

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

with FOUNDATION™ Fieldbus Protocol



Safety messages

⚠ 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 FOUNDATION Fieldbus [Reference Manual](#) for any restrictions associated with a safe installation.

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

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 housing use a 1/2-14 NPT thread form. Entries marked M20 are M20 x 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.

NOTICE

This guide provides basic guidelines for Rosemount™ 3051S MultiVariable™ (3051SMV) FOUNDATION™ Fieldbus Transmitters. It does not provide instructions for diagnostics, maintenance, service, or troubleshooting. Refer to the Rosemount 3051SMV FOUNDATION Fieldbus [Reference Manual](#) for more instruction. This document is also available electronically on Emerson.com/Rosemount.

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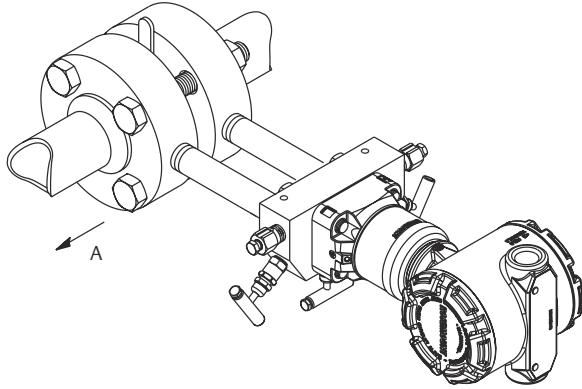
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1 Mounting the transmitter

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.

