

## 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

<b>Mode of operation</b>	
Measuring principle	W band FMCW radar
Measuring range	0 ... 30 m (0 ... 98.4 ft)
Frequency	80 GHz nominal
Beam angle	4°
<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 ... 30 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	0.7 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
<b>Certificates and approvals</b>	
	CE, cFM <sub>US</sub> , cCSA <sub>US</sub> , ATEX, IECEx, EACEx, CSA-Japan-Ex, RCM, INMETRO, NEPSI, CCOE, PESO, FDA(EG)1935/2004
Radio	CE, FCC, IC, Anatel, ICASA, NCC, KC, CITC, RCM, WPC, Telec, NBTC, MCMC
Marine	ABS, CCS, DNV-GL, LR, NK, RINA
Canadian Registration Number (CRN)	
• British Columbia	OF22218.51
• Alberta	OF20596.2
• Saskatchewan	OF2002.3
• Manitoba	OF7032.4
• Ontario	OF22218.5
• Québec	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

## 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
<b>SITRANS LR120 Radar level transmitter</b> Continuous, non-contact, 30 m (98.4 ft) range, for liquids, slurries, and solids, integrated cable connection <a href="#">Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</a>	<b>7ML532</b> - A 0 6 - 0 0	
<b>Communications</b> HART (4 ... 20 mA) Modbus RTU <sup>4)6)</sup>	0 3	
<b>Bluetooth function</b> Without With	0 1	
<b>Cable length</b> 5 m 10 m 30 m 50 m 100 m	A B C D E	
<b>Type of protection</b> Non Ex (ordinary locations) cFM <sub>US</sub> , cCSA <sub>US</sub> , CE, RCM <sup>2)</sup> Ex i (ia) (Gas Ex-Zone 0/Class I, Div. 1) Dust Ex-Zone 20, 21, Class II & III Div. 1 <sup>1)</sup> Ex ib mb, Ex ta, ta/tb, Zone 1, 1/2, Zone 20, 21, 22, (Class I, Div. 2), Class II & III, Div. 1 <sup>1)3)</sup>	A B G	
<b>Electrical connection of the cable entry</b> 1" BSPT 1" NPT	H P	
		<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 Inspection certificate 3.1 (EN 10204) - device with test data cFM <sub>US</sub> , cCSA <sub>US</sub> , ATEX, IECEx INMETRO, IA MASC NEPSI, CC0E ATEX, IECEx CSA-Japan-Ex EACEx <sup>5)</sup> WHG and Vlarem
		<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> Submergence shield kit Easy Aimer 2, aluminum, NPT with 3/4" x 1" PVC coupling Easy Aimer 2, aluminum with M20 adapter and 1" and 1 1/2" BSPT aluminum couplings Easy Aimer 304, NPT with 1" stainless steel coupling Easy Aimer 304, with M20 adapter and 1" and 1 1/2" BSPT 304 stainless steel couplings Bracket, Stainless steel, 1 inch mount, 80 mm (3.1 inch) offset Bracket, Stainless steel, 1 inch mount, 200 mm (7.9 inch) offset Bracket, Stainless steel, 1.5 inch mount, 80 mm (3.1 inch) offset Bracket, Stainless steel, 1.5 inch mount, 200 mm (7.9 inch) offset FMS-200 universal box bracket, mounting kit FMS-210 channel bracket, wall mount FMS-220 extended channel bracket, wall mount FMS-310 channel bracket, floor mount FMS-320 extended channel bracket, floor mount FMS-350 bridge channel bracket, floor mount (see Mounting Brackets on page 4/186 for more information) 1" NPT locknut, plastic 1" BSP locknut, plastic Plastic adapter 1" BSP - 20 mm Plastic adapter 1" NPT Plastic adapter 1" NPT/M20 SIMATIC RTU3010C compact, remote data manager with alarming SIMATIC RTU3030C compact, remote data manager with alarming Intrinsically Safe barrier
		Article No. <b>A5E49069764</b> <b>7ML1830-1AQ</b> <b>7ML1830-1AX</b> <b>7ML1830-1AU</b> <b>7ML1830-1GN</b> <b>A5E50507509</b> <b>A5E50507511</b> <b>A5E50507514</b> <b>A5E50507516</b> <b>7ML1830-1BK</b> <b>7ML1830-1BL</b> <b>7ML1830-1BM</b> <b>7ML1830-1BN</b> <b>7ML1830-1BP</b> <b>7ML1830-1BQ</b> <b>7ML1830-1DS</b> <b>7ML1830-1DR</b> <b>7ML1830-1EA</b> <b>7ML1930-1FX</b> <b>7ML1830-1EF</b> <b>6NH3112-0BA00-0XX0</b> <b>6NH3112-3BA00-0XX0</b> <b>7NG4124-1AA00</b>

