Level measurement
Continuous level measurement
Ultrasonic transmitters

SITRANS LU150

Overview

SITRANS LU150 is a short-range integrated ultrasonic level transmitter. This general purpose, 2-wire, 4 to 20 mA loop powered transmitter is ideal for liquids, slurries, and bulk materials in open or closed vessels to 5 m (16.4 ft).

Benefits

• Easy to install, program, and maintain
• Accurate and reliable
• Sanitary models available
• Patented Sonic Intelligence echo processing
• Integral temperature compensation

Application

The transducer is available in PVDF copolymer, making the device suitable for use in a wide variety of applications.

SITRANS LU150 is easy to install and maintain, and can be quickly removed for cleaning as required by the food, beverage and pharmaceutical industries.

The reliability of the level data is based on the Sonic Intelligence echo processing algorithms. A filter discriminates between the true echo and false echoes from acoustic or electrical noises and agitator blades in motion. The ultrasonic pulse propagation time to the material and back is temperature-compensated and converted into distance for display, analog output.

• Key Applications: chemical storage vessels, filter beds, mud pits, liquid storage vessels, food applications

Configuration
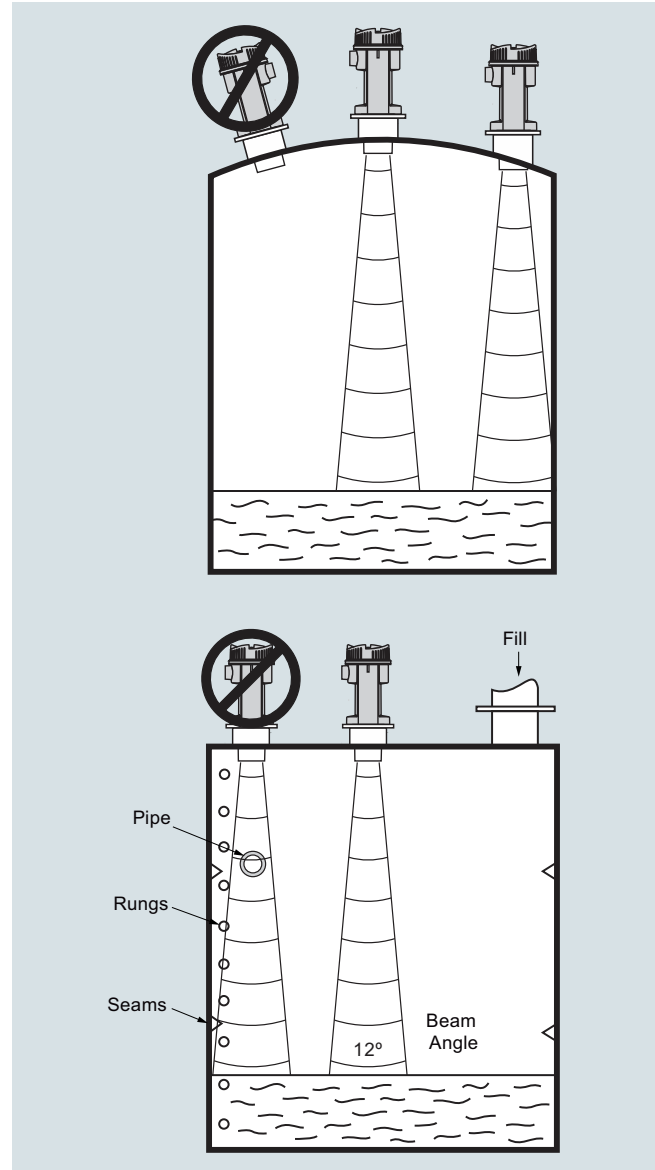
SITRANS LU150 mounting

Technical specifications

Mode of Operation	
Measuring principle	Ultrasonic level measurement
Input	
Measuring range	0.25 ... 5 m (0.8 ... 16.4 ft)
Frequency	54 kHz
Output	
mA	4 ... 20 mA
• Span	Proportional/ inversely proportional
• Max. load	600 Ω in the loop at 24 V DC
Power supply	
Supply voltage	12 ... 30 V DC, 0.1 A surge
Max. power consumption	0.75 W (25 mA at 24 V DC)
Certificates and approvals	CE, CSA$_{US/C}$
Accuracy	
Error in measurement	0.25 % of measuring range (in air)
Resolution	3 mm (0.125 inch)
Temperature compensation	Built in
Echo processing	Sonic Intelligence
Rated operation conditions	
Beam angle	12°
Ambient temperature	
• Standard	-30 ... +60 °C (-22 ... +140 °F)
• Metallic mounting	-20 ... +60 °C (-4 ... +140 °F)
