

SITRANS LR200**Overview**

SITRANS LR200 is a 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 ft).

Benefits

- Uni-Construction polypropylene rod antenna standard, other antenna options available
- Easy installation and simple start-up
- Programming using infrared Intrinsically Safe handheld programmer or SIMATIC PDM
- Communication using HART® or PROFIBUS PA
- Patented Sonic Intelligence® signal processing
- Extremely high signal-to-noise ratio
- Auto False-Echo Suppression of fixed obstructions
- Various flanges, horn and waveguide antenna options available

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.

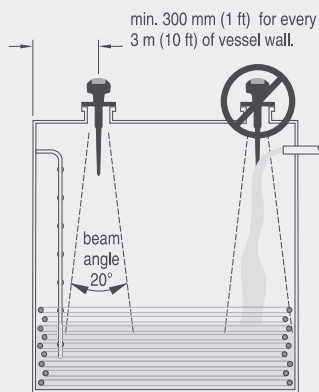
The SITRANS LR200 has a standard Uni-Construction polypropylene rod antenna that offers excellent chemical resistance and is hermetically sealed. With other instruments, you may need to consider compatibility of multiple materials including the seal between the materials. The Uni-Construction antenna 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 Sonic Intelligence signal-processing technology for superior reliability.

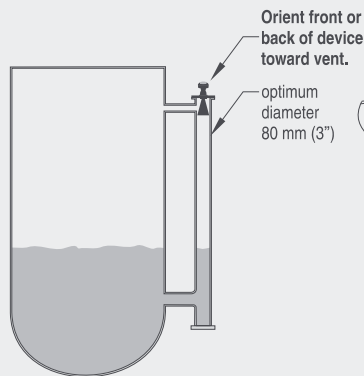
- Key Applications: liquid bulk storage tanks, process vessels with agitators, vaporous liquids, high temperatures, asphalt, digesters

Configuration

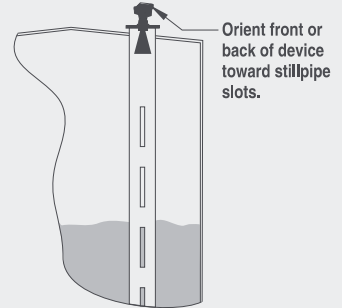
Installation



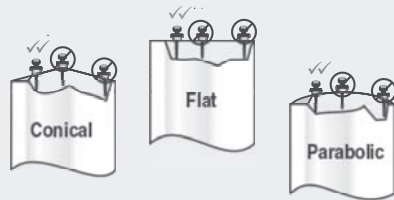
Mounting unit on bypass



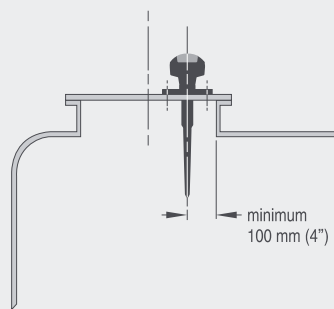
Mounting unit on stilling well



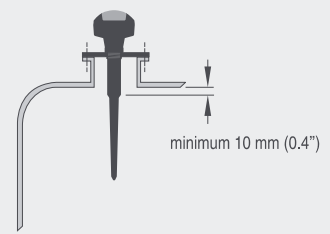
Mounting unit on vessel



Mounting on a manhole cover



Mounting on a nozzle



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 to 20 m (1.0 to 65 ft)

Output

• Analog output	4 to 20 mA
• Accuracy	± 0.02 mA
• Span	Proportional or inversely proportional
• Communications	HART® Optional: PROFIBUS PA (Profile 3.0, Class B)
• Fail-safe	Programmable as high, low or hold (Loss of Echo)

Performance (reference conditions)

• Accuracy (measured in accordance with IEC 60770-1)	
- From end of antenna to 600 mm	40 mm (1.57")
- Remainder of range	10 mm (0.4") or 0.1% of span (whichever is greater)
• Influence of ambient temperature	0.003% / K

Rated operating conditions

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

Medium conditions

• Dielectric constant ϵ_r	$\epsilon_r > 1.6$ (for $\epsilon_r < 3$, use waveguide antenna or stillpipe)
• Vessel temperature and pressure	Varies with connection type; see Pressure/Temperature curves for more information

Design

• Enclosure	
- Material	Aluminium, polyester powder coated
- Cable inlet	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 lbs) (polypropylene rod antenna)
• Display (local)	Multi-segment alphanumeric liquid crystal with bar graph (representing level) available in four languages
• Antenna	
- Material	Polypropylene rod, hermetically sealed construction, optional PTFE
- Dimensions	Standard 100 mm (4") shield for maximum 100 mm (4") nozzle, or optional 250 mm (10") long shield
- Optional rods, horn and waveguides	Refer to SITRANS LR200/LR300 Antennas for optional rods, horns and waveguides

Process connections

• Process connection	1½" NPT [(Taper), ANSI/ASME B1.20.1] R 1½" [(BSPT), EN 10226], or G 1½" [(BSPP), EN ISO 228-1] (polypropylene rod antenna)
• Flange connection	Refer to SITRANS LR200/LR300 Antennas for more connections

