

## Level Measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS300 - Standard

#### Overview



Pointek CLS300 (standard version) is an inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS300 is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present and has the ability to tune out buildup on the probe.

#### Benefits

- Active-Shield technology so measurement is unaffected by material buildup or nozzle interference in active shield section
- Performs in extremely abrasive conditions because of solid rod construction
- Three LED indicators for adjustment control, output status, and power
- High-temperature version up to 400 °C (752 °F)

#### Application

Pointek CLS300 standard version has three LED indicators with basic relay and solid-state switch alarms.

The robust design of CLS300 makes it specifically applicable for heavy solids applications where abrasive materials occur as in the mining industry. The fully potted electronics are unaffected by condensation, dust or vibration.

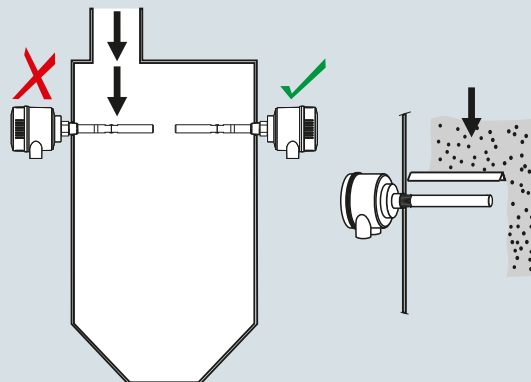
Wetted parts are made of stainless steel with a PFA shield for high chemical resistance, and of ceramic and stainless steel for high temperature version. Materials with low or high dielectric constants can be accurately detected. The unique Active Shield suppresses interference from material buildup or long installation nozzles.

The unique modular design of the Pointek CLS300 provides a wide range of configurations, process connections, extensions and approvals to meet the temperature and pressure requirements of specific applications. The modular design makes ordering easier and reduces stocking requirements. A wide range of probe configurations are available, including rod and cable versions.

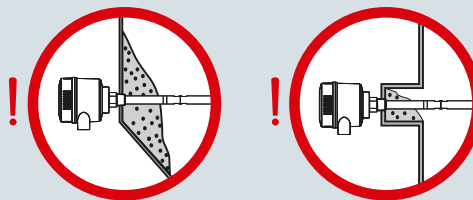
- Key Applications: liquids, slurries, bulk solids, relatively high pressure and temperature, hazardous areas, milling and mining applications

#### Configuration

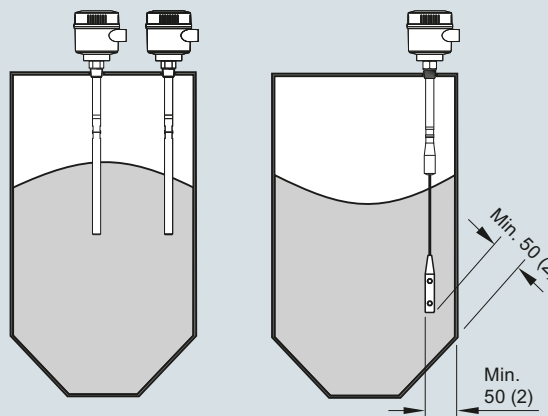
##### Installation



Keep unit out of path of falling material, or protect probe from falling material.



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



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

Pointek CLS300 installation, dimensions in mm (inch)

#### Technical specifications

Mode of operation		Design	
Measuring principle	Inverse frequency shift capacitive level detection	Material (enclosure)	Powder-coated aluminum with gasket
<b>Input</b>		Degree of Protection	Standard: Type 4/NEMA 4/IP65 Optional: Type 4/NEMA 4/IP68
Measured variable	Change in picoFarad (pF)	Cable inlet	2 x M20 x 1.5 thread (option: 2 x 1/2" NPT conduit entry including 1 plugged entry)
<b>Output</b>		<b>Controls and displays</b>	
Output signal		Displays	3 LEDs, for probe status, output status and power supply
• Relay output	1 SPDT Form C relay	Potentiometers	2 potentiometers for time delay and sensitivity
- Max. contact voltage	• 30 V DC • 250 V AC	Switches	5 DIP switches for delay on/off, fail-safe high/low, time delay test/adjust, high/low sensitivity, test delay settings
- Max. contact current	• 5 A (DC) • 8 A (AC)	<b>Power supply</b>	
- Max. switching capacity	• 150 W (DC) • 2 000 VA (AC)	Supply	12 ... 250 V AC/DC, 0 ... 60 Hz, galvanically isolated, 2 W
- Time delay (ON and/or OFF)	1 ... 60 s	<b>Certificates and approvals</b>	
• Solid-state output		General Purpose	CSA, FM, CE, RCM
- Output	Galvanically isolated	Flameproof Enclosure with IS Probe	ATEX II 1/2 G EEx d[ia] IIC T6 ... T1 ATEX II 1/2 D T100 °C
- Protection	Against reversed polarity (bipolar)	Dust Ignition Proof with IS Probe	ATEX II 1/2 D T100 °C CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
- Max. switching voltage	• 30 V (DC) • 30 V peak (AC)	Explosion Proof Enclosure with IS Probe	CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
- Max. load current	82 mA	Marine	Lloyds Register of Shipping, Categories ENV1, ENV2, and ENV5
- Voltage drop	< 1 V, typical at 50 mA	Overfill Protection	WHG (Germany) VLAREM II (Belgium)
- Time delay (pre or post switching)	1 ... 60 s	Others	Pattern Approval (China)
<b>Accuracy</b>		<sup>1)</sup> When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves starting on page 4/54. <sup>2)</sup> Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F). <sup>3)</sup> Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves starting on page 4/54.	
Resolution			
• Min. sensitivity (pF)	1 % change in actual capacitance		
• Max. temperature error	0.2 % of actual capacitance value		
<b>Rated operating conditions<sup>1)</sup></b>			
Installation conditions			
• Location	Indoor/outdoor		
Ambient conditions			
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) <sup>2)</sup>		
Medium conditions			
	Liquids, bulk solids, slurries and interfaces, and applications with viscous materials		
• Relative dielectric constant $\epsilon_r$	Min. 1.5		
• Process temperature			
- Rod/Cable version	-40 ... +200 °C (-40 ... +392 °F) <sup>2)</sup>		
- High-temperature version	-40 ... +400 °C (-40 ... +752 °F)		
• Process pressure <sup>3)</sup>	-1 ... +35 bar g (-14.6 ... +511 psi g)		

#### Design: Probe

	Rod version	High Temperature version	Cable version
Length	Min. 250 mm (9.8 inch), max. 1 000 mm (40 inch)	Min. 250 mm (9.8 inch), max. 1 000 mm (40 inch)	Min. 1 000 mm (40 inch), max. 25 000 mm (984 inch)
Sensor wetted parts	PFA (no insulation on active probe), 316L stainless steel, PEEK isolators	Ceramic (ZrO <sub>2</sub> <sup>1)</sup> isolators (no insulation on active probe), 316L stainless steel	316 stainless steel, optional PFA, PEEK isolators
O-ring seal material	FKM (optional FFKM) <sup>2)</sup>	Graphite <sup>2)</sup>	FKM (optional FFKM) <sup>2)</sup>
Thermal isolator	Optional	Standard	Optional
Extension	User selectable length	User selectable length	User selectable cable length

<sup>1)</sup> Zirconium Oxide

<sup>2)</sup> For caustic materials, consult a local sales person for alternative O-rings.  
For more information, please visit [http://www.automation.siemens.com/aspa\\_app](http://www.automation.siemens.com/aspa_app).

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<b>Pointek CLS300 RF Capacitance point level switch, rod design</b> Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, with active shield to tune out build-up on probe. <a href="#">Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</a>	<b>7ML5650-</b>	<b>Pointek CLS300 RF Capacitance point level switch, rod design</b> Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, with active shield to tune out build-up on probe. Add Order code Y01 and plain text: "Insertion length ... mm" Extended rod, factory adjusted length 250 ... 499 mm (9.8 ... 19.65 inch) Extended rod, factory adjusted length 500 ... 749 mm (19.69 ... 29.49 inch) Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch)	<b>7ML5650-</b>
<b>Process connection</b> <u>Threaded, 316L stainless steel</u> ¾" NPT [(Taper), ANSI/ASME B1.20.1] 1" NPT [(Taper), ANSI/ASME B1.20.1] 1¼" NPT [(Taper), ANSI/ASME B1.20.1] 1½" NPT [(Taper), ANSI/ASME B1.20.1] R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	<b>0 A</b> <b>0 B</b> <b>0 C</b> <b>0 D</b> <b>1 A</b> <b>1 B</b> <b>1 D</b> <b>3 A</b> <b>3 B</b> <b>3 D</b>	<b>Thermal isolator</b> Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)] <b>Wetted seals</b> FKM FFKM [for process temperatures above -20 °C (-4 °F)] <b>Probe material</b> 316L stainless steel with PFA lining and PEEK isolators <b>Approvals</b> Dust Ignition Proof with IS Probe: CE, RCM, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T1, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T1, ATEX II 1/2 D T100 °C Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CE, RCM) General Purpose with WHG approval (CSA, FM, CE, RCM)	<b>E</b> <b>F</b> <b>G</b> <b>0</b> <b>1</b> <b>0</b> <b>1</b> <b>0</b> <b>C</b> <b>D</b> <b>E</b> <b>F</b> <b>G</b> <b>H</b> <b>J</b> <b>K</b> <b>A</b> <b>B</b> <b>C</b> <b>D</b> <b>0</b> <b>1</b> <b>2</b>
<u>Welded flange, 316L stainless steel, raised face</u> 1" ASME, 150 lb 1" ASME, 300 lb 1" ASME, 600 lb 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	<b>5 A</b> <b>5 B</b> <b>5 C</b> <b>5 D</b> <b>5 E</b> <b>5 F</b> <b>5 G</b> <b>5 H</b> <b>5 J</b> <b>5 K</b> <b>5 L</b> <b>5 M</b> <b>5 N</b> <b>5 P</b> <b>5 Q</b>	<b>Enclosure and lid</b> <u>Aluminum epoxy coated</u> 2 x ½" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet, IP65 2 x ½" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet, IP68 <b>Active shield length</b> Standard length - (125 mm threaded, 105 mm flanged) Extended shield - (250 mm threaded, 230 mm flanged) <sup>1)</sup> Extended shield - (400 mm threaded, 380 mm flanged) <sup>2)</sup>	<b>0</b> <b>1</b> <b>2</b>
<u>Welded flange, 316L stainless steel, Type A flat faced</u> DN 25, PN 16 DN 25, PN 40 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 (Note: flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)	<b>6 A</b> <b>6 B</b> <b>6 C</b> <b>6 D</b> <b>6 E</b> <b>6 F</b> <b>6 G</b> <b>6 H</b> <b>6 J</b> <b>6 K</b>		
<b>Probe length</b> (length from flange face) (threaded lengths include process thread) <u>Note: No Y01 needed in Order code for standard lengths</u> Standard version, rod 350 mm (13.78 inch) Extended rod, length 500 mm (19.69 inch) Extended rod, length 750 mm (29.53 inch) Extended rod, length 1 000 mm (39.37 inch)	<b>A</b> <b>B</b> <b>C</b> <b>D</b>		

