Sensor module                                   |
| B. Cover O-ring  | K. Coplanar flange                                 |
| C. Terminal block  | L. Drain/vent valve                                |
| D. Electronics housing   | M. Flange adapters                                 |
| E. Configuration buttons cover   | N. Process O-ring                                  |
| F. Local configuration buttons   | O. Flange adapter O-ring                           |
| G. Electronics board   | P. Flange alignment screw (not pressure retaining) |
| H. Name plate  | Q. Flange bolts                                    |
| I. Housing rotation set screw<br>(180 degree maximum rotation without further disassembly) |  |

**Figure A-3. Rosemount 3051C Coplanar Flange**



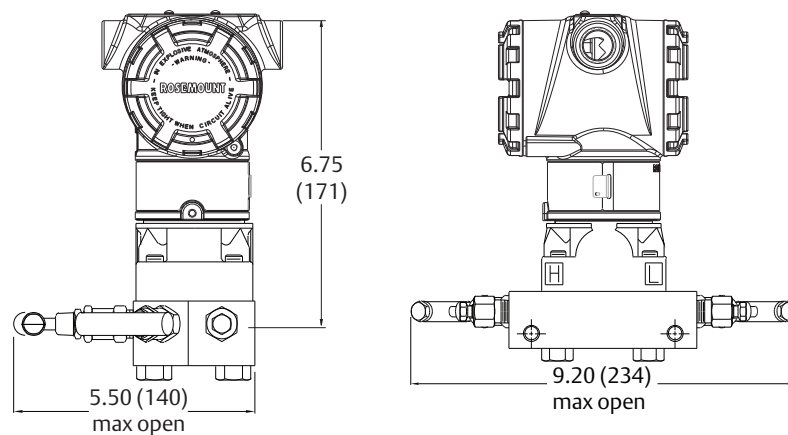
Dimensions are in inches (millimeters).

**Figure A-4. Rosemount 3051 Wireless Housing with Coplanar Flange**



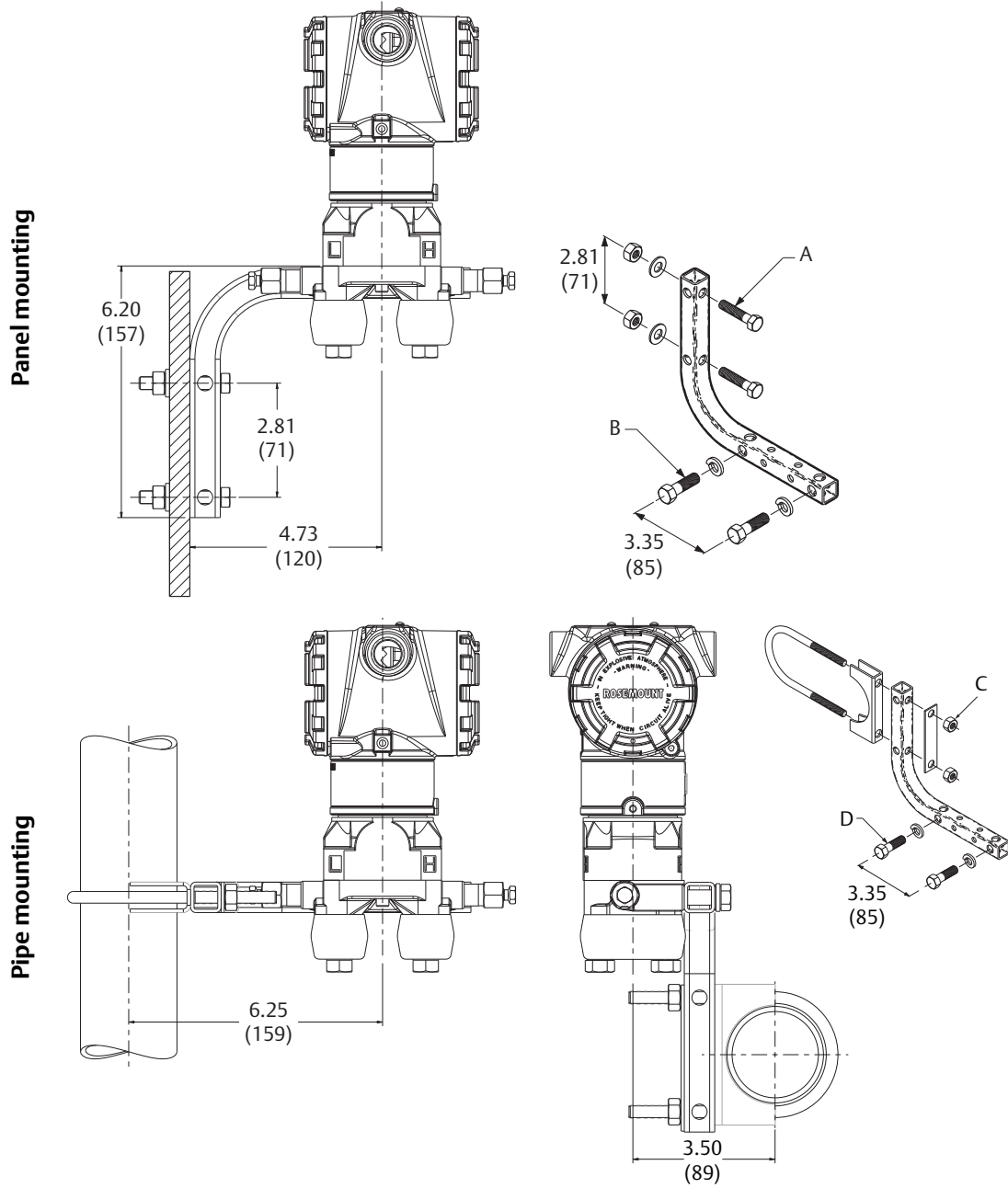
Dimensions are in inches (millimeters).

**Figure A-5. Rosemount 3051C Coplanar Flange with Rosemount 305RC3 3-Valve Coplanar Integral Manifold**



Dimensions are in inches (millimeters).

Figure A-6. Coplanar Flange Mounting Configurations with Optional Bracket (B4) for 2-in. Pipe or Panel Mounting

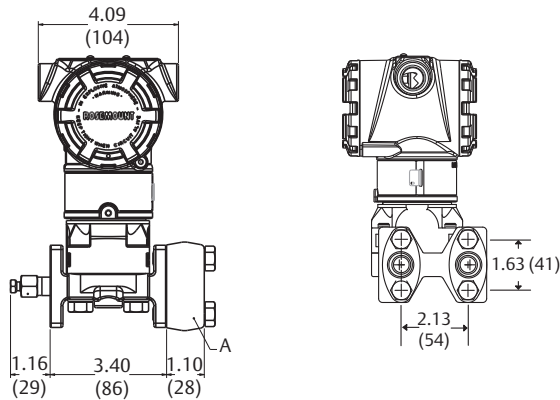


A.  $\frac{5}{16}$ -18 bolts (not supplied)  
 B.  $\frac{3}{8}$ -16 bolts  
 Dimensions are in inches (millimeters).

C. 2-in. U-bolt  
 D.  $\frac{3}{8}$ -16 bolts

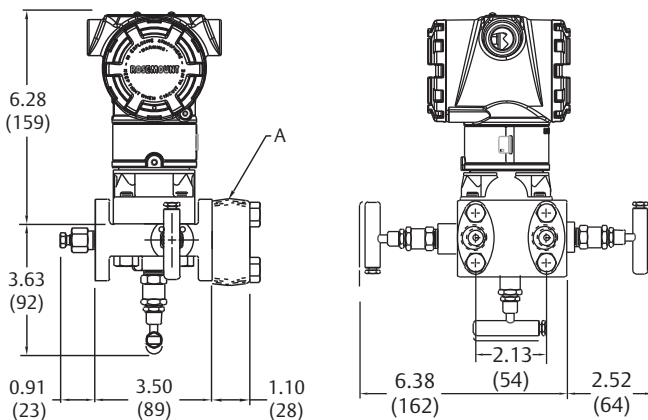


**Figure A-7. Rosemount 3051C Coplanar with Traditional Flange**



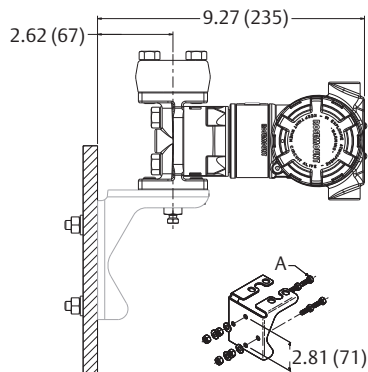
A. Flange adapters (optional)  
Dimensions are in inches (millimeters).

**Figure A-8. Rosemount 3051C Coplanar with Rosemount 305RT3 3-Valve Traditional Integral Manifold**



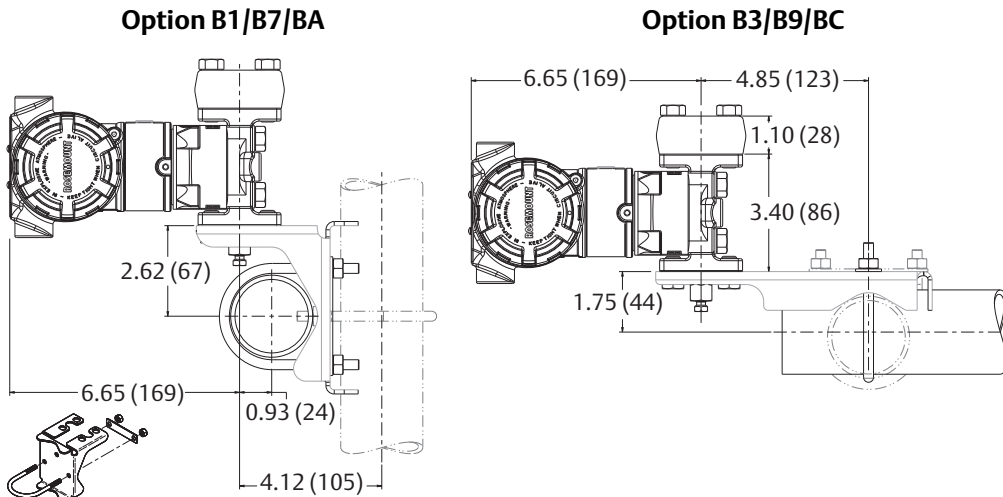
A. 1/2-14 NPT flange adapter (optional)  
Dimensions are in inches (millimeters).

**Figure A-9. Traditional Flange Mounting Configurations with Optional Brackets for Panel Mounting (Option B2/B8)**



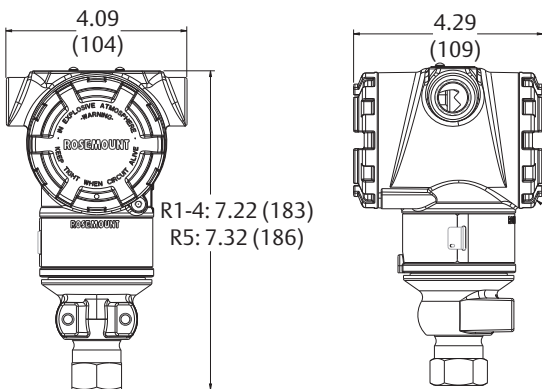
A. 5/16-18 bolts (not supplied)  
Dimensions are in inches (millimeters).

**Figure A-10. Traditional Flange Mounting Configurations with Optional Brackets for 2-in. Pipe Mounting**



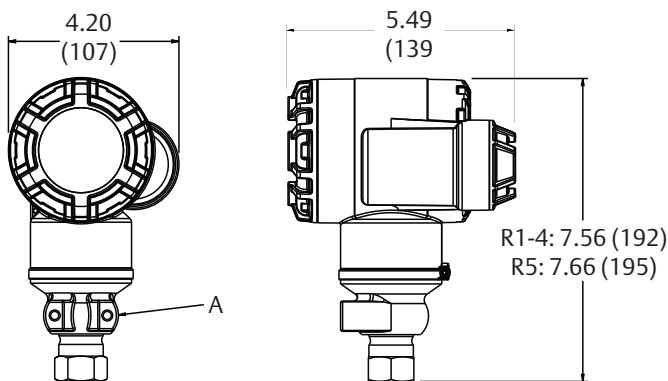
Dimensions are in inches (millimeters).

**Figure A-11. Rosemount 3051T**



Dimensions are in inches (millimeters).

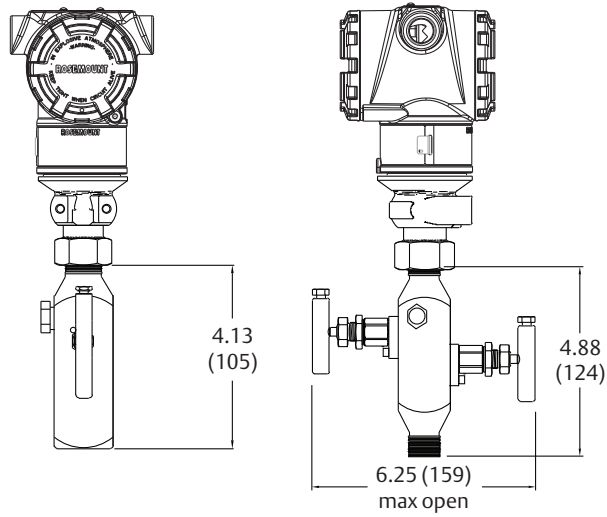
**Figure A-12. Rosemount 3051T Wireless Housing**



A. U-bolt bracket

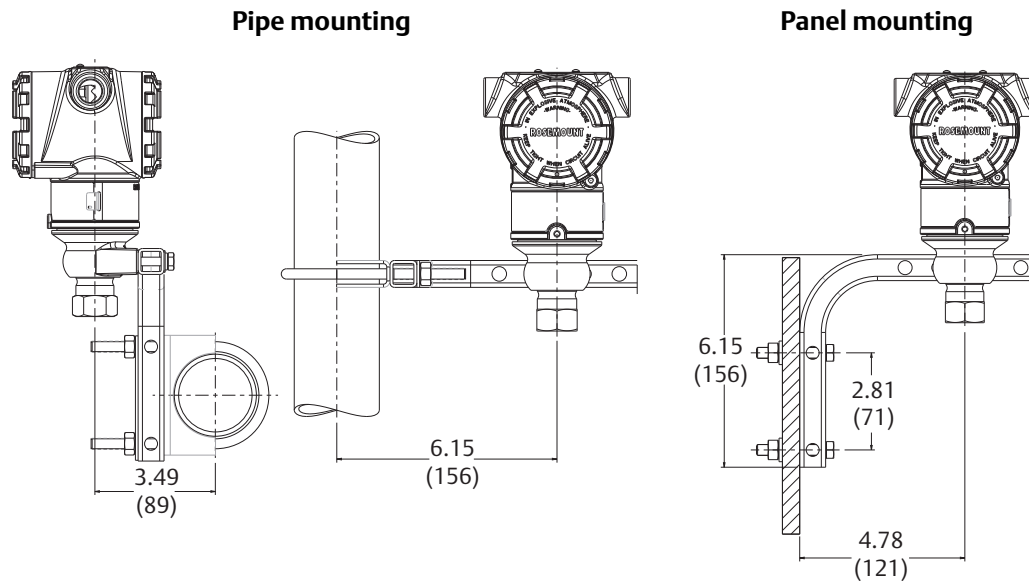
Dimensions are in inches (millimeters).

**Figure A-13. Rosemount 3051T with Rosemount 306 2-Valve Integral Manifold**



Dimensions are in inches (millimeters).

**Figure A-14. Rosemount 3051T Typical Mounting Configurations with Optional Mounting Bracket**



Dimensions are in inches (millimeters).

