Quick Start Guide
00825-0100-4803, Rev EH
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Rosemount™ 3051S and 3051SF Series Flow Meter MultiVariable™ Transmitters

ROSEMOUNT™

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Safety messages

NOTICE

This guide provides basic guidelines for Rosemount™ 3051S MultiVariable™ Transmitter (3051SMV). It also provides the basic Rosemount 3051SMV configuration guidelines for the Rosemount 3051SFA, Rosemount 3051SFC, and Rosemount 3051SFP. It does not provide instructions for diagnostics, maintenance, service, or troubleshooting. Refer to the Rosemount 3051SMV Reference Manual for more instruction.This document is also available electronically on Emerson.com/Rosemount.

⚠ WARNING

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 Rosemount 3051SMV Reference Manual for any restrictions associated with a safe installation.

- Before connecting a handheld communicator in an explosive atmosphere, make sure the instruments in the loop are installed in accordance with intrinsically safe or non-incendive field wiring practices.
- In an explosion-proof/flameproof installation, do not remove the transmitter covers when power is applied to the unit.

Process leaks could result in death or serious injury.

- Install and tighten process connectors before applying pressure.

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.

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.

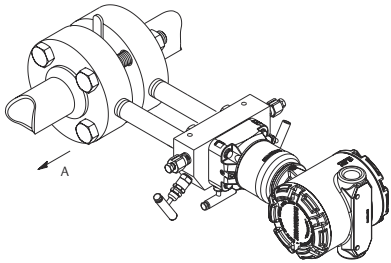
Contents

1 Mount the transmitter

1.1 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.

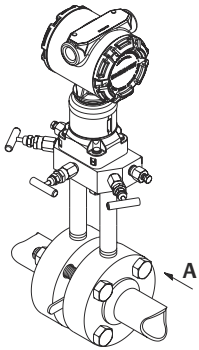


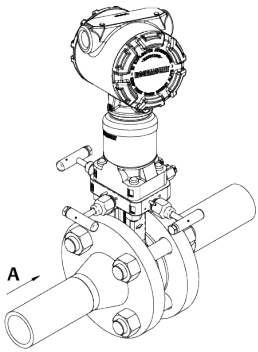
A. Direction of flow

1.2 Gas flow applications

Procedure

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



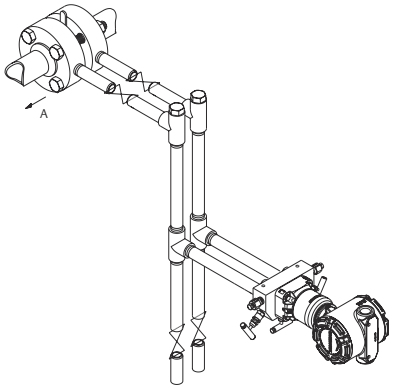


A. Direction of flow

1.3 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.

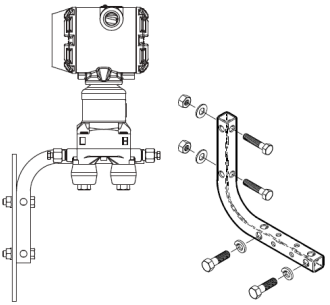


A. Direction of flow

1.4 Mounting brackets

Figure 1-1: Mounting Bracket – Coplanar Flange

Panel mount



Pipe mount

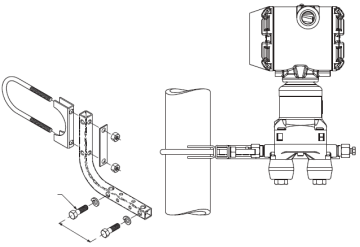
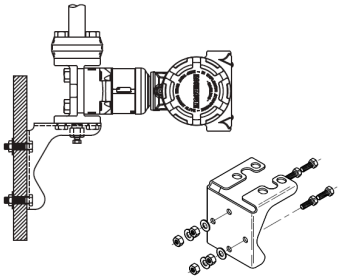


Figure 1-2: Mounting Brackets – Traditional Flange

Panel mount



Pipe mount

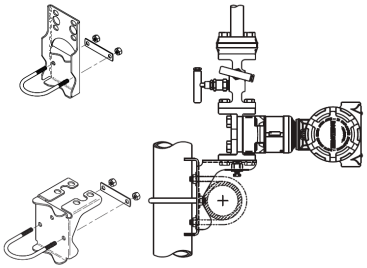
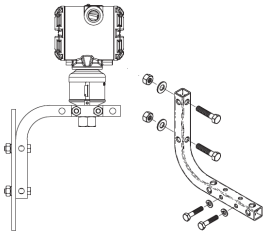
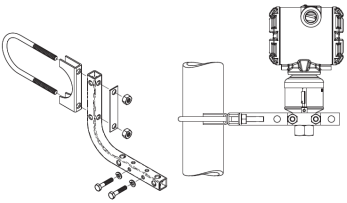


