Quick Start Guide
00825-0100-4029, Rev AB
May 2018

Rosemount™ 2110 Level Switch Vibrating Fork

Quick Start Guide for Installation

EMERSON™

1.0 About this guide

This Quick Start Guide provides basic guidelines for installing a Rosemount™ 2110 Vibrating Fork Liquid Level Switch ("level switch").

Refer to the Rosemount 2110 Reference Manual for more instructions. Manuals are available electronically at Emerson.com/Rosemount.

⚠ WARNING

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

- Use the Rosemount 2110 Vibrating Fork Level Switch ("level switch") only as specified in this guide and the product reference manual.
- The level switch must be installed, connected, commissioned, operated, and maintained by suitably qualified personnel only, observing national and local requirements that may apply.

Explosions could result in death or serious injury.

- The level switch does not have intrinsically safe, explosion-proof/flameproof, or dust approvals.

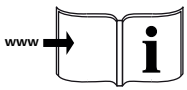
Electrical shock could cause death or serious injury

- Make sure the level switch is not powered when removing the terminal plug and making terminal connections.
- If the level switch is installed in a high voltage environment and a fault condition or installation error occurs, high voltage may be present on leads and terminals.

External surfaces may be hot.

- Care must be taken to avoid possible burns. The flange and process seal may be hot at high process temperatures. Allow to cool before servicing.

1.1 Symbols used in this guide

	■ Refer to the Rosemount 2110 Reference Manual for further information. ■ Adobe® Acrobat® Reader software is needed to view the document contents.
	■ Switch off power (0) to the level switch. ■ Switch on power (1) to the level switch.

1.2 Required equipment

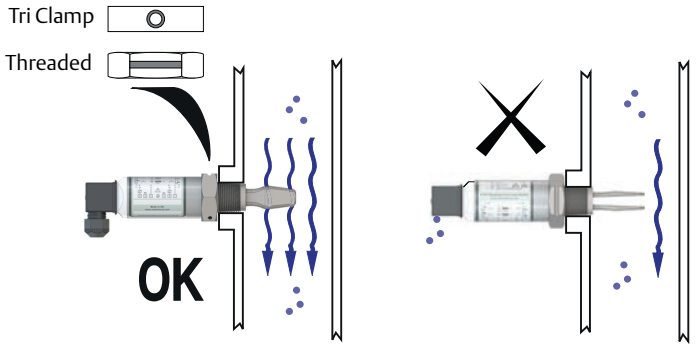
Standard tools e.g. screwdrivers and wire strippers/cutters.

