

## Level Measurement

### Continuous level measurement - Capacitance transmitters

#### SITRANS LC500

##### Overview



SITRANS LC500 is an inverse frequency shift capacitance level or interface transmitter for extreme and critical process conditions, such as oil and liquefied natural gas (LNG) as well as toxic and aggressive chemicals and vapors.

##### Benefits

- Active-Shield technology so measurement is unaffected by material buildup in active shield section
- Simple push-button calibration and integrated local display
- Inverse frequency approach provides high resolution
- 2-wire loop powered 4 to 20/20 to 4 mA measurement signal
- Pre-detection alarm and full function diagnostics
- High temperature and pressure resistant (optional)
- Full-function diagnostics comply with NAMUR NE 43
- Easy calibration locally or via HART (using SIMATIC PDM software)

##### Application

SITRANS LC500's advanced electronics provide one-step, push-button calibration and local display for easy on-site installation and setup.

The unique mechanical probe design coupled with a high performance transmitter gives superior performance in toxic and aggressive chemicals, acids, caustics, adhesives, and in viscous conductive and non-conductive materials.

The SMART 2-wire transmitter has HART communications for remote commissioning and inspection.

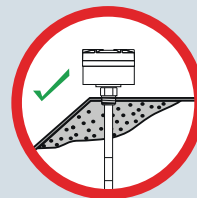
- Key Applications: oil/water or foam/liquid interface measurement in separators or coalescers, cryogenic applications including CO<sub>2</sub> and liquefied natural gas (LNG), distillation/regeneration tanks with high temperatures

##### Probe Applications

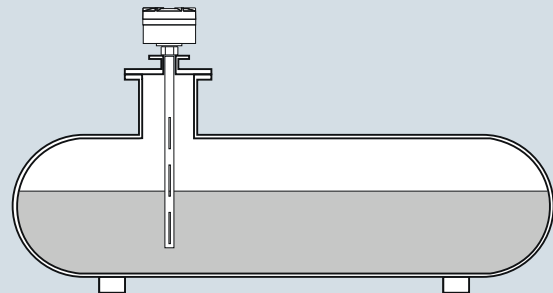
|                                 |   |
|---------------------------------|---|
| Rod version                     | Conductive liquids, slurries or solids  |
| Rod version with stilling well  | <ul style="list-style-type: none"> <li>• Conductive liquids or slurries in non-conductive tanks</li> <li>• Non-conductive liquids in non-conductive tanks</li> <li>• Tanks with agitation or turbulent liquids</li> <li>• Liquids with a dielectric constant below 2</li> <li>• Non-linear tanks, such as parabolic or spherical tanks</li> <li>• Interface measurements</li> </ul> |
| Cable version                   | Non-conductive solids or liquids  |
| PFA coated cable version        | Conductive or sticky liquids, slurries, or solids   |
| Extended cable with rod version | Long range conductive liquids, slurries or solids when level or interface measurements are required in the low area of the bin or tank  |

##### Configuration

###### Installation



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



Mounting on non-linear vessels in non-conductive fluids using stilling well.

SITRANS LC500 installation, dimensions in mm (inch)

### Technical specifications

|   |   |  |  |
|---|---|--|--|
| <b>Input</b>  |   | <b>Design</b>  |  |
| Measuring range   | 1 ... 3 300 pF  | Material   |  |
| Span  | Min. 3.3 pF   | <ul style="list-style-type: none"> <li>Wetted parts material               <ul style="list-style-type: none"> <li>Standard rod</li> </ul> </li> <li>Probe insulation (rod)</li> <li>Cable</li> </ul> | 316L stainless steel<br>PFA<br>316 stainless steel/<br>316 stainless steel PFA   |
| <b>Output</b>   |   | Probe diameter   |  |
| Solid-state switch  |   | <ul style="list-style-type: none"> <li>Rod version</li> </ul>  | 16 mm (0.63 inch) or 24 mm (0.95 inch)   |
| <ul style="list-style-type: none"> <li>Output</li> <li>Protection</li> <li>Max. switching voltage</li> </ul>  | Galvanically isolated<br>Bipolar <ul style="list-style-type: none"> <li>30 V (DC)</li> <li>30 V peak (AC)</li> </ul>          | <ul style="list-style-type: none"> <li>Cable version</li> </ul>  | 9 mm (0.35 inch) with PFA jacket,<br>6 mm (0.24 inch) without PFA jacket   |
| <ul style="list-style-type: none"> <li>Max. load current</li> <li>Voltage drop</li> <li>Time delay (pre or post switching)</li> </ul>                                   | 82 mA<br>< 1 V, typical at 50 mA<br>1 ... 60 s  | Active shield length   |  |
| Loop current  | 3.6 ... 22 mA/22 ... 3.6 mA (2-wire current loop)   | <ul style="list-style-type: none"> <li>Minimum (rod version)</li> </ul>  | 50 mm (1.97 inch), customer selectable (order number Y02)  |
| <b>Accuracy (transmitter)</b>   |   | Probe length   |  |
| Temperature stability   | 0.15 pF (0 pF) or < 0.25 % (typically < 0.1 %) of actual measured value, whichever is greater over the full temperature range | <ul style="list-style-type: none"> <li>Rod version</li> </ul>  | Max. 3.5 m (138 inch) with 16 mm rod, PFA<br>Max. 5.5 m (216 inch) with 24 mm rod, PFA   |
| Non-linearity and repeatability   | < 0.1 % of range and actual measured value respectively   | <ul style="list-style-type: none"> <li>Cable version</li> </ul>  | Max. 35 m (1 378 inch)   |
| Accuracy  | Deviation < 0.1 % of measured value   | Process connection of probe  |  |
| <b>Rated operating conditions<sup>1)</sup></b>  |   | <ul style="list-style-type: none"> <li>Threaded mounting</li> </ul>  | NPT [(Taper), ANSI/ASME B1.20.1] R [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]   |
| Installation conditions   |   | <ul style="list-style-type: none"> <li>Flange mounting</li> </ul>  | ASME, EN 1092-1  |
| <ul style="list-style-type: none"> <li>Location</li> </ul>  | Indoor/outdoor  | <b>Enclosure</b>   |  |
| Ambient conditions  |   | Material   | Aluminum, epoxy-coated   |
| <ul style="list-style-type: none"> <li>Ambient temperature (transmitter)</li> <li>Installation category</li> <li>Pollution degree</li> </ul>                            | -40 ... +85 °C (-40 ... +185 °F) <sup>2)</sup><br>II<br>4   | Cable inlet  | 2 x ½ inch NPT (2 x M20 x 1.5, IP68 adapter, optional)   |
| Medium conditions   |   | Degree of protection   | Type 4X/NEMA4X/IP65, IP68  |
| <ul style="list-style-type: none"> <li>Relative dielectric constant <math>\epsilon_r</math></li> <li>Minimum difference in dielectric constant for interface</li> </ul> | Min. 1.5<br>5   | <b>Power supply</b>  | 12 ... 33 V DC   |
| <ul style="list-style-type: none"> <li>Process temperature</li> </ul>   | Temperature rating of process seal is pressure dependent. See Pressure/Temperature curves on page 4/360.                      | <b>User Interface</b>  |  |
| <ul style="list-style-type: none"> <li>Standard (PFA)<sup>3)</sup></li> <li>Cryogenic version<sup>4)</sup></li> </ul>   | -50 ... +200 °C (-58 ... +392 °F)<br>-200 ... +200 °C (-328 ... +392 °F)  | Display  | Local LCD, 4 digit, each 0 ... 9 and limited alpha characters  |
| <ul style="list-style-type: none"> <li>Process pressure</li> </ul>  | Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves on page 4/360.                      | Rotary function switch   | For selecting programmable menu items  |
| <ul style="list-style-type: none"> <li>Standard (PFA)</li> </ul>  | -1 ... 150 bar g (2 175 psi g)  | Push buttons   | Red +, blue -, used in conjunction with rotary switch for programming  |
|   |   | <b>Features</b>  |  |
|   |   | Measurement current signaling  | According to NAMUR NE 43, signal 3.8 ... 20.5 mA, fault $\leq 3.6$ or $\geq 21$ mA (22 mA)   |
|   |   | Safety   | <ul style="list-style-type: none"> <li>Inputs/outputs fully galvanically isolated</li> <li>Polarity-insensitive current loop</li> <li>Fully potted</li> <li>Integrated safety barrier</li> </ul> |
|   |   | <ul style="list-style-type: none"> <li>Diagnostics with fault alarm when:</li> </ul>   | Primary variable (PV) out of limits, system failure in measurement circuit, deviation between A/D and D/A converter, check sum, watch dog and self-checking facility                             |
|   |   | <ul style="list-style-type: none"> <li>Function rotary switch</li> <li>SMART communication</li> </ul>  | Positions 0 ... 9, A ... F<br>Conforming to HART Communication Foundation (HCF)  |

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##### Certificates and approvals

|   |   |
|---|---|
| General Purpose   | CE, CSA, FM, RCM, KCC, EAC  |
| Non-incendive/Non-sparking  | <ul style="list-style-type: none"> <li>• CSA/FM Class I, Div. 2, Groups A, B, C, D T4 ATEX II 3G 2D EEx nA [ib] IIC</li> <li>• T6 ... T4 T100 °C</li> </ul> |
| Dust Ignition Proof<br>(Intrinsically Safe Probe Circuit)             |   |
| <ul style="list-style-type: none"> <li>• Canada/USA</li> </ul>        | CSA/FM Class II and III, Div. 1, Groups E, F, G   |
| <ul style="list-style-type: none"> <li>• Europe</li> </ul>            | ATEX II 1/2 GD EEx d [ia] T6 ... T1 T100 °C   |
| <ul style="list-style-type: none"> <li>• Brazil</li> </ul>            | INMETRO Ex d [ia Ga] IIC T6 ... T1 Gb Ex tb [ia Da] IIC T100 °C Db -40 °C ≤ Ta ≤ +70 °C IP65/IP68   |
| <ul style="list-style-type: none"> <li>• Russia/Kazakhstan</li> </ul> | EAC Ex  |
| Explosion Proof<br>(Intrinsically Safe Probe Circuit)                 |   |
| <ul style="list-style-type: none"> <li>• Canada/USA</li> </ul>        | FM Class I, Div. 1, Groups A, B, C, D T4  |
| <ul style="list-style-type: none"> <li>• Europe</li> </ul>            | ATEX II 1/2 GD EEx d [ia] IIC T6 ... T1   |
| Overfill Protection   | AIB-Vincotte  |
| Marine  | Lloyds Register of Shipping, Categories ENV1, ENV2, ENV3, and ENV5, Bureau Veritas  |
| Other   | Pattern approval (AQSIQ, China), CRN  |

- 1) When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves on page 4/360.
- 2) Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F).
- 3) Not recommended for steam environments
- 4) Customers interested in a custom designed device should consult a local sales person. For more information, please visit [http://www.automation.siemens.com/aspa\\_app](http://www.automation.siemens.com/aspa_app).

| SITRANS LC500 probe version                       | Standard   | Extended Cable version with Rod Sensor                       |
|---|--|--|
| <b>Process connection types</b>                   | Threaded or welded flange                                    | Single piece flanged   |
| Threaded  | Available as standard  | –  |
| Flange  | Available as standard  | Available as standard  |
| <b>Process connection materials</b>               |  |  |
| Stainless steel 316L                              | Available as standard  | Available as standard  |
| <b>Probe insulation</b>                           |  |  |
| PFA   | Available as standard  | Available as standard  |
| <b>Length and Process parameters<sup>1)</sup></b> |  |  |
| Rod length for PFA 16 mm version                  | Min. 200 mm (7.87 inch)<br>Max. 3 500 mm (137.80 inch)       | Min. 200 mm (7.87 inch)<br>Max. 3 500 mm (137.80 inch)       |
| Rod length for PFA 24 mm version                  | Min. 200 mm (7.87 inch)<br>Max. 5 500 mm (216.54 inch)       | Min. 200 mm (7.87 inch)<br>Max. 5 500 mm (216.54 inch)       |
| Cable length                                      | Min. 1 000 mm (39.37 inch)<br>Max. 35 000 mm (1 377.95 inch) | Min. 1 000 mm (39.37 inch)<br>Max. 35 000 mm (1 377.95 inch) |
| Maximum process pressure                          | See Pressure/Temperature curves for specific probe type      | 5 bar g (73 psi g)   |
| Maximum process temperature                       |  | 100 °C (212 °F)  |

- 1) See Pressure/Temperature curves for specific probe type
  - 2) Refers to total insertion length. See dimension drawing on page 4/368 for further explanation.
- Not available as standard.