Figure 1-3: Mounting Brackets – In-line

Panel mount



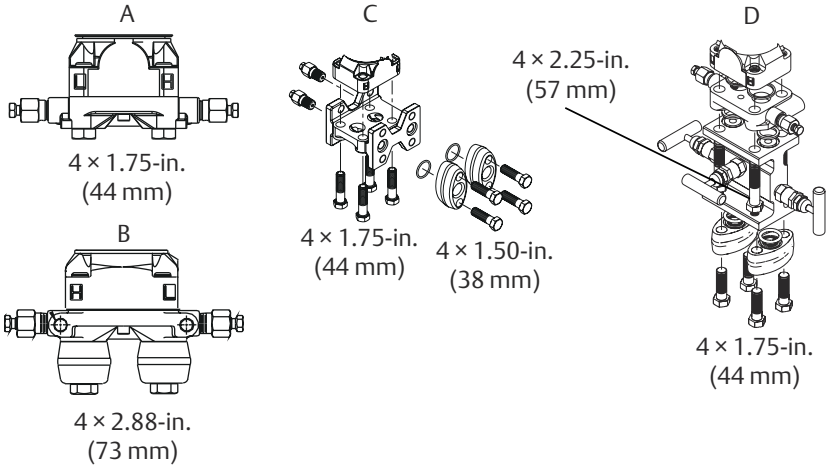
Pipe mount



1.5 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 1-4 illustrates common transmitter assemblies with the bolt length required for proper transmitter assembly.

Figure 1-4: 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 Customer Central technical support.

Bolts are typically carbon steel or stainless steel. Confirm the material by viewing the markings on the head of the bolt and referencing Table 1-1 . If bolt material is not shown in Table 1-1, 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 1-1 for initial torque value.
4. Torque the bolts to the final torque value using the same crossing pattern. See Table 1-1 for final torque value.

5. Verify the flange bolts are protruding through the sensor module before applying pressure (see Figure 1-5).

Example

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

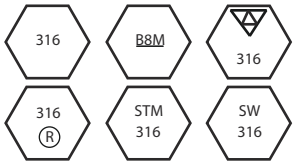
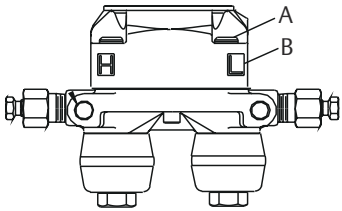
Bolt material	Head markings	Initial torque	Final torque
Carbon Steel (CS)		300 in-lb	650 in-lb
Stainless Steel (SST)		150 in-lb	300 in-lb

Figure 1-5: Proper Bolt Installation

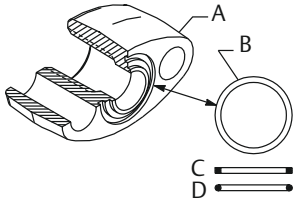


A. Bolt
B. Sensor module

1.6 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.



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.

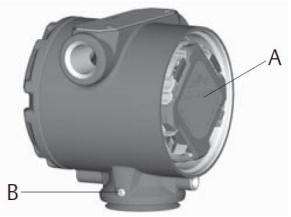
2 Consider housing rotation

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 2-1: 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 (refer to Troubleshooting for more information). Over-rotation may sever the electrical connection between the sensor module and the electronics.

3 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 3-1: Transmitter Switch Configuration

A. Security
B. AC Termination

4 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

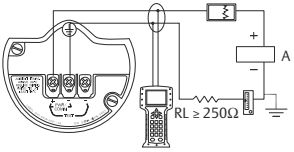
   When the enclosed pipe plug is utilized in the conduit opening, it must be installed with a minimum engagement of five threads to comply with explosion-proof requirements. Refer to the Rosemount™ 3051SMV Reference Manual for more information.

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.

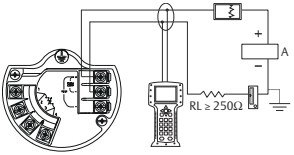
   Figure 4-1 shows the wiring connections necessary to power a Rosemount 3051SMV and enable communications with a hand-held Field Communicator.

Figure 4-1: 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.

