

# Level instruments

## 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

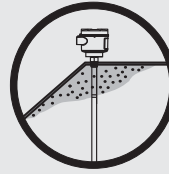
SITRANS LC300 is a 2-wire level measurement instrument combining a sophisticated, yet easy-to-adjust microprocessor with field-proven probes. It is available in four versions: rod, rod with stilling well, cable with PFA insulation, and cable without PFA insulation.

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.

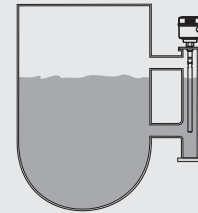
- Key Applications: Conductive and non-conductive media including: liquids and solids in standard industrial processes, bulk solids applications involving dust, and chemical processes involving vapour

### Configuration

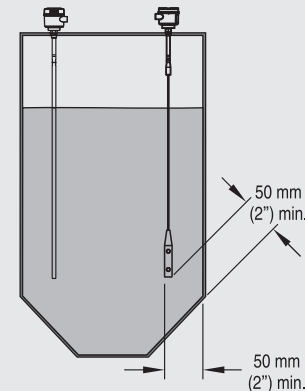
#### Installation



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



Mounting on a bypass



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

SITRANS LC300 installation

#### Technical specifications

##### Input

|                 |                 |
|-----------------|-----------------|
| Measuring range | 1.66 to 3300 pF |
| Span            | Min. 3.3 pF     |

##### Output

|              |                                                               |
|--------------|---------------------------------------------------------------|
| Loop current | Continuous signal 4 to 20 mA/20 to 4 mA according 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 to +85 °C (-40 to +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 to +35 bar g (-14.6 to +511 psi g)         |
| Process temperature                   | -40 to +200 °C (-40 to +392 °F) <sup>3)</sup> |
| Min. dielectric constant $\epsilon_r$ | 1.5                                           |

##### Design

|                             |                                                                                                                                                                             |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Material                    | Aluminum, epoxy-coated                                                                                                                                                      |
| • Enclosure                 |                                                                                                                                                                             |
| Probe diameter              |                                                                                                                                                                             |
| • Rod version               | 19 mm (0.75") with PFA jacket                                                                                                                                               |
| • Cable version             | 9 mm (0.35") with PFA jacket, 6 mm (0.24") without PFA jacket                                                                                                               |
| Active shield length        |                                                                                                                                                                             |
| • Rod version               | threaded: 120 mm (4.72")<br>flanged: 100 mm (3.94")                                                                                                                         |
| • Cable version             | threaded: 125 mm (4.92")<br>flanged: 105 mm (4.13")                                                                                                                         |
| Process connection of probe |                                                                                                                                                                             |
| • Threaded rod mounting     | ¾", 1", 1¼", 1½" NPT [(Taper), ANSI/ASME B1.20.1]<br>R ¾", 1", 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]<br>G ¾", 1", 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] |
| • Threaded cable mounting   | 1½" NPT [(Taper), ANSI/ASME B1.20.1]<br>R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]<br>G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]                              |
| • Flange mounting           | 1 to 4" ASME, DN 25 to 100                                                                                                                                                  |
| Enclosure cable inlet       | 2 x ½" NPT or 2 x M20x1.5                                                                                                                                                   |
| Power supply                | 12 to 30 V DC any polarity, 2-wire current loop circuit                                                                                                                     |

##### User Interface

|         |                                                              |
|---------|--------------------------------------------------------------|
| Display | Local LCD, 4 digit, each 0 to 9 and limited alpha characters |
|---------|--------------------------------------------------------------|

##### Safety

|                                |                                                                                 |
|--------------------------------|---------------------------------------------------------------------------------|
| Measurement current signalling | According to NAMUR NE 43, signal 3.8 to 20.5 mA, fault ≤ 3.6 or ≥ 21 mA (22 mA) |
|--------------------------------|---------------------------------------------------------------------------------|

##### Certificates and approvals

|                                                          |                                                                                             |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------|
| • General                                                | CE, CSA <sub>US/C</sub> , FM, C-TICK (Europe)                                               |
| • Dust Ignition Proof (Intrinsically Safe probe circuit) | ATEX 1/2 D T100 °C (US/Canada)<br>FM/CSA:<br>Class II, Div. 1, Groups E,F,G<br>Class III T4 |
| • Flame Proof (Intrinsically Safe probe circuit)         | (Europe)<br>ATEX II 1/2 G EEx d [ia] IIC T6...T1<br>ATEX II 1/2 D T100 °C (US/Canada)       |
| • Explosion Proof (Intrinsically Safe probe circuit)     | Class I, Div. 1, Groups A,B,C,D<br>Class II, Div. 1, Groups E,F,G<br>Class III T4           |
| • Marine                                                 | Bureau Veritas Type Approval<br>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 5/16.

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

<sup>3)</sup> Direct steam exposure can cause PFA insulation break down

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SITRANS LC300

| Design: Probe        |                                           |                                           |                                                                  |
|----------------------|-------------------------------------------|-------------------------------------------|------------------------------------------------------------------|
|                      | Rod version                               | Stilling well version                     | Cable version                                                    |
| Length               | Min. 300 mm (12"),<br>max. 5000 mm (197") | Min. 300 mm (12"),<br>max. 5000 mm (197") | Min. 1000 mm (40"),<br>max. 25000 mm (984")                      |
| Sensor wetted parts  | PFA, 316L stainless steel                 | PFA, 316L stainless steel                 | 316L stainless steel or 316L stainless 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                     |

### SITRANS LC300

#### Selection and Ordering data

Order No.

#### SITRANS LC300, rod version

7 ML 5 6 7 0 -

An inverse frequency shift capacitance continuous level transmitter for liquids and solids applications.

