

Level Measurement

Continuous level measurement – Radar transmitters

SITRANS LR260

Overview



SITRANS LR260 is a 2-wire 25 GHz pulse radar level transmitter for continuous monitoring of solids in storage vessels including extreme levels of dust and high temperatures, to a range of 30 m (98.4 ft).

Benefits

- Graphical local user interface (LUI) makes operation simple with plug-and-play setup using the intuitive Quick Start Wizard
- LUI displays echo profiles for diagnostic support
- 25 GHz high frequency allows for small horn antennas mounted easily in nozzles
- Communication using HART or PROFIBUS PA
- Process Intelligence signal processing for improved measurement reliability and Auto False-Echo Suppression of fixed obstructions
- Programming using infrared Intrinsically Safe handheld programmer or SIMATIC PDM

Application

SITRANS LR260 includes a graphical local user interface (LUI) that improves setup and operation using an intuitive Quick Start Wizard, and echo profile displays for diagnostic support. Startup is easy using the Quick Start wizard with a few parameters required for basic operation.

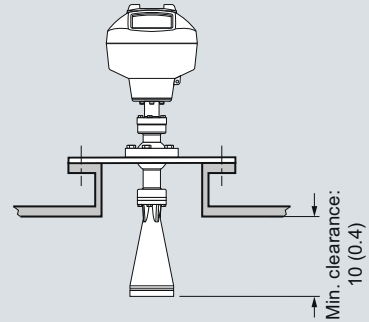
SITRANS LR260's unique design allows safe and simple programming using the Intrinsically Safe handheld programmer without having to open the instrument's lid.

SITRANS LR260 measures virtually any solids material to a range of 30 m (98.4 ft).

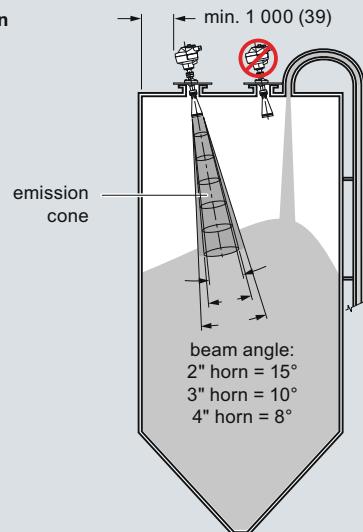
- Key Applications: cement powder, plastic powder/pellets, grain, flour, coal, solids bulk storage vessels, and other applications.

Configuration

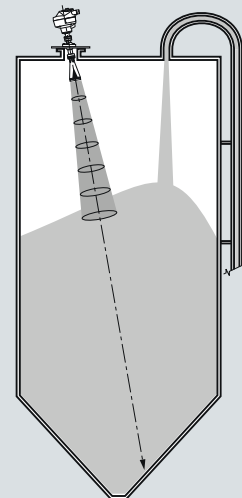
Mounting on a nozzle



Installation



Positioning with Easy Aimer



SITRANS LR260 installation, dimensions in mm (inch)

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Technical specifications

Mode of operation

Measuring principle	Pulse radar level measurement
Frequency	K-band (25.0 GHz)
Minimum detectable distance	0.05 m (2 inch) from end of horn
Maximum measuring range ¹⁾	<ul style="list-style-type: none"> • 2" horn: 10 m (32.8 ft) • 3" horn: 20 m (65.6 ft) • 4" horn: 30 m (98.4 ft)

Output - HART

Power	<ul style="list-style-type: none"> • 4 ... 20 mA (± 0.02 mA accuracy) • Nominal 24 V DC (max. 30 V DC)
Fail signal	3.6 mA ... 23 mA; or last value
Load	230 ... 600 Ω

Output - PROFIBUS PA

- Per IEC 61158-2
- 15.0 mA
- Profile version 3.01, Class B

Performance (according to reference conditions IEC60770-1)

Maximum measured error (including hysteresis and non-repeatability)	<ul style="list-style-type: none"> • 25 mm (1 inch) from minimum detectable distance to 300 mm (11.8 inch) • Remainder of range = 10 mm (0.39 inch) or 0.1% of span (whichever is greater)
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Rated operating conditions

