

Overview



SITRANS LCS050 is an ultra-compact, capacitance switch for point level detection in constricted spaces, water-based liquids, slurries, and foam.

Benefits

- Easy installation with no need for adjustment
- Low maintenance with no moving parts
- Highly visible 360-degree status indication
- M12 connector for ease of installation
- IO-Link communication option for advanced monitoring and configuration

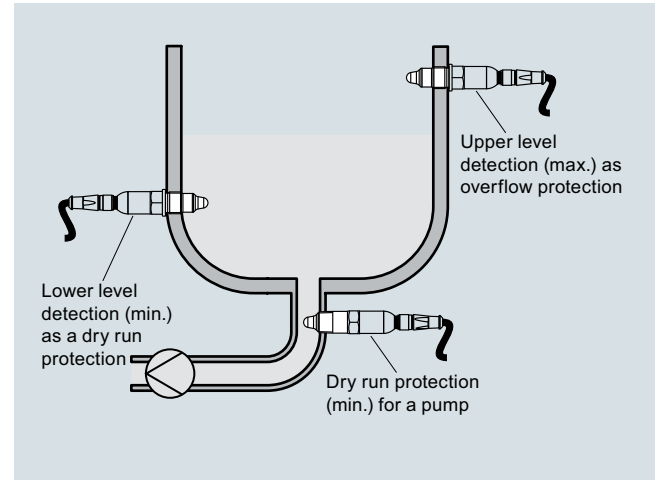
Application

The SITRANS LCS050's ultra-compact design, short insertion length of 15 mm (0.59 inch), and versatility in various applications in vessels or pipes, makes it a good replacement for traditional point level switches.

Its advanced alternating capacitance field at the sensor tip ensures material detection based on changes in capacitance, providing repeatable performance. The PEEK probe is chemically resistant with an effective process operating temperature range from -20 to +100 °C (-4 to +212 °F) and supports sterilization in place at 135 °C (275 °F) for up to 1 hour. The product design ensures reliability in a vibrating environment such as agitated tanks up to 5 g.

- Key Applications: water-based liquids with > 10 % water (alcohols, acids, cleaning agents), slurries and foam for point level, overflow and dry run protection including small pipes due to its compact design.

Configuration



SITRANS LCS050, installation examples

Level Measurement

Point level measurement

Capacitance switches

SITRANS LCS050

Technical specifications

Mode of operation	
Measuring principle	Capacitance level detection
Input	
Measured variable	Change in picoFarad (pF)
Output	
Output signal	
• Alarm output	Transistor (PNP/NPN) IO-Link acc. to IEC 61131-9
• Fail-safe mode	Min. or max.
Accuracy	
Hysteresis	Approx. 1 mm (0.04 inch)
Rated operating conditions	
Installation conditions	
• Location	Indoor/outdoor
Ambient conditions	
• Ambient temperature	-40 ... +70 °C (-40 ... +158 °F)
• Storage temperature	-40 ... +80 °C (-40 ... +176 °F)
• Installation category	I
• Pollution degree	4
Medium conditions	
• Relative dielectric constant ϵ_r	Min. 2
• Process temperature	-20 ... +100 °C (-4 ... +212 °F) up to 1h, +135 °C (+275 °F)
• Pressure (vessel)	-1 ... 25 bar/-100 ... 2 500 kPa (-14.5 ... 363 psig)
• Degree of protection	
- M 12 x 1 plug	IP66/IP67/IP69
Design	
	<u>Enclosure/integral cable version</u>
Material	
• Body	316L and plastic (polycarbonate)
Sensor length	15 mm (0.59 inch)
Process connection material of probe/wetted parts	<ul style="list-style-type: none"> • Connection: 316L stainless steel • Device seal: FKM (hygienic version EPDM) • Sensor tip: PEEK
Connection (Enclosure version)	M12 x 1 plug
Process connection	Pipe thread, cylindrical (DIN 3852-A) G½, G¾, G1 pipe thread, conical (ASME B1.20.1) ½ NPT, ¾ NPT, 1 NPT metric fine thread, cylindrical M24 x 1.5
Power supply	
Standard	12 ... 35 V DC
Certificates and approvals	
	General: CE

Selection and ordering data

Article No.

SITRANS LCS050 Point level switch

Compact, point level switch, detects level in liquids. For use with overflow, high, low, and demand applications as well as pump protection. Compact design is ideal for confined spaces. Support for IO-link communications.

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

Approvals

Ordinary location

With (FDA, EG1935/2004)

Process connection

Thread M24 x 1.5 PN 25, DIN 13 / 316L, EPDM

Thread G ½" PN 25, DIN 3852-A / 316L

Thread G ½" PN 25, ISO228-1 / 316L

(Ra < 0.76 µm); for ½" hygiene adapter

Thread ½" NPT PN 25, ASME B1.20.1 / 316L

Thread G ¾" PN 25, DIN 3852-A / 316L

Thread ¾" NPT PN 25, ASME B1.20.1 / 316L

Thread G 1" PN 25, DIN 3852-A / 316L

Thread G 1" PN 25, ISO228-1, hygiene design / 316L (Ra < 0.76 µm), EPDM, for hygiene adapter sealing with O-ring

Thread 1" NPT PN 25, ASME B1.20.1 / 316L

Thread G 1" PN 25, ISO228-1, cone 40° / 316L (Ra < 0.76 µm); for hygiene adapter metallically sealing

Electronics

Three-wire transistor with IO-link

Accessories

Hygienic adapter for G ½" is available, contact factory for pricing.

Welded socket, suitable for LCS050 series, with threaded fittings or hygienic connections is available, contact factory for pricing

Operating Instructions

Note: due to ATEX regulations one Quick start manual is included with every product.

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

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

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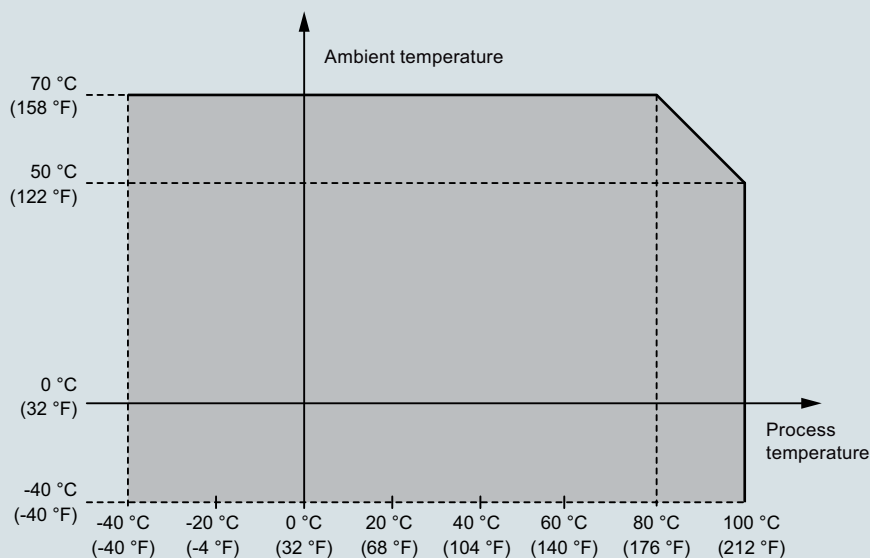
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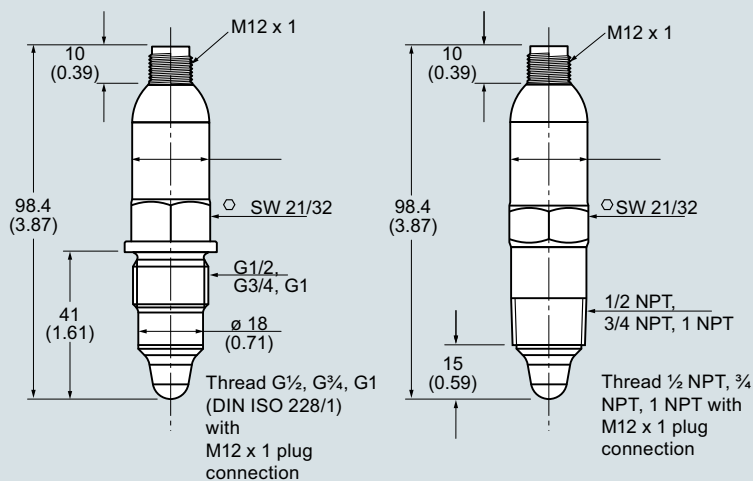
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Characteristic curves



SITRANS LCS050 ambient temperature/process temperature curve

Dimensional drawings



SITRANS LCS050, standard version - thread, dimensions in mm (inch)

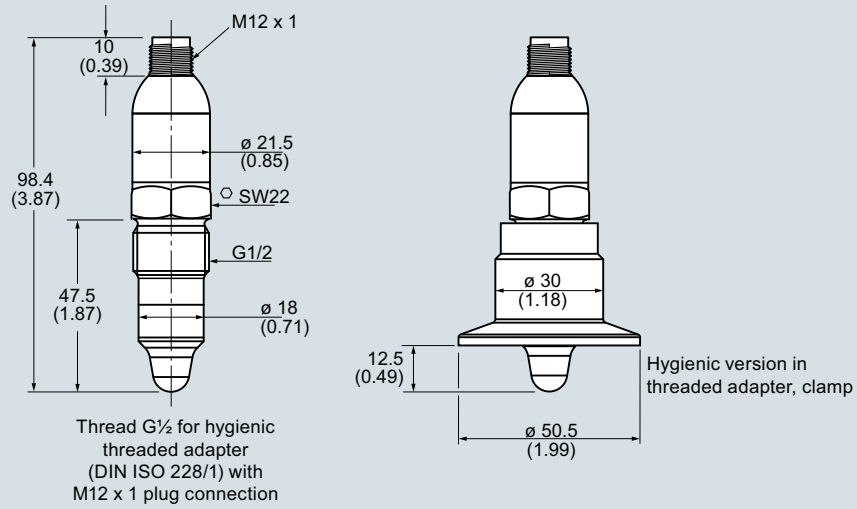
Level Measurement

Point level measurement

Capacitance switches

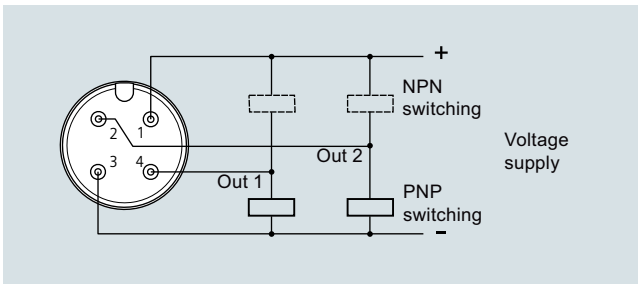
SITRANS LCS050

4



SITRANS LCS050, hygienic version - thread, dimensions in mm (inch)

Connection drawings



SITRANS LCS050 connections

Overview



Pointek CLS100 is a compact, 2-wire, inverse frequency shift capacitance switch for level and material detection in constricted spaces, interfaces, solids, liquids, slurries, and foam; with the ability to tune out buildup on probe.

Benefits

- Easy installation with verification by built-in LED
- Low maintenance with no moving parts
- Sensitivity adjustment
- Integrated cable or PBT enclosure versions available
- Intrinsically Safe, Dust Ignition Proof, and General Purpose options available

Application

Pointek CLS100's short insertion length of 100 mm (4 inch) and versatility in various applications and in vessels or pipes makes it a good replacement for traditional capacitance sensors.

Its advanced tip-sensing technology provides accurate, repeatable switchpoint performance. The PPS (Polyphenylene sulfide) probe [optional PVDF (Polyvinylidene Fluoride)] is chemically resistant with an effective process operating temperature range from -30 to +100 °C (-22 to +212 °F) (7ML5501), and -10 to +100 °C (14 to 212 °F) (7ML5610). The fully potted design ensures reliability in a vibrating environment such as agitated tanks up to 4 g. When used with a SensGuard protection cover, the CLS100 is protected from shearing, impact, and abrasion in tough primary processes.

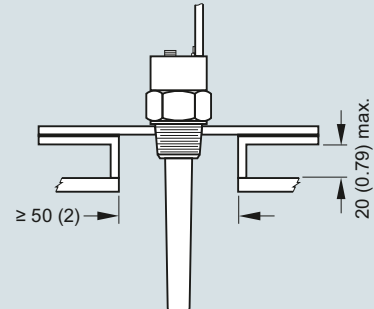
The Pointek CLS100 is available in three versions. The integral cable version has a stainless steel process connection and probe options of PPS or PVDF. The fully synthetic version has a thermoplastic polyester enclosure with a PPS process connection combined with a PPS probe. The standard enclosure version has a thermoplastic polyester enclosure with a stainless steel process connection in combination with a PPS or PVDF probe.

- Key Applications: liquids, slurries, powders, granules, food and pharmaceuticals, chemicals, hazardous areas

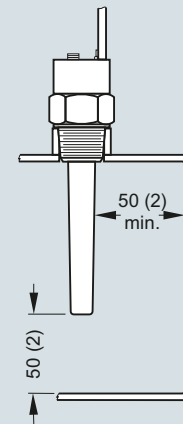
Configuration

Installation

Standpipes



Wall restriction



Pointek CLS100 installation, dimensions in mm (inch)

Level measurement

Point level measurement
RF Capacitance switches

Pointek CLS100

Technical specifications

	Stainless steel process connection (integral cable or enclosure version) (7ML5501)	Fully synthetic process connection (enclosure version only) (7ML5610)
Mode of operation		
Measuring principle	Inverse frequency shift capacitive level detection	Inverse frequency shift capacitive level detection
Input		
Measured variable	Change in picoFarad (pF)	Change in picoFarad (pF)
Output		
Output signal		
• Alarm output	4 ... 20/20 ... 4 mA 2-wire loop	4 ... 20/20 ... 4 mA 2-wire loop
• Switch output ¹⁾	Solid-state: 30 V DC/30 V AC, max. 82 mA	Max. switching voltage: 60 V DC/30 V AC Max. switching current: 1 A
• Fail-safe mode	Min. or max.	Min. or max.
Accuracy		
Repeatability	2 mm (0.08 inch)	2 mm (0.08 inch)
Rated operating conditions²⁾		
Installation conditions		
• Location	Indoor/outdoor	Indoor/outdoor
Ambient conditions		
• Ambient temperature	-30 ... +85 °C (-22 ... +185 °F)	-10 ... +85 °C (14 ... 185 °F)
• Storage temperature	-40 ... +85 °C (-40 ... +185 °F)	-40 ... +85 °C (-40 ... +185 °F)
• Installation category	I	I
• Pollution degree	4	4
Medium conditions		
• Relative dielectric constant ϵ_r	Min. 1.5	Min. 1.5
• Process temperature	-30 ... +100 °C (-22 ... +212 °F)	-10 ... +100 °C (14 ... 212 °F)
• Pressure (vessel)	-1 ... +10 bar g (-14.6 ... +146 psi g), nominal ²⁾	-1 ... +10 bar g (-14.6 ... +146 psi g), nominal
• Degree of protection		
- Enclosure version	IP68/Type 4/NEMA 4	IP68/Type 4/NEMA 4
- Integral cable version	IP65/Type 4/NEMA 4	Not applicable
• Cable inlet	½" NPT (M20 x 1.5 optional)	½" NPT (M20 x 1.5 optional)
Design		
	<u>Enclosure/Integral cable version</u>	<u>Fully synthetic version</u>
Material		
• Body (Enclosure version)	Thermoplastic polyester	Thermoplastic polyester
• Lid (Enclosure version)	Transparent thermoplastic polycarbonate (PC)	Transparent thermoplastic polycarbonate (PC)
• Integrated cable body (Integral cable version)	316L stainless steel	Not applicable

	Stainless steel process connection (integral cable or enclosure version) (7ML5501)	Fully synthetic process connection (enclosure version only) (7ML5610)
Sensor length (nominal)	100 mm (4 inch)	100 mm (4 inch)
Process connection material of probe/wetted parts ³⁾	Connection: 316L stainless steel; Process seal: FKM (optional FFKM); Sensor: PPS (optional PVDF) ⁴⁾	PPS process connection and PPS sensor (Uni-Construction)
Connection (Enclosure version)	Internal 5-point terminal block, ½" NPT wiring entrance, M20 x 1.5 optional	Removable internal 5-point terminal block, ½" NPT wiring entrance, M20 x 1.5 optional
Connection (Integral cable version)	4 conductors, 1 m (3.3 ft), 0.5 mm ² (22 AWG), shielded, polyester jacket	Not applicable
Process connection	¾" NPT [(Taper), ANSI/ASME B1.20.1] R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G 1" [(BSPF), EN ISO 228-1/PF (JIS-P), JIS B 0202]	¾" NPT [(Taper), ANSI/ASME B1.20.1] R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]
Power supply		
Standard	12 ... 33 V DC	12 ... 33 V DC
Intrinsically Safe	10 ... 30 V DC (Intrinsically Safe barrier required)	Not applicable
Certificates and approvals		
	<ul style="list-style-type: none"> • General: CE, CSA, FM, RCM • Marine: Lloyds Register of Shipping, categories ENV1, ENV2, and ENV5 Dust Ignition Proof (barrier required): CSA/FM Class II and III, Div. 1, Groups E, F, G T4 • Intrinsically Safe (barrier required): CSA/FM Class I, II, and III, Div. 1, Groups A, B, C, D, E, F, G T4 ATEX II 1 GD 1/2GD EEx ia IIC T4 to T6 T107 °C • Overfill protection: WHG (Germany) 	<ul style="list-style-type: none"> • General: CSA, FM

¹⁾ When synthetic process connection version (7ML5610) is used in wet locations, switching voltage of the relay is limited to 35 V DC/16 V AC.

²⁾ When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves on page 5/13.

³⁾ For caustic materials, consult a local sales person for alternative O-rings. For more information, please visit http://www.automation.siemens.com/aspa_app.

⁴⁾ When FFKM O-ring (Option A22) is selected, process temperature is restricted to -20 °C (-4 °F).

Selection and ordering data

Article No.

Pointek CLS100 RF Capacitance point level switch, stainless steel process connection

Detects level and interface in liquids, solids, slurries and foam. Compact, with 100 mm (4 inch) 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

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

Approvals

General Purpose: CE, CSA, FM, RCM
CSA/FM Class I, II, and III, Div. 1,
Groups A, B, C, D, E, F, G T4; ATEX II 1 GD ½
GD EEx ia IIC T4 ... T6 T107 °C¹⁾
CSA/FM Class II and III, Div. 1, Groups E, F, G¹⁾

Device version

Integral cable version (PPS probe)
Enclosure version (PPS probe), ½" NPT cable inlet
Integral cable version with PVDF probe body
Enclosure version with PVDF probe body
(½" NPT cable inlet)
Enclosure version (PPS probe), M20 x 1.5
cable inlet
Enclosure version with PVDF probe body,
M20 x 1.5 cable inlet

Overfill protection

Not required
Required (WHG)

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

Further designs

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

Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]:
Measuring-point number/identification
(max. 20 characters) specify in plain text
FFKM seal O-ring¹⁾

Material inspection Certificate Type 3.1 per
EN 10204
INMETRO²⁾

Operating Instructions

Note: due to ATEX regulations one Quick start
manual is included with every product. All literature
is available to download for free, in a range of
languages, at

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

¹⁾ See Temperature restriction on page 4/14.

²⁾ Available only with Approvals option C.

Accessories

SensGuard, ¾" NPT (PPS).
Only available for CLS100 with ¾" NPT thread.

SensGuard, R 1" (BSPT) (PPS).
Only available for CLS100 with ¾" NPT thread.

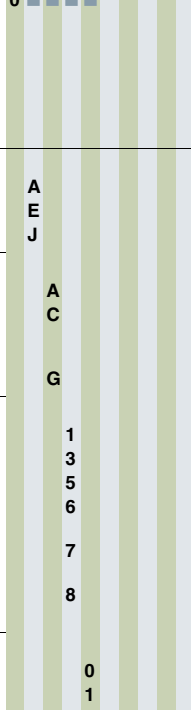
Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch),
one text line, suitable for enclosures

Siemens Intrinsically Safe Barrier (DC powered),
ATEX II 1 G EEx ia

½" 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)

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)

7ML5501-



Order code

Y17

A22

C12

E34

Article No.

7ML1830-1DL

7ML1830-1DM

7ML1930-1AC

7NG4124-0AA00

7ML1830-1JA

7ML1830-1JC

Article No.

Pointek CLS100 RF Capacitance point level switch, PPS process connection

Detects level and interface in liquids, solids, slurries, and foam. Compact, with 100 mm (4 inch) 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 (PPS)

¾" NPT [(Taper), ANSI/ASME B1.20.1]
(PPS probe body)
R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]
(PPS probe body)

Approvals

General Purpose: CSA, FM

Versions/Options

Enclosure version, PPS process connection,
½" NPT cable inlet
Enclosure version, PPS process connection,
M20 x 1.5

Overfill protection

Not required
Required

Further designs

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

Stainless steel tag [70 x 13 mm (2.75 x 0.5 inch)]:
Measuring-point number/identification
(max. 20 characters) specify in plain text

Material inspection Certificate Type 3.1 per
EN 10204

Operating Instructions

Note: due to ATEX regulations one Quick start
manual is included with every product. All literature
is available to download for free, in a range of
languages, at

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

Accessories

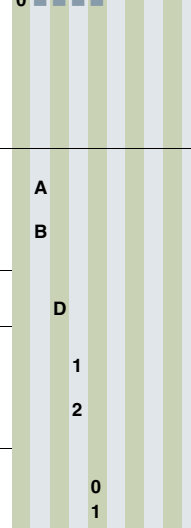
SensGuard, ¾" NPT (PPS).
Only available for CLS100 with ¾" NPT thread.

SensGuard, R 1" (BSPT) (PPS).
Only available for CLS100 with ¾" NPT thread.

Tag, stainless steel, 12 x 45 mm, (0.47 x 1.77 inch)
one text line, suitable for enclosures

¹⁾ See Temperature restriction on page 4/14.

7ML5610-



Order code

Y17

C12

Article No.