1.3 Contents

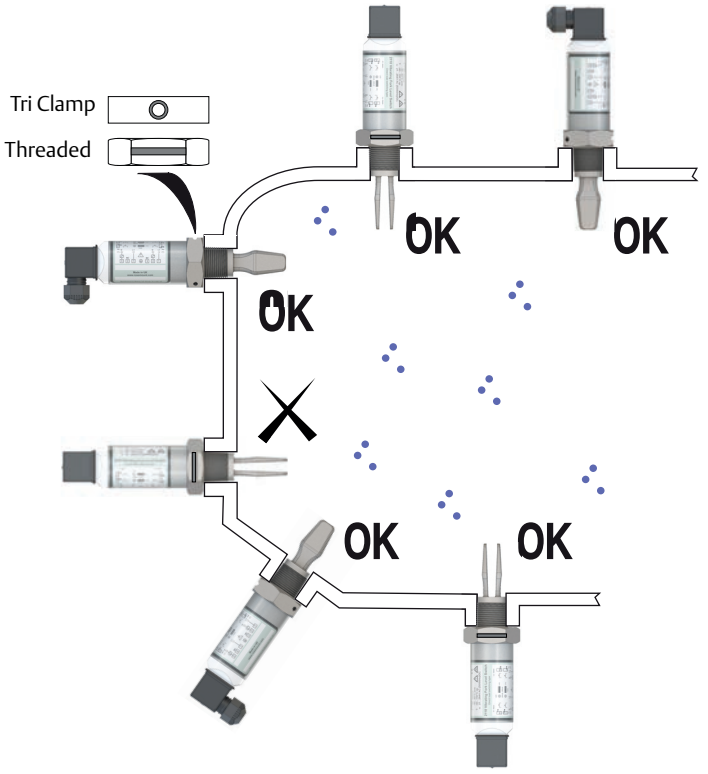
2.0 Installation

2.1 Installation considerations

Correct fork alignment for pipe installation



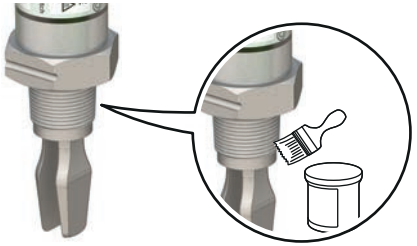
Correct fork alignment for tank installation



2.2 Mounting the threaded versions

Step 1: Seal and protect the threads

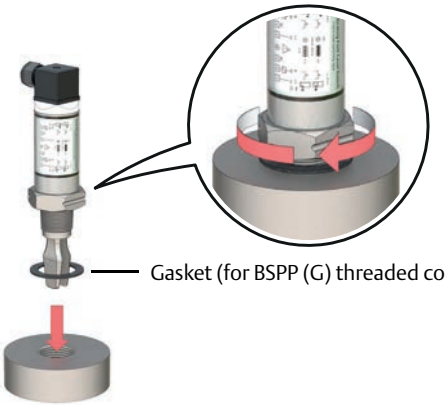
Use anti-seize paste or PTFE tape according to your site procedures.



Gasket may be used as a sealant for BSPP (G) threaded connections.

Step 2: Mount the level switch on tank or pipework

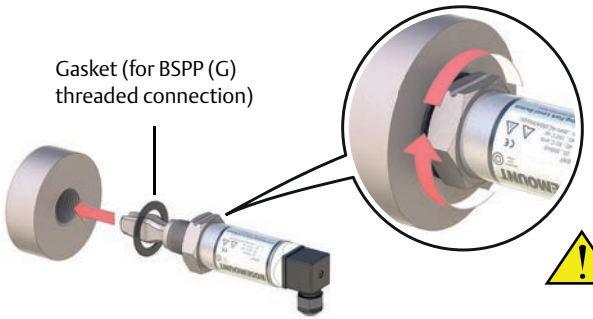
Threaded tank or pipework connection (vertical installation(1))



Tighten using the hexagon only

Gasket (for BSPP (G) threaded connection)

Threaded tank or pipework connection (horizontal installation[1])



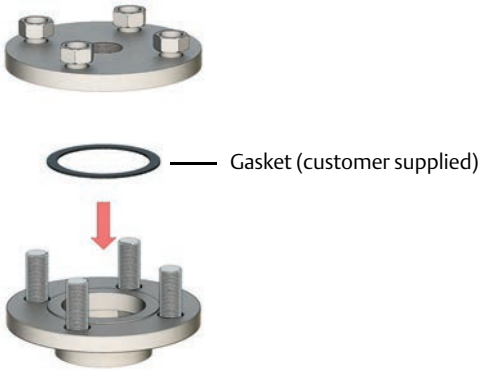
Gasket (for BSPP (G) threaded connection)

Tighten using the hexagon only

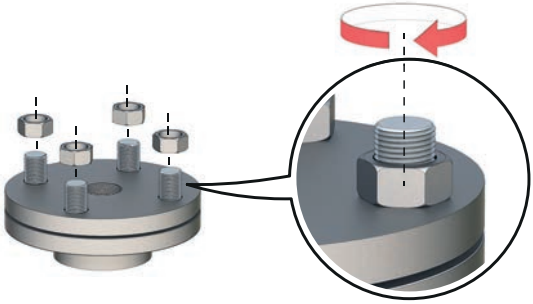
1. *The level switch can be installed at any angle that allows the liquid level to rise or flow through the fork gap.*