Storage temperature	
• Standard	-30 ... +60 °C (-22 ... +140 °F)
• Metallic mounting	-20 ... +60 °C (-4 ... +140 °F)
Max. static operating pressure	Normal atmospheric pressure
Design	
Weight	1.3 kg (2.9 lb)
Material	
• Electronics enclosure	PBT
• Transducer	PVDF copolymer
Degree of protection	IP68 / NEMA 6 / TYPE 6
Process connection	• 2" NPT [(Taper), ANSI/ASME B1.20.1] • R 2" [(BSPT), EN 10226] • G 2" [(BSPP), EN ISO 228-1] • 4" sanitary
Flange adapter	3" Universal, (fits DN 65, PN 10 and 3" ASME)
Cable inlet	1 inlet for M20, optional 1/2" NPT

Selection and ordering data — Article No.

SITRANS LU150 Ultrasonic level transmitter — 7ML5201-
Continuous, non-contact, 5 m (16.4 ft) range. Monitors level in liquids and slurries. Basic level performance. — 0 ■ ■ 0

↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

Transducer/Process connection (PVDF)
PVDF copolymer, 2" NPT [(Taper), ANSI/ASME B1.20.1] — E
PVDF copolymer, R 2" [(BSPT), EN 10226] — F
PVDF copolymer, G 2" [(BSPP), EN ISO 228-1] — G
PVDF copolymer, 4" Sanitary mounting — J

Cable inlet
M20 x 1.5 [General Purpose cable gland -20 ... +60 °C (-4 ... +140 °F) included] — B
1/2" NPT stainless steel entry (no cable gland included) — C

Further designs — Order code
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. 20 characters) specify in plain text — **Y15**

Test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and to ISO 9000 — **C11**

Operating Instructions
All literature is available to download for free, in a range of languages, at
http://www.siemens.com/processinstrumentation/documentation

Accessories — Article No.
| Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line | 7ML1930-1AC |
Universal Box Bracket Mounting kit	7ML1830-1BK
Sanitary 4" mounting clamp	7ML1830-1BR
3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" NPT	7ML1830-1BT
3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" BSPT	7ML1830-1BU
2" BSP nylon plastic locknut	7ML1830-1DQ
2" NPT nylon plastic locknut	7ML1830-1DT
Cable Gland - General Purpose -20 ... +60 °C (-4 ... +140 °F)	A5E34457564