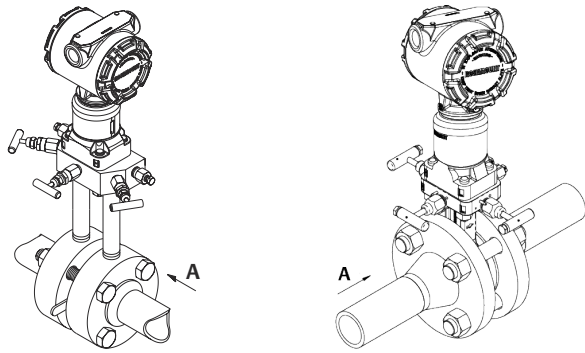


A. Direction of flow

1.2 Gas flow applications

Procedure

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

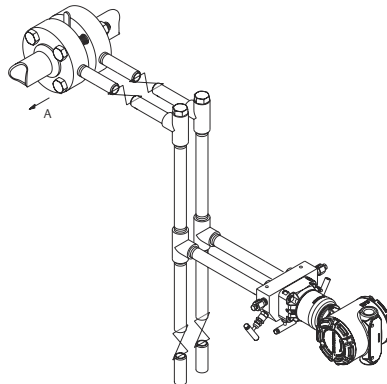


A. Direction of flow

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

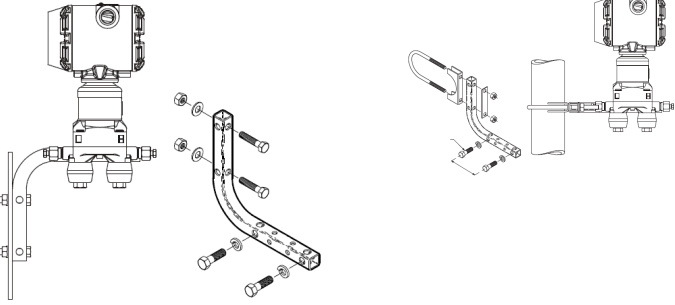


Figure 1-2: Mounting Brackets – Traditional Flange

Panel mount

Pipe mount

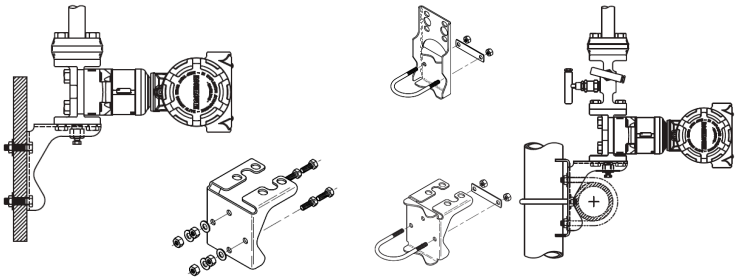
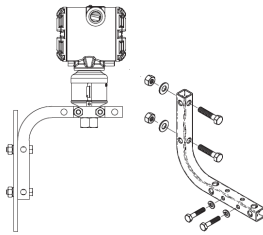
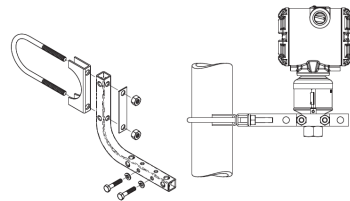


Figure 1-3: Mounting Brackets - In-line

Panel mount



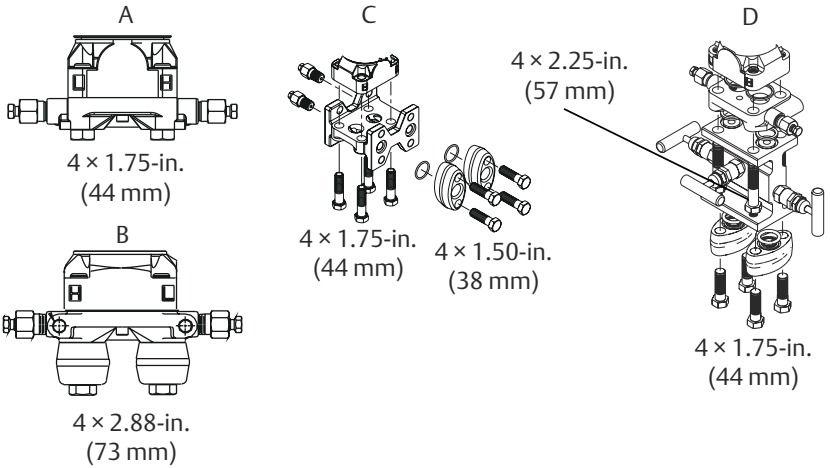
Pipe mount



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 Emerson.com/Rosemount.

Bolts are typically carbon steel or stainless steel. Confirm the material by viewing the markings on the head of the bolt and referencing [Table 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.

- 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


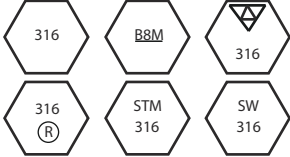
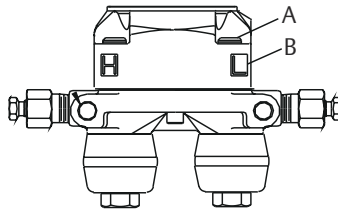
Bolt material	Head markings	Initial torque	Final torque
Carbon Steel (CS)		300 in-lb	650 in-lb
Stainless Steel (SST)		150 in-lb	300 in-lb

Figure 1-5: Proper Bolt Installation



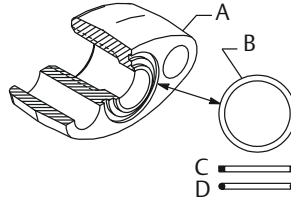
- A. Bolt
- B. Sensor module

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.

Figure 1-6: 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.

