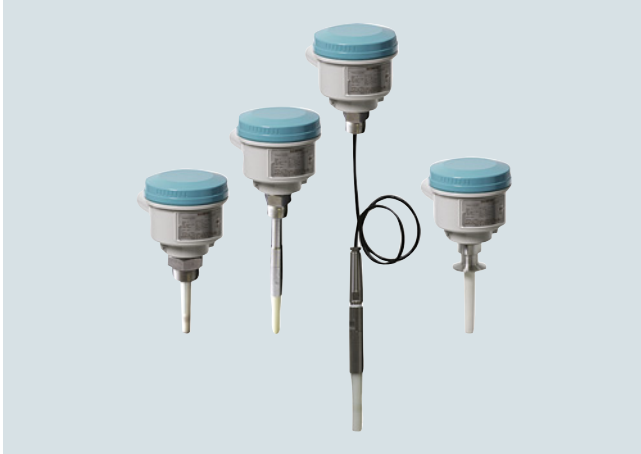


## Overview



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

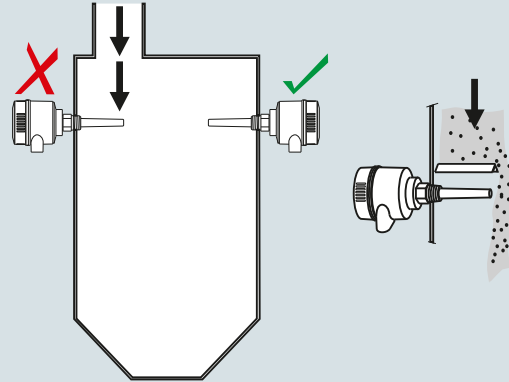
Pointek CLS200 standard version has 3 LED indicators with basic relay and solid-state switch alarms. Universal switch for solids/liquids and interface.

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).

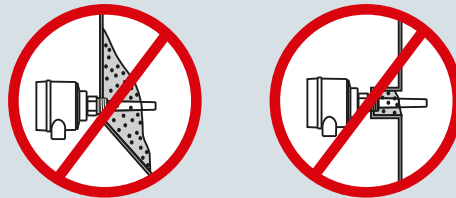
- Key Applications: liquids, slurries, powders, granules, pressurized applications, hazardous areas

## Configuration

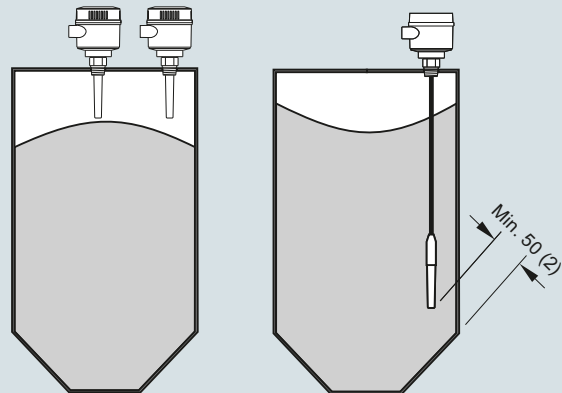
### Installation



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)

## Level measurement

Point level measurement

RF Capacitance switches

### Pointek CLS200 - Standard

#### Technical specifications

<b>Mode of operation</b>	
Measuring principle	Inverse frequency shift capacitive level detection
<b>Input</b>	
Measured variable	Change in picoFarad (pF)
<b>Output</b>	
Output signal	1 SPDT Form C relay
• Relay output	<ul style="list-style-type: none"> <li>• 30 V DC</li> <li>• 250 V AC</li> </ul>
- Max. contact voltage	<ul style="list-style-type: none"> <li>• 5 A DC</li> <li>• 8 A AC</li> </ul>
- Max. contact current	150 W DC
- Max. switching capacity	2 000 VA AC
- Time delay (ON and/or OFF)	1 ... 60 s
• Solid-state output	Galvanically isolated
- Output	Against reversed polarity (bipolar)
- Protection	<ul style="list-style-type: none"> <li>• 30 V DC</li> <li>• 30 V peak AC</li> </ul>
- Max. switching voltage	82 mA
- Max. load current	< 1 V, typical at 50 mA
- Voltage drop	1 ... 60 s
- Time delay (pre or post switching)	
<b>Rated operating conditions<sup>1)</sup></b>	
Installation conditions	Indoor/outdoor
• Location	
Ambient conditions	
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) <sup>2)</sup>
• Storage temperature	-40 ... +85 °C (-40 ... +185 °F)
• Installation category	II
• Pollution degree	4
Medium conditions	Liquids, bulk solids, slurries and interfaces
• Relative dielectric constant $\epsilon_r$	Min. 1.5
• Process temperature	
- Without thermal isolator	-40 ... +85 °C (-40 ... +185 °F) <sup>2)</sup>
- 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) <sup>3)</sup>	-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)
<b>Electromagnetic compatibility</b>	
	To comply with CE EMC regulations (where applicable); the CLS200 should be installed per the instruction manual.

<b>Design</b>	
Material	Epoxy-coated aluminum with gasket
• Enclosure	316L stainless steel
• Optional thermal isolator	
Connection	Removable terminal block, max. 2.5mm <sup>2</sup>
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)
<b>Power supply</b>	
	12 ... 250 V AC/DC, 0 ... 60 Hz max. 2 W
<b>Certificates and approvals</b>	
General Purpose	CSA, FM, CE, RCM
Dust Ignition Proof	ATEX II ½ D T100 °C
Flameproof Enclosure With IS Probe	ATEX II 1 G EEx d[ia] IIC T6 ... T4 ATEX II ½ 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

<sup>1)</sup> When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves on page 5/34.

<sup>2)</sup> Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F)

<sup>3)</sup> Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves on page 5/34.

**Technical specifications** (continued)

<b>Design: Probe</b>				
	<b>Rod version</b>	<b>Sanitary version</b>	<b>Cable version</b>	<b>Sliding Coupling version</b>
Max. length	5 500 mm (216.53 inch)	5 500 mm (216.53 inch)	<ul style="list-style-type: none"> <li>• 30 000 mm (1 181.1 inch) liquids and slurries</li> <li>• 5 000 mm (196.85 inch) solids (under loads)</li> </ul>	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 <sup>1)</sup>	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) <sup>2)</sup>	FKM (optional FFKM) <sup>2)</sup>	FKM (optional FFKM) <sup>2)</sup>	FKM (optional FFKM) <sup>2)</sup>
Thermal isolator <sup>3)</sup>	Optional	Optional	Optional	Optional
Extension	User selected length	User selected length	Cable extension	User selected length

<sup>1)</sup> PFA coating (7ML5634 and 7ML5644) has 120 micron thickness

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

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

# Level measurement

## Point level measurement

### RF Capacitance switches

#### Pointek CLS200 - Standard

#### Selection and ordering data

#### Article No.

#### 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.

#### Process connection

Threaded, 316L stainless steel

- 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 SO 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**

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**
- 1 1/2" ASME, 150 lb **5 D**
- 1 1/2" ASME, 300 lb **5 E**
- 1 1/2" ASME, 600 lb **5 F**
- 2" ASME, 150 lb **5 G**
- 2" ASME, 300 lb **5 H**
- 2" ASME, 600 lb **5 J**
- 3" ASME, 150 lb **5 K**
- 3" ASME, 300 lb **5 L**
- 3" ASME, 600 lb **5 M**
- 4" ASME, 150 lb **5 N**
- 4" ASME, 300 lb **5 P**
- 4" ASME, 600 lb **5 Q**

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

- DN 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

- Compact [threaded 120 mm (4.72 inch), Flanged 98 mm (3.86 inch)] **A**
- Extended rod, 250 mm (9.84 inch) **B**
- 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**

#### 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) **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<sup>1)2)</sup> **2**
- With 5 m (197 inch) of cable<sup>1)2)</sup> **3**

#### Wetted seals

- FKM **0**
- FFKM [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

- Dust Ignition Proof:CE, RCM, ATEX II 1/2 D T100 °C **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 **D**
- 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 **E**
- Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G, CSA/FM Class III T4 **F**
- Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D, CSA/FM Class II, Div. 1, Groups E, F, G, CSA/FM Class III T4 **G**
- General Purpose (CSA, FM) **H**
- General Purpose (CE, RCM) **J**
- General Purpose (CSA, FM, CE, RCM) with WHG approval **K**

#### Enclosure and lid

- Aluminum epoxy coated **A**
- 2 x 1/2" NPT via adapter - cable inlet, IP65 **B**
- 2 x M20 x 1.5 cable inlet, IP65 **C**
- 2 x 1/2" NPT via adapter - cable inlet, IP68 **D**
- 2 x M20 x 1.5 cable inlet IP68 **D**

<sup>1)</sup> Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection.  
<sup>2)</sup> Available with Approval options F, G, and H.