Selection and Ordering data	Order code	Selection and Ordering data	Article No.
<b>Further designs</b>		<b>Pointek CLS300 RF Capacitance point level switch, cable design</b>	<b>7ML5651-</b>
Please add <b>"-Z"</b> to Article No. and specify Order code(s).		Detects level and interface in aggressive liquids, solids, slurries, and foam. Cable extension options to 25 m (82.02 ft), adaptable sensitivity, with active shield to tune out build-up on probe.	
Total insertion length: enter the total insertion length in plain text description	<b>Y01</b>	↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	<b>Y15</b>	<b>Process connection</b>	
Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000	<b>C11</b>	<u>Threaded, 316L stainless steel</u>	
Material Inspection Certificate Type 3.1 per EN 10204	<b>C12</b>	1/4" NPT [(Taper), ANSI/ASME B1.20.1]	<b>0 C</b>
INMETRO <sup>1)</sup>	<b>E34</b>	1/2" NPT [(Taper), ANSI/ASME B1.20.1]	<b>0 D</b>
		R 1/2" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	<b>1 D</b>
		G 1/2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	<b>3 D</b>
<b>Operating Instructions</b>		<u>Welded flange, 316L stainless steel, raised face</u>	
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>		1/2" ASME, 150 lb	<b>5 D</b>
<b>Accessories</b>	<b>See page 4/53</b>	1/2" ASME, 300 lb	<b>5 E</b>
<sup>1)</sup> Available only with Approvals options C, D, E.		1/2" ASME, 600 lb	<b>5 F</b>
		2" ASME, 150 lb	<b>5 G</b>
		2" ASME, 300 lb	<b>5 H</b>
		2" ASME, 600 lb	<b>5 J</b>
		3" ASME, 150 lb	<b>5 K</b>
		3" ASME, 300 lb	<b>5 L</b>
		3" ASME, 600 lb	<b>5 M</b>
		4" ASME, 150 lb	<b>5 N</b>
		4" ASME, 300 lb	<b>5 P</b>
		4" ASME, 600 lb	<b>5 Q</b>
		<u>Welded flange, 316L stainless steel, Type A flat faced</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>
		(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)	
		<b>Probe length</b>	
		(length from flange face)	
		(threaded lengths include process thread)	
		<u>Note: No Y01 needed in Order code for standard lengths</u>	
		Extended cable, 3 000 mm (118.11 inch), length can be shortened by customer	<b>A</b>
		Extended cable, 6 000 mm (236.22 inch), length can be shortened by customer	<b>B</b>
		<u>Add Order code Y01 and plain text: "Insertion length ... mm"</u>	
		Extended cable, 500 ... 1 000 mm (19.69 ... 39.37 inch)	<b>E</b>
		Extended cable, 1 001 ... 5 000 mm (39.41 ... 196.85 inch)	<b>F</b>
		Extended cable, 5 001 ... 10 000 mm (196.89 ... 393.70 inch)	<b>G</b>
		Extended cable, 10 001 ... 15 000 mm (393.74 ... 590.55 inch)	<b>H</b>
		Extended cable, 15 001 ... 20 000 mm (590.59 ... 787.40 inch)	<b>J</b>
		Extended cable, 20 001 ... 25 000 mm (787.44 ... 984.25 inch)	<b>K</b>



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<b>Thermal isolator</b> Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1	<b>Operating Instructions</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>	<b>See page 4/53</b>
<b>Wetted seals</b> FKM FFKM [for process temperatures above -20 °C (-4 °F)]	0 1		
<b>Probe material</b> Bare 316L stainless steel cable, PEEK isolators and 316L stainless steel cable weight PFA coated cable, PEEK isolators and 316L stainless steel cable weight	0 1	<b>Accessories</b> <sup>1)</sup> Available only with Approvals options C, D, E.	
<b>Approvals</b> Dust Ignition Proof with IS Probe: CE, RCM, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T1, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T1, ATEX II 1/2 D T100 °C Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CE, RCM) General Purpose with WHG approval (CSA, FM, CE, RCM)	C D E F G H J K		
<b>Enclosure and lid</b> <u>Aluminum epoxy coated</u> 2 x 1/2" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet, IP65 2 x 1/2" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet, IP68	A B C D		
<b>Active shield length</b> Standard length - (125 mm threaded, 105 mm flanged) Extended shield - (250 mm threaded, 230 mm flanged) Extended shield - (400 mm threaded, 380 mm flanged) <sup>1)</sup>	0 1 2		

<sup>1)</sup> Available with Probe version options A, B, F ... K, only [≥ 1 000 mm (39.7 inch)].

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
<b>Pointek CLS300 RF Capacitance point level switch, high temperature design</b> Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, with active shield to tune out build-up on probe. <a href="#">Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</a>	<b>7ML5652-</b> 	<b>Pointek CLS300 RF Capacitance point level switch, high temperature design</b> Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, with active shield to tune out build-up on probe. Add Order code Y01 and plain text: "Insertion length ... mm" Extended rod, factory adjusted length 250 ... 499 mm (9.8 ... 19.65 inch) Extended rod, factory adjusted length 500 ... 749 mm (19.69 ... 29.49 inch) Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch)	<b>7ML5652-</b> 
<b>Process connection</b> <u>Threaded, 316L stainless steel</u> ¾" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 A</b> 1" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 B</b> 1¼" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 C</b> 1½" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 D</b> R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] <b>1 A</b> R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] <b>1 B</b> R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] <b>1 D</b> G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] <b>3 A</b> G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] <b>3 B</b> G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] <b>3 D</b>		<b>Wetted seals</b> Graphite <b>0</b>	
<u>Welded flange, 316L stainless steel, raised face</u> 1" ASME, 150 lb <b>5 A</b> 1" ASME, 300 lb <b>5 B</b> 1" ASME, 600 lb <b>5 C</b> 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>		<b>Wetted seals</b> Graphite <b>0</b>	
<u>Welded flange, 316L stainless steel, Type A flat faced</u> DN 25, PN 16 <b>6 A</b> DN 25, PN 40 <b>6 B</b> 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>Approvals</b> Dust Ignition Proof with IS Probe: CE, RCM, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T1, ATEXII 1/2 D T100 °C Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T1, ATEX II 1/2 D T100 °C Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) <b>H</b> General Purpose (CE, RCM) <b>J</b> General Purpose with WHG approval (CSA, FM, CE, RCM) <b>K</b>	
<b>Probe length</b> (length from flange face) (threaded lengths include process thread) <u>Note: No Y01 needed in Order code for standard lengths</u> Standard version rod, 350 mm (13.78 inch) <b>A</b> Extended rod, length 500 mm (19.69 inch) <b>B</b> Extended rod, length 750 mm (29.53 inch) <b>C</b> Extended rod, length 1 000 mm (39.37 inch) <b>D</b>		<b>Enclosure and lid</b> <u>Aluminum epoxy coated</u> 2 x ½" NPT via adapter - cable inlet, IP65 <b>A</b> 2 x M20 x 1.5 cable inlet, IP65 <b>B</b> 2 x ½" NPT via adapter - cable inlet, IP68 <b>C</b> 2 x M20 x 1.5 cable inlet, IP68 <b>D</b>	
		<b>Active shield length</b> Standard length - (125 mm threaded, 105 mm flanged) <b>0</b> Extended shield - (250 mm threaded, 230 mm flanged) <sup>1)</sup> <b>1</b> Extended shield - (400 mm threaded, 380 mm flanged) <sup>2)</sup> <b>2</b>	
		<sup>1)</sup> Available with Probe version options B ... D, F, G only [≥ 500 mm (19.69 inch)] <sup>2)</sup> Available with Probe version options C, D, and G only [≥ 750 mm (29.53 inch)]	

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Please add <b>"-Z"</b> to Article No. and specify Order code(s).	
Total insertion length: enter the total insertion length in plain text description <sup>1)</sup>	<b>Y01</b>
Stainless steel tag [70 x 13 mm (2.75 x 0.5 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>
Material Inspection Certificate Type 3.1 per EN 10204	<b>C12</b>
INMETRO <sup>2)</sup>	<b>E34</b>
<b>Operating Instructions</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>	
<b>Accessories</b>	<b>See page 4/53</b>

<sup>1)</sup> Not available with Probe length option B.

<sup>2)</sup> Available only with Approvals options C, D, E.

## Overview



Pointek CLS300 (digital version) is an inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. It is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present and has the ability to tune out buildup on the probe. The digital version includes PROFIBUS PA, an LCD display, and advanced diagnostic features.

