

# Level Measurement

## Continuous level measurement – Capacitance transmitters

SITRANS LC300

### Overview



SITRANS LC300 is an inverse frequency shift capacitance continuous level transmitter for liquids and solids applications. It is ideal for standard industrial applications in chemical, hydrocarbon processing, food and beverage, water, wastewater, and mining, aggregate, and cement industries.

### Benefits

- Patented Active-Shield technology so measurement is unaffected by material buildup in active shield section
- Highly accurate and reliable PFA-lined probes
- Integrated local LCD display
- 2-wire (4 to 20 mA) current loop design
- Current signalling according to NAMUR NE 43
- Push-button calibration and programming
- Stilling well (ground tube) version for low dielectric media and non-metallic vessels

### Application

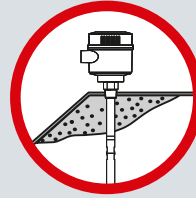
SITRANS LC300 is a 2-wire level measurement instrument combining a sophisticated, yet easy-to-adjust microprocessor with field-proven probes. It is available in four versions: rod, rod with stilling well, cable with PFA insulation, and cable without PFA insulation.

Materials with low or high dielectric properties are accurately measured and patented Active-Shield technology helps in ignoring the effects of buildup or condensation near vessel nozzle.

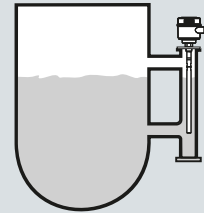
- Key Applications: Conductive and non-conductive media including: liquids and solids in standard industrial processes, bulk solids applications involving dust, and chemical processes involving vapour

### Configuration

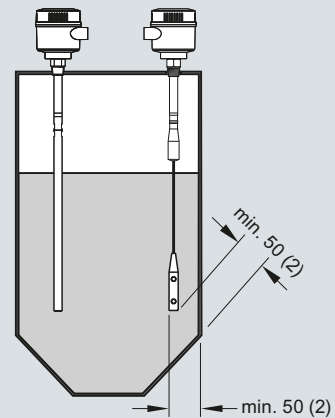
#### Installation



Build up of material in active shield area does not affect switch operation.



Mounting on a bypass



Install probe at least 50 (2) from tank wall.  
Note angle of repose and adjust accordingly.

SITRANS LC300 installation, dimensions in mm (inch)

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### SITRANS LC300

#### Technical specifications

Input	
Measuring range	1.66 ... 3300 pF
Span	Min. 3.3 pF
Output	
Loop current	Continuous signal 4 ... 20 mA/ 20 ... 4 mA acc. to NAMUR 43
Accuracy (transmitter)	
Temperature stability	0.25% of actual capacitance value
Non-linearity and repeatability	< 0.4% of full scale and actual measurement value
Accuracy	Deviation < 0.5% of actual measurement value
Rated operating conditions <sup>1)</sup>	
Ambient conditions	
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) <sup>2)</sup>
• Installation category	I
• Pollution degree	4
• Ingress protection	Type 4/NEMA 4/IP65 (optional IP68)
Installation conditions	
• Location	Indoor/outdoor
Process pressure	-1 ... +35 bar g (-14.6 ... +511 psi g)
Process temperature	-40 ... +200 °C (-40 ... +392 °F) <sup>3)</sup>
Min. dielectric constant $\epsilon_r$	1.5
Design	
Material	
• Enclosure	Aluminum, epoxy-coated
Probe diameter	
• Rod version	19 mm (0.75 inch) with PFA jacket
• Cable version	9 mm (0.35 inch) with PFA jacket, 6 mm (0.24 inch) without PFA jacket
Active shield length	
• Rod version	threaded: 120 mm (4.72 inch) flanged: 100 mm (3.94 inch)
• Cable version	threaded: 125 mm (4.92 inch) flanged: 105 mm (4.13 inch)
Process connection of probe	
• Threaded rod mounting	$\frac{3}{4}$ ", 1", 1 $\frac{1}{4}$ ", 1 $\frac{1}{2}$ " NPT [(Taper), ANSI/ASME B1.20.1] R $\frac{3}{4}$ ", 1", 1 $\frac{1}{2}$ " [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G $\frac{3}{4}$ ", 1", 1 $\frac{1}{2}$ " [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]
• Threaded cable mounting	1 $\frac{1}{2}$ " NPT [(Taper), ANSI/ASME B1.20.1] R 1 $\frac{1}{2}$ " [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G 1 $\frac{1}{2}$ " [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]
• Flange mounting	1 ... 4" ASME, DN 25 ... 100
Enclosure cable inlet	2 x $\frac{1}{2}$ " NPT or 2 x M20x1.5
Power supply	
	12 ... 30 V DC any polarity, 2-wire current loop circuit
User Interface	
Display	Local LCD, 4 digit, each 0 ... 9 and limited alpha characters

Safety	
Measurement current signalling	According to NAMUR NE 43, signal 3.8 ... 20.5 mA, fault $\leq$ 3.6 or $\geq$ 21 mA (22 mA)
Certificates and approvals	
General	CE, CSA <sub>US/C</sub> , FM, C-TICK
Dust Ignition Proof (Intrinsically Safe probe circuit)	(Europe) ATEX II 1/2 D T100 °C (US/Canada) FM/CSA: Class II, Div. 1, Groups E,F,G Class III T4
Flame Proof (Intrinsically Safe probe circuit)	(Europe) ATEX II 1/2 G EEx d [ia] IIC T6...T1 ATEX II 1/2 D T100 °C
Explosion Proof (Intrinsically Safe probe circuit)	(US/Canada) Class I, Div. 1, Groups A,B,C,D Class II, Div. 1, Groups E,F,G Class III T4
Marine	Bureau Veritas Type Approval ABS Type Approval
Overfill Protection	AIB-Vincotte
Other	Pattern Approval (China)

<sup>1)</sup> When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves on page 5/306.

<sup>2)</sup> Thermal isolator is used if process connection temperature exceeds +85 °C (+185 °F)

<sup>3)</sup> Not suitable for steam environments

Design: Probe	Rod version	Stilling well version	Cable version
Length	Min. 300 mm (12 inch), max. 5000 mm (197 inch)	Min. 300 mm (12 inch), max. 5000 mm (197 inch)	Min. 1000 mm (40 inch), max. 25000 mm (984 inch)
Sensor wetted parts	PFA, 316L stainless steel	PFA, 316L stainless steel	316L stainless steel or 316L stainle7ss steel with PFA insulation
O-ring seal material	FKM or FFKM	FKM or FFKM	FKM or FFKM
Thermal isolator	Optional	Optional	Optional
Options	N/A	N/A	Mounting eye for PFA insulated cable version