4

Selection and ordering data	Order code	Article No.
<b>Further designs</b>		
Please add <b>"-Z"</b> to Article No. and specify Order code(s).		
Total insertion length: enter the total insertion length in plain text description	<b>Y01</b>	
Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	<b>Y15</b>	
Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000	<b>C11</b>	
Material inspection Certificate Type 3.1 per EN 10204	<b>C12</b>	
SIL/IEC 61508 Declaration of Conformity [SIL 2 (overspill)]	<b>C20</b>	
INMETRO <sup>1)</sup>	<b>E34</b>	
<b>Operating Instructions</b>		
All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>		
<b>Accessories</b>	See page <b>4/41</b>	
1) Available only with Approvals options C, D, E.		
		<b>7ML5631-</b>
		<b>switch, cable design</b>
		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.
		Click on the Article No. for the online configuration in the PIA Life Cycle Portal.
		<b>Process connection</b>
		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]
		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
		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.)
		<b>0 A</b>
		<b>0 B</b>
		<b>0 C</b>
		<b>0 D</b>
		<b>1 A</b>
		<b>1 B</b>
		<b>1 D</b>
		<b>3 A</b>
		<b>3 B</b>
		<b>3 D</b>
		<b>5 A</b>
		<b>5 B</b>
		<b>5 C</b>
		<b>5 D</b>
		<b>5 E</b>
		<b>5 F</b>
		<b>5 G</b>
		<b>5 H</b>
		<b>5 J</b>
		<b>5 K</b>
		<b>5 L</b>
		<b>5 M</b>
		<b>5 N</b>
		<b>5 P</b>
		<b>5 Q</b>
		<b>6 A</b>
		<b>6 B</b>
		<b>6 C</b>
		<b>6 D</b>
		<b>6 E</b>
		<b>6 F</b>
		<b>6 G</b>
		<b>6 H</b>
		<b>6 J</b>
		<b>6 K</b>

## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS200 - Standard

#### Selection and ordering data

#### Article No.

#### 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.

##### 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<sup>1)</sup>

Extended cable, 6 000 mm (236.22 inch), length can be determined by customer on assembly<sup>1)</sup>

Add Order code Y01 and plain text: "Insertion length ... mm"

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 ... 787.4 inch)

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

Extended cable, 25 001 ... 30 000 mm (984.29 ... 1 181.1 inch)

##### Thermal isolator

Without thermal isolator

With thermal isolator [for process connection temperatures over 85 °C (185 °F)]

##### Remote mount electronics and mounting bracket

With 2 m (79 inch) of cable<sup>2)</sup>

With 5 m (197 inch) of cable<sup>2)</sup>

##### Wetted seals

FKM and PTFE

FFKM and PTFE [for process temperatures above -20 °C (-4 °F)]

##### Probe material

FEP jacketed cable with PPS probe body

FEP jacketed cable 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

##### Enclosure and lid

Aluminum epoxy coated

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

Article No.	Order code
7ML5631-	
0	
A	
B	
C	
D	
E	
F	
G	
H	
0	
1	
2	
3	
0	
1	
0	
1	
C	
D	
E	
F	
G	
H	
J	
K	
A	
B	
C	
D	

#### 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

SIL/IEC 61508 Declaration of Conformity [SIL 2 (overspill)]

C20

INMETRO<sup>1)</sup>

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 4/41

<sup>1)</sup> Available only with Approvals options C, D, E.

Selection and ordering data	Article No.	Article No.
<p><b>Pointek CLS200 RF Capacitance point level switch, sanitary rod design</b></p> <p>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.</p> <p>↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>	7ML5632- - - - - - 0	<p><b>Pointek CLS200 RF Capacitance point level switch, sanitary rod design</b></p> <p>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.</p>
<p><b>Process connection</b></p> <p>Sanitary 316L stainless steel</p> <p>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)</p>	8 A 8 B 8 C 8 D 8 E	<p><b>Approvals</b></p> <p>Dust Ignition Proof: CE, RCM, ATEX II ½ D T100 °C</p> <p>Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1 G EEx d[ia] IIC T6 ... T4, ATEX II ½ D T100 °C</p> <p>Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1 G EEx d[ia] IIC T6 ... T4, ATEX II ½ D T100 °C</p> <p>Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T4, ATEX II ½ D T100 °C</p> <p>Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G, CSA/FM Class III T4</p> <p>General Purpose (CSA, FM) General Purpose (CE, RCM) General Purpose (CSA, FM, CE, RCM) with WHG approval</p>
<p><b>Probe length</b></p> <p>(length from process connection face)</p> <p>Note: No Y01 needed in Order code for standard lengths</p> <p>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)</p> <p>Add Order code Y01 and plain text: "Insertion length ... mm"</p> <p>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)</p>	A B C D E F G H J K L M N P Q R S T	<p><b>Enclosure and lid</b></p> <p><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</p>
<p><b>Thermal isolator</b></p> <p>Thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]</p>	0 1	<p><b>Further designs</b></p> <p>Please add "-Z" to Article No. and specify Order code(s).</p> <p>Total insertion length: enter the total insertion length in plain text description</p> <p>Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text</p> <p>Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000</p> <p>Material inspection Certificate Type 3.1 per EN 10204</p> <p>SIL/IEC 61508 Declaration of Conformity [SIL 2 (overspill)]</p> <p>INMETRO<sup>1)</sup></p>
<p><b>Remote mount electronics and mounting bracket</b></p> <p>Remote mount electronics and mounting bracket Remote mount electronics with 5 m (197 inch) of cable</p>	2 3	<p><b>Operating Instructions</b></p> <p>All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a></p>
<p><b>Wetted seals</b></p> <p>FKM FFKM [for process temperatures above -20 °C (-4 °F)]</p>	0 1	<p><b>Accessories</b></p> <p>See page 4/41</p>
<p><b>Probe material</b></p> <p>316L stainless steel with PPS probe body 316L stainless steel with PVDF probe body</p>	0 1	<p><b>Order code</b></p> <p>Y01 Y15 C11 C12 C20 E34</p>

<sup>1)</sup> Available only with Approvals options C, D, E.



## Level measurement

### Point level measurement

### RF Capacitance switches

#### Pointek CLS200 - Standard

#### 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.

##### 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]

##### Probe length

(length from flange face)

(threaded lengths include process thread)

Note: No Y01 needed in Order code for standard lengths

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, 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)

##### Thermal isolator

Without thermal isolator

With thermal isolator [for process connection temperatures over 85 °C (185 °F)]

##### Remote mount electronics and mounting bracket

With 2 m (79 inch) of cable<sup>1)</sup>

With 5 m (197 inch) of cable<sup>1)</sup>

##### Wetted seals

FKM and PTFE

FFKM and PTFE [for process temperatures above -20 °C (-4 °F)]

##### Probe material

316L stainless steel with PPS probe body

316L stainless steel with PVDF probe body

Article No.
7ML5633-0
0 A
0 B
0 C
0 D
1 A
1 B
1 D
3 A
3 B
3 D
C
D
E
F
G
H
J
K
L
M
N
P
Q
R
S
0
1
2
3
0
1
0
1

#### 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.

##### 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

##### 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

<sup>1)</sup> Available with Approvals options F ... H.

##### 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<sup>1)</sup>

##### Operating Instructions

All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/processinstrumentation/documentation>

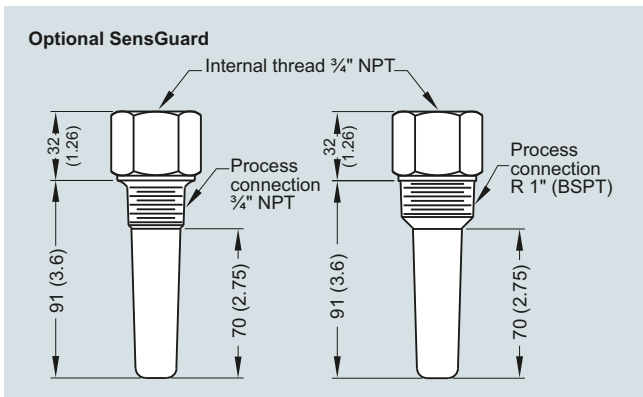
##### Accessories

Article No.	Order code
7ML5633-0	
C	
D	
E	
F	
G	
H	
J	
K	
A	
B	
C	
D	
Y01	
Y15	
C11	
C12	
C20	
E34	
See page 4/41	

<sup>1)</sup> Available only with Approval options C, D, E.



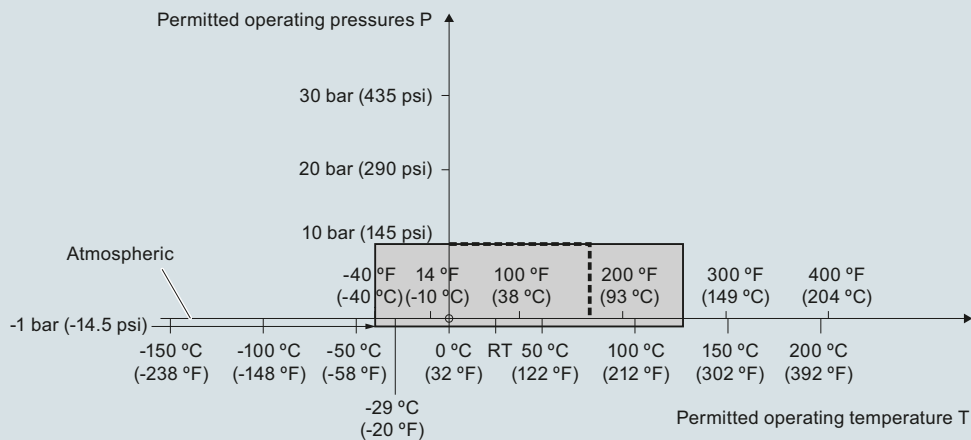
**Options**



Optional SensGuard, dimensions in mm (inch)

**Characteristic curves**

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



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

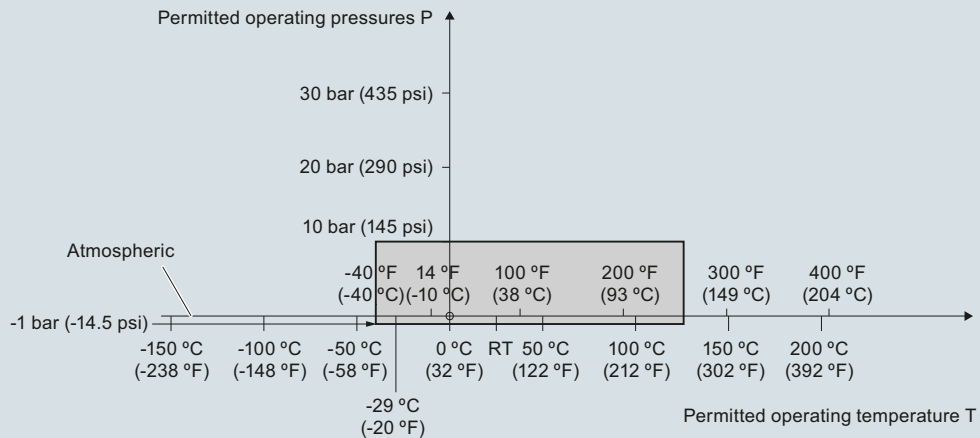
## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS200 - Standard