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| Selection and Ordering data  | Article No.   | Selection and Ordering data   | Article No.              |
|--|---|---|--------------------------|
| <b>SITRANS LC500, Threaded or Welded Flange with Cable Sensor</b><br>Inverse frequency shift capacitance level and interface transmitter for extreme and critical process conditions, such as oil and liquid gas, toxic and aggressive chemicals and vapours.<br>↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.   | 7ML5513-  | <b>SITRANS LC500, Threaded or Welded Flange with Cable Sensor</b><br>Inverse frequency shift capacitance level and interface transmitter for extreme and critical process conditions, such as oil and liquid gas, toxic and aggressive chemicals and vapours.   | 7ML5513-                 |
| <b>Version<sup>1)</sup></b><br>Cable, 9 mm (0.35 inch) diameter, 316 stainless steel with PFA insulation, weighted<br>Add Order code Y01 and plain text:<br><u>"Insertion length ... mm"</u><br>1 000 ... 2 000 mm (39.37 ... 78.74 inch)<br>2 001 ... 4 000 mm (78.78 ... 157.48 inch)<br>4 001 ... 6 000 mm (157.52 ... 236.22 inch)<br>6 001 ... 8 000 mm (236.26 ... 314.96 inch)<br>8 001 ... 10 000 mm (315 ... 393.70 inch)<br>Longer lengths possible to a max. of 35 000 mm (114.83 ft).<br>Please contact local sales person for details.<br>Cable, 6 mm (0.24 inch) diameter, 316L stainless steel, non-insulated, weighted (non-conductive media only)<br>Add Order code Y01 and plain text:<br><u>"Insertion length ... mm"</u><br>1 000 ... 2 000 mm (39.37 ... 78.74 inch) <sup>2)</sup><br>2 001 ... 4 000 mm (78.78 ... 157.48 inch) <sup>2)3)</sup><br>4 001 ... 6 000 mm (157.52 ... 236.22 inch) <sup>2)3)</sup><br>6 001 ... 8 000 mm (236.26 ... 314.96 inch) <sup>2)3)</sup><br>8 001 ... 10 000 mm (315 ... 393.70 inch) <sup>2)3)</sup><br>Cable lengths up to 25 000 mm (984.25 inch) are possible for non-conductive media. Cable lengths up to 15 000 mm (590.55 inch) are possible for conductive media.<br>Please contact a local sales person for details.                      | 0 E<br>1 E<br>2 E<br>3 E<br>4 E<br><br>0 F<br>1 F<br>2 F<br>3 F<br>4 F  | <b>Approvals</b><br>General Purpose: CE, CSA, FM, RCM<br>CSA / FM Class I, Div. 2, Groups A, B, C, D<br>CSA / FM Class II, III, Div. 1, Groups E, F, G T4<br>ATEX II 3G 2D EEx nA [ib] IIC T6 ... T4 T 100 °C<br>ATEX II 1/2 GD EEx d [ia] IIC T6 ... T1 T 100 °C<br>FM Class I, Div. 1, Groups A, B, C, D, T4  | 1<br>2<br><br>4<br>6     |
| <b>Process connection (316L stainless steel)</b><br><b>Threaded connection</b><br>1½" NPT [(Taper), ANSI/ASME B1.20.1]<br>R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]<br>1¼" NPT [(Taper), ANSI/ASME B1.20.1]<br>G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]<br><b>Welded flange, raised face</b><br>1½", ASME, 150 lb<br>1½", ASME, 300 lb<br>1½", ASME, 600 lb<br>2", ASME, 150 lb<br>2", ASME, 300 lb<br>2", ASME, 600 lb<br>3", ASME, 150 lb <sup>3)</sup><br>3", ASME, 300 lb <sup>3)</sup><br>3", ASME, 600 lb <sup>3)</sup><br>4", ASME, 150 lb <sup>3)</sup><br>4", ASME, 300 lb <sup>3)</sup><br>4", ASME, 600 lb <sup>3)</sup><br>6", ASME, 150 lb <sup>3)</sup><br>6", ASME, 300 lb <sup>3)</sup><br>6", ASME, 600 lb <sup>3)</sup><br><b>Welded flange, Type A flat faced</b><br>DN 40, PN 16<br>DN 40, PN 40<br>DN 50, PN 16<br>DN 50, PN 40<br>DN 80, PN 16<br>DN 80, PN 40 <sup>3)</sup><br>DN 100, PN 16 <sup>3)</sup><br>DN 100, PN 40 <sup>3)</sup><br>DN 125, PN 16 <sup>3)</sup><br>DN 125, PN 40 <sup>3)</sup><br>(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5, or EN 1092-1 standard.)<br>Sanitary, hastelloy, duplex or other custom process connections available.<br>Please contact a local sales person for details. | C 0<br>F 0<br>K 0<br>L 0<br><br>B 1<br>B 2<br>B 3<br><br>C 1<br>C 2<br>C 3<br><br>D 1<br>D 2<br>D 3<br><br>E 1<br>E 2<br>E 3<br><br>F 1<br>F 2<br>F 3<br><br>K 4<br>K 5<br><br>L 4<br>L 5<br><br>M 4<br>M 5<br><br>N 4<br>N 5<br><br>P 4<br>P 5 | <b>Enclosure/Cable inlet</b><br>Aluminum epoxy coated<br>2 x ½" NPT, IP68<br>2 x M20 x 1.5 (IP68, adapter)<br>Stainless steel<br>Please contact a local sales person for details.   | 1<br>2                   |
|  |   | <b>Options</b><br>No additional options<br>With mounting eye <sup>4)</sup>  | A<br>B                   |
|  |   | <b>Thermal isolator</b><br>Without thermal isolator<br>Isolator, only for use when temperature range is outside of -40 ... +85 °C (-40 ... +185 °F), explosion proof approval -40 ... +70 °C (-40 ... +158 °F)  | A<br>B                   |
|  |   | <b>Electronic output</b><br>No transmitter supplied<br>2-wire loop current 4 ... 20 mA<br>(transmitter MSP 2002-2_3300 pF)  | 0<br>1                   |
|  |   | <sup>1)</sup> A minimum span of 3 pF must be maintained<br><sup>2)</sup> Available with non-conductive media only<br><sup>3)</sup> Custom shipping methods required. Contact factory for more details.<br><sup>4)</sup> Available in PFA insulated version only<br>Customers interested in a custom designed device should consult a local sales person. For more information, please visit <a href="http://www.automation.siemens.com/aspa_app">http://www.automation.siemens.com/aspa_app</a> . |                          |
|  |   | <b>Selection and Ordering data</b>  | <b>Order code</b>        |
|  |   | <b>Further designs</b><br>Please add "-Z" to Article No. and specify Order code(s).<br>Insertion length, specify in plain text: Y01: ... mm<br>Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]:<br>Measuring-point number/identification (max. 27 characters) specify in plain text<br>Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000<br>Inspection Certificate Type 3.1 per EN 10204   | Y01<br>Y15<br>C11<br>C12 |
|  |   | <b>Operating Instructions</b>   | See page 4/359           |
|  |   | <b>Accessories</b>  | See page 4/359           |

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|---|--|---|---|
| <b>SITRANS LC500, Threaded or Welded Flange, with Rod Sensor</b><br>Inverse frequency shift capacitance level and interface transmitter for extreme and critical process conditions, such as oil and liquid gas, toxic and aggressive chemicals and vapours.<br>↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.   | <b>7ML5515-</b>  | <b>SITRANS LC500, Threaded or Welded Flange, with Rod Sensor</b><br>Inverse frequency shift capacitance level and interface transmitter for extreme and critical process conditions, such as oil and liquid gas, toxic and aggressive chemicals and vapours.  | <b>7ML5515-</b>   |
| <b>Version</b><br>Rod, 16 mm (0.63 inch), PFA insulated<br>Add Order code Y01 and Y02 and plain text:<br><u>Insertion length ... mm and active shield length ... mm<sup>1</sup></u><br>200 ... 1 000 mm (7.87 ... 39.37 inch) <sup>1</sup><br>1 001 ... 2 000 mm (39.41 ... 78.74 inch)<br>2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>2</sup><br>3 001 ... 3 500 mm (118.15 ... 137.80 inch) <sup>2</sup><br>Rod, 16 mm (0.63 inch), PFA insulated with 35 mm (1.38 inch) stilling well in 316L stainless steel<br>Add Order code Y01 and Y02 and plain text:<br><u>Insertion length ... mm and active shield length ... mm<sup>1</sup></u><br>200 ... 1 000 mm (7.87 ... 39.37 inch) <sup>1</sup> <sup>3</sup><br>1 001 ... 2 000 mm (39.41 ... 78.74 inch) <sup>3</sup><br>2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>2</sup> <sup>3</sup><br>3 001 ... 3 500 mm (118.15 ... 137.80 inch) <sup>2</sup> <sup>3</sup><br>Rod, 24 mm (0.94 inch), PFA insulated<br>Add Order code Y01 and Y02 and plain text:<br><u>Insertion length ... mm and active shield length ... mm<sup>1</sup></u><br>200 ... 1 000 mm (7.87 ... 39.37 inch) <sup>4</sup><br>1 001 ... 2 000 mm (39.41 ... 78.74 inch) <sup>4</sup><br>2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>2</sup> <sup>4</sup><br>3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>2</sup> <sup>4</sup><br>4 001 ... 5 000 mm (173.26 ... 196.88 inch) <sup>2</sup> <sup>4</sup><br>5 001 ... 5 500 mm (196.89 ... 216.54 inch) <sup>2</sup> <sup>4</sup><br>Rod, 24 mm (0.94 inch), PFA insulated with 48 mm (1.89 inch) stilling well in 316L stainless steel<br>Add Order code Y01 and Y02 and plain text:<br><u>Insertion length ... mm and active shield length ... mm<sup>1</sup></u><br>200 ... 1 000 mm (7.87 ... 39.37 inch) <sup>5</sup><br>1 001 ... 2 000 mm (39.41 ... 78.74 inch) <sup>5</sup><br>2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>2</sup> <sup>5</sup><br>3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>2</sup> <sup>5</sup><br>4 001 ... 5 000 mm (173.26 ... 196.88 inch) <sup>2</sup> <sup>5</sup><br>5 001 ... 5 500 mm (196.89 ... 216.54 inch) <sup>2</sup> <sup>5</sup><br>Bent probes also available.<br>Please contact a local sales person for details. | <b>0 A</b><br><b>1 A</b><br><b>2 A</b><br><b>3 A</b><br><br><b>0 B</b><br><b>1 B</b><br><b>2 B</b><br><b>3 B</b><br><br><b>0 C</b><br><b>1 C</b><br><b>2 C</b><br><b>3 C</b><br><b>4 C</b><br><b>5 C</b><br><br><b>0 D</b><br><b>1 D</b><br><b>2 D</b><br><b>3 D</b><br><b>4 D</b><br><b>5 D</b> | <b>Welded flange, Type A flat faced</b><br>DN 40, PN 16<br>DN 40, PN 40<br>DN 50, PN 16<br>DN 50, PN 40<br>DN 80, PN 16<br>DN 80, PN 40 <sup>2</sup><br>DN 100, PN 16 <sup>2</sup><br>DN 100, PN 40 <sup>2</sup><br>DN 125, PN 16 <sup>2</sup><br>DN 125, PN 40 <sup>2</sup><br>(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5, or EN 1092-1 standard.)<br>Sanitary, hastelloy, duplex or other custom process connections available.<br>Please contact a local sales person for details. | <b>E 1</b><br><b>E 2</b><br><b>E 3</b><br><b>F 1</b><br><b>F 2</b><br><b>F 3</b><br><br><b>K 4</b><br><b>K 5</b><br><b>L 4</b><br><b>L 5</b><br><b>M 4</b><br><b>M 5</b><br><b>N 4</b><br><b>N 5</b><br><b>P 4</b><br><b>P 5</b><br><br><b>1</b><br><b>2</b><br><br><b>4</b><br><b>6</b><br><br><b>1</b><br><b>2</b><br><br><b>A</b><br><b>A</b><br><b>B</b><br><br><b>C</b><br><b>D</b><br><b>E</b><br><b>F</b><br><br><b>0</b><br><b>1</b>  |
| <b>Process connection (316L stainless steel)</b><br><b>Threaded connection</b><br>¾" NPT [(Taper), ANSI/ASME B1.20.1]<br>1" NPT [(Taper), ANSI/ASME B1.20.1]<br>1½" NPT [(Taper), ANSI/ASME B1.20.1]<br>2" NPT [(Taper), ANSI/ASME B1.20.1]<br>R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]<br>R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]<br>R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]<br>R 2" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]<br>1¼" NPT [(Taper), ANSI/ASME B1.20.1]<br>G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]<br>G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]<br>G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]<br>G 2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]   | <b>A 0</b><br><b>B 0</b><br><b>C 0</b><br><b>D 0</b><br><b>E 0</b><br><b>F 0</b><br><b>J 0</b><br><b>K 0</b><br><b>N 0</b><br><b>P 0</b><br><b>R 0</b><br><b>S 0</b><br><br><b>T 0</b>   | <b>Approvals</b><br>General Purpose: CE, CSA, FM, RCM<br>CSA / FM Class I, Div. 2, Groups A, B, C, D<br>CSA / FM Class II, III, Div. 1, Groups E, F, G T4<br>ATEX II 3G 2D EEx nA [ib] IIC T6 ... T4 T 100 °C<br>ATEX II 1/2 GD EEx d [ia] IIC T6 ... T1 T 100 °C<br>FM Class I, Div. 1, Groups A, B, C, D, T4  | <b>Enclosure/Cable inlet</b><br>Aluminum epoxy coated<br>2 x ½" NPT, IP68<br>2 x M20 x1.5 (IP68, adapter)<br>Stainless steel<br>Please contact a local sales person for details.  |
| <b>Welded flange, raised face</b><br>1½", ASME, 150 lb<br>1½", ASME, 300 lb<br>1½", ASME, 600 lb<br>2", ASME, 150 lb<br>2", ASME, 300 lb<br>2", ASME, 600 lb<br>3", ASME, 150 lb <sup>2</sup><br>3", ASME, 300 lb <sup>2</sup><br>3", ASME, 600 lb <sup>2</sup>   | <b>B 1</b><br><b>B 2</b><br><b>B 3</b><br><b>C 1</b><br><b>C 2</b><br><b>C 3</b><br><b>D 1</b><br><b>D 2</b><br><b>D 3</b>   | <b>Options</b><br>No additional options   | <b>Thermal isolator/remote version</b><br>Without thermal isolator or remote electronics<br>Thermal isolator, only for use when temperature range is outside of -40 ... +85 °C (-40 ... +185 °F), explosion proof approval -40 ... +70 °C (-40 ... +158 °F)<br>Remote electronics with mounting bracket and cable <sup>6</sup><br>• Length: 2 m (79 inch)<br>• Length: 3 m (118 inch)<br>• Length: 4 m (158 inch)<br>• Length: 5 m (197 inch) |
|   |  | <b>Electronic output</b><br>No transmitter supplied<br>2-wire loop current 4 ... 20 mA<br>(transmitter MSP 2002-2 _3300 pF)   | <b>0</b><br><b>1</b>  |
|   |  | 1) A minimum span of 3 pF must be maintained<br>2) Custom shipping methods required. Contact factory for more details.<br>3) Available with process connection 1½" or larger<br>4) Available with process connection 1" or larger<br>5) Available with process connection 2" or larger<br>6) Available with approval option 1 only  |   |
|   |  | Customers interested in a custom designed device should consult a local sales person. For more information, please visit <a href="http://www.automation.siemens.com/aspa_app">http://www.automation.siemens.com/aspa_app</a> .  |   |

