

Level Measurement

Point level measurement - RF Capacitance switches

RF Capacitance

Overview

Introduction

Inverse frequency shift capacitance point level and material detection switches are designed to withstand the harsh environments of high pressure and high temperature applications.

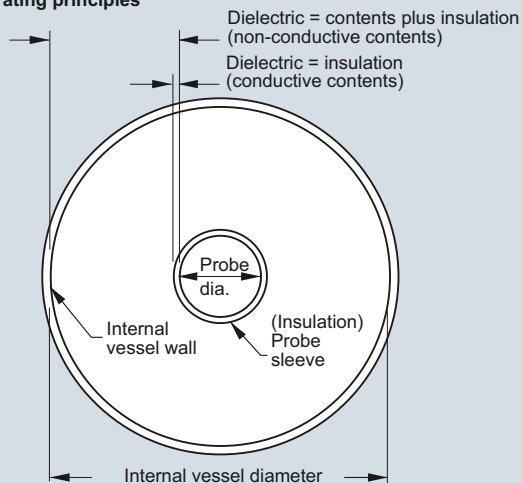
Inverse Frequency Technology

Siemens inverse frequency shift capacitance devices incorporate a unique frequency-based approach to level measurement. The capacitance units monitor the effect of capacitance based on frequency change. The relationship between capacitance and frequency is inverse. Because small level changes result in a large frequency change, the result is excellent resolution and accuracy.

Principle of Operation

Inverse frequency shift capacitance devices require two components: a reference electrode of a variable capacitor and the measurement electrode. In capacitive level measurement, the environment (typically the vessel wall) acts as the reference electrode, while the probe supplies the measurement electrode. The dielectric is composed of the vessel contents and, if the measurement electrode is insulated, the insulating layer.

Operating principles



Inverse frequency shift capacitance operation

Capacitance is affected by the surface area of the electrodes, the separation distance between the electrodes and the dielectric constant of the vessel contents. The dielectric constant is the measure of a material's ability to store energy. The relative dielectric constant of air (vacuum) is 1; all other materials have a higher value.

Mode of operation

Common Terms

Capacitance

The property of a system of conductors and dielectrics that permits the storage of electricity when a potential difference exists between the conductors. Its value is expressed as the ratio of a quantity of electricity to a potential difference and the unit is a Farad.

Capacitor

A device in a circuit that has the potential to store an electric charge. Typically a capacitor has two conductors or electrodes separated by a layer of a non-conducting material called a dielectric. With the conductors on opposite sides of the dielectric layer oppositely charged by a source of voltage, the electrical energy of the charged system is stored in the polarized dielectric.

Dielectric constant

The ability of a dielectric to store electrical potential energy under the influence of an electric field. This is measured by a ratio which compares the capacitance of a condenser with the material as dielectric to its capacitance with a vacuum/dry air as dielectric: the dielectric constant of air is 1.

Active shield

The portion of the probe isolated from the active measurement section. The sensor signal is connected to the active shield portion of the probe, eliminating the electrical potential difference between the shield and the measurement section. So, the shield portion of the probe near the process connection is not affected by changes in vapor concentration, material buildup, dust, or condensation.

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RF Capacitance

Technical specifications

Point Level Measurement			
Criteria	Pointek CLS100	Pointek CLS200	Pointek CLS300
Typical applications	Liquids, slurries, powders, granules, applications in constricted spaces	Liquids, slurries, powders, granules, foam, food, and pharmaceuticals, petrochemicals	Liquids, slurries, powders, granules, relatively high pressure, and temperature, hazardous areas
Max. length including sensor	100 mm (4 inch)	Rod: 5.5 m (18 ft) Cable: up to 30 m (98 ft)	Rod: 1 m (40 inch) Cable: 25 m (82 ft)
Process temperature (Temperature ratings are pressure dependent. See Pressure/Temperature curves for respective product.)	<ul style="list-style-type: none"> Stainless steel process connection: -30 ... +100 °C (22 ... +212 °F) Fully Synthetic (PPS process connection): -10 ... +100 °C (14 ... 212 °F) 	<ul style="list-style-type: none"> -40 ... +85 °C (-40 ... +185 °F) With thermal isolator: -40 ... +125 °C (-40 ... +257 °F) 	<ul style="list-style-type: none"> -40 ... +200 °C (-40 ... +392 °F) HT version: -40 ... +400 °C (-40 ... +752 °F)
Process pressure (Pressure ratings are temperature dependent. See Pressure/Temperature curves for respective product.)	Up to 10 bar g (146 psi g)	<ul style="list-style-type: none"> Rod versions: Up to 25 bar g (365 psi g) Cable version: Up to 10 bar g (146 psi g) 	Up to 35 bar g (511 psi g)
Output	Stainless steel cable or enclosure version: <ul style="list-style-type: none"> 4 ... 20/20 ... 4 mA, 2-wire current loop Solid-state output Fully-synthetic version (PPS) <ul style="list-style-type: none"> Relay output 	Standard: <ul style="list-style-type: none"> 1 SPDT Form C relay, solid-state switch Digital: <ul style="list-style-type: none"> Solid-state switch included 	Standard: <ul style="list-style-type: none"> 1 SPDT Form C relay, solid-state switch Digital: <ul style="list-style-type: none"> Solid-state switch included
Communications	-	Standard: <ul style="list-style-type: none"> 3 LED indicators Digital: <ul style="list-style-type: none"> PROFIBUS PA; SIMATIC PDM compatible 	Standard: <ul style="list-style-type: none"> 3 LED indicators Digital: <ul style="list-style-type: none"> PROFIBUS PA; SIMATIC PDM compatible
Power Specifications	Standard: <ul style="list-style-type: none"> 12 ... 33 V DC Intrinsically Safe (Stainless steel version only): <ul style="list-style-type: none"> 10 ... 30 V DC 	Standard: <ul style="list-style-type: none"> 12 ... 250 V AC/DC, 0 ... 60 Hz, 2 W max. Digital: <ul style="list-style-type: none"> Bus voltage: 12 ... 30 V DC, IS version: 12 ... 24 V DC Current consumption: 12.5 mA 	Standard: <ul style="list-style-type: none"> 12 ... 250 V AC/DC, 0 ... 60 Hz, 2 W max. Digital: <ul style="list-style-type: none"> Bus voltage: 12 ... 30 V DC, IS version: 12 ... 24 V DC Current consumption: 12.5 mA
Approvals	Stainless steel cable or enclosure version: <ul style="list-style-type: none"> CE, CSA, FM, ATEX, RCM, Lloyds Register, WHG Fully-synthetic version (PPS): <ul style="list-style-type: none"> CSA, FM 	CSA, FM, CE, ATEX, RCM, Lloyds Register, WHG, Vlare II	CSA, FM, CE, ATEX, RCM, Lloyds Register, WHG, Vlare II

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS100

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.

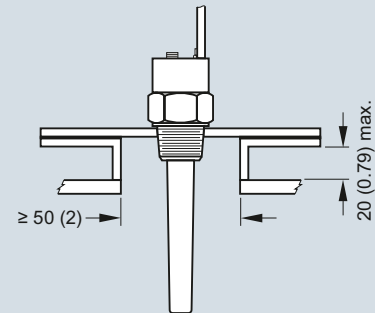
The Pointek CLS100 is available in three versions. The integral cable version has a stainless steel process connection and probe options of PPS or PVDF. The fully synthetic version has a thermoplastic polyester enclosure with a PPS process connection combined with a PPS probe. The standard enclosure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

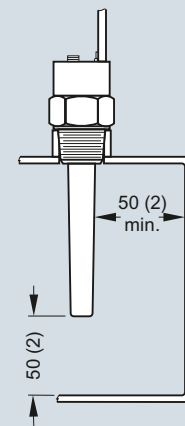
Configuration

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)
• 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" [(BSPP), 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 4/14.
- 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).

