

Level Measurement

Continuous level measurement

Ultrasonic / Ultrasonic transmitters / SITRANS Probe LU240

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 with quick commissioning wizards
- Programming using 4-button HMI or SIMATIC PDM
- Communication using HART
- ETFE or PVDF transducers for chemical compatibility
- Process Intelligence signal processing
- IQ Guard for health monitoring, 250 point diagnostic log, limit monitoring, 2010 point trend log, over 40 NE107 diagnostics, and quality verification report via Mobile IQ
- Auto False Echo Suppression for fixed obstruction avoidance
- Low power and current startup
- Optional Bluetooth configuration and monitoring via SITRANS mobile IQ
- Rotating enclosure for ease of installation

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).

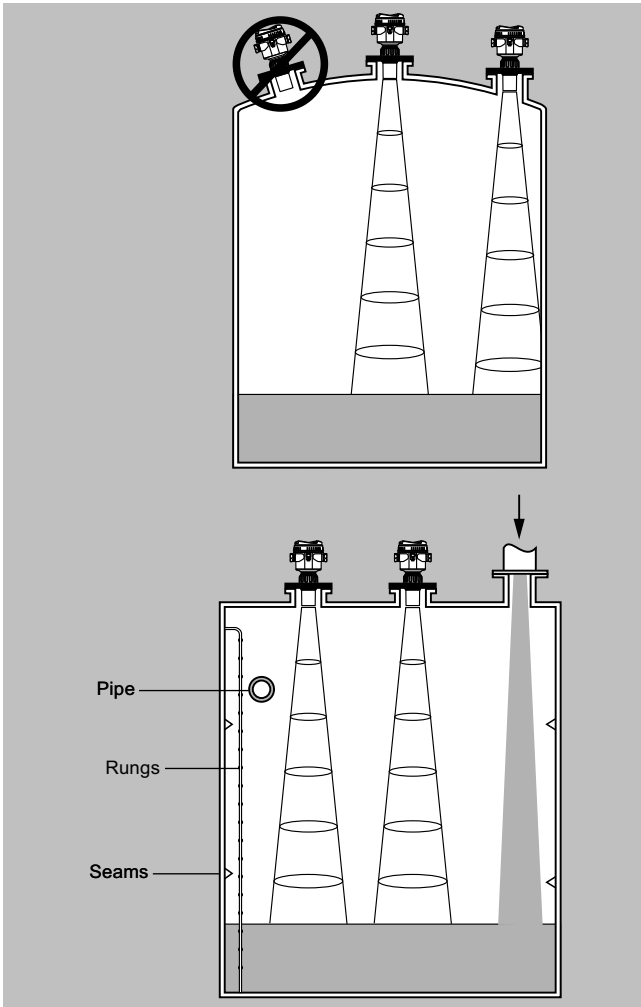
SITRANS Probe LU240 offers HART communication on certain models and mA output on all models.

SITRANS mobile IQ is a Bluetooth app that provides an intuitive interface to quickly configure, set up, and monitor SITRANS Probe LU240 series (available for Android, Apple, and Windows devices). For more information: <http://www.siemens.com/mobileIQ>.

