

# Rosemount™ 3051S and 3051SF Series Flow Meter MultiVariable™ Transmitters



---

## Contents

About this guide.....	3
Mount the transmitter.....	5
Consider housing rotation.....	12
Set the switches.....	13
Connect wiring and power up.....	15
Engineering Assistant installation.....	19
Flow configuration.....	22
Verifying device configuration.....	32
Trimming the transmitter.....	36
Safety instrumented systems installation.....	38
Product certifications.....	39

# 1 About this guide

This guide provides basic guidelines to install the Rosemount 3051S MultiVariable Transmitter. It also provides the basic Rosemount 3051SMV configuration guidelines for the Rosemount 3051SFA, Rosemount 3051SFC, and Rosemount 3051SFP. It does not provide instructions for detailed configuration, diagnostics, maintenance, service, troubleshooting, or installations. Refer to the Rosemount 3051SMV [Reference Manual](#) for more instruction. The manual and this guide are also available electronically at [Emerson.com/Rosemount](https://www.emerson.com/Rosemount).

## 1.1 Safety messages

### **⚠ WARNING**

**Failure to follow these installation guidelines could result in death or serious injury.**

Ensure only qualified personnel perform the installation.

#### **Explosions**

Explosions could result in death or serious injury.

Installation of device in an explosive environment must be in accordance with appropriate local, national, and international standards, codes, and practices.

Review the Hazardous Locations Certifications for any restrictions associated with a safe installation.

#### **Process leaks**

Process leaks could result in death or serious injury.

Install and tighten thermowells and sensors before applying pressure.

Do not remove the thermowell while in operation.

---

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

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

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

**Electrical shock**

Electrical shock could cause death or serious injury.

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

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

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

**Physical access**

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

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

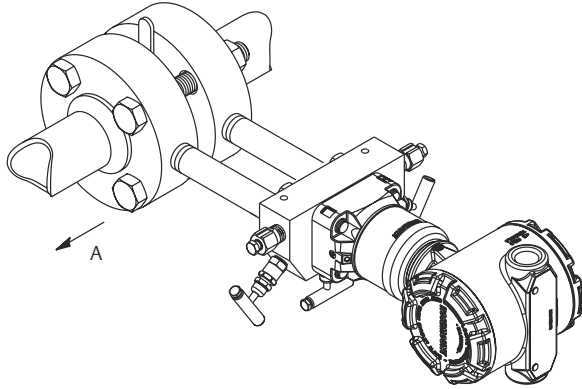
---

## 2 Mount the transmitter

### 2.1 Liquid flow applications

#### Procedure

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



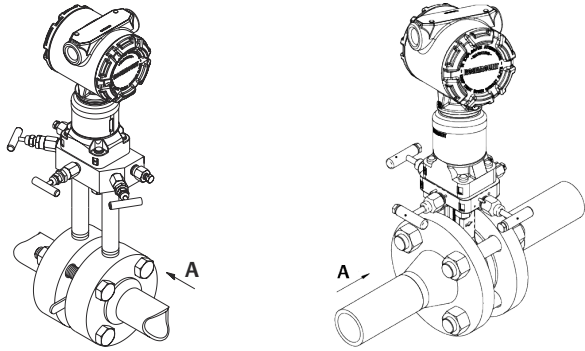
*A. Direction of flow*

---

### 2.2 Gas flow applications

#### Procedure

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

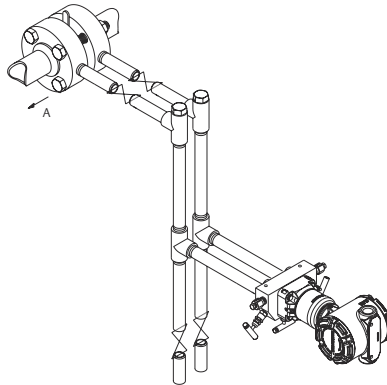


A. Direction of flow

## 2.3 Steam flow applications

### Procedure

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



A. Direction of flow

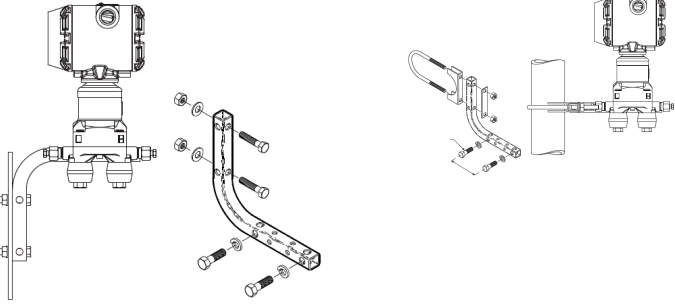
## 2.4 Mounting brackets

---

**Figure 2-1: Mounting Bracket – Coplanar Flange**

Panel mount

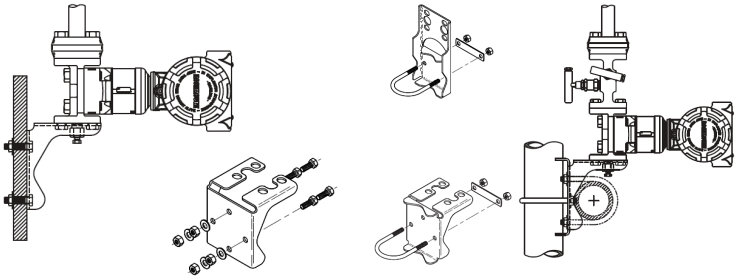
Pipe mount



**Figure 2-2: Mounting Brackets – Traditional Flange**

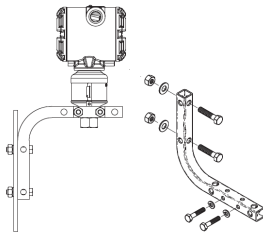
Panel mount

Pipe mount

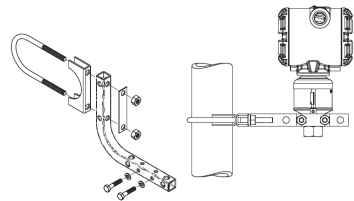


**Figure 2-3: Mounting Brackets - In-line**

Panel mount



Pipe mount

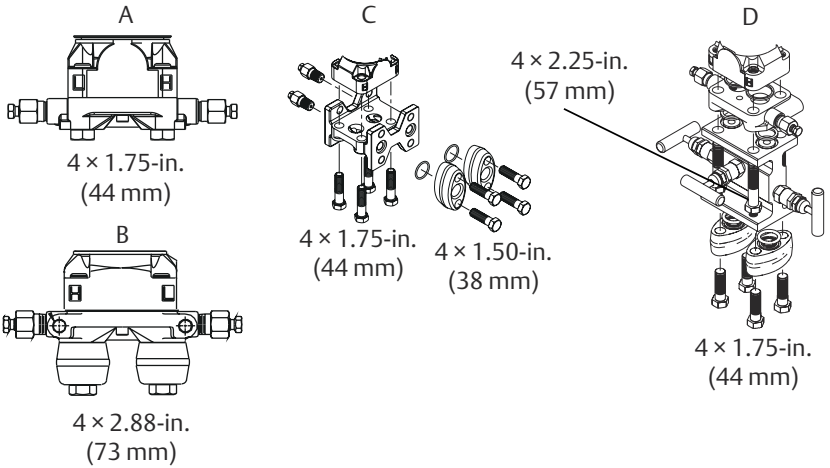


## 2.5 Bolting considerations

If the transmitter installation requires assembly of a process flange, manifold, or flange adapters, follow these assembly guidelines to ensure a tight seal for optimal performance characteristics of the transmitter. Only use bolts supplied with the transmitter or sold by Emerson as spare parts. [Figure 2-4](#) illustrates common transmitter assemblies with the bolt length required for proper transmitter assembly.



**Figure 2-4: Common Transmitter Assemblies**



- A. *Transmitter with coplanar flange*
- B. *Transmitter with coplanar flange and optional flange adapters*
- C. *Transmitter with traditional flange and optional flange adapters*
- D. *Transmitter with coplanar flange and optional Rosemount Conventional Manifold and flange adapters*

**Note**

For all other manifolds, contact [Emerson.com/Rosemount](http://Emerson.com/Rosemount).

Bolts are typically carbon steel or stainless steel. Confirm the material by viewing the markings on the head of the bolt and referencing [Table 2-1](#). If bolt material is not shown in [Table 2-1](#), contact the local Emerson representative for more information.

Use the following bolt installation procedure:


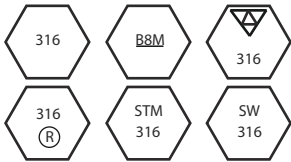
**Procedure**

1. Carbon steel bolts do not require lubrication and the stainless steel bolts are coated with a lubricant to ease installation. However, no additional lubricant should be applied when installing either type of bolt.
2. Finger-tighten the bolts.
3. Torque the bolts to the initial torque value using a crossing pattern. See [Table 2-1](#) for initial torque value.
4. Torque the bolts to the final torque value using the same crossing pattern. See [Table 2-1](#) for final torque value.