## Benefits

- Active-Shield technology so measurement is unaffected by material buildup or nozzle interference in active shield section
- Performs in extremely abrasive conditions because of solid rod construction
- Push-button calibration, full-function diagnostics
- High sensitivity allows installation in a wide range of liquids, solids or slurry applications
- Integral LCD display allows for easy menu-driven setup
- PROFIBUS PA communication (SIMATIC PDM compatible)

## Application

Pointek CLS300 digital version provides an integral LCD display for stand-alone use, with PROFIBUS PA communication (Profile version 3.0, Class B) when required. Solid-state switch alarm is standard.

The robust design of CLS300 makes it specifically applicable for heavy solids applications where abrasive materials occur as in the mining industry.

The fully potted electronics are unaffected by condensation, dust or vibration.

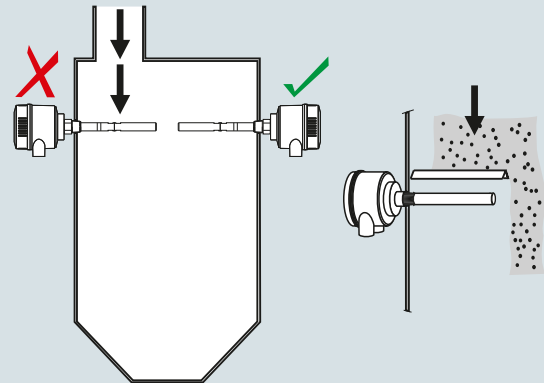
Wetted parts are made of stainless steel with a PFA shield for high chemical resistance, and of ceramic and stainless steel for high temperature version. Materials with low or high dielectric constants can be accurately detected. The unique Active Shield suppresses interference from material buildup or long installation nozzles.

The unique modular design of the Pointek CLS300 provides a wide range of configurations, process connections, extensions and approvals to meet the temperature and pressure requirements of specific applications. The modular design makes ordering easier and reduces stocking requirements. A wide range of probe configurations are available, including rod and cable versions.

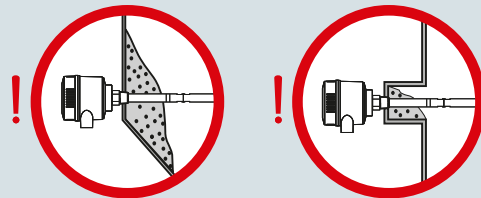
- Key Applications: liquids, slurries, bulk solids, relatively high pressure and temperature, hazardous areas, milling and mining applications

## Configuration

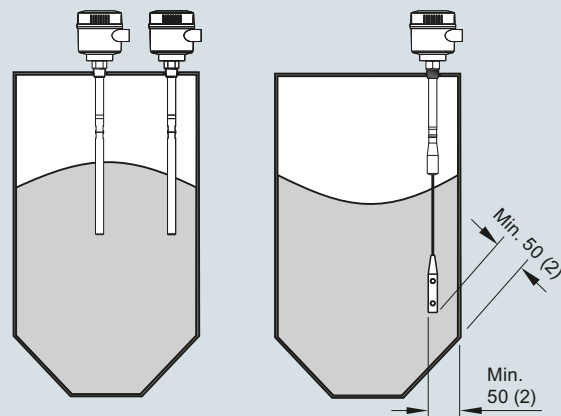
### Installation



Keep unit out of path of falling material, or protect probe from falling material.



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



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

Pointek CLS300 installation, dimensions in mm (inch)



## Level Measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS300 - Digital

#### Technical specifications

##### Mode of operation

Measuring principle	Inverse frequency shift capacitive level detection
<b>Input</b>	
Measured variable	Change in picoFarad (pF)
<b>Output</b>	
Solid-state output	
• Output	Galvanically isolated
• Protection	Against reversed polarity (bipolar)
• Max. switching voltage	<ul style="list-style-type: none"> <li>• 30 V (DC)</li> <li>• 30 V peak (AC)</li> </ul>
• Max. load current	82 mA
• Voltage drop	< 1 V, typical at 50 mA
• Time delay (pre or post switching)	Programmable by user (0 ... 100 s)
Fail-safe mode	Min. or max.
Connection	Removable terminal block
<b>Accuracy</b>	
Resolution	
• Min. sensitivity (pF)	1 % change in actual capacitance
• Max. temperature error	0.2 % of actual capacitance value
<b>Rated operating conditions<sup>1)</sup></b>	
Installation conditions	
• Location	Indoor/outdoor
Ambient conditions	
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) <sup>2)</sup>
Medium conditions	Liquids, bulk solids, slurries, interfaces, and applications with viscous materials
• Relative dielectric constant $\epsilon_r$	Min. 1.5
• Process temperature	
- Rod/Cable version	-40 ... +200 °C (-40 ... +392 °F) <sup>2)</sup>
- High Temperature version	-40 ... +400 °C (-40 ... +752 °F)
• Process pressure <sup>3)</sup>	-1 ... +35 bar g (-14.6 ... +511 psi g)
<b>Design</b>	
Material (enclosure)	Powder-coated aluminum with gasket
Degree of protection	Standard: Type 4/NEMA 4/IP65 Optional: Type 4/NEMA 4/IP68
Cable inlet	2 x M20 x 1.5 thread (option: 2 x 1/2" NPT conduit entry including 1 plugged entry)
<b>Controls and displays</b>	
Local display	LCD
Configuration	<ul style="list-style-type: none"> <li>• Locally, using 3 button keypad (for standalone operation)</li> <li>• Remotely, using SIMATIC PDM (for installation on a network)</li> </ul>

##### Power supply

Bus voltage (at process connection)	<ul style="list-style-type: none"> <li>• Standard: 12 ... 30 V DC</li> <li>• Intrinsically Safe: 12 ... 24 V DC</li> </ul>
Current consumption	12.5 mA
<b>Certificates and approvals</b>	
General Purpose	CSA, FM, CE, RCM
Dust Ignition Proof	ATEX II 1/2 D, 2 D IP6X T100 °C
Flameproof Enclosure With IS Probe	ATEX II 1/2 G EEx d[ia] IIC T6 ... T4 ATEX II 1/2 D T100 °C
Dust Ignition Proof With IS Probe	CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
Intrinsically Safe <sup>4)</sup>	ATEX II 1 G EEx ia IIC T6 ... T4 ATEX II 1/2 D, 2 D IP6X T100 °C CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
Non-incendive	CSA/FM Class I, Div. 2, Groups A, B, C, D CSA/FM Class II, Div. 2, Groups F, G CSA/FM Class III T4 or T6
Explosion Proof with IS Probe	CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
Marine	Lloyds Register of Shipping, Categories ENV1, ENV2, and ENV5
Others	Pattern Approval (China)
<b>Communication</b>	PROFIBUS PA (IEC 61158 CPF3 CP3/2) Bus physical layer: IEC 61158-2 MBP-(IS) Device profile: PROFIBUS PA profile for Process Control Devices Version 3.0, Class B FISCO field device

- 1) When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves starting on page 4/54.
- 2) Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F)
- 3) Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves starting on page 4/54.
- 4) Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection

#### Design: Probe

	Rod version	High Temperature version	Cable version
Length	Min. 250 mm (9.8 inch), max. 1 000 mm (40 inch)	Min. 250 mm (9.8 inch), max. 1 000 mm (40 inch)	Min. 1 000 mm (40 inch), max. 25 000 mm (984 inch)
Sensor wetted parts	PFA (no insulation on active probe), 316L stainless steel, PEEK isolators	Ceramic (ZrO <sub>2</sub> <sup>1)</sup> isolators (no insulation on active probe), 316L stainless steel	316 stainless steel, optional PFA, PEEK isolators
O-ring seal material	FKM (optional FFKM) <sup>2)</sup>	Graphite <sup>2)</sup>	FKM (optional FFKM) <sup>2)</sup>
Thermal isolator	Optional	Standard	Optional
Extension	User selectable length	User selectable length	User selectable cable length

<sup>1)</sup> Zirconium Oxide

<sup>2)</sup> For caustic materials, consult a local sales person for alternative O-rings. For more information, please visit [http://www.automation.siemens.com/aspa\\_app](http://www.automation.siemens.com/aspa_app).