7ML1830-1DL

7ML1830-1DM

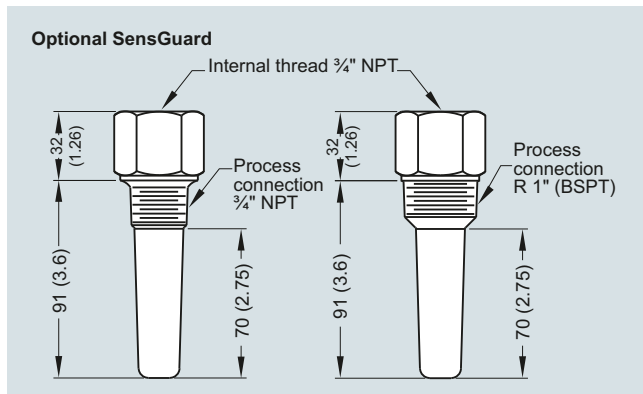
7ML1930-1AC

Level measurement

Point level measurement
RF Capacitance switches

Pointek CLS100

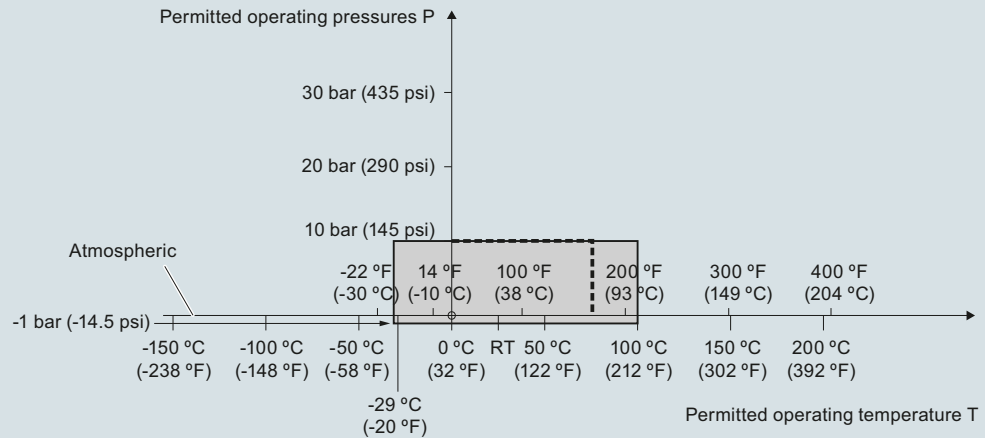
Options



Optional SensGuard, dimensions in mm (inch)

Characteristic curves

Pressure/temperature curve CLS100
Threaded process connections (7ML5501)

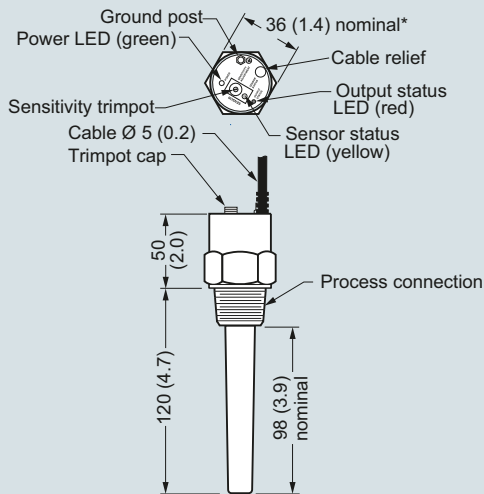


---- Example:
Permitted operating pressure = 10 bar (145 psi) at 75 °C

Pointek CLS100 process pressure/temperature derating curves

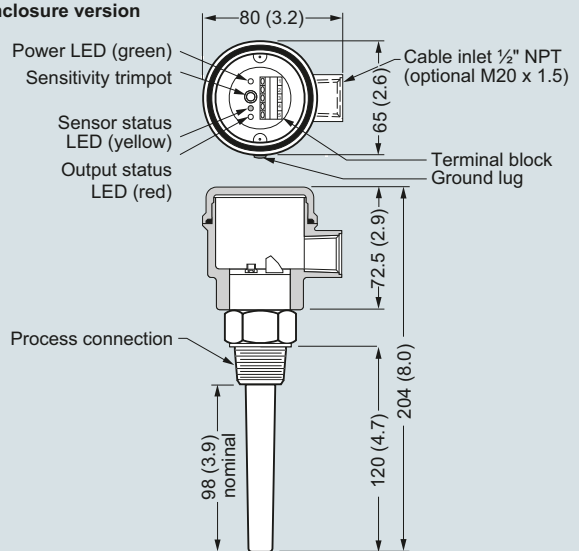
Dimensional drawings

Integral cable version



*Some G thread configurations deviate from this size.

Enclosure version



Pointek CLS100, dimensions in mm (inch)

Level measurement

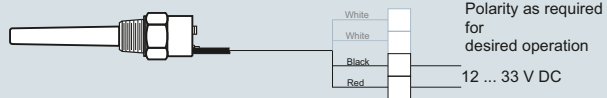
Point level measurement
RF Capacitance switches

Pointek CLS100

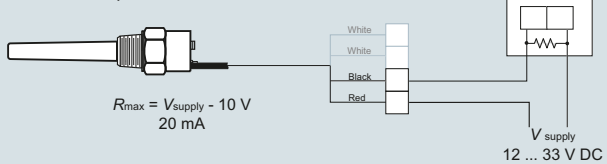
Circuit diagrams

Integral Cable Version - Non Intrinsically Safe only

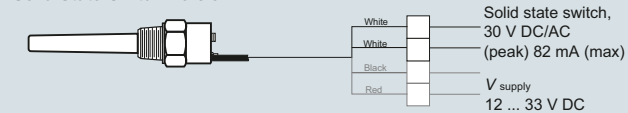
LOW/HIGH Alarm



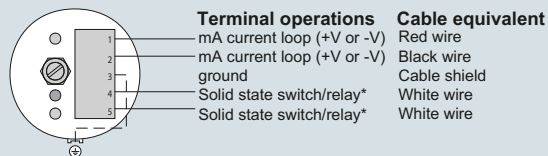
4/20 mA Loop Alarm



Solid State Switch Version



Enclosure and Fully Synthetic Version



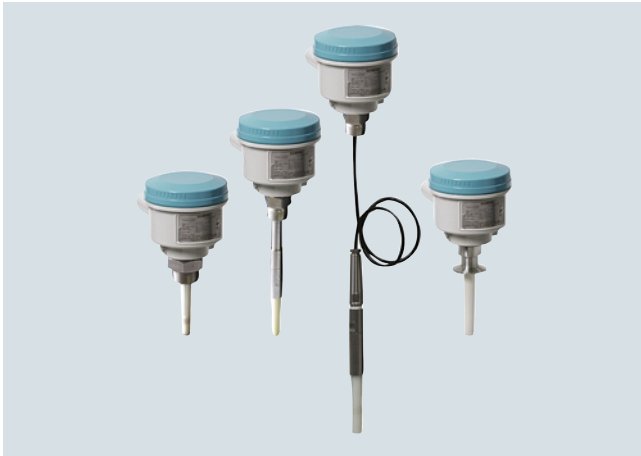
- * Switch/relay normally open in unpowered state
- * Relay not available on Pointek CLS100 IS version (7ML5501)

Note:

When driving an inductive load (for example, an external relay), a protection diode must be connected in the correct polarity to prevent possible switch damage due to inductive spikes generated by switching the inductor (please refer to instruction manual). Intrinsically Safe Models - please follow local regulations and area classifications; refer to instruction manual for more details.

Pointek CLS100 connections

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

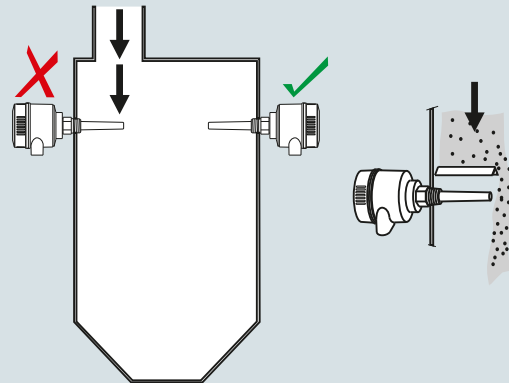
Pointek CLS200 standard version has 3 LED indicators with basic relay and solid-state switch alarms. Universal switch for solids/liquids and interface.

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

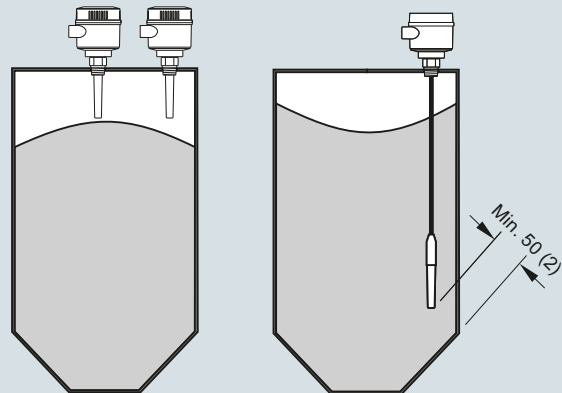
Installation



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

Mode of operation	
Measuring principle	Inverse frequency shift capacitive level detection
Input	
Measured variable	Change in picoFarad (pF)
Output	
Output signal	
• Relay output	1 SPDT Form C relay
- Max. contact voltage	<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
	2 000 VA AC
- Time delay (ON and/or OFF)	1 ... 60 s
• Solid-state output	
- Output	Galvanically isolated
- Protection	Against reversed polarity (bipolar)
- Max. switching voltage	<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⁾
• Storage temperature	-40 ... +85 °C (-40 ... +185 °F)
• Installation category	II
• Pollution degree	4
Medium conditions	Liquids, bulk solids, slurries and interfaces
	Min. 1.5
• Relative dielectric constant ϵ_r	
• 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. 2.5mm 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)
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 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

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

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 5/34.

Technical specifications (continued)

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)

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

7ML5630-
- - - - - 0

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

7ML5630-
- - - - - 0

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 cable¹⁾²⁾ **2**
- With 5 m (197 inch) of cable¹⁾²⁾ **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
- 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 Approval options F, G, and H.

4

Selection and ordering data	Order code	Article No.
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 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 4/41	
1) Available only with Approvals options C, D, E.		
		7ML5631-
		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.
		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]
		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.)
		0 A
		0 B
		0 C
		0 D
		1 A
		1 B
		1 D
		3 A
		3 B
		3 D
		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
		6 A
		6 B
		6 C
		6 D
		6 E
		6 F
		6 G
		6 H
		6 J
		6 K

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 assembly¹⁾

Extended cable, 6 000 mm (236.22 inch), length can be determined by customer on assembly¹⁾

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 cable²⁾

With 5 m (197 inch) of cable²⁾

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

INMETRO¹⁾

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, D, E.

Selection and ordering data	Article No.	Article No.
<p>Pointek CLS200 RF Capacitance point level switch, sanitary rod design</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>Pointek CLS200 RF Capacitance point level switch, sanitary rod design</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>Process connection</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>Approvals</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>Probe length</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>Enclosure and lid</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>Thermal isolator</p> <p>Thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]</p>	0 1	<p>Further designs</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>INMETRO¹⁾</p>
<p>Remote mount electronics and mounting bracket</p> <p>Remote mount electronics and mounting bracket Remote mount electronics with 5 m (197 inch) of cable</p>	2 3	<p>Operating Instructions</p> <p>All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation</p>
<p>Wetted seals</p> <p>FKM FFKM [for process temperatures above -20 °C (-4 °F)]</p>	0 1	<p>Accessories</p> <p>See page 4/41</p>
<p>Probe material</p> <p>316L stainless steel with PPS probe body 316L stainless steel with PVDF probe body</p>	0 1	<p>¹⁾ Available only with Approvals options C, D, E.</p>

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 cable¹⁾

With 5 m (197 inch) of cable¹⁾

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

¹⁾ 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)]

INMETRO¹⁾

Operating Instructions

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

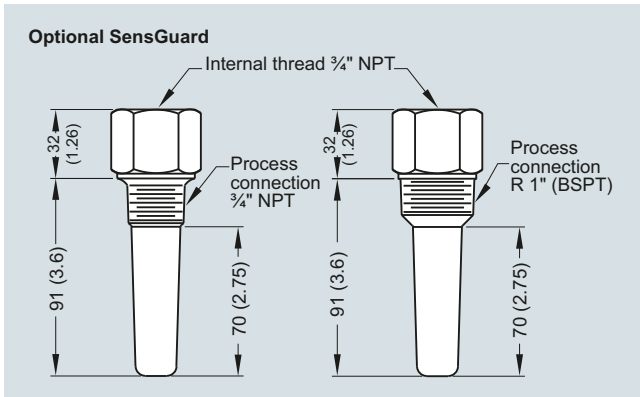
<http://www.siemens.com/processinstrumentation/documentation>

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	

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

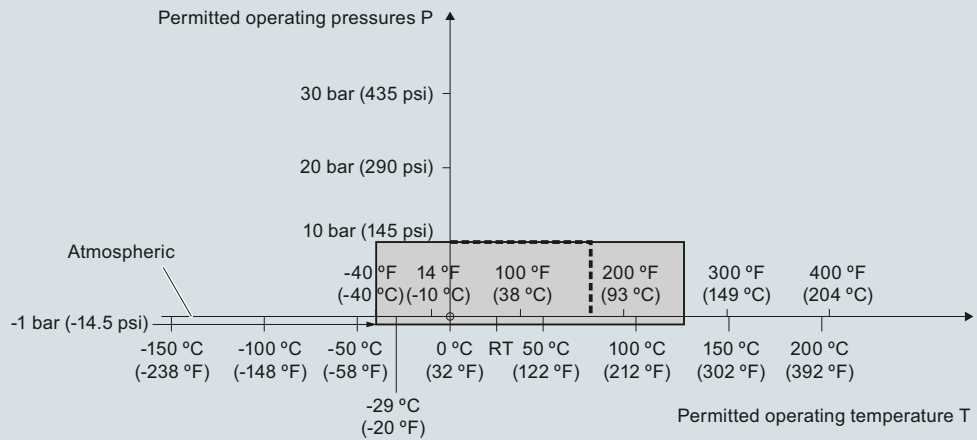
Options



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)

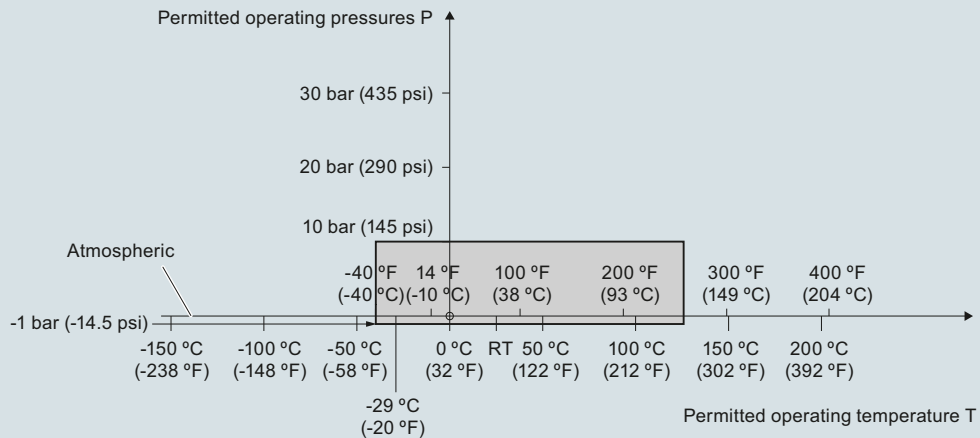
Level measurement

Point level measurement
RF Capacitance switches

Pointek CLS200 - Standard

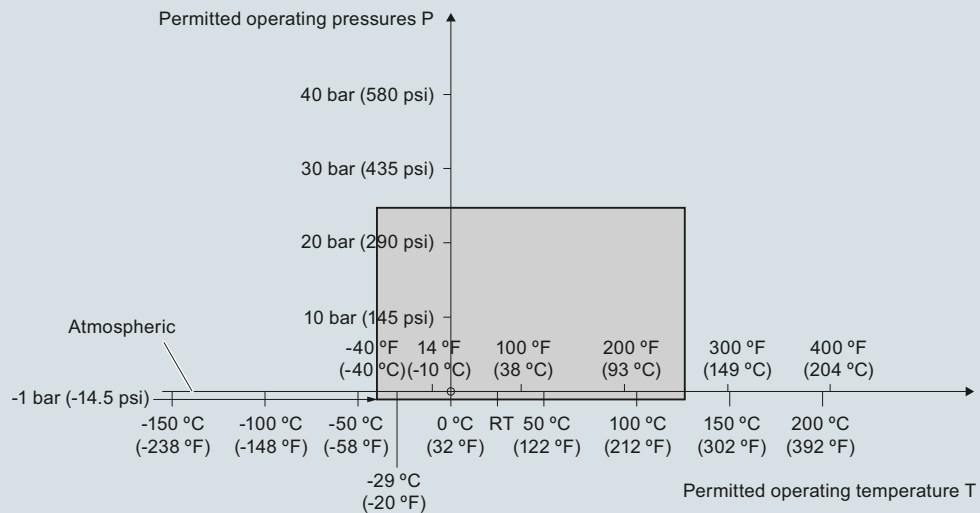
Characteristic curves (continued)

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



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

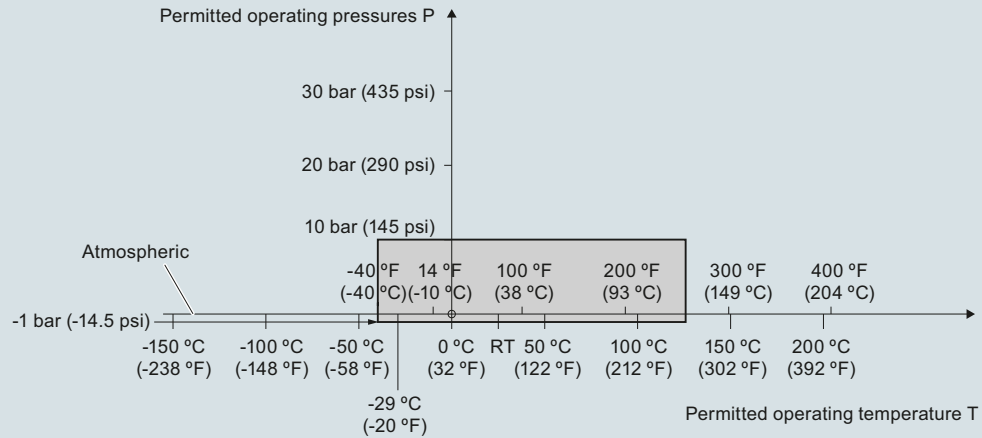
Pressure/temperature curve
CLS200 compact and extended rod
Threaded process connections
(7ML5630 and 7ML5640)



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

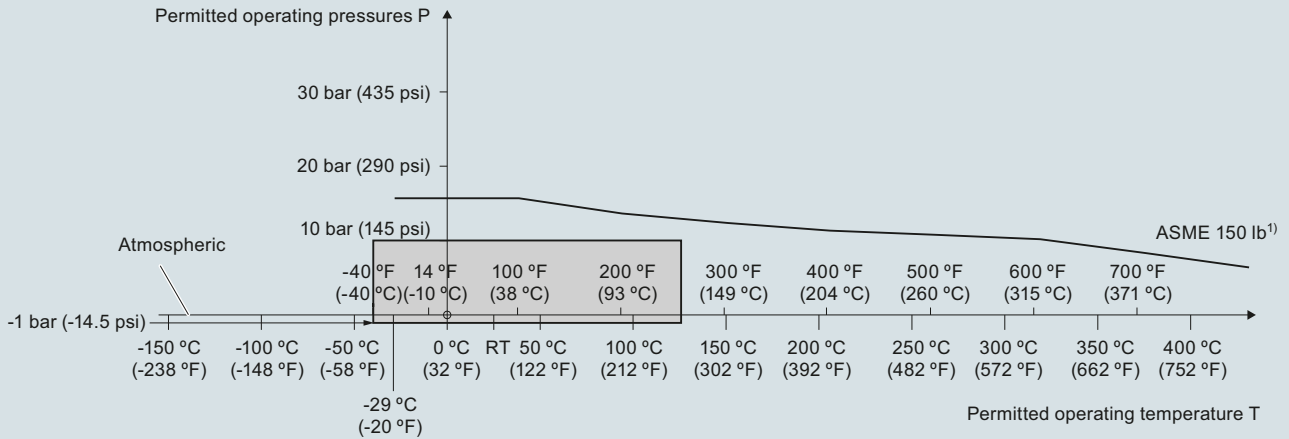
Characteristic curves (continued)

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)



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

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

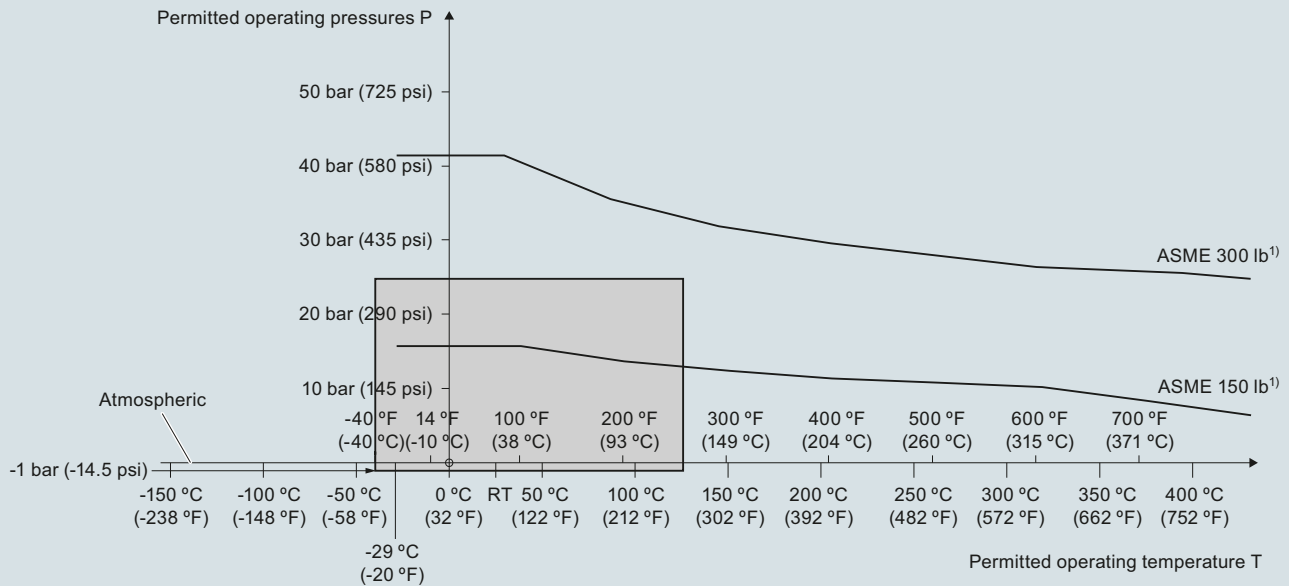
Level measurement

Point level measurement
RF Capacitance switches

Pointek CLS200 - Standard

Characteristic curves (continued)