Figure A-15. Rosemount 3051CFA Pak-Lok Annubar Flowmeter<sup>(1)</sup>

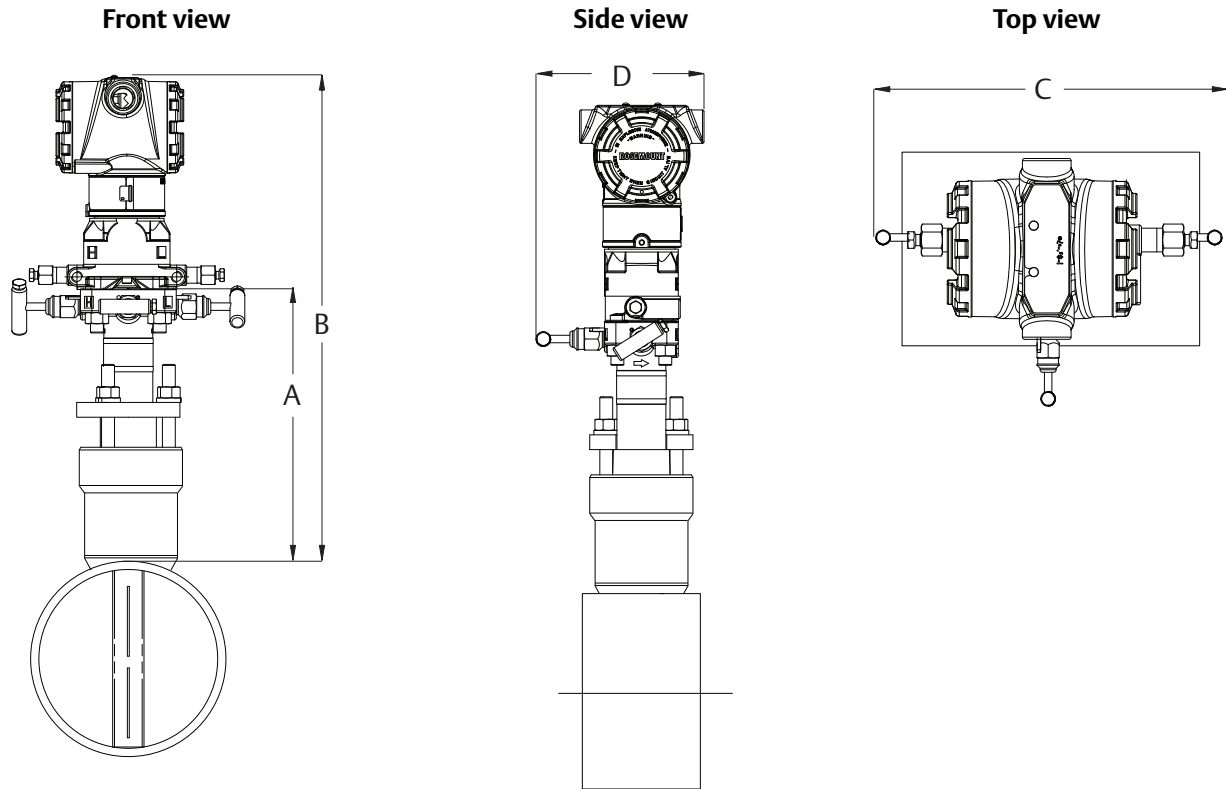


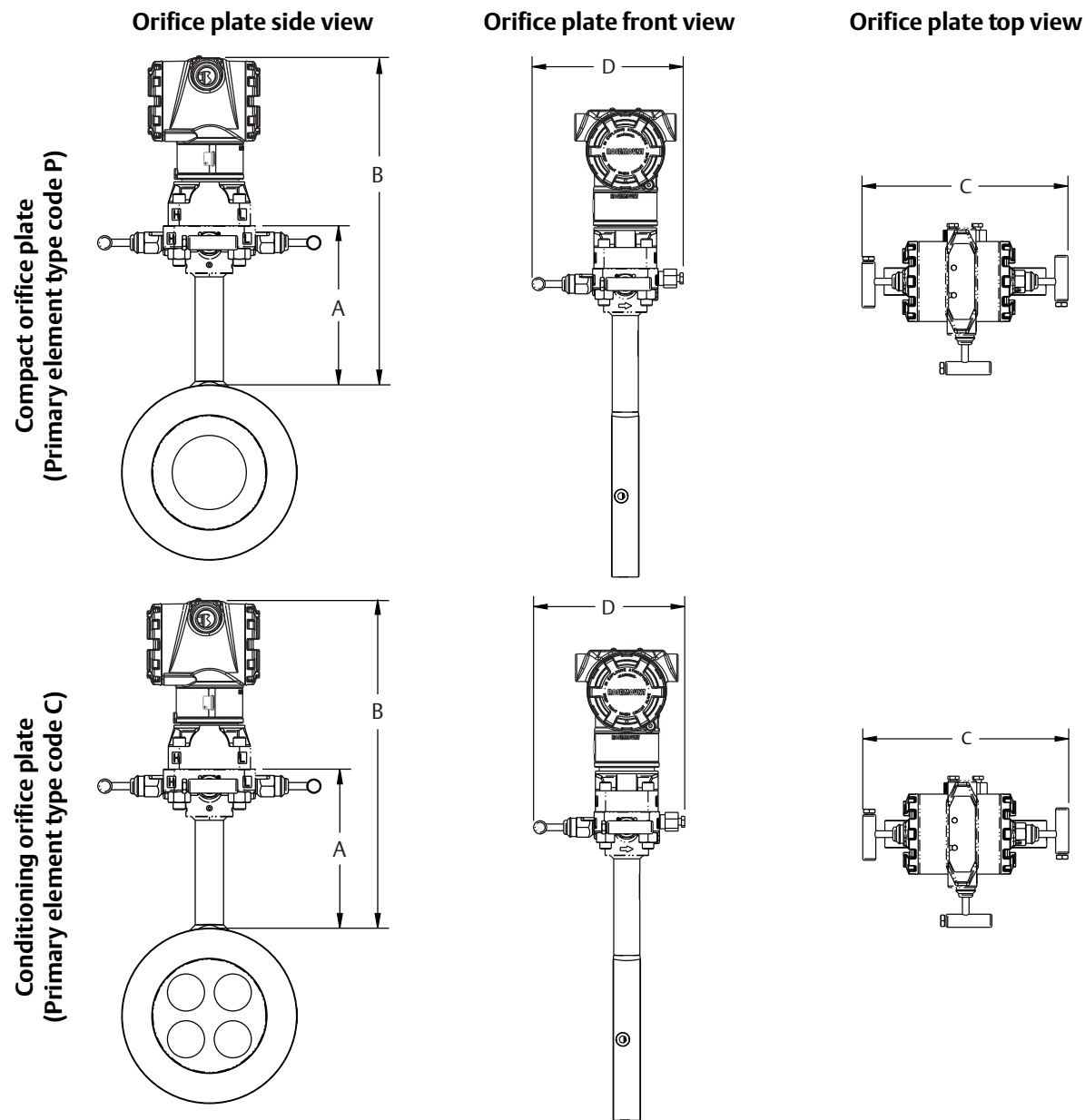
Table A-20. Rosemount 3051CFA Pak-Lok Annubar Flowmeter Dimensional Data (Maximum Dimensions)

Sensor size	A	B	C	D
1	8.50 (215.9)	15.60 (396.9)	9.00 (228.6)	6.00 (152.4)
2	11.00 (279.4)	18.10 (460.4)	9.00 (228.6)	6.00 (152.4)
3	12.00 (304.8)	19.10 (485.8)	9.00 (228.6)	6.00 (152.4)

Dimensions are in inches (millimeters).

1. The Pak-Lok Annubar model is available up to Class 600 ANSI (1440 psig at 100 °F [99 bar at 38 °C]).

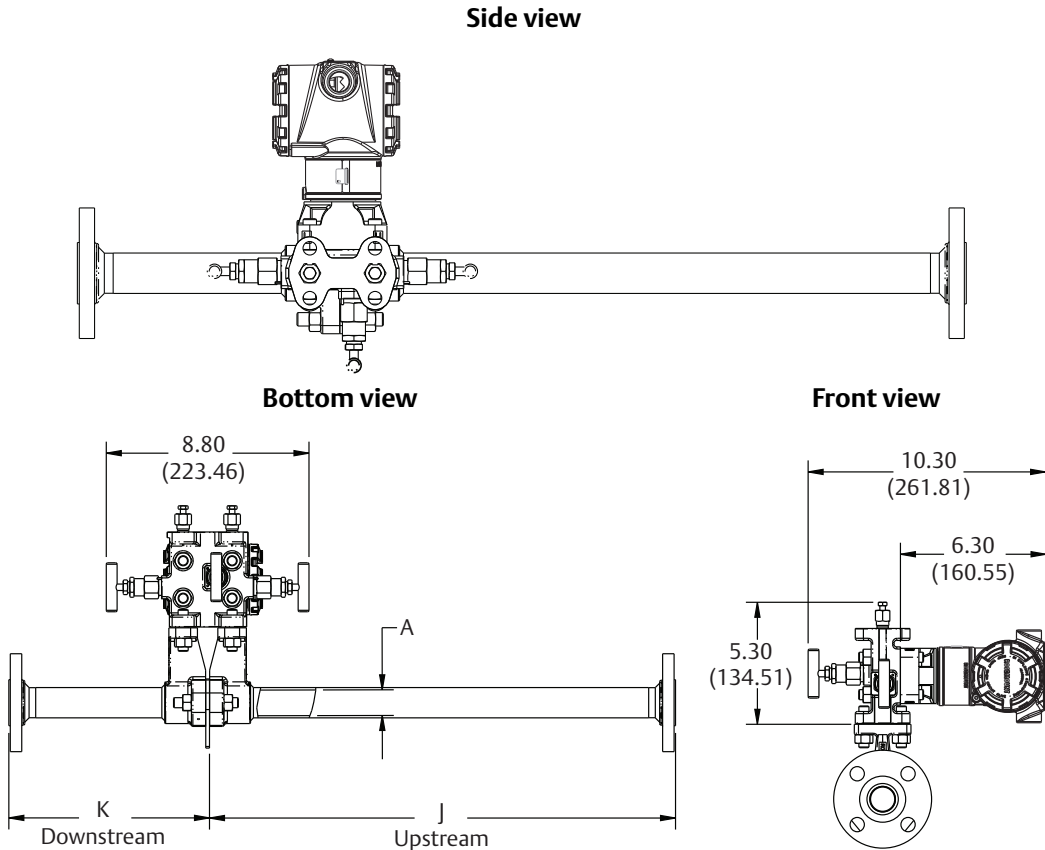
Figure A-16. Rosemount 3051CFC Compact Orifice Flowmeter



Primary element type	A	B	Transmitter height	C	D
Type P and C	5.62 (143)	Transmitter Height + A	6.27 (159)	7.75 (197) - closed 8.25 (210) - open	6.00 (152) - closed 6.25 (159) - open

Dimensions are in inches (millimeters).

Figure A-17. Rosemount 3051CFP Integral Orifice Flowmeter



A. B.D. (bore diameter)  
Dimensions are in inches (millimeters).

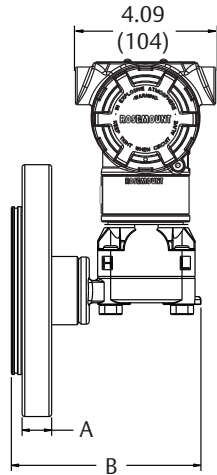
Dimension	Line size		
	1/2-in. (15 mm)	1-in. (25 mm)	1 1/2-in. (40 mm)
J (Beveled/Threaded pipe ends)	12.54 (318.4)	20.24 (514.0)	28.44 (722.4)
J (RF slip-on, RTJ slip-on, RF-DIN slip on)	12.62 (320.4)	20.32 (516.0)	28.52 (724.4)
J (RF Class 150, weld neck)	14.37 (364.9)	22.37 (568.1)	30.82 (782.9)
J (RF Class 300, weld neck)	14.56 (369.8)	22.63 (574.7)	31.06 (789.0)
J (RF Class 600, weld neck)	14.81 (376.0)	22.88 (581.0)	31.38 (797.1)
K (Beveled/Threaded pipe ends)	5.74 (145.7)	8.75 (222.2)	11.91 (302.6)
K (RF slip-on, RTJ slip-on, RF-DIN slip on) <sup>(1)</sup>	5.82 (147.8)	8.83 (224.2)	11.99 (304.6)
K (RF Class 150, weld neck)	7.57 (192.3)	10.88 (276.3)	14.29 (363.1)
K (RF Class 300, weld neck)	7.76 (197.1)	11.14 (282.9)	14.53 (369.2)
K (RF Class 600, weld neck)	8.01 (203.4)	11.39 (289.2)	14.85 (377.2)
B.D. (bore diameter)	0.664 (16.87)	1.097 (27.86)	1.567 (39.80)

Dimensions are in inches (millimeters).

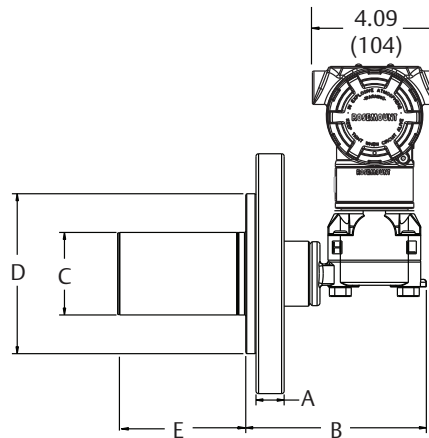
1. Downstream length shown here includes plate thickness of 0.162-in. (4.11 mm).

**Figure A-18. Rosemount 3051L**

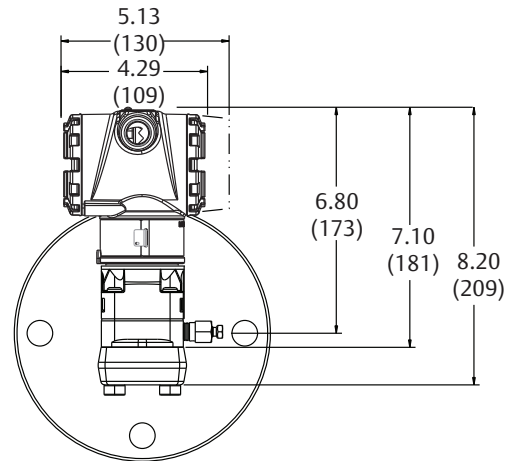
**2-in. flange configuration  
(flush mount only)**



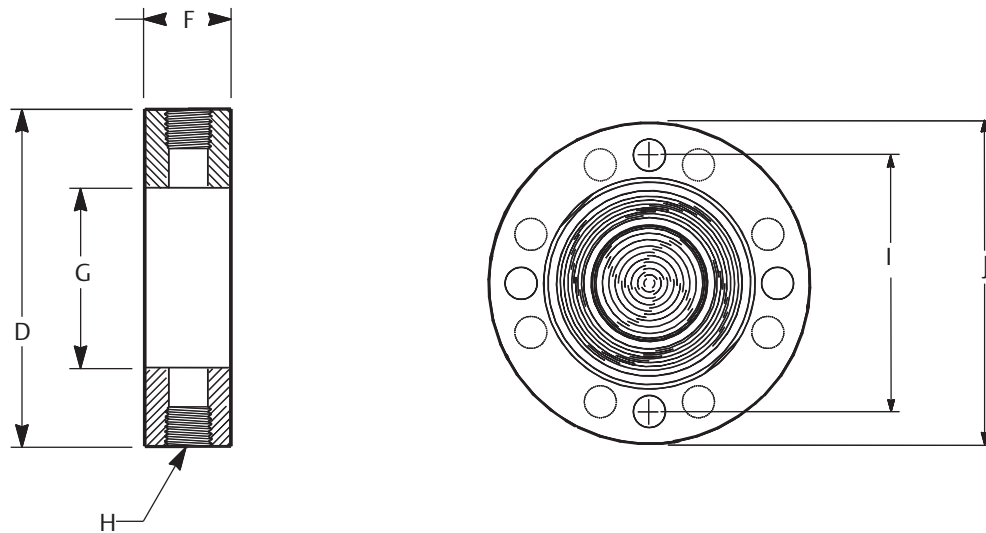
**3- and 4-in.  
flange configuration**



**Diaphragm assembly and mounting flange**



**Optional flushing connection ring (lower housing)**



- A. Flange thickness
  - B. See [Table A-21](#).
  - C. Extension diameter
  - D. O.D. gasket surface
  - E. 2-, 4-, or 6-in. extension  
(only available with 3- and 4-in., DN80, and DN100 flange configurations)
- Dimensions are in inches (millimeters).

- F. Lower housing
- G. Process side
- H. Flushing connection
- I. Bolt circle diameter
- J. Outside diameter

**Table A-21. Rosemount 3051L Dimensional Specifications**

Class <sup>(1)</sup>	Pipe size	Flange thickness A	Bolt circle diameter H	Outside diameter J	No. of bolts	Bolt hole diameter	Extension diameter <sup>(1)</sup> D	O.D. gasket surface E
ASME B16.5 (ANSI) 150	2 (51)	0.69 (18)	4.75 (121)	6.0 (152)	4	0.75 (19)	N/A	3.6 (92)
	3 (76)	0.88 (22)	6.0 (152)	7.5 (191)	4	0.75 (19)	2.58 (66)	5.0 (127)
	4 (102)	0.88 (22)	7.5 (191)	9.0 (229)	8	0.75 (19)	3.5 (89)	6.2 (158)
ASME B16.5 (ANSI) 300	2 (51)	0.82 (21)	5.0 (127)	6.5 (165)	8	0.75 (19)	N/A	3.6 (92)
	3 (76)	1.06 (27)	6.62 (168)	8.25 (210)	8	0.88 (22)	2.58 (66)	5.0 (127)
	4 (102)	1.19 (30)	7.88 (200)	10.0 (254)	8	0.88 (22)	3.5 (89)	6.2 (158)
ASME B16.5 (ANSI) 600	2 (51)	1.00 (25)	5.0 (127)	6.5 (165)	8	0.75 (19)	N/A	3.6 (92)
	3 (76)	1.25 (32)	6.62 (168)	8.25 (210)	8	0.88 (22)	2.58 (66)	5.0 (127)
DIN 2501 PN 10-40	DN 50	20 mm	125 mm	165 mm	4	18 mm	N/A	4.0 (102)
DIN 2501 PN 25/40	DN 80	24 mm	160 mm	200 mm	8	18 mm	66 mm	5.4 (138)
	DN 100	24 mm	190 mm	235 mm	8	22 mm	89 mm	6.2 (158)
DIN 2501 PN 10/16	DN 100	20 mm	180 mm	220 mm	8	18 mm	89 mm	6.2 (158)

Dimensions are in inches (millimeters).

1. Tolerances are 0.040 (1.02), - 0.020 (0.51).

Class <sup>(1)</sup>	Pipe size	Process side G	Lower housing F		Extension diameter C
			1/4-in. NPT	1/2-in. NPT	
ASME B16.5 (ANSI) 150	2 (51)	2.12 (54)	0.97 (25)	1.31 (33)	5.65 (143)
	3 (76)	3.60 (91)	0.97 (25)	1.31 (33)	5.65 (143)
	4 (102)	3.60 (91)	0.97 (25)	1.31 (33)	5.65 (143)
ASME B16.5 (ANSI) 300	2 (51)	2.12 (54)	0.97 (25)	1.31 (33)	5.65 (143)
	3 (76)	3.60 (91)	0.97 (25)	1.31 (33)	5.65 (143)
	4 (102)	3.60 (91)	0.97 (25)	1.31 (33)	5.65 (143)
ASME B16.5 (ANSI) 600	2 (51)	2.12 (54)	0.97 (25)	1.31 (33)	7.65 (194)
	3 (76)	3.60 (91)	0.97 (25)	1.31 (33)	7.65 (194)
DIN 2501 PN 10-40	DN 50	2.40 (61)	0.97 (25)	1.31 (33)	5.65 (143)
DIN 2501 PN 25/40	DN 80	3.60 (91)	0.97 (25)	1.31 (33)	5.65 (143)
	DN 100	3.60 (91)	0.97 (25)	1.31 (33)	5.65 (143)
DIN 2501 PN 10/16	DN 100	3.60 (91)	0.97 (25)	1.31 (33)	5.65 (143)

1. Tolerances are 0.040 (1.02), - 0.020 (0.51).



# Appendix B Product Certifications

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## B.1 Rosemount™ 3051 Pressure Transmitter

Rev 1.6

### B.1.1 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 [EmersonProcess.com/Rosemount](http://EmersonProcess.com/Rosemount).

