

Rosemount™ 4088A MultiVariable™ Transmitter

with Modbus® Output 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.

Contents

Steps required for quick installation..... 5

Mount the transmitter.....6

Consider housing rotation..... 13

Set the switches..... 15

Wiring and power up 16

Verify device configuration.....23

Trim the transmitter.....27

Product certifications..... 29

1 Steps required for quick installation

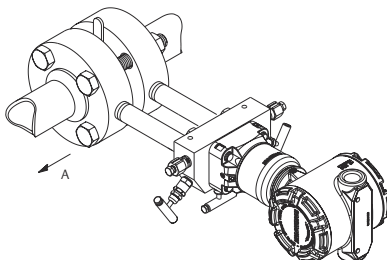
- Start >
- [Mount the transmitter](#): Mount the Transmitter
- [Consider housing rotation](#): Consider Housing Rotation
- [Set the switches](#): Set the Switches
- [Wiring and power up](#) : Wiring and Power Up
- [Verify device configuration](#): Verify Device Configuration
- [Trim the transmitter](#):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

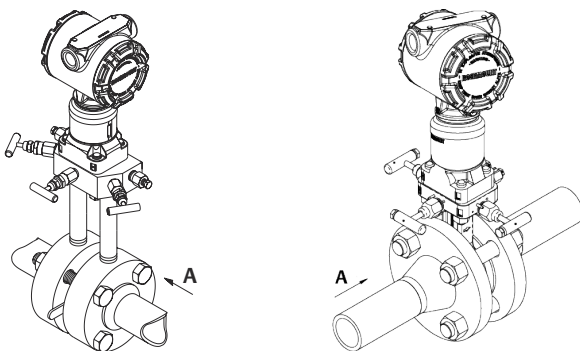


A. Direction of flow

2.2 Gas flow applications

Procedure

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

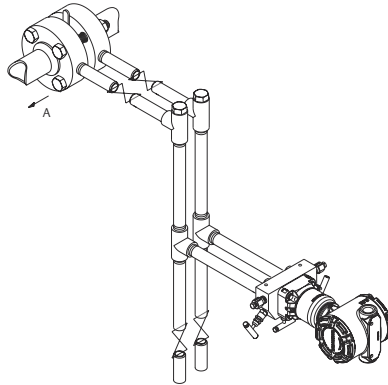


A. Direction of flow

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.

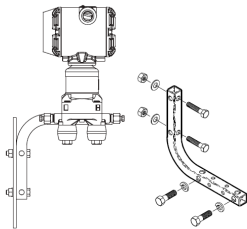


A. Direction of flow

2.4 Mounting brackets

Figure 2-1: Mounting Bracket – Coplanar Flange

Panel mount



Pipe mount

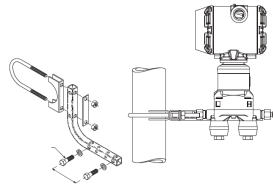


Figure 2-2: Mounting Brackets – Traditional Flange

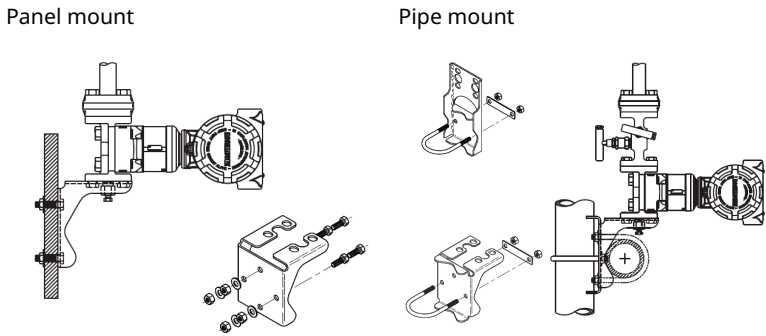
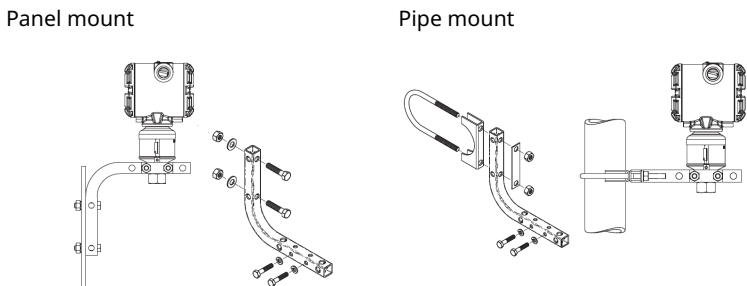


