Quick Start Guide
00825-0100-4088, Rev AE
September 2016

Rosemount™ 4088A MultiVariable™ Transmitter
with Modbus® Output Protocol

Modbus

EMERSON™
Process Management

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 EmersonProcess.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 × 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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Verify device configuration

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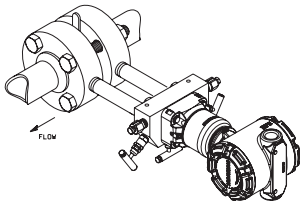
2.0 Mount the transmitter

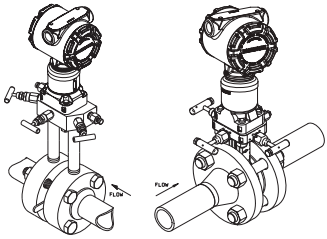
2.1 Liquid flow applications

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



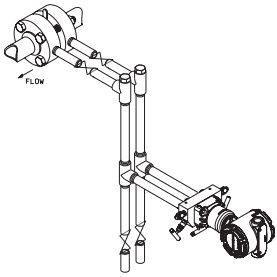
2.2 Gas flow applications

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



2.3 Steam flow applications

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



2.4 Mounting brackets

Figure 1. Coplanar Flange

Panel mount Pipe mount

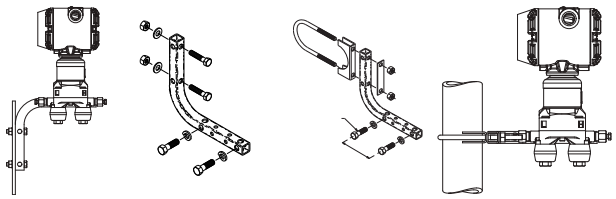


Figure 2. Traditional Flange

Panel mount Pipe mount

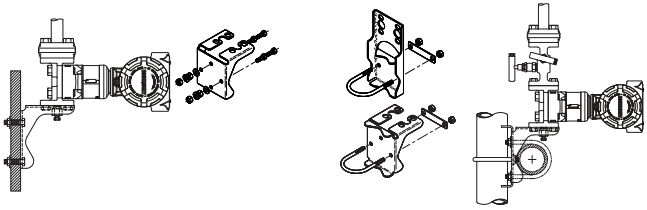
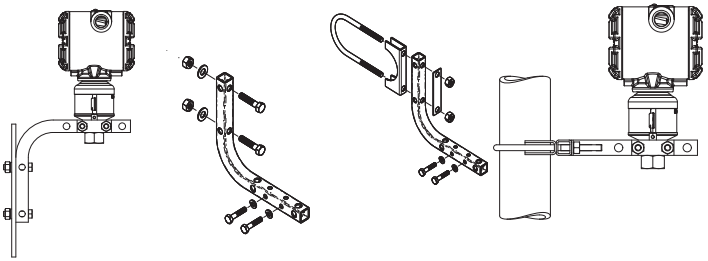


Figure 3. In-Line Flange

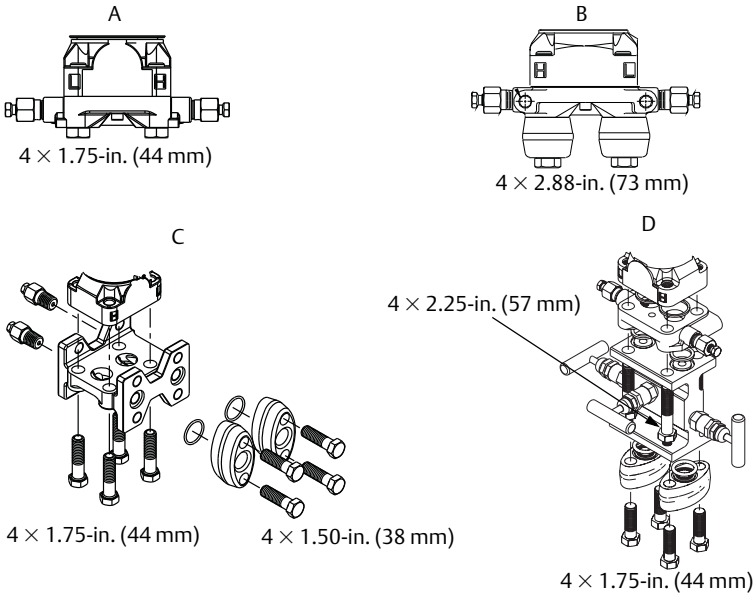
Panel mount Pipe mount



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 Process Management as spare parts. Figure 4 on page 6 illustrates common transmitter assemblies with the bolt length required for proper transmitter assembly.

