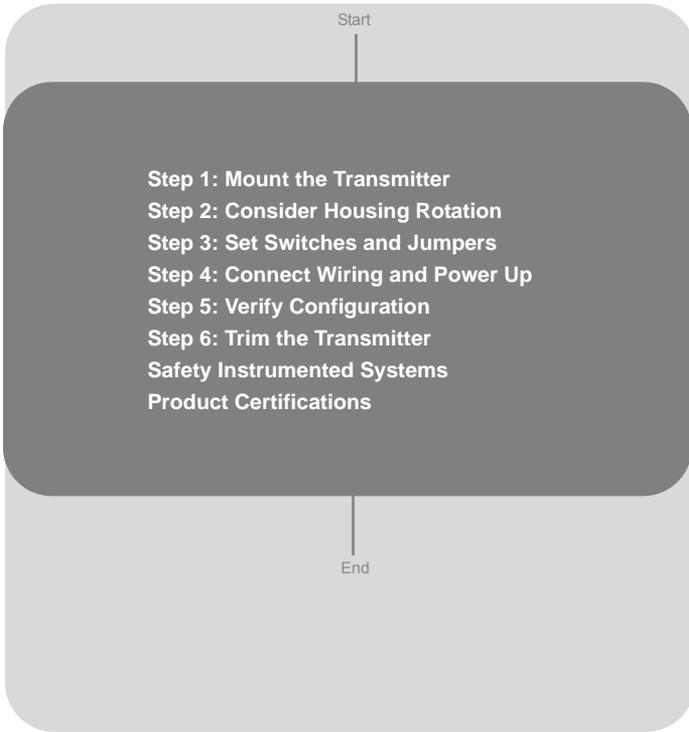


Rosemount 3051S Series Pressure Transmitter with HART[®] Protocol

Rosemount 3051SF Series Flowmeter Transmitter with HART[®] Protocol



ROSEMOUNT

www.rosemount.com



Rosemount 3051S

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**IMPORTANT NOTICE**

This installation guide provides basic guidelines for Rosemount 3051S transmitters (reference manual document number 00809-0100-4801). It also provides the basic electronics guidelines for the 3051SFA (reference manual document number 00809-0100-4809), 3051SFC (reference manual document number 00809-0100-4810), and 3051SFP (reference manual document number 00809-0100-4686). It does not provide instructions for diagnostics, maintenance, service, or troubleshooting. This document is also available electronically on www.rosemount.com.

**WARNING****Explosions could result in death or serious injury:**

Installation of this transmitter in an explosive environment must be in accordance with the appropriate local, national, and international standards, codes, and practices. Please review the approvals section of the 3051S reference manual for any restrictions associated with a safe installation.

- Before connecting a Field Communicator in an explosive atmosphere, ensure 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 may cause harm or result in death.

- Install and tighten process connectors before applying pressure.

Electrical shock can result in death or serious injury.

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

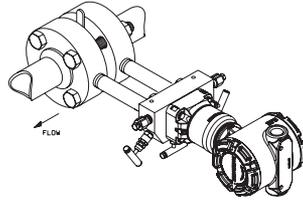
Conduit/Cable Entries

- Unless marked, the conduit/cable entries in the transmitter housing use a 1/2-14 NPT thread form. Only use plugs, adapters, glands, or conduit with a compatible thread form when closing these entries.

STEP 1: MOUNT THE TRANSMITTER

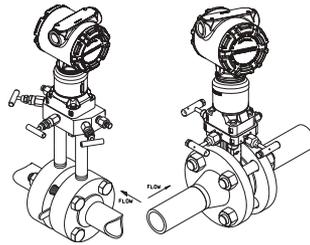
Liquid Flow Applications

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.



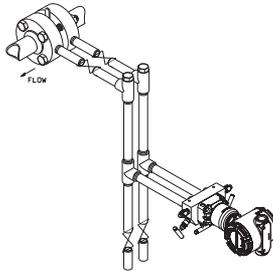
Gas Flow Applications

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



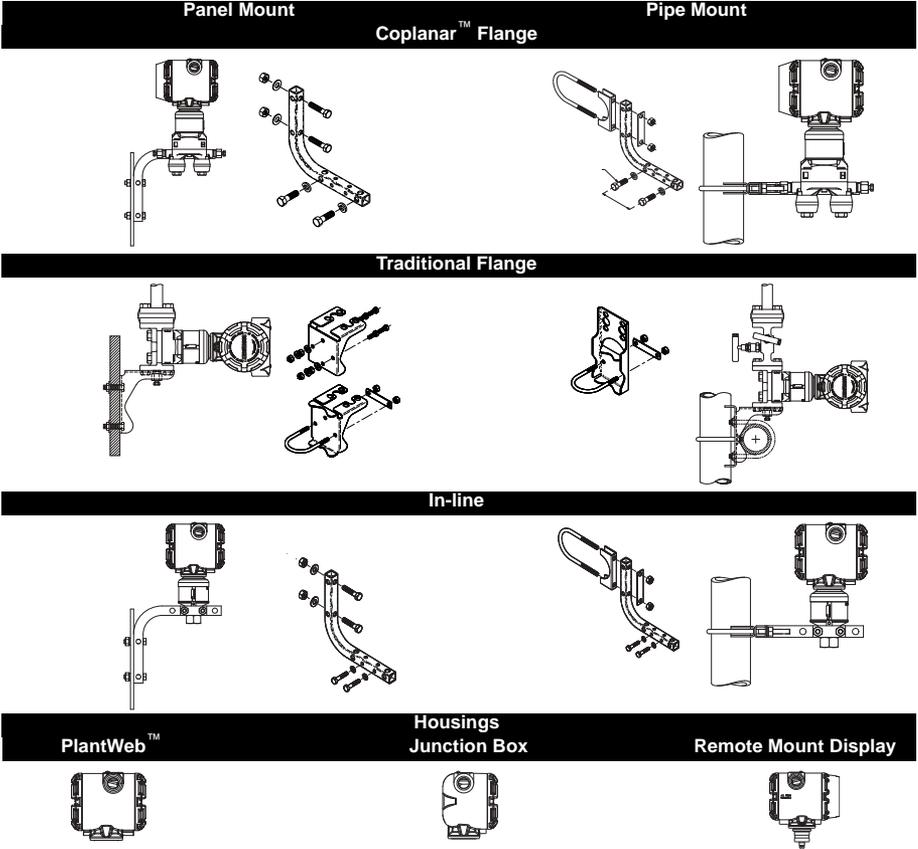
Steam Flow Applications

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



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STEP 1 CONTINUED...