Power supply

4 to 20 mA/HART	
- General Purpose, Non-incendive, Intrinsically Safe	Nominal 24 V DC (max. 30 V DC) with max. 550 Ω
- Flame proof, Increased safety, Explosion proof	Nominal 24 V DC (max. 30 V DC) with max. 250 Ω
PROFIBUS PA	• 10.5 mA • per IEC 61158-2

Certificates and approvals

• General	CSA US/C, CE, FM
• Marine	• Lloyd's Register of Shipping • ABS Type Approval
• Radio	FCC, Industry Canada and European (R&TTE)
• Hazardous	
- Flame proof (Europe)	ATEX II 1/2 G EEx dm ia IIC T4
- Increased safety (Europe)	ATEX II 1/2 G EEx em ia IIC T4
- Explosion proof (USA/Canada)	FM/CSA (barrier not required) T4, Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III
- Non-incendive (USA)	FM (barrier not required) T5, Class I, Div. 2, Groups A, B, C, D
- Intrinsically Safe (Europe)	ATEX II 1G EEx ia IIC T4
- Intrinsically Safe (USA/Canada)	FM/CSA (barrier required) T4, Class I, Div. 1, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III
- Intrinsically Safe (Australia)	ANZEX Ex ia IIC T4 (Tamb = -40 to +80 °C) IP67
- Intrinsically Safe (International)	IECEX TSA 04.0020X T4

Programming

• Intrinsically Safe Siemens Milltronics handheld programmer	Infrared receiver
- Approvals for handheld programmer	IS model with ATEX EEx ia IIC T4, FM/CSA Class I, Div. 1, Groups A, B, C, D
• Hand communicator	HART communicator 375
• PC	SIMATIC PDM
• Display (local)	Multi-segment alphanumeric liquid crystal with bar graph (representing level) available in four languages

HART® is a registered trademark of the Hart Communications Foundation.

SITRANS LR200

Selection and Ordering data	Order No.
SITRANS LR200, Uni-Construction polypropylene rod antenna version 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 ft). [Max. +80 °C (+176 °F), 3 bar]	7 ML 5 4 2 2 - 0
Enclosure/Cable inlet Aluminum, Epoxy painted 2 x 1/2" NPT, Milltronics local interface 2 x M20x1.5, Milltronics local interface 2 x 1/2" NPT, Siemens LUI interface 2 x M20 x 1.5, Siemens LUI interface	0 1 2 3
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	A B C D E F
Approvals General Purpose, CE ¹⁾ General Purpose, CSAus/c, FM, for North America only ²⁾ CSA Class I and II, Div. I, Groups A, B, C, D, G, 6.3 GHz, for North America only, Intrinsically Safe with suitable barrier ²⁾ FM, Class I and II, Div. I, Groups A, B, C, D, E, F, G, for North America only, Intrinsically Safe with suitable barrier ²⁾ ATEX II 1G EEx ia IIC T4, Intrinsically Safe with suitable barrier ¹⁾ FM, Class I, Div. 2, Groups A, B, C, D, for North America only (no barrier required) ^{2) and 4)} ATEX II 1/2 G EEx em ia IIC T4 (no barrier required) ^{1), 3) and 5)} ATEX II 1/2 G EEx dm ia IIC T4 (no barrier required) ^{1) and 5)} CSA/FM Class I, II and III, Div. 1, Groups A, B, C, D, E, F, G (no barrier required) ^{2), 4) and 5)}	A B C D E F G H J
Communication/Output 4 to 20 mA, HART® PROFIBUS PA	1 2
Further designs Please add "-Z" to Order No. and specify Order code(s).	Order code
Stainless steel tag [69 mm x 50 mm (2.71 x 1.97")]: Measuring-point number/identification (max. 16 characters); specify in plain text Test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and to ISO 9000	Y15 C11
Instruction manual for HART/ma device English French German Note: The instruction manual 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 instruction manual library.	C) 7ML1998-5FN04 C) 7ML1998-5FN11 C) 7ML1998-5FN34 C) 7ML1998-5QL83
Instruction manual for PROFIBUS device English French German Note: The instruction manual should be ordered as a separate line item on the order.	C) 7ML1998-5HP01 C) 7ML1998-5HP11 C) 7ML1998-5HP31