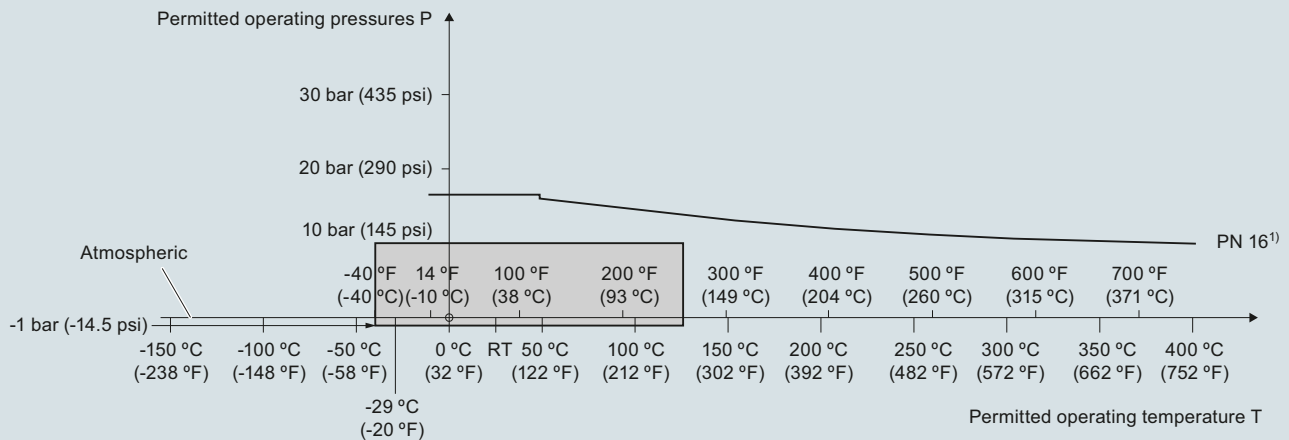
Pressure/temperature curve
CLS200 compact and extended rod
ASME flanged process connections
(7ML5630 and 7ML5640)



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)

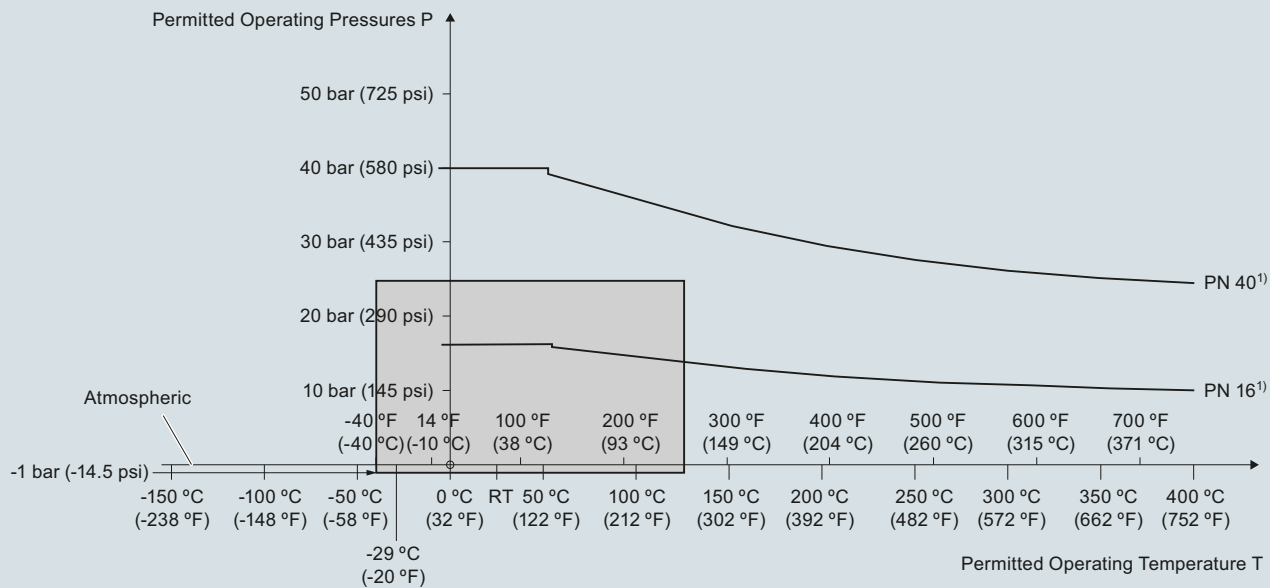


¹) The curve denotes the minimum allowable flange class for the shaded area below.

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)



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

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

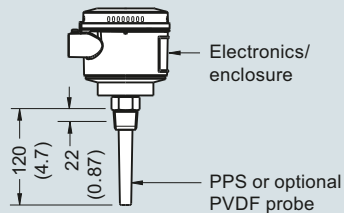
Level measurement

Point level measurement
RF Capacitance switches

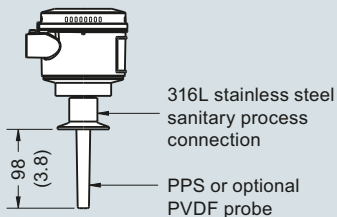
Pointek CLS200 - Standard

Dimensional drawings

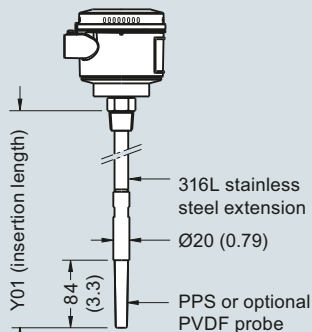
Compact version Threaded (7ML5630 and 7ML5640)



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

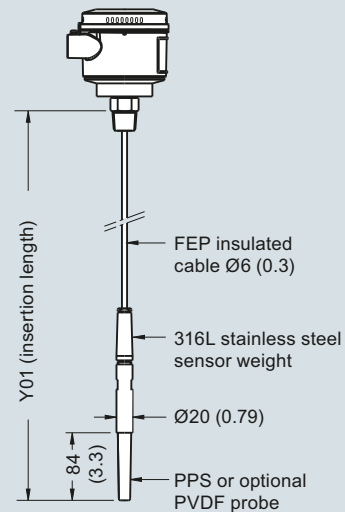


Extended rod version Threaded (7ML5630 and 7ML5640)

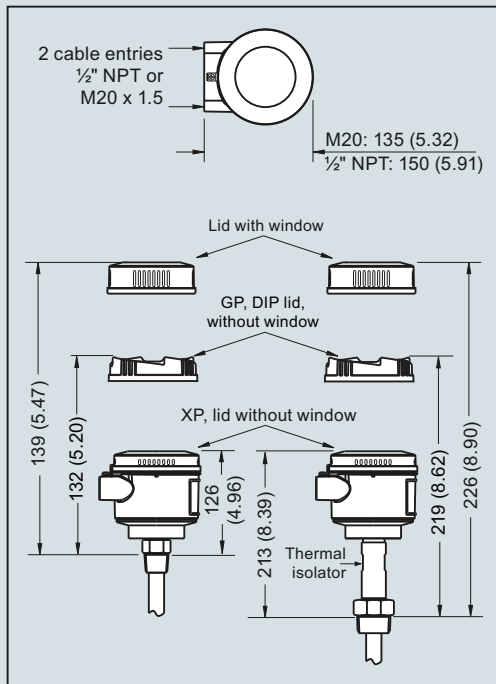


Min. insertion length = 200 (7.87)
Max. insertion length = 5 500 (216)

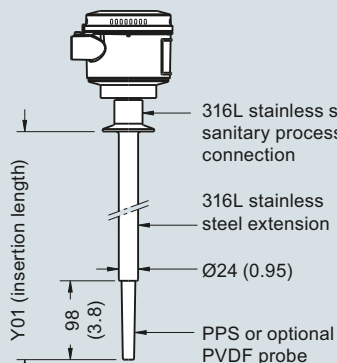
Extended cable version Threaded (7ML5631 and 7ML5641)



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.

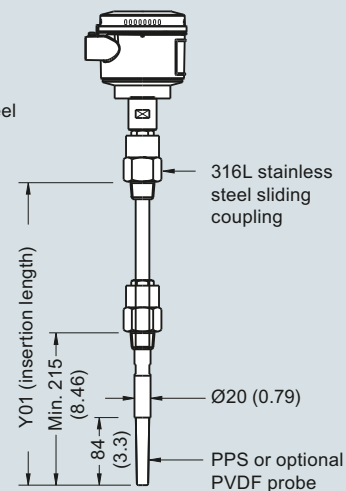


Sanitary extended version Sanitary fitting (7ML5632 and 7ML5642)



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

Sliding coupling version Threaded (7ML5633 and 7ML5643)

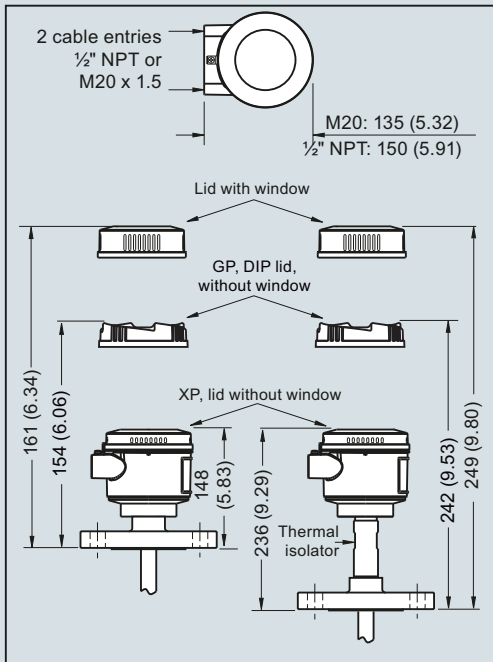
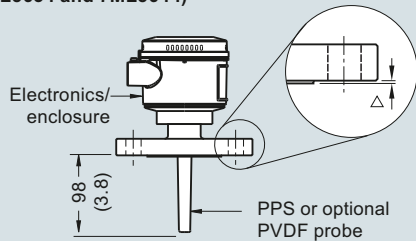


Min. insertion length = 350 (13.82)
Max. insertion length = 5 500 (216)

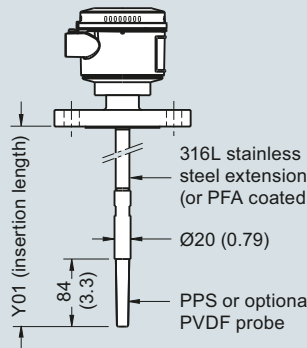
Pointek CLS200 threaded/sanitary process connection, dimensions in mm (inch)

Dimensional drawings (continued)

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

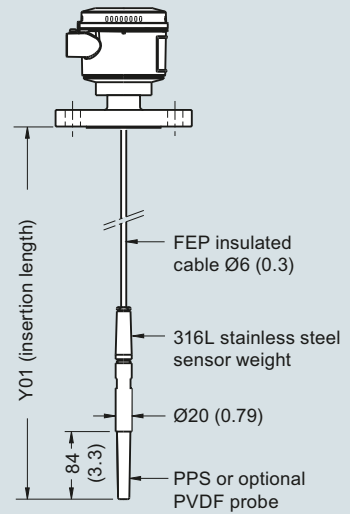


Extended rod version
Welded Flange (7ML5630 and 7ML5640)
Welded Flange, PFA coated
(7ML5634 and 7ML5644)



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)

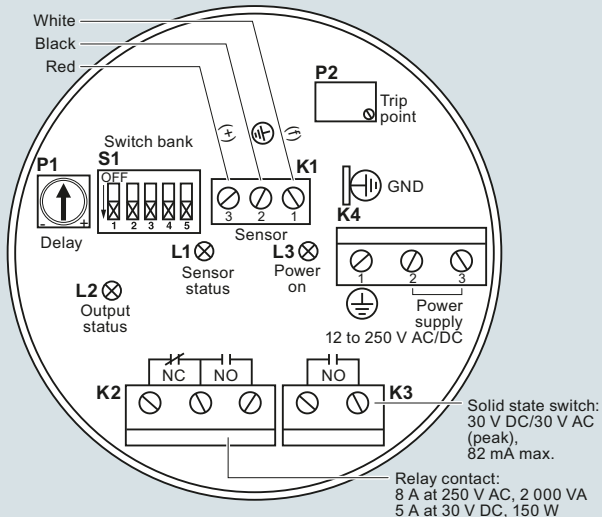
Level measurement

Point level measurement
RF Capacitance switches

Pointek CLS200 - Standard

Circuit diagrams

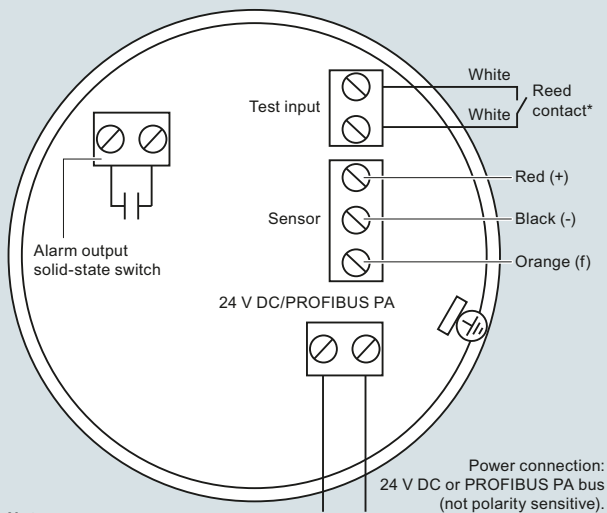
Wiring: Pointek CLS200 standard



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

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.

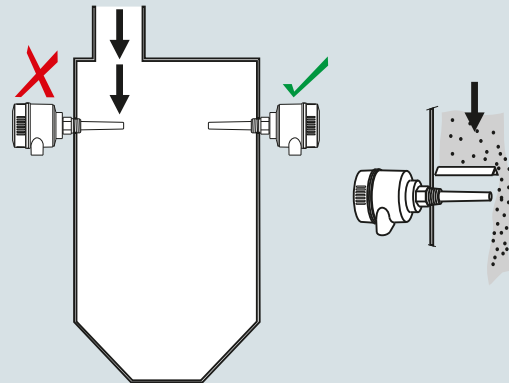
When connected to the PROFIBUS network, advanced diagnostics and set up using SIMATIC PDM are possible.

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).

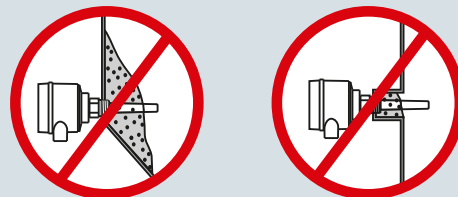
- Key Applications: liquids, slurries, powders, granules, pressurized applications, hazardous areas

Configuration

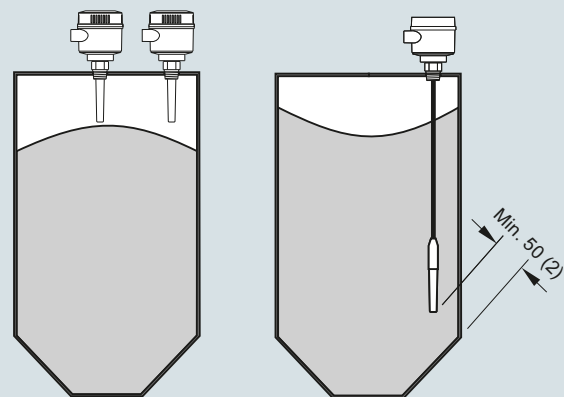
Installation



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

Mode of operation	
Measuring principle	Inverse frequency shift capacitive level detection
Input	
Measured variable	Change in pF
Output	
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
Rated operating conditions¹⁾	
Installation conditions	
• Location	Indoor/outdoor
Ambient conditions	
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) ²⁾
• 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 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 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.

Power supply	
Bus voltage	Standard: 12 ... 30 V DC Intrinsically Safe: 12 ... 24 V DC
Current consumption	12.5 mA
Certificates and approvals	
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 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
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)
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

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

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 5/34.

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

Technical specifications (continued)

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).

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, 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.

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]

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.)

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)

Article No.
7ML5640-0
0 A
0 B
0 C
0 D
1 A
1 B
1 D
3 A
3 B
3 D
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
6 A
6 B
6 C
6 D
6 E
6 F
6 G
6 H
6 J
6 K
A
B
C
D
E
F
G
H
J
K
L

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"

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)

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 cable²⁾

With 5 m (197 inch) of cable²⁾

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

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:¹⁾

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

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)

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

Article No.
7ML5640-0
M
N
P
Q
R
S
0
1
2
3
0
1
0
1
B
C
D
E
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	Article No.
Further designs		7ML5641-
Please add "-Z" to Article No. and specify Order code(s).		0
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 4/41	
1) Available only with Approvals options C and E.		
		0 A
		0 B
		0 C
		0 D
		1 A
		1 B
		1 D
		3 A
		3 B
		3 D
		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
		6 A
		6 B
		6 C
		6 D
		6 E
		6 F
		6 G
		6 H
		6 J
		6 K

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.

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

Welded flange, 316L stainless steel, raised face

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

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

DN 25, PN 16 **6 A**
 DN 25, PN 40 **6 B**
 DN 40, PN 16 **6 C**
 DN 40, PN 40 **6 D**
 DN 50, PN 16 **6 E**
 DN 50, PN 40 **6 F**
 DN 80, PN 16 **6 G**
 DN 80, PN 40 **6 H**
 DN 100, PN 16 **6 J**
 DN 100, PN 40 **6 K**

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

Selection and ordering data	Article No.	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	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	F G H J
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) <u>Add Order code Y01 and plain text:</u> <u>Insertion length ... mm</u> 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	J K L
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 ½ D T100 °C Intrinsically Safe: ¹⁾ 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	B C D E	F G H J K L
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	7ML5642- - - - - - 0
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
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 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⁾		Order code 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 4/41
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.

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 cable²⁾ **2**
- With 5 m (197 inch) of cable²⁾ **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

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: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)

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**

INMETRO¹⁾ **E34**

Operating Instructions

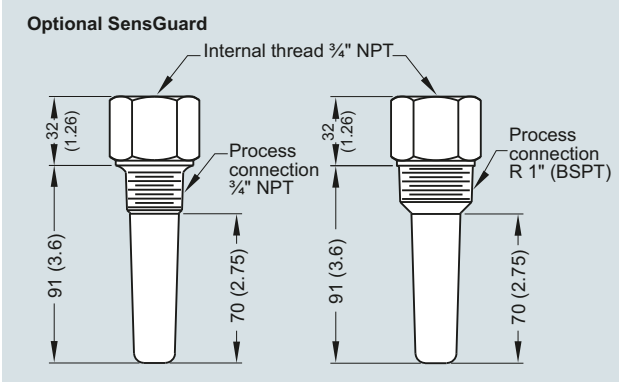
All literature is available to download for free, in a range of languages, at

<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>Accessories</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>General Purpose</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>Hazardous Locations</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>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.</p>	<p>7ML1830-1DL</p> <p>7ML1830-1DM</p> <p>7ML1830-1AQ</p> <p>7ML1830-1JA</p> <p>7ML1830-1JC</p> <p>7ML1830-1JB</p> <p>7ML1830-1JD</p>	<p>Optional SensGuard</p>  <p>Optional SensGuard, dimensions in mm (inch)</p>
<p>Pointek Specials</p>	<p>See page 4/70</p>	

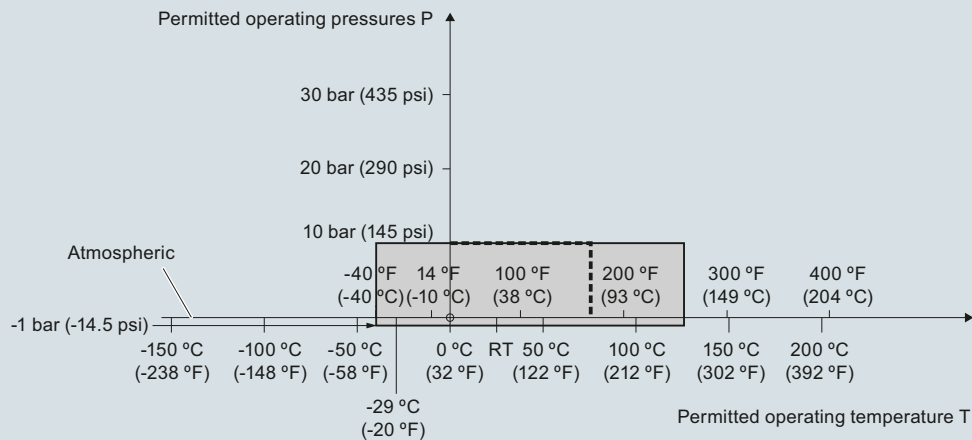
Level measurement

Point level measurement
RF Capacitance switches

Pointek CLS200 - Digital

Characteristic curves

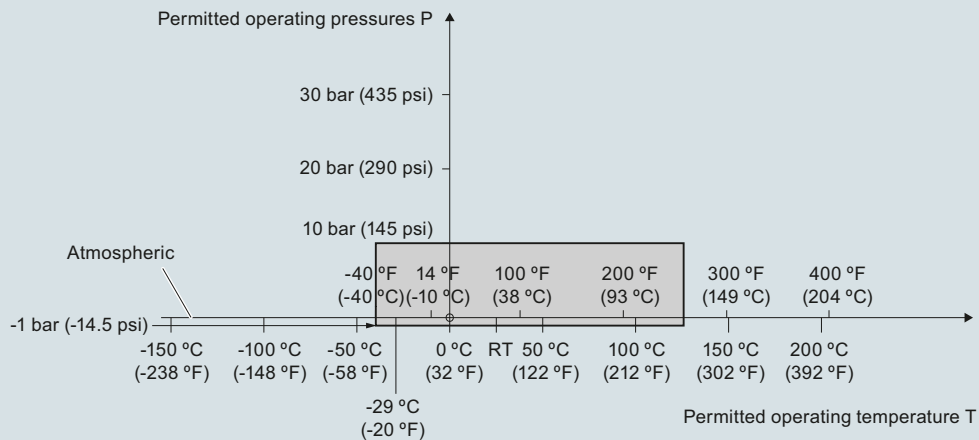
Pressure/temperature curve
CLS200 sliding coupling
threaded process connections
(7ML5633 and 7ML5643)



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

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

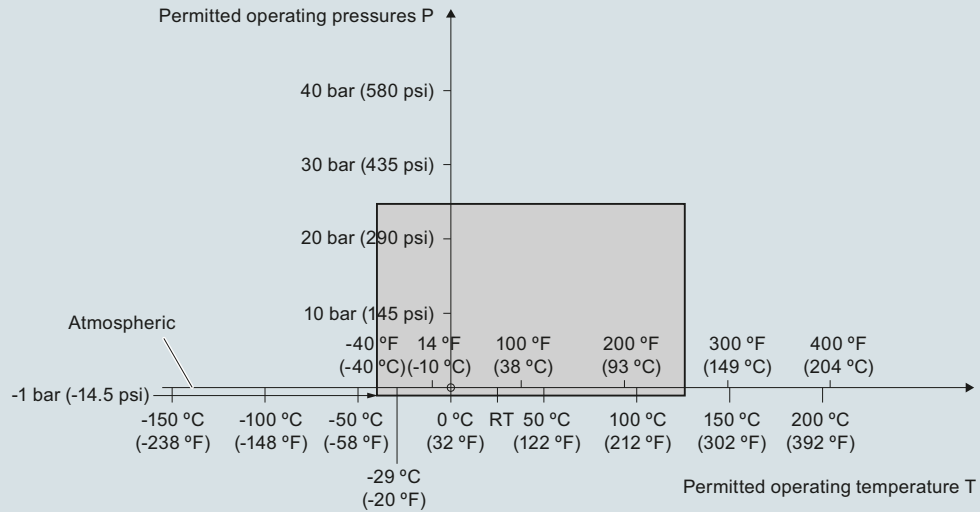
Pressure/temperature curve
CLS200 cable
Threaded process connections
(7ML5631 and 7ML5641)



