

Level Measurement

Continuous level measurement
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
- 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.

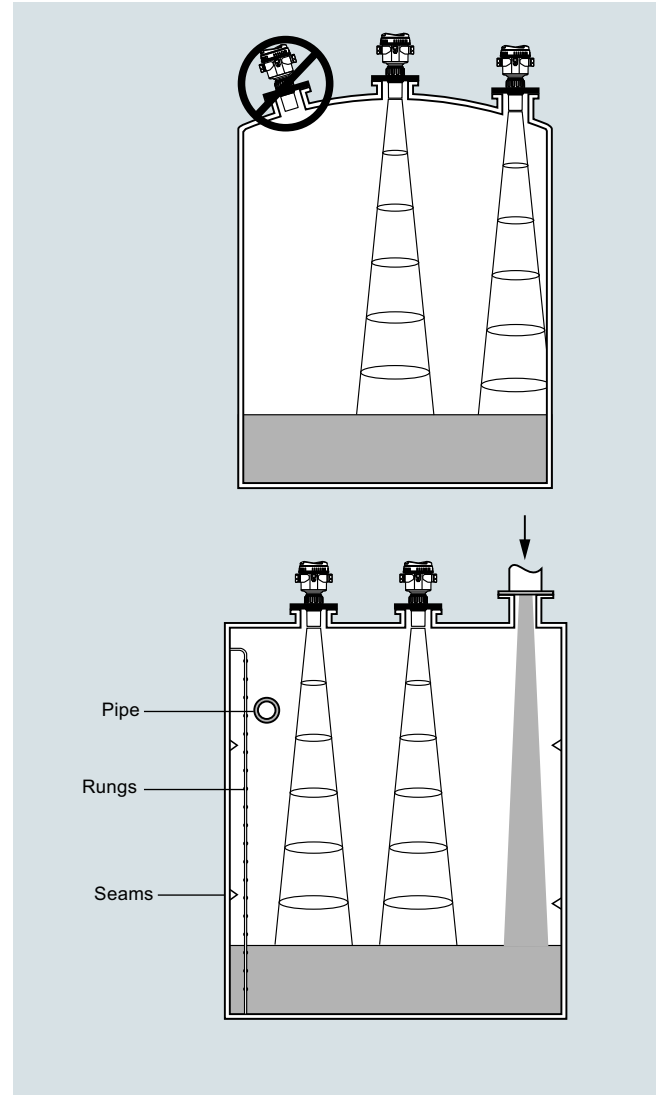
The range of SITRANS Probe LU240 is 3, 6, or 12 m (10, 20, or 40 ft). Probe LU240 provides unmatched reliability, using Process Intelligence, Auto False Echo Suppression for fixed obstruction avoidance, and accuracy of 0.15 % of range or 6 mm (0.25 inch) (on 6 m and 12 m models only).

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, the 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

Technical specifications

| | | | |
|--|--|-----------------------------------|---|
| Mode of operation | | Process connection | |
| Measuring principle | Ultrasonic level measurement | Threaded connection | 2" NPT [(Taper), ASME B1.20.1] R 2" [(BSPT), EN 10226] or G 2" [(BSPP), EN ISO 228-1] |
| Typical application | Level measurement in storage vessels and simple process vessels | Flange connection | 3 inch (80 mm) universal flange |
| Inputs | | Other connection | FMS 200 mounting bracket (see page 4/186) or customer supplied mount |
| Measuring range | | Display and Controls | |
| • 3 m (10 ft) | 0.2 ... 3 m (8 inch ... 10 ft) | Interface | Local: LCD display Remote: Available via HART |
| • 6 m (20 ft) | 0.2 ... 6 m (8 inch ... 20 ft) | Configuration | 4-button HMI |
| • 12 m (40 ft) | 0.2 ... 12 m (8 inch ... 40 ft) | Memory | Non-volatile EEPROM, no battery required |
| Frequency | 54 kHz | Power supply | |
| Outputs | | 4 ... 20 mA/HART | 10.5 ... 30 V DC |
| mA/HART | | Certificates and Approvals | |
| • Range | 4 ... 20 mA | General | FM, ^C CSA _{US} , CE, RCM, EAC, KC, VLAREM |
| • Accuracy | ± 0.02 mA | Hazardous | |
| • HART version | 7 | • Intrinsically Safe | |
| • Startup current | 3.6 mA | - Europe | ATEX II 1G Ex ia IIC T4 Ga |
| • Fail-safe | Programmable as high, low, or hold (loss of echo) per NAMUR NE43 | - International | IECEx SIR 18.0013X Ex ia IIC T4 Ga |
| Performance | | - USA/Canada | FM/ ^C CSA _{US} , Class I, Div. 1, Groups A, B, C, D, Class II, Div. 1, Groups E, F, G, Class III T4 |
| Resolution | ≤ 3 mm (0.12 inch) | - Brazil | INMETRO Ex ia IIC T4 Ga |
| Accuracy | | - China | NEPSI Ex ia IIC T4 Ga |
| • 3 m (10 ft) | 10 mm (0.39 inch) | - South Africa | SABS Ex ia IIC Tx Ga |
| • 6 m (20 ft), 12 m (40 ft) | ± the greater of 0.15 % of range or 6 mm (0.25 inch) [valid from 0.25 m (0.82 ft)] | - Russia | EAC Ex 1G Ex ia IIC T4 Ga |
| Non-Repeatability | ≤ 3 mm (0.12 inch) | - Korea | KOSHA KSs Ex ia IIC T4 |
| Blanking distance | 0.2 m (0.66 ft) | • Non-incendive | |
| Update time | ≤ 4 s | - USA | FM, Class I, Div. 2, Groups A, B, C, D Tx |
| Temperature compensation | Built-in to compensate over temperature range | Marine | Lloyd's Register, American Bureau of Shipping (ABS), DNV GL, Bureau Veritas, CCS |
| Beam angle | 10° | Metrological | MCERTS, CPA, Kazakstan patterna approval |
| 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 | | |