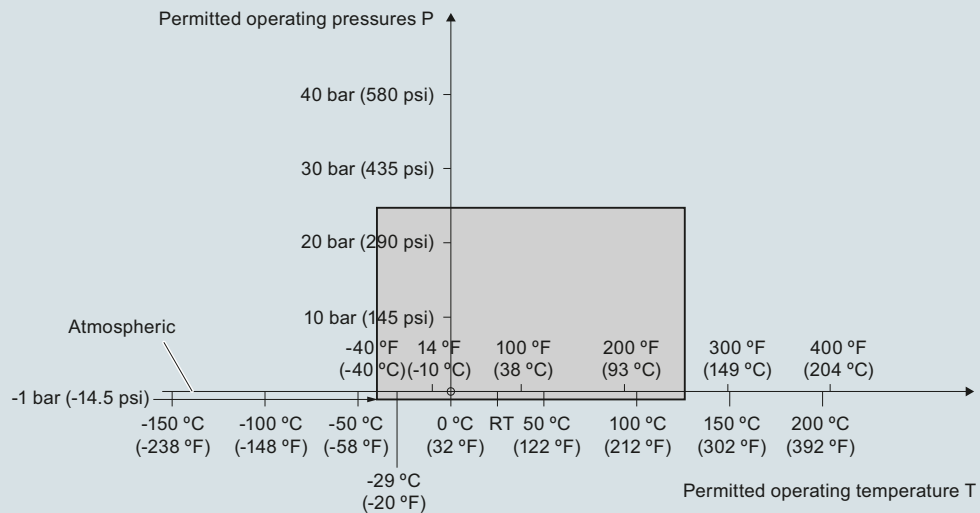
#### Characteristic curves (continued)

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



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

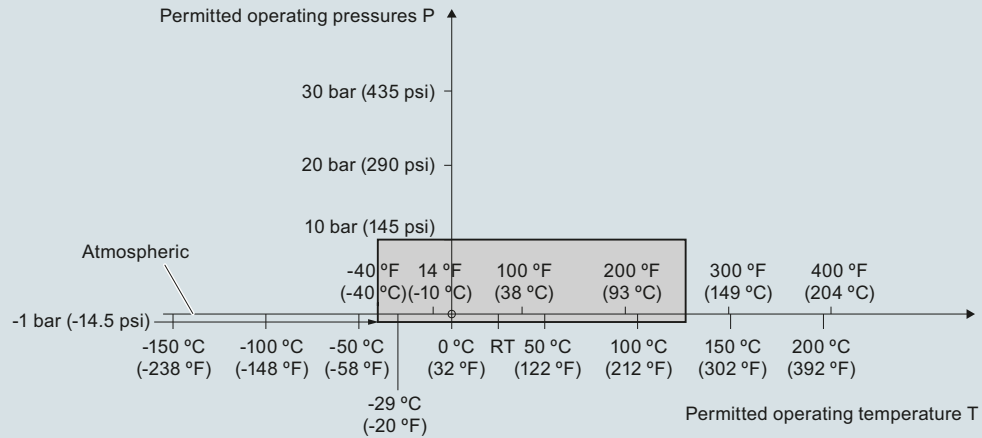
**Pressure/temperature curve**  
CLS200 compact and extended rod  
Threaded process connections  
(7ML5630 and 7ML5640)



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

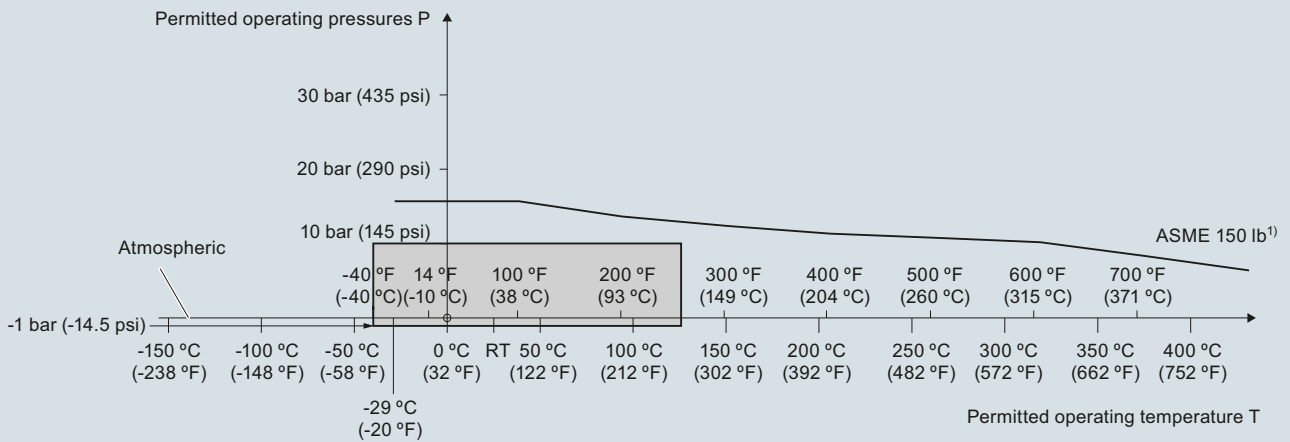
**Characteristic curves (continued)**

**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)**



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

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

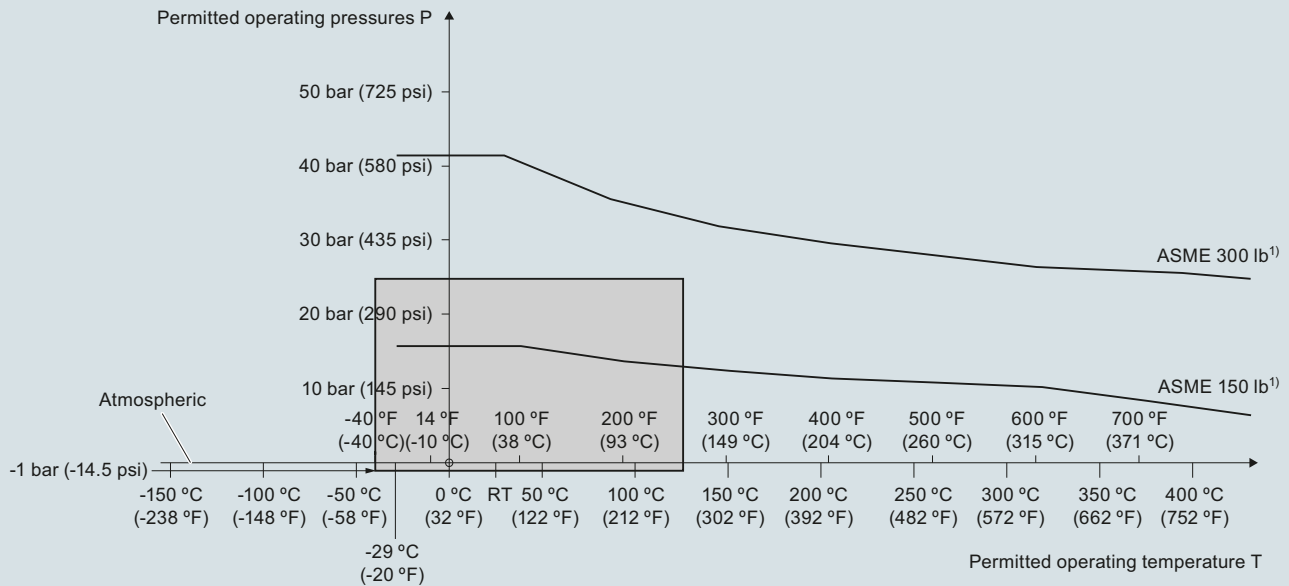
## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS200 - Standard

#### Characteristic curves (continued)

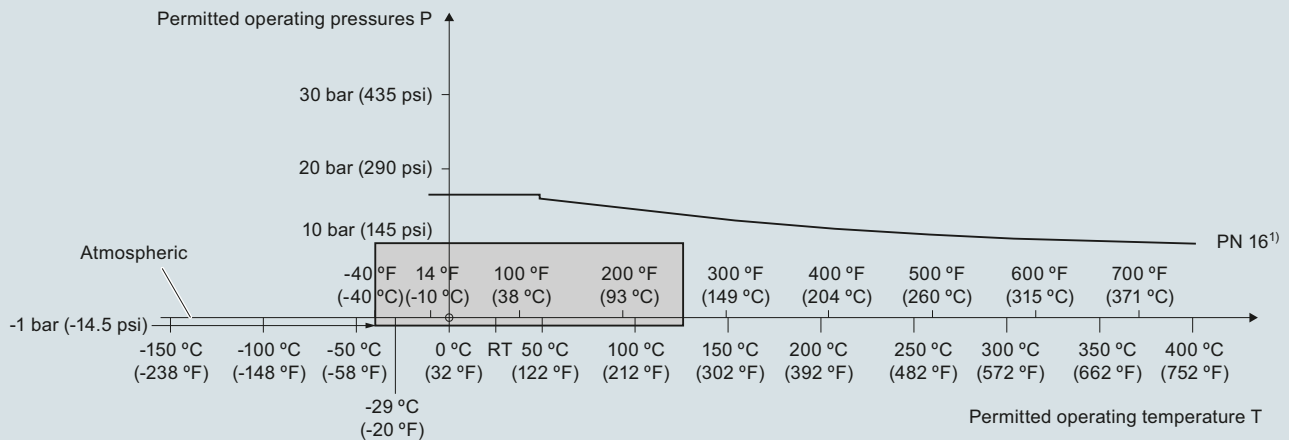
**Pressure/temperature curve**  
CLS200 compact and extended rod  
ASME flanged process connections  
(7ML5630 and 7ML5640)