4.1 Conduit electrical connector wiring (option GE or GM)

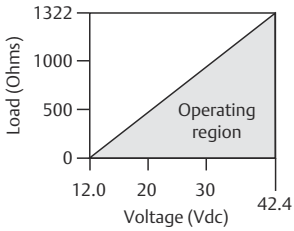
For Rosemount™ 3051SMV with conduit electrical connectors GE or GM, refer to the cordset manufacturer's installation instructions for wiring details. For FM Intrinsically Safe, Division 2 hazardous locations, install in accordance with Rosemount drawing 03151-1009 to maintain outdoor rating (NEMA® 4X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

4.2 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 4-2: Load Limitation

Maximum loop resistance = 43.5 x (power supply voltage – 12.0)



HART communication requires a minimum loop resistance of 250Ω

4.3 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.

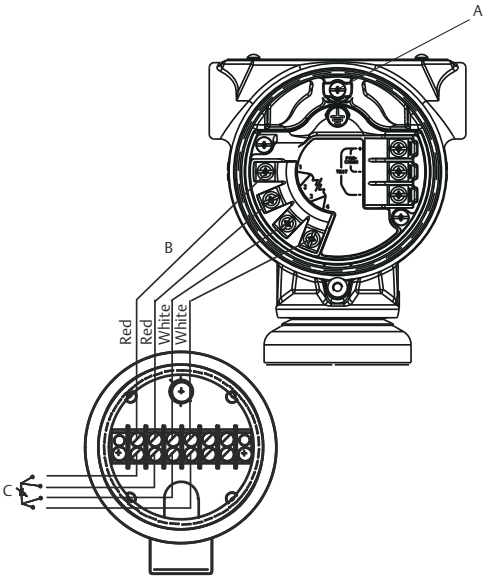
Procedure

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 4-3: Rosemount 3051SMV RTD Wiring Connection



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

5 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 Rosemount 3051SMV 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.

5.1 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

5.2 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.

5.3 Connect to a personal computer

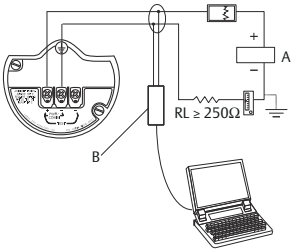
Procedure

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.

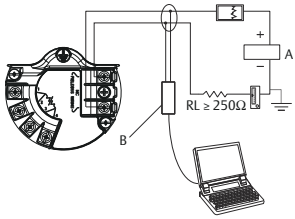
Figure 5-1 shows how to connect a computer to a Rosemount 3051SMV.

Figure 5-1: Connecting a PC to the Transmitter

Without optional process temperature connection



With optional process temperature connection



A. Power supply
B. Modem

6 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.

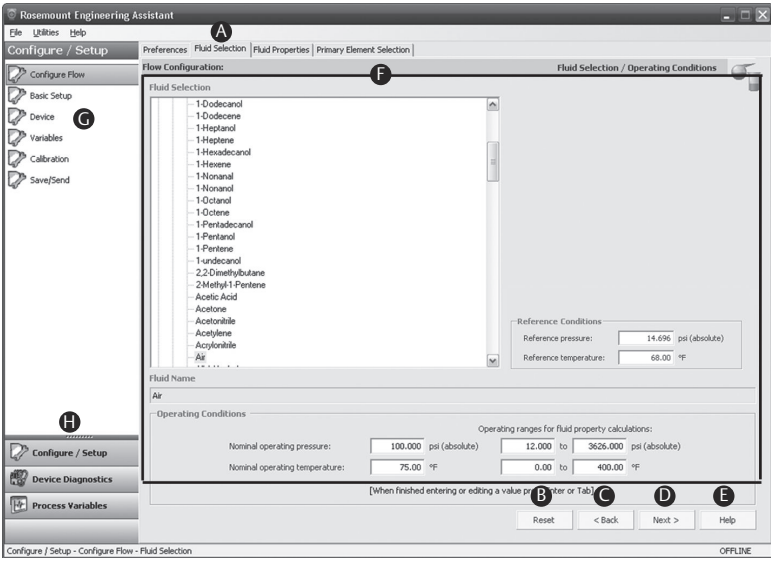
Online and offline modes

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.

6.1 Basic navigation overview

Figure 6-1: Engineering Assistant Basic Navigation Overview



Screen component	Description of use
A	The navigation tabs contain the flow configuration information. In Offline mode, each tab will not become active until the required fields on the previous tab are completed. In Online mode, these tabs will be functional at all times.
B	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. • 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.
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.

Screen component	Description of use
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.

6.2 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 6-2.
2. Select **Offline** button located in the lower right hand corner of the screen shown in Figure 6-2.

