

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



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.

Before applying pressure, install and tighten thermowells and sensors. Do not remove the thermowell while in operation.

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.

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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.

Related information

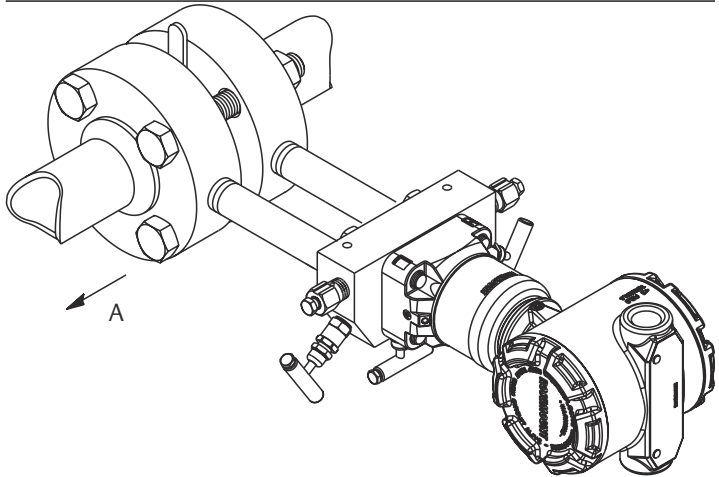
[Rosemount 3051SMV Reference Manual](#)
[Emerson.com/global](https://www.emerson.com/global)

2 Mounting 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. When mounting the transmitter, orient the drain/vent valves upward.