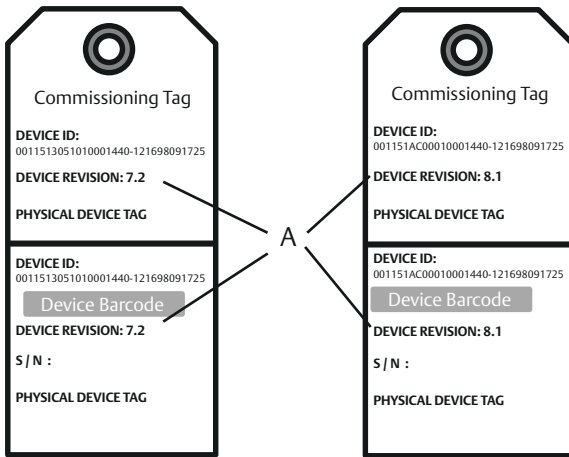
2 Tagging

2.1 Commissioning tag

The transmitter is supplied with a removable commissioning tag that contains both the Device ID (the unique code that identifies a particular device in the absence of a device tag) and a space to record the device tag (PD_TAG) (the operational identification for the device as defined by the *Piping and Instrumentation Diagram* [P&ID]).

When commissioning more than one device on a Fieldbus segment, it can be difficult to identify which device is at a particular location. The removable tag, provided with the transmitter, can aid in this process by linking the Device ID to its physical location. The installer should note the physical location of the transmitter on both the upper and lower location of the commissioning tag. Tear off the bottom portion for each device on the segment and use it for commissioning the segment in the control system.

Figure 2-1: Commissioning Tag



A. Device revision

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.

3.1 Rotate the LCD display

Transmitters ordered with the LCD display will be shipped with the display installed.

In addition to housing rotation, the optional LCD display can be rotated in 90° increments by squeezing the two tabs, pulling out, rotating and snapping back into place.

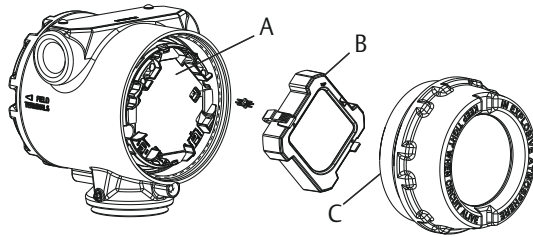
If LCD display pins are inadvertently removed from the electronics board, carefully re-insert the pins before snapping the LCD display back into place.

Use the following procedure and [Figure 3-2](#) to install the LCD display:

Procedure

1. If the transmitter is installed in a loop, then secure the loop and disconnect power.
2. Required: Remove the transmitter cover on the electronics board side (opposite the field terminals side). Do not remove instrument covers in explosive environments when circuit is live.
3. Engage the four-pin connector into the electronics board and snap LCD display into place.
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 3-2: Optional LCD Display



- A. *Electronics board*
- B. *LCD display*
- C. *Display cover*

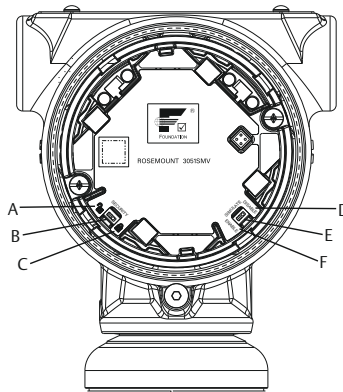
4 Set the switches

Prerequisites

Set Simulate and Security switch position before installation (location of switches shown in [Figure 4-1](#)), as desired.

- The Simulate switch enables or disables the ability to set simulated alerts or simulated measured value and status.
- The Security switch allows (🔓) or prevents (🔒) any configuration of the transmitter.

Figure 4-1: Simulate and Security Switches



- A. *Security unlocked position*
- B. *Security switch*
- C. *Security locked position*
- D. *Simulate disabled position*
- E. *Simulate switch*
- F. *Simulate enabled position*

Further security settings are available in the software, including settings which use a software lock. Additionally, these settings can be used to disable both hardware and software locks.

Use the following procedure to change the switch configuration:

Procedure

1. If the transmitter is installed, secure the segment, and remove power.

2. ⚠️ WARNING**Explosions could result in death or serious injury.**

Do not remove the housing covers in explosive atmospheres when the circuit is live.