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| Selection and Ordering data | Article No. | Selection and Ordering data | Order code |
|---|----------------------------|---|--|
| 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. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal. | 7ML51 1 - 0 - 4 | Approvals³⁾ ATEX, SABS, IECEx - 1G, EAC Ex, Ex ia IIC T4 Ga FM non-incendive - Class I, Div. 2, Groups A, B, C, D T5 (Ta = 80 °C), T6 (Ta = 40 °C) ¹⁾ NEPSI, KCs, IECEx - Ex ia IIC T4 Ga 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 Ga ¹⁾ Marine approvals⁴⁾ DNV-GL Det Norske Veritas/Germanischer Lloyd LR Lloyds Register BV Bureau Veritas ABS American Bureau of Shipping China Classification Society (CCS) For customs, contact a local sales person. For more information please visit http://www.automation.siemens.com/aspa_app . | E31 E32 E33 E34 E50 E51 E52 E53 E58 |
| Communications HART (4 ... 20 mA) level, volume, volume flow ⁵⁾ 4 ... 20 mA level ⁶⁾ | 0 7 | | |
| Ingress protection IP66, IP68, TYPE 4X, 6 | 1 | | |
| 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 | B C D E G H | | |
| Process connection 2" NPT [(Taper), ASME B1.20.1] R 2" [(BSPT), EN 10226] G 2" [(BSPP), EN ISO 228-1] | D E F | | |
| Non-wetted parts Plastic (PBT/PC material) | 7 | | |
| Type of protection Non-Ex (ordinary locations) cCSA _{US} , CE, KC, RCM, EAC Non-Ex (ordinary locations) cCSA _{US} , FM, CE, KC, RCM, EAC ¹⁾ Ex i (ia) (Ex-Zone 0/Div. 1)/IS, FM NI (Class I, Div. 2) ²⁾ | A B C | | |
| 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 | F K | | |
| 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) | 0 1 3 | | |

| 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 |
| Certificates Test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000 Certificate EN 10204-2.2 | C11 C14 |

| Selection and Ordering data | Order code |
|--|--|
| Spare Parts Spare lid, clear Spare lid, blind Spare o-ring for lid Spare segmented display and 4-button HMI | A5E44267491 A5E44267497 A5E44267501 A5E44809382 |

¹⁾ Available only with Electrical connections/cable entries option K.