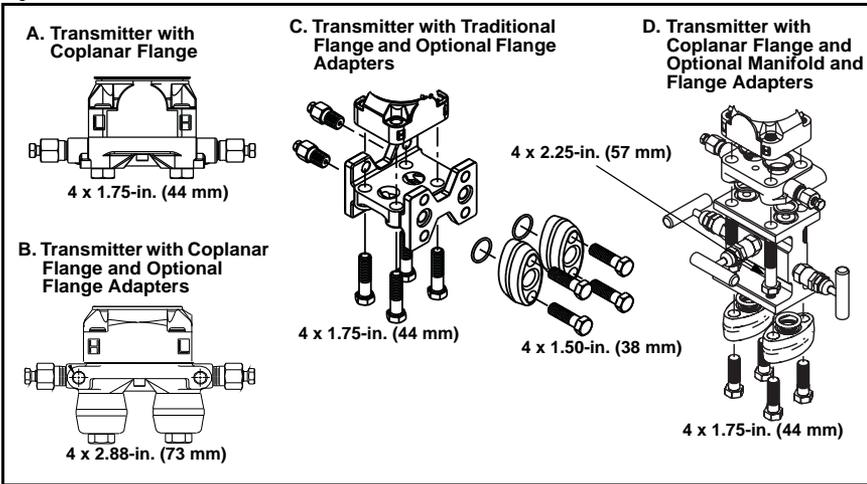


STEP 1 CONTINUED...

Bolting Considerations

If the transmitter installation requires assembly of the process flanges, manifolds, or flange adapters, follow these assembly guidelines to ensure a tight seal for optimal performance characteristics of the transmitters. Use only bolts supplied with the transmitter or sold by Emerson as spare parts. Figure 1 illustrates common transmitter assemblies with the bolt length required for proper transmitter assembly.

Figure 1. Common Transmitter Assemblies



Bolts are typically carbon steel or stainless steel. Confirm the material by viewing the markings on the head of the bolt and referencing Figure 2. If bolt material is not shown in Figure 2, contact the local Emerson Process Management representative for more information.

Use the following bolt installation 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 Figure 2 for initial torque value.
4. Torque the bolts to the final torque value using the same crossing pattern. See Figure 2 for final torque value.
5. Verify that the flange bolts are protruding through the isolator plate before applying pressure.

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STEP 1 CONTINUED...

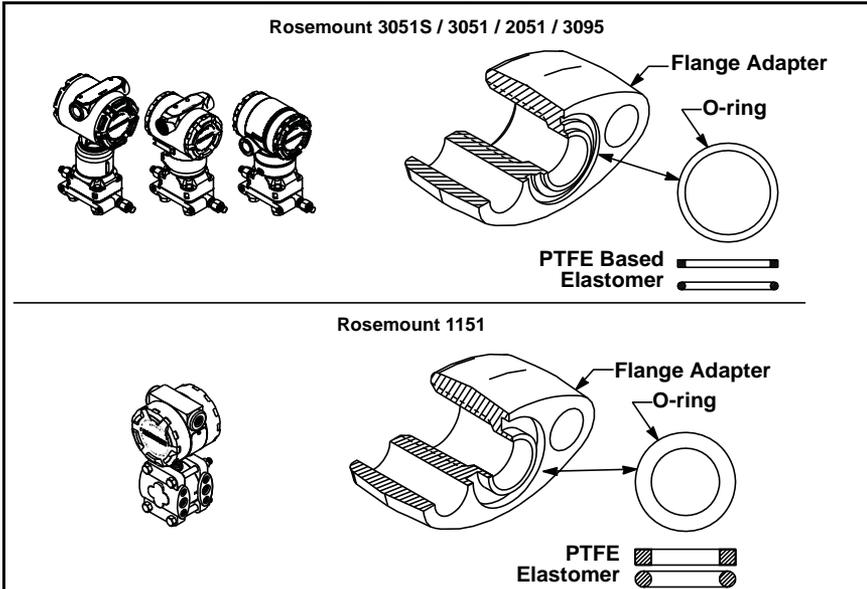
Figure 2. Torque values for the flange and flange adapter bolts

Bolt Material	Head Markings	Initial Torque	Final Torque
Carbon Steel (CS)	 	300 in.-lbs.	650 in.-lbs.
Stainless Steel (SST)	  	150 in.-lbs.	300 in.-lbs.
	  		

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. The two flange adapters are distinguished by unique O-ring grooves. Only use the O-ring that is designed for its specific flange adapter, as shown below.



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

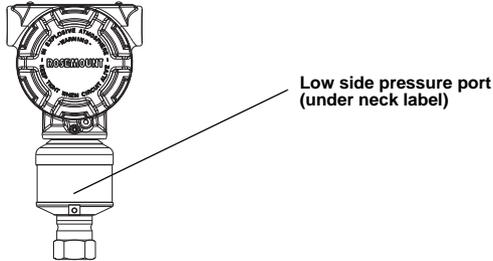
STEP 1 CONTINUED...

Inline Gage Transmitter Orientation

The low side pressure port (atmospheric reference) on the inline gage transmitter is located under the sensor module neck label. (See Figure 3.)

Keep the vent path free of any obstruction, including but not limited to paint, dust, and lubrication by mounting the transmitter so that any contaminants can drain away.

Figure 3. Inline Gage Transmitter

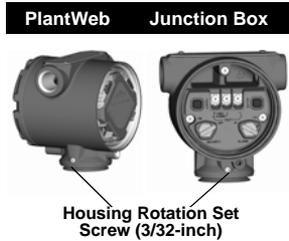


STEP 2: CONSIDER HOUSING ROTATION

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

1. Loosen the housing rotation set screw.
2. First rotate the housing clockwise to the desired location. If the desired location cannot be achieved due to thread limit, rotate the housing counter clockwise to the desired location (up to 360° from thread limit).
3. Retighten the housing rotation set screw.

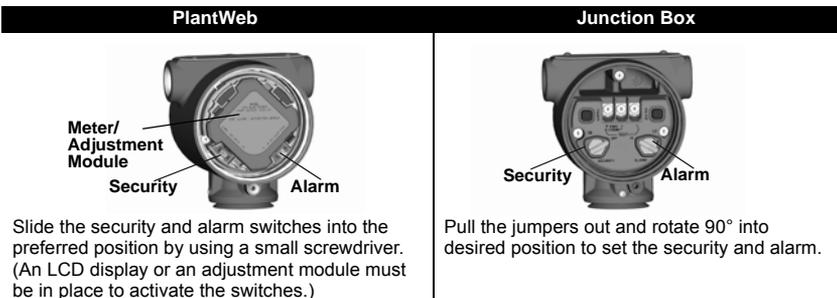
Figure 4. Transmitter Housing Set Screw



STEP 3: SET SWITCHES AND JUMPERS

If alarm and security adjustment option is not installed, the transmitter will operate normally with the default alarm condition alarm *high* and the security *off*.

Figure 5. Transmitter Switch and Jumper Configuration



Slide the security and alarm switches into the preferred position by using a small screwdriver. (An LCD display or an adjustment module must be in place to activate the switches.)

Pull the jumpers out and rotate 90° into desired position to set the security and alarm.

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STEP 4: CONNECT WIRING AND POWER UP

Use the following steps to wire the transmitter:

1. Remove the housing cover labeled "Field Terminals."
2. Connect the positive lead to the "+" terminal, and the negative lead to the "-" terminal.

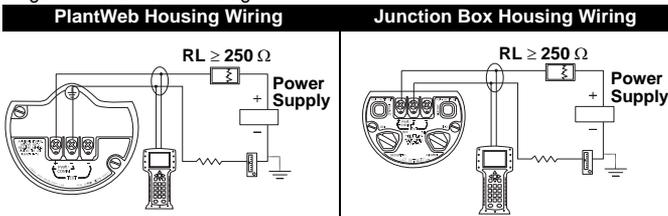
NOTE

Do not connect the power across the test terminals. Power could damage the test diode in the test connection. Twisted pairs yield best results. For single compartment housing (Junction Box housing), shielded signal wiring should be used in high EMI/RFI environments. Use 24 AWG to 14 AWG wire and do not exceed 5,000 feet (1500 meters).

