SITRANS LR260

Overview

SITRANS LR260 is a 2-wire 25 GHz pulse radar level transmitter for continuous monitoring of solids and liquids 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

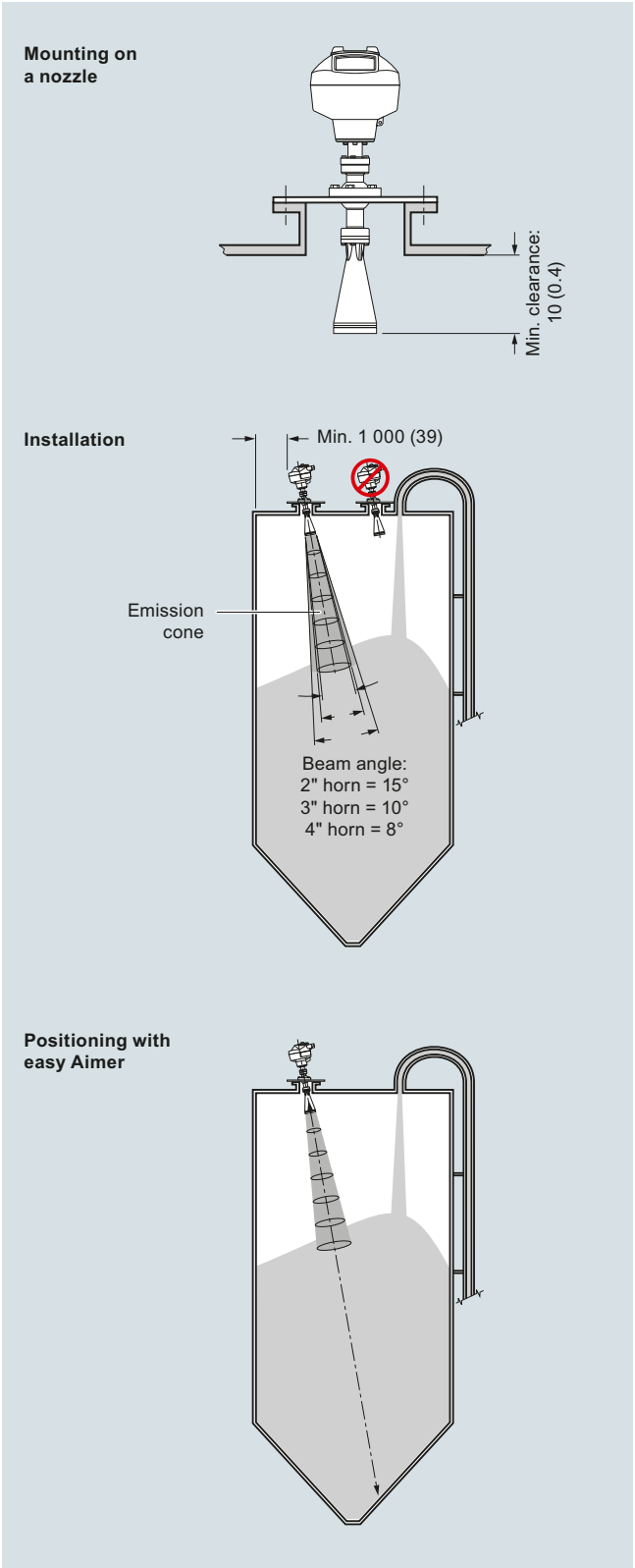
SITRANS LR260 includes a graphical local user interface (LUI) that improves setup and operation using an intuitive Quick Start Wizard, and echo profile displays for diagnostic support. Startup is easy using the Quick Start wizard with a few parameters required for basic operation.