Level Measurement

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Pointek CLS100

Selection and Ordering data

Article No.

Pointek CLS100, stainless steel process connection

7ML5501-0

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.

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

Approvals

General Purpose: CE, CSA, FM, RCM A
 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 ... T6 T107 °C¹⁾ C
 CSA/FM Class II and III, Div. 1, Groups E, F, G¹⁾ G

Device version

Integral cable version (PPS probe) 1
 Enclosure version (PPS probe), ½" NPT cable inlet 3
 Integral cable version with PVDF probe body 5
 Enclosure version with PVDF probe body (½" NPT cable inlet) 6
 Enclosure version (PPS probe), M20 x 1.5 cable inlet 7
 Enclosure version with PVDF probe body, M20 x 1.5 cable inlet 8

Overfill protection

Not required 0
 Required (WHG) 1

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

We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 10/11 in the appendix.

Selection and Ordering data

Order code

Further designs

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

Acrylic coated, stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]: Measuring-point number/identification (max. 20 characters) specify in plain text Y17

FFKM seal O-ring¹⁾ A22

Material inspection Certificate Type 3.1 per EN 10204 C12

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

We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 10/11 in the appendix.

Selection and Ordering data

Article No.

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 cable gland, nickel plated brass, fits cable diameter 6 ... 12 mm (0.24 ... 0.47 inch)
 -40 ... +100 °C (-40 ... +212 °F), IP68 (General Purpose)

M20 x 1.5 cable gland, PA polyamide, ATEX II 2G EEx e II, fits cable diameter 7 ... 12 mm (0.28 ... 0.47 inch), -20 ... +70 °C (-4 ... +158 °F), IP68 (General Purpose)

7ML1830-1DL

7ML1830-1DM

7ML1930-1AC

7NG4124-0AA00

7ML1830-1JA

7ML1830-1JC

Selection and Ordering data

Article No.

Pointek CLS100, PPS process connection

7ML5610-0

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 foam.

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] A
 R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] B
 (PPS probe body)

Approvals

General Purpose: CSA, FM D

Versions/Options

Enclosure version, PPS process connection, ½" NPT cable inlet 1

Enclosure version, PPS process connection, M20 x 1.5 2

Overfill protection

Not required 0
 Required 1

Selection and Ordering data

Order code

Further designs

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

Acrylic coated, stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]: Measuring-point number/identification (max. 20 characters) specify in plain text Y17

FFKM seal O-ring¹⁾ A22

Material inspection Certificate Type 3.1 per EN 10204 C12

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

Article No.

7ML1830-1DL

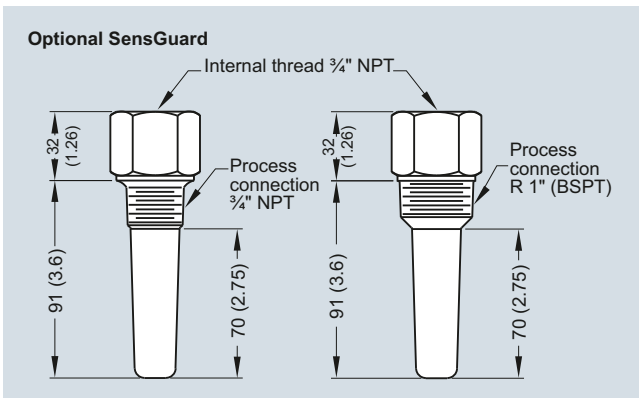
7ML1830-1DM

7ML1930-1AC

¹⁾ See Temperature restriction on page 4/14

We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 10/11 in the appendix.

Options



Optional SensGuard, dimensions in mm (inch)

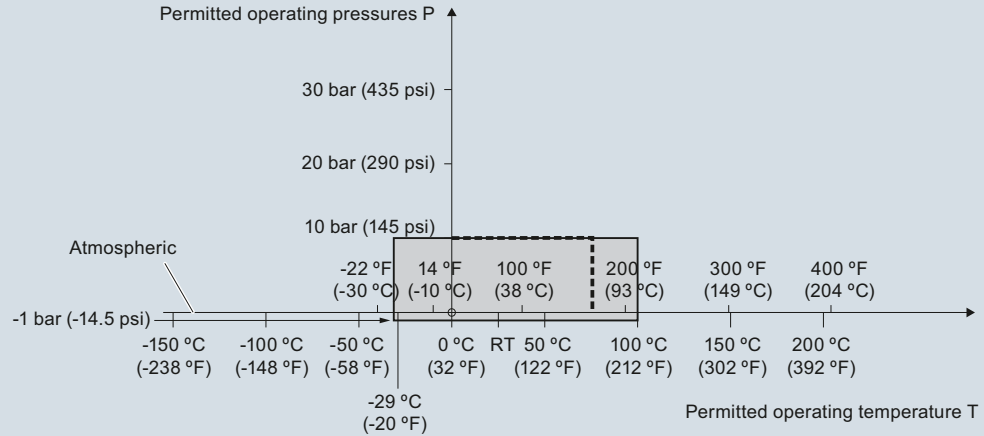
Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS100

Characteristic curves

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

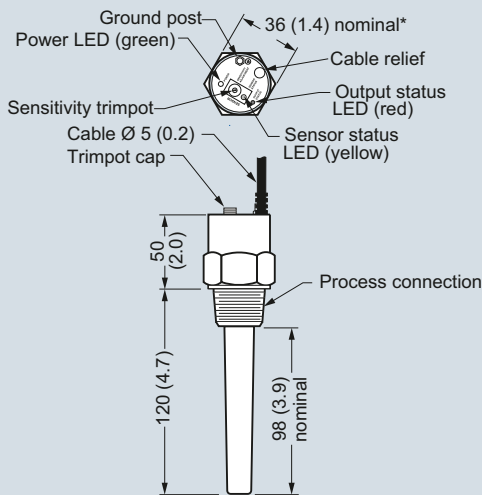


---- Example:
Permitted operating pressure = 10 bar (145 psi) at 75 °C

Pointek CLS100 process pressure/temperature derating curves

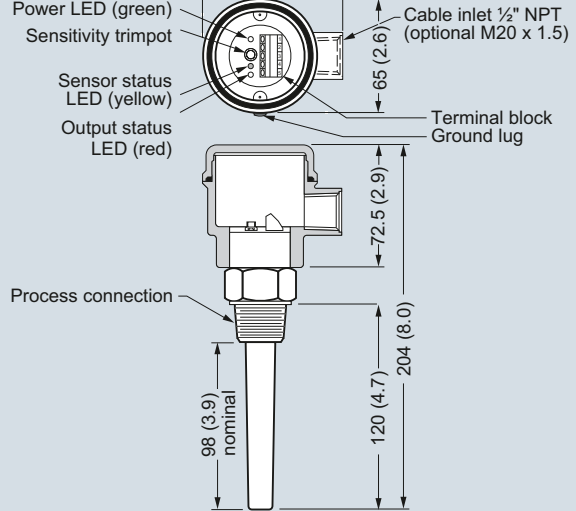
Dimensional drawings

Integral cable version



*Some G thread configurations deviate from this size.