| Selection and Ordering data   | Order code            |
|---|-----------------------|
| <i>Further designs</i>  |                       |
| Please add <b>"-Z"</b> to Article No. and specify Order code(s).  |                       |
| Insertion length, specify in plain text: Y01: ... mm  | <b>Y01</b>            |
| Active shield length, specify in plain text [min. length is 50 mm (2 inch), max. length is 3 350 mm (131.89 inch)]: Y02: ... mm       | <b>Y02</b>            |
| Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text | <b>Y15</b>            |
| Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000  | <b>C11</b>            |
| Inspection Certificate Type 3.1 per EN 10204  | <b>C12</b>            |
| Manufacturing Test Report (Electrode Test)  | <b>C18</b>            |
| <i>Operating Instructions</i>   | <b>See page 4/359</b> |
| <i>Accessories</i>  | <b>See page 4/359</b> |

## Level Measurement

### Continuous level measurement - Capacitance transmitters

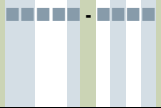
#### SITRANS LC500

| Selection and Ordering data  | Article No.  | Selection and Ordering data  | Article No.  |
|--|--|--|--|
| <b>SITRANS LC500, Single Piece Flanged with Rod Sensor</b><br>Inverse frequency shift capacitance level and interface transmitter for extreme and critical process conditions, such as oil and liquid gas, toxic and aggressive chemicals and vapours.<br>↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.  | <b>7ML5517-</b>  | <b>SITRANS LC500, Single Piece Flanged with Rod Sensor</b><br>Inverse frequency shift capacitance level and interface transmitter for extreme and critical process conditions, such as oil and liquid gas, toxic and aggressive chemicals and vapours.   | <b>7ML5517-</b>  |
| <b>Version</b><br>Rod, 16 mm (0.63 inch), PFA insulated<br>Add Order code Y01 and Y02 and plain text:<br>"Insertion length ... mm and active shield length ... mm"<br>250 ... 1 000 mm (9.84 ... 39.37 inch) <sup>1)</sup><br>1 001 ... 2 000 mm (39.41 ... 78.74 inch)<br>2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>2)</sup><br>3 001 ... 3 500 mm (118.15 ... 137.80 inch) <sup>2)</sup>   | <b>0 A</b><br><b>1 A</b><br><b>2 A</b><br><b>3 A</b>   | Single piece flange, Type B1 raised face<br>DN 40, PN 16<br>DN 40, PN 40<br>DN 50, PN 16<br>DN 50, PN 40<br>DN 80, PN 16<br>DN 80, PN 40 <sup>2)</sup><br>DN 100, PN 16 <sup>2)</sup><br>DN 100, PN 40 <sup>2)</sup><br>DN 125, PN 16 <sup>2)</sup><br>DN 125, PN 40 <sup>2)</sup>   | <b>K 4</b><br><b>K 5</b><br><b>L 4</b><br><b>L 5</b><br><b>M 4</b><br><b>M 5</b><br><b>N 4</b><br><b>N 5</b><br><b>P 4</b><br><b>P 5</b> |
| Rod, 16 mm (0.63 inch), PFA insulated with 35 mm (1.34 inch) stilling well in 316L stainless steel<br>Add Order code Y01 and Y02 and plain text:<br>"Insertion length ... mm and active shield length ... mm"<br>250 ... 1 000 mm (9.84 ... 39.37 inch)<br>1 001 ... 2 000 mm (39.41 ... 78.74 inch)<br>2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>2)</sup><br>3 001 ... 3 500 mm (118.15 ... 137.80 inch) <sup>2)</sup>  | <b>0 B</b><br><b>1 B</b><br><b>2 B</b><br><b>3 B</b>   | Single piece flange with PTFE flange facing<br>(applicable with versions 0A ... 3A and 0C ... 5C) <sup>4)</sup><br>1½" ASME, 150 lb<br>1½", ASME, 300 lb<br>1½", ASME, 600 lb<br>2", ASME, 150 lb<br>2", ASME, 300 lb<br>2", ASME, 600 lb  | <b>B 4</b><br><b>B 5</b><br><b>B 6</b><br><b>C 4</b><br><b>C 5</b><br><b>C 6</b>   |
| Rod, 24 mm (0.94 inch), PFA insulated<br>Add Order code Y01 and Y02 and plain text:<br>"Insertion length ... mm and active shield length ... mm"<br>250 ... 1 000 mm (9.84 ... 39.37 inch)<br>1 001 ... 2 000 mm (39.41 ... 78.74 inch)<br>2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>2)</sup><br>3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>2)</sup><br>4 001 ... 5 000 mm (173.26 ... 196.88 inch) <sup>2)</sup><br>5 001 ... 5 500 mm (196.89 ... 216.54 inch) <sup>2)</sup>   | <b>0 C</b><br><b>1 C</b><br><b>2 C</b><br><b>3 C</b><br><b>4 C</b><br><b>5 C</b>   | 3", ASME, 150 lb <sup>2)</sup><br>3", ASME, 300 lb <sup>2)</sup><br>3", ASME, 600 lb <sup>2)</sup><br>4", ASME, 150 lb <sup>2)</sup><br>4", ASME, 300 lb <sup>2)</sup><br>4", ASME, 600 lb <sup>2)</sup><br>6", ASME, 150 lb <sup>2)</sup><br>6", ASME, 300 lb <sup>2)</sup><br>6", ASME, 600 lb <sup>2)</sup>   | <b>D 4</b><br><b>D 5</b><br><b>D 6</b><br><b>E 4</b><br><b>E 5</b><br><b>E 6</b><br><b>F 4</b><br><b>F 5</b><br><b>F 6</b>               |
| Rod, 24 mm (0.94 inch), PFA insulated with 48 mm (1.89 inch) stilling well in 316L stainless steel<br>Add Order code Y01 and Y02 and plain text:<br>"Insertion length ... mm and active shield length ... mm"<br>250 ... 1 000 mm (9.84 ... 39.37 inch)<br>1 001 ... 2 000 mm (39.41 ... 78.74 inch) <sup>2)3)</sup><br>2 001 ... 3 000 mm (78.78 ... 118.11 inch) <sup>2)3)</sup><br>3 001 ... 4 000 mm (118.15 ... 157.48 inch) <sup>2)3)</sup><br>4 001 ... 5 000 mm (173.26 ... 196.88 inch) <sup>2)3)</sup><br>5 001 ... 5 500 mm (196.89 ... 216.54 inch) <sup>2)3)</sup><br>Bent probes also available.<br>Please contact a local sales person for details. | <b>0 D</b><br><b>1 D</b><br><b>2 D</b><br><b>3 D</b><br><b>4 D</b><br><b>5 D</b>   | Single piece flange with PTFE flange facing<br>(applicable with versions 0A ... 3A, 0C ... 5C) <sup>4)</sup><br>DN 40, PN 16<br>DN 40, PN 40<br>DN 50, PN 16<br>DN 50, PN 40<br>DN 80, PN 16<br>DN 80, PN 40 <sup>2)</sup><br>DN 100, PN 16 <sup>2)</sup><br>DN 100, PN 40 <sup>2)</sup><br>DN 125, PN 16 <sup>2)</sup><br>DN 125, PN 40 <sup>2)</sup> | <b>K 6</b><br><b>K 7</b><br><b>L 6</b><br><b>L 7</b><br><b>M 6</b><br><b>M 7</b><br><b>N 6</b><br><b>N 7</b><br><b>P 6</b><br><b>P 7</b> |
| <b>Process connection (316L stainless steel)</b><br>Single piece flange, raised face<br>1½", ASME, 150 lb<br>1½", ASME, 300 lb<br>1½", ASME, 600 lb<br>2", ASME, 150 lb<br>2", ASME, 300 lb<br>2", ASME, 600 lb<br>3", ASME, 150 lb <sup>2)</sup><br>3", ASME, 300 lb <sup>2)</sup><br>3", ASME, 600 lb <sup>2)</sup><br>4", ASME, 150 lb <sup>2)</sup><br>4", ASME, 300 lb <sup>2)</sup><br>4", ASME, 600 lb <sup>2)</sup><br>6", ASME, 150 lb <sup>2)</sup><br>6", ASME, 300 lb <sup>2)</sup><br>6", ASME, 600 lb <sup>2)</sup>  | <b>B 1</b><br><b>B 2</b><br><b>B 3</b><br><b>C 1</b><br><b>C 2</b><br><b>C 3</b><br><b>D 1</b><br><b>D 2</b><br><b>D 3</b><br><b>E 1</b><br><b>E 2</b><br><b>E 3</b><br><b>F 1</b><br><b>F 2</b><br><b>F 3</b> | (Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5, or EN 1092-1 standard.)<br>Sanitary, hastelloy, duplex or other custom process connections available.<br>Please contact a local sales person for details.  |  |