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
<p><b>Pointek CLS300 RF Capacitance point level switch, digital, rod design</b></p> <p>Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, and active shield to tune out build-up on probe. With display and digital communications.</p> <p>➔ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>	7ML5660-	<p><b>Pointek CLS300 RF Capacitance point level switch, digital, rod design</b></p> <p>Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, and active shield to tune out build-up on probe. With display and digital communications.</p> <p>Add Order code Y01 and plain text: "Insertion length ... mm"</p>	7ML5660-
<p><b>Process connection</b> Threaded, 316L stainless steel</p> <p>3/4" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 A</b></p> <p>1" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 B</b></p> <p>1 1/4" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 C</b></p> <p>1 1/2" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 D</b></p> <p>R 3/4" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] <b>1 A</b></p> <p>R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] <b>1 B</b></p> <p>R 1 1/2" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] <b>1 D</b></p> <p>G 3/4" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] <b>3 A</b></p> <p>G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] <b>3 B</b></p> <p>G 1 1/2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] <b>3 D</b></p>		<p>Extended rod, factory adjusted length 250 ... 499 mm (9.8 ... 19.65 inch) <b>E</b></p> <p>Extended rod, factory adjusted length 500 ... 749 mm (19.69 ... 29.49 inch) <b>F</b></p> <p>Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch) <b>G</b></p> <p><b>Thermal isolator</b></p> <p>Without thermal isolator <b>0</b></p> <p>With thermal isolator [for process connection temperatures over 85 °C (185 °F)] <b>1</b></p> <p><b>Wetted seals</b></p> <p>FKM <b>0</b></p> <p>FFKM [for process temperatures above -20 °C (-4 °F)] <b>1</b></p> <p><b>Probe material</b></p> <p>316L stainless steel with PFA lining and PEEK isolators <b>0</b></p>	
<p><b>Welded flange, 316L stainless steel, raised face</b></p> <p>1" ASME, 150 lb <b>5 A</b></p> <p>1" ASME, 300 lb <b>5 B</b></p> <p>1" ASME, 600 lb <b>5 C</b></p> <p>1 1/2" ASME, 150 lb <b>5 D</b></p> <p>1 1/2" ASME, 300 lb <b>5 E</b></p> <p>1 1/2" ASME, 600 lb <b>5 F</b></p> <p>2" ASME, 150 lb <b>5 G</b></p> <p>2" ASME, 300 lb <b>5 H</b></p> <p>2" ASME, 600 lb <b>5 J</b></p> <p>3" ASME, 150 lb <b>5 K</b></p> <p>3" ASME, 300 lb <b>5 L</b></p> <p>3" ASME, 600 lb <b>5 M</b></p> <p>4" ASME, 150 lb <b>5 N</b></p> <p>4" ASME, 300 lb <b>5 P</b></p> <p>4" ASME, 600 lb <b>5 Q</b></p>		<p><b>Approvals</b></p> <p>Dust Ignition Proof: CE, RCM, ATEX II 1/2 D, 2 D IP6X T100 °C</p> <p>Intrinsically Safe<sup>1)</sup> CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D, 2 D IP6X T100 °C</p> <p>Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C</p> <p>Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4</p> <p>Intrinsically Safe<sup>1)</sup> CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4</p> <p>Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4</p> <p>General Purpose (CSA, FM) <b>H</b></p> <p>General Purpose (CSA, FM, CE, RCM) <b>J</b></p>	
<p><b>Welded flange, 316L stainless steel, Type A flat faced</b></p> <p>DN 25, PN 16 <b>6 A</b></p> <p>DN 25, PN 40 <b>6 B</b></p> <p>DN 40, PN 16 <b>6 C</b></p> <p>DN 40, PN 40 <b>6 D</b></p> <p>DN 50, PN 16 <b>6 E</b></p> <p>DN 50, PN 40 <b>6 F</b></p> <p>DN 80, PN 16 <b>6 G</b></p> <p>DN 80, PN 40 <b>6 H</b></p> <p>DN 100, PN 16 <b>6 J</b></p> <p>DN 100, PN 40 <b>6 K</b></p> <p>(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)</p>			
<p><b>Probe length</b> (length from flange face) (threaded lengths include process thread)</p> <p>Note: No Y01 needed in Order code for standard lengths</p> <p>Standard version, rod 350 mm (13.78 inch) <b>A</b></p> <p>Extended rod, length 500 mm (19.69 inch) <b>B</b></p> <p>Extended rod, length 750 mm (29.53 inch) <b>C</b></p> <p>Extended rod, length 1 000 mm (39.37 inch) <b>D</b></p>			

## Level Measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS300 - Digital

Selection and Ordering data	Article No.
<b>Pointek CLS300 RF Capacitance point level switch, digital, rod design</b> Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, and active shield to tune out build-up on probe. With display and digital communications.	<b>7ML5660-</b>
<b>Enclosure and Lid</b> Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet, IP65 2 x ½" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet, IP68	A B C D
<b>Active shield length</b> Standard length - (125 mm threaded, 105 mm flanged) Extended shield - (250 mm threaded, 230 mm flanged) <sup>2)</sup> Extended shield - (400 mm threaded, 380 mm flanged) <sup>3)</sup>	0 1 2
<sup>1)</sup> Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection <sup>2)</sup> Available with Probe version options B ... D, F, G only [≥ 500 mm (19.69 inch)] <sup>3)</sup> Available with Probe version options C, D, and G only [≥ 750 mm (29.53 inch)]	

Selection and Ordering data	Order code
<b>Further designs</b> Please add <b>"-Z"</b> to Article No. and specify Order code(s).	
Total insertion length: enter the total insertion length in plain text description	<b>Y01</b>
Stainless steel tag [70 x 13 mm (2.75 x 0.5 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>
Material inspection Certificate Type 3.1 per EN 10204	<b>C12</b>
INMETRO <sup>1)</sup>	<b>E34</b>
<b>Operating Instructions</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>	
<b>Accessories</b> <sup>1)</sup> Available only with Approvals options B and D.	<b>See page 4/53</b>

Selection and Ordering data	Article No.
<b>Pointek CLS300 RF Capacitance point level switch, digital, cable design</b> Detects level and interface in aggressive liquids, solids, slurries, and foam. Cable extension options to 25 m (82.02 ft), adaptable sensitivity, with active shield to tune out build-up on probe. With display and digital communications. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	<b>7ML5661-</b>
<b>Process connection</b> Threaded, 316L stainless steel 1¼" NPT [(Taper), ANSI/ASME B1.20.1] 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]	<b>0 C</b> <b>0 D</b> <b>1 D</b> <b>3 D</b>
<b>Welded flange, 316L stainless steel, raised face</b> 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	<b>5 D</b> <b>5 E</b> <b>5 F</b> <b>5 G</b> <b>5 H</b> <b>5 J</b> <b>5 K</b> <b>5 L</b> <b>5 M</b> <b>5 N</b> <b>5 P</b> <b>5 Q</b>
<b>Welded flange, 316L stainless steel, Type A flat faced</b> 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 (Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)	<b>6 C</b> <b>6 D</b> <b>6 E</b> <b>6 F</b> <b>6 G</b> <b>6 H</b> <b>6 J</b> <b>6 K</b>
<b>Probe length</b> (length from flange face) (threaded lengths include process thread) <u>Note: No Y01 needed in Order code for standard lengths</u> Extended cable, 3 000 mm (118.11 inch), length can be shortened by customer Extended cable, 6 000 mm (236.22 inch), length can be shortened by customer <b>Add Order code Y01 and plain text:</b> <b>"Insertion length ... mm"</b> Extended cable, 500 ... 1 000 mm (19.69 ... 39.37 inch) Extended cable, 1 001 ... 5 000 mm (39.41 ... 196.85 inch) Extended cable, 5 001 ... 10 000 mm (196.89 ... 393.70 inch) Extended cable, 10 001 ... 15 000 mm (393.74 ... 590.55 inch) Extended cable, 15 001 ... 20 000 mm (590.59 ... 787.40 inch) Extended cable, 20 001 ... 25 000 mm (787.44 ... 984.25 inch)	A B E F G H J K

Selection and Ordering data	Article No.	Selection and Ordering data	Order code
<b>Pointek CLS300 RF Capacitance point level switch, digital, cable design</b> Detects level and interface in aggressive liquids, solids, slurries, and foam. Cable extension options to 25 m (82.02 ft), adaptable sensitivity, with active shield to tune out build-up on probe. With display and digital communications.	<b>7ML5661-</b>	<b>Further designs</b>	
<b>Thermal isolator</b> Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1	Please add "-Z" to Article No. and specify Order code(s).  Total insertion length: enter the total insertion length in plain text description	<b>Y01</b>
<b>Wetted seals</b> FKM FFKM [for process temperatures above -20 °C (-4 °F)]	0 1	Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text  Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000	<b>Y15</b>  <b>C11</b>
<b>Probe material</b> Bare 316L stainless steel cable, PEEK isolators and 316L stainless steel cable weight PFA coated cable, PEEK isolators and 316L stainless steel cable weight	0 1	Material inspection Certificate Type 3.1 per EN 10204 INMETRO <sup>1)</sup>	<b>C12</b>  <b>E34</b>
<b>Approvals</b> Dust Ignition Proof: CE, RCM, ATEX II 1/2 D, 2 D IP6X T100 °C  Intrinsically Safe <sup>1)</sup> CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D, 2 D IP6X T100 °C  Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C  Intrinsically Safe <sup>1)</sup> CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4  Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4  General Purpose (CSA, FM) General Purpose (CSA, FM, CE, RCM)	B C D F G H J	<b>Operating Instructions</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>	
<b>Enclosure and Lid</b> <u>Aluminum epoxy coated</u> 2 x 1/2" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet, IP65 2 x 1/2" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet, IP68	A B C D	<b>Accessories</b>	<b>See page 4/53</b>
<b>Active shield length</b> Standard length - (125 mm threaded, 105 mm flanged) Extended shield - (250 mm threaded, 230 mm flanged) Extended shield - (400 mm threaded, 380 mm flanged) <sup>2)</sup>	0 1 2		


<sup>1)</sup> Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection.


<sup>2)</sup> Available with Probe version options A, B, F ... K, only [≥ 1 000 mm (39.7 inch)].