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

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Selection and ordering data

SITRANS Probe LU240 Ultrasonic level transmitter 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.		Article No. 7ML51 1 ● - ● ● ● 0 ● - 4 ● ● ●									
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.											
Communications											
HART (4 ... 20 mA) level, volume, volume flow ⁵⁾											
4 ... 20 mA ¹⁾ level only											
Ingress protection											
IP66, IP68, Type 4X, 6											
Measurement range/wetted parts											
200 ... 3 000 mm (7.87 ... 118.11 inch), PVDF Copolymer											
200 ... 3 000 mm (7.87 ... 118.11 inch), ETFE											
200 ... 6 000 mm (7.87 ... 236.22 inch), PVDF Copolymer											
200 ... 6 000 mm (7.87 ... 236.22 inch), ETFE											
200 ... 12 000 mm (7.87 ... 472.44 inch), PVDF Copolymer											
200 ... 12 000 mm (7.87 ... 472.44 inch), ETFE											
Process connection											
2" NPT [(Taper), ASME B1.20.1]											
R 2" [(BSPT), EN 10226]											
G 2" [(BSPP), EN ISO 228-1]											
Non-wetted parts											
Plastic (PBT/PC material)											
Type of protection											
Ordinary Locations/General Purpose (Non-Ex), cCSA _{US} , CE, UKCA, KC, RCM, EAC											
Ordinary Locations/General Purpose (Non-Ex), cCSA _{US} , FM, CE, UKCA, KC, RCM, EAC ²⁾											
Ex i (ia) (Ex-Zone 0/Div. 1)/IS, FM NI (Class I, Div. 2) ³⁾											
Electrical connections/cable entries											
2 x M20 x 1.5 (one general purpose Polyamide cable gland and one Polyamide blocking plug provided)											
1 x 1/2" NPT (no gland cable provided)											
For custom electrical connections/cable entries, contact a local sales person. For more information please visit: http://www.automation.siemens.com/aspa_app											
Local HMI											
Without display (blind lid of PBT/PC material)											
With display (blind lid of PBT/PC material)											
With display (clear lid of PC material)											

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code(s).	
Stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]: Measuring-point number/identification (max. 32 characters) specify in plain text	Y15
<u>Certificates</u>	
Declaration of compliance DIN 55350-18, Type M / ISO 9001 delivery meets order requirements	C19
Certificate EN 10204-2.2	C14
<u>Wireless communication</u> ⁶⁾	
Bluetooth	F50
<u>Approvals</u> ⁴⁾	
ATEX II 1G Ex ia IIC T4 Ga, Ta = -40 °C to +80 °C;	E31
UKEX II 1G Ex ia IIC T4 Ga, Ta = -40 °C to +80 °C;	
IECEX Ex ia IIC T4 Ga, Ta = -40 °C to +80 °C;	
EAC Ex OEx ia IIC T4 Ga, IP67/IP68;	
SABS Ex ia IIC T4 Ga, Ta = -40 °C to +80 °C	
FM non-incendive - Class I, Div. 2, Groups A, B, C, D T5 (Ta = 80 °C), T6 (Ta = 40 °C) ²⁾	E32
NEPSI, KCs, IECEX - Ex ia IIC T4 Ga	E33

Selection and Ordering data	Order code
cCSA _{US} , KCs, FM - Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G, T4, CSA Ex ia IIC T4 Ga Class I, Zone 0, AEx ia IIC T4 Ga Tamp: -40 °C to +80 °C, INMETRO, IECEX - Ex ia IIC T4 Ga ²⁾	E34
For customs, contact a local sales person. For more information please visit http://www.automation.siemens.com/aspa_app .	

Spare parts and accessories	Article No.
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	
Tag, stainless steel, 12 x 45 mm, one text line (max. 16 characters)	7ML1930-1AC
Stainless steel FMS200 universal box bracket mounting kit	7ML1830-1BK
3" ASME/DIN Universal mounting adapter, 2" NPT, ETFE	7ML1830-1BT
3" ASME/DIN Universal mounting adapter, 2" BSP, ETFE	7ML1830-1BU
2" NPT nylon plastic locknut	7ML1830-1DT

Selection and ordering data (continued)

Spare parts and accessories	Article No.
2" BSP nylon plastic locknut	7ML1830-1DQ
Stainless steel sun shield	A5E52107153
Over-voltage protection up to 6 kV (external), M20 x 1.5	7MF7903-7AB
Over-voltage protection up to 6 kV (external), 1/2" NPT	7MF7903-7AC
Cable Gland Polyamide - General Purpose (-20 ... +60 °C)	A5E34457564
Bluetooth kit	A5E50514198
SIMATIC RTU3010C compact, remote data manager with alarming	6NH3112-0BA00-0-XX0
SIMATIC RTU3030C compact, remote data manager with alarming	6NH3112-3BA00-0-XX0
HART modem with USB interface	7MF4997-1DC
Intrinsically safe barrier	7NG4124-1AA00
SITRANS RD100, loop powered display	7ML5741-.....-
SITRANS RD150, remote digital display for 4 to 20 mA and HART devices	7ML5742-.....-

