

# Level Measurement

## Point level measurement – Capacitance switches

Pointek CLS300 – Standard

### Overview



Pointek CLS300 (standard version) is an inverse frequency shift capacitance level 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.

### Benefits

- Patented 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)

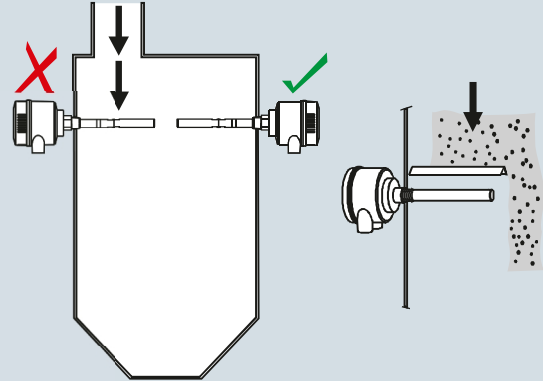
### Application

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.

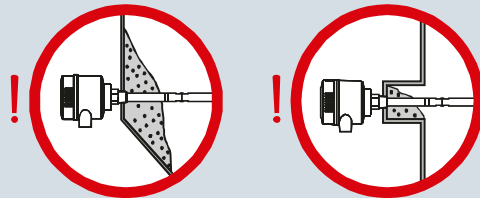
- Key Applications: liquids, slurries, bulk solids, relatively high pressure and temperature, hazardous areas, milling and mining applications

### Configuration

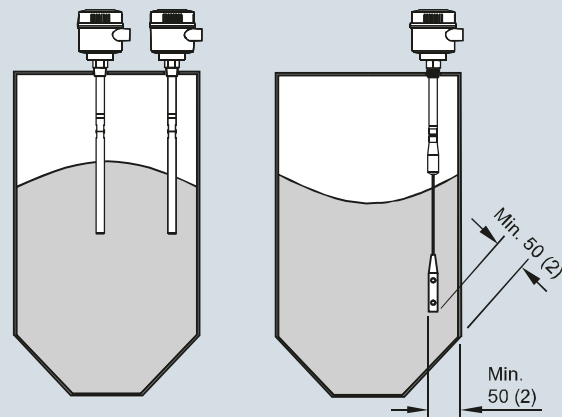
#### Installation



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)

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#### Technical specifications

<b>Mode of operation</b>		<b>Design</b>	
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 M20x1.5 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, C-TICK
- 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>		1) When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves starting on page 4/60.	
Resolution		2) Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F).	
• Min. sensitivity (pF)	1 % change in actual capacitance	3) Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves starting on page 4/60.	
• 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)		

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#### 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, please contact [ceg.smpi@siemens.com](mailto:ceg.smpi@siemens.com) for alternative O-Rings.

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Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
<b>Pointek CLS300 - Standard - Rod Version with Threaded or Flanged process connection</b> Inverse frequency shift capacitance level 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.	<b>7ML5650-</b> 	<b>Pointek CLS300 - Standard - Rod Version with Threaded or Flanged process connection</b> Inverse frequency shift capacitance level 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.	<b>7ML5650-</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>Add Order code Y01 and plain text:</b> <u>"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>	
<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>Thermal isolator</b> Without thermal isolator    ● <b>0</b> With thermal isolator [for process connection temperatures over 85 °C (185 °F)]    ● <b>1</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>Wetted seals</b> FKM    ● <b>0</b> FFKM [for process temperatures above -20 °C (-4 °F)]    ● <b>1</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>Probe material</b> 316L stainless steel with PFA lining and PEEK isolators    ● <b>0</b>	
		<b>Approvals</b> Dust Ignition Proof with IS Probe: CE, C-TICK, ATEX II 1/2 D T100 °C    ● <b>C</b> Flameproof Enclosure with IS Probe: CE, C-TICK, ATEX II 1/2 G EEx d[ia] IIC T6...T1, ATEX II 1/2 D T100 °C    ● <b>D</b> Flameproof Enclosure with IS Probe, with WHG approval: CE, C-TICK, ATEX II 1/2 G EEx d[ia] IIC T6...T1, ATEX II 1/2 D T100 °C    ● <b>E</b> Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4    ● <b>F</b> 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    ● <b>G</b> General Purpose (CSA, FM)    ● <b>H</b> General Purpose (CE, C-TICK)    ● <b>J</b> General Purpose with WHG approval (CSA, FM, CE, C-TICK)    ● <b>K</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 M20x1.5 cable inlet, IP65    ● <b>B</b> 2 x ½" NPT via adapter - cable inlet, IP68    ● <b>C</b> 2 x M20x1.5 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>	


1) Available with Probe version options B ... D, F, G only [≥ 500 mm (19.69 inch)]  
 2) Available with Probe version options C, D, and, G only [≥ 750 mm (29.53 inch)]

● We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ●. For details see page 9/5 in the appendix.

# Level Measurement

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Selection and Ordering data	Order code	Selection and Ordering data	Article No.
<b>Further designs</b>		<b>Pointek CLS300 - Standard - Cable Version with Threaded or Flanged process connection</b>	<b>7ML5651-</b>
Please add <b>"-Z"</b> to Article No. and specify Order code(s).		Inverse frequency shift capacitance level 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.	
Total insertion length: enter the total insertion length in plain text description	Y01	<b>Process connection</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	Y15	<u>Threaded, 316L stainless steel</u>	
Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000	C11	1¼" NPT [(Taper), ANSI/ASME B1.20.1]	0 C
Inspection Certificate Type 3.1 per EN 10204	C12	1½" NPT [(Taper), ANSI/ASME B1.20.1]	0 D
<b>Operating Instructions</b>		R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 D
Note: The Operating Instructions should be ordered as a separate line on the order. This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and manual library.	See page 4/59	G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 D
<b>Accessories</b>	See page 4/59	<u>Welded flange, 316L stainless steel, raised face</u>	
<ul style="list-style-type: none"> <li>We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 9/5 in the appendix.</li> </ul>		1½" ASME, 150 lb	5 D
		1½" ASME, 300 lb	5 E
		1½" ASME, 600 lb	5 F
		2" ASME, 150 lb	5 G
		2" ASME, 300 lb	5 H
		2" ASME, 600 lb	5 J
		3" ASME, 150 lb	5 K
		3" ASME, 300 lb	5 L
		3" ASME, 600 lb	5 M
		4" ASME, 150 lb	5 N
		4" ASME, 300 lb	5 P
		4" ASME, 600 lb	5 Q
		<u>Welded flange, 316L stainless steel, Type A flat faced</u>	
		DN 40, PN 16	6 C
		DN 40, PN 40	6 D
		DN 50, PN 16	6 E
		DN 50, PN 40	6 F
		DN 80, PN 16	6 G
		DN 80, PN 40	6 H
		DN 100, PN 16	6 J
		DN 100, PN 40	6 K
		(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	A
		Extended cable, 6 000 mm (236.22 inch), length can be shortened by customer	B
		<u>Add Order code Y01 and plain text: "Insertion length ... mm"</u>	
		Extended cable, 500 ... 1 000 mm (19.69 ... 39.37 inch)	E
		Extended cable, 1 001 ... 5 000 mm (39.41 ... 196.85 inch)	F
		Extended cable, 5 001 ... 10 000 mm (196.89 ... 393.70 inch)	G
		Extended cable, 10 001 ... 15 000 mm (393.74 ... 590.55 inch)	H
		Extended cable, 15 001 ... 20 000 mm (590.59 ... 787.40 inch)	J
		Extended cable, 20 001 ... 25 000 mm (787.44 ... 984.25 inch)	K
		<b>Thermal isolator</b>	
		Without thermal isolator	0
		With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	1

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### Pointek CLS300 – Standard

#### Selection and Ordering data

Article No.

