

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.

5

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 (+185 °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.

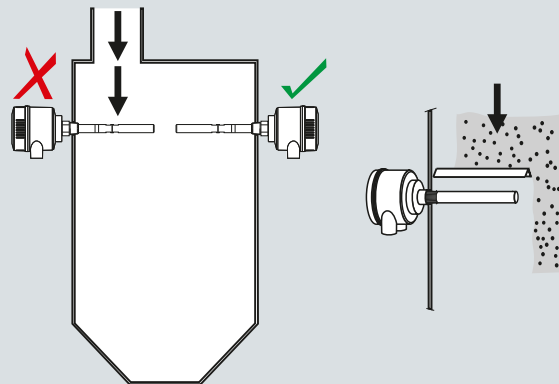
Wetted parts are made of stainless steel with a PFA shield for high chemical resistance, and of ceramic and stainless steel for high temperature version. Materials with low or high dielectric constants can be accurately detected. The unique Active Shield suppresses interference from material buildup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

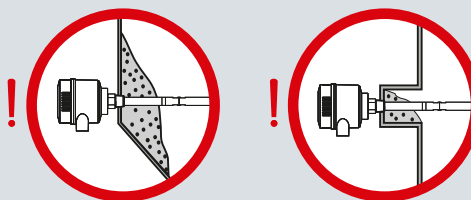
- Key Applications: liquids, slurries, bulk solids, relatively high pressure and temperature, hazardous areas, milling and mining applications

Configuration

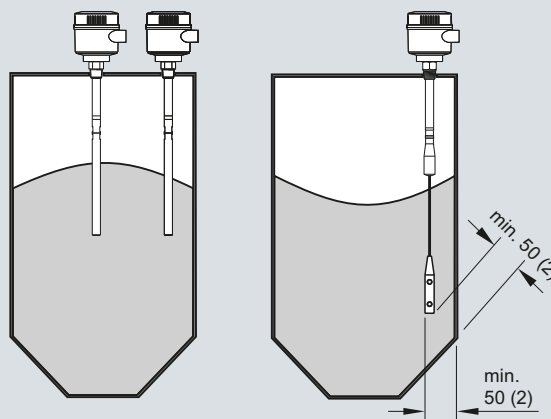
Installation



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

Measuring principle Inverse frequency shift capacitive level detection

Input

Measured variable Change in picoFarad (pF)

Output

Output signal

- Relay output
 - 1 SPDT Form C relay
 - Max. contact voltage
 - 30 V DC
 - 250 V AC
 - Max. contact current
 - 5 A (DC)
 - 8 A (AC)
 - Max. switching capacity
 - 150 W (DC)
 - 2000 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

- Resolution
- Min. sensitivity (pF) 1 % change in actual capacitance
 - Max. temperature error 0.2 % of actual capacitance value

Rated operating conditions¹⁾

- Installation conditions
- Location Indoor/outdoor
- Ambient conditions
- Ambient temperature -40 ... +85 °C (-40 ... +185 °F)²⁾
- Medium conditions
- Liquids, bulk solids, slurries and interfaces, and applications with viscous materials
- Relative dielectric constant ϵ_r Min. 1.5
 - Process temperature
 - Rod/Cable version -40 ... +200 °C (-40 ... +392 °F)²⁾
 - High-temperature version -40 ... +400 °C (-40 ... +752 °F)
 - Process pressure³⁾
 - 1 ... +35 bar g
 - (-14.6 ... +511 psi g)

Design

- 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)

Controls and displays

- Displays 3 LEDs, for probe status, output status and power supply
- Potentiometers 2 potentiometers for time delay and sensitivity
- Switches 5 DIP switches for delay on/off, fail-safe high/low, time delay test/adjust, high/low sensitivity, test delay settings

Power supply

- Supply 12 ... 250 V AC/DC, 0 ... 60 Hz, galvanically isolated, 2 W

Certificates and approvals

- General Purpose CSA, FM, CE, C-TICK
- Flameproof Enclosure with IS Probe ATEX II 1/2 G EEx d[ia] IIC T6...T1
ATEX II 1/2 D T100 °C
- Dust Ignition Proof with IS Probe ATEX II 1/2 D T100 °C
CSA/FM Class II, Div. 1, Gr. E, F, G
CSA/FM Class III T4
- Explosion Proof Enclosure with IS Probe CSA/FM Class I, Div. 1, Gr. A, B, C, D
CSA/FM Class II, Div. 1, Gr. E, F, G
CSA/FM Class III T4
- Marine Lloyds Register of Shipping, Categories ENV1, ENV2 and ENV5
- Overfill Protection WHG (Germany)
VLAREM II (Belgium)
- Others Pattern Approval (China)

- 1) When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves starting on page 5/58.
- 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 5/58.

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Design: Probe

	Rod version	High Temperature version	Cable version
Length	Min. 250 mm (9.8 inch), max. 1000 mm (40 inch)	Min. 250 mm (9.8 inch), max. 1000 mm (40 inch)	Min. 1000 mm (40 inch), max. 25000 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.

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Selection and Ordering data	Order No.
Pointek CLS300 - Standard - Rod Version with Threaded or Flanged process connection	C) 7ML5650-
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	
<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
<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.)	
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 1000 mm (39.37 inch)	D

Selection and Ordering data	Order No.
Pointek CLS300 - Standard - Rod Version with Threaded or Flanged process connection	C) 7ML5650-
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	
<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
<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.)	
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 1000 mm (39.37 inch)	D
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	
316L stainless steel with PFA lining and PEEK isolators	0
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, Gr. E, F, G CSA/FM Class III T4	F
Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Gr. A, B, C, D CSA/FM Class II, Div. 1, Gr. E, F, G CSA/FM Class III T4	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	
<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 to 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)]	

