

Overview



SITRANS Probe LU240 ultrasonic level transmitter, ideal for level, volume, and volume flow measurements. It works with liquids, slurries, and bulk materials up to 12 m (40 ft).

Benefits

- Continuous level measurement up to 12 m (40 ft) range.
- Easy installation and simple startup.
- Programming using 4-button HMI or SIMATIC PDM.
- Communication using HART.
- ETFE or PVDF transducers for chemical compatibility.
- Process Intelligence signal processing.
- Auto False Echo Suppression for fixed obstruction avoidance.
- Low power and current startup.

Application

SITRANS Probe LU240 is ideal for level monitoring in the water and wastewater industry, chemical storage vessels, and small bulk hoppers.

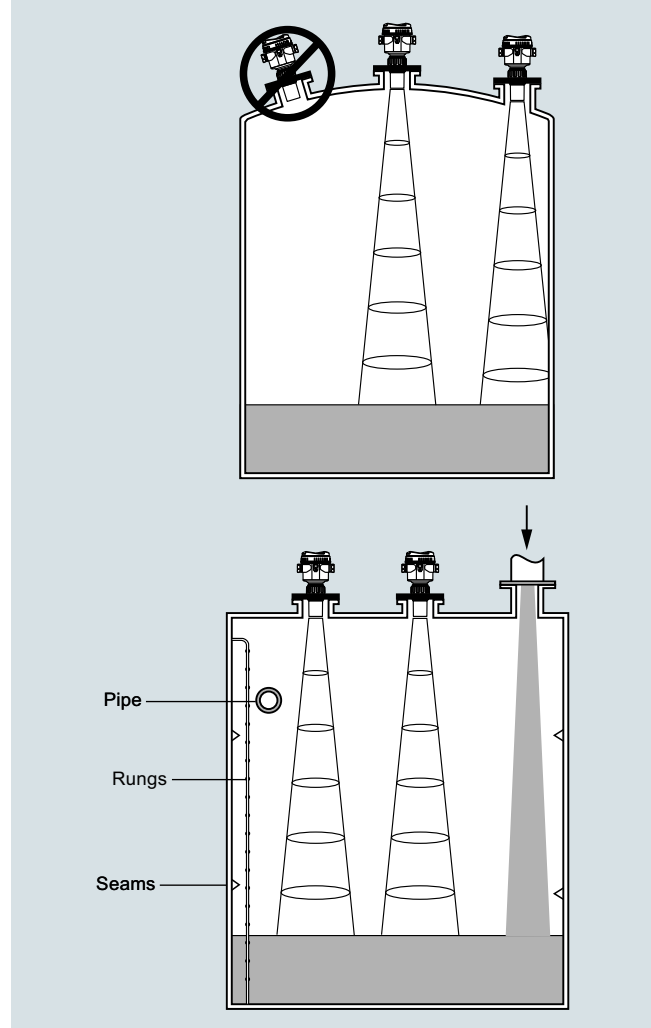
The range of SITRANS Probe LU240 is 3, 6, or 12 m (10, 20, or 40 ft). Probe LU240 provides unmatched reliability, using Process Intelligence, Auto False Echo Suppression for fixed obstruction avoidance, and accuracy of 0.15 % of range or 6 mm (0.25 inch) (on 6 m and 12 m models only).

SITRANS Probe LU240 offers HART communication on certain models and mA output on all models.

The transducer on the Probe LU240 is available as ETFE or PVDF to suit the chemical conditions of your application. As well, for applications with varying material and process temperatures, Probe LU240 incorporates an internal temperature sensor to compensate for temperature changes.

- Key Applications: chemical storage vessels, filter beds, liquid storage vessels

Configuration



SITRANS Probe LU240 mounting

Level Measurement

Continuous level measurement

Ultrasonic transmitters

SITRANS Probe LU240

Technical specifications

Mode of operation

Measuring principle	Ultrasonic level measurement
Typical application	Level measurement in storage vessels and simple process vessels

Inputs

Measuring range	
• 3 m (10 ft)	0.2 ... 3 m (8 inch ... 10 ft)
• 6 m (20 ft) model	0.2 ... 6 m (8 inch ... 20 ft)
• 12 m (40 ft) model	0.2 ... 12 m (8 inch ... 40 ft)