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SITRANS LC300

Selection and Ordering data	Order No.	Selection and Ordering data	Order No.
<b>SITRANS LC300, rod version</b>	C) <b>7ML5670-</b>	<b>SITRANS LC300, rod version</b>	C) <b>7ML5670-</b>
An inverse frequency shift capacitance continuous level transmitter for liquids and solids applications.	0	An inverse frequency shift capacitance continuous level transmitter for liquids and solids applications.	0
<b>Process connection</b>		<b>Wetted seals</b>	
Threaded, 316L stainless steel		FKM	0
¾" NPT [(Taper), ANSI/ASME B1.20.1]	0 A	FFKM [for process temperatures above -20 °C (-4 °F)]	1
1" NPT [(Taper), ANSI/ASME B1.20.1]	0 B		
1¼" NPT [(Taper), ANSI/ASME B1.20.1]	0 C	<b>Probe material</b>	
1½" NPT [(Taper), ANSI/ASME B1.20.1]	0 D	19 mm (0.75 inch) diameter 316L stainless steel, PFA lined rod	0
R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 A		
R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 B	<b>Approvals</b>	
R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 D	General Safety (CSA, FM, CE, C-TICK)	A
G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 A	Dust Ignition Proof With IS Probe	B
G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 B	CE, C-TICK, ATEX II 1/2 D T100 °C	C
G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 D	Flame Proof Enclosure With IS Probe	D
<u>Welded flange, 316L stainless steel, raised face<sup>1)</sup></u>		CE, C-TICK, ATEX II 1/2 G EEx d [ia] IIC T6...T1, ATEX II 1/2 D T100 °C	E
1" ASME, 150 lb	5 A	Dust Ignition Proof With IS Probe	
1" ASME, 300 lb	5 B	CSA/FM Class II, Div. 1, Gr. E, F, G	
1" ASME, 600 lb	5 C	CSA/FM Class III T4	
1½" ASME, 150 lb	5 D	Explosion Proof Enclosure With IS Probe	
1½" ASME, 300 lb	5 E	CSA/FM Class I, Div. 1, Gr. A, B, C, D	
1½" ASME, 600 lb	5 F	CSA/FM Class II, Div. 1, Gr. E, F, G	
2" ASME, 150 lb	5 G	CSA/FM Class III T4	
2" ASME, 300 lb	5 H	<b>Enclosure</b>	
2" ASME, 600 lb	5 J	Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP65	A
3" ASME, 150 lb	5 K	Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP65	B
3" ASME, 300 lb	5 L	Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP68	C
3" ASME, 600 lb	5 M	Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP68	D
4" ASME, 150 lb	5 N		
4" ASME, 300 lb	5 P		
4" ASME, 600 lb	5 Q		
<u>Welded flange, 316L stainless steel, Type A flat faced<sup>1)</sup></u>			
DN 25, PN 16	6 A		
DN 25, PN 40	6 B		
DN 40, PN 16	6 C		
DN 40, PN 40	6 D		
DN 50, PN 16	6 E		
DN 50, PN 40	6 F		
DN 80, PN 16	6 G		
DN 80, PN 40	6 H		
DN 100, PN 16	6 J		
DN 100, PN 40	6 K		
<b>Probe Length (from flange face or including process thread)</b>			
<u>Add order code Y01 and plain text: "Insertion length ... mm"</u>			
300 ... 1000 mm (11.81 ... 39.37 inch)	A		
1001 ... 2000 mm (39.41 ... 78.74 inch)	B		
2001 ... 3000 mm (78.78 ... 118.11 inch)	C		
3001 ... 4000 mm (118.15 ... 157.48 inch)	D		
4001 ... 5000 mm (157.52 ... 196.85 inch)	E		
<b>Thermal isolator</b>			
Without thermal isolator	0		
With thermal isolator [for process connection temperatures over +85 °C (+185 °F)]	1		

<sup>1)</sup> Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.

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### SITRANS LC300

Selection and Ordering data	Order code
<b>Further designs</b>	
Please add <b>"-Z"</b> to Order No. and specify Order code(s).	
Insertion length, specify in plain text: Y01: ... mm	<b>Y01</b>
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 16 characters) specify in plain text	<b>Y15</b>
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000	<b>C11</b>
Inspection Certificate Type 3.1 per EN 10204	<b>C12</b>
<b>Operating Instructions</b>	
English	C) <b>7ML1998-5HE03</b>
French	<b>7ML1998-5HE11</b>
German	C) <b>7ML1998-5HE33</b>
Spanish	<b>7ML1998-5HE21</b>
Multi-language Quick Start manual	C) <b>7ML1998-5QH81</b>
Note: The Operating Instructions should be ordered as a separate line item on the order.	
This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.	
<b>Accessories</b>	
Electronic transmitter kit (includes transmitter and driver)	C) <b>7ML1830-1KN</b>
SITRANS RD100 Remote display - see Chapter 8	
SITRANS RD200 Remote display - see Chapter 8	
SITRANS RD500 web, datalogging, alarming, ethernet, and modem support for instrumentation - see Chapter 8	K) <b>7ML5750- 1AA00-0</b>

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

K) Subject to export regulations AL: N, ECCN: 5A991X.