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

Level Measurement

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Selection and Ordering data	Order code	Selection and Ordering data	Order No.
Further designs		Pointek CLS300 - Standard - Cable Version with Threaded or Flanged process connection	C) 7ML5651-
Please add "-Z" to Order 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)]: Measuring-point number/identification (max. 16 characters) specify in plain text	Y15	<u>Threaded, 316L stainless steel</u>	
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and 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
Operating Instructions		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 CD containing the complete ATEX Quick Start and manual library.	See page 5/57	G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 D
Accessories	See page 5/57	<u>Welded flange, 316L stainless steel, raised face</u>	
		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.)	
		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, 3000 mm (118.11 inch), length can be shortened by customer	A
		Extended cable, 6000 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 ... 1000 mm (19.69 ... 39.37 inch)	E
		Extended cable, 1001 ... 5000 mm (39.41 ... 196.85 inch)	F
		Extended cable, 5001 ... 10000 mm (196.89 ... 393.70 inch)	G
		Extended cable, 10001 ... 15000 mm (393.74 ... 590.55 inch)	H
		Extended cable, 15001 ... 20000 mm (590.59 ... 787.40 inch)	J
		Extended cable, 20001 ... 25000 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	Order No.	Selection and Ordering data	Order code
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.	C) 7ML5651-	Further designs Please add "-Z" to Order 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. 16 characters) specify in plain text Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000 Inspection Certificate Type 3.1 per EN 10204	
Wetted seals FKM FFKM [for process temperatures above -20°C (-4°F)]	0 1	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 CD containing the complete ATEX Quick Start and manual library.	Y01 Y15 C11 C12
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	Accessories	See page 5/57
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, Gr. E, F, G CSA/FM Class III T4 Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Gr. A, B, C, D CSA/FM Class II, Div. 1, Gr. E, F, G CSA/FM Class III T4 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 ½" NPT via adapter - cable inlet, IP65 2 x M20x1.5 cable inlet, IP65 2 x ½" 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 to K, only [≥ 1000 mm (39.7 inch)]

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

Level Measurement

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Pointek CLS300 – Standard

Selection and Ordering data	Order No.
Pointek CLS300 - Standard - High Temperature Rod Version with Threaded or Flanged process connection	7ML5652-00-0
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 <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
<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.)	
Probe length (length from flange face) (threaded lengths include process thread)	
<u>Note: No Y01 needed in order code for standard lengths</u>	
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 1000 mm (39.37 inch)	D

Selection and Ordering data	Order No.
Pointek CLS300 - Standard - High Temperature Rod Version with Threaded or Flanged process connection	7ML5652-00-0
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: <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
Wetted seals Graphite	0
Probe material 316L stainless steel with ceramic (ZrO ₂) isolators	0
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, Gr. E, F, G CSA/FM Class III T4	F
Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Gr. A, B, C, D CSA/FM Class II, Div. 1, Gr. E, F, G CSA/FM Class III T4	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 <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 to 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)]	
C) Subject to export regulations AL: N, ECCN: EAR99H.	

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Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Order 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. 16 characters) specify in plain text	Y15
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and 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 CD containing the complete ATEX Quick Start and manual library.	See page 5/57
Accessories	
	See page 5/57

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

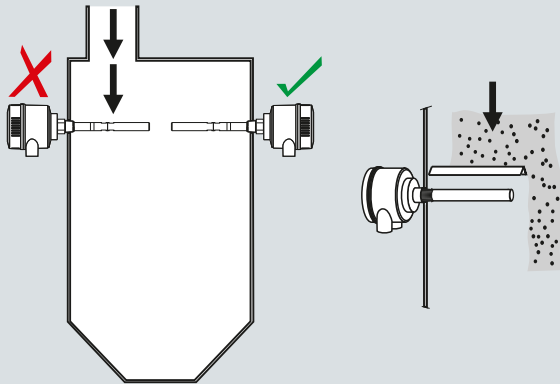
Level Measurement

Point level measurement – Capacitance switches

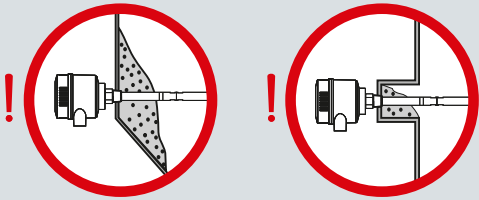
Pointek CLS300 – Digital

Configuration

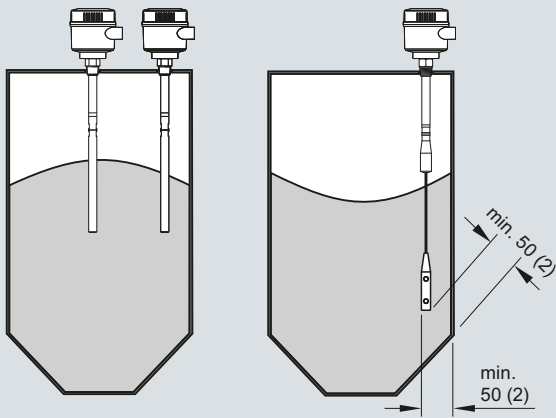
Installation



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	
Measuring principle	Inverse frequency shift capacitive level detection
Input	
Measured variable	Change in picoFarad (pF)
Output	
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
Accuracy	
Resolution	
• Min. sensitivity (pF)	1% change in actual capacitance
• Max. temperature error	0.2% of actual capacitance value
Rated operating conditions¹⁾	
Installation conditions	
Location	Indoor/outdoor
Ambient conditions	
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) ²⁾
Medium conditions	Liquids, bulk solids, slurries and interfaces, and applications with viscous materials
	Min. 1.5
• Relative dielectric constant ϵ_r	
• Process temperature	
- 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)
Design	
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)

Controls and displays

Local display	LCD
Configuration	<ul style="list-style-type: none"> Locally, using 3 button keypad (for standalone operation) Remotely, using SIMATIC PDM (for installation on a network)

Power supply

Bus voltage (at process connection)	<ul style="list-style-type: none"> Standard: 12 ... 30 V DC Intrinsically Safe: 12 ... 24 V DC
Current consumption	12.5 mA

