Quick Start Guide
00825-0100-4029, Rev CB
November 2020

Rosemount™ 2110 Level Switch

Vibrating Fork

ROSEMOUNT™

EMERSON.

Contents

1 About this guide

This Quick Start Guide provides basic guidelines for the Rosemount 2110. Refer to the Rosemount 2110 Reference Manual for more instructions. The manual and this guide are also available electronically at Emerson.com/Rosemount.

⚠ WARNING

Failure to follow safe installation and servicing guidelines could result in death or serious injury.

- Ensure the level switch is installed by qualified personnel and in accordance with applicable code of practice.
- Use the level switch only as specified in this manual. Failure to do so may impair the protection provided by the level switch.

Explosions could result in death or serious injury.

- The level switch must only be installed and operated in non-hazardous (ordinary) locations.

Electrical shock could cause death or serious injury.

- Avoid contact with the leads and terminals. High voltage that may be present on leads can cause electrical shock.
- Ensure the power to the level switch is off, and the lines to any other external power source are disconnected or not powered while wiring the level switch.
- Ensure the wiring is suitable for the electrical current and the insulation is suitable for the voltage, temperature, and environment.

Process leaks could result in death or serious injury.

- Ensure the level switch is handled carefully. If the process seal is damaged, gas might escape from the vessel (tank) or pipe.

⚠ WARNING

Any substitution of non-recognized parts may jeopardize safety. Repair (e.g. substitution of components) may also jeopardize safety and is not allowed under any circumstances.

- Unauthorized changes to the product are strictly prohibited as they may unintentionally and unpredictably alter performance and jeopardize safety. Unauthorized changes that interfere with the integrity of the welds or flanges, such as making additional perforations, compromise product integrity and safety. Equipment ratings and certifications are no longer valid on any products that have been damaged or modified without the prior written permission of Emerson. Any continued use of product that has been damaged or modified without the written authorization is at the customer's sole risk and expense.

⚠ WARNING

Physical access

Unauthorized personnel may potentially cause significant damage to and/or misconfiguration of end users' equipment. This could be intentional or unintentional and needs to be protected against.

Physical security is an important part of any security program and fundamental to protecting your system. Restrict physical access by unauthorized personnel to protect end users' assets. This is true for all systems used within the facility.

⚠ CAUTION

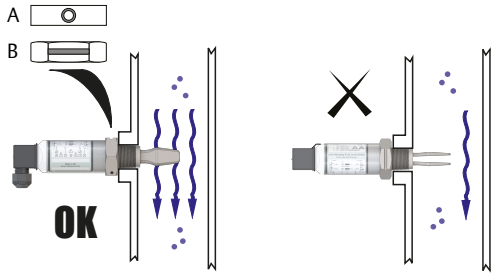
Hot surfaces
The flange and process seal may be hot at high process temperatures.

Allow to cool before servicing.

2 Installation

2.1 Fork alignment in a pipe installation

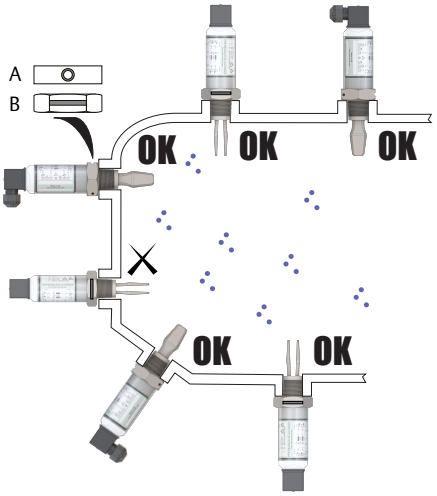
Figure 2-1: Correct Fork Alignment for Pipe Installation