3. Plug and seal the unused conduit connection.
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. Replace the housing cover.

The figures below show the wiring connections necessary to power a 3051S and enable communications with a hand-held Field Communicator.

Figure 6. Transmitter Wiring

**NOTE**

Installation of the transient protection terminal block does not provide transient protection unless the 3051S case is properly grounded.

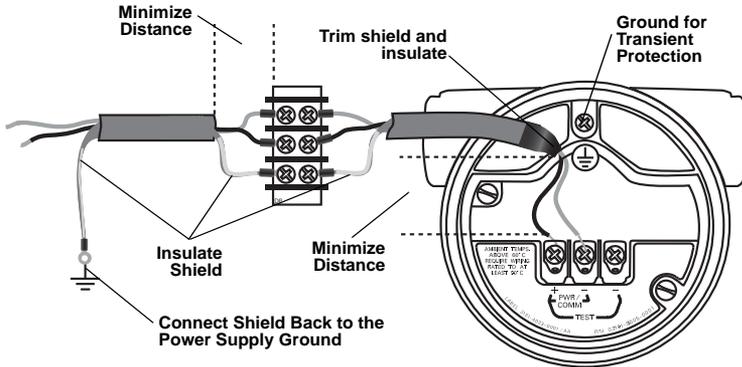
STEP 4 CONTINUED...

Signal Wiring Grounding

Do not run signal wiring in conduit or open trays with power wiring, or near heavy electrical equipment. Grounding terminations are provided on the sensor module and inside the Terminal Compartment. These grounds are used when transient protect terminal blocks are installed or to fulfill local regulations. See Step 2 below for more information on how the cable shield should be grounded.

1. Remove the Field Terminals housing cover.
2. Connect the wiring pair and ground as indicated in Figure 7.
 - a. The cable shield should:
 - Be trimmed close and insulated from touching the transmitter housing.
 - Continuously connect to the termination point.
 - Be connected to a good earth ground at the power supply end.

Figure 7. Wiring



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

STEP 4 CONTINUED...**Remote Display Wiring and Power Up**

The Remote Mount Display and Interface system consists of a local transmitter and a remote mount LCD display assembly. The local 3051S transmitter assembly includes a Junction Box housing with a three position terminal block integrally mounted to a sensor module. The remote mount LCD display assembly consists of a dual compartment PlantWeb housing with a seven position terminal block. See Figure 8 on page 11 for complete wiring instructions. The following is a list of necessary information specific to the Remote Mount Display system:

- Each terminal block is unique for the remote display system.
- A 316 SST housing adapter is permanently secured to the remote mount LCD display PlantWeb housing, providing an external ground and a means for field mounting with the provided mounting bracket.
- A cable is required for wiring between the transmitter and remote mount LCD display. The cable length is limited to 100 ft.
- 50 ft. (option M8) or 100 ft. (option M9) cable is provided for wiring between the transmitter and remote mount LCD display. Option M7 does not include cable; see recommended specifications below:

Cable type: Recommend Belden 3084A DeviceNet cable or Belden 123084A Armored DeviceNet cable. Other comparable cable may be used as long as it has independent dual twisted shielded pair wires with an outer shield. The Power wires must be 22 AWG minimum and the CAN communication wires must be 24 AWG minimum.

Cable length: Up to 100 feet depending upon cable capacitance.

Cable capacitance: The capacitance from the CAN communications line to the CAN return line as wired must be less than 5000 picofarads total. This allows up to 50 picofarads per foot for a 100 foot cable.

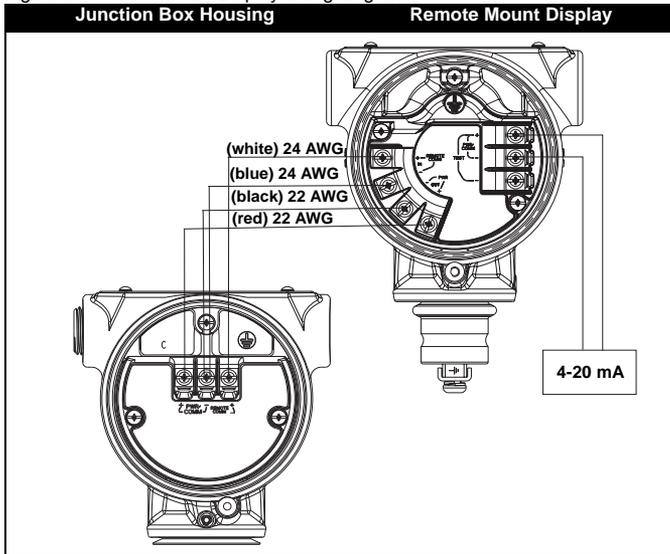
STEP 4 CONTINUED...

Intrinsic Safety Consideration: The transmitter assembly with remote display has been approved with Belden 3084A DeviceNet cable. Alternate cable may be used as long as the transmitter with remote display and cable is configured according to the installation control drawing or certificate. Refer to appropriate approval certificate or control drawing in Appendix B of the 3051S reference manual for remote cable IS requirements.

IMPORTANT

Do not apply power to the remote communications terminal. Follow wiring instructions carefully to prevent damage to system components.

Figure 8. Remote Mount Display wiring diagram



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STEP 4 CONTINUED...

NOTE

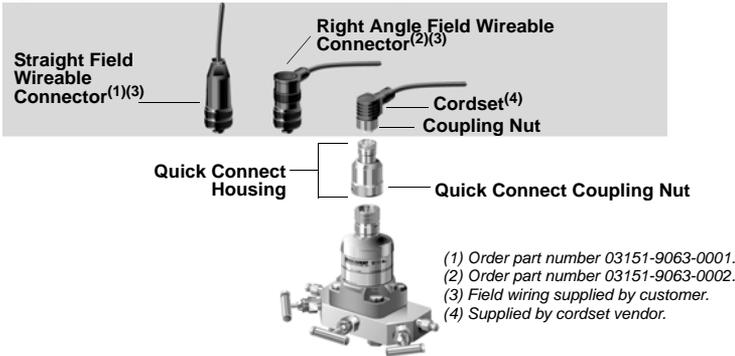
Wire colors provided on page 11 are per Belden 3084A DeviceNet cable. Wire color may vary depending on cable selected.

Belden 3084A DeviceNet cable includes a ground shield. This shield must be connected to earth ground at either the sensor module or the Remote Display, but not both.

Quick Connect Wiring

As standard, the 3051S Quick Connect arrives properly assembled to the sensor module and is ready for installation. Cordsets and Field Wireable Connectors (in shaded area) are sold separately.

Figure 9. Rosemount 3051S Quick Connect Exploded View



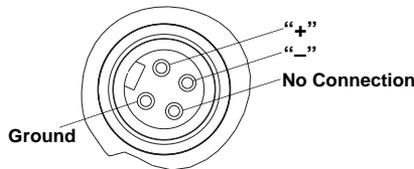
IMPORTANT

If Quick Connect is ordered as a 300S spare housing or is removed from the sensor module, follow the instructions below for proper assembly prior to field wiring.