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 and liquids bulk storage vessels, and other applications

Configuration



SITRANS LR260 installation, dimensions in mm (inch)

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)]	
Solids	• 2" horn: 10 m (32.8 ft) • 3" horn: 20 m (65.6 ft) • 4" horn: 30 m (98.4 ft)
Liquids	• 2" horn: 20 m (65.6 ft) • 3" horn: 30 m (98.4 ft) • 4" horn: 30 m (98.4 ft)
Output - HART	
Power	4 ... 20 mA (± 0.02 mA accuracy)
Fail signal	Nominal 24 V DC (max. 30 V DC)
Load	3.6 mA ... 23 mA; or last value 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)	• 25 mm (1 inch) from minimum detectable distance to 300 mm (11.8 inch) • Remainder of range = 6 mm (0.23 inch) or 0.05 % of spa (whichever is greater)
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	ε_r > 1.6, antenna and application dependent
Process temperature	-40 ... +200 °C (-40 ... +392 °F)
Process pressure	• 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	Aluminum, polyester powder-coated
• Conduit entry	2 x M20 x 1.5 or 2 x ½" 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 (easy aimer model)	
• Material	304 stainless steel
• Horn antenna	2" horn 3" horn 4" horn
Process connections	
• Universal flanges [2)]	2 inch/50 mm, 3 inch/80 mm, 4 inch/100 mm, 6 inch/150 mm
Mechanical (Threaded Connection model)	
• Threaded connection	2" NPT (ASME B1.20.1), R (BSPT, EN 10226-1), or G (BSPP, EN ISO 228-1)
• Materials	316L/1.4404 or 316L/1.4435 stainless steel PTFE emitter
Certificates and approvals	
General	$CSA_{US/C}$, CE, FM
Radio	Europe (RED), FCC, Industry Canada, RCM
Hazardous	CSA/FM Class II, Div. 1, Groups E, F, G, Class III ATEX II 1D, 1/2D, 2D Ex ta IIIC T100 °C Da IECEx/ATEX II 1 GD Ex ia IIC T4 Ga, Ex ta IIIC T100 °C Da CSA/FM Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G SABS ARP0108 Ex ia IIC T4 Ga
Programming	
Intrinsically Safe Siemens handheld programmer	Infrared receiver
• Approvals for handheld programmer	IS model: ATEX II 1GD Ex ia IIC T4 GaEx iaD 20 T135 °C Ta = -20 ... +50 °C CSA/FM Class I, II, and III, Div. 1, Groups A, B, C, D, E, F, 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

