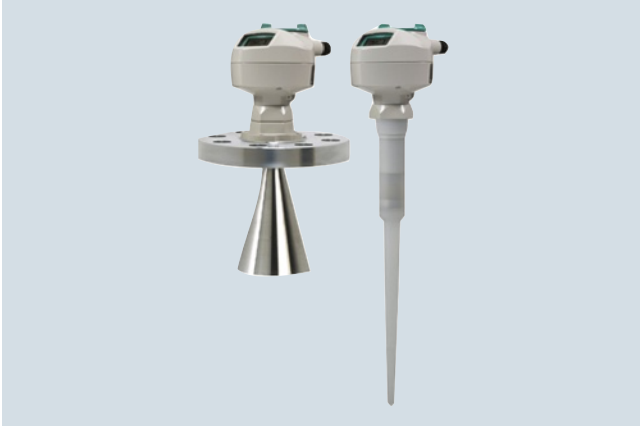


Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR200

Overview



SITRANS LR200 is a 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in process vessels including high temperature, pressure, agitation, and turbulence to a range of 20 m (65 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
- 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 LR200's unique design allows safe and simple programming using the Intrinsically Safe handheld programmer without having to open the instrument's lid. It also features a built-in alphanumeric display in four languages.

The SITRANS LR200 has a standard Uni-Construction polypropylene rod antenna that offers excellent chemical resistance and is hermetically sealed. The Uni-Construction antenna features an internal, integrated shield that eliminates vessel nozzle interference.

Start-up is easy with as few as two parameters for basic operation. Installation is simplified as the electronics are mounted on a rotating head that swivels, allowing the instrument to line up with conduit or wiring connections or simply to adjust the position for easy viewing. SITRANS LR200 features patented Process Intelligence signal-processing technology for superior reliability.

- Key Applications: liquid process vessels with agitators, vaporous liquids, high temperatures, asphalt, digesters

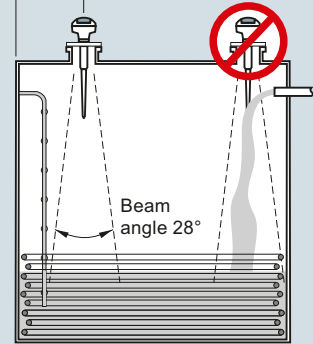
Configuration

Installation

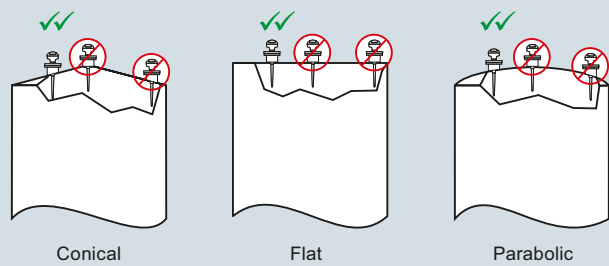
Note:

- Beam angle is the width of the cone where the energy density is half of the peak energy density.
- Beam angle for horn antenna dependent on horn size
- The peak energy density is directly in front of and in line with the rod antenna.
- There is a signal transmitted outside of the beam angle; therefore false targets may be detected.

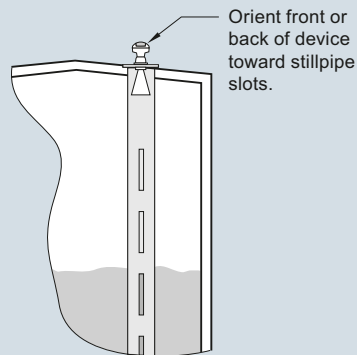
Min. 300 mm (1 ft) for every 3 m (10 ft) of vessel wall.



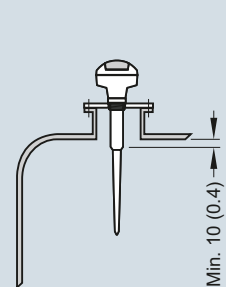
Mounting unit on vessel



Mounting unit on stilling well



Mounting on a nozzle



SITRANS LR200 installation, dimensions in mm (inch)

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR200

Technical specifications

Mode of operation

Measuring principle	Radar level measurement
Frequency	5.8 GHz (North America 6.3 GHz)
Measuring range	0.3 ... 20 m (1.0 ... 65 ft)

Output

<ul style="list-style-type: none"> • Analog output • Accuracy • Span 	4 ... 20 mA ± 0.02 mA Proportional or inversely proportional HART
<ul style="list-style-type: none"> • Communications 	Optional: PROFIBUS PA (Profile 3.0, Class B)
<ul style="list-style-type: none"> • Fail-safe 	Programmable as high, low or hold (Loss of Echo)