Figure 6-2: Engineering Assistant Device Connection Screen

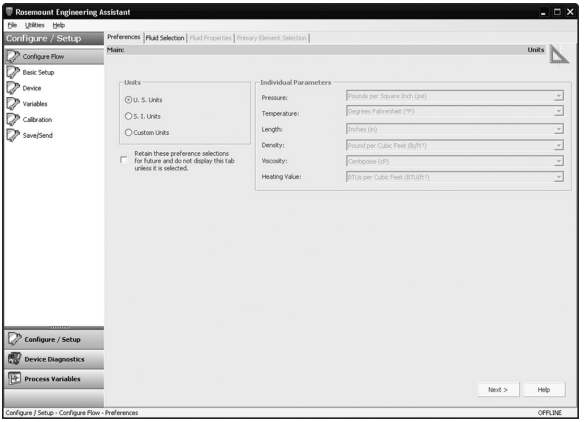
6.3 Use Preferences tab

The *Preferences* tab, shown in Figure 6-3, 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.

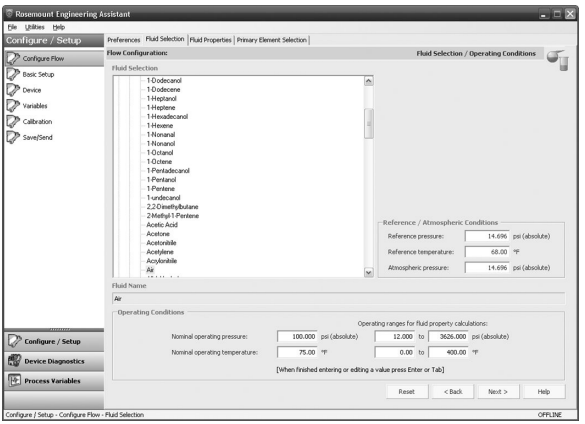
Figure 6-3: Preferences Tab



6.4 Select fluid for database liquid/gas

The *Fluid Selection* tab shown in Figure 6-4 allows the user to choose the process fluid.

Figure 6-4: 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 6-4. 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.

6.5 Fluid properties

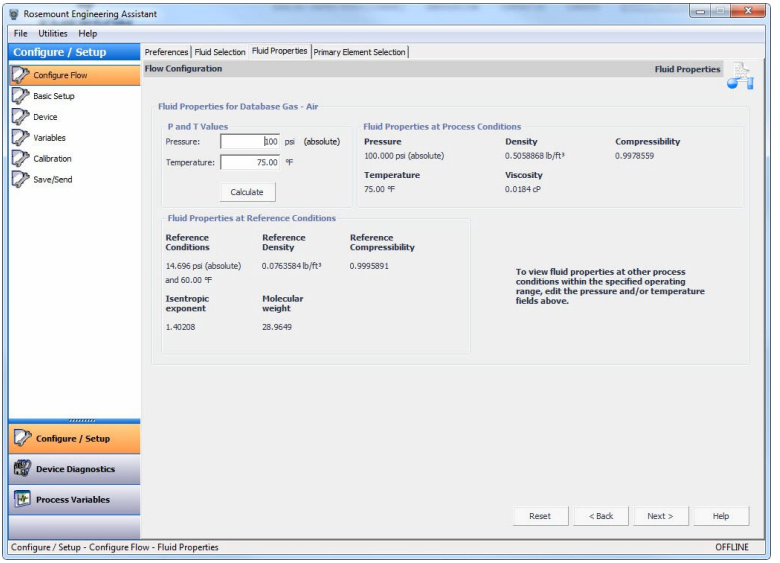
Note
The *Fluid Properties* tab is an optional step and is not required to complete a flow configuration.

The *Fluid Properties* tab for the database gas air is shown in Figure 6-5. 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.

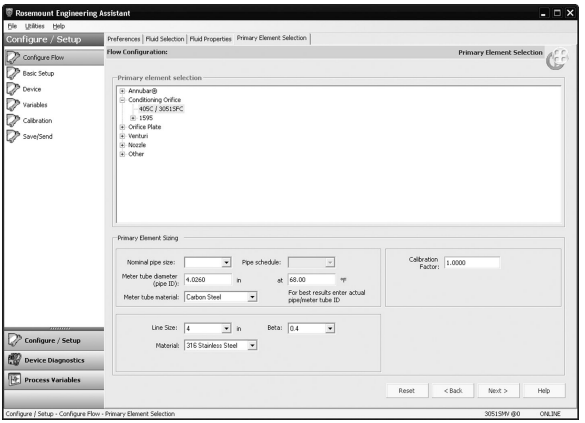
Figure 6-5: Fluid Properties Tab



6.6 Select primary element

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

Figure 6-6: 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.

