

Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS200 - Standard

Overview



Pointek CLS200 (standard version) is a versatile inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces and has the ability to tune out buildup on the probe.

Benefits

- Potted construction protects signal circuit from shock, vibration, humidity, and/or condensation
- High chemical resistance
- Level detection independent of tank or pipe earth reference
- Insensitive to product buildup due to high frequency oscillation
- 3 LED indicators for sensor status, output status, and power
- Suitable for API 2350

Application

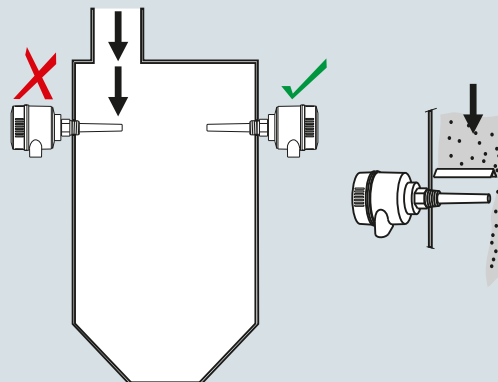
Pointek CLS200 standard version has 3 LED indicators with basic relay and solid-state switch alarms. Universal switch for solids/liquids and interface.

The power supply is galvanically isolated and accepts a wide range of voltages (12 to 250 V AC/DC). When used with thermal isolator, the stainless steel and PPS (PVDF optional) materials used in the probe construction provide a temperature rating up to 125 °C (257 °F) on the process wetted portion of the probe. The switch responds to any material with a dielectric constant of 1.5 or more by detecting a change in oscillating frequency, and it can be set to detect before contact or on contact with the probe. The CLS200 operates independently of the tank wall or pipe so it does not require an external reference electrode for level detection in a non-conductive vessel such as concrete or plastic (EMC regulations applicable in some regions).

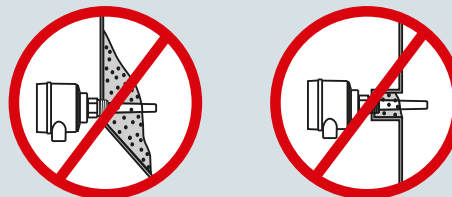
- Key Applications: liquids, slurries, powders, granules, pressurized applications, hazardous areas

Configuration

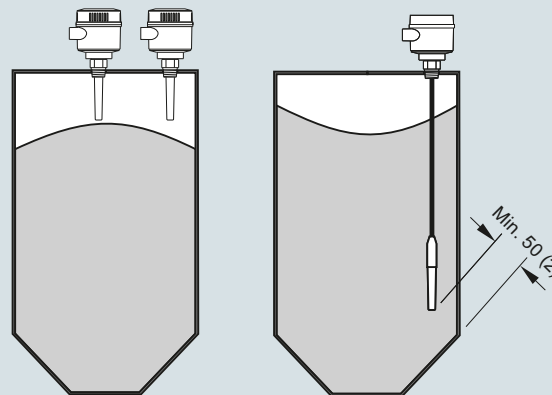
Installation



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



Avoid areas where material build up occurs.



Install probe at least 50 (2) from tank wall.

Pointek CLS200 installation, dimensions in mm (inch)

Technical specifications

Mode of operation	
Measuring principle	Inverse frequency shift capacitive level detection
Input	
Measured variable	Change in piconFarad (pF)
Output	
Output signal	
• Relay output	1 SPDT Form C relay
- Max. contact voltage	<ul style="list-style-type: none"> • 30 V DC • 250 V AC
- Max. contact current	<ul style="list-style-type: none"> • 5 A DC • 8 A AC
- Max. switching capacity	150 W DC
- Time delay (ON and/or OFF)	2 000 VA AC
• Solid-state output	1 ... 60 s
- Output	Galvanically isolated
- Protection	Against reversed polarity (bipolar)
- Max. switching voltage	<ul style="list-style-type: none"> • 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
Rated operating conditions¹⁾	
Installation conditions	
• Location	Indoor/outdoor
Ambient conditions	
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) ²⁾
• Installation category	II
• Pollution degree	4
Medium conditions	Liquids, bulk solids, slurries and interfaces
• Relative dielectric constant ϵ_r	Min. 1.5
• Process temperature	
- Without thermal isolator	-40 ... +85 °C (-40 ... +185 °F) ²⁾
- With thermal isolator	-40 ... +125 °C (-40 ... +257 °F)
• Process pressure (rod version)	-1 ... +25 bar g (-14.6 ... +365 psi g) (nominal)
• Process pressure (cable version) ³⁾	-1 ... +10 bar g (-14.6 ... +150 psi g) (nominal)
• Process pressure (sliding coupling version)	-1 ... +10 bar g (-14.6 ... +150 psi g) (nominal)
Electromagnetic compatibility	
	To comply with CE EMC regulations (where applicable); the CLS200 should be installed per the instruction manual.

Design	
Material	
• Enclosure	Epoxy-coated aluminum with gasket
• Optional thermal isolator	316L stainless steel
Connection	Removable terminal block, max. 2.5 mm ²
Degree of protection	IP65/Type 4/NEMA 4 (optional IP68)
Cable inlet	2 x M20 x 1.5 thread (option: 2 x 1/2" NPT conduit entry including 1 plugged entry)
Power supply	
	12 ... 250 V AC/DC, 0 ... 60 Hz max. 2 W
Certificates and approvals	
General Purpose	CSA, FM, CE, RCM
Dust Ignition Proof	ATEX II 1/2 D T100 °C
Flameproof Enclosure With IS Probe	ATEX II 1 G EEx d[ia] IIC T6 ... T4 ATEX II 1/2 D T100 °C
Dust Ignition Proof with IS Probe	CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
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
Marine	Lloyds Register of Shipping, Categories ENV1, ENV2, and ENV5
Overfill Protection	WHG (Germany) VLAREM II
Others	Pattern Approval (China), SIL

1) When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves on page 4/33.

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 on page 4/33.

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Design: Probe				
	Rod version	Sanitary version	Cable version	Sliding Coupling version
Max. length	5 500 mm (216.53 inch)	5 500 mm (216.53 inch)	<ul style="list-style-type: none"> • 30 000 mm (1 181.1 inch) liquids and slurries • 5 000 mm (196.85 inch) solids (under loads) 	5 500 mm (216.53 inch)
Process connection	R ¾", 1", 1¼", 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] ¾", 1", 1¼", 1½" NPT [(Taper), ANSI/ASME B1.20.1] G ¾", 1", 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 316L stainless steel ASME/EN flange	1½", 2" sanitary fitting clamp 316L stainless steel	R ¾", 1", 1¼", 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] ¾", 1", 1¼", 1½" NPT [(Taper), ANSI/ASME B1.20.1] G ¾", 1", 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 316L stainless steel ASME/EN flange	R ¾", 1", 1¼", 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] ¾", 1", 1¼", 1½" NPT [(Taper), ANSI/ASME B1.20.1] G ¾", 1", 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]
Extension material	316L stainless steel optional PFA coated ¹⁾	316L stainless steel	Fluoroethylene propylene (FEP) cable with stainless steel core	316L stainless steel
Sensor wetted parts	PPS (optional PVDF)	PPS (optional PVDF)	PPS (optional PVDF)	PPS (optional PVDF)
O-ring seal material	FKM (optional FFKM) ²⁾	FKM (optional FFKM) ²⁾	FKM (optional FFKM) ²⁾	FKM (optional FFKM) ²⁾
Thermal isolator ³⁾	Optional	Optional	Optional	Optional
Extension	User selected length	User selected length	Cable extension	User selected length

¹⁾ PFA coating (7ML5634 and 7ML5644) has 120 micron thickness

²⁾ For caustic materials, consult a local sales person for alternative O-rings. For more information, please visit http://www.automation.siemens.com/aspa_app.

