

Overview



SITRANS LR120 is a compact radar transmitter for continuous level measurement of liquids and solids to a range of 30 m (98.4 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 applications with obstructions
- Approved for open air applications outside of a tank
- 2 mm accuracy and zero near range distance yields optimum inventory management capability
- Submergence shield accessory prevents build up on sensor during flooding conditions
- Hazardous area variants available for safe use in explosive gas or dust environments

Application

SITRANS LR120 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 30 m (98.4 ft). Its long range, narrow beam make LR120 suitable for wet wells with obstructions or solids level measurement, for example aggregates or plastic pellets. Programming is convenient using the Bluetooth connection and SITRANS mobile IQ application on your smart device.

Technical specifications

Mode of operation	
Measuring principle	W band FMCW radar
Measuring range	0 ... 30 m (0 ... 98.4 ft)
Frequency	80 GHz nominal
Beam angle	4°
Power Supply	
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
Communications	
4 ... 20 mA	HART 7.0
Modbus (4-wire option)	RTU
Accuracy	
	± 2 mm (range 0.25 ... 30 m), ± 10 mm (range 0 ... 0.25 m)
Rated operating conditions	
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)
Design	
Weight	0.7 kg (1.5 lb), plus 0.1 kg/m (0.2 lb/ft) cable length
Material	
• Enclosure	PVDF
• Submergence shield	• Polypropylene • Silicone O-ring
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
Certificates and approvals	
	CE, cFM _{US} , cCSA _{US} , ATEX, IECEx, EACEx, CSA-Japan-Ex, RCM, FCC, Industry Canada, INMETRO, NEPSI, CCOE, KTL, PESO, FDA(EG)1935/2004
Marine	ABS, CCS, DNV-GL, LR, NK, RINA
Canadian Registration Number (CRN)	
• British Columbia	0F22218.51
• Alberta	0F20596.2
• Saskatchewan	0F2002.3
• Manitoba	0F7032.4
• Ontario	0F22218.5
• Québec	0F05183.6
• New Brunswick	0F1490.07
• Nova Scotia	0F1490.08
• Prince Edward Island	0F1490.09
• Newfoundland and Labrador	0F1490.0
• Yukon	0F1490.0Y
• Northwest Territories	0F1490.0T
• Nunavut	0F1490.0N

Level measurement

Continuous level measurement

Radar level transmitters

SITRANS LR120

Programming

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: <http://www.siemens.com/mobileIQ>

SIMATIC PDM

SIMATIC PDM allows for remote PC configuration and diagnostics (for installation on a network).

SITRANS DTM

Selection and ordering data	Article No.	Order code
SITRANS LR120 Radar level transmitter Continuous, non-contact, 30 m (98.4 ft) range, for liquids, slurries, and solids, integrated cable connection ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML532 	
Communications HART (4 ... 20 mA) Modbus RTU ⁵⁾	0 3	Y15
Bluetooth function Disabled Enabled	0 1	E49 E25 E27 E47
Cable length 5 m 10 m 30 m 50 m 100 m	A B C D E	E29 E24 E61
Type of protection Non Ex (ordinary locations) cFM _{US} , cCSA _{US} , CE, RCM ²⁾ Ex i (ia) (Gas Ex-Zone 0/Class I, Div. 1) Dust Ex-Zone 20, 21, Class II & III Div. 1 ¹⁾ Ex Zone 1, 1/2, Zone 21, 22, (Class I, Div. 2), Class II & III, Div. 1 via encapsulation ¹⁾³⁾⁴⁾	A B G	
Electrical connection of the cable entry 1" BSPT 1" NPT	H P	
		Further designs Please add "-Z" to Article No. and specify Order code(s). Tag (device parameter, max. 32 characters) plate stainless steel 304/1.4301 cFM _{US} , cCSA _{US} , ATEX, IECEx INMETRO ³⁾ NEPSI, CC0E, KTL ATEX, IECEx CSA-Japan-Ex EACEx ⁶⁾ WHG and Vlarex
		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. Submergence shield kit A5E49069764 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, Stainless steel, 1 inch mount, 80 mm (3.1 inch) offset A5E50507509 Bracket, Stainless steel, 1 inch mount, 200 mm (7.9 inch) offset A5E50507511 Bracket, Stainless steel, 1.5 inch mount, 80 mm (3.1 inch) offset A5E50507514 Bracket, 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 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 on page 4/186 for more information) 7ML1830-1BQ 1" NPT locknut, plastic 7ML1830-1DS 1" BSP locknut, plastic 7ML1830-1DR Plastic adapter 1" BSP - 20 mm 7ML1830-1EA Plastic adapter 1" NPT 7ML1830-1FX Plastic adapter 1" NPT/M20 7ML1830-1EF SIMATIC RTU3010C compact, remote data manager with alarming 6NH3112-0BA00-0XX0 SIMATIC RTU3030C compact, remote data manager with alarming 6NH3112-3BA00-0XX0 Intrinsically Safe barrier 7NG4124-1AA00