### B.1.2 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).

### B.1.3 North America

- E5** USA Explosionproof (XP) and Dust-Ignitionproof (DIP)  
Certificate: OT2H0.AE  
Standards: FM Class 3600 – 2011,  
FM Class 3615 – 2006,  
FM Class 3810 – 2005,  
ANSI/NEMA 250 – 200  
Markings: XP CL I, DIV 1, GP B, C, D; DIP CL II, DIV 1,  
GP E, F, G; CL III; T5(-50 °C ≤ T<sub>a</sub> ≤ +85 °C);  
Factory Sealed; Type 4X
- I5** USA Intrinsic Safety (IS) and Nonincendive (NI)  
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;  
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<sub>a</sub> ≤ +70 °C) [HART®],  
T5(-50 °C ≤ T<sub>a</sub> ≤ +40 °C) [HART];  
T4(-50 °C ≤ T<sub>a</sub> ≤ +60 °C)  
[Fieldbus/PROFIBUS®]; Type 4x

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

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

- IE** USA FISCO  
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 ≤ T<sub>a</sub> ≤ +60 °C); Type 4x

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



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

- C6** Canada Explosionproof, Dust-Ignitionproof, Intrinsic Safety and Nonincendive  
Certificate: 1053834  
Standards: ANSI/ISA 12.27.01-2003,  
CSA Std. C22.2 No. 30 -M1986,  
CSA Std. C22.2 No.142-M1987,  
CSA Std. C22.2. No.157-92,  
CSA Std. C22.2 No. 213 - M1987  
Markings: Explosionproof for Class I, Division 1,  
Groups B, C and D; Suitable for Class I,  
Zone 1, Group IIB+H2, T5;  
Dust-Ignitionproof Class II, Division 1,  
Groups E, F, G; Class III Division 1;  
Intrinsically Safe Class I, Division 1 Groups  
A, B, C, D when connected in accordance  
with Rosemount drawing 03031-1024,

Temperature Code T3C; Suitable for Class I, Zone 0; Class I Division 2 Groups A, B, C and D, T5; Suitable for Class I Zone 2, Group IIC; Type 4X; Factory Sealed; Single Seal (See drawing 03031-1053)

- E6** Canada Explosionproof, Dust-Ignitionproof and Division 2  
 Certificate: 1053834  
 Standards: ANSI/ISA 12.27.01-2003, CSA Std. C22.2 No. 30-M1986, CSA Std. C22.2 No.142-M1987, CSA Std. C22.2 No. 213 - M1987  
 Markings: Explosionproof Class I, Division 1, Groups B, C and D; Suitable for Class I, Zone 1, Group IIB+H2, T5; Dust-Ignitionproof for Class II and Class III, Division 1, Groups E, F and G; Class I, Division 2, Groups A, B, C and D; Suitable for Class I Zone 2, Group IIC; Type 4X; Factory Sealed; Single Seal (See drawing 03031-1053)

**B.1.4 Europe**




- E8** ATEX Flameproof and Dust  
 Certificate: KEMA00ATEX2013X;  
 Baseefa11ATEX0275X  
 Standards: EN60079-0:2012 + A11:2013, EN60079-1:2014, EN60079-26:2015, EN60079-31:2009  
 Markings:  II 1/2 G Ex db IIC T6...T4 Ga/Gb, T6(-60 °C ≤ T<sub>a</sub> ≤ +70 °C), T4/T5(-60 °C ≤ T<sub>a</sub> ≤ +80 °C);  II 1 D Ex ta IIIC T 95 °C T<sub>500</sub> 105 °C Da (-20 °C ≤ T<sub>a</sub> ≤ +85 °C)

**Table B-1. Process Temperature**

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

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


1. This device contains a thin wall diaphragm. 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. Some variants of the equipment have reduced markings on the nameplate. Refer to the Certificate for full equipment marking.
- II** ATEX Intrinsic Safety and Dust  
 Certificate: BAS97ATEX1089X; Baseefa11ATEX0275X  
 Standards: EN60079-0:2012, EN60079-11:2012, EN60079-31:2009  
 Markings: HART:  II 1 G Ex ia IIC T5/T4 Ga, T5(-60 °C ≤ T<sub>a</sub> ≤ +40 °C), T4(-60 °C ≤ T<sub>a</sub> ≤ +70 °C)  
 Fieldbus/PROFIBUS:  II 1 G Ex ia IIC Ga T4(-60 °C ≤ T<sub>a</sub> ≤ +60 °C)  
 DUST:  II 1 D Ex ta IIIC T 95 °C T<sub>500</sub> 105 °C Da (-20 °C ≤ T<sub>a</sub> ≤ +85 °C)

**Table B-2. Input Parameters**

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

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

1. The apparatus is not capable of withstanding the 500 V insulation test required by clause 6.3.12 of EN60079-11:2012. This must be taken into account when installing the apparatus.
  2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however care should be taken to protect it from impact or abrasion if located in Zone 0.
  3. Some variants of the equipment have reduced markings on the nameplate. Refer to the Certificate for full equipment marking.
- IA** ATEX FISCO  
 Certificate: BAS97ATEX1089X  
 Standards: EN60079-0:2012, EN60079-11:2009  
 Markings:  II 1 G Ex ia IIC T4 Ga (-60 °C ≤ T<sub>a</sub> ≤ +60 °C)

**Table B-3. Input Parameters**



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

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

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

**N1** ATEX Type n and Dust

Certificate: BAS00ATEX3105X; Baseefa11ATEX0275X  
Standards: EN60079-0:2012, EN60079-15:2010, EN60079-31:2009

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

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

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

**B.1.5 International**

**E7** IECEx Flameproof and Dust

Certificate: IECEx KEM 09.0034X; IECEx BAS 10.0034X  
Standards: IEC60079-0:2011, IEC60079-1:2014-06, IEC60079-26:2014-10, IEC60079-31:2008

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

**Table B-4. Process Temperature**

Temperature class	Process temperature
T6	-60 $^\circ\text{C}$ to +70 $^\circ\text{C}$
T5	-60 $^\circ\text{C}$ to +80 $^\circ\text{C}$
T4	06 $^\circ\text{C}$ to + 80 $^\circ\text{C}$

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

1. This device contains a thin wall diaphragm. 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. 2.3.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.
- I7** IECEx Intrinsic Safety  
Certificate: IECEx BAS 09.0076X  
Standards: IEC60079-0:2011, IEC60079-11:2011  
Markings: HART: Ex ia IIC T5/T4 Ga,  
T5( $-60\text{ }^\circ\text{C} \leq T_a \leq +40\text{ }^\circ\text{C}$ ),  
T4( $-60\text{ }^\circ\text{C} \leq T_a \leq +70\text{ }^\circ\text{C}$ )  
Fieldbus/PROFIBUS: Ex ia IIC  
T4( $-60\text{ }^\circ\text{C} \leq T_a \leq +60\text{ }^\circ\text{C}$ )

**Table B-5. Input Parameters**

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

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

1. If the apparatus is fitted with an optional 90 V transient suppressor, it is not capable of withstanding the 500 V insulation test required by clause 6.3.12 of IEC60079-11. 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 if located in Zone 0.

IECEx Mining (Special A0259)

Certificate: IECEx TSA 14.0001X

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

Markings: Ex ia I Ma (-60 °C ≤ T<sub>a</sub> ≤ +70 °C)

**Table B-6. Input Parameters**

Parameter	HART	Fieldbus/ PROFIBUS	FISCO
Voltage U <sub>i</sub>	30 V	30 V	17.5 V
Current I <sub>i</sub>	200 mA	300 mA	380 mA
Power P <sub>i</sub>	0.9 W	1.3 W	5.32 W
Capacitance C <sub>i</sub>	0.012 μF	0 μF	<5 nF
Inductance L <sub>i</sub>	0 mH	0 mH	<10 μH

**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 I applications.

**N7 IECEx Type n**

Certificate: IECEx BAS 09.0077X

Standards: IEC60079-0:2011, IEC60079-15:2010

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

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

1. The apparatus is not capable of withstanding the 500 V insulation test required by IEC60079-15. This must be taken into account when installing the apparatus.

**B.1.6 Brazil**

**E2 INMETRO Flameproof**

Certificate: UL-BR 13.0643X

Standards: ABNT NBR IEC60079-0:2008 + Errata 1:2011, ABNT NBR IEC60079-1:2009 + Errata 1:2011, ABNT NBR IEC60079-26:2008 + Errata 1:2008

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

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

1. This device contains a thin wall diaphragm 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. 2.3.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. The capacitance of the wrap around label, being 1.6 nF, exceeds the limit in Table 9 of ABNT NBR IEC 60079-0. The user shall determine suitability for the specific application.

**I2 INMETRO Intrinsic Safety**

Certificate: UL-BR 13.0584X

Standards: ABNT NBR IEC60079-0:2008 + Errata 1:2011, ABNT NBR IEC60079-11:2009

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

**Table B-7. Input Parameters**

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

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

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

**IB** INMETRO FISCO  
Certificate: UL-BR 13.0584X  
Standards: ABNT NBR IEC60079-0:2008 + Errata 1:2011, ABNT NBR IEC60079-11:2009  
Markings: Ex ia IIC T4 Ga (-60 °C ≤ T<sub>a</sub> ≤ +60 °C)

**Table B-8. Input Parameters**

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

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

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 a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in Zone 0.

**B.1.7 China**

**E3** China Flameproof  
Certificate: GYJ14.1041X; GYJ15.1368X [Flowmeters]  
Standards: GB12476-2000; GB3836.1-2010, GB3836.2-2010, GB3836.20-2010  
Markings: Ex d IIC T6/T5 Ga/Gb, T6(-50 °C ≤ T<sub>a</sub> ≤ +65 °C), T5(-50 °C ≤ T<sub>a</sub> ≤ +80 °C)

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

1. The relation between ambient temperature arrange and temperature class is as follows:

T <sub>a</sub>	Temperature class
-50 °C to +80 °C	T5
-50 °C to +65 °C	T6

When used in a combustible dust environment, the maximum ambient temperature is 80 °C.

2. The earth connection facility in the enclosure should be connected reliably.
3. Cable entry certified by notified body with type of protection Ex d IIC in accordance with GB3836.1-2000 and GB3836.2-2000, should be applied when installed in a hazardous location. When used in combustible dust environment, cable entry in accordance with IP66 or higher level should be applied.
4. Obey the warning “Keep tight when the circuit is alive.”
5. End users are not permitted to change any internal components.
6. During installation, use and maintenance of this product, observe the following standards: GB3836.13-1997, GB3836.15-2000, GB3836.16-2006, GB50257-1996, GB12476.2-2006, GB15577-2007.

**I3** China Intrinsic Safety  
Certificate: GYJ13.1362X; GYJ15.1367X [Flowmeters]  
Standards: GB3836.1-2010, GB3836.4-2010, GB3836.20-2010, GB12476.1-2000  
Markings: Ex ia IIC Ga T4/T5

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

1. Symbol “X” is used to denote specific conditions of use:
  - a. If the apparatus is fitted with an optional 90 V transient suppressor, it is not capable of withstanding the 500 V insulation test for 1 minute. This must be taken into account when installing the apparatus.
  - b. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in Zone 0.
2. The relation between T code and ambient temperature range is:

Model	T code	Temperature class
HART	T5	-60 °C ≤ T <sub>a</sub> ≤ +40 °C
HART	T4	-60 °C ≤ T <sub>a</sub> ≤ +70 °C
Fieldbus/PROFIBUS/ FISCO	T4	-60 °C ≤ T <sub>a</sub> ≤ +60 °C

## 3. Intrinsically Safe parameters:

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

Note 1: FISCO parameters apply to both Group IIC and IIB.

Note 2: [For Flowmeters] When Rosemount 644 Temperature Transmitter is used, the Rosemount 644 should be used with Ex-certified associated apparatus to establish explosion protection system that can be used in explosive gas atmospheres. Wiring and terminals should comply with the instruction manual of both Rosemount 644 and associated apparatus. The cables between Rosemount 644 and associated apparatus should be shielded cables (the cables must have insulated shield). The shielded cable has to be grounded reliably in a non-hazardous area.

- Transmitters comply with the requirements for FISCO field devices specified in IEC60079-27:2008. For the connection of an intrinsically safe circuit in accordance with FISCO Model, FISCO parameters are listed in the table above.
- The product should be used with Ex-certified associated apparatus to establish explosion protection system that can be used in explosive gas atmospheres. Wiring and terminals should comply with the instruction manual of the product and associated apparatus.
- The cables between this product and associated apparatus should be shielded cables (the cables must have insulated shield). The shielded cable has to be grounded reliably in a non-hazardous area.
- End users are not permitted to change any intern components but to settle the problem in conjunction with the manufacturer to avoid damage to the product.
- During installation, use and maintenance of this product, observe the following standards: GB3836.13-1997, GB3836.15-2000, GB3836.16-2006, GB50257-1996, GB12476.2-2006, GB15577-2007

**N3** China Type n

Certificate: GYJ15.1105X

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

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

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

- Symbol “X” is used to denote specific conditions of use: The apparatus is not capable of withstanding the 500 V test to earth for one minute. The must be taken into consideration during installation.

**B.1.8 Japan****E4** Japan Flameproof

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

Markings: Ex d IIC T5

**B.1.9 Technical Regulations Customs Union (EAC)****EM** EAC Flameproof

Certificate: RU C-US.GB05.B.01197

Markings: Ga/Gb Ex d IIC T5/T6 X,  
T5(-60 °C ≤ T<sub>a</sub> ≤ +80 °C),  
T6(-60 °C ≤ T<sub>a</sub> ≤ +65 °C)

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

- See certificate for special conditions.

**IM** EAC Intrinsically Safe

Certificate: RU C-US.GB05.B.01197

Markings: HART: 0Ex ia IIC T4/T5 Ga X,  
T4(-60 °C ≤ T<sub>a</sub> ≤ +70 °C),  
T5(-60 °C ≤ T<sub>a</sub> ≤ +40 °C)  
Fieldbus/PROFIBUS: 0Ex ia IIC T4 Ga X  
(-60 °C ≤ T<sub>a</sub> ≤ +60 °C)

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

- See certificate for special conditions.

**B.1.10 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

### B.1.11 Conduit plugs and adapters

IECEX Flameproof and Increased Safety  
Certificate: IECEX FMG 13.0032X  
Standards: IEC60079-0:2011, IEC60079-1:2007,  
IEC60079-7:2006-2007

Markings: Ex de IIC Gb

ATEX Flameproof and Increased Safety

Certificate: FM13ATEX0076X  
Standards: EN60079-0:2012, EN60079-1:2007,  
IEC60079-7:2007

Markings: II 2 G Ex de IIC Gb

**Table B-9. Conduit Plug Thread Sizes**

Thread	Identification mark
M20 × 1.5	M20
1/2 × 14 NPT	1/2 NPT

**Table B-10. Thread Adapter Thread Sizes**

Male thread	Identification mark
M20 × 1.5–6H	M20
1/2–14 NPT	1/2–14 NPT
3/4–14 NPT	3/4–14 NPT
Female thread	Identification mark
M20 × 1.5–6H	M20
1/2–14 NPT	1/2–14 NPT
G <sup>1/2</sup>	G <sup>1/2</sup>

#### 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. G<sup>1/2</sup> thread forms are only acceptable for existing (legacy) equipment installations.

### B.1.12 Additional certifications

**SBS** American Bureau of Shipping (ABS) Type Approval  
Certificate: 09-HS446883A-5-PDA  
Intended Use: Marine and Offshore Applications –  
Measurement of either gauge or  
absolute pressure for liquid, gas and  
vapor.

**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

**SDN** Det Norske Veritas (DNV) Type Approval  
Certificate: TAA000004F  
Intended Use: DNV GL Rules for Classification – Ships  
and offshore units

Application:

Locations classes	
Temperature	D
Humidity	B
Vibration	A
EMC	B
Enclosure	D

**SLL** Lloyds Register (LR) Type Approval  
Certificate: 11/60002  
Application: Environmental categories ENV1, ENV2,  
ENV3, and ENV5

**C5** Custody Transfer - Measurement Canada Accuracy  
Approval  
Certificate: AG-0226; AG-0454; AG-0477

## B.2 Rosemount 3051 Wireless Pressure Transmitter

Rev 1.3

### B.2.1 European Directive Information

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

### B.2.2 Telecommunication Compliance

All wireless devices require certification to ensure that they adhere to regulations regarding the use of the RF spectrum. Nearly every country requires this type of product certification.

Emerson is working with governmental agencies around the world to supply fully compliant products and remove the risk of violating country directives or laws governing wireless device usage.

### B.2.3 FCC and IC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: This device may not cause harmful interference. This device must accept any interference received, including interference that may cause undesired operation. This device must be installed to ensure a minimum antenna separation distance of 20 cm from all persons.

### B.2.4 Ordinary Location Certification for FM

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

### B.2.5 U.S.A.

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

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

1. The Rosemount 3051 Wireless Pressure Transmitter shall only be used with the 701PGNKF Rosemount SmartPower™ Battery Pack.
2. The in-line pressure sensor may contain more than 10% aluminum and is considered a potential risk of ignition by impact or friction. Care must be taken into account during installation and used to prevent impact and friction.
3. The surface resistivity of the transmitter housing is greater than one gigaohm. To avoid electrostatic charge build-up, it must not be rubbed or cleaned with solvents or a dry cloth.

### B.2.6 Canada

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

### B.2.7 Europe

- I1** ATEX Intrinsic Safety  
 Certificate: Baseefa12ATEX0228X  
 Standards: EN60079-11:2012, EN60079-0:2012  
 Markings: Ⓜ II 1 G Ex ia IIC T4 Ga,  
 T4(-40 °C ≤ T<sub>a</sub> ≤ +70 °C)  
 IP66/IP68

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

1. The plastic enclosure may constitute a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.
2. The Model 701PGNKF Power Module may be replaced in a hazardous area. The power module has a surface resistivity greater than 1GΩ and must be properly installed in the wireless device enclosure. Care must be taken during transportation to and from the point of installation to prevent electrostatic charge build-up.



## B.2.8 International

- I7** IECEx Intrinsic Safety  
Certificate: IECEx BAS 12.0124X  
Standards: IEC60079-11:2011, IEC60079-0:2011  
Markings: Ex ia IIC T4 Ga, T4(-40 °C ≤ T<sub>a</sub> ≤ 70 °C)  
IP66/68

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

1. The plastic enclosure may constitute a potential electrostatic ignition risk and must not be rubbed or cleaned with a dry cloth.
2. The Model 701PGNKF Power Module may be replaced in a hazardous area. The Power Module has a surface resistivity greater than 1GΩ and must be properly installed in the wireless device enclosure. Care must be taken during transportation to and from the point of installation to prevent electrostatic charge build-up.

## B.2.9 Brazil

- I2** INMETRO Intrinsic Safety  
Certificate: UL-BR 13.0534X  
Standards: ABNT NBR IEC 60079-0:2008 + Errata  
1:2011, ABNT NBR IEC 60079-11:2009  
Markings: Ex ia IIC T4 IP66 Ga,  
T4(-40 °C ≤ T<sub>a</sub> ≤ +70 °C)

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

1. See certificate for special conditions.

## B.2.10 Japan

- I4** TIIS Intrinsic Safety  
Certificate: TC22022X (3051C/L)  
TC22023X (3051T)  
TC22024X (3051CFx)  
Markings: Ex ia IIC T4 Ga, T4(-20 ~ +60°C)

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

1. See certificate for special conditions.

## B.2.11 China

- I3** China Intrinsic Safety  
Certificate: GYJ13.1362X  
GYJ15.1367X [Flowmeters]  
Standards: GB3836.1-2010, GB3836.4-2010,  
GB3836.20-2010  
Markings: Ex ia IIC T4 Ga, T4(-40 °C ~ +70 °C)

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

1. See certificate for special conditions.

## B.2.12 EAC – Belarus, Kazakhstan, Russia

- IM** Technical Regulation Customs Union (EAC) Intrinsic Safety  
Certificate: RU C-US.ГБ05.B.00400  
Markings: 0Ex ia IIC T4 Ga X

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

1. See certificate for special conditions.

## B.2.13 Korea

- IP** Korea Intrinsic Safety  
Certificate: 13-KB4BO-0295X  
Markings: Ex ia IIC T4 (-40 °C ≤ T<sub>a</sub> ≤ +70 °C)

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

1. See certificate for special conditions.

### B.3 Approval drawings

Figure B-1. Factory Mutual 03031-1019

CONFIDENTIAL AND PROPRIETARY INFORMATION IS CONTAINED HEREIN AND MUST BE HANDLED ACCORDINGLY	REVISIONS				
	REV	DESCRIPTION	CHG. NO.	APP'D	DATE
	AE	ADD 3051G	RTC1019922	J.G.	7/11/05
	AF	ADD FISCO DETAILS	RTC1021913	N.J.H.	7/9/06
	AG	ADD FISCO ENTITY PARAMETERS TO SHT 12	RTC1022876	N.J.H.	10/27/06