1. Place the Quick Connect onto the sensor module. To ensure proper pin alignment, remove coupling nut prior to installing quick connect onto the sensor module.
2. Place coupling nut over quick connect and wrench tighten to a maximum of 300 in-lb. (34 N-m).
3. Tighten the set screw using a 3/32-in. hex wrench.
4. Install Cordset/ Field Wireable Connectors onto the Quick Connect.
Do not over tighten.

Figure 10. Quick Connect Housing Pin-Out

For other wiring details, refer to pin-out drawing and the cordset manufacturer's installation instructions.



STEP 4 CONTINUED...

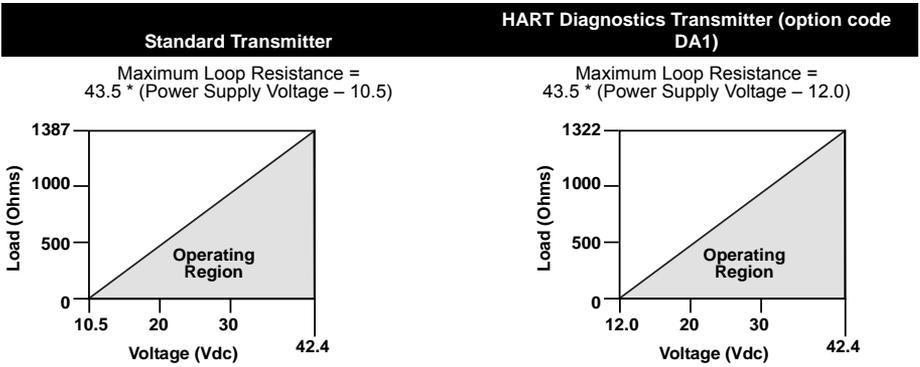
Conduit Electrical Connector Wiring (Option GE or GM)

For 3051S transmitters with conduit electrical connectors GE or GM, refer to the cordset manufacturer's installation instructions for wiring details. For FM Intrinsically Safe, non-incendive or FM FISCO Intrinsically Safe hazardous locations, install in accordance with Rosemount drawing 03151-1009 to maintain outdoor rating (NEMA 4X and IP66.) See Appendix B of the 3051S reference manual.

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, and related pieces. Note that the resistance of intrinsic safety barriers, if used, must be included.

Figure 11. Load Limitation



The Field Communicator requires a minimum loop resistance of 250Ω for communication.

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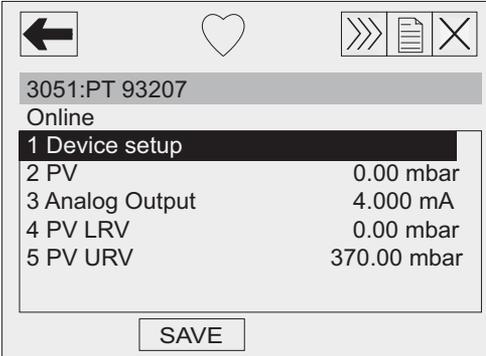
STEP 5: VERIFY CONFIGURATION

Use any HART-compliant master to communicate with and verify configuration of the 3051S. For the HART Diagnostics transmitter (option code DA1), DD revision 3051S HDT Dev. 1 Rev. 1 is required.

Field Communicator User Interface

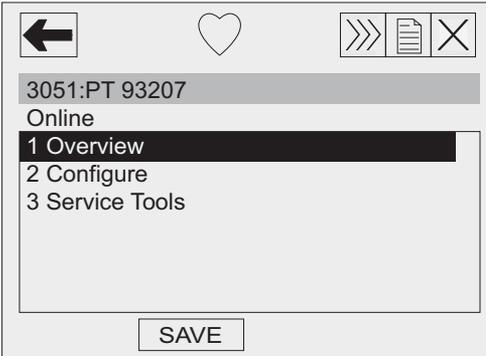
The Traditional Interface - Device Revision 6 or 7 and DD Revision 7 Fast Key Sequence can be found on page 15.

Figure 12. Traditional Interface - Device Revision 6 or 7 and DD Revision 7



The Device Dashboard - Device Revision 7 and DD Revision 9 Fast Key Sequence can be found on page 16.

Figure 13. Device Dashboard - Device Revision 7 and DD Revision 9



Quick Installation Guide

00825-0100-4801, Rev KB

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

Table 1. Traditional Interface - Device Revision 6 or 7 and DD Revision 7 Fast Key Sequence

Function	Fast Key Sequence
Alarm Level Configuration	1, 4, 2, 7, 7
Alarm and Saturation Levels	1, 4, 2, 7
Analog Output Alarm Direction	1, 4, 2, 7, 6
Analog Output Trim	1, 2, 3, 2
Burst Mode On/Off	1, 4, 3, 3, 3
Burst Options	1, 4, 3, 3, 4
✓ Damping	1, 3, 6
Date	1, 3, 4, 1
Descriptor	1, 3, 4, 2
Digital To Analog Trim (4-20 mA Output)	1, 2, 3, 2, 1
Field Device Information	1, 4, 4, 1
LCD Display Configuration	1, 3, 7
Loop Test	1, 2, 2
Lower Sensor Trim	1, 2, 3, 3, 2
Message	1, 3, 4, 3
Number of Requested Preambles	1, 4, 3, 3, 2
Pressure Alert Configuration	1, 4, 3, 5, 3
Poll Address	1, 4, 3, 3, 1
Poll a Multidropped Transmitter	Left Arrow, 3, 1, 1
Remapping	1, 4, 3, 6
Rerange- Keypad Input	1, 2, 3, 1, 1
Saturation Level Configuration	1, 4, 2, 7, 8
Scaled D/A Trim (4-20 mA Output)	1, 2, 3, 2, 2
Scaled Variable Configuration	1, 4, 3, 4, 7
Self Test (Transmitter)	1, 2, 1, 1
Sensor Information	1, 4, 4, 2
Sensor Temperature	1, 1, 4
Sensor Trim	1, 2, 3, 3
Sensor Trim Points	1, 2, 3, 3, 5
Status	1, 2, 1, 2
✓ Tag	1, 3, 1
Temperature Alert Configuration	1, 4, 3, 5, 4
✓ Transfer Function (Setting Output Type)	1, 3, 5
Transmitter Security (Write Protect)	1, 3, 4, 5
✓ Units (Process Variable)	1, 3, 2
Upper Sensor Trim	1, 2, 3, 3, 3
Zero Trim	1, 2, 3, 3, 1

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Table 2. Device Dashboard - Device Revision 7 and DD Revision 9 Fast Key Sequence

Function	Fast Key Sequence
Alarm and Saturation Levels	2,2,1,7
Burst Mode Control	2,2,4,2
Burst Option	2,2,4,3
Custom Display Configuration	2,1,3
✓ Damping	2,2,1,5
Date	2,2,5,4
Descriptor	2,2,5,5
Digital to Analog Trim (4 - 20 mA Output)	3,4,2
Disable Zero & Span Adjustment	2,2,7,2
Rerange with Keypad	2,2,1,3,1
Loop Test	3,5,1
Lower Sensor Trim	3,4,1,2
Message	2,2,5,6
Range Values	2,2,1,3
Scaled D/A Trim (4 - 20 mA Output)	3,4,2
Sensor Temperature/Trend (3051S)	3,3,3
✓ Tag	2,2,5,1
✓ Transfer Function	2,2,1,4
Transmitter Security (Write Protect)	2,2,7,1
✓ Units	2,2,1,2
Upper Sensor Trim	3,4,1,1
Zero Trim	3,4,1,3

STEP 6: TRIM THE TRANSMITTER

Transmitters are shipped fully calibrated per request or by the factory default of full scale (lower range value = zero, upper range value = upper range limit).

