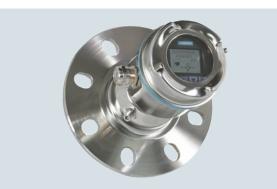
Continuous level measurement Radar transmitters

SITRANS LR560

Overview



SITRANS LR560 2-wire, 78 GHz FMCW radar level transmitter for continuous monitoring of solids and liquids to a range of 100 m (328 ft).

Benefits

- Rugged stainless steel design for industrial applications
- 78 GHz high frequency provides very narrow beam, virtually no mounting nozzle noise, and optimal reflection from sloped solids
- · Aimer option to direct beam to area of interest, such as draw point of cone
- Lens antenna is highly resistant to product buildup
- Air purge connection is included for self-cleaning of extremely sticky solids
- · Local display interface (LDI) allows local programming and diagnostics

Application

SITRANS LR560's plug and play performance is ideal for most solids applications and long range liquid applications, including those with extreme dust and high temperatures to 200 °C (392 °F). Unique design allows safe and simple programming using the Intrinsically Safe handheld programmer without having to open the instrument's lid.

SITRANS LR560 includes an optional graphical local display interface (LDI) that improves setup and operation using an intuitive Quick Start Wizard, and echo profile display for diagnostic support. Startup is easy using the Quick Start wizard with a few parameters required for basic operation.

SITRANS LR560 measures practically any solids material to a range of 100 m (328 ft).

 Key Applications: cement powder, plastic powder/pellets, grain, coal, wood powder, fly ash

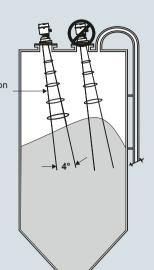
Installation

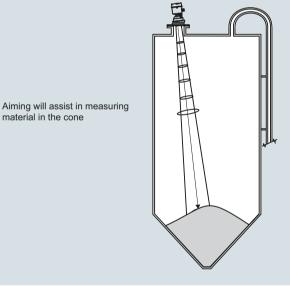
Note:

Configuration

- · Beam angle is the width of the cone where the energy density is half of the peak
- energy density Emission The peak energy density cone is directly in front of and
- in line with the antenna There is signal transmitted outside of the beam angle; therefore false targets may be detected

material in the cone





SITRANS LR560 installation, dimensions in mm (inch)

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Technical specifications

Mode of operation

Radar level measurement	
78 GHz FMCW	
400 mm (15.75 inch) from sensor reference point	
40 m (131 ft) version100 m (328 ft) version	
4 20 mA	
 HART Optional: PROFIBUS PA Optional: FOUNDATION Fieldbus 	
 Programmable as high, low or hold (Loss of Echo) NE43 programmable 	
5 mm (0.2 inch)	
Indoor/outdoor	
-40 +80 °C (-40 +176 °F) I 4	
> 1.6	
See chart below	
316L/1.4404 stainless steel M20 x 1.5, or ½" NPT via adapter 1/8" NPT, 30 cfm at max. 100 psi • 40 m version: PEI • 100 m version: PEEK	
- TOO IN VOISION. TEEK	
Damage to lens could result from con- tinuous purging/cleaning (due to abrasive solids). Recommended to purge/clean only a few seconds every hour.	
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Power supply	
4 20 mA/HART	Nominal 24 V DC (max. 30 V DC) with max. 550 Ω
PROFIBUS PA/ FOUNDATION Fieldbus	13.5 mA 9 32 V DC, per IEC 61158-2
Certificates and approvals	
General	CSA _{US/C} , CE, FM
Radio	Europe (RED), FCC, Industry Canada, RCM
Hazardous	
Europe/International	IECEX SIR 09.0149X ATEX II 1D, 1/2D, 2D Ex ta IIIC T139 °C Da ATEX II 3G Ex nA II 74 Gc Ex nL IIC T4 Gc
• US/Canada	FM/CSA Class II, Div. 1, Groups E, F, G Class III T4 FM/CSA Class I, Div. 2, Groups A, B, C, D, T4
• China • Brazil	NEPSI Ex nA II T4 Ex nL IIC T4 DIP A20 TA, T139 °C INMETRO
	Ex na IIC T4 Gc Ex ta IIIC T139 °C Da
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 T135 °C $T_a = -20 \dots +50$ °C CSA/FM Class I, II, and III, Div. 1, Groups A, B, C, D, E, F, G, T6 T_a = 50 °C
Handheld communicator	HART communicator 375/475
PC	SIMATIC PDM, AMS, PACTware
Display (local)	Graphic local user interface including quick start wizard and echo profile displays

¹⁾ From sensor reference point

²⁾ Under severe EMI/EMC environments per IEC61326-1 or NAMUR NE21, the device error may increase to a maximum of 25 mm (1 inch)

³⁾ Universal flange mates with EN 1092-1 (PN16)/ASME B16.5 (150 lb)/JIS 2220 (10K) bolt hole pattern.