Selection and Ordering data	Order No.
SITRANS LR200, Uni-Construction polypropylene rod antenna version 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 ft). [Max. +80 °C (+176 °F), 3 bar]	7 ML 5 4 2 2 - 0
Multi-language Quick Start manual This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and instruction manual library.	C) 7ML1998-5QG81
Instruction manual for HART/ma device (Siemens LUI interface version) English German Note: The instruction manual 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 instruction manual library.	C) 7ML1998-5JP01 C) 7ML1998-5JP31 C) 7ML1998-5XC81
Instruction manual for PROFIBUS device (Siemens LUI interface version) English German Note: The instruction manual 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 instruction manual library.	C) 7ML1998-5JR01 C) 7ML1998-5JR31 C) 7ML1998-5XD81
Accessories Handheld programmer, Intrinsically Safe, EEx ia (for HART device) Handheld programmer, Intrinsically Safe, EEx ia (for PROFIBUS PA device) Handheld programmer, Intrinsically safe, EEx ia (LUI enabled) 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 °C to +80 °C (-40 to +176 °F) for General Purpose or ATEX EEx e installations (available for HART only) One metallic cable gland M20x1.5, rated -40 to +80 °C (-40 °F to +176 °F) with integrated shield connection (available for PROFIBUS PA) One General Purpose polymeric cable gland M20 x 1.5, rating for -20 to + 80 °C (-4 to 176 °F)	7ML5830-2AH C) 7ML5830-2AJ C) 7ML1930-1BK D) 7MF4997-1DA D) 7MF4997-1DB 7ML1930-1AP 7ML1930-1AQ 7ML1930-1AM

¹⁾ Includes European Radio approval (R&TTE), 5.8 GHz

²⁾ Includes Radio approval FCC, 6.3 GHz

³⁾ Available with enclosure option 1 only

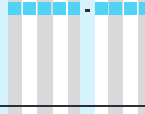
⁴⁾ Available with enclosure option 0 only

⁵⁾ Available with communication option 1 only

C) Subject to export regulations AL: N, ECCN: EAR99

D) Subject to export regulations AL: N, ECCN: EAR99H

SITRANS LR200

Selection and Ordering data	Order No.
SITRANS LR200, Flange Adapter, Sanitary Version 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 ft)	C) 7 ML 5 4 2 4 - 
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, Milltronics local interface 2 x M20x1.5, Milltronics local interface 2 x 1/2" NPT, Siemens LUI interface 2 x M20 x 1.5, Siemens LUI interface	0 1 2 3
Communication/Output 4 to 20 mA, HART® PROFIBUS PA	A B
Approvals General Purpose, CE ¹⁾ General Purpose, CSAus/c, FM, for North America only CSA Class I and II, Div. I, Groups A, B, C, D, G, for North America only, Intrinsically Safe with suitable barrier FM, Class I and II, Div. I, Groups A, B, C, D, E, F, G, for North America only, Intrinsically Safe with suitable barrier ATEX II 1G EEx ia IIC T4, Intrinsically Safe with suitable barrier ¹⁾ FM, Class I, Div. 2, Groups A, B, C, D, FCC 6.3 GHz, for North America only (no barrier required) ^{2) and 4)} ATEX II 1/2 G EEx em ia IIC T4 (no barrier required) ^{1), 3) and 5)} ATEX II 1/2 G EEx dm ia IIC T4 (no barrier required) ^{1) and 5)} CSA/FM Class I, II and III, Div. 1, Groups A, B, C, D, E, F, G (no barrier required) ^{2), 4) and 5)}	A B C D E F G H J
Pressure rating Rating per Pressure/Temperature curves in Manual 0.5 bar (7.25 psi) maximum	0 1
Further designs Please add "-Z" to Order No. and specify Order code(s).	Order code
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and to ISO 9000 Inspection Certificate Type 3.1 per EN 10204 Stainless steel tag [69 mm x 50 mm (2.71 x 1.97")]: Measuring-point number/identification (max. 16 characters); specify in plain text	C11 C12 Y15
Instruction manual for HART/mA device English French German Note: The instruction manual 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 instruction manual library.	C) 7ML1998-5FN04 C) 7ML1998-5FN11 C) 7ML1998-5FN34 C) 7ML1998-5QL83

Selection and Ordering data	Order No.
SITRANS LR200, Flange Adapter, Sanitary Version 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 ft)	C) 7 ML 5 4 2 4 - 
Instruction manual for PROFIBUS device English French German Note: The instruction manual 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 instruction manual library.	C) 7ML1998-5HP01 C) 7ML1998-5HP11 C) 7ML1998-5HP31 C) 7ML1998-5QG81
Instruction manual for HART/mA device (Siemens LUI interface version) English German Note: The instruction manual 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 instruction manual library.	C) 7ML1998-5JP01 C) 7ML1998-5JP31 C) 7ML1998-5XC81
Instruction manual for PROFIBUS device (Siemens LUI interface version) English German Note: The instruction manual 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 instruction manual library.	C) 7ML1998-5JR01 C) 7ML1998-5JR31 C) 7ML1998-5XD81
Accessories Handheld programmer, Intrinsically Safe, EEx ia (for HART device) Handheld programmer, Intrinsically Safe, EEx ia (for PROFIBUS PA device) Hand Programmer, Intrinsically safe, EEx ia (LUI enabled) 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 °C to +80 °C (-40 to +176 °F) for General Purpose or ATEX EEx e installations (available for HART only) One metallic cable gland M20x1.5, rated -40 to +80 °C (-40 °F to +176 °F) with integrated shield connection (available for PROFIBUS PA) One General Purpose polymeric cable gland M20 x 1.5, rating for -20 to + 80 °C (-4 to 176 °F)	7ML5830-2AH C) 7ML5830-2AJ C) 7ML1930-1BK D) 7MF4997-1DA D) 7MF4997-1DB 7ML1930-1AP 7ML1930-1AQ 7ML1930-1AM
Sanitary fitting clamps 2", 304 stainless steel 3", 304 stainless steel 4", 304 stainless steel	7ML1830-1HD 7ML1830-1HE 7ML1830-1HF