## Level Measurement

### Continuous level measurement - Capacitance transmitters

SITRANS LC500

| Selection and Ordering data  | Article No.  | Selection and Ordering data  | Order code   |
|--|--|--|--|
| <b>SITRANS LC500, Single Piece Flanged with Rod Sensor</b><br>Inverse frequency shift capacitance level and interface transmitter for extreme and critical process conditions, such as oil and liquid gas, toxic and aggressive chemicals and vapours.   | <b>7ML5517-</b><br> | <b>Further designs</b><br>Please add "-Z" to Article No. and specify Order code(s).<br>Insertion length, specify in plain text: Y01: ... mm<br>Active shield length, specify in plain text [min. length is 50 mm (2 inch), max. length is 3 350 mm (131.89 inch)]: Y02: ... mm<br>Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]:<br>Measuring-point number/identification (max. 27 characters) specify in plain text<br>Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000<br>Inspection Certificate Type 3.1 per EN 10204<br>Manufacturing Test Report (Electrode Test) | <br><b>Y01</b><br><b>Y02</b><br><b>Y15</b><br><b>C11</b><br><b>C12</b><br><b>C18</b> |
| <b>Approvals</b><br>General Purpose: CE, CSA, FM, RCM<br>CSA / FM Class I, Div. 2, Groups A, B, C, D<br>CSA / FM Class II, III, Div. 1, Groups E, F, G T4<br>ATEX II 3G 2D EEx nA [ib] IIC T6 ... T4 T 100 °C<br>ATEX II 1/2 GD EEx d [ia] IIC T6 ... T1 T 100 °C<br>FM Class I, Div. 1, Groups A, B, C, D, T4   | 1<br>2<br>4<br>6   | <b>Operating Instructions</b><br><b>Accessories</b>  | <b>See page 4/359</b><br><b>See page 4/359</b>                                       |
| <b>Enclosure/Cable inlet</b><br>Aluminum epoxy coated<br>2 x ½" NPT, IP68<br>2 x M20 x 1.5 (IP68, adapter)<br>Stainless steel<br>Please contact a local sales person for details.  | 1<br>2   |  |  |
| <b>Options</b><br>None   | A  |  |  |
| <b>Thermal isolator/remote version</b><br>Without thermal isolator<br>Isolator, only for use when temperature range is outside of -40 ... +85 °C (-40 ... +185 °F), explosion proof approval -40 ... +70 °C (-40 ... +158 °F)<br>Remote electronics with mounting bracket and cable <sup>5)</sup><br><ul style="list-style-type: none"> <li>• Length: 2 m (79 inch)</li> <li>• Length: 3 m (118 inch)</li> <li>• Length: 4 m (158 inch)</li> <li>• Length: 5 m (197 inch)</li> </ul> | A<br>B<br>C<br>D<br>E<br>F   |  |  |
| <b>Electronic output</b><br>No transmitter supplied<br>2-wire loop current 4 ... 20 mA<br>(transmitter MSP 2002-2 _3300 pF)  | 0<br>1   |  |  |

<sup>1)</sup> A minimum span of 3 pF must be maintained

<sup>2)</sup> Custom shipping methods required. Contact factory for more details.

<sup>3)</sup> Available with process connection 2" or larger, and only available with process connection options C1 ... F3, L4 ... P5

<sup>4)</sup> Not available with versions 0E and 0F

<sup>5)</sup> Available with approval option 1 only

Customers interested in a custom designed device should consult a local sales person. For more information, please visit [http://www.automation.siemens.com/aspa\\_app](http://www.automation.siemens.com/aspa_app).



## Level Measurement

### Continuous level measurement - Capacitance transmitters

#### SITRANS LC500

| Selection and Ordering data  | Article No.  |
|--|--|
| <b>SITRANS LC500, Extended Cable version with Rod Sensor, threaded connection or welded flange<sup>1)</sup></b><br>Inverse frequency shift capacitance level and interface transmitter for short range continuous measurement in large storage vessels.<br>↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.   | <b>7ML5523-</b>  |
| <b>Version<sup>2)</sup></b><br>Rod, 16 mm (0.63 inch), PFA insulated and 316L stainless steel flexible extension tube<br>Total insertion length:<br><u>Add Order code Y01 and plain text: "Total insertion length ... mm and Y02 and plain text: Active shield length ... mm"<sup>3)4)</sup></u> <ul style="list-style-type: none"> <li>• 5 000 ... 10 000 mm (196.85 ... 393.70 inch)<sup>1)</sup></li> <li>• 10 001 ... 15 000 mm (393.74 ... 590.55 inch)<sup>1)</sup></li> <li>• 15 001 ... 20 000 mm (590.59 ... 787.40 inch)<sup>1)</sup></li> <li>• 20 001 ... 25 000 mm (787.44 ... 984.25 inch)<sup>1)</sup></li> <li>• 25 001 ... 30 000 mm (984.29 ... 1 181.10 inch)<sup>1)</sup></li> <li>• 30 001 ... 35 000 mm (1 181.14 ... 1 377.95 inch)<sup>1)</sup></li> </ul> Rod, 24 mm (0.94 inch), PFA insulated and 316L stainless steel flexible extension tube<br>Total insertion length:<br><u>Add Order code Y01 and plain text: "Total insertion length ... mm and Y02 and plain text: Active shield length ... mm"<sup>3)4)</sup></u> <ul style="list-style-type: none"> <li>• 5 000 ... 10 000 mm (196.85 ... 393.70 inch)<sup>1)</sup></li> <li>• 10 001 ... 15 000 mm (393.74 ... 590.55 inch)<sup>1)</sup></li> <li>• 15 001 ... 20 000 mm (590.59 ... 787.40 inch)<sup>1)</sup></li> <li>• 20 001 ... 25 000 mm (787.44 ... 984.25 inch)<sup>1)</sup></li> <li>• 25 001 ... 30 000 mm (984.29 ... 1 181.10 inch)<sup>1)</sup></li> <li>• 30 001 ... 35 000 mm (1 181.14 ... 1 377.95 inch)<sup>1)</sup></li> </ul> | <b>0 A</b><br><b>1 A</b><br><b>2 A</b><br><b>3 A</b><br><b>4 A</b><br><b>5 A</b><br><br><b>0 B</b><br><b>1 B</b><br><b>2 B</b><br><b>3 B</b><br><b>4 B</b><br><b>5 B</b> |
| <b>Process connection (316L stainless steel)</b><br><u>Threaded connection</u><br>2" NPT [(Taper), ANSI/ASME B1.20.1]<br>R 2" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]<br>G 2" [(BSPP), EN ISO 228-1/PF (JIS-P) JIS B 0202]   | <b>A 0</b><br><b>B 0</b><br><b>D 0</b>   |
| <u>Welded flange, raised face</u><br>2", ASME, 150 lb<br>2", ASME, 300 lb<br>3", ASME, 150 lb <sup>1)</sup><br>3", ASME, 300 lb <sup>1)</sup><br>4", ASME, 150 lb <sup>1)</sup><br>4", ASME, 300 lb <sup>1)</sup><br>6", ASME, 150 lb <sup>1)</sup><br>6", ASME, 300 lb <sup>1)</sup>  | <b>C 1</b><br><b>C 2</b><br><b>D 1</b><br><b>D 2</b><br><b>E 1</b><br><b>E 2</b><br><b>F 1</b><br><b>F 2</b>   |
| <u>Welded flange, Type A flat faced</u><br>DN 50, PN 16<br>DN 50, PN 40<br>DN 80, PN 16<br>DN 80, PN 40 <sup>1)</sup><br>DN 100, PN 16 <sup>1)</sup><br>DN 100, PN 40 <sup>1)</sup><br>DN 125, PN 16 <sup>1)</sup><br>DN 125, PN 40 <sup>1)</sup><br>(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5, or EN 1092-1 standard.)<br>Sanitary, hastelloy, duplex or other custom process connections available.<br>Please contact a local sales person for details.   | <b>L 4</b><br><b>L 5</b><br><b>M 4</b><br><b>M 5</b><br><b>N 4</b><br><b>N 5</b><br><b>P 4</b><br><b>P 5</b>   |
| <b>Approvals</b><br>General Purpose: CE, CSA, FM, RCM<br>CSA / FM Class I, Div. 2, Groups A, B, C, D<br>CSA / FM Class II, III, Div. 1, Groups E, F, G T4<br>ATEX II 3G 2D EEx nA [ib] IIC T6 ... T4 T 100 °C<br>ATEX II 1/2 GD EEx d [ia] IIC T6 ... T1 T 100 °C<br>FM Class I, Div. 1, Groups A, B, C, D T4  | <b>1</b><br><b>2</b><br><br><b>4</b><br><b>6</b>   |

| Selection and Ordering data   | Article No.                                      |
|---|--|
| <b>SITRANS LC500, Extended Cable version with Rod Sensor, threaded connection or welded flange<sup>1)</sup></b><br>Inverse frequency shift capacitance level and interface transmitter for short range continuous measurement in large storage vessels.   | <b>7ML5523-</b>                                  |
| <b>Enclosure/Cable inlet</b><br><u>Aluminum epoxy coated</u><br>2 x ½" NPT, IP68<br>2 x M20 x 1.5 (IP68, adapter)<br>Stainless steel<br>Please contact a local sales person for details.  | <b>1</b><br><b>2</b><br><br><b>A</b><br><b>B</b> |
| <b>Options</b><br>No additional options<br>With mounting eye  | <b>A</b><br><b>B</b>                             |
| <b>Thermal isolator</b><br>Without thermal isolator<br>Isolator, only for use when temperature range is outside of -40 ... +85 °C (-40 ... +185 °F), explosion proof approval -40 ... +70 °C (-40 ... +158 °F)  | <b>A</b><br><b>B</b>                             |
| <b>Electronic output</b><br>No transmitter supplied<br>2-wire loop current 4 ... 20 mA<br>(transmitter MSP 2002-2 _3300 pF)   | <b>0</b><br><b>1</b>                             |
| <sup>1)</sup> Custom shipping methods required. Contact factory for more details.<br><sup>2)</sup> A minimum span of 3 pF must be maintained.<br><sup>3)</sup> See dimension drawings on page 4/368 for further explanation of Y01.<br><sup>4)</sup> Inactive length is equal to the flexible extension plus transition. See dimension drawings on page 4/368 for further explanation of Y02.<br>Customers interested in a custom designed device should consult a local sales person. For more information, please visit <a href="http://www.automation.siemens.com/aspa_app">http://www.automation.siemens.com/aspa_app</a> . |  |