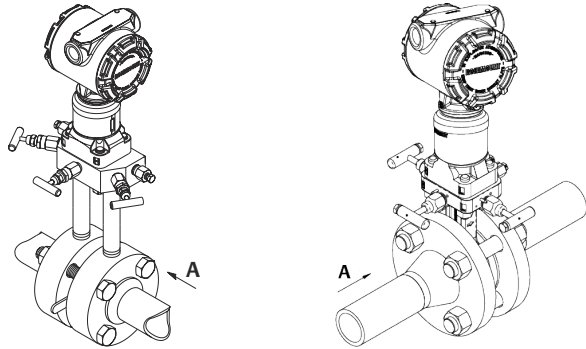


A. Direction of flow

2.2 Gas flow applications

Procedure

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

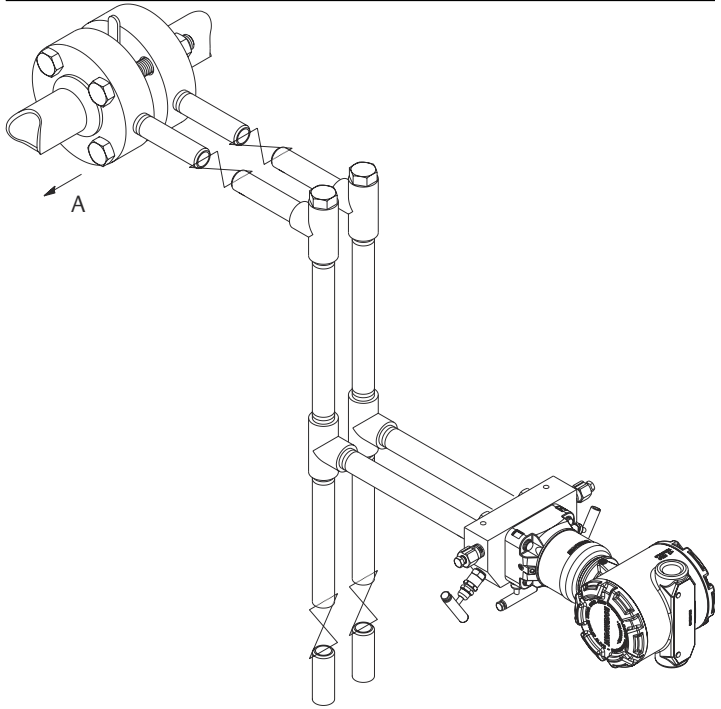


A. Direction of flow

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

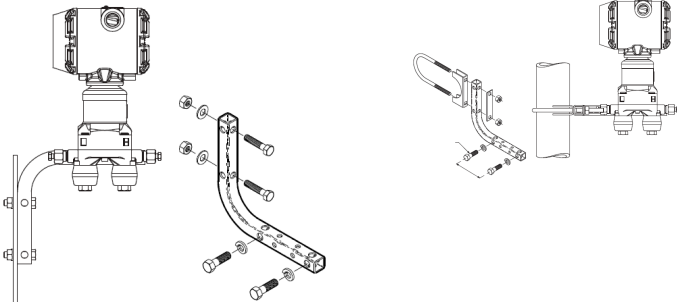
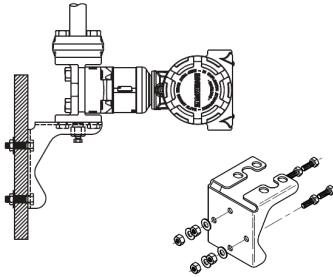


Figure 2-2: Mounting Brackets – Traditional Flange

Panel mount



Pipe mount

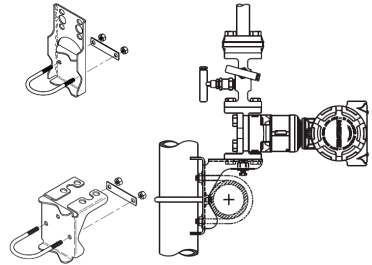
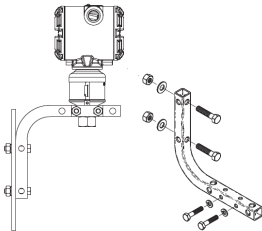
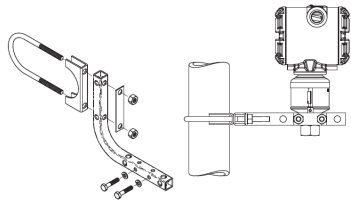


Figure 2-3: Mounting Brackets – In-line

Panel mount

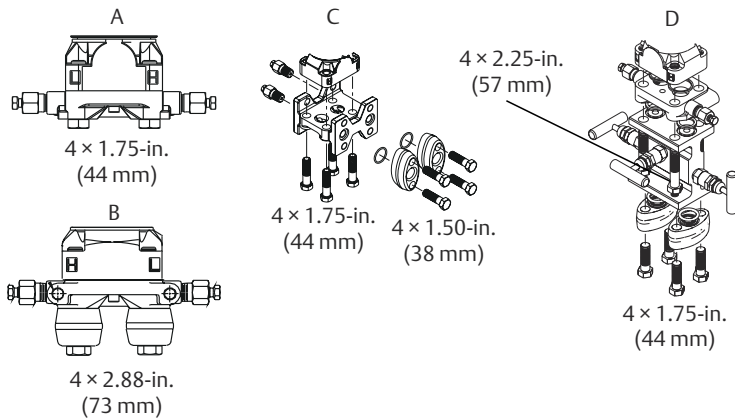


Pipe mount



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

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 your local Emerson representative for more information.

To install bolts:

Procedure

1. Carbon steel bolts do not require lubrication and the stainless steel bolts are coated with a lubricant to ease installation. However, do not apply additional lubricant when installing either type of bolt.
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.
5. 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


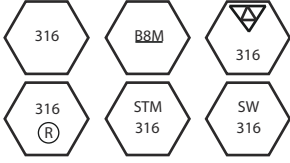
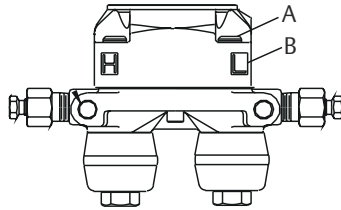
Bolt material	Head markings	Initial torque	Final torque
Carbon Steel (CS)		300 in-lb.	650 in-lb.
Stainless Steel (SST)		150 in-lb.	300 in-lb.

Figure 2-5: Proper Bolt Installation



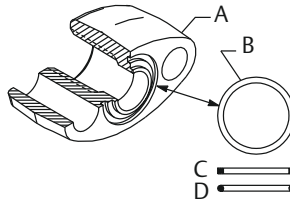
- A. Bolt
- B. Sensor module

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.

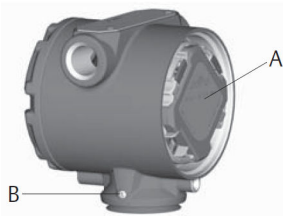
3 Consider housing rotation

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).