Certificates and approvals

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, Gr. E, F, G CSA/FM Class III T4
Intrinsically Safe ⁴⁾	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, Gr. A, B, C, D CSA/FM Class II, Div. 1, Gr. E, F, G CSA/FM Class III T4
Non-incendive	CSA/FM Class I, Div. 2, Gr. A, B, C, D CSA/FM Class II, Div. 2, Gr. F, G CSA/FM Class III T4 or T6
Explosion Proof with IS Probe	CSA/FM Class I, Div. 1, Gr. A, B, C, D CSA/FM Class II, Div. 1, Gr. E, F, G CSA/FM Class III T4
Marine	Lloyds Register of Shipping, Categories ENV1, ENV2 and ENV5
Others	Pattern Approval (China)

Communication

	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 5/58.
- 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 5/58.
- 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. 1000 mm (40 inch)	Min. 250 mm (9.8 inch), max. 1000 mm (40 inch)	Min. 1000 mm (40 inch), max. 25000 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	Order No.	Selection and Ordering data	Order No.
Pointek CLS300 - Digital - Rod 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.	7ML5660-0	Pointek CLS300 - Digital - Rod 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.	7ML5660-0
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 <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.)		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 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 316L stainless steel with PFA lining and PEEK isolators 0 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 Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Gr. E, F, G E CSA/FM Class III T4 F Intrinsically Safe ¹⁾ CSA/FM Class I, Div. 1, Gr. A, B, C, D F CSA/FM Class II, Div. 1, Gr. E, F, G F CSA/FM Class III T4 F Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Gr. A, B, C, D G CSA/FM Class II, Div. 1, Gr. E, F, G 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 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	
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 1000 mm (39.37 inch) D			

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

²⁾ Available with Probe version options B to 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) inch]

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

Level Measurement

Point level measurement – Capacitance switches

Pointek CLS300 – Digital

Selection and Ordering data	Order No.
Pointek CLS300 - Digital - Cable with Threaded or Flanged process connection 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	7ML5661-
Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over +85 °C (+185 °F)]	0 1
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: CE, C-TICK, ATEX II 1/2 D, 2 D IP6X T100 °C 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 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 Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Gr. E, F, G CSA/FM Class III T4 Intrinsically Safe ¹⁾ CSA/FM Class I, Div. 1, Gr. A, B, C, D CSA/FM Class II, Div. 1, Gr. E, F, G CSA/FM Class III T4 Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Gr. A, B, C, D CSA/FM Class II, Div. 1, Gr. E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CSA, FM, CE, C-TICK)	B C D E F G H J
Enclosure and Lid Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP65 2 x M20x1.5 cable inlet, IP65 2 x ½" 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) ²⁾ Extended shield - (400 mm threaded, 380 mm flanged) ²⁾	0 1 2

1) Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection
 2) Available with Probe version options A, B and, F to K only
 [≥ 1000 mm (39.7 inch)]
 C) Subject to export regulations AL: N, ECCN: EAR99.

Selection and Ordering data	Order code
Further designs Please add "-Z" to Order 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. 16 characters) specify in plain text Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and 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 CD containing the complete ATEX Quick Start and manual library.	See page 5/57
Accessories	See page 5/57

Level Measurement

Point level measurement – Capacitance switches

Pointek CLS300 – Digital

Selection and Ordering data

Order No.

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

C) 7ML5652-00-0

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 1000 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**
 Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch) **G**

Wetted seals

Graphite **0**

Selection and Ordering data

Order No.

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

C) 7ML5652-00-0

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.

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**

Dust Ignition Proof with IS Probe:
 CSA/FM Class II, Div. 1, Gr. E, F, G **E**
 CSA/FM Class III T4

Intrinsically Safe¹⁾
 CSA/FM Class I, Div. 1, Gr. A, B, C, D **F**
 CSA/FM Class II, Div. 1, Gr. E, F, G **G**
 CSA/FM Class III T4

Explosion Proof Enclosure with IS Probe:
 CSA/FM Class I, Div. 1, Gr. A, B, C, D **H**
 CSA/FM Class II, Div. 1, Gr. E, F, G **J**
 CSA/FM Class III T4

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 to 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)]

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

Level Measurement

Point level measurement – Capacitance switches

Pointek CLS300 – Standard and Digital

Selection and Ordering data	Order code	Selection and Ordering data	Order No.
Further designs		Operating Instructions - Standard	
Please add "-Z" to Order No. and specify Order code(s).		English	C) 7ML1998-5JH04
Total insertion length: enter the total insertion length in plain text description	Y01	German	C) 7ML1998-5JH33
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]; Measuring-point number/identification (max. 16 characters) specify in plain text	Y15	Note: The Operating Instructions should be ordered as a separate line on the order.	
Acceptance test certificate: Manufacturer's test certificate M to DIN 55350, Part 18 and ISO 9000	C11	Quick Start manual, multi-language	C) 7ML1998-5QY83
Inspection Certificate Type 3.1 per EN 10204	C12	This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.	
Operating Instructions		Operating Instructions - Digital	
Note: The Operating Instructions should be ordered as a separate line on the order. This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and manual library.	See page 5/57	English	C) 7ML1998-5JJ04
		French	C) 7ML1998-5JJ11
		German	C) 7ML1998-5JJ33
		Note: The Operating Instructions should be ordered as a separate line on the order.	
Accessories	See page 5/57	Quick Start manual, multi-language	C) 7ML1998-5XA83
		This device is shipped with the Siemens Milltronics manual CD containing the complete 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
		General Purpose	
		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)	C) A5E03252530
		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)	C) A5E03252531
		Hazardous Locations	
		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)	A5E03252527
		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)	A5E03252528
		Blind threaded flanges are available. Please contact ceg.smpi@siemens.com with a completed application data sheet on page 5/9	
		Pointek Specials	See page 5/79