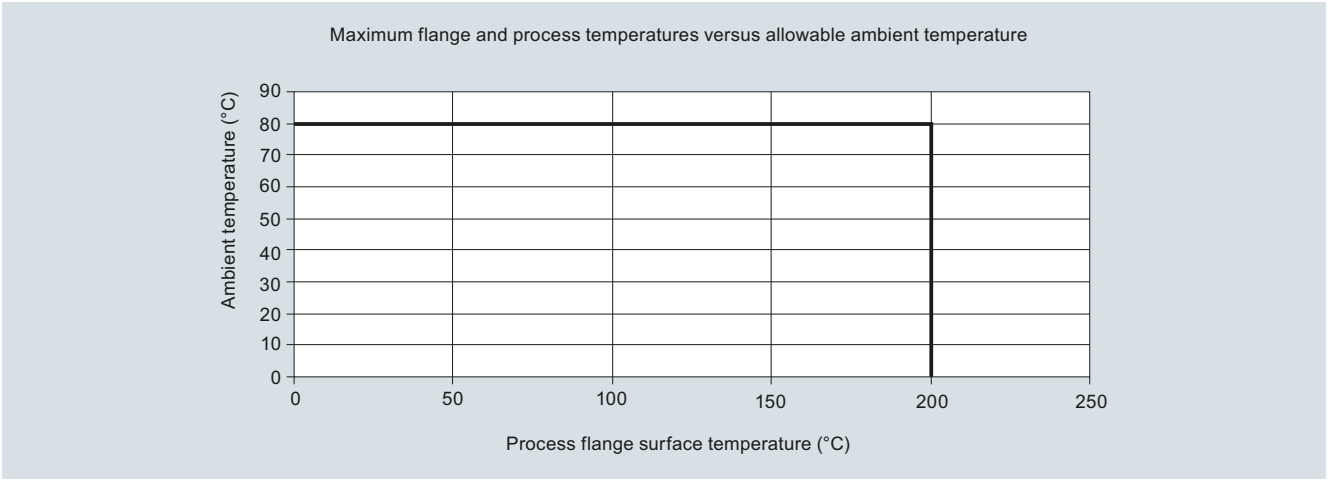
SITRANS LR260

Selection and Ordering data	Article 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).	**7ML5427-** **0** ■ ■ ■ **0** - ■ ■ ■ ■
Order handheld programmer separately	
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Process connection	
Universal flat faced flange fits ANSI/DIN/JIS flanges, Easy Aimer with integral (Easy Aimer ball)	
2 inch/50 mm	**A**
3 inch/80 mm	**B**
4 inch/100 mm	**C**
6 inch/150 mm	**D**
Threaded connection	
2" NPT (ASME B1.20.1) (tapered thread)[1)2)5)]	**E**
R 2" [(BSPT), EN 10226-1] (tapered thread)[1)2)5)]	**F**
G 2" [(BSPT), EN ISO 228-1] (parallel thread)[1)2)5)]	**G**
For custom process connections, contact a local sales person. For more information, please visit http://www.automation.siemens.com/aspa_app.	**Z**
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)]	**D**
2" Horn antenna with 1 000 mm extension[1)2)]	**E**
3" Horn antenna, fits 80 mm or 3" nozzles[3)]	**F**
3" Horn antenna with 100 mm extension[3)]	**G**
3" Horn antenna with 200 mm extension[3)]	**H**
3" Horn antenna with 500 mm extension[2)3)]	**J**
3" Horn antenna with 1 000 mm extension[2)3)]	**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)]	**P**
4" Horn antenna with 1 000 mm extension[2)]	**Q**
For custom antennas, contact a local sales person. For more information, please visit http://www.automation.siemens.com/aspa_app.	**Z**
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 M20 x 1.5	**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, RED, RCM	**A**
CSA/FM Class II, Div. 1, Groups E, F, G, Class III, Industry Canada, FCC, RCM	**B**
ATEX II 1D, 1/2D, 2D Ex ta IIIC T100 °C Da, CE, RED, RCM, INMETRO	**C**
Non-incendive, CSA/FM Class I, Div. 2, Groups A, B, C, D, Industry Canada, FCC, RCM	**D**
Intrinsically safe, IECEx/ATEX II 1 GD Ex ia IIC T4 Ga, Ex ta IIIC T100 °C Da, RED, RCM	**E**
Intrinsically safe, CSA/FM Class I, II, III, Div. 1, Groups A, B, C, D, E, F, G, Industry Canada, FCC, RCM	**F**
Intrinsically safe, South Africa ARP0108 Ex ia IIC T4 Ga	**G**
Pressure rating	
Rating per Pressure/Temperature curves in manual[6)]	**0**
0.5 bar g (7.25 psi g) maximum	**1**

Selection and Ordering data	Order code
Further designs	
Please add "**-Z**" to Article No. and specify Order code(s).	
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**
Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000	**C11**
Material inspection Certificate Type 3.1 per EN 10204[4)]	**C12**
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.
One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART	**7ML1930-1AP**
One metallic cable gland M20 x 1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA	**7ML1930-1AQ**
Handheld programmer, Infrared, Intrinsically Safe	**7ML1930-1BK**
Dust cap, PTFE, for 2 inch/50 mm horn	**7ML1930-1DE**
Dust cap, PTFE, for 3 inch/75 mm horn	**7ML1930-1BL**
Dust cap, PTFE, for 4 inch/100 mm horn	**7ML1930-1BM**
HART modem/USB (for use with a PC and SIMATIC PDM)	**7MF4997-1DB**
SITRANS RD100, loop powered display - see Chapter 7	**7ML5741-...**
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-...**
SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7	**7ML5750-...**
For applicable back up point level switch - see point level measurement section	
Note: Products shipped with plastic cable gland, rated to -20 °C. If -40 °C rating required, then metallic cable gland is recommended.	