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.

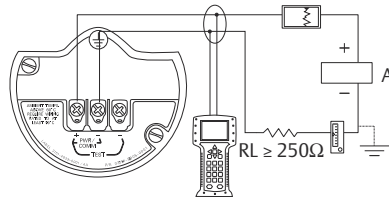
NOTICE

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. To meet explosion-proof requirements, reinstall the housing cover and tighten so that metal contacts metal.

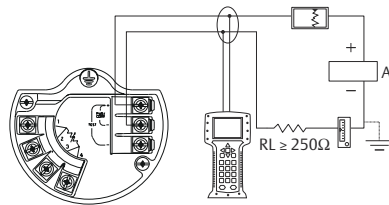
[Figure 5-1](#) shows the wiring connections necessary to power a Rosemount 3051SMV and enable communications with a handheld Field Communicator.

Figure 5-1: Transmitter Wiring: Without optional process temperature connection



A. Power supply

Figure 5-2: Transmitter Wiring: With optional process temperature connection



A. Power supply

NOTICE

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[®] 4X and IP66).

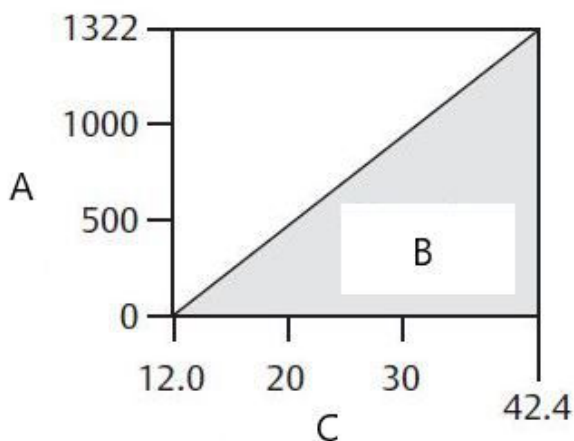
Related information

[Rosemount 3051SMV Reference Manual](#)

5.2 Power supply

The DC power supply will 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 5-3: Load Limitation



- A. Load (ohms)
- B. Operating region
- C. Voltage (VDC)

Note

Maximum loop resistance = $43.5 \times (\text{power supply voltage} - 12.0)$
 HART® communication requires a minimum loop resistance of 250 Ω .

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

Note

To meet ATEX/IECEX Flameproof certification, Emerson recommends only using ATEX/IECEX Flameproof cables (temperature input code C30, C32, C33, or C34).

Procedure

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

Note

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

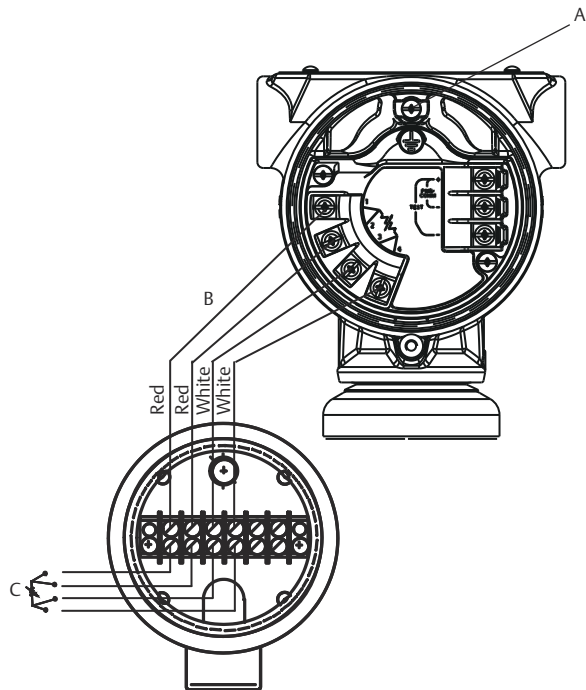
2. Connect the RTD cable to the Rosemount 3051SMV by inserting the cable wires through the unused housing conduit. Connect to the four screws on the transmitter terminal block.
-

Note

An appropriate cable gland must 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 5-4: 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://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 will 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. Emerson recommends using 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.

