

# Rosemount™ 4088B MultiVariable™ Transmitter

with Bristol™ Standard Asynchronous/  
Synchronous Protocol (BSAP)/MVS  
Protocol



Safety messages

NOTICE

This guide provides basic guidelines for the Rosemount 4088 MultiVariable Transmitter. It does not provide instructions for diagnostics, maintenance, service, or troubleshooting. Reference the 4088 MultiVariable Transmitter Reference Manual for more instruction. All documents are available electronically at Emerson.com/Rosemount.

Procedures and instructions in this section may require special precautions to ensure the safety of the personnel performing the operation. Information that raises potential safety issues is indicated with a warning symbol (⚠). Refer to the following safety messages before performing an operation preceded by this symbol.

⚠ 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. Review the approvals section of the 4088 MultiVariable Transmitter 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. 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, adapters, or glands in cable/conduit entries.

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# 1 Steps required for quick installation

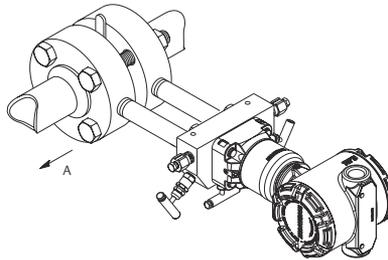
- Start >
- [Mount the transmitter](#) : Mount the Transmitter
- [Consider housing rotation](#) : Consider Housing Rotation
- [Set the switches](#) : Set the Switches
- [Wiring and power up](#) : Wiring and Power Up
- [Verify device configuration](#) : Verify Device Configuration
- [Trim the transmitter](#) : Trim the Transmitter
- > Finish

## 2 Mount the transmitter

### 2.1 Liquid flow applications

#### Procedure

1. Place taps to the side of the line.
2. Mount beside or below the taps.
3. Mount the transmitter so that the drain/vent valves are oriented upward.