Process temperature and pressure

Version	Stainless steel -1 0.5 bar -1 3.0 bar	Aimer flange: -1 0.5 bar	Aimer flange: -1 3.0 bar
40 m	-40 +100 °C	-40 +100 °C	-40 +100 °C
	(-40 +212 °F)	(-40 +212 °F)	(-40 +212 °F)
100 m	-40 +200 °C	-40 +200 °C	-40 +120 °C
	(-40 +392 °F)	(-40 +392 °F)	(-40 +248 °F)

Continuous level measurement

Radar transmitters

SITRANS LR560

Selection and Ordering data	Article No.	Selection and Ordering data	Order code
SITRANS LR560	7ML5440-	Further designs	
2-wire, 78 GHz FMCW radar level transmitter for	00-	Please add "-Z" to Article No. and specify Order code(s).	
continuous monitoring of solids and liquids to a		Plug M12 with mating connector ¹⁾²⁾³⁾	A50
range of 100 m (328 ft).		Plug 7/8" with mating connector ¹⁾³⁾⁴⁾	A55
Order handheld programmer separately		Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters); specify in plain text	Y15
Measurement and process temperature range 40 m (131 ft) max range, -40 +100 °C	0	Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000	C11
100 m (328 ft) max range, -40 +200 °C	1	Material inspection Certificate Type 3.1 per EN 10204 ⁵⁾	C12
Process connection Universal flat-faced flange fits ANSI/DIN/JIS flanges		NAMUR NE43 compliant, device preset to failsafe $< 3.6 \text{ mA}^{6)}$	N07
<u> </u>		Operating Instructions	
80 mm/3 inch, 304 stainless steel 100 mm/4 inch, 304 stainless steel 150 mm/6 inch, 304 stainless steel	A B C	All literature is available to download for free, in a range of languages, at http://www.siemens.com/ processinstrumentation/documentation	
80 mm/3 inch, 316L stainless steel	D	Accessories	Article No.
100 mm/4 inch, 316L stainless steel	E	Hand Programmer, Intrinsically safe	7ML1930-1
150 mm/6 inch, 316L stainless steel	F	Local display interface	7ML1930-1
80 mm/3 inch, painted aluminum, with integral aimer ¹⁾	G	Sun Shield Cover, 304 stainless steel	7ML1930-1
100 mm/4 inch, painted aluminum, with integral	н	Housing lid with window	7ML1930-1
aimer ¹⁾ 150 mm/6 inch, painted aluminum, with integral	J	One metallic cable gland M20 x 1.5, rated -40 +80 °C (-40 +176 °F), HART ⁷⁾	7ML1930-1
aimer ¹⁾ Enclosure (with cable inlet)	-	One metallic cable gland M20 x 1.5, rated -40 +80 °C (-40 +176 °F), PROFIBUS PA ⁷⁾	7ML1930-1
Stainless steel, 1 X 1/2" NPT	Α	SITRANS RD100, loop powered display - see Chapter 7	7ML5741
Stainless steel, 1 X M20 x 1.5 (plastic gland included)	В	SITRANS RD200, universal input display with Modbus conversion - see Chapter 7	7ML5740
Pressure rating 0.5 bar g (7.5 psi g) maximum	0	SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7	7ML5744
3 bar g (40 psi g) maximum Output/communication	1	SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7	7ML5750
4 20 mA, HART PROFIBUS PA	A B	For applicable back up point level switch - see point level measurement section	
FOUNDATION Fieldbus	C	¹⁾ Available with Approval option A only.	
Approvals		²⁾ Available with Enclosure option B only.	
General Purpose, FM, CSA _{US/C} , Industry Canada, FCC, CE, RED, RCM	Α	³⁾ Available with Output/communication options B and C	only.
CSA/FM Class I, Div. 2, Groups A, B, C, D, Class II,	в	⁴⁾ Only available with enclosure option A (NPT thread).	
Div. 1, Groups E, F, G, Class III, Industry Canada,		⁵⁾ Available with Pressure rating option 1 only.	
FCC		⁶⁾ Available with Output/communication option A only.	
ATEX II 3G Ex nA/nL, 1D, 1/2D, 2D Ex ta, INMETRO CE, RED, RCM	с	⁷⁾ Product shipped with plastic cable gland, rated to -20 If -40 °C rating required, then metallic cable gland is r	°C. ecommendec
Local display interface Without	1		
With	2		

