

## 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

<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 (in preparation)	
• 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) (in preparation)	RTU
<b>Accuracy</b>	
	± 2 mm
<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 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
<b>Certificates and approvals</b>	
	Hazardous ATEX, IECEx
<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 (available for Android, Apple and Windows devices).  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).

## Level Measurement

Continuous level measurement  
Radar level transmitters

### SITRANS LR120

#### Selection and Ordering data

##### SITRANS LR120 Radar level transmitter

Continuous, non-contact, 30 m (98.4 ft) range, for liquids and solids, integrated cable connection.

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

#### Communications

HART (4 ... 20 mA)

#### Bluetooth function

Disabled

Enabled

#### Cable length

5 m  
10 m  
30 m  
50 m  
100 m

#### Type of protection

Non Ex (ordinary locations) CE<sup>3)</sup>

Ex i (ia) (Gas Ex-Zone 0/Div. 1)

Dust Ex-Zone 20, 21, Class II & III Div. 1<sup>2)</sup>

#### Electrical connection of the cable entry

1" BSPT

1" NPT

Article No.

7ML532

- A 0 6 - 0 0

0

0  
1

A  
B  
C  
D  
E

A  
B

H  
P

#### Selection and Ordering data

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

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

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

Article No.

7ML1830-1BQ

7ML1830-1DS

7ML1830-1DR

7ML1830-1EA

7ML1930-1FX

7ML1830-1EF

6NH3112-0BA00-0XX0

6NH3112-3BA00-0XX0

7ML5741-.....-

7ML5742-.....-

7ML5740-.....-

7ML5744-.....-

<sup>1)</sup> Available only with HART communications.

<sup>2)</sup> Must be ordered in combination with order code E49.

<sup>3)</sup> Not available with order code E49.

#### 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<sup>1)</sup>

E61

#### Operating Instructions

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

#### Accessories

Submergence shield kit

Article No.

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

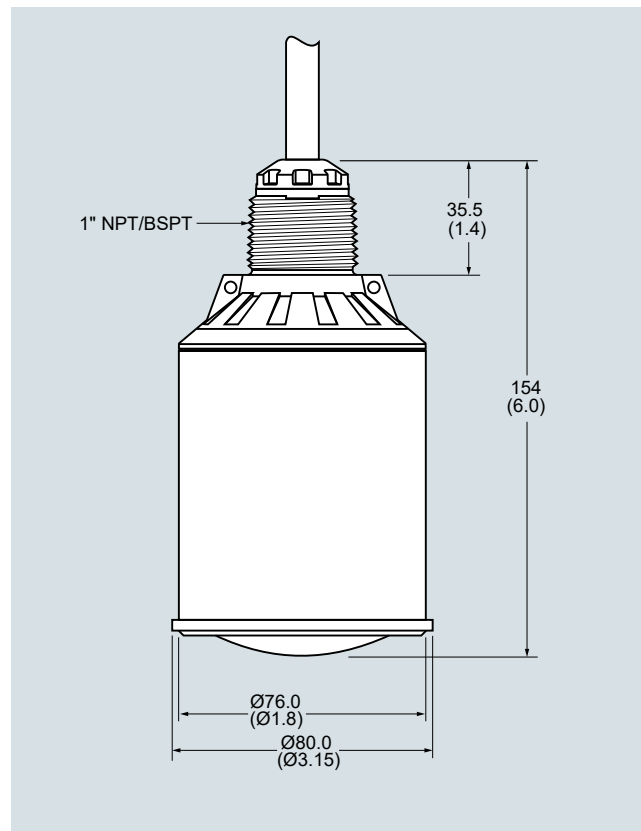
FMS-310 channel bracket, floor mount

7ML1830-1BN

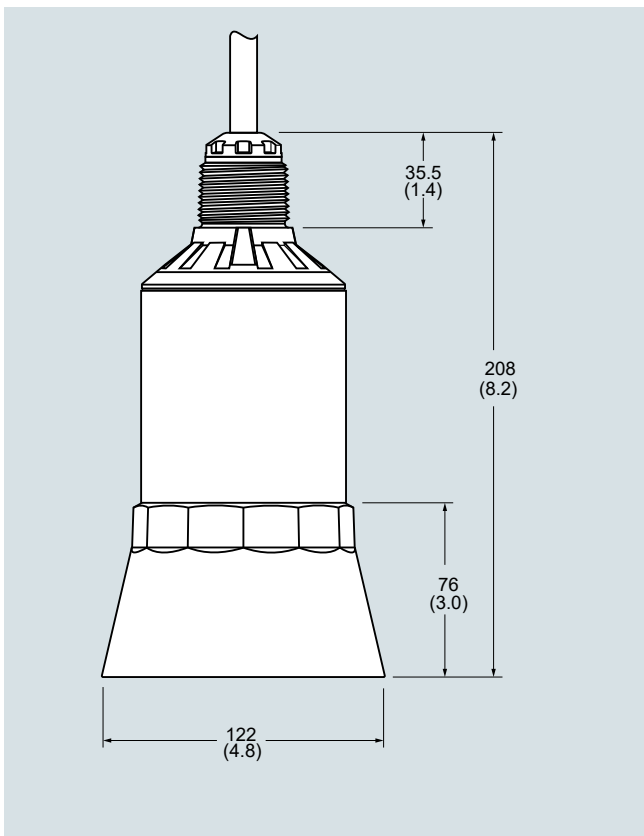
FMS-320 extended channel bracket, floor mount

7ML1830-1BP

#### Dimensional drawings



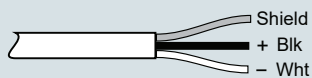
SITRANS LR120, dimensions in mm (inch)



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

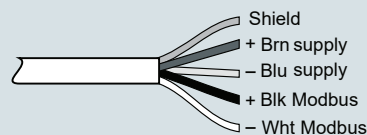
**Circuit diagrams**

**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