Frequency	54 kHz
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Outputs

mA/HART	
• Range	4 ... 20 mA
• Accuracy	± 0.02 mA
• HART version	7
• Startup current	3.6 mA
• Fail-safe	Programmable as high, low, or hold (loss of echo) per NAMUR NE43

Performance

Resolution	≤ 3 mm (0.12 inch)
Accuracy	
3 m (10 ft) version	10 mm (0.39 inch)
6 m (20 ft), 12 m (40 ft) version	<ul style="list-style-type: none"> ± the greater of 0.15 % of range or 6 mm (0.25 inch) [valid from 0.25 m (0.82 ft)] ± 2 mm (0.08 inch) on ranges 4 m (13 ft) or less
Non-repeatability	≤ 3 mm (0.12 inch)
Blanking distance	0.2 m (0.66 ft)
Update time	≤ 4 s
Temperature compensation	Built-in to compensate over temperature range
Beam angle	10°

Rated operating conditions

Ambient conditions	
• Location	Indoor/outdoor
• Ambient temperature	<ul style="list-style-type: none"> Storage: -40 ... +85 °C (-40 ... +185 °F) Operating: -40 ... +80 °C (-40 ... +176 °F)
• Relative humidity/ingress protection	Suitable for outdoor
• Installation category	I
• Pollution degree	4
Medium conditions	
• Temperature at flange or threads	-40 ... +85 °C (-40 ... +185 °F)
• Pressure (vessel)	0.5 bar g (7.25 psi g)
Display	-20 ... +80 °C (-4 ... +176 °F)

Design

Material (enclosure)	PBT (Polybutylene Terephthalate)
Degree of protection	Type 4X, Type 6, IP66, IP68
Weight	0.93 kg (2.1 lb)
Cable inlet	2 x M20 x 1.5 cable gland or 1 x ½" NPT thread
Material (transducer)	ETFE (Ethylene Tetrafluoroethylene) or PVDF (Polyvinylidene Fluoride) Buna-N seal

Process connection

Threaded connection	2" NPT [(Taper), ASME B1.20.1] R 2" [(BSPT), EN 10226] or G 2" [(BSPP), EN ISO 228-1]
Flange connection	3 inch (80 mm) universal flange
Other connection	FMS 200 mounting bracket (see page 4/186) or customer supplied mount

Display and Controls

Interface	Local: LCD display Remote: Available via HART
Configuration	4-button HMI
Memory	Non-volatile EEPROM, no battery required

Power supply

4 ... 20 mA/HART	10.5 ... 30 V DC
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Certificates and Approvals

General	FM, cCSA _{US} , CE, RCM, EAC, KC, VLAREM
Hazardous	
• Intrinsically Safe	
- Europe	ATEX II 1G Ex ia IIC T4 Ga
- International	IECEX SIR 18.0013X Ex ia IIC T4 Ga
- USA/Canada	FM/cCSA _{US} Class I, Div. 1, Groups A, B, C, D, Class II, Div. 1, Groups E, F, G, Class III T4
- Brazil	INMETRO Ex ia IIC T4 Ga
- China	NEPSI Ex ia IIC T4 Ga
- South Africa	SABS Ex ia IIC Tx Ga
- Russia	EAC Ex 1G Ex ia IIC T4 Ga
- Korea	KOSHA KSs Ex ia IIC T4
• Non-incendive	
- USA	FM, Class I, Div. 2, Groups A, B, C, D Tx
Marine	Lloyd's Register, American Bureau of Shipping (ABS), DNV GL, Bureau Veritas, CCS
Metrological	MCERTS, CPA, Kazakhstan pattern approval