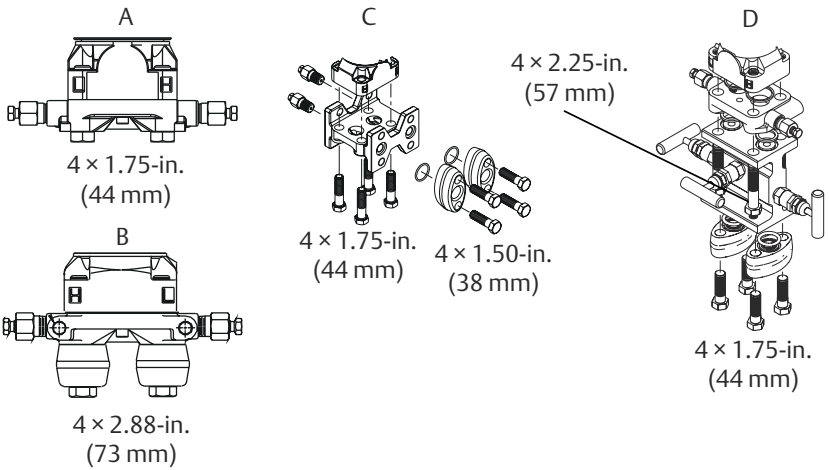
Figure 2-3: Mounting Brackets – In-line



2.5 Bolting considerations

If the transmitter installation requires assembly of a process flange, manifold, or flange adapters, follow these assembly guidelines to ensure a tight seal for optimal performance characteristics of the transmitter. Only use bolts supplied with the transmitter or sold by Emerson as spare parts. [Figure 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


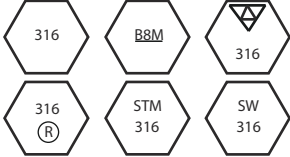
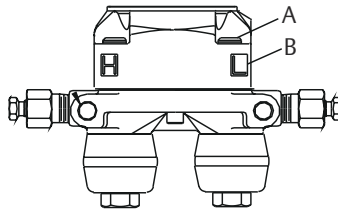
Bolt material	Head markings	Initial torque	Final torque
Carbon Steel (CS)		300 in-lb	650 in-lb
Stainless Steel (SST)		150 in-lb	300 in-lb

Figure 2-5: Proper Bolt Installation

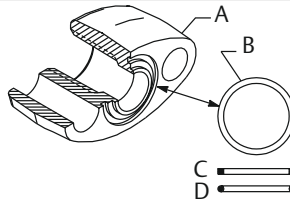


- A. Bolt
- B. Sensor module

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

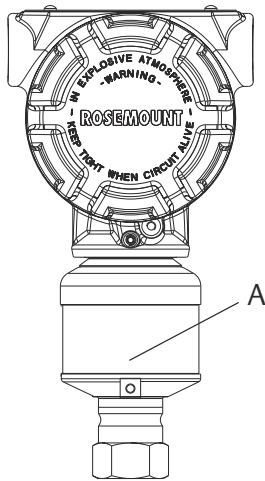
Thread sealing (PTFE) tape or paste on male threads of conduit is required to provide a water/dust tight conduit seal and meets requirements of NEMA[®] Type 4X, IP66, and IP68. Consult factory if other Ingress Protection ratings are required. For M20 threads, install conduit plugs to full thread engagement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

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

Procedure

1. Loosen the housing rotation set screw.
2. Turn the housing up to 180° left or right of its original (as shipped) position.
3. Re-tighten the housing rotation set screw.