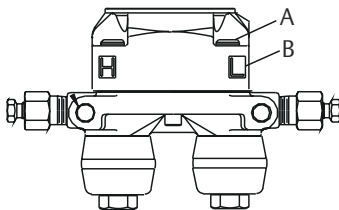
- Verify the flange bolts are protruding through the sensor module before applying pressure (see [Figure 2-5](#)).

**Example**

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

Bolt material	Head markings	Initial torque	Final torque
Carbon Steel (CS)		300 in-lb	650 in-lb
Stainless Steel (SST)		150 in-lb	300 in-lb

**Figure 2-5: Proper Bolt Installation**



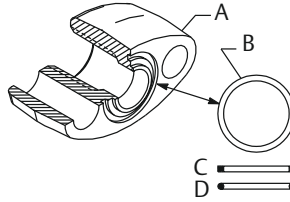
- A. Bolt
- B. Sensor module

## 2.6 O-rings with flange adapters

### ⚠ WARNING

Failure to install proper flange adapter O-rings may cause process leaks, which can result in death or serious injury. Only use the O-ring that is designed for its specific flange adapter.

**Figure 2-6: O-Ring flange adapter**



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

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

### 3 Consider housing rotation

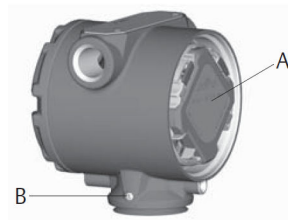
To improve field access to wiring or to better view the optional LCD display:

#### Procedure

1. Loosen the housing rotation set screw.
2. Turn the housing up to 180° left or right of its original (as shipped) position.
3. Re-tighten the housing rotation set screw.

---

**Figure 3-1: Transmitter Housing Set Screw**



A. LCD display

B. Housing rotation set screw (3/32 in.)

---

#### **⚠ CAUTION**

Do not rotate the housing more than 180° without first performing a disassembly procedure. Over-rotation may sever the electrical connection between the sensor module and the electronics.

---

## 4 Set the switches

The transmitter's default configuration sets the alarm condition to **High** (HI) and the security to **Off**.

### Procedure

1. If the transmitter is installed, secure the bus and remove power.
2. Required: Remove the transmitter cover opposite the field terminal side. Do not remove the instrument covers in explosive environments when the circuit is live.
3. Slide the **Security** and **Alarm** switches into the preferred position by using a small screwdriver.

---

### Note

The **Security** switch will need to be in the off position in order to make any configuration changes.

---

4. Required: In order to meet explosion-proof requirements, reinstall the housing cover and tighten so the cover is fully seated with metal to metal contact between the housing and cover. After the cover is seated properly, replace the flathead screw located on the bottom of the housing cover.

---

**Figure 4-1: Transmitter Switch Configuration**



- A. Security
  - B. AC Termination
-

## 5 Connect wiring and power up

### ⚠ CAUTION

Do not connect the power across the test terminals. Power could damage the test diode in the test connection. Twisted pairs yield best results. Use 24 to 14 AWG wire and do not exceed 5,000 ft. (1500 m).

Use the following steps to wire the transmitter:

#### Procedure

1. Remove the cover on the field terminals side of the housing.
2. Connect the positive lead to the "PWR/COMM +" terminal, and the negative lead to the "PWR/COMM -" terminal.
3. If the optional process temperature input is not installed, plug and seal the unused conduit connection. If the input is being utilized, see [Install optional process temperature input \(Pt 100 RTD sensor\)](#) for more information.

### NOTICE

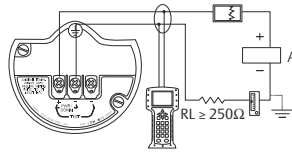
When the enclosed pipe plug is utilized in the conduit opening, it must be installed with a minimum engagement of five threads to comply with explosion-proof requirements. Refer to the Rosemount 3051SMV [Reference Manual](#) for more information.

4. If applicable, install wiring with a drip loop. Arrange the drip loop so the bottom is lower than the conduit connections and the transmitter housing.
5. Reinstall the housing cover and tighten so that metal contacts metal to meet explosion-proof requirements.

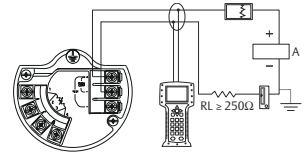
[Figure 5-1](#) shows the wiring connections necessary to power a Rosemount 3051SMV and enable communications with a handheld Field Communicator.

**Figure 5-1: Transmitter Wiring**

Without optional process temperature connection



With optional process temperature connection



A. Power supply

### Note

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

## 5.1 Conduit electrical connector wiring (option GE or GM)

For Rosemount 3051SMV with conduit electrical connectors GE or GM, refer to the cordset manufacturer's installation instructions for wiring details. For FM Intrinsically Safe, Division 2 hazardous locations, install in accordance with Rosemount drawing 03151-1009 to maintain outdoor rating (NEMA<sup>®</sup> 4X and IP66). See the Rosemount 3051SMV [Reference Manual](#).

## 5.2 Power supply

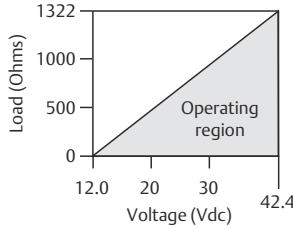
The Dc power supply should provide power with less than two percent ripple. The total resistance load is the sum of the resistance of the signal leads and the load resistance of the controller, indicator, intrinsic safety barriers, and related components.



---

### Figure 5-2: Load Limitation

Maximum loop resistance =  $43.5 \times (\text{power supply voltage} - 12.0)$



HART communication requires a minimum loop resistance of  $250\Omega$

---

## 5.3 Install optional process temperature input (Pt 100 RTD sensor)

### Note

To meet ATEX/IECEX Flameproof certification, only ATEX/IECEX Flameproof cables (temperature input code C30, C32, C33, or C34) may be used.

---

### Procedure

1. Mount the Pt 100 RTD sensor in the appropriate location.
- 

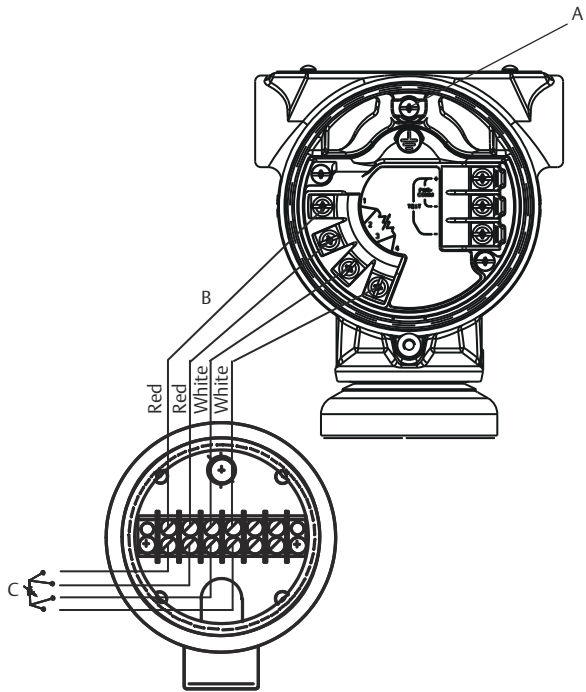
### Note

Use shielded four-wire cable for the process temperature connection.

---

2. Connect the RTD cable to the Rosemount 3051SMV by inserting the cable wires through the unused housing conduit and connect to the four screws on the transmitter terminal block. An appropriate cable gland should be used to seal the conduit opening around the cable.
3. Connect the RTD cable shield wire to the ground lug in the housing.

**Figure 5-3: RTD Wiring Connection**



- A. Ground lug
- B. RTD cable assembly wires
- C. Pt 100 RTD sensor

## 6 Engineering Assistant installation

### Engineering Assistant 6.1 or later

The Rosemount 3051SMV Engineering Assistant 6.1 or later is PC-based software that performs configuration, maintenance, diagnostic functions, and serves as the primary communication interface to the transmitter with the fully compensated mass and energy flow feature board.

The Rosemount 3051SMV Engineering Assistant software is required to complete the flow configuration.

### NOTICE

To ensure correct operation, download the most current version of the Engineering Assistant software at [Emerson.com/Rosemount-Engineering-Assistant](https://www.emerson.com/Rosemount-Engineering-Assistant).

### 6.1 System requirements

The following are the minimum system requirements to install the Rosemount 3051SMV Engineering Assistant software:

- Pentium®-grade processor: 500 MHz or faster
- Operating system: Windows™ XP Professional (32-bit), or Windows 7 (32-bit or 64-bit)
- 256 MB RAM
- 100 MB free hard disk space
- RS232 serial port or USB port (for use with HART® modem)
- CD-ROM

### 6.2 Install Rosemount 3051SMV Engineering Assistant 6.1 or later

#### Procedure

1. Uninstall any existing versions of Engineering Assistant 6.
2. Insert the new Engineering Assistant disk into the CD-ROM.
3. Windows should detect the presence of a CD and start the installation program. Follow the on-screen prompts to finish the installation. If Windows does not detect the CD, use Windows Explorer or My Computer to view the contents of the CD-ROM, and then double click the **SETUP.EXE** program.