Spare parts and accessories	Article No.
SITRANS RD200, universal input display with Modbus conversion	7ML5740-.....-
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion	7ML5744-.....-
SITRANS LT500, a versatile, single and multi-vessel level monitor/controller for virtually any application in a wide range of industries.	7ML60-.....-
Spare Parts	
Spare lid, clear	A5E44267491
Spare lid, blind	A5E44267497
Spare o-ring for lid	A5E44267501
Spare segmented display and 4-button HMI	A5E44809382

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

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Technical specifications

SITRANS Probe LU240	
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
Outputs	
mA/HART	
• Range	4 ... 20 mA
• Accuracy	± 0.0096 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

Technical specifications (continued)

SITRANS Probe LU240	
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 FMS mounting bracket product page for more information) or customer supplied mount.
Display and Controls	
Interface	Local: LCD display Remote: Available via HART or Bluetooth
Configuration	4-button HMI
Memory	Non-volatile EEPROM, no battery required
Remote configuration	
	<ul style="list-style-type: none"> PC running SIMATIC PDM PC running PACTware (SITRANS DTM) PC running Emerson AMS Device Manager PC running a Field Device Tool (FDT) Field Communicator 375/475 (FC375/FC475) Mobile device running SITRANS Mobile IQ (AW050 bluetooth)
Power supply	
4 ... 20 mA/HART	10.5 ... 30 V DC
Certificates and Approvals	
General	
	FM, cCSA _{US} , CE, UKCA, RCM, EAC, KC, VLAREM II, RoHS, China RoHS, WEEE, REACH, FCC, IC, RED, CMIIT
Radio	
Hazardous	
• Intrinsically Safe	
- Europe	ATEX II 1G Ex ia IIC T4 Ga
- UK	UKEX 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 CSA Ex ia IIC T4 Ga Class I, Zone 0, AEx ia IIC T4 Ga Temp: -40 °C to +80 °C
- 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	KCs Ex ia IIC T4
• Non-incendive	
- USA	FM, Class I, Div. 2, Groups A, B, C, D Tx
Metrological	
Drinking water	MCERTS, CPA, Kazakhstan metrology
Radio (Bluetooth) AW050	NSF/ANSI/CAN 61-2022
	Australia, Brazil, Canada, Chile, China, Colombia, Ecuador, Egypt, EU, Hong Kong, India, Israel, Japan, Kazakhstan, Malaysia, Mexico, New Zealand, Pakistan, Peru, South Africa, South Korea, Taiwan, UAE, UK, USA, Vietnam
Other	
	FDA (wetted sensor), Environmental Product Declaration (EPD), Siemens EcoTech Profile (SEP)