Level measurement

Continuous level measurement
Ultrasonic transmitters

■ **Options**
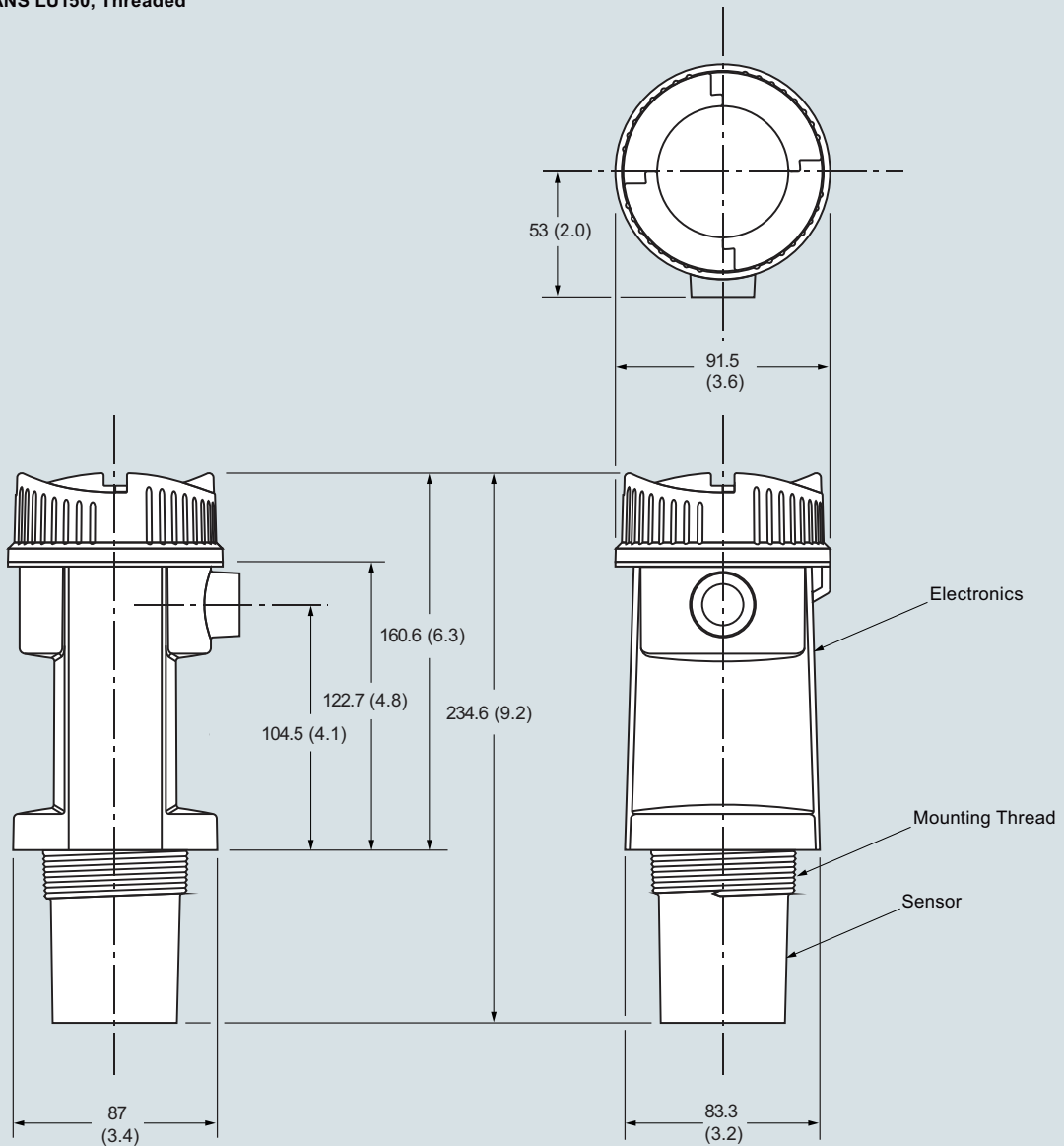
SITRANS LU150, Flange Adapter

The SITRANS LU150 can be fitted with the optional 75 (3) flange adapter for mating to 3" ANSI, DIN 65 PN10 and JIS 10K3B flanges.

SITRANS LU150

Optional flange adapter
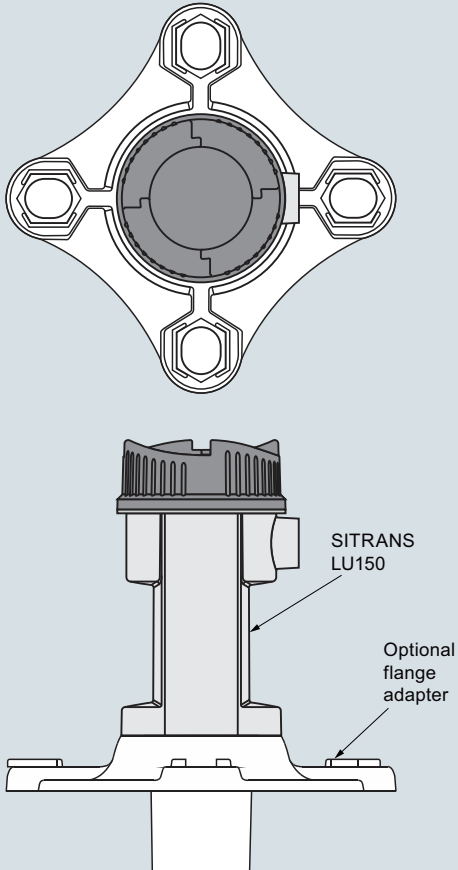
SITRANS LU150 optional flange adapter, dimensions in mm (inch)