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

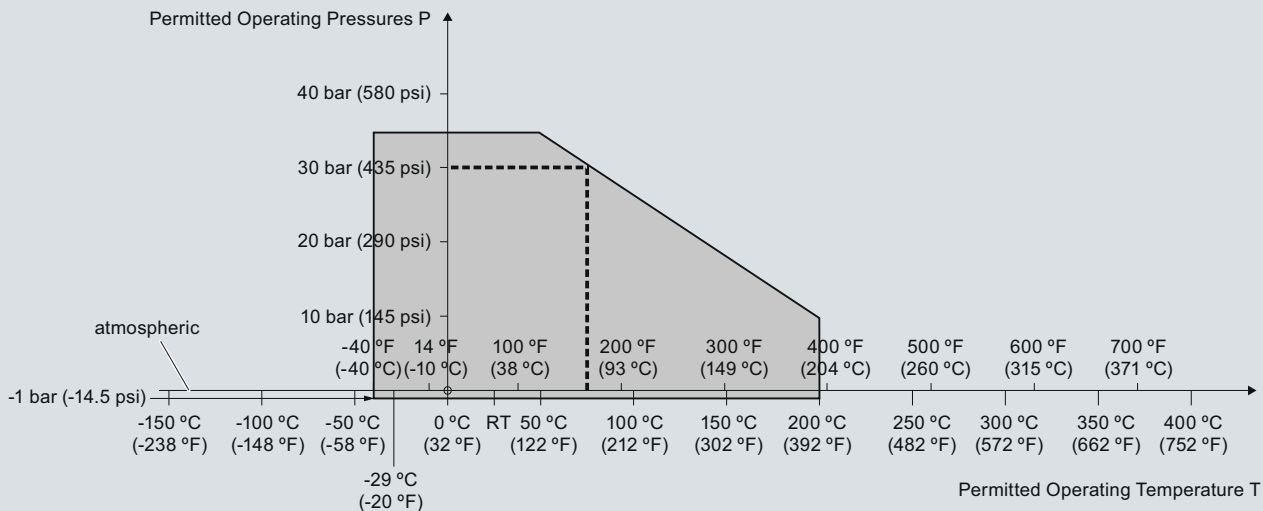
Level Measurement

Point level measurement – Capacitance switches

Pointek CLS300 – Standard and Digital

Characteristic curves

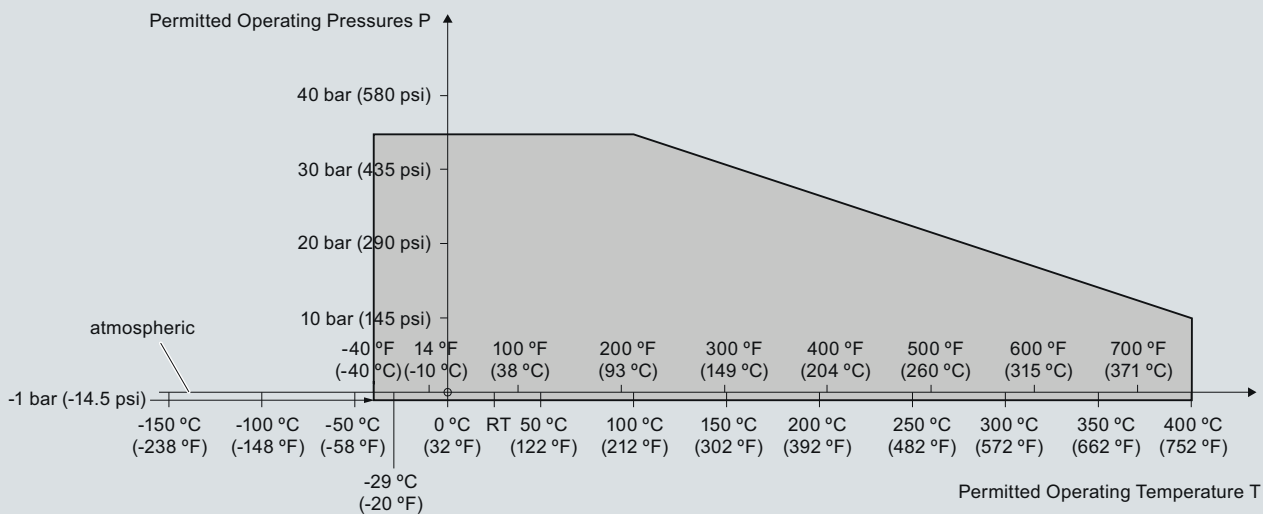
Pressure/Temperature Curve
CLS300 Extended Rod and Cable Probes
Threaded Process Connections
(7ML5650, 7ML5651, 7ML5660 and 7ML5661)



--- 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)