4. A series of screens (Installation Wizard) will appear and assist in the installation process. Follow the on-screen prompts. It is recommended to use the default installation settings.

---

**Note**

Engineering Assistant versions 6.1 or later require the use of Microsoft® .NET Framework version 4.0 or later. If .NET version 4.0 is not currently installed, the software will be automatically installed during the Engineering Assistant installation. Microsoft .NET version 4.0 requires an additional 200 MB of disk space.

---

## 6.3 Connect to a personal computer

### Procedure

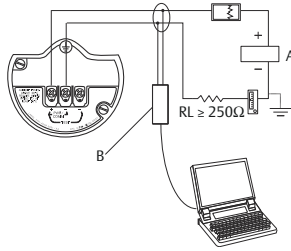
1. Remove the cover from the field terminals side of the housing.
2. Power the device as outlined in [Connect wiring and power up](#).
3. Connect the HART modem cable to the PC.
4. On the side of the transmitter marked "Field Terminals," connect the modem mini-grabbers to the two terminals marked "PWR/COMM."
5. Launch the Engineering Assistant software. For more information on launching software, see [Launch Engineering Assistant 6.1 or later](#).
6. Once the configuration is complete, replace cover and tighten until metal contacts metal to meet explosion-proof requirements.

[Figure 6-1](#) shows how to connect a computer to a Rosemount 3051SMV.

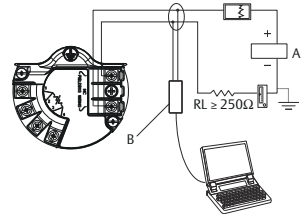
---

### Figure 6-1: Connecting a PC to the Transmitter

Without optional process temperature connection



With optional process temperature connection



- A. Power supply
- B. Modem

## 7 Flow configuration

### Rosemount 3051SMV Engineering Assistant 6.1 or later

The Rosemount 3051SMV Engineering Assistant is designed to guide the user through the setup of the flow configuration for a Rosemount 3051SMV. The **flow configuration** screens allow the user to specify the fluid, operating conditions, and information about the primary element, including inside pipe diameter. This information will be used by the Rosemount 3051SMV Engineering Assistant software to create flow configuration parameters that will be sent to the transmitter or saved for future use.

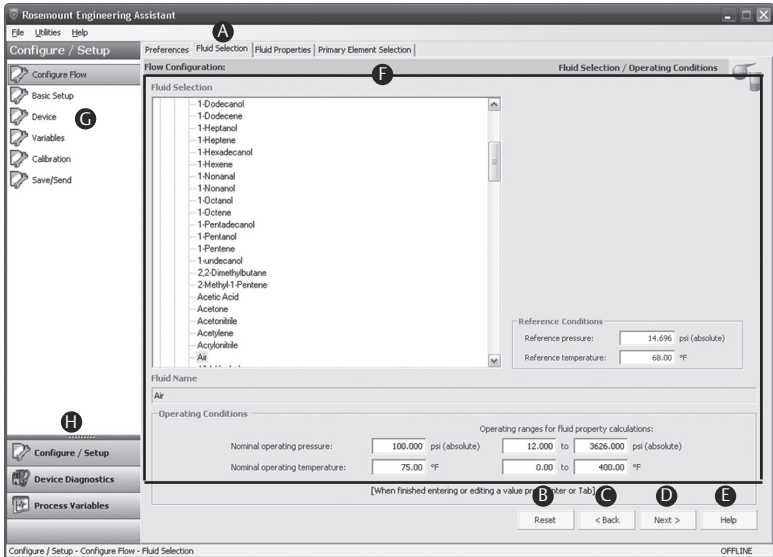
### Online and offline modes

The Engineering Assistant software can be used in two modes: Online and Offline. In **Online mode**, the user can receive the configuration from the transmitter, edit the configuration, send the changed configuration to the transmitter, or save the configuration to a file. In **Offline mode**, the user can create a new flow configuration and save the configuration to a file or open and modify an existing file.

The following pages provide instructions on creating a new flow configuration in offline mode. For more information on other functionality, see the Rosemount 3051SMV [Reference Manual](#).

## 7.1 Basic navigation overview

Figure 7-1: Engineering Assistant Basic Navigation Overview



Screen component	Description of use
A	The navigation tabs contain the flow configuration information. In <b>Offline</b> mode, each tab will not become active until the required fields on the previous tab are completed. In <b>Online</b> mode, these tabs will be functional at all times.
B	The <b>Reset</b> button will return each field within all of the flow configuration tabs (Fluid Selection, Fluid Properties, and Primary Element Selection) to the values initially displayed at the start of the configuration. <ul style="list-style-type: none"> <li>In <b>Online</b> mode, the values will return to the initial values received from the device before the start of the configuration.</li> <li>If editing a previously saved flow configuration, the values will return to those that were last saved. If starting a new flow configuration, all entered values will be erased.</li> </ul>
C	The <b>Back</b> button is used to step backward through the flow configuration tabs.

Screen component	Description of use
D	The <b>Next</b> button is used to step forward through the flow configuration tabs. In <b>Offline</b> mode, the <b>Next</b> button will not become active until all required fields on the current page are completed.
E	The <b>Help</b> button can be clicked at any time to get a detailed explanation of the information that is required on the current configuration tab.
F	Any configuration information that needs to be entered or reviewed will appear in this portion of the screen.
G	These menus navigate to the <b>Configure Flow, Basic Setup, Device, Variables, Calibration, and Save/Send Configuration</b> tabs.
H	These buttons navigate to <b>Config/Setup, Device Diagnostics</b> or <b>Process Variables</b> sections.

## 7.2 Launch Engineering Assistant 6.1 or later

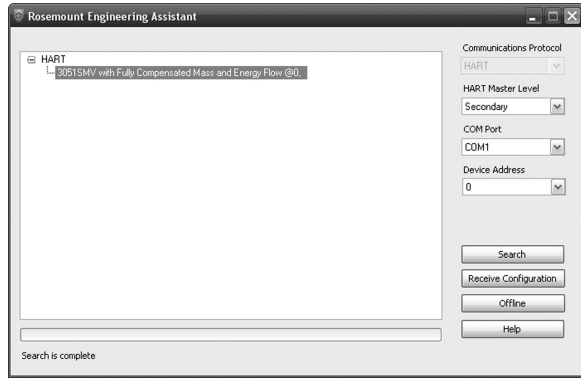
Flow configuration for the Rosemount 3051SMV is achieved by launching the Engineering Assistant software from the **Start** menu.

### Procedure

1. Select the **Start menu** → **All Programs** → **Engineering Assistant**. Engineering Assistant will open to the screen shown in [Figure 7-2](#).
2. Select **Offline** button located in the lower right hand corner of the screen shown in [Figure 7-2](#).



Figure 7-2: Engineering Assistant Device Connection Screen



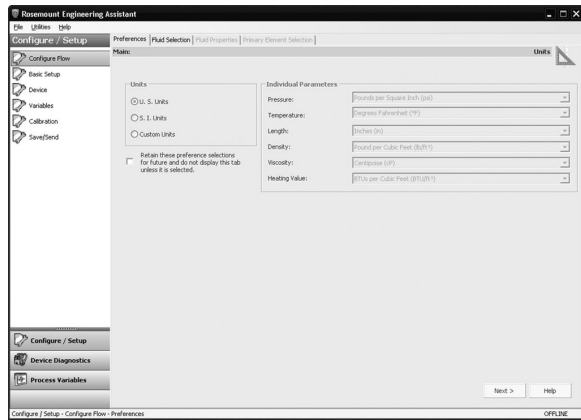
### 7.3 Use Preferences tab

The *Preferences* tab, shown in Figure 7-3, allows you to select the preferred engineering units to display.

#### Procedure

1. Select the preferred engineering units.
2. If **Custom Units** are selected, configure the **Individual Parameters**.
3. Check the box if unit preferences should be retained for future Engineering Assistant sessions.

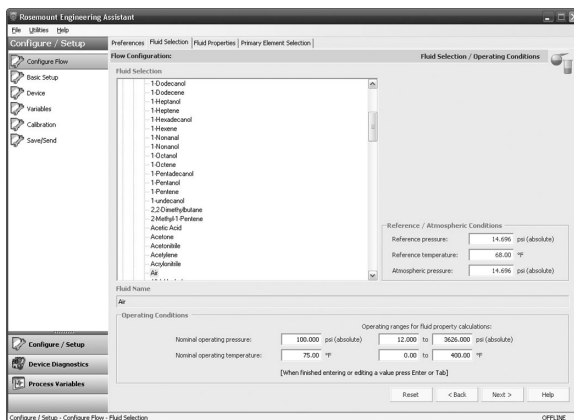
Figure 7-3: Preferences Tab



## 7.4 Select fluid for database liquid/gas

The *Fluid Selection* tab shown in [Figure 7-4](#) allows the user to choose the process fluid.

**Figure 7-4: Fluid Selection Tab**



### Note

The following example will show a flow configuration for the database gas air used with a Rosemount 405C Conditioning Orifice Plate as the primary element. The procedure to set up any other fluid with any other primary element will be similar to this example. Natural gases, custom liquids, and custom gases require additional steps during the configuration. See the [Rosemount 3051SMV Reference Manual](#) for more information.