ENTITY APPROVALS FOR


3051C	3001C
3051L	3001CL
3051P	3001CH
3051H	3001S
3051CA	3001SL
3051T	3001SH
3051G	

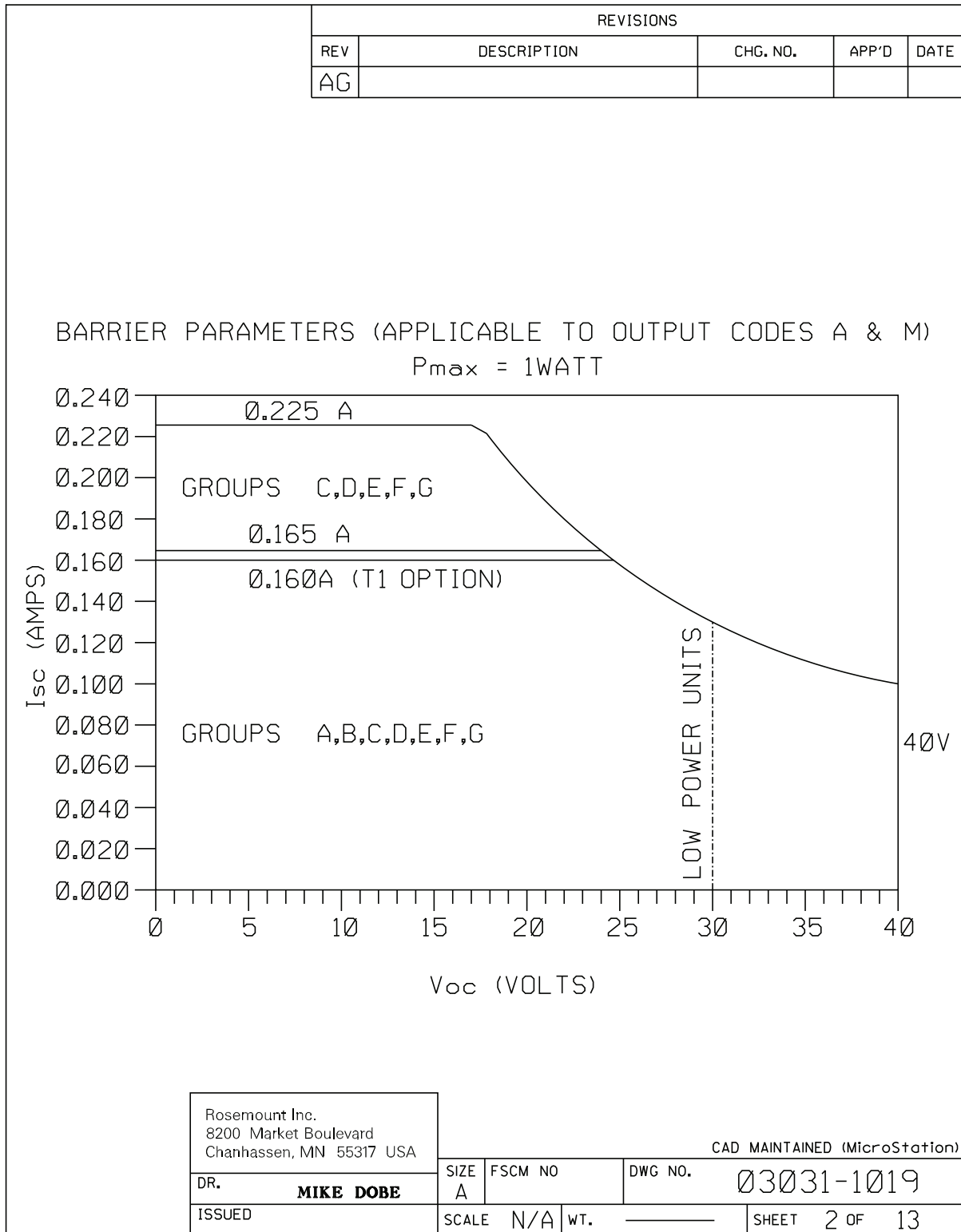
OUTPUT CODE A (4-20 mA HART) I.S. SEE SHEETS 2-5  
 OUTPUT CODE M (LOW POWER) I.S. SEE SHEETS 6-7  
 OUTPUT CODE F/W (FIELD BUS) I.S. SEE SHEETS 8-12  
 ALL OUTPUT CODES NONINCENDIVE SEE SHEET 13

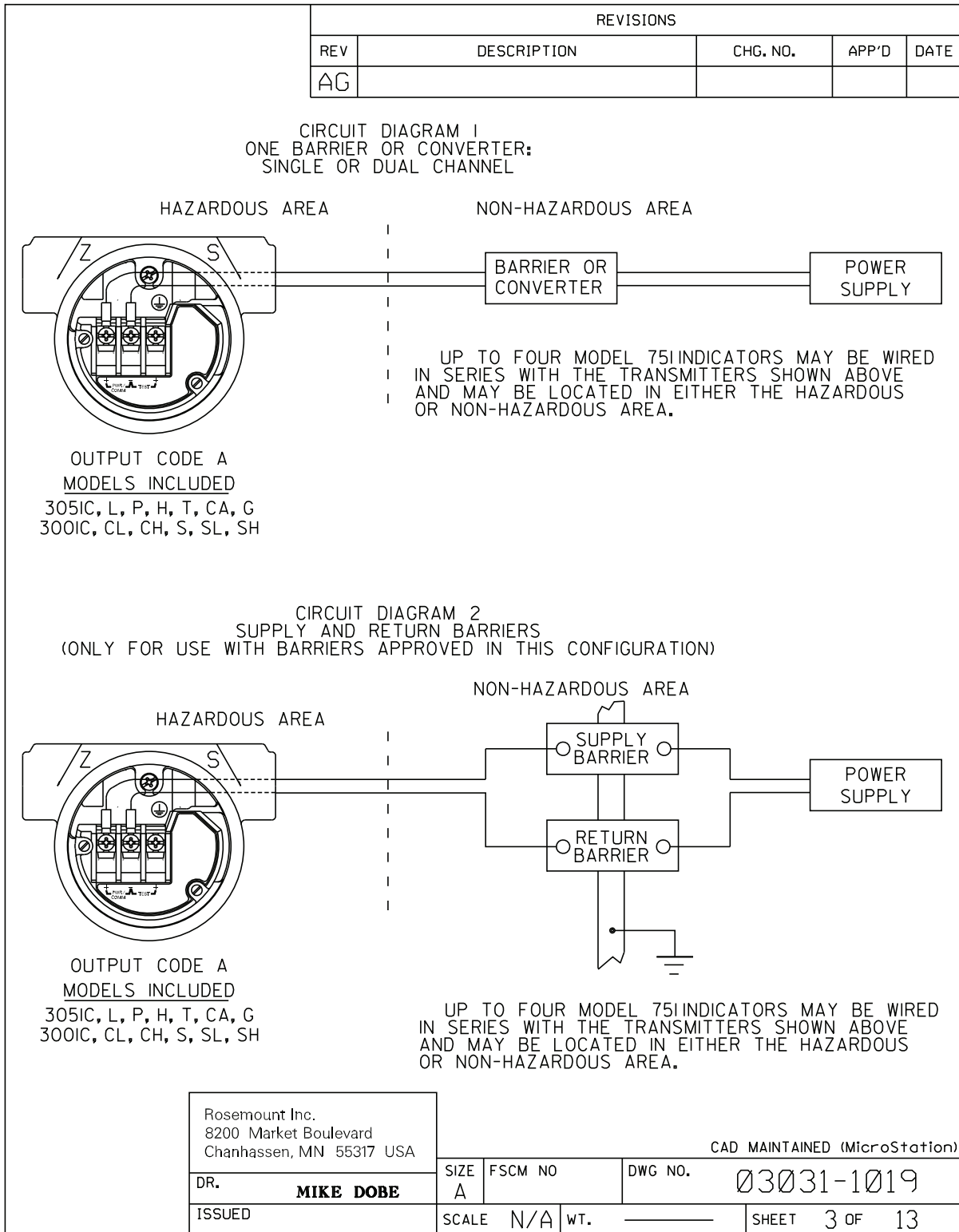
THE ROSEMOUNT TRANSMITTERS LISTED ABOVE ARE F.M. APPROVED AS INTRINSICALLY SAFE WHEN USED IN CIRCUIT WITH F.M. APPROVED BARRIERS WHICH MEET THE ENTITY PARAMETERS LISTED IN THE CLASS I, II, AND III, DIVISION 1 GROUPS INDICATED, TEMP CODE T4. ADDITIONALLY, THE ROSEMOUNT 751 FIELD SIGNAL INDICATOR IS F.M. APPROVED AS INTRINSICALLY SAFE WHEN CONNECTED IN CIRCUIT WITH ROSEMOUNT TRANSMITTERS (FROM ABOVE) AND F.M. APPROVED BARRIERS WHICH MEET THE ENTITY PARAMETERS LISTED FOR CLASS I, II, AND III, DIVISION 1, GROUPS INDICATED, TEMP CODE T4.

TO ASSURE AN INTRINSICALLY SAFE SYSTEM, THE TRANSMITTER AND BARRIER MUST BE WIRED IN ACCORDANCE WITH THE BARRIER MANUFACTURER'S FIELD WIRING INSTRUCTIONS AND THE APPLICABLE CIRCUIT DIAGRAM.

CAD MAINTAINED (MicroStation)

UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES [mm]. REMOVE ALL BURRS AND SHARP EDGES, MACHINE SURFACE FINISH 125  -TOLERANCE- .X ± .1 [2,5] .XX ± .02 [0,5] .XXX ± .010 [0,25]  FRACTIONS ANGLES ± 1/32 ± 2°  DO NOT SCALE PRINT	CONTRACT NO.	 <b>ROSEMOUNT®</b> 8200 Market Boulevard • Chanhassen, MN 55317 USA		
	DR. <b>MIKE DOBE</b> 03/21/89	TITLE INDEX OF I.S. & NONINCENDIVE F.M. FOR 3051C/L/P/H/T AND 3001C/S		
	CHK'D	SIZE A	FSCM NO	DWG NO. 03031-1019
	APP'D. <b>KELLY ORTH</b> 03/22/89	SCALE N/A	WT. _____	SHEET 1 OF 13
	APP'D. GOVT.			





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ENTITY CONCEPT APPROVALS

THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS TO ASSOCIATED APPARATUS NOT SPECIFICALLY EXAMINED IN COMBINATION AS A SYSTEM. THE APPROVED VALUES OF MAX. OPEN CIRCUIT VOLTAGE ( $V_{OC}$  OR  $V_t$ ) AND MAX. SHORT CIRCUIT CURRENT ( $I_{SC}$  OR  $I_t$ ) AND MAX. POWER ( $V_{OC} \times I_{SC}/4$ ) OR ( $V_t \times I_t/4$ ), FOR THE ASSOCIATED APPARATUS MUST BE LESS THAN OR EQUAL TO THE MAXIMUM SAFE INPUT VOLTAGE ( $V_{MAX}$ ), MAXIMUM SAFE INPUT CURRENT ( $I_{MAX}$ ), AND MAXIMUM SAFE INPUT POWER ( $P_{MAX}$ ) OF THE INTRINSICALLY SAFE APPARATUS. IN ADDITION, THE APPROVED MAX. ALLOWABLE CONNECTED CAPACITANCE ( $C_A$ ) OF THE ASSOCIATED APPARATUS MUST BE GREATER THAN THE SUM OF THE INTERCONNECTING CABLE CAPACITANCE AND THE UNPROTECTED INTERNAL CAPACITANCE ( $C_I$ ) OF THE INTRINSICALLY SAFE APPARATUS, AND THE APPROVED MAX. ALLOWABLE CONNECTED INDUCTANCE ( $L_A$ ) OF THE ASSOCIATED APPARATUS MUST BE GREATER THAN THE SUM OF THE INTERCONNECTING CABLE INDUCTANCE AND THE UNPROTECTED INTERNAL INDUCTANCE ( $L_I$ ) OF THE INTRINSICALLY SAFE APPARATUS.

FOR OUTPUT CODE A NOTE: ENTITY PARAMETERS LISTED APPLY ONLY TO ASSOCIATED APPARATUS WITH LINEAR OUTPUT.

CLASS I, DIV. 1, GROUPS A AND B

$V_{MAX} = 40V$	$V_t$ OR $V_{OC}$ IS LESS THAN OR EQUAL TO 40V
$I_{MAX} = 165mA$	$I_t$ OR $I_{SC}$ IS LESS THAN OR EQUAL TO 165mA
$P_{MAX} = 1 \text{ WATT}$	$(\frac{V_t \times I_t}{4})$ OR $(\frac{V_{OC} \times I_{SC}}{4})$ IS LESS THAN OR EQUAL TO 1 WATT
$C_I = .01\mu f$	$C_A$ IS GREATER THAN $.01\mu f$
$L_I = 10\mu H$	$L_A$ IS GREATER THAN $10\mu H$

\* FOR T1 OPTION:

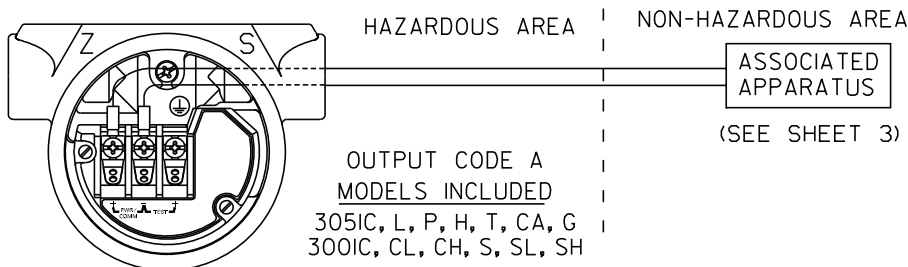
$I_{max} = 160mA$	$I_t$ OR $I_{SC}$ IS LESS THAN OR EQUAL TO 160mA
$L_I = 1.05mH$	$L_A$ IS GREATER THAN 1.05mH

CLASS I, DIV. 1, GROUPS C AND D

$V_{MAX} = 40V$	$V_t$ OR $V_{OC}$ IS LESS THAN OR EQUAL TO 40V
$I_{MAX} = 225mA$	$I_t$ OR $I_{SC}$ IS LESS THAN OR EQUAL TO 225mA
$P_{MAX} = 1 \text{ WATT}$	$(\frac{V_t \times I_t}{4})$ OR $(\frac{V_{OC} \times I_{SC}}{4})$ IS LESS THAN OR EQUAL TO 1 WATT
$C_I = .01\mu f$	$C_A$ IS GREATER THAN $.01\mu f$
$L_I = 10\mu H$	$L_A$ IS GREATER THAN $10\mu H$

\* FOR T1 OPTION:

$L_I = 1.05mH$	$L_A$ IS GREATER THAN 1.05mH
----------------	------------------------------



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DR. <b>MIKE DOBE</b>	SIZE A	FSCM NO.	DWG NO. 03031-1019
ISSUED	SCALE N/A	WT.	SHEET 4 OF 13

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**MODEL 3051G**

FOR OUTPUT CODE A

CLASS I, DIV. 1, GROUPS A AND B

$V_{MAX} = 30V$	$V_t$ or $V_{oc}$ IS LESS THAN OR EQUAL TO 30V
$I_{MAX} = 165mA$	$I_t$ or $I_{sc}$ IS LESS THAN OR EQUAL TO 165mA
$P_{MAX} = 1 WATT$	$(V_{oc} \times I_{sc}/4)$ or $(V_t \times I_t/4)$ IS LESS THAN OR EQUAL TO 1 WATT
$C_I = 0.01 \mu F$	$C_A$ IS GREATER THAN $0.01 \mu F + C_{CABLE}$
$L_I = 10 \mu H$	$L_A$ IS GREATER THAN $10 \mu H + L_{CABLE}$

FOR T1 OPTION:

$I_{MAX} = 160mA$	$I_t$ or $I_{sc}$ IS LESS THAN OR EQUAL TO 145mA
$L_I = 1.06 mH$	$L_A$ IS GREATER THAN $1.06 mH + L_{CABLE}$

CLASS I, DIV. 1, GROUPS C AND D

$V_{MAX} = 30V$	$V_t$ or $V_{oc}$ IS LESS THAN OR EQUAL TO 30V
$I_{MAX} = 225mA$	$I_t$ or $I_{sc}$ IS LESS THAN OR EQUAL TO 225mA
$P_{MAX} = 1 WATT$	$(V_{oc} \times I_{sc}/4)$ or $(V_t \times I_t/4)$ IS LESS THAN OR EQUAL TO 1 WATT
$C_I = 0.01 \mu F$	$C_A$ IS GREATER THAN $0.01 \mu F + C_{CABLE}$
$L_I = 10 \mu H$	$L_A$ IS GREATER THAN $10 \mu H + L_{CABLE}$

FOR T1 OPTION:

$L_I = 1.06 mH$	$L_A$ IS GREATER THAN $1.06 mH + L_{CABLE}$
-----------------	---

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DR. <b>Myles Lee Miller</b>	SIZE A	FSCM NO.	DWG NO. 03031-1019	
ISSUED	SCALE N/A	WT. _____	SHEET 5 OF 13	

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FOR OUTPUT CODE M

CLASS I, DIV. 1, GROUPS A AND B

$V_{MAX} = 30V$	$V_T$ OR $V_{OC}$ IS LESS THAN OR EQUAL TO 30V
$I_{MAX} = 165mA$	$I_T$ OR $I_{SC}$ IS LESS THAN OR EQUAL TO 165mA
$P_{MAX} = 1 \text{ WATT}$	$(\frac{V_T \times I_T}{4})$ OR $(\frac{V_{oc} \times I_{sc}}{4})$ IS LESS THAN OR EQUAL TO 1 WATT
$C_T = .042\mu f$	$C_A$ IS GREATER THAN $.042\mu f$
$L_T = 10\mu H$	$L_A$ IS GREATER THAN $10\mu H$

\* FOR T1 OPTION:

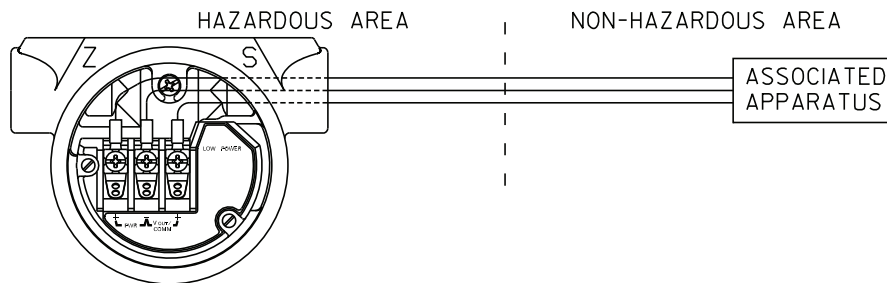
$L_T = 0.75mH$	$L_A$ IS GREATER THAN $0.75mH$
----------------	--------------------------------

CLASS I, DIV. 1, GROUPS C AND D

$V_{MAX} = 30V$	$V_T$ OR $V_{OC}$ IS LESS THAN OR EQUAL TO 30V
$I_{MAX} = 225mA$	$I_T$ OR $I_{SC}$ IS LESS THAN OR EQUAL TO 225mA
$P_{MAX} = 1 \text{ WATT}$	$(\frac{V_T \times I_T}{4})$ OR $(\frac{V_{oc} \times I_{sc}}{4})$ IS LESS THAN OR EQUAL TO 1 WATT
$C_T = .042\mu f$	$C_A$ IS GREATER THAN $.042\mu f$
$L_T = 10\mu H$	$L_A$ IS GREATER THAN $10\mu H$

\* FOR T1 OPTION:

$L_T = 0.75mH$	$L_A$ IS GREATER THAN $0.75mH$
----------------	--------------------------------



OUTPUT CODE M  
AVAILABLE FOR THE MODELS LISTED

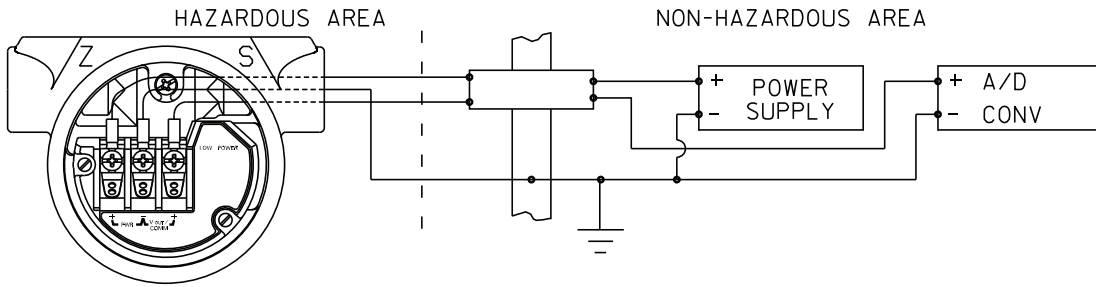
305IC	305IH
305IL	305ICA
305IP	305IT

Rosemount Inc. 8200 Market Boulevard Chanhassen, MN 55317 USA		CAD MAINTAINED (MicroStation)		
DR.	<b>MIKE DOBE</b>	SIZE	FSCM NO	DWG NO.
ISSUED		A		03031-1019
		SCALE	N/A	WT.
				SHEET 6 OF 13