6.7 Save/send configuration

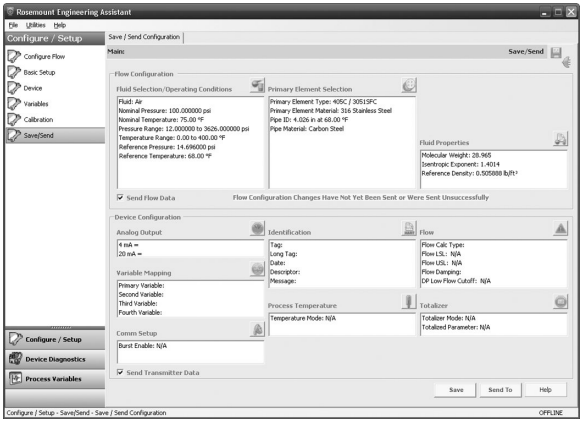
The *Save/Send Configuration* tab shown in Figure 6-7 allows you to verify, save, and send the configuration information to the transmitter with the fully compensated mass and energy flow feature board.

Procedure

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

Note
For more information, see Verifying device configuration.

Figure 6-7: Save/Send Configuration Tab



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

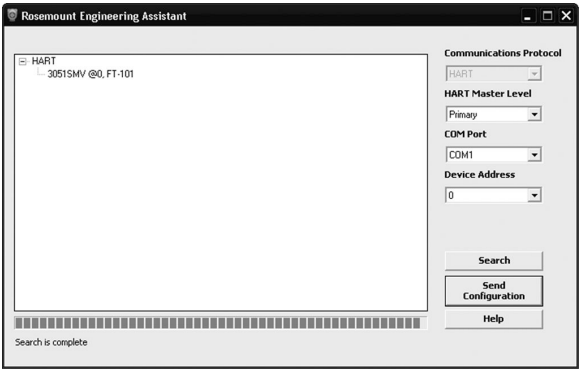
Note
The user will be notified if the configuration has been modified since it was last sent to the transmitter. A warning message will be shown to the right of the *Send Flow Data* and/or *Send Transmitter Data* check boxes.

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

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

4. The *Engineering Assistant Device Connection* screen will appear, see Figure 6-8.

Figure 6-8: 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.

7 Verifying device configuration

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

Table 7-1 shows the Field Communicator fast keys for the fully compensated mass and energy flow. Table 7-2 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 7-1: 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 7-1: 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
	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 7-1: 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 7-2: 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
	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 7-2: 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

8 Trimming the transmitter

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

8.1 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.

8.1.1 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 the Field Communicator, see Figure 4-1).
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 gage 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	Direct output Fast Keys	Description
1, 2, 5, 3, 1	1, 2, 4, 3, 1	Differential pressure sensor zero trim

9 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.

10 Product certifications

10.1 Rosemount 3051SMV/3051SFx Product Certifications

Rev 2.0

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.

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.

10.1.1 USA

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

Certificate FM16US0089X

Standards FM Class 3600 – 2011, FM Class 3615 – 2006, FM Class 3616 – 2011, 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 °C ≤ T_a ≤ +85 °C); Factory Sealed; Type 4X

I5 US Intrinsically Safe (IS) and Nonincendive (NI)

Certificate FM16US0233

Standards FM Class 3600 – 2011, FM Class 3610 – 2007, FM Class 3611 – 2004, 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 °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.

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;

Standards T4(–50 °C ≤ T_a ≤ +70 °C); when connected per Rosemount drawing 03151-1006; Type 4X

10.1.2 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; suitable for Class 1, Zone 0, IIC, T3C, Ta = 70 °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, Ta = 70 °C; when installed per Rosemount drawing 03151-1207; Type 4X

10.1.3 Europe

E1 ATEX Flameproof

Certificate KEMA 00ATEX2143X

Standards EN 60079-0:2012+A11:2013, EN 60079-1: 2014, EN 60079-26:2015

Markings ⟨Ex⟩ II 1/2 G 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
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 °C ≤T_a ≤ +70 °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 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

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

Markings ⟨Ex⟩ 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

Standards EN 60079-0:2012, EN 60079-31:2009

Markings Ⓔx II 1 D Ex ta IIIC T105 °C T_{500} 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

Certificate Baseefa08ATEX0065X

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

Markings Ⓔx II 3 G Ex nA IIC T4 Gc, (–40 °C ≤T_a ≤ 70 °C), V_{max} = 45 V

Special Condition for Safe Use (X):

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

10.1.4 International

E7 IECEx Flameproof and Dust

Certificate IECEx KEM 08.0010X (Flameproof)

Standards IEC 60079-0:2011, IEC 60079-1:2014,IEC 60079-26:2014

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
T5	–60 °C to +80 °C

Temperature class	Process temperature
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_{500} 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 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 °C≤ T_a ≤ +70 °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 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.