Threaded flange connection

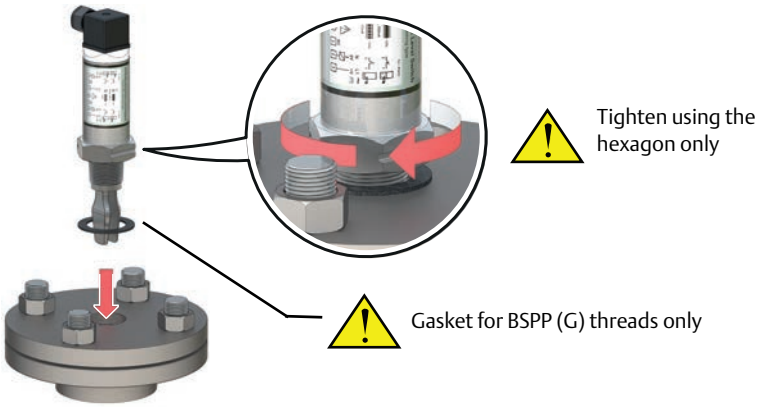
1. Place the customer supplied flange on the tank nozzle.



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

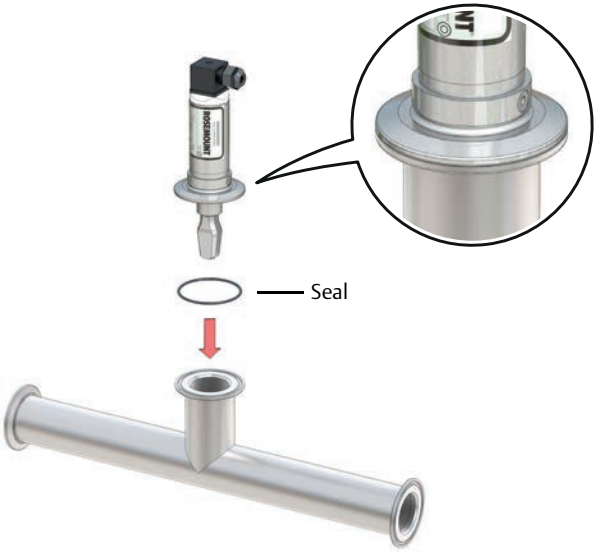


3. Screw the level switch into the flange thread.

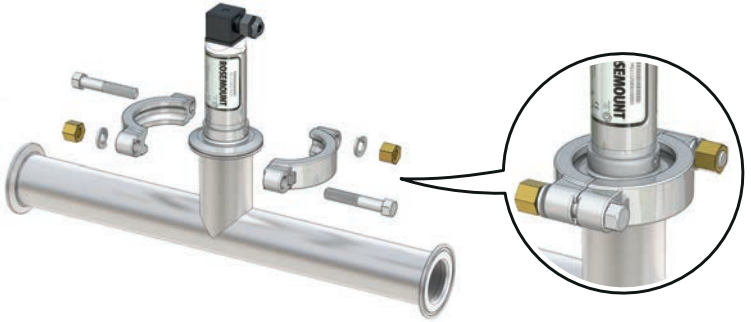


2.3 Mounting the Tri Clamp versions

Step 1: Lower the level switch onto the flange face

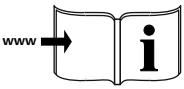


Step 2: Fit the Tri Clamp



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.

3.0 Prepare the electrical connections



Rosemount 2110
Reference Manual

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 gland

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 option operates on 21 - 264 Vdc or 21 - 264 Vac (50/60 Hz) at the level switch terminals.

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

3.4 Mode selection

Table 1 on page 1-8 shows how the mode selection is determined from the wiring connections. Modes are “Dry on, high level alarm” and “Wet on, low level alarm”.

3.5 Functions

Table 2 on page 1-9 shows the switched electrical outputs from the PNP and Direct Load electronics for each mode selection.

Note
For direct load switching, a DPST (Double Pole, Single Throw) (on/off) switch must also be fitted for safe disconnection of the power supply. Fit the DPST switch as near to the Rosemount 2110 as possible, keeping the switch free of obstructions. Label the switch to indicate it is the supply disconnection device for the Rosemount 2110.