Installation conditions	
• Location	Indoor/outdoor
Ambient conditions (enclosure)	
• Ambient temperature	-40 ... +80 °C (-40 ... +176 °F)
• Installation category	I
• Pollution degree	4

Medium conditions

Dielectric constant ϵ_r	$\epsilon_r > 1.6$, antenna and application dependent
Process temperature	-40 ... +200 °C (-40 ... +392 °F)
Process pressure	<ul style="list-style-type: none"> • 0.5 bar g (7.25 psi g) maximum • 3 bar g (43.5 psi g) optional with 80 °C (176 °F) temperature max.

Design

Enclosure	
• Construction	Aluminium, polyester powder-coated
• Conduit entry	2 x M20x1.5 or 2 x 1/2" NPT
Degree of protection	Type 4X/NEMA 4X, Type 6/NEMA 6, IP67, IP68
Weight	< 8.14 kg (17.9 lb) including 4" flange and standard Easy Aimer with 4" horn antenna
Display (local)	Graphic LCD, with bar graph representing level
Flange and horn	
• Material	304 stainless steel
• Dimensions (nominal horn sizes)	2" horn: 1.93" (49.0 mm) diameter 3" horn: 2.93" (74.5 mm) diameter 4" horn: 3.84" (97.5 mm) diameter
Process connections	
• Universal flanges ²⁾	2"/50 mm, 3"/80 mm, 4"/100 mm, 6"/150 mm

Certificates and approvals

General	CSA _{US/C} , CE, FM
Radio	Europe (R&TTE), FCC, Industry Canada, C-TICK
Hazardous	CSA/FM Class II, Div. 1, Groups E, F, G, Class III ATEX II 1D, 1/2D, 2D Ex tD A20 IP67, IP68 T100 °C IECEx/ATEX II 1 GD Ex ia IIC T4 CSA/FM Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G

Programming

Intrinsically Safe Siemens handheld programmer	Infrared receiver
• Approvals for handheld programmer	IS model: ATEX II 1GD Ex ia IIC T4 Ga Ex iaD 20 T = 135 °C Ta = -20 ... +50 °C CSA/FM Class I, II, and III, Div. 1, Gr. A-G, T6 Ta = 50 °C
Handheld communicator	HART communicator 375
PC	SIMATIC PDM
Display (local)	Graphic local user interface including quick start wizard and echo profile displays

¹⁾ From sensor reference point

²⁾ Universal flange mates with EN 1092-1 (PN 16)/ASME B16.5 (150 lb)/JIS 2220 (10K) bolt hole pattern

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Selection and Ordering data	Order No.
SITRANS LR260 2-wire, 25 GHz pulse radar level transmitter for continuous monitoring of solids to a range of 30 m (98.4 ft).	C) 7ML5427-
Order handheld programmer separately!	
Process connection Universal flat faced flange fits ANSI/DIN/JIS flanges, Easy Aimer with integral (Easy Aimer ball)	
2"/50 mm	A
3"/80 mm	B
4"/100 mm	C
6"/150 mm	D
Antenna	
2" Horn antenna, fits 50 mm or 2" nozzles ¹⁾	A
2" Horn antenna with 100 mm extension ¹⁾	B
2" Horn antenna with 200 mm extension ¹⁾	C
2" Horn antenna with 500 mm extension ¹⁾²⁾³⁾	D
2" Horn antenna with 1000 mm extension ¹⁾²⁾³⁾	E
3" Horn antenna, fits 80 mm or 3" nozzles ⁴⁾	F
3" Horn antenna with 100 mm extension ⁴⁾	G
3" Horn antenna with 200 mm extension ⁴⁾	H
3" Horn antenna with 500 mm extension ²⁾³⁾⁴⁾	J
3" Horn antenna with 1000 mm extension ²⁾³⁾⁴⁾	K
4" Horn antenna, fits 100 mm or 4" nozzles	L
4" Horn antenna with 100 mm extension	M
4" Horn antenna with 200 mm extension	N
4" Horn antenna with 500 mm extension ²⁾³⁾	P
4" Horn antenna with 1000 mm extension ²⁾³⁾	Q
Purge (self cleaning) connection	
No purge connection	0
Purge connection	1
Output/communication	
4 ... 20 mA, HART	0
PROFIBUS PA	1
Cable inlet	
2 x M20x1.5	A
2 x ½" NPT	B
Note: Polymeric cable glands will be provided with M20 devices.	
Approvals	
General purpose, CSA _{US/C} , FM, Industry Canada, FCC, CE, R&TTE, C-TICK	A
CSA/FM Class II, Div. I, Groups E, F, G, Class III, Industry Canada, FCC, C-TICK	B
ATEX II 1D, 1/2D, 2D T100 °C, CE, R&TTE, C-TICK	C
Non-incendive, CSA/FM Class I, Div. 2, Groups A, B, C, D, Industry Canada, FCC, C-TICK	D
Intrinsically safe, IECEx/ATEX II 1 GD Ex ia IIC T4, Ex tD A20 IP67 T90C, R&TTE, C-TICK, INMETRO	E
Intrinsically safe, CSA/FM Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G, Industry Canada, FCC, C-TICK	F
Pressure rating	
3 bar g (43.5 psi g) pressure maximum and 80 °C (176 °F)	0
0.5 bar g (7.25 psi g) maximum	1