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REV	DESCRIPTION	CHG. NO.	APP'D	DATE
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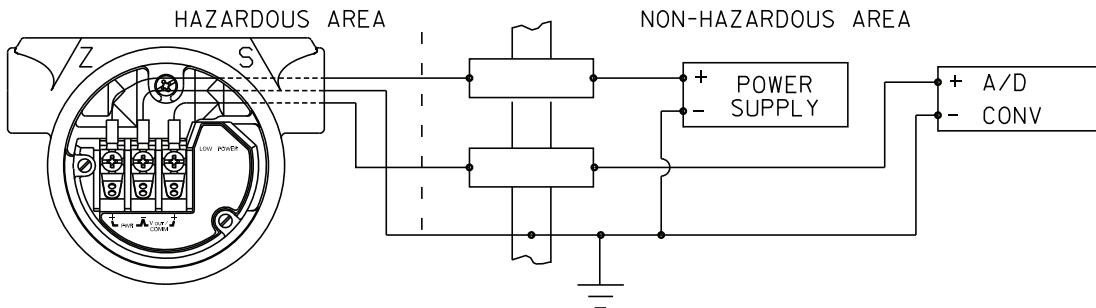
CIRCUIT DIAGRAM 3  
ONE DUAL CHANNEL BARRIER



OUTPUT CODE M  
AVAILABLE FOR THE MODELS LISTED

305IC	305IH
305IL	305ICA
305IP	305IT

CIRCUIT DIAGRAM 4  
TWO SINGLE CHANNEL BARRIERS  
(ONLY FOR USE WITH BARRIERS APPROVED  
IN THIS CONFIGURATION)



OUTPUT CODE M  
AVAILABLE FOR THE MODELS LISTED

305IC	305IH
305IL	305ICA
305IP	305IT

Rosemount Inc. 8200 Market Boulevard Chanhausen, MN 55317 USA		CAD MAINTAINED (MicroStation)		
DR.	<b>SANDI MANSON</b>	SIZE A	FSCM NO	DWG NO. 03031-1019
ISSUED		SCALE N/A	WT. ———	SHEET 7 OF 13

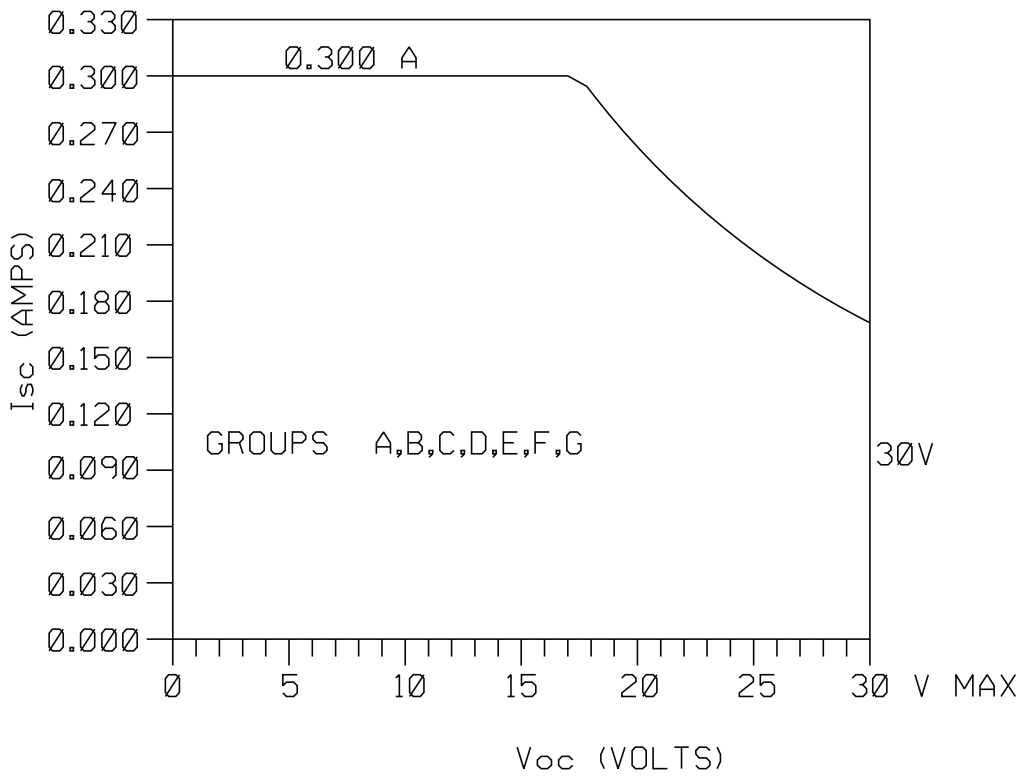
Form Rev. AC



REVISIONS				
REV	DESCRIPTION	CHG. NO.	APP'D	DATE
AG				

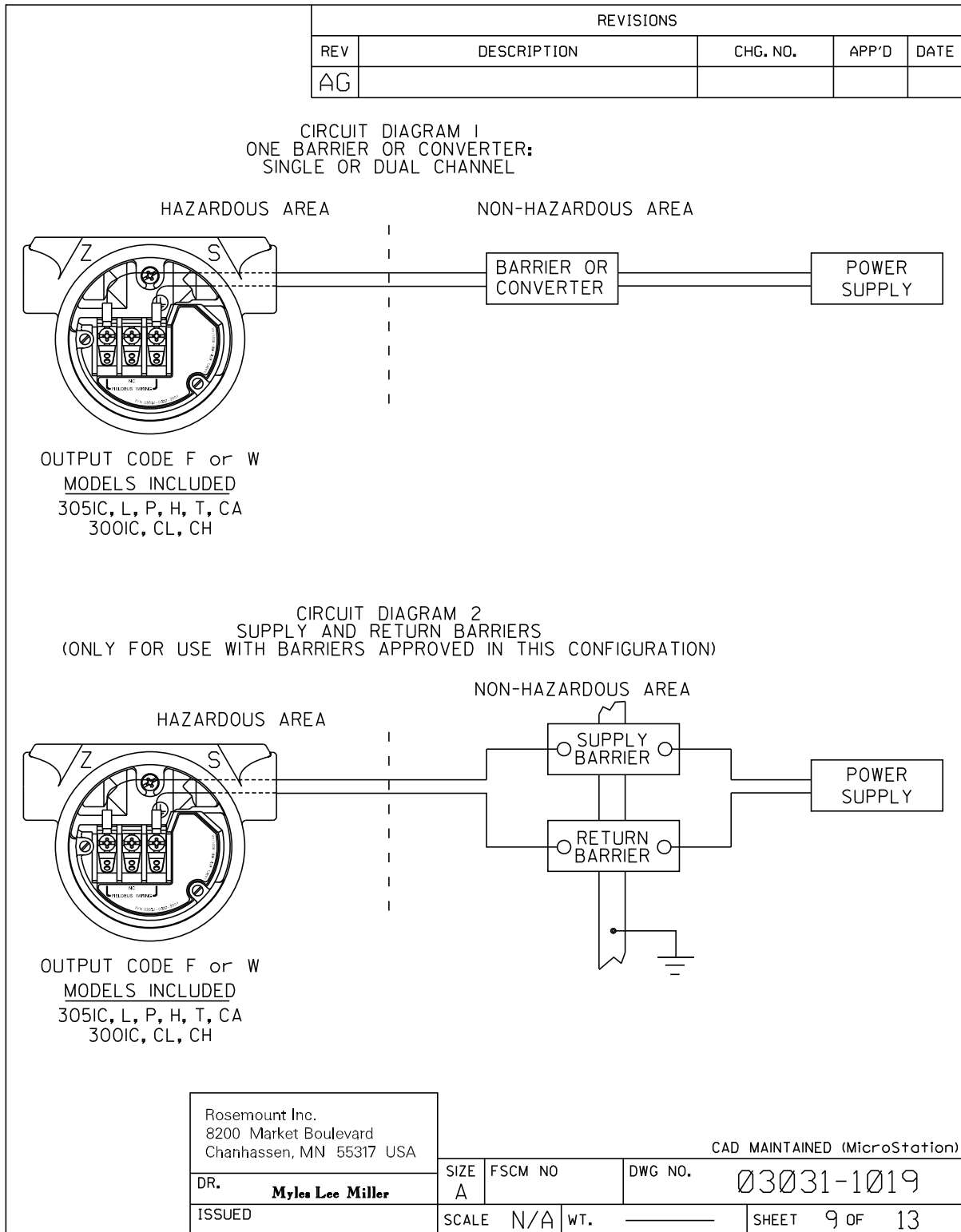
3Ø51 WITH FOUNDATION FIELDBUS OR PROFIBUS.  
(OUTPUT CODE F OR W)

BARRIER PARAMETERS (APPLICABLE TO OUTPUT CODE F OR W)  
 $P_{max} = 1.3 \text{ WATT}$



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DR. <b>Myles Lee Miller</b>	SIZE A	FSCM NO	DWG NO. 03031-1019	
ISSUED	SCALE N/A	WT.	SHEET 8 OF 13	

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AG				

ENTITY CONCEPT APPROVALS

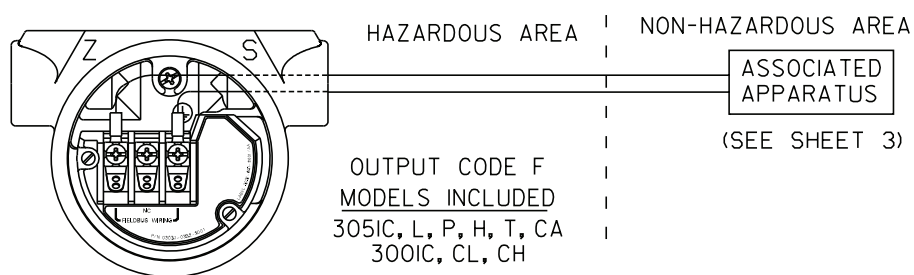
THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS TO ASSOCIATED APPARATUS NOT SPECIFICALLY EXAMINED IN COMBINATION AS A SYSTEM. THE APPROVED VALUES OF MAX. OPEN CIRCUIT VOLTAGE ( $V_{oc}$  OR  $V_t$ ) AND MAX. SHORT CIRCUIT CURRENT ( $I_{sc}$  OR  $I_t$ ) AND MAX. POWER ( $V_{oc} \times I_{sc}/4$ ) OR ( $V_t \times I_t/4$ ), FOR THE ASSOCIATED APPARATUS MUST BE LESS THAN OR EQUAL TO THE MAXIMUM SAFE INPUT VOLTAGE ( $V_{max}$ ), MAXIMUM SAFE INPUT CURRENT ( $I_{max}$ ), AND MAXIMUM SAFE INPUT POWER ( $P_{max}$ ) OF THE INTRINSICALLY SAFE APPARATUS. IN ADDITION, THE APPROVED MAX. ALLOWABLE CONNECTED CAPACITANCE ( $C_a$ ) OF THE ASSOCIATED APPARATUS MUST BE GREATER THAN THE SUM OF THE INTERCONNECTING CABLE CAPACITANCE AND THE UNPROTECTED INTERNAL CAPACITANCE ( $C_i$ ) OF THE INTRINSICALLY SAFE APPARATUS, AND THE APPROVED MAX. ALLOWABLE CONNECTED INDUCTANCE ( $L_a$ ) OF THE ASSOCIATED APPARATUS MUST BE GREATER THAN THE SUM OF THE INTERCONNECTING CABLE INDUCTANCE AND THE UNPROTECTED INTERNAL INDUCTANCE ( $L_i$ ) OF THE INTRINSICALLY SAFE APPARATUS.

NOTE: ENTITY PARAMETERS LISTED APPLY ONLY TO ASSOCIATED APPARATUS WITH LINEAR OUTPUT.

FOR OUTPUT CODE F or W

CLASS I, DIV. 1, GROUPS A, B, C AND D

$V_{MAX} = 30V$	$V_T$ OR $V_{OC}$ IS LESS THAN OR EQUAL TO 30V
$I_{MAX} = 300mA$	$I_T$ OR $I_{SC}$ IS LESS THAN OR EQUAL TO 300mA
$P_{MAX} = 1.3 \text{ WATT}$	$(\frac{V_T \times I_T}{4})$ OR $(\frac{V_{oc} \times I_{sc}}{4})$ IS LESS THAN OR EQUAL TO 1.3 WATT
$C_I = 0 \mu f$	$C_A$ IS GREATER THAN $0 \mu f$
$L_I = 0 \mu H$	$L_A$ IS GREATER THAN $0 \mu H$



Rosemount Inc. 8200 Market Boulevard Chanhassen, MN 55317 USA		CAD MAINTAINED (MicroStation)	
DR. <b>Myles Lee Miller</b>	SIZE A	FSCM NO.	DWG NO. 03031-1019
ISSUED	SCALE N/A	WT.	SHEET 10 OF 13

From Rev. 02

REVISIONS				
REV	DESCRIPTION	CHG. NO.	APP'D	DATE
AG				

FISCO CONCEPT APPROVALS

THE FISCO CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS TO ASSOCIATED APPARATUS NOT SPECIALLY EXAMINED IN SUCH COMBINATION. FOR THIS INTERCONNECTION TO BE VALID THE VOLTAGE ( $U_1$  or  $V_{max}$ ), THE CURRENT ( $I_1$  or  $I_{max}$ ), AND THE POWER ( $P_1$  or  $P_{ma}$ ) THAT INTRINSICALLY SAFE APPARATUS CAN RECEIVE AND REMAIN INTRINSICALLY SAFE, INCLUDING FAULTS, MUST BE EQUAL OR GREATER THAN THE VOLTAGE ( $U_0$ ,  $V_{oc}$ , or  $V_t$ ), THE CURRENT ( $I_0$ ,  $I_{sc}$ , or  $I_t$ ), AND THE POWER ( $P_0$  or  $P_{max}$ ) LEVELS WHICH CAN BE DELIVERED BY THE ASSOCIATED APPARATUS, CONSIDERING FAULTS AND APPLICABLE FACTORS. ALSO, THE MAXIMUM UNPROTECTED CAPACITANCE ( $C_1$ ) AND THE INDUCTANCE ( $L_1$ ) OF EACH APPARATUS (BESIDES THE TERMINATION) CONNECTED TO THE FIELD BUS MUST BE LESS THAN OR EQUAL TO  $5nF$  AND  $10\mu H$  RESPECTIVELY. ONLY ONE ACTIVE DEVICE IN EACH SECTION (USUALLY THE ASSOCIATED APPARATUS) IS ALLOWED TO CONTRIBUTE THE DESIRED ENERGY FOR THE FIELD BUS SYSTEM. THE ASSOCIATED APPARATUS' VOLTAGE  $U_0$  (or  $V_{oc}$  or  $V_t$ ) IS LIMITED TO A RANGE OF 14V TO 24 V.D.C. ALL OTHER EQUIPMENT COMBINED IN THE BUS CABLE MUST BE PASSIVE (THEY CANNOT PROVIDE ENERGY TO THE SYSTEM, EXCEPT A LEAKAGE CURRENT OF  $50 \mu A$  FOR EACH CONNECTED DEVICE) SEPARATELY POWERED EQUIPMENT REQUIRES A GALVANIC ISOLATION TO AFFIRM THAT THE INTRINSICALLY SAFE FIELD BUS CIRCUIT WILL REMAIN PASSIVE. THE PARAMETER OF THE CABLE USED TO INTERCONNECT THE DEVICES MUST BE IN THE FOLLOWING RANGE:

LOOP RESISTANCE  $R'$ : 15...150 OHM/km  
 INDUCTANCE PER UNIT LENGTH  $L'$ :  $0.4...1mH/KM$   
 CAPACITANCE PER UNLIT LENGTH  $C'$ :  $80...200nF$

$C' = C' \text{ LINE/LINE} + 0.5C' \text{ LINE/SCREEN}$ , IF BOTH LINES ARE FLOATING, OR  
 $C' = C' \text{ LINE/LINE} + C' \text{ LINE/SCREEN}$ , IF THE SCREEN IS CONNECTED TO ONE LINE  
 TRUNK CABLE LENGTH:  $\leq 1000 \text{ m}$   
 SPUR CABLE LENGTH:  $\leq 30 \text{ m}$   
 SPLICE LENGTH:  $\leq 1 \text{ m}$

AN APPROVED INFALLIBLE LINE TERMINATION TO EACH END OF THE TRUNK CABLE, WITH THE FOLLOWING PARAMETERS IS APPROPRIATE:

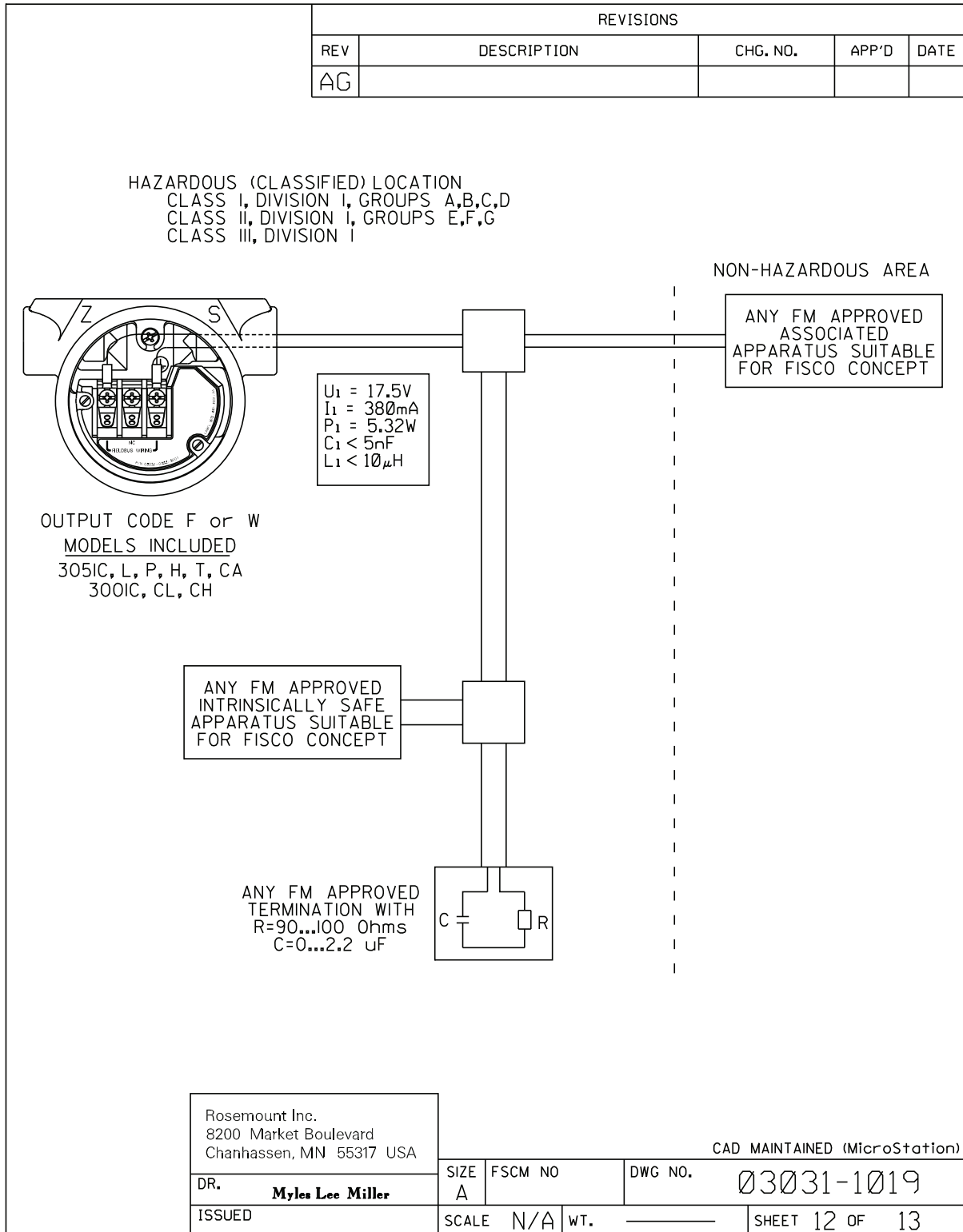
$R = 90...100 \text{ OHMS}$   $C = 2.2\mu F$

AN ALLOWED TERMINATION MIGHT ALREADY BE LINKED IN THE ASSOCIATED APPARATUS. DUE TO I.S. REASONS, THE NUMBER OF PASSIVE APPARATUS CONNECTED TO THE BUS SEGMENT IS NOT LIMITED. IF THE RULES ABOVE ARE FOLLOWED, UP TO A TOTAL LENGTH OF  $1000 \text{ m}$  (THE SUMMATION OF TRUNK AND ALL SPUR CABLES), THE INDUCTANCE AND THE CAPACITANCE OF THE CABLE WILL NOT DAMAGE THE INTRINSIC SAFETY OF THE SYSTEM.