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

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

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

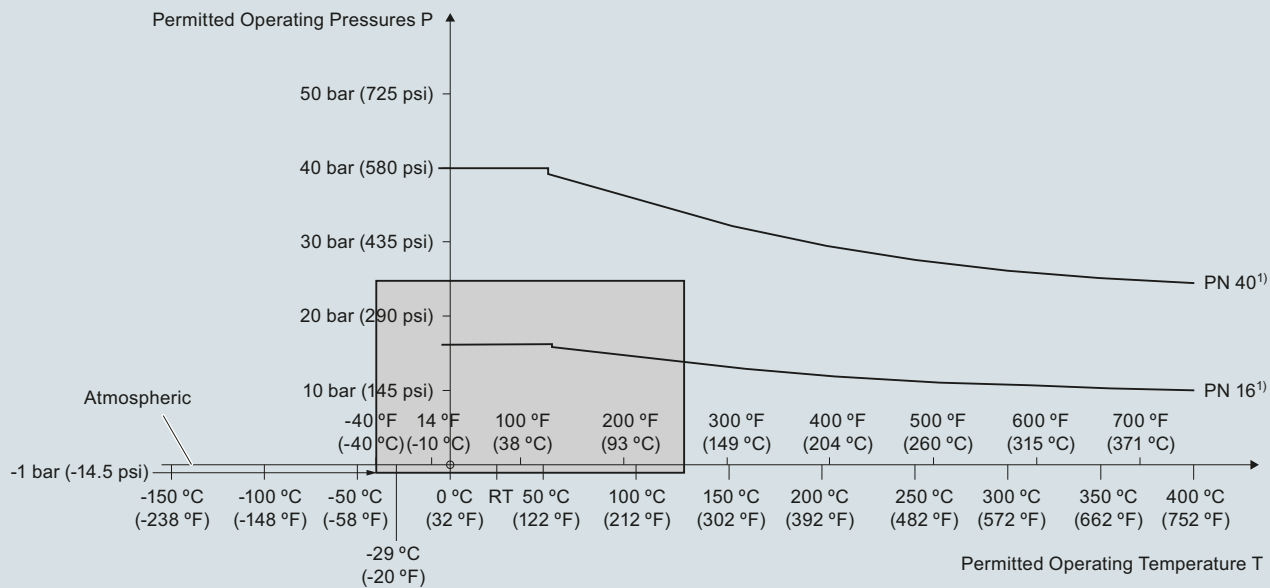


¹) The curve denotes the minimum allowable flange class for the shaded area below.

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

**Characteristic curves** (continued)

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



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

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

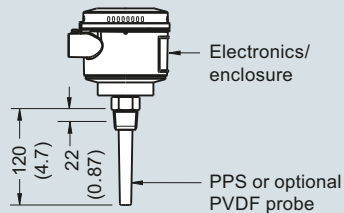
## Level measurement

Point level measurement  
RF Capacitance switches

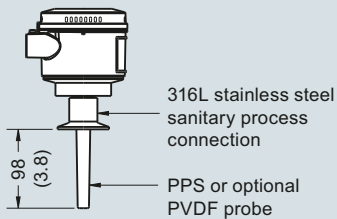
### Pointek CLS200 - Standard

#### Dimensional drawings

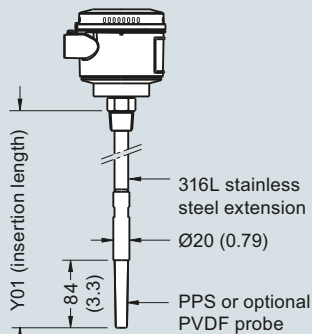
##### Compact version Threaded (7ML5630 and 7ML5640)



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

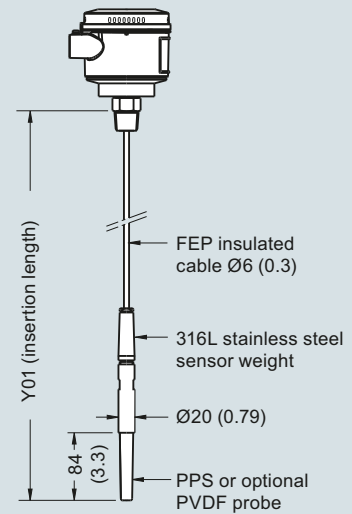


##### Extended rod version Threaded (7ML5630 and 7ML5640)

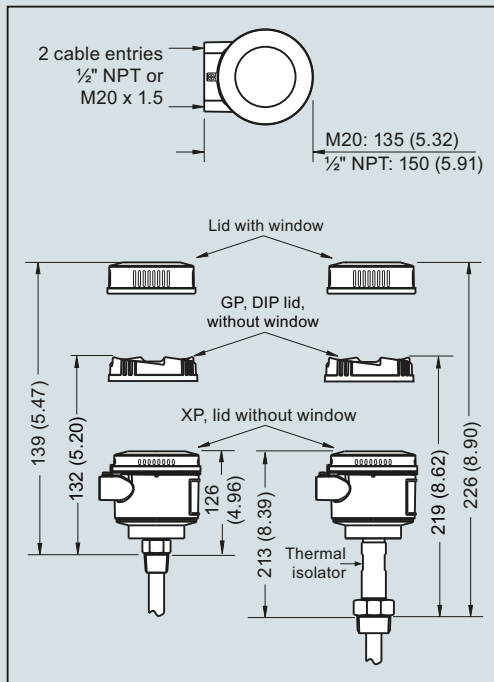


Min. insertion length = 200 (7.87)  
Max. insertion length = 5 500 (216)

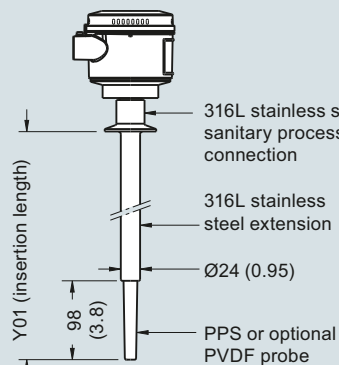
##### Extended cable version Threaded (7ML5631 and 7ML5641)



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.

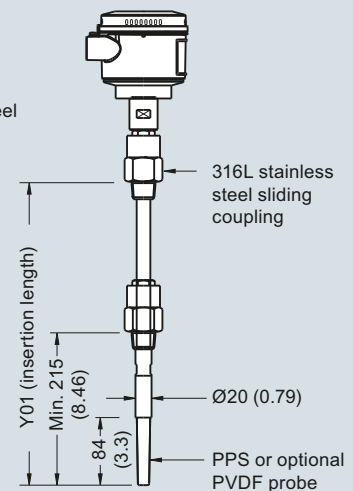


##### Sanitary extended version Sanitary fitting (7ML5632 and 7ML5642)



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

##### Sliding coupling version Threaded (7ML5633 and 7ML5643)

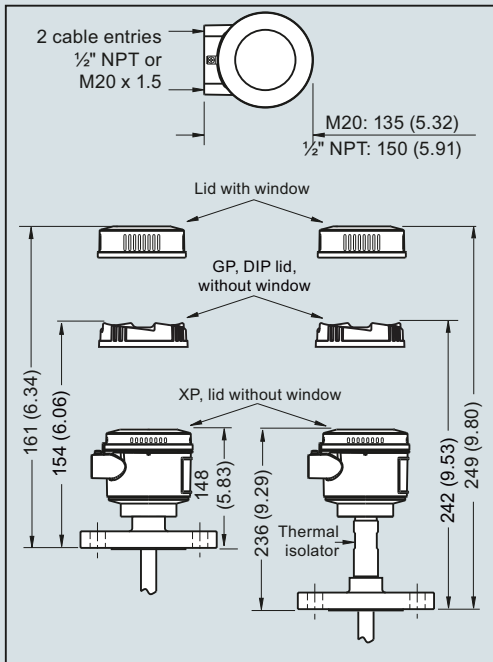
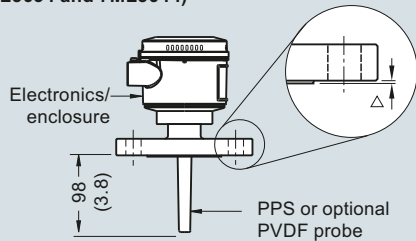


Min. insertion length = 350 (13.82)  
Max. insertion length = 5 500 (216)

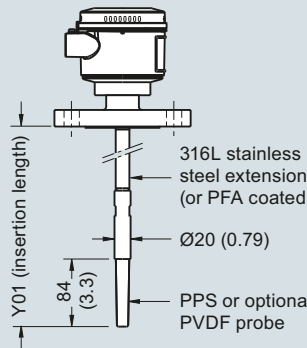
Pointek CLS200 threaded/sanitary process connection, dimensions in mm (inch)

**Dimensional drawings** (continued)

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

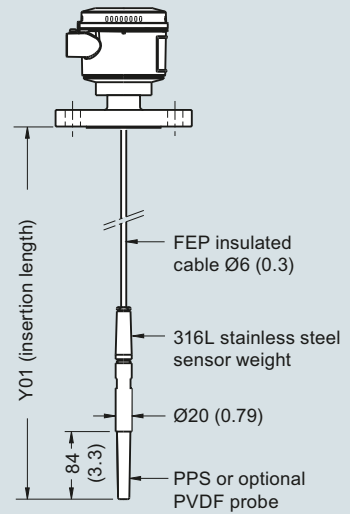


**Extended rod version**  
Welded Flange (7ML5630 and 7ML5640)  
Welded Flange, PFA coated  
(7ML5634 and 7ML5644)



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)