| Selection and Ordering data   | Order code | Selection and Ordering data  | Article No.        |
|---|------------|--|--------------------|
| <b>Further designs</b>  |            | <b>Accessories</b>   |                    |
| Please add <b>"-Z"</b> to Article No. and specify Order code(s).  |            | <b>General Purpose</b>   |                    |
| Insertion length, specify in plain text: Y01: to mm (Includes measuring range plus cable extension) - see dimensional information on page 4/368   | <b>Y01</b> | 1/2" NPT General Purpose Cable Entry IP68/IP69K NEMA6, -40 ... +100 °C (-40 ... +212 °F), cable size 6 ... 12 mm (0.236 ... 0.472 inch)  | <b>7ML1830-1JA</b> |
| Active shield/cable extension length, specify in plain text [min. length is 50 mm (2 inch), max. length is 5 500 mm (216.54 inch)]: Y02: to mm (see dimensional information on page 4/368)                          | <b>Y02</b> | M20 x 1.5 General Purpose Cable Entry IP68/IP69K NEMA6, -40 ... +100 °C (-40 ... +212 °F), cable size 7 ... 12 mm (0.275 ... 0.472 inch)   | <b>7ML1830-1JC</b> |
| Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text   | <b>Y15</b> | <b>Hazardous Locations</b>   |                    |
| Manufacturer's test certificate M to DIN 55350, Part 18 and to ISO 9000   | <b>C11</b> | 1/2" NPT EMC rated Cable Gland: Dust Ignition Proof, Flameproof Exd, and Increased Safety ATEX II 2 GD ExtD A21 (Zone 1, Zone 2, Zone 21, Zone 22, and in Gas Groups IIA, IIB and IIC) -60 ... +80 °C IP66, IP67, IP68, NEMA4X, cable sizes 5.5 ... 12 mm (0.216 ... 0.472 inch) | <b>7ML1830-1JB</b> |
| Inspection Certificate Type 3.1 per EN 10204  | <b>C12</b> | M20 EMC rated Cable Gland: Dust Ignition Proof, Flameproof Exd, and Increased Safety ATEX II 2 GD ExtD A21 (Zone 1, Zone 2, Zone 21, Zone 22, and in Gas Groups IIA, IIB and IIC) -60 ... +80 °C IP66, IP67, IP68, NEMA4X, cable sizes 5.5 ... 12 mm (0.216 ... 0.472 inch)      | <b>7ML1830-1JD</b> |
| <b>Operating Instructions</b>   |            | Transmitter, MSP 2002-1, 330 PF <sup>1)</sup>  | <b>7ML1830-1JP</b> |
| All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a> |            | Transmitter, MSP 2002-2, 3 300 PF <sup>1)</sup>  | <b>7ML1830-1JQ</b> |
| This device is shipped with the Siemens Level and Weighing manual DVD containing the ATEX Quick Start and Operating Instructions library.   |            | Transmitter, MSP 2002-3, 6 600 PF (used with conductive fluids and probe lengths > 10 000 mm) <sup>1)</sup>  | <b>7ML1830-1JR</b> |
|   |            | SITRANS RD100, loop powered display - see Chapter 7  | <b>7ML5741-...</b> |
|   |            | SITRANS RD200, universal input display with Modbus conversion - see Chapter 7  | <b>7ML5740-...</b> |
|   |            | SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7  | <b>7ML5744-...</b> |
|   |            | SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7  | <b>7ML5750-...</b> |
|   |            | For applicable back up point level switch - see point level measurement section  |                    |
|   |            | <sup>1)</sup> Transmitters not suitable for Intrinsically Safe application (ATEX II 1G EEx ia IIC T4 or CSA/FM Class I Div. 1 Groups A, B, C and D)  |                    |
|   |            | Customers interested in a custom designed device should consult local sales person. For more information, please visit <a href="http://www.automation.siemens.com/aspa_app">http://www.automation.siemens.com/aspa_app</a> .   |                    |

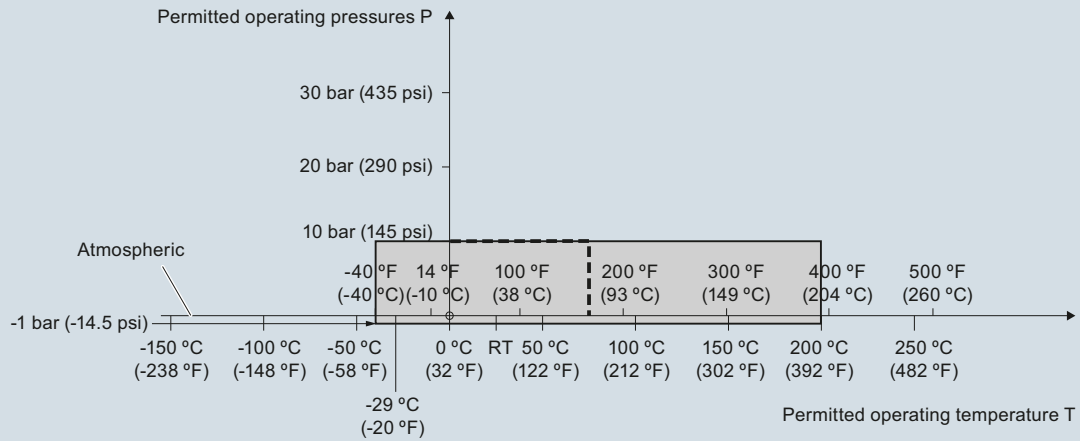
## Level Measurement

Continuous level measurement - Capacitance transmitters

### SITRANS LC500

#### Characteristic curves

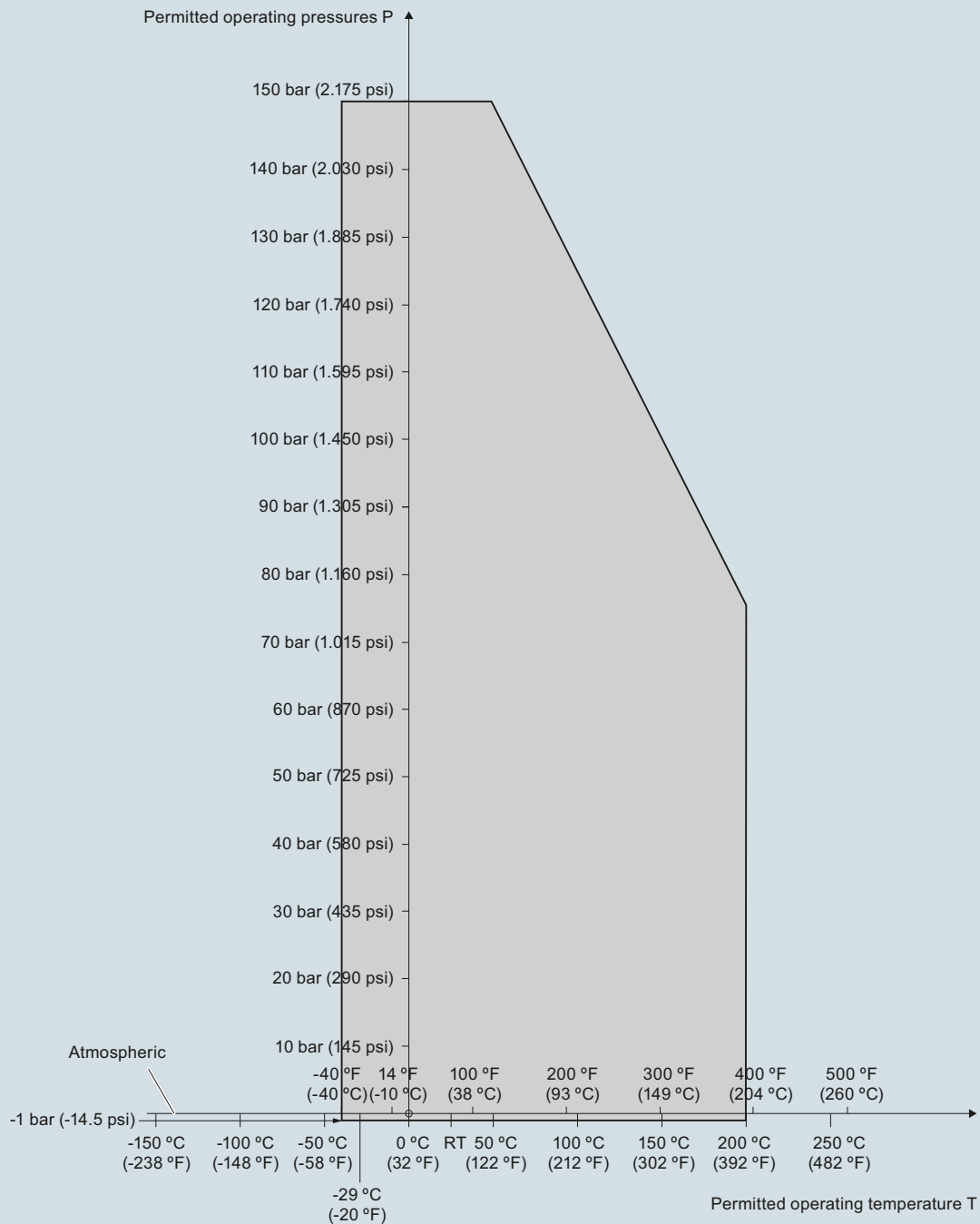
Pressure/temperature curve  
LC500 cable probes  
threaded process connections  
(7ML5513)



----- Example:  
permitted operating pressure = 10 bar (145 psi) at 75 °C

SITRANS LC500 process pressure/temperature derating curves (7ML5513)

**Pressure/temperature curve**  
**LC500 PFA rod probes**  
**Threaded process connections**  
**(7ML5515)**



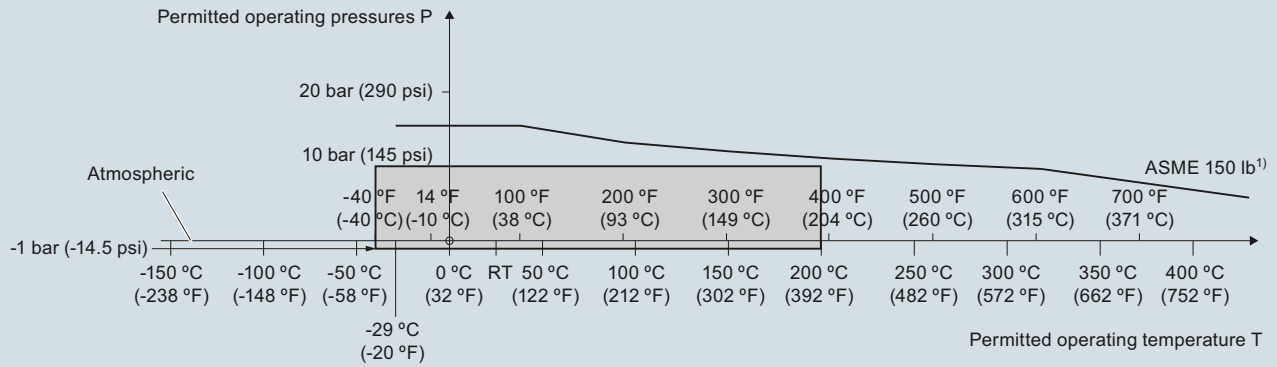
SITRANS LC500 process pressure/temperature derating curves (7ML5515)

## Level Measurement

Continuous level measurement - Capacitance transmitters

### SITRANS LC500

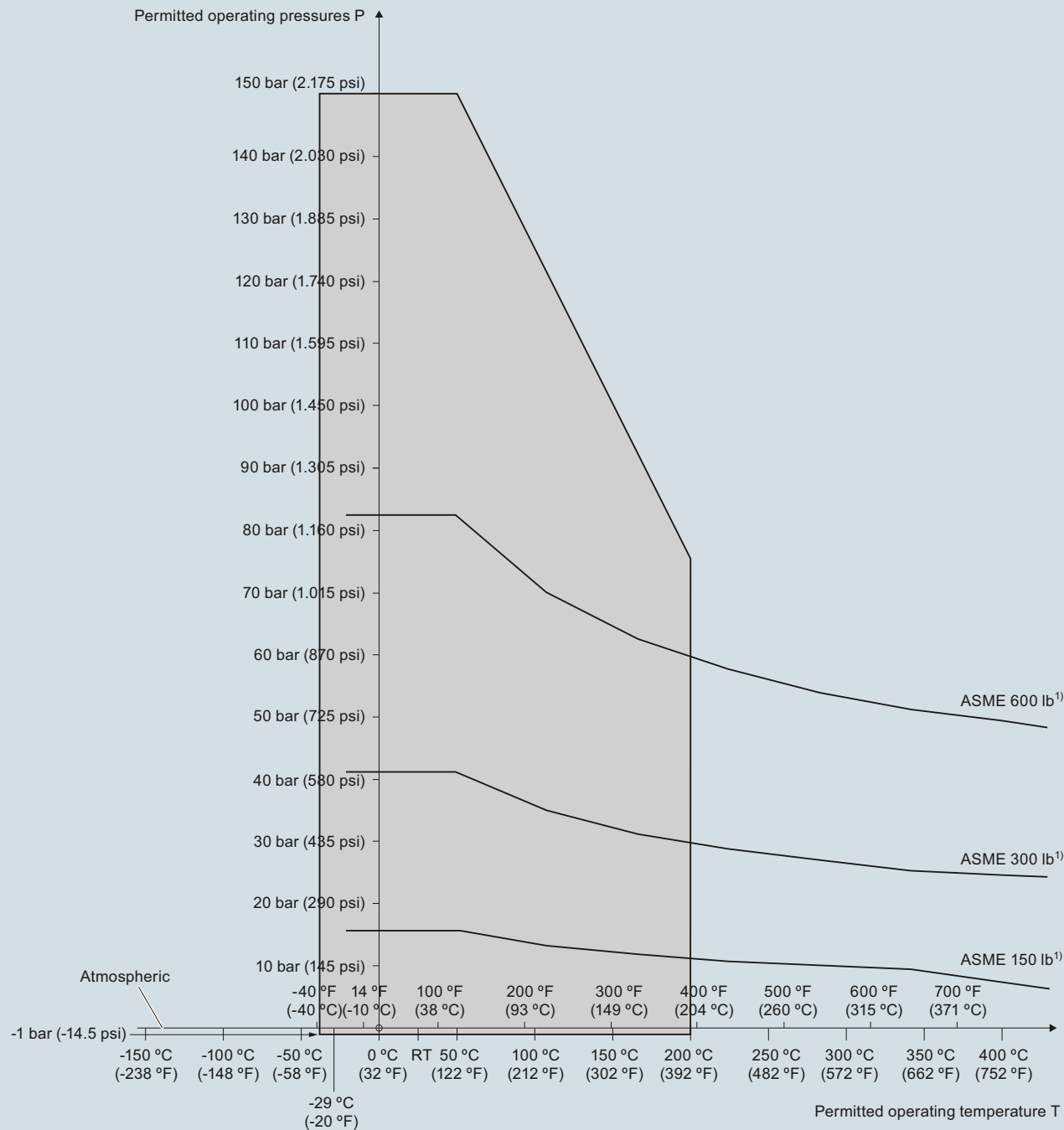
**Pressure/temperature curve**  
**LC500 cable probes**  
**ASME flanged process connections**  
**(7ML5513)**