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

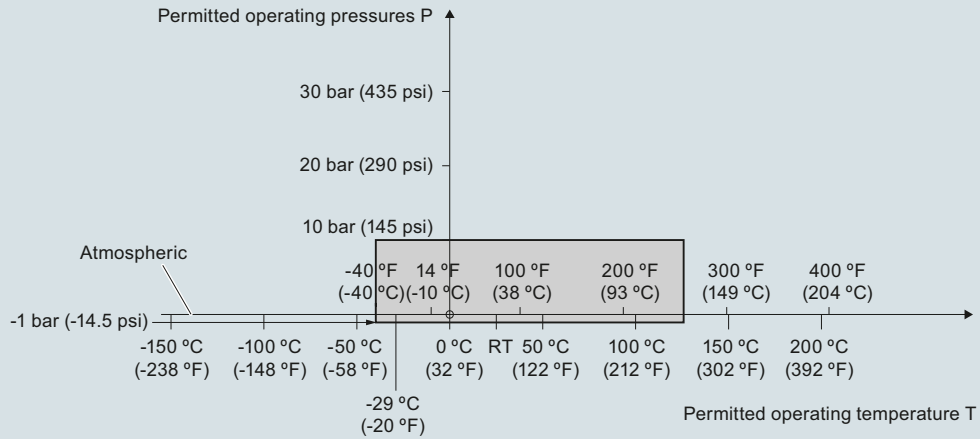
Characteristic curves (continued)

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)

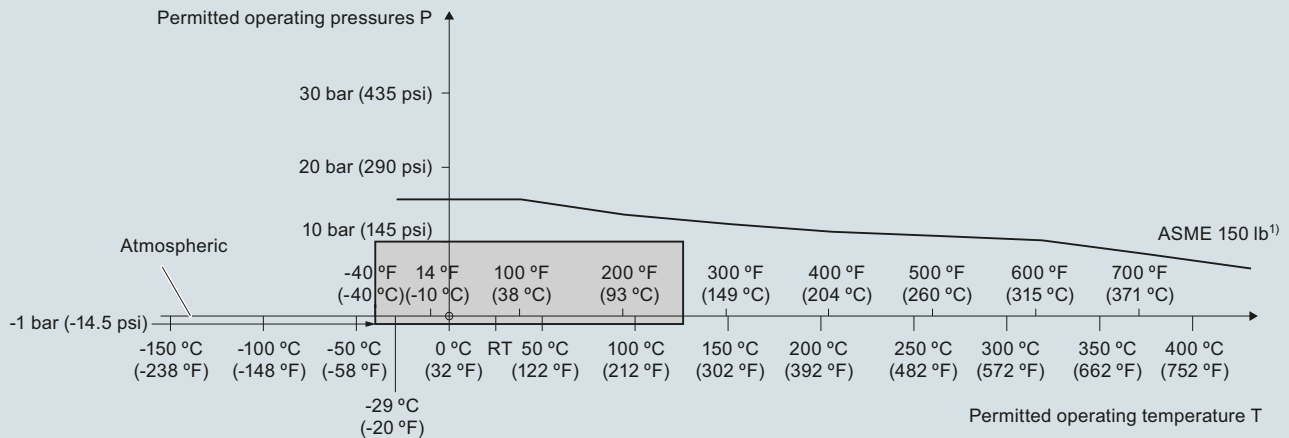
Level measurement

Point level measurement
RF Capacitance switches

Pointek CLS200 - Digital

Characteristic curves (continued)

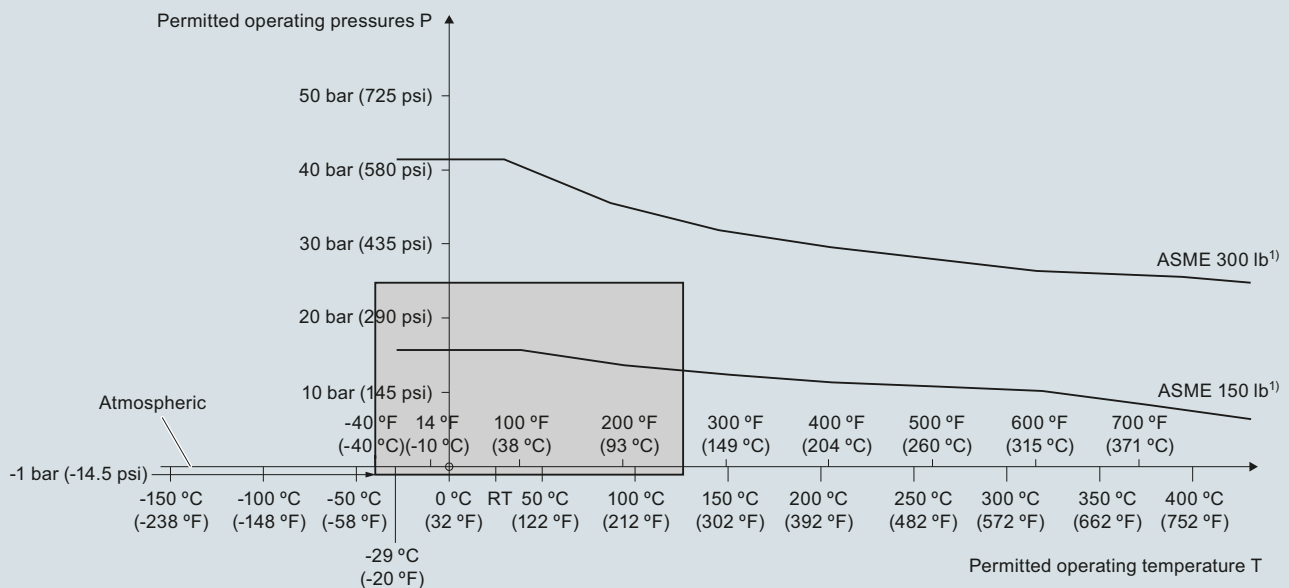
Pressure/temperature curve
CLS200, cable
ASME flanged process connections
(7ML5631 and 7ML5641)



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)

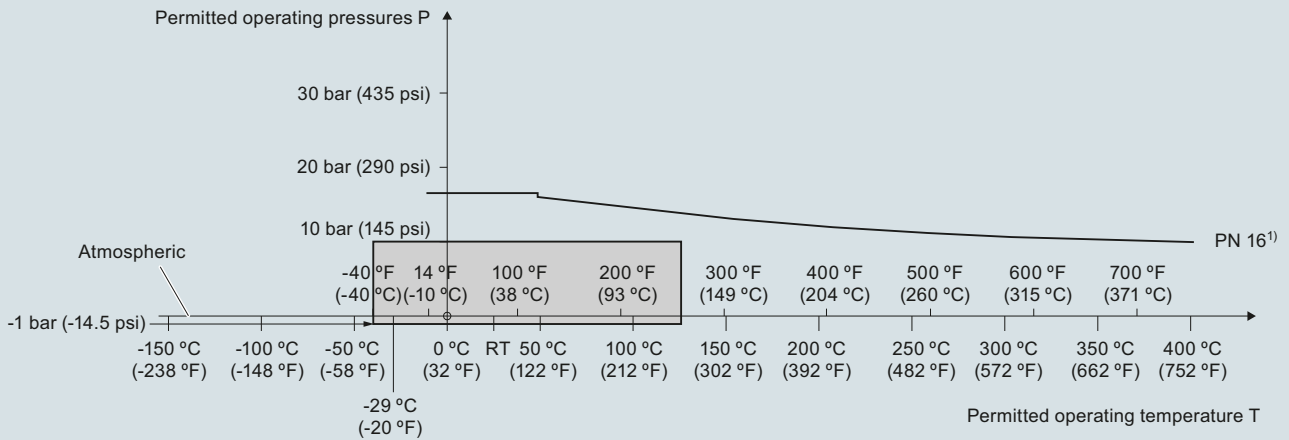


¹⁾ The curve denotes the minimum allowable flange class for the shaded area below.

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

Characteristic curves (continued)

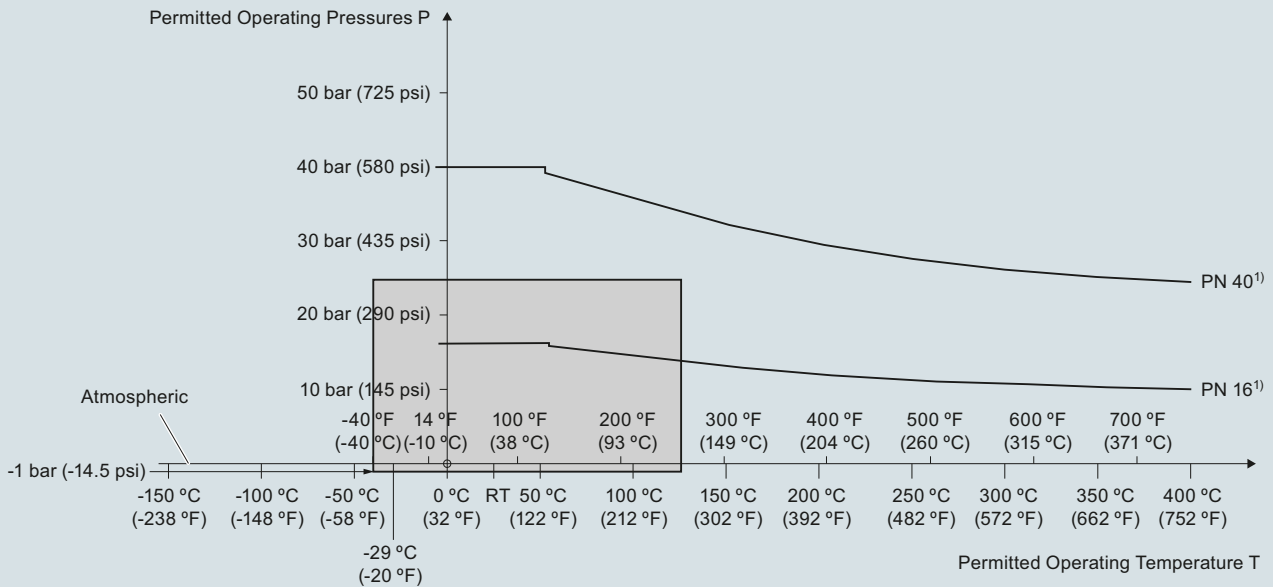
Pressure/temperature curve
CLS200 cable
EN flanged process connections
(7ML5631 and 7ML5641)



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)

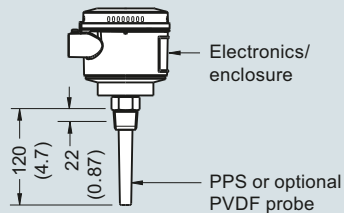
Level measurement

Point level measurement
RF Capacitance switches

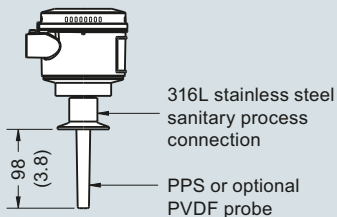
Pointek CLS200 - Digital

Dimensional drawings

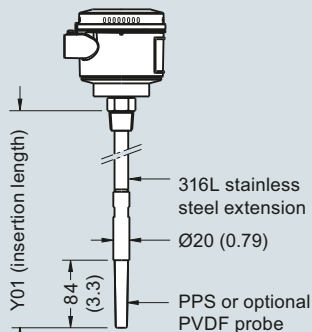
Compact version Threaded (7ML5630 and 7ML5640)



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

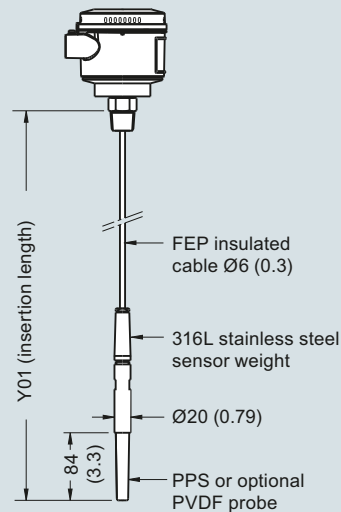


Extended rod version Threaded (7ML5630 and 7ML5640)

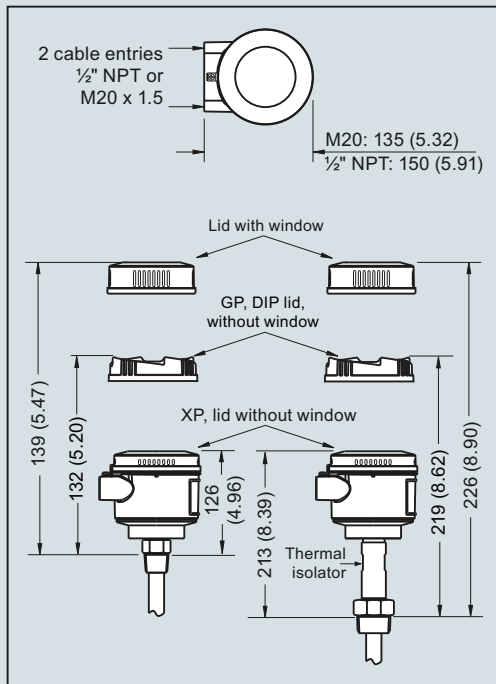


Min. insertion length = 200 (7.87)
Max. insertion length = 5 500 (216)

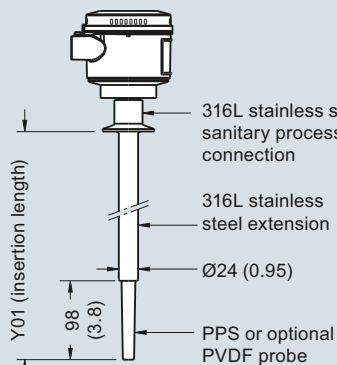
Extended cable version Threaded (7ML5631 and 7ML5641)



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.

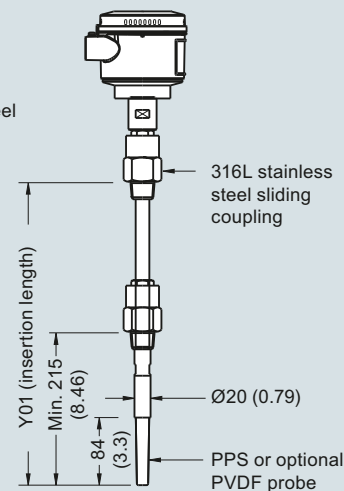


Sanitary extended version Sanitary fitting (7ML5632 and 7ML5642)



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

Sliding coupling version Threaded (7ML5633 and 7ML5643)

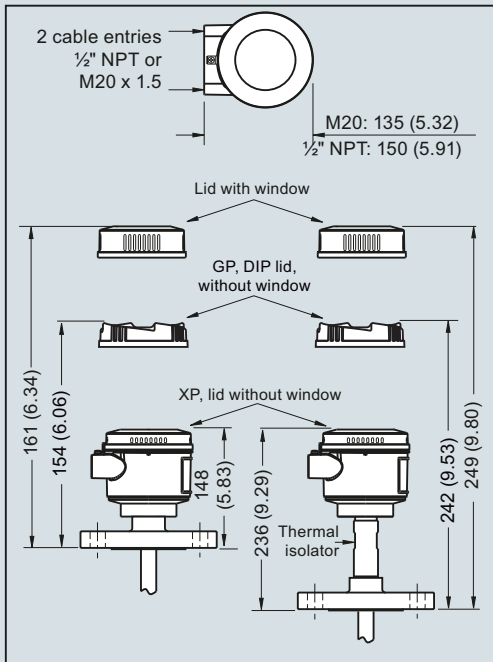
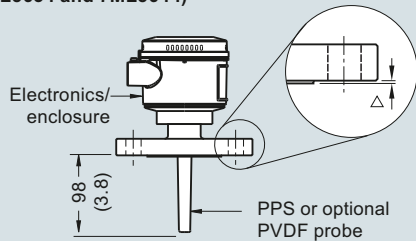


Min. insertion length = 350 (13.82)
Max. insertion length = 5 500 (216)

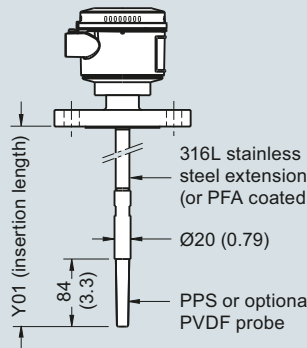
Pointek CLS200 threaded/sanitary process connections, dimensions in mm (inch)

Dimensional drawings (continued)

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

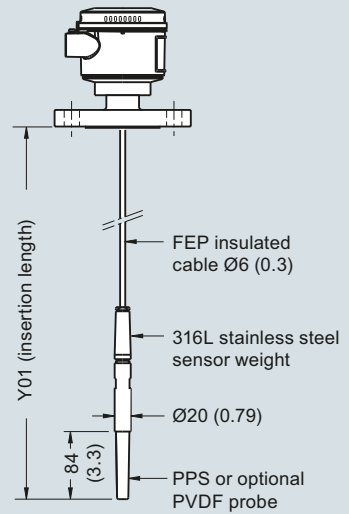


Extended rod version
Welded Flange (7ML5630 and 7ML5640)
Welded Flange, PFA coated
(7ML5634 and 7ML5644)



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)

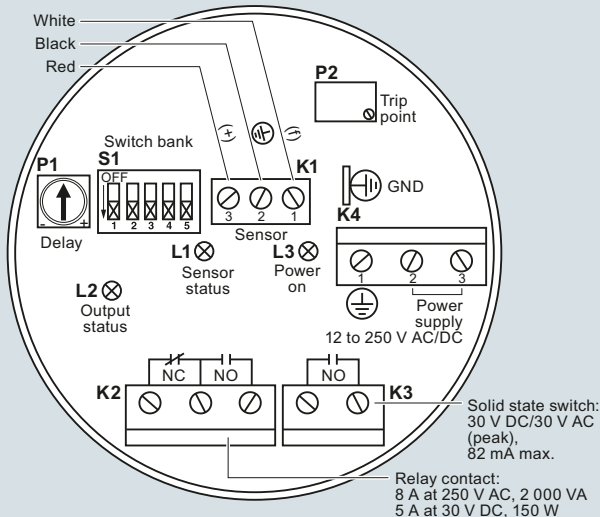
Level measurement

Point level measurement
RF Capacitance switches

Pointek CLS200 - Digital

Circuit diagrams

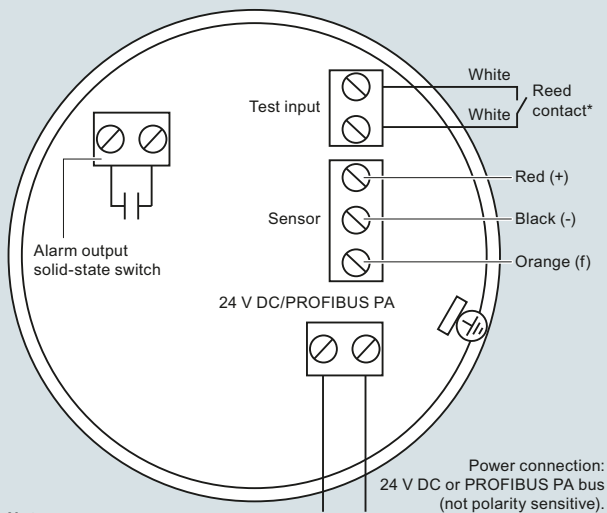
Wiring: Pointek CLS200 standard



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

4

Overview



Pointek CLS300 (standard version) is an inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. CLS300 is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present and has the ability to tune out buildup on the probe.

Benefits

- Active-Shield technology so measurement is unaffected by material buildup or nozzle interference in active shield section
- Performs in extremely abrasive conditions because of solid rod construction
- Three LED indicators for adjustment control, output status, and power
- High-temperature version up to 400 °C (752 °F)

Application

Pointek CLS300 standard version has three LED indicators with basic relay and solid-state switch alarms.

The robust design of CLS300 makes it specifically applicable for heavy solids applications where abrasive materials occur as in the mining industry. The fully potted electronics are unaffected by condensation, dust or vibration.

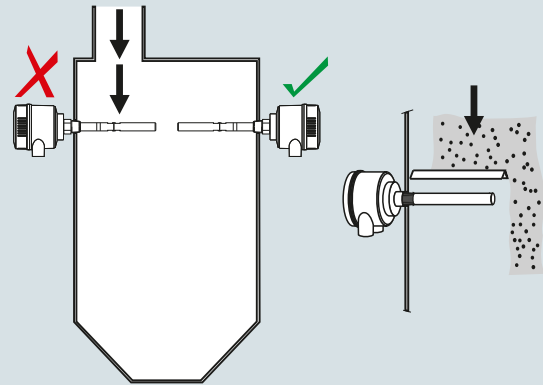
Wetted parts are made of stainless steel with a PFA shield for high chemical resistance, and of ceramic and stainless steel for high temperature version. Materials with low or high dielectric constants can be accurately detected. The unique Active Shield suppresses interference from material buildup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

The unique modular design of the Pointek CLS300 provides a wide range of configurations, process connections, extensions and approvals to meet the temperature and pressure requirements of specific applications. The modular design makes ordering easier and reduces stocking requirements. A wide range of probe configurations are available, including rod and cable versions.

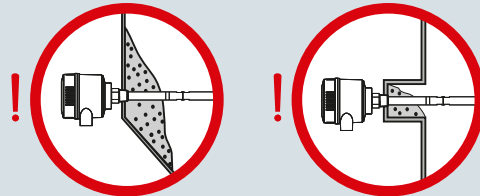
- Key Applications: liquids, slurries, bulk solids, relatively high pressure and temperature, hazardous areas, milling and mining applications

Configuration

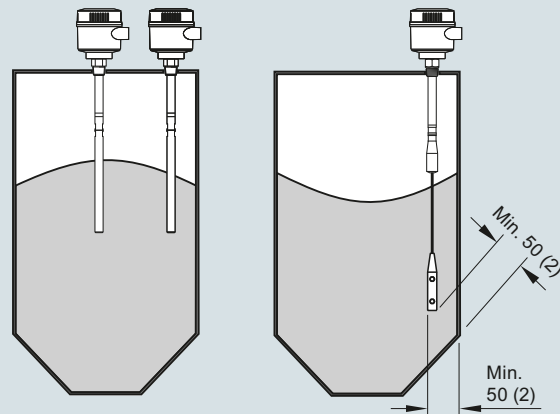
Installation



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



Build up of material in active shield area does not affect switch operation.