Figure 3-1: Transmitter Housing Set Screw



A. LCD display

B. Housing rotation set screw (3/32-in.)

⚠ CAUTION

Do not rotate the housing more than 180° without first performing a disassembly procedure. Over-rotation may sever the electrical connection between the sensor module and the electronics.

3.1 Rotate the LCD display

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

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

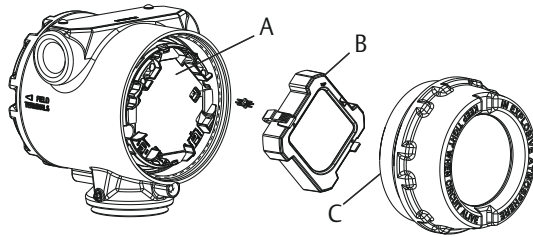
If LCD display pins are inadvertently removed from the electronics board, carefully re-insert the pins before snapping the LCD display back into place.

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

Procedure

1. If the transmitter is installed in a loop, then secure the loop and disconnect power.
2. Required: Remove the transmitter cover on the electronics board side (opposite the field terminals side). Do not remove instrument covers in explosive environments when circuit is live.
3. Engage the four-pin connector into the electronics board and snap LCD display into place.
4. Required: In order to meet explosion-proof requirements, reinstall the housing cover and tighten so the cover is fully seated with metal to metal contact between the housing and cover. After the cover is seated properly, replace the flathead screw located on the bottom of the housing cover.

Figure 3-2: Optional LCD Display



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

4 Set the switches

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.

Note

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

4. Required: In order to meet explosion-proof requirements, reinstall the housing cover and tighten so the cover is fully seated with metal 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

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 Rosemount 4088A to the RS-485 bus as shown in [Figure 6-2](#).
 - a) Connect the A lead to the "A" terminal.
 - b) Connect the B lead to the "B" terminal.
4. Connect the positive lead from the power source to the "PWR +" terminal, and the negative lead to the "PWR -" terminal (for power requirements, reference the Rosemount 4088 MultiVariable Transmitter [Reference Manual](#)).

Note

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

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.

5. 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.

Note

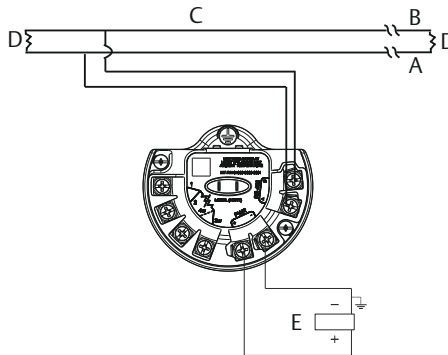
The use of a pin or a ferrule wire terminal is not recommended as the connection may be more susceptible to loosening over time or under vibration.

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.

Note

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

Example

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 Ω resistor
 - E. User-Provided Power Supply
-

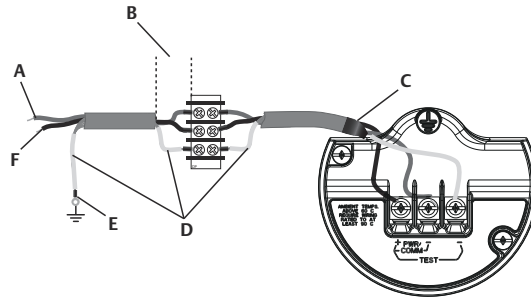
5.1 Grounding

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 5-2: 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


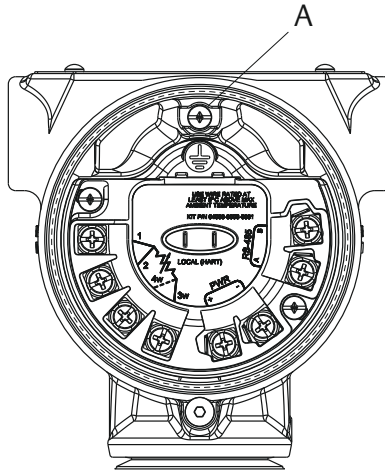
The internal ground connection screw is inside the terminal side of the electronics housing. The screw is identified by a ground symbol ()