■ Dimensional drawings

SITRANS LU150, Threaded

53 (2.0)

91.5 (3.6)

Electronics

160.6 (6.3)

122.7 (4.8)

104.5 (4.1)

234.6 (9.2)

Mounting Thread

Sensor

87 (3.4)

83.3 (3.2)

SITRANS LU150, dimensions in mm (inch)

4

SITRANS LU150

■ **Dimensional drawings** (continued)

SITRANS LU150, Sanitary

239.2 (9.4)

73.0
(2.9)

Electronics

Mounting
thread

Sensor
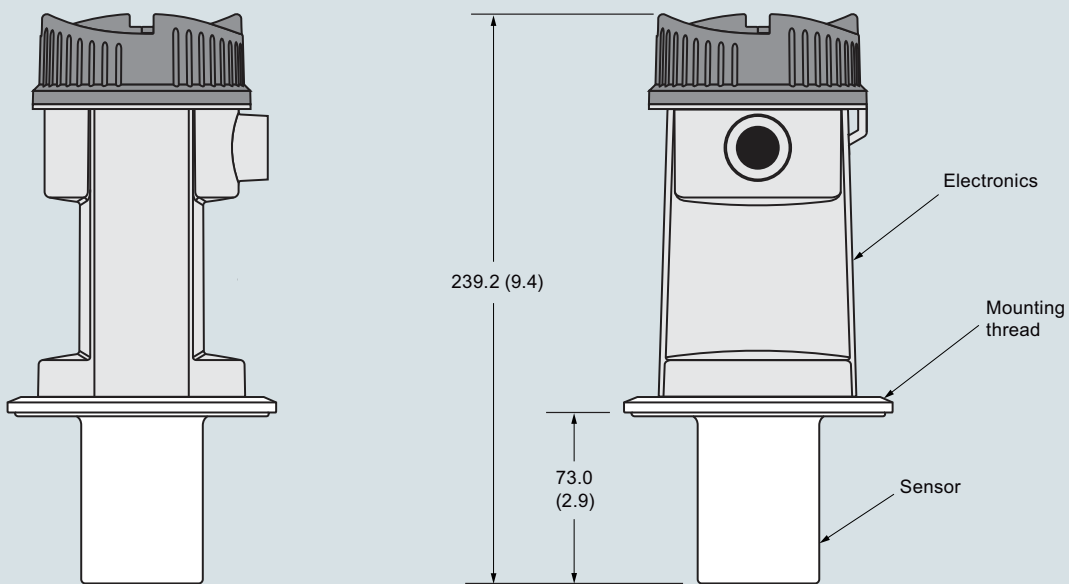
SITRANS LU150, dimensions in mm (inch)

■ **Circuit diagrams**

Threaded and Sanitary models

SITRANS
LU150
+ −
1 2

Loop
instrumentation
R$_{max}$
+

V Supply −

12 ... 30 V DC −

Display

Program
mode

Alphanumeric

'20' key

'4' key

Units

Operation
status

LOE/fault
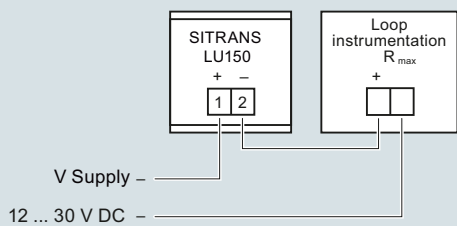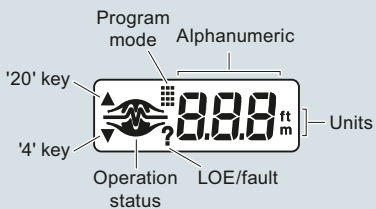
SITRANS LU150 connections

Overview

SITRANS LU180 is a short-range integrated ultrasonic level transmitter. It is intrinsically safe (ATEX, CSA, FM, IECEx, NEPSI), 2 wire, 4 to 20 mA loop powered, ideal for liquids, slurries, and bulk materials in open or closed vessels to 5 meters (16.4 feet).