Install probe at least 50 (2) from tank wall.
Note angle of repose and adjust accordingly.

Pointek CLS300 installation, dimensions in mm (inch)

Level measurement

Point level measurement

RF Capacitance switches

Pointek CLS300 - Standard

Technical specifications

Mode of operation		Design	
Measuring principle	Inverse frequency shift capacitive level detection	Material (enclosure)	Powder-coated aluminum with gasket
Input		Degree of Protection	Standard: Type 4/NEMA 4/IP65 Optional: Type 4/NEMA 4/IP68
Measured variable	Change in picoFarad (pF)	Cable inlet	2 x M20 x 1.5 thread (option: 2 x 1/2" NPT conduit entry including 1 plugged entry)
Output		Controls and displays	
Output signal		Displays	3 LEDs, for probe status, output status and power supply
• Relay output	1 SPDT Form C relay	Potentiometers	2 potentiometers for time delay and sensitivity
- Max. contact voltage	• 30 V DC • 250 V AC	Switches	5 DIP switches for delay on/off, fail-safe high/low, time delay test/adjust, high/low sensitivity, test delay settings
- Max. contact current	• 5 A (DC) • 8 A (AC)	Power supply	
- Max. switching capacity	• 150 W (DC) • 2 000 VA (AC)	Supply	12 ... 250 V AC/DC, 0 ... 60 Hz, galvanically isolated, 2 W
- Time delay (ON and/or OFF)	1 ... 60 s	Certificates and approvals	
• Solid-state output		General Purpose	CSA, FM, CE, RCM
- Output	Galvanically isolated	Flameproof Enclosure with IS Probe	ATEX II 1/2 G EEx d[ia] IIC T6 ... T1 ATEX II 1/2 D T100 °C
- Protection	Against reversed polarity (bipolar)	Dust Ignition Proof with IS Probe	ATEX II 1/2 D T100 °C CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
- Max. switching voltage	• 30 V (DC) • 30 V peak (AC)	Explosion Proof Enclosure with IS Probe	CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4
- Max. load current	82 mA	Marine	Lloyds Register of Shipping, Categories ENV1, ENV2, and ENV5
- Voltage drop	< 1 V, typical at 50 mA	Overfill Protection	WHG (Germany) VLAREM II (Belgium)
- Time delay (pre or post switching)	1 ... 60 s	Others	Pattern Approval (China)
Accuracy		1) When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves starting on page 5/57.	
Resolution		2) Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F).	
• Min. sensitivity (pF)	1 % change in actual capacitance	3) Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves starting on page 5/57.	
• Max. temperature error	0.2 % of actual capacitance value		
Rated operating conditions¹⁾			
Installation conditions			
• Location	Indoor/outdoor		
Ambient conditions			
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) ²⁾		
• Storage temperature	-40 ... +85 °C (-40 ... +185 °F)		
Medium conditions			
	Liquids, bulk solids, slurries and interfaces, and applications with viscous materials		
• Relative dielectric constant ϵ_r	Min. 1.5		
• Process temperature			
- Rod/Cable version	-40 ... +200 °C (-40 ... +392 °F) ²⁾		
- High-temperature version	-40 ... +400 °C (-40 ... +752 °F)		
• Process pressure ³⁾	-1 ... +35 bar g (-14.6 ... +511 psi g)		

Design: Probe

	Rod version	High Temperature version	Cable version
Length	Min. 250 mm (9.8 inch), max. 1 000 mm (40 inch)	Min. 250 mm (9.8 inch), max. 1 000 mm (40 inch)	Min. 1 000 mm (40 inch), max. 25 000 mm (984 inch)
Sensor wetted parts	PFA (no insulation on active probe), 316L stainless steel, PEEK isolators	Ceramic (ZrO ₂ ¹⁾ isolators (no insulation on active probe), 316L stainless steel	316 stainless steel, optional PFA, PEEK isolators
O-ring seal material	FKM (optional FFKM) ²⁾	Graphite ²⁾	FKM (optional FFKM) ²⁾
Thermal isolator	Optional	Standard	Optional
Extension	User selectable length	User selectable length	User selectable cable length

1) Zirconium Oxide

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

Selection and ordering data	Article No.	Article No.
<p>Pointek CLS300 RF Capacitance point level switch, rod design.</p> <p>Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, with active shield 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>	7ML5650-	7ML5650-
<p>Process connection</p> <p>Threaded, 316L stainless steel</p> <p>¾" NPT [(Taper), ANSI/ASME B1.20.1] 0 A</p> <p>1" NPT [(Taper), ANSI/ASME B1.20.1] 0 B</p> <p>1¼" NPT [(Taper), ANSI/ASME B1.20.1] 0 C</p> <p>1½" NPT [(Taper), ANSI/ASME B1.20.1] 0 D</p> <p>R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] 1 A</p> <p>R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] 1 B</p> <p>R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] 1 D</p> <p>G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 3 A</p> <p>G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 3 B</p> <p>G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 3 D</p>		
<p>Welded flange, 316L stainless steel, raised face</p> <p>1" ASME, 150 lb 5 A</p> <p>1" ASME, 300 lb 5 B</p> <p>1" ASME, 600 lb 5 C</p> <p>1½" ASME, 150 lb 5 D</p> <p>1½" ASME, 300 lb 5 E</p> <p>1½" ASME, 600 lb 5 F</p> <p>2" ASME, 150 lb 5 G</p> <p>2" ASME, 300 lb 5 H</p> <p>2" ASME, 600 lb 5 J</p> <p>3" ASME, 150 lb 5 K</p> <p>3" ASME, 300 lb 5 L</p> <p>3" ASME, 600 lb 5 M</p> <p>4" ASME, 150 lb 5 N</p> <p>4" ASME, 300 lb 5 P</p> <p>4" ASME, 600 lb 5 Q</p>		
<p>Welded flange, 316L stainless steel, Type A flat faced</p> <p>DN 25, PN 16 6 A</p> <p>DN 25, PN 40 6 B</p> <p>DN 40, PN 16 6 C</p> <p>DN 40, PN 40 6 D</p> <p>DN 50, PN 16 6 E</p> <p>DN 50, PN 40 6 F</p> <p>DN 80, PN 16 6 G</p> <p>DN 80, PN 40 6 H</p> <p>DN 100, PN 16 6 J</p> <p>DN 100, PN 40 6 K</p> <p>(Note: flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)</p>		
<p>Probe length</p> <p>(length from flange face) (threaded lengths include process thread)</p> <p><u>Note: No Y01 needed in Order code for standard lengths</u></p> <p>Standard version, rod 350 mm (13.78 inch) A</p> <p>Extended rod, length 500 mm (19.69 inch) B</p> <p>Extended rod, length 750 mm (29.53 inch) C</p> <p>Extended rod, length 1 000 mm (39.37 inch) D</p> <p><u>Add Order code Y01 and plain text: "Insertion length ... mm"</u></p> <p>Extended rod, factory adjusted length 250 ... 499 mm (9.8 ... 19.65 inch) E</p> <p>Extended rod, factory adjusted length 500 ... 749 mm (19.69 ... 29.49 inch) F</p> <p>Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch) G</p>		
<p>Pointek CLS300 RF Capacitance point level switch, rod design.</p> <p>Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, with active shield to tune out build-up on probe.</p>		
<p>Thermal isolator</p> <p>Without thermal isolator 0</p> <p>With thermal isolator [for process connection temperatures over 85 °C (185 °F)] 1</p>		
<p>Wetted seals</p> <p>FKM 0</p> <p>FFKM [for process temperatures above -20 °C (-4 °F)] 1</p>		
<p>Probe material</p> <p>316L stainless steel with PFA lining and PEEK isolators 0</p>		
<p>Approvals</p> <p>Dust Ignition Proof with IS Probe: CE, RCM, ATEX II ½ D T100 °C C</p> <p>Flameproof Enclosure with IS Probe: CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T1, ATEX II ½ D T100 °C D</p> <p>Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T1, ATEX II ½ D T100 °C E</p> <p>Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G, CSA/FM Class III T4 F</p> <p>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</p> <p>General Purpose (CSA, FM) H</p> <p>General Purpose (CE, RCM) J</p> <p>General Purpose with WHG approval (CSA, FM, CE, RCM) K</p>		
<p>Enclosure and lid</p> <p><u>Aluminum epoxy coated</u></p> <p>2 x ½" NPT via adapter - cable inlet, IP65 A</p> <p>2 x M20 x 1.5 cable inlet, IP65 B</p> <p>2 x ½" NPT via adapter - cable inlet, IP68 C</p> <p>2 x M20 x 1.5 cable inlet, IP68 D</p>		
<p>Active shield length</p> <p>Standard length - (125 mm threaded, 105 mm flanged) 0</p> <p>Extended shield - (250 mm threaded, 230 mm flanged)¹⁾ 1</p> <p>Extended shield - (400 mm threaded, 380 mm flanged)²⁾ 2</p>		
<p>¹⁾ Available with Probe version options B ... D, F, G only [≥ 500 mm (19.69 inch)].</p> <p>²⁾ Available with Probe version options C, D, and G only [≥ 750 mm (29.53 inch)].</p>		

Level measurement

Point level measurement
RF Capacitance switches

Pointek CLS300 - Standard

Selection and ordering data

Order code

Article No.

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 to ISO 9000

C11

Material Inspection Certificate Type 3.1 per EN 10204

C12

INMETRO¹⁾

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 **4/69**

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

Pointek CLS300 RF Capacitance point level switch, cable design.

7ML5651-

Detects level and interface in aggressive liquids, solids, slurries, and foam. Cable extension options to 25 m (82.02 ft), adaptable sensitivity, with active shield 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

1¼" NPT [(Taper), ANSI/ASME B1.20.1]

0 C

1½" NPT [(Taper), ANSI/ASME B1.20.1]

0 D

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

1 D

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

3 D

Welded flange, 316L stainless steel, raised face

1½" ASME, 150 lb

5 D

1½" ASME, 300 lb

5 E

1½" ASME, 600 lb

5 F

2" ASME, 150 lb

5 G

2" ASME, 300 lb

5 H

2" ASME, 600 lb

5 J

3" ASME, 150 lb

5 K

3" ASME, 300 lb

5 L

3" ASME, 600 lb

5 M

4" ASME, 150 lb

5 N

4" ASME, 300 lb

5 P

4" ASME, 600 lb

5 Q

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

DN 40, PN 16

6 C

DN 40, PN 40

6 D

DN 50, PN 16

6 E

DN 50, PN 40

6 F

DN 80, PN 16

6 G

DN 80, PN 40

6 H

DN 100, PN 16

6 J

DN 100, PN 40

6 K

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

Probe length

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

Note: No Y01 needed in Order code for standard lengths

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

A

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

B

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

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

E

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

F

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

G

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

H

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

J

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

K

Selection and ordering data	Article No.	Order code
<p>Pointek CLS300 RF Capacitance point level switch, cable design. Detects level and interface in aggressive liquids, solids, slurries, and foam. Cable extension options to 25 m (82.02 ft), adaptable sensitivity, with active shield to tune out build-up on probe.</p>	7ML5651-	
<p>Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]</p>	0 1	
<p>Wetted seals FKM FFKM [for process temperatures above -20 °C (-4 °F)]</p>	0 1	
<p>Probe material Bare 316L stainless steel cable, PEEK isolators and 316L stainless steel cable weight PFA coated cable, PEEK isolators and 316L stainless steel cable weight</p>	0 1	
<p>Approvals Dust Ignition Proof with IS Probe: CE, RCM, ATEX II ½ D T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T1, ATEX II ½ D T100 °C Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T1, 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 General Purpose (CSA, FM) General Purpose (CE, RCM) General Purpose with WHG approval (CSA, FM, CE, RCM)</p>	C D E F G H J K	
<p>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</p>	A B C D	
<p>Active shield length Standard length - (125 mm threaded, 105 mm flanged) Extended shield - (250 mm threaded, 230 mm flanged) Extended shield - (400 mm threaded, 380 mm flanged)¹⁾</p>	0 1 2	
<p>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 to ISO 9000 Material Inspection Certificate Type 3.1 per EN 10204 INMETRO¹⁾</p>		<p>Y01 Y15 C11 C12 E34</p>
<p>Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation.</p>		
<p>Accessories ¹⁾ Available only with Approvals options C, D, E.</p>		See page 4/69

Level measurement

Point level measurement
RF Capacitance switches

Pointek CLS300 - Standard

Selection and ordering data

Article No.

Pointek CLS300 RF Capacitance point level switch, high temperature design.

Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, with active shield 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] **0 A**
 1" NPT [(Taper), ANSI/ASME B1.20.1] **0 B**
 1¼" NPT [(Taper), ANSI/ASME B1.20.1] **0 C**
 1½" NPT [(Taper), ANSI/ASME B1.20.1] **0 D**
 R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] **1 A**
 R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] **1 B**
 R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] **1 D**
 G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] **3 A**
 G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] **3 B**
 G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] **3 D**

Welded flange, 316L stainless steel, raised face

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

Welded flange, 316L stainless steel,

Type A flat faced

DN 25, PN 16 **6 A**
 DN 25, PN 40 **6 B**
 DN 40, PN 16 **6 C**
 DN 40, PN 40 **6 D**
 DN 50, PN 16 **6 E**
 DN 50, PN 40 **6 F**
 DN 80, PN 16 **6 G**
 DN 80, PN 40 **6 H**
 DN 100, PN 16 **6 J**
 DN 100, PN 40 **6 K**

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

Probe length

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

Note: No Y01 needed in Order code for standard lengths

Standard version rod, 350 mm (13.78 inch) **A**
 Extended rod, length 500 mm (19.69 inch) **B**
 Extended rod, length 750 mm (29.53 inch) **C**
 Extended rod, length 1 000 mm (39.37 inch) **D**

Article No.

Pointek CLS300 RF Capacitance point level switch, high temperature design.

Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, with active shield to tune out build-up on probe.

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

Extended rod, factory adjusted length 250 ... 499 mm (9.8 ... 19.65 inch) **E**
 Extended rod, factory adjusted length 500 ... 749 mm (19.69 ... 29.49 inch) **F**
 Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch) **G**

Wetted seals

Graphite **0**

Probe material

316L stainless steel with ceramic (ZrO₂) isolators **0**

Approvals

Dust Ignition Proof with IS Probe:
CE, RCM, ATEX II ½ D T100 °C **C**
 Flameproof Enclosure with IS Probe:
CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T1, ATEX II ½ D T100 °C **D**
 Flameproof Enclosure with IS Probe with WHG approval:
CE, RCM, ATEX II ½ G EEx d[ia] IIC T6 ... T1, ATEX II ½ 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 with WHG approval (CSA, FM, CE, RCM) **K**

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**

Active shield length

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

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

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

Selection and ordering data	Order code
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Further designs	
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Please add "-Z" to Article No. and specify Order code(s).	
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Total insertion length: enter the total insertion length in plain text description ¹⁾	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 to ISO 9000	C11
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Material Inspection Certificate Type 3.1 per EN 10204	C12
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INMETRO ²⁾	E34
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Operating Instructions	
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All literature is available to download for free, in a range of languages, at	
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http://www.siemens.com/processinstrumentation/documentation .	
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Accessories	
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See page 4/69

¹⁾ Not available with Probe length option B.

²⁾ Available only with Approvals options C, D, E.

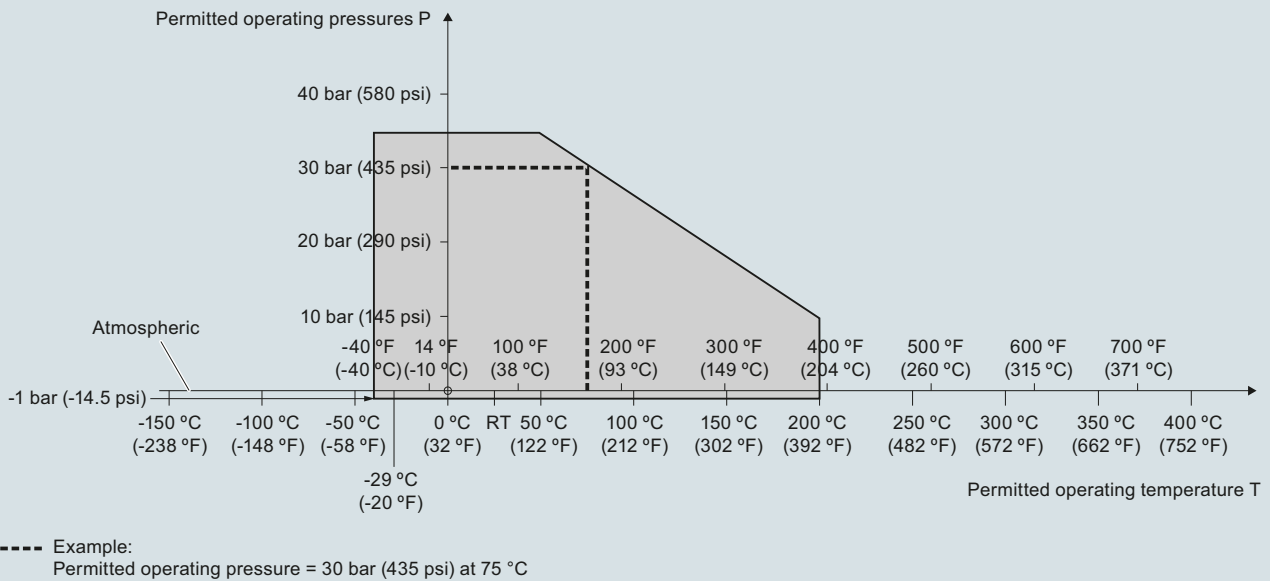
Level measurement

Point level measurement
RF Capacitance switches

Pointek CLS300 - Standard

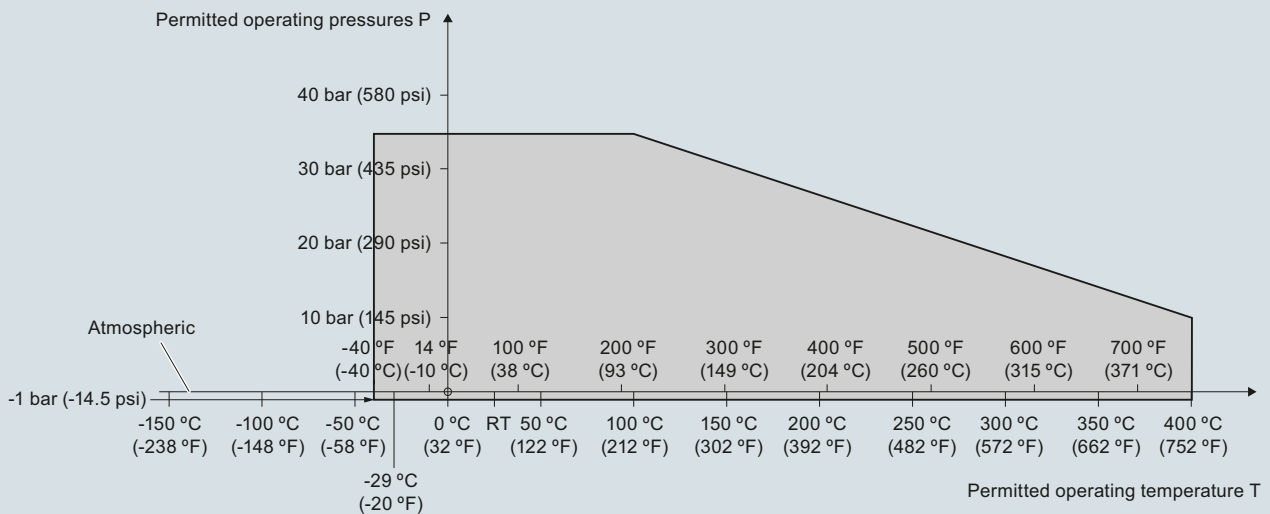
Characteristic curves

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



Pointek CLS300 process pressure/temperature derating curves (7ML5650, 7ML5651, 7ML5660, and 7ML5661)

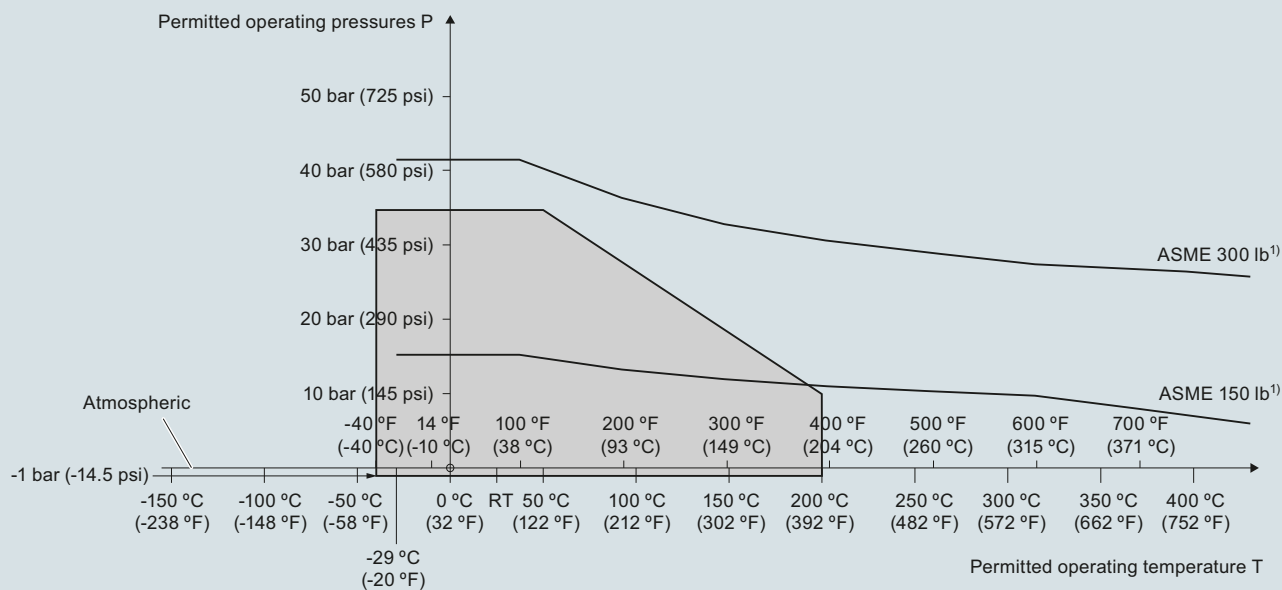
Pressure/temperature curve
CLS300 high temperature rod probes
Threaded process connections
(7ML5652 and 7ML5662)



Pointek CLS300 process pressure/temperature derating curves (7ML5652 and 7ML5662)

Characteristic curves (continued)