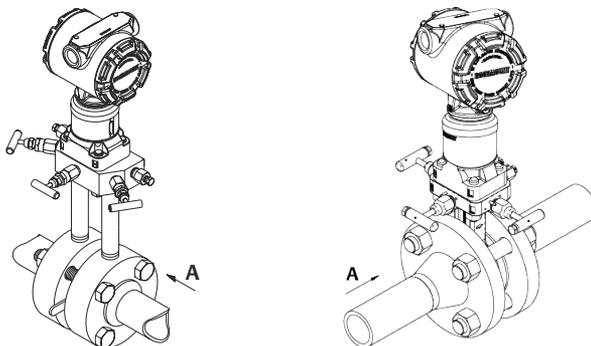


A. Direction of flow

### 2.2 Gas flow applications

#### Procedure

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

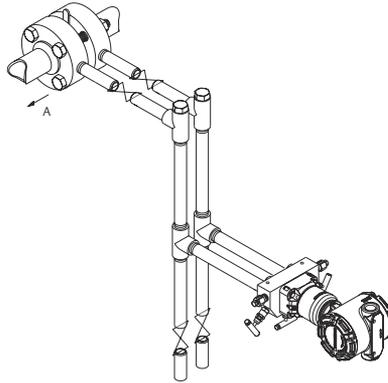


A. Direction of flow

## 2.3 Steam flow applications

### Procedure

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

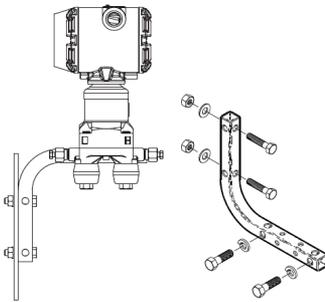


A. Direction of flow

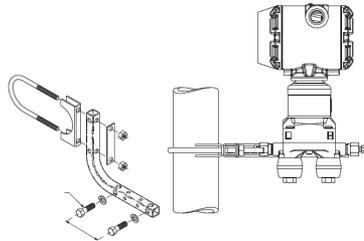
## 2.4 Mounting brackets

**Figure 2-1: Mounting Bracket – Coplanar Flange**

Panel mount



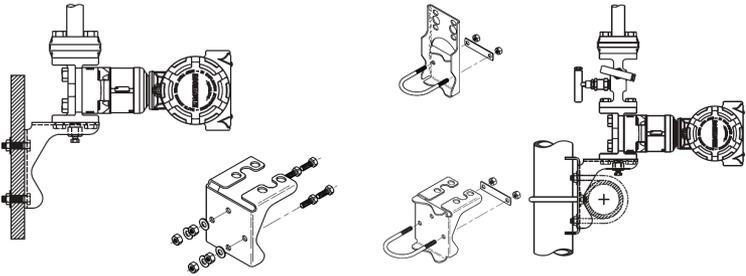
Pipe mount



**Figure 2-2: Mounting Brackets – Traditional Flange**

Panel mount

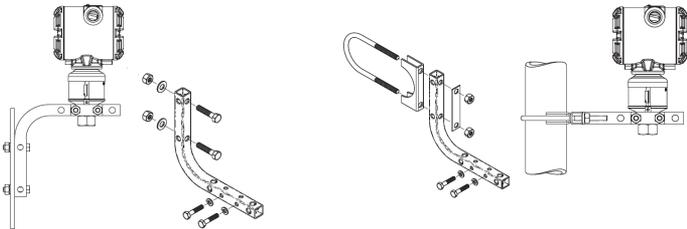
Pipe mount



**Figure 2-3: Mounting Brackets – In-line**

Panel mount

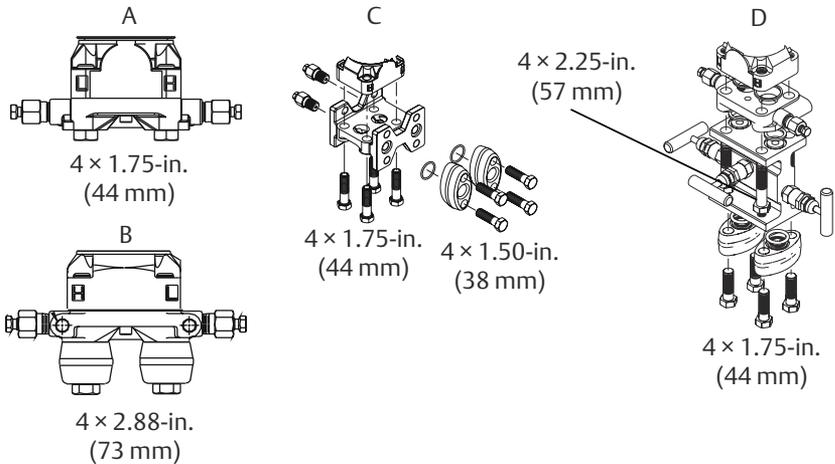
Pipe mount



## 2.5 Bolting considerations

### About this task

If the transmitter installation requires assembly of a process flange, manifold, or flange adapters, follow these assembly guidelines to ensure a tight seal for optimal performance characteristics of the transmitter. Only use bolts supplied with the transmitter or sold by Emerson™ as spare parts. [Figure 2-4](#) illustrates common transmitter assemblies with the bolt length required for proper transmitter assembly.

**Figure 2-4: Common Transmitter Assemblies**

- A. *Transmitter with coplanar flange*
- B. *Transmitter with coplanar flange and optional flange adapters*
- C. *Transmitter with traditional flange and optional flange adapters*
- D. *Transmitter with coplanar flange and optional Rosemount Conventional Manifold and flange adapters*

**Note**

For all other manifolds, contact Customer Central technical support.

Bolts are typically carbon steel or stainless steel. Confirm the material by viewing the markings on the head of the bolt and referencing [Table 2-1](#). If bolt material is not shown in [Table 2-1](#), contact the local Emerson representative for more information.

Use the following bolt installation procedure:

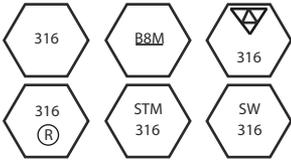
**Procedure**

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 2-1](#) for initial torque value.
4. Torque the bolts to the final torque value using the same crossing pattern. See [Table 2-1](#) for final torque value.

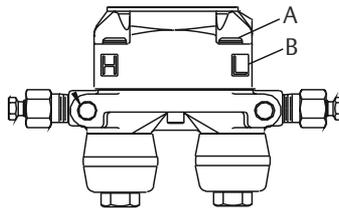
- Verify the flange bolts are protruding through the sensor module before applying pressure (see [Figure 2-5](#)).

**Example**

**Table 2-1: Torque Values for the Flange and Flange Adapter Bolts**

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

**Figure 2-5: Proper Bolt Installation**

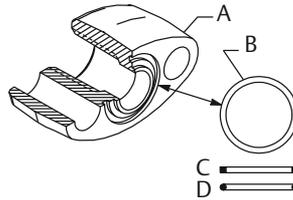


- A. Bolt
- B. Sensor module

## 2.6 O-rings with flange adapters

### ⚠ WARNING

Failure to install proper flange adapter O-rings may cause process leaks, which can result in death or serious injury. Only use the O-ring that is designed for its specific flange adapter.



- 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.

## 2.7 Environmental seal for housing

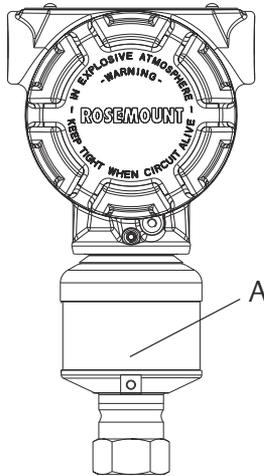
Thread sealing (PTFE) tape or paste on male threads of conduit is required to provide a water/dust tight conduit seal and meets requirements of NEMA<sup>®</sup> Type 4X, IP66, and IP68. Consult factory if other Ingress Protection ratings are required. For M20 threads, install conduit plugs to full thread engagement or until mechanical resistance is met.

## 2.8 In-line gage transmitter orientation

The low side pressure port (atmospheric reference) on the in-line gage transmitter is located under the sensor module neck label. (See [Figure 2-6](#))

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 2-6: In-line Gage Transmitter**



A. Low side pressure port (under neck label)

## 3 Consider housing rotation

### About this task

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.

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**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 (refer to the Troubleshooting chapter in the appropriate reference manual for more information). Over-rotation may sever the electrical connection between the sensor module and the electronics.

---

### 3.1 Rotate the LCD display

#### About this task

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.

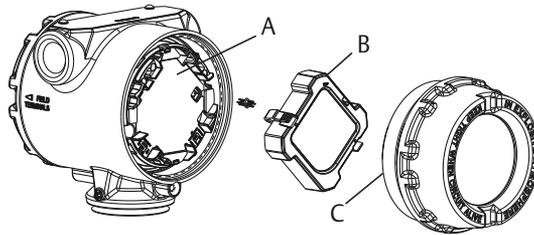
Use the following procedure and [Figure 3-2](#) to install the LCD display:

### 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.

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**Figure 3-2: Optional LCD Display**



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

## 4 Set the switches

### Procedure

1. If the transmitter is installed, secure the bus and remove power.
2. Required: Remove the transmitter cover opposite the field terminal side. Do not remove the instrument covers in explosive environments when the circuit is live.
3. Slide the **Security** and switches into the preferred position by using a small screwdriver.