Benefits

- Easy to install, program, and maintain
- Accurate and reliable
- Sanitary models available
- Patented Sonic Intelligence echo processing
- Integral temperature compensation

Application

The transducer is available in PVDF copolymer, making the device suitable for use in a wide variety of applications. SITRANS LU180 is easy to install and maintain, and can be quickly removed for cleaning as required by the food, beverage and pharmaceutical industries. The reliability of the level data is based on the Sonic Intelligence echo processing algorithms. A filter discriminates between the true echo and false echoes from acoustic or electrical noises and agitator blades in motion. The ultrasonic pulse propagation time to the material and back is temperature compensated and converted into distance for display, analog output.

- Key Applications: chemical storage vessels, filter beds, mud pits, liquid storage vessels, food applications

Configuration
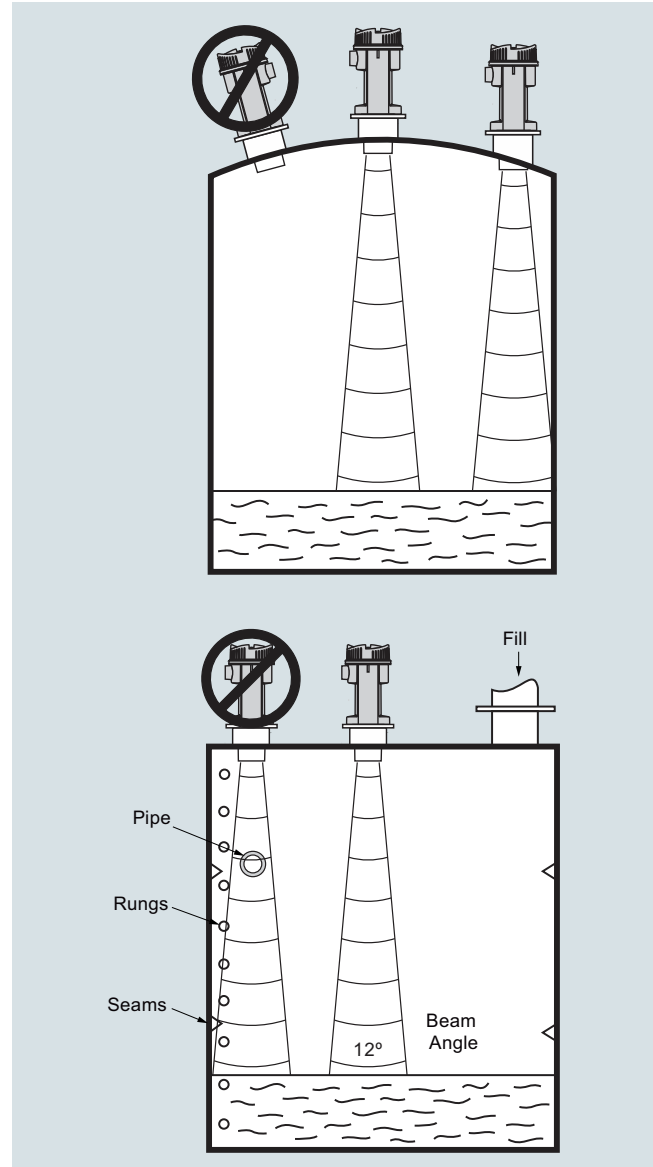
SITRANS LU180 mounting

Level measurement
Continuous level measurement
Ultrasonic transmitters

SITRANS LU180

■ Technical specifications

Mode of operation	
Measuring principle	Ultrasonic level measurement
Input	
Measuring range	0.25 ... 5 m (0.8 ... 16.4 ft)
Frequency	54 kHz
Output	
mA	4 ... 20 mA
• Span	Proportional/ inversely proportional
• Max. load	600 Ω in the loop at 24 V DC
Power supply	
Supply voltage	12 ... 30 V DC, 0.1 A surge
Max. power consumption	0.75 W (25 mA at 24 V DC)
Certificates and approvals	CSA:
	IS/ Class I, II, III, Div. 1, Groups: A, B, C, D, E, F, G T4
	FM:
	IS/ Class I, II, III, Div. 1, Groups: A, B, C, D, E, F, G T4
	ATEX:
	II 1G Ex ia IIC T4 Ga
	IECEx Ex ia IIC T4 Ga
	NEPSI Ex ia IIC T4 Ga
Accuracy	
Error in measurement	0.25 % of measuring range (in air)
Resolution	3 mm (0.125 inch)
Temperature compensation	Built in
Echo processing	Sonic Intelligence
Rated operation conditions	
Beam angle	12°
Ambient temperature	
• Standard	-40 ... +60 °C (-40 ... +140 °F)
• Metallic mounting	-20 ... +60 °C (-4 ... +140 °F)