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



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

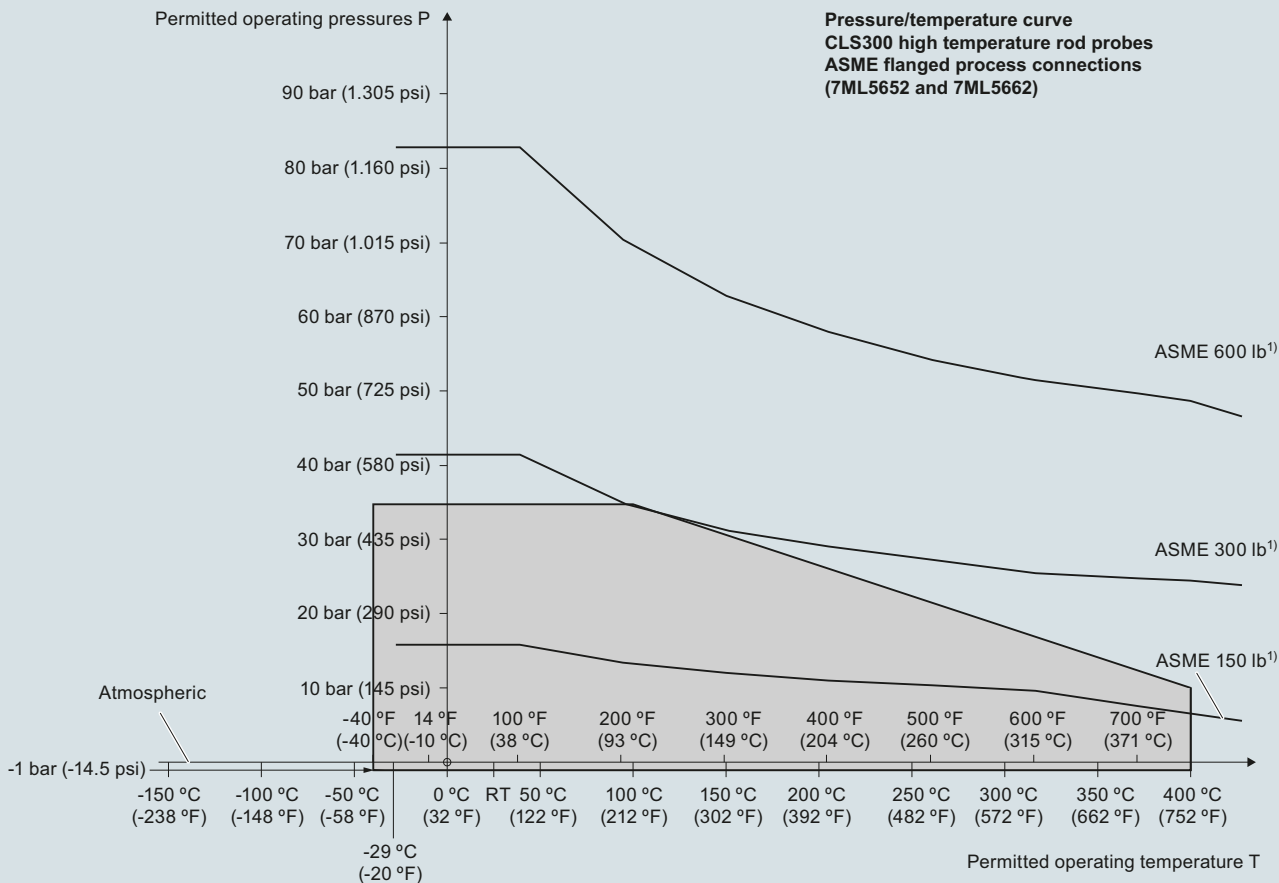
Pointek CLS300 process pressure/temperature derating curves (7ML5650, 7ML5651, 7ML5660, and 7ML5661)



Level measurement
 Point level measurement
 RF Capacitance switches

Pointek CLS300 - Standard

Characteristic curves (continued)

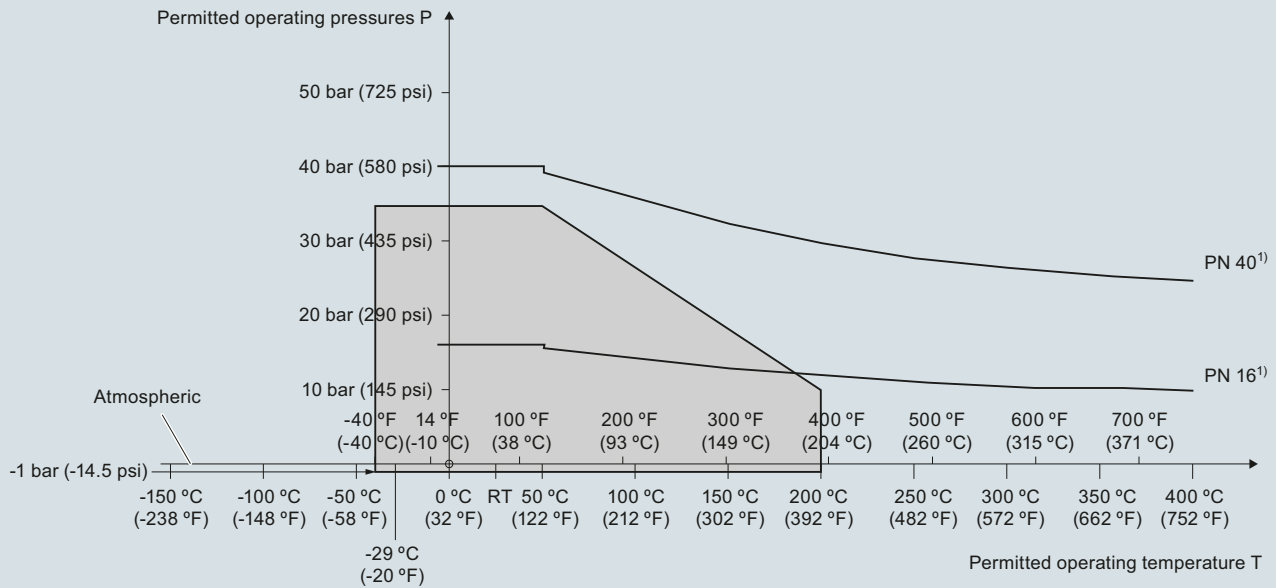


¹⁾ The curve denotes the minimum allowable flange class for the shaded area below.

Pointek CLS300 process pressure/temperature derating curves (7ML5652 and 7ML5662)

Characteristic curves (continued)

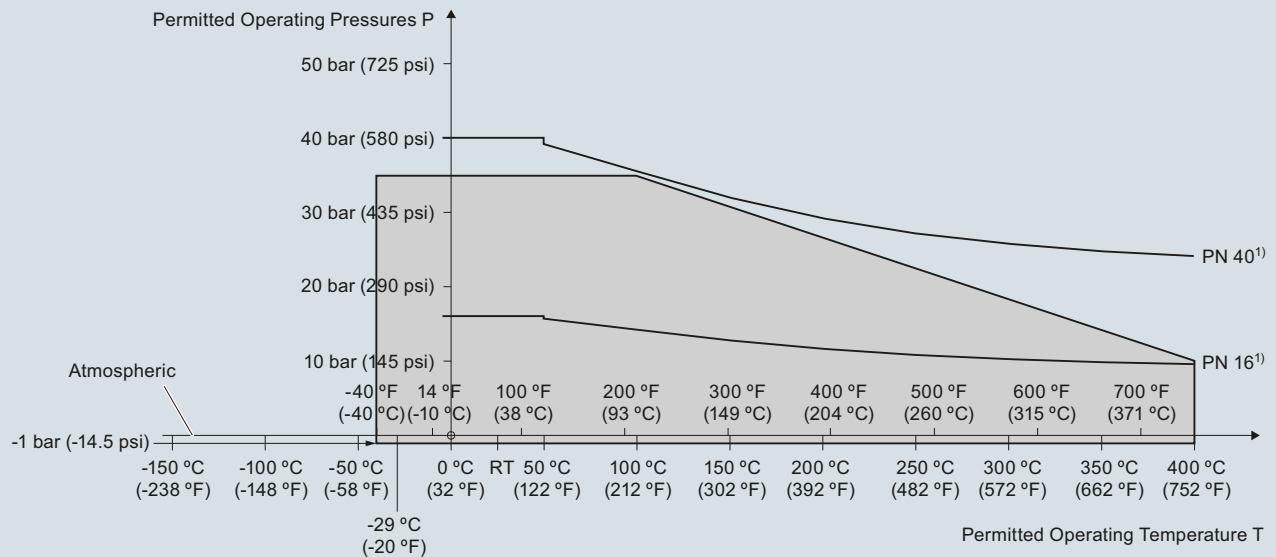
Pressure/temperature curve
CLS300 extended rod and cable probes
EN flanged process connections
(7ML5650, 7ML5651, 7ML5660 and 7ML5661)



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

Pointek CLS300 process pressure/temperature derating curves (7ML5650, 7ML5651, 7ML5660, and 7ML5661)

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



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

Pointek CLS300 process pressure/temperature derating curves (7ML5652 and 7ML5662)

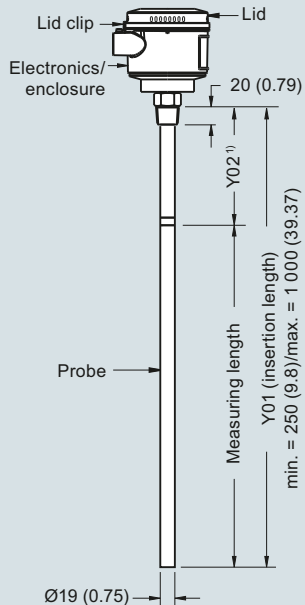
Level measurement

Point level measurement
RF Capacitance switches

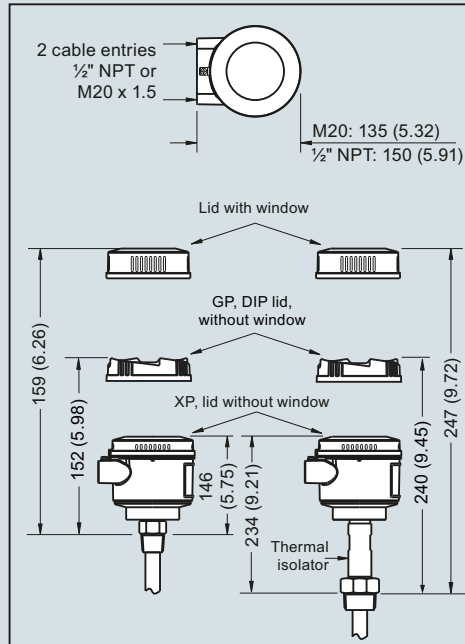
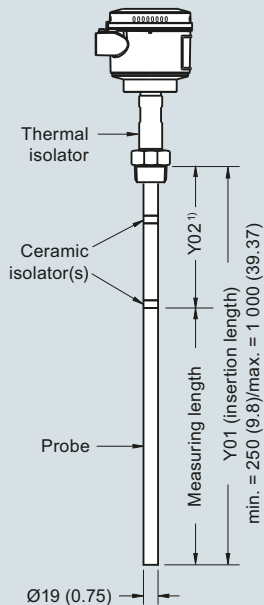
Pointek CLS300 - Standard

Dimensional drawings

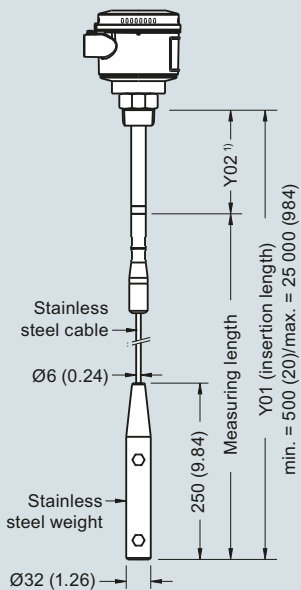
**Rod version
Threaded (7ML5650 and 7ML5660)**



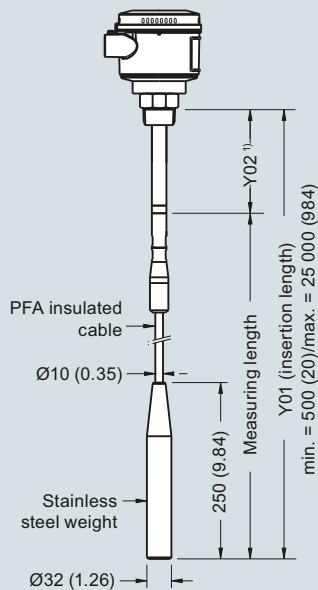
**High temperature rod version
Threaded (7ML5652 and 7ML5662)**



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



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



Note:

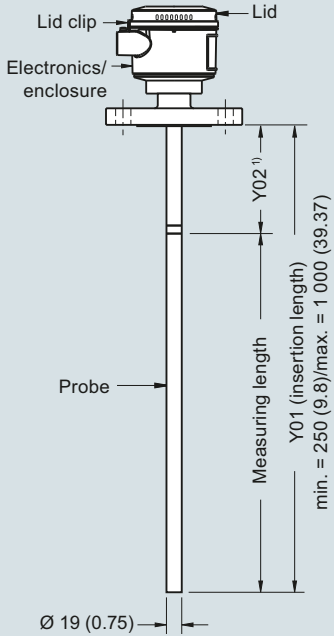
¹⁾ Extended Active Shield (Y02): standard length 125 (4.92). Optional active shield lengths: 250 (9.84) or 400 (15.75).

Pointek CLS300 threaded process connections, dimensions in mm (inch)

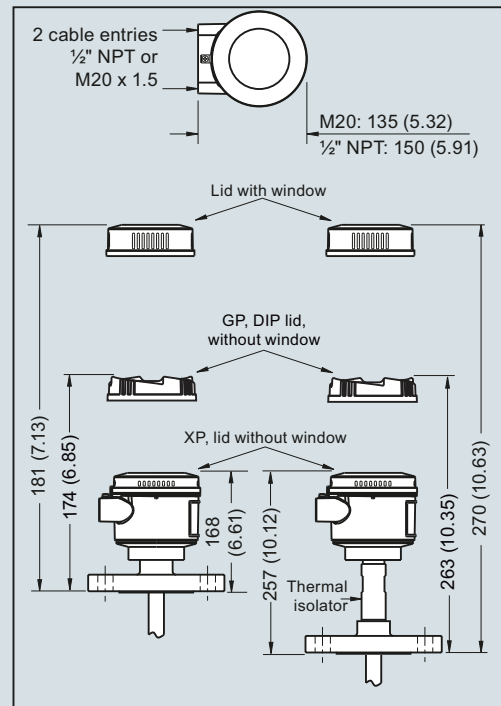
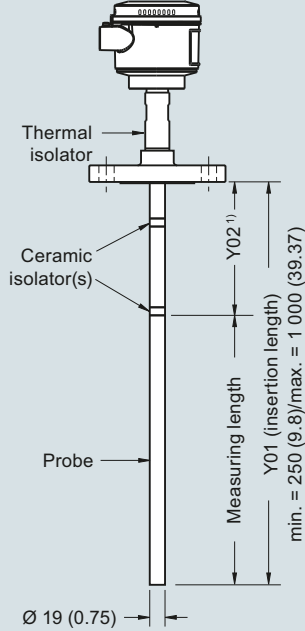
4

Dimensional drawings (continued)

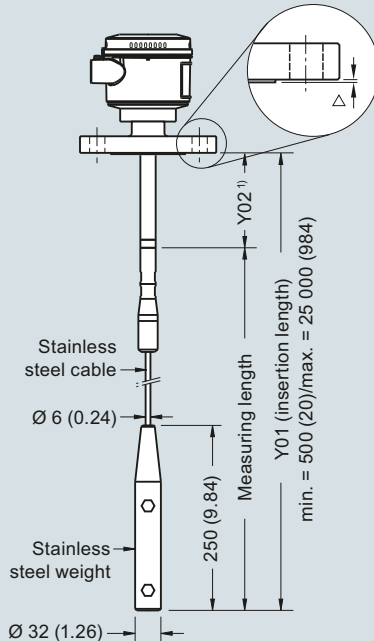
**Rod version
Welded flange (7ML5650 and 7ML5660)**



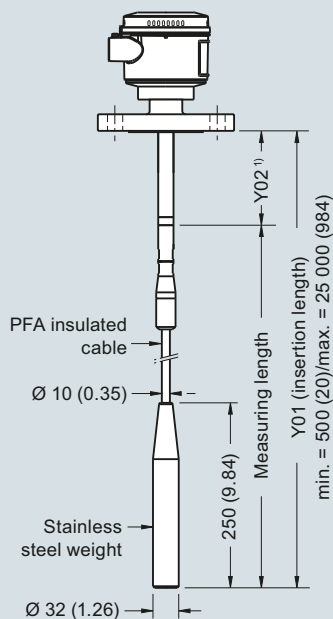
**High temperature rod version
Welded flange (7ML5652 and 7ML5662)**



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



**Cable version, insulated
Welded flange (7ML5651 and 7ML5661)**



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

Note:

¹⁾ Extended Active Shield (Y02): standard length 105 (4.13). Optional active shield lengths: 230 (9.06) or 380 (14.96).
Insertion length does not include any raised face/gasket face dimension (see Flange Facing Table above)

Pointek CLS300 flanged process connections, dimensions in mm (inch)

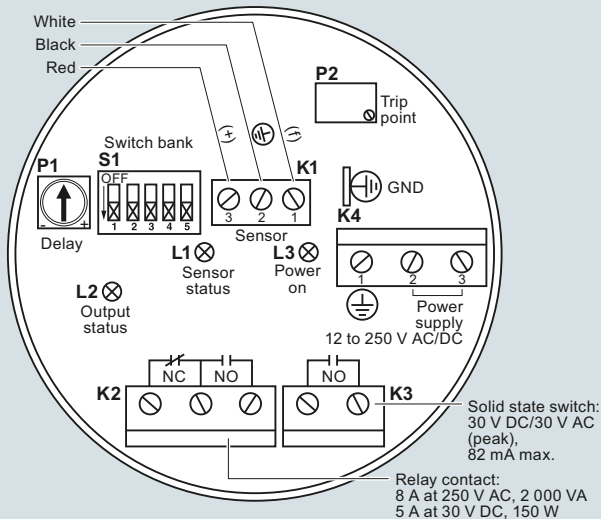
Level measurement

Point level measurement
RF Capacitance switches

Pointek CLS300 - Standard

Circuit diagrams

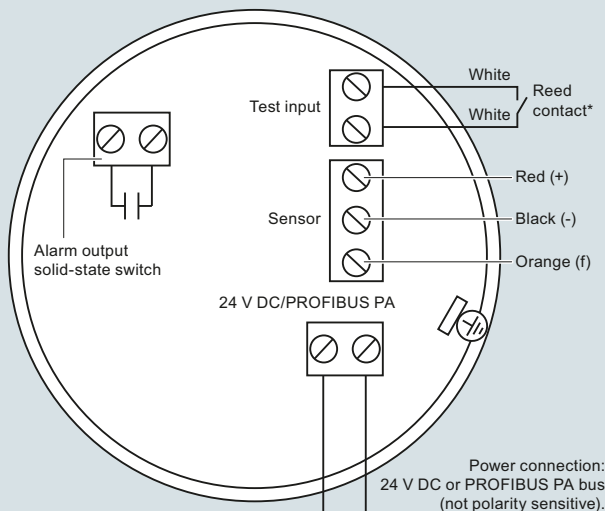
Wiring: Pointek CLS300 standard



Notes:

- Identification label is on underside of lid. Switch and potentiometer settings are for illustration purposes only (refer to operation/setup in manual).
- All field wiring must have insulation suitable for at least 250 V.
- Relay contact terminals are for use with equipment having no accessible live parts and wiring having insulation suitable for at least 250 V.
- Maximum working voltage between adjacent relay contacts shall be 250 V.
- Refer to the Instruction manual or contact Siemens representative for detailed wiring information.

Wiring: Pointek CLS300 digital



Notes:

Refer to the instruction manual or contact a Siemens representative for detailed wiring information.

*Magnet activated sensor test

A magnet can be used to test the sensor without opening the lid of the Pointek CLS300 digital version. Bring the magnet close to the test area indicated on the enclosure. The sensor test starts and finishes automatically after 10 seconds.



Pointek CLS300 connections

Overview



Pointek CLS300 (digital version) is an inverse frequency shift capacitance level and material detection switch with optional rod/cable choices and configurable output. It is ideal for detecting liquids, solids, slurries, foam, and interfaces in demanding conditions where high pressure and temperatures are present 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

- Active-Shield technology so measurement is unaffected by material buildup or nozzle interference in active shield section
- Performs in extremely abrasive conditions because of solid rod construction
- Push-button calibration, full-function diagnostics
- High sensitivity allows installation in a wide range of liquids, solids or slurry applications
- Integral LCD display allows for easy menu-driven setup
- PROFIBUS PA communication (SIMATIC PDM compatible)

Application

Pointek CLS300 digital version provides an integral LCD display for stand-alone use, with PROFIBUS PA communication (Profile version 3.0, Class B) when required. Solid-state switch alarm is standard.

The robust design of CLS300 makes it specifically applicable for heavy solids applications where abrasive materials occur as in the mining industry.

The fully potted electronics are unaffected by condensation, dust or vibration.

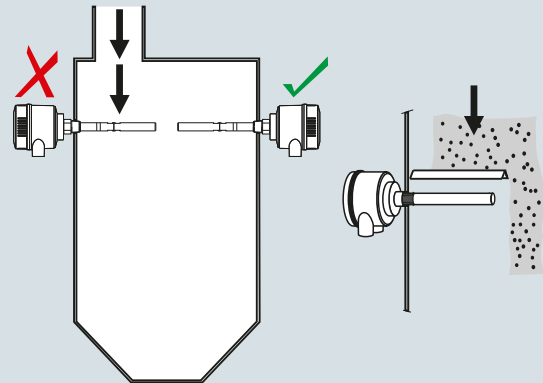
Wetted parts are made of stainless steel with a PFA shield for high chemical resistance, and of ceramic and stainless steel for high temperature version. Materials with low or high dielectric constants can be accurately detected. The unique Active Shield suppresses interference from material buildup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

The unique modular design of the Pointek CLS300 provides a wide range of configurations, process connections, extensions and approvals to meet the temperature and pressure requirements of specific applications. The modular design makes ordering easier and reduces stocking requirements. A wide range of probe configurations are available, including rod and cable versions.

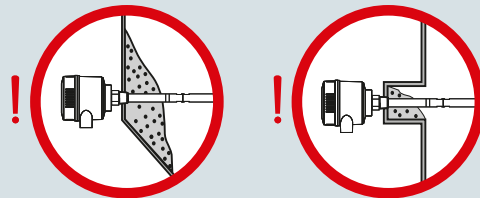
- Key Applications: liquids, slurries, bulk solids, relatively high pressure and temperature, hazardous areas, milling and mining applications

Configuration

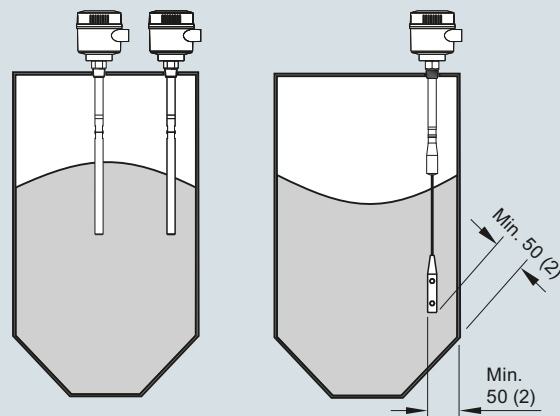
Installation



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



Build up of material in active shield area does not affect switch operation.