#### Pointek CLS300 - Standard - Cable Version with Threaded or Flanged process connection

7ML5651-

Inverse frequency shift capacitance level 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.

#### Wetted seals

FKM  0  
FFKM [for process temperatures above -20 °C (-4 °F)]  1

#### Probe material

Bare 316L stainless steel cable, PEEK isolators and 316L stainless steel cable weight  0  
PFA coated cable, PEEK isolators and 316L stainless steel cable weight  1

#### Approvals

Dust Ignition Proof with IS Probe: CE, C-TICK, ATEX II 1/2 D T100 °C  C  
Flameproof Enclosure with IS Probe: CE, C-TICK, ATEX II 1/2 G EEx d[ia] IIC T6...T1, ATEX II 1/2 D T100 °C  D  
Flameproof Enclosure with IS Probe, with WHG approval: CE, C-TICK, ATEX II 1/2 G EEx d[ia] IIC T6...T1, ATEX II 1/2 D T100 °C  E  
Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4  F  
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  G  
General Purpose (CSA, FM)  H  
General Purpose (CE, C-TICK)  J  
General Purpose with WHG approval (CSA, FM, CE, C-TICK)  K

#### Enclosure and lid

##### Aluminum epoxy coated

2 x 1/2" NPT via adapter - cable inlet, IP65  A  
2 x M20x1.5 cable inlet, IP65  B  
2 x 1/2" NPT via adapter - cable inlet, IP68  C  
2 x M20x1.5 cable inlet, IP68  D

#### Active shield length

Standard length - (125 mm threaded, 105 mm flanged)  0  
Extended shield - (250 mm threaded, 230 mm flanged)<sup>1)</sup>  1  
Extended shield - (400 mm threaded, 380 mm flanged)<sup>1)</sup>  2

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

We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 9/5 in the appendix.

#### Selection and Ordering data

Order code

#### Further designs

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

Total insertion length: enter the total insertion length in plain text description  **Y01**

Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text  **Y15**

Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000  **C11**

Inspection Certificate Type 3.1 per EN 10204  **C12**

#### Operating Instructions

Note: The Operating Instructions should be ordered as a separate line on the order. This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and manual library.

**See page 4/59**

#### Accessories

**See page 4/59**

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### Pointek CLS300 – Standard

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
<b>Pointek CLS300 - Standard - High Temperature Rod Version with Threaded or Flanged process connection</b> Inverse frequency shift capacitance level 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.	<b>7ML5652-</b> 0 -	<b>Pointek CLS300 - Standard - High Temperature Rod Version with Threaded or Flanged process connection</b> Inverse frequency shift capacitance level 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.	<b>7ML5652-</b> 0 -
<b>Process connection</b> <u>Threaded, 316L stainless steel</u> ¾" NPT [(Taper), ANSI/ASME B1.20.1]    ● 0 A 1" NPT [(Taper), ANSI/ASME B1.20.1]    ● 0 B 1¼" NPT [(Taper), ANSI/ASME B1.20.1]    ● 0 C 1½" NPT [(Taper), ANSI/ASME B1.20.1]    ● 0 D R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]    ● 1 A R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]    ● 1 B R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]    ● 1 D G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]    ● 3 A G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]    ● 3 B G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]    ● 3 D		<b>Wetted seals</b> Graphite    ● 0	
<u>Welded flange, 316L stainless steel, raised face</u> 1" ASME, 150 lb    ● 5 A 1" ASME, 300 lb    ● 5 B 1" ASME, 600 lb    ● 5 C 1½" ASME, 150 lb    ● 5 D 1½" ASME, 300 lb    ● 5 E 1½" ASME, 600 lb    ● 5 F 2" ASME, 150 lb    ● 5 G 2" ASME, 300 lb    ● 5 H 2" ASME, 600 lb    ● 5 J 3" ASME, 150 lb    ● 5 K 3" ASME, 300 lb    ● 5 L 3" ASME, 600 lb    ● 5 M 4" ASME, 150 lb    ● 5 N 4" ASME, 300 lb    ● 5 P 4" ASME, 600 lb    ● 5 Q		<b>Approvals</b> Dust Ignition Proof with IS Probe: CE, C-TICK, ATEX II 1/2 D T100 °C    ● C Flameproof Enclosure with IS Probe: CE, C-TICK, ATEX II 1/2 G EEx d[ia] IIC T6...T1, ATEX II 1/2 D T100 °C    ● D Flameproof Enclosure with IS Probe, with WHG approval: CE, C-TICK, ATEX II 1/2 G EEx d[ia] IIC T6...T1, ATEX II 1/2 D T100 °C    ● E Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4    ● F 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    ● G General Purpose (CSA, FM)    ● H General Purpose (CE, C-TICK)    ● J General Purpose with WHG approval (CSA, FM, CE, C-TICK)    ● K	
<u>Welded flange, 316L stainless steel, Type A flat faced</u> DN 25, PN 16    ● 6 A DN 25, PN 40    ● 6 B DN 40, PN 16    ● 6 C DN 40, PN 40    ● 6 D DN 50, PN 16    ● 6 E DN 50, PN 40    ● 6 F DN 80, PN 16    ● 6 G DN 80, PN 40    ● 6 H DN 100, PN 16    ● 6 J DN 100, PN 40    ● 6 K		<b>Enclosure and lid</b> <u>Aluminum epoxy coated</u> 2 x ½" NPT via adapter - cable inlet, IP65    ● A 2 x M20x1.5 cable inlet, IP65    ● B 2 x ½" NPT via adapter - cable inlet, IP68    ● C 2 x M20x1.5 cable inlet, IP68    ● D	
<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)    ● A Extended rod, length 500 mm (19.69 inch)    ● B Extended rod, length 750 mm (29.53 inch)    ● C Extended rod, length 1 000 mm (39.37 inch)    ● D		<b>Active shield length</b> Standard length - (125 mm threaded, 105 mm flanged)    ● 0 Extended shield - (250 mm threaded, 230 mm flanged) <sup>1)</sup> ● 1 Extended shield - (400 mm threaded, 380 mm flanged) <sup>2)</sup> ● 2	
		1) Available with Probe version options B ... D, F, G only [≥ 500 mm (19.69 inch)] 2) Available with Probe version options C, D, and, G only [≥ 750 mm (29.53 inch)] ● We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ●. For details see page 9/5 in the appendix.	

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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 [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>
<b>Operating Instructions</b>	
Note: The Operating Instructions should be ordered as a separate line on the order. This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and manual library.	<b>See page 4/59</b>
<b>Accessories</b>	
◆ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆. For details see page 9/5 in the appendix.	<b>See page 4/59</b>



# Level Measurement

## Point level measurement – Capacitance switches

Pointek CLS300 – Digital

### Overview



Pointek CLS300 (digital version) is an inverse frequency shift capacitance level 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. The digital version includes PROFIBUS PA, an LCD display, and advanced diagnostic features.

### Benefits

- Patented 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.