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### Note

The *Security* switch will need to be in the off position in order to make any configuration changes.

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4. Required: In order to meet explosion-proof requirements, reinstall the housing cover and tighten so the cover is fully seated with metal to metal contact between the housing and cover. After the cover is seated properly, replace the flathead screw located on the bottom of the housing cover.
- 

**Figure 4-1: Transmitter Switch Configuration**



- A. *Security*  
B. *AC Termination*
-

## 5 Wiring and power up

### About this task

Use the following steps to wire the transmitter:

### Procedure

1. Remove the cover on the field terminals side of the housing.
2. Set up based on optional process temperature input.
  - a) If the optional process temperature input is being utilized, follow the procedure [Install optional process temperature input \(Pt 100 RTD Sensor\)](#).
  - b) If there will not be an optional process temperature input, plug and seal the unused conduit connection.

### NOTICE

When the enclosed threaded plug is utilized in the conduit opening, it must be installed with a minimum engagement of five threads in order to comply with explosion-proof requirements. For straight threads, a minimum of six threads must be engaged. For tapered threads, install the plug wrench-tight.

3. Connect the positive lead from the power source to the “PWR +” terminal, and the negative lead to the “PWR –” terminal (for power requirements, reference).
4. Ensure full contact with terminal block screw and washer. When using a direct wiring method, wrap wire clockwise to ensure it is in place when tightening the terminal block screw.

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#### Note

The use of a pin or a ferrule wire terminal is not recommended as the connection may be more susceptible to loosening over time or under vibration.

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5. Connect the transmitter to the RS-485 bus as shown in [Figure 5-1](#)
  - a) Connect the A lead to the “A” terminal.
  - b) Connect the B lead to the “B” terminal.

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#### Note

The Rosemount 4088 MultiVariable Transmitter uses RS-485 Modbus® with 8 data bits, one stop bit and no parity. The default baud rate is 9600.

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**Note**

Twisted pair wiring is required for RS-485 bus wiring. Wiring runs under 1000 ft. (305 m) should be AWG 22 or larger. Wiring runs from 1000 to 4000 ft. (305 to 1219 m) should be AWG 20 or larger. Wiring should not exceed AWG 16.

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**NOTICE**

When the enclosed threaded plug is utilized in the conduit opening, it must be installed with a minimum engagement of five threads in order to comply with explosion-proof requirements. Refer to the Rosemount 4088 MultiVariable Transmitter Reference Manual for more information.

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6. 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.

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**Note**

Installation of the transient protection terminal block does not provide transient protection unless the transmitter housing is properly grounded.

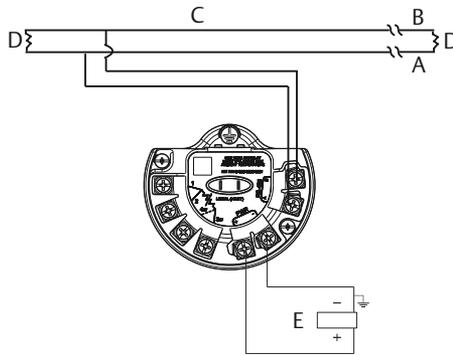
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**Example**

[Figure 5-1](#) shows the wiring connections necessary to power a Rosemount 4088 MultiVariable Transmitter and enable communications with OpenEnterprise Field Tools.

## 5.1 Transmitter wiring

**Figure 5-1: Transmitter Wiring for RS-485 Bus**



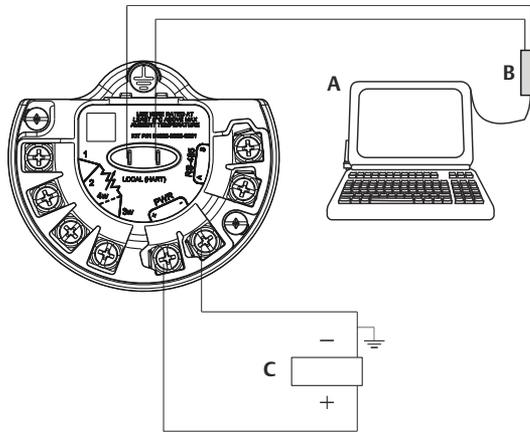
- A. RS-485 (A)
- B. RS-485 (B)
- C. RS-485 bus, twisted pair required
- D. Bus Termination: AC Termination on Rosemount 4088 (see [Set the switches](#)) or 120  $\Omega$  resistor
- E. User-Provided Power Supply

It is not required to remove the Rosemount 4088 from the RS-485 network when configuring over the local HART® port. The device should be taken out of service or put in manual prior to performing any configuration changes.

### Note

Certain BSAP parameters (such as MANUAL.LOCK.CFG or EXECUTE.CALIB) are accessible only through BSAP and must be configured using the TechView component of OpenEnterprise Field Tools.