NOTES:  
INTRINSICALLY SAFE CLASS I, DIV. 1, GROUPS A, B, C, D

1. THE MAXIMUM NON-HAZARDOUS AREA VOLTAGE MUST NOT EXCEED 250 V.
2. CAUTION: ONLY USE SUPPLY WIRES SUITABLE FOR 5°C ABOVE SURROUNDING TEMPERATURE.
3. WARNING: REPLACEMENT OF COMPONENTS MAY DAMAGE INTRINSIC SAFETY.

Rosemount Inc. 8200 Market Boulevard Chanhassen, MN 55317 USA	CAD MAINTAINED (MicroStation)		
DR. <b>Myles Lee Miller</b>	SIZE A	FSCM NO	DWG NO. <b>03031-1019</b>
ISSUED	SCALE N/A	WT. _____	SHEET 11 OF 13



REVISIONS				
REV	DESCRIPTION	CHG. NO.	APP'D	DATE
AG				

NON-HAZARDOUS  
LOCATION

DIVISION 2 HAZARDOUS (CLASSIFIED) LOCATION

$V_{max1}$   
 $C_{I1}$   
 $L_{I1}$   
 $I_{max1}$

$V_{max2}$   
 $C_{I2}$   
 $L_{I2}$   
 $I_{max2}$

$V_{max3}$   
 $C_{I3}$   
 $L_{I3}$   
 $I_{max3}$

$V_{maxN}$   
 $C_{IN}$   
 $L_{IN}$   
 $I_{maxN}$

WIRING PER NEC® (NFPA 70) 501-4 (b) EXCEPTION (NONINCENDIVE FIELD CIRCUIT)      NFPA 70 National Electrical Code® ARTICLE 501-4(b) EXCEPTION: "WIRING IN NONINCENDIVE CIRCUITS SHALL BE PERMITTED USING ANY OF THE METHODS SUITABLE FOR WIRING IN ORDINARY LOCATIONS."

**IN NORMAL OPERATION**  
**DEVICES CONTROL THROUGH-CURRENT**

PARAMETERS	DEVICE	ROSEMOUNT 3051/3001
$V_{oc}$	$\leq$ Minimum of ( $V_{max1}, V_{max2}, \dots, V_{maxN}$ )	4-20mA / HART      FIELDBUS (F or W)
		$V_{max}$ 40v      30v
	$I_{max1} \geq I_{q1} + I_{signal1}$	Maximum normal operating current      22mA      27mA
	$I_{max2} \geq I_{q1} + I_{signal2}$	
	.	$C_a$ .010uF      0uF
	.	$L_a$ 10uH      0uH
	.	
	$I_{maxN} \geq I_{qN} + I_{signalN}$	
$C_a$	$\leq C_{I1} + C_{I2} + \dots + C_{IN} + C_{cable}$	
$L_a$	$\leq L_{I1} + L_{I2} + \dots + L_{IN} + L_{cable}$	
	$I_{max}$ for an individual device = $I_q + I_{signal}$	REFERENCE: APPENDIX A7.3 (FM3611)
	$I_q$ = Quiescent current through device (Maximum quiescent current for the device)	
	$I_{signal}$ = Signaling current through device (Protocol may limit signaling to one device at a time)	
	Operating $I_{max} = I_{q1} + I_{q2} + \dots + I_{qN} + I_{signal\ max}$	
	$I_{signal\ max} = \text{Max. of } (I_{signal1}, I_{signal2}, \dots, I_{signalN})$	


  

Rosemount Inc.  
8200 Market Boulevard  
Chanhassen, MN 55317 USA

CAD MAINTAINED (MicroStation)

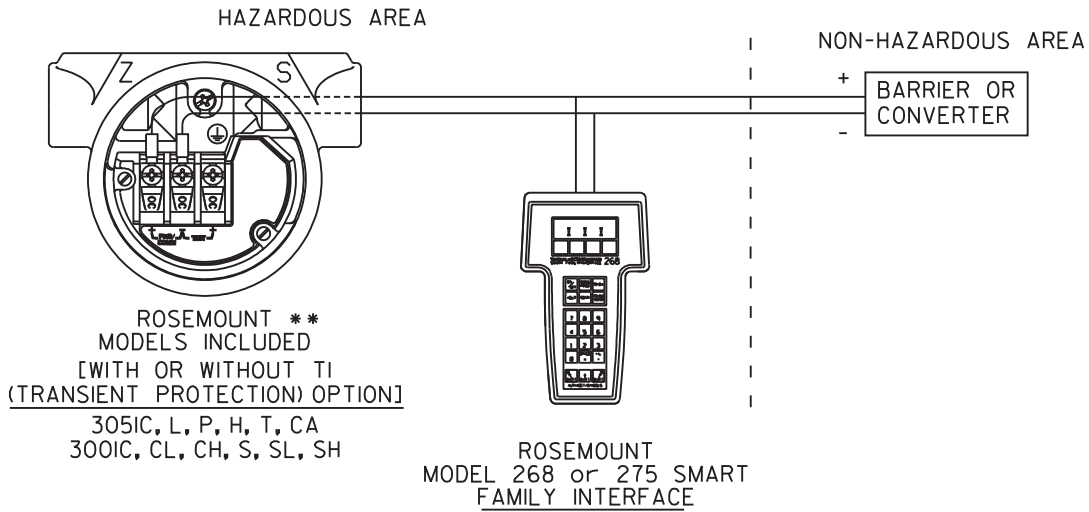
DR.	<b>Jon Steffens</b>	SIZE	FSCM NO	DWG NO.	03031-1019
ISSUED		SCALE	N/A	WT.	
				SHEET	13 OF 13

Figure B-2. Canadian Standards Association (CSA) 03031-1024

CONFIDENTIAL AND PROPRIETARY INFORMATION IS CONTAINED HEREIN AND MUST BE HANDLED ACCORDINGLY	REVISIONS				
	REV	DESCRIPTION	CHG. NO.	APP'D	DATE
	AA	ADD FIELDBUS	RTC1004232	<b>M.L.M.</b>	5/28/98
	AB	ADD PROFIBUS, ENTITY PARAMETERS	RTC1008326	<b>P.C.S.</b>	2/4/00
	AC	REM It, Vt FROM ENTITY PARAMETERS	RTC1009279	<b>W.C.R.</b>	7/11/00
	AD	ADD FISCO FIELDBUS	RTC1012624	<b>J.P.W.</b>	4/4/02
<p>APPROVALS FOR</p> <p>3051C      3001C            3051L      3001CL            3051P      3001CH            3051H      3001S            3051CA     3001SL            3051T      3001SH</p> <p>OUTPUT CODE A (4-20 mA HART) I.S. SEE SHEETS 2-3            OUTPUT CODE M (LOW POWER) I.S. SEE SHEETS 3-4            OUTPUT CODE F/W (FIELDBUS) I.S. SEE SHEETS 5-7            OUTPUT CODES A,F,W I.S. ENTITY PARAMETERS SHEET 8-9</p> <p>TO ASSURE AN INTRINSICALLY SAFE SYSTEM, THE TRANSMITTER AND BARRIER MUST BE WIRED IN ACCORDANCE WITH THE BARRIER MANUFACTURER'S FIELD WIRING INSTRUCTIONS AND THE APPLICABLE CIRCUIT DIAGRAM.</p> <p>WARNING - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.            AVERTISSEMENT - RISQUE D'EXPLOSION - LA SUBSTITUTION DE COMPOSANTS PEUT RENDRE CE MATERIEL INACCEPTABLE POUR LES EMBLEMES DE CLASSE I, DIVISION 2.</p> <p style="text-align: right;">CAD MAINTAINED (MicroStation)</p>					
UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES [mm]. REMOVE ALL BURRS AND SHARP EDGES. MACHINE SURFACE FINISH 125  -TOLERANCE- .X ± .1 [2,5] .XX ± .02 [0,5] .XXX ± .010 [0,25]  FRACTIONS      ANGLES ± 1/32            ± 2°  DO NOT SCALE PRINT	CONTRACT NO.	 <b>ROSEMOUNT®</b> 8200 Market Boulevard • Champlin, MN 55317 USA			
	DR. <b>Mike Dobe</b> 08/27/90	TITLE INDEX OF I.S. CSA FOR 3051C/L/P/H/T & 3001C/S			
	CHK'D	SIZE A	FSCM NO	DWG NO. 03031-1024	
	APP'D. <b>GLEN MONZO</b> 8/31/90	SCALE N/A	WT.	SHEET 1 OF 9	
	APP'D. GOVT.				

REVISIONS				
REV	DESCRIPTION	CHG. NO.	APP'D	DATE
AD				

CSA INTRINSIC SAFETY APPROVALS  
CIRCUIT CONNECTION WITH BARRIER OR CONVERTER  
Ex ia  
INTRINSICALLY SAFE/SECURITE INTRINSEQUE  
4-20 mA, ("A" OUTPUT CODE)



\*\* FOR THE LOW POWER OPTION, SEE PAGE 4 FOR THE CIRCUIT CONNECTION WITH BARRIER OR CONVERTER. FOR FIELDBUS OPTIONS("F" or "W" OUTPUT CODE), SEE PAGE 5 FOR PARAMETERS AND CIRCUIT CONNECTION TO BARRIER.

Rosemount Inc. 8200 Market Boulevard Chanhassen, MN 55317 USA		CAD MAINTAINED (MicroStation)		
DR.	Mike Dobe 08/27/90	SIZE A	FSCM NO.	DWG NO. 03031-1024
ISSUED		SCALE N/A	WT.	SHEET 2 OF 9



		REVISIONS				
REV	DESCRIPTION	CHG. NO.	APP'D	DATE		
AD						
4-20 mA, ("A" OUTPUT CODE)						
DEVICE		PARAMETERS		APPROVED FOR CLASS I, DIV.I		
CSA APPROVED SAFETY BARRIER		30 V OR LESS * 330 OHMS OR MORE * 28 V OR LESS * 300 OHMS OR MORE 25 V OR LESS 200 OHMS OR MORE * 22 V OR LESS * 180 OHMS OR MORE		GROUPS A, B, C, D		
FOXBORO CONVERTER 2AI-I2V-CGB, 2AI-I3V-CGB, 2AS-I3I-CGB, 3A2-I2D-CGB, 3A2-I3D-CGB, 3AD-I3I-CGB, 3A4-I2D-CGB, 2AS-I2I-CGB, 3F4-I2DA				GROUPS B, C, D		
CSA APPROVED SAFETY BARRIER		30 V OR LESS 150 OHMS OR MORE		GROUPS C, D		
LOW POWER, ("M" OUTPUT CODE)						
DEVICE		PARAMETERS		APPROVED FOR CLASS I, DIV.I		
CSA APPROVED SAFETY BARRIER		Supply $\leq 28V, \geq 300 \Omega$ Return $\leq 10V, \geq 47 \Omega$		GROUPS A, B, C, D		
CSA APPROVED SAFETY BARRIER		Supply $\leq 30V, \geq 150 \Omega$ Return $\leq 10V, \geq 47 \Omega$		GROUPS C, D		
* MAY BE USED WITH ROSEMOUNT MODEL 268 or 275 SMART FAMILY INTERFACE.						
Rosemount Inc. 8200 Market Boulevard Chanhassen, MN 55317 USA		CAD MAINTAINED (MicroStation)				
		DR.	SIZE	FSCM NO	DWG NO.	
		Mike Dobe	A		03031-1024	
ISSUED	SCALE	N/A	WT.		SHEET 3 OF 9	



REVISIONS				
REV	DESCRIPTION	CHG. NO.	APP'D	DATE
AD				

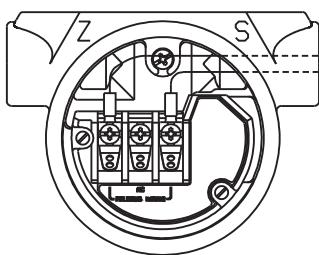
**FIELDBUS, ("F" or "W" OUTPUT CODE)**

DEVICE	PARAMETERS	APPROVED FOR CLASS I, DIV. I
CSA APPROVED SAFETY BARRIER	30 V OR LESS 300 OHMS OR MORE 28 V OR LESS 235 OHMS OR MORE 25 V OR LESS 160 OHMS OR MORE 22 V OR LESS 100 OHMS OR MORE	GROUPS A, B, C, D


**CSA INTRINSIC SAFETY APPROVALS**  
CIRCUIT CONNECTION WITH BARRIER OR CONVERTER

Ex ia  
INTRINSICALLY SAFE/SECURITE INTRINSEQUE  
FIELDBUS, ("F" or "W" OUTPUT CODE)

HAZARDOUS AREA



NON-HAZARDOUS AREA



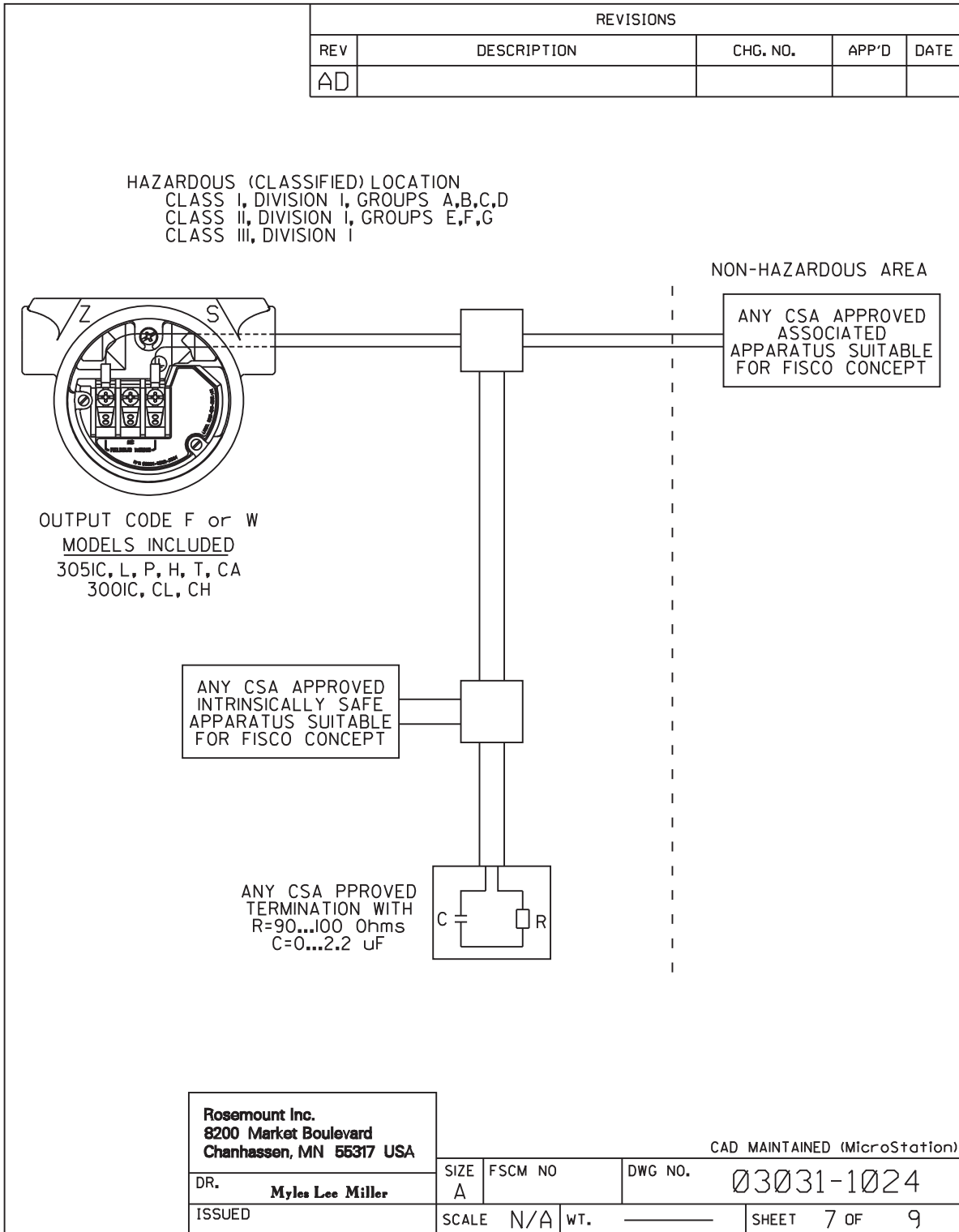
ROSEMOUNT \*\*  
MODELS INCLUDED  
[WITH OR WITHOUT TI  
(TRANSIENT PROTECTION) OPTION]  
305IC, L, P, H, T, CA  
300IC, CL, CH, S, SL, SH

WARNING - EXPLOSION HAZARD - SUBSTITUTION OF COMPONENTS  
MAY IMPAIR SUITABILITY FOR CLASS I, DIVISION 2.

AVERTISSEMENT - RISQUE D'EXPLOSION - LA SUBSTITUTION DE COMPOSANTS  
PEUT RENDRE CE MATERIEL INACCEPTABLE POUR LES EMBLEMES  
DE CLASSE I, DIVISION 2.