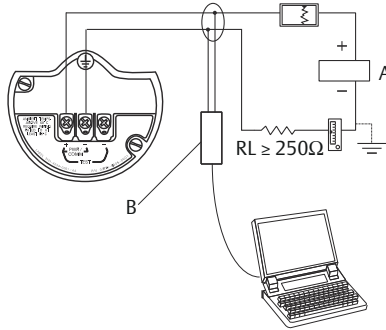
6.3 Connecting to a PC

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.

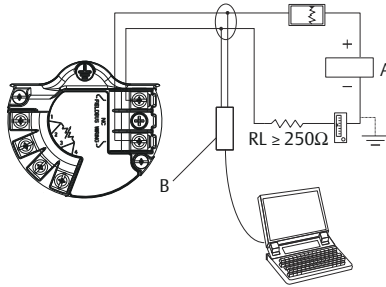
[Figure 6-1](#) shows how to connect a computer to a Rosemount 3051SMV.

Figure 6-1: Connecting a PC to the Transmitter: Without optional process temperature connection



- A. Power supply
- B. Modem

Figure 6-2: Connecting a PC to the Transmitter: 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
- Save the configuration to a file

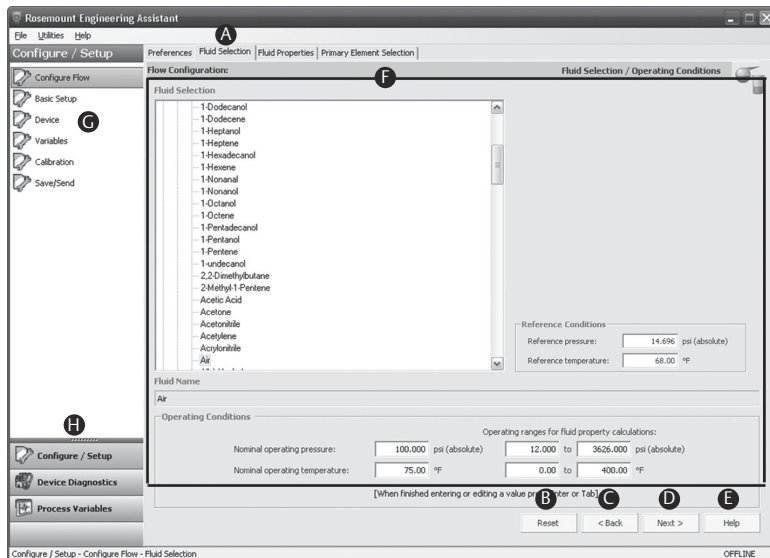
In **Offline mode**, the user can:

- Create a new flow configuration
- Save the configuration to a file
- 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	<p>The navigation tabs contain the flow configuration information.</p> <p>In Offline mode, each tab will not become active until the required fields on the previous tab are completed.</p> <p>In Online mode, these tabs will be functional at all times.</p>
B	<p>The Reset 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.</p> <ul style="list-style-type: none"> In Online mode, the values will return to the initial values received from the device before the start of the configuration. 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.

Screen component	Description of use
C	The Back button is used to step backward through the flow configuration tabs.
D	The Next button is used to step forward through the flow configuration tabs. In Offline mode, the Next button will not become active until all required fields on the current page are completed.
E	The Help 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 Configure Flow, Basic Setup, Device, Variables, Calibration, and Save/Send Configuration tabs.
H	These buttons navigate to Config/Setup, Device Diagnostics or Process Variables 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



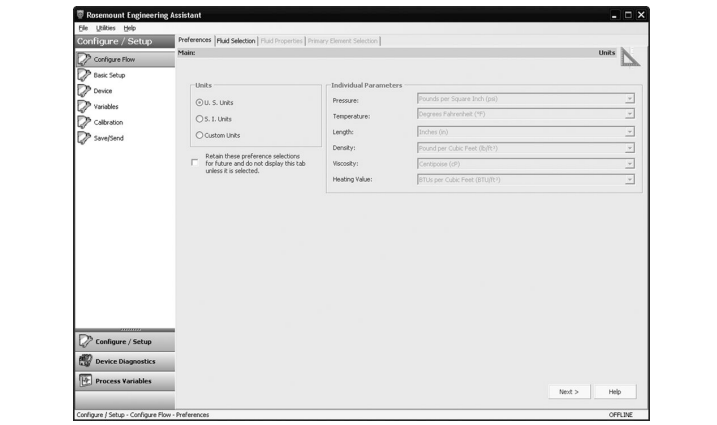
7.3 Use Preferences tab

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 you want unit preferences to be retained for future Engineering Assistant sessions.