Technical specifications (continued)**SITRANS Probe LU240**

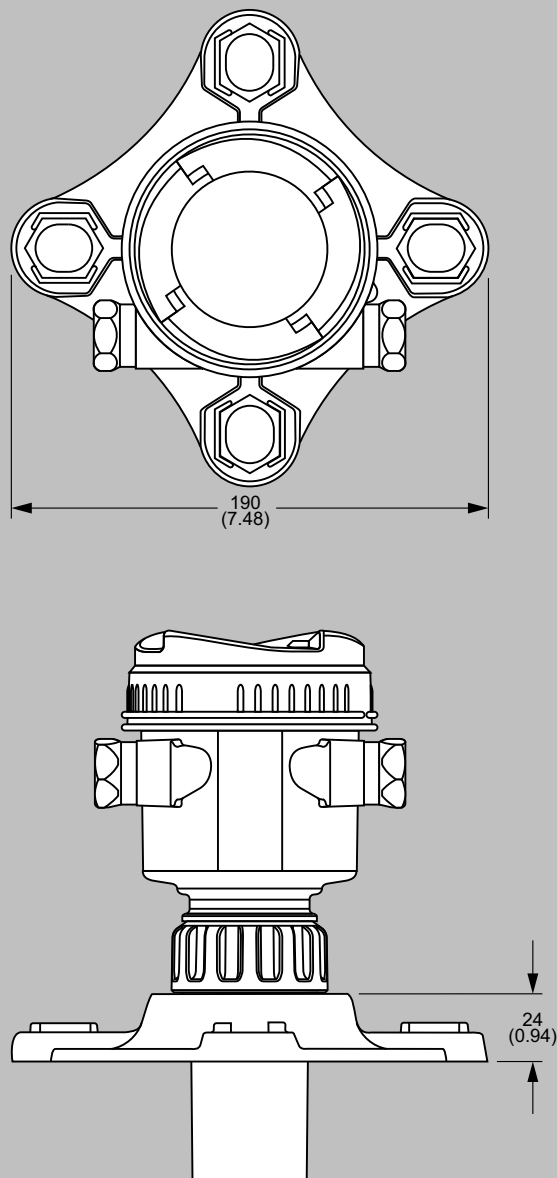
Production and development certification	<ul style="list-style-type: none">• ISO 9001• ISO 14001• ISO 18001• ISO 45001• IEC 62443-4-1• EN ISO/IEC 80079-34• PED 2014/68/EU• IEC 62443-4-1, maturity level 3
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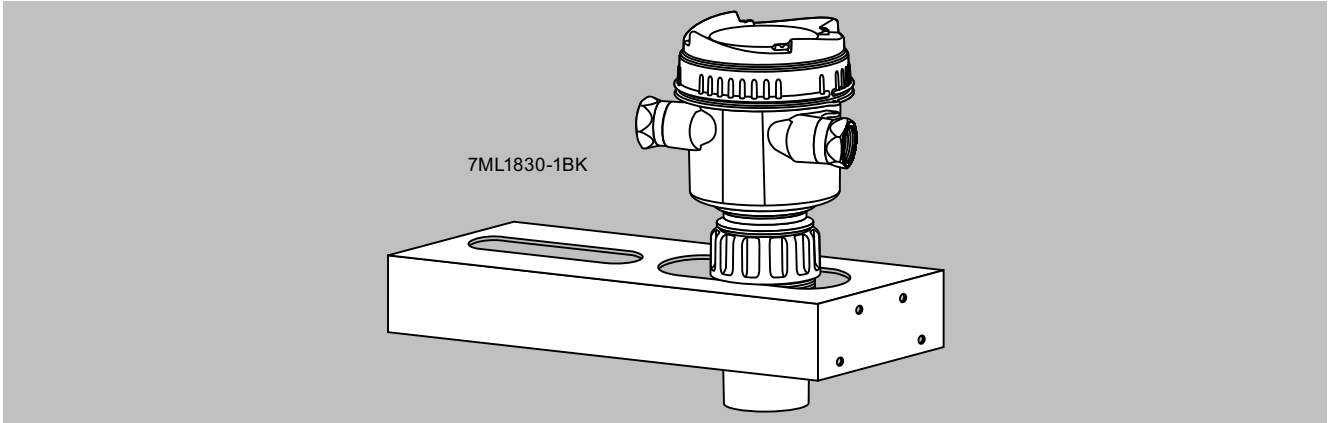
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Options

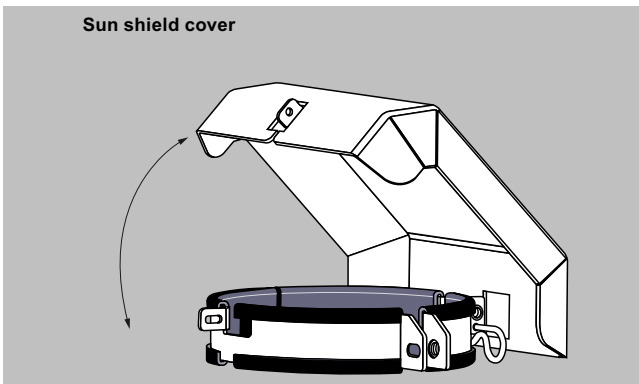


SITRANS Probe LU240 optional flange adapter, dimensions in mm (inch)