Performance (according to reference conditions IEC60770-1)

<ul style="list-style-type: none"> • From end of antenna to 600 mm: • Remainder of range: 	40 mm (1.57 inch) 10 mm (0.4 inch) or 0.1 % of span (whichever is greater)
---	---

Rated operating conditions

Installation conditions <ul style="list-style-type: none"> • Location 	Indoor/outdoor
Ambient conditions (enclosure) <ul style="list-style-type: none"> • Ambient temperature • Installation category • Pollution degree 	-40 ... +80 °C (-40 ... +176 °F) I 4

Medium conditions

<ul style="list-style-type: none"> • Dielectric constant ϵ_r 	$\epsilon_r > 1.6$ (for $\epsilon_r < 3$, use waveguide antenna or stillpipe)
<ul style="list-style-type: none"> • Vessel temperature and pressure 	Varies with connection type; see Pressure/Temperature curves for more information

Design

Enclosure <ul style="list-style-type: none"> • Material • Cable inlet 	Aluminum, polyester powder coated 2 x M20x1.5 or 2 x 1/2" NPT with adapter
Degree of protection	Type 4X/NEMA 4X, Type 6/NEMA 6, IP67, IP68
Weight	< 2 kg (4.4 lb) (polypropylene rod antenna)
Display (local)	Multi-segment alphanumeric liquid crystal with bar graph (representing level) available in four languages
Antenna <ul style="list-style-type: none"> • Material • Dimensions 	Polypropylene rod, hermetically sealed construction, optional PTFE Standard 100 mm (4 inch) shield for maximum 100 mm (4 inch) nozzle, or optional 250 mm (10 inch) long shield Refer to SITRANS LR200 Antennas for optional rods, horns and waveguides
<ul style="list-style-type: none"> • Optional rods, horn and waveguides 	Refer to SITRANS LR200 Antennas for optional rods, horns and waveguides
Process connections <ul style="list-style-type: none"> • Process connection 	1 1/2" NPT [(Taper), ANSI/ASME B1.20.1] R 1 1/2" [(BSPT), EN 10226], or G 1 1/2" [(BSPP), EN ISO 228-1] (polypropylene rod antenna)
<ul style="list-style-type: none"> • Flange connection 	Refer to SITRANS LR200 Antennas for more connections
Power supply	4 to 20 mA/HART
<ul style="list-style-type: none"> • General Purpose, Non-incendive, Intrinsically Safe • Flame proof, Increased safety, Explosion proof 	Nominal 24 V DC (max. 30 V DC) with max. 550 Ω Nominal 24 V DC (max. 30 V DC) with max. 250 Ω
PROFIBUS PA <ul style="list-style-type: none"> • 10.5 mA • per IEC 61158-2 	

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR200

Certificates and approvals	
General	CSA _{US/C} , CE, FM, C-TICK
Marine	<ul style="list-style-type: none"> • Lloyd's Register of Shipping • ABS Type Approval
Radio	FCC, Industry Canada and European (R&TTE), C-TICK
Hazardous	
• Intrinsically Safe (Brazil)	INMETRO Ex ia IIC T4 Ga
• Explosion Proof (Canada/USA)	CSA/FM, Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III, T4
• Intrinsically Safe (Canada/USA)	CSA/FM, Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III, T4
• Non-incendive (USA)	FM, Class I, Div. 2, Groups A, B, C, D, T5
• Flame Proof/Increased Safety (China)	NEPSI Ex d mb ia IIC T4/ Ex e mb ia IIC T4
• Flame Proof (Europe)	ATEX II 1/2 G Ex d mb ia IIC T4 Ga/Gb
• Increased Safety (Europe)	ATEX II 1/2 G Ex e mb ia IIC T4 Ga/Gb
• Intrinsically Safe (Europe)	ATEX II 1G Ex ia IIC T4
• Intrinsically Safe (International)	IECEX Ex ia IIC T4
• Intrinsically Safe (Russia)	GOST-R Ex ia
Programming	
• Intrinsically Safe Siemens handheld programmer - Approvals for handheld programmer	Infrared receiver IS model: ATEX II 1GD Ex ia IIC T4 Ga Ex iaD 20 T135 °C T _a = -20 ... +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
• PC	<ul style="list-style-type: none"> • SIMATIC PDM • AMS
• Display (local)	Multi-segment alphanumeric liquid crystal with bar graph (representing level) available in four languages

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR200

Selection and Ordering data

SITRANS LR200, Uni-Construction polypropylene rod antenna version

2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in process vessels including high temperature and pressure, to a range of 20 m (66 ft).