Zero Trim

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

If zero offset is less than 3% of true zero, follow the “Using the Field Communicator” instructions below to perform a zero trim. If zero offset is greater than 3% of true zero, follow the “Using the Transmitter Zero Adjustment Button” instructions below to rerange. If hardware adjustments are not available, see the 3051S Reference Manual (document number 00809-0100-4801) to perform a rerange using the Field Communicator.

Using the Field Communicator

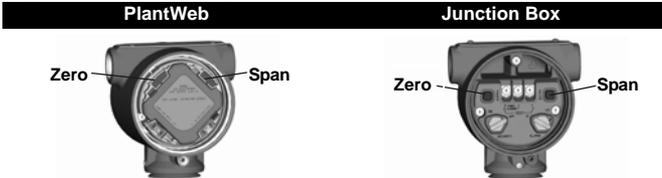
Steps

1. Equalize or vent the transmitter and connect Field Communicator.
2. At the menu, input the Fast Key sequence (refer to Table 1 or Table 2).
3. Follow the commands to perform a zero trim.

Using the Transmitter Zero Adjustment Button

Push and hold the zero adjustment button for at least two seconds but no longer than ten seconds.

Figure 14. Transmitter Adjustment Buttons



SAFETY INSTRUMENTED SYSTEMS

Additional Safety Instrumented Systems information is available in the Rosemount 3051S reference manual (document number 00809-0100-4801). The manual is available electronically on www.rosemount.com or by contacting an Emerson Process Management representative.

3051S Safety-Certified Identification

All 3051S transmitters must be identified as safety-certified before installing into SIS systems.

NOTE

There are two versions of safety-certified 3051S pressure transmitters. For transmitters with a yellow SIS circuit board installed and output code B in the model number, please refer to Manual Supplement 00809-0700-4801.

To identify a safety-certified 3051S:

1. Connect a HART host to the transmitter.
2. Check the software to verify that the software revision is 7 or higher.

Revision #'s	
Fld Dev Rev	7
Software Rev	7
Hardware Rev	16

Installation

No special installation is required in addition to the standard installation practices outlined in this document. Always ensure a proper seal by installing the electronics housing covers so that metal contacts metal.

The loop should be designed so the terminal voltage does not drop below 10.5 Vdc when the transmitter output is 23.0 mA.

If hardware security switches are installed, the security switch should be in the "ON" position during normal operation. See Figure 5 on page 7. If hardware security switches are not installed, security should be "ON" in the software to prevent accidental or deliberate change of configuration data during normal operation.

Configuration

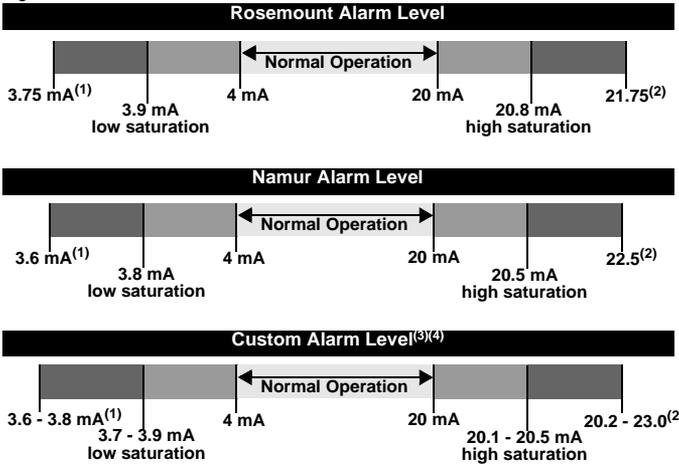
Use any HART-compliant master to communicate with and verify configuration of the 3051S Safety-Certified Pressure Transmitter (see Table 1 on page 15 or Table 2 on page 16 to verify configuration).

User-selected damping will affect the transmitters ability to respond to changes in the applied process. The *damping value + response time* should not exceed the loop requirements.

NOTES

1. Transmitter output is not safety-rated during the following: configuration changes, multidrop, loop test. Alternative means should be used to ensure process safety during transmitter configuration and maintenance activities.
2. DCS or safety logic solver should be configured to match transmitter configuration. Figure 15 identifies the three alarm levels available and their operation values.

Figure 15. Alarm Levels



- (1) Transmitter Failure, hardware or software alarm in LO position.
- (2) Transmitter Failure, hardware or software alarm in HI position.
- (3) High alarm must be at least 0.1 mA higher than the high saturation value.
- (4) Low alarm must be at least 0.1 mA lower than the low saturation value.

Setting the alarm values and direction is dependent on whether or not the hardware switch option is installed. You can use a HART master or Field Communicator to set the Alarm and Saturation values.

Switches installed

1. If using a Field Communicator, use the fast key sequence to set the Alarm and Saturation values.
2. Manually set the direction for the Alarm to HI or LO using the ALARM switch as shown in Figure 5 on page 7.

Switches not installed

If using a Field Communicator, use the fast key sequence to set the Alarm and Saturation values and the Alarm Direction.

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Operation and Maintenance

Proof Test and Inspection

The following proof tests are recommended. Proof test results and corrective actions taken must be documented at http://rosemount.d1asia.ph/rosemount/safety/ReportAFailure_newweb.asp in the event that an error is found in the safety functionality.

Use the fast key sequences in Table 1 on page 15 or Table 2 on page 16 to perform a Loop Test, Analog Output Trim, or Sensor Trim. See the 3051S reference manual for additional information.

Proof Test 1

Conducting an analog output Loop Test satisfies the proof test requirements and will detect more than 52% of DU failures not detected by the 3051S_C or 3051S_L automatic diagnostics, and more than 62% of DU failures not detected by the 3051S_T automatic diagnostics.

Required tools: Field Communicator and mA meter.

1. On the Field Communicator, enter the Fast Key Sequence for Loop Test.
2. At the "Choose Analog Output" prompt, select "Other" to manually input a value.
3. Enter the milliampere value representing a high alarm state.
4. Check the reference meter to verify the mA output corresponds to the entered value.
5. Enter the milliampere value representing a low alarm state.
6. Check the reference meter to verify the mA output corresponds to the entered value.
7. Document the test results per your requirements.

Proof Test 2

This proof test, when combined with the Proof Test 1, will detect over 92% of DU failures not detected by the 3051S_C or 3051S_L automatic diagnostics, and over 95% of DU failures not detected by the 3051S_T automatic diagnostics.

Required tools: Field Communicator and pressure calibration equipment.