#### Process Connection

##### Threaded, 316L stainless steel

¾" NPT [(Taper), ANSI/ASME B1.20.1]

0 A

1" NPT [(Taper), ANSI/ASME B1.20.1]

0 B

1¼" NPT [(Taper), ANSI/ASME B1.20.1]

0 C

1½" NPT [(Taper), ANSI/ASME B1.20.1]

0 D

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

R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]

1 D

G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]

3 A

G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]

3 B

G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]

3 D

##### Welded flange, 316L stainless steel, raised face<sup>1)</sup>

1" ASME, 150 lb

5 A

1" ASME, 300 lb

5 B

1" ASME, 600 lb

5 C

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

##### Welded flange, 316L stainless steel, Type A flat faced<sup>1)</sup>

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

#### Probe Length (from flange face or including process thread)

Add order code Y01 and plain text: "Insertion length ... mm"

300 to 1000 mm (11.81 to 39.37")

A

1001 to 2000 mm (39.41 to 78.74")

B

2001 to 3000 mm (78.78 to 118.11")

C

3001 to 4000 mm (118.15 to 157.48")

D

4001 to 5000 mm (157.52 to 196.85")

E

#### Thermal Isolator

Without thermal isolator

0

With thermal isolator [for process connection temperatures over +85 °C (+185 °F)]

1

#### Selection and Ordering data

Order No.

#### SITRANS LC300, rod version

7 ML 5 6 7 0 -

An inverse frequency shift capacitance continuous level transmitter for liquids and solids applications.

#### Wetted Seals

FKM

0

FFKM [for process temperatures above -20 °C (-4 °F)]

1

#### Probe Material

19 mm (0.75") diameter 316L stainless steel, PFA lined rod

0

#### Approvals

General Safety (CSA, FM, CE, C-TICK)

A

Dust Ignition Proof With IS Probe

B

CE, C-TICK, ATEX II 1/2 D T100 °C

C

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

D

Dust Ignition Proof With IS Probe

CSA/FM Class II, Div. 1, Gr. E, F, G

CSA/FM Class III T4

E

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

A

#### Enclosure

Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP65

B

Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP65

C

Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP68

D

Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP68

D

#### Further designs

Order code

Please add "-Z" to Order No. and specify Order code(s).

Insertion length, specify in plain text: Y01: ... mm

Y01

Stainless steel tag [69 x 50 mm (2.71 x 1.97")]: Measuring-point number/identification (max. 16 characters) specify in plain text

Y15

Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000 Inspection Certificate Type 3.1 per EN 10204

C11

C12

#### Operating Instructions

Order No.

English

7ML1998-5HE02

French

7ML1998-5HE11

German

7ML1998-5HE32

Spanish

7ML1998-5HE21

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.

# Level instruments

## Continuous level measurement - Capacitance transmitters

### SITRANS LC300

| Selection and Ordering data                                                                              | Order No.              |
|----------------------------------------------------------------------------------------------------------|------------------------|
| <b>SITRANS LC300, rod version</b>                                                                        | <b>7 M L 5 6 7 0 -</b> |
| An inverse frequency shift capacitance continuous level transmitter for liquids and solids applications. | <b>0</b>               |
| <b>Accessories</b>                                                                                       |                        |
| Electronic transmitter kit (includes transmitter and driver)                                             | C) <b>7ML1830-1KN</b>  |
| SITRANS RD100 Remote display - see RD100 on page 5/305                                                   |                        |
| SITRANS RD200 Remote display - see RD200 on page 5/307                                                   |                        |
| SITRANS RD500 Remote display - see RD500 on page 5/311                                                   |                        |

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

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

| Selection and Ordering data                                                                  | Order No.              |
|----------------------------------------------------------------------------------------------|------------------------|
| <b>SITRANS LC300, stilling well version</b>                                                  | <b>7 M L 5 6 7 1 -</b> |
| An inverse frequency shift capacitance continuous level transmitter for liquid applications. | <b>0</b>               |
| <b>Process Connection</b>                                                                    |                        |
| <u>Threaded, 316L stainless steel</u>                                                        |                        |
| 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: "Insertion length .... mm"</u>                         |                        |
| 300 to 1000 mm (11.81 to 39.37")                                                             | <b>A</b>               |
| 1001 to 2000 mm (39.41 to 78.74")                                                            | <b>B</b>               |
| 2001 to 3000 mm (78.78 to 118.11")                                                           | <b>C</b>               |
| 3001 to 4000 mm (118.15 to 157.48")                                                          | <b>D</b>               |
| 4001 to 5000 mm (157.52 to 196.85")                                                          | <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>               |