Level measurement

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Accessories

SITRANS RD100, loop powered display - see Chapter 7

SITRANS RD150, remote digital display for 4 to 20 mA and HART devices - see Chapter 7

SITRANS RD200, universal input display with Modbus conversion - see Chapter 7

SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7

SITRANS LT500, a versatile, single and multi-vessel level monitor/controller for virtually any application in a wide range of industries.

For applicable back up point level switch - see point level measurement section

Article No.

7ML5741-.....-

7ML5742-.....-

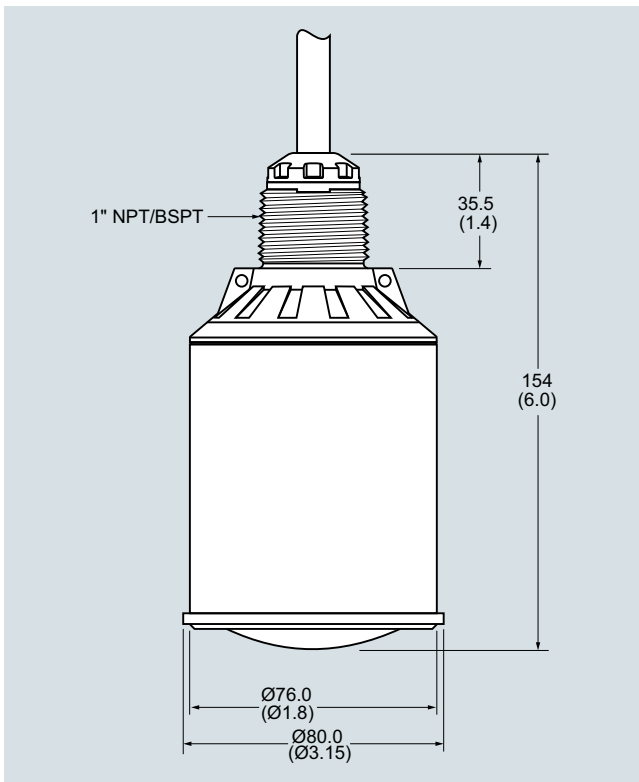
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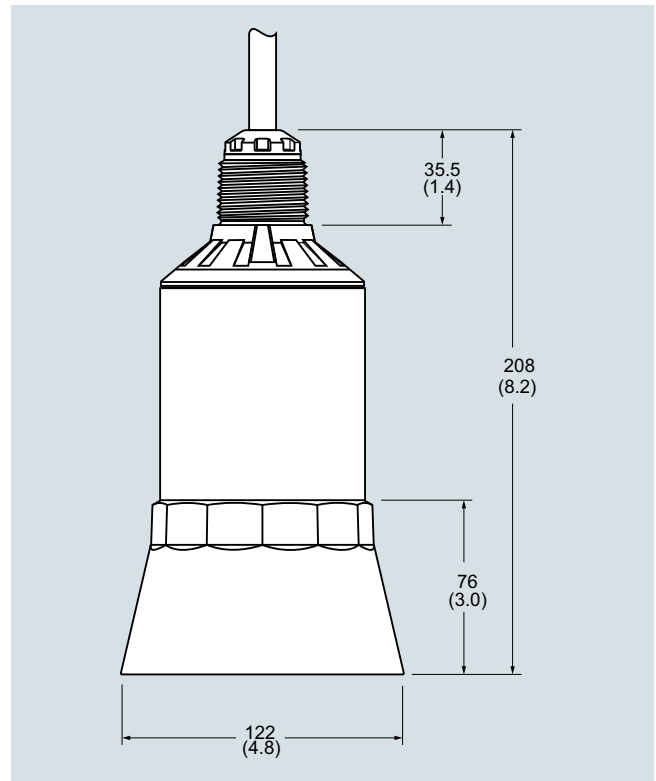
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- 1) Must be ordered in combination with order codes E49, E25, E27, E47, E29, or E24.
- 2) Not available in combination with order codes E49, E25, E27, E47, E29, or E24.
- 3) MASC approval is also included with INMETRO.
- 4) When ordered in combination 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, or E29
- 5) Available only with Type of protection options A and G.
- 6) Not available with Approval option G.