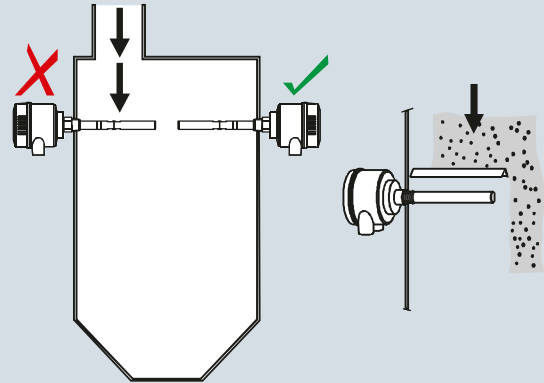
Wetted parts are made of stainless steel with a PFA shield for high chemical resistance, and of ceramic and stainless steel for high temperature version. Materials with low or high dielectric constants can be accurately detected. The unique Active Shield suppresses interference from material buildup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

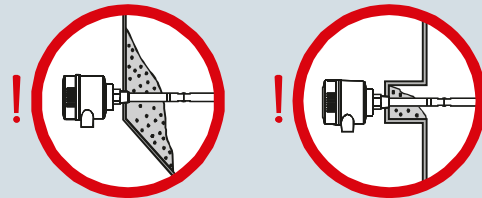
- Key Applications: liquids, slurries, bulk solids, relatively high pressure and temperature, hazardous areas, milling and mining applications

### Configuration

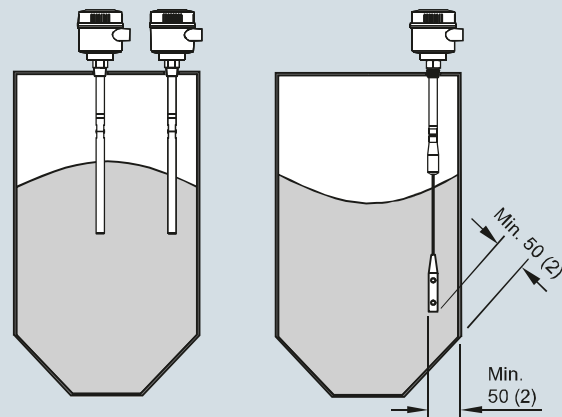
#### Installation



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 – Capacitance switches

### Pointek CLS300 – Digital

#### Technical specifications

<b>Mode of operation</b>	
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	• 30 V DC • 30 V peak AC
• 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 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)
<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 M20x1.5 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>
<b>Power supply</b>	
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, C-TICK
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

- When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves starting on page 4/60.
- Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F)
- Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves starting on page 4/60.
- 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

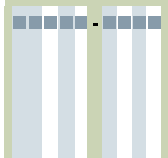
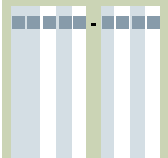
<sup>2)</sup> For Caustic Materials, please contact [ceg.smpi@siemens.com](mailto:ceg.smpi@siemens.com) for alternative O-Rings


# Level Measurement

## Point level measurement – Capacitance switches

### Pointek CLS300 – Digital

4

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
<b>Pointek CLS300 - Digital - Rod with Threaded or Flanged process connection</b> Inverse frequency shift capacitance level 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.	<b>7ML5660-</b> 	<b>Pointek CLS300 - Digital - Rod with Threaded or Flanged process connection</b> Inverse frequency shift capacitance level 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.	<b>7ML5660-</b> 
<b>Process connection</b> <u>Threaded, 316L stainless steel</u> 3/4" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 A</b> 1" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 B</b> 1 1/4" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 C</b> 1 1/2" NPT [(Taper), ANSI/ASME B1.20.1] <b>0 D</b> R 3/4" [(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 1 1/2" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] <b>1 D</b> G 3/4" [(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 1 1/2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] <b>3 D</b>		<b>Add Order code Y01 and plain text:</b> <u>"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>	
<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> 1 1/2" ASME, 150 lb <b>5 D</b> 1 1/2" ASME, 300 lb <b>5 E</b> 1 1/2" ASME, 600 lb <b>5 F</b> 2" ASME, 150 lb <b>5 G</b> 2" ASME, 300 lb <b>5 H</b> 2" ASME, 600 lb <b>5 J</b> 3" ASME, 150 lb <b>5 K</b> 3" ASME, 300 lb <b>5 L</b> 3" ASME, 600 lb <b>5 M</b> 4" ASME, 150 lb <b>5 N</b> 4" ASME, 300 lb <b>5 P</b> 4" ASME, 600 lb <b>5 Q</b>		<b>Thermal isolator</b> Without thermal isolator <b>0</b> With thermal isolator [for process connection temperatures over 85 °C (185 °F)] <b>1</b>	
<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>Wetted seals</b> FKM <b>0</b> FFKM [for process temperatures above -20 °C (-4 °F)] <b>1</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>		<b>Probe material</b> 316L stainless steel with PFA lining and PEEK isolators <b>0</b>	
		<b>Approvals</b> Dust Ignition Proof: CE, C-TICK, ATEX II 1/2 D, 2 D IP6X T100 °C <b>B</b> Intrinsically Safe <sup>1)</sup> CE, C-TICK, ATEX II 1 G EEx ia IIC T6...T4, ATEX II 1/2 D, 2 D IP6X T100 °C <b>C</b> Flameproof Enclosure with IS Probe: CE, C-TICK, ATEX II 1/2 G EEx d[ia] IIC T6...T4, ATEX II 1/2 D T100 °C <b>D</b> Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 <b>E</b> 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 <b>F</b> 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 <b>G</b> General Purpose (CSA, FM) <b>H</b> General Purpose (CSA, FM, CE, C-TICK) <b>J</b>	
		<b>Enclosure and Lid</b> <u>Aluminum epoxy coated</u> 2 x 1/2" NPT via adapter - cable inlet, IP65 <b>A</b> 2 x M20x1.5 cable inlet, IP65 <b>B</b> 2 x 1/2" NPT via adapter - cable inlet, IP68 <b>C</b> 2 x M20x1.5 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>	

1) Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection  
 2) Available with Probe version options B ... D, F, G only [≥ 500 mm (19.69 inch)]  
 3) Available with Probe version options C, D, and, G only [≥ 750 mm (29.53 inch)]  
 We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 9/5 in the appendix.

# Level Measurement

## Point level measurement – Capacitance switches

### Pointek CLS300 – Digital

#### Selection and Ordering data

#### Order code

##### Further designs

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

Total insertion length: enter the total insertion length in plain text description **Y01**

Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text **Y15**

Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000 **C11**

Inspection Certificate Type 3.1 per EN 10204 **C12**

##### Operating Instructions

Note: The Operating Instructions should be ordered as a separate line on the order. This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and manual library.

**See page 4/59**

##### Accessories

**See page 4/59**

● We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ●. For details see page 9/5 in the appendix.