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**Figure 5-2: Configuration via HART® or BSAP (Local) Port**


- A. TechView (BSAP protocol) component of OpenEnterprise Field Tools  
 B. MACTek® Viator® USB HART Interface  
 C. User-provided power supply
- 

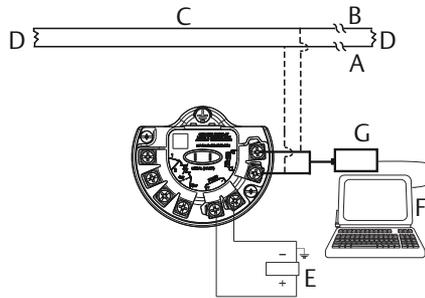
### Note

In the TechView component of OpenEnterprise Field Tools, specify a baud rate of 1200 baud, and specify the transmitter's local address. For more information on Rosemount 4088B configuration/calibration tasks in TechView, see the TechView User's Guide (part D301430X012).

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Configure the Rosemount 4088B either through a connection with a ROC controller or FloBoss™ flow computer using the ROCLINK™ 800 component of OpenEnterprise Field Tools or through a connection with a ControlWave™ controller or flow computer using the TechView component of OpenEnterprise Field Tools.

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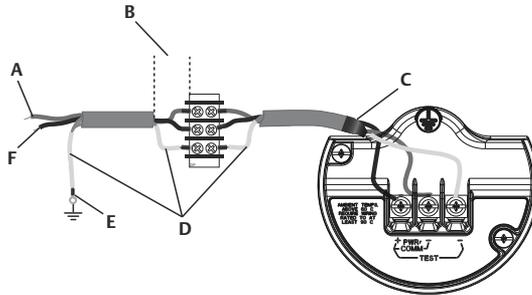
**Figure 5-3: Transmitter Configuration via RS-485 Network Port**


- A. RS-485 (A)
  - B. RS-485 (B)
  - C. RS-485 bus, twisted pair required
  - D. Bus Termination: AC termination on Rosemount 4088 (see [Set the switches](#)) or 120  $\Omega$  resistor
  - E. User-Provided Power Supply
  - F. OpenEnterprise Field Tools (ROCLINK for MVS or TechView for BSAP protocol)
  - G. ROC, FloBoss, or ControlWave flow computer or RTU
- 

## 5.2 Grounding

### Signal wire grounding

Do not run signal wiring in conduit or open trays with power wiring, or near heavy electrical equipment. If shielded wiring is used, ground the shield of the signal wiring at any one point on the signal loop. Device must be properly grounded or earthed according to local electric codes.

**Figure 5-4: Signal Ground Wiring**

- A. Positive
- B. Minimize distance
- C. Trim shield and insulate
- D. Insulate shield
- E. Connect shield back to the power supply
- F. Negative

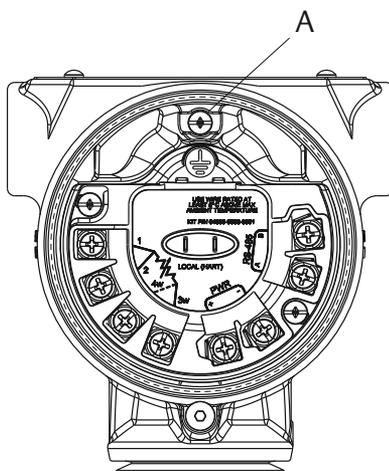
### Transmitter case

Always ground the transmitter case in accordance with national and local electrical codes. The most effective transmitter case grounding method is a direct connection to earth ground with minimal impedance ( $< 1 \Omega$ ). Methods for grounding the transmitter case include:

### Internal ground connection

The internal ground connection screw is inside the terminal side of the electronics housing. The screw is identified by a ground symbol ( $\oplus$ ).

**Figure 5-5: Internal Ground Connection**

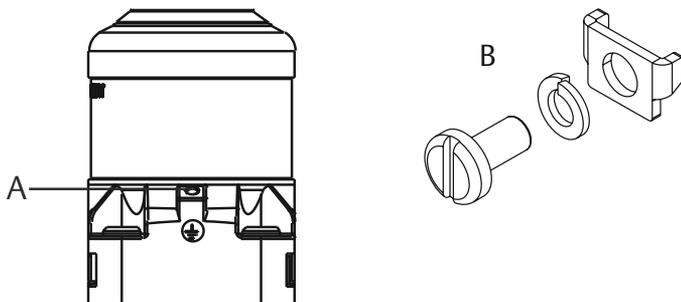


A. Ground lug

**External ground connection**

The external ground connection is on the outside of the sensor module housing. The connection is identified by a ground symbol ( $\oplus$ ). An external ground assembly is included with the option codes shown in [Table 5-1](#) or is available as a spare part (03151-9060-0001).

**Figure 5-6: External Ground Connection**



A. External ground lug

B. External ground assembly (03151-9060-0001)

**Table 5-1: External Ground Screw Approval Option Codes**

Option code	Description
E1	ATEX Flameproof
I1	ATEX Intrinsic Safety
N1	ATEX Type n
ND	ATEX Dust
K1	ATEX Flameproof, Intrinsic Safety, Type n, Dust (combination of E1, I1, N1, and ND)
E7	IECEx Flameproof, Dust Ignition-proof
N7	IECEx Type n
K7	IECEx Flameproof, Dust Ignition-proof, Intrinsic Safety, and Type n (combination of E7, I7, N7, and ND)
KA	ATEX and CSA Explosion-proof, Intrinsically Safe, Division 2 (combination of E1, I1, N1, and ND)
KC	FM and ATEX Explosion-proof, Intrinsically Safe, Division 2 (combination of E5, I5, N5, and ND)
T1	Transient terminal block
D4	External ground screw assembly

### 5.3 Install optional process temperature input (Pt 100 RTD Sensor)

#### About this task

##### Note

To meet ATEX/IECEx Flameproof certification, only ATEX/IECEx Flameproof cables (temperature input code C30, C32, C33, or C34) may be used.

