

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.

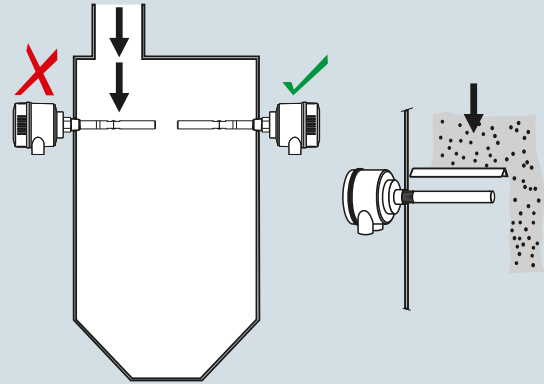
Wetted parts are made of stainless steel with a PFA shield for high chemical resistance, and of ceramic and stainless steel for high temperature version. Materials with low or high dielectric constants can be accurately detected. The unique Active Shield suppresses interference from material buildup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

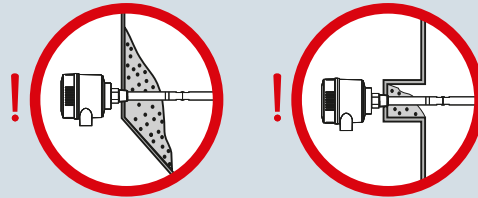
- Key Applications: liquids, slurries, bulk solids, relatively high pressure and temperature, hazardous areas, milling and mining applications

Configuration

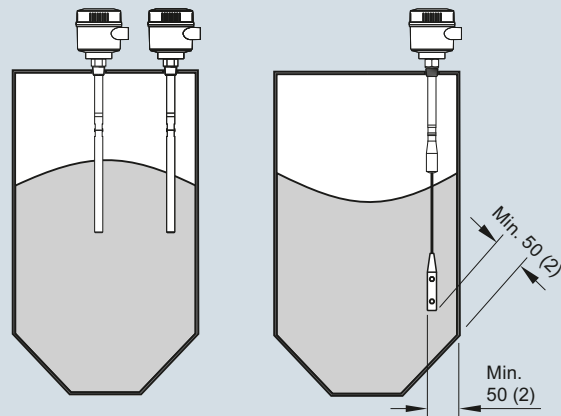
Installation



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

Mode of operation		Design	
Measuring principle	Inverse frequency shift capacitive level detection	Material (enclosure)	Powder-coated aluminum with gasket
Input		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)
Output		Controls and displays	
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		
- Max. switching capacity	• 150 W DC • 2 000 VA AC		
- Time delay (ON and/or OFF)	1 ... 60 s		
• 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)	1 ... 60 s		
Accuracy		Power supply	
Resolution		Supply	12 ... 250 V AC/DC, 0 ... 60 Hz, galvanically isolated, 2 W
• Min. sensitivity (pF)	1 % change in actual capacitance		
• Max. temperature error	0.2 % of actual capacitance value		
Rated operating conditions¹⁾		Certificates and approvals	
Installation conditions		General Purpose	CSA, FM, CE, C-TICK
• Location	Indoor/outdoor	Flameproof Enclosure with IS Probe	ATEX II 1/2 G EEx d[ia] IIC T6...T1 ATEX II 1/2 D T100 °C
Ambient conditions		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
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) ²⁾	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
Medium conditions		Marine	Lloyds Register of Shipping, Categories ENV1, ENV2 and ENV5
• Relative dielectric constant ϵ_r	Liquids, bulk solids, slurries and interfaces, and applications with viscous materials Min. 1.5	Overfill Protection	WHG (Germany) VLAREM II (Belgium)
• Process temperature		Others	Pattern Approval (China)
- Rod/Cable version	-40 ... +200 °C (-40 ... +392 °F) ²⁾		
- High-temperature version	-40 ... +400 °C (-40 ... +752 °F)		
• Process pressure ³⁾	-1 ... +35 bar g (-14.6 ... +511 psi g)		

- 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.
- 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 4/60.

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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 ₂ ¹⁾) isolators (no insulation on active probe), 316L stainless steel	316 stainless steel, optional PFA, PEEK isolators
O-ring seal material	FKM (optional FFKM) ²⁾	Graphite ²⁾	FKM (optional FFKM) ²⁾
Thermal isolator	Optional	Standard	Optional
Extension	User selectable length	User selectable length	User selectable cable length

¹⁾ Zirconium Oxide

²⁾ For Caustic Materials, please contact ceg.smpi@siemens.com for alternative O-Rings.

Level Measurement

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Selection and Ordering data

Article No.

Pointek CLS300 - Standard - Rod Version with Threaded or Flanged process connection

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.

Process connection

Threaded, 316L stainless steel

¾" NPT [(Taper), ANSI/ASME B1.20.1]  **0 A**
 1" NPT [(Taper), ANSI/ASME B1.20.1]  **0 B**
 1¼" NPT [(Taper), ANSI/ASME B1.20.1]  **0 C**
 1½" NPT [(Taper), ANSI/ASME B1.20.1]  **0 D**
 R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]  **1 A**
 R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]  **1 B**

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

G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]  **3 A**

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

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

Welded flange, 316L stainless steel, raised face

1" ASME, 150 lb  **5 A**

1" ASME, 300 lb  **5 B**

1" ASME, 600 lb  **5 C**

1½" ASME, 150 lb  **5 D**

1½" ASME, 300 lb  **5 E**

1½" ASME, 600 lb  **5 F**

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

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

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

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

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

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

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

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

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

Welded flange, 316L stainless steel,

Type A flat faced

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.)

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

Note: No Y01 needed in Order code for standard lengths

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**

Selection and Ordering data

Article No.

Pointek CLS300 - Standard - Rod Version with Threaded or Flanged process connection

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.

Add Order code Y01 and plain text:

"Insertion length ... mm"

Extended rod, factory adjusted length  **E**

250 ... 499 mm (9.8 ... 19.65 inch)  **F**

Extended rod, factory adjusted length  **G**

500 ... 749 mm (19.69 ... 29.49 inch)  **G**

Extended rod, factory adjusted length  **G**

750 ... 999 mm (29.53 ... 39.3 inch)  **G**

Thermal isolator

Without thermal isolator  **0**

With thermal isolator [for process connection  **1**

temperatures over 85 °C (185 °F)]

Wetted seals

FKM  **0**

FFKM [for process temperatures above  **1**

-20 °C (-4 °F)]

Probe material

316L stainless steel with PFA lining and PEEK  **0**

Approvals

Dust Ignition Proof with IS Probe:  **C**

CE, C-TICK, ATEX II 1/2 D T100 °C

Flameproof Enclosure with IS Probe:  **D**

CE, C-TICK, ATEX II 1/2 G EEx d[ia] IIC T6...T1,

ATEX II 1/2 D T100 °C

Flameproof Enclosure with IS Probe,  **E**

with WHG approval:

CE, C-TICK, ATEX II 1/2 G EEx d[ia] IIC T6...T1,

ATEX II 1/2 D T100 °C

Dust Ignition Proof with IS Probe:  **F**

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

CSA/FM Class III T4

Explosion Proof Enclosure with IS Probe:  **G**

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)  **H**

General Purpose (CE, C-TICK)  **J**

General Purpose with WHG approval  **K**

(CSA, FM, CE, C-TICK)

Enclosure and lid

Aluminum epoxy coated

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**

Active shield length

Standard length -  **0**

(125 mm threaded, 105 mm flanged)

Extended shield -  **1**

(250 mm threaded, 230 mm flanged)¹⁾

Extended shield -  **2**

(400 mm threaded, 380 mm flanged)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	Selection and Ordering data	Article No.
Further designs		Pointek CLS300 - Standard - Cable Version with Threaded or Flanged process connection	7ML5651-
Please add "-Z" 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	Process connection	
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]:	Y15	<u>Threaded, 316L stainless steel</u>	
Measuring-point number/identification (max. 27 characters) specify in plain text		1¼" NPT [(Taper), ANSI/ASME B1.20.1]	0 C
Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000	C11	1½" NPT [(Taper), ANSI/ASME B1.20.1]	0 D
Inspection Certificate Type 3.1 per EN 10204	C12	R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 D
Operating Instructions		G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 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	<u>Welded flange, 316L stainless steel, raised face</u>	
Accessories	See page 4/59	1½" ASME, 150 lb	5 D
● We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ●. For details see page 9/5 in the appendix.		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.)	
		Probe length (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
		Add Order code Y01 and plain text: <u>"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
		Thermal isolator	
		Without thermal isolator	0
		With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	1

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Selection and Ordering data	Article No.
Pointek CLS300 - Standard - Cable Version with Threaded or Flanged process connection 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.	7ML5651-
Wetted seals FKM FFKM [for process temperatures above -20 °C (-4 °F)]	0 1
Probe material 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
Approvals Dust Ignition Proof with IS Probe: CE, C-TICK, ATEX II 1/2 D T100 °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 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 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, C-TICK) General Purpose with WHG approval (CSA, FM, CE, C-TICK)	C D E F G H J K
Enclosure and lid <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	A B C D
Active shield length Standard length - (125 mm threaded, 105 mm flanged) Extended shield - (250 mm threaded, 230 mm flanged) ¹⁾ Extended shield - (400 mm threaded, 380 mm flanged) ¹⁾	0 1 2

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

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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 Stainless steel tag [69 x 50 mm (2.71 x 1.97 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 Inspection Certificate Type 3.1 per EN 10204	Y01 Y15 C11 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.
Pointek CLS300 - Standard - High Temperature Rod Version with Threaded or Flanged process connection 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.	7ML5652- 	Pointek CLS300 - Standard - High Temperature Rod Version with Threaded or Flanged process connection 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.	7ML5652- 
Process connection <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		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 Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch)  G	
<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		Wetted seals Graphite  0 Probe material 316L stainless steel with ceramic (ZrO ₂) isolators  0	
<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		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	
Probe length (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		Enclosure and lid <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	
		Active shield length Standard length - (125 mm threaded, 105 mm flanged)  0 Extended shield - (250 mm threaded, 230 mm flanged) ¹⁾  1 Extended shield - (400 mm threaded, 380 mm flanged) ²⁾  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

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)]: ◆ **Y15**
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 ◆ **C11**

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

Operating Instructions

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See page 4/59

Accessories

See page 4/59

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Level Measurement

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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.

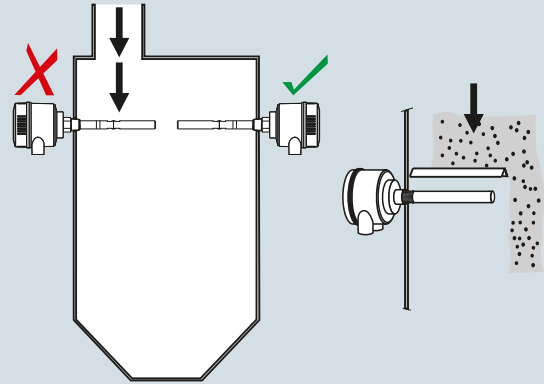
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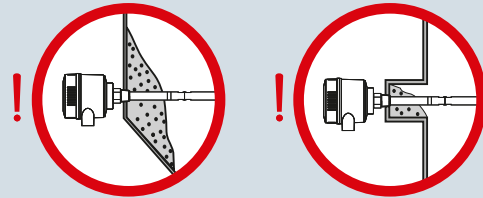
- Key Applications: liquids, slurries, bulk solids, relatively high pressure and temperature, hazardous areas, milling and mining applications