Figure 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 1. If bolt material is not shown in Table 1, contact the local Emerson Process Management representative for more information.

Use the following bolt installation procedure:

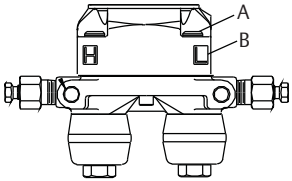
1. Carbon steel bolts do not require lubrication and the stainless steel bolts are coated with a lubricant to ease installation. However, no additional lubricant should be applied when installing either type of bolt.

2. Finger-tighten the bolts.
3. Torque the bolts to the initial torque value using a crossing pattern. See Table 1 for initial torque value.
4. Torque the bolts to the final torque value using the same crossing pattern. See Table 1 for final torque value.
5. Verify the flange bolts are protruding through the sensor module before applying pressure (see Figure 5).

Table 1. Torque Values for Flange and Flange Adapter Bolts

Bolt material	Head markings	Initial torque	Final torque
Carbon Steel (CS)	B7M	300 in-lb	650 in-lb
Stainless Steel (SST)	316, B8M, 316, 316 R, STM 316, SW 316	150 in-lb	300 in-lb

Figure 5. Proper Bolt Installation

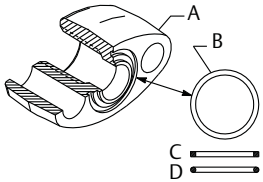


A. Bolt B. Sensor module

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 is square
D. Elastomer profile is 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

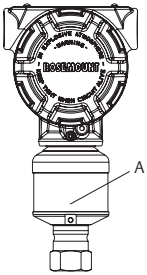
Thread sealing (PTFE) tape or paste on male threads of conduit is required to provide a water/dust tight conduit seal and meets requirements of NEMA Type 4X, IP66, and IP68. Consult factory if other Ingress Protection ratings are required. For M20 threads, install conduit plugs to full thread engagement 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 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 6. In-Line Gage Transmitter



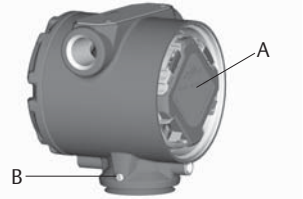
A. Low side pressure port (under neck label)

3.0 Consider housing rotation

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

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

Figure 7. Transmitter Housing Set Screw



A. LCD display B. Housing rotation set screw ($^3/_{32}$-in.)

Note
Do not rotate the housing more than 180° without first performing a disassembly procedure [reference Rosemount 4088 MultiVariable Transmitter 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

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

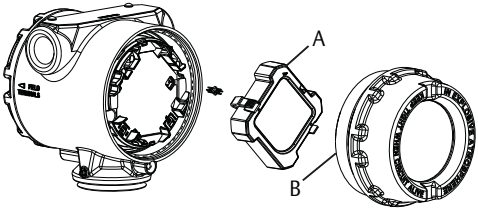
In addition to housing rotation, the optional LCD display can be rotated in 90-degree increments by squeezing the two tabs, pulling out, rotating and snapping back into place.

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

Use the following procedure and Figure 8 to install the LCD display:

1. If the transmitter is installed in a loop, then secure the loop and disconnect power.
2. Remove the transmitter cover opposite the field terminal side. Do not remove the instrument covers in explosive environments when the circuit is live.
3. Engage the four-pin connector into the LCD display and snap into place.
4. Install the meter cover and tighten to ensure metal to metal contact.

Figure 8. Optional LCD Display



A. LCD display B. Meter cover

4.0 Set the switches

The transmitter's default configuration for the AC Termination is in the *off* position. The transmitter's default configuration for the security switch is in the *off* position.