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

SITRANS LC500 process pressure/temperature derating curves (7ML5513)

**Pressure/temperature curve**  
**LC500 PFA rod probes**  
**ASME flanged process connections**  
**(7ML5515 and 7ML5517)**



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

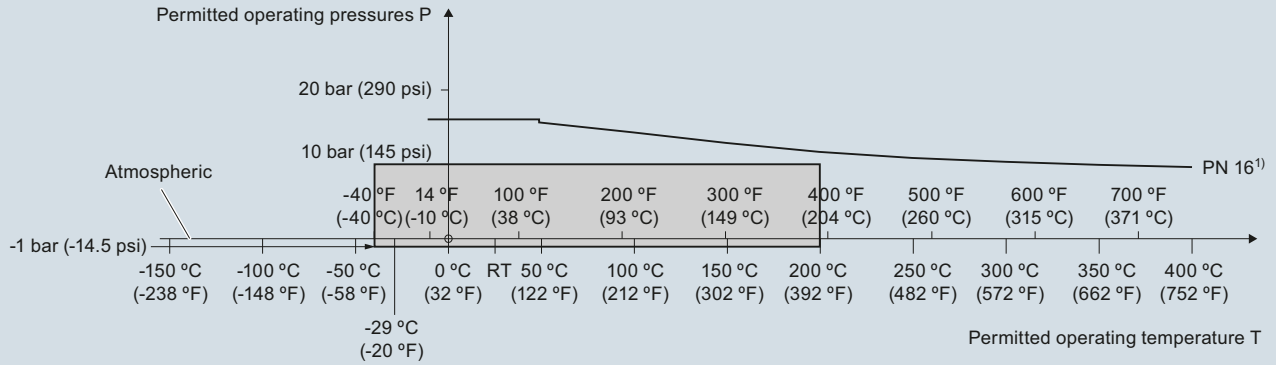
SITRANS LC500 process pressure/temperature derating curves (7ML5515 and 7ML5517)

## Level Measurement

Continuous level measurement - Capacitance transmitters

### SITRANS LC500

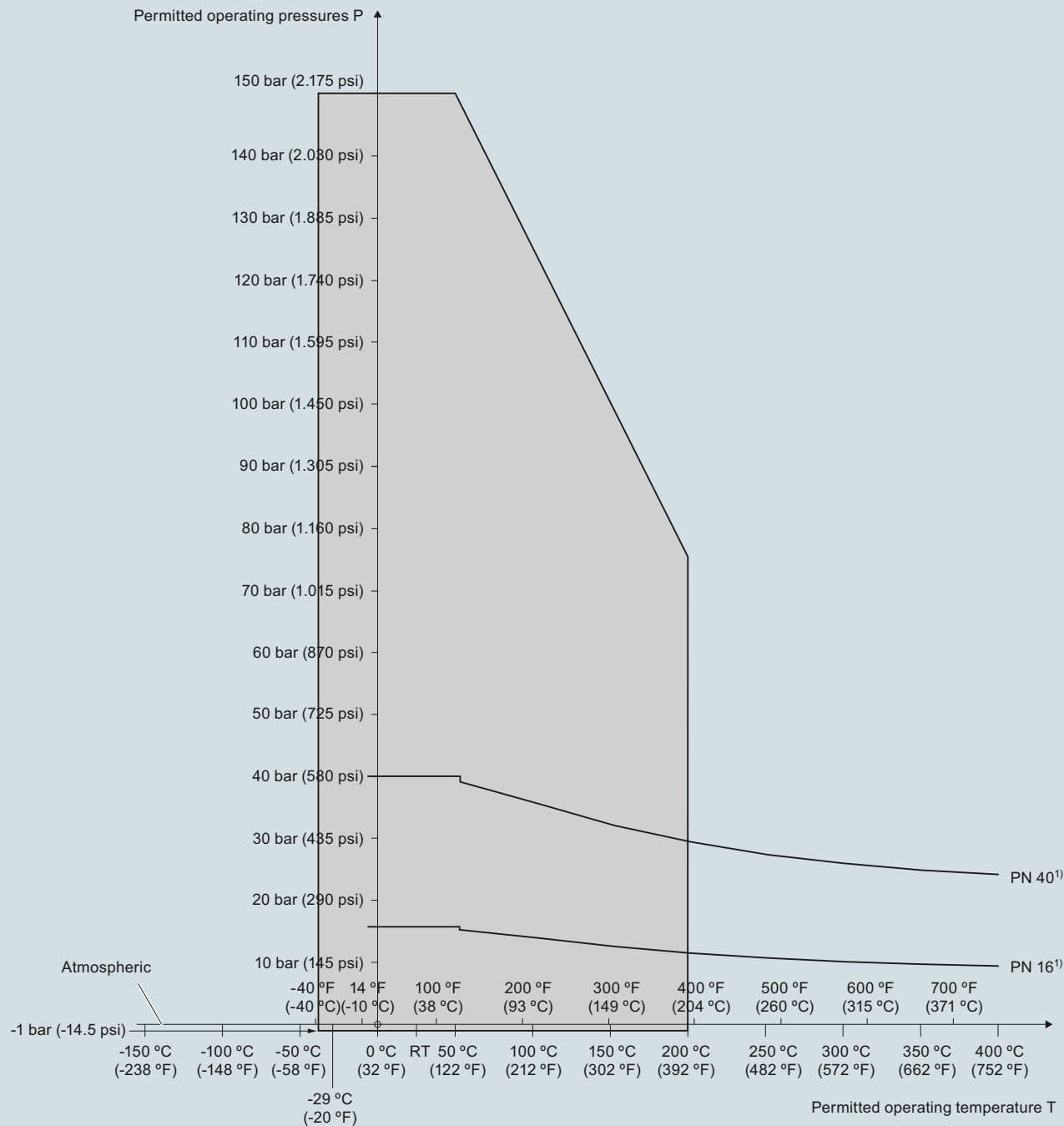
**Pressure/temperature curve**  
**LC500 cable probes**  
**EN flanged process connections**  
**(7ML5513)**



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

SITRANS LC500 process pressure/temperature derating curves (7ML5513)

**Pressure/temperature curve**  
**LC500 PFA rod probes**  
**EN flanged process connections**  
**(7ML5515 and 7ML5517)**



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

SITRANS LC500 process pressure/temperature derating curves (7ML5515 and 7ML5517)

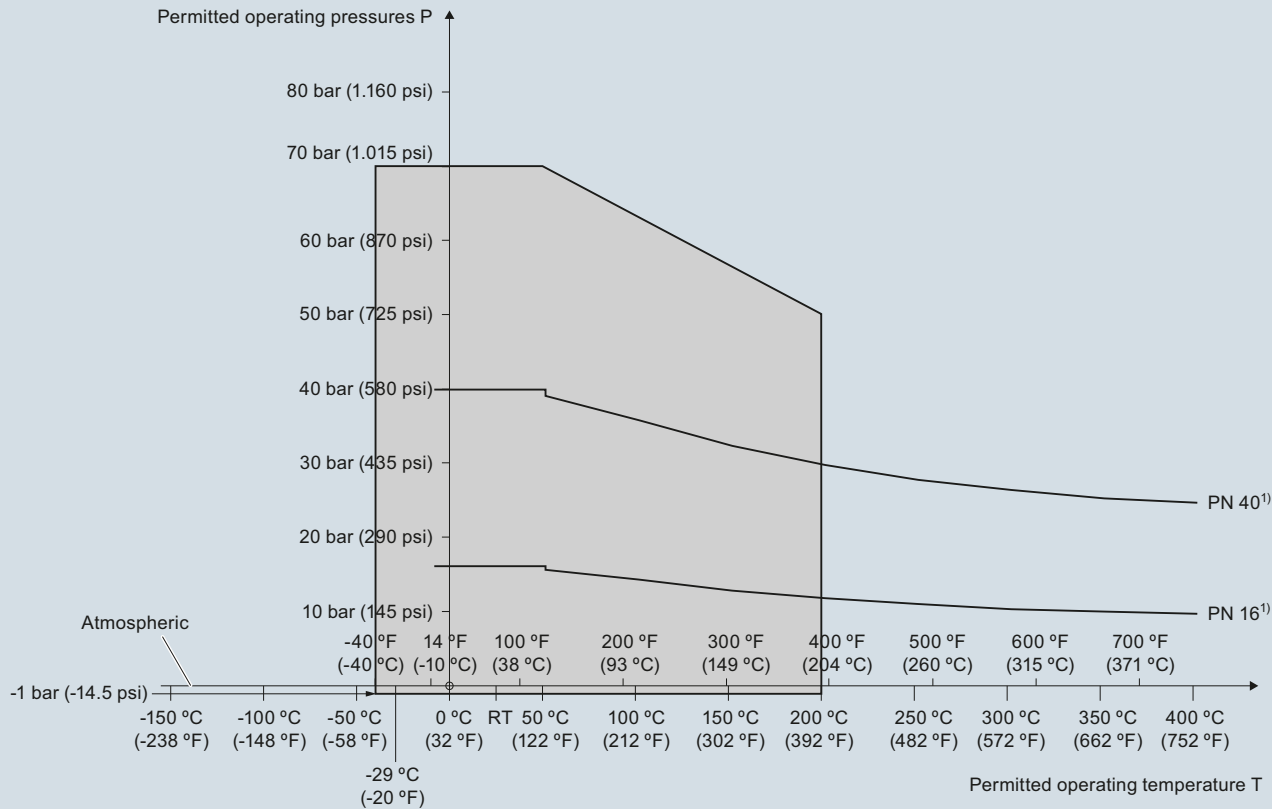


# Level Measurement

## Continuous level measurement - Capacitance transmitters

### SITRANS LC500

**Pressure/temperature curve**  
**LC500 single piece flanged rod probes with PTFE facing**  
**EN flanged process connections**  
**(7ML5517)**