A. Tri Clamp process connections have a circular notch
B. Threaded process connections have a groove

2.2 Fork alignment in a vessel (tank) installation

Figure 2-2: Correct Fork Alignment for Vessel (Tank) Installation

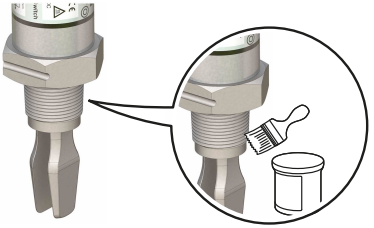


A. Tri Clamp process connections have a circular notch
B. Threaded process connections have a groove

2.3 Mounting the threaded version

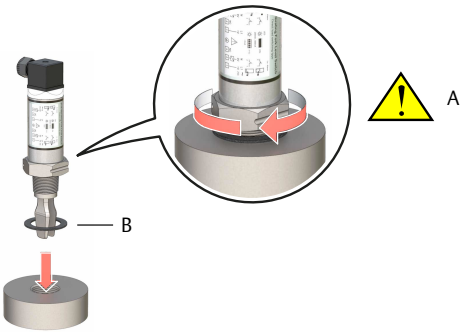
2.3.1 Seal and protect the threads

- Use anti-seize paste or PTFE tape according to site procedures.
  A gasket may be used as a sealant for BSPP (G) threaded connections.

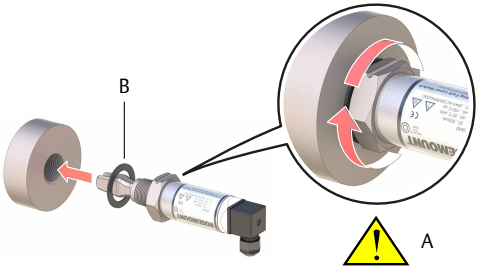


2.3.2 Threaded vessel (tank) or pipework connection

- Vertical installation.



- Horizontal installation.