Max. 3 bar g (43.5 psi g) pressure and 80 °C (176 °F)

Enclosure/Cable inlet

Aluminum, epoxy painted
2 x 1/2" NPT
2 x M20x1.5

Polypropylene antenna type - (Max. 3 Bar pressure and 80 °C)

1 1/2" NPT [(Taper), ANSI/ASME B1.20.1],
c/w integral 100 mm shield
R 1 1/2" [(BSPT), EN 10226],
c/w integral 100 mm shield
G 1 1/2" [(BSPP), EN ISO 228-1],
c/w integral 100 mm shield

1 1/2" NPT [(Taper), ANSI/ASME B1.20.1],
c/w integral 250 mm shield
R 1 1/2" [(BSPT), EN 10226],
c/w integral 250 mm shield
G 1 1/2" [(BSPP), EN ISO 228-1],
c/w integral 250 mm shield

Approvals

General Purpose, CE, R&TTE, C-TICK
General Purpose, CSA, FM, Industry Canada, FCC
Intrinsically Safe, CSA Class I, II, Div. 1, Groups A, B, C, D, E, F, G, Industry Canada

Intrinsically Safe, FM Class I, II, Div. 1, Groups A, B, C, D, E, F, G, FCC

Intrinsically Safe, IECEx/ATEX II 1G Ex ia IIC T4, INMETRO Ex ia IIC T4, CE, R&TTE, C-TICK; GOST-R

Non incandive, FM Class I, Div. 2, Groups A, B, C, D, FCC¹⁾

Increased Safety, ATEX II 1/2G Ex e mb ia IIC T4 Ga/Gb, CE, R&TTE, C-TICK; GOST-R²⁾³⁾

Flame Proof, ATEX II 1/2G Ex d mb ia IIC T4 Ga/Gb, CE, R&TTE, C-TICK; GOST-R³⁾

Explosion Proof, CSA/FM Class I, II, III, Groups A, B, C, D, E, F, G, Industry Canada, FCC¹⁾³⁾

Communication/Output

PROFIBUS PA
4 ... 20 mA, HART, startup at < 3.6 mA

¹⁾ Available with enclosure option 2 only

²⁾ Available with enclosure option 3 only

³⁾ Available with communication option 3 only

Article No.

7ML5422-

0

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Selection and Ordering data

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

Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000

Namur NE43 compliant, device preset to failsafe < 3.6 mA¹⁾

Operating Instructions for HART/mA device

English

German

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 DVD containing the ATEX Quick Start and Operating Instructions library.

Operating Instructions for PROFIBUS PA device

English

German

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 DVD containing the ATEX Quick Start and Operating Instructions library.

Accessories

Handheld programmer, Intrinsically safe, EEx ia

HART modem/RS 232
(for use with a PC and SIMATIC PDM)

HART modem/USB
(for use with a PC and SIMATIC PDM)

One metallic cable gland M20x1.5,
rated -40 ... +80 °C (-40 ... +176 °F), HART²⁾

One metallic cable gland M20x1.5,
rated -40 ... +80 °C (-40 ... +176 °F),
PROFIBUS PA²⁾

One general purpose polymeric cable gland
M20x1.5, rated -20 ... + 80 °C (-40 ... +176 °F)

SITRANS RD100 Remote display - see Chapter 7

SITRANS RD200 Remote display - see Chapter 7

SITRANS RD500 web, datalogging, alarming,
ethernet, and modem support for instrumentation -
see Chapter 7

For applicable back up point level switch -
see point level section on page 4/9

¹⁾ Available with communication option 3 only

²⁾ Product shipped with plastic cable gland, rated to -20 °C.
If -40 °C rating required, then metallic cable gland is recommended.

Order code

Y15	
C11	
N07	
Article No.	
A5E32337676	
7ML1998-5JP32	
A5E31993614	
Article No.	
A5E32337680	
7ML1998-5JR32	
A5E32153438	
7ML1930-1BK	
7MF4997-1DA	
7MF4997-1DB	
7ML1930-1AP	
7ML1930-1AQ	
7ML1930-1AM	
7ML5750-1AA00-0	