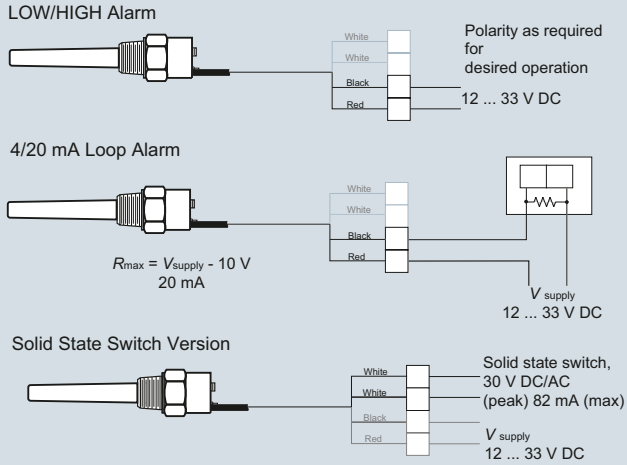
Enclosure version



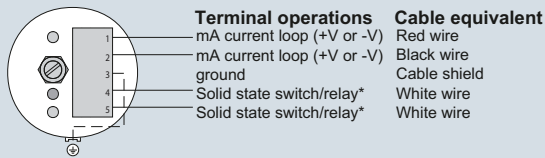
Pointek CLS100, dimensions in mm (inch)

Schematics

Integral Cable Version - Non Intrinsically Safe only



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

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS200 - Standard

Overview



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

Benefits

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

Application

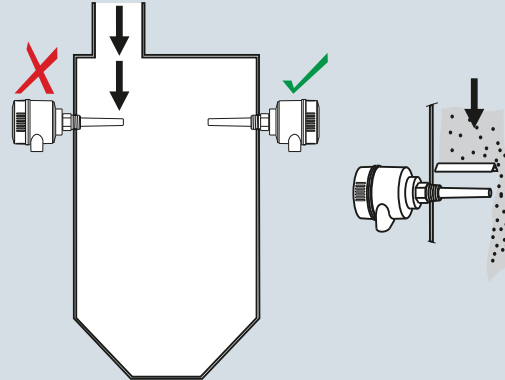
Pointek CLS200 standard version has 3 LED indicators with basic relay and solid-state switch alarms. Universal switch for solids/liquids and interface.

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

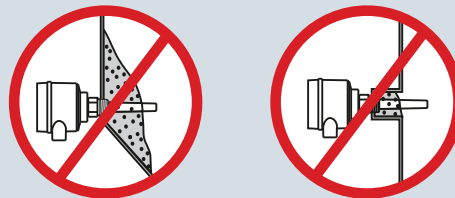
- Key Applications: liquids, slurries, powders, granules, pressurized applications, hazardous areas

Configuration

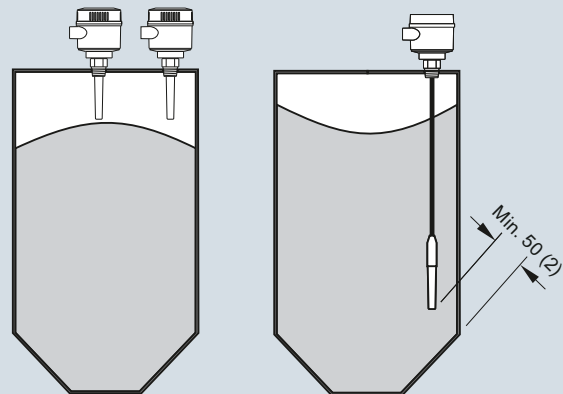
Installation



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



Avoid areas where material build up occurs.



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

Pointek CLS200 installation, dimensions in mm (inch)

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	<ul style="list-style-type: none"> • 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⁾
• Installation category	II
• Pollution degree	4
Medium conditions	Liquids, bulk solids, slurries and interfaces
• Relative dielectric constant ϵ_r	Min. 1.5
• Process temperature	
- Without thermal isolator	-40 ... +85 °C (-40 ... +185 °F) ²⁾
- With thermal isolator	-40 ... +125 °C (-40 ... +257 °F)
• Process pressure (rod version)	-1 ... +25 bar g (-14.6 ... +365 psi g) (nominal)
• Process pressure (cable version) ³⁾	-1 ... +10 bar g (-14.6 ... +150 psi g) (nominal)
• Process pressure (sliding coupling version)	-1 ... +10 bar g (-14.6 ... +150 psi g) (nominal)
Electromagnetic compatibility	
	To comply with CE EMC regulations (where applicable); the CLS200 should be installed per the instruction manual.

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

- 1) When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves on page 4/35.
- 2) Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F)
- 3) Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves on page 4/35.

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS200 - Standard

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.
Pointek CLS200 - Standard - Rod Version with Threaded or Flanged process connection 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. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5630-
Process connection <u>Threaded, 316L stainless steel</u> ¾" NPT [(Taper), ANSI/ASME B1.20.1] ● 0 A 1" NPT [(Taper), ANSI/ASME B1.20.1] ● 0 B 1¼" NPT [(Taper), ANSI/ASME B1.20.1] ● 0 C 1½" NPT [(Taper), ANSI/ASME B1.20.1] ● 0 D R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] ● 1 A R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] ● 1 B R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] ● 1 D G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] ● 3 A G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] ● 3 B G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] ● 3 D	
<u>Welded flange, 316L stainless steel, raised face</u> 1" ASME, 150 lb ● 5 A 1" ASME, 300 lb ● 5 B 1" ASME, 600 lb ● 5 C 1½" ASME, 150 lb ● 5 D 1½" ASME, 300 lb ● 5 E 1½" ASME, 600 lb ● 5 F 2" ASME, 150 lb ● 5 G 2" ASME, 300 lb ● 5 H 2" ASME, 600 lb ● 5 J 3" ASME, 150 lb ● 5 K 3" ASME, 300 lb ● 5 L 3" ASME, 600 lb ● 5 M 4" ASME, 150 lb ● 5 N 4" ASME, 300 lb ● 5 P 4" ASME, 600 lb ● 5 Q	
<u>Welded flange, 316L stainless steel, Type A flat faced</u> DN 25, PN 16 ● 6 A DN 25, PN 40 ● 6 B DN 40, PN 16 ● 6 C DN 40, PN 40 ● 6 D DN 50, PN 16 ● 6 E DN 50, PN 40 ● 6 F DN 80, PN 16 ● 6 G DN 80, PN 40 ● 6 H DN 100, PN 16 ● 6 J DN 100, PN 40 ● 6 K	
(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)	
Probe length (length from flange face) (threaded lengths include process thread) Note: No Y01 needed in Order code for standard lengths	
<u>Compact [threaded 120 mm (4.72 inch), Flanged 98 mm (3.86 inch)]</u> ● 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	

Selection and Ordering data	Article No.
Pointek CLS200 - Standard - Rod Version with Threaded or Flanged process connection 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. Add Order code Y01 and plain text: "Insertion length ... mm"	7ML5630-
Extended rod, 210 ... 1 000 mm (8.27 ... 39.37 inch) ● M Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch) ● N Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch) ● P Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch) ● Q Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch) ● R Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch) ● S	
Thermal isolator Without thermal isolator ● 0 With thermal isolator [for process connection temperatures over 85 °C (185 °F)] ● 1	
Remote mount electronics and mounting bracket With 2 m (79 inch) of cable ¹⁾²⁾ ● 2 With 5 m (197 inch) of cable ¹⁾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 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 approval options F, G, and H	
● We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ●. For details see page 10/11 in the appendix.	

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Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS200 - Standard

Selection and Ordering data

Order code

Further designs

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

Total insertion length: enter the total insertion length in plain text description **Y01**

Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text **Y15**

Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000 **C11**

Material inspection Certificate Type 3.1 per EN 10204 **C12**

SIL/IEC 61508 Declaration of Conformity [SIL 2 (overspill)] **C20**

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 4/34

◆ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆. For details see page 10/11 in the appendix.

Selection and Ordering data

Article No.

Pointek CLS200 - Standard - Cable Version with Threaded or Flanged process connection

7ML5631-0000

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.