### Procedure

1. Engineering Assistant may open to the *Preferences* tab. Using the tabs at the top of the screen, navigate to the **Fluid Selection** tab.
2. Expand the *Gas* category (click on the + icon).
3. Expand the *Database Gas* category.
4. Select **Air** from the list of database fluids.
5. Enter the *Nominal Operating Pressure*, select the **Enter** or **Tab** key.
6. Enter the *Nominal Operating Temperature*, select the **Enter** or **Tab** key. Engineering Assistant will automatically fill in suggested operating ranges, as shown in [Figure 7-4](#). These values may be edited as needed by the user.

7. Verify the *Reference/Atmospheric Conditions* are correct for the application. These values may be edited as needed.

---

**Note**

Reference pressure and temperature values are used by Engineering Assistant to convert the flow rate from mass units to mass units expressed as standard or normal volumetric units.

---

8. Select **Next** to proceed to the *Fluid Properties* tab.

## 7.5 Fluid properties

---

**Note**

The *Fluid Properties* tab is an optional step and is not required to complete a flow configuration.

---

The *Fluid Properties* tab for the database gas air is shown in [Figure 7-5](#). This is used to verify the properties of the chosen fluid are acceptable.

To check density, compressibility, and viscosity of the selected fluid at other pressure and temperature values, enter a Pressure and Temperature and select **Calculate**.

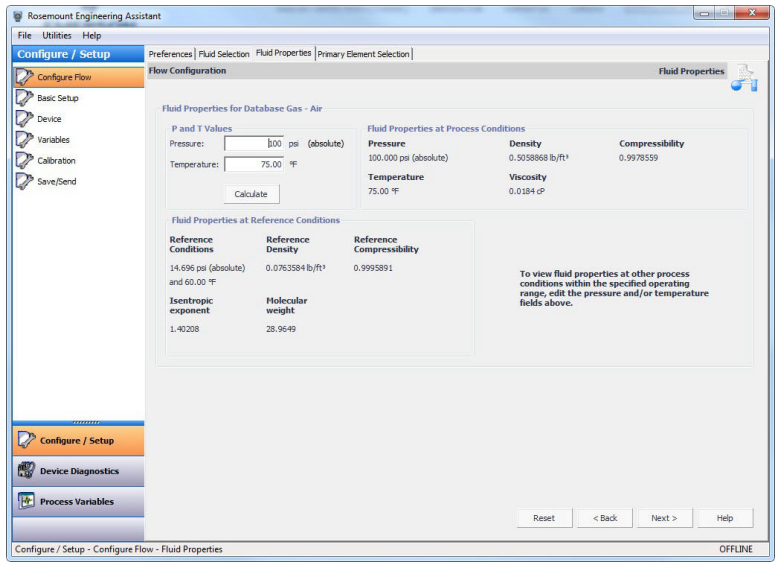
---

**Note**

Changing the pressure and temperature values on the *Fluid Properties* tab does not affect the fluid configuration.

---

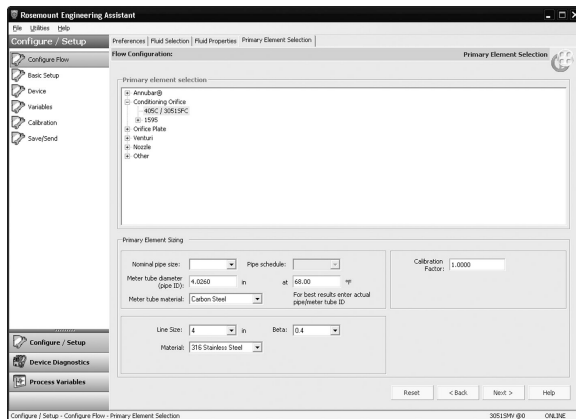
Figure 7-5: Fluid Properties Tab



## 7.6 Select primary element

The *Primary Element Selection* tab shown in Figure 7-6 allows the user to choose the primary element.

Figure 7-6: Primary Element Selection Tab



Continuing with the example configuration:

## Procedure

1. Expand the **Conditioning Orifice Plate** category.
2. Select **405C/3051SFC**.
3. Enter the measured **Meter Tube Diameter (pipe ID)** at a *reference temperature*. If the meter tube diameter cannot be measured, select a Nominal Pipe Size and Pipe Schedule to input an estimated value for the meter tube diameter (English units only).
4. If necessary, edit the **Meter Tube Material**.
5. Enter the **Line Size** and select the **Beta** of the conditioning orifice plate. The required primary element sizing parameters will be different depending on what primary element was selected.
6. If necessary, select a primary element **Material** from the dropdown menu.
7. Select **Next >** to advance to the *Save/Send Configuration* tab.

---

### Note

To be in compliance with appropriate national or international standards, beta ratios and differential producer diameters should be within the limits as listed in the applicable standards. The Engineering Assistant software will alert the user if a primary element value exceeds these limits, but will allow the user to proceed with the flow configuration.

---

## 7.7 Save/send configuration

The *Save/Send Configuration* tab shown in [Figure 7-7](#) allows you to verify, save, and send the configuration information to the transmitter with the fully compensated mass and energy flow feature board.

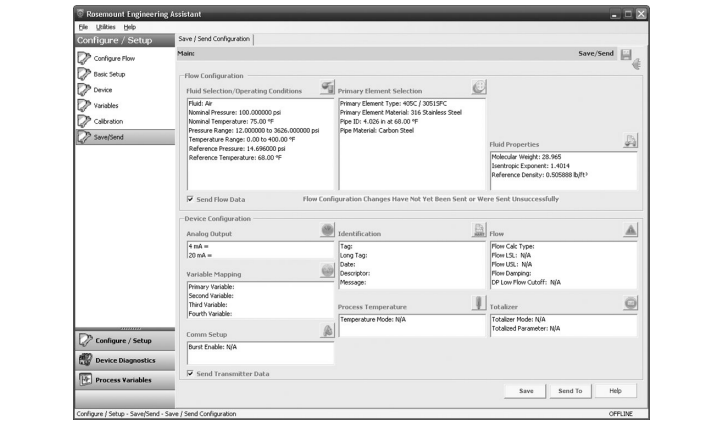
### Procedure

1. Review the information under the *Flow Configuration* and *Device Configuration* headings.

### Note

For more information, see [Verifying device configuration](#).

**Figure 7-7: Save/Send Configuration Tab**



2. Select the icon above each window to edit the configuration information in these windows.

### Note

The user will be notified if the configuration has been modified since it was last sent to the transmitter. A warning message will be shown to the right of the *Send Flow Data* and/or *Send Transmitter Data* checkboxes.

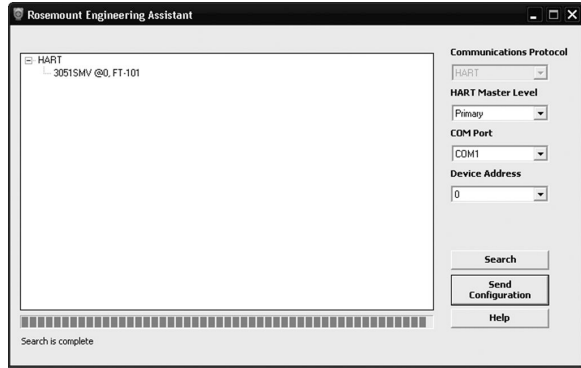
3. To send the configuration, select the **Send To** button.

### Note

The *Send Flow Data* and *Send Transmitter Data* checkboxes can be used to select what configuration data is sent to the transmitter. If either checkbox is unselected, the corresponding data will not be sent.

4. The *Engineering Assistant Device Connection* screen will appear, see [Figure 7-8](#).

**Figure 7-8: Engineering Assistant Device Connection Screen**



5. Select the **Search** button located in the lower right hand corner of the screen. Engineering Assistant will begin to search for connected devices.
6. When the search is completed, select the device to communicate with and select **Send Configuration** button.

**Note**

After the configuration is sent to the device, saving the configuration file is recommended. The user can select the **Save** button on the *Save/Send* screen or select **Save** from the program menu.

Once the configuration is finished being sent to the device, the user will be notified by a pop-up dialog box.

7. If finished with the configuration process, close Engineering Assistant.

## 8 Verifying device configuration

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

[Table 8-1](#) shows the Field Communicator fast keys for the fully compensated mass and energy flow. [Table 8-2](#) shows the Fast Keys for the direct process variable output.

### Note

Device configuration procedures are given for Rosemount 3051SMV Engineering Assistant 6.1 or later and AMS Device Manager 9.0 or later in the Rosemount 3051SMV [Reference Manual](#).

