

## Overview



SITRANS LR110 is a compact radar transmitter for continuous level measurement of liquids, slurries, or solids to a range of 15 m (49.2 ft).

## Benefits

- Bluetooth connectivity for easy setup with SITRANS mobile IQ.
- Chemically resistant PVDF enclosure.
- HART 7.0 or Modbus RTU communication for intelligent integration into your application.
- W band FMCW radar yields narrow beam with small antenna for superior performance in short range applications.
- Approved for open air applications outside of a tank.
- 2 mm accuracy and zero near range distance yields optimum inventory management capability.
- Compact design fits in limited space installations.
- Hazardous area variants available for safe use in explosive gas or dust environments.

## Application

SITRANS LR110 is a W band FMCW radar level transmitter, packaged in a hermetically sealed PVDF enclosure for years of trouble-free reliable measurement service.

4 to 20 mA loop powered with HART [optional 4-wire Modbus RTU], providing accurate level measurement to ranges of 15 m (49.2 ft). Measurement is possible non-intrusively through plastic vessel tops for easy installation. Programming is convenient using the Bluetooth connection and SITRANS mobile IQ application on your smart device.

## SITRANS LR110

## Selection and ordering data

		Article No.										
<b>SITRANS LR110 Radar level transmitter</b> Continuous, non-contact, 15 m (49.2 ft) range, for liquids, slurries, or solids, integrated cable connection		7	M	L	5	3	1	0	6	0	A	0
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.												
<b>Communications</b>												
HART (4 ... 20 mA)		0										
Modbus RTU <sup>(4)(6)</sup>		3										
<b>Bluetooth function</b>												
Without		0										
With		1										
<b>Cable length</b>												
5 m		A										
10 m		B										
30 m		C										
50 m		D										
100 m		E										
<b>Process connection</b>												
1-½" NPT [(Taper), ASME B1.20.1]/electrical connection 1" NPT		A										
R 1-½" [(BSPT), EN 10226]/electrical connection 1" BSPT		B										
G 1-½" [(BSPP), EN ISO 228-1]/electrical connection 1" BSPT		C										
<b>Type of protection</b>												
Ordinary Locations/General Purpose (Non-Ex), CE, UKCA, cFM <sub>US</sub> , cCSA <sub>US</sub> , RCM <sup>(2)</sup>		A										
ATEX II 1G, 1/2G Ex ia IIC T4 Ga, Ga/Gb, ATEX II 1D, 1/2D Ex ia IIIC T134°C Da, Da/Db; UKEX II 1G, 1/2G Ex ia IIC T4 Ga, Ga/Gb, UKEX II 1D, 1/2D Ex ia IIIC T134°C Da, Da/Db; Gas Ex-Zone 0/Class 1, Div. 1; Dust Ex-Zone 20, 21, Class II & III Div. 1 <sup>(1)</sup>		B										
ATEX II 2G Ex ib mb IIC T4 Gb; UKEX II 2G Ex ib mb IIC T4 Gb; ATEX II 1D, 1/2D Ex ta, ta/tb IIIC T200 121°C Da, Da/Db, ATEX II 2D Ex tb IIIC T200 134°C Db; UKEX II 1D, 1/2D Ex ta, ta/tb IIIC T200 121°C Da, Da/Db, UKEX II 2D Ex tb IIIC T200 134°C Db; ATEX II 1D, 1/2D Ex ta, ta/tb IIIC T200 142°C Da, Da/Db, ATEX II 2D Ex tb IIIC T200 155°C Db; UKEX II 1D, 1/2D Ex ta, ta/tb IIIC T200 142°C Da, Da/Db, UKEX II 2D Ex tb IIIC T200 155°C Db; Zone 1, 1/2, Zone 20, 21, 22, (Class I, Div. 2), Class II & III, Div. 1 <sup>(3)</sup>		G										

Selection and Ordering data	Order code
<b>Further designs</b>	
Please add "-Z" to Article No. and specify Order code(s).	
Tag (device parameter, max. 32 characters) plate stainless steel 304/1.4301	Y15
Inspection certificate 3.1 (EN 10204) - device with test data	C25
cFM <sub>US</sub> , cCSA <sub>US</sub> , ATEX, UKEX, IECEx	E49
INMETRO, IA MASC	E25
NEPSI, CCOE	E27
ATEX, UKEX, IECEx	E47
CSA-Japan-Ex	E29
EACEx <sup>(5)</sup>	E24
WHG and VLAREM II	E61
NSF 61 Drinking Water and FDA, EG1935/2004	E84