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR200

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
SITRANS LR200, Flange Adapter/PTFE Rod Antenna Version 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in process vessels including high temperature and pressure, to a range of 20 m (66 ft).	7ML5423-	SITRANS LR200, Flange Adapter/PTFE Rod Antenna Version 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in process vessels including high temperature and pressure, to a range of 20 m (66 ft).	7ML5423-
Antenna material (uses antenna adapter) PTFE, uses antenna adapter and additional process connection below	1	Communication/Output PROFIBUS PA 4 ... 20 mA, HART, startup at < 3.6 mA	B C
Process connection (refer to Pressure/Temperature curves, page 4/212) Flanges (316L stainless steel) DN 50 PN 16, Type A, flat faced DN 80 PN 16, Type A, flat faced DN 100 PN 16, Type A, flat faced DN 150 PN 16, Type A, flat faced 2" ASME 150 lb, flat faced 3" ASME 150 lb, flat faced 4" ASME 150 lb, flat faced 6" ASME 150 lb, flat faced DN 50 PN 40, flat faced DN 80 PN 40, flat faced DN 100 PN 40, flat faced DN 150 PN 40, flat faced 2" ASME 300 lb, flat faced, available with Pressure rating option 1 only due to flange hole spacing 3" ASME 300 lb, flat faced 4" ASME 300 lb, flat faced 6" ASME 300 lb, flat faced JIS DN 50 10K JIS DN 80 10K JIS DN 100 10K JIS DN 150 10K (Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5, or EN 1092-1, or JIS B 2220 standard.) Threaded connection (316L stainless steel) 1½" NPT [(Taper), ANSI/ASME B1.20.1] 2" NPT [(Taper), ANSI/ASME B1.20.1] R 1½" [(BSPT), EN 10226] R 2" [(BSPT), EN 10226] G 1½" [(BSPP), EN ISO 228-1] G 2" [(BSPP), EN ISO 228-1]	AA BA CA DA FA GB HB JB AC BC CC DC FD GD HD JD AE BE CE DE	Approvals General Purpose, CE, R&TTE, C-TICK General Purpose, CSA FM, Industry Canada, FCC Intrinsically Safe, CSA Class I, II, Div. 1, Groups A, B, C, D, E, F, G, Industry Canada Intrinsically Safe, FM Class I, II, Div. 1, Groups A, B, C, D, E, F, G, FCC Intrinsically Safe, IECEx/ATEX II 1G Ex ia IIC T4, INMETRO Ex ia IIC T4, CE, R&TTE, C-TICK; GOST-R Non incensive, FM Class I, Div. 2, Groups A, B, C, D, FCC ²⁾ Increased Safety, ATEX II 1/2G Ex e mb ia IIC T4 Ga/Gb, CE, R&TTE, C-TICK; GOST-R ³⁾⁴⁾ Flame Proof, ATEX II 1/2G Ex d mb ia IIC T4 Ga/Gb, CE, R&TTE, C-TICK; GOST-R ⁴⁾ Explosion Proof, CSA/FM Class I, II, III, Groups A, B, C, D, E, F, G, Industry Canada, FCC ²⁾⁴⁾	A B C D E F G H J
Antenna extensions or Inactive shield length No antenna extension 50 mm (2 inch) extension, PTFE 100 mm (4 inch) extension, PTFE 100 mm (4 inch) extension, 316L stainless steel shield ¹⁾ 150 mm (6 inch) extension, 316L stainless steel shield ¹⁾ 200 mm (8 inch) extension, 316L stainless steel shield ¹⁾ 250 mm (10 inch) extension, 316L stainless steel shield ¹⁾	0 1 2 3 4 5 6	Pressure rating Rating per Pressure/Temperature curves in manual 0.5 bar g (7.25 psi g) maximum	0 1
Process seal/gasket Integral Gasket, for flat faced flange process connections only, not for Antenna extension options 3 ... 6 FKM O-ring, not available for combination of flat faced flanges with Antenna extension options 0, 1 or 2	0 1	Footnote 1) Available with process connection options BA, CA, DA, GB, HB, JB, BC, CC, DC, GD, HD, JD, BE, CE, DE, MA, MC, ME only Footnote 2) Available with enclosure option 2 only Footnote 3) Available with enclosure option 3 only Footnote 4) Available with communication option C only	
Enclosure/Cable inlet Aluminum, Epoxy painted 2 x ½" NPT 2 x M20x1.5	2 3		