Configuration

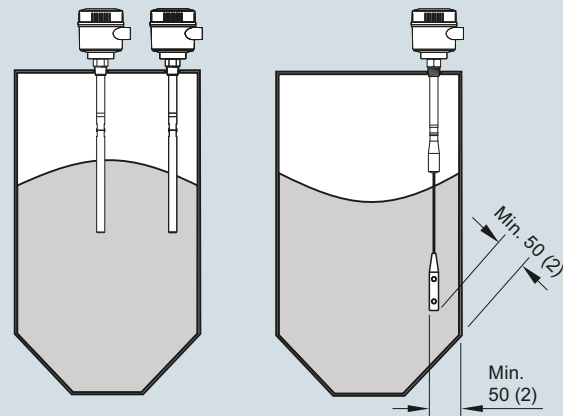
Installation



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

Mode of operation		Controls and displays	
Measuring principle	Inverse frequency shift capacitive level detection	Local display	LCD
Input		Configuration	- Locally, using 3 button keypad (for standalone operation) - Remotely, using SIMATIC PDM (for installation on a network)
Measured variable	Change in picoFarad (pF)	Power supply	
Output		Bus voltage (at process connection)	- Standard: 12 ... 30 V DC - Intrinsically Safe: 12 ... 24 V DC
- Output - Protection - Max. switching voltage	Galvanically isolated Against reversed polarity (bipolar) 30 V DC 30 V peak AC	Current consumption	12.5 mA
- Max. load current - Voltage drop - Time delay (pre or post switching)	82 mA < 1 V, typical at 50 mA Programmable by user (0 ... 100 s) Min. or max. Removable terminal block	Certificates and approvals	
Fail-safe mode		General Purpose	CSA, FM, CE, C-TICK
Connection		Dust Ignition Proof	ATEX II 1/2 D, 2 D IP6X T100 °C
Accuracy		Flameproof Enclosure With IS Probe	ATEX II 1/2 G EEx d[ia] IIC T6...T4
Resolution		Dust Ignition Proof With IS Probe	ATEX II 1/2 D T100 °C
Min. sensitivity (pF)	1 % change in actual capacitance	Intrinsically Safe ⁴⁾	CSA/FM Class I, Div. 1, Groups E, F, G CSA/FM Class III T4 ATEX II 1 G EEx ia IIC T6...T4 ATEX II 1/2 D, 2 D IP6X T100 °C
Max. temperature error	0.2 % of actual capacitance value		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 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
Rated operating conditions¹⁾		Non-incendive	CSA/FM Class I, Div. 1, Groups A, B, C, D
Installation conditions		Explosion Proof with IS Probe	CSA/FM Class II, Div. 2, Groups F, G
Location	Indoor/outdoor		CSA/FM Class III T4 or T6
Ambient conditions			CSA/FM Class I, Div. 1, Groups A, B, C, D
Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) ²⁾		CSA/FM Class II, Div. 1, Groups E, F, G
Medium conditions			CSA/FM Class III T4
- Relative dielectric constant ϵ_r - Process temperature - Rod/Cable version - High Temperature version - Process pressure³⁾	Liquids, bulk solids, slurries and interfaces, and applications with viscous materials Min. 1.5 -40 ... +200 °C (-40 ... +392 °F) ²⁾ -40 ... +400 °C (-40 ... +752 °F) -1 ... +35 bar g (-14.6 ... +511 psi g)	Marine	Lloyds Register of Shipping, Categories ENV1, ENV2 and ENV5
Design		Others	Pattern Approval (China)
Material (enclosure)	Powder-coated aluminum with gasket	Communication	
Degree of protection	Standard: Type 4/NEMA 4/IP65 Optional: Type 4/NEMA 4/IP68		PROFIBUS PA (IEC 61158 CPF3 CP3/2)
Cable inlet	2 x M20x1.5 thread (option: 2 x 1/2" NPT conduit entry including 1 plugged entry)		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 4/60.
- 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 4/60.
- 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 ₂ ¹⁾) isolators (no insulation on active probe), 316L stainless steel	316 stainless steel, optional PFA, PEEK isolators
O-ring seal material	FKM (optional FFKM) ²⁾	Graphite ²⁾	FKM (optional FFKM) ²⁾
Thermal isolator	Optional	Standard	Optional
Extension	User selectable length	User selectable length	User selectable cable length

¹⁾ Zirconium Oxide

²⁾ For Caustic Materials, please contact ceg.smpi@siemens.com for alternative O-Rings

Level Measurement

Point level measurement – Capacitance switches

Pointek CLS300 – Digital

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Pointek CLS300 - Digital - Rod with Threaded or Flanged process connection	7ML5660-	Pointek CLS300 - Digital - Rod with Threaded or Flanged process connection	7ML5660-
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.		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.	
Process connection		Add Order code Y01 and plain text:	
<u>Threaded, 316L stainless steel</u>		<u>"Insertion length ... mm"</u>	
¾" NPT [(Taper), ANSI/ASME B1.20.1]	0 A	Extended rod, factory adjusted length 250 ... 499 mm (9.8 ... 19.65 inch)	E
1" NPT [(Taper), ANSI/ASME B1.20.1]	0 B	Extended rod, factory adjusted length 500 ... 749 mm (19.69 ... 29.49 inch)	F
1¼" NPT [(Taper), ANSI/ASME B1.20.1]	0 C	Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch)	G
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	Thermal isolator	
G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 B	Without thermal isolator	0
G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 D	With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	1
<u>Welded flange, 316L stainless steel, raised face</u>		Wetted seals	
1" ASME, 150 lb	5 A	FKM	0
1" ASME, 300 lb	5 B	FFKM [for process temperatures above -20 °C (-4 °F)]	1
1" ASME, 600 lb	5 C		
1½" ASME, 150 lb	5 D	Probe material	
1½" ASME, 300 lb	5 E	316L stainless steel with PFA lining and PEEK isolators	0
1½" ASME, 600 lb	5 F		
2" ASME, 150 lb	5 G	Approvals	
2" ASME, 300 lb	5 H	Dust Ignition Proof:	
2" ASME, 600 lb	5 J	CE, C-TICK, ATEX II 1/2 D, 2 D IP6X T100 °C	B
3" ASME, 150 lb	5 K	Intrinsically Safe ¹⁾	C
3" ASME, 300 lb	5 L	CE, C-TICK, ATEX II 1 G EEx ia IIC T6...T4, ATEX II 1/2 D, 2 D IP6X T100 °C	
3" ASME, 600 lb	5 M	Flameproof Enclosure with IS Probe:	D
4" ASME, 150 lb	5 N	CE, C-TICK, ATEX II 1/2 G EEx d[ia] IIC T6...T4, ATEX II 1/2 D T100 °C	
4" ASME, 300 lb	5 P	Dust Ignition Proof with IS Probe:	E
4" ASME, 600 lb	5 Q	CSA/FM Class II, Div. 1, Groups E, F, G	
<u>Welded flange, 316L stainless steel, Type A flat faced</u>		CSA/FM Class III T4	F
DN 25, PN 16	6 A	Intrinsically Safe ¹⁾	
DN 25, PN 40	6 B	CSA/FM Class I, Div. 1, Groups A, B, C, D	
DN 40, PN 16	6 C	CSA/FM Class II, Div. 1, Groups E, F, G	G
DN 40, PN 40	6 D	CSA/FM Class III T4	
DN 50, PN 16	6 E	Explosion Proof Enclosure with IS Probe:	
DN 50, PN 40	6 F	CSA/FM Class I, Div. 1, Groups A, B, C, D	
DN 80, PN 16	6 G	CSA/FM Class II, Div. 1, Groups E, F, G	H
DN 80, PN 40	6 H	CSA/FM Class III T4	
DN 100, PN 16	6 J	General Purpose (CSA, FM)	J
DN 100, PN 40	6 K	General Purpose (CSA, FM, CE, C-TICK)	
(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)		Enclosure and Lid	
Probe length (length from flange face) (threaded lengths include process thread)		<u>Aluminum epoxy coated</u>	
<u>Note: No Y01 needed in Order code for standard lengths</u>		2 x ½" NPT via adapter - cable inlet, IP65	A
Standard version, rod 350 mm (13.78 inch)	A	2 x M20x1.5 cable inlet, IP65	B
Extended rod, length 500 mm (19.69 inch)	B	2 x ½" NPT via adapter - cable inlet, IP68	C
Extended rod, length 750 mm (29.53 inch)	C	2 x M20x1.5 cable inlet, IP68	D
Extended rod, length 1 000 mm (39.37 inch)	D	Active shield length	
		Standard length -	0
		(125 mm threaded, 105 mm flanged)	
		Extended shield -	1
		(250 mm threaded, 230 mm flanged) ²⁾	
		Extended shield -	2
		(400 mm threaded, 380 mm flanged) ³⁾	

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

1 1/4" NPT [(Taper), ANSI/ASME B1.20.1] **0 C**

1 1/2" NPT [(Taper), ANSI/ASME B1.20.1] **0 D**

R 1 1/2" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] **1 D**

G 1 1/2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] **3 D**

Welded flange, 316L stainless steel, raised face

1 1/2" ASME, 150 lb **5 D**

1 1/2" ASME, 300 lb **5 E**

1 1/2" 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), **A**

length can be shortened by customer

Extended cable, 6 000 mm (236.22 inch), **B**

length can be shortened by customer

Add Order code Y01 and plain text:

"Insertion length ... mm"

Extended cable, 500 ... 1 000 mm **E**

(19.69 ... 39.37 inch)

Extended cable, 1 001 ... 5 000 mm **F**

(39.41 ... 196.85 inch)

Extended cable, 5 001 ... 10 000 mm **G**

(196.89 ... 393.70 inch)

Extended cable, 10 001 ... 15 000 mm **H**

(393.74 ... 590.55 inch)

Extended cable, 15 001 ... 20 000 mm **J**

(590.59 ... 787.40 inch)

Extended cable, 20 001 ... 25 000 mm **K**

(787.44 ... 984.25 inch)

Level Measurement

Point level measurement – Capacitance switches

Pointek CLS300 – Digital

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	
Thermal isolator	
Without thermal isolator	0
With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	1
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: CE, C-TICK, ATEX II 1/2 D, 2 D IP6X T100 °C	B
Intrinsically Safe ¹⁾ 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 ¹⁾ 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
Enclosure and Lid	
<u>Aluminum epoxy coated</u>	
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 ²⁾	1
Extended shield - (400 mm threaded, 380 mm flanged) ²⁾	2

¹⁾ Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection

²⁾ 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.

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.

Level Measurement

Point level measurement – Capacitance switches

Pointek CLS300 – Digital

Selection and Ordering data Article No.

Pointek CLS300 - Digital - High Temperature Rod version with Threaded or Flanged process connection

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.

Process connection

Threaded, 316L stainless steel

¾" NPT [(Taper), ANSI/ASME B1.20.1] 0 A
1" NPT [(Taper), ANSI/ASME B1.20.1] 0 B
1¼" NPT [(Taper), ANSI/ASME B1.20.1] 0 C
1½" NPT [(Taper), ANSI/ASME B1.20.1] 0 D
R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] 1 A
R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] 1 B

R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] 1 D
G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 3 A
G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 3 B

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

Welded flange, 316L stainless steel, raised face

1" ASME, 150 lb 5 A
1" ASME, 300 lb 5 B
1" ASME, 600 lb 5 C
1½" ASME, 150 lb 5 D
1½" ASME, 300 lb 5 E
1½" ASME, 600 lb 5 F

2" ASME, 150 lb 5 G
2" ASME, 300 lb 5 H
2" ASME, 600 lb 5 J

3" ASME, 150 lb 5 K
3" ASME, 300 lb 5 L
3" ASME, 600 lb 5 M

4" ASME, 150 lb 5 N
4" ASME, 300 lb 5 P
4" ASME, 600 lb 5 Q

Welded flange, 316L stainless steel, Type A flat faced

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.)

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

Note: No Y01 needed in Order code for standard lengths

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: "Insertion length ... mm"

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

Selection and Ordering data Article No.

Pointek CLS300 - Digital - High Temperature Rod version with Threaded or Flanged process connection

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.

Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch) G

Wetted seals

Graphite 0

Probe material

316L stainless steel with ceramic (ZrO₂) isolators 0

Approvals

Dust Ignition Proof: CE, C-TICK, ATEX II 1/2 D, 2 D IP6X T100 °C B

Intrinsically Safe¹⁾ 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 Safe¹⁾ 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

Enclosure and Lid

Aluminum epoxy coated

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

Active shield length

Standard length - (125 mm threaded, 105 mm flanged) 0
Extended shield - (250 mm threaded, 230 mm flanged)²⁾ 1
Extended shield - (400 mm threaded, 380 mm flanged)³⁾ 2

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 – Standard and 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.
Operating Instructions - Standard	
English	7ML1998-5JH04
German	7ML1998-5JH34
Note: The Operating Instructions should be ordered as a separate line on the order.	
Quick Start manual, multi-language	A5E32221251
This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and Operating Instructions library.	
Operating Instructions - Digital	
English	7ML1998-5JJ05
French	7ML1998-5JJ11
German	7ML1998-5JJ34
Note: The Operating Instructions should be ordered as a separate line on the order.	
Quick Start manual, multi-language	A5E32221496
This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and Operating Instructions library.	
Accessories	
One metallic cable gland M20x1.5, -40 ... +80 °C (-40 ... +176 °F) with integrated shield connection (available for PROFIBUS PA)	7ML1930-1AQ
<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)	7ML1830-1JA
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)	7ML1830-1JC
<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)	7ML1830-1JB
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)	7ML1830-1JD
Blind threaded flanges are available. Please contact ceg.smpi@siemens.com with a completed application data sheet on page 4/11	
Pointek Specials	See page 4/82