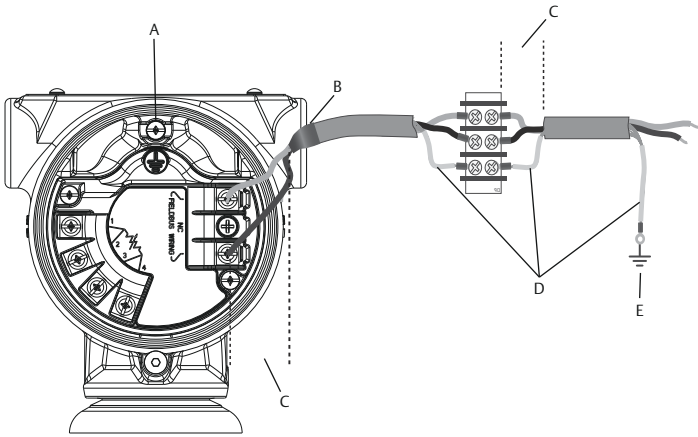
Remove the housing cover opposite the field terminal side.

3. Slide the security and simulate switches into the preferred position.
4. Reinstall the housing cover and tighten so the cover is fully seated with metal to metal contact between the housing and cover in order to meet explosion proof requirements.
5. If the transmitter was installed, reapply power.

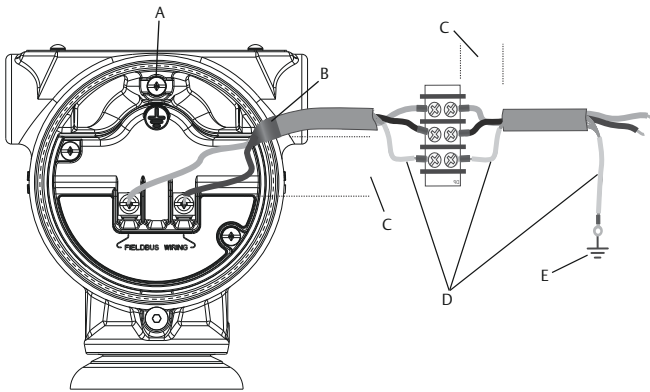
5 Wiring, grounding, and power

Use a copper wire of sufficient size to ensure the voltage across the transmitter power terminals does not drop below 9 Vdc. Power supply voltage can be variable, especially under abnormal conditions such as when operating on battery backup. A minimum of 12 Vdc under normal operating conditions is recommended. Shielded twisted pair Type A cable is recommended.

Figure 5-1: Wiring Terminals with RTD



- A. Protective grounding terminal (do not ground cable shield at the transmitter)
- B. Trim shield and insulate
- C. Minimize distance
- D. Insulate shield
- E. Connect shield back to the power supply ground

Figure 5-2: Wiring Terminals without RTD

- A. Protective grounding terminal (do not ground cable shield at the transmitter)
- B. Trim shield and insulate
- C. Minimize distance
- D. Insulate shield
- E. Connect shield back to the power supply ground

Note

The power terminals are polarity insensitive, which means the electrical polarity of the power leads does not matter when connecting to the power terminals. If polarity sensitive devices are connected to the segment, terminal polarity should be followed.

5.1 Signal wiring and shield grounding

Do not run signal wiring in conduit or open trays with power wiring, or near heavy electrical equipment. Grounding terminations are provided on the outside of the electronics housing and inside the terminal compartment. These grounds are used when transient protection terminal blocks are installed or to fulfill local regulations.

Procedure

1. Remove the field terminals housing cover.
2. To power the transmitter, connect the power leads to the terminals indicated on the terminal block label.
3. Tighten the terminal screws to ensure adequate contact.
4. Trim the cable shield as short as practical and insulate from touching the transmitter housing as indicated in [Figure 5-1](#) and [Figure 5-2](#).

Note

Do NOT ground the cable shield at the transmitter; if the cable shield touches the transmitter housing, it can create ground loops and interfere with communications. To protect the fieldbus segment from noise, grounding techniques for shield wire require a single grounding point for shield wire to avoid creating a ground loop.