#### Procedure

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

##### Note

Use shielded 4- or 3-wire cable for the process temperature connection.

2. Connect the RTD cable to the transmitter by inserting the cable wires through the unused housing conduit and connect to the screws on the transmitter terminal block. An appropriate cable gland should be used to seal the conduit opening around the cable.

##### Note

If power is already connected to the Rosemount 4088, power should be removed prior to connecting the RTD wires. This will allow the

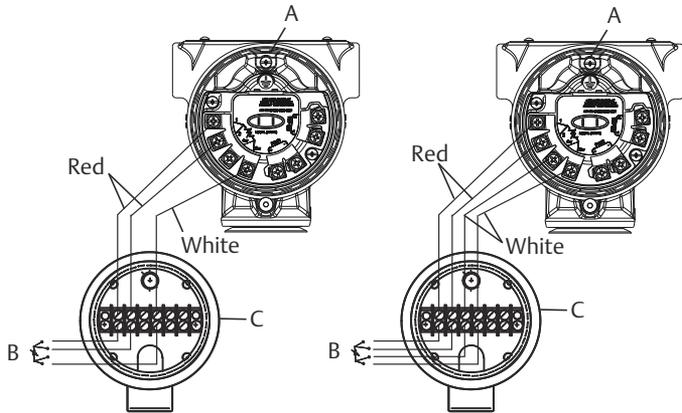
Rosemount 4088 to detect the RTD type at startup. Once the RTD is installed, reconnect power.

3. Connect the RTD cable shield wire to the ground lug in the housing.

**Figure 5-7: Transmitter RTD Wiring Connection**

3-wire

4-wire



- A. Ground Lug
- B. Pt 100 RTD sensor
- C. Connection head

**Note**

Verify the installed PT sensor type (3-wire or 4-wire) matches the device setting.

## 6 Verify device configuration

For Rosemount 4088B, use ROCLINK™ or TechView components of OpenEnterprise Field Tools to communicate with and verify configuration of the transmitter.

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### Note

Device configuration procedures are given in the ROCLINK Configuration Software User Manual (for ROC800-Series), part D301250X012; the ROCLINK Configuration Software User Manual (for FloBoss 107), part D301249X012; and the TechView User's Guide (part D301430X012). The Rosemount 4088 MultiVariable Transmitter Reference Manual contains a detailed register map.

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## 7 Trim the transmitter

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

### 7.1 Zero trim

#### About this task

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

If zero offset is less than 5 percent of USL, follow the user interface software instructions below to perform a zero trim on a Field Communicator.

#### 7.1.1 Performing a zero trim using OpenEnterprise Field Tools

See the product-specific ROCLINK manual (ROCLINK Configuration Software User Manual [for ROC800-Series], part D301250X012, or the ROCLINK Configuration Software User Manual [for FloBoss 107], part D301249X012) or the TechView User's Guide (part D301430X012) for information.

## 8 Product Certifications

Rev 1.6

### **⚠ 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. Review this document 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.

### **⚠ WARNING**

Conduit/cable entries

- Unless marked, the conduit/cable entries in the transmitter 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, adapters, or glands in cable/conduit entries.

### 8.1 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](http://Emerson.com/Rosemount).

### 8.2 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).

### 8.3 Installing Equipment in North America

The US National Electrical Code<sup>®</sup> (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.

## 8.4 USA

### E5 FM Explosionproof (XP), Dust-Ignitionproof(DIP)

**Certificate** FM17US0146X

**Standards** FM Class 3600 - 2011, FM 3610 - 2005, FM Class 3615 - 2005, FM Class 3616 2011, FM 3810 - 2005, ANSI/NEMA 250 - 1991, ANSI/IEC 60529 - 2004, ANSI/ISA 60079-0:2013, ANSI/ISA 60079-1:2015, ANSI/ISA 60079-26:2017

**Markings** XP Class I, Division 1, Groups B, C, D ( $T_a = -50$  to  $85$  °C); DIP Class II and Class III, Division 1, Groups E, F, G ( $T_a = -50$  to  $85$  °C); Class I Zone 0/1 AEx db IIC T5 ( $T_a = -50$  to  $80$  °C); Enclosure Type 4X/IP66/IP68; Conduit seal not required for division installations

#### Special Conditions for Safe Use (X):

1. This device contains a thin wall diaphragm less than 1 mm thickness that forms a boundary between Class 1, Zone 0 (process connection) and Class 1, Zone 1 (all other parts of the equipment). The model code and datasheet are to be consulted for details of the diaphragm material. Installation, maintenance and use shall take into account the environmental conditions to which the diaphragm will be subjected. The manufacturer's instructions for installation and maintenance shall be followed in detail to assure safety during its expected lifetime.
2. Flameproof joints are not intended for repair.
3. Appropriate cable, glands, and plugs need to be suitable for a temperature of  $5$  °C greater than the maximum specified temperature for location where installed.
4. The applicable temperature class, ambient temperature range and process temperature range of the equipment is T4 for  $-50 \leq T_a \leq 80$  °C with  $T_{process} = -50$  to  $120$  °C.
5. Non-standard paint options (paint options other than Rosemount Blue) may cause risk from electrostatic discharge. Avoid installation that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth.
6. Display glass shall be positioned in such a way as to minimize the risk of mechanical impact.