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR200

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
Inspection Certificate Type 3.1 per EN 10204	C12
Namur NE43 compliant, device preset to failsafe < 3.6 mA ³)	N07
Operating Instructions for HART/mA device	
English	A5E32337676
German	7ML1998-5JP32
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 DVD containing the ATEX Quick Start and Operating Instructions library.	A5E31993614
Operating Instructions for PROFIBUS PA device	
English	A5E32337680
German	7ML1998-5JR32
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 DVD containing the ATEX Quick Start and Operating Instructions library.	A5E32153438
Accessories	
Handheld programmer, Intrinsically safe, EEx ia	7ML1930-1BK
Antenna, rod, PTFE	7ML1830-1HC
Antenna extension, 50 mm (2 inch), PTFE	7ML1830-1CH
Antenna extension, 100 mm (4 inch), PTFE	7ML1830-1CG
HART modem/RS 232 (for use with a PC and SIMA- TIC PDM)	7MF4997-1DA
HART modem / USB (for use with PC and SIMATIC PDM)	7MF4997-1DB
Metallic cable gland M20 x 1.5, rated -40 °C (-40 °F) ... 80 °C. (176 °F), HART (two are required)	7ML1930-1AP
Metallic cable gland M20 x 1.5, rated -40 °C (-40 °F) ... 80 °C. (176 °F), PROFIBUS PA (two required)	7ML1930-1AQ
One General Purpose polymeric cable gland M20 x 1.5, rating for -20°C (-4°F) ...+ 80°C. (176 °F)	7ML1930-1AM
SITRANS RD100 Remote display - see Chapter 7	
SITRANS RD200 Remote display - see Chapter 7	
SITRANS RD500 web, datalogging, alarming, ethernet, and modem support for instrumentation - see Chapter 7	7ML5750- 1AA00-0
For applicable back up point level switch - see point level section on page 4/9	

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR200

Selection and Ordering data	Article No.
SITRANS LR200, Flange Adapter, Sanitary Version 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in process vessels including high temperature and pressure, to a range of 20 m (66 ft).	7ML5424- - - - - -
Antenna material (uses antenna adapter) PTFE, one piece rod antenna UHMW-PE, one piece rod antenna	0 1
Process connection Sanitary fitting clamp	A
Configuration/Connection size 2" connection, rod antenna only 3" connection, rod antenna only 4" connection, rod antenna only	A B C
Antenna extension No extension	0
Mounting Clamp No mounting clamp Mounting clamp included, not available with Pressure rating option 0	0 1
Enclosure/Cable inlet Aluminum, Epoxy painted 2 x 1/2" NPT 2 x M20x1.5	2 3
Communication/Output PROFIBUS PA 4 ... 20 mA, HART, startup at < 3.6 mA	B C
Approvals General Purpose, CE, R&TTE, C-TICK General Purpose, CSA, FM, Industry Canada, FCC Intrinsically Safe, CSA Class I, II, Div. 1, Groups A, B, C, D, E, F, G, Industry Canada Intrinsically Safe, FM Class I, II, Div. 1, Groups A, B, C, D, E, F, G, FCC Intrinsically Safe, IECEx/ATEX II 1G Ex ia IIC T4, INMETRO Ex ia IIC T4, CE, R&TTE, C-TICK; GOST-R Non incendive, FM Class I, Div. 2, Groups A, B, C, D, FCC ¹⁾ Increased Safety, ATEX II 1/2G Ex e mb ia IIC T4 Ga/Gb, CE, R&TTE, C-TICK; GOST-R ²⁾³⁾ Flame Proof, ATEX II 1/2G Ex d mb ia IIC T4 Ga/Gb, CE, R&TTE, C-TICK; GOST-R ³⁾ Explosion Proof, CSA/FM Class I, II, III, Groups A, B, C, D, E, F, G, Industry Canada, FCC ¹⁾³⁾	A B C D E F G H J
Pressure rating Rating per Pressure/Temperature curves in Manual 0.5 bar g (7.25 psi g) maximum	0 1

1) Available with enclosure option 2 only

2) Available with enclosure option 3 only

3) Available with communication option C only

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**

Inspection Certificate Type 3.1 per EN 10204

C12Namur NE43 compliant, device preset to failsafe
< 3.6 mA¹⁾**N07****Operating Instructions for HART/mA device**

Article No.

English

A5E32337676

German

7ML1998-5JP32Note: 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 DVD containing the ATEX Quick Start and
Operating Instructions library.**A5E31993614****Operating Instructions for PROFIBUS PA device**

English

A5E32337680

German

7ML1998-5JR32Note: 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 DVD containing the ATEX Quick Start and
Operating Instructions library.**A5E32153438****Accessories**

Handheld programmer, Intrinsically safe, EEx ia

7ML1930-1BKHART modem/RS 232
(for use with a PC and SIMATIC PDM)**7MF4997-1DA**HART modem/USB
(for use with a PC and SIMATIC PDM)**7MF4997-1DB**One metallic cable gland M20x1.5,
rated -40 ... +80 °C (-40 ... +176 °F), HART²⁾**7ML1930-1AP**One metallic cable gland M20x1.5,
rated -40 ... +80 °C (-40 ... +176 °F),
PROFIBUS PA²⁾**7ML1930-1AQ**One general purpose polymeric cable gland
M20x 1.5, rated -40 ... +80 °C (-40 ... +176 °F)**7ML1930-1AM**