³⁾ Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F)

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Pointek CLS200 RF Capacitance point level switch, rod design Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe. Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5630- - - - - - 0	Pointek CLS200 RF Capacitance point level switch, rod design Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe. Add Order code Y01 and plain text: "Insertion length ... mm" Extended rod, 210 ... 1 000 mm (8.27 ... 39.37 inch) Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch) Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch) Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch) Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch) Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch)	7ML5630- - - - - - 0
Process connection Threaded, 316L stainless steel ¾" NPT [(Taper), ANSI/ASME B1.20.1] 1" NPT [(Taper), ANSI/ASME B1.20.1] 1¼" NPT [(Taper), ANSI/ASME B1.20.1] 1½" NPT [(Taper), ANSI/ASME B1.20.1] R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	0 A 0 B 0 C 0 D 1 A 1 B 1 D 3 A 3 B 3 D	Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	M N P Q R S 0 1
Welded flange, 316L stainless steel, raised face 1" ASME, 150 lb 1" ASME, 300 lb 1" ASME, 600 lb 1½" ASME, 150 lb 1½" ASME, 300 lb 1½" ASME, 600 lb 2" ASME, 150 lb 2" ASME, 300 lb 2" ASME, 600 lb 3" ASME, 150 lb 3" ASME, 300 lb 3" ASME, 600 lb 4" ASME, 150 lb 4" ASME, 300 lb 4" ASME, 600 lb	5 A 5 B 5 C 5 D 5 E 5 F 5 G 5 H 5 J 5 K 5 L 5 M 5 N 5 P 5 Q	Thermal isolator Remote mount electronics and mounting bracket With 2 m (79 inch) of cable ¹⁾²⁾ With 5 m (197 inch) of cable ¹⁾²⁾	2 3
Welded flange, 316L stainless steel, Type A flat faced DN 25, PN 16 DN 25, PN 40 DN 40, PN 16 DN 40, PN 40 DN 50, PN 16 DN 50, PN 40 DN 80, PN 16 DN 80, PN 40 DN 100, PN 16 DN 100, PN 40 (Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)	6 A 6 B 6 C 6 D 6 E 6 F 6 G 6 H 6 J 6 K	Wetted seals FKM FFKM [for process temperatures above -20 °C (-4 °F)] Probe material 316L stainless steel with PPS probe body 316L stainless steel with PVDF probe body Approvals Dust Ignition Proof: CE, RCM, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CE, RCM) General Purpose (CSA, FM, CE, RCM) with WHG approval	0 1 C D E F G H J K
Probe length (length from flange face) (threaded lengths include process thread) Note: No Y01 needed in Order code for standard lengths Compact [threaded 120 mm (4.72 inch), Flanged 98 mm (3.86 inch)] Extended rod, 250 mm (9.84 inch) Extended rod, 350 mm (13.78 inch) Extended rod, 500 mm (19.69 inch) Extended rod, 750 mm (29.53 inch) Extended rod, 1 000 mm (39.37 inch) Extended rod, 1 250 mm (49.21 inch) Extended rod, 1 350 mm (53.15 inch) Extended rod, 1 500 mm (59.06 inch) Extended rod, 1 750 mm (68.90 inch) Extended rod, 2 000 mm (78.74 inch)	A B C D E F G H J K L	Enclosure and lid Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet IP65 2 x ½" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet IP68	A B C D

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


¹⁾ ²⁾ Available with Approval options F, G, and H

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Selection and Ordering data	Order code	Selection and Ordering data	Article No.
Further designs		Pointek CLS200 RF Capacitance point level switch, cable design	7ML5631-
Please add "-Z" to Article No. and specify Order code(s).		Detects level and interface in liquids, solids, slurries, and foam. Cable extension options to 30 m (98.43 ft), adaptable sensitivity, with the ability to tune out build-up on probe.	0
Total insertion length: enter the total insertion length in plain text description	Y01	➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15	Process connection	
Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000	C11	Threaded, 316L stainless steel	
Material inspection Certificate Type 3.1 per EN 10204	C12	¾" NPT [(Taper), ANSI/ASME B1.20.1]	0 A
SIL/IEC 61508 Declaration of Conformity [SIL 2 (overspill)]	C20	1" NPT [(Taper), ANSI/ASME B1.20.1]	0 B
INMETRO ¹⁾	E34	1¼" NPT [(Taper), ANSI/ASME B1.20.1]	0 C
Operating Instructions		1½" NPT [(Taper), ANSI/ASME B1.20.1]	0 D
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation		R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 A
Accessories	See page 4/32	R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 B
¹⁾ Available only with Approvals options C, D, E.		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) Note: No Y01 needed in Order code for standard lengths	
		Extended cable, 3 000 mm (118.11 inch), length can be determined by customer on assembly ¹⁾	A
		Extended cable, 6 000 mm (236.22 inch), length can be determined by customer on assembly ¹⁾	B
		<u>Add Order code Y01 and plain text:</u> <u>"Insertion length ... mm"</u>	
		Extended cable, 500 ... 5 000 mm (19.69 ... 196.85 inch)	C
		Extended cable, 5 001 ... 10 000 mm (196.89 ... 393.70 inch)	D
		Extended cable, 10 001 ... 15 000 mm (393.74 ... 590.55 inch)	E
		Extended cable, 15 001 ... 20 000 mm (590.59 ... 787.4 inch)	F
		Extended cable, 20 001 ... 25 000 mm (787.44 ... 984.25 inch)	G
		Extended cable, 25 001 ... 30 000 mm (984.29 ... 1 181.1 inch)	H

Selection and Ordering data	Article No.	Selection and Ordering data	Order code
Pointek CLS200 RF Capacitance point level switch, cable design Detects level and interface in liquids, solids, slurries, and foam. Cable extension options to 30 m (98.43 ft), adaptable sensitivity, with the ability to tune out build-up on probe.	7ML5631- 	Further designs Please add "-Z" to Article No. and specify Order code(s).	
Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1	Total insertion length: enter the total insertion length in plain text description	Y01
Remote mount electronics and mounting bracket With 2 m (79 inch) of cable ²⁾ With 5 m (197 inch) of cable ²⁾	2 3	Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000	Y15 C11
Wetted seals FKM and PTFE FFKM and PTFE [for process temperatures above -20 °C (-4 °F)]	0 1	Material inspection Certificate Type 3.1 per EN 10204 SIL/IEC 61508 Declaration of Conformity [SIL 2 (overspill)]	C12 C20
Probe material FEP jacketed cable with PPS probe body FEP jacketed cable with PVDF probe body	0 1	INMETRO ¹⁾	E34
Approvals Dust Ignition Proof: CE, RCM, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CE, RCM) General Purpose (CSA, FM, CE, RCM) with WHG approval	C D E F G H J K	Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Enclosure and lid Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet, IP65 2 x ½" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet, IP68	A B C D	Accessories ¹⁾ Available only with Approvals options C, D, E.	See page 4/32



¹⁾ Sensor detached to allow customer to set desired cable length

²⁾ Available with Approvals options F ... H

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Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Pointek CLS200 RF Capacitance point level switch, sanitary rod design Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5632- 	Pointek CLS200 RF Capacitance point level switch, sanitary rod design Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe.	7ML5632- 
Process connection <u>Sanitary 316L stainless steel</u> 1" sanitary fitting clamp 1½" sanitary fitting clamp 2" sanitary fitting clamp 2½" sanitary fitting clamp 3" sanitary fitting clamp (Note: Sanitary connection dimensionally corresponds to the applicable ISO 2852 standard)	8 A 8 B 8 C 8 D 8 E	Approvals Dust Ignition Proof: CE, RCM, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CE, RCM) General Purpose (CSA, FM, CE, RCM) with WHG approval	C D E F G H J K
Probe length (length from process connection face) <u>Note: No Y01 needed in Order code for standard lengths</u> Compact, 98 mm (3.86 inch) Extended rod, 250 mm (9.84 inch) Extended rod, 350 mm (13.78 inch) Extended rod, 500 mm (19.69 inch) Extended rod, 750 mm (29.53 inch) Extended rod, 1 000 mm (39.37 inch) Extended rod, 1 250 mm (49.21 inch) Extended rod, 1 350 mm (53.15 inch) Extended rod, 1 500 mm (59.06 inch) Extended rod, 1 750 mm (68.90 inch) Extended rod, 2 000 mm (78.74 inch) Add Order code Y01 and plain text: "Insertion length ... mm" Extended rod, 110 ... 350 mm (4.3 ... 13.78 inch) Extended rod, 351 ... 1 000 mm (13.78 ... 39.37 inch) Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch) Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch) Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch) Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch) Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch)	A B C D E F G H J K L M N P Q R S T	Enclosure and lid <u>Aluminum epoxy coated</u> 2 x ½" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet, IP65 2 x ½" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet, IP68	A B C D
Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1	Selection and Ordering data	Order code
Remote mount electronics and mounting bracket Remote mount electronics with 2 m (79 inch) of cable Remote mount electronics with 5 m (197 inch) of cable	2 3	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 [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000 Material inspection Certificate Type 3.1 per EN 10204 SIL/IEC 61508 Declaration of Conformity [SIL 2 (overspill)] INMETRO ¹⁾	Y01 Y15 C11 C12 C20 E34
Wetted seals FKM FFKM [for process temperatures above -20 °C (-4 °F)]	0 1	Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Probe material 316L stainless steel with PPS probe body 316L stainless steel with PVDF probe body	0 1	Accessories	See page 4/32
		¹⁾ Availavble only with Approvals options C, D, E.	