### 15 FM Intrinsic Safety (IS) and Nonincendive (NI)

**Certificate** FM17US0263X

**Standards** FM Class 3600 - 2011, FM Class 3610 - 2010, FM Class 3611 - 2004, FM Class 3810 - 2005, ANSI/NEMA 250 - 1991, ANSI/ISA 60529 - 2004, ANSI/ISA 61010-1 - 2004

**Markings** Intrinsic Safety Class I, Division 1, Groups C, D; Class II, Groups E, F, G; Class III; Class I Zone 0 AEx ia IIB T4; Nonincendive Class I, Division 2, Groups A, B, C, D; T4( $-50 \leq T_a \leq 70$  °C); when connected per Rosemount drawing 04088-1206; Type 4X

### Special Conditions for Safe Use (X):

1. The maximum permitted ambient temperature of the Rosemount 4088 Pressure Transmitter is 70 °C. To avoid the effects of process temperature and other thermal effects care shall be taken to ensure the surrounding ambient and the ambient inside the transmitter housing does not exceed 70 °C.
2. The enclosure may contain aluminum and is considered to present a potential risk of ignition by impact or friction. Care must be taken during installation and use to prevent impact or friction.
3. The Rosemount 4088 Transmitters fitted with transient protection are not capable of withstanding the 500 V test. This must be taken into account during installation.

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#### 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 04088-1206.

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## 8.5 Canada

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

### E6 CSA Explosionproof, Dust-Ignitionproof, and Division 2

**Certificate** 2618446

**Standards** CSA C22.2 No. 0-10, CSA C22.2 No. 25-1966, CSA C22.2 No. 30-M1986, CSA C22.2 No. 94-M91, CSA C22.2 No. 142-M1987, CSA C22.2 No. 213-M1987, CSA C22.2 No. 60079-0:2011, CSA C22.2 No. 60079-11:2011, ANSI/ISA 12.27.01-2003

**Markings** Class I, Division 1, Groups B, C, D; Class II, Division 1, Groups E, F, G; Class III; Class I, Division 2, Groups A, B, C, D; Temp Code T5; seal not required; when installed per Rosemount Drawing 04088-1053; Type 4X

### I6 CSA Intrinsically Safe

**Certificate** 2618446

- Standards** CSA C22.2 No. 0-10, CSA C22.2 No. 25-1966, CSA C22.2 No. 30-M1986, CSA C22.2 No. 94-M91, CSA C22.2 No. 142-M1987, CSA C22.2 No. 157-92, CSA C22.2 No. 213-M1987, CSA C22.2 No. 60079-0:2011, CSA C22.2 No. 60079-11:2011, ANSI/ISA 12.27.01-2003
- Markings** Class I, Division 1, Groups C, D, Temp Code T3C; Class I Zone 0 Ex ia IIB T4; when installed per Rosemount Drawing 04088-1207; Type 4X

## 8.6 Europe

### E1 ATEX Flameproof

- Certificate** FM12ATEX0030X
- Standards** EN 60079-0:2012+A11:2013, EN 60079-1:2014, EN 60079-26:2015, EN 60529:1991+A1:2000
- Markings** II 1/2 G Ex db IIC T6...T4 Ga/Gb, T4/T5( $-50 \leq T_a \leq 80^\circ\text{C}$ ), T6( $-50 \leq T_a \leq 65^\circ\text{C}$ )

### 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. Appropriate cable, glands, and plugs need to be suitable for a temperature of  $5^\circ\text{C}$  greater than the maximum specified temperature for location where installed.
4. The applicable temperature class, ambient temperature range and process temperature range of the equipment is as follows:
  - T4 for  $-50 \leq T_a \leq 80^\circ\text{C}$  with T process =  $-50$  to  $120^\circ\text{C}$
  - T5 for  $-50 \leq T_a \leq 80^\circ\text{C}$  with T process =  $-50$  to  $80^\circ\text{C}$
  - T6 for  $-50 \leq T_a \leq 65^\circ\text{C}$  with T process =  $-50$  to  $65^\circ\text{C}$
5. Non-standard paint options (paint options other than Rosemount Blue) may cause risk from Electrostatic discharge. Avoid installation that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth.
6. Display glass shall be positioned in such a way as to minimize the risk of mechanical impact.

## I1 ATEX Flameproof

<b>Certificate</b>	Baseefa13ATEX0221X
<b>Standards</b>	EN 60079-0:2012, EN 60079-11:2012
<b>Markings</b>	Ex II 1 G Ex ia IIB T4 Ga ( $-60 \leq T_a \leq +70$ °C)

	Supply	Modbus	RTD
Voltage $U_i$	22 V	9 V	15.51 V
Current $I_i$	147 mA	26 mA	20.89 mA
Power $P_i$	1 W	1 W	80.94 mW
Capacitance $C_i$	0	0	0
Inductance $L_i$	0	0	0

### Special Conditions for Safe Use (X):

1. The Rosemount 4088 MV Transmitters fitted with transient protection are not capable of withstanding the 500 V test as defined in Clause 6.3.13 of EN 60079-11:2012. This must be taken into account during installation.
2. The Rosemount 4088 MV 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 area.

## ND ATEX Dust

<b>Certificate</b>	FM12ATEX0030X
<b>Standards</b>	EN 60079-0:2012+A11:2013, EN 60079-31:2014, EN 60529:1991+A1:2000
<b>Markings</b>	Ex II 2 D Ex tb IIIC T95 °C, $T_a = -20$ to 85 °C Db

### Special Conditions for Safe Use (X):

1. Cable entries must be used which maintain the ingress protection of the enclosure to at least IP66/68.
2. Unused cable entries must be filled with suitable blanking plugs which maintain the ingress protection of the enclosure to at least IP66/68.
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. Non-standard paint options (paint options other than Rosemount Blue) may cause risk from Electrostatic discharge. Avoid installation that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth.

