
Rosemount 1151 Analog Pressure Transmitter

Product Discontinued



ROSEMOUNT

www.rosemount.com



EMERSON
Process Management

Rosemount 1151

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⚠ IMPORTANT NOTICE

This installation guide provides basic guidelines for Rosemount 1151 transmitters. It does not provide instructions for configuration, diagnostics, maintenance, service, troubleshooting, Explosion-Proof, Flame-Proof, or intrinsically safe (I.S.) installations. Refer to the Rosemount 1151 reference manual (document number 00809-0100-4360) for more instruction. This manual is also available electronically on www.emersonprocess.com/rosemount.

⚠ 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 1151 reference manual for any restrictions associated with a safe installation.

- In an Explosion-Proof/Flame-Proof installation, do not remove the transmitter covers when power is applied to the unit.

Process leaks may cause harm or result in death.

- To avoid process leaks, only use the o-ring designed to seal with the corresponding flange adapter.

Electrical shock can result in death or serious injury.

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

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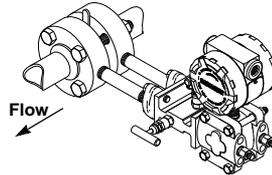
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STEP 1: MOUNT THE TRANSMITTER

A. Applications

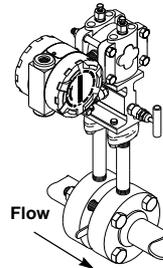
Liquid Flow Applications

1. Place taps to the side of the line.
2. Mount beside or below the taps.



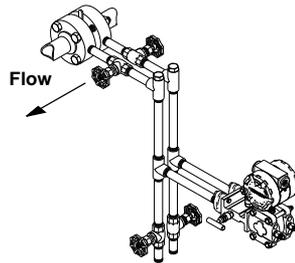
Gas Flow Applications

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.



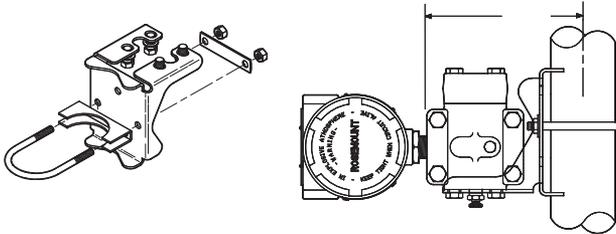
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STEP 1 CONTINUED...

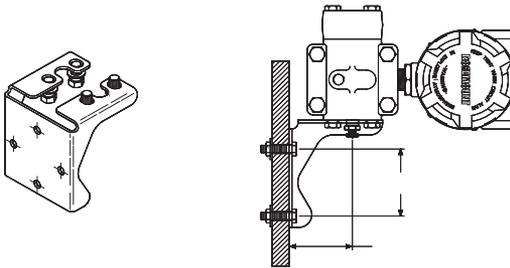
B. Optional Mounting Brackets

When installing the transmitter to one of the optional mounting brackets, torque the bracket bolts to 125 in.-lbs. (0,9 N-m).

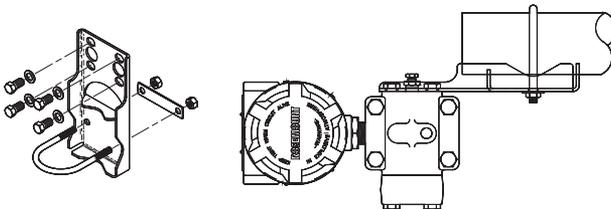
Pipe Mount



Panel Mount⁽¹⁾



Flat Mount



(1) Panel bolts are customer supplied.