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 ISO 228-1/PF (JIS-P), JIS B 0202] **3 A**

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

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

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

Extended cable, 3 000 mm (118.11 inch), length can be determined by customer on assembly¹⁾ **A**

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

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

Extended cable, 500 ... 5 000 mm (19.69 ... 196.85 inch) **C**

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

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

Extended cable, 15 001 ... 20 000 mm (590.59 ... 787.4 inch) **F**

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

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

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS200 - Standard

Selection and Ordering data	Article No.	Selection and Ordering data	Order code
Pointek CLS200 - Standard - Cable Version with Threaded or Flanged process connection 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.	7ML5631- 	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	
Thermal isolator Without thermal isolator	0	Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y01 Y15
With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	1	Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000	C11
Remote mount electronics and mounting bracket With 2 m (79 inch) of cable ²⁾	2	Material inspection Certificate Type 3.1 per EN 10204	C12
With 5 m (197 inch) of cable ²⁾	3	SIL/IEC 61508 Declaration of Conformity [SIL 2 (overspill)]	C20
Wetted seals FKM and PTFE	0	Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
FFKM and PTFE [for process temperatures above -20 °C (-4 °F)]	1	Accessories	See page 4/34
Probe material FEP jacketed cable with PPS probe body	0	● We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ●. For details see page 10/11 in the appendix.	
FEP jacketed cable 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⁾ Sensor detached to allow customer to set desired cable length

²⁾ Available with Approvals options F ... H

● We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ●. For details see page 10/11 in the appendix.

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS200 - Standard

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Selection and Ordering data	Article No.
Pointek CLS200 - Standard - Rod with Sanitary process connection 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. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5632-
Process connection Sanitary 316L stainless steel 1" sanitary fitting clamp 1½" sanitary fitting clamp 2" sanitary fitting clamp 2½" sanitary fitting clamp 3" sanitary fitting clamp (Note: Sanitary connection dimensionally corresponds to the applicable ISO 2852 standard)	8 A 8 B 8 C 8 D 8 E
Probe length (length from process connection face) Note: No Y01 needed in Order code for standard lengths Compact, 98 mm (3.86 inch) Extended rod, 250 mm (9.84 inch) Extended rod, 350 mm (13.78 inch) Extended rod, 500 mm (19.69 inch) Extended rod, 750 mm (29.53 inch) Extended rod, 1 000 mm (39.37 inch) Extended rod, 1 250 mm (49.21 inch) Extended rod, 1 350 mm (53.15 inch) Extended rod, 1 500 mm (59.06 inch) Extended rod, 1 750 mm (68.90 inch) Extended rod, 2 000 mm (78.74 inch) Add Order code Y01 and plain text: "Insertion length ... mm" Extended rod, 110 ... 350 mm (4.3 ... 13.78 inch) Extended rod, 351 ... 1 000 mm (13.78 ... 39.37 inch) Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch) Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch) Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch) Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch) Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch)	A B C D E F G H J K L M N P Q R S T
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 Remote mount electronics with 2 m (79 inch) of cable Remote mount electronics with 5 m (197 inch) of cable	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

Selection and Ordering data	Article No.
Pointek CLS200 - Standard - Rod with Sanitary process connection 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.	7ML5632-
Approvals Dust Ignition Proof: CE, RCM, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CE, RCM) General Purpose (CSA, FM, CE, RCM) with WHG approval	C D E F G H J K
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

Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code(s). Total insertion length: enter the total insertion length in plain text description Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]; Measuring-point number/identification (max. 27 characters) specify in plain text Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000 Material inspection Certificate Type 3.1 per EN 10204 SIL/IEC 61508 Declaration of Conformity [SIL 2 (overspill)]	Y01 Y15 C11 C12 C20
Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ⚡. For details see page 10/11 in the appendix.	See page 4/34

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS200 - Standard

Selection and Ordering data	Article No.
Pointek CLS200 - Standard - Sliding Coupling with Threaded process connection 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. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5633-0
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	0 A 0 B 0 C 0 D 1 A 1 B 1 D 3 A 3 B 3 D
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 M Extended rod, 1 001 ... 2 000 mm N Extended rod, 2 001 ... 3 000 mm P Extended rod, 3 001 ... 4 000 mm Q Extended rod, 4 001 ... 5 000 mm R Extended rod, 5 001 ... 5 500 mm S	C D E F G H J K L M N P Q R S
Thermal isolator Without thermal isolator 0 With thermal isolator [for process connection temperatures over 85 °C (185 °F)] 1	0 1
Remote mount electronics and mounting bracket With 2 m (79 inch) of cable ¹⁾ 2 With 5 m (197 inch) of cable ¹⁾ 3	2 3
Wetted seals FKM and PTFE 0 FFKM and PTFE [for process temperatures above -20 °C (-4 °F)] 1	0 1
Probe material 316L stainless steel with PPS probe body 0 316L stainless steel with PVDF probe body 1	0 1

Selection and Ordering data	Article No.
Pointek CLS200 - Standard - Sliding Coupling with Threaded process connection 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.	7ML5633-0
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	C D E F G H J 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 1) Available with Approvals options F ... H We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ●. For details see page 10/11 in the appendix.	A B C D
Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code(s). Total insertion length: enter the total insertion length in plain text description Y01 Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text Y15 Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000 C11 Material inspection Certificate Type 3.1 per EN 10204 C12 SIL/IEC 61508 Declaration of Conformity [SIL 2 (overspill)] C20	Y01 Y15 C11 C12 C20
Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ●. For details see page 10/11 in the appendix.	See page 4/34

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS200 - Standard

Selection and Ordering data	Article No.
Pointek CLS200 - Standard - PFA Coated Rod with PFA Coated Flanged process connection 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. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5634-
Process connection Welded flange, 316L stainless steel, raised face 1" ASME, 150 lb 1" ASME, 300 lb 1" ASME, 600 lb 1½" ASME, 150 lb 1½" ASME, 300 lb 1½" ASME, 600 lb 2" ASME, 150 lb 2" ASME, 300 lb 2" ASME, 600 lb 3" ASME, 150 lb 3" ASME, 300 lb 3" ASME, 600 lb 4" ASME, 150 lb 4" ASME, 300 lb 4" ASME, 600 lb	5 A 5 B 5 C 5 D 5 E 5 F 5 G 5 H 5 J 5 K 5 L 5 M 5 N 5 P 5 Q
Welded flange, 316L stainless steel, Type A flat faced DN 25, PN 16 DN 25, PN 40 DN 40, PN 16 DN 40, PN 40 DN 50, PN 16 DN 50, PN 40 DN 80, PN 16 DN 80, PN 40 DN 100, PN 16 DN 100, PN 40 (Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)	6 A 6 B 6 C 6 D 6 E 6 F 6 G 6 H 6 J 6 K
Probe length (length from flange face) (threaded lengths include process thread) Note: No Y01 needed in Order code for standard lengths Compact, 98 mm (3.86 inch) Extended rod, 250 mm (9.84 inch) Extended rod, 350 mm (13.78 inch) Extended rod, 500 mm (19.69 inch) Extended rod, 750 mm (29.53 inch) Extended rod, 1 000 mm (39.37 inch) Extended rod, 1 250 mm (49.21 inch) Extended rod, 1 350 mm (53.15 inch) Extended rod, 1 500 mm (59.06 inch) Extended rod, 1 750 mm (68.90 inch) Extended rod, 2 000 mm (78.74 inch) Add Order code Y01 and plain text: "Insertion length ... mm" Extended rod, 200 ... 1 000 mm (7.87 ... 39.37 inch) Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch) Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch) Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch) Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch) Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch)	A B C D E F G H J K L M N P Q R S

Selection and Ordering data	Article No.
Pointek CLS200 - Standard - PFA Coated Rod with PFA Coated Flanged process connection 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.	7ML5634-
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 With 5 m (197 inch) of cable	2 3
Wetted seals FKM FFKM [for process temperatures above -20 °C (-4 °F)]	0 1
Probe material PFA Coated 316L stainless steel with PPS probe body PFA Coated 316L stainless steel with PVDF probe body	0 1
Approvals 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)	F G H
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

Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code(s). Total insertion length: enter the total insertion length in plain text description Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]; Measuring-point number/identification (max. 27 characters) specify in plain text Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000 Material inspection Certificate Type 3.1 per EN 10204 SIL/IEC 61508 Declaration of Conformity [SIL 2 (overspill)]	Y01 Y15 C11 C12 C20
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 4/34

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.