1. If the transmitter is installed, secure the bus and remove power.
2. Remove the housing cover opposite the field terminals side. Do not remove the housing cover in explosive environments.

3. Slide the security and AC Termination switches into the preferred position by using a small screwdriver. Note that the security switch will need to be in the off position in order to make any configuration changes.
4. Reinstall the housing cover and tighten so that the cover is fully seated with metal to metal contact between the housing and cover in order to meet explosion proof requirements.

Figure 9. Transmitter Switch Configuration

A. Security B. AC termination

5.0 Wiring and power up

Use the following steps to wire the transmitter:

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)" on page 13.
   b. If there will not be an optional temperature input, plug and seal the unused conduit connection.
3. Connect the transmitter to the RS-485 bus as shown in Figure 10.
   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.

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.

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 feet (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.

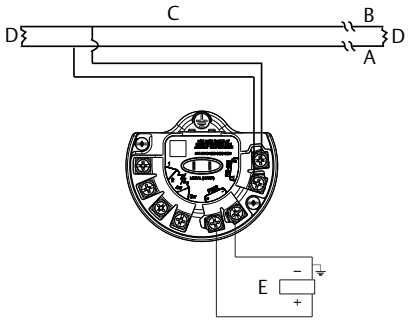
NOTICE

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. Reference the Rosemount 4088 MultiVariable Transmitter Reference Manual for more information.

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.

Figure 10. 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 4088 (see "Set the switches" on page 9) 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. Ground the shield of the signal wiring at any one point on the signal loop. The negative terminal of the power supply is a recommended grounding point. Device must be properly grounded or earthed according to local electric codes.

Transmitter case

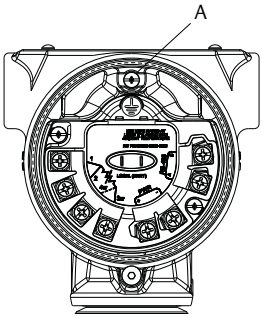
Always ground the transmitter case in accordance with national and local

electrical codes. The most effective transmitter case grounding method is a direct connection to earth ground with minimal impedance (< 1 Ω). 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 11. Internal Ground Connection

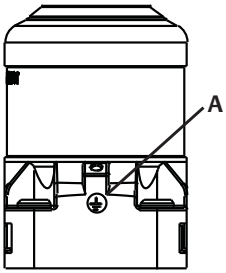


A. Ground lug

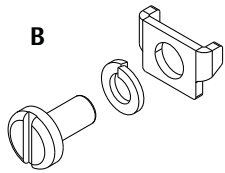
External ground connection

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 2 on page 12 or is available as a spare part (03151-9060-0001).

Figure 12. External Ground Connection



A. External ground lug



B. External ground assembly 03151-9060-0001

Table 2. External Ground Screw Approval Option Codes

Option code	Description
E1	ATEX Flameproof
I1	ATEX Intrinsic Safety

Option code	Description
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 4088 MultiVariable Transmitters in the field. For a complete listing of spare part numbers for transient protection terminal blocks, reference the Rosemount 4088 MultiVariable 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 "Trim the transmitter" on page 18 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.