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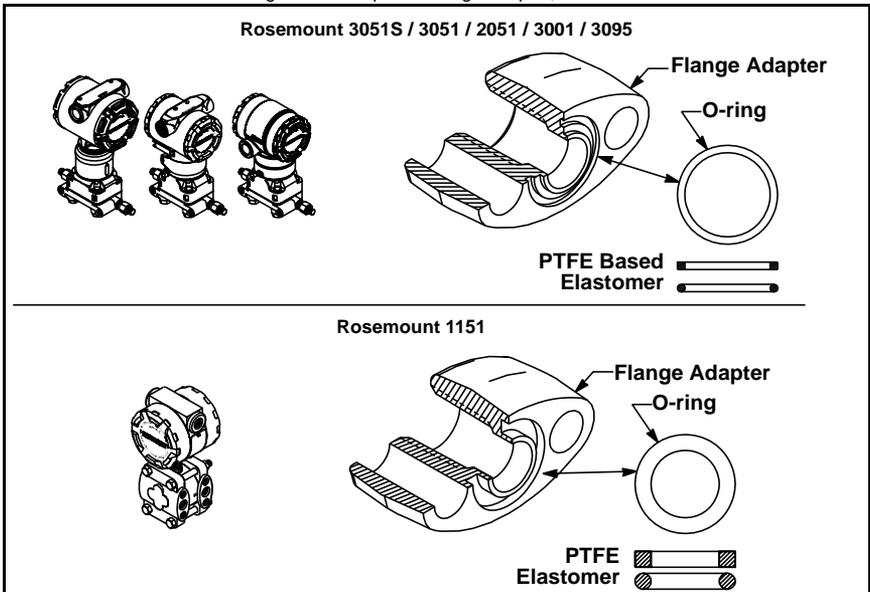
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STEP 1 CONTINUED...

C. 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.

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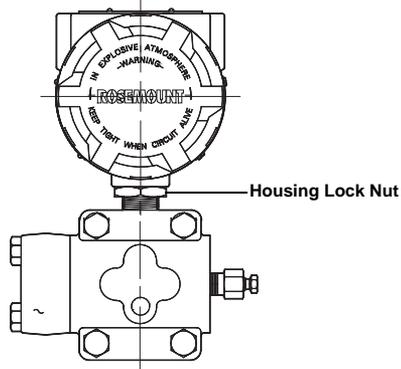
STEP 2: CONSIDER HOUSING ROTATION

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

1. Loosen the housing lock nut.
2. Rotate the housing clockwise to the desired position – up to 90° from its original position. Over rotating will damage the transmitter.
3. If the desired position is attained, tighten the housing lock nut.
4. If the desired position cannot be reached because the housing will not rotate further, rotate the housing counterclockwise until in the desired position (up to 90° from its original position).
5. Tighten the housing lock nut to 420-in/lb. Use a sealing compound (Loctite 222 – Small Screw Threadlocker) on the threads to ensure a watertight seal on the housing.

NOTE

If the desired position cannot be attained within the 90° limit, the transmitter will need to be disassembled. See the Rosemount 1151 reference manual (document number 00809-0100-4360) for further instruction.



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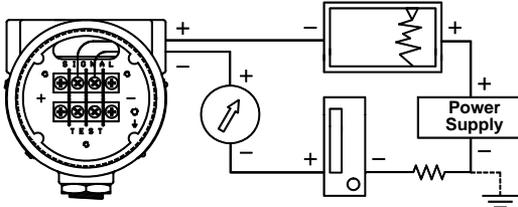
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STEP 3: CONNECT THE WIRING AND POWER UP

Figure 1 shows wiring connections necessary to power a 1151. Use the following steps to wire the transmitter:

1. Remove the housing cover on the side marked TERMINALS on the nameplate.
2. Connect the positive lead to the “+” terminal and the negative lead to the “-” terminal.

Figure 1. Terminal Connections



Installation of the transient protection terminal block does not provide transient protection unless the 1151 case is properly grounded.

3. Ensure proper grounding. It is important that the instrument cable shield:
 - be trimmed close and insulated from touching the transmitter housing
 - be connected to the next shield if cable is routed through a junction box
 - be connected to a good earth ground at the power supply end

NOTE

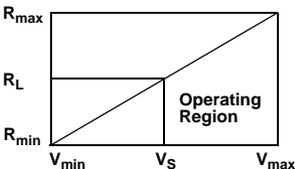
Do not connect the powered signal wiring to the test terminals. Power could damage the test diode in the test connection. Twisted pair cable should be used for best results.

4. Plug and seal unused conduit connections.
5. 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.
6. Replace the housing cover.

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 2. Load Limitation

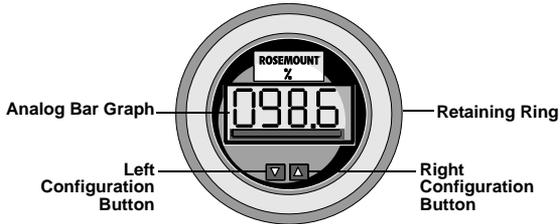


Code	V _{min}	V _{max}	R _{min}	R _{max}	R _L at Supply Voltage (V _S)
E	12	45	0	1650	R _L = 50 (V _S - 12)
G	30	85	0	1100	R _L = 20 (V _S - 30)
L	5	12	Low Power Minimum Load Impedance:		
M	8	14	100 kΩ		

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STEP 4: CONFIGURE THE TRANSMITTER**LCD Display Configuration**

Figure 3. Sample 1151 Display

**NOTE**

The LCD display time-out is approximately 16 seconds. If keys are not pressed within this period, the indicator reverts to reading the signal.