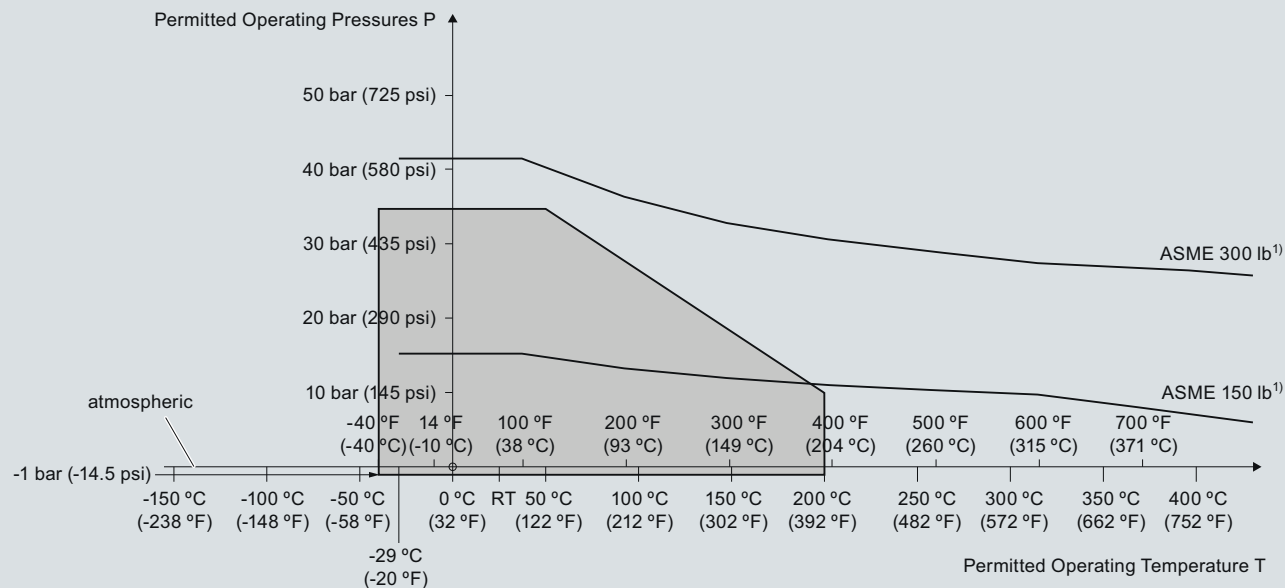
5

Level Measurement

Point level measurement – Capacitance switches

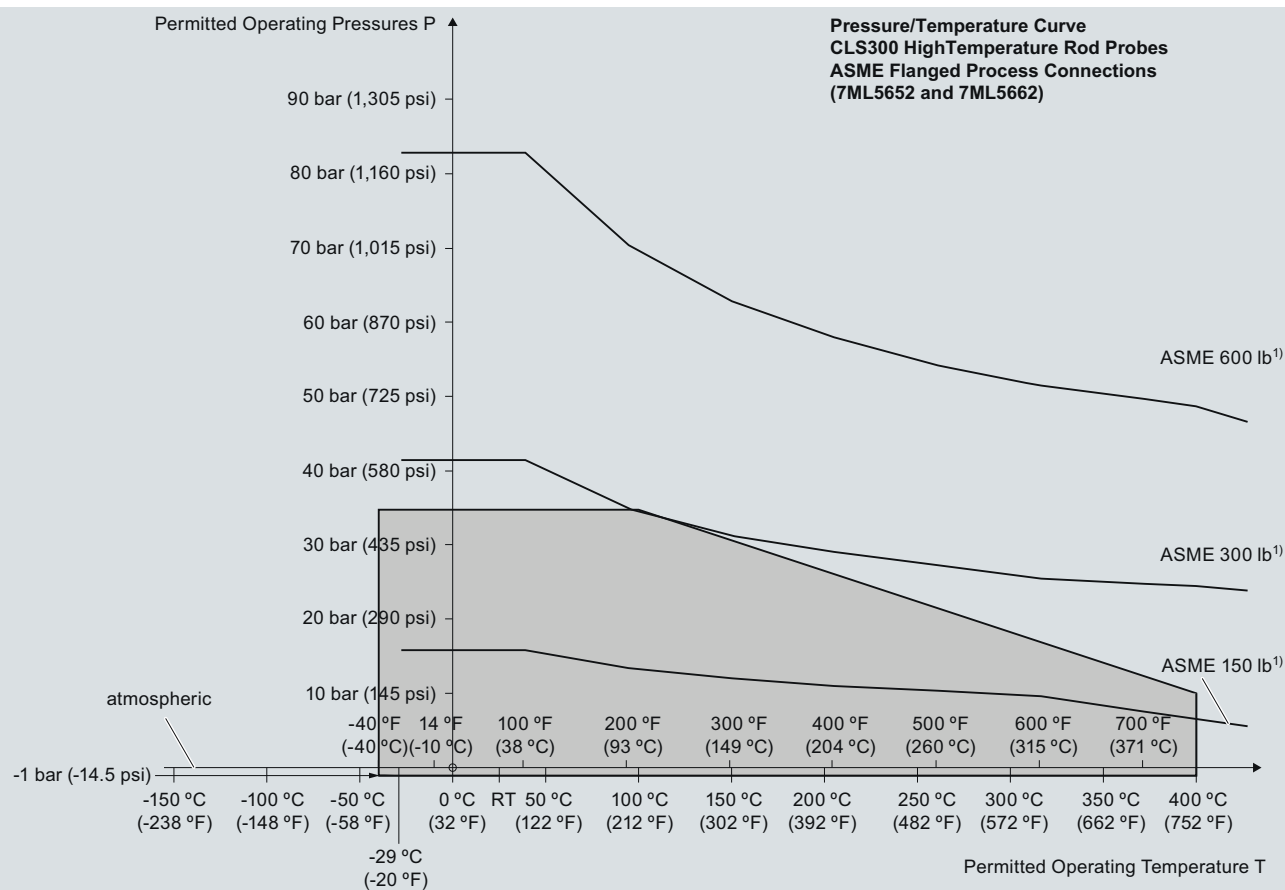
Pointek CLS300 – Standard and Digital

Pressure/Temperature Curve
CLS300 Extended Rod and Cable Probes
ASME Flanged Process Connections
(7ML5650, 7ML5651, 7ML5660 and 7ML5661)



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)