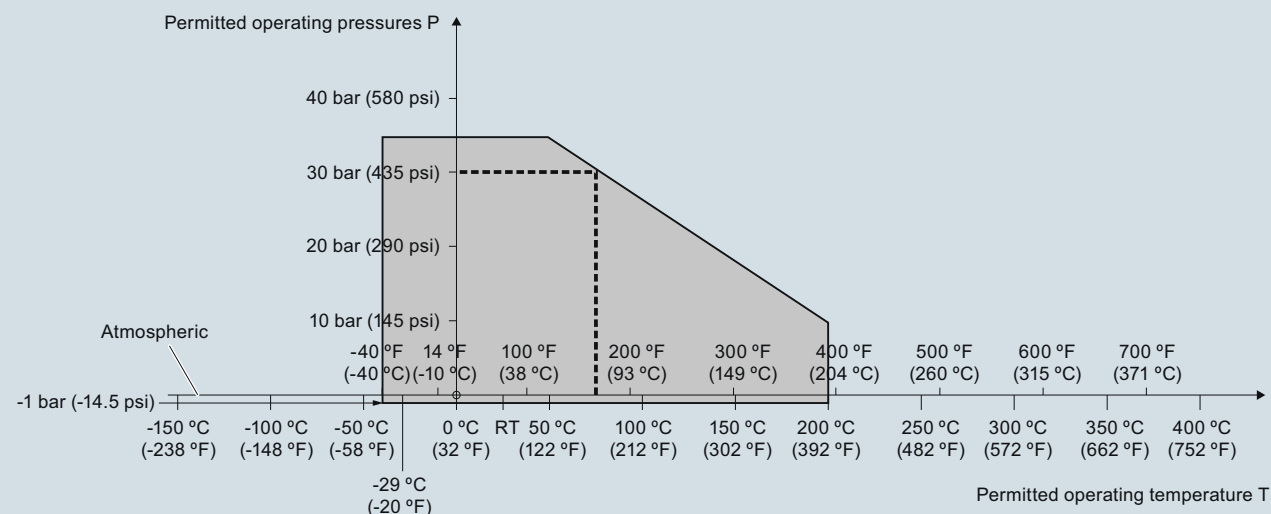
Level Measurement

Point level measurement – Capacitance switches

Pointek CLS300 – Standard and Digital

Characteristic curves

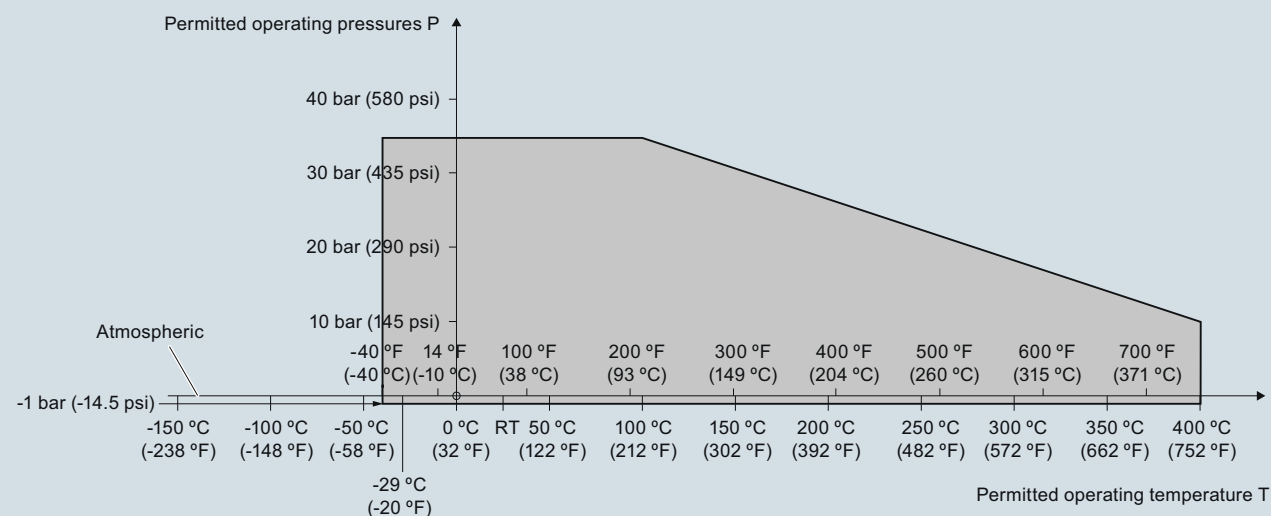
Pressure/temperature curve
CLS300 extended rod and cable probes
Threaded process connections
(7ML5650, 7ML5651, 7ML5660 and 7ML5661)



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

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)