## Level Measurement

### Continuous level measurement Radar level transmitters

#### SITRANS LR120

##### 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-.....-

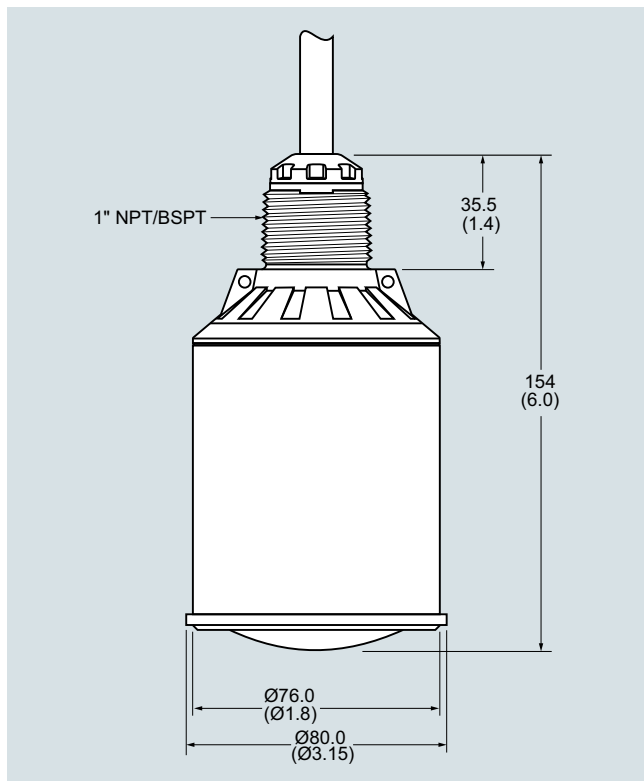
7ML5740-.....-

7ML5744-.....-

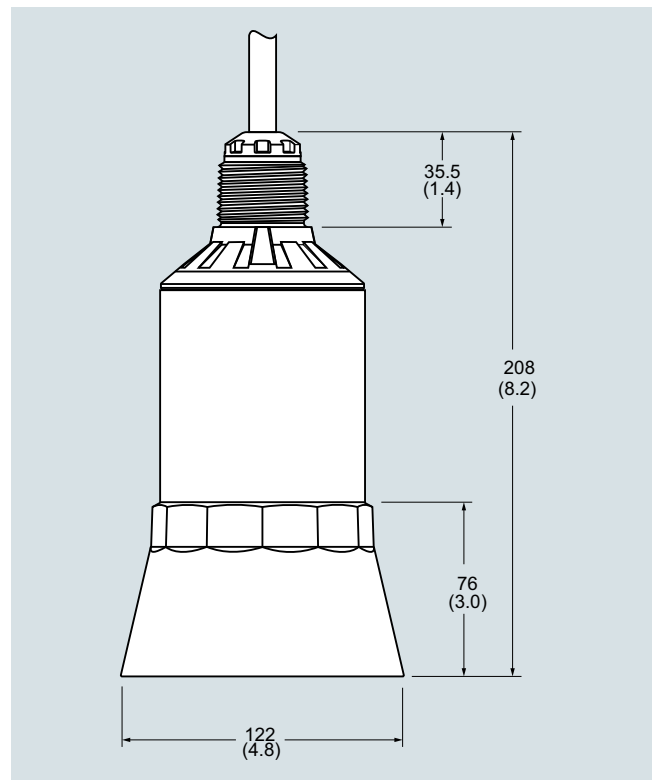
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- 1) Must be ordered in combination with order codes E49, E25, E27, E47, E29, or E24.
- 2) Not available in combination with order codes E49, E25, E27, E47, E29, or E24.
- 3) When ordered in combination with NPT thread types, this option is available 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
- 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.