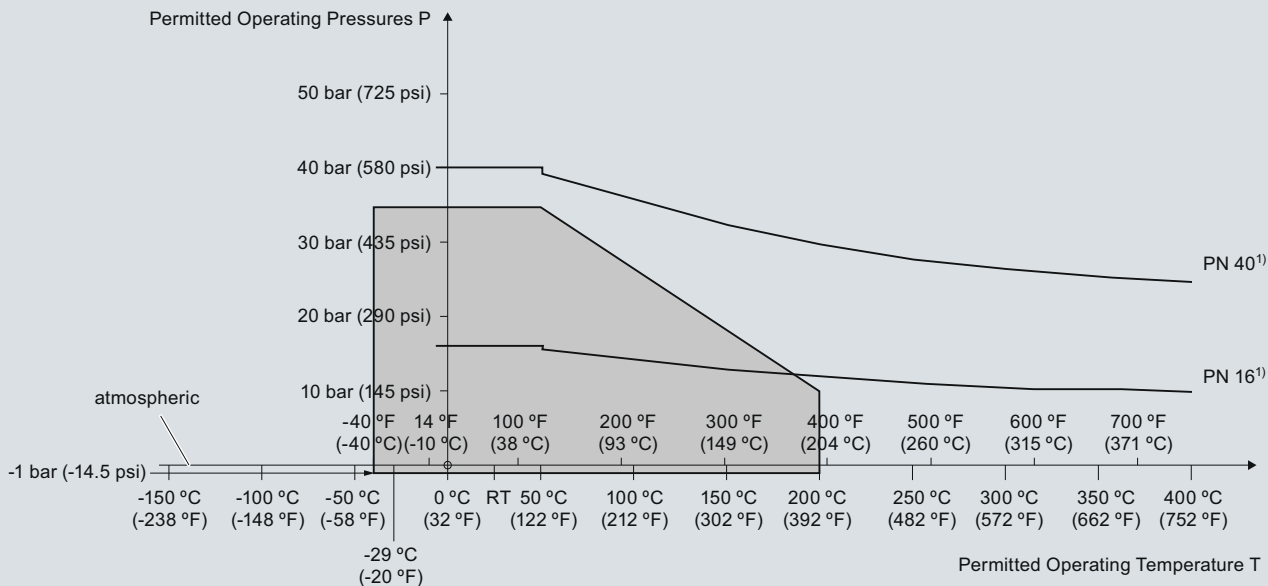
5

Level Measurement

Point level measurement – Capacitance switches

Pointek CLS300 – Standard and Digital

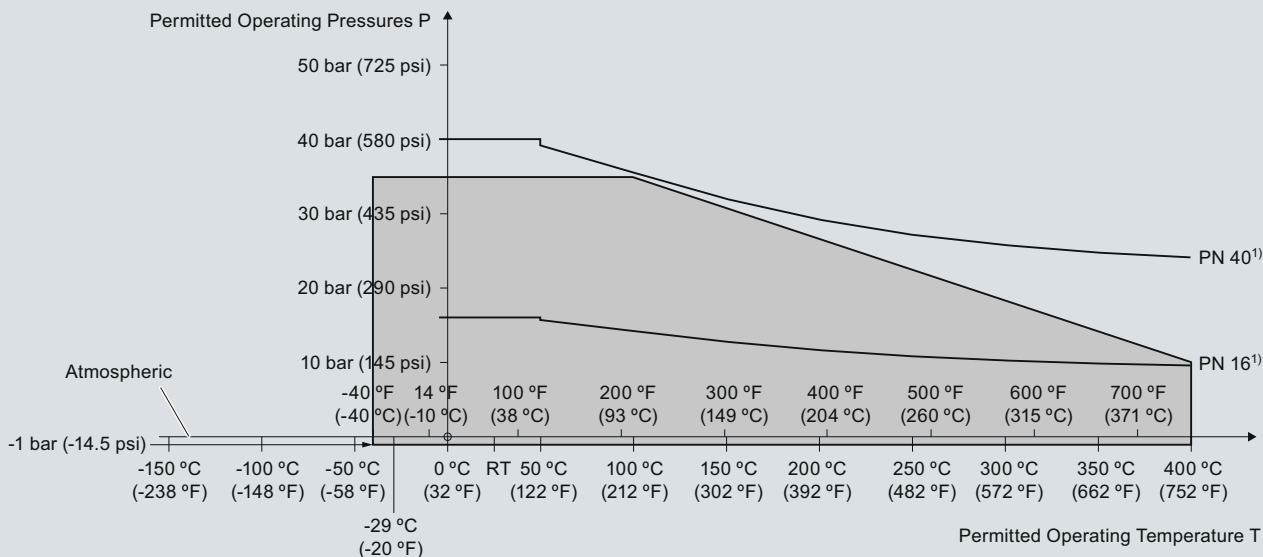
Pressure/Temperature Curve
CLS300 Extended Rod and Cable Probes
EN Flanged Process Connections
(7ML5650, 7ML5651, 7ML5660 and 7ML5661)



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 (7ML56552 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)

5

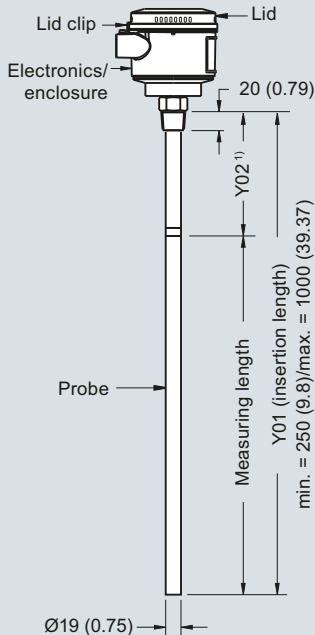
Level Measurement

Point level measurement – Capacitance switches

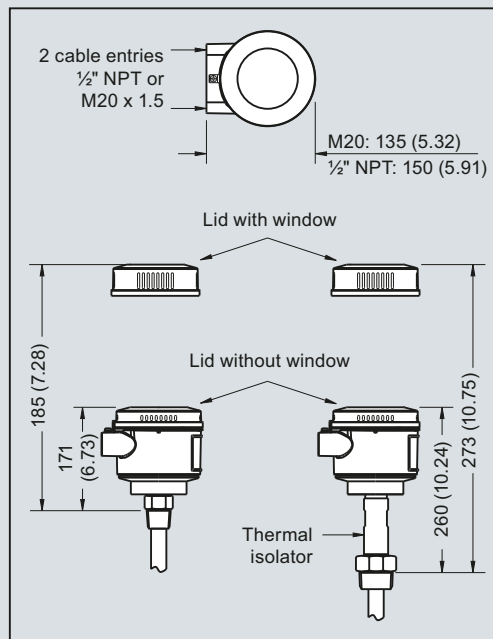
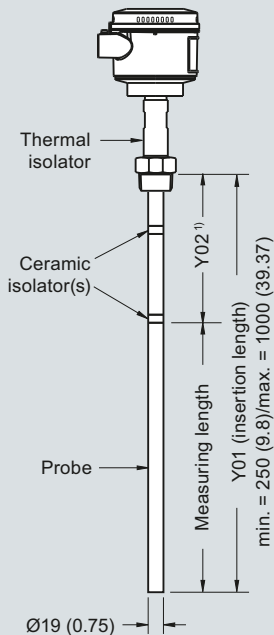
Pointek CLS300 – Standard and Digital