Figure 5-3: Internal Ground Connection

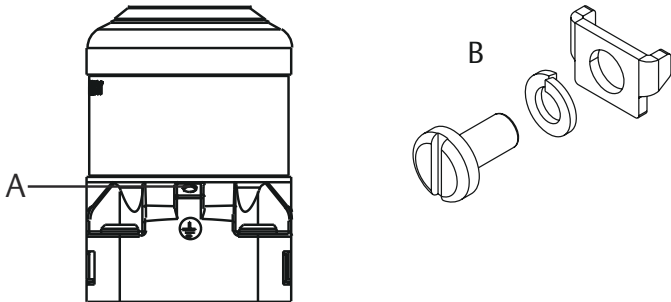


A. Ground lug

External ground connection

The external ground connection is on the outside of the sensor module housing. The connection is identified by a ground symbol (⊕). 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 5-4: 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, and N7)
KA	ATEX and CSA Explosion-proof, Intrinsically Safe, Division 2 (combination of E1, E6, I1, and I6)
KC	FM and ATEX Explosion-proof, Intrinsically Safe, Division 2 (combination of E5, E1, I5, and I1)
T1	Transient terminal block
D4	External ground screw assembly

Surges/transients

The transmitter will withstand electrical transients of the energy level usually encountered in static discharges or induced switching transients. However, high-energy transients, such as those induced in wiring from nearby lightning strikes, can damage the transmitter.

Optional transient protection terminal block

The transient protection terminal block can be ordered as an installed option (option code T1 in the transmitter model number) or as a spare part to retrofit existing Rosemount 4088 MultiVariable Transmitters in the field. For a complete listing of spare part numbers for transient protection terminal blocks, refer to the Spare parts list section in the Rosemount 4088 MultiVariable Transmitter [Reference Manual](#). A lightning bolt symbol on a terminal block identifies it as having transient protection.

Note

Grounding the transmitter case using the threaded conduit connection may not provide a sufficient ground. The transient protection terminal block (option code T1) will not provide transient protection unless the transmitter case is properly grounded. See [Transmitter case](#) to ground the transmitter case. Do not run transient

protection ground wire with signal wiring; the ground wire may carry excessive current if a lightning strike occurs.

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

Note

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

Procedure

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

Note

Use shielded 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

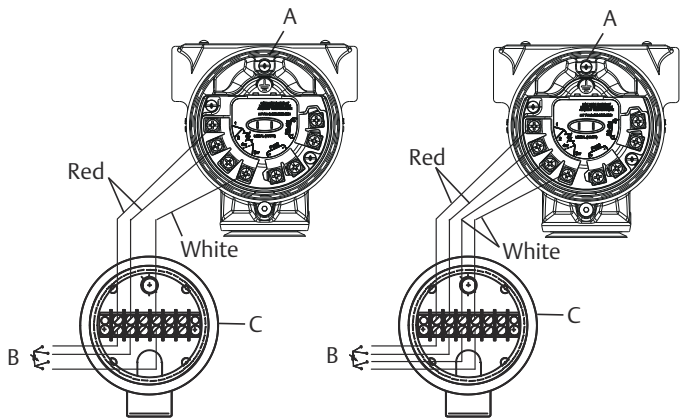
If power is already connected to the Rosemount 4088, power should be removed prior to connecting the RTD wires. This will allow the Rosemount 4088 to detect the RTD type at startup. Once the RTD is installed, reconnect power.