- a) Ensure the cable shield maintains a continuous connection to the power supply ground.
 - b) Connect the cable shields for the entire segment to a single good earth ground at the power supply.
-

Note

Improper grounding is the most frequent cause of poor segment communications.

5. Reinstall the housing cover and tighten so the cover is fully seated with metal to metal contact between the housing and cover in order to meet explosion proof requirements.
6. Plug and seal unused conduit connections.

NOTICE

When the enclosed threaded plug is utilized in the conduit opening, it must be installed with a minimum thread engagement in order to comply with explosion-proof requirements.

- For straight threads, a minimum of seven threads must be engaged.
 - For tapered threads, a minimum of five threads must be engaged.
-

5.2 Power supply

The transmitter requires between 9 and 32 Vdc (9 and 30 Vdc for intrinsic safety, and 9 and 17.5 Vdc for FISCO intrinsic safety) to operate and provide complete functionality.

5.3 Power conditioner

A fieldbus segment requires a power conditioner to isolate the power supply, filter, and decouple the segment from other segments attached to the same power supply.

5.4 Grounding

Signal wiring of the fieldbus segment can not be grounded. Grounding one of the signal wires will shut down the entire fieldbus segment.

5.5 Signal termination

A terminator should be installed at the beginning and end of every fieldbus segment.

5.6 Install optional process temperature input (Pt 100 RTD Sensor)

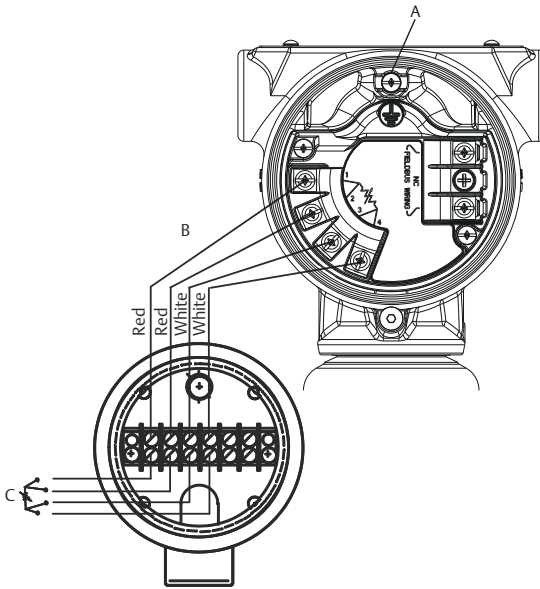
Note

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. Use shielded four-wire cable for the process temperature connection.
2. Connect the RTD cable to the Rosemount 3051S MultiVariable Transmitter by inserting the cable wires through the unused housing conduit and connect to the four screws on the transmitter terminal block. An appropriate cable gland should be used to seal the conduit opening around the cable.
3. Connect the RTD cable shield wire to the ground lug in the housing.

Figure 5-3: Transmitter RTD Wiring Connection



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

6 System readiness

6.1 System readiness

Confirm correct device driver

- Verify the correct Device Driver (DD) is loaded on your systems to ensure proper communications.
- Download the correct device driver at your host vendor download site, [Emerson.com/Rosemount](https://emerson.com/Rosemount) by selecting **Support** → **Software Downloads & Drivers** or FieldCommGroup.org.

7 Zero trim the transmitter

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

A zero trim is a single-point adjustment used for compensating mounting position and line pressure effects. Use the steps below if zero offset is less than five percent of URL.

Procedure

1. When performing a zero trim, ensure the equalizing valve is open and all wet legs are filled to the correct level. Ensure the transmitter is connected to the host system.
2. Zero the differential pressure sensor by using the “Zero Differential Pressure” method in the host system.
3. Follow the zero DP trim procedure.
4. Zero the static pressure sensor by using the “Zero Static Pressure” or the “Lower Static Pressure Trim” method in the host system.
 - a) Use the “Zero Static Pressure” for a transmitter equipped with a gage static pressure sensor and the “Lower Static Pressure Trim” for a transmitter equipped with an absolute static pressure sensor.