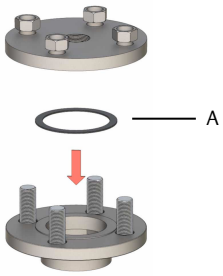
A. Tighten using the hexagon nut only

B. Gasket for BSPP (G) threaded connection

2.3.3 Threaded flange connection

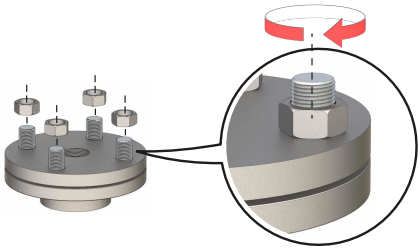
Procedure

1. Place the customer-supplied flange and gasket on the vessel (tank) nozzle.

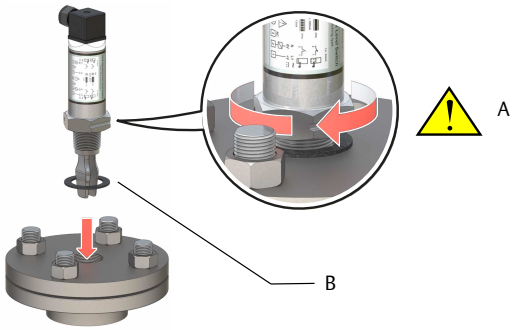


A. Gasket (customer supplied)

2. Tighten the bolts and nuts with sufficient torque for the flange and gasket.



3. Screw the level switch into the flange thread.



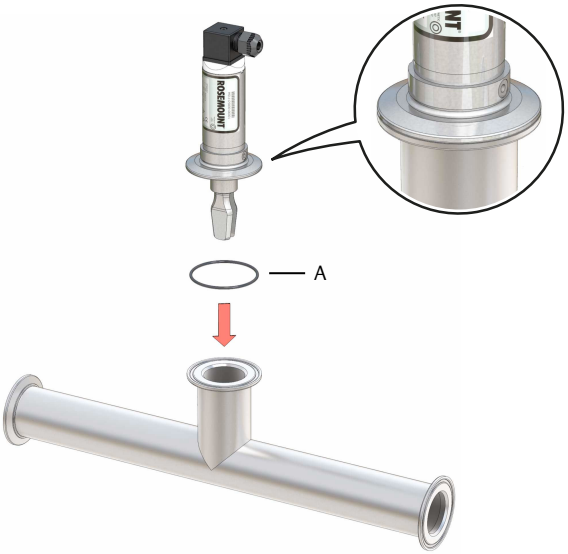
A. Tighten using the hexagon nut only

B. Gasket for BSPP (G) threaded connection

2.4 Mounting the Tri Clamp version

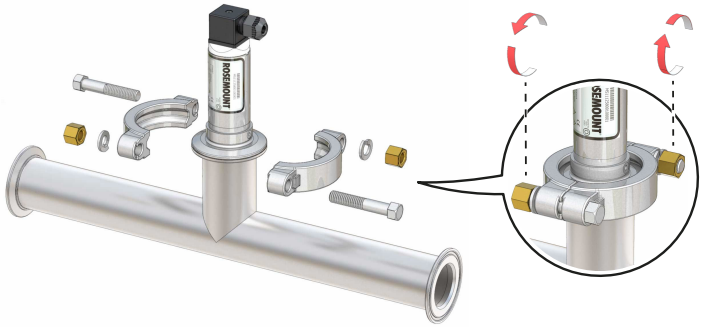
Procedure

1. Lower the level switch into the flange face.



A. Seal (supplied with Tri Clamp)

2. Fit the Tri Clamp.



Note
The Tri Clamp and seal are supplied in an accessory kit that has to be ordered separately. See the Rosemount 2110 Product Data Sheet for ordering information.

3 Prepare the electrical connections

Note
See the Rosemount 2110 Product Data Sheet for all electrical specifications.

3.1 Cable selection

Twisted-pairs and shielded wiring is recommended for environments with high EMI (electromagnetic interference). Two wires can be safely connected to each terminal screw. Maximum wire size is 15 AWG.

3.2 Cable glands/conduits

The cable gland is integrated in the four-position plug of the level switch. Do not make any modifications to the level switch.

3.3 Power supply

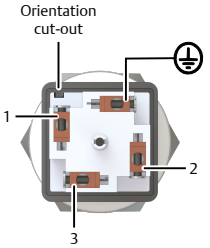
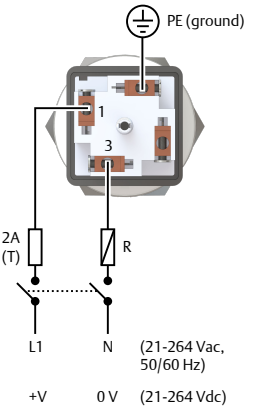
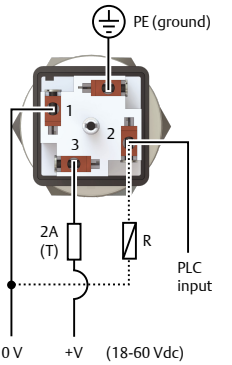
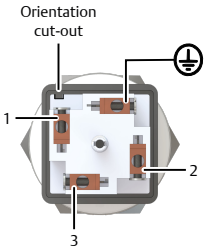
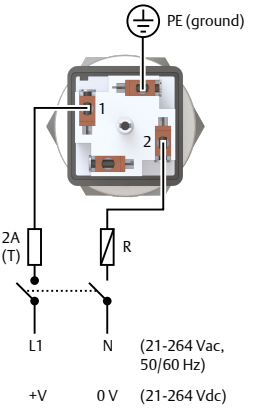
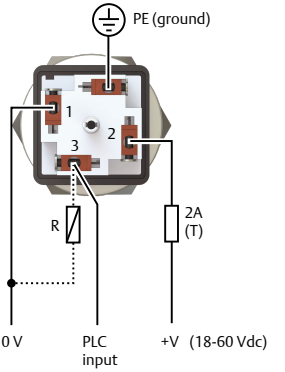
The Direct Load electronics operate on 21 - 264 Vdc or 21 - 264 Vac (50/60 Hz) at the level switch terminals.

The PNP electronics operate on 18 - 60 Vdc at the level switch terminals.

3.4 Mode selection

Table 3-1 shows how the mode selection is determined from the wiring connections. Modes are “Dry on, high level alarm” and “Wet on, low level alarm”.