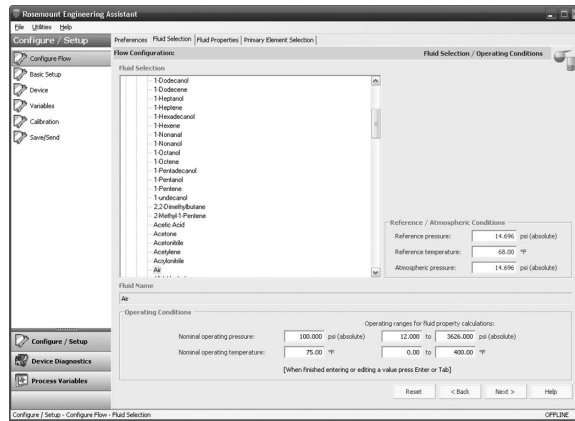
Figure 7-3: Preferences Tab



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. Select the **+** icon to expand the **Gas** category.
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.

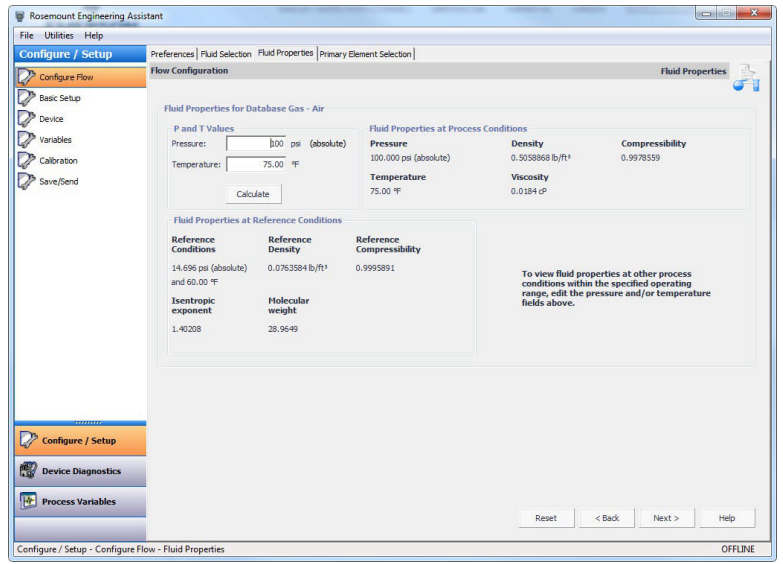
The **Fluid Properties** tab for the database gas air is shown in [Figure 7-5](#). This is used to verify the properties of the chosen fluid are acceptable.

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.

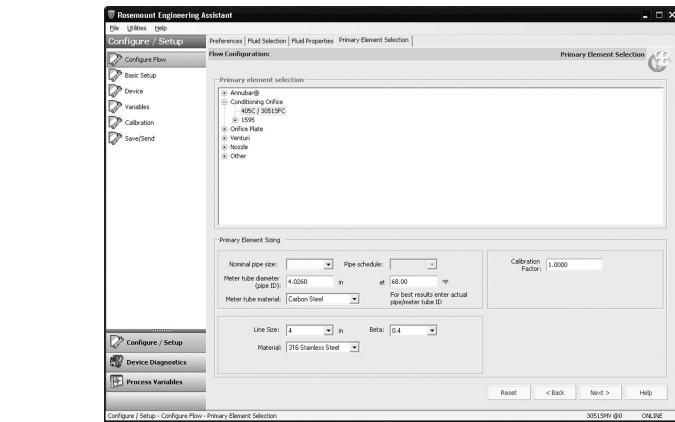
Figure 7-5: Fluid Properties Tab



7.6 Selecting a 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



To continue 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 must 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.