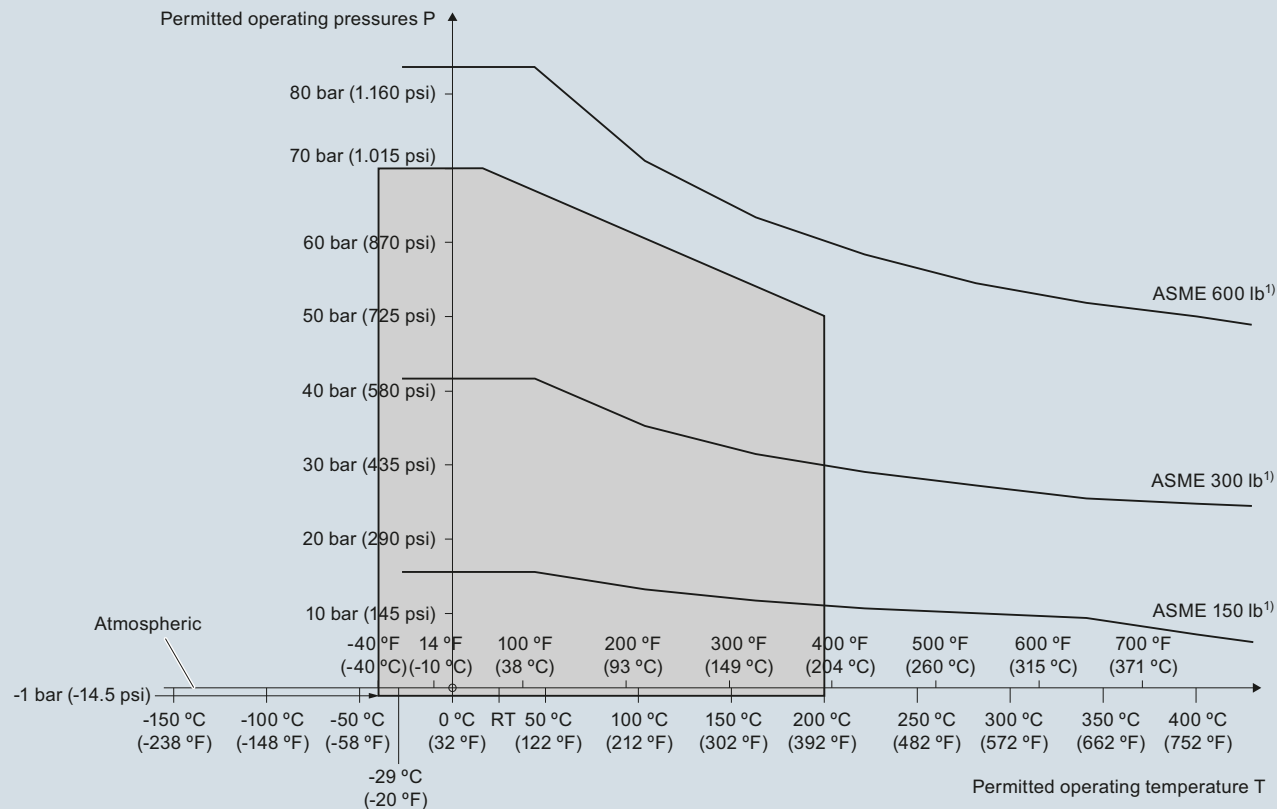


1) The curve denotes the minimum allowable flange class for the shaded area below.

SITRANS LC500 process pressure/temperature derating curves (7ML5517)

4

**Pressure/temperature curve**  
**LC500 single piece flanged rod probes with PTFE facing**  
**ASME flanged process connections**  
**(7ML5517)**



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

SITRANS LC500 process pressure/temperature derating curves (7ML5517)

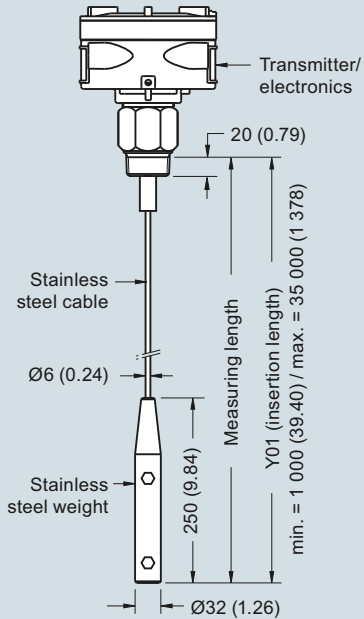
# Level Measurement

Continuous level measurement - Capacitance transmitters

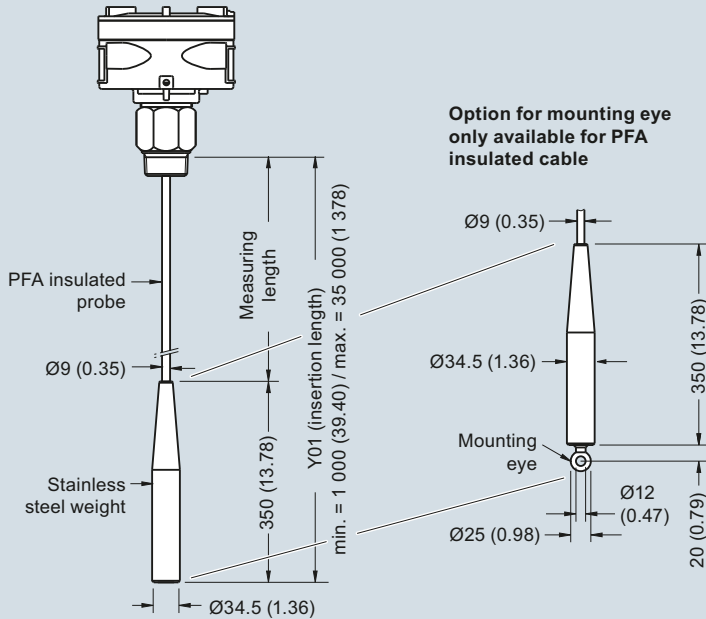
## SITRANS LC500

### Dimensional drawings

Cable version, non-insulated welded flange (7ML5513)

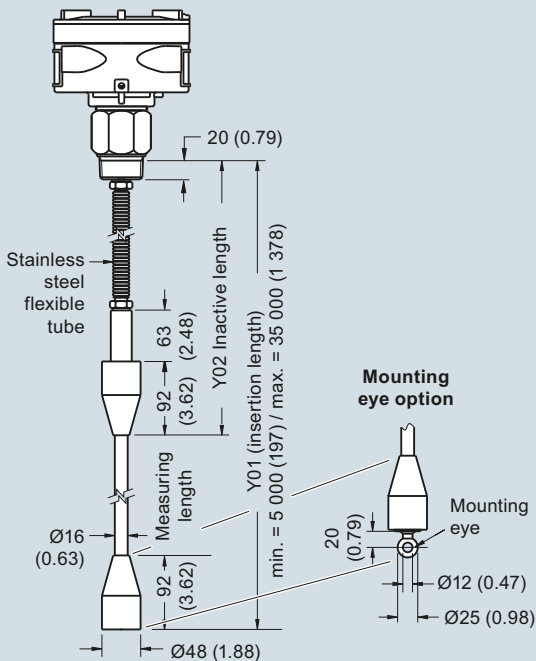


Cable version, insulated welded flange (7ML5513)

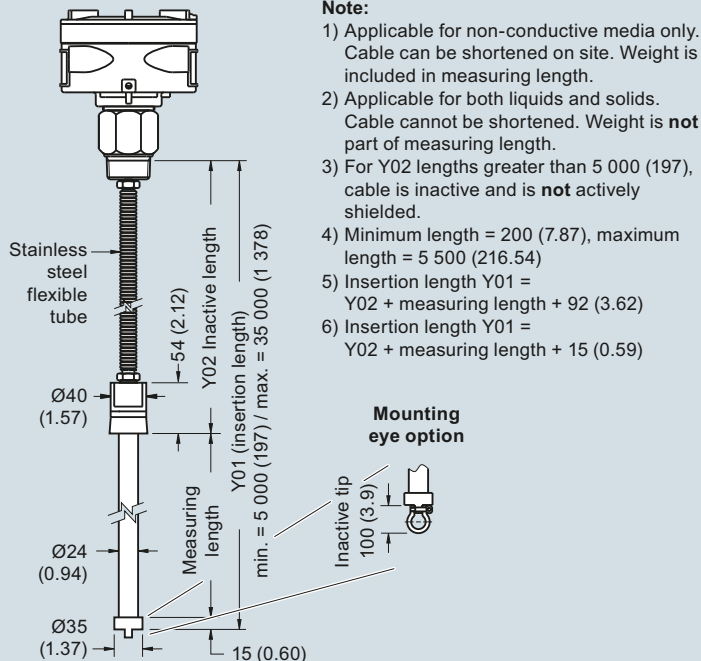


Option for mounting eye only available for PFA insulated cable

Extended cable version with rod sensor welded flange (7ML5523)



Extended cable version with rod sensor welded flange (7ML5523)



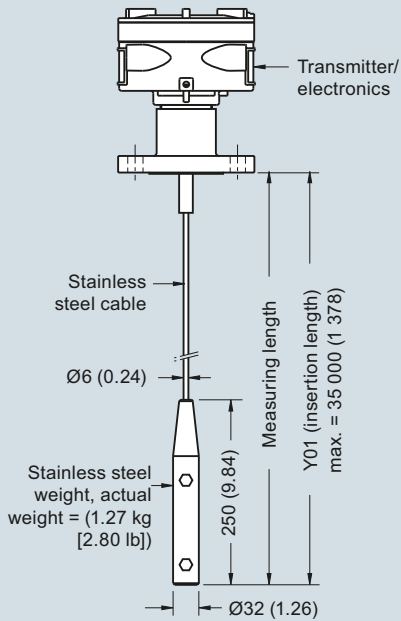
**Note:**

- 1) Applicable for non-conductive media only. Cable can be shortened on site. Weight is included in measuring length.
- 2) Applicable for both liquids and solids. Cable cannot be shortened. Weight is **not** part of measuring length.
- 3) For Y02 lengths greater than 5 000 (197), cable is inactive and is **not** actively shielded.
- 4) Minimum length = 200 (7.87), maximum length = 5 500 (216.54)
- 5) Insertion length Y01 = Y02 + measuring length + 92 (3.62)
- 6) Insertion length Y01 = Y02 + measuring length + 15 (0.59)

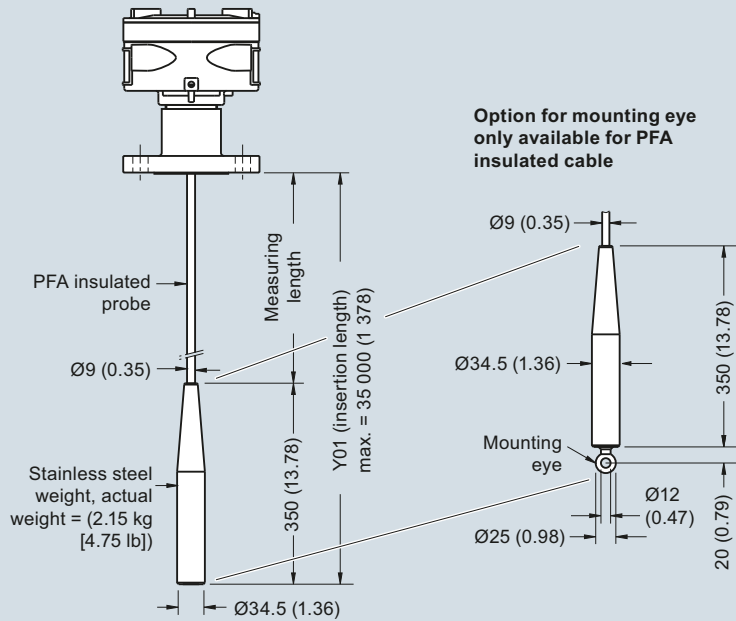
SITRANS LC500 cable versions, dimensions in mm (inch)

4

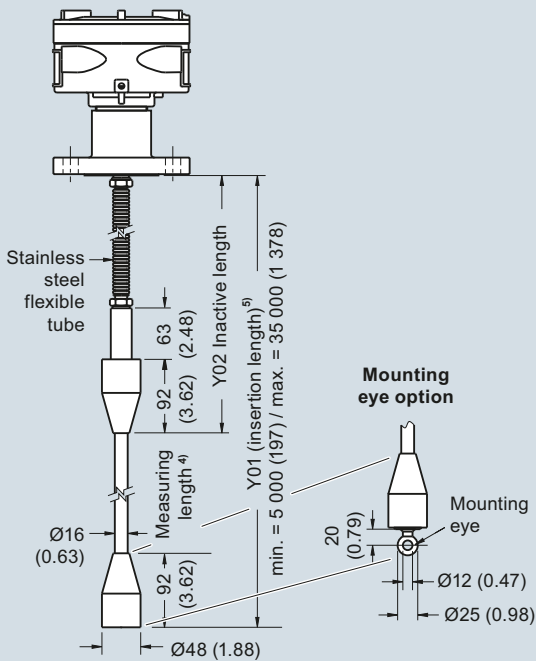
Cable version, non-insulated<sup>1)</sup>  
Welded flange (7ML5513)