Table 1. Mode Selection

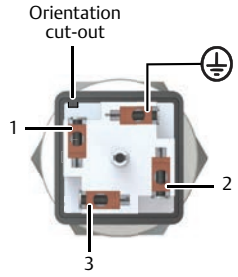
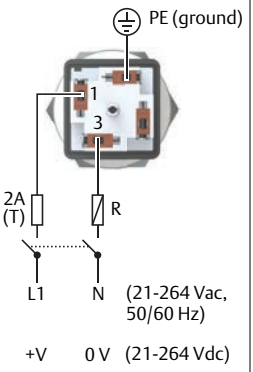
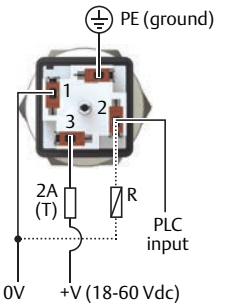
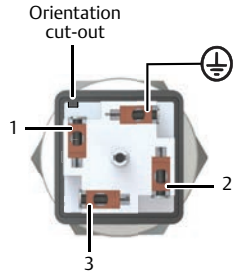
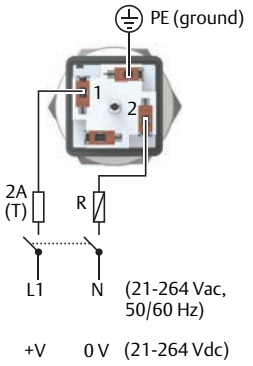
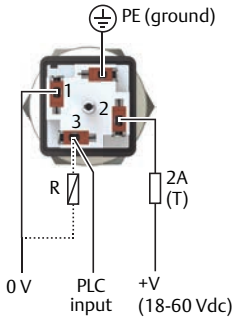
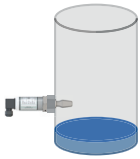
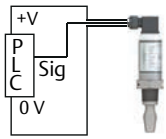
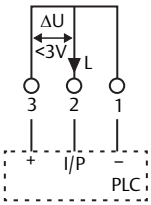
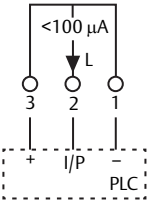
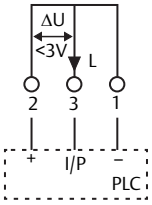
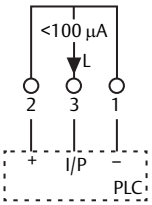
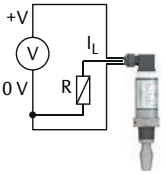
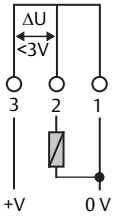
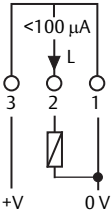
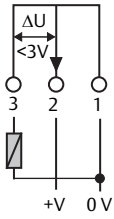
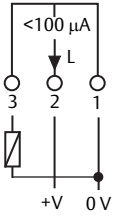
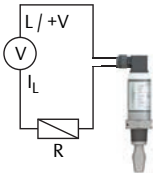
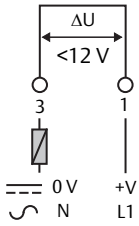
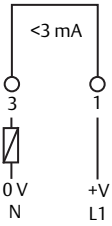
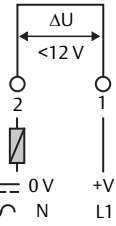
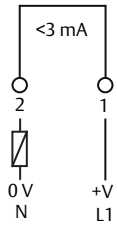
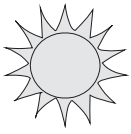
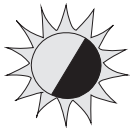
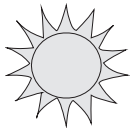
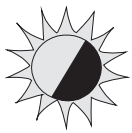
Modes	Electronics option code 0	Electronics option code 1
	Load switching: ac or dc Direct load switching: ac or dc	PNP output: dc PNP for PLC/SPS connection: dc
Dry = on, high level alarm 		
Wet = on, low level alarm 		
	 R = external load (must be wired)	 R = external load
	Maximum inrush current: 5A (over current protected)	
	I maximum continuous: 500 mA	
	I minimum continuous: 20 mA	Supply current: 3 mA nominal
	Voltage drop: 6.5 V @ 24 Vdc / 5.0 V @ 240 Vac	Voltage drop: < 3 V
	I load off: < 3 mA	I load off: < 0.5 mA