#### Dimensional drawings

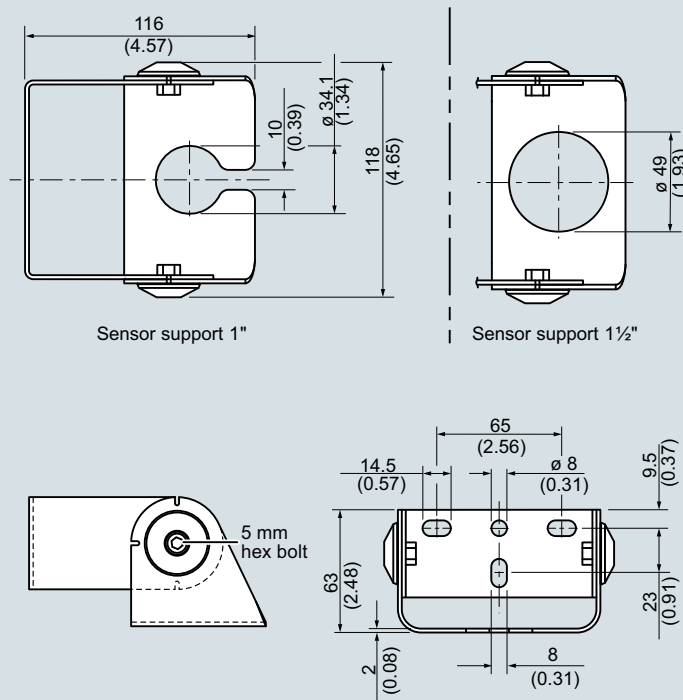


SITRANS LR120, dimensions in mm (inch)

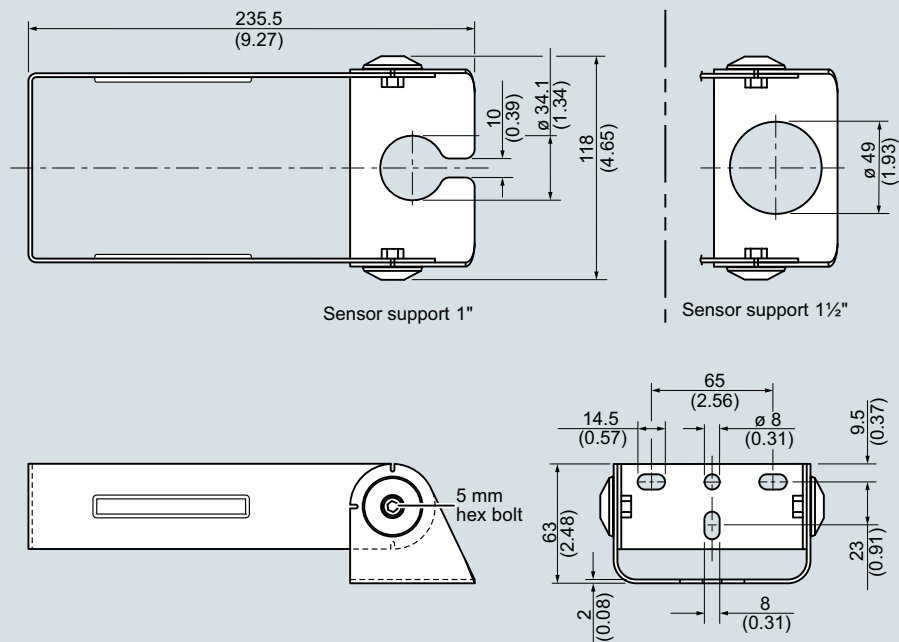


SITRANS LR120 Submergence shield accessory, dimensions in mm (inch)

**Mounting bracket, 80 mm**



**Mounting bracket, 200 mm**



SITRANS LR120 mounting brackets, dimensions in mm (inch)

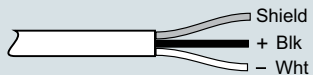
## Level Measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR120

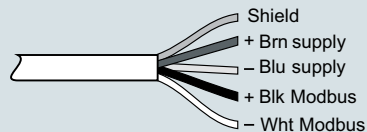
#### Circuit diagrams

##### 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