Options (continued)



SITRANS Probe LU240 with optional FMS 200 universal box bracket



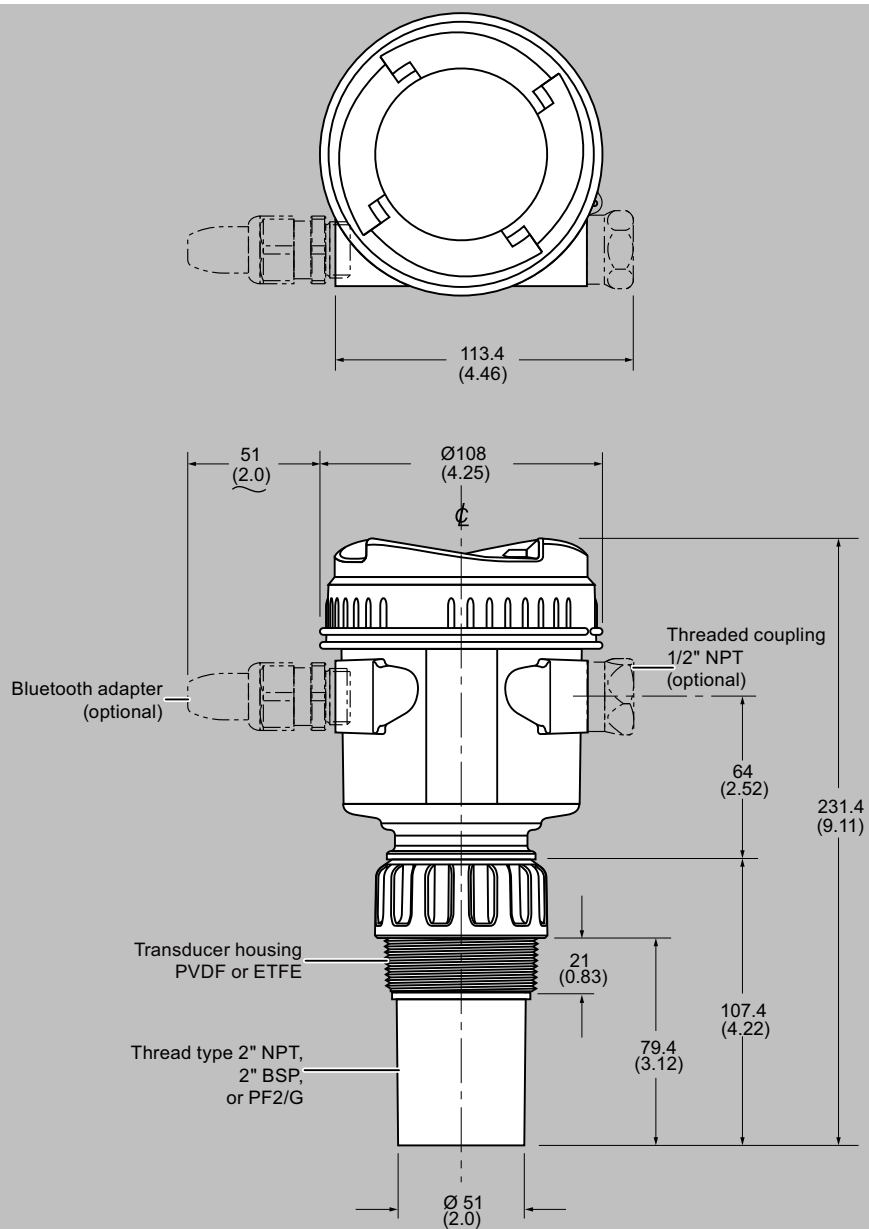
SITRANS Probe LU240 Sunshield

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