### SITRANS LC300

| Selection and Ordering data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Order No.                                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>SITRANS LC300, stilling well version</b><br>An inverse frequency shift capacitance continuous level transmitter for liquid applications.                                                                                                                                                                                                                                                                                                                                                                  | <b>7 ML 5 6 7 1 -</b><br>■ ■ ■ ■ ■ - ■ ■ ■ ■ ■ 0                                                          |
| <b>Wetted Seals</b><br>FKM<br>FFKM [for process temperatures above -20 °C (-4 °F)]                                                                                                                                                                                                                                                                                                                                                                                                                           | 0<br>1                                                                                                    |
| <b>Probe Material</b><br>35 mm (1.38") diameter stilling well, with 19 mm (0.75") diameter 316L stainless steel, PFA lined rod with PTFE spacers                                                                                                                                                                                                                                                                                                                                                             | 1                                                                                                         |
| <b>Approvals</b><br>General Safety (CSA, FM, CE, C-TICK)<br>Dust Ignition Proof With IS Probe<br>CE, C-TICK, ATEX II 1/2 D T100 °C<br>Flame Proof Enclosure With IS Probe<br>CE, C-TICK, ATEX II 1/2 G EEx d [ia] IIC T6...T1, ATEX II 1/2 D T100 °C<br>Dust Ignition Proof With IS Probe<br>CSA/FM Class II, Div. 1, Gr. E, F, G<br>CSA/FM Class III T4<br>Explosion Proof Enclosure With IS Probe<br>CSA/FM Class I, Div. 1, Gr. A, B, C, D<br>CSA/FM Class II, Div. 1, Gr. E, F, G<br>CSA/FM Class III T4 | A<br>B<br>C<br>D<br>E                                                                                     |
| <b>Enclosure</b><br>Aluminum epoxy coated 2 x 1/2" NPT via adapter - cable inlet, IP65<br>Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP65<br>Aluminum epoxy coated 2 x 1/2" NPT via adapter - cable inlet, IP68<br>Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP68                                                                                                                                                                                                                               | A<br>B<br>C<br>D                                                                                          |
| <b>Further designs</b><br>Please add "-Z" to Order No. and specify Order code(s).                                                                                                                                                                                                                                                                                                                                                                                                                            | Order code                                                                                                |
| Insertion length, specify in plain text:<br>Y01: ... mm                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Y01</b>                                                                                                |
| Stainless steel tag [69 x 50 mm (2.71 x 1.97")]:<br>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<br>Inspection Certificate Type 3.1 per EN 10204                                                                                                                                                                                                                                                                                                                                                            | <b>C11</b><br><b>C12</b>                                                                                  |
| <b>Operating Instructions</b><br>English<br>French<br>German<br>Spanish<br>Note: The Operating Instructions should be ordered as a separate line item on the order.<br><br>This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.                                                                                                                                                                                        | Order No.<br><b>7ML1998-5HE02</b><br><b>7ML1998-5HE11</b><br><b>7ML1998-5HE32</b><br><b>7ML1998-5HE21</b> |

| Selection and Ordering data                                                                                                                                                                                                                                      | Order No.                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| <b>SITRANS LC300, stilling well version</b><br>An inverse frequency shift capacitance continuous level transmitter for liquid applications.                                                                                                                      | <b>7 ML 5 6 7 1 -</b><br>■ ■ ■ ■ ■ - ■ ■ ■ ■ ■ 0 |
| <b>Accessories</b><br>Electronic transmitter kit (includes transmitter and driver)<br>SITRANS RD100 Remote display - see RD100 on page 5/305<br>SITRANS RD200 Remote display - see RD200 on page 5/307<br>SITRANS RD500 Remote display - see RD500 on page 5/311 | C) <b>7ML1830-1KN</b>                            |
| 1) Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.<br>C) Subject to export regulations AL: N, ECCN: EAR99                                                                                       |                                                  |

# Level instruments

## Continuous level measurement - Capacitance transmitters

SITRANS LC300

| Selection and Ordering data                                                                                             | Order No.             |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <b>SITRANS LC300, cable version</b>                                                                                     | <b>7 ML 5 6 7 2 -</b> |
| An inverse frequency shift capacitance continuous level transmitter for non-conductive liquids and solids applications. | ■ ■ ■ ■ ■ - ■ ■ ■ ■ 0 |
| <b>Process Connection</b>                                                                                               |                       |
| <u>Threaded, 316L stainless steel</u>                                                                                   |                       |
| 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: "Insertion length ... mm"</u>                                                     |                       |
| 1000 to 2000 mm (39.37 to 78.74")                                                                                       | <b>A</b>              |
| 2001 to 4000 mm (78.78 to 157.48")                                                                                      | <b>B</b>              |
| 4001 to 6000 mm (157.52 to 236.22")                                                                                     | <b>C</b>              |
| 6001 to 8000 mm (236.26 to 314.96")                                                                                     | <b>D</b>              |
| 8001 to 10000 mm (315.00 to 393.70")                                                                                    | <b>E</b>              |
| 10001 to 12000 mm (393.74 to 472.44")                                                                                   | <b>F</b>              |
| 12001 to 14000 mm (472.48 to 551.18")                                                                                   | <b>G</b>              |
| 14001 to 16000 mm (551.22 to 629.92") <sup>2)</sup>                                                                     | <b>H</b>              |
| 16001 to 18000 mm (629.96 to 708.66") <sup>2)</sup>                                                                     | <b>J</b>              |
| 18001 to 20000 mm (708.70 to 787.40") <sup>2)</sup>                                                                     | <b>K</b>              |
| 20001 to 22000 mm (787.44 to 866.14") <sup>2)</sup>                                                                     | <b>L</b>              |
| 22001 to 24000 mm (866.18 to 944.88") <sup>2)</sup>                                                                     | <b>M</b>              |
| 24001 to 25000 mm (944.92 to 984.25") <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>              |

