

Overview



SITRANS LR110 is a compact radar transmitter for continuous level measurement of liquids, slurries, and 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 (in preparation) 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 (in preparation)], 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.

Technical specifications

Mode of operation	
Measuring principle	W band FMCW radar
Measuring range	0 ... 15 m (0 ... 49.2 ft)
Frequency	80 GHz nominal
Beam angle	8°
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	0.5 kg (1.1 lb), plus 0.1 kg/m (0.2 lb/ft) cable length
Material (enclosure)	PVDF
Process connection	1-1/2" NPT, 1-1/2" BSPT or 1-1/2" BSPP
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).

Level Measurement

Continuous level measurement
Radar level transmitters

SITRANS LR110

Selection and Ordering data

SITRANS LR110 Radar level transmitter
Continuous, non-contact, 15 m (49.2 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

Process connection

1-1/2" NPT [(Taper), ASME B1.20.1]/
electrical connection 1" NPT

R 1-1/2" [(BSPT), EN 10226]/
electrical connection 1" BSPT

G 1-1/2" [(BSPP), EN ISO 228-1]/
electrical connection 1" BSPT

Type of protection

Non Ex (ordinary locations) CE³⁾

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

Dust Ex-Zone 20, 21, Class II & III Div. 1²⁾

Article No.

7ML531

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Selection and Ordering data

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

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.

7ML1830-1BP

7ML1830-1BQ

7ML1830-1DS

7ML1830-1DR

7ML1830-1EA

7ML1930-1FX

7ML1830-1EF

6NH3112-0BA00-0XX0

6NH3112-3BA00-0XX0

7ML5741-.....-

7ML5742-.....-

7ML5740-.....-

7ML5744-.....-

¹⁾ Available only with Hart communications.

²⁾ Must be ordered in combination with order code E49.

³⁾ 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

ATEX (Europe) and IECEx (Worldwide)

WHG¹⁾

Operating Instructions

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

Accessories

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

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

Article No.

7ML1830-1AQ

7ML1830-1AX

7ML1830-1AU

7ML1830-1GN

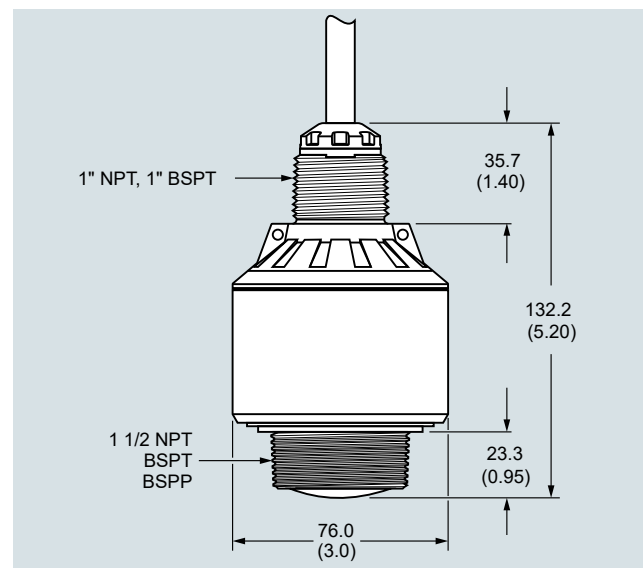
7ML1830-1BK

7ML1830-1BL

7ML1830-1BM

7ML1830-1BN

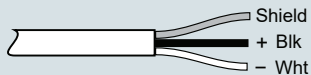
Dimensional drawings



SITRANS LR110, dimensions in mm (inch)

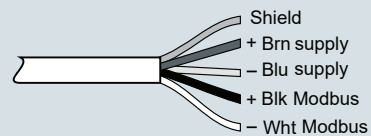
Circuit diagrams

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 LR110 connections