- 1) Maximum measurement range 10 m (32.8 ft)
 2) Available with purge connection option 0 only
 3) Available with pressure option 1 only
 4) Maximum measurement range 20 m (65.6 ft)
 C) Subject to export regulations AL: N, ECCN: EAR99.

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Order No. and specify Order code(s).	
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 16 characters); specify in plain text	Y15
Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000	C11
Inspection Certificate Type 3.1 per EN 10204	C12
Operating Instructions for HART/mA device	Order No.
English	C) 7ML1998-5KE01
German	C) 7ML1998-5KE11
Note: The Operating Instructions should be ordered as a separate line item on the order.	
Multi-language Quick Start manual This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.	C) 7ML1998-5KE31
Operating Instructions for PROFIBUS PA device	
English	C) 7ML1998-5KF01
German	C) 7ML1998-5KF31
Note: The Operating Instructions should be ordered as a separate line item on the order.	
Multi-language Quick Start manual This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.	C) 7ML1998-5XJ81
Accessories	
One metallic cable gland M20x1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART ¹⁾	7ML1930-1AP
One metallic cable gland M20x1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA ¹⁾	7ML1930-1AQ
Handheld programmer, Infrared, Intrinsically Safe	C) 7ML1930-1BK
Dust cap, PTFE, for 2"/50 mm horn	7ML1930-1DE
Dust cap, PTFE, for 3"/75 mm horn	7ML1930-1BL
Dust cap, PTFE, for 4"/100 mm horn	7ML1930-1BM
HART modem/RS-232 (for use with a PC and SIMATIC PDM)	D) 7MF4997-1DA
HART modem/USB (for use with a PC and SIMATIC PDM)	D) 7MF4997-1DB
SITRANS RD100 Remote display - see Chapter 8	
SITRANS RD200 Remote display - see Chapter 8	
SITRANS RD500 web, datalogging, alarming, ethernet, and modem support for instrumentation - see Chapter 8	K) 7ML5750-1AA00-0

- 1) Product shipped with plastic cable gland, rated to -20 °C.
 If -40 °C rating required, then metallic cable gland is recommended.