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

Figure 5-5: Transmitter RTD Wiring Connection

3-wire

4-wire



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

6 Verify device configuration

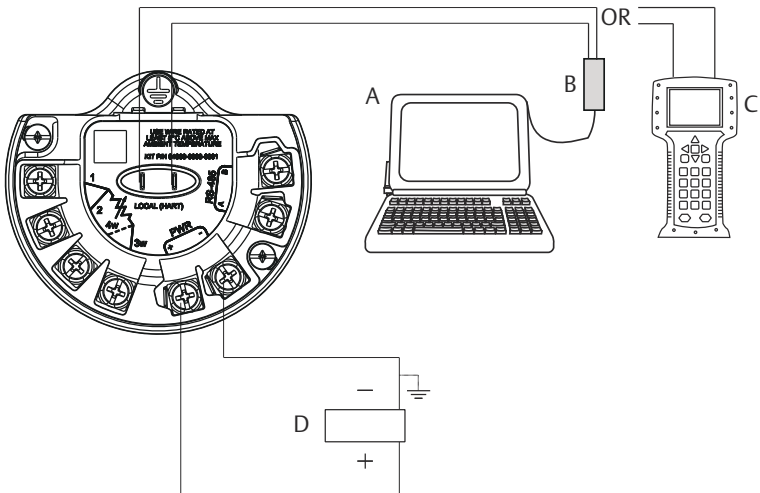
For Rosemount 4088A, use AMS Device Configurator with the Rosemount 4088 DTM or a HART Field Communicator with the Rosemount 4088 Device Descriptor to communicate with and verify configuration of the transmitter.

Figure 6-1 shows the wiring connections necessary to power a Rosemount 4088 MultiVariable Transmitter and enable communications with a PC-based software tool or handheld Field Communicator.

6.1 Transmitter wiring

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.

Figure 6-1: Connecting a Personal Computer to a Transmitter

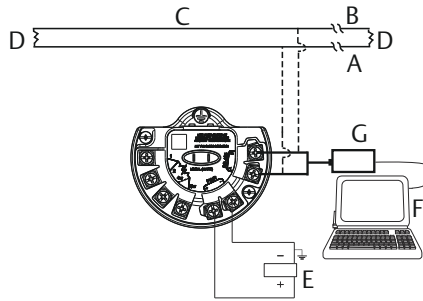


- A. AMS Device Configurator
- B. HART modem
- C. Field Communicator
- D. User-provided power supply

The Rosemount 4088 may be configured with the Rosemount 3095FB Configuration Software. When using this legacy tool, only functionality that was available with the Rosemount 3095FB can be

accessed. The device must be removed from the Modbus network prior to communicating over the RS-485 bus.

Figure 6-2: 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 Ω resistor
- E. User-Provided Power Supply
- F. Rosemount 3095FB configuration software
- G. RS 232/RS 485 converter

Note

Device configuration procedures are given for AMS Device Configurator in the Rosemount 4088 MultiVariable Transmitter [Reference Manual](#). This manual also includes a detailed Modbus register map.

Table 6-1: Field Communication Fast Keys

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

	Category	Function	Sequence
✓	Device	Available Measurements	1, 9, 4
	Device	Display	2, 2, 5
	Device	Sensor Module Temperature	2, 2, 4
	Device	Sensor Module Temperature Units	2, 2, 4, 3

Table 6-1: Field Communication Fast Keys (continued)