Position the Decimal Point and Select the Meter Function

1. Unscrew the retaining ring shown in Figure 3 and remove the LCD display cover.
2. Press the left and right configuration buttons simultaneously and release immediately.
3. To move the decimal point to the desired location, press the left configuration button. Note that the decimal point wraps around.
4. To scroll through the mode options, press the right configuration button until the desired mode is displayed (see Table 1).
5. Press both configuration buttons simultaneously for two seconds.
6. Replace the LCD Display cover.

Table 1. LCD Display Modes

Options	Relationship between Input Signal and Digital Display
L in	Linear
L in F	Linear with five-second filter
Srt	Square root
SrtF	Square root with five-second filter

Square root function: relates to the digital display. The bar graph output remains linear with the current signal.

Square root response: digital display will be proportional to the square root of the input current where 4 mA=0 and 20 mA=1.0, scaled per the calibration procedure. The transition point from linear to square root is at 25% of full scale flow.

Filter response: operates upon "present input" and "input received in the previous five second interval" in the following manner:

$$\text{Display} = (0.75 \times \text{previous input}) + (0.25 \times \text{present input})$$

This relationship is maintained provided that the previous reading minus the present reading is less than 25% of full scale.

NOTE

The meter displays "----" for approximately 7.5 seconds while the information is being stored.

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STEP 4 CONTINUED...

Set the Display Equivalent to a 4 mA Signal

1. Unscrew the retaining ring shown in Figure 3 and remove the LCD display cover.
2. Press the left button for two seconds.
3. To decrement the display numbers, press the left configuration button and to increment the numbers, press the right configuration button. Set the numbers between -999 and 1000.
4. To store the information, press both configuration buttons simultaneously for two seconds.
5. Replace the LCD display cover.

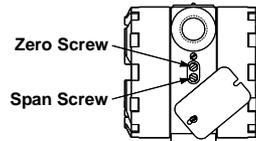
Set the Display Equivalent to a 20 mA Signal

1. Unscrew the retaining ring shown in Figure 3 and remove the LCD display cover.
2. Press the right button for two seconds.
3. To decrement the display numbers, press the left configuration button on the display and to increment the numbers, press the right configuration button. Set the numbers between -999 and 9999. The sum of the 4 mA point and the span must not exceed 9999.
4. To store the information, press both configuration buttons simultaneously for two seconds. The LCD display is now configured.
5. Replace the LCD Display cover.

STEP 5: CALIBRATE THE TRANSMITTER

The zero and span adjustment screws are accessible externally behind the nameplate on the terminal side of the electronics housing (see Figure 4). The output of the transmitter increases with clockwise rotation of the adjustment screws.

Figure 4. Zero and Span Adjustment Screws



Quick Calibration Procedure (for E and G Electronics)

1. Apply 4 mA-point pressure and turn zero screw to output 4 mA.
2. Apply 20 mA-point pressure.
3. Subtract actual output from desired output.
4. Divide difference by 3.
5. Turn span screw above or below desired output by value in Step 4.
6. Repeat Steps 1 through 5 until calibrated.

Quick Calibration Procedure (For L and M Electronics)

1. Apply 1 V dc-point pressure for M electronics (0.8 V dc for L electronics) and turn zero screw to output 1 V dc (0.8 V dc for L electronics).
2. Apply 5 V dc-point pressure (M electronics) or 3.2 V dc (L electronics).
3. Subtract actual output from desired output.
4. Divide the difference by 3.
5. Turn span screw above or below desired output by value in Step 4.
6. Repeat Steps 1 through 5 until calibrated.

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., Limited – Beijing, China

European Directive Information

The EC declaration of conformity for all applicable European directives for this product can be found on the Rosemount website at www.rosemount.com. A hard copy may be obtained by contacting our local sales office.

ATEX Directive (94/9/EC)

Emerson Process Management complies with the ATEX Directive.