Install probe at least 50 (2) from tank wall.
Note angle of repose and adjust accordingly.

Pointek CLS300 installation, dimensions in mm (inch)

Level measurement

Point level measurement

RF Capacitance switches

Pointek CLS300 - Digital

Technical specifications

Mode of operation	
Measuring principle	Inverse frequency shift capacitive level detection
Input	
Measured variable	Change in picoFarad (pF)
Output	
Solid-state output	
• Output	Galvanically isolated
• Protection	Against reversed polarity (bipolar)
• Max. switching voltage	• 30 V (DC) • 30 V peak (AC)
• Max. load current	82 mA
• Voltage drop	< 1 V, typical at 50 mA
• Time delay (pre or post switching)	Programmable by user (0 ... 100 s)
Fail-safe mode	Min. or max.
Connection	Removable terminal block
Accuracy	
Resolution	
• Min. sensitivity (pF)	1 % change in actual capacitance
• Max. temperature error	0.2 % of actual capacitance value
Rated operating conditions¹⁾	
Installation conditions	
• Location	Indoor/outdoor
Ambient conditions	
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) ²⁾
• Storage temperature	-40 ... +85 °C (-40 ... +185 °F)
Medium conditions	Liquids, bulk solids, slurries, interfaces, and applications with viscous materials
	Min. 1.5
• Relative dielectric constant ϵ_r	
• Process temperature	
- Rod/Cable version	-40 ... +200 °C (-40 ... +392 °F) ²⁾
- High Temperature version	-40 ... +400 °C (-40 ... +752 °F)
• Process pressure ³⁾	-1 ... +35 bar g (-14.6 ... +511 psi g)
Design	
Material (enclosure)	Powder-coated aluminum with gasket
Degree of protection	Standard: Type 4/NEMA 4/IP65 Optional: Type 4/NEMA 4/IP68
Cable inlet	2 x M20 x 1.5 thread (option: 2 x 1/2" NPT conduit entry including 1 plugged entry)
Controls and displays	
Local display	LCD
Configuration	• Locally, using 3 button keypad (for standalone operation) • Remotely, using SIMATIC PDM (for installation on a network)

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

- When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves starting on page 5/57.
- Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F)
- Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves starting on page 5/57.
- Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection

Design: Probe

	Rod version	High Temperature version	Cable version
Length	Min. 250 mm (9.8 inch), max. 1 000 mm (40 inch)	Min. 250 mm (9.8 inch), max. 1 000 mm (40 inch)	Min. 1 000 mm (40 inch), max. 25 000 mm (984 inch)
Sensor wetted parts	PFA (no insulation on active probe), 316L stainless steel, PEEK isolators	Ceramic (ZrO ₂ ¹⁾ isolators (no insulation on active probe), 316L stainless steel	316 stainless steel, optional PFA, PEEK isolators
O-ring seal material	FKM (optional FFKM) ²⁾	Graphite ²⁾	FKM (optional FFKM) ²⁾
Thermal isolator	Optional	Standard	Optional
Extension	User selectable length	User selectable length	User selectable cable length

¹⁾ Zirconium Oxide

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

Selection and ordering data

Article No.

Article No.

Pointek CLS300 RF Capacitance point level switch, digital, rod design.

Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, and active shield 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
1½" NPT [(Taper), ANSI/ASME B1.20.1]	0 D
R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 A
R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 B
R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 D
G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 A
G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 B
G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 D

Welded flange, 316L stainless steel, raised face

1" ASME, 150 lb	5 A
1" ASME, 300 lb	5 B
1" ASME, 600 lb	5 C
1½" ASME, 150 lb	5 D
1½" ASME, 300 lb	5 E
1½" ASME, 600 lb	5 F
2" ASME, 150 lb	5 G
2" ASME, 300 lb	5 H
2" ASME, 600 lb	5 J
3" ASME, 150 lb	5 K
3" ASME, 300 lb	5 L
3" ASME, 600 lb	5 M
4" ASME, 150 lb	5 N
4" ASME, 300 lb	5 P
4" ASME, 600 lb	5 Q

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

DN 25, PN 16	6 A
DN 25, PN 40	6 B
DN 40, PN 16	6 C
DN 40, PN 40	6 D
DN 50, PN 16	6 E
DN 50, PN 40	6 F
DN 80, PN 16	6 G
DN 80, PN 40	6 H
DN 100, PN 16	6 J
DN 100, PN 40	6 K

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

Probe length

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

Note: No Y01 needed in Order code for standard lengths

Standard version, rod 350 mm (13.78 inch)	A
Extended rod, length 500 mm (19.69 inch)	B
Extended rod, length 750 mm (29.53 inch)	C
Extended rod, length 1 000 mm (39.37 inch)	D

Pointek CLS300 RF Capacitance point level switch, digital, rod design.

Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, and active shield to tune out build-up on probe. With display and digital communications.

Add Order code Y01 and plain text:

Insertion length ... mm

Extended rod, factory adjusted length 250 ... 499 mm (9.8 ... 19.65 inch)	E
Extended rod, factory adjusted length 500 ... 749 mm (19.69 ... 29.49 inch)	F
Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch)	G

Thermal isolator

Without thermal isolator

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

Wetted seals

FKM

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

Probe material

316L stainless steel with PFA lining and PEEK isolators

Approvals

Dust Ignition Proof:

CE, RCM, ATEX II ½ D, 2 D IP6X T100 °C

Intrinsically Safe¹⁾ CE, RCM,

ATEX II 1 G EEx ia IIC T6 ... T4,

ATEX II ½ D, 2 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

Dust Ignition Proof with IS Probe:

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

CSA/FM Class III T4

Intrinsically Safe¹⁾

CSA/FM Class I, Div. 1, Groups A, B, C, D

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

CSA/FM Class III T4

Explosion Proof Enclosure with IS Probe:

CSA/FM Class I, Div. 1, Groups A, B, C, D

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

CSA/FM Class III T4

General Purpose (CSA, FM)

General Purpose (CSA, FM, CE, RCM)

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

Active shield length

Standard length -

(125 mm threaded, 105 mm flanged)

Extended shield -

(250 mm threaded, 230 mm flanged)²⁾

Extended shield -

(400 mm threaded, 380 mm flanged)³⁾

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

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

³⁾ Available with Probe version options C, D, and G only [≥ 750 mm (29.53 inch)].

Level measurement

Point level measurement
RF Capacitance switches

Pointek CLS300 - Digital

Selection and ordering data

Order code

Article No.

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 to ISO 9000

C11

Material inspection Certificate Type 3.1 per EN 10204

C12

INMETRO¹⁾

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 4/69

¹⁾ Available only with Approvals options B and D.

Pointek CLS300 RF Capacitance point level switch, digital, cable design.

Detects level and interface in aggressive liquids, solids, slurries, and foam. Cable extension options to 25 m (82.02 ft), adaptable sensitivity, with active shield 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

1¼" NPT [(Taper), ANSI/ASME B1.20.1]

1½" NPT [(Taper), ANSI/ASME B1.20.1]

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

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

7ML5661-

0 C

0 D

1 D

3 D

Welded flange, 316L stainless steel, raised face

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 D

5 E

5 F

5 G

5 H

5 J

5 K

5 L

5 M

5 N

5 P

5 Q

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

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 C

6 D

6 E

6 F

6 G

6 H

6 J

6 K

Probe length

(length from flange face)

(threaded lengths include process thread)

Note: No Y01 needed in Order code for standard lengths

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

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

Add Order code Y01 and plain text:

"Insertion length ... mm"

Extended cable, 500 ... 1 000 mm

(19.69 ... 39.37 inch)

Extended cable, 1 001 ... 5 000 mm

(39.41 ... 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)

A

B

E

F

G

H

J

K

Selection and ordering data	Article No.	Order code
Pointek CLS300 RF Capacitance point level switch, digital, cable design. Detects level and interface in aggressive liquids, solids, slurries, and foam. Cable extension options to 25 m (82.02 ft), adaptable sensitivity, with active shield to tune out build-up on probe. With display and digital communications.	7ML5661-	
Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1	
Wetted seals FKM FFKM [for process temperatures above -20 °C (-4 °F)]	0 1	
Probe material Bare 316L stainless steel cable, PEEK isolators and 316L stainless steel cable weight PFA coated cable, PEEK isolators and 316L stainless steel cable weight	0 1	
Approvals Dust Ignition Proof: CE, RCM, ATEX II ½ D, 2 D IP6X T100 °C Intrinsically Safe ¹⁾ CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II ½ D, 2 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 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 Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CSA, FM, CE, RCM)	B C D F G H J	
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	
Active shield length Standard length - (125 mm threaded, 105 mm flanged) Extended shield - (250 mm threaded, 230 mm flanged) Extended shield - (400 mm threaded, 380 mm flanged) ²⁾	0 1 2	
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 to 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 ¹⁾ Available only with Approvals options B and D.		See page 4/69

Level measurement

Point level measurement

RF Capacitance switches

Pointek CLS300 - Digital

Selection and ordering data

Article No.

Article No.

Pointek CLS300 RF Capacitance point level switch, digital, high temperature design.

Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, with active shield 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**
 1½" NPT [(Taper), ANSI/ASME B1.20.1] **0 D**
 R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] **1 A**
 R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] **1 B**
 R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] **1 D**
 G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] **3 A**
 G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] **3 B**
 G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] **3 D**

Welded flange, 316L stainless steel, raised face

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

Welded flange, 316L stainless steel,

Type A flat faced

DN 25, PN 16 **6 A**
 DN 25, PN 40 **6 B**
 DN 40, PN 16 **6 C**
 DN 40, PN 40 **6 D**
 DN 50, PN 16 **6 E**
 DN 50, PN 40 **6 F**
 DN 80, PN 16 **6 G**
 DN 80, PN 40 **6 H**
 DN 100, PN 16 **6 J**
 DN 100, PN 40 **6 K**

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

Probe length

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

Note: No Y01 needed in Order code for standard lengths

Standard version rod, 350 mm (13.78 inch) **A**
 Extended rod, length 500 mm (19.69 inch) **B**
 Extended rod, length 750 mm (29.53 inch) **C**
 Extended rod, length 1 000 mm (39.37 inch) **D**

Pointek CLS300 RF Capacitance point level switch, digital, high temperature design.

Detects level and interface in aggressive liquids, solids, slurries, and foam. Adjustable, 1 m (3.28 ft), insertion, adaptable sensitivity, with active shield to tune out build-up on probe. With display and digital communications.

Add Order code Y01 and plain text:

"Insertion length ... mm"

Extended rod, factory adjusted length 250 ... 499 mm (9.8 ... 19.65 inch) **E**

Extended rod, factory adjusted length 500 ... 749 mm (19.69 ... 29.49 inch) **F**

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

Wetted seals

Graphite **0**

Probe material

316L stainless steel with ceramic (ZrO₂)isolators **0**

Approvals

Dust Ignition Proof
 CE, RCM, ATEX II ½ D, 2 D IP6X T100 °C
 Intrinsically Safe¹⁾
 CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II ½ D, 2 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
 Intrinsically Safe¹⁾
 CSA/FM Class I, Div. 1, Groups A, B, C, D
 CSA/FM Class II, Div. 1, Groups E, F, G
 CSA/FM Class III T4
 Explosion Proof Enclosure with IS Probe:
 CSA/FM Class I, Div. 1, Groups A, B, C, D
 CSA/FM Class II, Div. 1, Groups E, F, G
 CSA/FM Class III T4
 General Purpose (CSA, FM)
 General Purpose (CSA, FM, CE, 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**

Active shield length

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

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

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

³⁾ Available with Probe version options C, D, and G only [≥ 750 mm (29.53 inch)].

Selection and ordering data	Order code	Article No.
<p>Further designs</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>	Y01	
<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>	Y15	
<p>Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000</p>	C11	
<p>Material Inspection Certificate Type 3.1 per EN 10204</p>	C12	
<p>INMETRO¹⁾</p>	E34	
<p>Operating Instructions</p> <p>All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation.</p>		
<p>Accessories</p> <p>¹⁾ Available only with Approvals options B and D.</p>	See page 4/69	
		<p>Accessories</p> <p>One metallic cable gland M20 x 1.5, -40 ... +80 °C (-40 ... +176 °F) with integrated shield connection (available for PROFIBUS PA)</p> <p>7ML1930-1AQ</p> <p>General Purpose</p> <p>½" 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>7ML1830-1JA</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>7ML1830-1JC</p> <p>Hazardous Locations</p> <p>½" 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>7ML1830-1JB</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>7ML1830-1JD</p> <p>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.</p>

Level measurement

Point level measurement

RF Capacitance switches

Pointek CLS300 - Digital

Selection and ordering data

Pointek Specials¹⁾

CLS100 Polycarbonate Lid and Gasket, FKM

Kit, lid and gasket, CLS100 enclosure version

A5E01163671

CLS100 Miscellaneous Parts

Custom length of cable is available only for 7ML5501-xxx1x and 7ML5501-xxx5x²⁾

CLS200 Gasket (IP65), Synprene

Spare gasket, enclosure version (IP65 versions only)

A5E01163672

CLS200 Gasket (IP68), Silicone

Spare gasket, enclosure version (IP68 versions)

A5E01163673

CLS200/CLS300/LC300 Blind Lid

Spare aluminum blind lid (for standard versions only)

A5E01163674

CLS200/CLS300 Lid with window

Spare aluminum lid with window

A5E01163676

CLS200 Sensor Kit for cable units

Kit, sensor for cable units, PPS, standard, FKM

A5E01163677

Kit, sensor for cable units, PPS, digital, FKM

A5E01163678

Kit, sensor for cable units, PPS, standard, FFKM

A5E01163679

Kit, sensor for cable units, PPS, digital, FFKM

A5E01163680

Kit, sensor for cable units, PVDF, standard, FKM

A5E01163681

Kit, sensor for cable units, PVDF, digital, FKM

A5E01163682

Kit, sensor for cable units, PVDF, standard, FFKM

A5E01163683

Kit, sensor for cable units, PVDF, digital, FFKM

A5E01163684

CLS200 Mounting Bracket, 316L stainless steel

Spare mounting bracket, mounting hole 27 mm (1 inch)

A5E01163685

CLS200 PROFIBUS Connector (IP65)

Spare, PROFIBUS connector (IP65 versions only)

A5E01163686

CLS200 Miscellaneous Parts

CLS200 with FFKM O-rings (any version)²⁾

CLS200 Electronics

Test magnet, digital version

7ML1830-1JE

Amplifier/power supply kit, standard version

A5E03251681

Amplifier/power supply, digital version

7ML1830-1JF

LCD display, digital version

7ML1830-1JK

CLS300 Cable Extensions, 316L stainless steel

Kit, stainless steel cable extension, 1 m, adjustable by customer

A5E01163688

Kit, stainless steel cable extension, 3 m, adjustable by customer

A5E01163689

Kit, stainless steel cable extension, 5 m, adjustable by customer

A5E01163690

Kit, stainless steel cable extension, 10 m, adjustable by customer

A5E01163691

Kit, stainless steel cable extension, 15 m, adjustable by customer

A5E01163693

Kit, stainless steel cable extension, 20 m, adjustable by customer

A5E01163695

CLS300 Cable Extensions, 316 stainless steel with PFA coating

Kit, PFA cable extension, 1 m, adjustable by customer

A5E01163697

Kit, PFA cable extension, 3 m, adjustable by customer

A5E01163698

Kit, PFA cable extension, 5 m, adjustable by customer

A5E01163699

Pointek Specials¹⁾

Kit, PFA cable extension, 10 m, adjustable by customer

A5E01163700

Kit, PFA cable extension, 15 m, adjustable by customer

A5E01163701

Kit, PFA cable extension, 20 m, adjustable by customer

A5E01163702

CLS300 Rod Kits, 316L stainless steel

Kit, stainless steel rod 180 mm (7.09 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 350 mm (13.78 inch).

A5E01163719

Kit, stainless steel rod 330 mm (12.99 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 500 mm (19.69 inch).

A5E01163720

Kit, stainless steel rod 580 mm (22.83 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 750 mm (29.53 inch).

A5E01163721

Kit, stainless steel rod 830 mm (32.68 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 1 000 mm (39.37 inch).

A5E01163722

Kit, stainless steel rod 1330 mm (52.36 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 1 500 mm (59.06 inch).²⁾

Kit, stainless steel rod 1830 mm (72.05 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 2 000 mm (78.74 inch).²⁾

Kit, stainless steel rod customized length up to 1 m²⁾

Kit, stainless steel rod customized length up to 2 m²⁾

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

Kit, electronics with driver, standard CLS300. To be used in cable versions with length greater than 5 m.³⁾⁴⁾

A5E01163723

Kit, electronics with driver, digital CLS300. To be used in cable versions with length greater than 5 m.³⁾⁴⁾

A5E01163725

CLS300 Electronics Kits with drivers (for cable versions)

Kit, electronics with driver, standard CLS300. To be used in cable versions with length greater than 5 m.³⁾⁴⁾

A5E01163724

Kit, electronics with driver, digital CLS300. To be used in cable versions with length greater than 5 m.³⁾⁴⁾

A5E01163726

CLS300 Electronics

Test magnet, digital version

7ML1830-1JE

Amplifier/power supply kit, standard version

A5E03251683

Amplifier/power supply, digital version

7ML1830-1JF

LCD display, digital version

7ML1830-1JK

CLS300 Weight Kit, 316L stainless steel

Kit, spare stainless steel weight. To be used in any cable version of CLS300.

A5E01163727

¹⁾ Special flange sizes and facings are available. Please consult a local sales person for details.

²⁾ Please consult a local sales person for part number and pricing

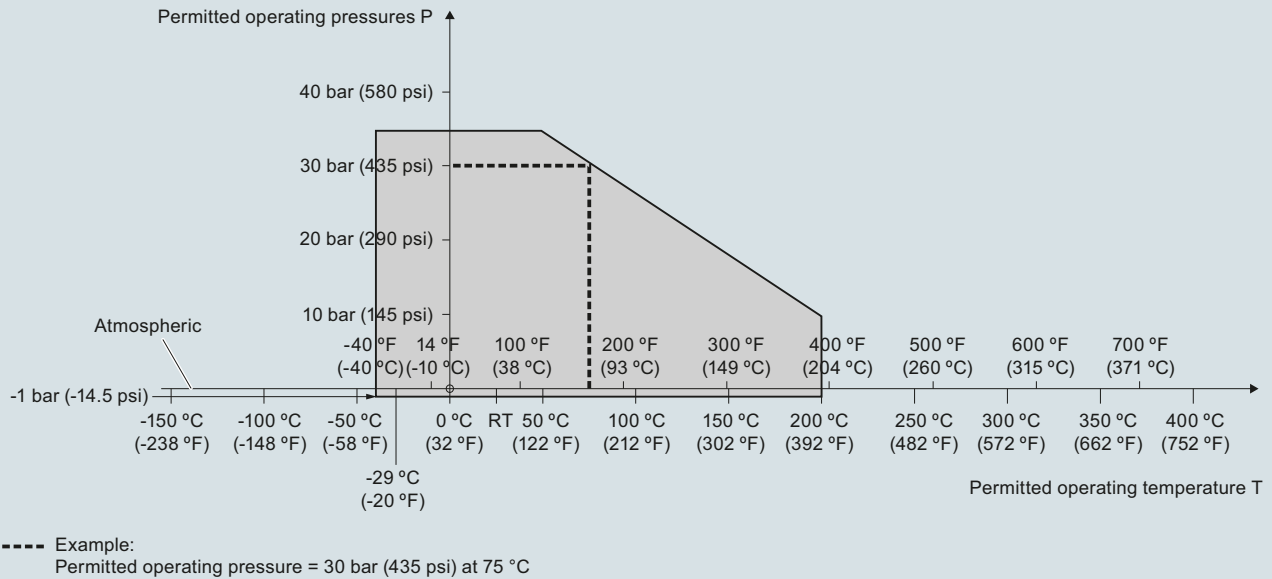
³⁾ For General Purpose approvals only

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

⁵⁾ 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.