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Pointek CLS200 RF Capacitance point level switch, sliding coupling design Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe. Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5633- 0	Pointek CLS200 RF Capacitance point level switch, sliding coupling design Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe.	7ML5633- 0
Process connection Threaded, 316L stainless steel ¾" NPT [(Taper), ANSI/ASME B1.20.1] 1" NPT [(Taper), ANSI/ASME B1.20.1] 1¼" NPT [(Taper), ANSI/ASME B1.20.1] 1½" NPT [(Taper), ANSI/ASME B1.20.1] R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	0 A 0 B 0 C 0 D 1 A 1 B 1 D 3 A 3 B 3 D	Approvals Dust Ignition Proof: CE, RCM, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CE, RCM) General Purpose (CSA, FM, CE, RCM) with WHG approval	C D E F G H J K
Probe length (length from flange face) (threaded lengths include process thread) Note: No Y01 needed in Order code for <u>standard lengths</u> Extended rod, 350 mm (13.78 inch) Extended rod, 500 mm (19.69 inch) Extended rod, 750 mm (29.53 inch) Extended rod, 1 000 mm (39.37 inch) Extended rod, 1 250 mm (49.21 inch) Extended rod, 1 350 mm (53.15 inch) Extended rod, 1 500 mm (59.06 inch) Extended rod, 1 750 mm (68.90 inch) Extended rod, 2 000 mm (78.74 inch) Add Order code Y01 and plain text: <u>"Insertion length ... mm"</u> Extended rod, 350 ... 1 000 mm (13.78 ... 39.37 inch) Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch) Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch) Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch) Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch) Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch)	C D E F G H J K L M N P Q R S	Enclosure and lid Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet, IP65 2 x ½" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet, IP68	A B C D
Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1	Enclosure and lid 1) Available with Approvals options F ... H	
Remote mount electronics and mounting bracket With 2 m (79 inch) of cable ¹⁾ With 5 m (197 inch) of cable ¹⁾	2 3	Selection and Ordering data	Order code
Wetted seals FKM and PTFE FFKM and PTFE [for process temperatures above -20 °C (-4 °F)]	0 1	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 [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000 Material inspection Certificate Type 3.1 per EN 10204 SIL/IEC 61508 Declaration of Conformity [SIL 2 (overspill)] INMETRO ¹⁾	Y01 Y15 C11 C12 C20 E34
Probe material 316L stainless steel with PPS probe body 316L stainless steel with PVDF probe body	0 1	Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
		Accessories	See page 4/32

¹⁾ Available only with Approvals options C, D, E.

Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS200 - Digital

Overview



Pointek CLS200 (digital version) is a versatile inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS200 is ideal for detection of liquids, solids, slurries, foam, and interfaces and has the ability to tune out buildup on the probe. The digital version includes PROFIBUS PA, an LCD display, and advanced diagnostic features.

Benefits

- Potted construction protects signal circuit from shock, vibration, humidity, and/or condensation
- High chemical resistance
- Level detection independent of tank or pipe earth reference
- Insensitive to product buildup due to high frequency oscillation
- 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 CLS200 digital version provides an integral LCD display for stand-alone use, and also provides PROFIBUS PA communication (Profile version 3.0, Class B) for connection to a network.

The power supply is galvanically isolated and accepts a wide range of voltages (12 to 30 V DC). When used with thermal isolator, the stainless steel and PPS (PVDF optional) materials used in the probe construction provide a temperature rating up to 125 °C (257 °F) on the process wetted portion of the probe. The switch responds to any material with a dielectric constant of 1.5 or more by detecting a change in oscillating frequency, and it can be set to detect before contact or on contact with the probe. The menu-driven setup allows precise control of the switch point signal damping and alarm functions.

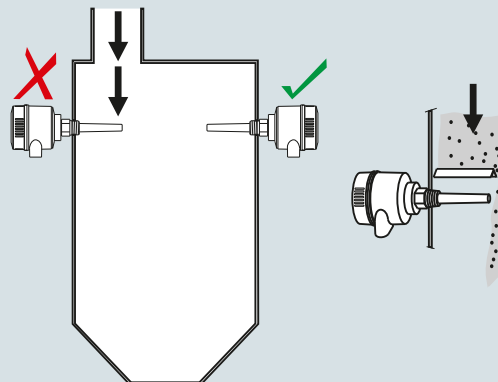
When connected to the PROFIBUS network, advanced diagnostics and set up using SIMATIC PDM are possible.

The CLS200 operates independently of the tank wall or pipe so it does not require an external reference electrode for level detection in a non-conductive vessel such as concrete or plastic (EMC regulations applicable in some regions).

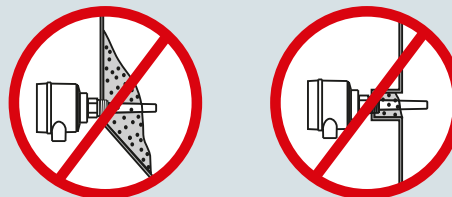
- Key Applications: liquids, slurries, powders, granules, pressurized applications, hazardous areas

Configuration

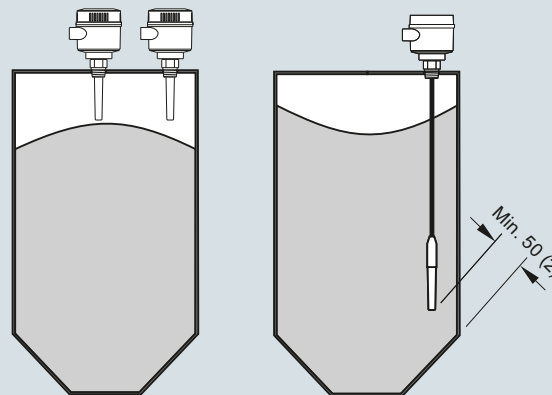
Installation



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



Avoid areas where material build up occurs.



Install probe at least 50 (2) from tank wall.

Pointek CLS200 installation, dimensions in mm (inch)

Technical specifications

Mode of operation		Power supply	
Measuring principle	Inverse frequency shift capacitive level detection	Bus voltage	Standard: 12 ... 30 V DC Intrinsically Safe: 12 ... 24 V DC
Input		Current consumption	12.5 mA
Measured variable	Change in piconFarad (pF)	Certificates and approvals	
Output		General Purpose	CSA, FM, CE, RCM
Output signal		Dust Ignition Proof	ATEX II 1/2 D T100 °C
• Solid-state output		Dust Ignition Proof with IS Probe	CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
- Output	Galvanically isolated	Flameproof Enclosure with IS Probe	ATEX II 1/2 G EEx d[ia] IIC T6 ... T4 ATEX II 1/2 D T100 °C
- Protection	Against reversed polarity (bipolar)	Explosion Proof with IS Probe	CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
- Max. switching voltage	• 30 V (DC) • 30 V peak (AC)	Intrinsically Safe ⁴⁾	ATEX II 1 G EEx ia IIC T6 ... T4 ATEX II 1/2 D IP6X T100 °C CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
- Max. load current	82 mA	Non-incendive	CSA/FM Class I, Div. 2, Groups A, B, C, D CSA/FM Class II, Div. 2, Groups F, G CSA/FM Class III T4 or T6
- Voltage drop	< 1 V, typical at 50 mA	Non-Sparking	ATEX II 3 G Ex nA II T6 ... T4 ATEX II 2 D IP6X T100 °C
- Time delay (ON and/or OFF)	Programmable by user (0 ... 100 s)	Marine	Lloyds Register of Shipping, Categories ENV1, ENV2, and ENV5
• Fail-safe mode	Min. or max.	Others	Pattern Approval (China)
• Connection	Removable terminal block	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
Rated operating conditions¹⁾			
Installation conditions			
• Location	Indoor/outdoor		
Ambient conditions			
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) ²⁾		
• Installation category	II		
• Pollution degree	4		
Medium conditions			
	Liquids, bulk solids, slurries, and interfaces		
• Relative dielectric constant ϵ_r	Min. 1.5		
• Process temperature			
- Without thermal isolator	-40 ... +85 °C (-40 ... +185 °F) ²⁾		
- With thermal isolator	-40 ... +125 °C (-40 ... +257 °F)		
• Process pressure (rod version)	-1 ... +25 bar g (-14.6 ... +365 psi g) (nominal)		
• Process pressure (cable version) ³⁾	-1 ... +10 bar g (-14.6 ... +150 psi g) (nominal)		
• Process pressure (sliding coupling version)	-1 ... +10 bar g (-14.6 ... +150 psi g) (nominal)		
Design			
Material			
• Enclosure	Epoxy-coated aluminum with gasket		
• Optional thermal isolator	316L stainless steel		
Connection	Removable terminal block, max. 2.5 mm ²		
Degree of protection	IP65/Type 4/NEMA 4 (optional IP68)		
Cable inlet	2 x M20 x 1.5 thread (option: 2 x ½" NPT conduit entry including 1 plugged entry)		
Electromagnetic compatibility	To comply with CE EMC regulations (where applicable); the CLS200 should be installed per the instruction manual.		

¹⁾ When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves on page 4/33.

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 on page 4/33.