Dimensional drawings

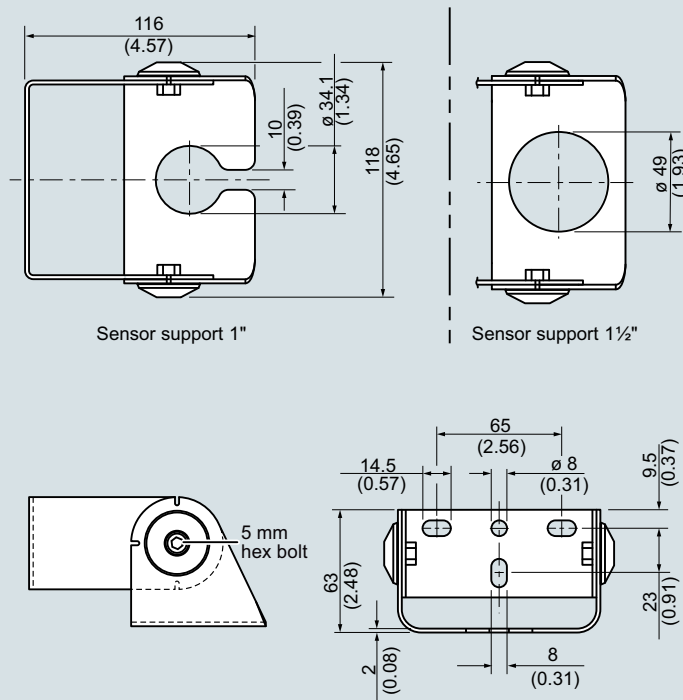


SITRANS LR120, dimensions in mm (inch)

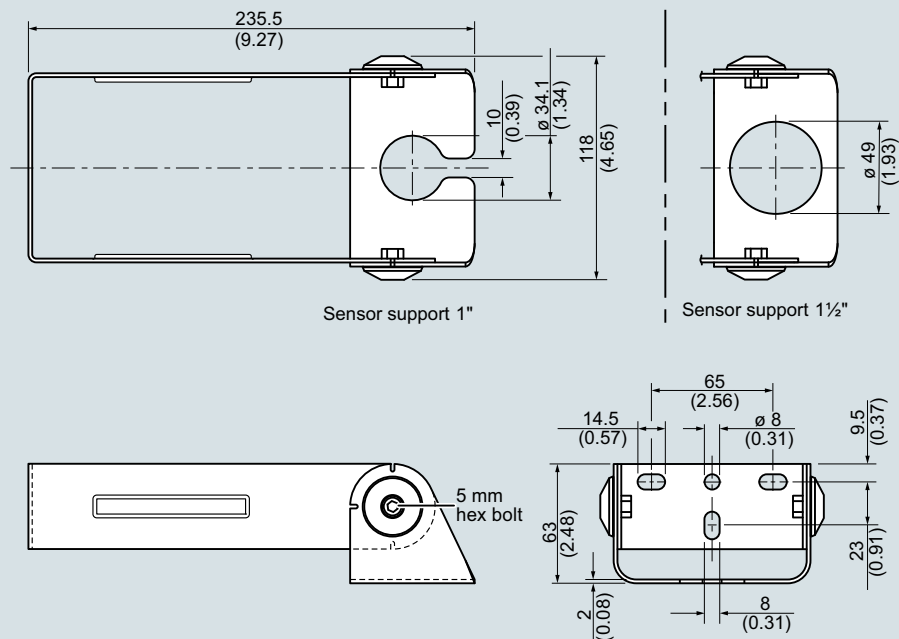


SITRANS LR120 Submergence shield accessory, dimensions in mm (inch)

Mounting bracket, 80 mm



Mounting bracket, 200 mm



SITRANS LR120 mounting brackets, dimensions in mm (inch)

Level measurement

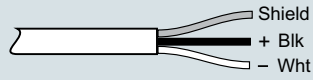
Continuous level measurement

Radar level transmitters

SITRANS LR120

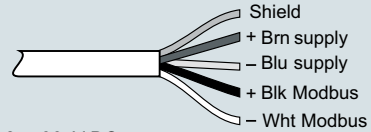
Circuit diagrams

HART



12 ... 35 V DC
4 ... 20 mA
Loop powered

Modbus



8 ... 30 V DC
30 mA at 8 V DC/
17 mA at 30 V DC
Modbus RTU

SITRANS LR120 Connections