Dimensional drawings

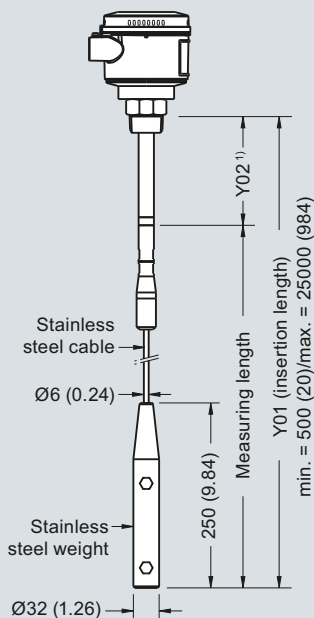
**Rod version
Threaded (7ML5650 and 7ML5660)**



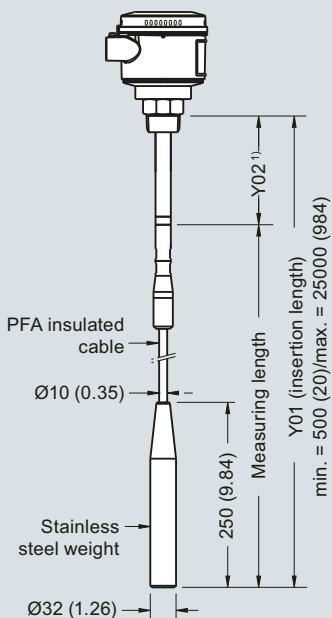
**High temperature rod version
Threaded (7ML5652 and 7ML5662)**



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



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



Note:

¹⁾ Extended Active Shield (Y02): standard length 125 mm (4.92"). Optional active shield lengths: 250 mm (9.84") or 400 mm (15.75").

Pointek CLS300 dimensions -Threaded Process connections, dimensions in mm (inch)

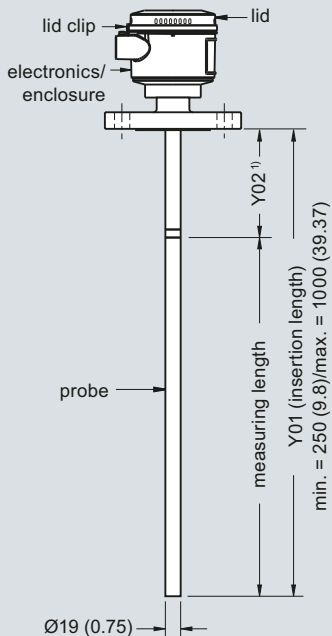
Level Measurement

Point level measurement – Capacitance switches

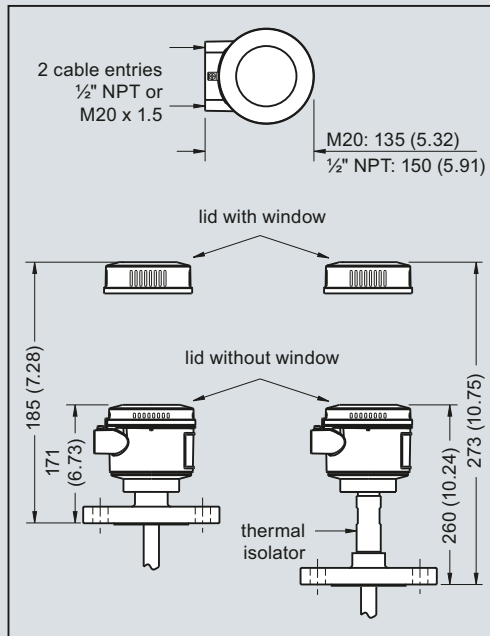
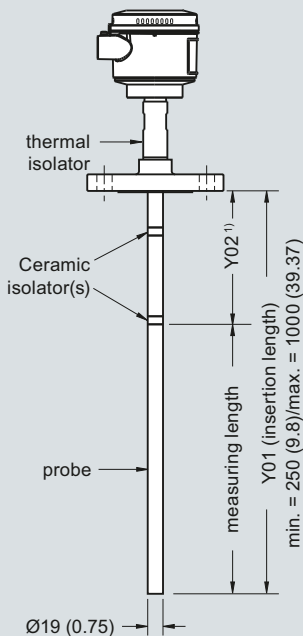
Pointek CLS300 – Standard and Digital

5

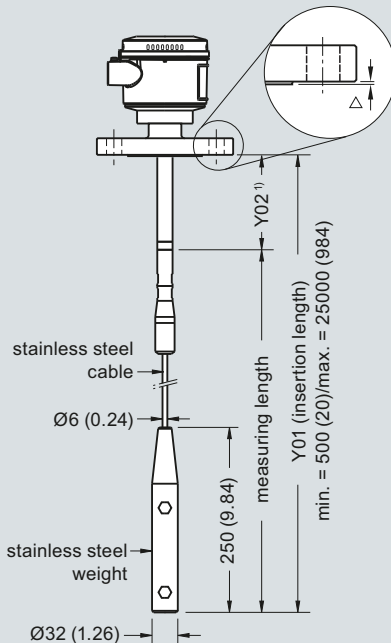
Rod version
Welded flange (7ML5650 and 7ML5660)



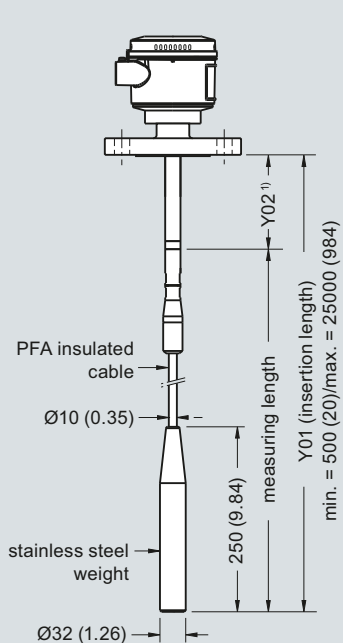
High temperature rod version
Welded flange (7ML5652 and 7ML5662)



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 mm (4.13"). Optional active shield lengths: 230 mm (9.06") or 380 mm (14.96"). Insertion length does not include any raised face/gasket face dimension (see Flange Facing Table above)

Pointek CLS300 dimensions - Flanged Process connections, dimensions in mm (inch)