## Level Measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS300 - Digital

Selection and Ordering data	Article No.
<b>Pointek CLS300 RF Capacitance point level switch, digital, high temperature design</b> Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, with active shield to tune out build-up on probe. With display and digital communications. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	<b>7ML5662-</b> 
<b>Process connection</b> <u>Threaded, 316L stainless steel</u> ¾" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 A</b> 1" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 B</b> 1¼" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 C</b> 1½" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 D</b> R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] <b>1 A</b> R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] <b>1 B</b> R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] <b>1 D</b> G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] <b>3 A</b> G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] <b>3 B</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</u> 1" ASME, 150 lb <b>5 A</b> 1" ASME, 300 lb <b>5 B</b> 1" ASME, 600 lb <b>5 C</b> 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</u> DN 25, PN 16 <b>6 A</b> DN 25, PN 40 <b>6 B</b> 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> (Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)	
<b>Probe length</b> (length from flange face) (threaded lengths include process thread) <u>Note: No Y01 needed in Order code for standard lengths</u> Standard version rod, 350 mm (13.78 inch) <b>A</b> Extended rod, length 500 mm (19.69 inch) <b>B</b> Extended rod, length 750 mm (29.53 inch) <b>C</b> Extended rod, length 1 000 mm (39.37 inch) <b>D</b>	

Selection and Ordering data	Article No.
<b>Pointek CLS300 RF Capacitance point level switch, digital, high temperature design</b> Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, with active shield to tune out build-up on probe. With display and digital communications. <u>Add Order code Y01 and plain text: "Insertion length ... mm"</u> Extended rod, factory adjusted length 250 ... 499 mm (9.8 ... 19.65 inch) <b>E</b> Extended rod, factory adjusted length 500 ... 749 mm (19.69 ... 29.49 inch) <b>F</b> Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch) <b>G</b> <b>Wetted seals</b> Graphite <b>0</b> <b>Probe material</b> 316L stainless steel with ceramic (ZrO <sub>2</sub> ) isolators <b>0</b>	<b>7ML5662-</b> 
<b>Approvals</b> Dust Ignition Proof: CE, RCM, ATEX II 1/2 D, 2 D IP6X T100 °C Intrinsically Safe <sup>1)</sup> CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D, 2 D IP6X T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Intrinsically Safe <sup>1)</sup> CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) <b>H</b> General Purpose (CSA, FM, CE, RCM) <b>J</b>	
<b>Enclosure and Lid</b> <u>Aluminum epoxy coated</u> 2 x ½" NPT via adapter - cable inlet, IP65 <b>A</b> 2 x M20 x 1.5 cable inlet, IP65 <b>B</b> 2 x ½" NPT via adapter - cable inlet, IP68 <b>C</b> 2 x M20 x 1.5 cable inlet, IP68 <b>D</b>	
<b>Active shield length</b> Standard length - (125 mm threaded, 105 mm flanged) <b>0</b> Extended shield - (250 mm threaded, 230 mm flanged) <sup>2)</sup> <b>1</b> Extended shield - (400 mm threaded, 380 mm flanged) <sup>3)</sup> <b>2</b>	
<sup>1)</sup> Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection <sup>2)</sup> Available with Probe version options B ... D, F, G only [≥ 500 mm (19.69 inch)] <sup>3)</sup> Available with Probe version options C, D, and G only [≥ 750 mm (29.53 inch)]	

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).		One metallic cable gland M20 x 1.5, -40 ... +80 °C (-40 ... +176 °F) with integrated shield connection (available for PROFIBUS PA)	<b>7ML1930-1AQ</b>
Total insertion length: enter the total insertion length in plain text description	<b>Y01</b>	<u>General Purpose</u>	
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	<b>Y15</b>	½" NPT General Purpose Cable Entry IP68/IP69K NEMA 6, -40 ... +80 °C (-40 ... +176 °F), Dust Ignition Proof, cable size 6 ... 12 mm (0.236 ... 0.472 inch)	<b>7ML1830-1JA</b>
Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000	<b>C11</b>	M20 x 1.5 General Purpose Cable Entry IP68/IP69K NEMA 6, -40 ... +80 °C (-40 ... +176 °F), Dust Ignition Proof, cable size 7 ... 12 mm (0.275 ... 0.472 inch)	<b>7ML1830-1JC</b>
Material Inspection Certificate Type 3.1 per EN 10204	<b>C12</b>	<u>Hazardous Locations</u>	
INMETRO <sup>1)</sup>	<b>E34</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>
<b>Operating Instructions</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>
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>		<b>Blind threaded flanges are available.</b> 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>Accessories</b>	<b>See page 4/53</b>	<b>Pointek Specials</b>	<b>See page 4/60</b>

<sup>1)</sup> Available only with Approvals options B and D.

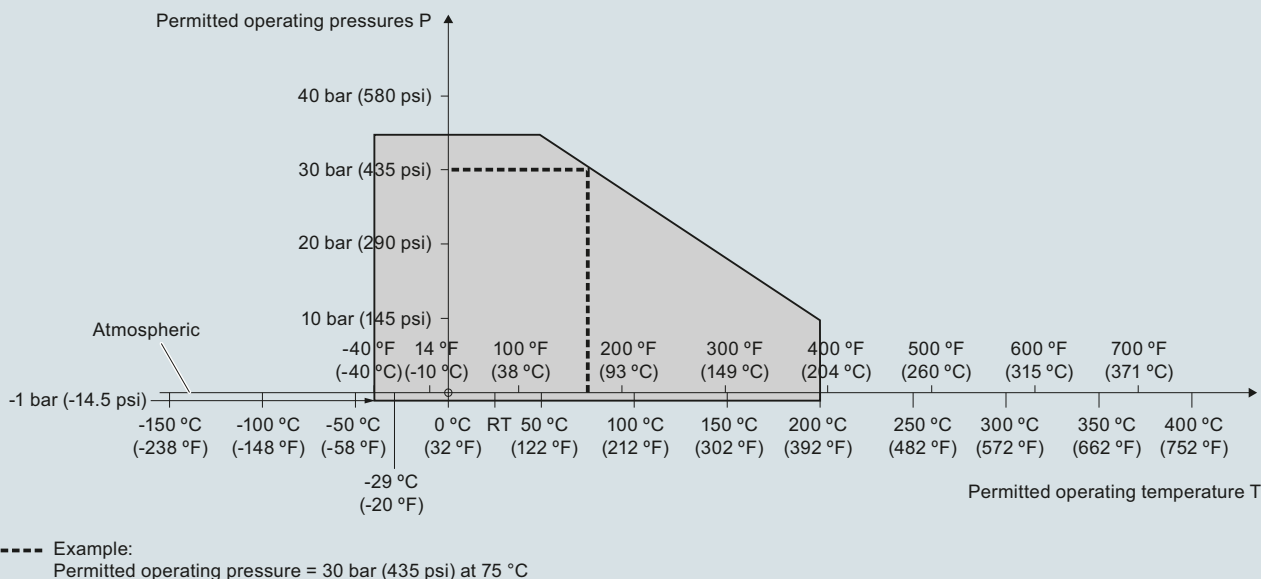
## Level Measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS300 - Standard and Digital

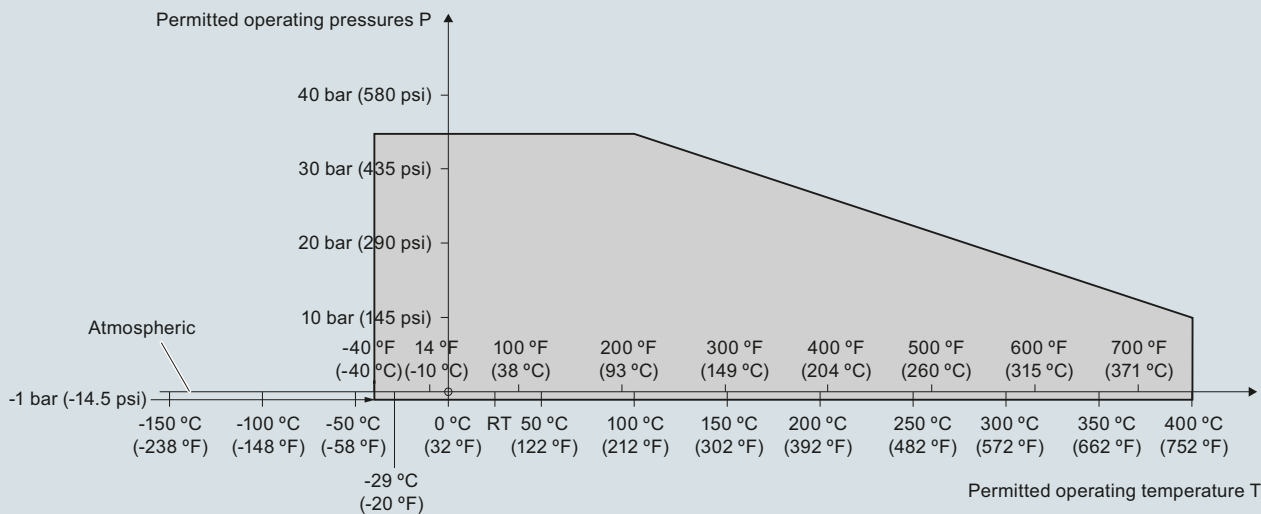
#### Characteristic curves

**Pressure/temperature curve**  
**CLS300 extended rod and cable probes**  
**Threaded process connections**  
**(7ML5650, 7ML5651, 7ML5660 and 7ML5661)**



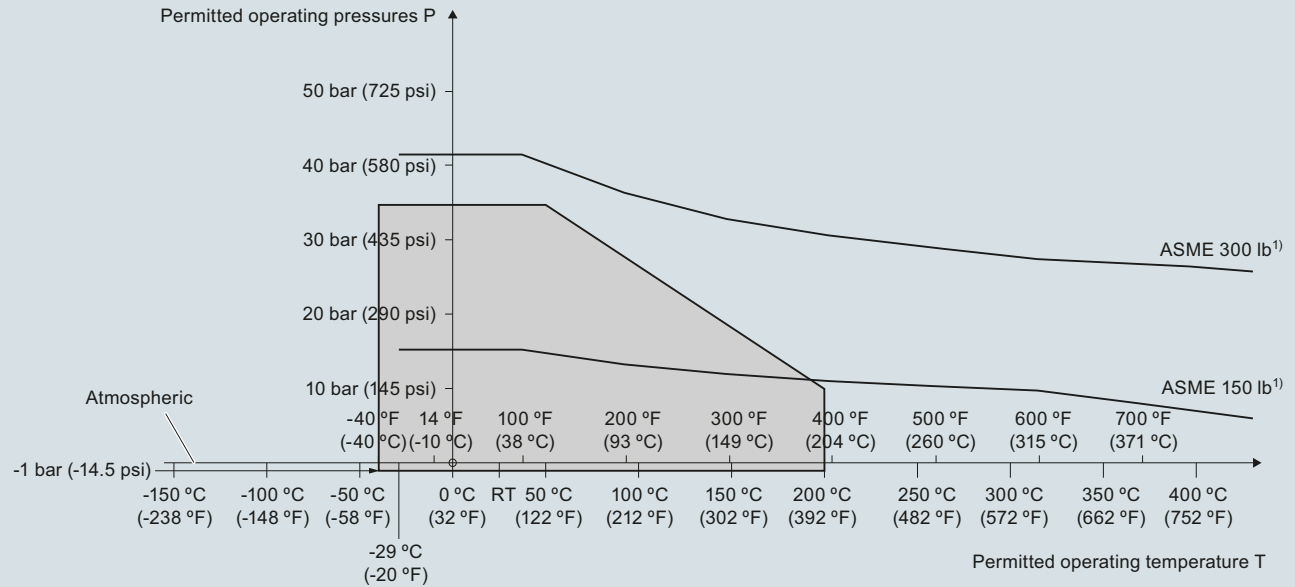
Pointek CLS300 process pressure/temperature derating curves (7ML5650, 7ML5651, 7ML5660 and 7ML5661)