Note

When performing a lower sensor trim on a pressure sensor, it is possible to degrade the performance of the sensor if inaccurate calibration equipment is used. Use calibration equipment that is at least three times as accurate as the pressure sensor of the Rosemount 3051SMV FOUNDATION Fieldbus Transmitter.

5. Follow the static pressure trim procedure.

8 Product certifications

8.1 Rosemount 3051SMV/3051SFx

Rev 2.14

European directive information

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

Ordinary location certification

As standard, the transmitter has been examined and tested to determine that the design meets the basic electrical, mechanical, and fire protection requirements by a Nationally Recognized Test Laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Installing Equipment in North America

The US National Electrical Code (NEC) and the Canadian Electrical Code (CEC) permit the use of Division marked equipment in Zones and Zone marked equipment in Divisions. The markings must be suitable for the area classification, gas, and temperature class. This information is clearly defined in the respective codes.

8.1.1 USA

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

Certificate FM16US0089X

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

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

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 3616 – 2006, FM Class 3810 – 2005, NEMA 250 – 1991

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

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

Note

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

US Intrinsic Safety (IS) and Nonincendive (NI)

Certificate: 1143113

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

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

IE US FISCO Intrinsically Safe

Certificate FM16US0233

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

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

US FISCO Intrinsically Safe

Certificate: 1143113

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

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

8.1.2 Canada

E6 Canada Explosionproof, Dust Ignition-proof, Division 2

Certificate 1143113

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

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

I6 Canada Intrinsically Safe

Certificate 1143113

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

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

IF Canada FISCO Intrinsically Safe

Certificate 1143113

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

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

8.1.3 Europe

E1 ATEX/UKEX Flameproof

ATEX Certificate KEMA 00ATEX2143X

UKEX Certificate DEKRA 21UKEX0293X

- Standards** EN IEC 60079-0:2018, EN 60079-1: 2014, EN 60079-26:2015
- Markings** Ex II 1/2 G Ex db IIC T6...T4 Ga/Gb, T6 (-60 °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

Parameter	HART®	FOUNDATION™ Fieldbus	SuperModule™ only	RTD (for 3051SFx)	
				HART	Fieldbus
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 μ F	0	0.8 nF
Inductance L_i	0	0	0	0	1.33 mH

Special Conditions for Safe Use (X):

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

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 ($-60\text{ °C} \leq T_a \leq +70\text{ °C}$)

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

ND ATEX Dust

Certificate BAS01ATEX1374X

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

Markings Ex II 1 D Ex ta IIIC T105 °C 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

Certificate Baseefa08ATEX0065X

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

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

Special Condition for Safe Use (X):

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

**8.1.4 International
E7 IECEx Flameproof and Dust**

Certificate IECEx KEM 08.0010X (Flameproof)

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

Markings Ex db IIC T6...T4 Ga/Gb, T6 (-60 °C ≤ T_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 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 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 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	IECEx BAS 08.0026X
Standards	IEC 60079-0:2011, IEC 60079-15:2010
Markings	Ex nA IIC T5 Gc, ($-40\text{ °C} \leq T_a \leq +70\text{ °C}$)

Special Condition for Safe Use (X):

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

8.1.5 Brazil E2 Brazil Flameproof

Certificate	UL-BR 15.0393X
Standards	ABNT NBR IEC 60079-0:2013, ABNT NBR IEC 60079-1:2016, ABNT NBR IEC 60079-26:2016
Markings	Ex db IIC T6...T4 Ga/Gb, T6 ($-60\text{ °C} \leq T_a \leq +70\text{ °C}$), T5/T4 ($-60\text{ °C} \leq T_a \leq +80\text{ °C}$), IP66

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

Special Conditions for Safe Use (X):

1. The device contains a thin wall diaphragm less than 1 mm thick that forms a boundary between EPL Ga (process connection) and EPL Gb (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. Installation, maintenance, and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through

a special option code, contact the manufacturer for more information.