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

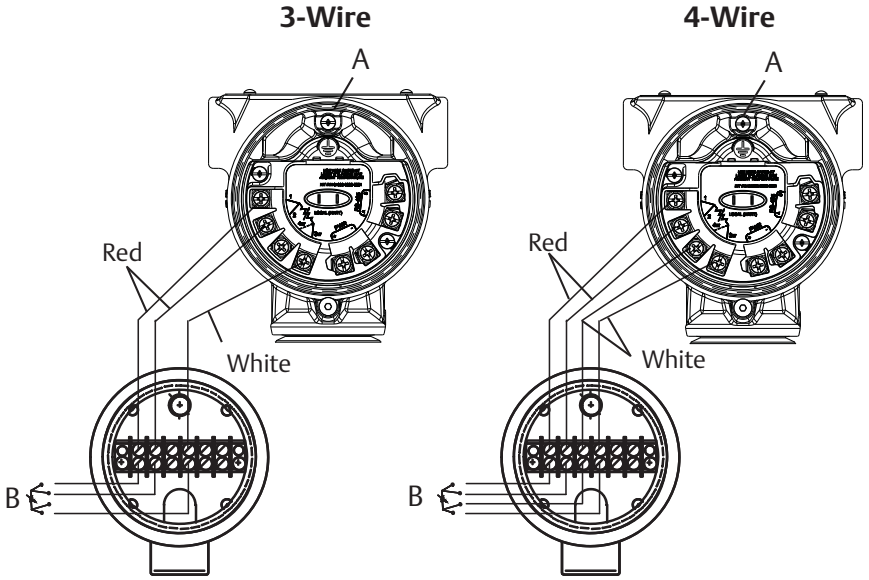
Note
Use shielded four-wire or three-wire cable for the process temperature connection.

2. Connect the RTD cable to the Rosemount 4088 MultiVariable 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 MultiVariable Transmitter, power should be removed prior to connecting the RTD wires. This will allow the transmitter to detect the RTD type at startup. Once the RTD is installed, reconnect power. The same procedure should be followed if the RTD type is changed.

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

Figure 13. Rosemount 4088 MultiVariable Transmitter RTD Wiring Connection



A. Ground lug B. Pt 100 RTD sensor

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

6.0 Verify device configuration

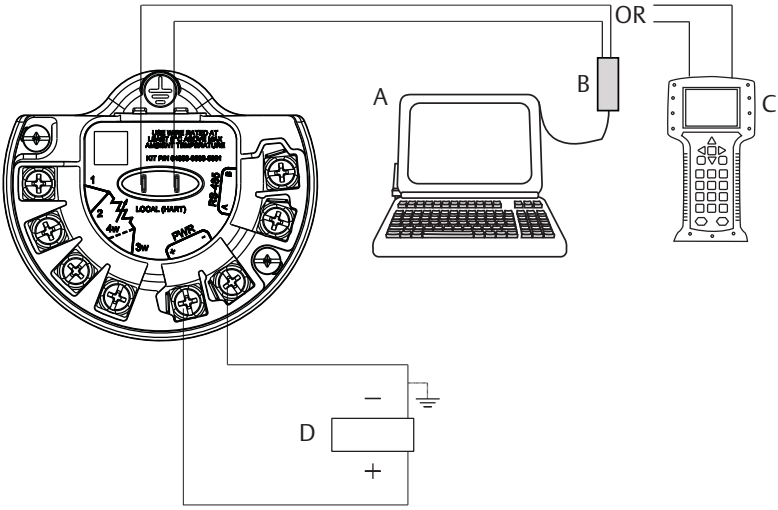
Use RTIS with the Rosemount 4088 DTM or a HART Field Communicator with the Rosemount 4088 Device Descriptor to communicate with and verify configuration of the Rosemount 4088 MultiVariable transmitter.

Figure 14 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

Figure 14. Configuration via HART® (local) Port

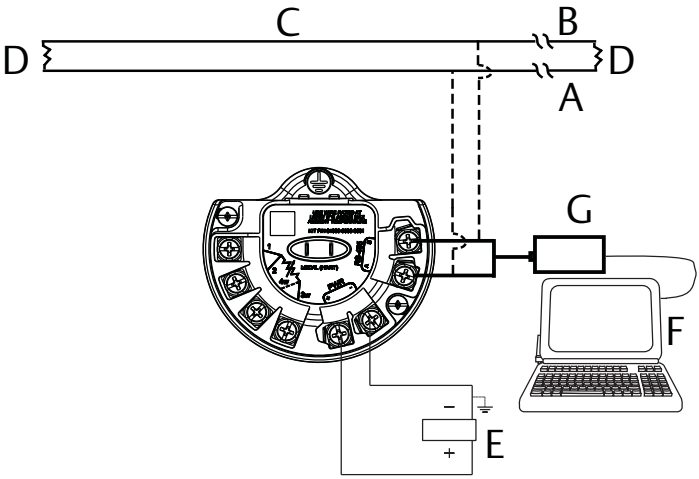
It is not required to remove the Rosemount 4088 from the RS-485 network when configuring over the local HART port. The device should be taken out of service or put in manual prior to performing any configuration changes.