SITRANS RD100 Remote display - see Chapter 7

SITRANS RD200 Remote display - see Chapter 7

SITRANS RD500 web, datalogging, alarming,
ethernet, and modem support for instrumentation -
see Chapter 7**7ML5750-
1AA00-0**For applicable back up point level switch -
see point level section on page 4/9**Sanitary fitting clamps**

2", 304 stainless steel

7ML1830-1HD

3", 304 stainless steel

7ML1830-1HE

4", 304 stainless steel

7ML1830-1HF

1) Available with communication option C only

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

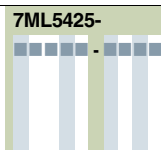
4

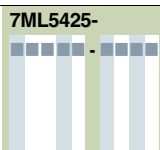
Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR200

4

Selection and Ordering data	Article No.
SITRANS LR200, Flange adapter/Horn Antenna version 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in process vessels including high temperature and pressure, to a range of 20 m (66 ft).	7ML5425- 
Antenna material (uses antenna adapter) 316L stainless steel with PTFE cone emitter 316L stainless steel with PTFE cone emitter and purge connection with 1/8" NPT inlet ¹⁾ Sliding waveguide system with 1 000 mm (40 inch) waveguide ¹⁾²⁾	0 1 2
Process connection (refer to Pressure/Temperature curves, page 4/212) Flanges (316L stainless steel) DN 50 PN 16 EN 1092-1 Type A flat faced ¹⁾ DN 80 PN 16 EN 1092-1 Type A flat faced DN 100 PN 16 EN 1092-1 Type A flat faced DN 150 PN 16 EN 1092-1 Type A flat faced DN 200 PN 16 EN 1092-1 Type A flat faced DN 80 PN 10/16 DIN EN 1092-1 Type B1 raised face ³⁾ DN 100 PN 10/16 DIN EN 1092-1 Type B1 raised face ³⁾ DN 150 PN 10/16 DIN EN 1092-1 Type B1 raised face ³⁾ DN 200 PN 16 DIN EN 1092-1 Type B1 raised face ³⁾ 2" ASME 150 lb, flat faced ¹⁾ 3" ASME 150 lb, flat faced 4" ASME 150 lb, flat faced 6" ASME 150 lb, flat faced 8" ASME 150 lb, flat faced DN 50 PN 40, flat faced ³⁾ DN 80 PN 40, flat faced ³⁾ DN 100 PN 40, flat faced ³⁾ DN 200 PN 40, flat faced ³⁾ DN 80 PN 25/40 DIN EN 1092-1 Type B1 raised face ³⁾ DN 100 PN 25/40 DIN EN 1092-1 Type B1 raised face ³⁾ DN 150 PN 25/40 DIN EN 1092-1 Type B1 raised face ³⁾ 2" ASME 300 lb, flat faced ¹⁾³⁾ 3" ASME 300 lb, flat faced ³⁾ 4" ASME 300 lb, flat faced ³⁾ JIS DN 50 10K ¹⁾ JIS DN 80 10K JIS DN 100 10K JIS DN 150 10K JIS DN 200 10K (Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5, or EN 1092-1, or JIS B 2220 standard.)	AA BA CA DA EA BF CF DF EF FB GB HB JB KB AC BC CC EC CG DG EG FD GD HD AE BE CE DE EE
Communication/Output PROFIBUS PA 4 ... 20 mA, HART, startup at < 3.6 mA	1 2

Selection and Ordering data	Article No.
SITRANS LR200, Flange adapter/Horn Antenna version 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in process vessels including high temperature and pressure, to a range of 20 m (66 ft).	7ML5425- 
Process seal/gasket FKM (-40 ... +200 °C) Nitrile (-40 ... +60 °C), sliding waveguide systems only FFKM (-35 ... +200 °C)	0 1 2
Enclosure/Cable inlet Aluminum, Epoxy painted 2 x 1/2" NPT 2 x M20x1.5	2 3
Horn size/Waveguide options 80 mm (3 inch) horn ⁴⁾ 100 mm (4 inch) horn ⁴⁾ 150 (6 inch) mm horn 200 (8 inch) mm horn 100 mm (4 inch) horn with 100 mm (4 inch) waveguide extension ⁴⁾ 100 mm (4 inch) horn with 150 mm (6 inch) waveguide extension ⁴⁾ 100 mm (4 inch) horn with 200 mm (8 inch) waveguide extension ⁴⁾ 100 mm (4 inch) horn with 250 mm (10 inch) waveguide extension ⁴⁾ 150 mm (6 inch) horn with 100 mm (4 inch) waveguide extension 150 mm (6 inch) horn with 150 mm (6 inch) waveguide extension 150 mm (6 inch) horn with 200 mm (8 inch) waveguide extension 150 mm (6 inch) horn with 250 mm (10 inch) waveguide extension 200 mm (8 inch) horn with 100 mm (4 inch) waveguide extension 200 mm (8 inch) horn with 150 mm (6 inch) waveguide extension 200 mm (8 inch) horn with 200 mm (8 inch) waveguide extension 200 mm (8 inch) horn with 250 mm (10 inch) waveguide extension (Add Order code Y01 and plain text: "waveguide length ... mm")	B C D E F G H J K L M N P Q R S