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 °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

N7 IECEx Type n

Certificate I ECEx BAS 08.0026X

Standards IEC 60079-0:2011, IEC 60079-15:2010

Markings Ex nA IIC T5 Gc,(–40 °C ≤T_a ≤ 70 °C)

Special Condition for Safe Use (X):

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

10.1.5 Brazil

E2 INMETRO Flameproof

Certificate UL-BR 15.0393X

Standards ABNT NBR IEC 60079-0:2008 + Corrigendum 1:2011, ABNT NBR IEC 60079-1:2009 + Corrigendum 1:2011, ABNT NBR IEC 60079-26:2008 + Corrigendum 1: 2008

Markings Ex db IIC T* Ga/Gb, T6(–60 °C≤ T_a ≤ +70 °C), T5/T4(–60 °C ≤ T_a ≤ +80 °C), IP66

Special Conditions for Safe Use (X):

1. The device contains a thin wall diaphragm less than 1mm thick that forms a boundary between zone 0 (process connection) and zone 1 (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. Installation, maintenance, and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for 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 INMETRO 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_a ≤ +70 °C)

Special Conditions for Safe Use (X):

1. If the equipment is fitted with the optional 90V transient suppressor, it is incapable of withstanding the 500V 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_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

I2/IB INMETRO Intrinsic Safety/FISCO

Certificate UL-BR 15.0392X

Standards ABNT NBR IEC 60079-0:2013, ABNT NBR IEC 60079-11:2013

Markings Ex ia IIC T4 Ga (–60 °C ≤ T_a ≤ +70 °C), IP66

Special Conditions for Safe Use (X):

1. The surface resistivity of the antenna is greater than 1 GΩ. To avoid electrostatic charge buildup, it must not be rubbed or cleaned with solvents or a dry cloth.
2. The Model 701PBKKF Power Module may be replaced in a hazardous area. The Power Module has a surface resistivity greater than 1 GΩ and must be properly installed in the wireless device enclosure. Care must be taken during transportation to and from the point of installation to prevent electrostatic charge buildup.
3. The 3051S 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 areas that requires EPL Ga.

Table 10-1: Input Parameters

	U_i	I_i	P_i	C_i	L_i
SuperModule	30 V	300 mA	1.0 W	30 nF	0
3051S…A; 3051SF…A; 3051SAL…C	30 V	300 mA	1.0 W	12 nF	0
3051S…F; 3051SF…F	30 V	300 mA	1.3 W	0	0

Table 10-1: Input Parameters *(continued)*

	U_i	I_i	P_i	C_i	L_i
3051S...F...IB; 3051SF...F...IB	17.5 V	380mA	5.32W	0	0
3051S ...A...M7, M8, or M9; 3051SF ...A...M7, M8, or M9; 3051SAL...C... M7, M8, or M9	30 V	300 mA	1.0 W	12 nF	60 µH
3051SAL or 3051SAM	30 V	300 mA	1.0 W	12 nF	33 µH
3051SAL... M7, M8, or M9 3051SAM... M7, M8, or M9	30 V	300 mA	1.0 W	12 nF	93 µH
RTD Option for 3051SF	5 V	500 mA	0.63 W	N/A	N/A

10.1.6 China

E3 China Flameproof and Dust Ignition-proof

Certificate 3051SMV: GYJ14.1039X [Mfg USA, China, Singapore]
3051SFx: GYJ11.1466X [Mfg USA, China, Singapore]

Standards 3051SMV: GB3836.1-2010, GB3836.2-2010, GB3836.20-2010
3051SFx: GB3836.1-2010, GB3836.2-2010, GB3836.20-2010, GB12476.1-2013, GB12476.5-2013

Markings 3051SMV: Ex d IIC T6/T5 Ga/Gb
3051SFx: Ex d IIC T4...T6 Ga/Gb; Ex tD A20 T_A 105 °C; IP66

Special Conditions for Safe Use (X):

1. Symbol "X" is used to denote specific conditions of use: For information on the dimensions of the flameproof joints the manufacturer shall be contacted.
2. The relationship between T code and ambient temperature range for the 3051SMV are as follows:

T code	Ambient temperature range
T6	–50 °C ~ +65 °C (–58 °F ~ +149 °F)
T5	–50 °C ~ +80 °C (–58 °F ~ +176 °F)

The relationship between T code and ambient temperature range for the 3051SFx are as follows:

T code	Ambient temperature range
T6	–60 °C ~ +70 °C (–76 °F ~ +158 °F)
T4/T5	–60 °C ~ +80 °C (–76 °F ~ +176 °F)

3. The earth connection facility in the enclosure should be connected reliably.
4. During installation, use and maintenance of the product in explosive atmosphere, observe the warning “Do not open cover when circuit is alive”. During installation, use, and maintenance in explosive dust atmosphere, observe the warning “Do not open when an explosive dust atmosphere is present”.
5. During installation there should be no mixture harmful to the housing.
6. During installation, use and maintenance in explosive dust atmosphere, product enclosure should be cleaned to avoid dust accumulation, but compressed air should not be used.
7. During installation in a hazardous location, cable glands and blanking plugs certified by state appointed inspection bodies with Ex d IIC Gb or Ex d IIC Gb DIP A20 [flow meters] IP66 type of protection should be used. Redundant cable entries should be blocked with blanking plugs.
8. End users are not permitted to change any components, but to contact the manufacturer to avoid damage to the product.
9. Maintenance should be done when no explosive gas and dust atmosphere is present.
10. During installation, use and maintenance of this product, observe following standards:

    GB3836.13-1997 “Electrical apparatus for explosive gas atmospheres Part 13: Repair and overhaul for apparatus used in explosive gas atmospheres”

    GB3836.15-2000 “Electrical apparatus for explosive gas atmospheres Part 15: Electrical installations in hazardous area (other than mines)”

    GB3836.16-2006 “Electrical apparatus for explosive gas atmospheres Part 16: Inspection and maintenance of electrical installation (other than mines)”

    GB50257-1996 “Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering”

    GB15577-2007 “Safety regulations for dust explosion prevention and protection”

    GB12476.2-2010 “Electrical apparatus for use in the presence of combustible dust”

I3 China Intrinsic Safety

Certificate 3051SMV: GYJ14.1040X [Mfg USA, China, Singapore]
3051SFx: GYJ16.14 [Mfg USA, China, Singapore]

Standards 3051SMV: GB3836.1-2010, GB3836.4-2010, GB3836.20-2010
3051SFx: GB3836.1/4-2010, GB3836.20-2010, GB12476.1-2000

Markings 3051SMV: Ex ia IIC T4 Ga
3051SFx: Ex ia IIC T4 Ga, Ex tD A20 T_A105 °C T_{500}95 °C; IP66

Special Conditions for Safe Use (X):

1. The enclosure may contain light metal, attention should be taken to avoid ignition hazard due to impact or friction.
2. The apparatus is not capable of withstanding the 500V electrical strength test defined in Clause 6.3.12 of GB3836.4-2010.
3. Ambient temperature range: –60 °C ~ +70 °C
4. Intrinsically safe electric parameters:

Maximum input voltage: U_i (V)	Maximum input current: I_i (mA)	Maximum input power: P_i (W)	Maximum internal parameters:	
			C_i (nF)	L_i (µH)
30	300	1.0	14.8	0

	Maximum output voltage: U_i (V)	Maximum output current: I_i (mA)	Maximum output power: P_i (W)	Maximum external parameters:	
				C_i (nF)	L_i (µH)
RTD	30	2.31	17.32	0	0
SuperModule	7.14	300	887	110	0

5. The cables between this product and associated apparatus should be shielded cables. The shield should be grounded reliably in non-hazardous area.
6. The product should be used with Ex certified associated apparatus to establish explosion protection system that can be used in explosive gas atmospheres. Wiring and terminals should comply with the instruction manual of the product and associated apparatus.

7. End users are not permitted to change any components, contact the manufacturer to avoid damage to the product.
8. During installation in hazardous location, cable glands, conduit, and blanking plugs certified by state-appointed inspection bodies with DIP A20 IP66 type of protection should be used. Redundant cable entries should be blocked with blanking plugs.
9. During installation, use, and maintenance in explosive dust atmosphere, observe the warning “Do not open when an explosive dust atmosphere is present”.
10. Maintenance should be done when no explosive dust atmosphere is present.
11. During installation, use and maintenance of this product, observe following standards:
    GB3836.13-2013 “Electrical apparatus for explosive gas atmospheres Part 13: Repair and overhaul for apparatus used in explosive gas atmospheres“
    GB3836.15-2000 “Electrical apparatus for explosive gas atmospheres Part 15: Electrical installations in hazardous area (other than mines)”
    GB3836.16-2006 “Electrical apparatus for explosive gas atmospheres Part 16: Inspection and maintenance of electrical installation (other than mines)”
    GB3836.18-2010 “Intrinsically Safe System”
    GB50257-1996- “Code for construction and acceptance of electric device for explosion atmospheres and fire hazard electrical equipment installation engineering”
    GB15577-2007 Safety regulations for dust explosion prevention and protection
    GB12476.2-2010 “Electrical apparatus for use in the presence of combustible dust”