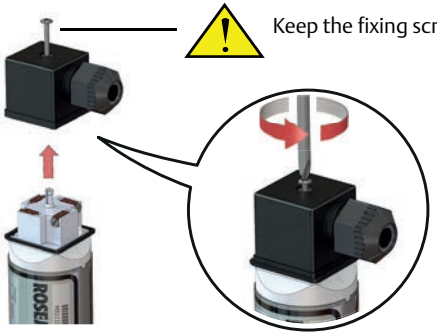
Table 2. Functions

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

4.0 Connect wiring and power up

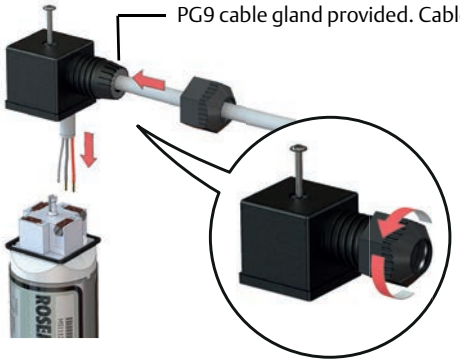
Verify that the power supply is disconnected or switched off.

Step 1: Remove the plug cover and cable gland



Keep the fixing screw and screw seal safe

Step 2: Pull the cable through the cable gland



PG9 cable gland provided. Cable diameter 0.24 to 0.31 in. (6 to 8 mm)

Step 3: Connect the cable wires

Table 1 on page 1-8 shows the wiring connections for each electronics option.

Step 4: Ensure proper 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.

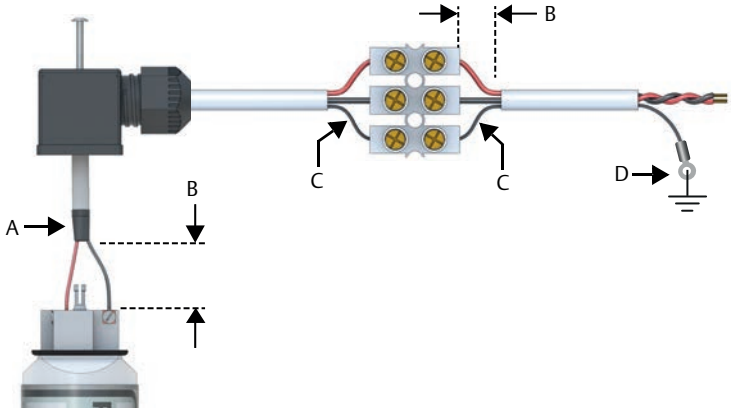
Signal cable shield grounding at power supply end

Make sure the instrument cable shield is:

- Trimmed close and insulated from touching the level switch housing.
- Connected to the next shield if cable is routed through a junction box.

- Connected to a good earth ground at the power supply end.

Figure 1. Cable Shield Connection (Power Supply End)



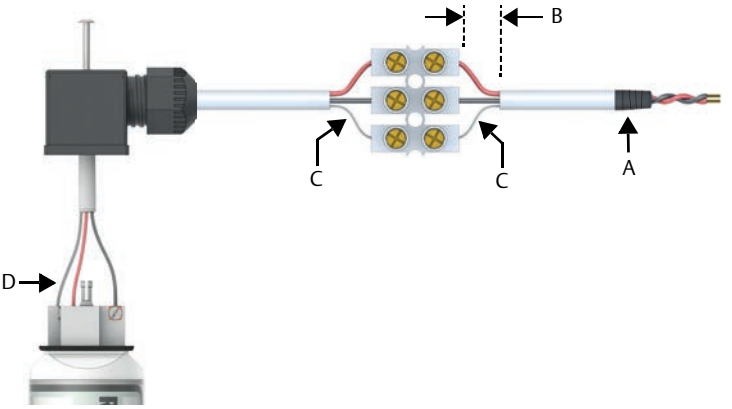
A. Trim shield and insulate
B. Minimize distance
C. Trim shield
D. Connect shield back to power supply ground

Signal cable shield grounding at level switch end

Make sure the instrument cable shield is:

- Trimmed close and insulated at the power supply end.
- Connected to the next shield if cable is routed through a junction box.
- Connected to the potential earth (ground) terminal.