Level Measurement
Continuous level measurement
Ultrasonic transmitters

SITRANS Probe LU240

Selection and ordering data	Article No.	Order code
<p>SITRANS Probe LU240 Ultrasonic level transmitter</p> <p>Continuous, non-contact, up to 12 m (40 ft) range. Monitors level, volume, and volume flow (model dependent) in liquids, slurries, and solids. With easy to use quick start wizards.</p> <p>Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>	<p>7ML51-</p> <p>1 - 0 - 4</p>	<p>Further designs</p> <p>Please add "-Z" to Article No. and specify Order code(s).</p> <p>Stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]: Measuring-point number/identification (max. 32 characters) specify in plain text</p> <p>Y15</p> <p>Certificates</p> <p>Test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000 C11</p> <p>Certificate EN 10204-2.2 C14</p> <p>Approvals³⁾</p> <p>ATEX, SABS, IECEx - 1G, EAC Ex, Ex ia IIC T4 Ga E31</p> <p>FM non-incendive - Class I, Div. 2, Groups A, B, C, D T5 (Ta = 80 °C), T6 (Ta = 40 °C)¹⁾ E32</p> <p>NEPSI, KCs, IECEx - Ex ia IIC T4 Ga E33</p> <p>cCSA_{US}, KCs, FM - Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G, T4, INMETRO, IECEx - Ex ia IIC T4 Ga¹⁾ E34</p> <p>Marine approvals⁴⁾</p> <p>DNV-GL Det Norske Veritas/Germanischer Lloyd E50</p> <p>LR Lloyds Register E51</p> <p>BV Bureau Veritas E52</p> <p>ABS American Bureau of Shipping E53</p> <p>China Classification Society (CCS) E58</p> <p>For customs, contact a local sales person. For more information please visit http://www.automation.siemens.com/aspa_app.</p>
<p>Communications</p> <p>HART (4 ... 20 mA) level, volume, volume flow⁵⁾</p> <p>4 ... 20 mA level⁶⁾</p>	<p>0</p> <p>7</p>	<p>Operating Instructions</p> <p>All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation</p>
<p>Ingress protection</p> <p>IP66, IP68, Type 4X, 6</p>	<p>1</p>	<p>Accessories</p> <p>Tag, stainless steel, 12 x 45 mm, one text line (max. 16 characters) 7ML1930-1AC</p> <p>Stainless steel FMS200 universal box bracket mounting kit 7ML1830-1BK</p> <p>3" ASME/DIN Universal mounting adapter, 2" NPT, ETFE 7ML1830-1BT</p> <p>3" ASME/DIN Universal mounting adapter, 2" BSP, ETFE 7ML1830-1BU</p> <p>2" NPT nylon plastic locknut 7ML1830-1DT</p> <p>2" BSP nylon plastic locknut 7ML1830-1DQ</p> <p>Cable Gland Polyamide - General Purpose (-20 ... +60 °C) A5E34457564</p>
<p>Measurement range/wetted parts</p> <p>200 ... 3 000 mm (7.87 ... 118.11 inch), PVDF Copolymer B</p> <p>200 ... 3 000 mm (7.87 ... 118.11 inch), ETFE C</p> <p>200 ... 6 000 mm (7.87 ... 236.22 inch), PVDF Copolymer D</p> <p>200 ... 6 000 mm (7.87 ... 236.22 inch), ETFE E</p> <p>200 ... 12 000 mm (7.87 ... 472.44 inch), PVDF Copolymer G</p> <p>200 ... 12 000 mm (7.87 ... 472.44 inch), ETFE H</p>	<p>B</p> <p>C</p> <p>D</p> <p>E</p> <p>G</p> <p>H</p>	<p>Spare Parts</p> <p>Spare lid, clear A5E44267491</p> <p>Spare lid, blind A5E44267497</p> <p>Spare o-ring for lid A5E44267501</p> <p>Spare segmented display and 4-button HMI A5E44809382</p>
<p>Process connection</p> <p>2" NPT [(Taper), ASME B1.20.1]</p> <p>R 2" [(BSPT), EN 10226]</p> <p>G 2" [(BSPP), EN ISO 228-1]</p>	<p>D</p> <p>E</p> <p>F</p>	
<p>Non-wetted parts</p> <p>Plastic (PBT/PC material)</p>	<p>7</p>	
<p>Type of protection</p> <p>Non-Ex (ordinary locations) cCSA_{US}, CE, KC, RCM, EAC A</p> <p>Non-Ex (ordinary locations) cCSA_{US}, FM, CE, KC, RCM, EAC¹⁾ B</p> <p>Ex i (ia) (Ex-Zone 0/Div. 1)/IS, FM NI (Class I, Div. 2)²⁾ C</p>	<p>A</p> <p>B</p> <p>C</p>	
<p>Electrical connections/cable entries</p> <p>2 x M20 x 1.5 (one general purpose Polyamide cable gland and one Polyamide blocking plug provided) F</p> <p>1 x 1/2" NPT (no gland cable provided) K</p> <p>For custom electrical connections/cable entries, contact a local sales person. For more information please visit: http://www.automation.siemens.com/aspa_app</p>	<p>F</p> <p>K</p>	
<p>Local HMI</p> <p>Without display (blind lid of PBT/PC material) 0</p> <p>With display (blind lid of PBT/PC material) 1</p> <p>With display (clear lid of PC material) 3</p>	<p>0</p> <p>1</p> <p>3</p>	