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Selection and Ordering data	Order No.	Selection and Ordering data	Order No.
<b>SITRANS LC300, stilling well version</b>	<b>7ML5671-</b>	<b>SITRANS LC300, stilling well version</b>	<b>7ML5671-</b>
An inverse frequency shift capacitance continuous level transmitter for liquid applications.	■■■■■ - ■■■■ 0	An inverse frequency shift capacitance continuous level transmitter for liquid applications.	■■■■■ - ■■■■ 0
<b>Process connection</b>		<b>Enclosure</b>	
Threaded, 316L stainless steel		Aluminum epoxy coated 2 x 1/2" NPT via adapter - cable inlet, IP65	<b>A</b>
1 1/2" NPT [(Taper), ANSI/ASME B1.20.1]	<b>0 D</b>	Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP65	<b>B</b>
R 1 1/2" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	<b>1 D</b>	Aluminum epoxy coated 2 x 1/2" NPT via adapter - cable inlet, IP68	<b>C</b>
G 1 1/2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	<b>3 D</b>	Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP68	<b>D</b>
<u>Welded flange, 316L stainless steel, raised face<sup>1)</sup></u>			
1 1/2" ASME, 150 lb	<b>5 D</b>		
1 1/2" ASME, 300 lb	<b>5 E</b>		
1 1/2" ASME, 600 lb	<b>5 F</b>		
2" ASME, 150 lb	<b>5 G</b>		
2" ASME, 300 lb	<b>5 H</b>		
2" ASME, 600 lb	<b>5 J</b>		
3" ASME, 150 lb	<b>5 K</b>		
3" ASME, 300 lb	<b>5 L</b>		
3" ASME, 600 lb	<b>5 M</b>		
4" ASME, 150 lb	<b>5 N</b>		
4" ASME, 300 lb	<b>5 P</b>		
4" ASME, 600 lb	<b>5 Q</b>		
<u>Welded flange, 316L stainless steel, Type A flat faced<sup>1)</sup></u>			
DN 40, PN 16	<b>6 C</b>		
DN 40, PN 40	<b>6 D</b>		
DN 50, PN 16	<b>6 E</b>		
DN 50, PN 40	<b>6 F</b>		
DN 80, PN 16	<b>6 G</b>		
DN 80, PN 40	<b>6 H</b>		
DN 100, PN 16	<b>6 J</b>		
DN 100, PN 40	<b>6 K</b>		
<b>Probe Length (from flange face or including process thread)</b>			
<u>Add order code Y01 and plain text: "Insertion length ... mm"</u>			
300 ... 1000 mm (11.81 ... 39.37 inch)	<b>A</b>		
1001 ... 2000 mm (39.41 ... 78.74 inch)	<b>B</b>		
2001 ... 3000 mm (78.78 ... 118.11 inch)	<b>C</b>		
3001 ... 4000 mm (118.15 ... 157.48 inch)	<b>D</b>		
4001 ... 5000 mm (157.52 ... 196.85 inch)	<b>E</b>		
<b>Thermal isolator</b>			
Without thermal isolator	<b>0</b>		
With thermal isolator [for process connection temperatures over +85 °C (+185 °F)]	<b>1</b>		
<b>Wetted seals</b>			
FKM	<b>0</b>		
FFKM [for process temperatures above -20 °C (-4 °F)]	<b>1</b>		
<b>Probe material</b>			
35 mm (1.38 inch) diameter stilling well, with 19 mm (0.75 inch) diameter 316L stainless steel, PFA lined rod with PTFE spacers	<b>1</b>		
<b>Approvals</b>			
General Safety (CSA, FM, CE, C-TICK)	<b>A</b>		
Dust Ignition Proof With IS Probe CE, C-TICK, ATEX II 1/2 D T100 °C	<b>B</b>		
Flame Proof Enclosure With IS Probe CE, C-TICK, ATEX II 1/2 G EEx d [ia] IIC T6 ... T1, ATEX II 1/2 D T100 °C	<b>C</b>		
Dust Ignition Proof With IS Probe CSA/FM Class II, Div. 1, Gr. E, F, G CSA/FM Class III T4	<b>D</b>		
Explosion Proof Enclosure With IS Probe CSA/FM Class I, Div. 1, Gr. A, B, C, D CSA/FM Class II, Div. 1, Gr. E, F, G CSA/FM Class III T4	<b>E</b>		
		<b>Further designs</b>	Order code
		Please add "-Z" to Order No. and specify Order code(s).	
		Insertion length, specify in plain text: Y01: ... mm	<b>Y01</b>
		Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 16 characters) specify in plain text	<b>Y15</b>
		Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000	<b>C11</b>
		Inspection Certificate Type 3.1 per EN 10204	<b>C12</b>
		<b>Operating Instructions</b>	Order No.
		English	C) <b>7ML1998-5HE03</b>
		French	<b>7ML1998-5HE11</b>
		German	C) <b>7ML1998-5HE33</b>
		Spanish	<b>7ML1998-5HE21</b>
		Multi-language Quick Start manual Note: The Operating Instructions should be ordered as a separate line item on the order.	C) <b>7ML1998-5QH81</b>
		This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.	
		<b>Accessories</b>	
		Electronic transmitter kit (includes transmitter and driver)	C) <b>7ML1830-1KN</b>
		SITRANS RD100 Remote display - see Chapter 8	
		SITRANS RD200 Remote display - see Chapter 8	
		SITRANS RD500 web, datalogging, alarming, ethernet, and modem support for instrumentation - see Chapter 8	K) <b>7ML5750-1AA00-0</b>
		C) Subject to export regulations AL: N, ECCN: EAR99.	
		K) Subject to export regulations AL: N, ECCN: 5A991X.	

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### SITRANS LC300

Selection and Ordering data	Order No.
<b>SITRANS LC300, cable version</b>	C) <b>7ML5672-</b>
An inverse frequency shift capacitance continuous level transmitter for non-conductive liquids and solids applications.	0
<b>Process connection</b>	
Threaded, 316L stainless steel	
1½" NPT [(Taper), ANSI/ASME B1.20.1]	0 D
R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 D
G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 D
<u>Welded flange, 316L stainless steel, raised face<sup>1)</sup></u>	
1½" ASME, 150 lb	5 D
1½" ASME, 300 lb	5 E
1½" ASME, 600 lb	5 F
2" ASME, 150 lb	5 G
2" ASME, 300 lb	5 H
2" ASME, 600 lb	5 J
3" ASME, 150 lb	5 K
3" ASME, 300 lb	5 L
3" ASME, 600 lb	5 M
4" ASME, 150 lb	5 N
4" ASME, 300 lb	5 P
4" ASME, 600 lb	5 Q
<u>Welded flange, 316L stainless steel, Type A flat faced<sup>1)</sup></u>	
DN 40, PN 16	6 C
DN 40, PN 40	6 D
DN 50, PN 16	6 E
DN 50, PN 40	6 F
DN 80, PN 16	6 G
DN 80, PN 40	6 H
DN 100, PN 16	6 J
DN 100, PN 40	6 K
<b>Probe Length (from flange face or including process thread)</b>	
<u>Add order code Y01 and plain text:</u> "Insertion length ... mm"	
1000 ... 2000 mm (39.37 ... 78.74 inch)	A
2001 ... 4000 mm (78.78 ... 157.48 inch)	B
4001 ... 6000 mm (157.52 ... 236.22 inch)	C
6001 ... 8000 mm (236.26 ... 314.96 inch)	D
8001 ... 10000 mm (315.00 ... 393.70 inch)	E
10001 ... 12000 mm (393.74 ... 472.44 inch)	F
12001 ... 14000 mm (472.48 ... 551.18 inch)	G
14001 ... 16000 mm (551.22 ... 629.92 inch) <sup>2)</sup>	H
16001 ... 18000 mm (629.96 ... 708.66 inch) <sup>2)</sup>	J
18001 ... 20000 mm (708.70 ... 787.40 inch) <sup>2)</sup>	K
20001 ... 22000 mm (787.44 ... 866.14 inch) <sup>2)</sup>	L
22001 ... 24000 mm (866.18 ... 944.88 inch) <sup>2)</sup>	M
24001 ... 25000 mm (944.92 ... 984.25 inch) <sup>2)</sup>	N
<b>Thermal isolator</b>	
Without thermal isolator	0
With thermal isolator [for process connection temperatures over +85 °C (+185 °F)]	1
<b>Wetted seals</b>	
FKM	0
FFKM [for process temperatures above -20 °C (-4 °F)]	1
<b>Probe material</b>	
Bare 316L stainless steel cable and 316L stainless steel cable weight, tinned copper crimp, PTFE backing ring, PEEK isolator and PFA lined active shield	0

Selection and Ordering data	Order No.
<b>SITRANS LC300, cable version</b>	C) <b>7ML5672-</b>
An inverse frequency shift capacitance continuous level transmitter for non-conductive liquids and solids applications.	0
<b>Approvals</b>	
General Safety (CSA, FM, CE, C-TICK)	A
Dust Ignition Proof With IS Probe CE, C-TICK, ATEX II 1/2 D T100 °C	B
Flame Proof Enclosure With IS Probe CE, C-TICK, ATEX II 1/2 G EEx d [ia] IIC T6...T1, ATEX II 1/2 D T100 °C	C
Dust Ignition Proof With IS Probe CSA/FM Class II, Div. 1, Gr. E, F, G CSA/FM Class III T4	D
Explosion Proof Enclosure With IS Probe CSA/FM Class I, Div. 1, Gr. A, B, C, D CSA/FM Class II, Div. 1, Gr. E, F, G CSA/FM Class III T4	E
<b>Enclosure</b>	
Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP65	A
Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP65	B
Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP68	C
Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP68	D

- Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.
- Cable lengths from 15 000 (590.55 inch) to 25 000 mm (984.25 inch) can be used in non-conductive media. Contact Factory for assistance.