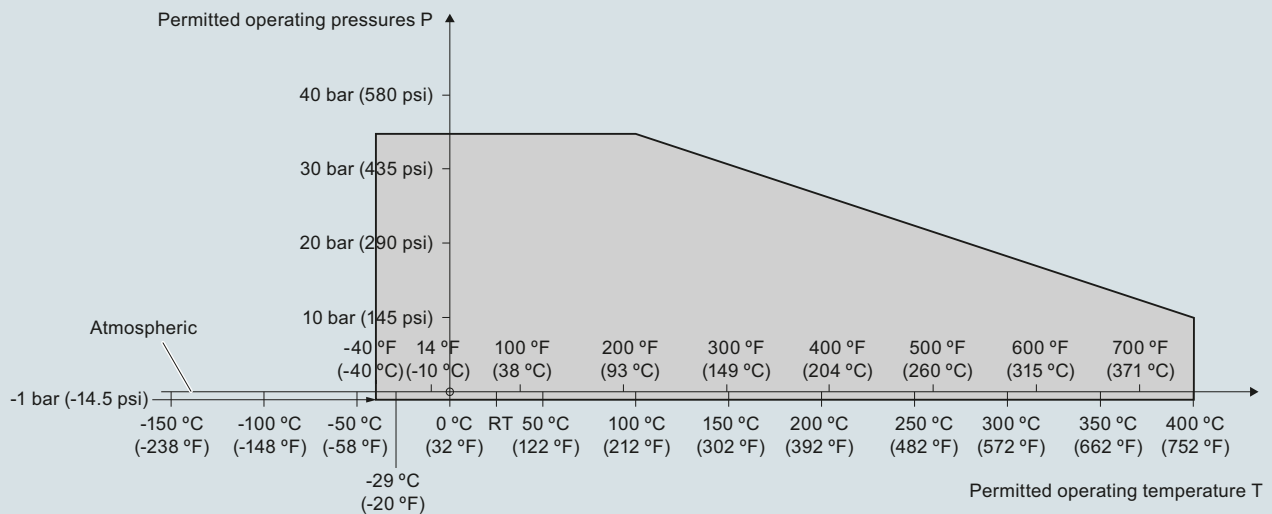
Characteristic curves

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



Pointek CLS300 process pressure/temperature derating curves (7ML5650, 7ML5651, 7ML5660 and 7ML5661)

Pressure/temperature curve
CLS300 high temperature rod probes
Threaded process connections
(7ML5652 and 7ML5662)



Pointek CLS300 process pressure/temperature derating curves (7ML5652 and 7ML5662)

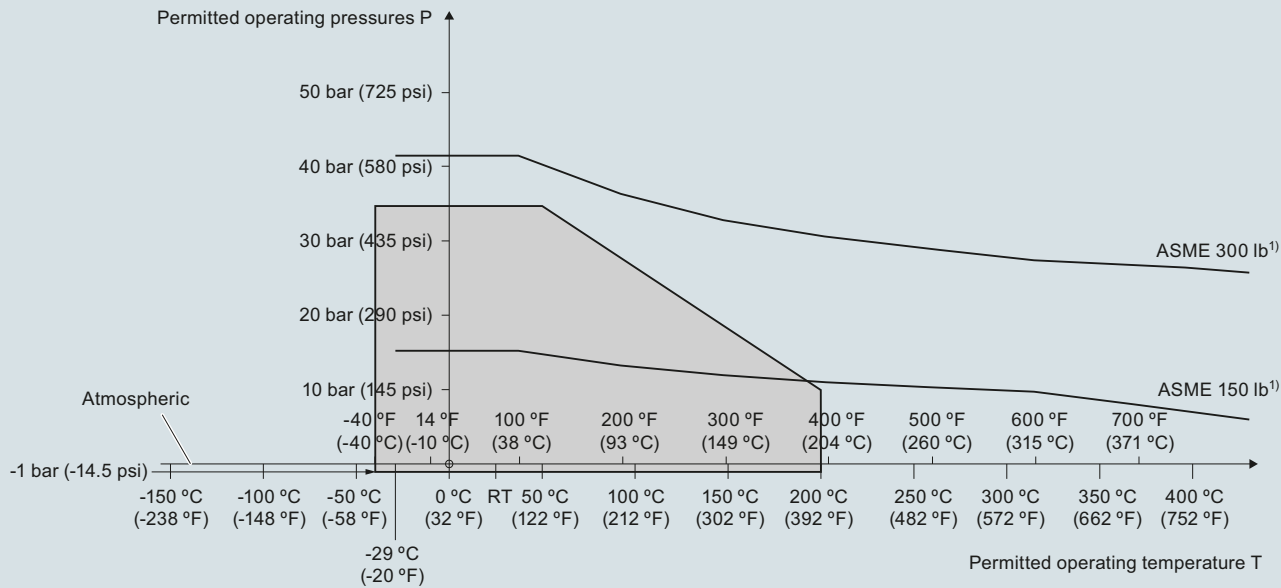
Level measurement

Point level measurement
RF Capacitance switches

Pointek CLS300 - Digital

Characteristic curves (continued)

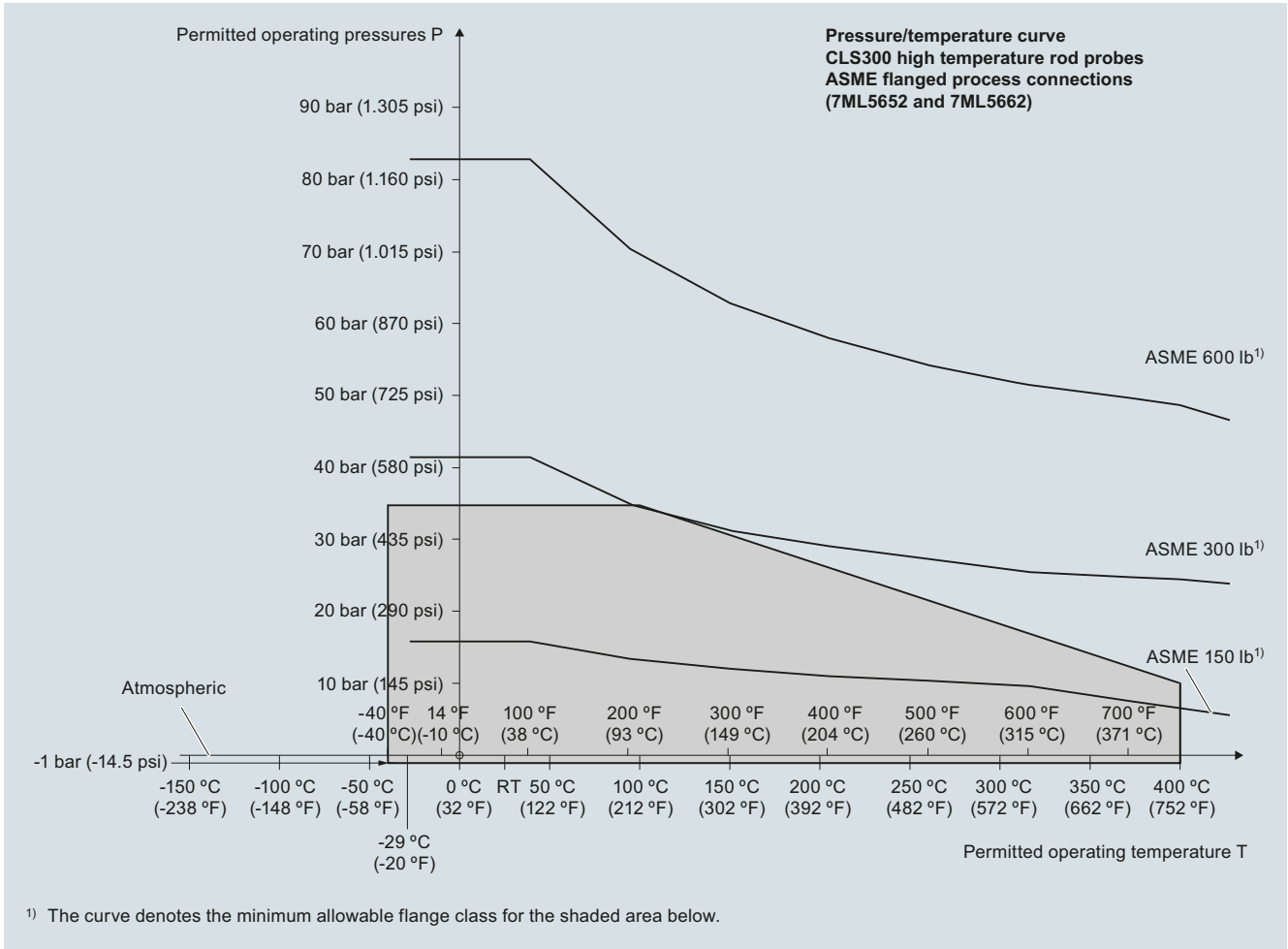
Pressure/temperature curve
CLS300 extended rod and cable probes
ASME flanged process connections
(7ML5650, 7ML5651, 7ML5660 and 7ML5661)



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

Pointek CLS300 process pressure/temperature derating curves (7ML5650, 7ML5651, 7ML5660, and 7ML5661)

Characteristic curves (continued)



Pointek CLS300 process pressure/temperature derating curves (7ML5652 and 7ML5662)

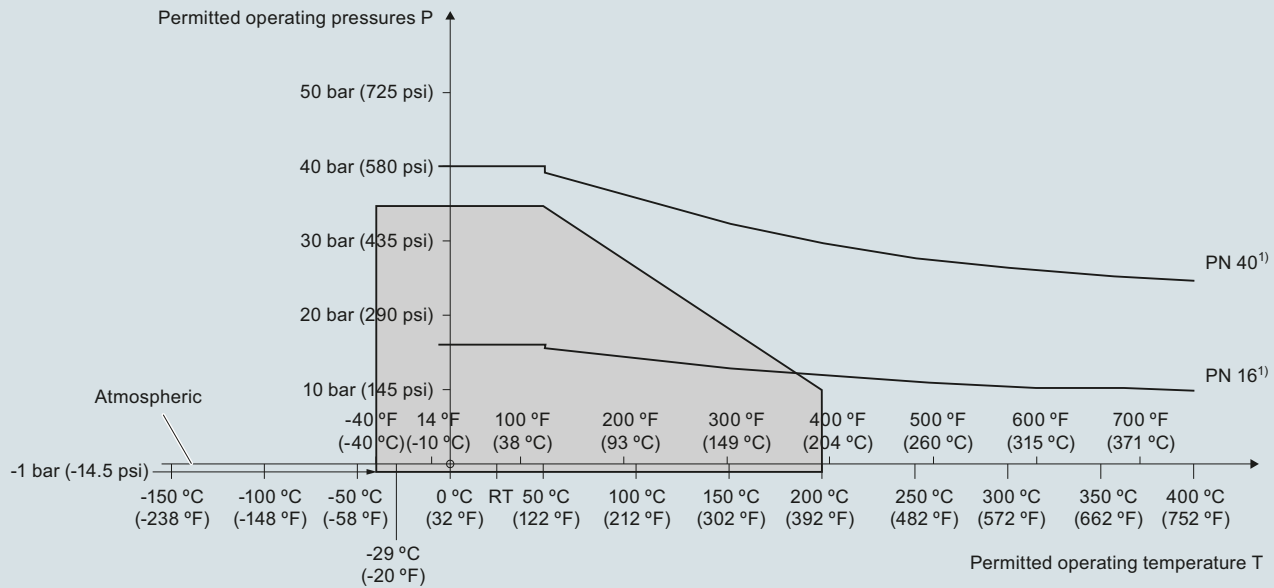
Level measurement

Point level measurement
RF Capacitance switches

Pointek CLS300 - Digital

Characteristic curves (continued)

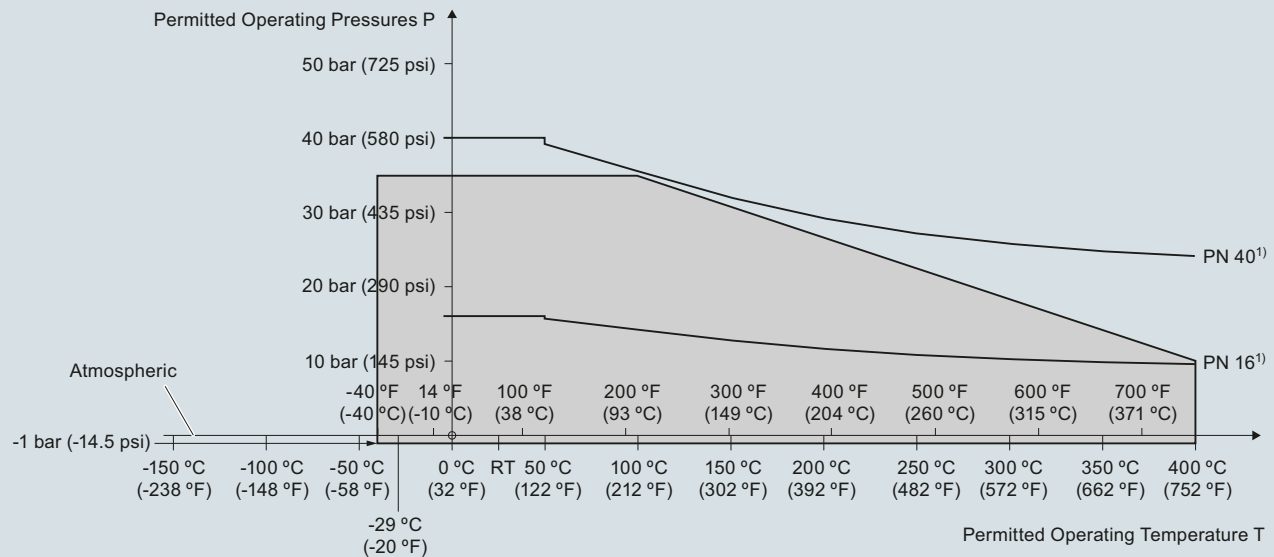
Pressure/temperature curve
CLS300 extended rod and cable probes
EN flanged process connections
(7ML5650, 7ML5651, 7ML5660 and 7ML5661)



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

Pointek CLS300 process pressure/temperature derating curves (7ML5650, 7ML5651, 7ML5660 and 7ML5661)

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

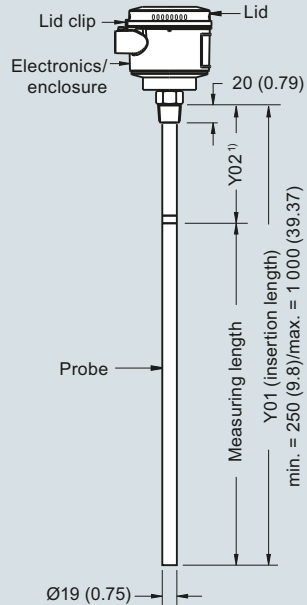


¹⁾ The curve denotes the minimum allowable flange class for the shaded area below.

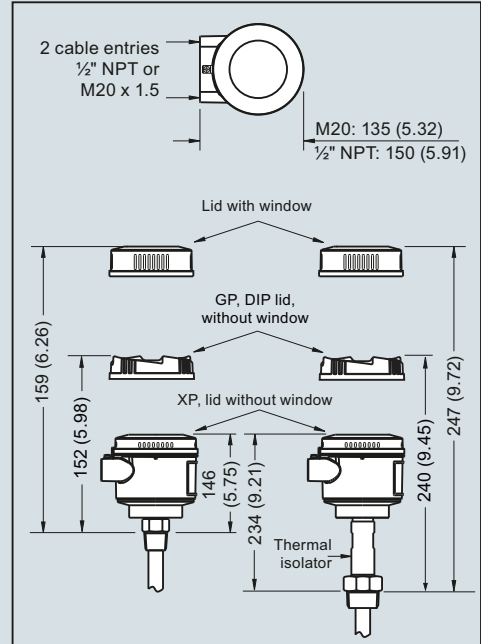
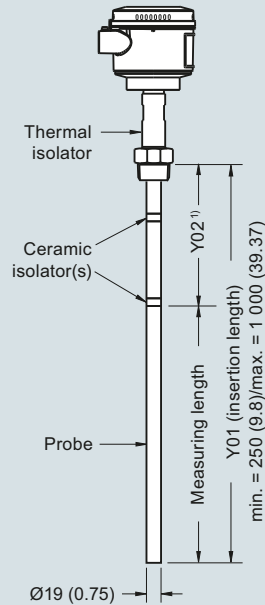
Pointek CLS300 process pressure/temperature derating curves (7ML5652 and 7ML5662)

Dimensional drawings

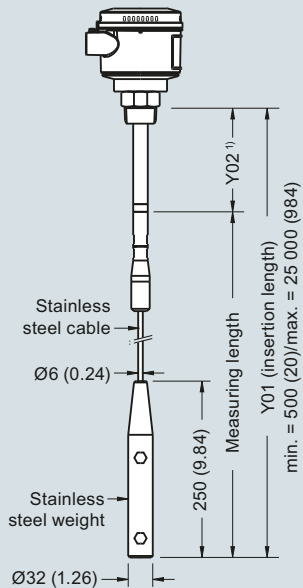
**Rod version
Threaded (7ML5650 and 7ML5660)**



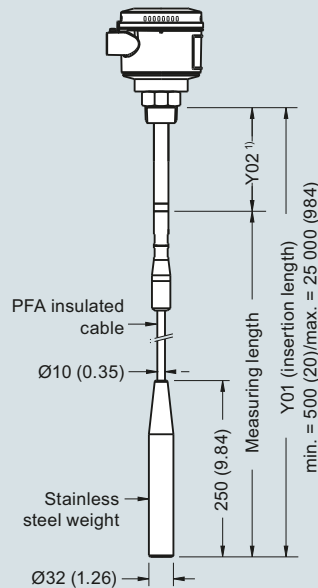
**High temperature rod version
Threaded (7ML5652 and 7ML5662)**



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



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



Note:

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

Pointek CLS300 threaded process connections, dimensions in mm (inch)

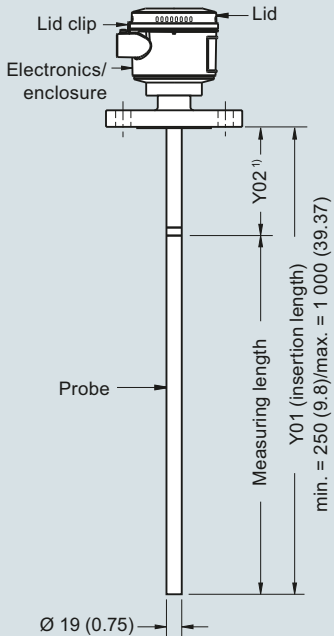
Level measurement

Point level measurement
RF Capacitance switches

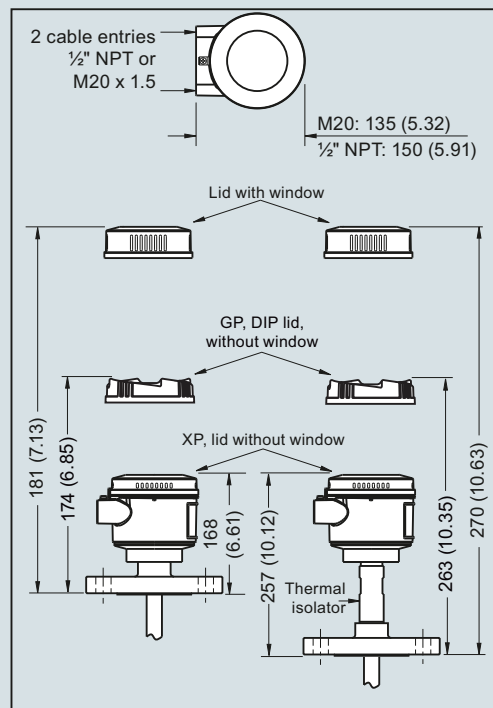
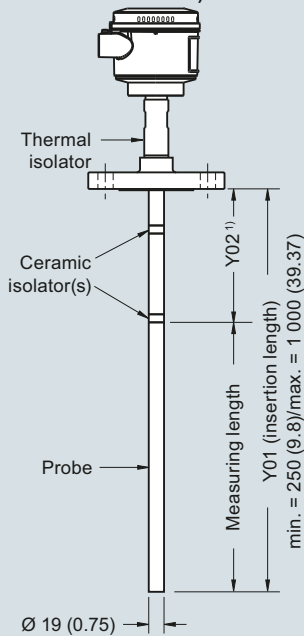
Pointek CLS300 - Digital

Dimensional drawings (continued)

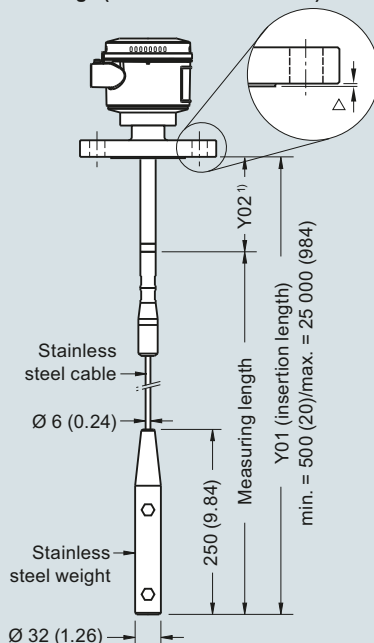
**Rod version
Welded flange (7ML5650 and 7ML5660)**



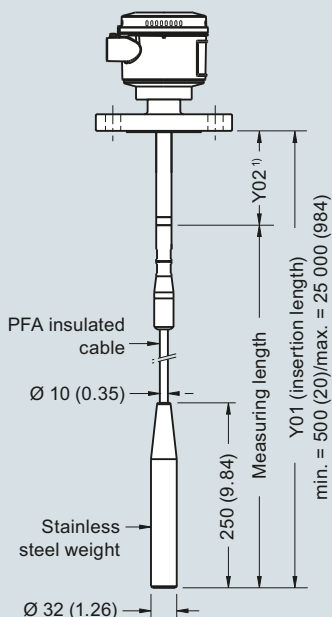
**High temperature rod version
Welded flange (7ML5652 and 7ML5662)**



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



**Cable version, insulated
Welded flange (7ML5651 and 7ML5661)**



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

Note:

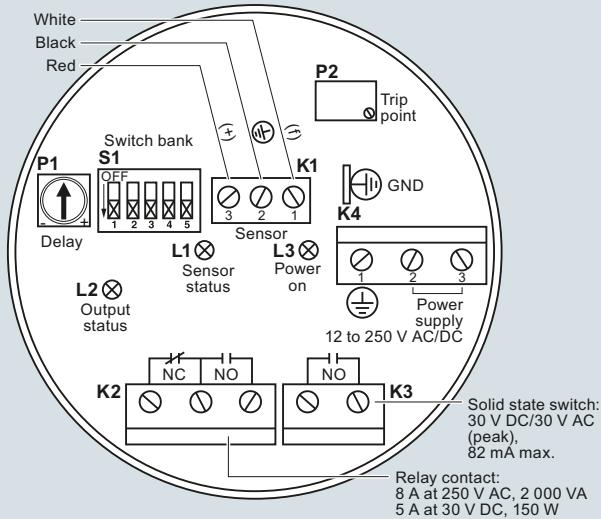
¹⁾ Extended Active Shield (Y02): standard length 105 (4.13). Optional active shield lengths: 230 (9.06) or 380 (14.96).
Insertion length does not include any raised face/gasket face dimension (see Flange Facing Table above)

Pointek CLS300 flanged process connections, dimensions in mm (inch)

4

Circuit diagrams

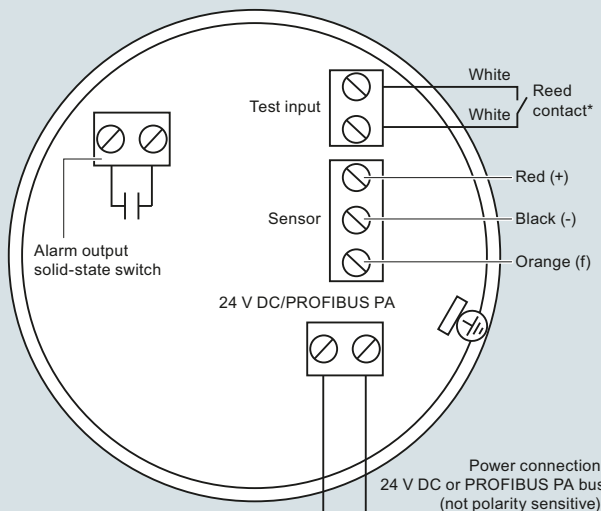
Wiring: Pointek CLS300 standard



Notes:

- Identification label is on underside of lid. Switch and potentiometer settings are for illustration purposes only (refer to operation/setup in manual).
- All field wiring must have insulation suitable for at least 250 V.
- Relay contact terminals are for use with equipment having no accessible live parts and wiring having insulation suitable for at least 250 V.
- Maximum working voltage between adjacent relay contacts shall be 250 V.
- Refer to the Instruction manual or contact Siemens representative for detailed wiring information.

Wiring: Pointek CLS300 digital



Notes:

Refer to the instruction manual or contact a Siemens representative for detailed wiring information.

***Magnet activated sensor test**

A magnet can be used to test the sensor without opening the lid of the Pointek CLS300 digital version. Bring the magnet close to the test area indicated on the enclosure. The sensor test starts and finishes automatically after 10 seconds.



Pointek CLS300 connections