| Selection and Ordering data                                                                                                                              | Order No.             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <b>SITRANS LC300, cable version</b>                                                                                                                      | <b>7 ML 5 6 7 2 -</b> |
| An inverse frequency shift capacitance continuous level transmitter for non-conductive liquids and solids applications.                                  | ■ ■ ■ ■ ■ - ■ ■ ■ ■ 0 |
| <b>Wetted Seals</b>                                                                                                                                      |                       |
| FKM                                                                                                                                                      | <b>0</b>              |
| FFKM [for process temperatures above -20 °C (-4 °F)]                                                                                                     | <b>1</b>              |
| <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 | <b>0</b>              |
| <b>Approvals</b>                                                                                                                                         |                       |
| General Safety (CSA, FM, CE, C-TICK)                                                                                                                     | <b>A</b>              |
| Dust Ignition Proof With IS Probe                                                                                                                        | <b>B</b>              |
| CE, C-TICK, ATEX II 1/2 D T100 °C                                                                                                                        | <b>C</b>              |
| Flame Proof Enclosure With IS Probe                                                                                                                      | <b>C</b>              |
| CE, C-TICK, ATEX II 1/2 G EEx d [ia] IIC T6...T1, ATEX II 1/2 D T100 °C                                                                                  | <b>D</b>              |
| Dust Ignition Proof With IS Probe                                                                                                                        | <b>D</b>              |
| CSA/FM Class II, Div. 1, Gr. E, F, G                                                                                                                     | <b>E</b>              |
| CSA/FM Class III T4                                                                                                                                      | <b>E</b>              |
| Explosion Proof Enclosure With IS Probe                                                                                                                  | <b>E</b>              |
| CSA/FM Class I, Div. 1, Gr. A, B, C, D                                                                                                                   | <b>E</b>              |
| CSA/FM Class II, Div. 1, Gr. E, F, G                                                                                                                     | <b>E</b>              |
| 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>Further designs</b>                                                                                                                                   | Order code            |
| 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")]: 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                                                                                                                                                  | <b>7ML1998-5HE02</b>  |
| French                                                                                                                                                   | <b>7ML1998-5HE11</b>  |
| German                                                                                                                                                   | <b>7ML1998-5HE32</b>  |
| Spanish                                                                                                                                                  | <b>7ML1998-5HE21</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.               |                       |

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### SITRANS LC300

#### Selection and Ordering data

##### SITRANS LC300, cable version

An inverse frequency shift capacitance continuous level transmitter for non-conductive liquids and solids applications.

#### Accessories

Electronic transmitter kit (includes transmitter and driver)  
SITRANS RD100 Remote display - see RD100 on page 5/305  
SITRANS RD200 Remote display - see RD200 on page 5/307  
SITRANS RD500 Remote display - see RD500 on page 5/311

Order No.

7 M L 5 6 7 2 -

0

C) 7ML1830-1KN

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

2) Cable lengths from 15000 (590.55") to 25000 mm (984.25") can be used in non-conductive media. Contact Factory for assistance.

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

#### Selection and Ordering data

##### SITRANS LC300, PFA coated cable version

An inverse frequency shift capacitance continuous level transmitter for liquids and solids applications.

Order No.

7 M L 5 6 7 3 -

0

#### Process Connection

##### Threaded, 316L stainless steel

1½" NPT [(Taper), ANSI/ASME B1.20.1]

R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]

G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]

##### Welded flange, 316L stainless steel, raised face<sup>1)</sup>

1½" ASME, 150 lb

1½" ASME, 300 lb

1½" ASME, 600 lb

2" ASME, 150 lb

2" ASME, 300 lb

2" ASME, 600 lb

3" ASME, 150 lb

3" ASME, 300 lb

3" ASME, 600 lb

4" ASME, 150 lb

4" ASME, 300 lb

4" ASME, 600 lb

##### Welded flange, 316L stainless steel, Type A flat faced<sup>1)</sup>

DN 40, PN 16

DN 40, PN 40

DN 50, PN 16

DN 50, PN 40

DN 80, PN 16

DN 80, PN 40

DN 100, PN 16

DN 100, PN 40

#### Probe Length (from flange face or including process thread)

Add order code Y01 and plain text: "Insertion length ... mm"

1000 to 2000 mm (39.37 to 78.74")

2001 to 4000 mm (78.78 to 157.48")

4001 to 6000 mm (157.52 to 236.22")

6001 to 8000 mm (236.26 to 314.96")

8001 to 10000 mm (315.00 to 393.70")

10001 to 12000 mm (393.74 to 472.44")

12001 to 14000 mm (472.48 to 551.18")

14001 to 16000 mm (551.22 to 629.92")<sup>2)</sup>

16001 to 18000 mm (629.96 to 708.66")<sup>2)</sup>

18001 to 20000 mm (708.70 to 787.40")<sup>2)</sup>

20001 to 22000 mm (787.44 to 866.14")<sup>2)</sup>

22001 to 24000 mm (866.18 to 944.88")<sup>2)</sup>

24001 to 25000 mm (944.92 to 984.25")<sup>2)</sup>

#### Thermal Isolator

Without thermal isolator

With thermal isolator [for process connection temperatures over +85 °C (+185 °F)]

A

B

C

D

E

F

G

H

J

K

L

M

N

0

1

# Level instruments

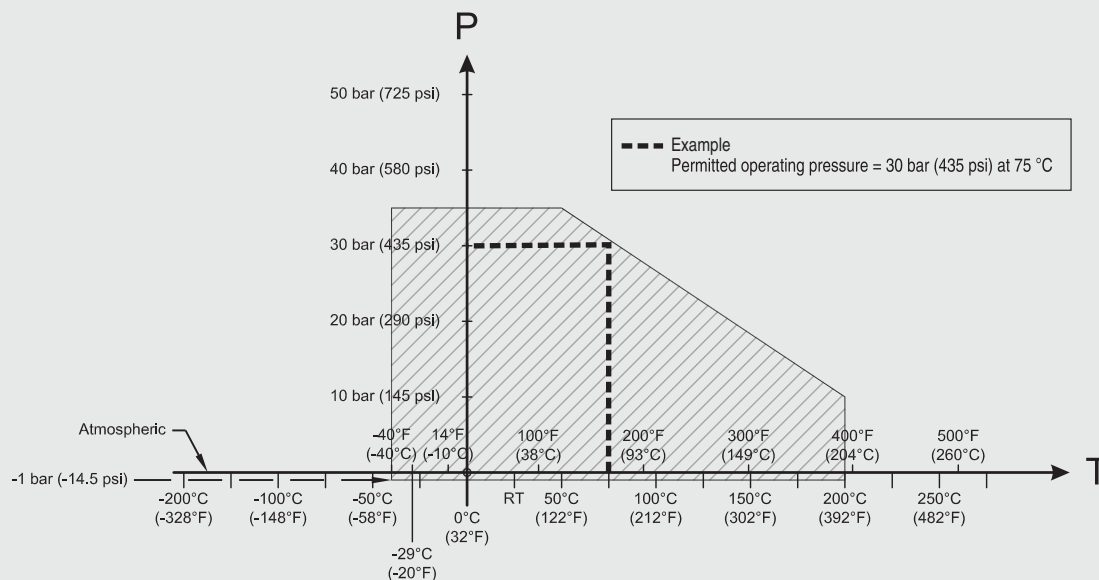
## Continuous level measurement - Capacitance transmitters