5. Display glass shall be positioned in such a way as to minimize the risk of mechanical impact.

### N1 ATEX Type n

<b>Certificate</b>	B aseefa13ATEX0222X
<b>Standards</b>	EN 60079-0:2012, EN 60079-15: 2010
<b>Markings</b>	Ex II 3 G Ex nA IIC T5 Gc ( $-40 \leq T_a \leq 70 \text{ }^\circ\text{C}$ )

### Special Condition for Safe Use (X):

The Rosemount 4088 MV Transmitters fitted with transient protection are not capable of withstanding the 500 V test as defined in Clause 6.5.1 of EN 60079-15:2010. This must be taken into account during installation.

## 8.7 International

### E7 IECEx Flameproof

<b>Certificate</b>	IECEx FMG 13.0024X
<b>Standards</b>	IEC 60079-0:2011, IEC 60079-1: 2014, IEC 60079-26: 2014
<b>Markings</b>	Ex db IIC T6...T4 Ga/Gb, T4/T5 ( $-50 \leq T_a \leq 80 \text{ }^\circ\text{C}$ ), T6 ( $-50 \leq T_a \leq 65 \text{ }^\circ\text{C}$ )

### 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. Appropriate cable, glands, and plugs need to be suitable for a temperature of 5 °C greater than the maximum specified temperature for location where installed.
4. The applicable temperature class, ambient temperature range and process temperature range of the equipment is as follows:
  - T4 for  $-50 \leq T_a \leq 80 \text{ }^\circ\text{C}$  with T process =  $-50$  to  $120 \text{ }^\circ\text{C}$
  - T5 for  $-50 \leq T_a \leq 80 \text{ }^\circ\text{C}$  with T process =  $-50$  to  $80 \text{ }^\circ\text{C}$
  - T6 for  $-50 \leq T_a \leq 65 \text{ }^\circ\text{C}$  with T process =  $-50$  to  $65 \text{ }^\circ\text{C}$
5. Non-standard paint options (paint options other than Rosemount Blue) may cause risk from Electrostatic discharge. Avoid installation

that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth.

6. Display glass shall be positioned in such a way as to minimize the risk of mechanical impact.

**I7 IECEx Intrinsic Safety**

**Certificate** IECEx BAS 13.0110X  
**Standards** IEC 60079-0:2011, IEC 60079-11:2011  
**Markings** Ex ia IIB T4 Ga (-60 ≤ T<sub>a</sub> ≤ +70 °C)

	Supply	Modbus	RTD
Voltage U <sub>i</sub>	22 V	9 V	15.51 V
Current I <sub>i</sub>	147 mA	26 mA	20.89 mA
Power P <sub>i</sub>	1 W	1 W	80.94 mW
Capacitance C <sub>i</sub>	0	0	0
Inductance L <sub>i</sub>	0	0	0

**Special Conditions for Safe Use (X):**

1. The Rosemount 4088 MV Transmitters fitted with transient protection are not capable of withstanding the 500V test as defined in Clause 6.3.13 of IEC 60079-11:2012. This must be taken into account during installation.
2. The Rosemount 4088 MV 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 area.

**NK IECEx Dust**

**Certificate** IECEx FMG 13.0024X  
**Standards** IEC 60079-0:2011, IEC 60079-31:2013  
**Markings** Ex tb IIIC T95 °C, Ta = -20 to 85 °C, Db

**Special Conditions for Safe Use (X):**

1. Cable entries must be used which maintain the ingress protection of the enclosure to at least IP66/68.
2. Unused cable entries must be filled with suitable blanking plugs which maintain the ingress protection of the enclosure to at least IP66/68.
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. Non-standard paint options (paint options other than Rosemount Blue) may cause risk from Electrostatic discharge. Avoid installation that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth.
5. Display glass shall be positioned in such a way as to minimize the risk of mechanical impact.

### N7 IECEx Type n

<b>Certificate</b>	IECEx BAS 13.0111X
<b>Standards</b>	IEC 60079-0:2011, IEC 60079-15: 2010
<b>Markings</b>	Ex nA IIC T5 Gc ( $-40 \leq T_a \leq +70 \text{ }^\circ\text{C}$ )

### Special Conditions for Safe Use (X):

1. The Rosemount 4088 MV Transmitters fitted with transient protection are not capable of withstanding the 500 V test as defined in Clause 6.5.1 of IEC 60079-15:2010. This must be taken into account during installation.

## 8.8 Brazil

### E2 INMETRO Flameproof

<b>Certificate</b>	UL-BR 15.0531X
<b>Standards</b>	ABNT NBR IEC60079-0:2013, ABNT NBR IEC60079-1:2016, ABNT NBR IEC60079-26:2016
<b>Markings</b>	Ex db IIC T6...T4 Ga/Gb, T6 ( $-50 \leq T_a \leq +65 \text{ }^\circ\text{C}$ ), T5/T4 ( $-50 \leq T_a \leq +80 \text{ }^\circ\text{C}$ )

### 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. Flameproof joints are not intended for repair.
3. Appropriate cable, glands, and plugs need to be suitable for a temperature of 5 °C greater than the maximum specified temperature for the location where it is installed.
4. Non-standard paint options (paint options other than Rosemount Blue) may cause risk from electrostatic discharge. Avoid installation that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth.