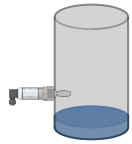
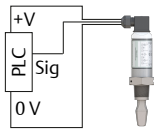
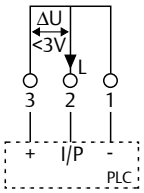
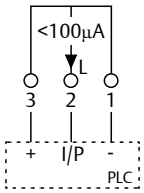
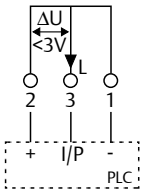
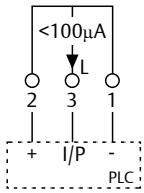
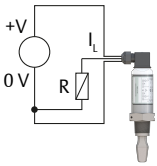
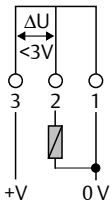
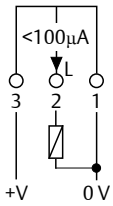
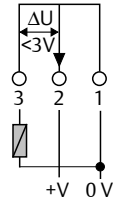
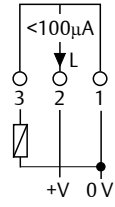
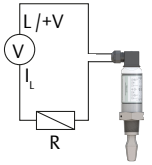
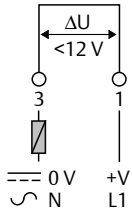
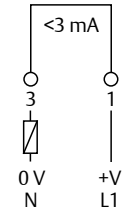
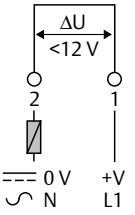
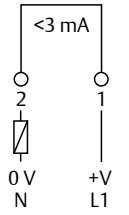
Table 3-1: Mode Selection By Customer Wiring

Modes	Electronics option code 0	Electronics option code 1
	Load switching: ac/dc Direct load switching: ac/dc	PNP output: dc PNP for PLC/SPS connection: dc
Dry = on, high level alarm 		
Wet = on, low level alarm 		
	 R = external load (must be wired)	 R = external load
	Maximum inrush current: 5A (over current protected)	
	I maximum continuous: 500 mA	
	Voltage drop: 6.5 V @ 24 Vdc or 5.0 V @ 240 Vac	Voltage drop: less than 3 V
	I load off: less than 3 mA	I load off: less than 0.5 mA

3.5 Functions

Table 3-2 shows the switched electrical outputs from the PNP and Direct Load electronics for each mode selection.

Table 3-2: Functions

	Mode: dry on, high level alarm		Mode: wet on, low level alarm	
				
PLC (positive output) 				
PNP dc 				
Load switching ac/dc 				
LED				
Electrical load				

3.6 Grounding

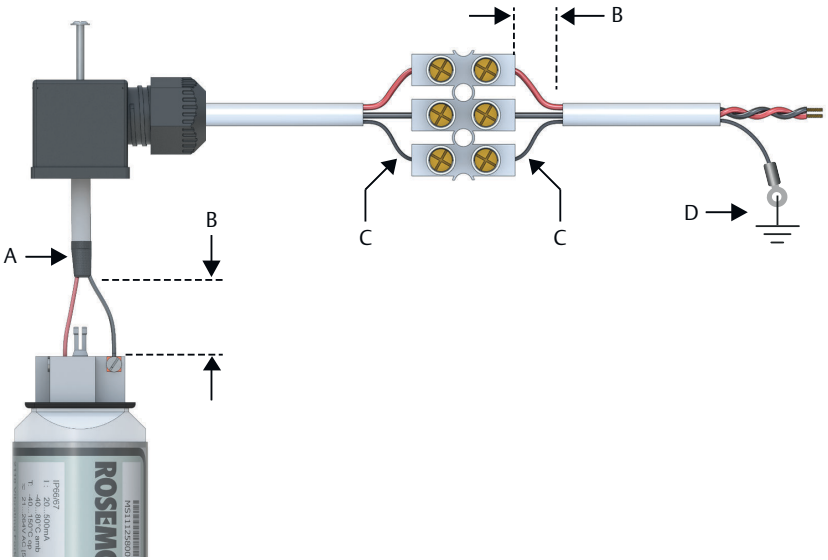
⚠ Always ground the housing in accordance with national and local electrical codes.