SITRANS LC300

| Selection and Ordering data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Order No.                                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>SITRANS LC300, PFA coated cable version</b><br>An inverse frequency shift capacitance continuous level transmitter for liquids and solids applications.                                                                                                                                                                                                                                                                                                                                                       | <b>7 ML 5 6 7 3 -</b>                                                                                     |
| <b>Wetted Seals</b><br>FKM<br>FFKM [for process temperatures above -20 °C (-4 °F)]                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>0</b><br><b>1</b>                                                                                      |
| <b>Probe Material</b><br>PFA coated cable and 316L stainless steel cable weight, PEEK isolator and PFA lined active shield                                                                                                                                                                                                                                                                                                                                                                                       | <b>1</b>                                                                                                  |
| <b>Approvals</b><br>General Safety (CSA, FM, CE, C-TICK)<br>Dust Ignition Proof With IS Probe<br>CE, C-TICK, ATEX II 1/2 D T100 °C<br>Flame Proof Enclosure With IS Probe<br>CE, C-TICK, ATEX II 1/2 G EEx d [Ia] IIC T6...T1, ATEX II 1/2 D T100 °C<br><br>Dust Ignition Proof With IS Probe<br>CSA/FM Class II, Div. 1, Gr. E, F, G<br>CSA/FM Class III T4<br>Explosion Proof Enclosure With IS Probe<br>CSA/FM Class I, Div. 1, Gr. A, B, C, D<br>CSA/FM Class II, Div. 1, Gr. E, F, G<br>CSA/FM Class III T4 | <b>A</b><br><b>B</b><br><b>C</b><br><b>D</b><br><b>E</b>                                                  |
| <b>Enclosure</b><br>Aluminum epoxy coated 2 x 1/2" NPT via adapter - cable inlet, IP65<br>Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP65<br>Aluminum epoxy coated 2 x 1/2" NPT via adapter - cable inlet, IP68<br>Aluminum epoxy coated 2 x M20 x 1.5 cable inlet, IP68                                                                                                                                                                                                                                   | <b>A</b><br><b>B</b><br><b>C</b><br><b>D</b>                                                              |
| <b>Mounting eye</b><br>Without Mounting eye<br>With mounting eye                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>0</b><br><b>1</b>                                                                                      |
| <b>Further designs</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Order code                                                                                                |
| Please add "-Z" to Order No. and specify Order code(s).                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                           |
| Insertion length, specify in plain text:<br>Y01: ... mm                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Y01</b>                                                                                                |
| Stainless steel tag [69 x 50 mm (2.71 x 1.97")]:<br>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<br>Inspection Certificate Type 3.1 per EN 10204                                                                                                                                                                                                                                                                                                                                                                | <b>C11</b><br><b>C12</b>                                                                                  |
| <b>Operating Instructions</b><br>English<br>French<br>German<br>Spanish<br>Note: The Operating Instructions should be ordered as a separate line item on the order.<br><br>This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.                                                                                                                                                                                            | Order No.<br><b>7ML1998-5HE02</b><br><b>7ML1998-5HE11</b><br><b>7ML1998-5HE32</b><br><b>7ML1998-5HE21</b> |

| Selection and Ordering data                                                                                                                                                                                                                                                                                    | Order No.             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <b>SITRANS LC300, PFA coated cable version</b><br>An inverse frequency shift capacitance continuous level transmitter for liquids and solids applications.                                                                                                                                                     | <b>7 ML 5 6 7 3 -</b> |
| <b>Accessories</b><br>Electronic transmitter kit (includes transmitter and driver)<br>SITRANS RD100 Remote display - see RD100 on page 5/305<br>SITRANS RD200 Remote display - see RD200 on page 5/307<br>SITRANS RD500 Remote display - see RD500 on page 5/311                                               | <b>C) 7ML1830-1KN</b> |
| 1) Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.<br>2) Cable lengths from 15000 (590.55") to 25000 mm (984.25") can be used in non-conductive media. Contact Factory for assistance.<br>C) Subject to export regulations AL: N, ECCN: EAR99 |                       |