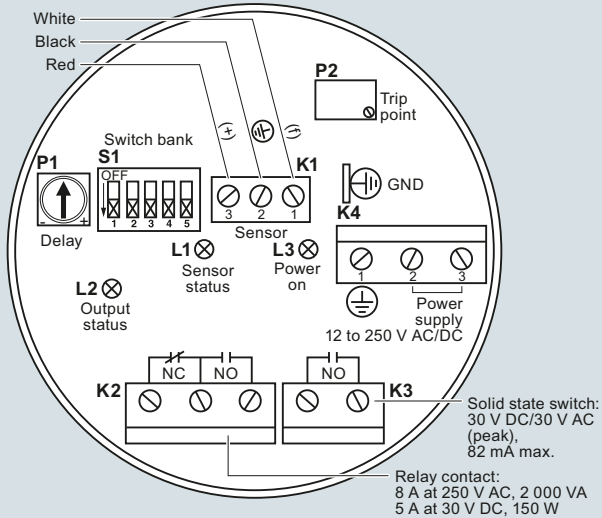
## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS200 - Standard

#### Circuit diagrams

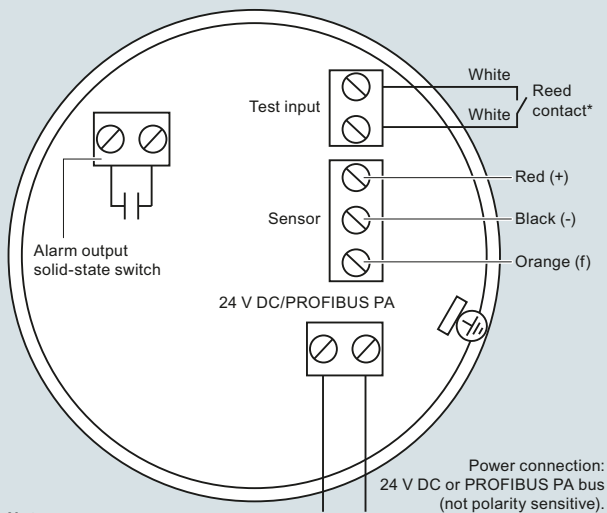
##### Wiring: Pointek CLS200 standard



##### 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

4

## 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.

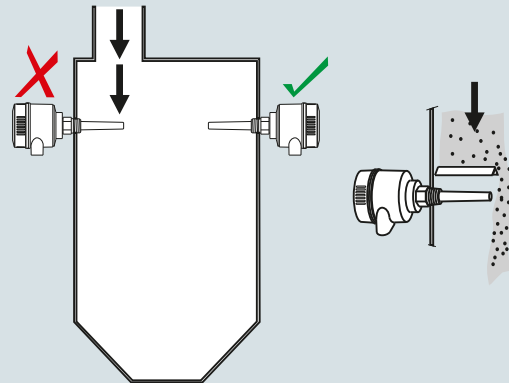
When connected to the PROFIBUS network, advanced diagnostics and set up using SIMATIC PDM are possible.

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).

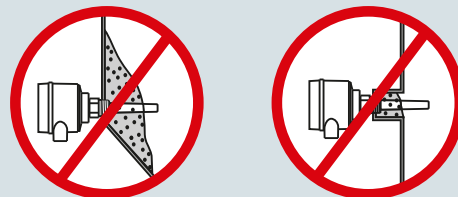
- Key Applications: liquids, slurries, powders, granules, pressurized applications, hazardous areas

## Configuration

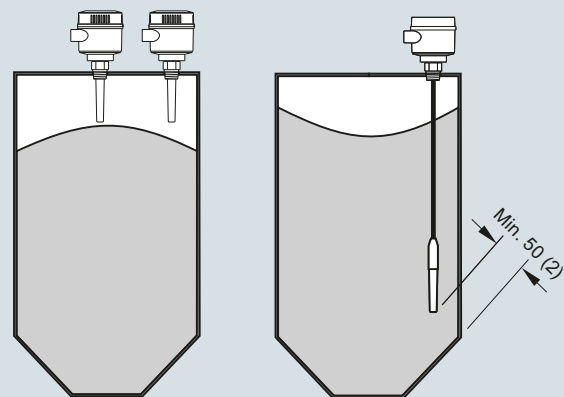
### Installation



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)

# Level measurement

## Point level measurement

### RF Capacitance switches

#### Pointek CLS200 - Digital

#### Technical specifications

<b>Mode of operation</b>	
Measuring principle	Inverse frequency shift capacitive level detection
<b>Input</b>	
Measured variable	Change in pF
<b>Output</b>	
Output signal	
• 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 (ON and/or OFF)	Programmable by user (0 ... 100 s)
• Fail-safe mode	Min. or max.
• Connection	Removable terminal block
<b>Rated operating conditions<sup>1)</sup></b>	
Installation conditions	
• Location	Indoor/outdoor
Ambient conditions	
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) <sup>2)</sup>
• Storage temperature	-40 ... +85 °C (-40 ... +185 °F)
• Installation category	II
• Pollution degree	4
Medium conditions	Liquids, bulk solids, slurries, and interfaces
• Relative dielectric constant $\epsilon_r$	Min. 1.5
• Process temperature	
- Without thermal isolator	-40 ... +85 °C (-40 ... +185 °F) <sup>2)</sup>
- 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) <sup>3)</sup>	-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)
<b>Design</b>	
Material	
• Enclosure	Epoxy-coated aluminum with gasket
• Optional thermal isolator	316L stainless steel
Connection	Removable terminal block, max. 2.5 mm <sup>2</sup>
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)
Electromagnetic compatibility	To comply with CE EMC regulations (where applicable); the CLS200 should be installed per the instruction manual.

<b>Power supply</b>	
Bus voltage	Standard: 12 ... 30 V DC Intrinsically Safe: 12 ... 24 V DC
Current consumption	12.5 mA
<b>Certificates and approvals</b>	
General Purpose	CSA, FM, CE, RCM
Dust Ignition Proof	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
Flameproof Enclosure with IS Probe	ATEX II 1/2 G EEx d[ia] IIC T6 ... T4 ATEX II 1/2 D T100 °C
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
Intrinsically Safe <sup>4)</sup>	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
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
Non-Sparking	ATEX II 3 G Ex nA II T6 ... T4 ATEX II 2 D IP6X T100 °C
Marine	Lloyds Register of Shipping, Categories ENV1, ENV2, and ENV5
Others	Pattern Approval (China)
<b>Communication</b>	
	PROFIBUS PA (IEC 61158 CPF3 CP3/2) Bus physical layer: IEC 61158-2 MBP (IS) Device profile: PROFIBUS PA profile for Process Control Devices Version 3.0, Class B FISCO field device

<sup>1)</sup> When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves on page 5/36.

<sup>2)</sup> Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F)

<sup>3)</sup> Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves on page 5/34.

<sup>4)</sup> Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection

**Technical specifications** (continued)

<b>Design: Probe</b>				
	<b>Rod version</b>	<b>Sanitary version</b>	<b>Cable version</b>	<b>Sliding Coupling version</b>
Max. length	5 500 mm (216.53 inch)	5 500 mm (216.53 inch)	<ul style="list-style-type: none"> <li>• 30 000 mm (1 181.1 inch) liquids and slurries</li> <li>• 5 000 mm (196.85 inch) solids (under loads)</li> </ul>	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 <sup>1)</sup>	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) <sup>2)</sup>	FKM (optional FFKM) <sup>2)</sup>	FKM (optional FFKM) <sup>2)</sup>	FKM (optional FFKM) <sup>2)</sup>
Thermal isolator <sup>3)</sup>	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](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.	Article No.
<p><b>Pointek CLS200 RF Capacitance point level switch, digital, sanitary rod design.</b></p> <p>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.</p> <p>➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>	7ML5642- - - - - - 0	7ML5642- - - - - - 0
<p><b>Process connection</b></p> <p><u>Sanitary 316L stainless steel</u></p> <p>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.)</p>	8 A 8 B 8 C 8 D 8 E	F G H J K L
<p><b>Probe length</b></p> <p>(length from process connection face)</p> <p><u>Note: No Y01 needed in Order code for standard lengths</u></p> <p>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)</p> <p><u>Add Order code Y01 and plain text:</u> <u>"Insertion length ... mm"</u></p> <p>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)</p>	A B C D E F G H J K L M N P Q R S T	
<p><b>Thermal isolator</b></p> <p>Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]</p>	0 1	
<p><b>Remote mount electronics and mounting bracket</b></p> <p>With 2 m (79 inch) of cable<sup>2)</sup> With 5 m (197 inch) of cable<sup>2)</sup></p>	2 3	
<p><b>Wetted seals</b></p> <p>FKM FFKM [for process temperatures above -20 °C (-4 °F)]</p>	0 1	
<p><b>Probe material</b></p> <p>316L stainless steel with PPS probe body 316L stainless steel with PVDF probe body</p>	0 1	
<p><b>Approvals</b></p> <p>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 ½ D T100 °C Intrinsically Safe:<sup>1)</sup> CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II ½ D IP6X T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T4, ATEX II ½ D T100 °C</p>	B C D E	
<p><b>Pointek CLS200 RF Capacitance point level switch, digital, sanitary rod design.</b></p> <p>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.</p>		7ML5642- - - - - - 0
<p>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:<sup>1)</sup> CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof 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)</p>		F G H J K L
<p><b>Enclosure and lid</b></p> <p><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</p>		A B C D
<p><sup>1)</sup> Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection. <sup>2)</sup> Available with Approvals options F, G, H, J, and K.</p>		
<p><b>Further designs</b></p> <p>Please add "-Z" to Article No. and specify Order code(s).</p> <p>Total insertion length: enter the total insertion length in plain text description</p> <p>Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]; Measuring-point number/identification (max. 27 characters) specify in plain text</p> <p>Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000</p> <p>Material inspection Certificate Type 3.1 per EN 10204</p> <p>INMETRO<sup>1)</sup></p>		Order code Y01 Y15 C11 C12 E34
<p><b>Operating Instructions</b></p> <p>All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a></p>		
<p><b>Accessories</b></p> <p><sup>1)</sup> Available only with Approvals options C and E.</p>		See page 4/41

# Level measurement

## Point level measurement

### RF Capacitance switches

#### Pointek CLS200 - Digital

#### Selection and ordering data

#### Article No.

#### Article No.

#### Pointek CLS200 RF Capacitance point level switch, digital, 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. With display and digital communications.

➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.

#### 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**
- 0 D
- 1½" NPT [(Taper), ANSI/ASME B1.20.1] **1 A**
- R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] **1 B**
- R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] **1 D**
- R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] **3 A**
- G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] **3 B**
- G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] **3 D**
- G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]

#### Probe length

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

Note: No Y01 needed in Order code for standard lengths

- 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**

Add Order code Y01 and plain text: "Insertion length ... mm"

- 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<sup>2)</sup> **2**  
With 5 m (197 inch) of cable<sup>2)</sup> **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:  
CE, RCM, ATEX II 3 G Ex nA II T6 ... T4, ATEX II 2 D IP6X T100 °C **B**  
Dust Ignition Proof:  
CE, RCM, ATEX II 1/2 D T100 °C **C**  
Intrinsically Safe:<sup>1)</sup>  
CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D IP6X T100 °C **D**

#### Pointek CLS200 RF Capacitance point level switch, digital, 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. With display and digital communications.

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:<sup>1)</sup>  
CSA/FM Class I, Div. 1, Groups A, B, C, D  
CSA/FM Class II, Div. 1, Groups E, F, G  
CSA/FM Class III T4

Explosion Proof 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)

#### Enclosure and lid

- Aluminum epoxy coated
- 2 x ½" NPT via adapter - cable inlet, IP65 **A**
- 2 x M20 x 1.5 cable inlet, IP65 **B**
- 2 x ½" 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.

#### 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<sup>1)</sup> **E34**

#### Operating Instructions

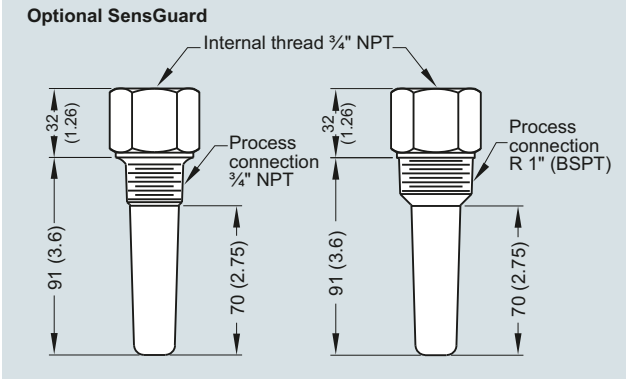
All literature is available to download for free, in a range of languages, at

<http://www.siemens.com/processinstrumentation/documentation>

#### Accessories

See page 4/41

- 1) Available only with Approvals options C and E.

Selection and ordering data	Article No.	Options
<p><b>Accessories</b></p> <p>SensGuard, 3/4" NPT (PPS). Only available for CLS200 with 3/4" NPT thread.</p> <p>SensGuard, R 1" (BSPT) (PPS). Only available for CLS200 with 3/4" NPT thread.</p> <p>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)</p> <p><b>General Purpose</b></p> <p>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)</p> <p>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)</p> <p><b>Hazardous Locations</b></p> <p>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)</p> <p>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)</p> <p><b>Blind threaded flanges are available.</b> Customers interested in a custom designed device should consult a local sales person. For more information, please visit <a href="http://www.automation.siemens.com/aspa_app">http://www.automation.siemens.com/aspa_app</a>.</p>	<p><b>7ML1830-1DL</b></p> <p><b>7ML1830-1DM</b></p> <p><b>7ML1830-1AQ</b></p> <p><b>7ML1830-1JA</b></p> <p><b>7ML1830-1JC</b></p> <p><b>7ML1830-1JB</b></p> <p><b>7ML1830-1JD</b></p>	<p><b>Optional SensGuard</b></p>  <p>Optional SensGuard, dimensions in mm (inch)</p>
<p><b>Pointek Specials</b></p>	<p>See page <b>4/70</b></p>	

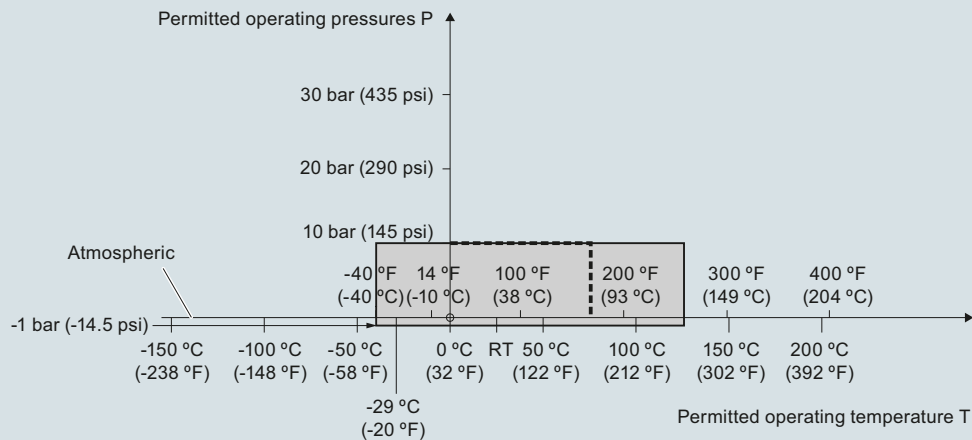
## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS200 - Digital

#### Characteristic curves

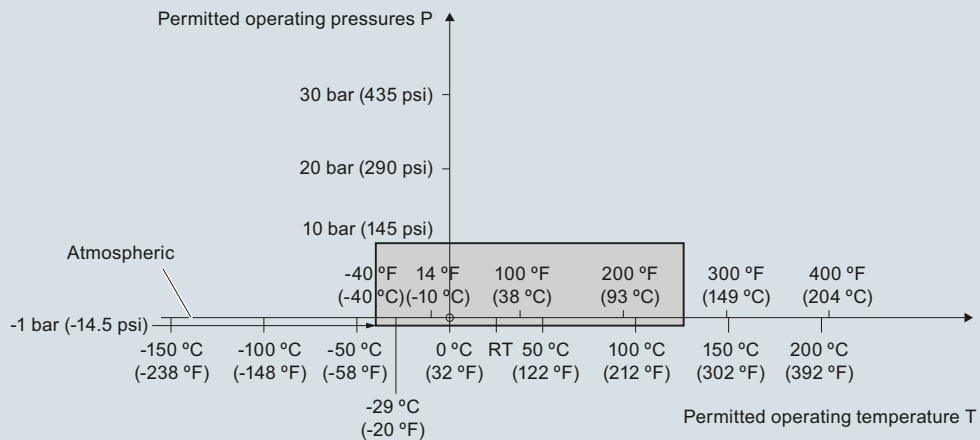
**Pressure/temperature curve**  
CLS200 sliding coupling  
threaded process connections  
(7ML5633 and 7ML5643)



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

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

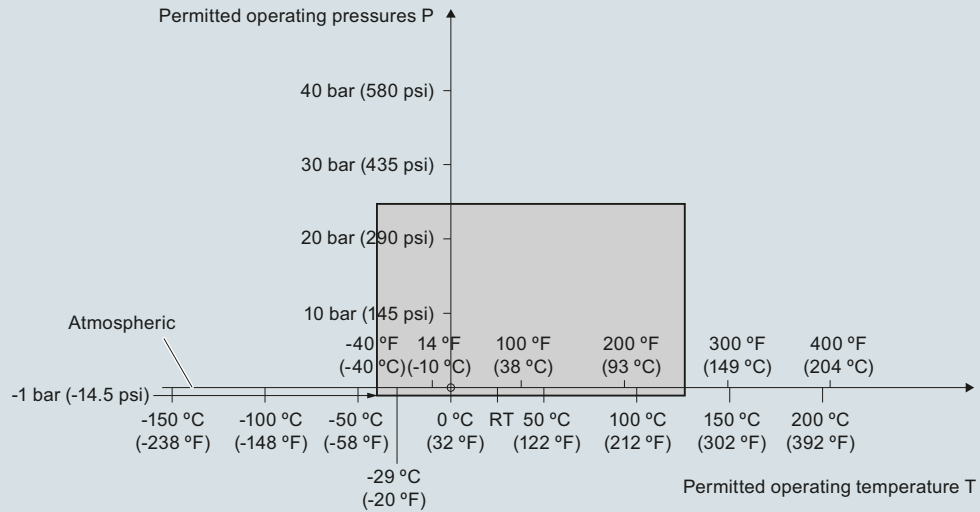
**Pressure/temperature curve**  
CLS200 cable  
Threaded process connections  
(7ML5631 and 7ML5641)