A. Rosemount transmitter interface software (RTIS)
B. HART modem
C. Handheld communicator
D. User-provided power supply

Figure 15. Configuration via RS-485 Network Port

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.



A. RS- 485 (A)
B. RS-485 (B)
C. RS-485 bus, twisted pair required
D. Bus Termination: AC Termination on 4088 (see "Set the switches" on page 9) or 120 Ω resistor
E. User-provided power supply
F. Rosemount 3095FB configuration software
G. RS-232/RS485 converter

Note
Device configuration procedures are given for RTIS in the Rosemount 4088 MultiVariable Transmitter Reference Manual. This manual also includes a detailed Modbus register map.

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

Table 3. Fast Keys

	Category	Function	Fast Key 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 3. Fast Keys

	Category	Function	Fast Key sequence
	Device	Sensor Module Temperature Upper Alert Limit Sensor Module Temperature Lower Alert Limit	2,2,4,4 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 Lower Alert Limit	2,2,1,6 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 Lower Alert Limit	2,2,3,6,1 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
	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 Lower Alert Limit	2,2,2,6,3 2,2,2,6,4

7.0 Trim the transmitter

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

Use RTIS 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.

The transmitter will allow up to 95% of URL zero error to be trimmed through a lower trim procedure.

If zero offset is less than 5% of URL, follow the user interface software instructions below.

Performing a zero trim using the Field Communicator

1. Block, equalize, and vent the transmitter and connect the Field Communicator (for more information on connecting the Field Communicator, see Figure 14 on page 15).
2. If the device is equipped with a static pressure sensor, trim the sensor by inputting the following Fast Key sequence at the 4088 MultiVariable Transmitter menu:

Fast Keys	Description
3,4,2,8	Static Pressure Sensor Trim Options

3. Follow the static pressure trim procedure.

- Zero Trim for Gauge Pressure Sensors

  OR

- Lower Sensor Trim for Absolute Pressure Sensors

Note

When performing a lower sensor trim on an absolute pressure sensor, it is possible to degrade the performance of the sensor if inaccurate calibration equipment is used. Use a barometer that is at least three times as accurate as the absolute sensor of the 4088 MultiVariable Transmitter.

4. Zero the differential pressure sensor by inputting the following Fast Key sequence at the Rosemount 4088 MultiVariable Transmitter menu:

Fast Keys	Description
3,4,1,8,5	Differential Pressure Sensor Zero Trim

5. Follow the zero DP trim procedure.

8.0 Product certifications

Rev 1.3

⚠ 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.

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 × 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 EmersonProcess.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.

USA

E5 FM Explosionproof (XP), Dust-Ignitionproof (DIP) and Nonincendive (NI)
Certificate: 3045445 / 3052850
Standards: FM Class 3600 - 2011, FM Class 3611 - 2004, FM Class 3615 - 2005, FM Class 3616 2011, FM 3810 - 2005, ANSI/NEMA 250 - 1991, ANSI/IEC 60529 - 2004
Markings: XP Class I, Division 1, Groups B, C, D (Ta = -50 °C to 85 °C);
DIP Class II and Class III, Division 1, Groups E, F, G (T_a = -50 °C to 85 °C);
Class I Zone 0/1 AEx d IIC T5 (T_a = -50 °C to 80 °C);
Nonincendive Class I, Division 2, Groups A, B, C, D; T4(-50 °C ≤ T_a ≤ 70 °C);
enclosure Type 4X/IP66/IP68; conduit seal not required

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.

Special Conditions for Safe Use (X):

1. The 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 manufacturers instruction for maintenance shall be followed in detail to assure safety during its expected lifetime.
2. In case of repair contact the manufacturer for information on the dimensions of the flameproof joint.
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 °C ≤ T_a ≤ 80 °C with T process = –50 °C to 120 °C
   - T5 for –50 °C ≤ T_a ≤ 80 °C with T process = –50 °C to 80 °C
   - T6 for –50 °C ≤ T_a ≤ 65 °C with T process = –50 °C to 65 °C

I5 FM Intrinsic Safety (IS) and Nonincendive (NI)
Certificate: 3052850
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 °C ≤ T_a ≤ 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 Model 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 Model 4088 Transmitters fitted with transient protection are not capable of withstanding the 500V 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.