⁴⁾ Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection

Level Measurement

Point level measurement

RF Capacitance switches

Pointek CLS200 - Digital

Design: Probe				
	Rod version	Sanitary version	Cable version	Sliding Coupling version
Max. length	5 500 mm (216.53 inch)	5 500 mm (216.53 inch)	<ul style="list-style-type: none"> • 30 000 mm (1 181.1 inch) liquids and slurries • 5 000 mm (196.85 inch) solids (under loads) 	5 500 mm (216.53 inch)
Process connection	R ¾", 1", 1¼", 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] ¾", 1", 1¼", 1½" NPT [(Taper), ANSI/ASME B1.20.1] G ¾", 1", 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 316L stainless steel ASME/EN flange	1½", 2" sanitary fitting clamp 316L stainless steel	R ¾", 1", 1¼", 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] ¾", 1", 1¼", 1½" NPT [(Taper), ANSI/ASME B1.20.1] G ¾", 1", 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 316L stainless steel ASME/EN flange	R ¾", 1", 1¼", 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] ¾", 1", 1¼", 1½" NPT [(Taper), ANSI/ASME B1.20.1] G ¾", 1", 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]
Extension material	316L stainless steel optional PFA coated ¹⁾	316L stainless steel	Fluoroethylene propylene (FEP) cable with stainless steel core	316L stainless steel
Sensor wetted parts	PPS (optional PVDF)	PPS (optional PVDF)	PPS (optional PVDF)	PPS (optional PVDF)
O-ring seal material	FKM (optional FFKM) ²⁾	FKM (optional FFKM) ²⁾	FKM (optional FFKM) ²⁾	FKM (optional FFKM) ²⁾
Thermal isolator ³⁾	Optional	Optional	Optional	Optional
Extension	User selected length	User selected length	Cable extension	User selected length

¹⁾ PFA coating (7ML5634 and 7ML5644) has 120 micron thickness

²⁾ For caustic materials, consult a local sales person for alternative O-rings. For more information, please visit http://www.automation.siemens.com/aspa_app.

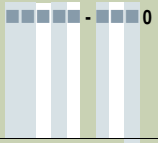
³⁾ Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F).

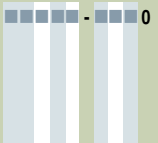
Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Pointek CLS200 RF Capacitance point level switch, digital, rod design Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe. With display and digital communications. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5640- 	Pointek CLS200 RF Capacitance point level switch, digital, rod design Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe. With display and digital communications. Add Order code Y01 and plain text: "Insertion length ... mm"	7ML5640-
Process connection Threaded, 316L stainless steel ¾" NPT [(Taper), ANSI/ASME B1.20.1] 1" NPT [(Taper), ANSI/ASME B1.20.1] 1¼" NPT [(Taper), ANSI/ASME B1.20.1] 1½" NPT [(Taper), ANSI/ASME B1.20.1] R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	0 A 0 B 0 C 0 D 1 A 1 B 1 D 3 A 3 B 3 D	Extended rod, 210 ... 1 000 mm (8.27 ... 39.37 inch) Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch) Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch) Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch) Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch) Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch)	M N P Q R S
Welded flange, 316L stainless steel, raised face 1" ASME, 150 lb 1" ASME, 300 lb 1" ASME, 600 lb 1½" ASME, 150 lb 1½" ASME, 300 lb 1½" ASME, 600 lb 2" ASME, 150 lb 2" ASME, 300 lb 2" ASME, 600 lb 3" ASME, 150 lb 3" ASME, 300 lb 3" ASME, 600 lb 4" ASME, 150 lb 4" ASME, 300 lb 4" ASME, 600 lb	5 A 5 B 5 C 5 D 5 E 5 F 5 G 5 H 5 J 5 K 5 L 5 M 5 N 5 P 5 Q	Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1
Welded flange, 316L stainless steel, Type A flat faced DN 25, PN 16 DN 25, PN 40 DN 40, PN 16 DN 40, PN 40 DN 50, PN 16 DN 50, PN 40 DN 80, PN 16 DN 80, PN 40 DN 100, PN 16 DN 100, PN 40	6 A 6 B 6 C 6 D 6 E 6 F 6 G 6 H 6 J 6 K	Remote mount electronics and mounting bracket With 2 m (79 inch) of cable ²⁾ With 5 m (197 inch) of cable ²⁾	2 3
(Note: flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)		Wetted seals FKM FFKM [for process temperatures above -20 °C (-4 °F)]	0 1
Probe length (length from flange face) (threaded lengths include process thread) Note: No Y01 needed in Order code for standard lengths Compact [threaded 120 mm (4.72 inch), Flanged 98 mm (3.86 inch)] Extended rod, 250 mm (9.84 inch) Extended rod, 350 mm (13.78 inch) Extended rod, 500 mm (19.69 inch) Extended rod, 750 mm (29.53 inch) Extended rod, 1 000 mm (39.37 inch) Extended rod, 1 250 mm (49.21 inch) Extended rod, 1 350 mm (53.15 inch) Extended rod, 1 500 mm (59.06 inch) Extended rod, 1 750 mm (68.90 inch) Extended rod, 2 000 mm (78.74 inch)	A B C D E F G H J K L	Probe material 316L stainless steel with PPS probe body 316L stainless steel with PVDF probe body	0 1
		Approvals Non-Sparking: CE, RCM, ATEX II 3 G Ex nA II T6 ... T4, ATEX II 2 D IP6X T100 °C Dust Ignition Proof: CE, RCM, ATEX II 1/2 D T100 °C Intrinsically Safe: ¹⁾ CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D IP6X T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Non-incendive: CSA/FM Class I, Div. 2, Groups A, B, C, D CSA/FM Class II, Div. 2, Groups F, G CSA/FM Class III T4 or T6 Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 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 Explosion Proof with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CE, RCM)	B C D E F G H J K L

Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS200 - Digital

Selection and Ordering data	Article No.
Pointek CLS200 RF Capacitance point level switch, digital, rod design Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe. With display and digital communications.	7ML5640- 
Enclosure and lid <u>Aluminum epoxy coated</u> 2 x 1/2" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet, IP65 2 x 1/2" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet, IP68	A B C D
1) Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection 2) Available with Approvals options F, G, H, J, and K	

Selection and Ordering data	Article No.
Pointek CLS200 RF Capacitance point level switch, digital, cable design Detects level and interface in liquids, solids, slurries, and foam. Cable extension options to 30 m (98.43 ft), adaptable sensitivity, with the ability to tune out build-up on probe. With display and digital communications.	7ML5641- 
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Process connection <u>Threaded, 316L stainless steel</u> 3/4" NPT [(Taper), ANSI/ASME B1.20.1] 1" NPT [(Taper), ANSI/ASME B1.20.1] 1 1/4" NPT [(Taper), ANSI/ASME B1.20.1] 1 1/2" NPT [(Taper), ANSI/ASME B1.20.1] R 3/4" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] R 1 1/2" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G 3/4" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] G 1 1/2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	0 A 0 B 0 C 0 D 1 A 1 B 1 D 3 A 3 B 3 D
<u>Welded flange, 316L stainless steel, raised face</u> 1" ASME, 150 lb 1" ASME, 300 lb 1" ASME, 600 lb 1 1/2" ASME, 150 lb 1 1/2" ASME, 300 lb 1 1/2" ASME, 600 lb 2" ASME, 150 lb 2" ASME, 300 lb 2" ASME, 600 lb 3" ASME, 150 lb 3" ASME, 300 lb 3" ASME, 600 lb 4" ASME, 150 lb 4" ASME, 300 lb 4" ASME, 600 lb	5 A 5 B 5 C 5 D 5 E 5 F 5 G 5 H 5 J 5 K 5 L 5 M 5 N 5 P 5 Q
<u>Welded flange, 316L stainless steel, Type A flat faced</u> DN 25, PN 16 DN 25, PN 40 DN 40, PN 16 DN 40, PN 40 DN 50, PN 16 DN 50, PN 40 DN 80, PN 16 DN 80, PN 40 DN 100, PN 16 DN 100, PN 40	6 A 6 B 6 C 6 D 6 E 6 F 6 G 6 H 6 J 6 K
(Note: flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)	

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 [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000	C11
Material inspection Certificate Type 3.1 per EN 10204	C12
INMETRO ¹⁾	E34
Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	See page 4/32
1) Available only with Approvals options C and E.	

4

Selection and Ordering data	Article No.
Pointek CLS200 RF Capacitance point level switch, digital, cable design	7ML5641- - - - - - 0
Detects level and interface in liquids, solids, slurries, and foam. Cable extension options to 30 m (98.43 ft), adaptable sensitivity, with the ability to tune out build-up on probe. With display and digital communications.	
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 determined by customer on assembly Extended cable, 6 000 mm (236.22 inch), length can be determined by customer on assembly <u>Add Order code Y01 and plain text:</u> <u>"Insertion length ... mm"</u> Extended cable, 500 ... 5 000 mm (19.69 ... 196.85 inch) Extended cable, 5 001 ... 10 000 mm (196.89 ... 393.70 inch) Extended cable, 10 001 ... 15 000 mm (393.74 ... 590.55 inch) Extended cable, 15 001 ... 20 000 mm (590.59 ... 787.40 inch) Extended cable, 20 001 ... 25 000 mm (787.44 ... 984.25 inch) Extended cable, 25 001 ... 30 000 mm (984.29 ... 1 181.10 inch)	A B C D E F G H
Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1
Remote mount electronics and mounting bracket With 2 m (79 inch) of cable ²⁾ With 5 m (197 inch) of cable ²⁾	2 3
Wetted seals FKM and PTFE FFKM and PTFE [for process temperatures above -20 °C (-4 °F)]	0 1
Probe material FEP jacketed cable with PPS probe body FEP jacketed cable with PVDF probe body	0 1
Approvals Non-Sparking: CE, RCM, ATEX II 3 G Ex nA II T6 ... T4, ATEX II 2 D IP6X T100 °C Dust Ignition Proof: CE, RCM, ATEX II 1/2 D T100 °C Intrinsically Safe: ¹⁾ CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D IP6X T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Non-incendive: CSA/FM Class I, Div. 2, Groups A, B, C, D CSA/FM Class II, Div. 2, Groups F, G CSA/FM Class III T4 or T6 Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 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 Explosion Proof with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CE, RCM)	B C D E F G H J K L

Selection and Ordering data	Article No.
Pointek CLS200 RF Capacitance point level switch, digital, cable design	7ML5641- - - - - - 0
Detects level and interface in liquids, solids, slurries, and foam. Cable extension options to 30 m (98.43 ft), adaptable sensitivity, with the ability to tune out build-up on probe. With display and digital communications.	
Enclosure and lid <u>Aluminum epoxy coated</u> 2 x 1/2" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet, IP65 2 x 1/2" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet, IP68	A B C D
1) Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection 2) Available with Approvals options F, G, H, J, and K	

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 [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000 Material inspection Certificate Type 3.1 per EN 10204 INMETRO ¹⁾	Y01 Y15 C11 C12 E34
Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	See page 4/32

¹⁾ Available only with Approvals options C and E.

Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS200 - Digital

Selection and Ordering data	Article No.
Pointek CLS200 RF Capacitance point level switch, digital, sanitary rod design Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe. With display and digital communications. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5642-0
Process connection Sanitary 316L stainless steel 1" sanitary fitting clamp 1½" sanitary fitting clamp 2" sanitary fitting clamp 2½" sanitary fitting clamp 3" sanitary fitting clamp (Note: Sanitary connection dimensionally corresponds to the applicable ISO 2852 standard.)	8 A 8 B 8 C 8 D 8 E
Probe length (length from process connection face) Note: No Y01 needed in Order code for standard lengths Compact, 98 mm (3.86 inch) Extended rod, 250 mm (9.84 inch) Extended rod, 350 mm (13.78 inch) Extended rod, 500 mm (19.69 inch) Extended rod, 750 mm (29.53 inch) Extended rod, 1 000 mm (39.37 inch) Extended rod, 1 250 mm (49.21 inch) Extended rod, 1 350 mm (53.15 inch) Extended rod, 1 500 mm (59.06 inch) Extended rod, 1 750 mm (68.90 inch) Extended rod, 2 000 mm (78.74 inch) Add Order code Y01 and plain text: "Insertion length ... mm" Extended rod, 110 ... 350 mm (4.3 ... 13.78 inch) Extended rod, 351 ... 1 000 mm (13.82 ... 39.37 inch) Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch) Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch) Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch) Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch) Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch)	A B C D E F G H J K L M N P Q R S T
Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1
Remote mount electronics and mounting bracket With 2 m (79 inch) of cable ²⁾ With 5 m (197 inch) of cable ²⁾	2 3
Wetted seals FKM FFKM [for process temperatures above -20 °C (-4 °F)]	0 1
Probe material 316L stainless steel with PPS probe body 316L stainless steel with PVDF probe body	0 1
Approvals Non-Sparking: CE, RCM, ATEX II 3 G Ex nA II T6 ... T4, ATEX II 2 D IP6X T100 °C Dust Ignition Proof: CE, RCM, ATEX II 1/2 D T100 °C Intrinsically Safe: ¹⁾ CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D IP6X T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C	B C D E

Selection and Ordering data	Article No.
Pointek CLS200 RF Capacitance point level switch, digital, sanitary rod design Detects level and interface in liquids, solids, slurries, and foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe. With display and digital communications. Non-incendive: CSA/FM Class I, Div. 2, Groups A, B, C, D CSA/FM Class II, Div. 2, Groups F, G CSA/FM Class III T4 or T6 Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 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 Explosion Proof with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CE, RCM)	7ML5642-0
Enclosure and lid Aluminum epoxy coated 2 x ½" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet, IP65 2 x ½" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet, IP68	F G H J K L A B C D
¹⁾ Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection ²⁾ Available with Approvals options F, G, H, J, and K	

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 [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000	C11
Material inspection Certificate Type 3.1 per EN 10204	C12
INMETRO ¹⁾	E34
Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	See page 4/32

¹⁾ Available only with Approvals options C and E.

Selection and Ordering data	Article No.
Pointek CLS200 RF Capacitance point level switch, digital, sliding coupling design	7ML5643-
Detects level and interface in liquids, solids, slurries, and, foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe. With display and digital communications.	0
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Process connection	
<u>Threaded, 316L stainless steel</u>	
3/4" NPT [(Taper), ANSI/ASME B1.20.1]	0 A
1" NPT [(Taper), ANSI/ASME B1.20.1]	0 B
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 3/4" [(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 1 1/2" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 D
G 3/4" [(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 1 1/2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 D
Probe length	
(length from flange face)	
(threaded lengths include process thread)	
<u>Note: No Y01 needed in Order code for standard lengths</u>	
Extended rod, 350 mm (13.78 inch)	C
Extended rod, 500 mm (19.69 inch)	D
Extended rod, 750 mm (29.53 inch)	E
Extended rod, 1 000 mm (39.37 inch)	F
Extended rod, 1 250 mm (49.21 inch)	G
Extended rod, 1 350 mm (53.15 inch)	H
Extended rod, 1 500 mm (59.06 inch)	J
Extended rod, 1 750 mm (68.90 inch)	K
Extended rod, 2 000 mm (78.74 inch)	L
<u>Add Order code Y01 and plain text:</u>	
<u>"Insertion length ... mm"</u>	
Extended rod, 350 ... 1 000 mm (13.82 ... 39.37 inch)	M
Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch)	N
Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch)	P
Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch)	Q
Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch)	R
Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch)	S
Thermal isolator	
Without thermal isolator	0
With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	1
Remote mount electronics and mounting bracket	
With 2 m (79 inch) of cable ²⁾	2
With 5 m (197 inch) of cable ²⁾	3
Wetted seals	
FKM and PTFE	0
FFKM and PTFE [for process temperatures above -20 °C (-4 °F)]	1
Probe material	
316L stainless steel with PPS probe body	0
316L stainless steel with PVDF probe body	1
Approvals	
Non-Sparking:	B
CE, RCM, ATEX II 3 G Ex nA II T6 ... T4, ATEX II 2 D IP6X T100 °C	
Dust Ignition Proof:	C
CE, RCM, ATEX II 1/2 D T100 °C	
Intrinsically Safe: ¹⁾	D
CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D IP6X T100 °C	

Selection and Ordering data	Article No.
Pointek CLS200 RF Capacitance point level switch, digital, sliding coupling design	7ML5643-
Detects level and interface in liquids, solids, slurries, and, foam. Adjustable, 5.5 m (18.04 ft), insertion, adaptable sensitivity, with the ability to tune out build-up on probe. With display and digital communications.	0
Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C	E
Non-incendive: CSA/FM Class I, Div. 2, Groups A, B, C, D CSA/FM Class II, Div. 2, Groups F, G CSA/FM Class III T4 or T6	F
Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4	G
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	H
Explosion Proof with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4	J
General Purpose (CSA, FM)	K
General Purpose (CE, RCM)	L
Enclosure and lid	
<u>Aluminum epoxy coated</u>	
2 x 1/2" NPT via adapter - cable inlet, IP65	A
2 x M20 x 1.5 cable inlet, IP65	B
2 x 1/2" NPT via adapter - cable inlet, IP68	C
2 x M20 x 1.5 cable inlet, IP68	D
¹⁾ Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection	
²⁾ Available with Approvals options F, G, H, J, and K	

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 [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000	C11
Material inspection Certificate Type 3.1 per EN 10204	C12
INMETRO ¹⁾	E34
Operating Instructions	
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	See page 4/32

¹⁾ Available only with Approvals options C and E.

Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS200 – Standard and Digital

Selection and Ordering data

Article No.

Accessories

SensGuard, 3/4" NPT (PPS)

Only available for CLS200 with 3/4" NPT thread

7ML1830-1DL

SensGuard, R 1" (BSPT) (PPS)

Only available for CLS200 with 3/4" NPT thread

7ML1830-1DM

One metallic cable gland M20 x 1.5, -40 ... +80 °C (-40 ... +176 °F), Dust Ignition Proof, with integrated shield connection (available for PROFIBUS PA)

7ML1930-1AQ

General Purpose

1/2" NPT General Purpose Cable Entry IP68/IP69K NEMA 6, -40 ... +80 °C (-40 ... +176 °F), Dust Ignition Proof, cable size 6 ... 12 mm (0.236 ... 0.472 inch)

7ML1830-1JA

M20 x 1.5 General Purpose Cable Entry IP68/IP69K NEMA 6, -40 ... +80 °C (-40 ... +176 °F), Dust Ignition Proof, cable size 7 ... 12 mm (0.275 ... 0.472 inch)

7ML1830-1JC

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)

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.