Signal cable shield grounding

Make sure the instrument cable shield is:

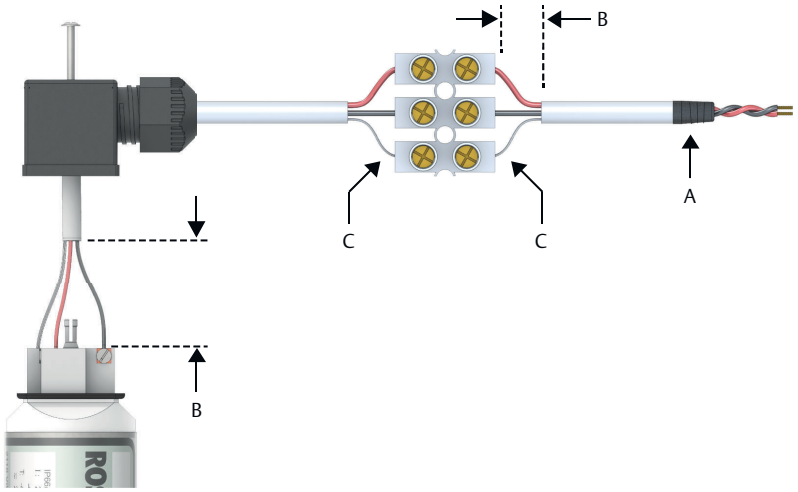
- Trimmed close and insulated from touching the level switch housing.
- Continuously connected throughout the segment.
- Connected to a good earth ground at the power supply end.

Figure 3-1: Signal Cable Shield Grounding at Power Supply End



A. Trim shield and insulate
B. Minimize distance
C. Trim shield
D. Connect shield back to the power supply ground

Figure 3-2: Signal Cable Shield Grounding at Instrument End



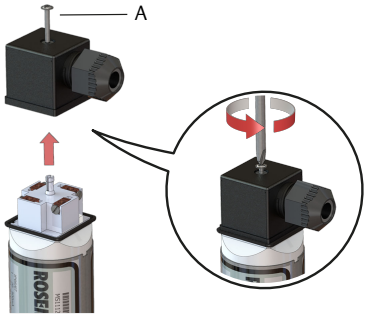
A. Trim shield and insulate
B. Minimize distance
C. Trim shield
D. Connect shield back to the power supply ground

4 Connect wiring and power up

The Rosemount 2110 meets IP66 and IP67 weatherproof ratings when correctly assembled with the supplied connector and suitable cable. Ensure seals are in place to maintain the weatherproof ratings.

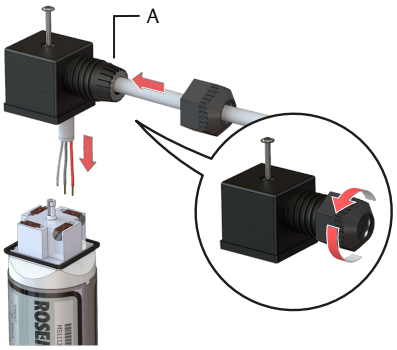
Procedure

1. ⚠ Verify the power supply is disconnected.
2. Remove the plug cover and cable gland.
   Keep the fixing screw and screw seal safe.