¹⁾ Includes European Radio approval (R&TTE), 5.8 GHz

²⁾ Includes Radio approval FCC, 6.3 GHz

³⁾ Available with enclosure option 1 only

⁴⁾ Available with enclosure option 0 only

⁵⁾ Available with communication option A only

C) Subject to export regulations AL: N, ECCN: EAR99

D) Subject to export regulations AL: N, ECCN: EAR99H

SITRANS LR200

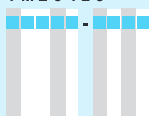
Selection and Ordering data	Order No.
SITRANS LR200, Flange Adapter/PTFE Rod Antenna Version	7 ML 5 4 2 3 -
2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 ft)	
Antenna material (uses antenna adapter)	
PTFE, uses antenna adapter and additional process connection below	1
Process connection (refer to Pressure/Temperature curves in Instruction manual)	
Flat Faced Flanges (316L stainless steel)	
DN 50 PN 16, Type A, flat faced	AA
DN 80 PN 16, Type A, flat faced	BA
DN 100 PN 16, Type A, flat faced	CA
DN 150 PN 16, Type A, flat faced	DA
2" ASME 150 lb, flat faced	FB
3" ASME 150 lb, flat faced	GB
4" ASME 150 lb, flat faced	HB
6" ASME 150 lb, flat faced	JB
DN 50 PN 40, flat faced	AC
DN 80 PN 40, flat faced	BC
DN 100 PN 40, flat faced	CC
DN 150 PN 40, flat faced	DC
2" ASME 300 lb, flat faced, available with Pressure Rating option 1 only	FD
3" ASME 300 lb, flat faced	GD
4" ASME 300 lb, flat faced	HD
6" ASME 300 lb, flat faced	JD
JIS DN50 10K	AE
JIS DN80 10K	BE
JIS DN100 10K	CE
JIS DN150 10K	DE
(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5, or EN 1092-1, or JIS B 2238 standard.)	
Threaded connection (316L stainless steel)	
1-1/2" NPT [(Taper), ANSI/ASME B1.20.1]	LA
2" NPT [(Taper), ANSI/ASME B1.20.1]	MA
R 1-1/2" [(BSPT), EN 10226]	LC
R 2" [(BSPT), EN 10226]	MC
G 1-1/2" [(BSPP), EN ISO 228-1]	LE
G 2" [(BSPP), EN ISO 228-1]	ME
Antenna extensions or inactive shield length	
No antenna extension	0
50 mm (2") extension, PTFE	1
100 mm (4") extension, PTFE	2
100 mm (4") extension, 316L stainless steel shield ⁽⁶⁾	3
150 mm (6") extension, 316L stainless steel shield ⁽⁶⁾	4
200 mm (8") extension, 316L stainless steel shield ⁽⁶⁾	5
250 mm (10") extension, 316L stainless steel shield ⁽⁶⁾	6
Custom inactive shield length 101 mm to 1000 mm (in 1 mm increments) Add order code Y01 and plain text: "Inactive shield length...mm" ⁽⁶⁾	7
Process Seal/Gasket	
Integral Gasket, for flat faced flange process connections only, not for Antenna extension options 3 to 6	0
FKM O-ring, not available for combination of flat faced flanges with Antenna extension options 0, 1 or 2	1
Enclosure/Cable inlet	
Aluminum, Epoxy painted	
2 x 1/2" NPT, Milltronics local interface	0
2 x M20x1.5, Milltronics local interface	1
2 x 1/2" NPT, Siemens LUI interface	2
2 x M20 x 1.5, Siemens LUI interface	3
Communication/Output	
4 to 20 mA, HART®	A
PROFIBUS PA	B