**Pressure/temperature curve**  
**CLS300 high temperature rod probes**  
**Threaded process connections**  
**(7ML5652 and 7ML5662)**



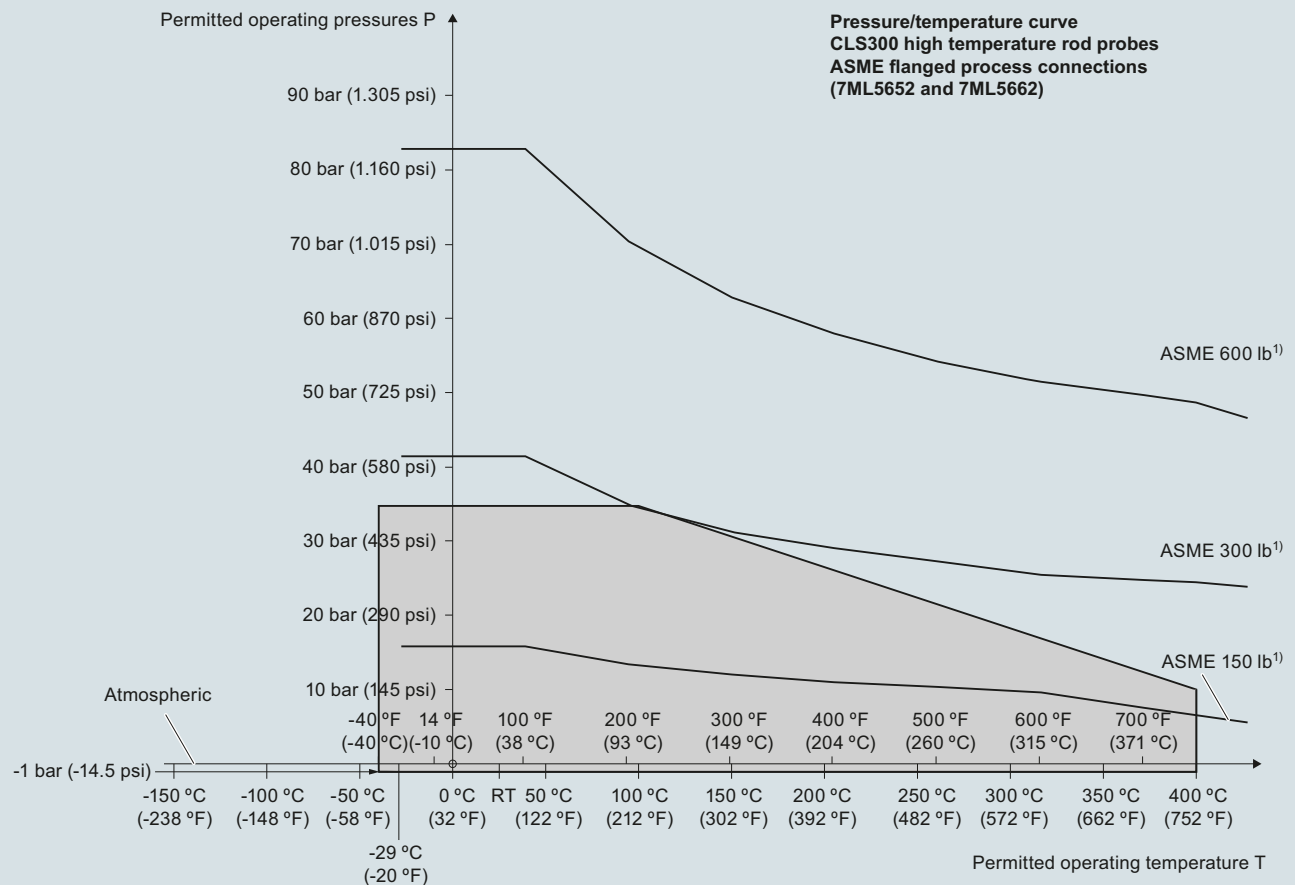
Pointek CLS300 process pressure/temperature derating curves (7ML5652 and 7ML5662)

**Pressure/temperature curve**  
CLS300 extended rod and cable probes  
ASME flanged process connections  
(7ML5650, 7ML5651, 7ML5660 and 7ML5661)



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

Pointek CLS300 process pressure/temperature derating curves (7ML5650, 7ML5651, 7ML5660, and 7ML5661)



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

Pointek CLS300 process pressure/temperature derating curves (7ML5652 and 7ML5662)

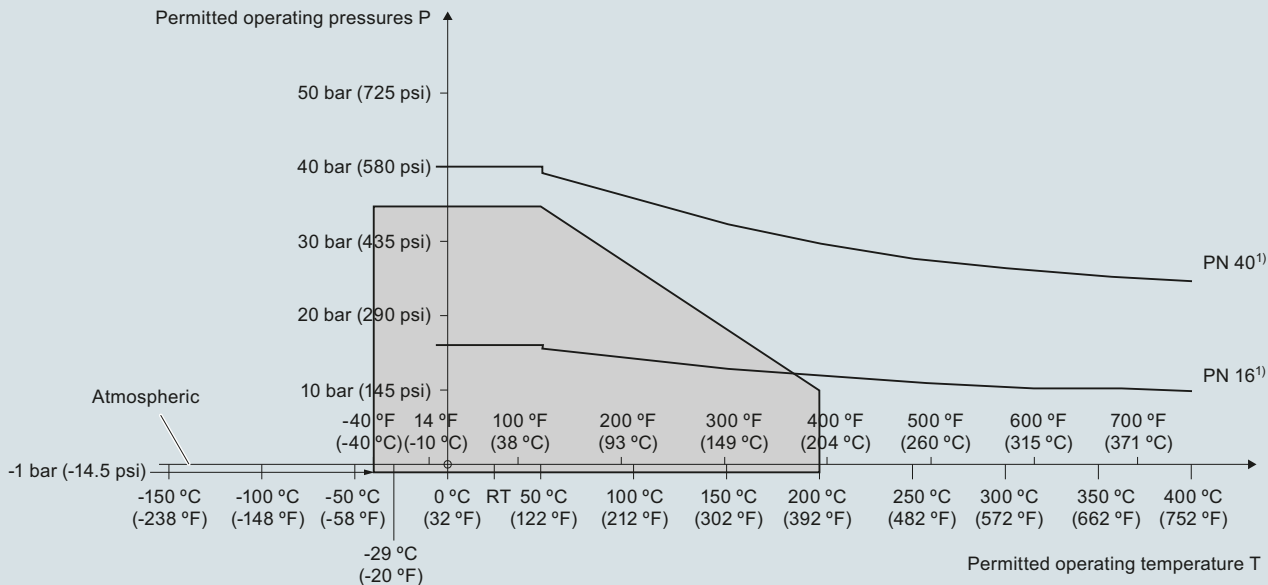


## Level Measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS300 - Standard and Digital

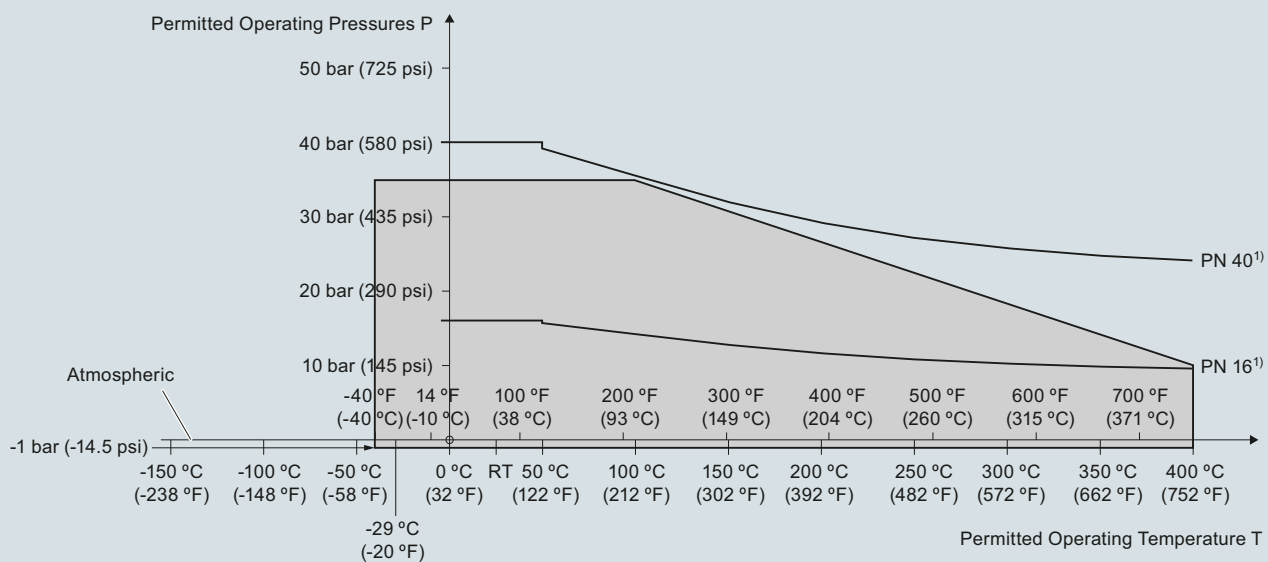
**Pressure/temperature curve**  
CLS300 extended rod and cable probes  
EN flanged process connections  
(7ML5650, 7ML5651, 7ML5660 and 7ML5661)



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

Pointek CLS300 process pressure/temperature derating curves (7ML5650, 7ML5651, 7ML5660 and 7ML5661)

**Pressure/Temperature Curve**  
CLS300 High Temperature Rod Probes  
EN Flanged Process Connections (7ML5652 and 7ML5662)

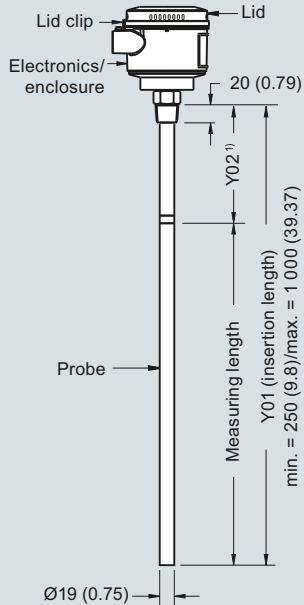


1) The curve denotes the minimum allowable flange class for the shaded area below.