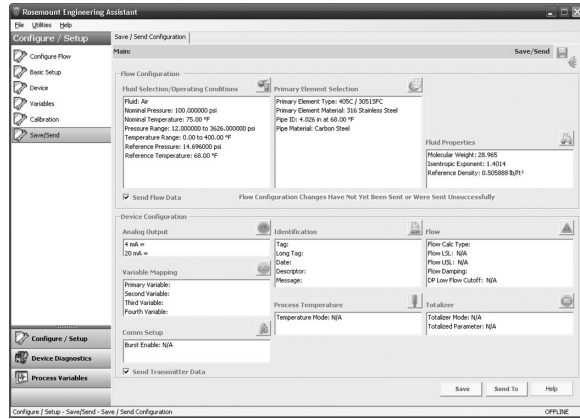
7.7 Saving/sending configuration

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. 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.

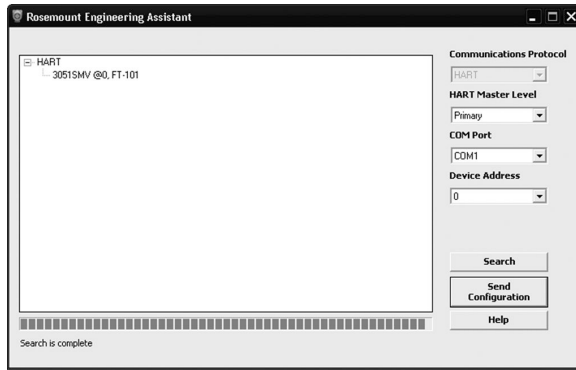
3. To send the configuration, select the **Send To** button.

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.

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

Figure 7-8: Engineering Assistant Device Connection Screen



- Select the **Search** button located in the lower right hand corner of the screen. **Engineering Assistant** will start searching for connected devices.
- 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, Emerson recommends saving the configuration file. 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.

- 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 will 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)

	Function	Fast Key sequence
	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
	Gauge Pressure Reading and Status	1, 4, 2, 1, 6
	Gauge Pressure Sensor Limits	1, 4, 1, 5, 9
	Gauge 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)

	Function	Fast Key sequence
	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

	Function	Fast Key sequence
	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
	Gauge Pressure Reading and Status	1, 4, 2, 1, 3
	Gauge Pressure Sensor Limits	1, 4, 1, 2, 9
	Gauge Pressure Units	1, 3, 3, 3

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

	Function	Fast Key sequence
	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 Performing 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 1, 2, 5, 4

Direct output Fast Keys 1, 2, 4, 4

Description 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 transmitted 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	1, 2, 5, 3, 1
Direct output Fast Keys	1, 2, 4, 3, 1
Description	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 2.20

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 Explosion-proof (XP) and Dust-Ignitionproof (DIP)

Certificate FM16US0089X

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

I5 US Intrinsic Safety (IS) and Nonincendive (NI)

Certificate FM16US0233

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 °C ≤ T_a ≤ +70 °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](https://www.emerson.com/Drawing-03151-1206).

US Intrinsic Safety (IS) and Nonincendive (NI)

Certificate: 1143113

Markings: IS Class I/II/III, Division 1, Groups A, B, C, D, T4/ E, F, and G T 135 °C;
 Class I, Zone 0 AEx ia IIC T4 Ga;
 T4 (-50 °C ≤ Ta ≤ +70 °C) [HART®];
 T4 (-50 °C ≤ Ta ≤ +60 °C) [Fieldbus™];
 When connected per Rosemount drawing 03151-1207;
 Type 4X

IE US FISCO Intrinsic Safety

Certificate FM16US0233

Markings IS CL I, DIV 1, GP A, B, C, D; T4 (-50 °C ≤ Ta ≤ +70 °C);
 when connected per Rosemount drawing 03151-1006;
 Type 4X

US FISCO Intrinsic Safety

Certificate: 1143113

Markings: IS Class I/II/III, Division 1, Groups A, B, C, D, T4/ E, F, and G T 135 °C;
 Class I, Zone 0 AEx ia IIC T4 Ga;
 T4 (-50 °C ≤ Ta ≤ +70 °C) [HART®];
 T4 (-50 °C ≤ Ta ≤ +60 °C) [Fieldbus™];
 When connected per Rosemount drawing 03151-1207;
 Type 4X

11.1.2 Canada

E6 Canada Explosion-proof, Dust Ignition-proof, Division 2

Certificate 1143113

Markings Explosion-proof Class I, Division 1, Groups B, C, D; Dust Ignition-proof 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 Intrinsic Safety