1) Available only with Electrical connections/cable entries option K only.
 2) Available only with order codes E31, E32, E33, and E34.
 3) Order codes E31, E32, E33, E34 only available with Type of protection option C.
 4) Order codes E50, E51, E54, E53, E58 only available with Communications option 0.
 5) Available only with Measurement range/wetted parts options D, E, G, and H.
 6) Available only with Measurement range/wetted parts options B and C.

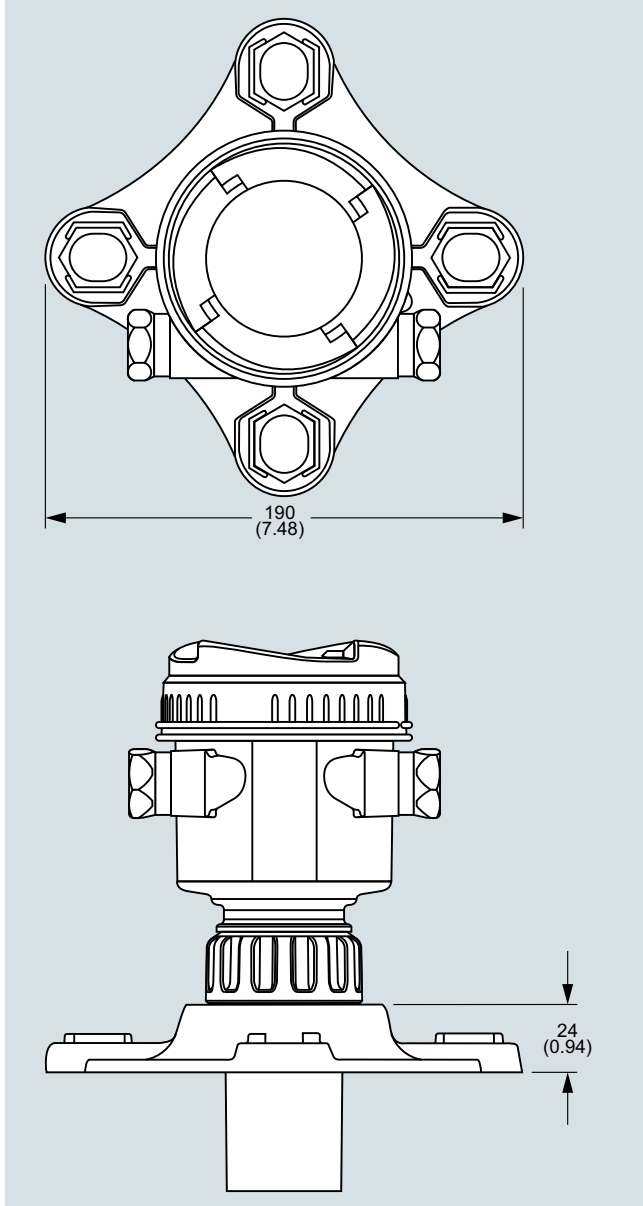
Level Measurement

Continuous level measurement
Ultrasonic transmitters

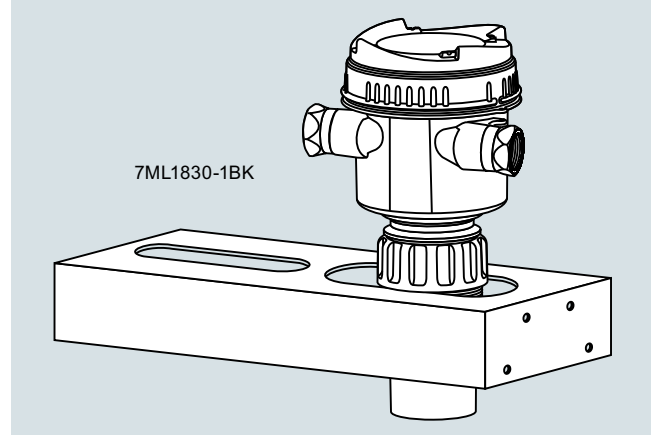
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Options