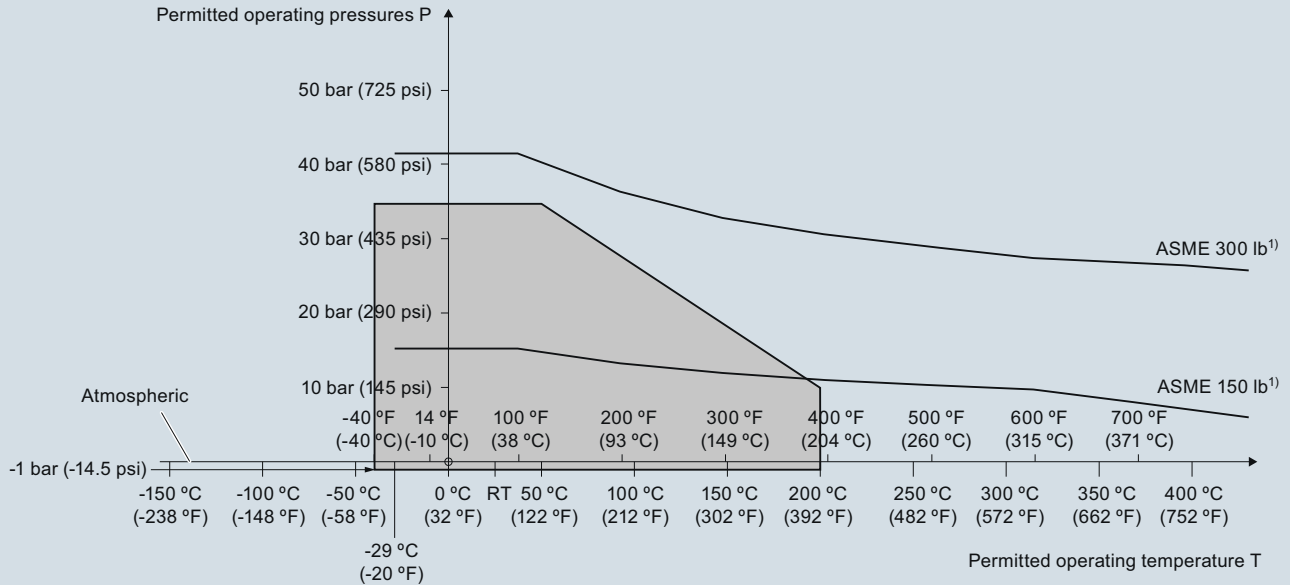
Level Measurement

Point level measurement – Capacitance switches

Pointek CLS300 – Standard and Digital

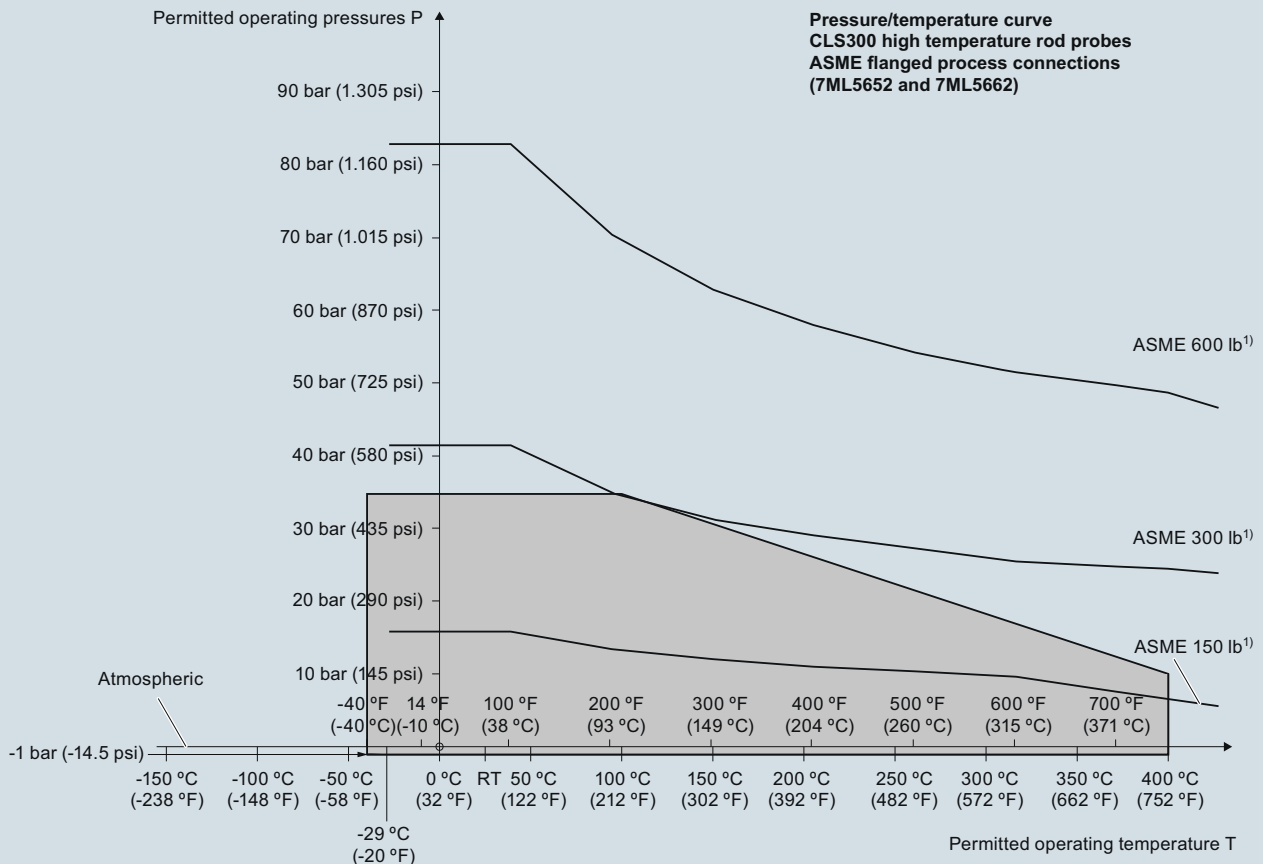
4

Pressure/temperature curve
CLS300 extended rod and cable probes
ASME 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)



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

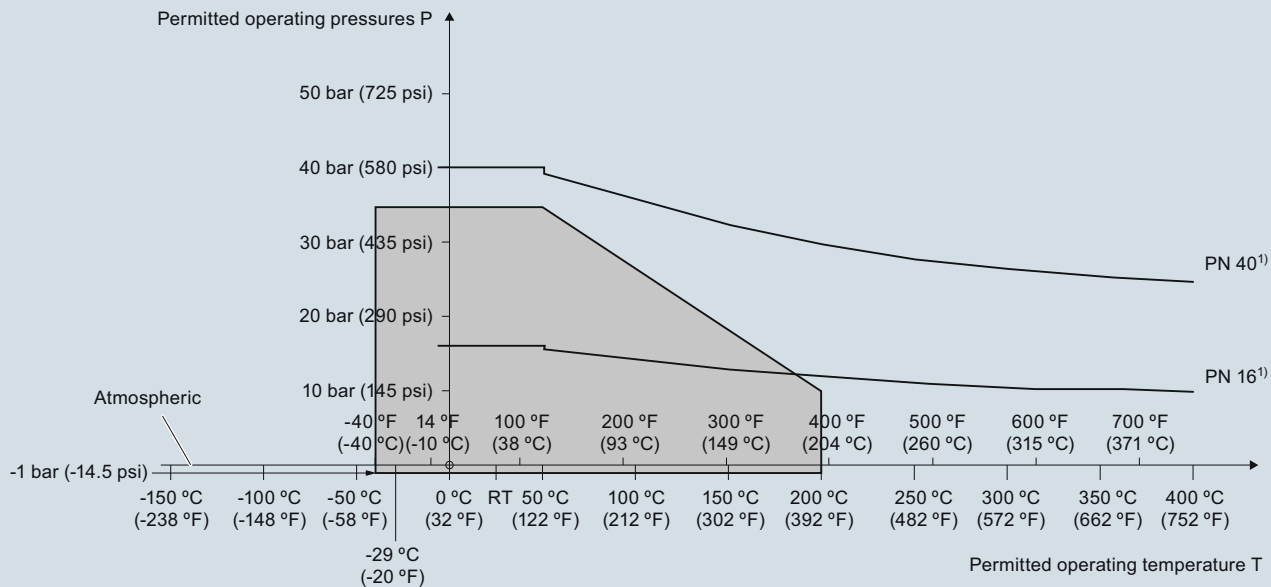
Pointek CLS300 Process Pressure/Temperature derating curves (7ML5652 and 7ML5662)

Level Measurement

Point level measurement – Capacitance switches

Pointek CLS300 – Standard and Digital

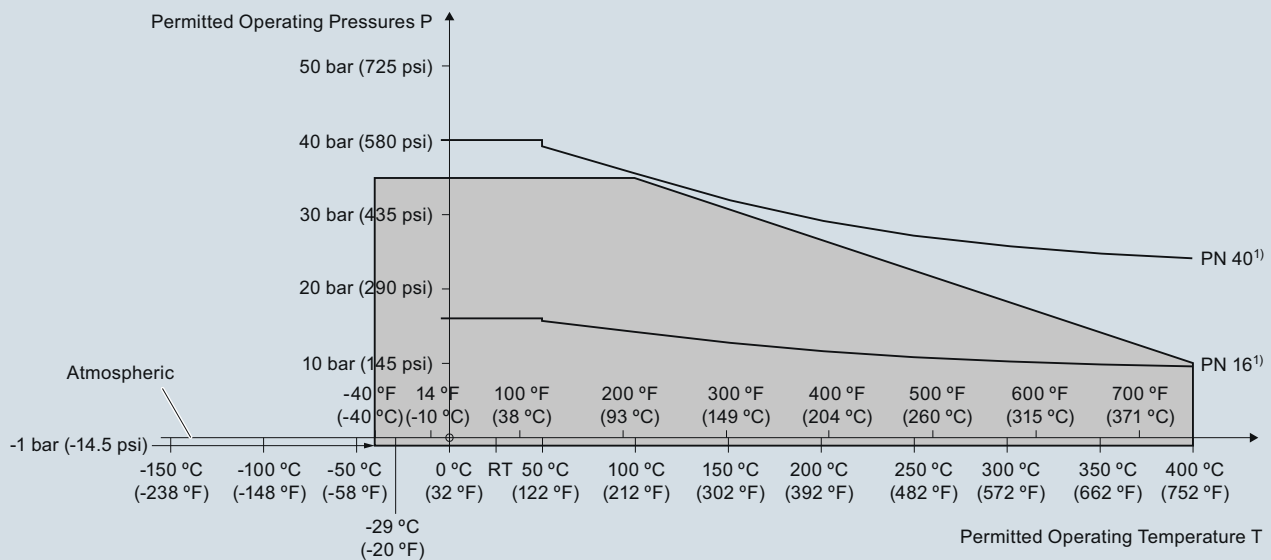
Pressure/temperature curve
CLS300 extended rod and cable probes
EN flanged process connections
(7ML5650, 7ML5651, 7ML5660 and 7ML5661)



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)