#### Selection and Ordering data

#### Article No.

##### Pointek CLS300 - Digital - Cable with Threaded or Flanged process connection

**7ML5661-**

Versatile inverse frequency shift capacitance level switch with optional process connection choices and configurable output, ideal for detection of liquids, solids, slurries, foam, and interfaces

##### Process connection

###### Threaded, 316L stainless steel

1¼" NPT [(Taper), ANSI/ASME B1.20.1] **0 C**

1½" NPT [(Taper), ANSI/ASME B1.20.1] **0 D**

R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] **1 D**

G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] **3 D**

###### Welded flange, 316L stainless steel, raised face

1½" ASME, 150 lb **5 D**

1½" ASME, 300 lb **5 E**

1½" ASME, 600 lb **5 F**

2" ASME, 150 lb **5 G**

2" ASME, 300 lb **5 H**

2" ASME, 600 lb **5 J**

3" ASME, 150 lb **5 K**

3" ASME, 300 lb **5 L**

3" ASME, 600 lb **5 M**

4" ASME, 150 lb **5 N**

4" ASME, 300 lb **5 P**

4" ASME, 600 lb **5 Q**

###### Welded flange, 316L stainless steel,

###### Type A flat faced

DN 40, PN 16 **6 C**

DN 40, PN 40 **6 D**

DN 50, PN 16 **6 E**

DN 50, PN 40 **6 F**

DN 80, PN 16 **6 G**

DN 80, PN 40 **6 H**

DN 100, PN 16 **6 J**

DN 100, PN 40 **6 K**

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

**Probe length** (length from flange face) (threaded lengths include process thread)

Note: No Y01 needed in Order code for standard lengths

Extended cable, 3 000 mm (118.11 inch), length can be shortened by customer **A**

Extended cable, 6 000 mm (236.22 inch), length can be shortened by customer **B**

Extended cable, 1 001 ... 5 000 mm (39.41 ... 196.85 inch) **F**

Extended cable, 5 001 ... 10 000 mm (196.89 ... 393.70 inch) **G**

Extended cable, 10 001 ... 15 000 mm (393.74 ... 590.55 inch) **H**

Extended cable, 15 001 ... 20 000 mm (590.59 ... 787.40 inch) **J**

Extended cable, 20 001 ... 25 000 mm (787.44 ... 984.25 inch) **K**

Extended cable, 500 ... 1 000 mm (19.69 ... 39.37 inch) **E**

Extended cable, 1 001 ... 5 000 mm (39.41 ... 196.85 inch) **F**

Extended cable, 5 001 ... 10 000 mm (196.89 ... 393.70 inch) **G**

Extended cable, 10 001 ... 15 000 mm (393.74 ... 590.55 inch) **H**

Extended cable, 15 001 ... 20 000 mm (590.59 ... 787.40 inch) **J**

Extended cable, 20 001 ... 25 000 mm (787.44 ... 984.25 inch) **K**

Extended cable, 500 ... 1 000 mm (19.69 ... 39.37 inch) **E**

Extended cable, 1 001 ... 5 000 mm (39.41 ... 196.85 inch) **F**

Extended cable, 5 001 ... 10 000 mm (196.89 ... 393.70 inch) **G**

Extended cable, 10 001 ... 15 000 mm (393.74 ... 590.55 inch) **H**

Extended cable, 15 001 ... 20 000 mm (590.59 ... 787.40 inch) **J**

Extended cable, 20 001 ... 25 000 mm (787.44 ... 984.25 inch) **K**

# Level Measurement

## Point level measurement – Capacitance switches

### Pointek CLS300 – Digital

Selection and Ordering data	Article No.	Selection and Ordering data	Order code
<b>Pointek CLS300 - Digital - Cable with Threaded or Flanged process connection</b> Versatile inverse frequency shift capacitance level switch with optional process connection choices and configurable output, ideal for detection of liquids, solids, slurries, foam, and interfaces	<b>7ML5661-</b> 	<b>Further designs</b> Please add "-Z" to Article No. and specify Order code(s). Total insertion length: enter the total insertion length in plain text description	
<b>Thermal isolator</b> Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1	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>Y01</b> <b>Y15</b>
<b>Wetted seals</b> FKM FFKM [for process temperatures above -20 °C (-4 °F)]	0 1	Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000 Inspection Certificate Type 3.1 per EN 10204	<b>C11</b> <b>C12</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	<b>Operating Instructions</b> Note: The Operating Instructions should be ordered as a separate line on the order. This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and manual library.	<b>See page 4/59</b>
<b>Approvals</b> Dust Ignition Proof: CE, C-TICK, ATEX II 1/2 D, 2 D IP6X T100 °C Intrinsically Safe <sup>1)</sup> CE, C-TICK, 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, C-TICK, 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, C-TICK)		<b>Accessories</b> We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 9/5 in the appendix.	<b>See page 4/59</b>
<b>Enclosure and Lid</b> <u>Aluminum epoxy coated</u> 2 x 1/2" NPT via adapter - cable inlet, IP65 2 x M20x1.5 cable inlet, IP65 2 x 1/2" NPT via adapter - cable inlet, IP68 2 x M20x1.5 cable inlet, IP68			<b>A</b> <b>B</b> <b>C</b> <b>D</b>
<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>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 and, F ... K only [≥ 1 000 mm (39.7 inch)] We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 9/5 in the appendix.			

# Level Measurement

## Point level measurement – Capacitance switches

### Pointek CLS300 – Digital

4

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
<b>Pointek CLS300 - Digital - High Temperature Rod version with Threaded or Flanged process connection</b> Inverse frequency shift capacitance level 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.	<b>7ML5662-</b> 0 -	<b>Pointek CLS300 - Digital - High Temperature Rod version with Threaded or Flanged process connection</b> Inverse frequency shift capacitance level 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.	<b>7ML5662-</b> 0 -
<b>Process connection</b> <u>Threaded, 316L stainless steel</u> ¾" NPT [(Taper), ANSI/ASME B1.20.1]    ● 0 A 1" NPT [(Taper), ANSI/ASME B1.20.1]    ● 0 B 1¼" NPT [(Taper), ANSI/ASME B1.20.1]    ● 0 C 1½" NPT [(Taper), ANSI/ASME B1.20.1]    ● 0 D R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]    ● 1 A R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]    ● 1 B R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]    ● 1 D G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]    ● 3 A G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]    ● 3 B G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]    ● 3 D		Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch)    ● G <b>Wetted seals</b> Graphite    ● 0 <b>Probe material</b> 316L stainless steel with ceramic (ZrO <sub>2</sub> ) isolators    ● 0 <b>Approvals</b> Dust Ignition Proof: CE, C-TICK, ATEX II 1/2 D, 2 D IP6X T100 °C    ● B Intrinsically Safe <sup>1)</sup> CE, C-TICK, ATEX II 1 G EEx ia IIC T6...T4, ATEX II 1/2 D, 2 D IP6X T100 °C    ● C Flameproof Enclosure with IS Probe: CE, C-TICK, ATEX II 1/2 G EEx d[ia] IIC T6...T4, ATEX II 1/2 D T100 °C    ● D 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    ● F 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    ● G General Purpose (CSA, FM)    ● H General Purpose (CSA, FM, CE, C-TICK)    ● J <b>Enclosure and Lid</b> <u>Aluminum epoxy coated</u> 2 x ½" NPT via adapter - cable inlet, IP65    ● A 2 x M20x1.5 cable inlet, IP65    ● B 2 x ½" NPT via adapter - cable inlet, IP68    ● C 2 x M20x1.5 cable inlet, IP68    ● D <b>Active shield length</b> Standard length - (125 mm threaded, 105 mm flanged)    ● 0 Extended shield - (250 mm threaded, 230 mm flanged) <sup>2)</sup> ● 1 Extended shield - (400 mm threaded, 380 mm flanged) <sup>3)</sup> ● 2	
<u>Welded flange, 316L stainless steel, raised face</u> 1" ASME, 150 lb    ● 5 A 1" ASME, 300 lb    ● 5 B 1" ASME, 600 lb    ● 5 C 1½" ASME, 150 lb    ● 5 D 1½" ASME, 300 lb    ● 5 E 1½" ASME, 600 lb    ● 5 F 2" ASME, 150 lb    ● 5 G 2" ASME, 300 lb    ● 5 H 2" ASME, 600 lb    ● 5 J 3" ASME, 150 lb    ● 5 K 3" ASME, 300 lb    ● 5 L 3" ASME, 600 lb    ● 5 M 4" ASME, 150 lb    ● 5 N 4" ASME, 300 lb    ● 5 P 4" ASME, 600 lb    ● 5 Q			
<u>Welded flange, 316L stainless steel, Type A flat faced</u> DN 25, PN 16    ● 6 A DN 25, PN 40    ● 6 B DN 40, PN 16    ● 6 C DN 40, PN 40    ● 6 D DN 50, PN 16    ● 6 E DN 50, PN 40    ● 6 F DN 80, PN 16    ● 6 G DN 80, PN 40    ● 6 H DN 100, PN 16    ● 6 J DN 100, PN 40    ● 6 K (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)    ● A Extended rod, length 500 mm (19.69 inch)    ● B Extended rod, length 750 mm (29.53 inch)    ● C Extended rod, length 1 000 mm (39.37 inch)    ● D Add Order code Y01 and plain text: <u>Insertion length ... mm</u> Extended rod, factory adjusted length 250 ... 499 mm (9.8 ... 19.65 inch)    ● E Extended rod, factory adjusted length 500 ... 749 mm (19.69 ... 29.49 inch)    ● F			

1) Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection  
 2) Available with Probe version options B ... D, F, G only [≥ 500 mm (19.69 inch)]  
 3) Available with Probe version options C, D, and, G only [≥ 750 mm (29.53 inch)]  
 ● We can offer shorter delivery times for configurations designated with the Quick Snip Symbol ●. For details see page 9/5 in the appendix.

# Level Measurement

## Point level measurement – Capacitance switches

### Pointek CLS300 – Standard and Digital

Selection and Ordering data	Order code	Selection and Ordering data	Article No.
<b>Further designs</b>		<b>Operating Instructions - Standard</b>	
Please add <b>"-Z"</b> to Article No. and specify Order code(s).		English	<b>7ML1998-5JH04</b>
Total insertion length: enter the total insertion length in plain text description	◆ <b>Y01</b>	German	<b>7ML1998-5JH34</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>	Note: The Operating Instructions should be ordered as a separate line on the order.	
Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000	◆ <b>C11</b>	Quick Start manual, multi-language	<b>A5E32221251</b>
Inspection Certificate Type 3.1 per EN 10204	◆ <b>C12</b>	This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and Operating Instructions library.	
<b>Operating Instructions</b>		<b>Operating Instructions - Digital</b>	
Note: The Operating Instructions should be ordered as a separate line on the order. This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and manual library.	<b>See page 4/59</b>	English	<b>7ML1998-5JJ05</b>
		French	<b>7ML1998-5JJ11</b>
		German	<b>7ML1998-5JJ34</b>
<b>Accessories</b>	<b>See page 4/59</b>	Note: The Operating Instructions should be ordered as a separate line on the order.	
◆ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆. For details see page 9/5 in the appendix.		Quick Start manual, multi-language	<b>A5E32221496</b>
		This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and Operating Instructions library.	
		<b>Accessories</b>	
		One metallic cable gland M20x1.5, -40 ... +80 °C (-40 ... +176 °F) with integrated shield connection (available for PROFIBUS PA)	<b>7ML1930-1AQ</b>
		<u>General Purpose</u>	
		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>
		M20x1.5 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>
		<u>Hazardous Locations</u>	
		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>
		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>Blind threaded flanges are available. Please contact <a href="mailto:ceg.smp@siemens.com">ceg.smp@siemens.com</a> with a completed application data sheet on page 4/11</b>	
		<b>Pointek Specials</b>	<b>See page 4/82</b>