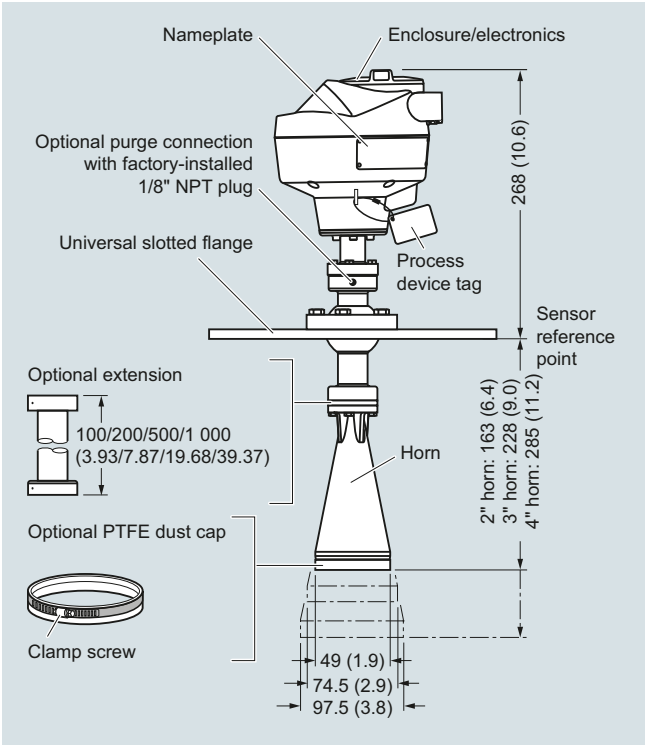
1) Maximum measurement range 10 m (32.8 ft) solids or 20 m (65.6 ft) liquids
2) Available with Purge option 0 only
3) Maximum measurement range 20 m (65.6 ft) solids or 30 m (98.4 ft) liquids
4) Available with Pressure option 0 only
5) Available with Antenna options A, B, F, G, L, and M only
6) Available with Pressure option 0 only