Selection and Ordering data	Order No.
SITRANS LR200, Flange Adapter/PTFE Rod Antenna Version	7 ML 5 4 2 3 -
2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 ft)	
Approvals	
General Purpose, CE ¹⁾	A
General Purpose, CSAUS/c, FM, for North America only ²⁾	B
CSA Class I and II, Div. I, Groups A, B, C, D, G, for North America only, Intrinsically Safe with suitable barrier ²⁾	C
FM, Class I and II, Div. I, Groups A, B, C, D, E, F, G, for North America only, Intrinsically Safe with suitable barrier ²⁾	D
ATEX II 1G EEx ia IIC T4, Intrinsically Safe with suitable barrier ¹⁾	E
FM, Class I, Div. 2, Groups A, B, C, D, FCC 6.3 GHz, for North America only (no barrier required) ^{2) and 4)}	F
ATEX II 1/2 G EEx em ia IIC T4 (no barrier required) ^{1), 3) and 5)}	G
ATEX II 1/2 G EEx dm ia IIC T4 (no barrier required) ^{1) and 5)}	H
CSA/FM Class I, II and III, Div. 1, Groups A, B, C, D, E, F, G (no barrier required) ^{2), 4) and 5)}	J
Pressure rating	
rating per Pressure/Temperature curves in Manual 0.5 bar (7.25 psi) maximum	0
Further designs	1
Please add "-Z" to Order No. and specify Order code(s).	Order code
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and to ISO 9000 Inspection Certificate Type 3.1 per EN 10204	C11
Stainless steel tag [69 mm x 50 mm (2.71 x 1.97")]: Measuring-point number/identification (max. 16 characters); specify in plain text	C12
Inactive custom shield lengths: Enter the total length of the inactive shield in plain text description (in 1 mm increments).	Y15
	Y01
Instruction manual for HART/mA device	Order No.
English	C) 7ML1998-5FN04
French	C) 7ML1998-5FN11
German	C) 7ML1998-5FN34
Note: The instruction manual should be ordered as a separate line item on the order.	
Multi-language Quick Start manual	C) 7ML1998-5QL83
This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and instruction manual library.	
Instruction manual for PROFIBUS device	
English	C) 7ML1998-5HP01
French	C) 7ML1998-5HP11
German	C) 7ML1998-5HP31
Note: The instruction manual should be ordered as a separate line item on the order.	
Multi-language Quick Start manual	C) 7ML1998-5QG81
This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and instruction manual library.	
Instruction manual for HART/mA device (Siemens LUI interface version)	
English	C) 7ML1998-5JP01
German	C) 7ML1998-5JP31
Note: The instruction manual should be ordered as a separate line item on the order.	
Multi-language Quick Start manual	C) 7ML1998-5XC81
This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and instruction manual library.	

SITRANS LR200

Selection and Ordering data

Order No.

SITRANS LR200, Flange Adapter/PTFE Rod Antenna VersionC) **7ML5423-**

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

Instruction manual for PROFIBUS device (Siemens LUI interface version)

English

C) **7ML1998-5JR01**

German

C) **7ML1998-5JR31**

Note: The instruction manual should be ordered as a separate line item on the order.

Multi-language Quick Start manual

C) **7ML1998-5XD81**

This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and instruction manual library.

Accessories

Handheld programmer, Intrinsically Safe, EEx ia (for HART device)

7ML5830-2AH

Handheld programmer, Intrinsically Safe, EEx ia (for PROFIBUS PA device)

C) **7ML5830-2AJ**

Handheld programmer, Intrinsically safe, EEx ia (LUI enabled)

C) **7ML1930-1BK**

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**

One metallic cable gland M20x1.5, rated -40 °C to +80 °C (-40 to +176 °F) for General Purpose or ATEX EEx e installations (available for HART only)

7ML1930-1AP

Antenna, rod, PTFE

7ML1830-1HC

Antenna extension, 50 mm (2") PTFE

7ML1830-1CG

Antenna extension, 100 mm (4") PTFE

7ML1830-1CH

One metallic cable gland M20x1.5, rated -40 °C to +80 °C (-40 to +176 °F) for General Purpose or ATEX EEx e installations (available for HART only)

7ML1930-1AP

One metallic cable gland M20x1.5, rated -40 to +80 °C (-40 °F to +176 °F) with integrated shield connection (available for PROFIBUS PA)

7ML1930-1AQ

One General Purpose polymeric cable gland M20 x 1.5, rating for -20 to + 80 °C (-4 to 176 °F)

7ML1930-1AM

¹⁾ Includes European Radio approval (R&TTE), 5.8 GHz

²⁾ Includes Radio approval FCC, 6.3 GHz

³⁾ Available with enclosure option 1 only

⁴⁾ Available with enclosure option 0 only

⁵⁾ Available with communication option A only

⁶⁾ Available with process connection options BA, CA, DA, GB, HB, JB, BC, CC, DC, GD, HD, JD, BE, CE, DE, MA, MC, ME only