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

**Table 8-1: Fast Keys for Fully Compensated Mass and Energy Flow**

	Function	Fast Key sequence
	Absolute Pressure Reading and Status	1, 4, 2, 1, 5
	Absolute Pressure Sensor Limits	1, 4, 1, 5, 8
	Absolute Pressure Units	1, 3, 3, 5
	Alarm and Saturation Level Configuration	1, 4, 2, 6, 6
	Alarm and Saturation Levels	1, 4, 2, 6
	Analog Output Trim Options	1, 2, 5, 2
	Burst Mode Setup	1, 4, 3, 3, 3
	Burst Mode Options	1, 4, 3, 3, 4
	Callendar-van Dusen Sensor Matching	1, 2, 5, 5, 4
	Configure Fixed Variables	1, 2, 4
✓	Damping	1, 3, 7
	Diaphragm Seals Information	1, 4, 4, 5
✓	Differential Pressure Low Flow Cutoff	1, 4, 1, 1, 6
	Differential Pressure Reading and Status	1, 4, 2, 1, 4
	Differential Pressure Sensor Trim Options	1, 2, 5, 3
✓	Differential Pressure Zero Trim	1, 2, 5, 3, 1
	Differential Pressure Units	1, 3, 3, 4



**Table 8-1: Fast Keys for Fully Compensated Mass and Energy Flow (continued)**

	<b>Function</b>	<b>Fast Key sequence</b>
	Energy Rate Units	1, 3, 3, 2
	Energy Reading and Status	1, 4, 2, 1, 2
	Equipped Sensors	1, 4, 4, 4
	Field Device Information	1, 4, 4, 1
	Flow Calculation Type	1, 4, 1, 1, 2
✓	Flow Rate Units	1, 3, 3, 1
	Flow Reading and Status	1, 4, 2, 1, 1
	Gage Pressure Reading and Status	1, 4, 2, 1, 6
	Gage Pressure Sensor Limits	1, 4, 1, 5, 9
	Gage Pressure Units	1, 3, 3, 6
	LCD Configuration	1, 3, 8
	Loop Test	1, 2, 2
	Module Temperature Reading and Status	1, 4, 2, 1, 8
	Module Temperature Units	1, 3, 3, 8
	Poll Address	1, 4, 3, 3, 1
	Process Temperature Reading and Status	1, 4, 2, 1, 7
✓	Process Temperature Sensor Mode	1, 4, 1, 6, 8
	Process Temperature Sensor Trim Options	1, 2, 5, 5
	Process Temperature Unit	1, 3, 3, 7
✓	Ranging the Analog Output	1, 2, 5, 1
	Recall Factory Trim Settings	1, 2, 5, 2, 3
	Sensor Information	1, 4, 4, 2
	Static Pressure Sensor Lower Trim (AP Sensor)	1, 2, 5, 4, 2
	Static Pressure Sensor Trim Options	1, 2, 5, 4
	Static Pressure Sensor Zero Trim (GP Sensor)	1, 2, 5, 4, 1
	Status	1, 2, 1
✓	Tag	1, 3, 1
	Test Flow Calculation	1, 2, 3

**Table 8-1: Fast Keys for Fully Compensated Mass and Energy Flow (continued)**

	<b>Function</b>	<b>Fast Key sequence</b>
	Totalizer Configuration	1, 4, 1, 3
	Totalizer Reading and Status	1, 4, 2, 1, 3
	Totalizer Units	1, 3, 3, 3
	Variable Mapping	1, 4, 3, 4
	Write Protect	1, 3, 5, 4

**Table 8-2: Fast Keys for Direct Process Variable Output**

	<b>Function</b>	<b>Fast Key sequence</b>
	Absolute Pressure Reading and Status	1, 4, 2, 1, 2
	Absolute Pressure Sensor Limits	1, 4, 1, 2, 8
	Absolute Pressure Units	1, 3, 3, 2
	Alarm and Saturation Level Configuration	1, 4, 2, 6, 6
	Alarm and Saturation Levels	1, 4, 2, 6
	Analog Output Trim Options	1, 2, 4, 2
	Burst Mode Setup	1, 4, 3, 3, 3
	Burst Mode Options	1, 4, 3, 3, 4
	Callendar-van Dusen Sensor Matching	1, 2, 4, 5, 4
✓	Damping	1, 3, 7
	Diaphragm Seals Information	1, 4, 4, 4
	Differential Pressure Reading and Status	1, 4, 2, 1, 1
	Differential Pressure Sensor Trim Options	1, 2, 4, 3
✓	Differential Pressure Zero Trim	1, 2, 4, 3, 1
✓	Differential Pressure Units	1, 3, 3, 1
	Equipped Sensors	1, 4, 4, 3
	Field Device Information	1, 4, 4, 1
	Gage Pressure Reading and Status	1, 4, 2, 1, 3
	Gage Pressure Sensor Limits	1, 4, 1, 2, 9
	Gage Pressure Units	1, 3, 3, 3

**Table 8-2: Fast Keys for Direct Process Variable Output**  
*(continued)*

	<b>Function</b>	<b>Fast Key sequence</b>
	LCD Configuration	1, 3, 8
	Loop Test	1, 2, 2
	Module Temperature Reading and Status	1, 4, 2, 1, 5
	Module Temperature Units	1, 3, 3, 5
	Poll Address	1, 4, 3, 3, 1
	Process Temperature Reading and Status	1, 4, 2, 1, 4
	Process Temperature Sensor Trim Options	1, 2, 4, 5
	Process Temperature Unit	1, 3, 3, 4
✓	Ranging the Analog Output	1, 2, 4, 1
	Recall Factory Trim Settings	1, 2, 4, 2, 3
	Sensor Information	1, 4, 4, 2
	Static Pressure Sensor Lower Trim (AP Sensor)	1, 2, 4, 4, 2
	Static Pressure Sensor Trim Options	1, 2, 4, 4
	Static Pressure Sensor Zero Trim (GP Sensor)	1, 2, 4, 4, 1
	Status	1, 2, 1
✓	Tag	1, 3, 1
✓	Transfer Function	1, 3, 6
	Variable Mapping	1, 4, 3, 4
	Write Protect	1, 3, 5, 4

## 9 Trimming the transmitter

Transmitters are shipped fully calibrated per request or by the factory default of full scale.

### 9.1 Zero trim

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

The transmitter will only allow up to five percent of URL zero error to be trimmed.

#### 9.1.1 Perform a zero trim using the Field Communicator

##### Procedure

1. Equalize or vent the transmitter and connect the Field Communicator. For more information on connecting, see [Figure 5-1](#).
2. If the device is equipped with a static pressure sensor, zero the sensor by inputting the following Fast Key sequence at the Rosemount 3051SMV menu:

Flow Fast Keys	Direct output Fast Keys	Description
1, 2, 5, 4	1, 2, 4, 4	Static pressure sensor trim options

3. Use the zero trim (selection 1) for a transmitter equipped with a gauge static pressure sensor or lower sensor trim (selection 2) for a transmitter equipped with an absolute static pressure sensor.

##### Note

When performing a lower sensor trim on an absolute pressure sensor, it is possible to degrade the performance of the sensor if inaccurate calibration equipment is used. Use a barometer that is at least three times as accurate as the absolute sensor of the transmitter.

- 4. Zero the differential pressure sensor by inputting the following Fast Key sequence at the Rosemount 3051SMV menu:

Flow Fast Keys	Direct output Fast Keys	Description
1, 2, 5, 3, 1	1, 2, 4, 3, 1	Differential pressure sensor zero trim

## 10 Safety instrumented systems installation

For safety certified installations, refer to the appropriate reference manual for the installation procedure and system requirements:

- For DP only measurements (measurement type D), refer to the Rosemount 3051S [Reference Manual](#).
- For MultiVariable measurements (measurement type 1–7), refer to the Rosemount 3051SMV [Reference Manual](#).

# 11 Product certifications

## 11.1 Rosemount 3051SMV/3051SFx

Rev 2.14

### European directive information

A copy of the EU Declaration of Conformity can be found at the end of the Quick Start Guide. The most recent revision of the EU Declaration of Conformity can be found at [Emerson.com/Rosemount](https://www.emerson.com/Rosemount).

### 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).

### Installing Equipment in North America

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.

### 11.1.1 USA

#### E5 US Explosionproof (XP) and Dust-Ignitionproof (DIP)

**Certificate** FM16US0089X

**Standards** FM Class 3600 – 2011, FM Class 3615 – 2006, FM Class 3616 – 2011, FM Class 3810 – 2005, ANSI/NEMA 250 – 2003

**Markings** XP CL I, DIV 1, GP B, C, D; T5; DIP CL II, DIV 1, GP E, F, G; CL III; T5 ( $-50\text{ °C} \leq T_a \leq +85\text{ °C}$ ); Factory Sealed; Type 4X

#### IS US Intrinsically Safe (IS) and Nonincendive (NI)

**Certificate** FM16US0233

**Standards** FM Class 3600 – 2011, FM Class 3610 – 2007, FM Class 3611 – 2004, FM Class 3616 – 2006, FM Class 3810 – 2005, NEMA 250 – 1991

**Markings** IS CL I, DIV 1, GP A, B, C, D; CL II, DIV 1, GP E, F, G; Class III; Class 1, Zone 0 AEx ia IIC T4; NI CL 1, DIV 2, GP A,

B, C, D; T4 ( $-50\text{ °C} \leq T_a \leq +70\text{ °C}$ ) when connected per Rosemount drawing 03151-1206; Type 4X

---

### Note

Transmitters marked with NI CL 1, DIV 2 can be installed in Division 2 locations using general Division 2 wiring methods or Nonincendive Field Wiring (NIFW). See [Drawing 03151-1206](#).