Characteristic curves



SITRANS LR260 ambient/process flange surface temperature curve

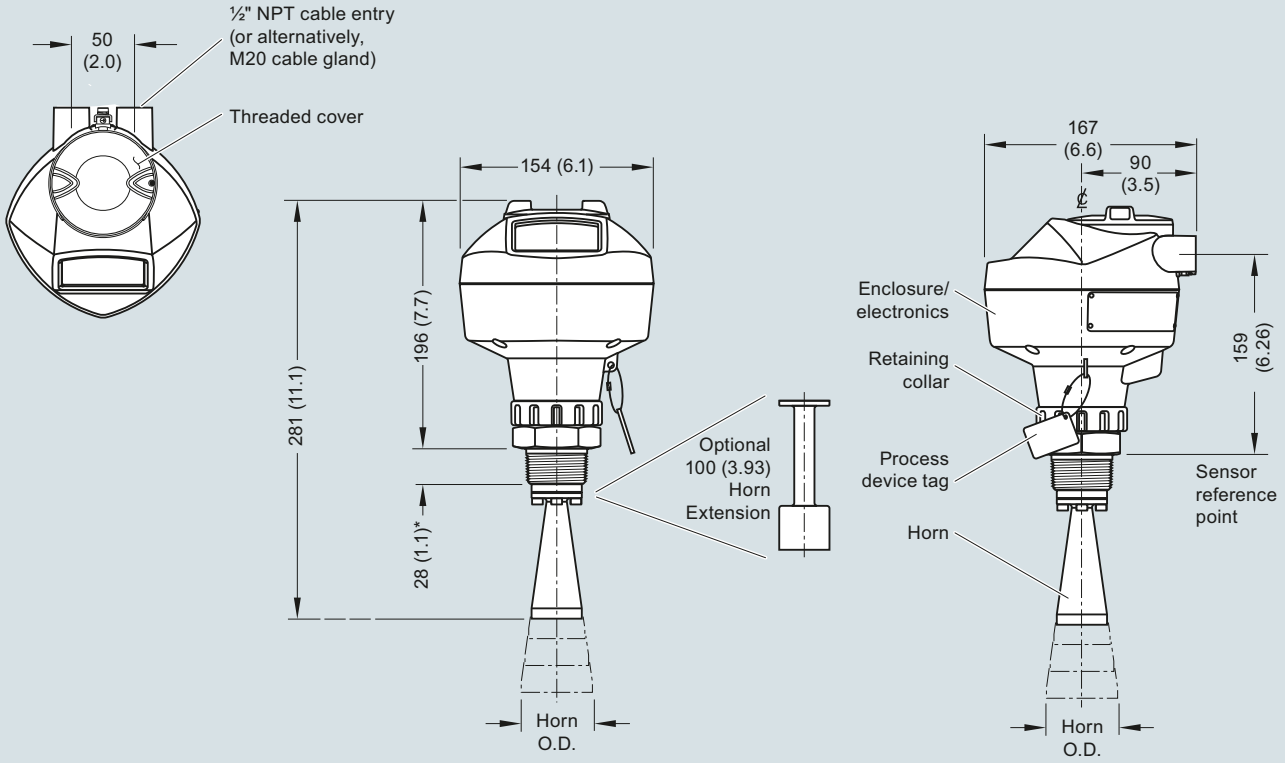
Dimensional drawings



SITRANS LR260, dimensions in mm (inch)

SITRANS LR260

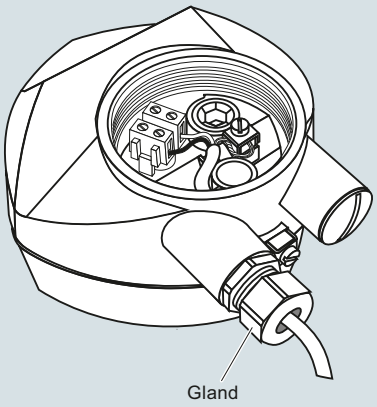
SITRANS LR260

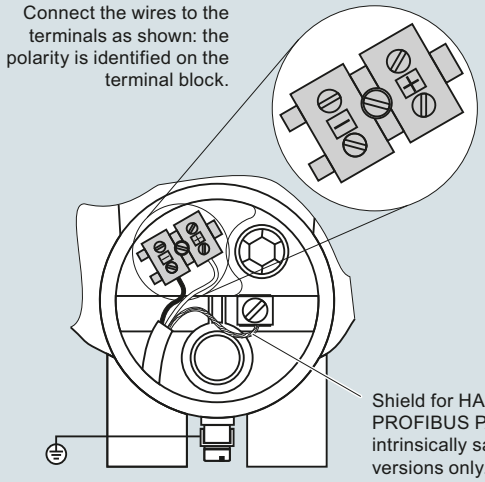


Antenna Type	Antenna O.D.	Height to sensor reference point			Beam angle	Measurement range
		1-1/2" threaded connection	2" threaded connection	3" threaded connection		
2" horn	47.8 (1.88)	N/A	166 (6.55)	180 (7.09)	15 degrees	20 m (65.6 ft)
3" horn	74.8 (2.94)	N/A	199 (7.85)	213 (8.39)	10 degrees	30 m (98.4 ft)
4" horn	94.8 (3.73)	N/A	254 (10)	268 (10.55)	8 degrees	30 m (98.4 ft)

SITRANS LR260, dimensions in mm (inch)

Circuit diagrams





Hand programmer

Part number:
7ML1930-1BK

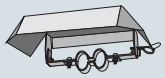
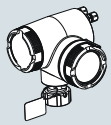
Notes:

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 ... 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