European Pressure Equipment Directive (PED) (97/23/EC)

1151GP9, 0; 1151HP4, 5, 6, 7, 8 Pressure Transmitters

— QS Certificate of Assessment - EC No. PED-H-20 Module H Conformity Assessment

All other 1151 Pressure Transmitters

— Sound Engineering Practice

Transmitter Attachments: Diaphragm Seal - Process Flange - Manifold

— Sound Engineering Practice

Electro Magnetic Compatibility (EMC) (89/336/EEC)

All models

— EN 50081-1: 1992; EN 50082-2:1995;

Hazardous Locations Certifications

North American Certifications

Factory Mutual (FM) Approvals

FM Explosion Proof tag is standard. Appropriate tag will be substituted if optional certification is selected.

Explosion Proof: Class I, Division 1, Groups B, C, and D. Dust-Ignition Proof: Class II, Division 1, Groups E, F, and G; Class III, Division 1. Indoor and outdoor use. Enclosure Type 4X. Factory Sealed.

- 15 Intrinsically safe for Class I, II, and III Division 1, Groups A, B, C, D, E, F, and G hazardous locations in accordance with entity requirements and Control drawing 01151-0214. Non- incendive for Class I, Division 2, Groups A, B, C and D hazardous locations.

For entity parameters see control drawing 01151-0214.

Canadian Standards Association (CSA) Approvals

- E6 Explosion proof for Class I, Division 1, Groups C and D; Class II, Division 1, Groups E, F, and G; Class III, Division 1 Hazardous Locations. Suitable for Class I, Division 2, Groups A, B, C, and D; CSA enclosure type 4X. Factory Sealed.

- 16 Intrinsically safe for Class I, Division 1, Groups A, B, C, and D hazardous locations when connected per Drawing 01151-2575. For entity parameters see control drawing 01151-2575. Temperature Code T2D.

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European Certifications

E8 ATEX Flameproof
Certification Number CESI03ATEX037
ATEX Marking  II 1/2 G
EEx d IIC T6 ($-40 \leq T_a \leq 40$ °C)
EEx d IIC T4 ($-40 \leq T_a \leq 80$ °C)
CE 1180
V = 60 Vdc maximum

Australian Certifications

Standards Association of Australia (SAA) Certification

E7 Flameproof
Certificate Number Ex 494X
Ex d IIB + H₂ T6
DIP T6 IP65

Special Conditions for safe use (x):

For transmitters having NPT, PG or G cable entry threads, an appropriate flameproof thread adaptor shall be used to facilitate application of certified flameproof cable glands or conduit system.

Combination 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.

C6 Combination of I6 and E6, CSA Explosion Proof and Intrinsic Safety Approval. Factory Sealed.

K5 Combination of Explosion Proof, Intrinsic Safety, and Non-incendive Approvals.

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EC Declaration of Conformity

No: RMD 1052 Rev. A

We,

**Emerson Process Management
Heath Place
Bognor Regis
West Sussex PO22 9SH
England**

declare under our sole responsibility that the product,

Model 1151 Analog Pressure Transmitter

manufactured by,

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

Ron Migliorini

(name - printed)

Vice President, Marketing & Sales, EMA

(function name - printed)

1st May 2003

(date of issue)

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Schedule

EC Declaration of Conformity RMD 1052 Rev. A

EMC Directive (89/336/EEC)

Model 1151 Analog Pressure Transmitter
EN 50081-1: 1992, EN 50082-1: 1992

PED Directive (97/23/EC)

Model 1151GP9, 0; 1151HP4, 5, 6, 7, 8 Pressure Transmitters
QS Certificate of Assessment - EC No. PED-H-20
Module H Conformity Assessment

All other model 1151 Analog Pressure Transmitters
Sound Engineering Practice

Transmitter Attachments: Diaphragm Seal - Process Flange - Manifold
Sound Engineering Practice

ATEX Directive (94/9/EC)

Model 1151 Analog Pressure Transmitter
CESI03ATEX037 - Flameproof Certificate
EN50014: 1997; EN50018: 2000; EN50284: 1999

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Schedule

EC Declaration of Conformity RMD 1052 Rev. A

PED Notified Body

Det Norske Veritas (DNV) [Notified Body Number: 0434]
Veritasveien 1, N-1322
Hovik, Norway

ATEX Notified Bodies for EC Type Examination Certificates

CESI [Notified Body Number: 0722]
Via Rubattino
1 - 20134
Italy

ATEX Notified Body for Quality Assurance

Baseefa [2001] Limited [Notified Body Number: 1180]
Harpur Hill
Buxton, Derbyshire
United Kingdom