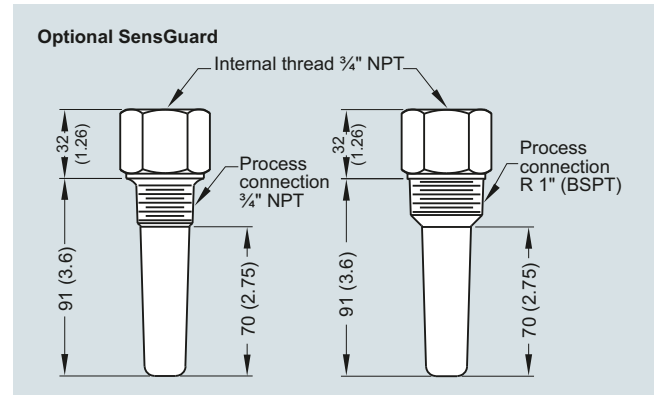
Customers interested in a custom designed device should consult a local sales person. For more information, please visit

http://www.automation.siemens.com/aspa_app.

Pointek Specials

See page 4/60

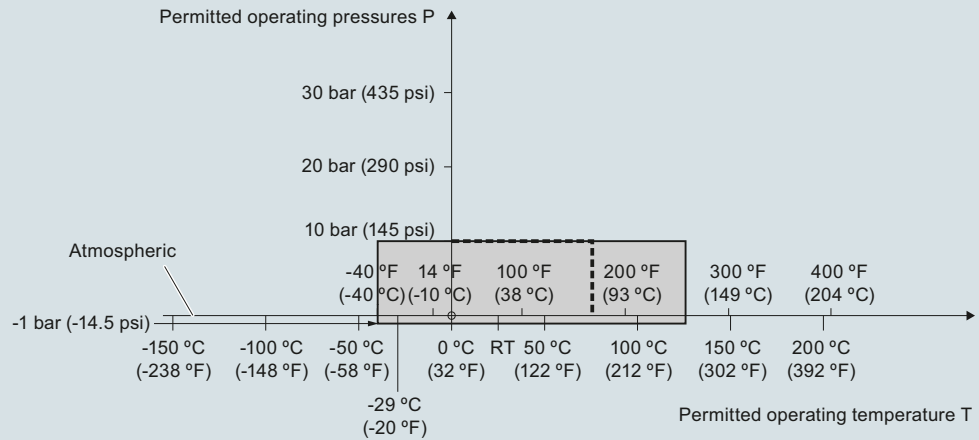
Options



Optional SensGuard, dimensions in mm (inch)

Characteristic curves

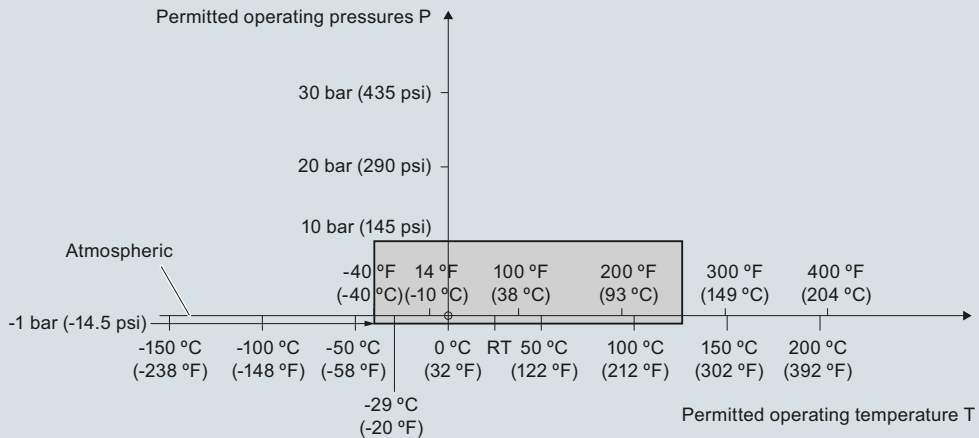
Pressure/temperature curve
CLS200 sliding coupling
threaded process connections
(7ML5633 and 7ML5643)



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

Pointek CLS200 process pressure/temperature derating curves (7ML5633 and 7ML5643)

Pressure/temperature curve
CLS200 cable
Threaded process connections
(7ML5631 and 7ML5641)



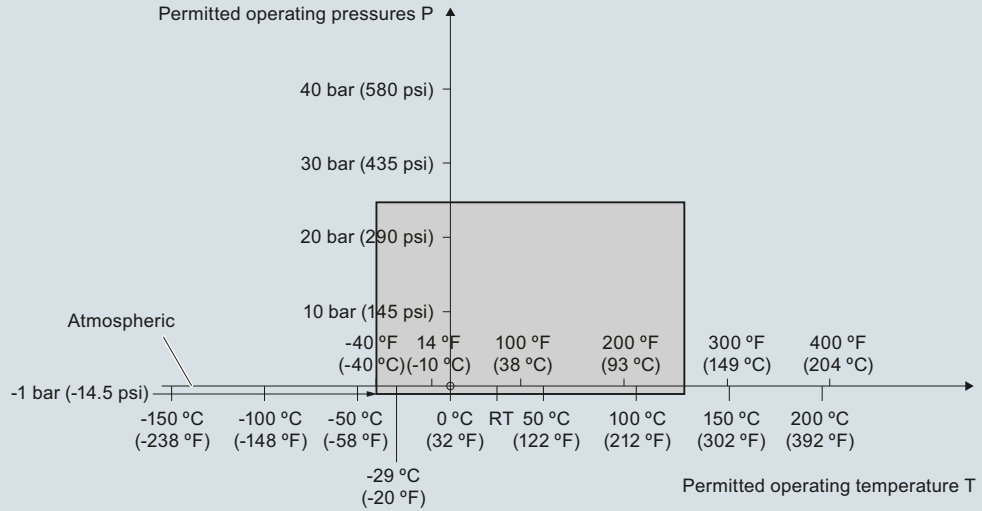
Pointek CLS200 process pressure/temperature derating curves (7ML5631 and 7ML5641)

Level Measurement

Point level measurement
RF Capacitance switches

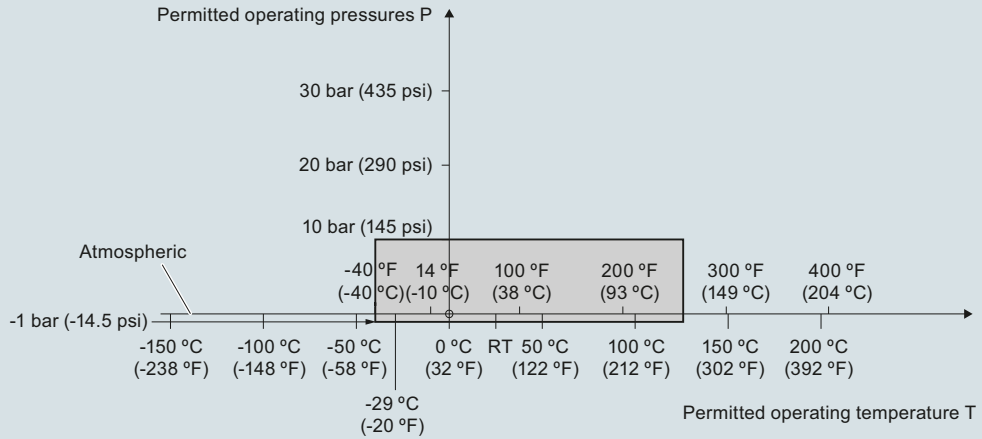
Pointek CLS200 - Standard and Digital

Pressure/temperature curve
CLS200 compact and extended rod
Threaded process connections
(7ML5630 and 7ML5640)



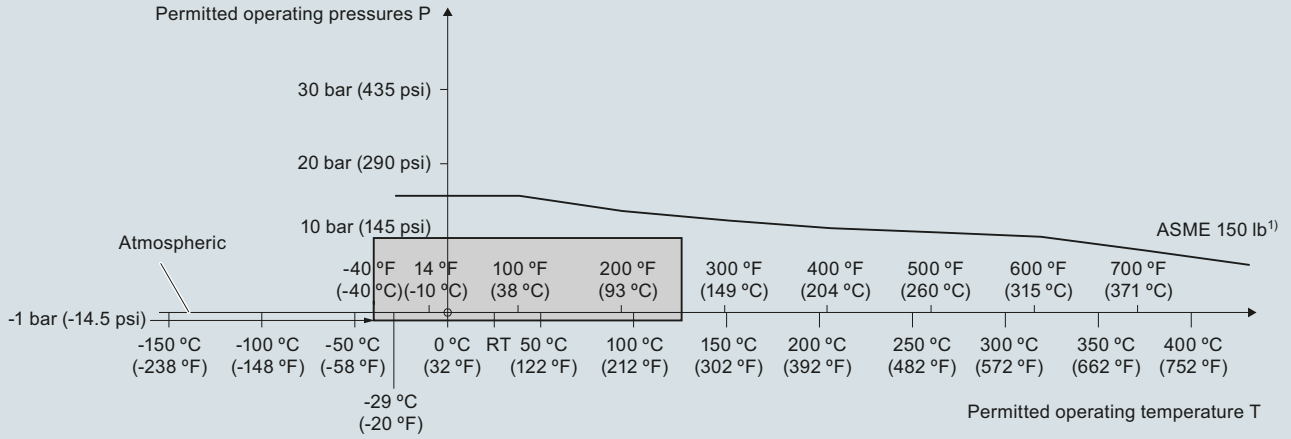
Pointek CLS200 process pressure/temperature derating curves (7ML5630 or 7ML5640)