	Category	Function	Sequence
	Device	Sensor Module Temperature Upper Alert Limit	2, 2, 4, 4
	Device	Sensor Module Temperature Lower Alert Limit	2, 2, 4, 5
✓	Device	Device Address	2, 2, 6, 1, 1
	Device	Device Status	1, 1
	Device	Baud Rate	2, 2, 6, 1, 2
	Device	Turnaround Delay	2, 2, 6, 1, 3
	Device	Tag	2, 2, 7, 1, 1
	Device	Long Tag	2, 2, 7, 1, 2
	Device	Transmitter S/N	2, 2, 7, 1, 7
	Device	Security Switch	1, 9, 5, 1
	DP Sensor	DP	2, 2, 1
	DP Sensor	Calibration	3, 4, 1, 8
✓	DP Sensor	DP Units	2, 2, 1, 3
✓	DP Sensor	DP Damping	2, 2, 1, 4
	DP Sensor	Verification	3, 4, 1, 9
	DP Sensor	Upper Alert Limit	2, 2, 1, 6
	DP Sensor	Lower Alert Limit	2, 2, 1, 7
	PT Sensor	Sensor Matching	2, 2, 3, 8
	PT Sensor	PT	2, 2, 3
	PT Sensor	Calibration	3, 4, 3, 8
✓	PT Sensor	PT Units	2, 2, 3, 3
✓	PT Sensor	PT Damping	2, 2, 3, 4
✓	PT Sensor	Sensor Type	2, 2, 3, 5
	PT Sensor	Verification	3, 4, 3, 9
	PT Sensor	Upper Alert Limit	2, 2, 3, 6, 1
	PT Sensor	Lower Alert Limit	2, 2, 3, 6, 2
✓	PT Sensor	Temp Mode Setup	2, 2, 3, 7
	SP Sensor	AP	2, 2, 2, 7
✓	SP Sensor	SP Units	2, 2, 2, 3

Table 6-1: Field Communication Fast Keys (continued)

	Category	Function	Sequence
	SP Sensor	GP	2, 2, 2, 6
✓	SP Sensor	SP Damping	2, 2, 2, 4
	SP Sensor	Calibration	3, 4, 2, 8
	SP Sensor	Verification	3, 4, 2, 9
	SP Sensor	Upper Alert Limit	2, 2, 2, 6, 3
	SP Sensor	Lower Alert Limit	2, 2, 2, 6, 4

7 Trim the transmitter

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

Use AMS Device Configurator with the Rosemount 4088 DTM or a HART Field Communicator with the Rosemount 4088 Device Descriptor to communicate with and perform maintenance on the Rosemount 4088 MultiVariable Transmitter.

7.1 Zero trim

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

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 the Field Communicator

Procedure

1. Block, equalize, and vent the transmitter and connect the Field Communicator (for more information on connecting the Field Communicator, see The Connect to a personal computer section in the Rosemount 4088 MultiTransmitter [Reference Manual](#)).
2. If the device is equipped with a static pressure sensor, trim the sensor by inputting the following Fast Key sequence at the transmitter menu:

Field Communicator	3, 4, 2, 8
--------------------	------------

3. Follow the appropriate static pressure trim procedure.
4.
 - Zero trim for gage pressure sensors
 - Lower sensor trim for absolute pressure sensors

Note

It is possible to degrade the performance of the transmitter if the full sensor trim is done improperly or with inaccurate calibration equipment. Use a pressure input source that is at least three times more accurate than the transmitter and allow

the pressure input to stabilize for ten seconds before entering any values.

5. Zero the differential pressure sensor by inputting the following Fast Key sequence at the transmitter menu:

Field Communicator	3, 4, 1, 8, 5
--------------------	---------------

6. Follow the zero DP trim procedure.

8 Product certifications

Rev 1.11

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](https://www.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® (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 US 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 (Ta = -50 to 85 °C); DIP Class II and Class III, Division 1, Groups E, F, G (Ta = -50 to 85 °C); Class I Zone 0/1 AEx db IIC T5 (Ta = -50 to 80 °C); Enclosure Type 4X/IP66/IP68; Conduit seal not required for division installations

Specific Conditions of Use:

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.

IS US 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.

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.