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR200

Selection and Ordering data	Article No.	Selection and Ordering data	Order code
SITRANS LR200, Flange adapter/Horn Antenna version 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in process vessels including high temperature and pressure, to a range of 20 m (66 ft).	7ML5425- 	Further designs Please add "-Z" to Article No. and specify Order code(s).	
Approvals General Purpose, CE, R&TTE, C-TICK General Purpose, CSA FM, Industry Canada, FCC Intrinsically Safe, CSA Class I, II, Div. 1, Groups A, B, C, D, E, F, G, Industry Canada Intrinsically Safe, FM Class I, II, Div. 1, Groups A, B, C, D, E, F, G, FCC Intrinsically Safe, IECEx/ATEX II 1G Ex ia IIC T4, INMETRO Ex ia IIC T4, CE, R&TTE, C-TICK; GOST-R Non incandive, FM Class I, Div. 2, Groups A, B, C, D, FCC ⁵⁾ Increased Safety, ATEX II 1/2G Ex e mb ia IIC T4 Ga/Gb, CE, R&TTE, C-TICK; GOST-R ⁶⁾⁷⁾ Flame Proof, ATEX II 1/2G Ex d mb ia IIC T4 Ga/Gb, CE, R&TTE, C-TICK; GOST-R ⁷⁾ Explosion Proof, CSA/FM Class I, II, III, Groups A, B, C, D, E, F, G, Industry Canada, FCC ⁵⁾⁷⁾		Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters); specify in plain text Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000 Inspection Certificate Type 3.1 per EN 10204 Namur NE43 compliant, device preset to failsafe < 3.6 mA ¹⁾	Y15 C11 C12 N07
Pressure rating Rating per Pressure/Temperature curves in manual 0.5 bar g (7.25 psi g) maximum	0 1	Operating Instructions for HART/mA device English German 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 DVD containing the ATEX Quick Start and Operating Instructions library. Operating Instructions for PROFIBUS PA device English German 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 DVD containing the ATEX Quick Start and Operating Instructions library.	Article No. A5E32337676 7ML1998-5JP32 A5E31993614 A5E32337680 7ML1998-5JR32 A5E32153438
¹⁾ Available with pressure rating option 1 only ²⁾ Maximum Process Temperature 60 °C (140 °F) ³⁾ Available with Antenna Material option 0 and 1 only ⁴⁾ For stillpipe applications only ⁵⁾ Available with enclosure option 2 only ⁶⁾ Available with enclosure option 3 only ⁷⁾ Available with communication option 2 only		Accessories Handheld programmer, Intrinsically safe, EEx ia HART modem/RS 232 (for use with a PC and SIMATIC PDM) HART modem/USB (for use with a PC and SIMATIC PDM) One metallic cable gland M20x1.5, rated -40 ... +80 °C (-40 ... +176 °F), HART ²⁾ One metallic cable gland M20x1.5, rated -40 ... +80 °C (-40 ... +176 °F), PROFIBUS PA ³⁾ One general purpose polymeric cable gland M20x1.5, rated -40 ... +80 °C (-40 ... +176 °F) SITRANS RD100 Remote display - see Chapter 7 SITRANS RD200 Remote display - see Chapter 7 SITRANS RD500 web, datalogging, alarming, ethernet, and modem support for instrumentation - see Chapter 7 For applicable back up point level switch - see point level section on page 4/9	7ML1930-1BK 7MF4997-1DA 7MF4997-1DB 7ML1930-1AP 7ML1930-1AQ 7ML1930-1AM 7ML5750-1AA00-0
		¹⁾ Available with communication option 2 only ²⁾ Product shipped with plastic cable gland, rated to -20 °C. If -40 °C rating required, then metallic cable gland is recommended. ³⁾ Available with enclosure option 2 only	