Pressure/temperature curve
CLS200 compact and extended sanitary type
Sanitary process connections
(7ML5632 and 7ML5642)



Pointek CLS200 process pressure/temperature derating curves (7ML5632 and 7ML5642)

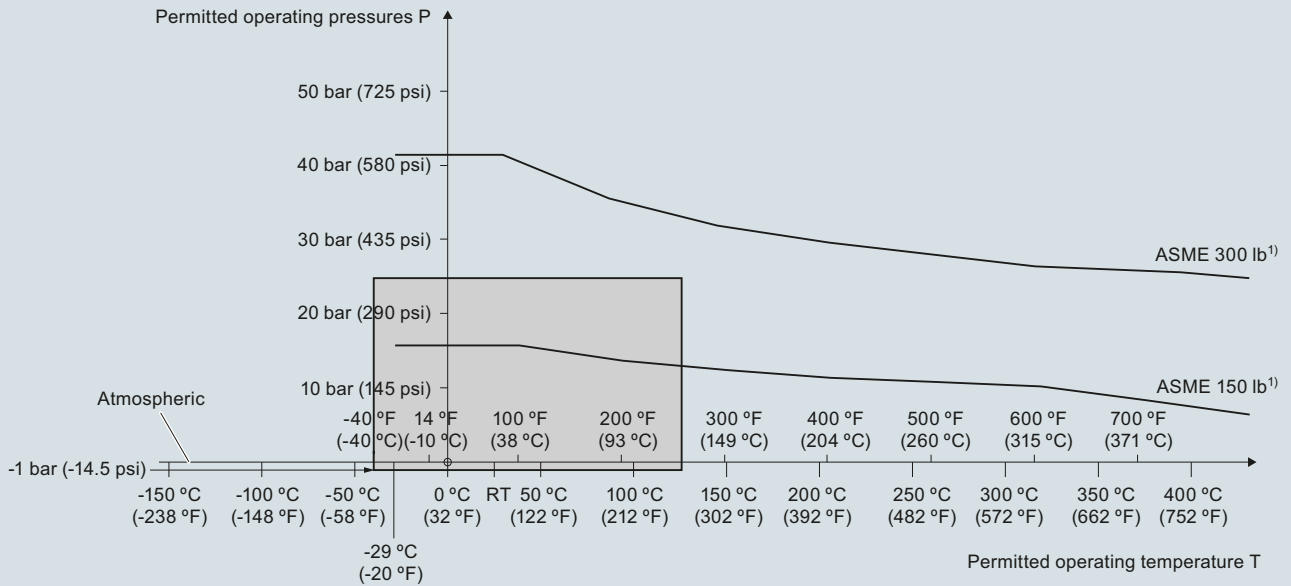
Pressure/temperature curve
CLS200, cable
ASME flanged process connections
(7ML5631 and 7ML5641)



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

Pointek CLS200 process pressure/temperature derating curves (7ML5631 and 7ML5641)

Pressure/temperature curve
CLS200 compact and extended rod
ASME flanged process connections
(7ML5630 and 7ML5640)



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

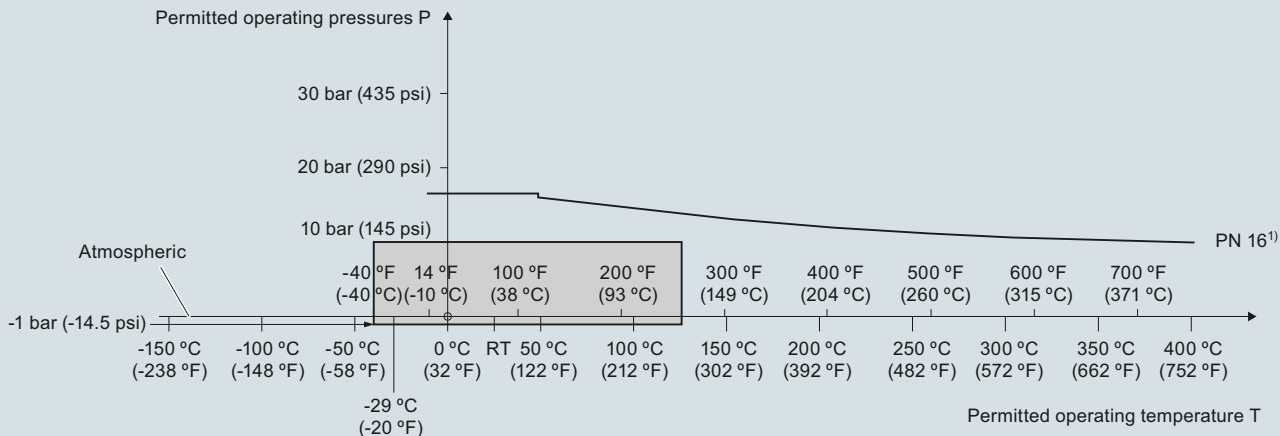
Pointek CLS200 process pressure/temperature derating curves (7ML5630 and 7ML5640)

Level Measurement

Point level measurement
RF Capacitance switches

Pointek CLS200 - Standard and Digital

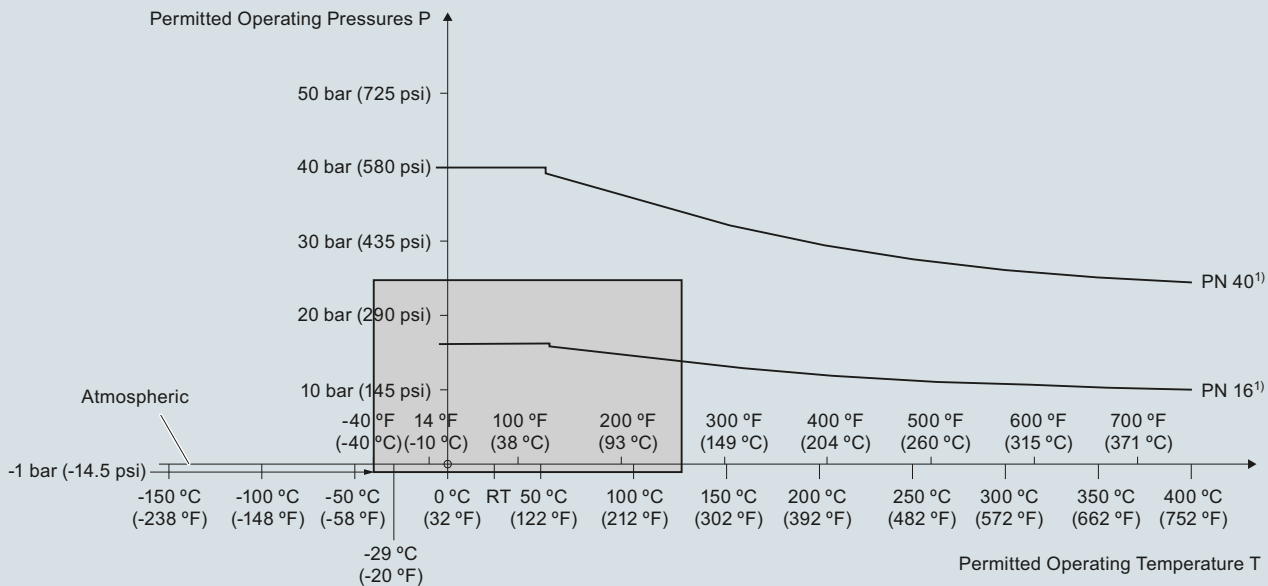
Pressure/temperature curve
CLS200 cable
EN flanged process connections
(7ML5631 and 7ML5641)



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

Pointek CLS200 process pressure/temperature derating curves (7ML5631 and 7ML5641)

Pressure/Temperature Curve
CLS200 Compact and Extended Rod
EN Flanged Process Connections
(7ML5630 and 7ML5640)

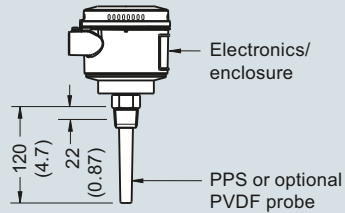


1) The curve denotes the minimum allowable flange class for the shaded area below.