Accessories	Article No.
<b>Operating Instructions</b>	
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>	
<b>Accessories</b>	
Easy Aimer 2, aluminum, NPT with ¾" x 1" PVC coupling	7ML1830-1AQ
Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings	7ML1830-1AX
Easy Aimer 304, NPT with 1" stainless steel coupling	7ML1830-1AU
Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 stainless steel couplings	7ML1830-1GN
Bracket, 316L Stainless steel, 1 inch mount, 80 mm (3.1 inch) offset	A5E50507509
Bracket, 316L Stainless steel, 1 inch mount, 200 mm (7.9 inch) offset	A5E50507511
Bracket, 316L Stainless steel, 1.5 inch mount, 80 mm (3.1 inch) offset	A5E50507514
Bracket, 316L Stainless steel, 1.5 inch mount, 200 mm (7.9 inch) offset	A5E50507516
FMS-200 universal box bracket, mounting kit	7ML1830-1BK
FMS-210 channel bracket, wall mount	7ML1830-1BL
FMS-220 extended channel bracket, wall mount	7ML1830-1BM

## Selection and ordering data (continued)

Accessories	Article No.
FMS-310 channel bracket, floor mount	7ML1830-1BN
FMS-320 extended channel bracket, floor mount	7ML1830-1BP
FMS-350 bridge channel bracket, floor mount (see Mounting Brackets catalog page for more information)	7ML1830-1BQ
1" NPT locknut, plastic	7ML1830-1DS
1" BSP locknut, plastic	7ML1830-1DR
1-½ BSP locknut, plastic	7ML1830-1DP
Plastic adapter 1" BSP - 20 mm	7ML1830-1EA
Plastic adapter 1" NPT	7ML1930-1FX
Plastic adapter 1" NPT/M20	7ML1830-1EF
SIMATIC RTU3010C compact, remote data manager with alarming	6NH3112-0BA00-0-XX0
SIMATIC RTU3030C compact, remote data manager with alarming	6NH3112-3BA00-0-XX0
Intrinsically Safe barrier	7NG4124-1AA00

Accessories	Article No.
SITRANS RD100, loop powered display - see Chapter 7	7ML5741-.....-
SITRANS RD150, remote digital display for 4 to 20 mA and HART devices - see Chapter 7	7ML5742-.....-...
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	7ML5740-.....-..
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	7ML5744-.....-..
SITRANS LT500, a versatile, single and multi-vessel level monitor/controller for virtually any application in a wide range of industries.	7ML60.-.....-....
For applicable back up point level switch - see point level measurement section	

- 1) Must be ordered in combination with order codes E49, E25, E27, E47, E29, or E24.
- 2) Not available in combination with order codes E49, E25, E27, E47, E29, or E24.
- 3) When ordered in combination with NPT thread types, this option is available with any order code. When ordered in combination with BSPP or BSPT thread types, this option is only available with order codes E49, E25, E27, E47, E29.
- 4) Available only with Type of protection options A and G.
- 5) Available only with Type of protection option B.
- 6) Available only with Bluetooth option 1.