Rosemount Inc. 8200 Market Boulevard Chanhassen, MN 55317 USA		CAD MAINTAINED (MicroStation)		
DR.	<b>Myles Lee Miller</b>	SIZE A	FSCM NO	DWG NO. <b>03031-1024</b>
ISSUED	SCALE	N/A	WT.	SHEET 5 OF 9



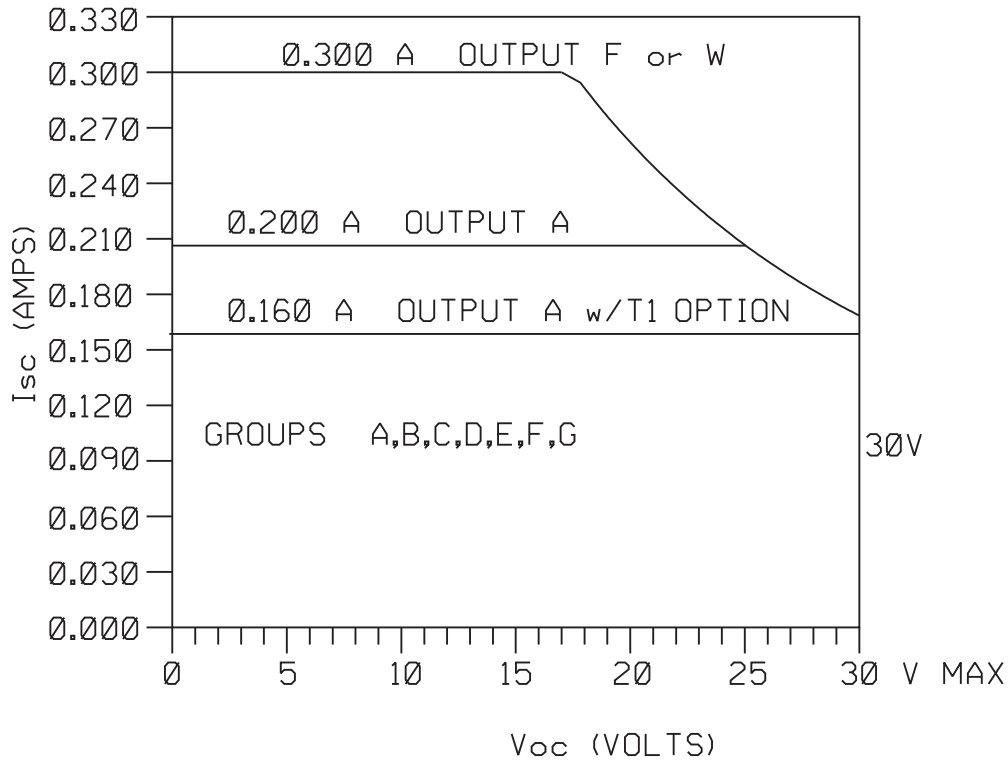


REVISIONS				
REV	DESCRIPTION	CHG. NO.	APP'D	DATE
AD				

3051 I.S. ENTITY PARAMETERS.  
(OUTPUT CODE A,F, or W)

BARRIER PARAMETERS (APPLICABLE TO OUTPUT CODE A,F, or W)

$P_{max} = 1.3$  WATT OUTPUT F or W  
 $P_{max} = 1.0$  WATT OUTPUT A



Rosemount Inc. 8200 Market Boulevard Chanhassen, MN 55317 USA		CAD MAINTAINED (MicroStation)		
DR. <b>JON STEFFENS</b>	SIZE A	FSCM NO.	DWG NO.	03031-1024
ISSUED	SCALE N/A	WT.	SHEET 8 OF	9

REVISIONS				
REV	DESCRIPTION	CHG. NO.	APP'D	DATE
AD				

ENTITY CONCEPT APPROVALS

THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS TO ASSOCIATED APPARATUS NOT SPECIFICALLY EXAMINED IN COMBINATION AS A SYSTEM. THE APPROVED VALUES OF MAX. OPEN CIRCUIT VOLTAGE ( $V_{oc}$ ) AND MAX. SHORT CIRCUIT CURRENT ( $I_{sc}$ ) AND MAX. POWER ( $V_{oc} \times I_{sc}/4$ ), FOR THE ASSOCIATED APPARATUS MUST BE LESS THAN OR EQUAL TO THE MAXIMUM SAFE INPUT VOLTAGE ( $V_{max}$ ), MAXIMUM SAFE INPUT CURRENT ( $I_{max}$ ), AND MAXIMUM SAFE INPUT POWER ( $P_{max}$ ) OF THE INTRINSICALLY SAFE APPARATUS. IN ADDITION, THE APPROVED MAX. ALLOWABLE CONNECTED CAPACITANCE ( $C_a$ ) OF THE ASSOCIATED APPARATUS MUST BE GREATER THAN THE SUM OF THE INTERCONNECTING CABLE CAPACITANCE AND THE UNPROTECTED INTERNAL CAPACITANCE ( $C_i$ ) OF THE INTRINSICALLY SAFE APPARATUS, AND THE APPROVED MAX. ALLOWABLE CONNECTED INDUCTANCE ( $L_a$ ) OF THE ASSOCIATED APPARATUS MUST BE GREATER THAN THE SUM OF THE INTERCONNECTING CABLE INDUCTANCE AND THE UNPROTECTED INTERNAL INDUCTANCE ( $L_i$ ) OF THE INTRINSICALLY SAFE APPARATUS.

FOR OUTPUT CODE A

CLASS I, DIV. 1, GROUPS A, B, C AND D

$V_{MAX} = 30V$	$V_{oc}$ IS LESS THAN OR EQUAL TO 30V
$I_{MAX} = 200mA$	$I_{sc}$ IS LESS THAN OR EQUAL TO 200mA
$P_{MAX} = 1 \text{ WATT}$	$(\frac{V_{oc} \times I_{sc}}{4})$ IS LESS THAN OR EQUAL TO 1 WATT
$C_i = .01\mu f$	$C_a$ IS GREATER THAN $.01\mu f + C$ CABLE
$L_i = 10\mu H$	$L_a$ IS GREATER THAN $10\mu H + L$ CABLE

\* FOR T1 OPTION:

$I_{max} = 160mA$	$I_{sc}$ IS LESS THAN OR EQUAL TO 160mA
$L_i = 1.05mH$	$L_a$ IS GREATER THAN $1.05mH + L$ CABLE

FOR OUTPUT CODE F or W

CLASS I, DIV. 1, GROUPS A, B, C AND D

$V_{MAX} = 30V$	$V_{oc}$ IS LESS THAN OR EQUAL TO 30V
$I_{MAX} = 300mA$	$I_{sc}$ IS LESS THAN OR EQUAL TO 300mA
$P_{MAX} = 1.3 \text{ WATT}$	$(\frac{V_{oc} \times I_{sc}}{4})$ IS LESS THAN OR EQUAL TO 1.3 WATT
$C_i = 0\mu f$	$C_a$ IS GREATER THAN $0\mu f + C$ CABLE
$L_i = 0\mu H$	$L_a$ IS GREATER THAN $0\mu H + L$ CABLE

NOTE: ENTITY PARAMETERS LISTED APPLY ONLY TO ASSOCIATED APPARATUS WITH LINEAR OUTPUT.

<b>Rosemount Inc.</b> <b>8200 Market Boulevard</b> <b>Chanhassen, MN 55317 USA</b>		CAD MAINTAINED (MicroStation)	
DR. <b>JON STEFFENS</b>	SIZE A	FSCM NO.	DWG NO. <b>03031-1024</b>
ISSUED	SCALE N/A	WT. _____	SHEET 9 OF 9

Form Rev 4/0

Figure B-3. Standards Association of Australia (SAA) 03031-1026

CONFIDENTIAL AND PROPRIETARY INFORMATION IS CONTAINED HEREIN AND MUST BE HANDLED ACCORDINGLY	REVISIONS				
	REV	DESCRIPTION	CHG. NO.	APP'D	DATE
	AA	UPDATE ENTITY PARAMETERS	RTC1002910	<b>J.D.J.</b>	12/2/97
	AB	ADD FIELDBUS AND PROFIBUS	RTC1006448	<b>J.D.J.</b>	4/26/99
	AC	ADD 2088 & 2090's	RTC1017572	K.J.K.	6/11/04

SAA ENTITY CONCEPT APPROVALS


3051C	3001C	2088
3051L	3001CL	2090P
3051P	3001CH	2090F
3051H	3001S	
3051CA		
3051T		

OUTPUT CODE A (4-20 mA HART) SEE SHEETS 2  
OUTPUT CODE M (LOW POWER) SEE SHEETS 3  
OUTPUT CODE F / W (FIELDBUS, PROFIBUS) SEE SHEETS 4

THE ROSEMOUNT PRESSURE TRANSMITTERS LISTED ABOVE ARE INTRINSICALLY SAFE WHEN USED IN THE CURCUIT WITH SAA APPROVED BARRIERS WHICH MEET THE LIST ENTITY PERAMETERS.

TO ASSURE AN INTRINSICALLY SAFE SYSTEM, THE TRANSMITTER AND BARRIER MUST BE WIRED IN ACCORDANCE WITH THE BARRIER MANUFACTURER'S FIELD WIRING INSTRUCTIONS AND THE APPLICABLE CIRCUIT DIAGRAM.

CAD MAINTAINED (MicroStation)

<small>UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES [mm]. REMOVE ALL BURRS AND SHARP EDGES. MACHINE SURFACE FINISH 125</small>  <small>-TOLERANCE-</small> .X ± .1 [2,5] .XX ± .02 [0,5] .XXX ± .010 [0,25]  <small>FRACTIONS</small> <small>ANGLES</small> ± 1/32              ± 2°  DO NOT SCALE PRINT	CONTRACT NO.	 <b>ROSEMOUNT®</b> <small>8200 Market Boulevard • Chanhassen, MN 55317 USA</small>		
	DR. <b>Mike Dobe</b> 12/30/91	TITLE SAA I.S. INDEX FOR 2088, 2090, 3051 & 3001		
	CHK'D			
	APP'D. <b>GLEN MONZO</b> 5/8/92	SIZE A	FSCM NO	DWG NO. 03031-1026
	APP'D. GOVT.	SCALE N/A	WT. _____	SHEET 1 OF 4



REVISIONS				
REV	DESCRIPTION	CHG. NO.	APP'D	DATE
AC				

OUTPUT CODE "A" (4-20MA / HART)  
SAA ENTITY CONCEPT APPROVALS

THE ROSEMOUNT PRESSURE TRANSMITTERS LISTED BELOW ARE INTRINSICALLY SAFE WHEN USED IN THE CIRCUIT WITH SAA APPROVED BARRIERS WHICH MEET THE LISTED ENTITY PARAMETERS.

APPROVED TRANSMITTERS

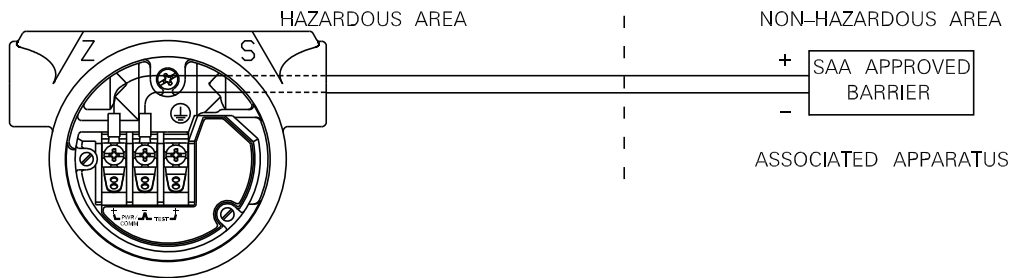
3051C	3051H	3001C	2088
3051L	3051T	3001CL	2090P
3051P	3051CA	3001CH	2090F
		3001S	

ENTITY PARAMETER FOR Ex ia IIC T5 CLASS I, ZONE 0 PROTECTION:

APPARATUS PARAMETER	BARRIER PARAMETER
$V_{max} = 30V$ $I_{max} = 200mA$ $P_{max} = 0.9W$  $C_i = 0.01\mu F$ $L_i = 10\mu H$  FOR T1 OPTION ONLY $I_{max} = 160mA$ $L_i = 1.05mH$	$V_{oc}$ IS LESS THAN OR EQUAL TO 30V $I_{sc}$ IS LESS THAN OR EQUAL TO 200mA $\frac{V_{oc} * I_{sc}}{4}$ IS LESS THAN OR EQUAL TO 0.9W $C_a$ IS GREATER THAN 0.01 MICROFARADS $L_a$ IS GREATER THAN 10 MICROHENRIES  $I_{sc}$ IS LESS THAN OR EQUAL TO 160mA $L_a$ IS GREATER THAN 1.05 MILLIHENRIES

THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS NOT SPECIFICALLY EXAMINED IN COMBINATION AS A SYSTEM.

TO ASSURE AN INTRINSICALLY SAFE SYSTEM THE TRANSMITTER AND BARRIER MUST BE WIRED IN ACCORDANCE WITH THE BARRIER MANUFACTURERS FIELD WIRING INSTRUCTIONS AND THE CIRCUIT DIAGRAM SHOWN BELOW.



Rosemount Inc. 8200 Market Boulevard Chanhausen, MN 55317 USA		CAD MAINTAINED (MicroStation)	
DR.	<b>Mike Dobe</b>	SIZE	A
ISSUED		FSCM NO	
		DWG NO.	03031-1026
		SCALE	N/A
		WT.	
		SHEET	2 OF 4

Form Rev. AC

REVISIONS				
REV	DESCRIPTION	CHG. NO.	APP'D	DATE
AC				

OUTPUT CODE "M" (LOW POWER)  
SAA ENTITY CONCEPT APPROVALS

THE ROSEMOUNT LOW POWER CONFIGURED PRESSURE TRANSMITTERS LISTED BELOW ARE SAA APPROVED AS INTRINSICALLY SAFE WHEN USED IN THE CIRCUIT WITH SAA APPROVED BARRIERS WHICH MEET THE LISTED ENTITY PARAMETERS.

APPROVED TRANSMITTERS WITH LOW POWER CONFIGURATION

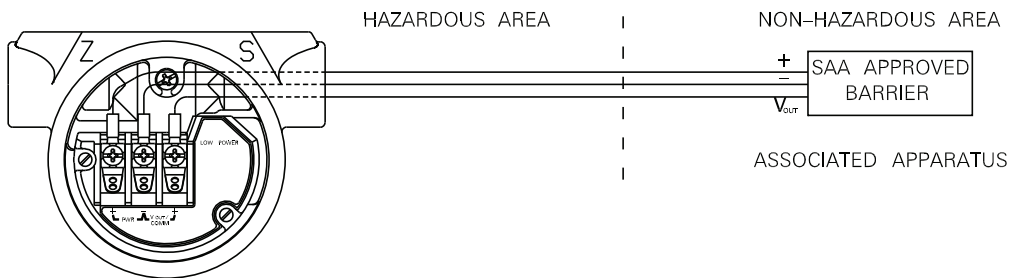
3051C	3051T
3051L	3051CA
3051P	
3051H	

ENTITY PARAMETER FOR Ex ia IIC T5 CLASS I, ZONE 0 PROTECTION:

APPARATUS PARAMETER	BARRIER PARAMETER
$V_{max} = 30V$ $I_{max} = 200mA$ $P_{max} = 0.9W$	$V_{oc}$ IS LESS THAN OR EQUAL TO 30V $I_{sc}$ IS LESS THAN OR EQUAL TO 200mA $\frac{V_{oc} * I_{sc}}{4}$ IS LESS THAN OR EQUAL TO 0.9W
$C_i = 0.042\mu F$ $L_i = 10\mu H$	$C_a$ IS GREATER THAN 0.042 MICROFARADS $L_a$ IS GREATER THAN 10 MICROHENRIES
FOR T1 OPTION ONLY	
$L_i = 0.75mH$	$L_a$ IS GREATER THAN 0.75 MILLIHENRIES

THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS NOT SPECIFICALLY EXAMINED IN COMBINATION AS A SYSTEM.

TO ASSURE AN INTRINSICALLY SAFE SYSTEM THE TRANSMITTER AND BARRIER MUST BE WIRED IN ACCORDANCE WITH THE BARRIER MANUFACTURERS FIELD WIRING INSTRUCTIONS AND THE CIRCUIT DIAGRAM SHOWN BELOW.



Rosemount Inc. 8200 Market Boulevard Chanhassen, MN 55317 USA		CAD MAINTAINED (MicroStation)		
DR.	<b>Mike Dobe</b>	SIZE	FSCM NO	DWG NO. 03031-1026
ISSUED		SCALE	N/A	WT. _____ SHEET 3 OF 4

Form Rev. AC

REVISIONS				
REV	DESCRIPTION	CHG. NO.	APP'D	DATE
AC				

OUTPUT CODE F / W (FIELD BUS, PROFIBUS)  
SAA ENTITY CONCEPT APPROVALS

THE ROSEMOUNT PRESSURE TRANSMITTERS LISTED BELOW ARE INTRINSICALLY SAFE WHEN USED IN THE CIRCUIT WITH SAA APPROVED BARRIERS WHICH MEET THE LISTED ENTITY PARAMETERS.

APPROVED TRANSMITTERS

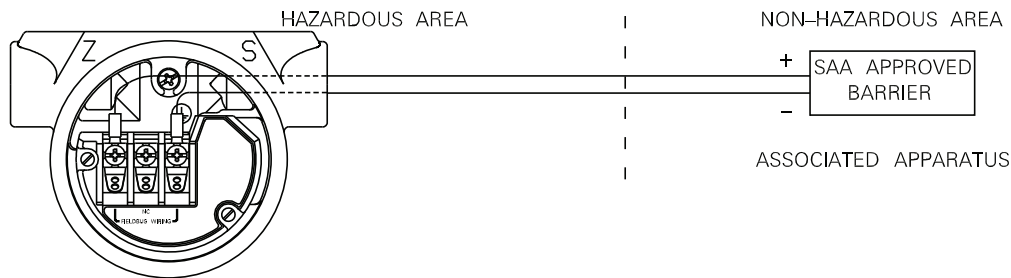
3051C	3051H	3001C	3001S
3051L	3051T	3001CL	
3051P	3051CA	3001CH	

ENTITY PARAMETER FOR Ex ia IIC T5 CLASS I, ZONE 0 PROTECTION:

APPARATUS PARAMETER	BARRIER PARAMETER
V <sub>max</sub> = 30V	V <sub>oc</sub> IS LESS THAN OR EQUAL TO 30V
I <sub>max</sub> = 300mA	I <sub>sc</sub> IS LESS THAN OR EQUAL TO 300mA
P <sub>max</sub> = 1.3W	$\frac{V_{oc} * I_{sc}}{4}$ IS LESS THAN OR EQUAL TO 1.3W
C <sub>i</sub> = 0 μF	C <sub>a</sub> IS GREATER THAN 0 MICROFARADS
L <sub>i</sub> = 0 μH	L <sub>a</sub> IS GREATER THAN 0 MICROHENRIES

THE ENTITY CONCEPT ALLOWS INTERCONNECTION OF INTRINSICALLY SAFE APPARATUS NOT SPECIFICALLY EXAMINED IN COMBINATION AS A SYSTEM.

TO ASSURE AN INTRINSICALLY SAFE SYSTEM THE TRANSMITTER AND BARRIER MUST BE WIRED IN ACCORDANCE WITH THE BARRIER MANUFACTURERS FIELD WIRING INSTRUCTIONS AND THE CIRCUIT DIAGRAM SHOWN BELOW.



Rosemount Inc.  
8200 Market Boulevard  
Chanhausen, MN 55317 USA

CAD MAINTAINED (MicroStation)

DR.	<b>Mike Dobe</b>	SIZE	A	FSCM NO		DWG NO.	03031-1026
ISSUED		SCALE	N/A	WT.		SHEET	4 OF 4

From Rev AC



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# Appendix C Local Operator Interface (LOI) Menu

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Safety messages .....	page 179
Detailed LOI Menu .....	page 180

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## C.1 Overview

This appendix contains the complete LOI menu.

## C.2 Safety messages

Procedures and instructions in this section may require special precautions to ensure the safety of the personnel performing the operations. Information that raises potential safety issues is indicated by a warning symbol (⚠). Refer to the following safety messages before performing an operation preceded by this symbol.