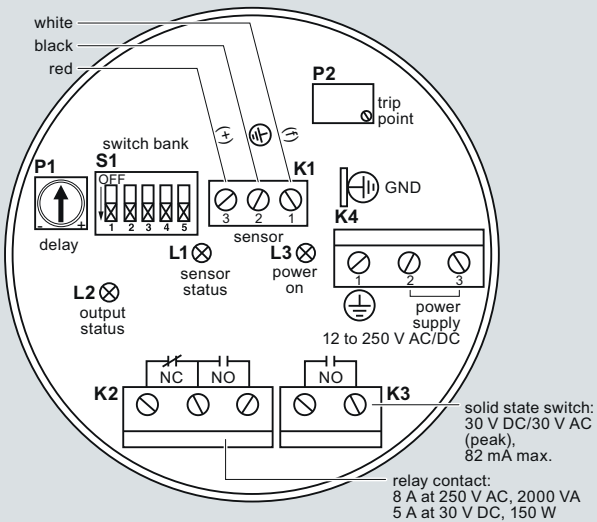
Level Measurement

Point level measurement – Capacitance switches

Pointek CLS300 – Standard and Digital

Schematics

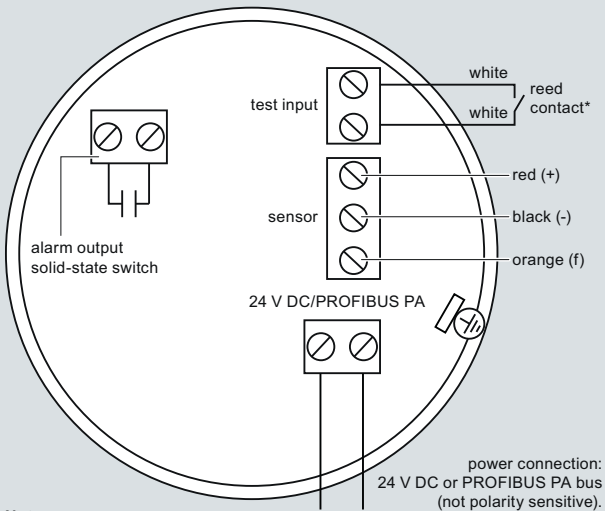
Wiring: Pointek CLS300 Standard



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

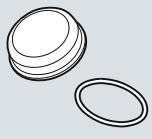

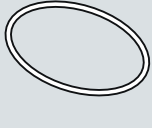
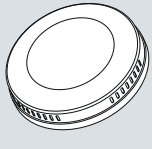
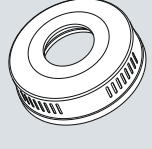

Level Measurement

Point level measurement – Capacitance switches

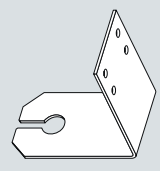


Pontek CLS Specials

Selection and ordering data

Pointek Specials. See note 1.

	Order No.
CLS100 Polycarbonate Lid and Gasket, FKM	
	
Kit, Lid and gasket, CLS100 enclosure version	F) A5E01163671
CLS100 Miscellaneous Parts	
Custom length of cable is available only for 7ML5501-xxx1x and 7ML5501-xxx5x	See note 2
CLS200 Gasket (IP65), Synprene	
	
Spare gasket, enclosure version (IP65 versions only)	F) A5E01163672
CLS200 Gasket (IP68), Silicone	
	
Spare gasket, enclosure version (IP68 versions)	F) 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	C) A5E01163677

Pointek Specials. See note 1.

Kit, Sensor for cable units, PPS, Digital, FKM	C)	A5E01163678
Kit, Sensor for cable units, PPS, Standard, FFKM	C)	A5E01163679
Kit, Sensor for cable units, PPS, Digital, FFKM	C)	A5E01163680
Kit, Sensor for cable units, PVDF, Standard, FKM	C)	A5E01163681
Kit, Sensor for cable units, PVDF, Digital, FKM	C)	A5E01163682
Kit, Sensor for cable units, PVDF, Standard, FFKM	C)	A5E01163683
Kit, Sensor for cable units, PVDF, Digital, FFKM	C)	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)		See note 2
CLS200 Electronics		
Test magnet, digital version		7ML1830-1JE
Amplifier/power supply kit, standard version	C)	A5E03251681
Amplifier/power supply, digital version	L)	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

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Level Measurement

Point level measurement – Capacitance switches

Pontek CLS Specials

Pointek Specials. See note 1.

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 1000 mm (39.37 inch).

A5E01163722

Kit, Stainless steel rod 1330 mm (52.36 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 1500 mm (59.06 inch).

See note 2

Kit, Stainless steel rod 1830 mm (72.05 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 2000 mm (78.74 inch).

See note 2

Kit, Stainless steel rod customized length up to 1 m

See note 2

Kit, Stainless steel rod customized length up to 2 m

See note 2

CLS300 Electronics Kits with drivers (for rod or cable versions)



Kit, Electronics with driver, standard CLS300. C) To be used in rod or cable versions with length less than 5 m. See notes 3 and 4.

A5E01163723

Kit, Electronics with driver, digital CLS300. C) To be used in rod or cable versions with length less than 5 m. See notes 3 and 4.

A5E01163725

Pointek Specials. See note 1.

CLS300 Electronics Kits with drivers (for cable versions)



Kit, Electronics with driver, standard CLS300. C) To be used in cable versions with length greater than 5 m. See notes 3 and 4.

A5E01163724

Kit, Electronics with driver, digital CLS300. C) To be used in cable versions with length greater than 5 m. See notes 3 and 4.

A5E01163726

CLS300 Electronics

Test magnet, digital version

7ML1830-1JE

Amplifier/power supply kit, standard version C)

A5E03251683

Amplifier/power supply, digital version L)

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 L)

7ML1830-1JP

Note 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 5/9.

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

Note 3: For General Purpose approvals only.

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

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

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

F) Subject to export regulations AL: 91999, ECCN: N.

J) Subject to export regulations AL: 91999, ECCN: EAR99.

L) Subject to export regulations AL: N, ECCN: 3A991X.