---

### US Intrinsic Safety (IS) and Nonincendive (NI)

**Certificate:** 1143113

**Standards:** FM Class 3600:2011, FM Class 3610:2010, FM Class 3611:2004, FM Class 3810:2005, UL50E (1st Ed.)

**Markings:** IS Class I/II/III, Division 1, Groups A, B, C, D, T4/ E, F, and G T135 °C; Class I, Zone 0 AEx ia IIC T4 Ga;  
T4 ( $-50\text{ °C} \leq T_a \leq +70\text{ °C}$ ) [HART®];  
T4 ( $-50\text{ °C} \leq T_a \leq +60\text{ °C}$ ) [Fieldbus];  
when connected per Rosemount drawing 03151-1207;  
Type 4X

### IE US FISCO Intrinsically Safe

**Certificate** FM16US0233

**Standards** FM Class 3600 – 2011, FM Class 3610 – 2010, FM Class 3611 – 2004, FM Class 3616 – 2006, FM Class 3810 – 2005, NEMA 250 – 1991

**Markings** IS CL I, DIV 1, GP A, B, C, D; T4 ( $-50\text{ °C} \leq T_a \leq +70\text{ °C}$ );  
when connected per Rosemount drawing 03151-1006;  
Type 4X

### US FISCO Intrinsically Safe

**Certificate:** 1143113

**Standards:** FM Class 3600:2011, FM Class 3610:2010, FM Class 3611:2004, FM Class 3810:2005, UL50E (1st Ed.)

**Markings:** IS Class I/II/III, Division 1, Groups A, B, C, D, T4/ E, F, and G T135 °C; Class I, Zone 0 AEx ia IIC T4 Ga;  
T4 ( $-50\text{ °C} \leq T_a \leq +70\text{ °C}$ ) [HART®];  
T4 ( $-50\text{ °C} \leq T_a \leq +60\text{ °C}$ ) [Fieldbus];  
when connected per Rosemount drawing 03151-1207;  
Type 4X



### 11.1.2 Canada

#### E6 Canada Explosionproof, Dust Ignition-proof, Division 2

**Certificate** 1143113

**Standards** CAN/CSA C22.2 No. 0-10, CSA Std C22.2 No. 25-1966, CSA Std C22.2 No. 30-M1986, CSA C22.2 No. 94.2-07, CSA Std C22.2 No. 213-M1987, CAN/CSA C22.2 60079-11:14, CAN/CSA-C22.2 No. 61010-1-12, ANSI/ISA 12.27.01-2003, CSA Std C22.2 No. 60529:05 (R2010)

**Markings** Explosionproof Class I, Division 1, Groups B, C, D; Dust-Ignitionproof Class II, Division 1, Groups E, F, G; Class III; suitable for Class I, Division 2, Groups A, B, C, D; Type 4X

#### I6 Canada Intrinsically Safe

**Certificate** 1143113

**Standards** CAN/CSA C22.2 No. 0-10, CSA Std C22.2 No. 25-1966, CSA Std C22.2 No. 30-M1986, CSA C22.2 No. 94.2-07, CSA Std C22.2 No. 213-M1987, CAN/CSA C22.2 60079-11:14, CAN/CSA-C22.2 No. 61010-1-12, ANSI/ISA 12.27.01-2003, CSA Std C22.2 No. 60529:05 (R2010)

**Markings** Intrinsically Safe Class I, Division 1; Groups A, B, C, D; suitable for Class 1, Zone 0, IIC, T3C,  $T_a = 70\text{ }^\circ\text{C}$ ; when connected per Rosemount drawing 03151-1207; Type 4X

#### IF Canada FISCO Intrinsically Safe

**Certificate** 1143113

**Standards** CAN/CSA C22.2 No. 0-10, CSA Std C22.2 No. 25-1966, CSA Std C22.2 No. 30-M1986, CSA C22.2 No. 94.2-07, CSA Std C22.2 No. 213-M1987, CAN/CSA C22.2 60079-11:14, CAN/CSA-C22.2 No. 61010-1-12, ANSI/ISA 12.27.01-2003, CSA Std C22.2 No. 60529:05 (R2010)

**Markings** FISCO Intrinsically Safe Class I, Division 1; Groups A, B, C, D; suitable for Class I, Zone 0; T3C,  $T_a = 70\text{ }^\circ\text{C}$ ; when installed per Rosemount drawing 03151-1207; Type 4X

### 11.1.3 Europe

#### E1 ATEX/UKEX Flameproof

**ATEX Certificate** KEMA 00ATEX2143X

**UKEX Certificate** DEKRA 21UKEX0293X

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

**Markings** Ex II 1/2 G Ex db IIC T6...T4 Ga/Gb, T6 ( $-60\text{ °C} \leq T_a \leq +70\text{ °C}$ ), T5/T4 ( $-60\text{ °C} \leq T_a \leq +80\text{ °C}$ )

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 less than 1 mm thickness that forms a boundary between Category 1 (process connection) and Category 2 (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. 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. Appropriate cable, glands, and plugs need to be suitable for a temperature of 5 °C greater than maximum specified temperature for location where installed.

## I1 ATEX Intrinsic Safety

**Certificate** Baseefa08ATEX0064X

**Standards** EN 60079-0:2012, EN 60079-11:2012

**Markings** Ex II 1 G Ex ia IIC T4 Ga, T4 ( $-60\text{ °C} \leq T_a \leq +70\text{ °C}$ )

Parameter	HART®	FOUNDATION™ Fieldbus	SuperModule™ only	RTD (for 3051SFx)	
				HART	Fieldbus
Voltage $U_i$	30 V	30 V	7.14 V	30 V	30 V

Parameter	HART®	FOUNDATION™ Fieldbus	SuperModule™ only	RTD (for 3051SFX)	
				HART	Fieldbus
Current I <sub>i</sub>	300 mA	300 mA	300 mA	2.31 mA	18.24 mA
Power P <sub>i</sub>	1 W	1.3 W	887 mW	17.32 mW	137 mW
Capacitance C <sub>i</sub>	14.8 nF	0	0.11 μF	0	0.8 nF
Inductance L <sub>i</sub>	0	0	0	0	1.33 mH

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

1. If the equipment is fitted with the optional 90 V transient suppressor, it is incapable of withstanding the 500 V isolation from earth test and this must be taken into account during installation.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a Zone 0 environment.

**IA ATEX FISCO**

**Certificate** Baseefa08ATEX0064X  
**Standards** EN 60079-0:2012, EN 60079-11:2012  
**Markings** Ex II 1 G Ex ia IIC T4 Ga, T4 (-60 °C ≤ T<sub>a</sub> ≤ +70 °C)

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>	0
Inductance L <sub>i</sub>	0

**ND ATEX Dust**

**Certificate** BAS01ATEX1374X  
**Standards** EN 60079-0:2012+A11:2013, EN 60079-31:2009

**Markings** Ex II 1 D Ex ta IIIC T105 °C T<sub>500</sub> 95 °C Da, (-20 °C ≤ T<sub>a</sub> ≤ +85 °C), V<sub>max</sub> = 42.4 V

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

1. Cable entries must be used which maintain the ingress protection of the enclosure to at least IP66.
2. Unused cable entries must be filled with suitable blanking plugs which maintain the ingress protection of the enclosure to at least IP66.
3. Cable entries and blanking plugs must be suitable for the ambient temperature range of the apparatus and capable of withstanding a 7J impact test.
4. The SuperModule(s) must be securely screwed in place to maintain the ingress protection of the enclosure(s).

## N1 ATEX Type n

**Certificate** Baseefa08ATEX0065X

**Standards** EN 60079-0:2012, EN 60079-15:2010

**Markings** Ex II 3 G Ex nA IIC T4 Gc, (-40 °C ≤ T<sub>a</sub> ≤ 70 °C), V<sub>max</sub> = 45 V

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

If fitted with a 90 V transient suppressor, the equipment is not capable of withstanding the 500 V electrical strength test as defined in Clause 6.5.1 of EN 60079-15:2010. This must be taken into account during installation.

## 11.1.4 International E7 IECEx Flameproof and Dust

**Certificate** IECEx KEM 08.0010X (Flameproof)

**Standards** IEC 60079-0:2017, IEC 60079-1:2014, IEC 60079-26:2014

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

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 less than 1 mm thickness that forms a boundary between EPL Ga (process connection) and EPL Gb (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. 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. Appropriate cable, glands and plugs need to be suitable for a temperature of 5 °C greater than maximum specified temperature for location where installed.

**Certificate** IECEx BAS 09.0014X (Dust)

**Standards** IEC 60079-0:2011, IEC 60079-31:2008

**Markings** Ex ta IIIC T105 °C T<sub>500</sub> 95 °C Da, (-20 °C ≤ T<sub>a</sub> ≤ +85 °C), V<sub>max</sub> = 42.4 V

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

1. Cable entries must be used which maintain the ingress protection of the enclosure to at least IP66.
2. Unused cable entries must be filled with suitable blanking plugs which maintain the ingress protection of the enclosure to at least IP66.
3. Cable entries and blanking plugs must be suitable for the ambient temperature range of the apparatus and capable of withstanding a 7J impact test.
4. The Rosemount 3051S SuperModule™ must be securely screwed in place to maintain the ingress protection of the enclosure.