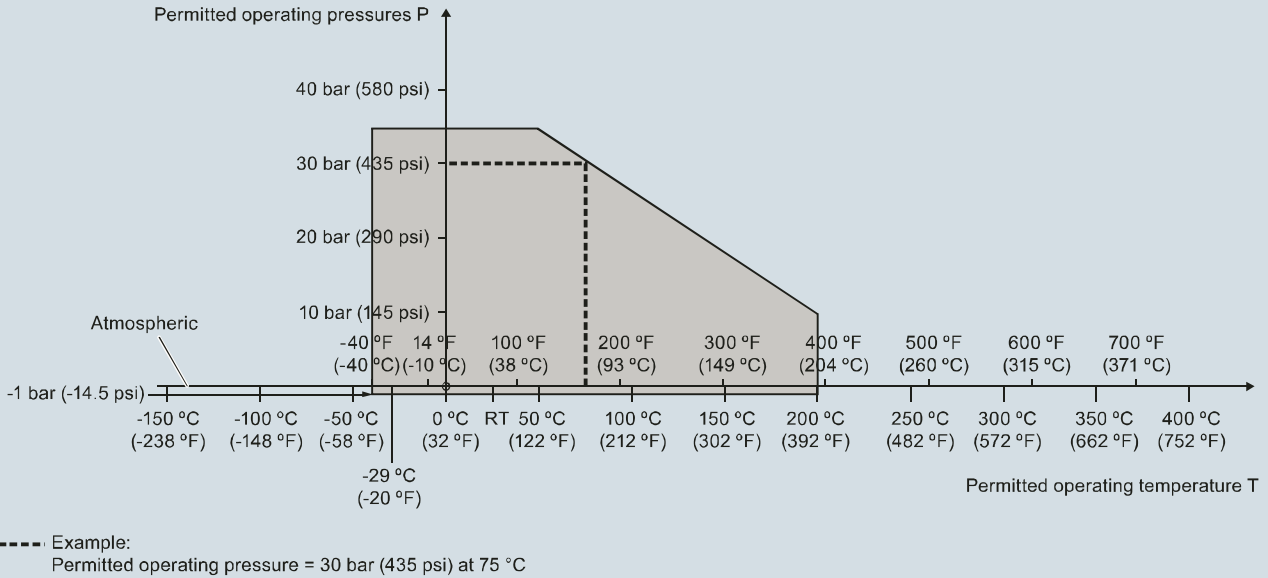
# Level Measurement

## Point level measurement – Capacitance switches

### Pointek CLS300 – Standard and Digital

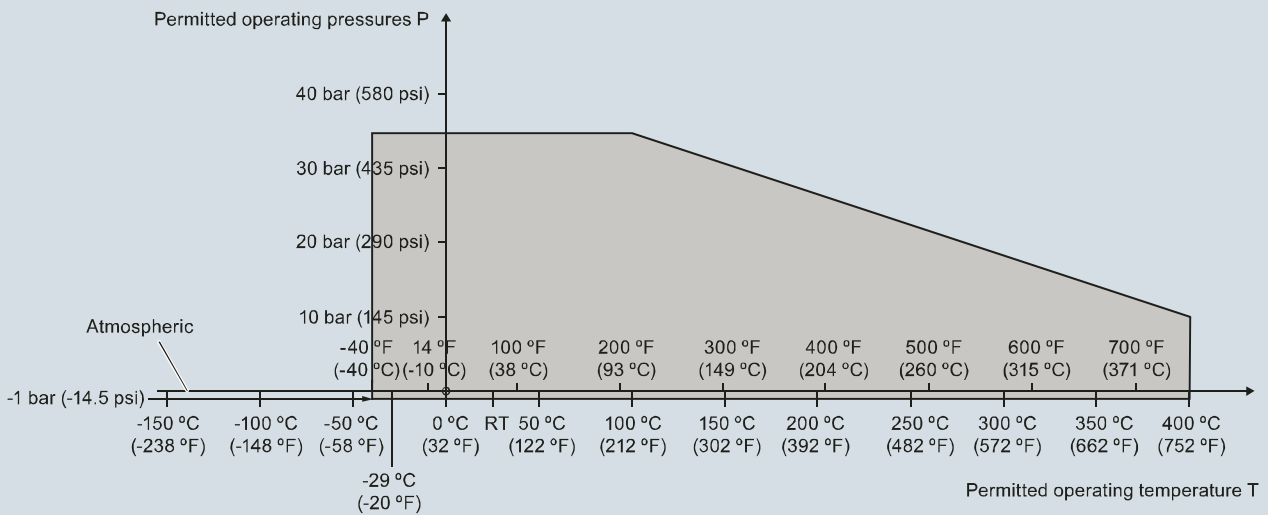
#### Characteristic curves

**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)

4

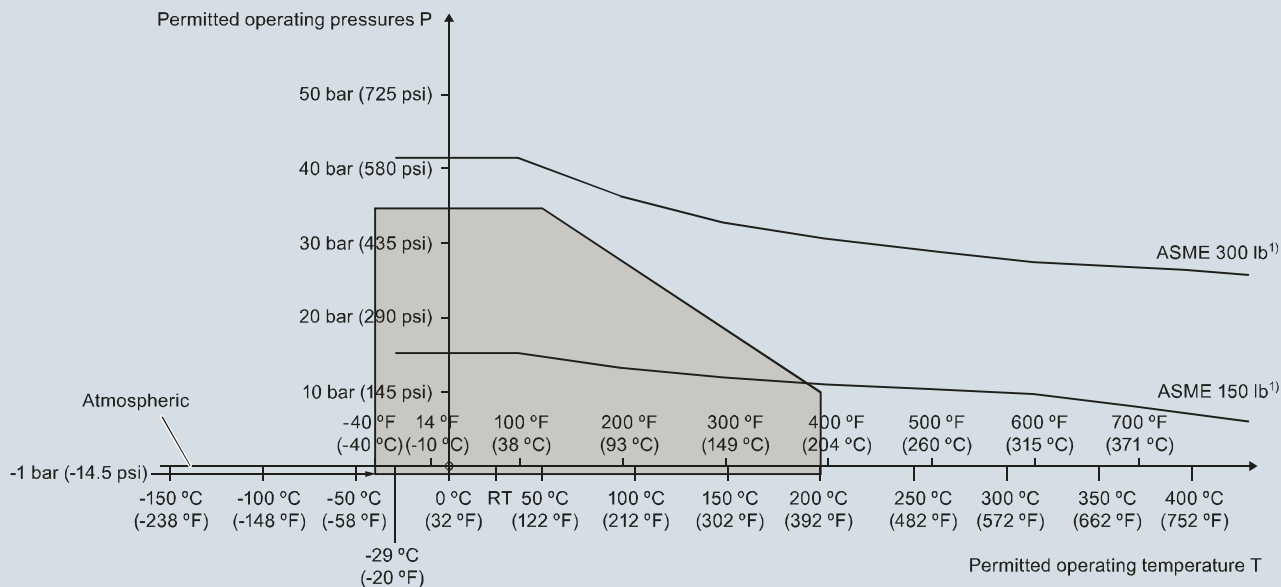


# Level Measurement

## Point level measurement – Capacitance switches

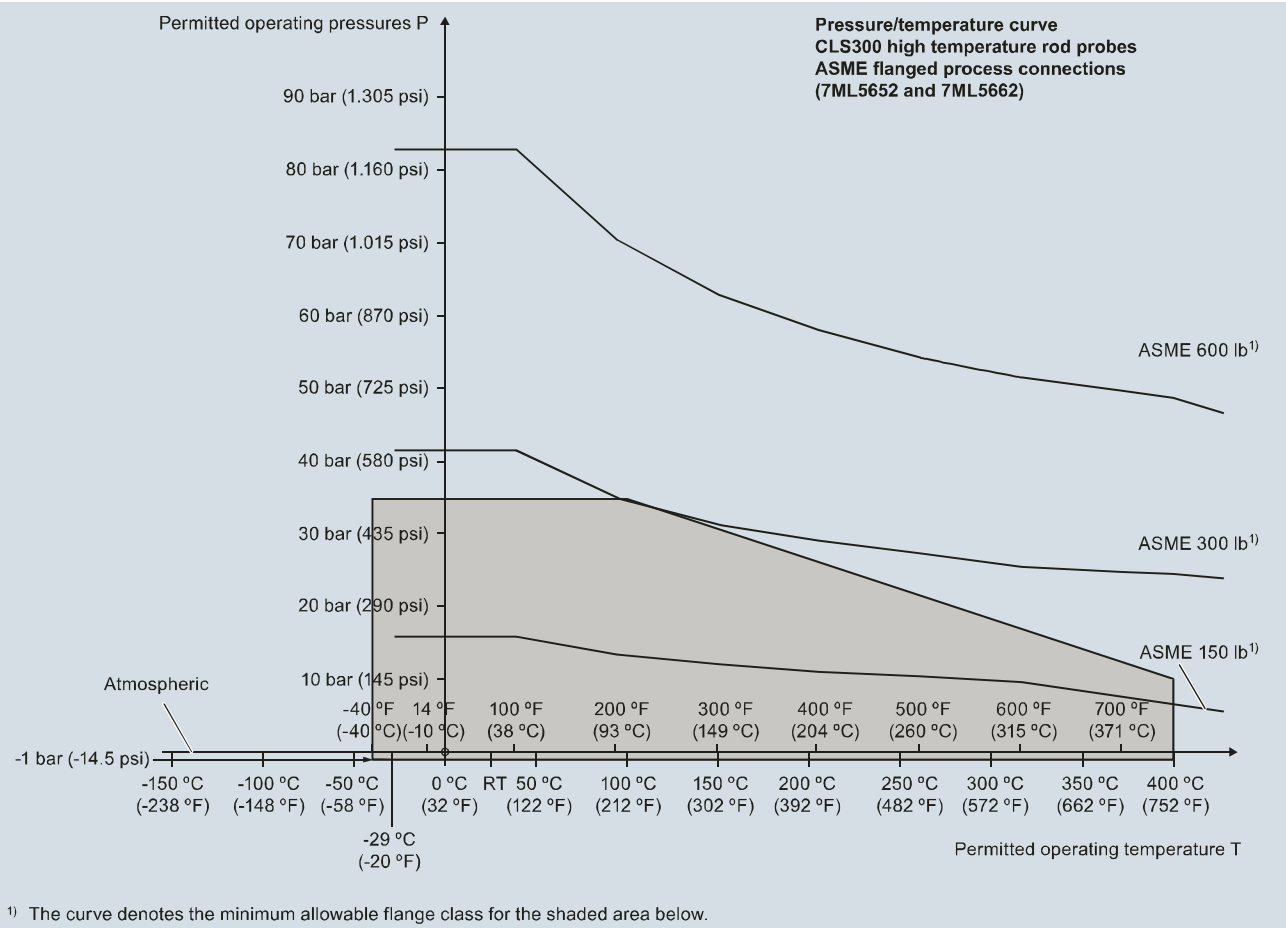
### Pointek CLS300 – Standard and Digital