8.5 Canada

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

E6 Canada 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 Canada 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/UKEX Flameproof

ATEX Certificate DEKRA 20ATEX0012X


UKEX Certificate DEKRA 21UKEX0291X

Standards	EN IEC 60079-0:2018, EN 60079-1:2014, EN 60079-26:2015
Markings	 II 1/2 G Ex db IIC T6...T4 Ga/Gb, T4/T5(-60 °C ≤ T _a ≤ 80 °C), T6(-60 °C ≤ T _a ≤ 70 °C)

Specific Conditions of Use:

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

I1 ATEX Intrinsic Safety

Certificate	Baseefa13ATEX0221X
Standards	EN 60079-0:2012, EN 60079-11:2012
Markings	 II 1 G Ex ia IIB T4 Ga (-60 °C ≤ T _a ≤ +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/UKEX Dust

ATEX Certificate	DEKRA 20ATEX0012X
UKEX Certificate	DEKRA 21UKEX0291X
Standards	EN IEC 60079-0:2018, EN 60079-31:2014
Markings	⊕ II 2 D Ex tb IIIC T95 °C Db, (-20 °C ≤ T _a ≤ +85 °C)

Specific Condition of Use:

Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact manufacturer for more information.

N1 ATEX Type n

Certificate	Baseefa13ATEX0222X
Standards	EN 60079-0:2012, EN 60079-15: 2010
Markings	⊕ II 3 G Ex nA IIC T5 Gc (-40 °C ≤ T _a ≤ 70 °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

Certificate	IECEx DEK 20.0007X
Standards	IEC 60079-0:2017, IEC 60079-1: 2014-06, IEC 60079-26: 2014-10
Markings	Ex db IIC T6...T4 Ga/Gb, T4/T5(-60 °C ≤ T _a ≤ 80 °C), T6(-60 °C ≤ T _a ≤ 70 °C)

Specific Conditions of Use:

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

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 °C ≤ T _a ≤ +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 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 DEK 20.0007X
Standards	IEC 60079-0:2017, IEC 60079-31:2013
Markings	Ex tb IIIC T95 °C Db, (-20 °C ≤ T _a ≤ +85 °C)

Specific Condition of Use:

Non-standard paint options may cause risk from electrostatic discharge. Avoid installations that could cause electrostatic build-up on painted surfaces, and only clean the painted surfaces with a damp cloth. If paint is ordered through a special option code, contact manufacturer for more information.

N7 IECEx Type n

Certificate	IECEx BAS 13.0111X
Standards	IEC 60079-0:2011, IEC 60079-15: 2010
Markings	Ex nA IIC T5 Gc (-40 °C ≤ T _a ≤ +70 °C)

Special Condition for Safe Use (X):

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 Brazil Flameproof

Certificate	UL-BR 15.0531X
Standards	ABNT NBR IEC60079-0:2013, ABNT NBR IEC60079-1:2016, ABNT NBR IEC60079-26:2016
Markings	Ex db IIC T6...T4 Ga/Gb, T6(-50 °C ≤ T _a ≤ +65 °C), T5/T4(-50 °C ≤ T _a ≤ +80 °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 $-50\text{ °C} \leq T_a \leq 80\text{ °C}$ with T process = -50 to 120 °C
 - T5 for $-50\text{ °C} \leq T_a \leq 80\text{ °C}$ with T process = -50 to 80 °C
 - T6 for $-50\text{ °C} \leq T_a \leq 65\text{ °C}$ with T process = -50 to 65 °C

I2 Brazil 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($-60\text{ °C} \leq T_a \leq +70\text{ °C}$)

	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 EAЭC KZ 7500525.01.01.00603

Markings Ga/Gb Ex d IIC T6...T4 X, T5/T4(-50 °C ≤ T_a ≤ +80 °C), T6(-50 °C ≤ T_a ≤ +65 °C)

Special Condition for Safe Use (X):

See certificate for special conditions.