### I7 IECEx Intrinsic Safety

**Certificate** IECEx BAS 08.0025X

**Standards** IEC 60079-0:2011, IEC 60079-11:2011

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

Parameter	HART®	FOUNDATION™ Fieldbus	SuperModule™ only	RTD (for 3051SFx)	
				HART	Fieldbus
Voltage $U_i$	30 V	30 V	7.14 V	30 V	30 V
Current $I_i$	300 mA	300 mA	300 mA	2.31 mA	18.24 mA
Power $P_i$	1 W	1.3 W	887 mW	17.32 mW	137 mW
Capacitance $C_i$	14.8 nF	0	0.11 $\mu$ F	0	0.8 nF
Inductance $L_i$	0	0	0	0	1.33 mH

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

1. If the equipment is fitted with the optional 90 V transient suppressor, it is incapable of withstanding the 500 V isolation from earth test and this must be taken into account during installation.
2. The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a Zone 0 environment.

### IG IECEx FISCO

**Certificate** IECEx BAS 08.0025X

**Standards** IEC 60079-0:2011, IEC 60079-11:2011

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

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

## N7 IECEx Type n

<b>Certificate</b>	IECEx BAS 08.0026X
<b>Standards</b>	IEC 60079-0:2011, IEC 60079-15:2010
<b>Markings</b>	Ex nA IIC T5 Gc, (-40 °C ≤ T <sub>a</sub> ≤ +70 °C)

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

If fitted with a 90 V transient suppressor, the equipment is not capable of withstanding the 500 V electrical strength test as defined in Clause 6.5.1 of IEC 60079-15:2010. This must be taken into account during installation.

### 11.1.5 Brazil

#### E2 Brazil Flameproof

<b>Certificate</b>	UL-BR 15.0393X
<b>Standards</b>	ABNT NBR IEC 60079-0:2013, ABNT NBR IEC 60079-1:2016, ABNT NBR IEC 60079-26:2016
<b>Markings</b>	Ex db IIC T6...T4 Ga/Gb, T6 (-60 °C ≤ T <sub>a</sub> ≤ +70 °C), T5/T4 (-60 °C ≤ T <sub>a</sub> ≤ +80 °C), IP66

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

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

1. The device contains a thin wall diaphragm less than 1 mm thick that forms a boundary between EPL Ga (process connection) and EPL Gb (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. Installation, maintenance, and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer’s instructions for 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.

## I2 Brazil Intrinsic Safety

**Certificate** UL-BR 15.0357X

**Standards** ABNT NBR IEC 60079-0:2008 + Addendum 1:2011, ABNT NBR IEC 60079-11:2009

**Markings** Ex ia IIC T4 Ga (-60 °C ≤ T<sub>a</sub> ≤ +70 °C)

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

1. If the equipment is fitted with the optional 90 V transient suppressor, it is incapable of withstanding the 500 V isolation from earth test and this must be taken into account during installation.
2. The enclosure may be made of aluminium alloy and given a protective polyurethane paint finish; however, care should be taken to protect it from impact or abrasion if located in a Zone 0 environment, areas requiring EPL Ga.

Parameter	HART®		Fieldbus	
	Input	RTD	Input	RTD
Voltage U <sub>i</sub>	30 V	30 V	30 V	30 V
Current I <sub>i</sub>	300 mA	2.31 mA	300 mA	18.24 mA
Power P <sub>i</sub>	1 W	17.32 mW	1.3 W	137 mW
Capacitance C <sub>i</sub>	14.8 nF	0	0	0.8 nF
Inductance L <sub>i</sub>	0	0	0	1.33 mH

## 11.1.6 China

### E3 China Flameproof and Dust Ignition-proof

**Certificate** 3051SMV: GYJ23.1243X [Mfg USA, China, Singapore]  
3051SFx: GYJ21.3300X [MfgUSA, China, Singapore]

**Standards** 3051SMV: GB/T 3836.1-2021, GB/T 3836.2-2021, GB/T 3836.20-2010  
3051SFx: GB3836.1-2010, GB3836.2-2010, GB12476.1-2013, GB12476.5-2013

**Markings** 3051SMV: Ex d IIC T6... T4 Ga/Gb  
3051SFx: Ex d IIC T4..T6 Ga/Gb; Ex tD IP66 A20 T105°C T<sub>500</sub>95°C



## Special Conditions for Safe Use (X):

### 一、产品安全使用特殊条件

证书编号后缀“X”表明产品具有安全使用特殊条件：

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

### 二、产品使用注意事项

1. 产品温度组别和使用环境温度之间的关系为：

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

2. 用于爆炸性粉尘环境中，产品使用环境温度为： $-20\text{ °C} \leq T_a \leq +85\text{ °C}$ 。
3. 产品外壳设有接地端子，用户在使用时应可靠接地。
4. 安装现场应不存在对产品外壳有腐蚀作用的有害气体。
5. 现场安装时，电缆引入口须选用经国家指定的防爆检验机构检验认可、具有 Ex dIIC Gb, Ex tD A20 IP66 防爆等级的电缆引入装置或堵封件，冗余电缆引入口须用堵封件有效密封。
6. 用于爆炸性气体环境中，现场安装、使用和维护必须严格遵守“严禁带电开盖！”的警告语。
7. 用于爆炸性粉尘环境中，产品外壳表面需保持清洁，以防粉尘堆积，但严禁用压缩空气吹扫。
8. 用户不得自行更换该产品的零部件，应会同产品制造商共同解决运行中出现的故障，以杜绝损坏现象的发生。
9. 产品的安装、使用和维护应同时遵守产品使用说明书、GB3836.13-2013“爆炸性环境 第 13 部分：设备的修理、检修、修复和改造”、GB/T3836.15-2017“爆炸性环境 第 15 部分：电气装置的设计、选型和安装”、GB/T3836.16-2017“爆炸性环境 第 16 部分：电气装置的检查与维护”和 GB50257-2014“电气装置安装工程爆炸和火灾危险环境电力装置施工及验收规范”和 GB15577-2007

“粉尘防爆安全规程”、GB12476.2-2010“可燃性粉尘环境用电气设备 第2部分：选型和安装”的有关规定。

### I3 China Intrinsic Safety

**Certificate** 3051SMV: GYJ23.1243X [Mfg USA, China, Singapore]

3051SFx: GYJ21.3301X [Mfg USA, China, Singapore]

**Standards** 3051SMV: GB/T 3836.1-2021, GB/T 3836.2-2021, GB/T 3836.20-2010

3051SFx: GB3836.1-2010, GB3836.4-2010, GB3836.20-2010

**Markings** 3051SMV: Ex ia IIC T4 Ga

3051SFx: Ex ia IIC T4 Ga;

c 输出代码	防爆标志
A, F	Ex iaIIC T4 Ga, Ex tD A20 IP66 T105 °C T500 95 °C
X	Ex iaIIC T4 Ga

#### 一、产品安全使用特殊条件

产品防爆合格证号后缀“X”代表产品安全使用有特殊条件:

1. 产品外壳含有轻金属，用于 0 区时需注意防止由于冲击或摩擦产生的点燃危险。
2. 此设备不能承受 GB3836.4-2010 标准中第 6.3.12 条规定的 500V 交流有效值试验电压的介电强度试验。
3. c 为 X 时，天线表面电阻大于 1 GΩ，为了避免静电积聚，不允许用溶剂或者干布擦拭；电源模块表面电阻大于 1 GΩ，如果在危险区域更换，则需要避免静电积聚；只能使用由原制造厂提供的 P/N 753-9220-XXXX 电池。

#### 二、产品使用注意事项

1. 用于爆炸性气体环境中，产品使用环境温度为：-60 °C ≤ T<sub>a</sub> ≤ + 70 °C 用于爆炸性粉尘环境中，产品使用环境温度为：-20 °C ≤ T<sub>a</sub> ≤ + 85 °C
2. 本安电气参数：

c 输出代码	端子	最高输入电压 U <sub>i</sub> (V)	最大输入电流 I <sub>i</sub> (mA)	最大输入功率 P <sub>i</sub> (W)	最大内部等效参数	
					C <sub>i</sub> (nF)	L <sub>i</sub> (μH)
SuperModule	+, -, CAN	30	300	1	30	0

c 输出代码	端子	最高输入电压 $U_i$ (V)	最大输入电流 $I_i$ (mA)	最大输入功率 $P_i$ (W)	最大内部等效参数	
					$C_i$ (nF)	$L_i$ ( $\mu$ H)
A	+, -, CAN	30	300	1	12	0
A 配 M7、M8 或 M9 显示	+, -	30	300	1	12	60
F	+, -	30	300	1.3	0	0
FISCO	+, -	17.5	380	5.32	0	0

d 代码为 A 时

	最高输出电压 $U_o$ (V)	最大输出电流 $I_o$ (mA)	最大输出功率 $P_o$ (mW)	最大内部等效参数	
				$C_i$ (nF)	$L_i$ ( $\mu$ H)
RTD	30	2.31	17.32	0	0
SuperModule	7.14	300	887	110	0