**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.

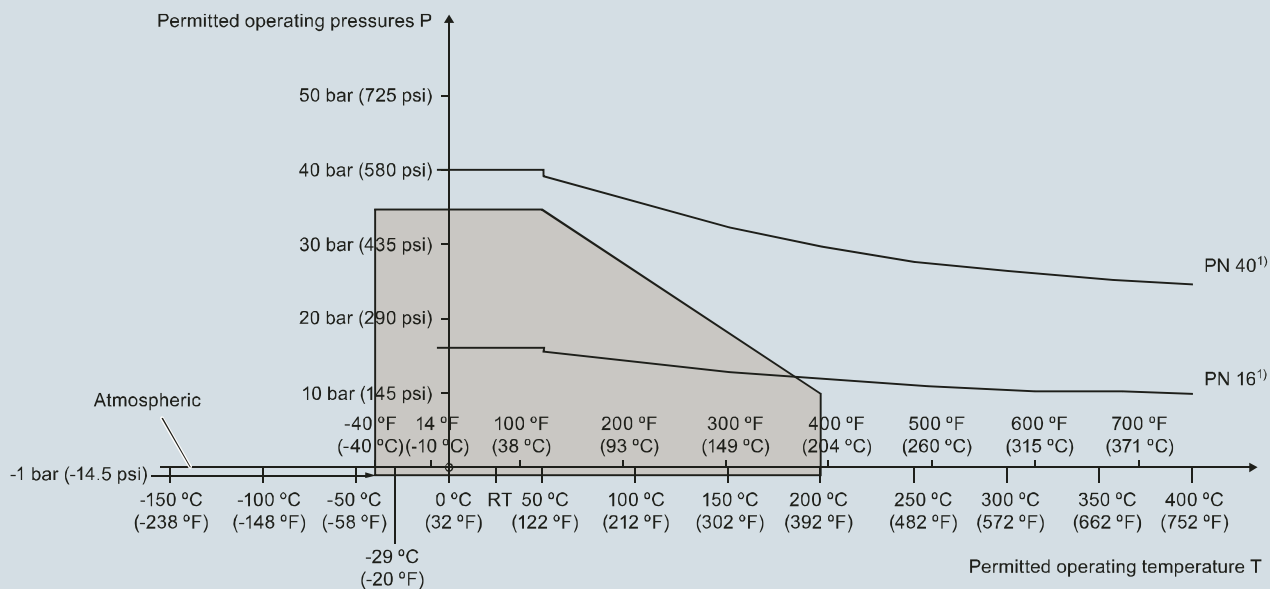
Pointek CLS300 Process Pressure/Temperature derating curves (7ML5652 and 7ML5662)

# Level Measurement

## Point level measurement – Capacitance switches

### Pointek CLS300 – Standard and Digital

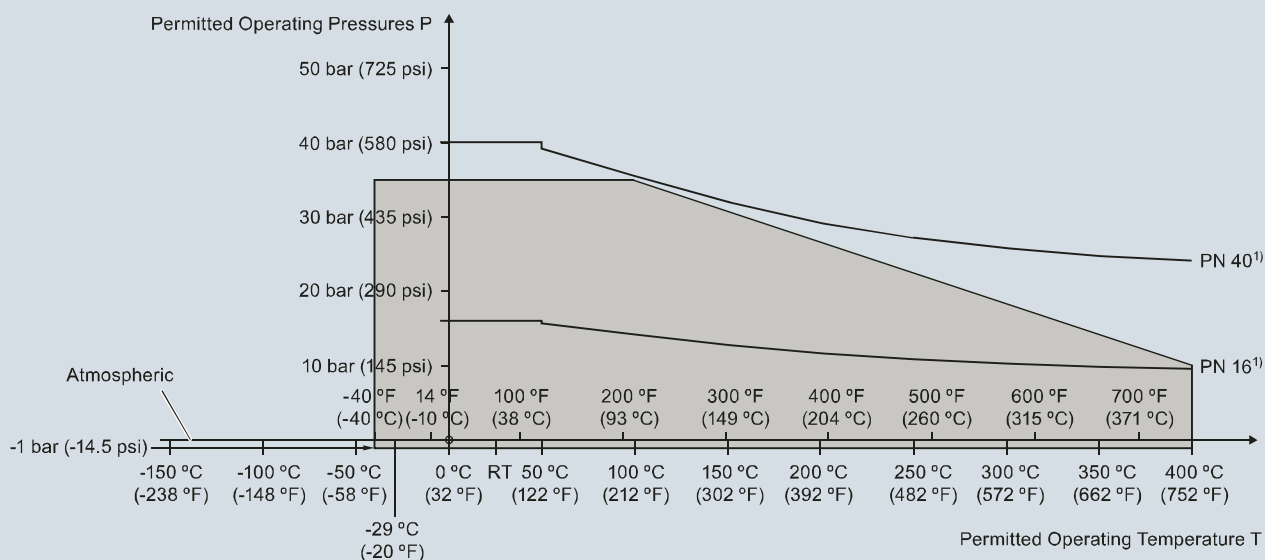
**Pressure/temperature curve**  
**CLS300 extended rod and cable probes**  
**EN flanged process connections**  
**(7ML5650, 7ML5651, 7ML5660 and 7ML5661)**



<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)

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



<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)

4

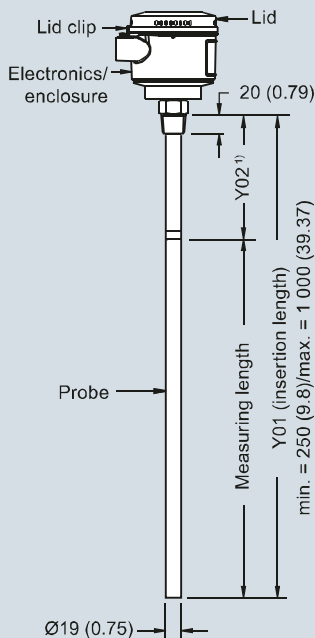
# Level Measurement

## Point level measurement – Capacitance switches

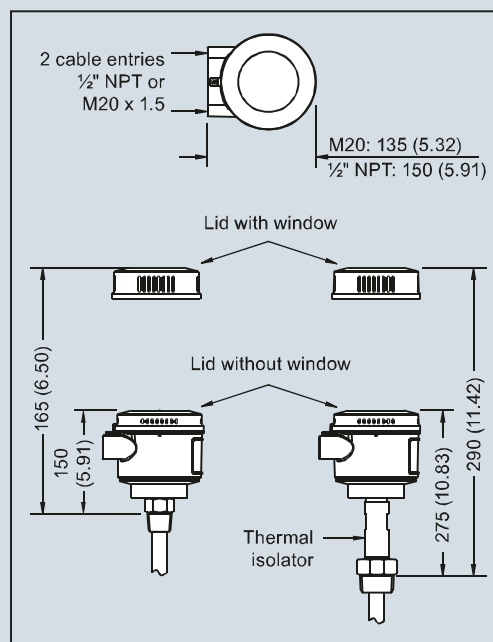
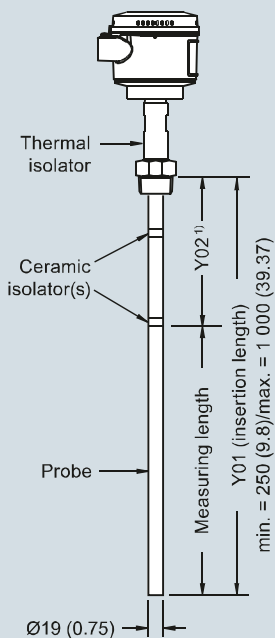
### Pointek CLS300 – Standard and Digital

#### Dimensional drawings

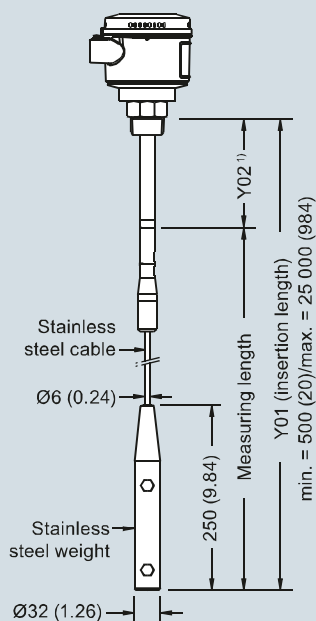
**Rod version  
Threaded (7ML5650 and 7ML5660)**