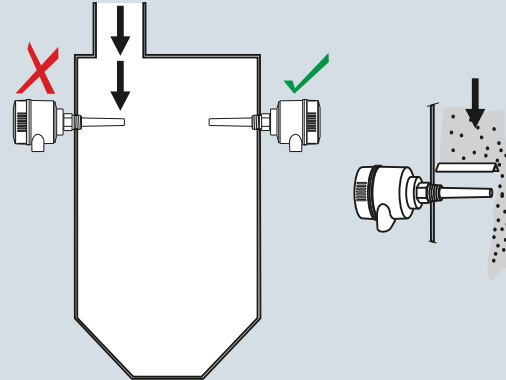
When connected to the PROFIBUS network, advanced diagnostics and set up using SIMATIC PDM are possible.

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

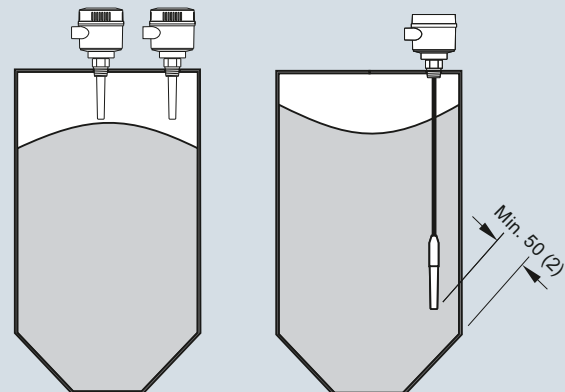
Installation



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



Avoid areas where material buildup 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 picoFarad (pF)

Output

Output signal

• Solid-state output

- Output
- Protection
- Max. switching voltage

Galvanically isolated
Against reversed polarity (bipolar)

- 30 V (DC)
- 30 V peak (AC)

- Max. load current
- Voltage drop
- Time delay (ON and/or OFF)

82 mA
< 1 V, typical at 50 mA
Programmable by user (0 ... 100 s)
Min. or max.

- Fail-safe mode
- Connection

Removable terminal block

Rated operating conditions¹⁾

Installation conditions

- Location

Indoor/outdoor

Ambient conditions

- Ambient temperature
- Installation category
- Pollution degree

-40 ... +85 °C (-40 ... +185 °F)²⁾
II
4

Medium conditions

Liquids, bulk solids, slurries, and interfaces

- Relative dielectric constant ϵ_r
- Process temperature

Min. 1.5

- Without thermal isolator
- With thermal isolator

-40 ... +85 °C (-40 ... +185 °F)²⁾
-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
- Optional thermal isolator

Epoxy-coated aluminum with gasket
316L stainless steel

Connection

Removable terminal block,
max. 2.5 mm²

Degree of protection

IP65/Type 4/NEMA 4 (optional IP68)

Cable inlet

2 x M20 x 1.5 thread (option: 2 x
½" NPT conduit entry including 1
plugged entry)

Electromagnetic compatibility

To comply with CE EMC regulations
(where applicable); the CLS200
should be installed per the instruction
manual.

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 Safe⁴⁾

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 4/35.

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

³⁾ Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves on page 4/35.

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

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS200 - Digital

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

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

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

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

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS200 - Digital

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Selection and Ordering data	Article No.
Pointek CLS200 - Digital - Rod with Threaded or Flanged process connection	7ML5640-
Versatile inverse frequency shift capacitance level and material detection switch with optional process connection 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.	
➤ 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 ISO 228-1/PF (JIS-P), JIS B 0202]	3 A
G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 B
G 1 1/2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 D
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

Selection and Ordering data	Article No.
Pointek CLS200 - Digital - Rod with Threaded or Flanged process connection	7ML5640-
Versatile inverse frequency shift capacitance level and material detection switch with optional process connection 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.	
Add Order code Y01 and plain text: "Insertion length ... mm"	
Extended rod, 210 ... 1 000 mm (8.27 ... 39.37 inch)	M
Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch)	N
Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch)	P
Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch)	Q
Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch)	R
Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch)	S
Thermal isolator	
Without thermal isolator	0
With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	1
Remote mount electronics and mounting bracket	
With 2 m (79 inch) of cable ²⁾	2
With 5 m (197 inch) of cable 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	
Non-Sparking:	
CE, RCM, ATEX II 3 G Ex nA II T6 ... T4, ATEX II 2 D IP6X T100 °C	B
Dust Ignition Proof:	
CE, RCM, ATEX II 1/2 D T100 °C	C
Intrinsically Safe: ¹⁾	
CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D IP6X T100 °C	D
Flameproof Enclosure with IS Probe:	
CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C	E
Non-incendive:	
CSA/FM Class I, Div. 2, Groups A, B, C, D	
CSA/FM Class II, Div. 2, Groups F, G	
CSA/FM Class III T4 or T6	F
Dust Ignition Proof with IS Probe:	
CSA/FM Class II, Div. 1, Groups E, F, G	
CSA/FM Class III T4	G
Intrinsically Safe: ¹⁾	
CSA/FM Class I, Div. 1, Groups A, B, C, D	
CSA/FM Class II, Div. 1, Groups E, F, G	
CSA/FM Class III T4	H
Explosion Proof with IS Probe:	
CSA/FM Class I, Div. 1, Groups A, B, C, D	
CSA/FM Class II, Div. 1, Groups E, F, G	
CSA/FM Class III T4	J
General Purpose (CSA, FM)	K
General Purpose (CE, RCM)	L

Selection and Ordering data	Article No.
Pointek CLS200 - Digital - Rod with Threaded or Flanged process connection Versatile inverse frequency shift capacitance level and material detection switch with optional process connection 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.	7ML5640-
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	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	
We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 10/11 in the appendix.	


Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code(s).	
Total insertion length: enter the total insertion length in plain text description	Y01
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000	C11
Material inspection Certificate Type 3.1 per EN 10204	C12
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 4/34
We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 10/11 in the appendix.	


Selection and Ordering data	Article No.
Pointek CLS200 - Digital - Cable with Threaded or Flanged process connection Versatile inverse frequency shift capacitance level and material detection switch with optional process connection 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.	7ML5641-
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 ISO 228-1/PF (JIS-P), JIS B 0202]	3 A
G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 B
G 1 1/2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 D
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.)	