C) Subject to export regulations AL: N, ECCN: EAR99

D) Subject to export regulations AL: N, ECCN: EAR99H

Selection and Ordering data	Order No.
SITRANS LR200, Flange Adapter/Horn Antenna Version	7 ML 5 4 2 5 -
2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 ft)	
Antenna Material (uses antenna adapter)	
316L stainless steel with PTFE cone emitter	0
316L stainless steel with PTFE cone emitter and purge connection with 1/8" NPT inlet ⁷⁾	1
Sliding waveguide system with 1000 mm (40") waveguide ⁷⁾	2
Process connection (refer to Pressure/Temperature curves on specification sheets)	
<u>Flat Faced Flanges (316L stainless steel)</u>	
DN 50 PN 16, Type A, flat faced ⁷⁾	AA
DN 80 PN 16, Type A, flat faced	BA
DN 100 PN 16, Type A, flat faced	CA
DN 150 PN 16, Type A, flat faced	DA
DN 200 PN 16, Type A, flat faced	EA
2" ASME 150 lb, flat faced ⁷⁾	FB
3" ASME 150 lb, flat faced	GB
4" ASME 150 lb, flat faced	HB
6" ASME 150 lb, flat faced	JB
8" ASME 150 lb, flat faced	KB
DN 50 PN 40, flat faced ⁷⁾	AC
DN 80 PN 40, flat faced	BC
DN 100 PN 40, flat faced	CC
DN 150 PN 40, flat faced	DC
DN 200 PN 40, flat faced	EC
2" ASME 300 lb, flat faced ⁷⁾	FD
3" ASME 300 lb, flat faced	GD
4" ASME 300 lb, flat faced	HD
6" ASME 300 lb, flat faced	JD
8" ASME 300 lb, flat faced	KD
JIS DN 50 10K ⁷⁾	AE
JIS DN 80 10K	BE
JIS DN 100 10K	CE
JIS DN 150 10K	DE
JIS DN 200 10K	EE
(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5, or EN 1092-1, or JIS B 2238 standard.)	
Communication/Output	
4 to 20 mA, HART®	0
PROFIBUS PA	1
Process Seal/Gasket	
FKM (-40 to +200 °C)	0
Nitrile (-40 to +100 °C), sliding waveguide systems only	1
FFKM (-35 to +200 °C)	2
Enclosure/Cable inlet	
Aluminum, Epoxy painted	
2 x 1/2" NPT	0
2 x M20x1.5	1
2 x 1/2" NPT, Siemens LUI interface	2
2 x M20 x 1.5, Siemens LUI interface	3
Horn size/Waveguide options	
80 mm (3") horn ³⁾	B
100 mm (4") horn ³⁾	C
150 (6") mm horn	D
200 (8") mm horn	E
100 mm (4") horn with 100 mm (4") waveguide extension ³⁾	F
100 mm (4") horn with 150 mm (6") waveguide extension ³⁾	G
100 mm (4") horn with 200 mm (8") waveguide extension ³⁾	H
100 mm (4") horn with 250 mm (10") waveguide extension ³⁾	J
150 mm (6") horn with 100 mm (4") waveguide extension	K
150 mm (6") horn with 150 mm (6") waveguide extension	L

Selection and Ordering data	Order No.
SITRANS LR200, Flange Adapter/Horn Antenna Version	7 ML 5 4 2 5 -
2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 ft)	
150 mm (6") horn with 200 mm (8") waveguide extension	M
150 mm (6") horn with 250 mm (10") waveguide extension	N
200 mm (8") horn with 100 mm (4") waveguide extension	P
200 mm (8") horn with 150 mm (6") waveguide extension	Q
200 mm (8") horn with 200 mm (8") waveguide extension	R
200 mm (8") horn with 250 mm (10") waveguide extension	S
Waveguide only - Waveguide length 500 mm to 3000 mm (in 1 mm increments) (Add order code Y01 and plain text: "waveguide length...mm")	T
Horn with custom waveguide lengths 101 to 2000 mm (Add order codes Y01 and Y03 and plain text: "waveguide length...mm" and "horn size...mm") ⁸⁾	U
Approvals	
General Purpose, CE ¹⁾	A
General Purpose, CSAUSC, FM, for North America only ²⁾	B
CSA Class I and II, Div. I, Groups A, B, C, D, G, for North America only, Intrinsically Safe with suitable barrier ²⁾	C
FM, Class I and II, Div. I, Groups A, B, C, D, E, F, G, for North America only, Intrinsically Safe with suitable barrier ²⁾	D
ATEX II 1G EEx ia IIC T4, Intrinsically Safe with suitable barrier ¹⁾	E
FM, Class I, Div. 2, Groups A, B, C, D, for North America only (no barrier required) ²⁾	F
ATEX II 1/2 G EEx em ia IIC T4 (no barrier required) ^{1), 4) and 6)}	G
ATEX II 1/2 G EEx dm ia IIC T4 (no barrier required) ^{1) and 6)}	H
CSA/FM Class I, II and III, Div. 1, Groups A, B, C, D, E, F, G (no barrier required) ^{2), 5) and 6)}	J
Pressure rating	
Rating per Pressure/Temperature curves in Manual 0.5 bar (7.25 psi) maximum	0
Further designs	1
Please add "-Z" to Order No. and specify Order code(s).	
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and to ISO 9000	C11
Inspection Certificate Type 3.1 per EN 10204	C12
Stainless steel tag [69 mm x 50 mm (2.71 x 1.97")]: Measuring-point number/identification (max. 16 characters) specify in plain text	Y15
Waveguide custom lengths: Enter the total length of the waveguide in plain text description (1 mm increments)	Y01
Enter the waveguide length (100 mm to 1000 mm) and enter the horn size (100 mm, 150 mm, and 200 mm only) in plain text description	Y03
Instruction manual for HART/mA device	
English	Order No. C) 7ML1998-5FN04
French	C) 7ML1998-5FN11
German	C) 7ML1998-5FN34
Note: The instruction manual should be ordered as a separate line item on the order.	
Multi-language Quick Start manual	C) 7ML1998-5QL83
This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and instruction manual library.	