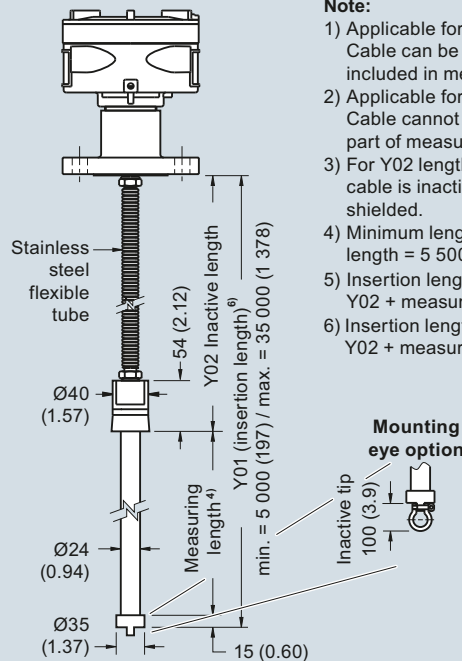
Cable version, insulated<sup>2)</sup>  
Welded flange (7ML5513)



Extended cable version with rod sensor<sup>3)</sup>  
Welded flange (7ML5523)



Extended cable version with rod sensor<sup>3)</sup>  
Welded flange (7ML5523)



**Note:**

- 1) Applicable for non-conductive media only. Cable can be shortened on site. Weight is included in measuring length.
- 2) Applicable for both liquids and solids. Cable cannot be shortened. Weight is **not** part of measuring length.
- 3) For Y02 lengths greater than 5 000 (197), cable is inactive and is **not** actively shielded.
- 4) Minimum length = 200 (7.87), maximum length = 5 500 (216.54)
- 5) Insertion length Y01 = Y02 + measuring length + 92 (3.62)
- 6) Insertion length Y01 = Y02 + measuring length + 15 (0.59)

SITRANS LC500 cable versions, dimensions in mm (inch)

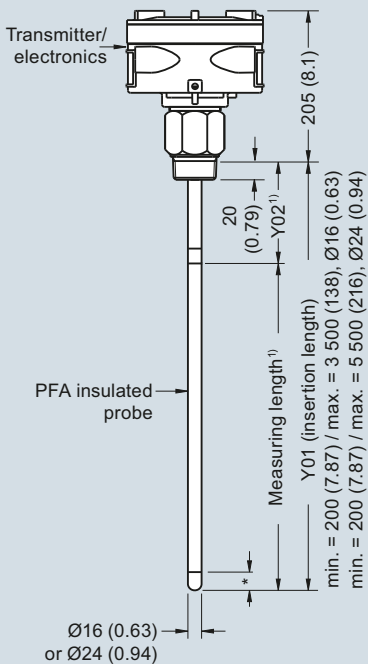
# Level Measurement

## Continuous level measurement - Capacitance transmitters

### SITRANS LC500

4

#### Rod version threaded (7ML5515)

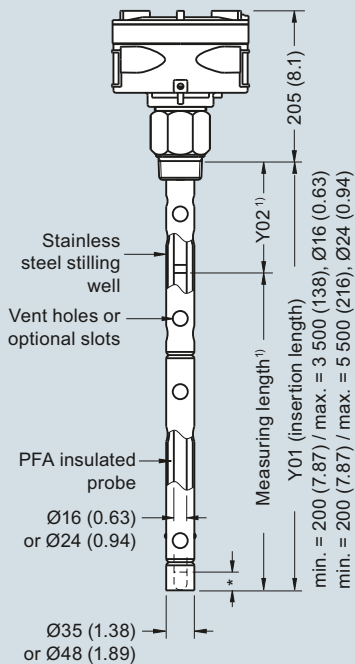


\* = 30 (1.18) inactive tip

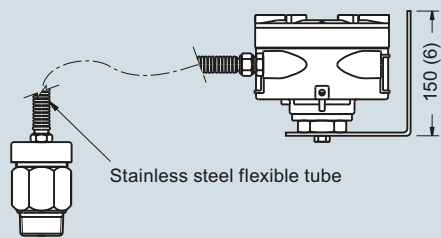
**Note:**

- 1) Minimum Y02 (active shield length) = 50 (1.96), minimum measuring length = 200 (7.87)

#### Rod version with stilling well threaded (7ML5515)

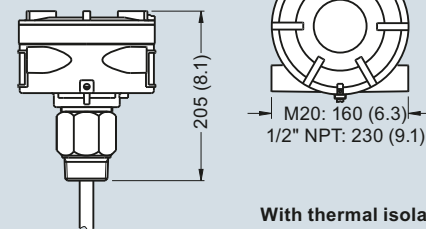


#### Remote electronics with mounting bracket option threaded (7ML5515)



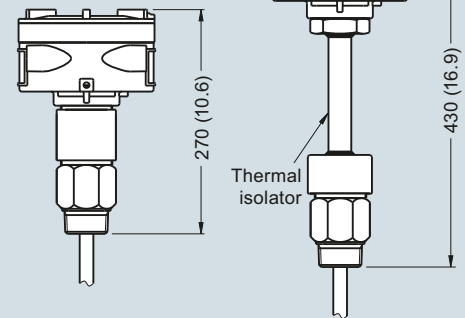
General purpose approval only.

#### Standard configuration (all versions)



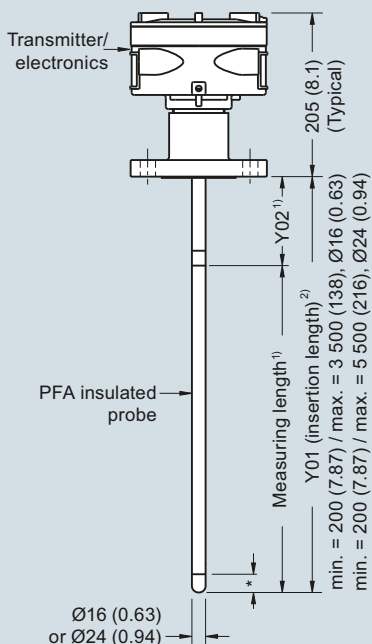
#### With thermal isolator option (all versions)

#### With explosion-proof seal option (all versions)

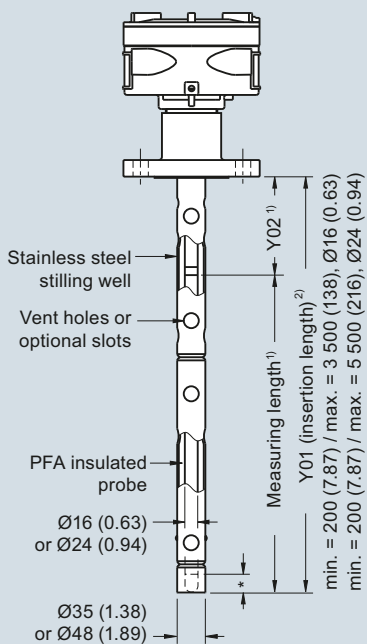


SITRANS LC500 rod versions, dimensions in mm (inch)

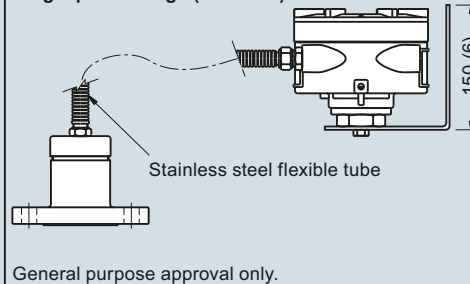
**Rod version**  
**Welded flange (7ML5515)**  
**Single piece flange (7ML5517)**



**Rod version with stilling well**  
**Welded flange (7ML5515)**  
**Single piece flange (7ML5517)**

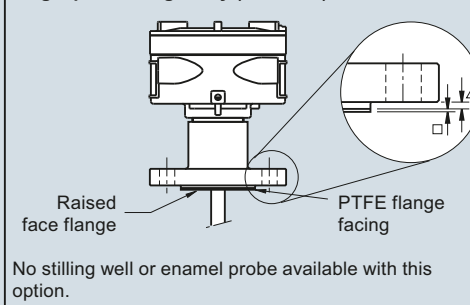


**Remote electronics with mounting bracket option**  
**Welded flange (7ML5515)**  
**Single piece flange (7ML5517)**

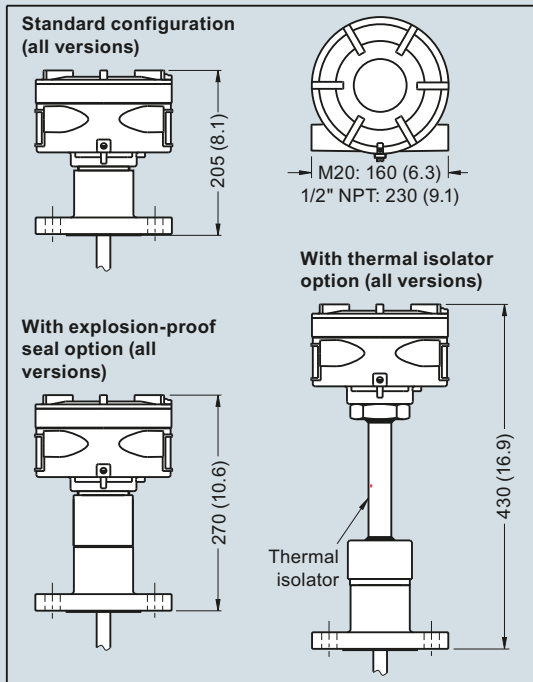


General purpose approval only.

**PTFE flange facing option**  
**single piece flange only (7ML5517)**



\* = 30 (1.18) inactive tip



| Flange facing (raised face) |                  |
|-----------------------------|------------------|
| Flange class                | Facing thickness |
| △ ASME 150/300              | 2 (0.08)         |
| △ ASME 600/900              | 7 (0.28)         |
| △ PN16/25/40/64             | 2 (0.08)         |
| □ PTFE facing (additional)  | 2 (0.08)         |

**Notes:**

- 1) Minimum Y02 (active shield length) = 50 (1.96), minimum measuring length = 200 (7.87)
- 2) Insertion length does not include any raised face/gasket face dimension (see Flange Facing table above).

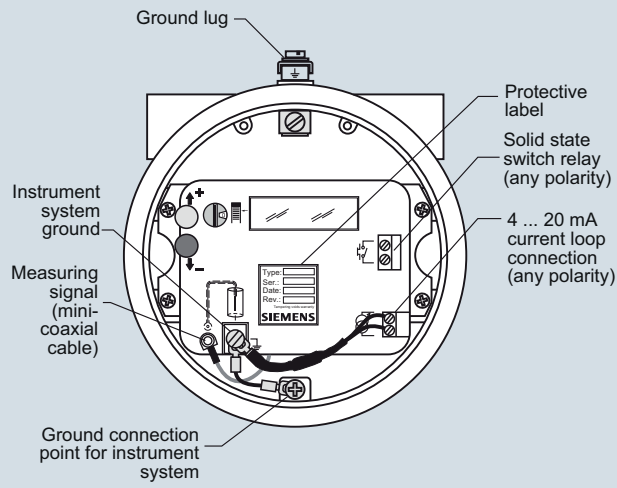
SITRANS LC500 rod versions, dimensions in mm (inch)

## Level Measurement

Continuous level measurement - Capacitance transmitters

### SITRANS LC500



#### Schematics




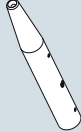
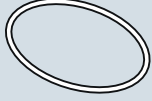
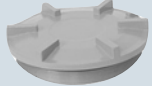



SITRANS LC500 connections

#### Selection and ordering data

##### LC300 and LC500 Specials<sup>1)</sup>

|  | Article No.        |
|--|--------------------|
| <b>LC300 Cable Extensions,<br/>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> |
| <b>LC300 Cable Extensions,<br/>316 stainless steel with PFA coating</b>            |                    |
|  |                    |
| 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 and LC500 Specials<sup>1)</sup>

|   | Article No.        |
|---|--------------------|
| <b>LC300 Mounting Eye</b>   |                    |
|                                      |                    |
| Spare mounting eye (LC300 PFA versions only)  | <b>A5E01163717</b> |
| <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   | <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<sup>2)</sup></b>   |                    |
|                                    |                    |

<sup>1)</sup> Special flange sizes and facings are available. Please contact a local sales person for details.

<sup>2)</sup> Please contact a local sales person for part number and pricing.

Customers interested in a custom designed device should consult a local sales person. For more information, please visit [http://www.automation.siemens.com/aspa\\_app](http://www.automation.siemens.com/aspa_app).