I2 Brazil Intrinsic Safety

Certificate UL-BR 15.0357X

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

Markings Ex ia IIC T4 Ga (-60 °C ≤ T_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 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

8.1.6 China

E3 China Flameproof and Dust Ignition-proof

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

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

Markings 3051SMV: Ex d IIC T6... T4 Ga/Gb
 3051SFx: Ex d IIC T4..T6 Ga/Gb; Ex tD IP66 A20 T105°C T₅₀₀95°C

Special Conditions for Safe Use (X):

一、产品安全使用特殊条件

证书编号后缀“X”表明产品具有安全使用特殊条件：

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

二、产品使用注意事项

1. 产品温度组别和使用环境温度之间的关系为：

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

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

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

I3 China Intrinsic Safety

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

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

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

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

Markings 3051SMV: Ex ia IIC T4 Ga

3051SFx: Ex ia IIC T4 Ga;

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

一、产品安全使用特殊条件

产品防爆合格证号后缀“X”代表产品安全使用有特殊条件:

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

二、产品使用注意事项

1. 用于爆炸性气体环境中，产品使用环境温度为： $-60\text{ °C} \leq T_a \leq +70\text{ °C}$ 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 (μH)
SuperModule	+, -, CAN	30	300	1	30	0

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

d 代码为 A 时

	最高输出电压 U_o (V)	最大输出电流 I_o (mA)	最大输出功率 P_o (mW)	最大内部等效参数	
				C_i (nF)	L_i (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 24 nF, 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使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。
- 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。

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

Certificate EAЭC KZ 7500525.01.01.00672
Markings 0/1 Ex db IIC T6...T4 Ga/Gb X
 Ex ta IIIC T105°C T₅₀₀95°C Da X

IM Technical Regulation Customs Union (EAC) Intrinsic Safety

Certificate EAЭC KZ 7500525.01.01.00672
Markings 0Ex ia IIC T4 Ga X

**8.1.8 Japan
E4 Japan Flameproof**

Certificate CML 17JPN1147X
Markings Ex db IIC T6...T4 Ga/Gb

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

Special Conditions for Safe Use (X):

1. This device contains a thin wall diaphragm less than 1 mm thickness that forms a boundary between EPL Ga (process connection) and EPL Gb (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. Installation, maintenance, and use shall consider the environmental conditions to which the diaphragm will be subjected. The manufacturer’s instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact the manufacturer for more information.

8.1.9 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

8.1.10 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

8.1.11 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]

8.2 Declaration of conformity

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



EU Declaration of Conformity



No: RMD 1072 Rev. 0

EMC Directive (2014/30/EU)

All Models 3051SMV and 300SMV Pressure Transmitters
Harmonized Standards Used:
EN 61326-1:2013, EN61326-2-3: 2013

PED Directive (2014/68/EU)

Models 3051SMV and 300SMV Pressure Transmitters

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

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

All other models

Sound Engineering Practice

Transmitter Attachments: Diaphragm Seal – Process Flange - Manifold

Sound Engineering Practice

Model 3051SFx Flowmeter Transmitters

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

ATEX Directive (2014/34/EU)

BAS08ATEX0064X – Intrinsically Safe

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

BAS08ATEX0065X – Type n

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

BAS01ATEX1374X – Dust

Group II Category 1 D



EU Declaration of Conformity

No: RMD 1072 Rev. 0



Ex ta III CT 105°C T50095°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 – Flam eproof Certificate

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

PED Notified Body

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

ATEX Notified Body for EU Type Examination Certificate

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

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

ATEX Notified Body for Quality Assurance

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

8.3 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。

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



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