A. Fixing screw and screw seal

3. Pull the cable through the cable gland.
   Cable diameter 0.24 to 0.31 in. (6 to 8 mm).



A. PG9 cable gland provided

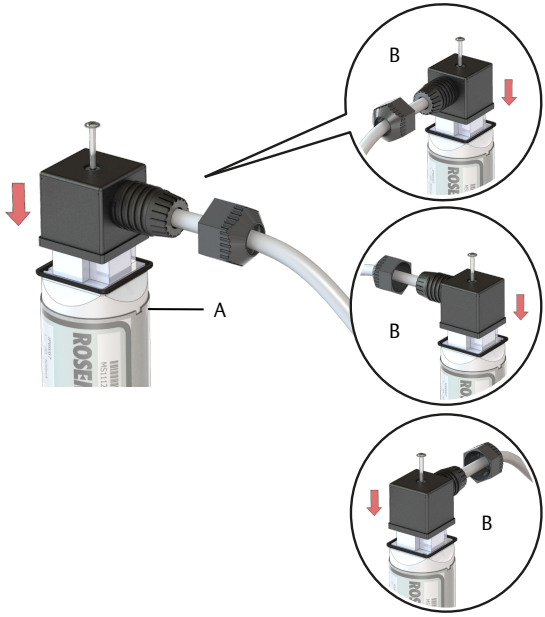
4. Connect the cable wires.
   Table 3-1 shows the wiring connections for each electronics option.

5. Ensure proper grounding (see Grounding).

   Make sure grounding is done according to national and local electrical codes. Failure to do so may impair the protection provided by the equipment.

6. Re-fit the plug cover and tighten the cable gland.

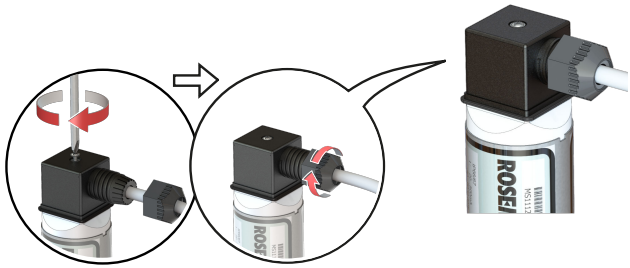
   a) The plug cover can be re-fitted in any one of four positions.



A. Fork alignment indicator
B. Optional plug positions

   b) Ensure the cable gland is pointing downwards or sideways.

c) Secure the plug cover with the plug screw and washer, and tighten cable gland.



d) If possible, arrange the wiring with a drip loop.

7. Connect the power supply when ready to apply power.

5 Product certifications

5.1 European Union directive information

A copy of the EU Declaration of Conformity certificate can be found in the section EU Declaration of Conformity. The most recent revision of the certificate can be found at Emerson.com/Rosemount.

5.2 Hygienic approvals and compliance (surface finish codes 3, 4, 7, and 8)

3-A® (authorization 3632) and EHEDG (certificate: 102016)

ASME-BPE and FDA compliant

(See Instructions for hygienic installations)

5.3 Overfill approval

Certificate	Z-65.11-236

TÜV-tested and approved for overfill protection according to the German DIBt/WHG regulations. Certified under safety devices for tanks and piping related to water pollution control.

5.4 Canadian Registration Number

CRN	0F04227.2C

The requirements of CRN are met when a Rosemount 2110 is configured with a NPT threaded process connection.

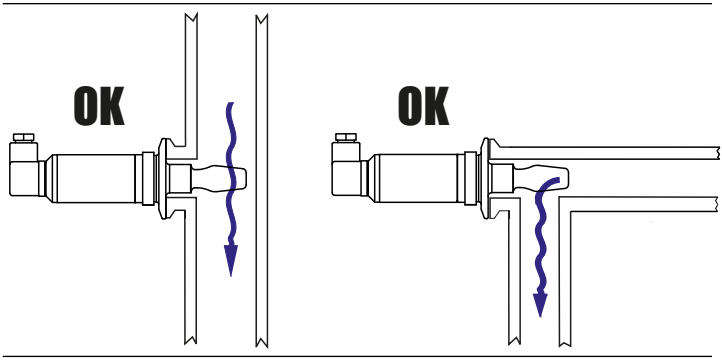
5.5 Technical Regulation Customs Union (EAC), ordinary locations mark

Certificate	TCRU C-GB.AB72.B.01385
Standards	EN61010-1 Pollution degree 2, Category II (264 V maximum) Pollution degree 2, Category III (150 V maximum)
Certificate	TCRU C-GB.AB72.B.01974
Standard	EN61010-1