1. Perform a minimum two point sensor calibration check using the 4-20 mA range points as the calibration points.
2. Check the reference mA meter to verify the mA output corresponds to the pressure input value.
3. If necessary, use one of the "Trim" procedures available in the 3051S reference manual to calibrate.
4. Document the test results per your requirements.

NOTE

The user determines the proof-test requirements for impulse piping.

Visual Inspection

Not required.

Special Tools

Not required.

Product Repair

All failures detected by the transmitter diagnostics or by the proof-test must be reported.

Feedback can be submitted electronically at

http://rosemount.d1asia.ph/rosemount/safety/ReportAFailure_newweb.asp.

The 3051S is repairable by major component replacement. Follow the instructions in the 3051S reference manual (document number 00809-0100-4801) for additional information.

Reference

Certification

The 3051S Safety-Certified Pressure Transmitter was designed, developed, and audited to be compliant to IEC 61508 safety-certified SIL 2 Claim Limit.

Specifications

The 3051S Safety-Certified Pressure Transmitter must be operated in accordance to the functional and performance specifications provided in the 3051S reference manual.

Failure Rate Data

The FMEDA report includes failure rates and common cause Beta factor estimates. This report is available at http://rosemount.d1asia.ph/rosemount/safety/ReportAFailure_newweb.asp.

3051S Safety-Certified Pressure Transmitter Failure Values

Safety accuracy: 2.0%⁽¹⁾

Safety response time: 1.5 seconds

Self-diagnostics Test Interval: At least once per hour

Product Life

50 years – based on worst case component wear-out mechanisms – not based on wear-out process wetted materials.

(1) A 2% variation of the transmitter mA output is allowed before a safety trip. Trip values in the DCS or safety logic solver should be derated by 2%.

PRODUCT CERTIFICATIONS

Approved Manufacturing Locations

Rosemount Inc. — Chanhassen, Minnesota USA
Fisher-Rosemount GmbH & Co. — Wessling, Germany
Emerson Process Management Asia Pacific Private Limited — Singapore
Beijing Rosemount Far East Instrument Co., LTD — Beijing, China
Emerson Process Management LTDA — Sorocaba, Brazil
Emerson Process Management (India) Pvt. Ltd. — Daman, India

European Directive Information

The EC declaration of conformity can be found on page 29. The most recent revision can be found at www.rosemount.com.

Ordinary Location Certification for FM Approvals

As standard, the transmitter has been examined and tested to determine that the design meets basic electrical, mechanical, and fire protection requirements by FM Approvals, a nationally recognized testing laboratory (NRTL) as accredited by the Federal Occupational Safety and Health Administration (OSHA).

Hazardous Locations Certifications

North American Certifications

FM Approvals

- E5** Explosion proof for Class I, Division 1, Groups B, C, and D, T5 ($T_a = 85\text{ }^\circ\text{C}$); dust-ignition proof for Class II and Class III, Division 1, Groups E, F, and G, T5 ($T_a = 85\text{ }^\circ\text{C}$); hazardous locations; enclosure Type 4X, conduit seal not required when installed according to Rosemount drawing 03151-1003.
- I5** Intrinsically Safe for use in Class I, Division 1, Groups A, B, C, and D, T4 ($T_a = 70\text{ }^\circ\text{C}$); Class II, Division 1, Groups E, F, and G; Class III, Division 1; Class I, Zone 0 AEx ia IIC T4 ($T_a = 70\text{ }^\circ\text{C}$) when connected in accordance with Rosemount drawing 03151-1006; Non-incendive for Class I, Division 2, Groups A, B, C, and D; T4 ($T_a = 70\text{ }^\circ\text{C}$); Enclosure Type 4X
For entity parameters see control drawing 03151-1006.

Canadian Standards Association (CSA)

All CSA hazardous approved transmitters are certified per ANSI/ISA 12.27.01-2003.

- E6** Explosion-Proof for Class I, Division 1, Groups B, C, and D; Dust-Ignition-Proof for Class II and Class III, Division 1, Groups E, F, and G; suitable for Class I, Division 2, Groups A, B, C, and D, when installed per Rosemount drawing 03151-1013, CSA Enclosure Type 4X; conduit seal not required; Dual Seal.
- I6** Intrinsically Safe for Class I, Division 1, Groups A, B, C, and D when connected in accordance with Rosemount drawings 03151-1016; Dual Seal.
For entity parameters see control drawing 03151-1016.

European Certifications

- I1** ATEX Intrinsic Safety
 -HART/Remote Display/Quick Connect/HART Diagnostics
 Certificate No.: BAS01ATEX1303X  II 1 G
 Ex ia IIC T4 (-60 °C ≤ T_{amb} ≤ 70 °C)
CE 1180

Table 3. Input Parameters

Loop / Power	Groups
U _i = 30 V	All
I _i = 300 mA	All
P _i = 1.0 W	All
C _i = 30 nF	SuperModule™ Platform
C _i = 11.4 nF	HART / HART Diagnostics / Quick Connect
C _i = 0	Remote Display
L _i = 0	All Except Remote Display
L _i = 60 µH	Remote Display
RTD Assembly (3051SFx Option T or R)	
U _i = 5 Vdc	
I _i = 500 mA	
P _i = 0.63 W	

Special Conditions for Safe Use (X)

1. The apparatus, excluding the Types 3051 S-T and 3051 S-C (In-line and Coplanar SuperModule Platforms respectively), is not capable of withstanding the 500 V test as defined in Clause 6.3.12 of EN 60079-11. This must be considered during installation.
2. The terminal pins of the Types 3051 S-T and 3051 S-C must be protected to IP20 minimum.

- N1** ATEX Type n
 Certificate No.: BAS01ATEX3304X  II 3 G
 Ex nL IIC T5 (-40 °C ≤ T_{amb} ≤ 70 °C)
 U_i = 45 Vdc max
 C_i = 11.4 nF
 L_i = 0
 For remote display, C_i = 0, L_i = 60 µH
 IP66
CE

Special Conditions for Safe Use (x)

The apparatus is not capable of withstanding the 500 V insulation test required by Clause 6.8.1 of EN 60079-15. This must be taken into account when installing the apparatus.

NOTE

RTD Assembly is not included with the 3051SFx Type n Approval.

Rosemount 3051S

ND ATEX Dust
 Certificate No.: BAS01ATEX1374X  II 1 D
 Ex tD A20 T105 °C (-20 °C ≤ T_{amb} ≤ 85 °C)
 V_{max} = 42.4 volts max
 A = 22 mA
 IP66
 1180

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 range of the apparatus and capable of withstanding a 7J impact test.
4. The 3051S must be securely screwed in place to maintain the ingress protection of the enclosure. (The 3051S SuperModule must be properly assembled to the 3051S housing to maintain ingress protection.)

E1 ATEX Flameproof
 Certificate No.: KEMA00ATEX2143X  II 1/2 G
 Ex d IIC T6 (-50 °C ≤ T_{amb} ≤ 65 °C)
 Ex d IIC T5 (-50 °C ≤ T_{amb} ≤ 80 °C)
 V_{max} = 42.4 V
 1180

Special conditions for safe use (x)

1. Appropriate Ex d blanking plugs, cable glands, and wiring needs to be suitable for a temperature of 90 °C.
2. This device contains a thin wall diaphragm. Installation, maintenance, and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for maintenance shall be followed in detail to assure safety during its expected lifetime.
3. The 3051S does not comply with the requirements of EN 60079-1 Clause 5.2, Table 2 for all joints. Contact Emerson Process Management for information on the dimensions of flameproof joints.