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

Europe

E1 ATEX Flameproof
Certificate: FM12ATEX0030X
Standards: EN 60079-0:2012, EN 60079-1:2007, EN 60079-26:2008, EN 60529:1991+A1:2000
Markings:  II 1/2 G Ex d IIC T6...T4, T4/T5 T_a=-50 °C to 80 °C, T6 Ta=-50 °C to 65 °C, Ga/Gb

Special Conditions for Safe Use (X):

1. The 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 instruction for maintenance shall be followed in detail to assure safety during its expected lifetime.
2. In case of repair, contact the manufacturer for information on the dimensions of the flameproof joint.
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 °C ≤ T_a ≤ 80 °C with T process = –50 °C to 120 °C
   - T5 for –50 °C ≤ T_a ≤ 80 °C with T process = –50 °C to 80 °C
   - T6 for –50 °C ≤ T_a ≤ 65 °C with T process = –50 °C to 65 °C
5. The Transmitter can be installed in the boundary wall between an area of Category 1 and Category 2. In this configuration, the process connection is installed in Category 1, while the transmitter housing is installed in Category 2.

I1 ATEX Flameproof
Certificate: Baseefa13ATEX0221X
Standards: EN 60079-0:2012, EN 60079-11:2012
Markings: ⟨Ex⟩ 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 4088 MV Transmitters fitted with transient protection are not capable of withstanding the 500V test as defined in Clause 6.3.13 of EN 60079-11:2012. This must be taken into account during installation.
2. The Model 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
Certificate: FM12ATEX0030X
Standards: EN 60079-0:2012, EN 60079-31:2009, EN 60529:1991+A1:2000
Markings: ⟨Ex⟩ CII 2 D Ex tb IIIC T95 °C, T_a=-20 °C 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.

N1 ATEX Type n
Certificate: Baseefa13ATEX0222X
Standards: EN 60079-0:2012, EN 60079-15: 2010
Markings: ⟨Ex⟩ II 3 G Ex nA IIC T5 Gc (-40 °C ≤ T_a ≤ 70 °C)

Special Condition for Safe Use (X):
1. The Model 4088 MV Transmitters fitted with transient protection are not capable of withstanding the 500V test as defined in Clause 6.5.1 of EN 60079-15:2010. This must be taken into account during installation.

International

E7 IECEx Flameproof
Certificate: IECEx FMG 13.0024X
Standards: IEC 60079-0:2011, IEC 60079-1: 2007, IEC 60079-26: 2006
Markings: Ex d IIC T6...T4, T4/T5 T_a=-50 °C to 80 °C, T6 T_a=-50 °C to 65 °C, Ga/Gb

Special Conditions for Safe Use (X):

1. The 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 instruction for maintenance shall be followed in detail to assure safety during its expected lifetime.
2. In case of repair, contact the manufacturer for information on the dimensions of the flameproof joint.
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 °C ≤ T_a ≤ 80 °C with T process = –50 °C to 120 °C
   - T5 for –50 °C ≤ T_a ≤ 80 °C with T process = –50 °C to 80 °C
   - T6 for –50 °C ≤ T_a ≤ 65 °C with T process = –50 °C to 65 °C
5. The Transmitter can be installed in the boundary wall between an area of EPL Ga and the less hazardous area, EPL Gb. In this configuration, the process connection is installed in EPL Ga, while the transmitter housing is installed in EPL Gb.

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 Model 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 Model 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, T_a =-20 °C 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.