SITRANS LR200

Selection and Ordering data		Order No.
SITRANS LR200, Flange Adapter/Horn Antenna Version 2-wire, 6 GHz pulse radar level transmitter for continuous monitoring of liquids and slurries in storage and process vessels including high temperature and pressure, to a range of 20 m (66 ft)		7ML5425- 
Instruction manual for PROFIBUS device English French German Note: The instruction manual 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 instruction manual library.		C) 7ML1998-5HP01 C) 7ML1998-5HP11 C) 7ML1998-5HP31 C) 7ML1998-5QG81
Instruction manual for HART/MA device (Siemens LUI interface version) English German Note: The instruction manual 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 instruction manual library.		C) 7ML1998-5JP01 C) 7ML1998-5JP31 C) 7ML1998-5XC81
Instruction manual for PROFIBUS device (Siemens LUI interface version) English German Note: The instruction manual 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 instruction manual library.		C) 7ML1998-5JR01 C) 7ML1998-5JR31 C) 7ML1998-5XD81
Accessories Handheld programmer, Intrinsically Safe, EEx ia (for HART® device) Handheld programmer, Intrinsically Safe, EEx ia (for PROFIBUS PA® device) Handheld programmer, Intrinsically safe, EEx ia (LUI enabled) 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 °C to +80 °C (-40 to +176 °F) (available for HART only) One metallic cable gland M20x1.5, rated -40 °C to +80 °C (-40 to +176 °F) with integrated shield connection (available for PROFIBUS PA) One General Purpose polymeric cable gland M20 x 1.5, rating for -20 to + 80 °C (-4 to 176 °F)		7ML5830-2AH C) 7ML5830-2AJ C) 7ML1930-1BK D) 7MF4997-1DA D) 7MF4997-1DB 7ML1930-1AP 7ML1930-1AQ 7ML1930-1AM

1) Includes European Radio approval (R&TTE), 5.8 GHz

2) Includes Radio approval FCC, 6.3 GHz

3) For stillpipe applications only

4) Available with enclosure option 1 only

5) Available with enclosure option 0 only

6) Available with communication option 0 only

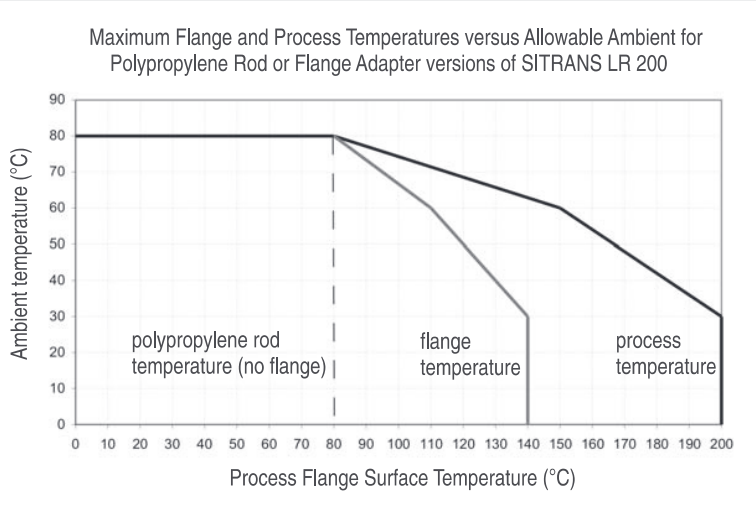
7) Available with pressure rating option 1 only

8) Order standard waveguide lengths 100, 150, 200, 250 mm (3.93, 5.91, 7.87, 9.84") by choosing options from *Horn size/Waveguide options*