## SITRANS LR110

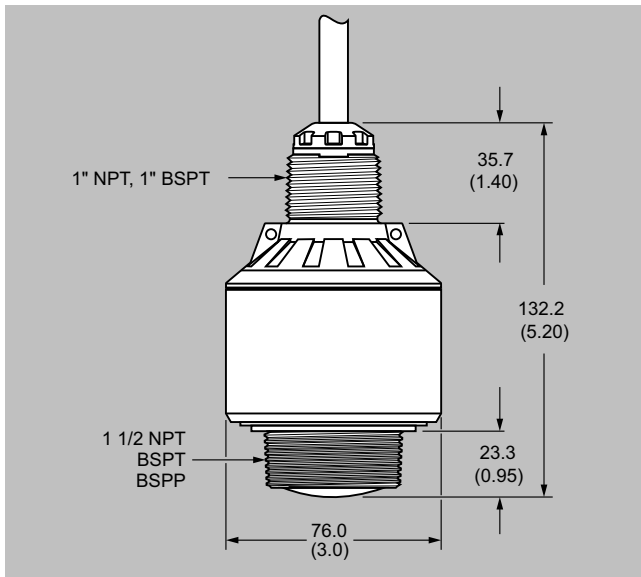
## Technical specifications

SITRANS LR110	
<b>Mode of operation</b>	
Measuring principle	W band FMCW radar
Measuring range	0 ... 15 m (0 ... 49.2 ft)
Frequency	80 GHz nominal
Beam angle	8°
<b>Power Supply</b>	
HART	
• Voltage	12 ... 35 V DC
• Current	4 ... 20 mA
Modbus	
• Voltage	8 ... 30 V DC
• Current	38 mA at 8 V DC/17 mA at 30 V DC
<b>Communications</b>	
4 ... 20 mA	HART 7.0
Modbus (4-wire option)	RTU
<b>Accuracy</b>	
	± 2 mm (range 0.25 ... 0.15 m), ± 10 mm (range 0 ... 0.25 m)
<b>Rated operating conditions</b>	
Vessel pressure	-1 ... +3 bar (14.50 ... 43.51 psi g)
Ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
Process temperature	-40 ... +80 °C (-40 ... +176 °F)
Storage temperature	-40 ... +80 °C (-40 ... +176 °F)
<b>Design</b>	
Weight	0.5 kg (1.1 lb), plus 0.1 kg/m (0.2 lb/ft) cable length
Material (enclosure)	PVDF
Process connection	1-½" NPT, 1-½" BSPT or 1-½" BSPP
Degree of protection	IP66/IP68
Cable connection	1" NPT or 1" BSPT threaded connection
• HART	Length options: 5 ... 100 m (16.4 ... 328.1 ft), 2 conductor, twisted with shield 18 AWG, PVC jacket
• Modbus version	Length options: 5 ... 100 m (16.4 ... 328.1 ft), 4 conductor, twisted pairs, 22 AWG, polyurethane jacket
<b>Certificates and approvals</b>	
	CE, UKCA, cFM <sub>US</sub> , cCSA <sub>US</sub> , ATEX, UKEX, IECEX, EACEx, CSA-Japan-Ex, RCM, INMETRO, NEPSI, CCOE, PESO, FDA, Reg. (EC) No. 1935/2004
Radio	CE, UKCA, FCC, IC, Anatel, ICASA, NCC, KC, CITC, RCM, WPC, Telec, NBTC, MCMC
Marine	CE, FCC, IC, Anatel, ICASA, NCC, KC, CITC, RCM, WPC, Telec, NBTC, MCMC
Water monitoring, flow	MCERTS Class 1
Canadian Registration Number (CRN)	
• British Columbia	OF22218.51
• Alberta	OF20596.2
• Saskatchewan	OF2002.3
• Manitoba	OF7032.4
• Ontario	OF22218.5
• Quebec	OF05183.6
• New Brunswick	OF1490.07
• Nova Scotia	OF1490.08
• Prince Edward Island	OF1490.09
• Newfoundland and Labrador	OF1490.0
• Yukon	OF1490.0Y
• Northwest Territories	OF1490.0T
• Nunavut	OF1490.0N

## Technical specifications (continued)

SITRANS LR110	
<b>Programming</b>	
SITRANS mobile IQ App	SITRANS mobile IQ is a Bluetooth app that provides an intuitive interface to quickly configure, set up and monitor SITRANS LR100 series. For more information: <a href="http://www.siemens.com/mobileIQ">http://www.siemens.com/mobileIQ</a>
SIMATIC PDM	SIMATIC PDM allows for remote PC configuration and diagnostics (for installation on a network).
SITRANS DTM	