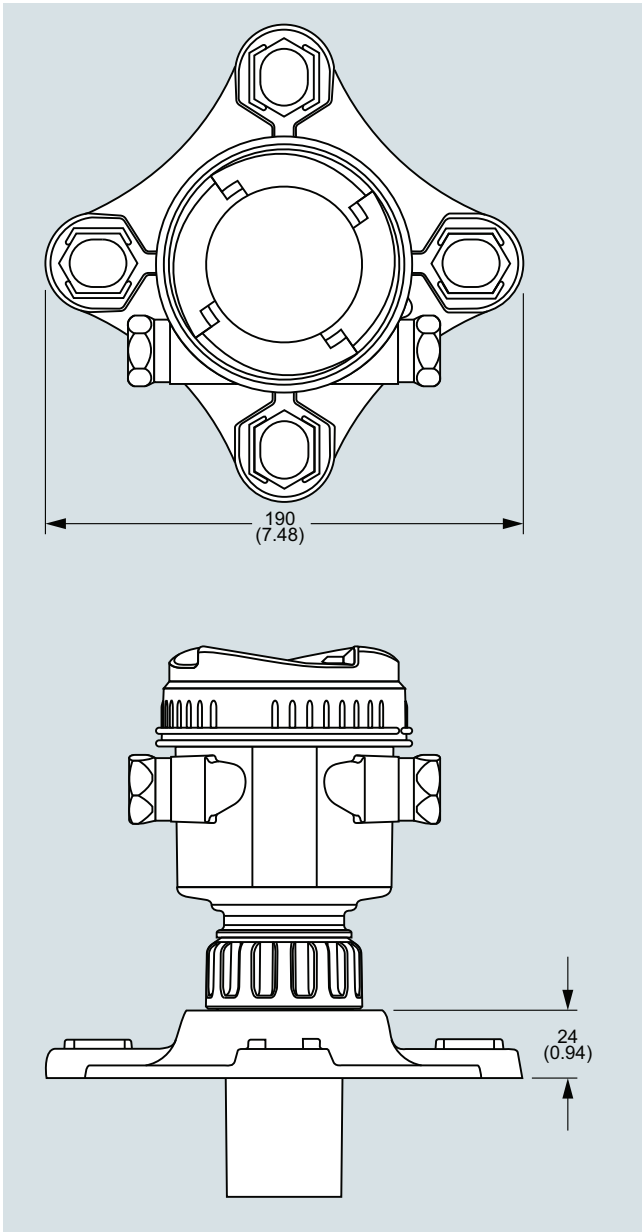
²⁾ Available only with order codes E31, E32, E33, and E34.

³⁾ Order codes E31, E32, E33, E34 available only with Type of protection option C.

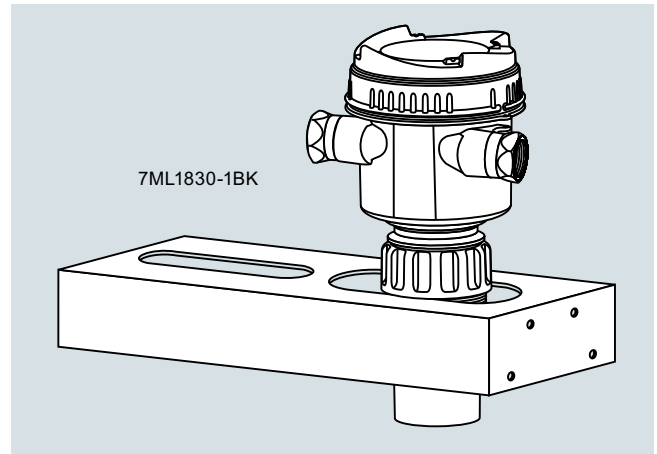
⁴⁾ Order codes E50, E51, E54, E53, E58 available only with Communications option 0.

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.