Storage temperature	
• Standard	-40 ... +60 °C (-40 ... +140 °F)
• Metallic mounting	-20 ... +60 °C (-4 ... +140 °F)
Max. static operating pressure	Normal atmospheric pressure
Design	
Weight	1.3 kg (2.9 lb)
Material	
• Electronics enclosure	PBT
• Transducer	PVDF copolymer
Degree of protection	IP68 / NEMA 6 / TYPE 6
Process connection	• 2" NPT [(Taper), ANSI/ASME B1.20.1] • R 2" [(BSPT), EN 10226] • G 2" [(BSPP), EN ISO 228-1] • 4" sanitary
Flange adapter	3" Universal (fits DN 65, PN 10 and 3" ASME)
Cable inlet	1 inlet for M20, optional 1/2" NPT

■ Selection and ordering data

	Article No.
SITRANS LU180 Ultrasonic level transmitter	**7ML5202-**
Continuous, non-contact, 5 m (16.4 ft) range. Monitors level in liquids and slurries. Basic level performance for intrinsically safe applications.	**0 ■ ■ 0**
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	

Transducer/Process connection	
PVDF copolymer, 2" NPT [(Taper), ANSI/ASME B1.20.1]	E
PVDF copolymer, R 2" [(BSPT), EN 10226]	F
PVDF copolymer, G 2" [(BSPP), EN ISO 228-1]	G
PVDF copolymer, 4" Sanitary mounting	J

Cable inlet	
M20 x 1.5 [General Purpose cable gland -20 ... +60 °C (-4 ... +140 °F) included]	B
1/2" NPT stainless steel entry (no cable gland included)	C

Further designs	Order code
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. 20 characters) specify in plain text	**Y15**
Test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and to ISO 9000	**C11**

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| *Accessories*	Article No.
Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line	**7ML1930-1AC**
Universal box bracket mounting kit	**7ML1830-1BK**
Sanitary 4" mounting clamp	**7ML1830-1BR**
3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" NPT	**7ML1830-1BT**
3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" BSPT	**7ML1830-1BU**
2" BSP nylon plastic locknut	**7ML1830-1DQ**
2" NPT nylon plastic locknut	**7ML1830-1DT**
Cable Gland, General Purpose -20 ... +60 °C (-4 ... +140 °F)	**A5E34457564**