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Selection and Ordering data	Order code
<b>Further designs</b>	
Please add <b>"-Z"</b> to Order No. and specify Order code(s).	
Insertion length, specify in plain text: Y01: ... mm	<b>Y01</b>
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 16 characters) specify in plain text	<b>Y15</b>
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000	<b>C11</b>
Inspection Certificate Type 3.1 per EN 10204	<b>C12</b>
<b>Operating Instructions</b>	
English	C) <b>7ML1998-5HE03</b>
French	<b>7ML1998-5HE11</b>
German	C) <b>7ML1998-5HE33</b>
Spanish	<b>7ML1998-5HE21</b>
Multi-language Quick Start manual	C) <b>7ML1998-5QH81</b>
Note: The Operating Instructions should be ordered as a separate line item on the order.	
This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.	
<b>Accessories</b>	
Electronic transmitter kit (includes transmitter and driver)	C) <b>7ML1830-1KN</b>
SITRANS RD100 Remote display - see Chapter 8	
SITRANS RD200 Remote display - see Chapter 8	
SITRANS RD500 web, datalogging, alarming, ethernet, and modem support for instrumentation - see Chapter 8	K) <b>7ML5750- 1AA00-0</b>
C) Subject to export regulations AL: N, ECCN: EAR99.	
K) Subject to export regulations AL: N, ECCN: 5A991X.	

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## Continuous level measurement – Capacitance transmitters

### SITRANS LC300

Selection and Ordering data	Order No.
<b>SITRANS LC300, PFA coated cable version</b> C)	<b>7ML5673-</b>
An inverse frequency shift capacitance continuous level transmitter for liquids and solids applications.	
<b>Process connection</b>	
Threaded, 316L stainless steel	
1½" NPT [(Taper), ANSI/ASME B1.20.1]	<b>0 D</b>
R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	<b>1 D</b>
G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	<b>3 D</b>
<u>Welded flange, 316L stainless steel, raised face<sup>1)</sup></u>	
1½" ASME, 150 lb	<b>5 D</b>
1½" ASME, 300 lb	<b>5 E</b>
1½" ASME, 600 lb	<b>5 F</b>
2" ASME, 150 lb	<b>5 G</b>
2" ASME, 300 lb	<b>5 H</b>
2" ASME, 600 lb	<b>5 J</b>
3" ASME, 150 lb	<b>5 K</b>
3" ASME, 300 lb	<b>5 L</b>
3" ASME, 600 lb	<b>5 M</b>
4" ASME, 150 lb	<b>5 N</b>
4" ASME, 300 lb	<b>5 P</b>
4" ASME, 600 lb	<b>5 Q</b>
<u>Welded flange, 316L stainless steel, Type A flat faced<sup>1)</sup></u>	
DN 40, PN 16	<b>6 C</b>
DN 40, PN 40	<b>6 D</b>
DN 50, PN 16	<b>6 E</b>
DN 50, PN 40	<b>6 F</b>
DN 80, PN 16	<b>6 G</b>
DN 80, PN 40	<b>6 H</b>
DN 100, PN 16	<b>6 J</b>
DN 100, PN 40	<b>6 K</b>
<b>Probe Length (from flange face or including process thread)</b>	
<u>Add order code Y01 and plain text:</u> <u>"Insertion length ... mm"</u>	
1000 ... 2000 mm (39.37 ... 78.74 inch)	<b>A</b>
2001 ... 4000 mm (78.78 ... 157.48 inch)	<b>B</b>
4001 ... 6000 mm (157.52 ... 236.22 inch)	<b>C</b>
6001 ... 8000 mm (236.26 ... 314.96 inch)	<b>D</b>
8001 ... 10000 mm (315.00 ... 393.70 inch)	<b>E</b>
10001 ... 12000 mm (393.74 ... 472.44 inch)	<b>F</b>
12001 ... 14000 mm (472.48 ... 551.18 inch)	<b>G</b>
14001 ... 16000 mm (551.22 ... 629.92 inch) <sup>2)</sup>	<b>H</b>
16001 ... 18000 mm (629.96 ... 708.66 inch) <sup>2)</sup>	<b>J</b>
18001 ... 20000 mm (708.70 ... 787.40 inch) <sup>2)</sup>	<b>K</b>
20001 ... 22000 mm (787.44 ... 866.14 inch) <sup>2)</sup>	<b>L</b>
22001 ... 24000 mm (866.18 ... 944.88 inch) <sup>2)</sup>	<b>M</b>
24001 ... 25000 mm (944.92 ... 984.25 inch) <sup>2)</sup>	<b>N</b>
<b>Thermal isolator</b>	
Without thermal isolator	<b>0</b>
With thermal isolator [for process connection temperatures over +85 °C (+185 °F)]	<b>1</b>
<b>Wetted seals</b>	
FKM	<b>0</b>
FFKM [for process temperatures above -20 °C (-4 °F)]	<b>1</b>

Selection and Ordering data	Order No.
<b>SITRANS LC300, PFA coated cable version</b> C)	<b>7ML5673-</b>
An inverse frequency shift capacitance continuous level transmitter for liquids and solids applications.	
<b>Probe material</b>	
PFA coated cable and 316L stainless steel cable weight, PEEK isolator and PFA lined active shield	<b>1</b>
<b>Approvals</b>	
General Safety (CSA, FM, CE, C-TICK)	<b>A</b>
Dust Ignition Proof With IS Probe CE, C-TICK, ATEX II 1/2 D T100 °C	<b>B</b>
Flame Proof Enclosure With IS Probe CE, C-TICK, ATEX II 1/2 G EEx d [ia] IIC T6...T1, ATEX II 1/2 D T100 °C	<b>C</b>
Dust Ignition Proof With IS Probe CSA/FM Class II, Div. 1, Gr. E, F, G CSA/FM Class III T4	<b>D</b>
Explosion Proof Enclosure With IS Probe CSA/FM Class I, Div. 1, Gr. A, B, C, D CSA/FM Class II, Div. 1, Gr. E, F, G CSA/FM Class III T4	<b>E</b>
<b>Enclosure</b>	
Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP65	<b>A</b>
Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP65	<b>B</b>
Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP68	<b>C</b>
Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP68	<b>D</b>
<b>Mounting eye</b>	
Without Mounting eye	<b>0</b>
With mounting eye	<b>1</b>

- Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.
- Cable lengths from 15000 (590.55 inch) to 25000 mm (984.25 inch) can be used in non-conductive media. Contact Factory for assistance.