### C.2.1 Warnings

#### **⚠ WARNING**

##### **Explosions could result in death or serious injury.**

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

- In an Explosion-Proof/Flameproof installation, do not remove the transmitter covers when power is applied to the unit.

##### **Process leaks may cause harm or result in death.**

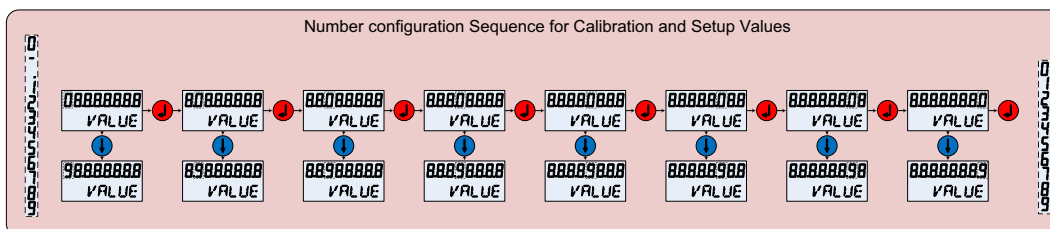
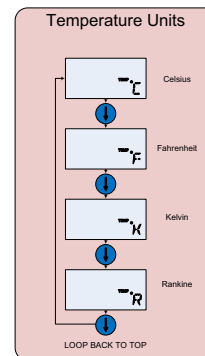
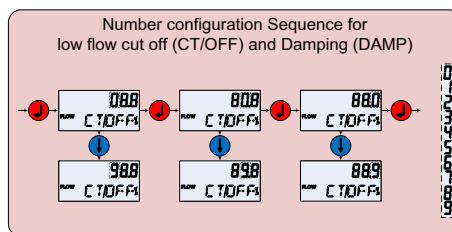
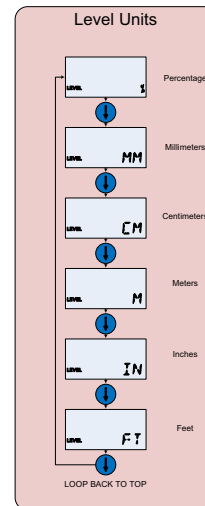
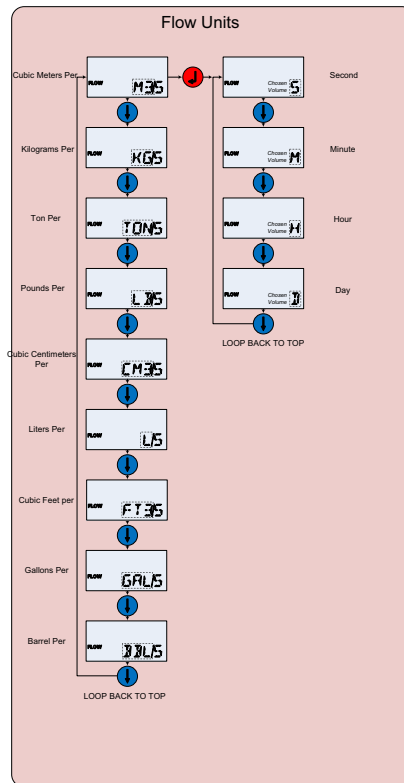
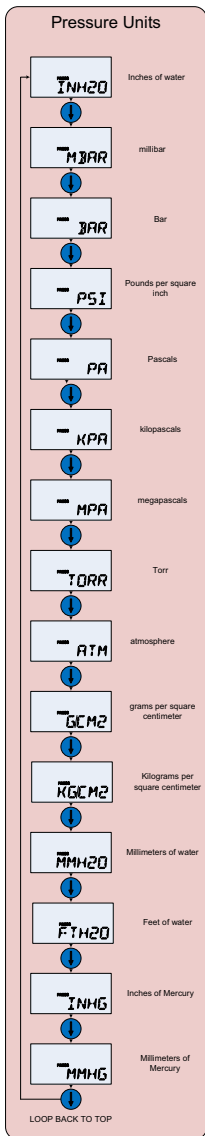
- Install and tighten process connectors before applying pressure.

##### **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.
-



Details of LOI Map Information







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# Appendix D PROFIBUS® Block Information

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Overview .....	page 183
Safety messages .....	page 183
PROFIBUS block parameters .....	page 184
Condensed status .....	page 189

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## D.1 Overview

This appendix contains PROFIBUS block and parameter information.

## D.2 Safety messages

Procedures and instructions in this section may require special precautions to ensure the safety of the personnel performing the operations. Information that raises potential safety issues is indicated by a warning symbol (). Refer to the following safety messages before performing an operation preceded by this symbol.

### WARNING

#### **Explosions could result in death or serious injury.**

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

- In an Explosion-Proof/Flameproof installation, do not remove the transmitter covers when power is applied to the unit.

#### **Process leaks may cause harm or result in death.**

- Install and tighten process connectors before applying pressure.

#### **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.
-

## D.3 PROFIBUS block parameters

Table D-1 through Table D-3 can be used to cross reference parameters from the PROFIBUS specification, Class 2 Master, and Local Operator Interface (LOI).

**Table D-1. Physical Block Parameters**

Index	Parameter name	DTM™ name	LOI location <sup>(1)</sup>	Definition
0	BLOCK OBJECT	Block Object	N/A	N/A
1	ST_REV	Static Revision No.	N/A	The revision level of the static data associated with block; the revision value will be incremented each time a static parameter value in the block is changed.
2	TAG_DESC	Tag	N/A	The user description of the intended block application.
3	STRATEGY	Strategy	N/A	Grouping of function blocks.
4	ALERT_KEY	Alert Key	N/A	The identification number of the plant unit. This information may be used in the host for sorting alarms, etc.
5	TARGET_MODE	Target Mode	N/A	Contains desired mode of the block normally set by the operator or a control specification.
6	MODE_BLK	Actual Mode	N/A	Contains the actual, permitted, and normal modes of the block.
7	ALARM_SUM		N/A	Contains the current states of the block alarms
8	SOFTWARE REVISION	Software Revision	N/A	Software revision, includes a major, minor, and build revision.
9	HARDWARE_REVISION	Hardware Revision	N/A	Hardware revision
10	DEVICE_MAN_ID	Manufacturer	N/A	Identification code of the manufacturer of the field device
11	DEVICE_ID	Device ID	N/A	Identification of the device (Rosemount 3051)
12	DEVICE_SER_NUM	Device Serial Num	N/A	Serial number of the device (output board serial number).
13	DIAGNOSIS	Diagnosis	N/A	Detailed information of the device bitwise coded. MSB (bit 31) represents more information available in Diagnosis extension.
14	DIAGNOSIS_EXTENSION	Diagnosis Extension	N/A	Additional manufacturer diagnoses information (See DIAGNOSIS_EXTENSION table below).
15	DIAGNOSIS_MASK	N/A	N/A	Definition of supported DIAGNOSIS information bits
16	DIAGNOSIS_MASK_EXTENSION	N/A	N/A	Definition of supported DIAGNOSIS_EXTENSION information bits

**Table D-1. Physical Block Parameters**

Index	Parameter name	DTM™ name	LOI location <sup>(1)</sup>	Definition
18	WRITE_LOCKING	Write Locking	N/A	Software write protection
19	FACTORY_RESET	Factory Reset	N/A	Command for restarting device
20	DESCRIPTOR	Descriptor	N/A	User-definable text to describe the device.
21	DEVICE_MESSAGE	Message	N/A	User-definable message to the device or application in plant.
22	DEVICE_INSTAL_DATE	Installation Date	N/A	Date of installation of the device.
23	LOCAL_OP_ENA	LOI Enable	N/A	Disable/enable the optional Local Operator Interface (LOI)
24	IDENT_NUMBER_SELECTOR	Ident Number Selector	IDENT	Specifies the cyclic behavior of a device which is described in the corresponding GSD file
25	HW_WRITE_PROTECTION	HW Write Protection	N/A	Status of the security jumper
26	FEATURE	Optional Device Features	N/A	Indicates optional features implemented in the device
27	COND_STATUS_DIAG	N/A	N/A	Indicates the mode of a device that can be configured for status and diagnostic behavior
33	FINAL_ASSEMBLY_NUM	Final Assembly Number	N/A	The same final assembly number placed on the neck label
34	DOWNLOAD_MODE	Factory Upgrade	N/A	Puts the device into a manufacturer mode for upgrading the device
35	PASSCODE_LOI	Password	PSSWD	Password for the LOI
36	LOI_DISPLAY_SELECTION	Display Selection	DISP	Indicates process variables shown on the local display
37	LOI_BUTTON_STATE	Button State	N/A	Status of the optional LOI buttons
38	VENDOR_IDENT_NUMBER	Vendor Ident Number	IDENT	0x4444
39	LOI_PRESENT	LOI Present	N/A	Parameter written during manufacturing to indicate if an optional LOI is present
40	HW_SIMULATE_PROTECTION	HW Simulation Protection	N/A	Status of hardware simulation jumper

1. If blank, parameter is not applicable to LOI.

Table D-2. Transducer Block Parameters

Index	Parameter name	DTM name	LOI location <sup>(1)</sup>	Definition
1	ST_REV	Static Revision No.	N/A	The revision level of the static data associated with block; the revision value will be incremented each time a static parameter value in the block is changed.
2	TAG_DESC	Tag	N/A	The user description of the intended block application.
3	STRATEGY	Strategy	N/A	Grouping of function blocks.
4	ALERT_KEY	Alert Key	N/A	The identification number of the plant unit. This information may be used in the host for sorting alarms, etc.
5	TARGET_MODE	Target Mode	N/A	Contains desired mode of the block normally set by the operator or a control specification.
6	MODE_BLK	Actual Mode	N/A	Contains the actual, permitted, and normal modes of the block.
7	ALARM_SUM	N/A	N/A	Contains the current states of the block alarms
8	SENSOR_VALUE	Pressure raw value	N/A	Raw sensor value, untrimmed, in SENSOR_UNIT
9	SENSOR_HI_LIM	Upper Sensor Limit	N/A	Upper sensor range value, in SENSOR_UNIT
10	SENSOR_LO_LIM	Lower Sensor Limit	N/A	Lower sensor range value, in SENSOR_UNIT
11	CAL_POINT_HI	Upper Calibration Point	CALIB->UPPER	The value of the sensor measurement used for the high calibration point. Unit is derived from SENSOR_UNIT
12	CAL_POINT_LO	Lower Calibration Point	CALIB->LOWER	The value of the sensor measurement used for the low calibration point. Unit is derived from SENSOR_UNIT
13	CAL_MIN_SPAN	Calibration Min Span	N/A	The minimum span that is allowed between the calibration high and low points.
14	SENSOR_UNIT	Sensor Unit	UNITS	Engineering units for the calibration values
15	TRIMMED_VALUE	Pressure Trimmed Value	UNITS	Contains the sensor value after the trim processing. Unit is derived from SENSOR_UNIT
16	SENSOR_TYPE	Sensor Type	N/A	Sensor type (capacitance, strain gauge)
18	SENSOR_SERIAL_NUMMER	Sensor Serial Number	N/A	Sensor serial number
19	PRIMARY_VALUE	Primary Value	N/A	Measured value and status available to the Function Block. The unit of PRIMARY_VALUE is the PRIMARY_VALUE_UNIT.

Table D-2. Transducer Block Parameters

Index	Parameter name	DTM name	LOI location <sup>(1)</sup>	Definition
20	PRIMARY_VALUE_UNIT	Unit (PV)	N/A	Engineering units for the primary value
21	PRIMARY_VALUE_TYPE	Primary Value Type	N/A	Type of pressure application (pressure, flow, level)
22	SENSOR_DIAPHRAGM_MATERIAL	Isolator Material	N/A	Type of material of the sensor isolator
23	SENSOR_FILL_FLUID	Module Fill Fluid	N/A	Type of fill fluid used in sensor
24	SENSOR_O_RING_MATERIAL	O-ring Material	N/A	Type of material of the flange O-rings
25	PROCESS_CONNECTION_TYPE	Process Connection Type	N/A	Type of flange that is attached to the device
26	PROCESS_CONNECTION_MATERIAL	Process Connection Material	N/A	Type of material of the flange
27	TEMPERATURE	Temperature	N/A	Sensor temperature, in TEMPERATURE_UNIT
28	TEMPERATURE_UNIT	Temperature Unit	UNITS	Engineering units of the sensor temperature
29	SECONDARY_VALUE_1	Secondary Value 1	UNITS	Trimmed pressure value, unscaled, in SECONDARY_VALUE_1_UNIT
30	SECONDARY_VALUE_1_UNIT	Unit (Secondary Value 1)	UNITS	Engineering unit of SECONDARY_VALUE_1
31	SECONDARY_VALUE_2	Secondary Value 2	UNITS	Measured value after input scaling
33	LIN_TYPE	Characterization type	UNITS	Linearization type
34	SCALE_IN	Scale in	UNITS	Input scaling in SECONDARY_VALUE_1_UNIT
35	SCALE_OUT	Scale out	UNITS	Output scaling in PRIMARY_VALUE_UNIT
36	LOW_FLOW_CUT_OFF	Low Flow Cut Off	UNITS->FLOW	This is the point in percent of flow until the output of the flow function is set to zero. It is used for suppressing low flow values
59	FACT_CAL_RECALL	Restore Calibration Factory	CALIB->RESET	Recalls the sensor calibration set at the factory
60	SENSOR_CAL_METHOD	Sensor Calibration Factor	N/A	The method of last sensor calibration.
61	SENSOR_VALUE_TYPE	Transmitter Type	N/A	Type of pressure measurement (differential, absolute, gage)

1. If blank, parameter is not applicable to LOI.

Table D-3. Analog input Block Parameters

Index	Parameter name	DTM name	LOI location <sup>(1)</sup>	Definition
1	ST_REV	Static Revision No.	N/A	The revision level of the static data associated with block; the revision value will be incremented each time a static parameter value in the block is changed.
2	TAG_DESC	Tag	N/A	The user description of the intended block application.
3	STRATEGY	Strategy	N/A	Grouping of function blocks.
4	ALERT_KEY	Alert Key	N/A	The identification number of the plant unit. This information may be used in the host for sorting alarms, etc.
5	TARGET_MODE	Target Mode	N/A	Contains desired mode of the block normally set by the operator or a control specification.
6	MODE_BLK	Actual Mode	N/A	Contains the actual, permitted, and normal modes of the block.
7	ALARM_SUM	Alarm Summary	N/A	Contains the current states of the block alarms
8	BATCH	Batch Information	N/A	Used in Batch applications according to IEC 61512-1
10	OUT	Value (Output)	N/A	Value and status of the block output.
11	PV_SCALE	PV Scale	N/A	Conversion of the Process Variable into percent using the high and low scale value, in TB.PRIMARY_VALUE_UNIT
12	OUT_SCALE	Output Scale	N/A	The high and low scale values, units code, and number of digits to the right of the decimal point associated with OUT.
13	LIN_TYPE	Characterization Type	N/A	Linearization type
14	CHANNEL	Channel	N/A	Used to select the Transducer Block measurement value. Always 0x112.
16	PV_FTIME	Filter Time Const	DAMP	The time constant of the first order PV filter. Time required for a 63% change in the input value (seconds).
17	FSAFE_TYPE	Fail Safe Mode	N/A	Defines the reaction of the device, if a fault is detected
18	FSAFE_VALUE	Fail Safe Default Value	N/A	Default value for the OUT parameter, in OUT_SCALE units, if a sensor or sensor electronic fault is detected
19	ALARM_HYS	Limit Hysteresis	N/A	The amount the alarm value must return within the alarm limit before the associated active alarm condition clears.
21	HI_HI_LIM	Upper Limit Alarm Limits	N/A	The setting of the alarm limit used to detect the HI HI alarm condition.
23	HI_LIM	Upper Limit Warning Limits	N/A	The setting of the alarm limit used to detect the HI alarm condition.
25	LO_LIM	Lower Limit Warning Limits	N/A	The setting of the alarm limit used to detect the LO alarm condition.
27	LO_LO_LIM	Lower Limit Alarm Limits	N/A	The setting of the alarm limit used to detect the LO LO alarm condition.
30	HI_HI_ALM	Upper Limit Alarm	N/A	The HI Hi alarm data.

**Table D-3. Analog input Block Parameters**

Index	Parameter name	DTM name	LOI location <sup>(1)</sup>	Definition
31	HI_ALM	Upper Limit Warning	N/A	The HI alarm data
32	LO_ALM	Lower Limit Warning	N/A	The LO alarm data.
33	LO_LO_ALM	Lower Limit Alarm	N/A	The LO LO alarm data.
34	SIMULATE	Simulation	N/A	A group of data that contains the simulated transducer value and status, and the enable/disable bit.

1. If blank, parameter is not applicable to LOI.

## D.4 Condensed status

The Rosemount 3051 device utilizes condensed status as recommended by the Profile 3.02 specification and NE 107. Condensed status has some additional bits and changed bit assignments from classic status. Confirm bit assignment using [Table D-4](#) and [Table D-5](#).

**Table D-4. Diagnosis Descriptions**

Device related diagnosis		
Byte-Bit	Unit_Diag_Bit	Diagnostic description
2-4	36	Cold Start
2-3	35	Warm Start
3-2	42	Function Check
3-0	40	Maintenance Alarm
4-7	55	More Information Available

**Table D-5. Output Status Bit Definition**

Description	HEX	DECIMAL
Bad - passivated	0x23	35
Bad, maintenance alarm, more diagnostics available	0x24	36
Bad, process related - no maintenance	0x28	40
Uncertain, substitute set	0x4B	75
Uncertain, process related, no maintenance	0x78	120
Good, ok	0x80	128
Good, update event	0x84	132
Good, advisory alarm, low limit	0x89	137
Good, advisory alarm, high limit	0x8A	138
Good, critical alarm, low limit	0x8D	141
Good, critical alarm, high limit	0x8E	142
Good, function check	0xBC	188







## Global Headquarters

### Emerson Process Management

6021 Innovation Blvd.

Shakopee, MN 55379, USA

+1 800 999 9307 or +1 952 906 8888

+1 952 949 7001

RFQ.RMD-RCC@EmersonProcess.com

## North America Regional Office

### Emerson Process Management

8200 Market Blvd.

Chanhassen, MN 55317, USA

+1 800 999 9307 or +1 952 906 8888

+1 952 949 7001

RMT-NA.RCCRFQ@Emerson.com

## Latin America Regional Office

### Emerson Process Management

1300 Concord Terrace, Suite 400

Sunrise, FL 33323, USA

+1 954 846 5030

+1 954 846 5121

RFQ.RMD-RCC@EmersonProcess.com

## Europe Regional Office

### Emerson Process Management Europe GmbH

Neuhofstrasse 19a P.O. Box 1046

CH 6340 Baar

Switzerland

+41 (0) 41 768 6111

+41 (0) 41 768 6300

RFQ.RMD-RCC@EmersonProcess.com

## Asia Pacific Regional Office

### Emerson Process Management Asia Pacific Pte Ltd

1 Pandan Crescent

Singapore 128461

+65 6777 8211

+65 6777 0947

Enquiries@AP.EmersonProcess.com

## Middle East and Africa Regional Office

### Emerson Process Management

Emerson FZE P.O. Box 17033

Jebel Ali Free Zone - South 2

Dubai, United Arab Emirates

+971 4 8118100

+971 4 8865465

RFQ.RMTMEA@Emerson.com



[Linkedin.com/company/Emerson-Process-Management](https://www.linkedin.com/company/Emerson-Process-Management)



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