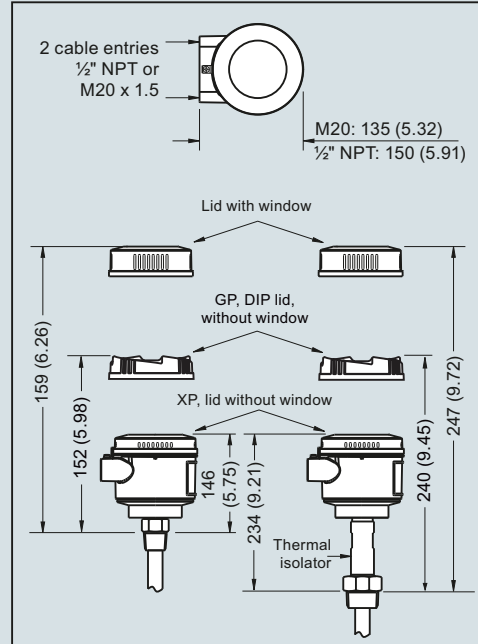
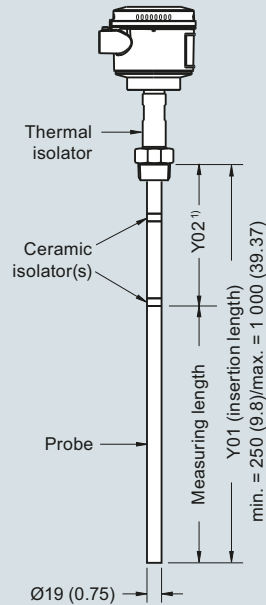
Pointek CLS300 process pressure/temperature derating curves (7ML5652 and 7ML5662)

**Dimensional drawings**

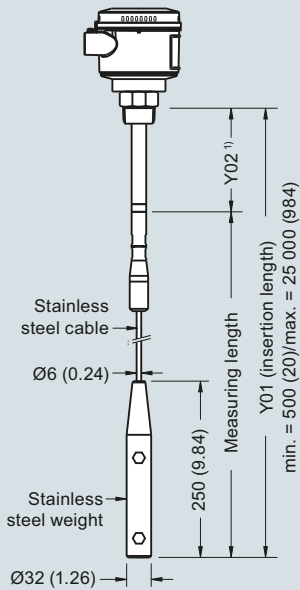
**Rod version  
Threaded (7ML5650 and 7ML5660)**



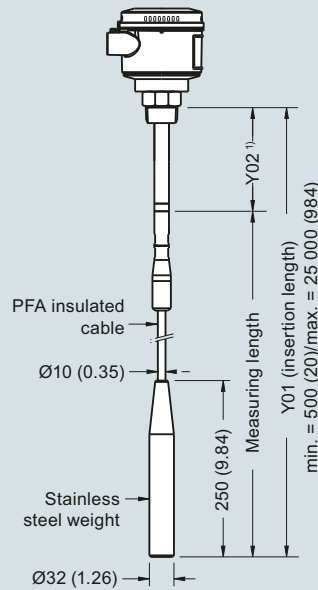
**High temperature rod version  
Threaded (7ML5652 and 7ML5662)**



**Cable version, non-insulated  
Threaded (7ML5651 and 7ML5661)**



**Cable version, insulated  
Threaded (7ML5651 and 7ML5661)**



**Note:**

<sup>1)</sup> Extended Active Shield (Y02): standard length 125 (4.92). Optional active shield lengths: 250 (9.84) or 400 (15.75).

Pointek CLS300 threaded process connections, dimensions in mm (inch)

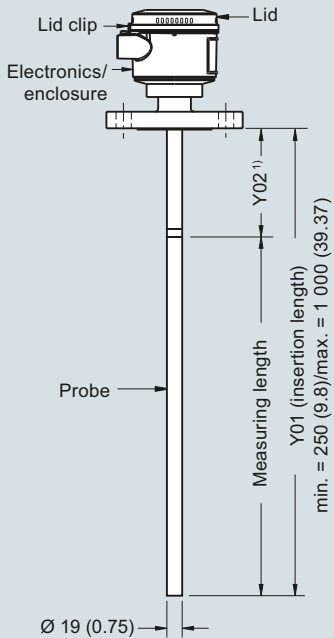
# Level Measurement

Point level measurement  
RF Capacitance switches

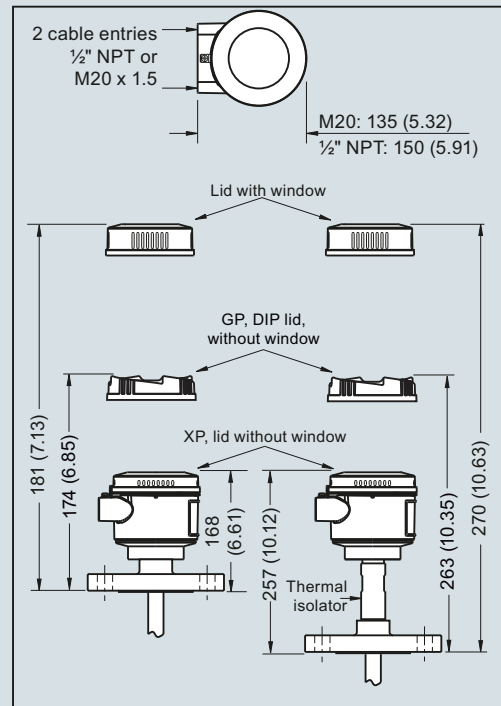
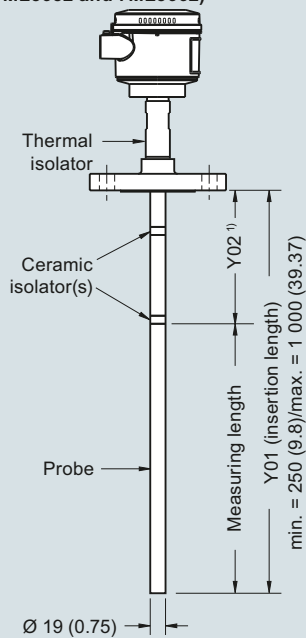
## Pointek CLS300 - Standard and Digital

4

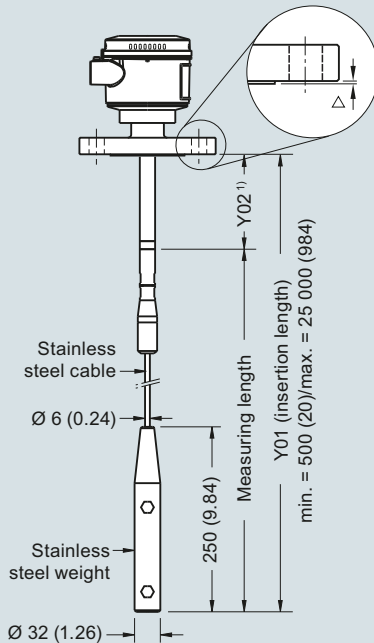
### Rod version Welded flange (7ML5650 and 7ML5660)



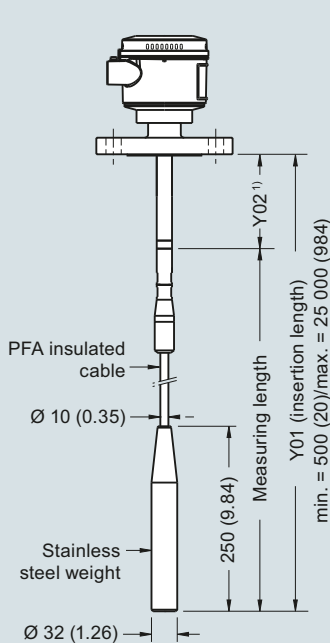
### High temperature rod version Welded flange (7ML5652 and 7ML5662)