#### Characteristic curves

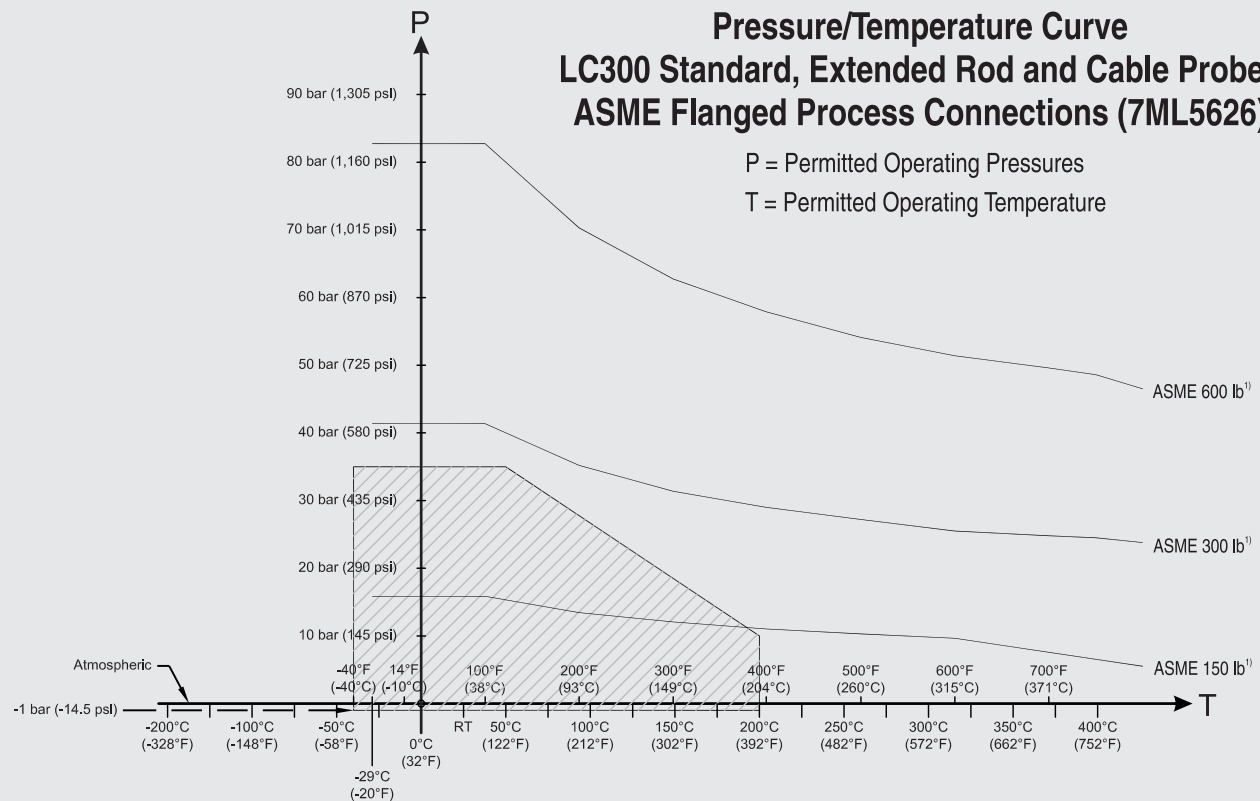


**Pressure/Temperature Curve**  
**LC300 Standard, Extended Rod and Cable Probes**  
**Threaded Process Connections (7ML5625)**

P = Permitted Operating Pressures

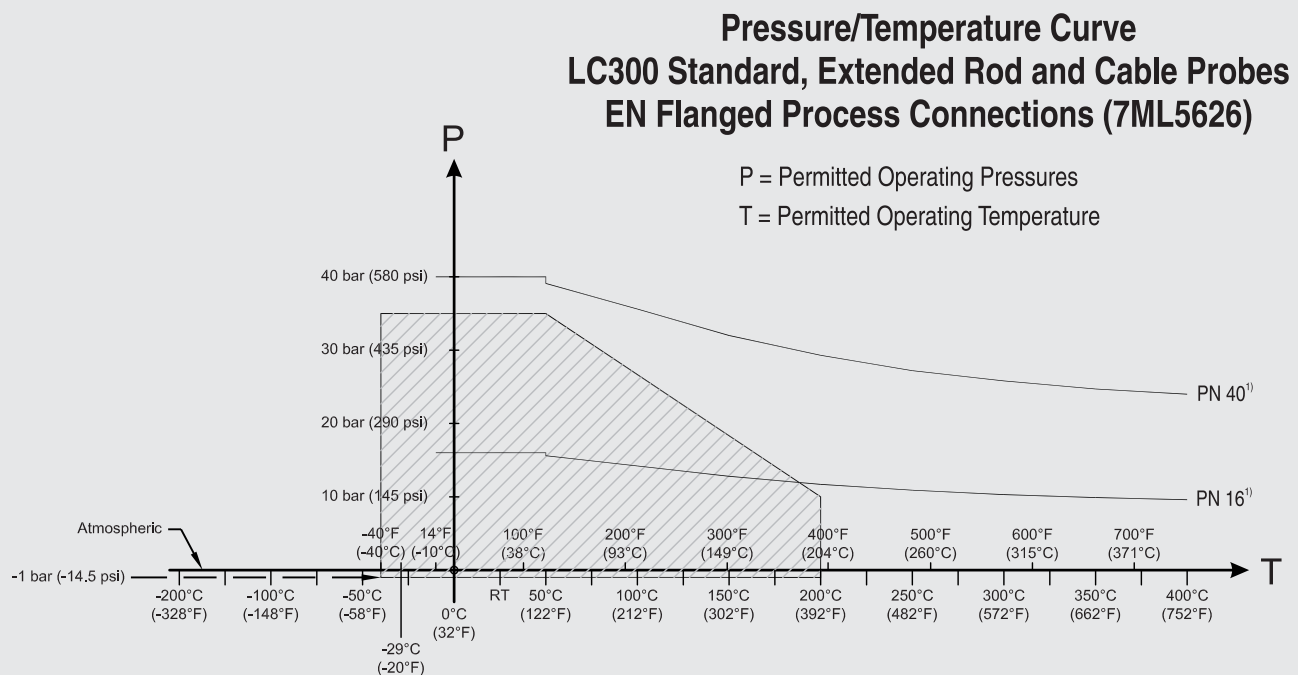
T = Permitted Operating Temperature

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



1) The curve denotes the minimum allowable flange class for the shaded area below.