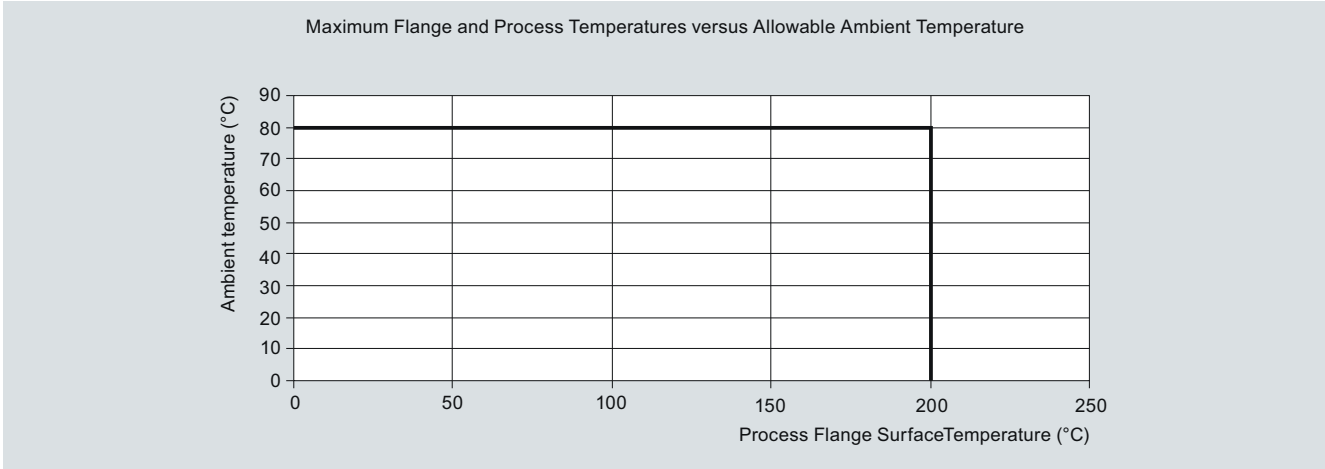
- C) Subject to export regulations AL: N, ECCN: EAR99.
 D) Subject to export regulations AL: N, ECCN: EAR99H.
 K) Subject to export regulations AL: N, ECCN: 5A991X.

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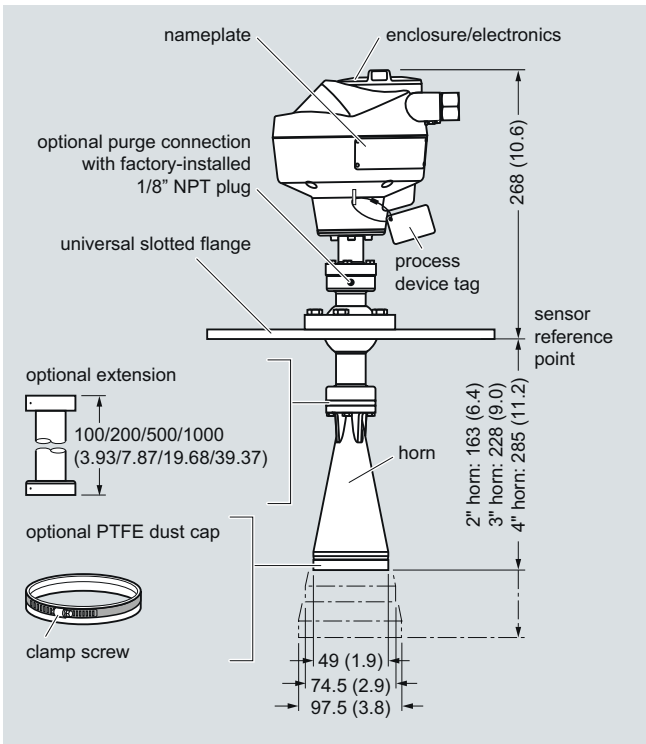
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Characteristic curves



SITRANS LR260 Ambient/Process Flange Surface Temperature Curve

5 Dimensional drawings



SITRANS LR260, dimensions in mm (inch)

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Schematics

Connect the wires to the terminals as shown: the polarity is identified on the terminal block.

Shield for HART and PROFIBUS PA
Intrinsically Safe versions only.

Hand Programmer

SIEMENS			
1	2	3	4
5	6	7	8
9	0	.	↵
C	⏪	⏩	⏴
⏴	⏵	⏶	⏷

Part number:
7ML1930-1BK

Notes:

1. DC terminal shall be supplied from a source providing electrical isolation between the input and output, to meet the applicable safety requirements of IEC 61010-1.
2. All field wiring must have insulation suitable for rated input voltages.
3. Use shielded twisted pair cable (14 to 22 AWG) for HART version.
4. Separate cables and conduit may be required to conform to standard instrumentation wiring practices or electrical codes.

SITRANS LR260 connections

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