### Cable version, non-insulated Welded flange (7ML5651 and 7ML5661)



### Cable version, insulated Welded flange (7ML5651 and 7ML5661)



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

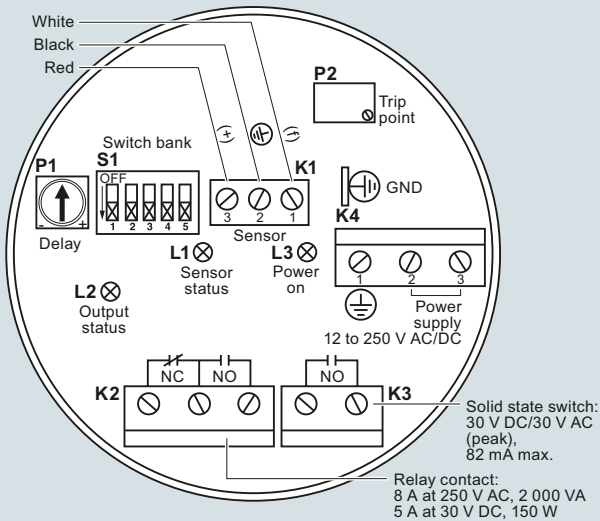
**Note:**

<sup>1)</sup> Extended Active Shield (Y02): standard length 105 (4.13). Optional active shield lengths: 230 (9.06) or 380 (14.96). Insertion length does not include any raised face/gasket face dimension (see Flange Facing Table above)

Pointek CLS300 flanged process connections, dimensions in mm (inch)

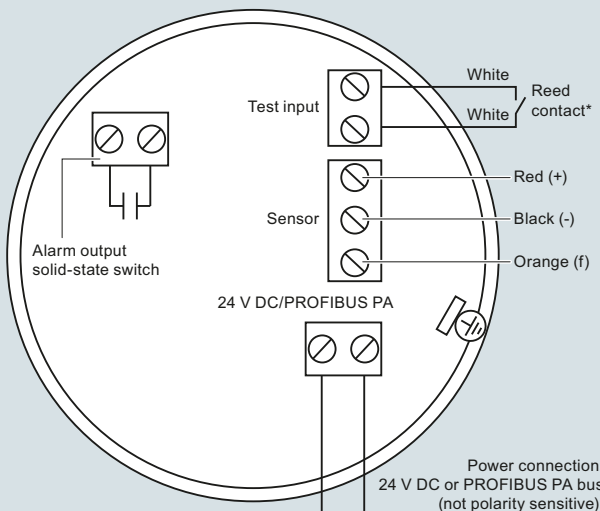
**Circuit diagrams**

**Wiring: Pointek CLS300 standard**



- Notes:**
- Identification label is on underside of lid. Switch and potentiometer settings are for illustration purposes only (refer to operation/setup in manual).
  - All field wiring must have insulation suitable for at least 250 V.
  - Relay contact terminals are for use with equipment having no accessible live parts and wiring having insulation suitable for at least 250 V.
  - Maximum working voltage between adjacent relay contacts shall be 250 V.
  - Refer to the Instruction manual or contact Siemens representative for detailed wiring information.

**Wiring: Pointek CLS300 digital**



- Notes:**
- Refer to the instruction manual or contact a Siemens representative for detailed wiring information.

**\*Magnet activated sensor test**

A magnet can be used to test the sensor without opening the lid of the Pointek CLS300 digital version. Bring the magnet close to the test area indicated on the enclosure. The sensor test starts and finishes automatically after 10 seconds.



Pointek CLS300 connections

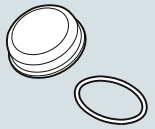

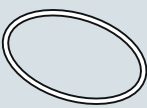
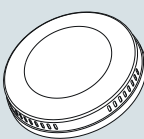
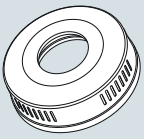

## Level Measurement

Point level measurement  
RF Capacitance switches

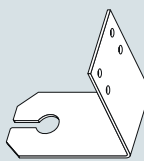


### Pointek CLS Specials



#### Selection and ordering data


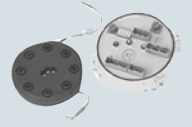

##### Pointek Specials<sup>1)</sup>

	Article No.
<b>CLS100 Polycarbonate Lid and Gasket, FKM</b>  	<b>A5E01163671</b>
Kit, Lid and gasket, CLS100 enclosure version	
<b>CLS100 Miscellaneous Parts</b>  Custom length of cable is available only for 7ML5501-xxx1x and 7ML5501-xxx5x <sup>2)</sup>	
<b>CLS200 Gasket (IP65), Synprene</b>  	<b>A5E01163672</b>
Spare gasket, enclosure version (IP65 versions only)	
<b>CLS200 Gasket (IP68), Silicone</b>  	<b>A5E01163673</b>
Spare gasket, enclosure version (IP68 versions)	
<b>CLS200/CLS300/LC300 Blind Lid</b>  	<b>A5E01163674</b>
Spare aluminum blind lid (for standard versions only)	
<b>CLS200/CLS300 Lid with window</b>  	<b>A5E01163676</b>
Spare aluminum lid with window	
<b>CLS200 Sensor Kit for cable units</b>  	<b>A5E01163677</b>
Kit, sensor for cable units, PPS, Standard, FKM	

##### Pointek Specials<sup>1)</sup>

	Article No.
Kit, sensor for cable units, PPS, digital, FKM	<b>A5E01163678</b>
Kit, sensor for cable units, PPS, standard, FFKM	<b>A5E01163679</b>
Kit, sensor for cable units, PPS, digital, FFKM	<b>A5E01163680</b>
Kit, sensor for cable units, PVDF, standard, FKM	<b>A5E01163681</b>
Kit, sensor for cable units, PVDF, digital, FFKM	<b>A5E01163682</b>
Kit, sensor for cable units, PVDF, standard, FFKM	<b>A5E01163683</b>
Kit, sensor for cable units, PVDF, digital, FFKM	<b>A5E01163684</b>
<b>CLS200 Mounting Bracket, 316L stainless steel</b>  	
Spare mounting bracket	<b>A5E01163685</b>
<b>CLS200 PROFIBUS Connector (IP65)</b>  	
Spare, PROFIBUS connector (IP65 versions only)	<b>A5E01163686</b>
<b>CLS200 Miscellaneous Parts</b>  CLS200 with FFKM O-rings (any version) <sup>2)</sup>	
<b>CLS200 Electronics</b>  Test magnet, digital version Amplifier/power supply kit, standard version Amplifier/power supply, digital version LCD display, digital version	<b>7ML1830-1JE</b> <b>A5E03251681</b> <b>7ML1830-1JF</b> <b>7ML1830-1JK</b>
<b>CLS300 Cable Extensions, 316L stainless steel</b>  	
Kit, stainless steel cable extension, 1 m, adjustable by customer	<b>A5E01163688</b>
Kit, stainless steel cable extension, 3 m, adjustable by customer	<b>A5E01163689</b>
Kit, stainless steel cable extension, 5 m, adjustable by customer	<b>A5E01163690</b>
Kit, stainless steel cable extension, 10 m, adjustable by customer	<b>A5E01163691</b>
Kit, stainless steel cable extension, 15 m, adjustable by customer	<b>A5E01163693</b>
Kit, stainless steel cable extension, 20 m, adjustable by customer	<b>A5E01163695</b>

Pointek Specials <sup>1)</sup>	
	Article No.
<b>CLS300 Cable Extensions, 316 stainless steel with PFA coating</b>	
Kit, PFA cable extension, 1 m, adjustable by customer	<b>A5E01163697</b>
Kit, PFA cable extension, 3 m, adjustable by customer	<b>A5E01163698</b>
Kit, PFA cable extension, 5 m, adjustable by customer	<b>A5E01163699</b>
Kit, PFA cable extension, 10 m, adjustable by customer	<b>A5E01163700</b>
Kit, PFA cable extension, 15 m, adjustable by customer	<b>A5E01163701</b>
Kit, PFA cable extension, 20 m, adjustable by customer	<b>A5E01163702</b>
<b>CLS300 Rod Kits, 316L stainless steel</b>	
Kit, stainless steel rod 180 mm (7.09 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 350 mm (13.78 inch).	<b>A5E01163719</b>
Kit, stainless steel rod 330 mm (12.99 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 500 mm (19.69 inch).	<b>A5E01163720</b>
Kit, stainless steel rod 580 mm (22.83 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 750 mm (29.53 inch).	<b>A5E01163721</b>
Kit, stainless steel rod 830 mm (32.68 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 1 000 mm (39.37 inch).	<b>A5E01163722</b>
Kit, stainless steel rod 1 330 mm (52.36 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 1 500 mm (59.06 inch). <sup>2)</sup>	
Kit, stainless steel rod 1 830 mm (72.05 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 2 000 mm (78.74 inch). <sup>2)</sup>	
Kit, stainless steel rod customized length up to 1 m <sup>2)</sup>	
Kit, stainless steel rod customized length up to 2 m <sup>2)</sup>	

Pointek Specials <sup>1)</sup>	
	Article No.
<b>CLS300 Electronics Kits with drivers (for rod or cable versions)</b>	
Kit, electronics with driver, standard CLS300. To be used in rod or cable versions with length less than 5 m. <sup>3)4)</sup>	<b>A5E01163723</b>
Kit, electronics with driver, digital CLS300. To be used in rod or cable versions with length less than 5 m. <sup>3)4)</sup>	<b>A5E01163725</b>
<b>CLS300 Electronics Kits with drivers (for cable versions)</b>	
Kit, electronics with driver, standard CLS300. To be used in cable versions with length greater than 5 m. <sup>3)4)</sup>	<b>A5E01163724</b>
Kit, electronics with driver, digital CLS300. To be used in cable versions with length greater than 5 m. <sup>3)4)</sup>	<b>A5E01163726</b>
<b>CLS300 Electronics</b>	
Test magnet, digital version	<b>7ML1830-1JE</b>
Amplifier/power supply kit, standard version	<b>A5E03251683</b>
Amplifier/power supply, digital version	<b>7ML1830-1JF</b>
LCD display, digital version	<b>7ML1830-1JK</b>
<b>CLS300 Weight Kit, 316L stainless steel</b>	
Kit, spare stainless steel weight. To be used in any cable version of CLS300.	<b>A5E01163727</b>

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

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

<sup>3)</sup> For General Purpose approvals only

<sup>4)</sup> To maintain approvals, qualified trained Siemens personnel required for part replacement

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).