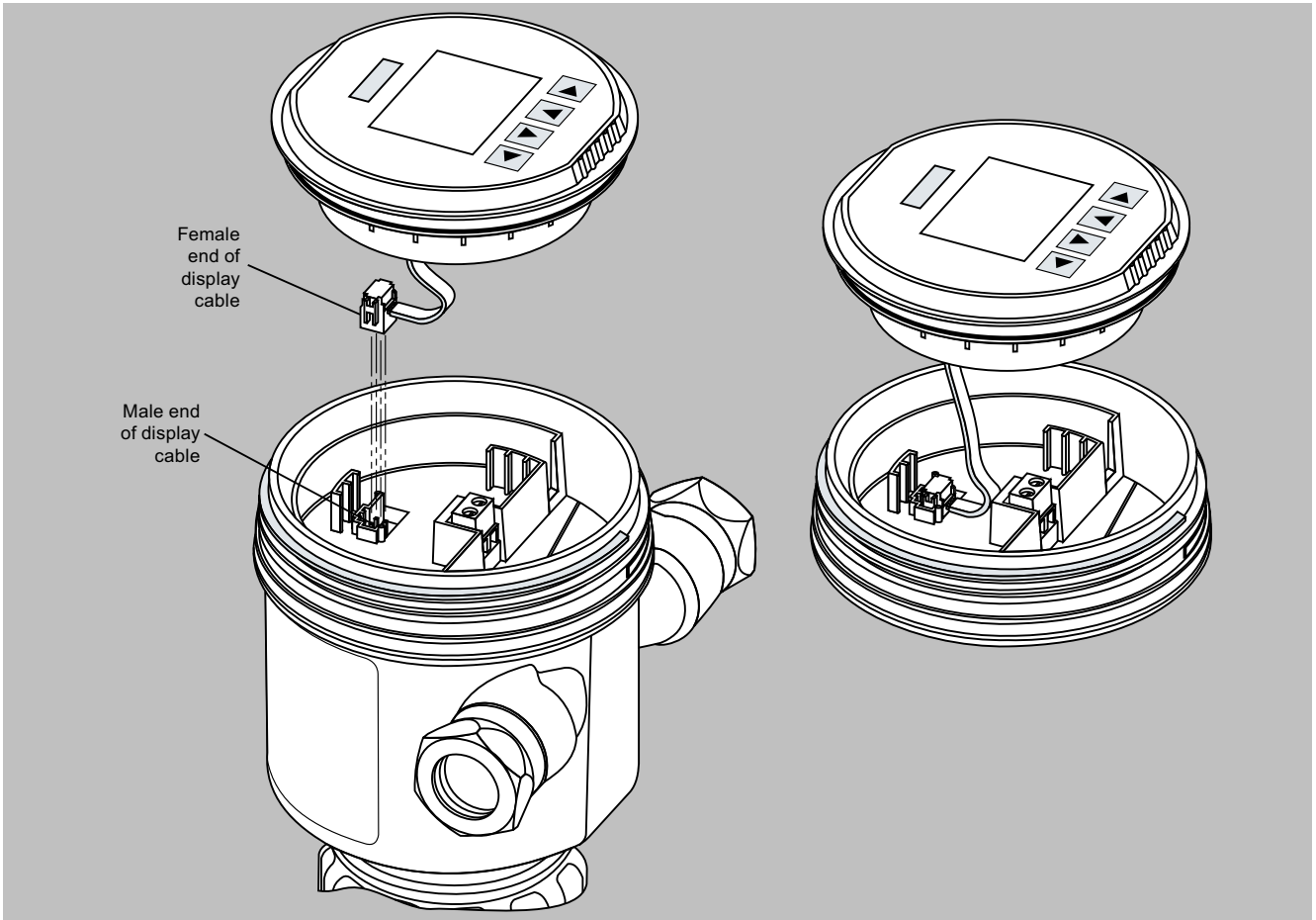
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Dimensional drawings



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

Circuit diagrams



SITRANS Probe LU240 connections