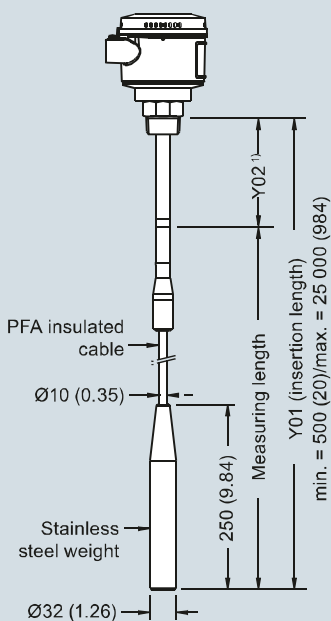
**High temperature rod version  
Threaded (7ML5652 and 7ML5662)**



**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)

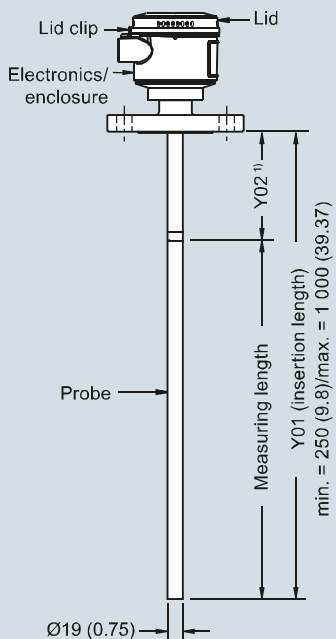
# Level Measurement

## Point level measurement – Capacitance switches

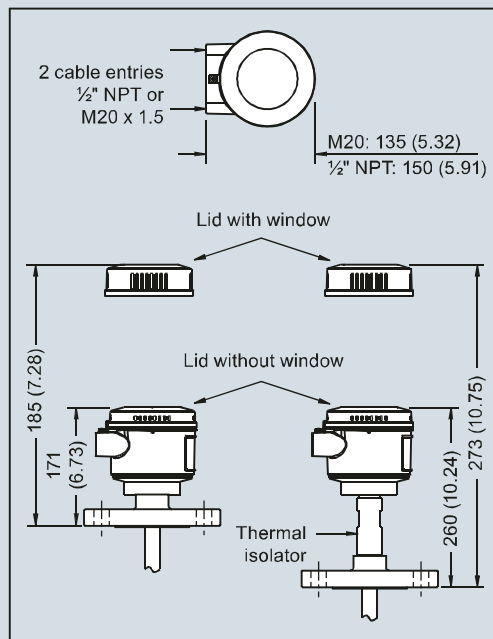
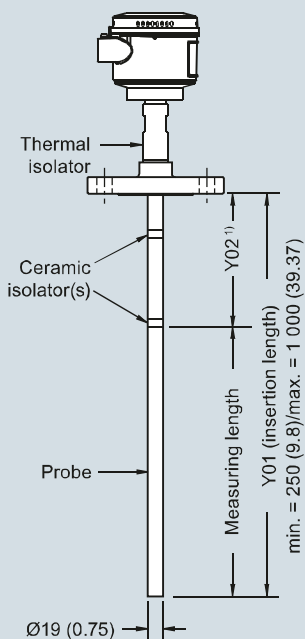
### Pointek CLS300 – Standard and Digital

4

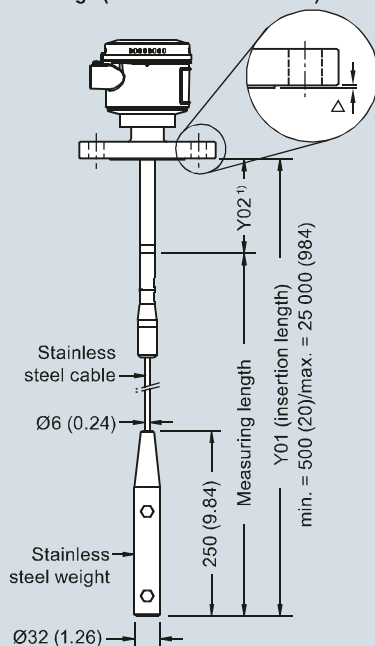
**Rod version**  
Welded flange (7ML5650 and 7ML5660)



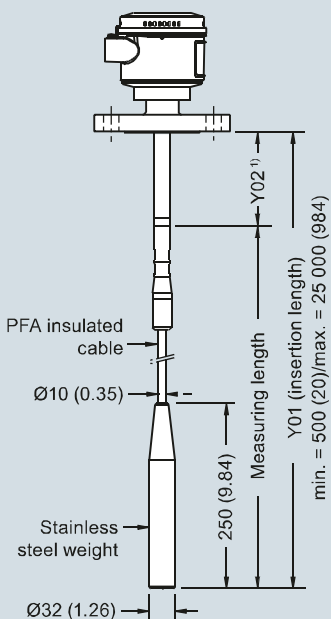
**High temperature rod version**  
Welded flange (7ML5652 and 7ML5662)



**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)

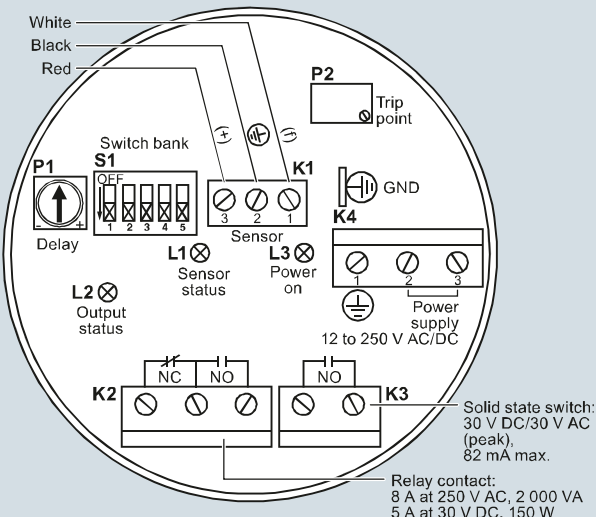
# Level Measurement

## Point level measurement – Capacitance switches

### Pointek CLS300 – Standard and Digital

#### Schematics

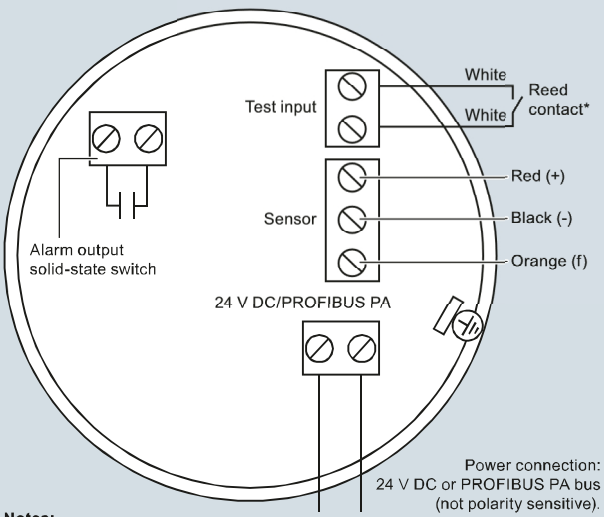
##### Wiring: Pointek CLS300 standard



**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 connection