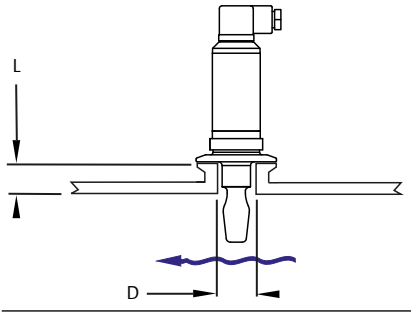
5.6 Instructions for hygienic installations

The following instructions are for a Rosemount™ 2110 Level Switch ("level switch") with a 51 mm Tri Clamp fitting covered by 3-A authorization 3632 and EHEDG certificate 102016, and ASME-BPE and FDA compliance:

1. The level switch is suitable for installation on pipeline (with fork gap in line with the flow) and on closed vessels (with the fork gap vertical).
   EHEDG only recommend horizontal stub mounting in pipelines:



2. Installation of this equipment shall be carried out by suitably trained personnel, in accordance with the applicable code of practice.
3. Inspection and maintenance of this equipment shall be carried out by suitably trained personnel, in accordance with the applicable code of practice.
4. If the level switch is installed in a stub then, to ensure clean-ability, the length (L) must not exceed the diameter (D) with a minimum diameter (D) of 46 mm.



5. The certification of the level switch relies upon the following materials used in its construction:
    a. Product contact surfaces

Probe:	Stainless steel 316/316L

    b. Non-product contact surfaces

Enclosure:	Stainless steel 304 type
Lens:	Nylon 12
Seals:	Nitrile rubber
Connector:	Nylon (PA6)

6. It is the responsibility of the user to ensure:
    a. The materials listed in instruction 5 are suitable for the media and cleaning (sanitisation) processes.
    b. The installation of the level switch is drainable and cleanable.
    c. That the joint requirements between the probe and the vessel/pipe are compatible with the process media, applicable standards, and code of practice. In EHEDG applications, the seals (gaskets) used should be as defined in the EHEDG position paper “Easy cleanable pipe couplings and process connections”.
7. Cleaning-In-Place (CIP) routines up to 160 °F (71 °C) are suitable for the level switch.
8. Steaming-In-Place (SIP) routines up to 302 °F (150 °C) are suitable for the level switch.

5.7 EU Declaration of Conformity

Figure 5-1: EU Declaration of Conformity (Page 1)

EMERSON

CE

EU Declaration of Conformity

No: RMD 1069 Rev. H

We,

Rosemount Tank Radar AB
Layoutvägen 1
S-435 33 MÖLNLYCKE
Sweden

declare under our sole responsibility that the product,

Rosemount™ 2110 Compact Vibrating Fork Liquid Level Switch

manufactured by,

Rosemount Tank Radar AB
Layoutvägen 1
S-435 33 MÖLNLYCKE
Sweden

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)	Manager Product Approvals (function)
Dajana Prastalo (name)	9/3/2020 (date of issue)

Page 1 of 2

Figure 5-2: EU Declaration of Conformity (Page 2)

EMERSON

CE

EU Declaration of Conformity

No: RMD 1069 Rev. H

EMC Directive (2014/30/EU)

Rosemount 21100**; Rosemount 21101******
Harmonized Standards: EN 61326-1:2013, EN 61326-2.3:2013

LV Directive (2014/35/EU)

Rosemount 21100****
Harmonized Standards: EN 61010-1:2010

RoHS Directive (2011/65/EU)

The Model 2110***** is in conformity with Directive 2011/65/EU of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

(Minor variations in design to suit the application and/or mounting requirements are identified by alpha/numeric characters where indicated * above)

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5.8 China RoHS

含有China RoHS管控物质超过最大浓度限值的部件型号列表 Rosemount 2110
List of Rosemount 2110 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	O	O	O	O	O	O
壳体组件 Housing Assembly	O	O	O	O	O	O
传感器组件 Sensor Assembly	X	O	O	O	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.

Quick Start Guide
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