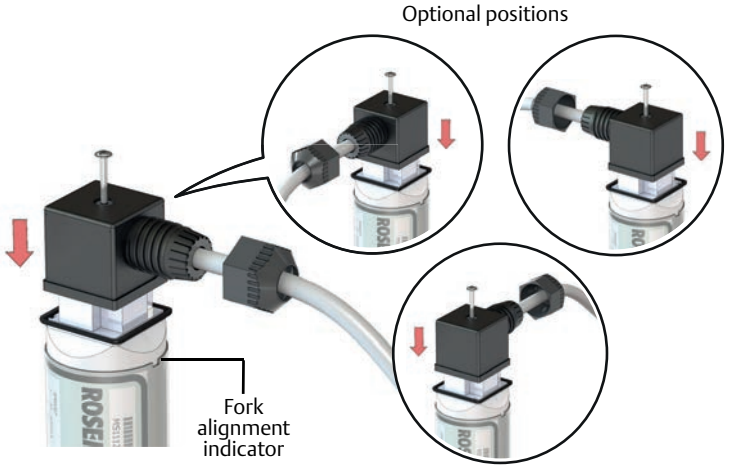
Figure 2. Cable Shield Connection (Level Switch End)



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

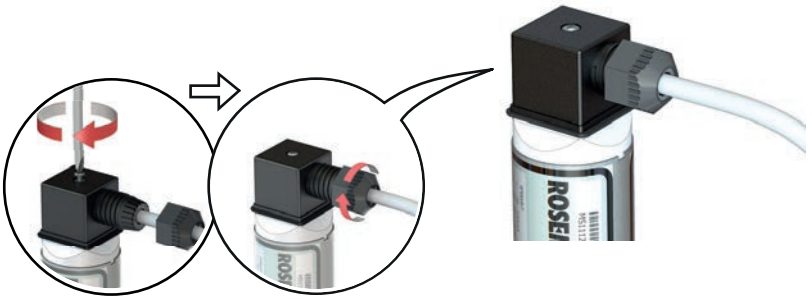
Step 5: Re-fit the plug cover and tighten the cable gland

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



Note
Ensure the cable gland is pointing downwards or sideways.

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



Note
Arrange the wiring with a drip loop.

Step 6: Connect the power supply

Apply power to the level switch when ready for it to start operating.

5.0 Product certifications

5.1 European Union directive information

The EU declaration of conformity for all applicable European directives for this product can be found on page 16 and at Emerson.com/Rosemount.

5.2 Hygienic approvals and compliance

3-A® (authorization 3496), and **EHEDG** (certificate: 102016)
ASME-BPE and **FDA** compliant

(See "Instructions for hygienic installations" on page 14)

5.3 Overfill approval

If required, select Product Certificates code U1 for DIBt/WHG overfill protection. The approval number is Z-65.11-236.

5.4 Canadian Registration Number

The CRN is 0F04227.2C for model numbers with a NPT threaded process connection selected.

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

TRCU 004/2011

Certificate: TCRU C-GB.AB72.B.01385

EN61010-1 Pollution degree 2, Category II (264V maximum), Pollution degree 2, Category III (150 V maximum)

TRCU 020/2011

Certificate: TCRU C-GB.AB72.B.01974

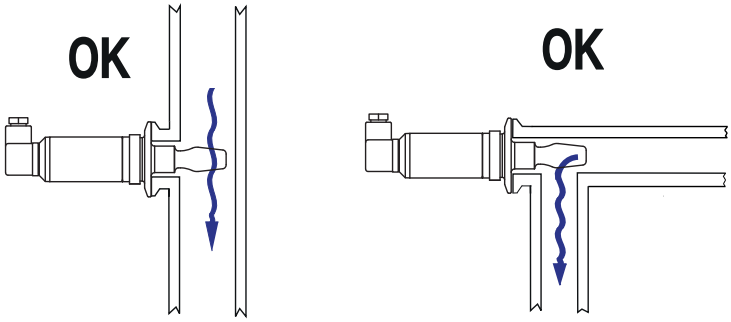
EN61326

5.6 Instructions for hygienic installations

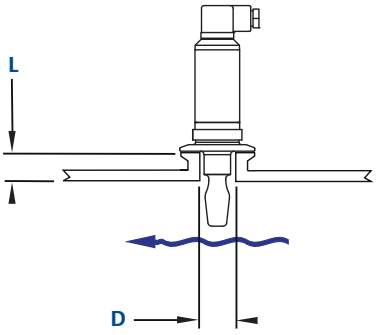
The following instructions are for a Rosemount 2110 Level Switch (“level switch”) with a 51 mm Tri Clamp fitting covered by 3-A authorization 3496 and EHEDG certificate 102016, and ASME-BPE and FDA compliance:

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:

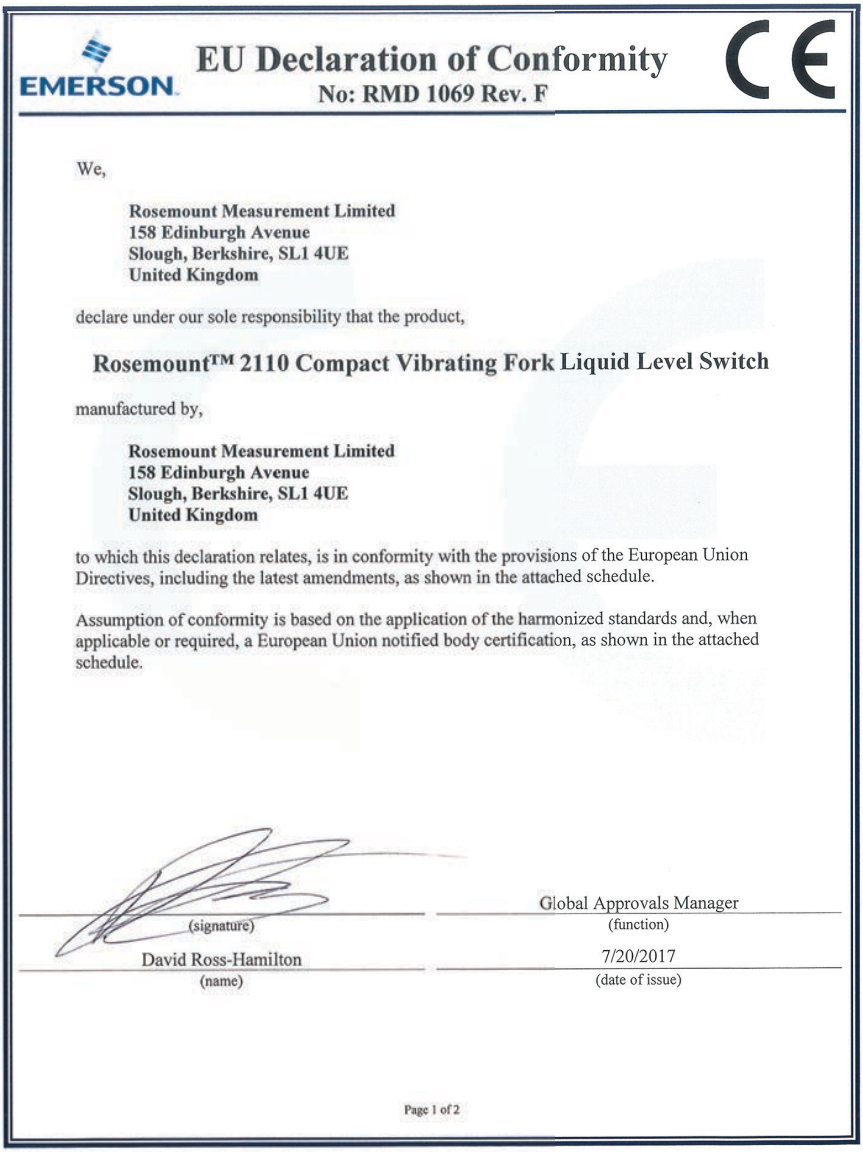


2. Installation of this equipment shall be carried out by suitably trained personnel, in accordance with the applicable standards and code of practice.
3. Inspection and maintenance of this equipment shall be carried out by suitably trained personnel, in accordance with the applicable standards and code 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. The level switch is suitable for Cleaning-In-Place (CIP) up to 160 °F (71 °C).
8. The level switch is suitable for Steaming-In-Place (SIP) up to 275 °F (135 °C).