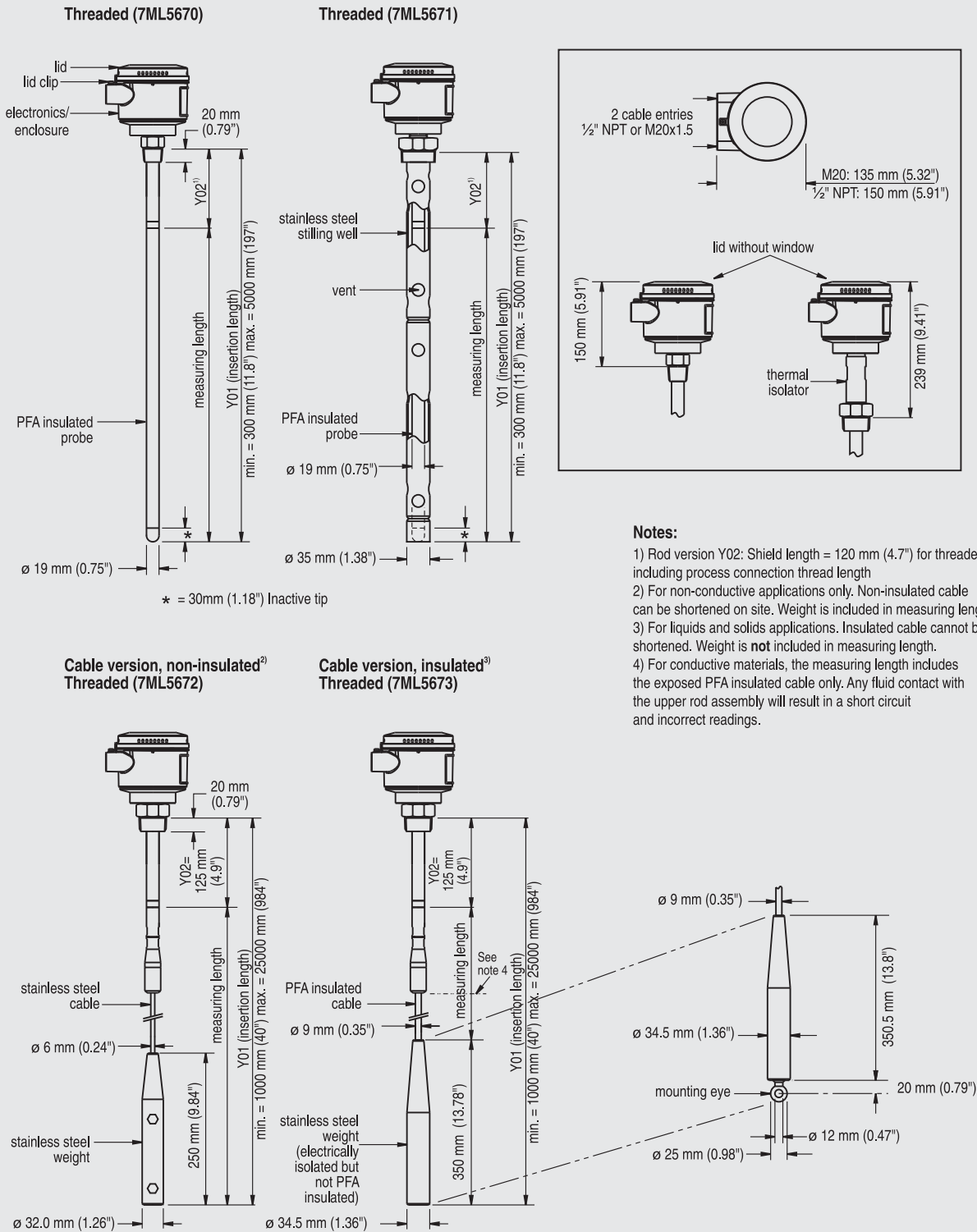
SITRANS LC300 Process Pressure/Temperature derating curves (7ML5626)



1) The curve denotes the minimum allowable flange class for the shaded area below.

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

#### Dimensional drawings



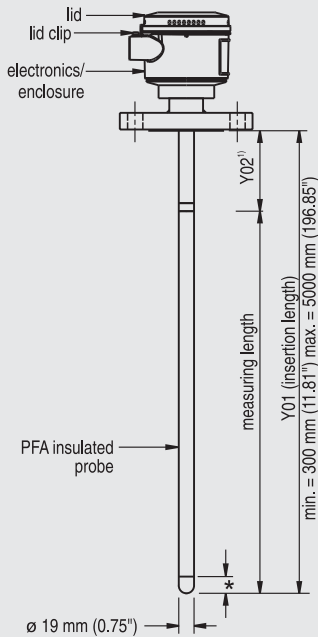
SITRANS LC300 dimensions - Threaded Process Connections

# Level instruments

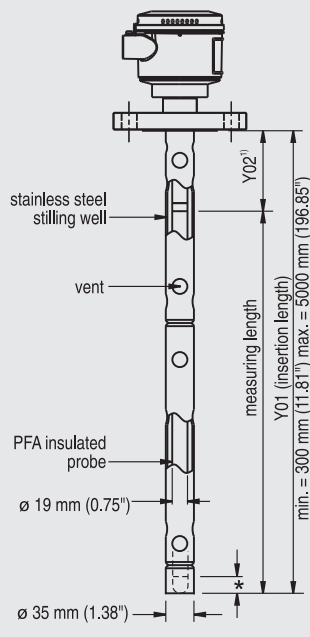
## Continuous level measurement - Capacitance transmitters