C) Subject to export regulations AL: N, ECCN: EAR99

D) Subject to export regulations AL: N, ECCN: EAR99H

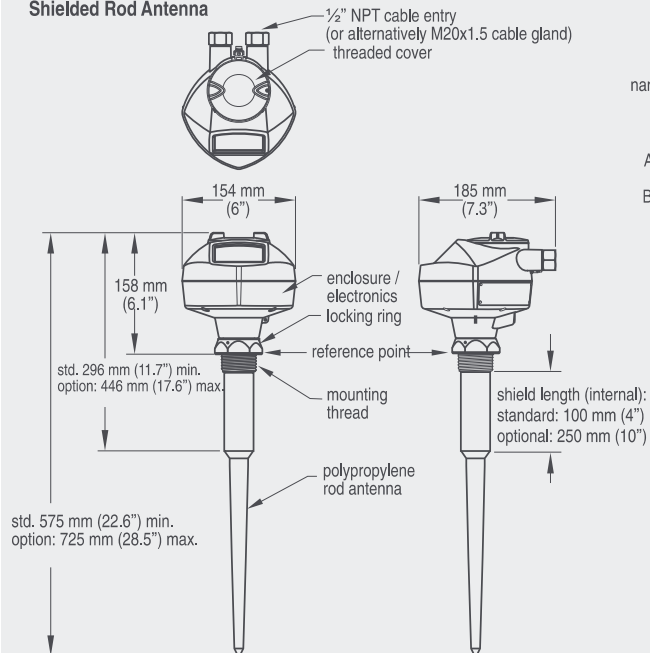
Characteristic curves



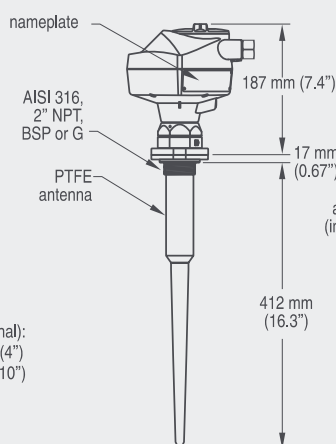
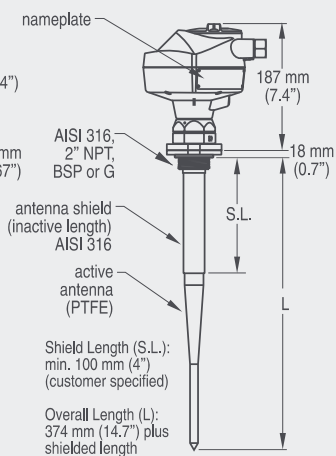
SITRANS LR200 Temperature/Pressure Curve

SITRANS LR200

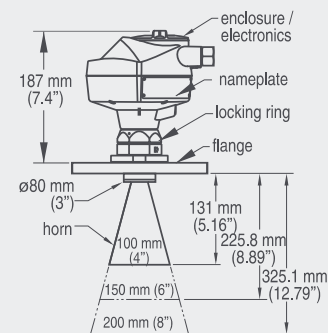
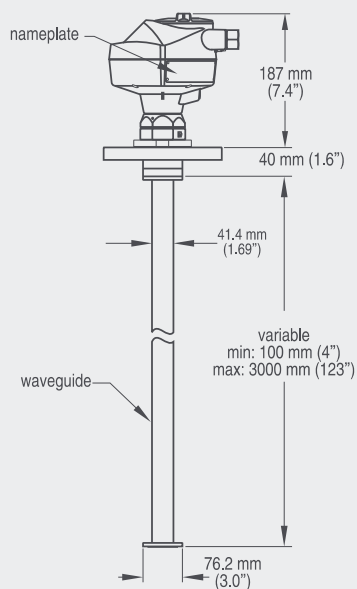
Dimensional drawings

SITRANS LR 200 with Polypropylene
Shielded Rod Antenna

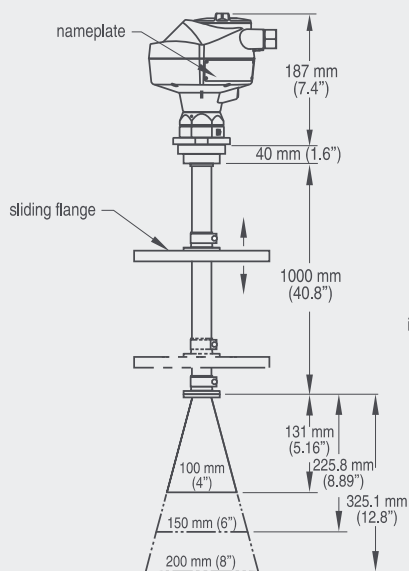
PTFE Rod Antenna, Threaded

PTFE Rod Antenna,
Threaded, Shielded

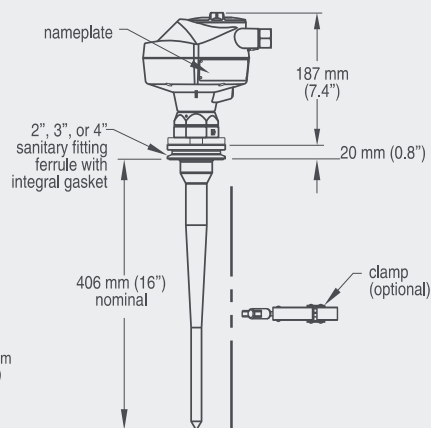
Horn Antenna with Flat Faced Flange

Waveguide Antenna with
Flat Faced Flange

Sliding Waveguide



Sanitary Rod Antenna

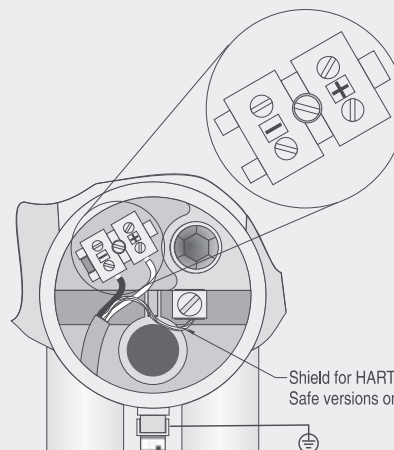


SITRANS LR200 dimensions

Schematics

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 to 22 AWG) for HART version.
4. Separate cables and conduit may be required to conform to standard instrumentation wiring practices or electrical codes.

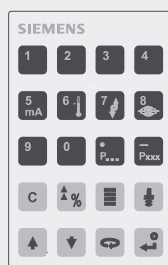


Connect the wires to the terminals as shown: the polarity is identified on the terminal block.

Shield for HART and PROFIBUS PA Intrinsically Safe versions only.

Hand Programmiers
**SITRANS LR 200
HART**

Part number:
7ML5830-2AH


**SITRANS LR 200
PROFIBUS PA**

Part number:
7ML5830-2AJ



SITRANS LR200 connections