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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 (in preparation) 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 (in preparation)], 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 (in preparation)	
• 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) (in preparation)	RTU
Accuracy	± 2 mm
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 version	Length options: 5 ... 100 m (16.4 ... 328.1 ft), 2 conductor, twisted with shield 18 AWG, PVC jacket
• Modbus version (in preparation)	Length options: 5 ... 100 m (16.4 ... 328.1 ft), 4 conductor, twisted pairs, 22 AWG, polyurethane jacket
Certificates and approvals	Hazardous ATEX, IECEx
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 (available for Android, Apple and Windows devices). For more information: http://www.siemens.com/mobileIQ
SIMATIC PDM	SIMATIC PDM allows for remote PC configuration and diagnostics (for installation on a network).

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SITRANS LR120

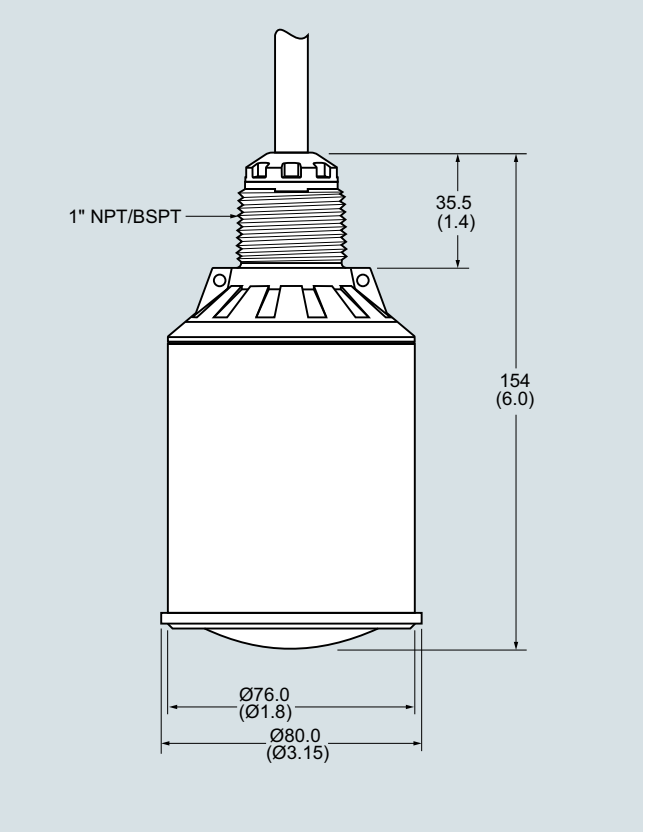
Selection and Ordering data	Article No.
SITRANS LR120 Radar level transmitter ↗ Continuous, non-contact, 30 m (98.4 ft) range, for liquids and solids, integrated cable connection.	**7ML532** - A 0 6 - 0 0
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Communications	
HART (4 ... 20 mA)	0
Bluetooth function	
Disabled	0
Enabled	1
Cable length	
5 m	A
10 m	B
30 m	C
50 m	D
100 m	E
Type of protection	
Non Ex (ordinary locations) CE[3]	A
Ex i (ia) (Gas Ex-Zone 0/Div. 1) Dust Ex-Zone 20, 21, Class II & III Div. 1[2]	B
Electrical connection of the cable entry	
1" BSPT	H
1" NPT	P

Selection and Ordering data	Order code
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	**Y15**
ATEX (Europe) and IECEx (Worldwide)	**E49**
WHG[1]	**E61**
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**
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**

Selection and Ordering data	Article No.
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	**7ML1930-1FX**
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**
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-.....-..**
For applicable back up point level switch - see point level measurement section	

[1] Available only with HART communications.
[2] Must be ordered in combination with order code E49.
[3] Not available with order code E49.

Dimensional drawings



SITRANS LR120, dimensions in mm (inch)

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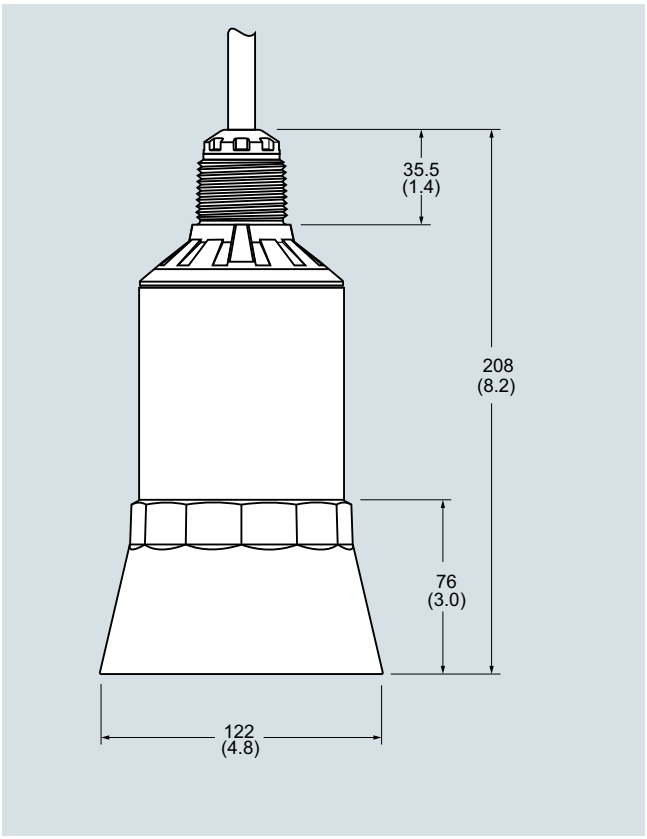
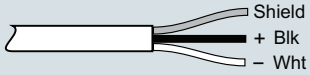


SITRANS LR120 Submergence shield accessory, dimensions in mm (inch)

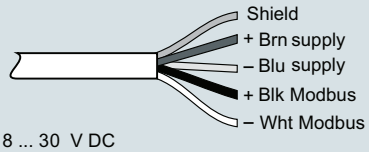
Circuit diagrams

HART



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

Modbus (in preparation)



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

SITRANS LR120 connections