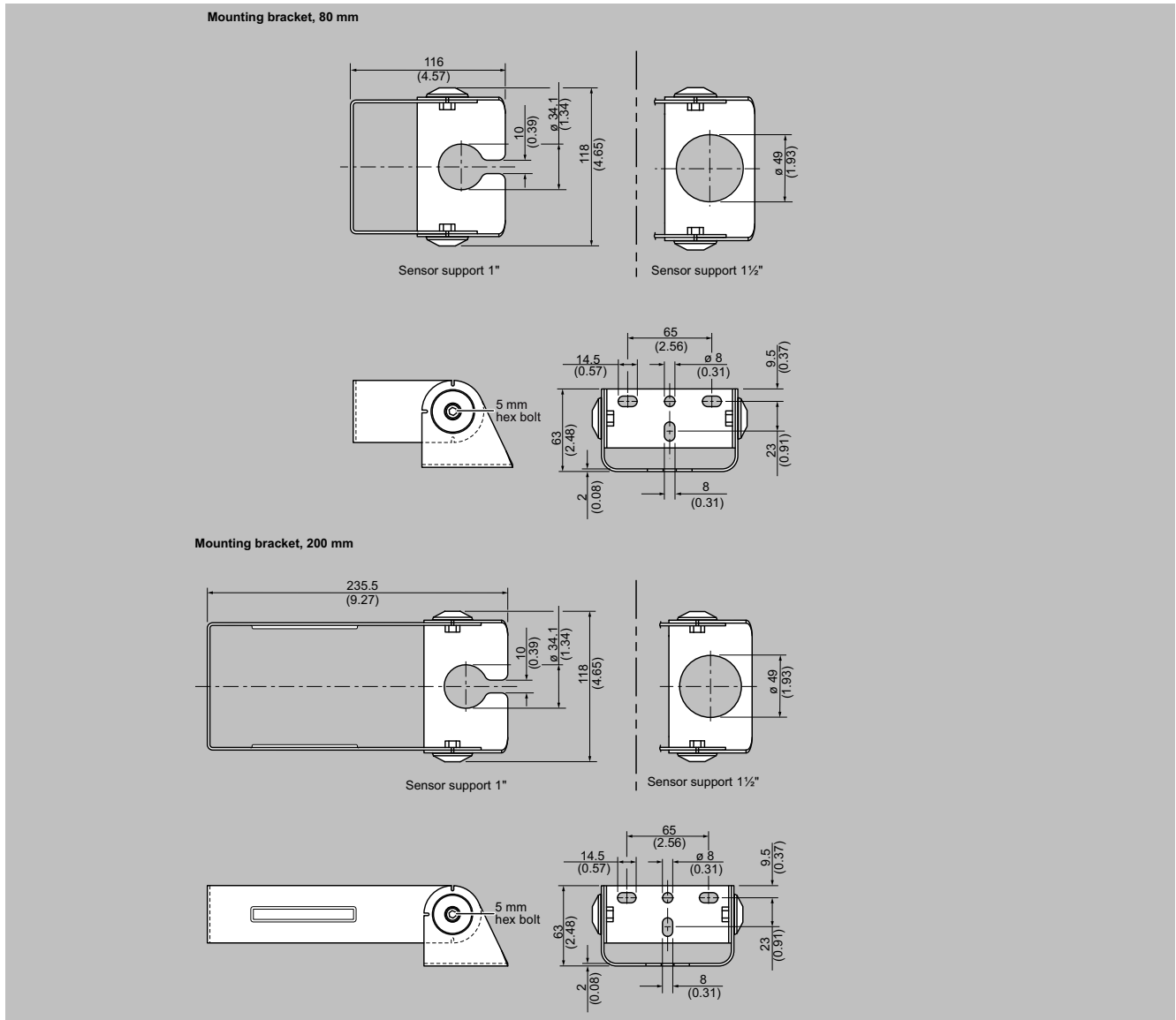
Dimensional drawings



SITRANS LR110, dimensions in mm (inch)

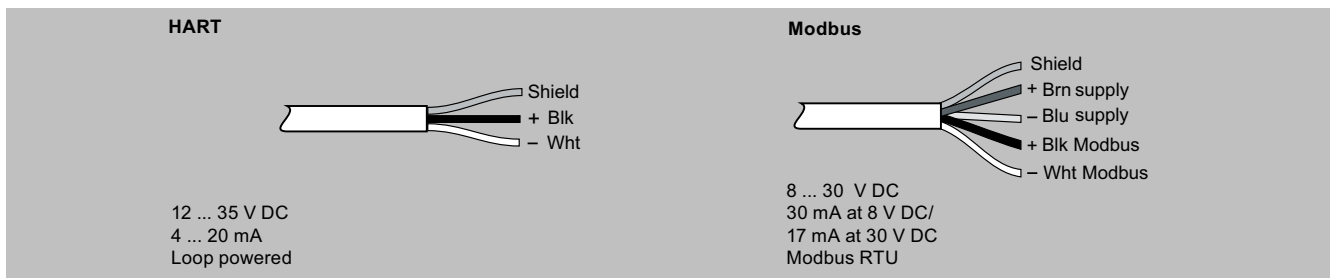
SITRANS LR110

Dimensional drawings (continued)



SITRANS LR110 mounting brackets, dimensions in mm (inch)

Circuit diagrams



SITRANS LR110 connections