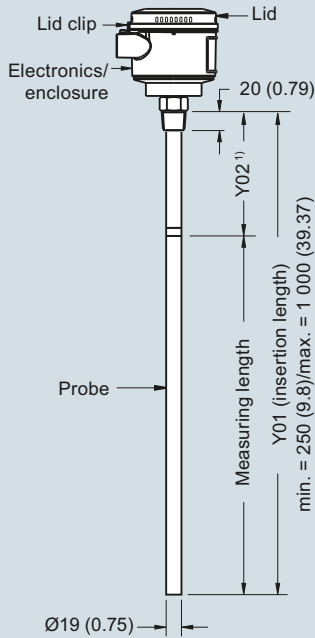
Level Measurement

Point level measurement – Capacitance switches

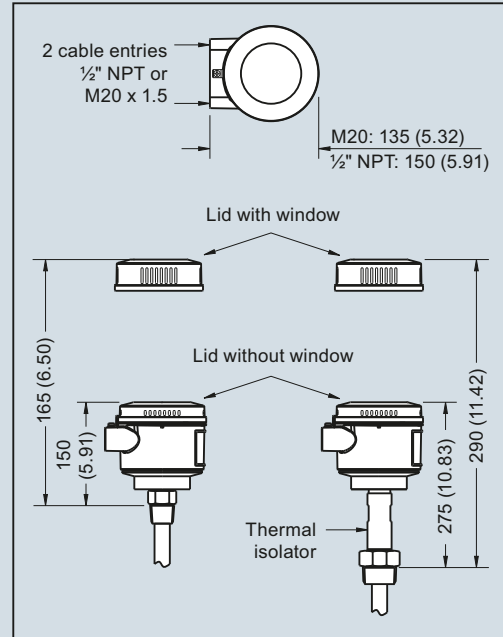
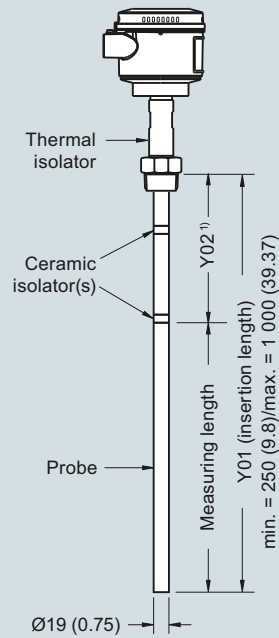
Pointek CLS300 – Standard and Digital

Dimensional drawings

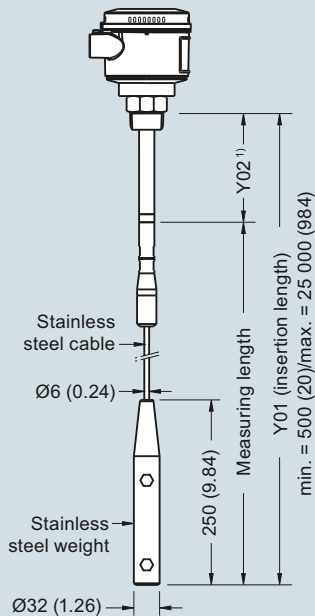
Rod version
Threaded (7ML5650 and 7ML5660)



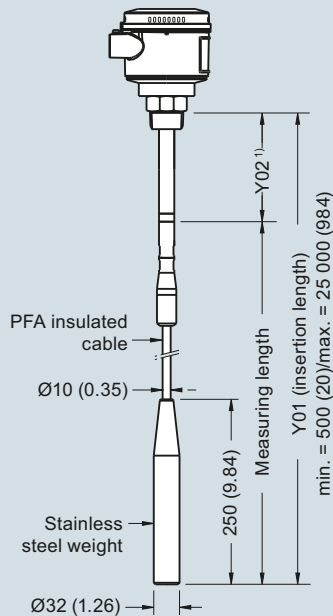
High temperature rod version
Threaded (7ML5652 and 7ML5662)



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



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



Note:

¹⁾ 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)

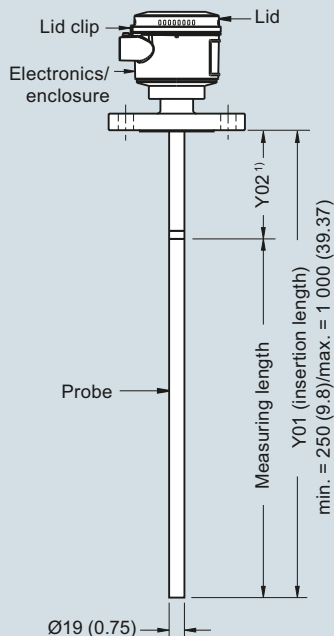
Level Measurement

Point level measurement – Capacitance switches

Pointek CLS300 – Standard and Digital

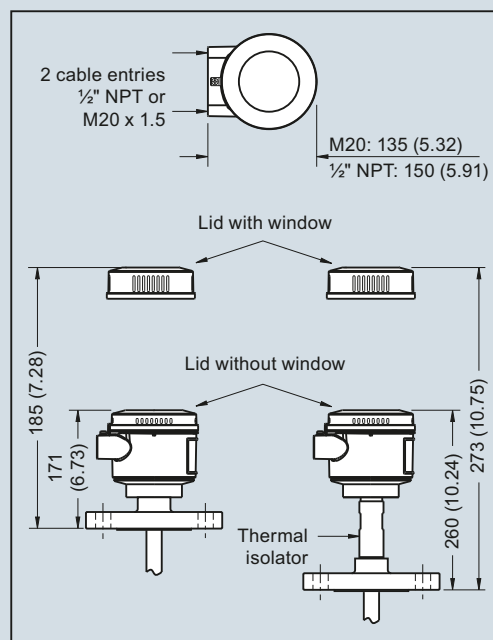
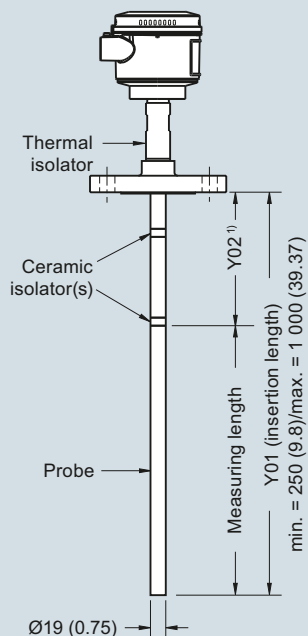
Rod version

Welded flange (7ML5650 and 7ML5660)



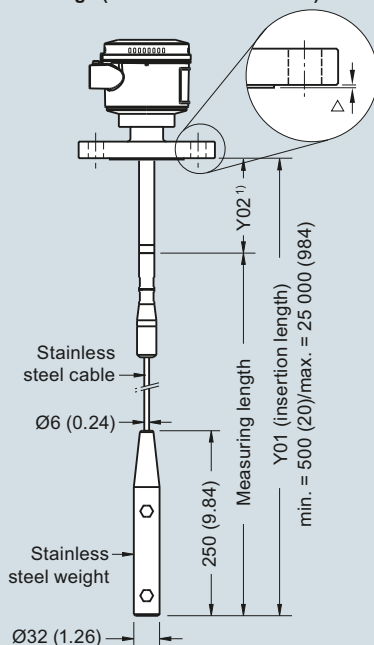
High temperature rod version

Welded flange (7ML5652 and 7ML5662)