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS200 - Digital

Selection and Ordering data	Article No.
Pointek CLS200 - Digital - Cable with Threaded or Flanged process connection	7ML5641-
Versatile inverse frequency shift capacitance level and material detection switch with optional process connection 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.	
Probe length (length from flange face) (threaded lengths include process thread) <u>Note: No Y01 needed in Order code for standard lengths</u>	
Extended cable, 3 000 mm (118.11 inch), length can be determined by customer on assembly	● A
Extended cable, 6 000 mm (236.22 inch), length can be determined by customer on assembly	● B
<u>Add Order code Y01 and plain text: "Insertion length ... mm"</u>	
Extended cable, 500 ... 5 000 mm (19.69 ... 196.85 inch)	● C
Extended cable, 5 001 ... 10 000 mm (196.89 ... 393.70 inch)	● D
Extended cable, 10 001 ... 15 000 mm (393.74 ... 590.55 inch)	● E
Extended cable, 15 001 ... 20 000 mm (590.59 ... 787.40 inch)	● F
Extended cable, 20 001 ... 25 000 mm (787.44 ... 984.25 inch)	● G
Extended cable, 25 001 ... 30 000 mm (984.29 ... 1 181.10 inch)	● H
Thermal isolator	
Without thermal isolator	0
With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	1
Remote mount electronics and mounting bracket	
With 2 m (79 inch) of cable ²⁾	2
With 5 m (197 inch) of cable ²⁾	3
Wetted seals	
FKM and PTFE	0
FFKM and PTFE [for process temperatures above -20 °C (-4 °F)]	1
Probe material	
FEP jacketed cable with PPS probe body	0
FEP jacketed cable with PVDF probe body	1
Approvals	
Non-Sparking: CE, RCM, ATEX II 3 G Ex nA II T6 ... T4, ATEX II 2 D IP6X T100 °C	● B
Dust Ignition Proof: CE, RCM, ATEX II 1/2 D T100 °C	● C
Intrinsically Safe: ¹⁾ CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D IP6X T100 °C	● D
Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C	● E
Non-incendive: CSA/FM Class I, Div. 2, Groups A, B, C, D CSA/FM Class II, Div. 2, Groups F, G CSA/FM Class III T4 or T6	● F
Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4	● G
Intrinsically Safe: ¹⁾ CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4	● H
Explosion Proof with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4	● J
General Purpose (CSA, FM)	● K
General Purpose (CE, RCM)	● L

Selection and Ordering data	Article No.
Pointek CLS200 - Digital - Cable with Threaded or Flanged process connection	7ML5641-
Versatile inverse frequency shift capacitance level and material detection switch with optional process connection 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.	
Enclosure and lid <u>Aluminum epoxy coated</u>	
2 x 1/2" NPT via adapter - cable inlet, IP65	● A
2 x M20 x 1.5 cable inlet, IP65	● B
2 x 1/2" NPT via adapter - cable inlet, IP68	● C
2 x M20 x 1.5 cable inlet, IP68	● D
1) Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection	
2) Available with Approvals options F, G, H, J, and K	
● We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ●. For details see page 10/11 in the appendix.	

Selection and Ordering data	Order code
Further designs	
Please add "-Z" to Article No. and specify Order code(s).	
Total insertion length: enter the total insertion length in plain text description	● Y01
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	● Y15
Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000	● C11
Material inspection Certificate Type 3.1 per EN 10204	● C12
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 4/34
● We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ●. For details see page 10/11 in the appendix.	

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS200 - Digital

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Pointek CLS200 - Digital - Rod with Sanitary process connection Versatile inverse frequency shift capacitance level and material detection switch with optional process connection 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. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5642-0	Pointek CLS200 - Digital - Rod with Sanitary process connection Versatile inverse frequency shift capacitance level and material detection switch with optional process connection 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.	7ML5642-0
Process connection Sanitary 316L stainless steel		Non-incendive: CSA/FM Class I, Div. 2, Groups A, B, C, D CSA/FM Class II, Div. 2, Groups F, G CSA/FM Class III T4 or T6	F
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	Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4	G
Probe length (length from process connection face) Note: No Y01 needed in Order code for standard lengths		Intrinsically Safe: ¹⁾ CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4	H
Compact, 98 mm (3.86 inch) Extended rod, 250 mm (9.84 inch) Extended rod, 350 mm (13.78 inch)	A B 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	J
Extended rod, 500 mm (19.69 inch) Extended rod, 750 mm (29.53 inch) Extended rod, 1 000 mm (39.37 inch)	D E F	General Purpose (CSA, FM) General Purpose (CE, RCM)	K L
Extended rod, 1 250 mm (49.21 inch) Extended rod, 1 350 mm (53.15 inch) Extended rod, 1 500 mm (59.06 inch)	G H J	Enclosure and lid Aluminum epoxy coated	
Extended rod, 1 750 mm (68.90 inch) Extended rod, 2 000 mm (78.74 inch)	K L	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
Add Order code Y01 and plain text: "Insertion length ... mm" Extended rod, 110 ... 350 mm (4.3 ... 13.78 inch) Extended rod, 351 ... 1 000 mm (13.82 ... 39.37 inch) Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch) Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch) Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch) Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch) Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch)	M N P Q R S T	¹⁾ Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection ²⁾ Available with Approvals options F, G, H, J, and K	
Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1	We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 10/11 in the appendix.	
Remote mount electronics and mounting bracket With 2 m (79 inch) of cable ²⁾ With 5 m (197 inch) of cable ²⁾	2 3	Selection and Ordering data	Order code
Wetted seals FKM FFKM [for process temperatures above -20 °C (-4 °F)]	0 1	Further designs Please add "-Z" to Article No. and specify Order code(s).	
Probe material 316L stainless steel with PPS probe body 316L stainless steel with PVDF probe body	0 1	Total insertion length: enter the total insertion length in plain text description Y01 Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text Y15 Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000 C11 Material inspection Certificate Type 3.1 per EN 10204 C12	
Approvals Non-Sparking: CE, RCM, ATEX II 3 G Ex nA II T6 ... T4, ATEX II 2 D IP6X T100 °C Dust Ignition Proof: CE, RCM, ATEX II 1/2 D T100 °C Intrinsically Safe: ¹⁾ CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D IP6X T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C	B C D E	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 4/34
		We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 10/11 in the appendix.	

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS200 - Digital

4

Selection and Ordering data	Article No.
Pointek CLS200 - Digital - Rod with Sliding coupling with Threaded process connection Versatile inverse frequency shift capacitance level and material detection switch with optional process connection 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. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5643-
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 ISO 228-1/PF (JIS-P), JIS B 0202] 3 A G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 3 B G 1 1/2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 3 D	
Probe length (length from flange face) (threaded lengths include process thread) Note: No Y01 needed in Order code for standard lengths Extended rod, 350 mm (13.78 inch) C Extended rod, 500 mm (19.69 inch) D Extended rod, 750 mm (29.53 inch) E Extended rod, 1 000 mm (39.37 inch) F Extended rod, 1 250 mm (49.21 inch) G Extended rod, 1 350 mm (53.15 inch) H Extended rod, 1 500 mm (59.06 inch) J Extended rod, 1 750 mm (68.90 inch) K Extended rod, 2 000 mm (78.74 inch) L Add Order code Y01 and plain text: "Insertion length ... mm" Extended rod, 350 ... 1 000 mm (13.82 ... 39.37 inch) M Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch) N Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch) P Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch) Q Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch) R Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch) S	
Thermal isolator Without thermal isolator 0 With thermal isolator [for process connection temperatures over 85 °C (185 °F)] 1	
Remote mount electronics and mounting bracket With 2 m (79 inch) of cable ²⁾ 2 With 5 m (197 inch) of cable ²⁾ 3	
Wetted seals FKM and PTFE 0 FFKM and PTFE [for process temperatures above -20 °C (-4 °F)] 1	
Probe material 316L stainless steel with PPS probe body 0 316L stainless steel with PVDF probe body 1	
Approvals Non-Sparking: CE, RCM, ATEX II 3 G Ex nA II T6 ... T4, ATEX II 2 D IP6X T100 °C B Dust Ignition Proof: CE, RCM, ATEX II 1/2 D T100 °C C Intrinsically Safe: ¹⁾ CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D IP6X T100 °C D	

Selection and Ordering data	Article No.
Pointek CLS200 - Digital - Rod with Sliding coupling with Threaded process connection Versatile inverse frequency shift capacitance level and material detection switch with optional process connection 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. Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C E Non-incendive: CSA/FM Class I, Div. 2, Groups A, B, C, D F CSA/FM Class II, Div. 2, Groups F, G F CSA/FM Class III T4 or T6 F Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G G CSA/FM Class III T4 G Intrinsically Safe: ¹⁾ CSA/FM Class I, Div. 1, Groups A, B, C, D H CSA/FM Class II, Div. 1, Groups E, F, G H CSA/FM Class III T4 H Explosion Proof with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D J CSA/FM Class II, Div. 1, Groups E, F, G J CSA/FM Class III T4 J General Purpose (CSA, FM) K General Purpose (CE, RCM) L	7ML5643-
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 Approvals options F, G, H, J, and K We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 10/11 in the appendix.	

Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code(s). Total insertion length: enter the total insertion length in plain text description Y01 Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text Y15 Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000 C11 Material inspection Certificate Type 3.1 per EN 10204 C12	
Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 10/11 in the appendix.	See page 4/34

Selection and Ordering data	Article No.
Pointek CLS200 - Digital - PFA Rod with PFA Flanged process connection Versatile inverse frequency shift capacitance level and material detection switch with optional process connection 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. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	↗ 7ML5644-
Process connection <u>Welded flange, PFA coated, 316L stainless steel, raised face</u> 1" ASME, 150 lb 1" ASME, 300 lb 1" ASME, 600 lb 1½" ASME, 150 lb 1½" ASME, 300 lb 1½" ASME, 600 lb 2" ASME, 150 lb 2" ASME, 300 lb 2" ASME, 600 lb 3" ASME, 150 lb 3" ASME, 300 lb 3" ASME, 600 lb 4" ASME, 150 lb 4" ASME, 300 lb 4" ASME, 600 lb	5 A 5 B 5 C 5 D 5 E 5 F 5 G 5 H 5 J 5 K 5 L 5 M 5 N 5 P 5 Q
<u>Welded flange, PFA coated, 316L stainless steel, Type A flat faced</u> DN 25, PN 16 DN 25, PN 40 DN 40, PN 16 DN 40, PN 40 DN 50, PN 16 DN 50, PN 40 DN 80, PN 16 DN 80, PN 40 DN 100, PN 16 DN 100, PN 40 (Note: flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)	6 A 6 B 6 C 6 D 6 E 6 F 6 G 6 H 6 J 6 K
Probe length (length from process connection face) Note: No Y01 needed in Order code for standard lengths <u>Compact, 98 mm (3.86 inch)</u> <u>Extended rod, 250 mm (9.84 inch)</u> <u>Extended rod, 350 mm (13.78 inch)</u> <u>Extended rod, 500 mm (19.69 inch)</u> <u>Extended rod, 750 mm (29.53 inch)</u> <u>Extended rod, 1 000 mm (39.37 inch)</u> <u>Extended rod, 1 250 mm (49.21 inch)</u> <u>Extended rod, 1 350 mm (53.15 inch)</u> <u>Extended rod, 1 500 mm (59.06 inch)</u> <u>Extended rod, 1 750 mm (68.90 inch)</u> <u>Extended rod, 2 000 mm (78.74 inch)</u> Add Order code Y01 and plain text: "Insertion length ... mm" Extended rod, 200 ... 1 000 mm (7.87 ... 39.37 inch) Extended rod, 1 001 ... 2 000 mm (39.41 ... 78.74 inch) Extended rod, 2 001 ... 3 000 mm (78.78 ... 118.11 inch) Extended rod, 3 001 ... 4 000 mm (118.15 ... 157.48 inch) Extended rod, 4 001 ... 5 000 mm (157.52 ... 196.85 inch) Extended rod, 5 001 ... 5 500 mm (196.89 ... 216.53 inch)	A B C D E F G H J K L M N P Q R S
Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1

Selection and Ordering data	Article No.
Pointek CLS200 - Digital - PFA Rod with PFA Flanged process connection Versatile inverse frequency shift capacitance level and material detection switch with optional process connection 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.	↗ 7ML5644-
Remote mount electronics and mounting bracket With 2 m (79 inch) of cable With 5 m (197 inch) of cable	2 3
Wetted seals FKM FFKM [for process temperatures above -20 °C (-4 °F)]	0 1
Probe material PFA Coated 316L stainless steel with PPS probe body PFA Coated 316L stainless steel with PVDF probe body	0 1
Approvals 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)	F G H J K
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	

Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code(s).	
Total insertion length: enter the total insertion length in plain text description	Y01
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15
Manufacturer's test certificate: M to DIN 55350, Part 18 and ISO 9000	C11
Material inspection Certificate Type 3.1 per EN 10204	C12
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 4/34

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS200 – Standard and Digital

Selection and Ordering data

Article No.

Accessories

SensGuard, 3/4" NPT (PPS)

Only available for CLS200 with 3/4" NPT thread

7ML1830-1DL

SensGuard, R 1" (BSPT) (PPS)

Only available for CLS200 with 3/4" NPT thread

7ML1830-1DM

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

7ML1930-1AQ

General Purpose

1/2" NPT General Purpose Cable Entry IP68/IP69K NEMA6, -40 ... +100 °C (-40 ... +212 °F), cable size 6 ... 12 mm (0.236 ... 0.472 inch)

7ML1830-1JA

M20 x 1.5 General Purpose Cable Entry IP68/IP69K NEMA6, -40 ... -100 °C (-40 ... -212 °F), cable size 7 ... 12 mm (0.275 ... 0.472 inch)

7ML1830-1JC

Hazardous Locations

1/2" NPT EMC rated Cable Gland: Dust Ignition Proof, Flameproof Exd, and Increased Safety ATEX II 2 GD ExtD A21 (Zone 1, Zone 2, Zone 21, Zone 22, and in Gas Groups IIA, IIB and IIC) -60 ... +80 °C IP66, IP67, IP68, NEMA4X, cable sizes 5.5 ... 12 mm (0.216 ... 0.472 inch)

7ML1830-1JB

M20 EMC rated Cable Gland: Dust Ignition Proof, Flameproof Exd, and Increased Safety ATEX II 2 GD ExtD A21 (Zone 1, Zone 2, Zone 21, Zone 22 and in Gas Groups IIA, IIB and IIC) -60 ... +80 °C IP66, IP67, IP68, NEMA4X, cable sizes 5.5 ... 12 mm (0.216 ... 0.472 inch)

7ML1830-1JD

Blind threaded flanges are available.

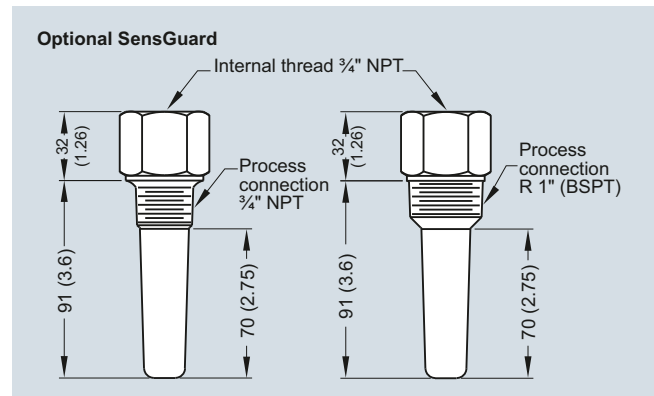
Customers interested in a custom designed device should consult a local sales person. For more information, please visit