IM EAC Intrinsically Safe

Certificate EAЭC KZ 7500525.01.01.00603

Markings 0Ex ia IIB T4 Ga X, T4(-60 °C ≤ T_a ≤ +70 °C)


Special Condition for Safe Use (X):

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 Declaration of Conformity



EU Declaration of Conformity

No: RMD 1097 Rev. K



We,

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

declare under our sole responsibility that the product,

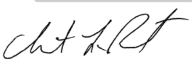
Rosemount™ Model 4088 Pressure Transmitters

manufactured by,

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

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

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



(signature)

Vice President of Global Quality

(function name - printed)

Chris LaPoint

(name - printed)

1-April-2019; Shakopee, MN USA

(date of issue)



Page 1 of 4

Document Rev: 2013_A



EMERSON. EU Declaration of Conformity

No: RMD 1097 Rev. K



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. 12698-2018-CE-ACCREDIA

Module H Conformity Assessment

Other Standards Used:

ANSI / ISA 61010-1: 2004

Note – previous PED Certificate No. 59552-2009-CE-HOU-DNV

All other model 4088 Pressure Transmitters

Sound Engineering Practice

ROSEMOUNT™



EMERSON. EU Declaration of Conformity

No: RMD 1097 Rev. K



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

PED Notified Body


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

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





EMERSON. EU Declaration of Conformity



No: RMD 1097 Rev. K

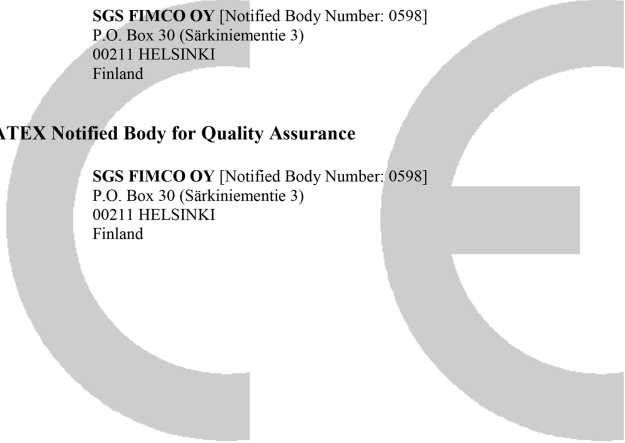
ATEX Notified Body for EU Type Examination Certificate

FM Approvals Europe Ltd. [Notified Body Number: 2809]
One Georges Quay Plaza
Dublin Ireland D02 E440

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

ATEX Notified Body for Quality Assurance

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



ROSEMOUNT

Page 4 of 4 Document Rev: 2013_A

8.12 China RoHS

有害物质成分表
03031-9021, Rev AA

罗斯蒙特产品型号 4088
7/1/2016

含有China RoHS管控物质超过最大浓度限值的部件型号列表 4088
List of 4088 Parts with China RoHS Concentration above MCVs

部件名称 Part Name	有害物质 / Hazardous Substances					
	铅 Lead (Pb)	汞 Mercury (Hg)	镉 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr +6)	多溴联苯 Polybrominated biphenyls (PBB)	多溴联苯醚 Polybrominated diphenyl ethers (PBDE)
电子组件 Electronics Assembly	X	○	○	○	○	○
壳体组件 Housing Assembly	X	○	○	X	○	○
传感器组件 Sensor Assembly	X	○	○	X	○	○

本表格系依据SJ/T11364的规定而制作。

This table is proposed in accordance with the provision of SJ/T11364.

○: 意为该部件的所有均质材料中该有害物质的含量均低于GB/T 26572所规定的限量要求。

○: Indicate that said hazardous substance in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

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

部件名称 Part Name	组装备件说明 Spare Parts Descriptions for Assemblies
电子组件 Electronics Assembly	电子线路板组件 Electronic Board Assemblies 端子块组件 Terminal Block Assemblies 升级套件 Upgrade Kits 液晶显示屏成本地操作界面 LCD or LOI Display
壳体组件 Housing Assembly	电子外壳 Electrical Housing
传感器组件 Sensor Assembly	传感器模块 Sensor Module



Quick Start Guide
00825-0100-4088, Rev. CB
March 2023

For more information: [Emerson.com](https://www.emerson.com)

©2023 Emerson. All rights reserved.

Emerson Terms and Conditions of Sale are available upon request. The Emerson logo is a trademark and service mark of Emerson Electric Co. Rosemount is a mark of one of the Emerson family of companies. All other marks are the property of their respective owners.

ROSEMOUNT™