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

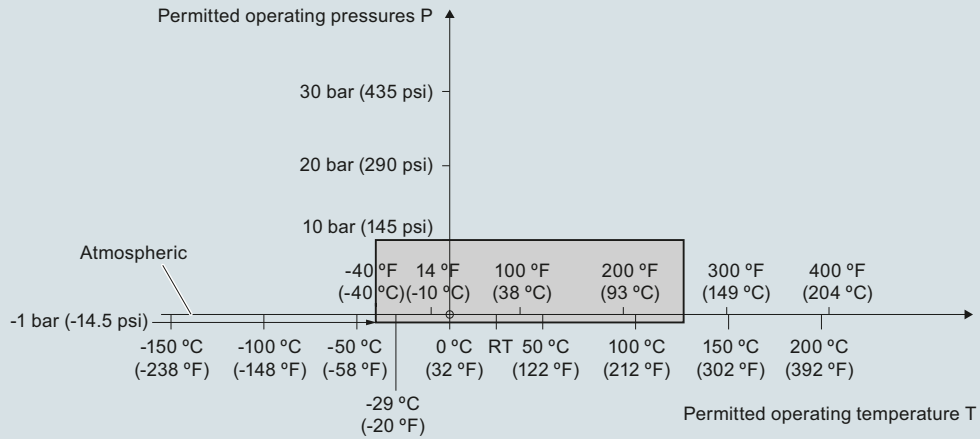
**Characteristic curves** (continued)

**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)

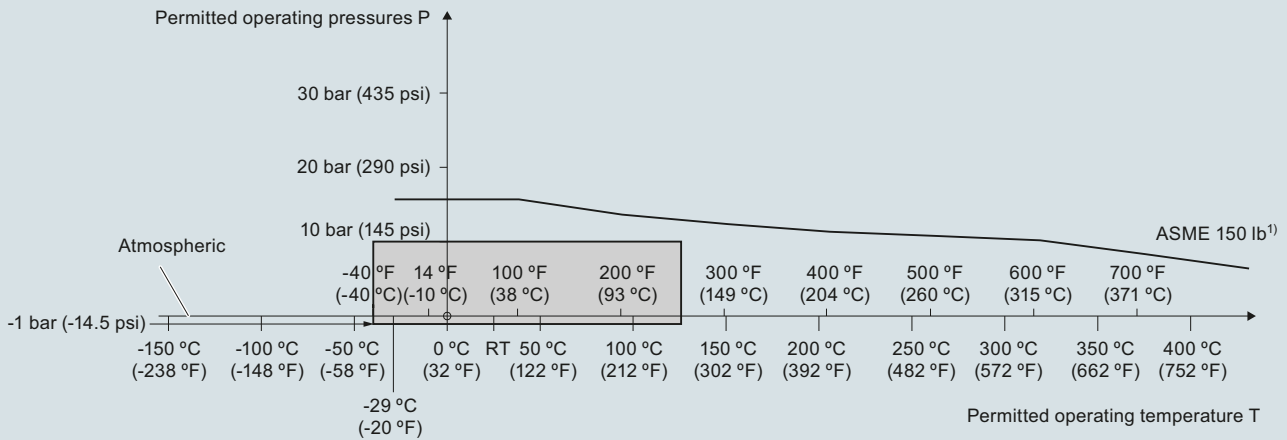
## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS200 - Digital

#### Characteristic curves (continued)

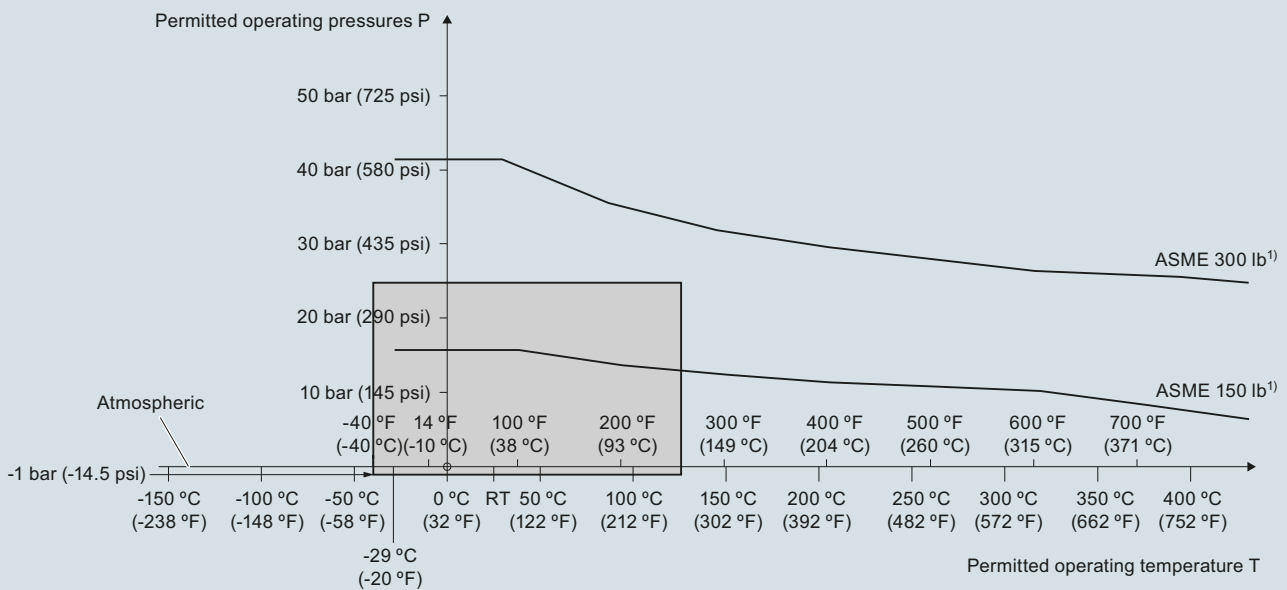
**Pressure/temperature curve**  
CLS200, cable  
ASME flanged process connections  
(7ML5631 and 7ML5641)



<sup>1)</sup> 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)

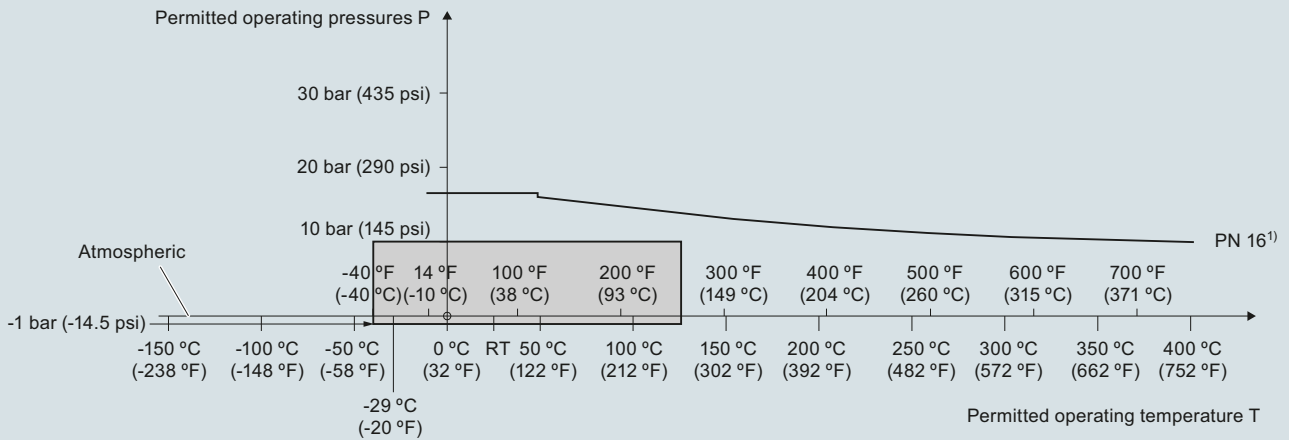


<sup>1)</sup> The curve denotes the minimum allowable flange class for the shaded area below.

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

**Characteristic curves (continued)**

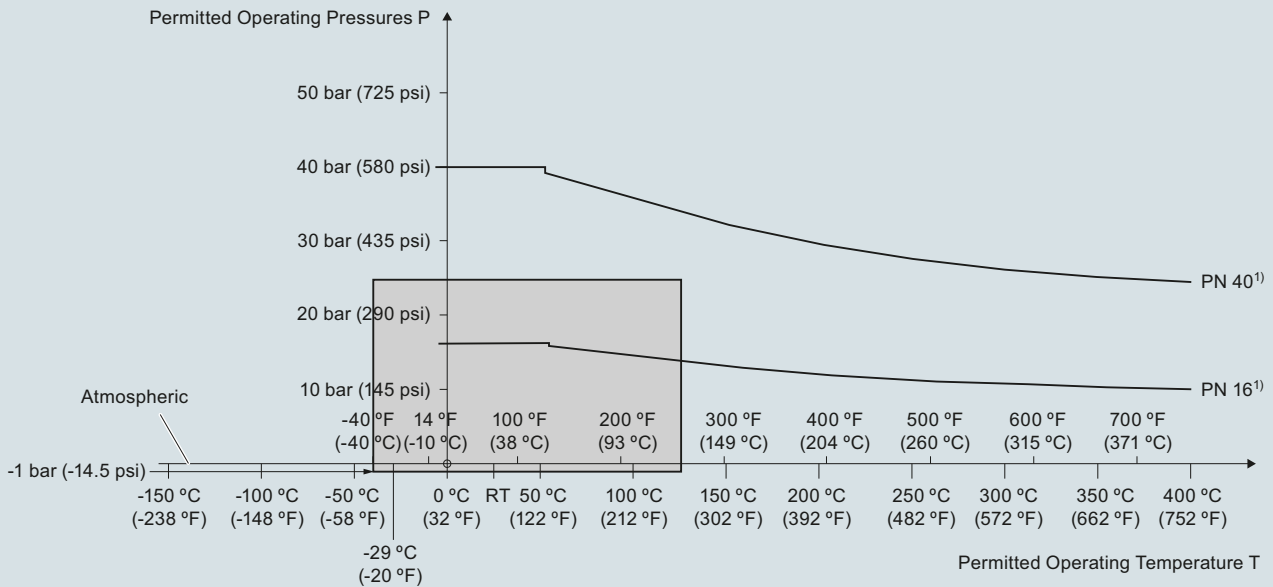
**Pressure/temperature curve**  
CLS200 cable  
EN flanged process connections  
(7ML5631 and 7ML5641)