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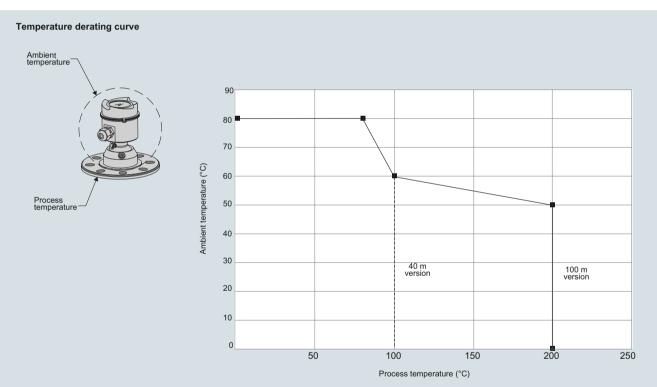
Options

SITRANS LR560

Handheld programmer Sun shield cover (304 stainless steel) Article number: Article number: 7ML1930-1BK 7ML1930-1FK SIEMENS 3 1 2 4 Γ 5 7. С Ŧ ଳ 📘 0 + * * *

SITRANS LR560 handheld programmer and sun shield cover

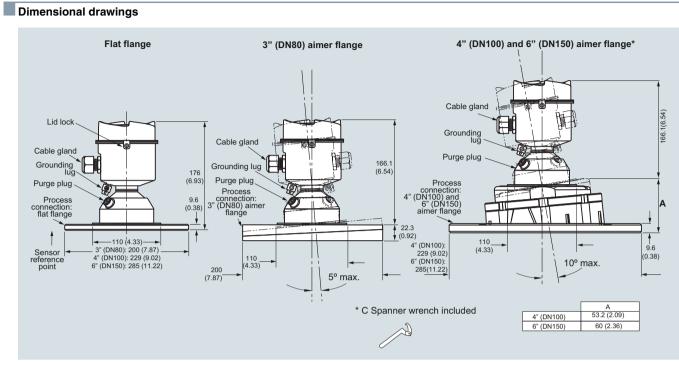
Characteristic curves





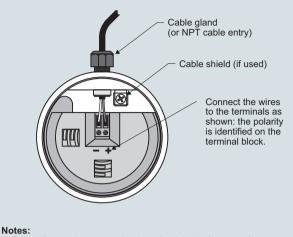
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SITRANS LR560, dimensions in mm (inch)

Circuit diagrams



- 1. Depending on the approval rating, glands and plugs may be
- Depending on the approval rating, glands and plugs may be supplied with your instrument.
 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.
 All field wiring must have insulation suitable for rated input voltages.
 Use shielded twisted pair cable (14 ... 22 AWG) for HART version.
 Separate cables and conduit may be required to conform to standard instrumentation wiring practices or electrical codes.

SITRANS LR560 connections

Selection and ordering data

SITRANS LR560 Specials

	Article No.
SITRANS LR560 Electronics Modules	
SITRANS LR560 Electronics Module, HART, 100 m range, compatible with 7ML5440-100A, no enclosure or process connection included.	7ML1830-3AC
SITRANS LR560 Electronics Module, PROFIBUS PA, 100 m range, compatible with 7ML5440-100B, no enclosure or process connection included.	7ML1830-3AH
SITRANS LR560 Electronics Module, FOUNDATION Fieldbus, 100 m range, compati- ble with 7ML5440-100C, no enclosure or process connection included.	7ML1830-3AJ
SITRANS LR560 Electronics Module, HART, 40 m range, compatible with 7ML5440-000A, no enclosure or process connection included.	7ML1830-3AK
SITRANS LR560 Electronics Module, PROFIBUS PA, 40 m range, compatible with 7ML5440-000B, no enclosure or process connection included.	7ML1830-3AL
SITRANS LR560 Electronics Module, FOUNDATION Fieldbus, 40 m range, compati- ble with 7ML5440-000C, no enclosure or process connection included.	7ML1830-3AM
SITRANS LR560 Miscellaneous Spare Kits	
Kit, lid gasket, EPDM	7ML1830-3AA
Kit, wrench for 4" and 6" Aimers	7ML1830-3AB
Kit, O-rings for 3" Aimer	7ML1830-3AD
Kit, O-rings for 4" Aimer	7ML1830-3AE
Kit, O-rings for 6" Aimer	7ML1830-3AF
Kit, lid screw and purge plug set with hex keys	7ML1830-3AG
Kit, lid, no window	7ML1830-3AP

Customers interested in a custom designed device should consult a local sales person. For more information, please visit http://www.automation.siemens.com/aspa_app.