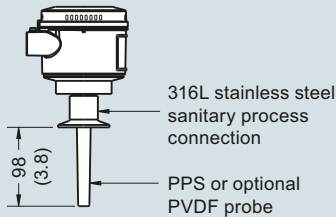
Pointek CLS200 process pressure/temperature derating curves (7ML5630 and 7ML5640)

Dimensional drawings

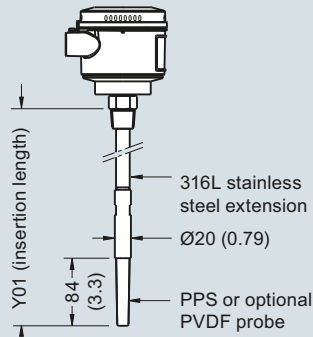
Compact version
Threaded
(7ML5630 and 7ML5640)



Sanitary compact version
Sanitary fitting
(7ML5632 and 7ML5642)

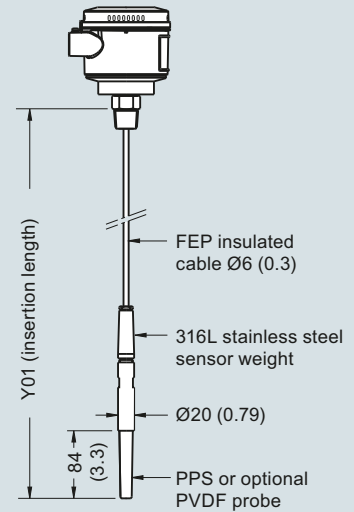


Extended rod version
Threaded
(7ML5630 and 7ML5640)

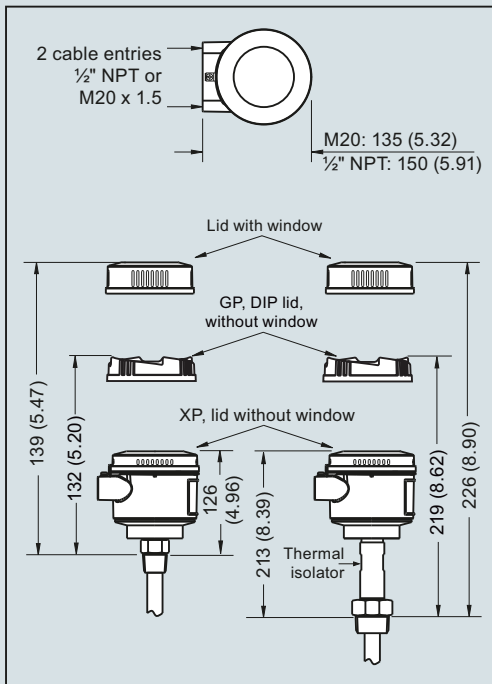


Min. insertion length = 200 (7.87)
Max. insertion length = 5 500 (216)

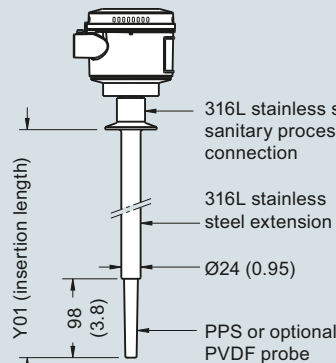
Extended cable version
Threaded
(7ML5631 and 7ML5641)



Min. insertion length = 500 (19.69)
Max. insertion length = 30 000 (1 181)
Applicable for liquids and solids applications. Cable can be shortened on site.

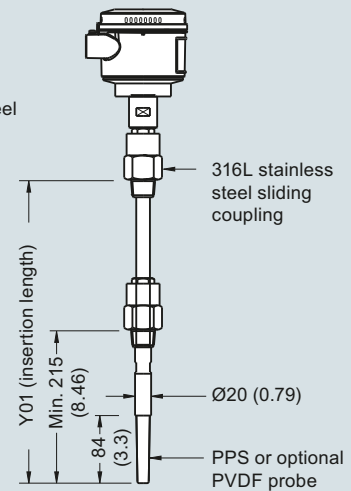


Sanitary extended version
Sanitary fitting
(7ML5632 and 7ML5642)



Min. insertion length = 110 (4.3)
Max. insertion length = 5 500 (216)

Sliding coupling version
Threaded
(7ML5633 and 7ML5643)



Min. insertion length = 350 (13.82)
Max. insertion length = 5 500 (216)

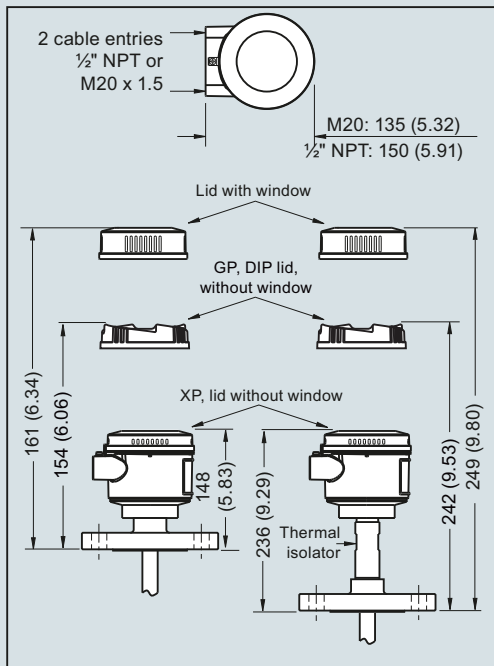
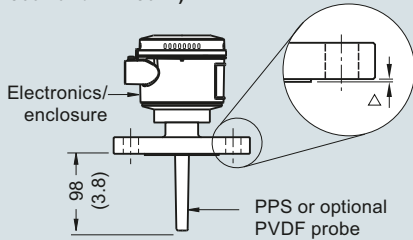
Pointek CLS200 threaded/sanitary process connections, dimensions in mm (inch)

Level Measurement

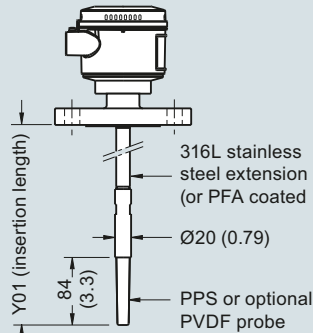
Point level measurement
RF Capacitance switches

Pointek CLS200 - Standard and Digital

Compact version
Welded Flange (7ML5630 and 7ML5640)
Welded Flange, PFA coated
(7ML5634 and 7ML5644)

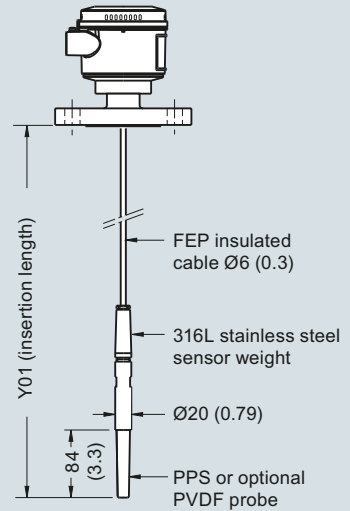


Extended rod version
Welded Flange (7ML5630 and 7ML5640)
Welded Flange, PFA coated
(7ML5634 and 7ML5644)



Min. insertion length = 200 (7.87)
Max. insertion length = 5 500 (216)

Extended cable version
Welded Flange
(7ML5631 and 7ML5641)



Min. insertion length = 500 (19.69)
Max. insertion length = 30 000 (1 181)
Applicable for liquids and solids applications. Cable can be shortened on site.

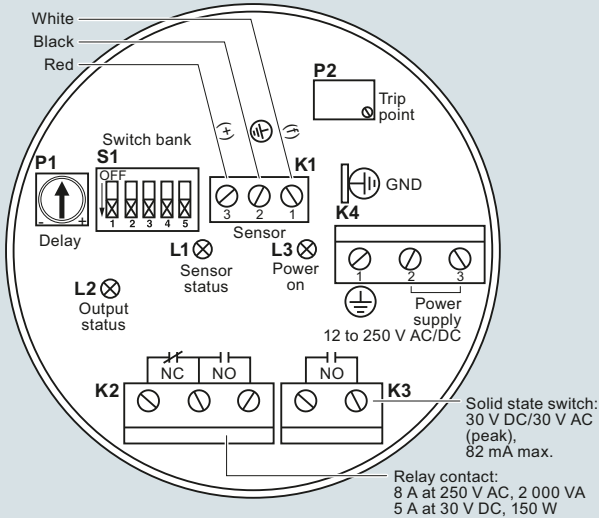
Flange Facing (raised face)	
Flange Class	Facing thickness
△ ASME 150/300	2 (0.08)
△ ASME 600/900	7 (0.28)
△ PN16/40	2 (0.08)

Insertion length does not include any raised face/gasket face dimension (see Flange Facing Table above)

Pointek CLS200 flanged process connections, dimensions in mm (inch)

Circuit diagrams

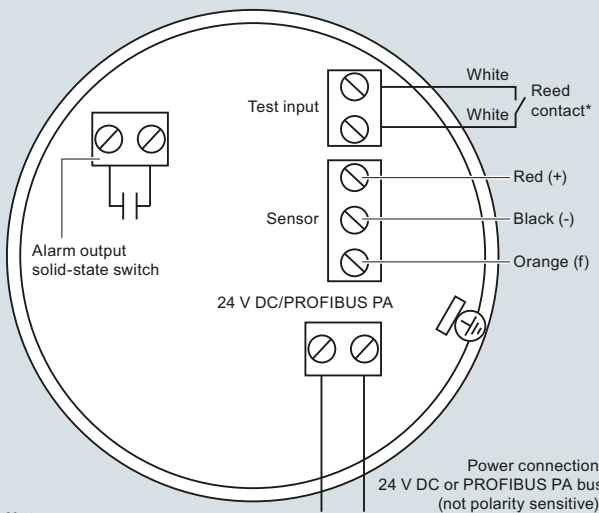
Wiring: Pointek CLS200 standard



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 CLS200 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 CLS200 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 CLS200 connections