SITRANS LC300

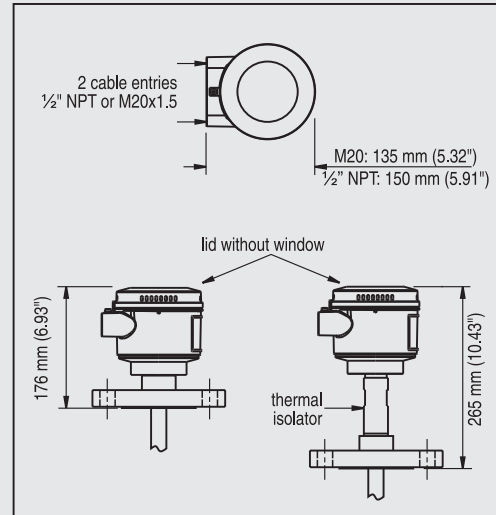
Welded Flange (7ML5670)



Welded Flange (7ML5671)



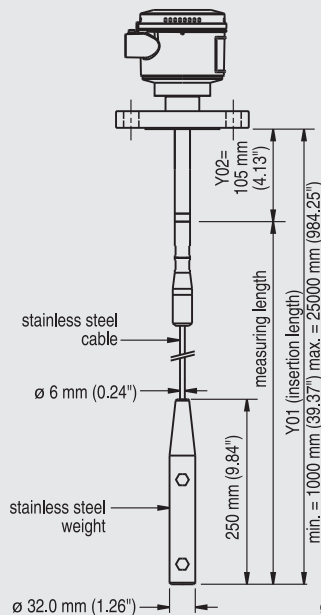
★ = 30 mm (1.18") Inactive tip



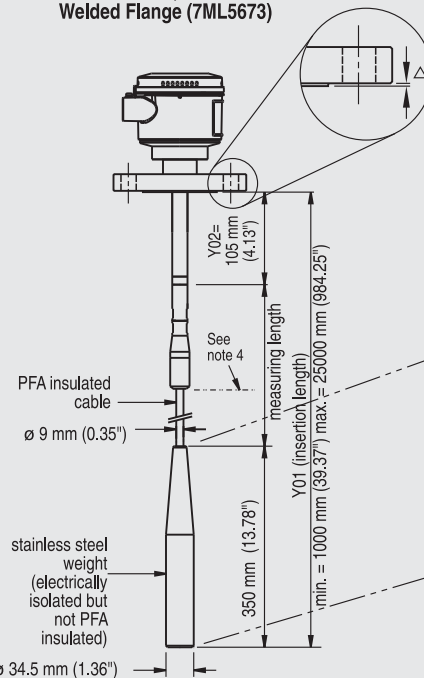
Flange Facing (raised face)

| Flange Class   | Facing thickness |
|----------------|------------------|
| △ ASME 150/300 | 2 mm (0.08")     |
| △ ASME 600/900 | 7 mm (0.28")     |
| △ PN 16/40     | 2 mm (0.08")     |

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

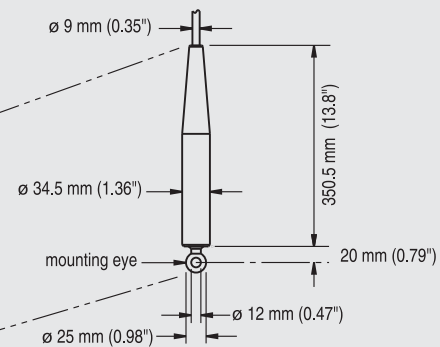


Cable version, insulated<sup>3)</sup>  
Welded Flange (7ML5673)



### Notes:

- 1) Rod version Y02: Shield length= 100 mm (3.9")
- 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.



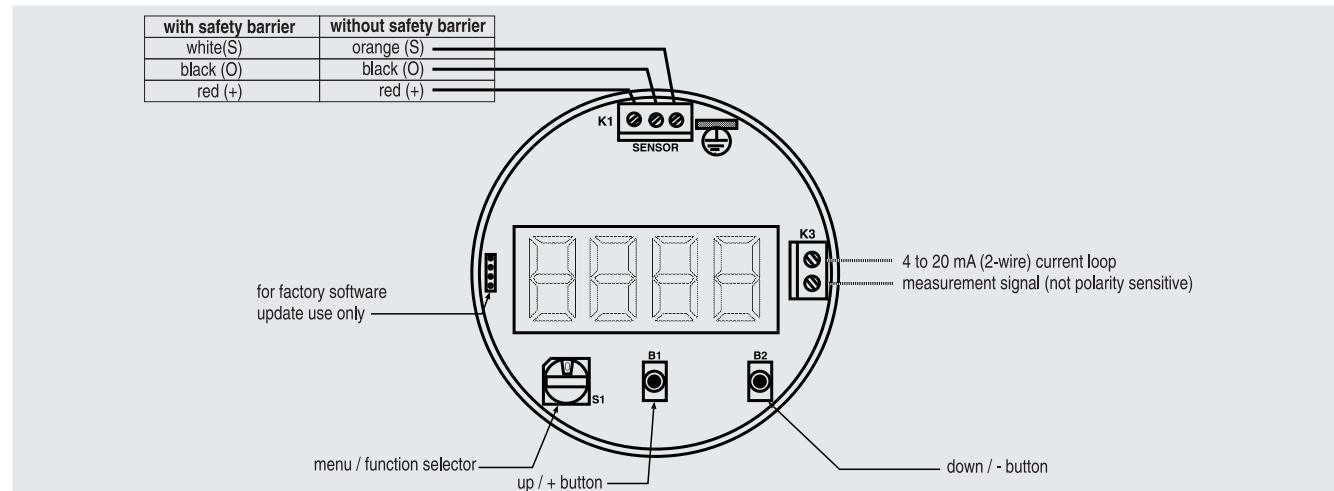
SITRANS LC300 dimensions - Flanged Process Connections

# Level instruments

## Continuous level measurement - Capacitance transmitters

### SITRANS LC300

#### Schematics



SITRANS LC300 connections