Figure 3. EU Declaration of Conformity for Rosemount 2110 (Page 1)



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EU Declaration of Conformity

No: RMD 1069 Rev. F

CE

We,

Rosemount Measurement Limited
158 Edinburgh Avenue
Slough, Berkshire, SL1 4UE
United Kingdom

declare under our sole responsibility that the product,

Rosemount™ 2110 Compact Vibrating Fork Liquid Level Switch

manufactured by,

Rosemount Measurement Limited
158 Edinburgh Avenue
Slough, Berkshire, SL1 4UE
United Kingdom

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)

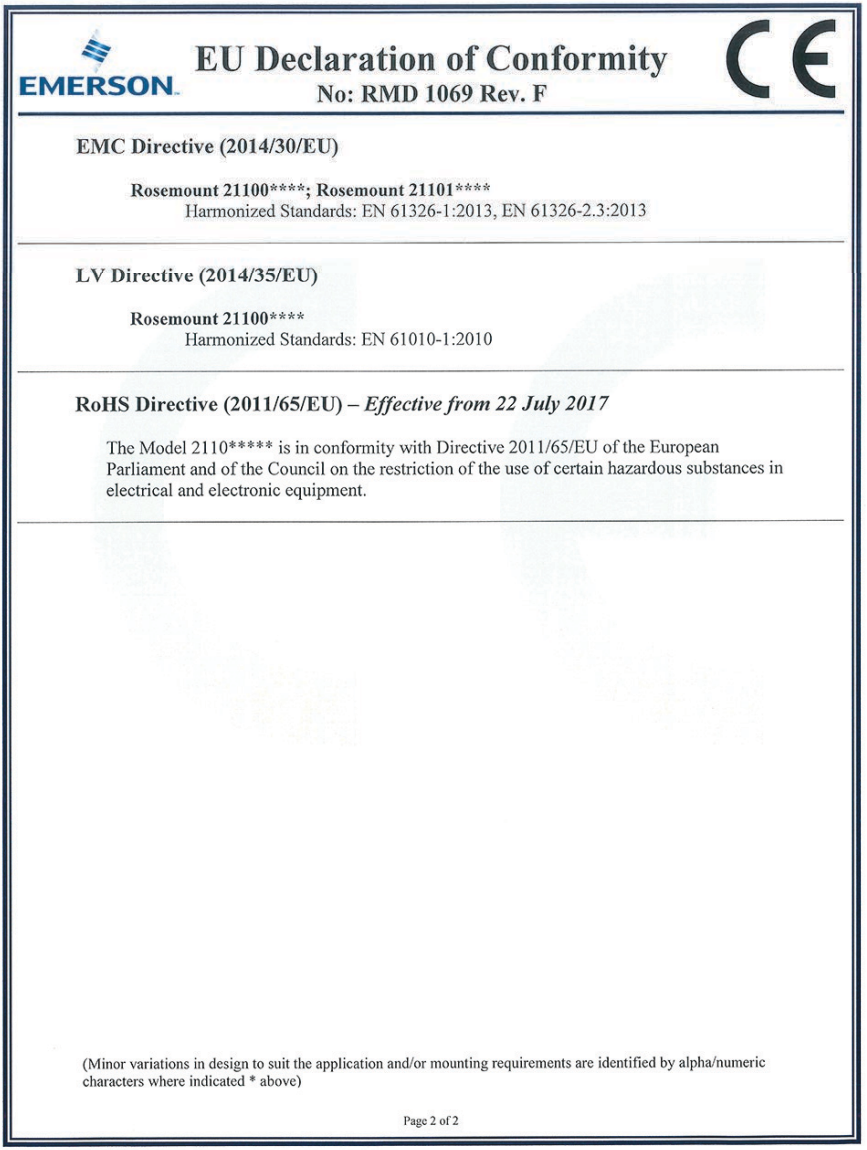
Global Approvals Manager
(function)

David Ross-Hamilton
(name)

7/20/2017
(date of issue)

Page 1 of 2

Figure 4. EU Declaration of Conformity for Rosemount 2110 (Page 2)



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EU Declaration of Conformity

No: RMD 1069 Rev. F

CE

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) – *Effective from 22 July 2017*

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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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.

00825-0100-4029

Quick Start Guide
00825-0100-4029, Rev AB
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