注: 本安电气参数符合 GB3836.19-2010 对 FISCO 现场仪表的参数要求。

- 选择 Remote Mount 选项 M7、M8、M9 时，电缆分布电容小于 24 nF，分布电感小于 60  $\mu$ H。
- 该产品必须与已通过防爆认证的关联设备配套共同组成本安防爆系统方可用于爆炸性气体环境。其系统接线必须同时遵守本产品和所配关联设备的使用说明书要求，接线端子不得接错。
- 用于爆炸性粉尘环境中，电缆引入口须选用国家指定的防爆检验机构按检验认可、具有 Ex tD A20 IP66 防爆等级的电缆引入装置或堵封件，冗余电缆引入口须用堵封件有效密封。
- 用户不得自行更换该产品的零部件，应会同产品制造商共同解决运行中出现的故障，以杜绝损坏现象的发生。
- 产品的安装、使用和维护应同时遵守产品使用说明书、GB3836.13-2013“爆炸性环境 第 13 部分：设备的修理、检修、修复和改造”、GB/T3836.15-2017“爆炸性环境 第 15 部分：电气装置的设计、选型和安装”、GB/T3836.16-2017“爆炸性环境 第 16 部分：电气装置的检查与维护”、GB/T 3836.18-2017“爆炸性环境 第 18 部分：本质安全电气系统”、GB50257-2014“电气装置安装工程爆炸和火灾危险环境电力装置施工及验收规范” GB12476.2-2010 “可燃性粉尘环境用电气设备 第 2 部分：选型和安装”的有关规定。

### 11.1.7 EAC – Belarus, Kazakhstan, Russia EM Technical Regulation Customs Union (EAC) Flameproof and Dust Ignition-proof

**Certificate** EAЭC KZ 7500525.01.01.00672

**Markings** 0/1 Ex db IIC T6...T4 Ga/Gb X  
Ex ta IIIC T105°C T<sub>500</sub>95°C Da X

### IM Technical Regulation Customs Union (EAC) Intrinsic Safety

**Certificate** EAЭC KZ 7500525.01.01.00672

**Markings** 0Ex ia IIC T4 Ga X

### 11.1.8 Japan E4 Japan Flameproof

**Certificate** CML 17JPN1147X

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

Temperature class	Ambient temperature	Process temperature
T6	-60 to +70 °C	-60 to +70 °C
T5	-60 to +80 °C	-60 to +80 °C
T4	-60 to +80 °C	-60 to +120 °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 EPL Ga (process connection) and EPL Gb (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. Installation, maintenance, and use shall consider 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.

### 11.1.9 Republic of Korea

#### EP Republic of Korea Flameproof

**Certificate** 19-KA4BO-0913X [Mfg USA], 12-KB4BO-0180X [Mfg USA],  
11-KB4BO-0068X [Mfg Singapore]

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

#### IP Republic of Korea Intrinsic Safety [HART® Only]

**Certificate** 10-KB4BO-0021X [Mfg SMMC], 16-KB4BO-0440X [Mfg  
USA], 19-KA4BO-0911X [Mfg USA]

**Markings** Ex ia IIC T4

### 11.1.10 Combinations

- K1** Combination of E1, I1, N1, and ND
- K2** Combination of E2 and I2
- K5** Combination of E5 and I5
- K6** Combination of E6 and I6
- K7** Combination of E7, I7, and N7
- KA** Combination of E1, I1, E6, and I6
- KB** Combination of E5, I5, E6, and I6
- KC** Combination of E1, I1, E5, and I5
- KD** Combination of E1, I1, E5, I5, E6, and I6
- KM** Combination of EM and IM
- KP** Combination of EP and IP

### 11.1.11 Additional certifications

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

**Certificate** 17-RJ1679518-PDA

**Intended Use** Measure gauge or absolute pressure of liquid, gas  
or vapor applications on ABS classed vessels, marine,  
and offshore installations. [HART only]

#### SBV Bureau Veritas (BV) Type Approval

**Certificate** 31910 BV

**Requirements** Bureau Veritas Rules for the Classification of Steel Ships

**Application** Class Notations: AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS. [HART only]

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

**Certificate** TAA00000K9

**Intended Use** Det Norske Veritas’ Rules for Classification of Ships, High Speed and Light Craft, and Det Norske Veritas’ Offshore Standards. [HART® only]

**Application**




Location classes	
Type	3051S
Temperature	D
Humidity	B
Vibration	A
EMC	A
Enclosure	D/IP66/IP68

### SLL Lloyds Register (LR) Type Approval

**Certificate** LR21173788TA

**Application** Environmental categories ENV1, ENV2, ENV3, and ENV5. [HART® only]

## 11.2 Declaration of conformity

	<h3 style="margin: 0;">EU Declaration of Conformity</h3> <p style="margin: 0;">No: RMD 1072 Rev. 0</p>	
<p>We,</p> <p style="margin-left: 40px;"><b>Rosemount Inc.</b> 8200 Market Boulevard Chanhassen, MN 55317-9685 USA</p> <p>declare under our sole responsibility that the product,</p> <p style="text-align: center;"><b>Rosemount™ Models 3051SMV &amp; 300SMV Pressure Transmitters</b></p> <p>manufactured by,</p> <p style="margin-left: 40px;"><b>Rosemount Inc.</b> 8200 Market Boulevard Chanhassen, MN 55317-9685 USA</p> <p>to which this declaration relates, is in conformity with the provisions of the European Union Directives, including the latest amendments, as shown in the attached schedule.</p> <p>Assumption of conformity is based on the application of the harmonized standards and, when applicable or required, a European Union notified body certification, as shown in the attached schedule.</p>		
 <hr style="width: 100%;"/> <p>(signature)</p>	<p>Vice President of Global Quality (function name - printed)</p> <hr style="width: 100%;"/> <p>Mark Lee (name - printed)</p>	<p>June 1, 2021; Boulder, CO USA (date of issue &amp; place)</p> <hr style="width: 100%;"/>
<p>Page 1 of 3</p>		<p>Document Rev: 2013_A</p>



# EU Declaration of Conformity

No: RMD 1072 Rev. 0



## EMC Directive (2014/30/EU)

All Models 3051SMV and 300SMV Pressure Transmitters

Harmonized Standards Used:  
EN 61326-1:2013, EN61326-2-3: 2013

## PED Directive (2014/68/EU)

### *Models 3051SMV and 300SMV Pressure Transmitters*

**Model 3051SMV with Static Pressure Range 4 only (also with P0 & P9 options)  
Pressure Transmitter**

QS Certificate of Assessment – Certificate No. 12695-2018-CE-ACCREDIA  
Module H Conformity Assessment

#### **All other models**

Sound Engineering Practice

**Transmitter Attachments: Diaphragm Seal – Process Flange - Manifold**

Sound Engineering Practice

**Model 3051SFx Flowmeter Transmitters**

See DSI 1000 Declaration of Conformity for 3051SF Series Flowmeter  
Information

## ATEX Directive (2014/34/EU)

**BAS08ATEX0064X – Intrinsically Safe**

Group II Category 1 G  
Ex ia IIC T4 Ga  
Harmonized Standards Used:  
EN IEC 60079-0:2018, EN60079-11:2012

**BAS08ATEX0065X – Type n**

Group II Category 3 G  
Ex nA IIC T4 Gc  
Harmonized Standards Used:  
EN IEC 60079-0:2018, EN60079-15:2010

**BAS01ATEX1374X – Dust**

Group II Category 1 D





# EU Declaration of Conformity



No: RMD 1072 Rev. O

Ex ta IICT105°C T<sub>500</sub>95°C Da  
 Harmonized Standards Used:  
 EN 60079-0:2012+A11:2013  
 Other Standards Used:  
 EN 60079-31:2009 (a review against EN60079-31:2014, which is harmonized, shows no significant changes relevant to this equipment so EN60079:2009 continues to represent "State of the Art")

### **KEMA00ATEX2143X – Flameproof Certificate**

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

### **PED Notified Body**

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

### **ATEX Notified Body for EU Type Examination Certificate**

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

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

### **ATEX Notified Body for Quality Assurance**

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

# 11.3 China RoHS

有害物质成分表  
03031-9021, Rev AA

罗斯蒙特产品型号 **3051SMV**  
7/1/2016

含有China RoHS管控物质超过最大浓度限值的部件型号列表 3051SMV  
List of 3051SMV Parts with China RoHS Concentration above MCVs

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

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

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

X: 意为在该部件所使用的所有均质材料里, 至少有一类均质材料中该有害物质的含量高于GB/T 26572所规定的限量要求。  
X: Indicate that said hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement of GB/T 26572.

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





**Quick Start Guide**  
**00825-0100-4803, Rev. GB**  
**January 2024**

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

©2024 Emerson. All rights reserved.

Emerson Terms and Conditions of Sale are available upon request. The Emerson logo is a trademark and service mark of Emerson Electric Co. Rosemount is a mark of one of the Emerson family of companies. All other marks are the property of their respective owners.

**ROSEMOUNT™**