# Level Measurement

## Continuous level measurement – Capacitance transmitters

SITRANS LC300

Selection and Ordering data	Order code
<b>Further designs</b>	
Please add <b>"-Z"</b> to Order No. and specify Order code(s).	
Insertion length, specify in plain text: Y01: ... mm	<b>Y01</b>
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 16 characters) specify in plain text	<b>Y15</b>
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000	<b>C11</b>
Inspection Certificate Type 3.1 per EN 10204	<b>C12</b>
<b>Operating Instructions</b>	
English	C) <b>7ML1998-5HE03</b>
French	<b>7ML1998-5HE11</b>
German	C) <b>7ML1998-5HE33</b>
Spanish	<b>7ML1998-5HE21</b>
Multi-language Quick Start manual	C) <b>7ML1998-5QH81</b>
Note: The Operating Instructions should be ordered as a separate line item on the order. This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.	
<b>Accessories</b>	
Electronic transmitter kit (includes transmitter and driver)	C) <b>7ML1830-1KN</b>
SITRANS RD100 Remote display - see Chapter 8	
SITRANS RD200 Remote display - see Chapter 8	
SITRANS RD500 web, datalogging, alarming, ethernet, and modem support for instrumentation - see Chapter 8	K) <b>7ML5750- 1AA00-0</b>
C) Subject to export regulations AL: N, ECCN: EAR99.	
K) Subject to export regulations AL: N, ECCN: 5A991X.	

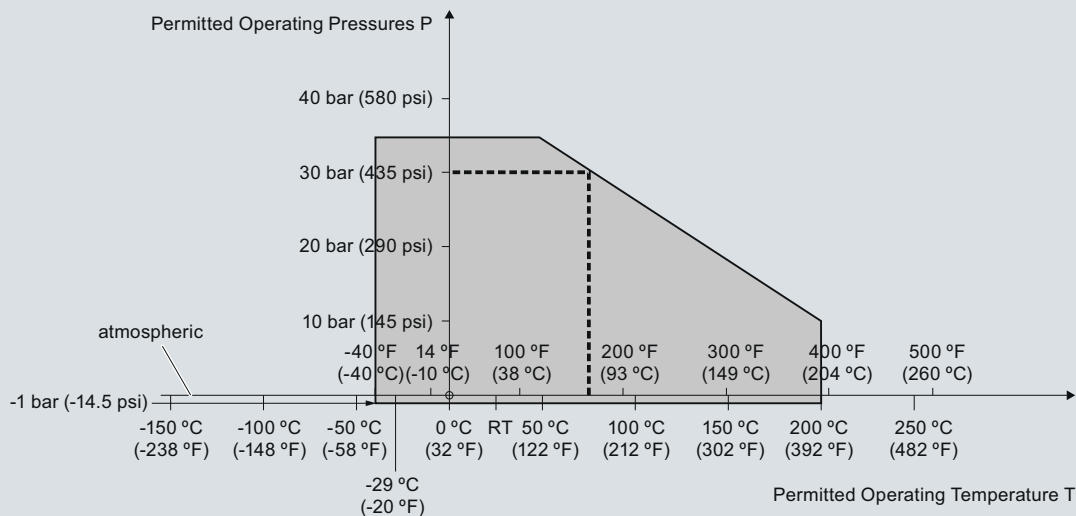
# Level Measurement

## Continuous level measurement – Capacitance transmitters

### SITRANS LC300

#### Characteristic curves

**Pressure/Temperature Curve**  
 LC300 Standard, Extended Rod and Cable Probes  
 Threaded Process Connections  
 (7ML5670, 7ML5671, 7ML5672 and 7ML5673)



--- Example:  
 Permitted operating pressure = 30 bar (435 psi) at 75 °C

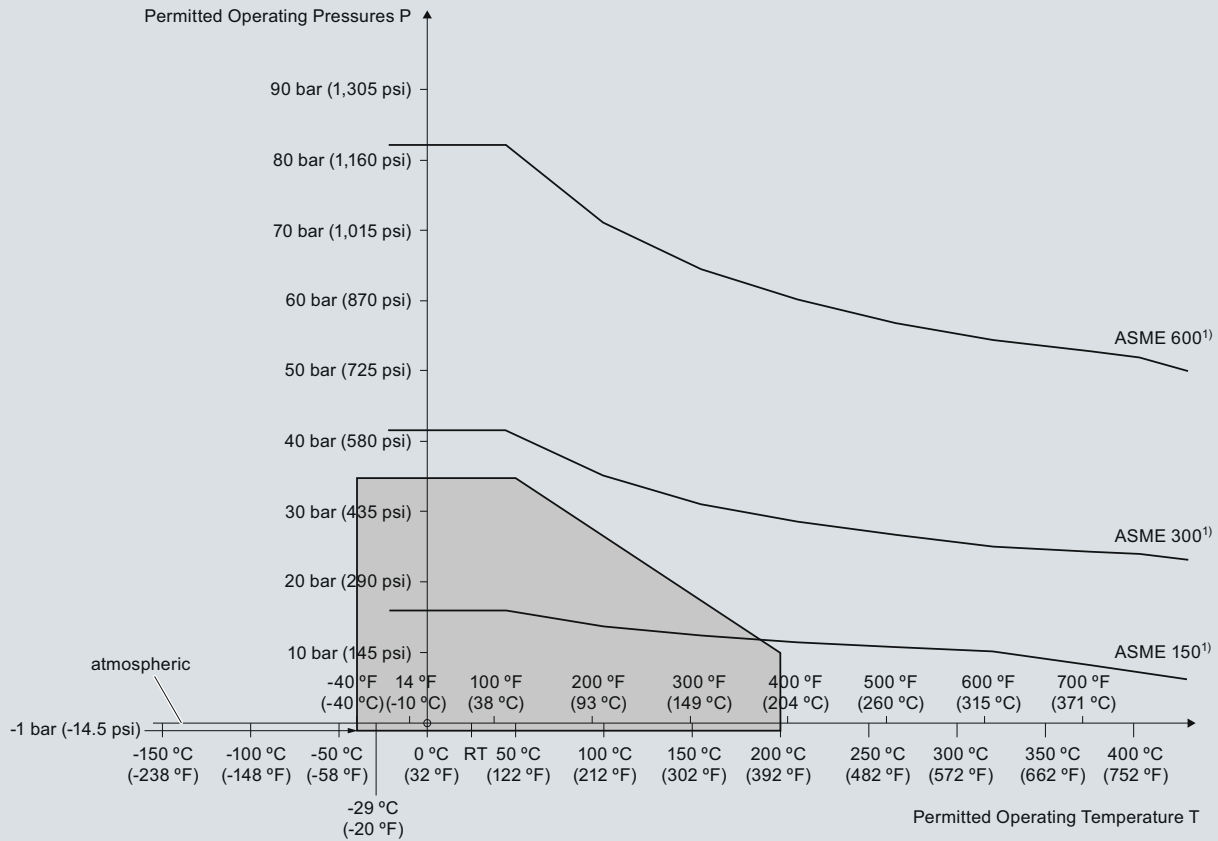
SITRANS LC300 Process Pressure/Temperature derating curves (7ML5625)