5. Display Glass should be positioned in such a way as to minimize the risk of mechanical impact.
6. The applicable temperature class, ambient temperature range and process temperature range of the equipment is as follows:
  - T4 for  $-50 \leq T_a \leq 80 \text{ }^\circ\text{C}$  with T process = -50 to 120 °C
  - T5 for  $-50 \leq T_a \leq 80 \text{ }^\circ\text{C}$  with T process = -50 to 80 °C
  - T6 for  $-50 \leq T_a \leq 65 \text{ }^\circ\text{C}$  with T process = -50 to 65 °C

**I2 INMETRO Intrinsic Safety**

**Certificate** UL-BR 15.0720X

**Standards** ABNT NBR IEC60079-0:2008 + Errata 1:2011, ABNT NBR IEC60079-11:2009

**Markings** Ex ia IIB T4 Ga, T4( $-60 \leq T_a \leq +70 \text{ }^\circ\text{C}$ )

	Supply	Modbus	RTD
Voltage $U_i$	22 V	9 V	15.51 V
Current $I_i$	147 mA	26 mA	20.89 mA
Power $P_i$	1 W	1 W	80.94 mW
Capacitance $C_i$	0	0	0
Inductance $L_i$	0	0	0

**Special Conditions for Safe Use (X):**

1. If the equipment is fitted with an optional 90V transient suppressor, it is not capable of withstanding the 500 V insulation test required by ABNT NBR IRC 60079-11. This must be taken into account when installing the equipment.
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 in zones that require EPL Ga.

**8.9 Technical Regulations Customs Union (EAC)**

**EM EAC Flameproof**

**Certificate** RU C-US.Mю62.B.02349

**Markings** Ga/Gb Ex d IIC T6...T4 X, T5/T4( $-50 \leq T_a \leq +80 \text{ }^\circ\text{C}$ ), T6( $-50 \leq T_a \leq +65 \text{ }^\circ\text{C}$ )

**Special Conditions for Safe Use (X):**

1. See certificate for special conditions.

### IM EAC Intrinsically Safe

**Certificate** RU C-US.Mю62.B.02349

**Markings** 0Ex ia IIB T4 Ga X, T4(-60 ≤ T<sub>a</sub> ≤ +70 °C)

#### Special Conditions for Safe Use (X):

1. See certificate for special conditions.

## 8.10 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, N7, and NK

**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

# 8.11 EU Declaration of Conformity

	<h2 style="margin: 0;">EU Declaration of Conformity</h2> <p style="margin: 0;"><b>No: RMD 1097 Rev. I</b></p>	
<p>We,</p> <p style="margin-left: 40px;"><b>Rosemount Inc.</b>  <b>8200 Market Boulevard</b>  <b>Chanhassen, MN 55317-9685</b>  <b>USA</b></p> <p>declare under our sole responsibility that the product,</p> <p style="text-align: center;"><b>Rosemount™ Model 4088 Pressure Transmitters</b></p> <p>manufactured by,</p> <p style="margin-left: 40px;"><b>Rosemount Inc.</b>  <b>8200 Market Boulevard</b>  <b>Chanhassen, MN 55317-9685</b>  <b>USA</b></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>		
 <hr style="width: 100%;"/> <p style="text-align: center;">(signature)</p>	<p style="text-align: right;">Vice President of Global Quality</p> <hr style="width: 100%;"/> <p style="text-align: center;">(function name - printed)</p>	
<p style="text-align: center;">Chris LaPoint</p> <hr style="width: 100%;"/> <p style="text-align: center;">(name - printed)</p>	<p style="text-align: right;">13-Feb-18</p> <hr style="width: 100%;"/> <p style="text-align: center;">(date of issue)</p>	
<p><b>ROSEMOUNT</b></p>		
<p>Page 1 of 4</p>		<p>Document Rev: 2013_A</p>



# EU Declaration of Conformity



No: RMD 1097 Rev. I

## EMC Directive (2014/30/EU)

All Models

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

## PED Directive (2014/68/EU)

### Model 4088 Pressure Transmitters

**Model 4088 with Differential Pressure Ranges A, 2, 3, 4 & 5; Static Pressure Ranges 4 & 5 (also with P0 and P9 options) 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

### All other model 4088 Pressure Transmitters

Sound Engineering Practice

ROSEMOUNT™



# EU Declaration of Conformity



No: RMD 1097 Rev. I

## ATEX Directive (2014/34/EU)

### Model 4088 Pressure Transmitters

#### FM12ATEX0030X – Flameproof Certificate

Equipment Group II, Category 1/2 G

Ex db IIC T6...T4 Ga/Gb

Harmonized Standards Used:

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

#### FM12ATEX0030X – Dust Certificate

Equipment Group II, Category 2 D

Ex tb IIIC T95°C Db

Harmonized Standards Used:

EN 60079-0:2012+A11:2013, EN 60079-31:2014

#### Baseefa13ATEX0221X – Intrinsic Safety Certificate

Equipment Group II, Category 1 G

Ex ia IIB T4 Ga

Harmonized Standards Used:

EN 60079-0:2012+A11:2013, EN 60079-11:2012

#### Baseefa13ATEX0222X – Type n Certificate

Equipment Group II, Category 3 G

Ex nA IIC T4 Gc

Harmonized Standards Used:

EN 60079-0:2012+A11:2013, EN 60079-15:2010

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# EU Declaration of Conformity



No: RMD 1097 Rev. I

## PED Notified Body

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

## ATEX Notified Body for EU Type Examination Certificate

**FM Approvals Ltd.** [Notified Body Number: 1725]  
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Windsor, Berkshire, SL4 1RS  
United Kingdom

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

## ATEX Notified Body for Quality Assurance

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ROSEMOUNT™





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