4

■ **Options**

SITRANS LU180, Flange Adapter

The SITRANS LU180 can be fitted with the optional 75 (3) flange adapter for mating to 3" ANSI, DIN 65 PN10 and JIS 10K3B flanges.
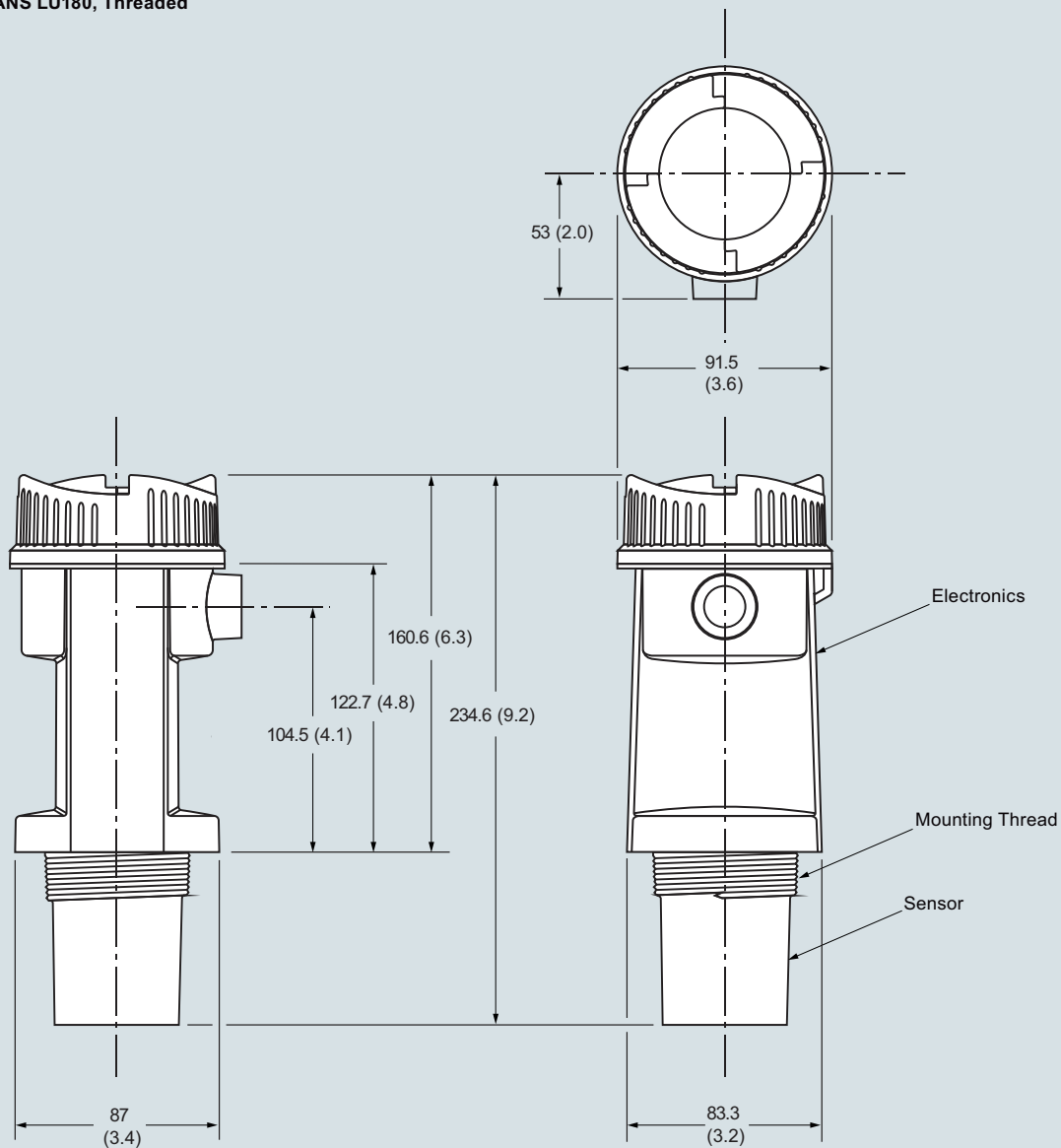
SITRANS
LU180

Optional
flange
adapter

SITRANS LU180 optional flange adapter, dimensions in mm (inch)

4
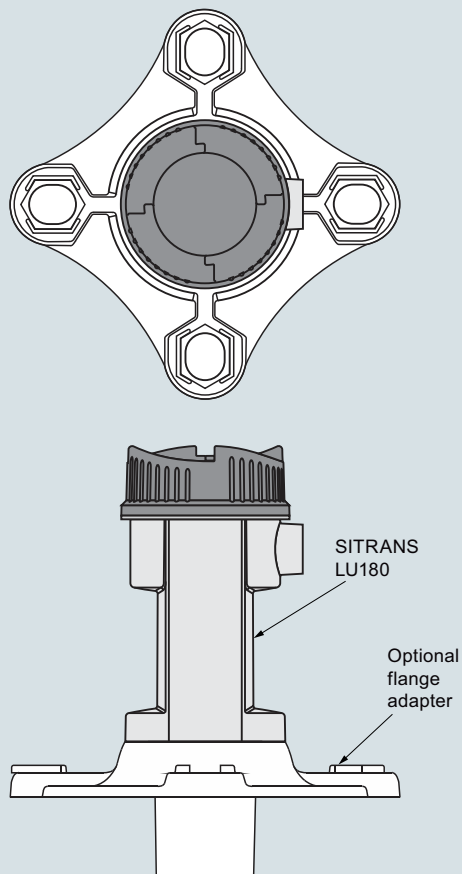
Level measurement
Continuous level measurement
Ultrasonic transmitters