Certificate 1143113

Markings Intrinsically Safe Class I, Division 1; Groups A, B, C, D; suitable for Class 1, Zone 0, IIC, T3C, Ta = 70 °C; when connected per Rosemount drawing 03151-1207; Type 4X

IF Canada FISCO Intrinsic Safety

Certificate 1143113

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 Flameproof

Certificate KEMA 00ATEX2143X

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

Temperature class	Process temperature
T6	$-60\text{ }^\circ\text{C}$ to $+70\text{ }^\circ\text{C}$
T5	$-60\text{ }^\circ\text{C}$ to $+80\text{ }^\circ\text{C}$
T4	$-60\text{ }^\circ\text{C}$ to $+120\text{ }^\circ\text{C}$

Special Conditions for Safe Use (X):

1. This device contains a thin wall diaphragm less than 1 mm thick that forms a boundary between Category 1G (process connection) and Category 2G (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. During installation, maintenance and use the environmental conditions to which the diaphragm will be subjected shall be taken into account. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended 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 $5\text{ }^\circ\text{C}$ greater than maximum specified temperature for location where installed.

I1 ATEX Intrinsic Safety

Certificate Baseefa08ATEX0064X

Markings Ⓢ II 1 G Ex ia IIC T4 Ga, T4 (-60 °C ≤ T_a ≤ +70 °C)

Parameter	HART®	FOUNDATION™ Fieldbus	SuperModule™ only	RTD (for 3051SFx) (HART)	RTD (for 3051SFx) (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 μF	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.

IA ATEX FISCO

Certificate Baseefa08ATEX0064X

Markings Ⓢ II 1 G Ex ia IIC T4 Ga, T4 (- 60 °C ≤ T_a ≤ +70 °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

ND ATEX Dust

Certificate BAS01ATEX1374X

Markings Ex II 1 D Ex ta IIIC T 105 °C T₅₀₀ 95 °C Da, (-20 °C ≤ T_a ≤ +85 °C), V_{max} = 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 / Increased Safety

Certificate Baseefa08ATEX0065X

Markings ⊕ II 3 G Ex nA IIC T4 Gc
 ⊕ II 3 G Ex ec IIC T4 Gc
 (-40 °C ≤ T_a ≤ +70 °C)
 V_{max} = 45 V

Special Condition for Safe Use (X):

If fitted with an optional transient suppressor, the equipment is not capable of withstanding the 500sV insulation test required by Clause 6.5.1 of EN 60079-15: 2010 or Clause 6.1 of EN IEC 60079-7:2015+A1:2018. This must be taken into account when installing the equipment.

11.1.4 International E7 IECEx Flameproof and Dust

Certificate IECEx KEM 08.0010X (Flameproof)

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

Temperature class	Process temperature
T6	-60 °C to +70 °C

Temperature class	Process temperature
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 thick that forms a boundary between EPL Ga (process connection) and EPL Gb (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. During installation, maintenance and use the environmental conditions to which the diaphragm will be subjected shall be taken into account. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.
4. 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)

Markings Ex ta IIIC T 105 °C T₅₀₀ 95 °C Da, (-20 °C ≤ T_a ≤ +85 °C), V_{max} = 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.

- 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

Markings Ex ia IIC T4 Ga, T4 (-60 °C ≤ T_a ≤ +70 °C)

Parameter	HART®	FOUNDATION™ Fieldbus	SuperModule™ only	RTD (for 3051SFx) (HART)	RTD (for 3051SFx) (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 μF	0	0.8 nF
Inductance L _i	0	0	0	0	1.33 mH

Special Conditions for Safe Use (X):

- 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.
- The enclosure may be made of aluminum alloy and given a protective polyurethane paint finish. However, care must be taken to protect it from impact or abrasion if located in a Zone 0 environment.