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):

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

Brazil

E2 INMETRO Flameproof

Certificate: UL-BR 15.0531X

Standards: ABNT NBR IEC60079-0:2008 + Errata 1:2011, ABNT NBR IEC60079-1:2009 + Errata 1:2011, ABNT NBR IEC60079-26:2008 + Errata 1:2008

Markings: Ex d 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. In case of repair, contact the manufacturer for information on the dimensions of the flameproof joints.
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. The transmitter can be installed in the boundary wall between an area of EPL Ga and the less hazardous area, EPL Gb. In this configuration, the process connection is installed in EPL Ga, while the transmitter housing is installed in EPL Gb.
5. The applicable temperature class, ambient temperature range and process temperature range of the equipment is as follows:
   - T4 for –50 °C ≤ T_a ≤ 80 °C with T process = –50 °C to 120 °C
   - T5 for –50 °C ≤ T_a ≤ 80 °C with T process = –50 °C to 80 °C
   - T6 for –50 °C ≤ T_a ≤ 65 °C with T process = –50 °C 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 °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. If the equipment is fitted with an optional 90V transient suppressor, it is not capable of withstanding the 500V 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.

Technical Regulations Customs Union (EAC)

EM EAC Flameproof
Certificate: RU C-US.МЮ62.B.02349
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: RU C-US.МЮ62.B.02349
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

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

Figure 16. Rosemount 4088 Declaration of Conformity

EMERSON.
Process Management

CE

EU Declaration of Conformity

No: RMD 1097 Rev. F

We,

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

declare under our sole responsibility that the product,

Model 4088 Pressure Transmitters

manufactured by,

Rosemount Inc.
8200 Market Boulevard
Chanhassen, 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)

Kelly Klein
(name - printed)

19 May 2016
(date of issue)

ROSEMOUNT

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EU Declaration of Conformity

No: RMD 1097 Rev. F

EMC Directive (2004/108/EC) ***This directive is valid until 19 April 2016***
EMC Directive (2014/30/EU) ***This directive is valid from 20 April 2016***

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

PED Directive (97/23/EC) ***This directive is valid until 18 July 2016***
PED Directive (2014/68/EU) ***This directive is valid from 19 July 2016***

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

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EU Declaration of Conformity

No: RMD 1097 Rev. F

ATEX Directive (94/9/EC) ***This directive is valid until 19 April 2016***
ATEX Directive (2014/34/EU) ***This directive is valid from 20 April 2016***

Model 4088 Pressure Transmitters

FM12ATEX0030X – Flameproof Certificate
Equipment Group II, Category 1/2 G
Ex d IIC T6…T4 Ga/Gb
Harmonized Standards Used:
EN 60079-0:2012, EN 60079-1: 2007, EN 60079-26:2007

FM12ATEX0030X – Dust Certificate
Equipment Group II, Category 2 D
Ex tb IIIC T95°C Db
Harmonized Standards Used:
EN 60079-31:2009
Other Standards Used:
EN 60079-0:2012

Baseefa13ATEX0221X – Intrinsic Safety Certificate
Equipment Group II, Category 1 G
Ex ia IIB T4 Ga
Harmonized Standards Used:
EN 60079-11:2012
Other Standards Used:
EN 60079-0:2012

Baseefa13ATEX0222X – Type n Certificate
Equipment Group II, Category 3 G
Ex nA IIC T4 Gc
Harmonized Standards Used:
EN 60079-15:2010
Other Standards Used:
EN 60079-0:2012

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EU Declaration of Conformity
No: RMD 1097 Rev. F

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]
1 Windsor Dials
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

Baseefa [Notified Body Number: 1180]
Rockhead Business Park, Staden Lane
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United Kingdom

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含有China RoHS管控物质超过最大浓度限值的部件型号列表 Rosemount 4088A
List of Rosemount 4088A 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	O	O	O	O	O
壳体组件 Housing Assembly	X	O	O	X	O	O
传感器组件 Sensor Assembly	X	O	O	X	O	O

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.

O: 意为该部件的所有均质材料中该有害物质的含量均低于GB/T 26572所规定的限量要求.
O: Indicate that said hazardous substance in all of the homogeneous materials for this part is below the limit requirement of GB/T 26572.

X: 意为在该部件所使用的所有均质材料里，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.

00825-0100-4088

Quick Start Guide
00825-0100-4088, Rev AE
September 2016

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