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)



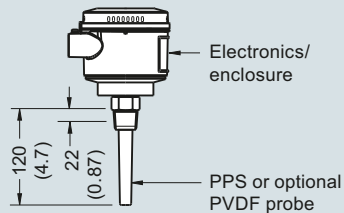
## Level measurement

Point level measurement  
RF Capacitance switches

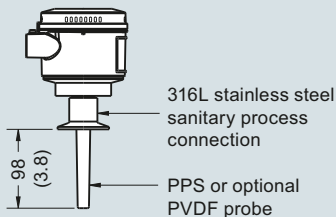
### Pointek CLS200 - Digital

#### Dimensional drawings

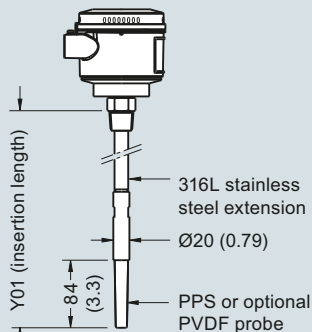
##### Compact version Threaded (7ML5630 and 7ML5640)



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

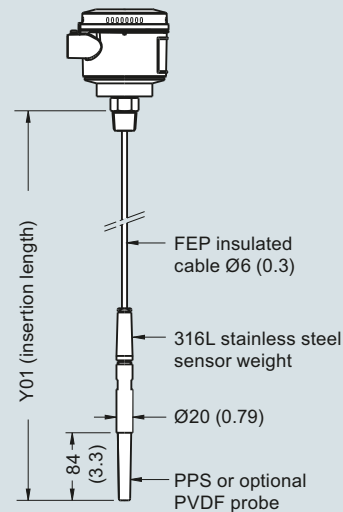


##### Extended rod version Threaded (7ML5630 and 7ML5640)

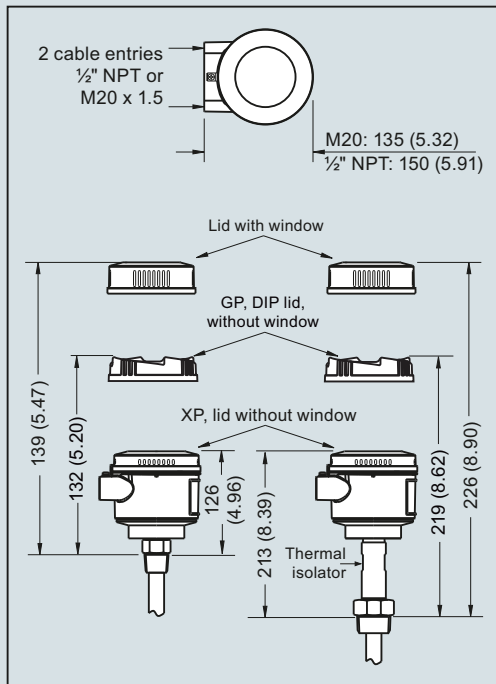


Min. insertion length = 200 (7.87)  
Max. insertion length = 5 500 (216)

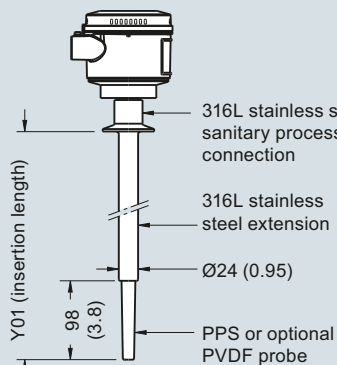
##### Extended cable version Threaded (7ML5631 and 7ML5641)



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.

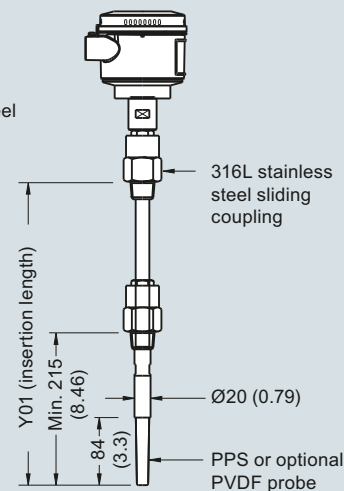


##### Sanitary extended version Sanitary fitting (7ML5632 and 7ML5642)



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

##### Sliding coupling version Threaded (7ML5633 and 7ML5643)

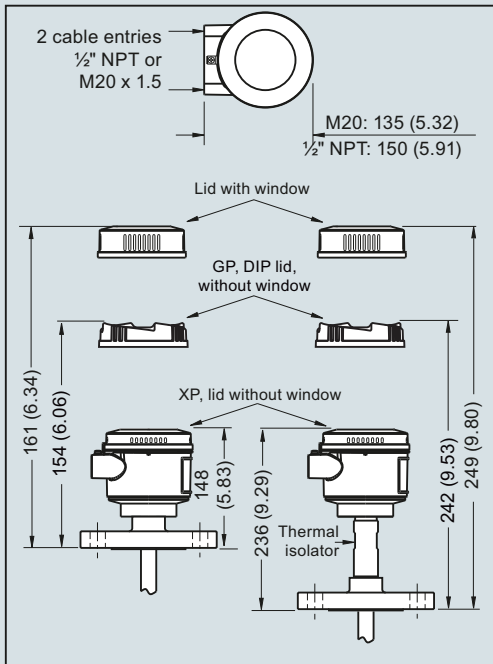
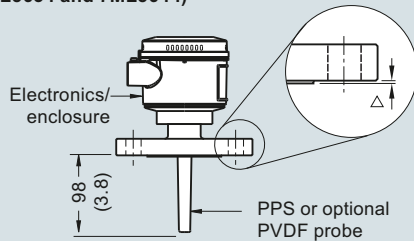


Min. insertion length = 350 (13.82)  
Max. insertion length = 5 500 (216)

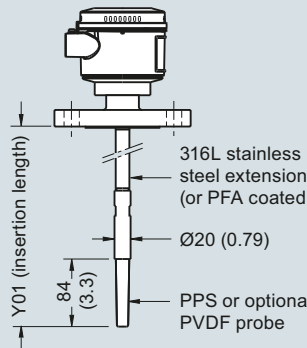
Pointek CLS200 threaded/sanitary process connections, dimensions in mm (inch)

**Dimensional drawings** (continued)

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

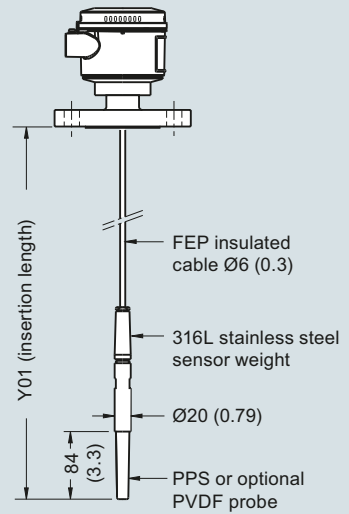


**Extended rod version**  
Welded Flange (7ML5630 and 7ML5640)  
Welded Flange, PFA coated  
(7ML5634 and 7ML5644)



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)

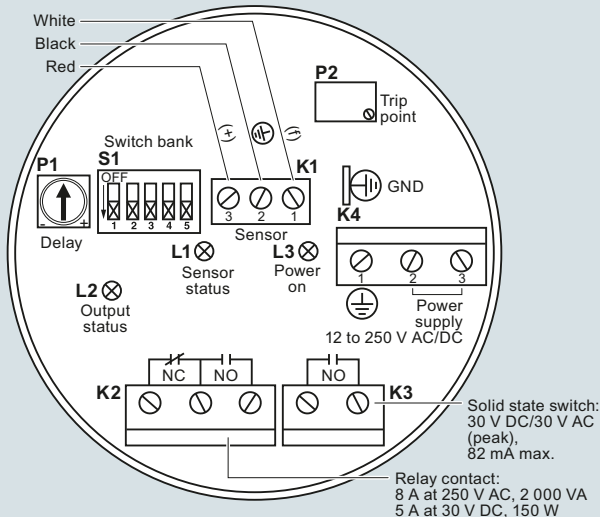
## Level measurement

Point level measurement  
RF Capacitance switches

### Pointek CLS200 - Digital

#### Circuit diagrams

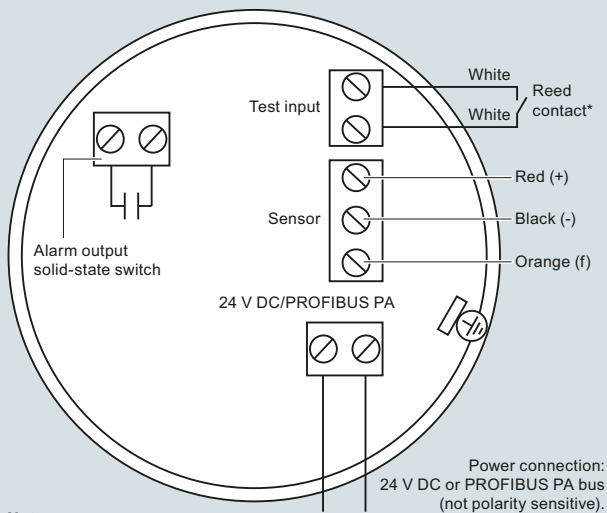
##### Wiring: Pointek CLS200 standard



##### 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