IG IECEx FISCO

Certificate IECEx BAS 08.0025X

Markings Ex ia IIC T4 Ga, T4 (-60 °C ≤ T_a ≤ +70 °C)

	FISCO
Voltage U _i	17.5 V
Current I _i	380 mA
Power P _i	5.32 W
Capacitance C _i	0

	FISCO
Inductance L_i	0

N7 IECEx Type n

Certificate IECEx BAS 08.0026X

Markings Ⓢ II 3 G Ex nA IIC T4 Gc
 Ⓢ II 3 G Ex ec IIC T4 Gc
 (-40 °C ≤ T_a ≤ +70 °C)
 $V_{max} = 45 V$

Special Condition for Safe Use (X):

If fitted with an optional transient suppressor, the equipment is not capable of withstanding the 500 V insulation test required by Clause 6.5.1 of EN 60079-15: 2010 or Clause 6.1 of EN IEC 60079-7:2015+A1:2018. This must be taken into account when installing the equipment.

11.1.5 Brazil E2 Brazil Flameproof

Certificate UL-BR 15.0393X

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

Markings Ex ia IIC T4 Ga (-60 °C ≤ T_a ≤ +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 must 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 _i	30 V	30 V	30 V	30 V
Current I _i	300 mA	2.31 mA	300 mA	18.24 mA
Power P _i	1 W	17.32 mW	1.3 W	137 mW
Capacitance C _i	14.8 nF	0	0	0.8 nF
Inductance L _i	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]

Markings 3051SMV: Ex d IIC T6... T4 Ga/Gb
3051SFx: Ex d IIC T4..T6 Ga/Gb; Ex tD IP66 A20 T 105 °C
T₅₀₀ 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 d II C 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]

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 ia II C T4 Ga, Ex tD A20 IP66 T 105 °C T500 95 °C
X	Ex ia II C 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 $1G\Omega$ ，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 $1G\Omega$ ，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： $-60\text{ °C} \leq T_a \leq +70\text{ °C}$
用于爆炸性粉尘环境中，产品使用环境温度为： $-20\text{ °C} \leq T_a \leq +85\text{ °C}$
2. 本安电气参数：

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 (μ H)
SuperModule [®]	+, -, CA N	30	300	1	30	0
A	+, -, CA N	30	300	1	12	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 (μ H)
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 (μ 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 24nF，分布电感小于 60 μ 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 and 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。
7. 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, Kyrgyzstan, Armenia) EM EAC T-Standard 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 III C T 105 °C T ₅₀₀ 95 °C Da X

IM EAC T-Standard 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 °C to +70 °C	-60 to +70 °C
T5	-60 °C to +80 °C	-60 to +80 °C
T4	-60 °C 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 must 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



EU DECLARATION OF CONFORMITY




This declaration of conformity is issued under the sole responsibility of

Rosemount Inc.
6021 Innovation Blvd
Shakopee, MN 55379
USA

that the following products,

Rosemount™ 305ISMV Series Pressure Transmitters
Rosemount™ 300SMV Series Pressure Transmitters

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

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

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

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

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

ATEX Notified Bodies for EU Type Examination Certificates:
DEKRA Certification B.V. [Notified Body Number: 0344]
Utrechtseweg 310, Postbus 5185
6802 ED Arnhem
Netherlands

SGS Fimko Oy [Notified Body Number: 0598]
Takomotie 8
FI-00380 Helsinki
Finland

ATEX Notified Body for Quality Assurance:
SGS Fimko Oy [Notified Body Number: 0598]
Takomotie 8
FI-00380 Helsinki
Finland



EU DECLARATION OF CONFORMITY



EMC Directive (2014/30/EU)

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

RED Directive (2014/68/EU)

Rosemount 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 Rosemount 3051SMV and 300SMV Pressure Transmitters:
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 – intrinsic safety
Group II Category 1G
Ex ia IIC T4 Ga
Harmonized Standards Used:
EN IEC 60079-0:2018
EN 60079-11:2012

BAS08ATEX0065X – type “n” & increased safety
Group II Category 3G
Ex nA IIC T4 Gc
Ex cc IIC T4 Gc
Harmonized Standards Used:
EN IEC 60079-0:2018
EN 60079-15:2010
EN IEC 60079-7:2015+A1:2018

BAS01ATEX1374X – dust ignition protection by enclosure
Group II Category 1D
Ex ta IIIC T₆₀105°C Da
Harmonized Standards Used:
EN IEC 60079-0:2018
EN 60079-31:2014

KEMA00ATEX2143X – flameproof enclosures
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

11.3 China RoHS

危害物质成分表
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. GC
May 2024

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

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