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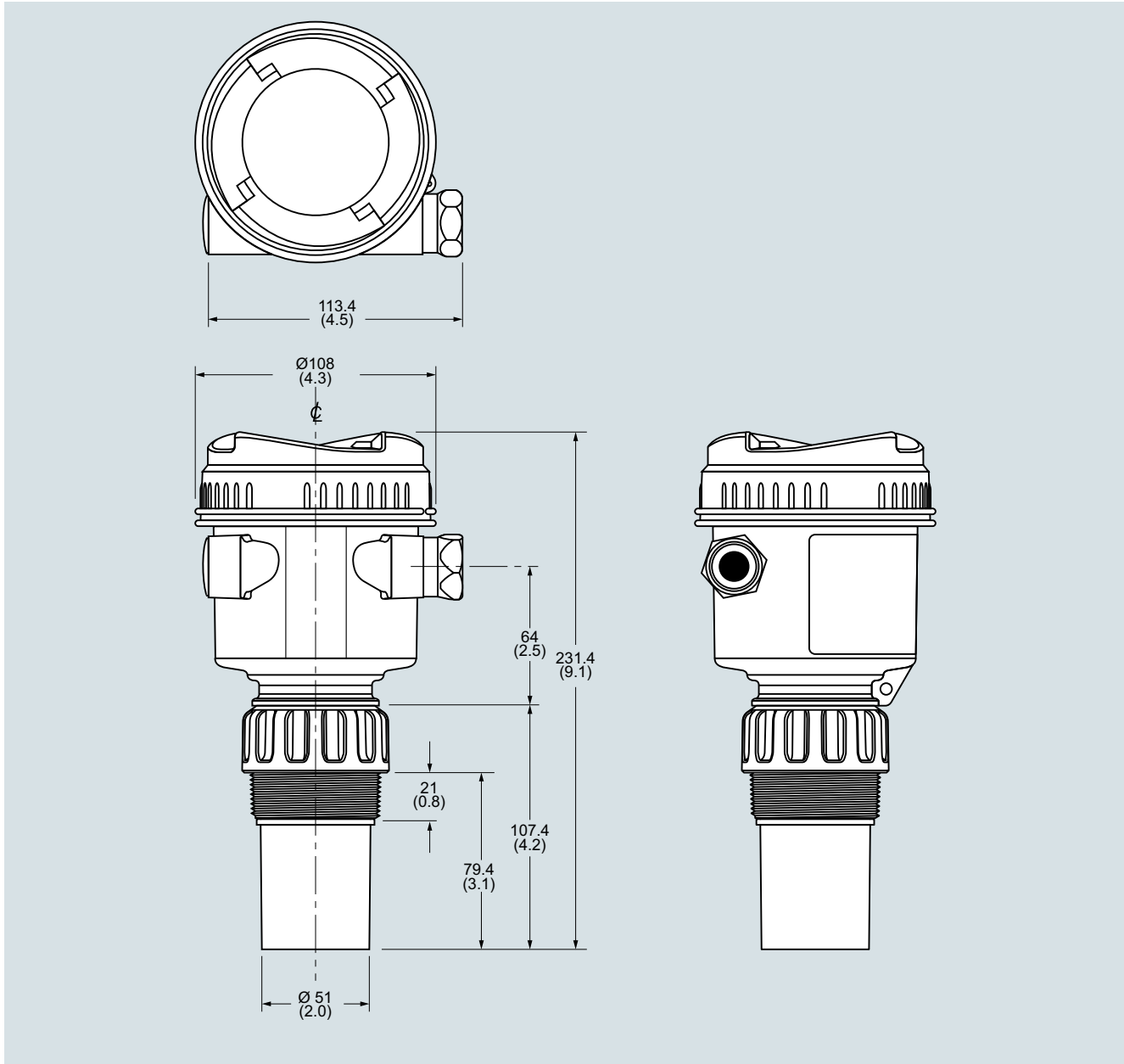