Level measurement

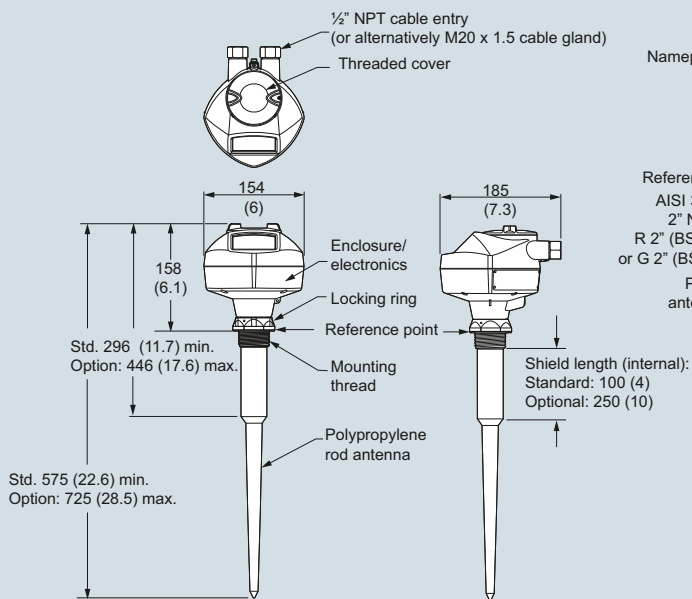
Continuous level measurement – Radar transmitters

SITRANS LR200

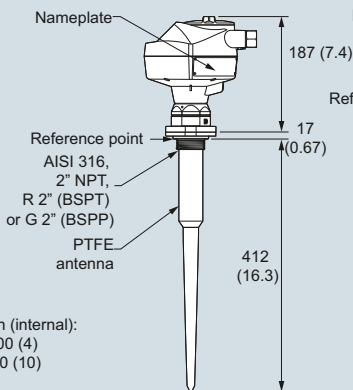
Dimensional drawings

4

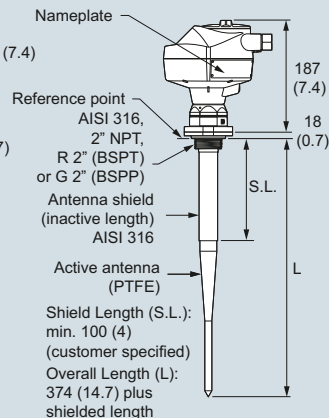
SITRANS LR200 with polypropylene shielded rod antenna



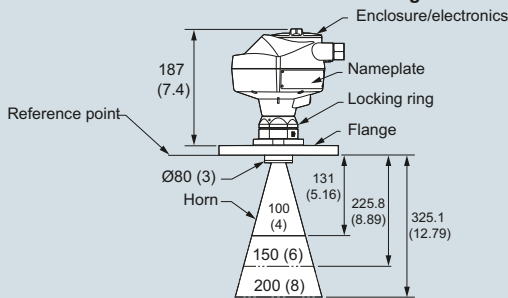
PTFE rod antenna, threaded



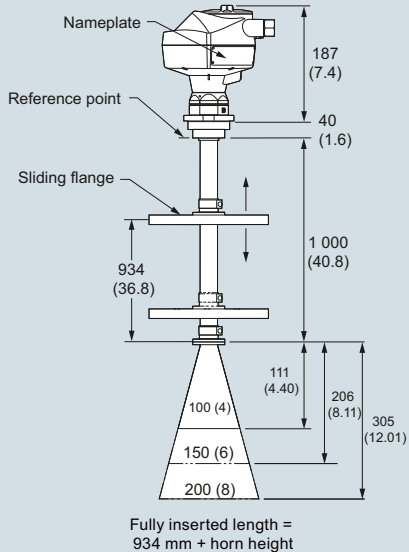
Threaded connection PTFE rod, external shield



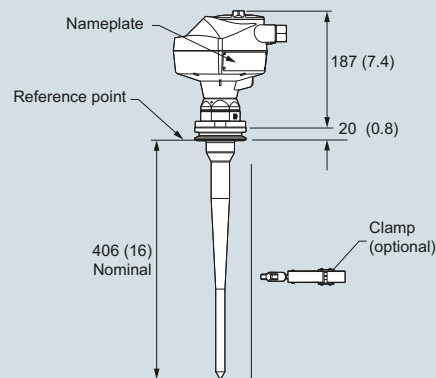
Horn antenna with flat faced flange



Sliding waveguide



Sanitary rod antenna



SITRANS LR200, dimensions in mm (inch)

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR200

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.

Gland

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 an SELV source in accordance with IEC 1010-1 Annex H.
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 LR200 connections

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR200

4

Level measurement

Continuous level measurement – Radar transmitters

SITRANS LR200