Options



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



SITRANS Probe LU240 with optional FMS 200 universal box bracket

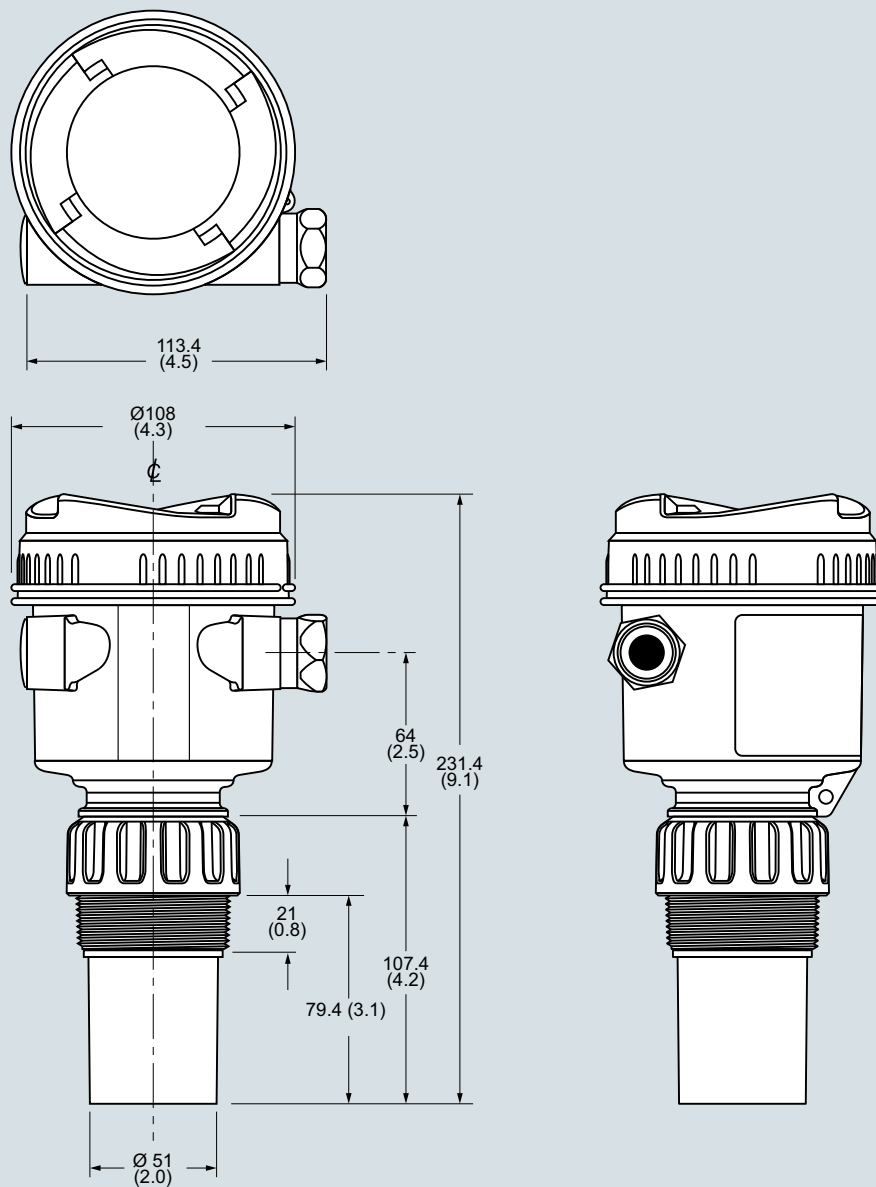
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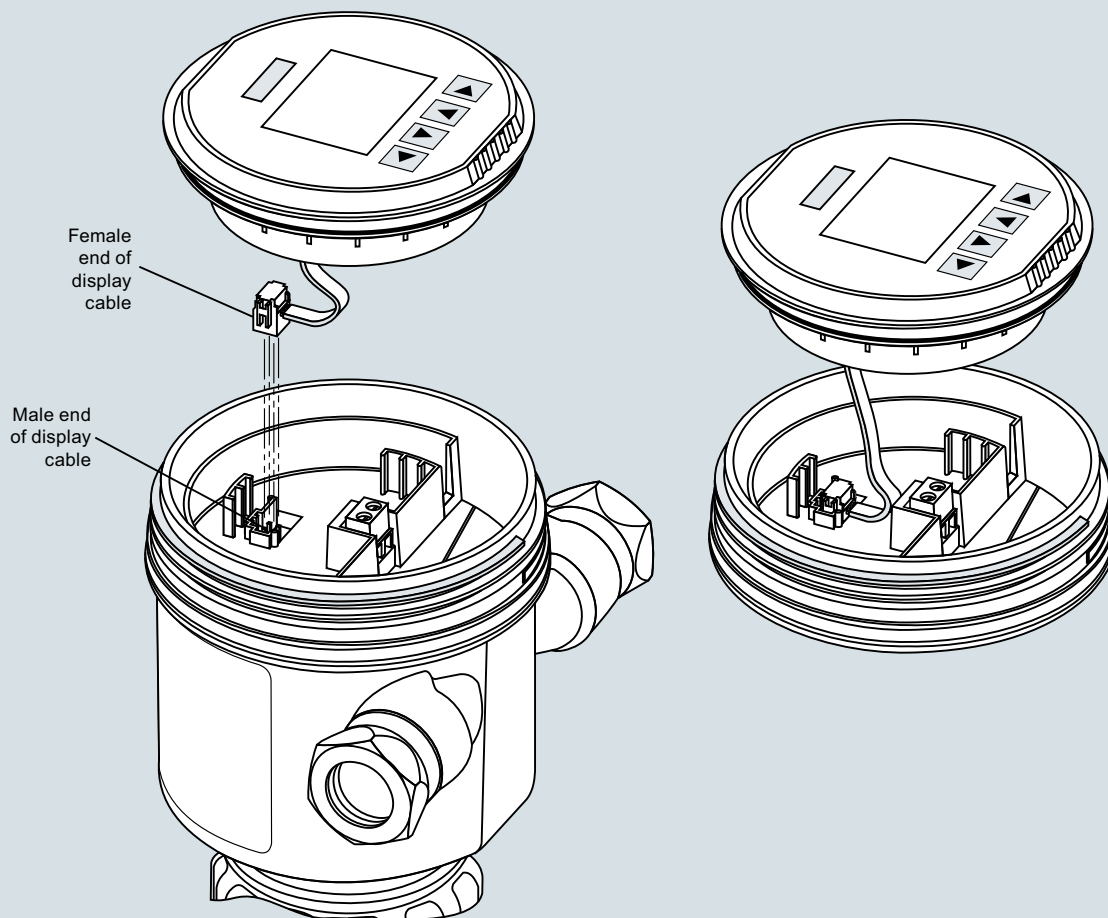
SITRANS Probe LU240**Dimensional drawings**

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SITRANS Probe LU240, dimensions in mm (inch)

Circuit diagrams



SITRANS Probe LU240 connections