10.1.7 EAC - Belarus, Kazakhstan, Russia

EM Technical Regulation Customs Union (EAC) Flameproof and Dust Ignition-proof

Certificate	RU C-US.AA87.B.00378
Markings	Ga/Gb Ex d IIC T6...T4 X Ex tb IIIC T105 °C T_{500}95 °C Db X Ex ta IIIC T105 °C T_{500}95 °C Da X

IM Technical Regulation Customs Union (EAC) Intrinsic Safety

Certificate	RU C-US.AA87.B.00378

Markings 0Ex ia IIC T4 Ga X

10.1.8 Japan

E4 Japan Flameproof

Certificate CML 17JPN1147X

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

Table 10-2:

Temperature class	Ambient temperature	Process temperature
T6	–40 °C to +70 °C (–40 °F to +158 °F)	–60 °C to +70 °C (–76 °F to +158 °F)
T5	–40 °C to +75 °C (–40 °F to +167 °F)	–60 °C to +80 °C (–76 °F to +176 °F)
T4	–40 °C to +75 °C (–40 °F to +167 °F)	–60 °C to +120 °C (–76 °F to +248 °F)

Special Conditions for Safe Use (X):

1. This device contains a thin wall diaphragm less than 1mm 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 fr 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 insallations 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.

10.1.9 Republic of Korea

EP Republic of Korea Flameproof

Certificate 12-KB4BO-0180X [Mfg USA], 11-KB4BO-0068X [Mfg Singapore]

Markings Ex d IIC T6...T4

IP Republic of Korea Intrinsic Safety [HART Only]

Certificate 10-KB4BO-0021X [Mfg USA, SMMC]

Markings Ex ia IIC T4

10.1.1 Combinations 0

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

10.1.1 Additional Certifications 1

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 11/60002

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

10.2 Declaration of Conformity

EMERSON.

EU Declaration of Conformity

No: RMD 1072 Rev. L

We,

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

declare under our sole responsibility that the product,

Rosemount™ Models 3051SMV & 300SMV Pressure Transmitters

manufactured by,

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

to which this declaration relates, is in conformity with the provisions of the European Union Directives, including the latest amendments, as shown in the attached schedule.

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

(signature)	Vice President of Global Quality (function name - printed)
Chris LaPoint (name - printed)	1-Feb-19.; Shakopee, MN USA (date of issue & place)

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EMERSON.

EU Declaration of Conformity

No: RMD 1072 Rev. L

CE

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
Other Standards Used:
ANSI/ISA 61010-1:2004
Note – previous PED Certificate No. 59552-2009-CE-HOU-DNV

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

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ATEX Directive (2014/34/EU)

BAS08ATEX0064X – Intrinsically Safe
Group II Category 1 G
Ex ia IIC T4 Ga
Harmonized Standards Used:
EN 60079-0:2012+A11:2013, EN60079-11:2012

BAS08ATEX0065X – Type n
Group II Category 3 G
Ex nA IIC T4 Gc
Harmonized Standards Used:
EN 60079-0:2012+A11:2013, EN60079-15:2010

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EU Declaration of Conformity

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BAS01ATEX1374X – Dust

Group II Category 1 D
Ex ta IIIC T105°C T_{500}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: 2012+A11:2013, 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

Note – equipment manufactured prior to 20 October 2018 may be marked with the previous PED Notified Body number; previous PED Notified Body information was as follows:
Det Norske Veritas (DNV) [Notified Body Number: 0575]
Veritasveien 1, N-1322
Hovik, Norway

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

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EU Declaration of Conformity

No: RMD 1072 Rev. L

ATEX Notified Body for Quality Assurance

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

10.3 ChinaRoHS

含有China RoHS管控物质超过最大浓度限值的部件型号列表 Rosemount 3051SMV
List of Rosemount 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	O	O	O	O	O
壳体组件 Housing Assembly	X	O	O	X	O	O
传感器组件 Sensor Assembly	X	O	O	X	O	O

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

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

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

Quick Start Guide
00825-0100-4803, Rev. EH
February 2019

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