Quick Installation Guide

00825-0100-4801, Rev KB

December 2010

Rosemount 3051S

Japanese Certifications

- E4** TIIS Flameproof
Ex d IIC T6

Table 4. TIIS Certificates

Certificate	Description
TC15682	Coplanar w/Junction Box Housing
TC15683	Coplanar w/PlantWeb Housing
TC15684	Coplanar w/PlantWeb Housing & LCD Display
TC15685	In-Line SST w/Junction Box Housing
TC15686	In-Line Alloy C-276 w/Junction Box Housing
TC15687	In-Line SST w/PlantWeb Housing
TC15688	In-Line Alloy C-276 w/Plantweb Housing
TC15689	In-Line SST w/Plantweb Housing & LCD Display
TC15690	In-Line Alloy C-276 w/PlantWeb Housing & LCD Display
TC17102	Remote Display
TC17099	3051SFA/C/P SST/Alloy C-276 w/ PlantWeb Housing & LCD Display
TC17100	3051SFA/C/P SST/Alloy C-276 w/ PlantWeb Housing & Remote Display
TC17101	3051SFA/C/P SST/Alloy C-276 w/ Junction Box Housing

China (NEPSI) Certifications

- E3** China Flameproof, Dust Ignition-proof
Certificate No. (manufactured in Chanhassen, MN): GYJ091035
Certificate No. (manufactured in Beijing, China): GYJ06366
Certificate No. (manufactured in Singapore): GYJ06364
Certificate No. (3051SFx RTC, BMMC, SMMC): GYJ071086
Ex d IIB+H₂ T3~T5
DIP A21 T_A T3~T5 IP66
Refer to Appendix B of the 3051S Reference Manual (document number 00809-0100-4801) for Special Conditions for Safe Use.
- I3** China Intrinsic Safety, Dust Ignition-proof
Certificate No. (manufactured in Chanhassen, MN): GYJ081078
Certificate No. (manufactured in Beijing, China): GYJ06367
Certificate No. (manufactured in Singapore): GYJ06365
Certificate No. (3051SFx RTC, BMMC, SMMC): GYJ071293
Ex ia IIC T4
DIP A21 T_A T4 IP66
Refer to Appendix B of the 3051S Reference Manual (document number 00809-0100-4801) for Special Conditions for Safe Use.
- N3** China Type n - Energy Limited
NEPSI Certificate No.: GYJ101112X
Ex nL IIC T5 (-40 °C ≤ Ta ≤ 70 °C)
IP66
Refer to Appendix B of the 3051S Reference Manual (document number 00809-0100-4801) for Special Conditions for Safe Use.

Rosemount 3051S

INMETRO Certifications

- I2** Brazilian Approval (INMETRO Approval) - Intrinsic Safety
 Certificate number: CEPEL-EX-0722/05X (manufacturing in Chanhassen, MN)
 Certificate number: CEPEL-EX-1414/07X (manufacturing in Brazil)
 INMETRO Marking: BR-Ex ia IIC T4 IP 66W

Special conditions for safe use (x)

The apparatus, excluding the Types 3051S-T and 3051S-C (In-line and Coplanar SuperModule Platforms respectively), is not capable of withstanding the 500 V test as defined in Clause 6.3.12 of IEC 60079.11. This must be considered during installation.

- E2** Brazilian Approval (INMETRO Approval) - Flameproof
 Certificate number: CEPEL-EX-0722/05X (manufacturing in Chanhassen, MN)
 Certificate number: CEPEL-EX-1413/07X (manufacturing in Brazil)
 INMETRO Marking: BR-Ex d IIC T5/T6

Special conditions for safe use (x)

1. This device contains a thin wall diaphragm. Installation, maintenance, and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. For ambient temperature above 60 °C, cable wiring must have minimum isolation temperature of 90 °C, to be in accordance to equipment operation temperature.
3. The accessory of cable entries or conduit must be certified as flameproof and needs to be suitable for use conditions.
4. Where electrical entry is via conduit, the required sealing device must be assembled immediately close to enclosure.

IECEX Certifications

- E7** IECEX Flameproof and Dust (each listed separately)

IECEX Flameproof

Certificate No.: IECEXKEM08.0010X

Ex d IIC T6 (-50 °C ≤ T_{amb} ≤ 65 °C)

Ex d IIC T5 (-50 °C ≤ T_{amb} ≤ 80 °C)

V_{max} = 42.4 V

Special conditions for safe use (x)

1. Appropriate ex d blanking plugs, cable glands, and wiring needs to be suitable for a temperature of 90 °C.
2. This device contains a thin wall diaphragm. Installation, maintenance, and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for maintenance shall be followed in detail to assure safety during its expected lifetime.
3. The 3051S does not comply with the requirements of IEC 60079-1 Clause 5.2, Table 2 for all joints. Contact Emerson Process Management for information on the dimensions of flameproof joints.

IECEX Dust
 Certificate No. IECEXBAS09.0014X
 Ex tD A20 T105 °C (-20 °C ≤ Tamb ≤ 85 °C)
 Vmax = 42.4 V
 A = 22 mA
 IP66

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 range of the apparatus and capable of withstanding a 7J impact test.
4. The 3051S must be securely screwed in place to maintain the ingress protection of the enclosure. (The 3051S SuperModule must be properly assembled to the 3051S housing to maintain ingress protection.)

17 IECEX Intrinsic Safety

-HART/Remote Display/Quick Connect/HART Diagnostics

Certificate No.: IECEXBAS04.0017X

Ex ia IIC T4 (T_a = -60 °C to 70 °C)

IP66

Table 5. Input Parameters

Loop / Power	Groups
U _i = 30 V	All
I _i = 300 mA	All
P _i = 1.0 W	All
C _i = 30 nF	SuperModule™ Platform
C _i = 11.4 nF	HART / HART Diagnostics / Quick Connect
C _i = 0	Remote Display
L _i = 0	All Except Remote Display
L _i = 60 μH	Remote Display
RTD Assembly (3051SFx Option T or R)	
U _i = 5 Vdc	
I _i = 500 mA	
P _i = 0.63 W	

Special conditions for safe use (x)

1. The 3051S HART 4-20 mA, 3051S FOUNDATION fieldbus, 3051S Profibus and 3051S FISCO are not capable of withstanding the 500 V test as defined in clause 6.3.12 of IEC 60079-11. This must be taken into account during installation.
2. The terminal pins of the Types 3051S-T and 3051S-C must be protected to IP20 minimum.

Rosemount 3051S

N7 IECEx Type n
Certificate No.: IECExBAS04.0018X
Ex nC IIC T5 ($T_a = -40\text{ °C}$ to 70 °C)
 $U_i = 45\text{ Vdc MAX}$
IP66

Special conditions for safe use (x)

The apparatus is not capable of withstanding the 500 V insulation test required by Clause 6.8.1 of IEC 60079-15.

Combinations of Certifications

Stainless steel certification tag is provided when optional approval is specified. Once a device labeled with multiple approval types is installed, it should not be reinstalled using any other approval types. Permanently mark the approval label to distinguish it from unused approval types.