SITRANS LU180

◼ Dimensional drawings

SITRANS LU180, Threaded

53 (2.0)

91.5
(3.6)

160.6 (6.3)

122.7 (4.8)

104.5 (4.1)

234.6 (9.2)

Electronics

Mounting Thread

Sensor

87
(3.4)

83.3
(3.2)

SITRANS LU180, dimensions in mm (inch)

■ **Dimensional drawings** (continued)

SITRANS LU180, Sanitary
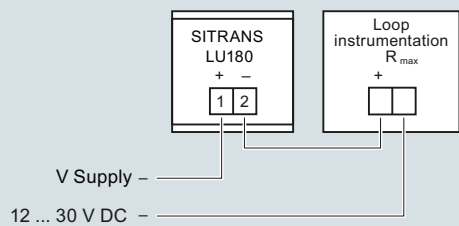
Electronics

Mounting thread

Sensor

239.2 (9.4)

73.0 (2.9)
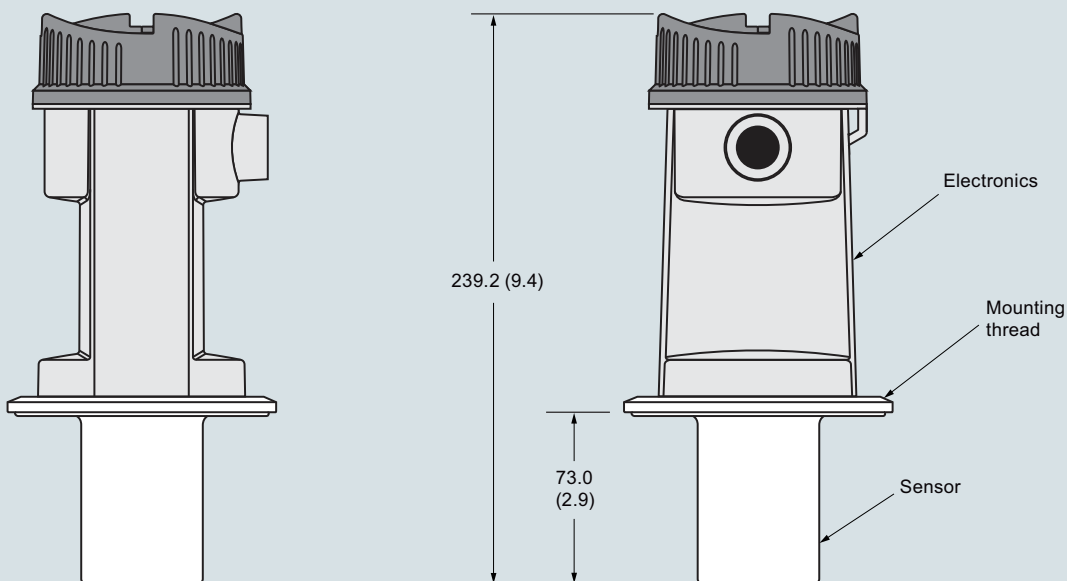
SITRANS LU180, dimensions in mm (inch)

■ **Circuit diagrams**

SITRANS LU180, Threaded and sanitary models

SITRANS LU180
+ −
1 2

Loop instrumentation R_{max}
+

V Supply −

12 ... 30 V DC −

Display

Program mode

Alphanumeric

'20' key

'4' key

Units

Operation status

LOE/fault
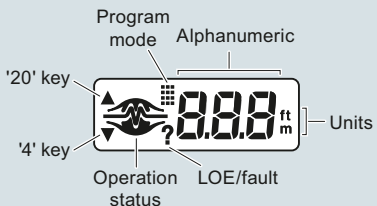
SITRANS LU180 connections