# Level Measurement

## Continuous level measurement – Capacitance transmitters

SITRANS LC300

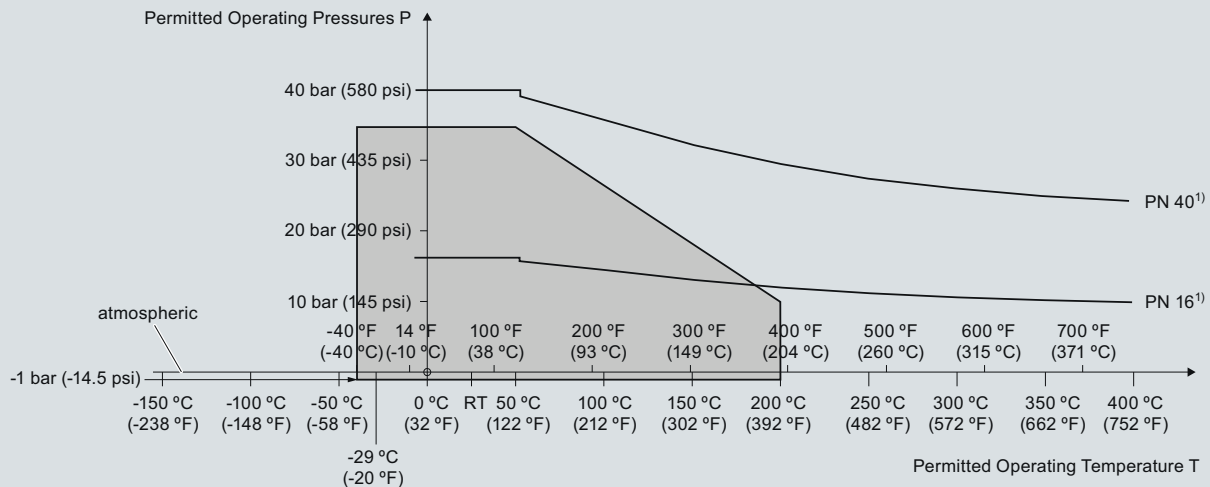
**Pressure/Temperature Curve**  
**LC300 Standard, Extended Rod and Cable Probes**  
**ASME Flanged Process Connections**  
**(7ML5670, 7ML5671, 7ML5672 and 7ML5673)**



<sup>1)</sup> The curve denotes the minimum allowable flange class for the shaded area below.

SITRANS LC300 Process Pressure/Temperature derating curves (7ML5626)

**Pressure/Temperature Curve**  
**LC300 Standard, Extended Rod and Cable Probes**  
**EN Flanged Process Connections**  
**(7ML5670, 7ML5671, 7ML5672 and 7ML5673)**



<sup>1)</sup> The curve denotes the minimum allowable flange class for the shaded area below.

SITRANS LC300 Process Pressure/Temperature derating curves (7ML5626)

5

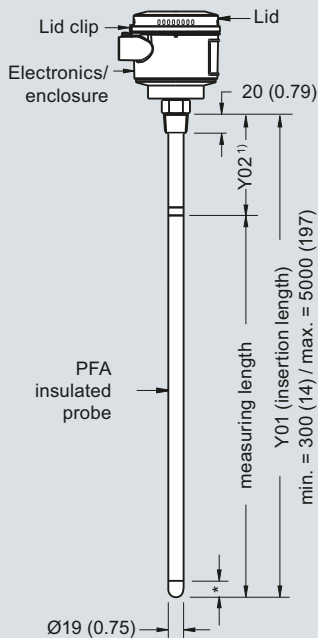
# Level Measurement

## Continuous level measurement – Capacitance transmitters

### SITRANS LC300

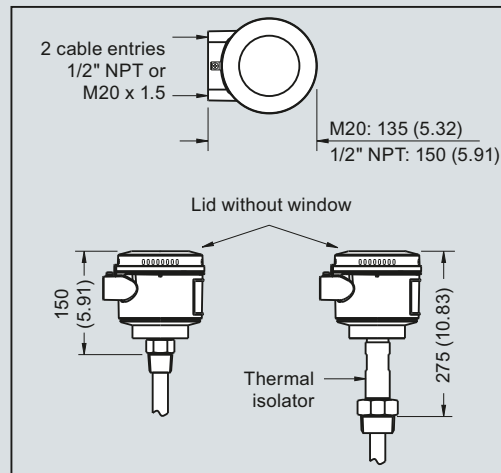
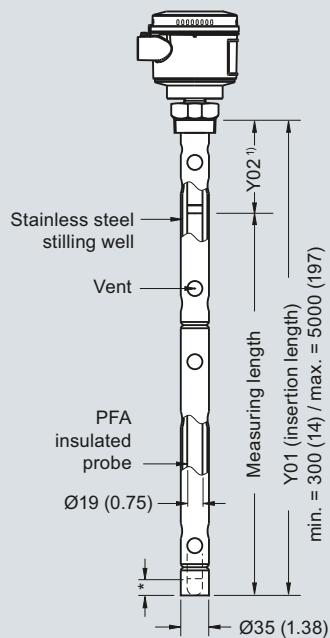
#### Dimensional drawings

Threaded (7ML5670)



\* = 30 (1.18) Inactive tip

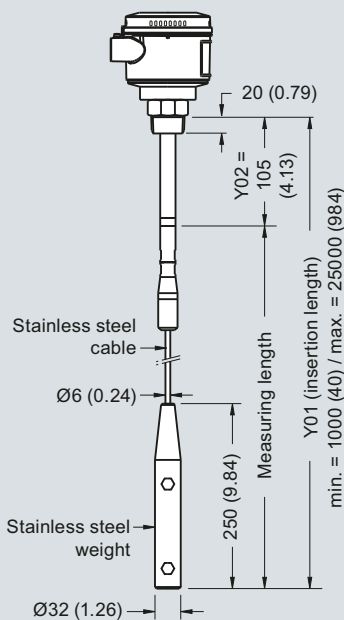
Threaded (7ML5671)