- 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**, **I6**, and **E6**
- KC** Combination of **E5**, **E1**, **I5**, and **I1**
- KD** Combination of **E5**, **I5**, **E6**, **I6**, **E1**, and **I1**

ROSEMOUNT



EC Declaration of Conformity

No: RMD 1044 Rev. 1

We,

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

declare under our sole responsibility that the product,

**Model 3051S Series Pressure Transmitters
Model 3051SF Series Flowmeter Transmitters
Model 300S Housings**

manufactured by,

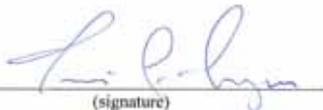
Rosemount Inc.
12001 Technology Drive
Eden Prairie, MN 55344-3695
USA

and

8200 Market Boulevard
Chanhassen, MN 55317-9687
USA

to which this declaration relates, is in conformity with the provisions of the European Community 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 Community notified body certification, as shown in the attached schedule.


(signature)

Vice President, Quality
(function- printed)

Timothy J. Layer
(name-printed)

17-DECEMBER-2009
(date of issue)

ROSEMOUNT**Schedule****EC Declaration of Conformity RMD 1044 Rev. 1****EMC Directive (2004/108/EC)****All Models**

Harmonized Standards: EN 61326-1:2006, EN 61326-2-3: 2006

R&TTE Directive (1999/5/EC)**All Models with "Output Code X" and "Operating Frequency and Protocol Code 1"**Harmonized Standards: EN 301 489-1: V 1.2.1 2002, EN 301 489-17: V1.4.1 2002
EN 60950-1: 2001, EN 300 328 V 1.6.1 (2004-11)

Country	Restriction
Bulgaria	General authorization required for outdoor use and public service
France	Outdoor use limited to 10mW e.i.r.p.
Italy	If used outside of own premises, general authorization is required
Norway	May be restricted in the geographical area within a radius of 20km from the center of Ny-Alesund
Romania	Use on a secondary basis. Individual license required.

**All Models with "Output Code X" and "Operating Frequency and Protocol Code 3"**Harmonized Standards: EN 301 489-1: V 1.2.1 2002, EN 301 489-17: V1.4.1 2002,
EN 61010-1: 2001 Second Edition EN 300 328 V 1.6.1 (2004-11)**All Models with "Output Code X" and "Operating Frequency and Protocol Code 3"
With the Extended Range Antenna option code "WM"**

Country	Restriction
Bulgaria	General authorization required for outdoor use and public service
France	Outdoor use limited to 10mW e.i.r.p.
Italy	If used outside of own premises, general authorization is required
Norway	May be restricted in the geographical area within a radius of 20km from the center of Ny-Alesund
Romania	Use on a secondary basis. Individual license required.





Schedule

EC Declaration of Conformity RMD 1044 Rev. I



PED Directive (97/23/EC)

3051S series Pressure Transmitters

Model 3051S_CA4; 3051S_CD2, 3, 4, 5 (also with P9 option) Pressure Transmitters

QS Certificate of Assessment EC Certificate No. 59552-2009-CE-HOU-DNV

Module H Conformity Assessment

Evaluation standards: ANSI / ISA 61010-1:2004, EC 60770-1 1999

All other model 3051S Pressure Transmitters

Sound Engineering Practice

Transmitter Attachments: Diaphragm Seal - Process Flange - Manifold

Sound Engineering Practice

3051SF Series Flowmeters Pressure Transmitters

Model 3051SF Flowmeter Transmitters (See Table)

QS Certificate of Assessment - CE-41-PED-H1-RMT-001-04-USA

Module __ Conformity Assessment

Evaluation standards:

Model/Range	PED Category	
	Group 1 Fluid	Group 2 Fluid
3051SFA: 1500# & 2500# All Lines	II	SEP
3051SFA: Sensor Size 2 150# 6"to 24" Line	I	SEP
3051SFA: Sensor Size 2 300# 6"to 24" Line	II	I
3051SFA: Sensor Size 2 600# 6"to 16" Line	II	I
3051SFA: Sensor Size 2 600# 18"to 24" Line	III	II
3051SFA: Sensor Size 3 150# 12"to 44" Line	II	I
3051SFA: Sensor Size 3 150# 46"to 72" Line	III	II
3051SFA: Sensor Size 3 300# 12" to 72" Line	III	II
3051SFA: Sensor Size 3 600# 12"to 48" Line	III	II
3051SFA: Sensor Size 3 600# 60" to 72" Line	IV	III
3051SFP: 150#, 300#, 600# 1-1/2"	I	SEP
3051SFP: 300# & 600# 1-1/2"	II	I
3051SFP: 1-1/2" Threaded & Welded	II	I



ROSEMOUNT**Schedule****EC Declaration of Conformity RMD 1044 Rev. 1**

3051SFP: 1-1/2" Threaded & Welded

II

I

All other model 3051SF Flowmeter Transmitters
Sound Engineering Practice

ATEX Directive (94/9/EC)**Model 3051S Pressure Transmitter****BAS01ATEX1303X – Intrinsic Safety Certificate**

Equipment Group II, Category 1 G (Ex ia IIC T4)

Harmonized Standards: EN60079-0: 2006; EN60079-11: 2007

BAS01ATEX3304X – Type n Certificate

Equipment Group II, Category 3 G (Ex nL IIC T5)

Harmonized Standards: EN60079-0: 2006; EN60079-15: 2005

BAS01ATEX1374X – Dust Certificate

Equipment Group II, Category 1 D (Ex tD A20 IP66 T105°C)

Harmonized Standards: Standards used EN61241-0:2006; EN61241-1:2004

Baseefa04ATEX0181X – Mining Certificate

Equipment Group I, Category M 1 (Ex ia D)

Harmonized Standards: EN60079-0: 2006; EN60079-11: 2007; EN50303: 2000

Baseefa05ATEX0193U – Mining Certificate: Component

Equipment Group I, Category M 1 (Ex ia D)

Harmonized Standards: EN60079-0: 2006; EN60079-11: 2007; EN50303: 2000

KEMA00ATEX2143X – Flameproof Certificate

Equipment Group II, Category 1/2 G (Ex d IIC T5 or T6)

Harmonized Standards: EN60079-0: 2006; EN60079-1: 2007; EN60079-26:2007



ROSEMOUNT

Schedule

EC Declaration of Conformity RMD 1044 Rev. 1



PED Notified Body

3051S Series Pressure Transmitters

Det Norske Veritas (DNV) [Notified Body Number: 0575]
Veritasveien 1, N-1322
Hovik, Norway

3051SF Series Flowmeter Transmitters

Plant Safety Limited
Plant Safety Limited [Notified Body Number: 0041]
Parklands, Wilmslow Road, Didsbury
Manchester M20 2RE
United Kingdom

ATEX Notified Bodies for EC Type Examination Certificate

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

Baseefa [Notified Body Number: 1180]
Rockhead Business Park, Staden Lane
Buxton, Derbyshire SK17 9RZ
United Kingdom

ATEX Notified Body for Quality Assurance

Baseefa [Notified Body Number: 1180]
Rockhead Business Park, Staden Lane
Buxton, Derbyshire SK17 9RZ
United Kingdom