SITRANS Probe LU240 optional flange adapter, dimensions in mm (inch)



SITRANS Probe LU240 with optional FMS 200 universal box bracket

Dimensional drawings



SITRANS Probe LU240, dimensions in mm (inch)

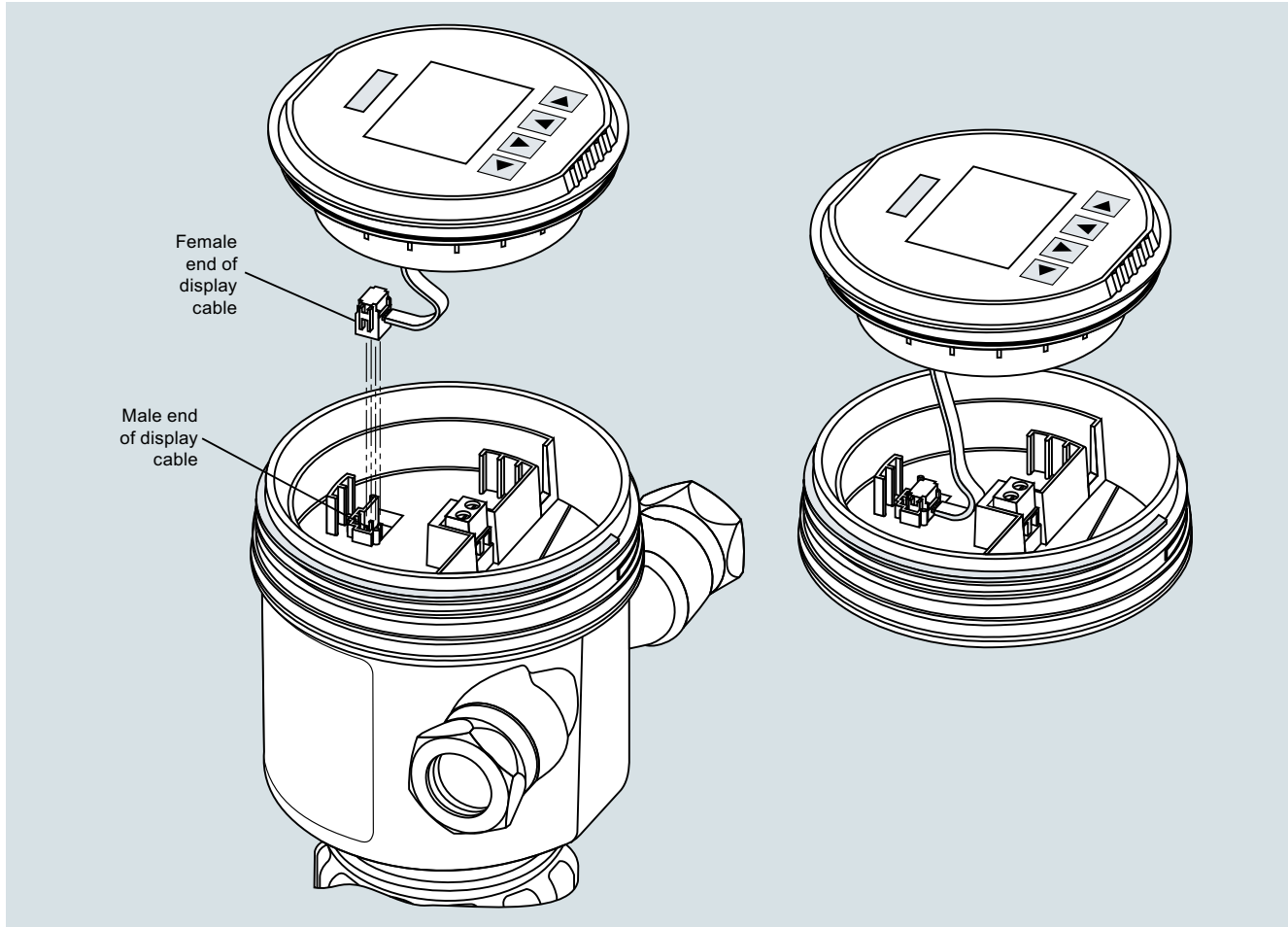
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Circuit diagrams

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SITRANS Probe LU240 connections