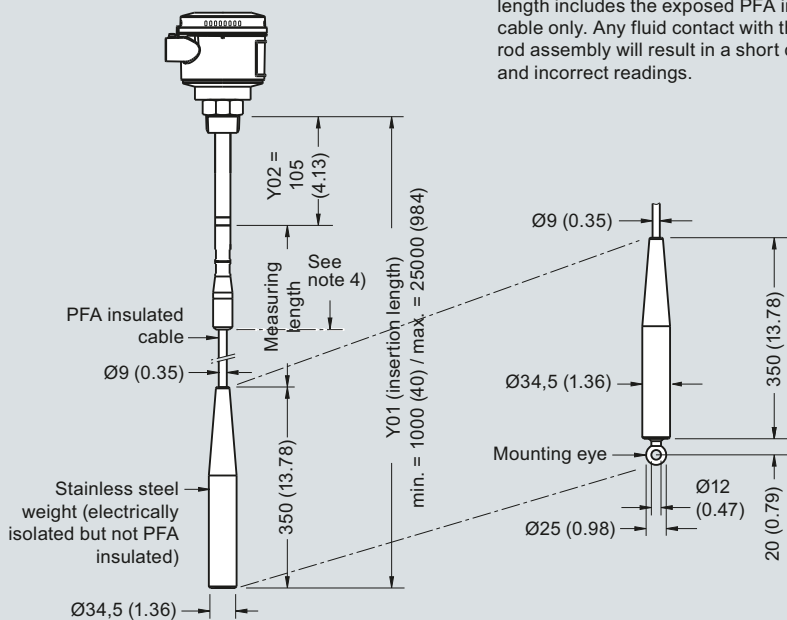
**Note:**

- 1) Rod version Y02: Shield length = 100 mm (3.9") for threaded including process connection thread length, 100 mm (3.9") for welded flange
- 2) For non-conductive applications only. Non-insulated cable can be shortened on site. Weight is included in measuring length.
- 3) For liquids and solids applications. Insulated cable cannot be shortened. Weight is **not** included in measuring length.
- 4) For conductive materials, the measuring length includes the exposed PFA insulated cable only. Any fluid contact with the upper rod assembly will result in a short circuit and incorrect readings.

Cable version, non-insulated <sup>2)</sup>  
Threaded (7ML5672)



Cable version, insulated <sup>3)</sup>  
Threaded (7ML5673)



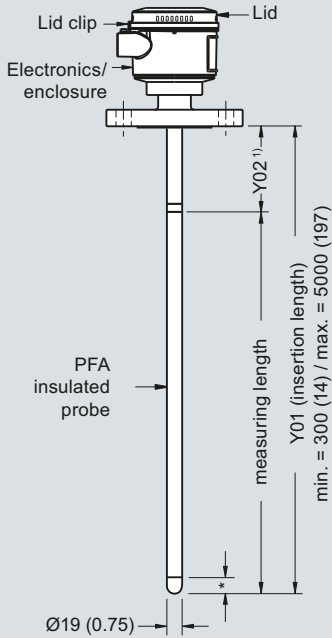
SITRANS LC300 dimensions - Threaded Process connections, dimensions in mm (inch)

# Level Measurement

## Continuous level measurement – Capacitance transmitters

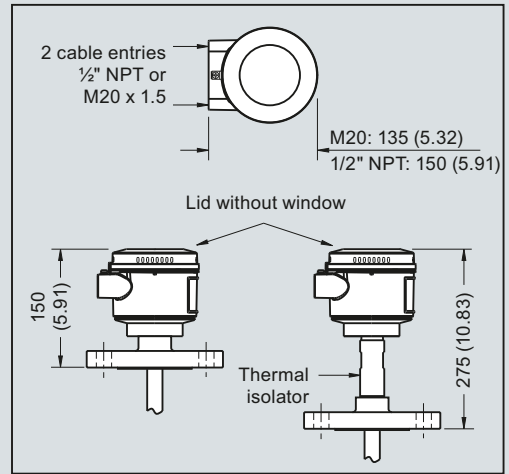
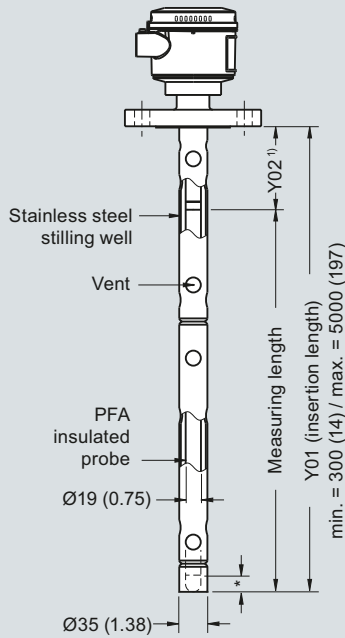
SITRANS LC300

### Welded Flange (7ML5670)



\* = 30 (1.18) inactive tip

### Welded Flange (7ML5671)



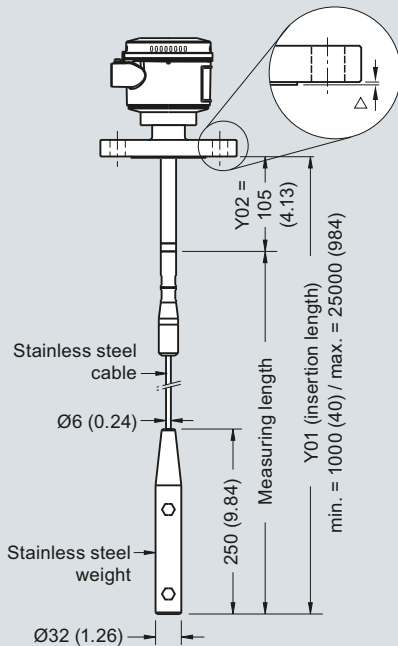
#### Flange Facing (raised face)

Flange Class	Facing thickness
△ ASME 150/300	2 (0.08)
△ ASME 600/900	7 (0.28)
△ PN16/40	2 (0.08)

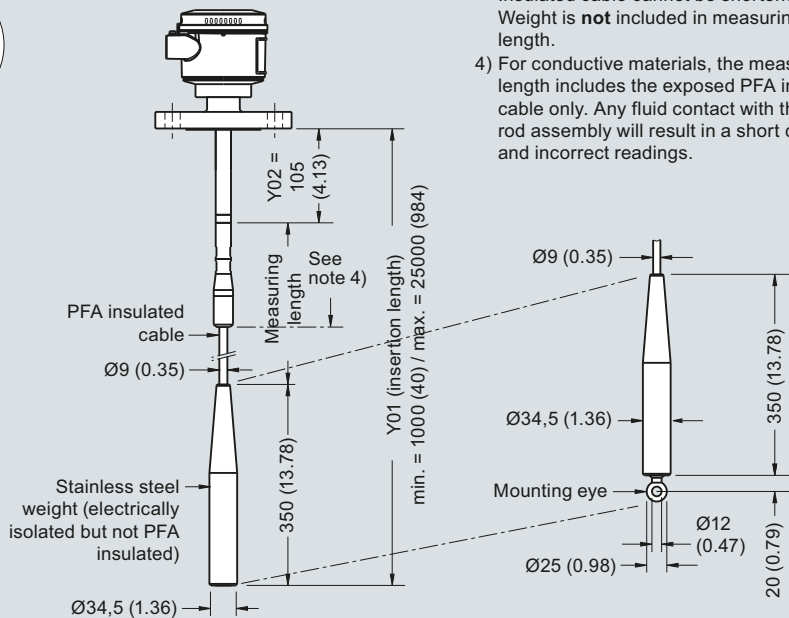
#### Notes:

- 1) Rod version Y02: Shield length = 100 mm (3.9") for threaded including process connection thread length, 100 mm (3.9") for welded flange.
- 2) For non-conductive applications only. Non-insulated cable can be shortened on site. Weight is included in measuring length.
- 3) For liquids and solids applications. Insulated cable cannot be shortened. Weight is **not** included in measuring length.
- 4) For conductive materials, the measuring length includes the exposed PFA insulated cable only. Any fluid contact with the upper rod assembly will result in a short circuit and incorrect readings.

### Cable version, non-insulated<sup>2)</sup> Welded Flange (7ML5672)



### Cable version, insulated<sup>3)</sup> Welded Flange (7ML5673)



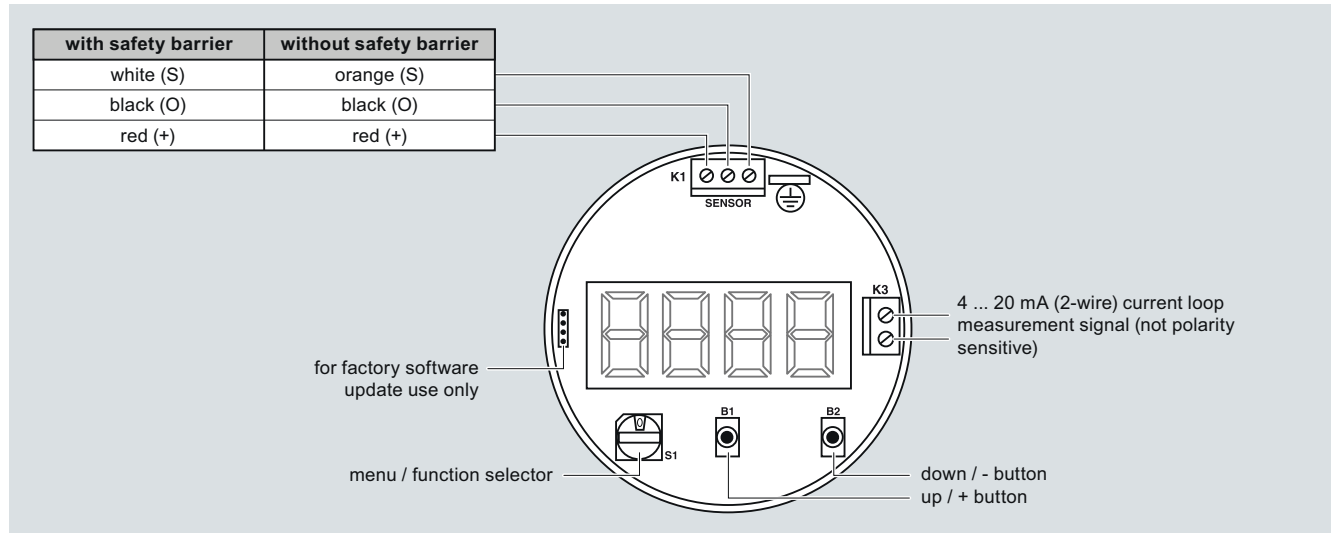
SITRANS LC300 dimensions - Flanged Process connections, dimensions in mm (inch)

# Level Measurement

## Continuous level measurement – Capacitance transmitters

### SITRANS LC300

#### Schematics



SITRANS LC300 connections


# Level Measurement

## Continuous level measurement – Capacitance transmitters

### SITRANS LC300/LC500 Specials

#### Selection and ordering data

##### LC300 and LC500 Specials. See note 1.

	Order No.
<b>LC300 Cable Extensions, 316L stainless steel</b>	
Kit, Stainless steel cable extension, 1 m, adjustable by customer	<b>A5E01163688</b>
Kit, Stainless steel cable extension, 3 m, adjustable by customer	<b>A5E01163689</b>
Kit, Stainless steel cable extension, 5 m, adjustable by customer	<b>A5E01163690</b>
Kit, Stainless steel cable extension, 10 m, adjustable by customer	<b>A5E01163691</b>
Kit, Stainless steel cable extension, 15 m, adjustable by customer	<b>A5E01163693</b>
Kit, Stainless steel cable extension, 20 m, adjustable by customer	<b>A5E01163695</b>

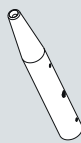

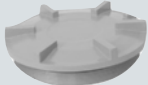


##### LC300 Cable Extensions, 316 stainless steel with PFA coating

	
Kit, PFA cable extension, 1 m	<b>A5E01163709</b>
Kit, PFA cable extension, 3 m	<b>A5E01163710</b>
Kit, PFA cable extension, 5 m	<b>A5E01163711</b>
Kit, PFA cable extension, 10 m	<b>A5E01163712</b>
Kit, PFA cable extension, 15 m	<b>A5E01163713</b>
Kit, PFA cable extension, 20 m	<b>A5E01163714</b>

##### LC300 Mounting Eye

	
Spare mounting eye (LC300 PFA versions only)	<b>A5E01163717</b>

##### LC300 and LC500 Specials. See note 1.

	Order No.
<b>LC300 Weight Kit, 316L stainless steel</b>	
Kit, Spare stainless steel weight. To be used in any cable version of CLS300, or stainless steel cable version of LC300	<b>A5E01163727</b>
<b>LC500 Gasket (IP65), Silicone</b>	
Spare gasket, LC500 enclosure version, IP65 J)	<b>A5E01163728</b>
<b>LC500 Blind Lid</b>	
Spare LC500 aluminum blind lid	<b>A5E01163729</b>
<b>LC500 Mounting Eye</b>	
Spare mounting eye (PFA cable version only)	<b>A5E01163717</b>
<b>LC500 Mounting Bracket</b>	
Spare mounting bracket	<b>A5E01163730</b>
<b>LC500 Sanitary Versions</b>	<b>See note 2.</b>

J) Subject to export regulations AL: 91999, ECCN: EAR99.

**Note 1:** Special flange sizes and facings are available. Please contact [ceg.smpi@siemens.com](mailto:ceg.smpi@siemens.com) for part number and pricing. Submit Application Questionnaire found on page 5/9.

**Note 2:** Please contact [ceg.smpi@siemens.com](mailto:ceg.smpi@siemens.com) for part number and pricing. Submit Application Questionnaire found on page 5/9.

Please contact [ceg.smpi@siemens.com](mailto:ceg.smpi@siemens.com) for special requests.