Selection and ordering data

SITRANS LR260/LR460 Specials	Article No.
NOTE: **LR260 head can be supplied with any LR250 process connection or antenna as special order. For LR250, this means a stronger signal and longer measurement range is possible.**	
Process connection part kits - non-pressure-rated	
SITRANS LR260/LR460, 100 mm extension for horn antenna, no purge[1]	**A5E01087872**
SITRANS LR260/LR460, 200 mm extension for horn antenna, no purge[1]	**A5E01091262**
SITRANS LR260/LR460, 100 mm extension for horn antenna with purge[1]	**A5E01261979**
SITRANS LR260/LR460, 200 mm extension for horn antenna with purge[1]	**A5E01261981**
SITRANS LR260/LR460, horn 2", no purge, no emitter[1]	**A5E02083905**
SITRANS LR260/LR460, horn 3", no purge, no emitter[1]	**A5E01623511**
SITRANS LR260/LR460, horn 4", no purge, no emitter[1]	**A5E01623512**
SITRANS LR260/LR460, horn 2", with purge, no emitter[1]	**A5E02083906**
SITRANS LR260/LR460, horn 3", with purge, no emitter[1]	**A5E01623513**
SITRANS LR260/LR460, horn 4", with purge, no emitter[1]	**A5E01623514**
SITRANS LR260/LR460, 3" universal flat faced flange[1]	**A5E02303897**
SITRANS LR260/LR460, 4" universal flat faced flange[1]	**A5E01259467**
SITRANS LR260/LR460, 6" universal flat faced flange[1]	**A5E01261834**
SITRANS LR260/LR460 O-rings for Easy Aimer[1)]	**A5E01261836**
Kit, Emitter for LR260/LR460[1]	**A5E02360694**
SITRANS LR260 lid with O-ring	**A5E02465410**
Purge conversion kit – non-pressure-rated (no flange or extension included)	
SITRANS LR260/LR460 purge conversion, 2" horn[1]	**A5E02083914**
SITRANS LR260/LR460 purge conversion, 3" horn[1]	**A5E02083915**
SITRANS LR260/LR460 purge conversion, 4" horn[1]	**A5E02083916**
Enclosure with electronics (LR260)	
SITRANS LR260 enclosure with board stack, HART communication, M20 cable inlet, approval option A, no process connection	**A5E02203605**
SITRANS LR260 enclosure with board stack, PROFIBUS PA communication, M20 cable inlet, approval option A, no process connection	**A5E02213423**
SITRANS LR260 enclosure with board stack, HART communication, NPT cable inlet, approval option A, no process connection	**A5E02165924**

SITRANS LR260/LR460 Specials	Article No.
SITRANS LR260 enclosure with board stack, PROFIBUS PA communication, NPT cable inlet, approval option A, no process connection	**A5E02213428**
SITRANS LR260 enclosure with board stack, HART communication, NPT cable inlet, approval option D, no process connection	**A5E03934184**
SITRANS LR260 enclosure with board stack, HART communication, M20 cable inlet, approval option E, no process connection	**A5E03934187**
SITRANS LR260 enclosure with board stack, HART communication, M20 cable inlet, approval option F, no process connection	**A5E03934191**
SITRANS LR260 enclosure with board stack, PROFIBUS PA communication, M20 cable inlet, approval option E, no process connection	**A5E37217558**
SITRANS LR260 enclosure with board stack, PROFIBUS PA communication, ½" NPT cable inlet, approval option F, no process connection	**A5E31820689**
Sun shield for SITRANS LR260 enclosure, stainless steel	
	A5E39142556
Enclosure with electronics (LR460)	
SITRANS LR460 enclosure with board stack, HART communication, AC power, M20 cable inlet, approval option A, no process connection	**A5E02182085**
SITRANS LR460 enclosure with board stack, PROFIBUS PA communication, AC power, M20 cable inlet, approval option A, no process connection	**A5E02212422**
SITRANS LR460 enclosure with board stack, HART communication, AC power, NPT cable inlet, approval option A, no process connection	**A5E02212423**
SITRANS LR460 enclosure with board stack, PROFIBUS PA communication, AC power, NPT cable inlet, approval option A, no process connection	**A5E02212424**
SITRANS LR460 enclosure with board stack, HART communication, DC power, M20 cable inlet, approval option A, no process connection	**A5E02212425**
SITRANS LR460 enclosure with board stack, PROFIBUS PA communication, DC power, M20 cable inlet, approval option A, no process connection	**A5E02212426**
SITRANS LR460 enclosure with board stack, HART communication, DC power, NPT cable inlet, approval option A, no process connection	**A5E02212428**
SITRANS LR460 enclosure with board stack, PROFIBUS PA communication, DC power, NPT cable inlet, approval option A, no process connection	**A5E02212429**

[1] Available with no pressure rating, 0.5 bar g maximum. 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.