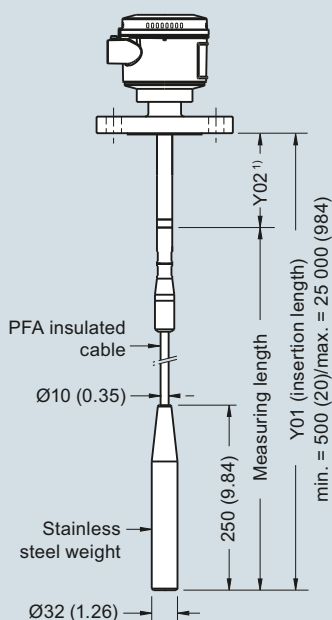
Cable version, non-insulated

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:

¹⁾ 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)

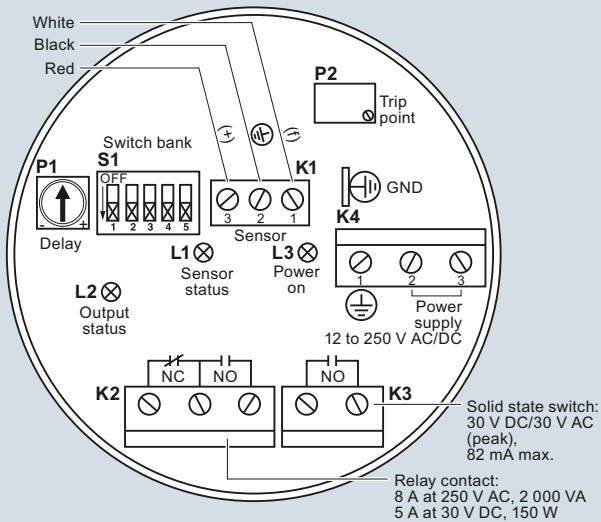
Level Measurement

Point level measurement – Capacitance switches

Pointek CLS300 – Standard and Digital

Schematics

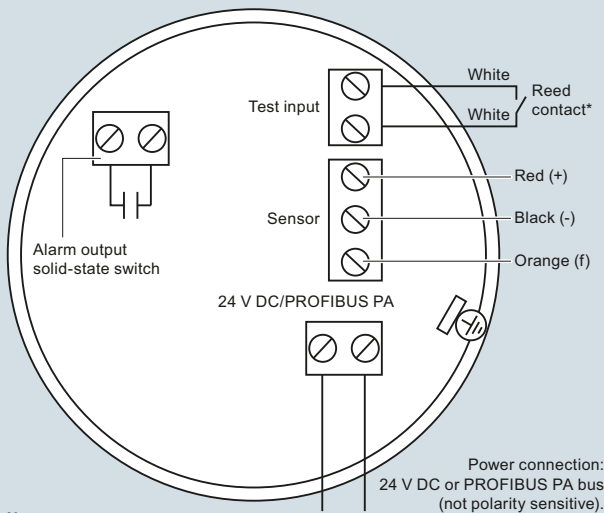
Wiring: Pointek CLS300 standard



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

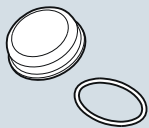
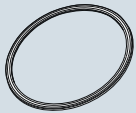
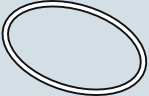
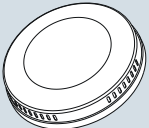
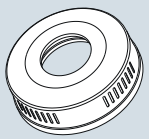
Level Measurement

Point level measurement – Capacitance switches

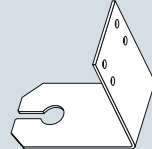
Pointek CLS Specials

Selection and ordering data

Pointek Specials¹⁾

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

Pointek Specials¹⁾

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

Level Measurement

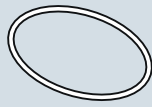
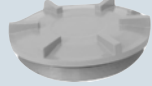
Point level measurement – Capacitance switches

Pointek CLS Specials

Pointek Specials¹⁾

	Article No.
CLS300 Cable Extensions, 316 stainless steel with PFA coating	
	
Kit, PFA cable extension, 1 m, adjustable by customer	A5E01163697
Kit, PFA cable extension, 3 m, adjustable by customer	A5E01163698
Kit, PFA cable extension, 5 m, adjustable by customer	A5E01163699
Kit, PFA cable extension, 10 m, adjustable by customer	A5E01163700
Kit, PFA cable extension, 15 m, adjustable by customer	A5E01163701
Kit, PFA cable extension, 20 m, adjustable by customer	A5E01163702
CLS300 Rod Kits, 316L stainless steel	
	
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).	A5E01163719
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).	A5E01163720
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).	A5E01163721
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).	A5E01163722
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). ²⁾	
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). ²⁾	
Kit, stainless steel rod customized length up to 1 m ²⁾	
Kit, stainless steel rod customized length up to 2 m ²⁾	
CLS300 Electronics Kits with drivers (for rod or cable versions)	
	
Kit, Electronics with driver, standard CLS300. To be used in rod or cable versions with length less than 5 m. ³⁾⁴⁾	A5E01163723
Kit, Electronics with driver, digital CLS300. To be used in rod or cable versions with length less than 5 m. ³⁾⁴⁾	A5E01163725

Pointek Specials¹⁾

	Article No.
CLS300 Electronics Kits with drivers (for cable versions)	
	
Kit, Electronics with driver, standard CLS300. To be used in cable versions with length greater than 5 m. ³⁾⁴⁾	A5E01163724
Kit, Electronics with driver, digital CLS300. To be used in cable versions with length greater than 5 m. ³⁾⁴⁾	A5E01163726
CLS300 Electronics	
Test magnet, digital version	7ML1830-1JE
Amplifier/power supply kit, standard version	A5E03251683
Amplifier/power supply, digital version	7ML1830-1JF
LCD display, digital version	7ML1830-1JK
CLS300 Weight Kit, 316L stainless steel	
	
Kit, Spare stainless steel weight. To be used in any cable version of CLS300	A5E01163727
CLS500 Gasket (IP65), Silicone	
	
Spare gasket, CLS500 enclosure version, IP65	A5E01163728
CLS500 Blind Lid	
	
Spare CLS500 aluminum blind lid	A5E01163729
CLS500 Electronics Kit	
Transmitter, MSP 2002-1, 330 PF	7ML1830-1JP

¹⁾ Special flange sizes and facings are available. Please contact ceg.smpi@siemens.com for part number and pricing. Submit Application Questionnaire found on page 4/11.

²⁾ Please contact ceg.smpi@siemens.com for part number and pricing.

³⁾ For General Purpose approvals only.

⁴⁾ To maintain approvals, qualified trained Siemens personnel required for part replacement.

Please contact ceg.smpi@siemens.com for special requests.