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

Pointek Specials

See page 4/62

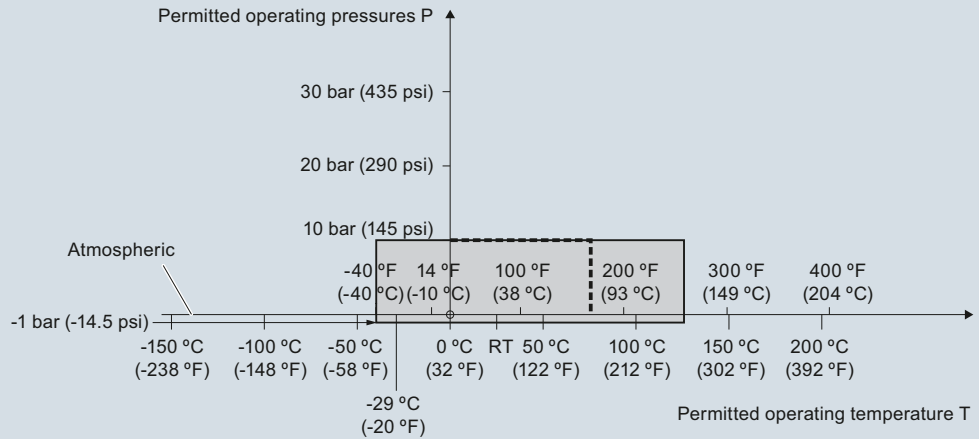
Options



Optional SensGuard, dimensions in mm (inch)

Characteristic curves

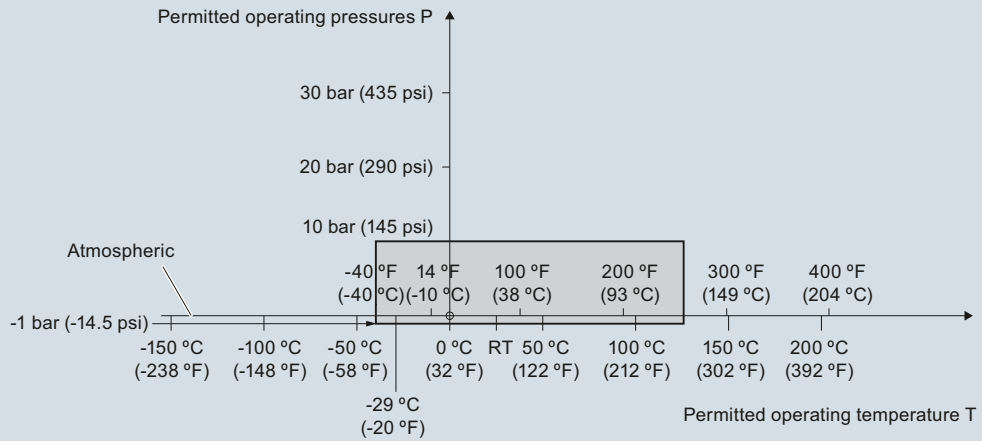
**Pressure/temperature curve
CLS200 sliding coupling
threaded process connections
(7ML5633 and 7ML5643)**



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

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

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



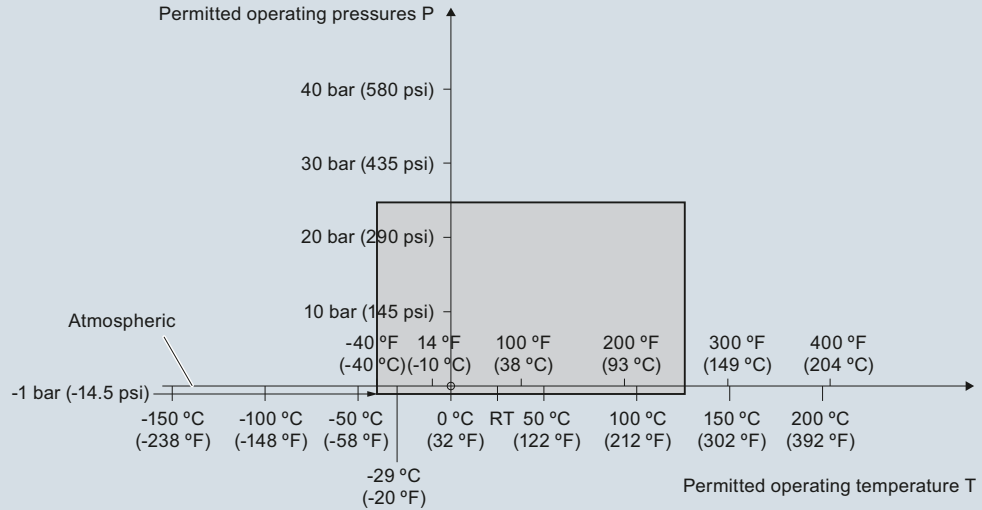
Pointek CLS200 process pressure/temperature derating curves (7ML5631 and 7ML5641)

Level Measurement

Point level measurement - RF Capacitance switches

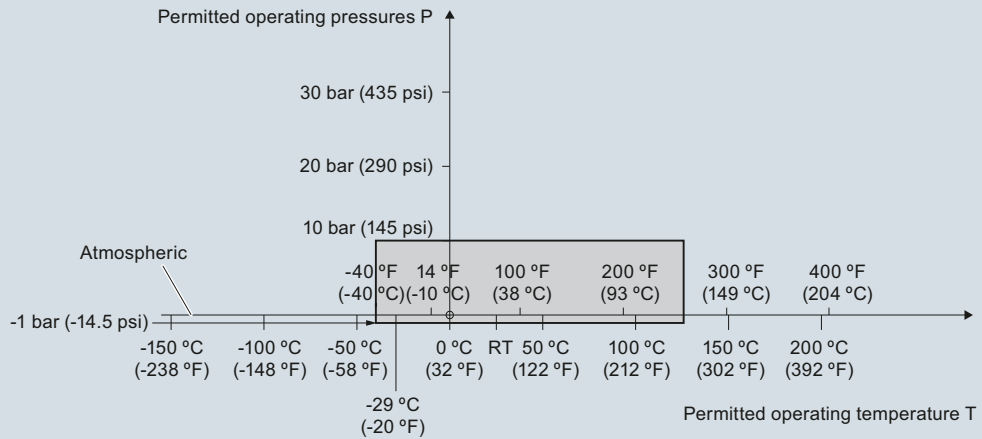
Pointek CLS200 Standard and Digital

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



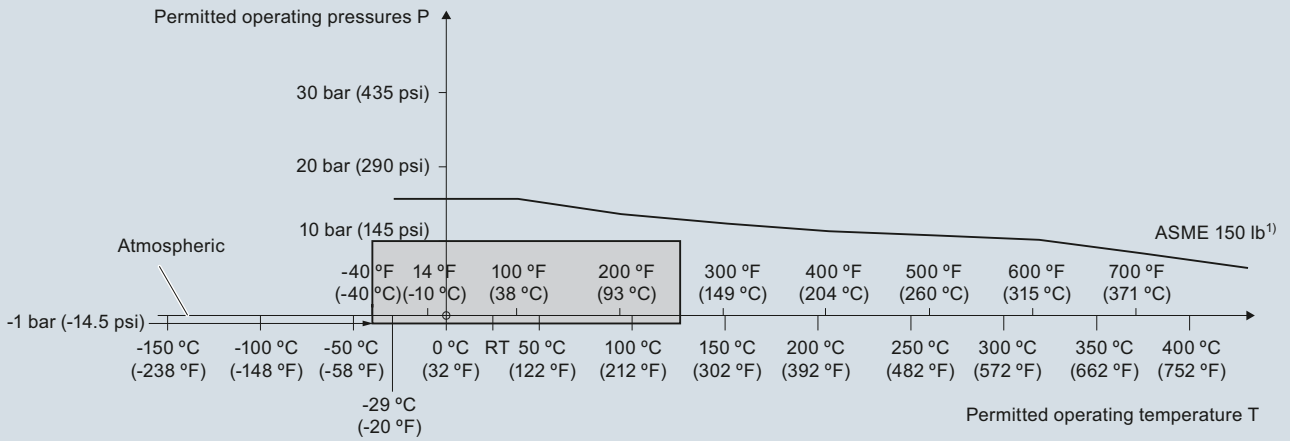
Pointek CLS200 process pressure/temperature derating curves (7ML5630 or 7ML5640)

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



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

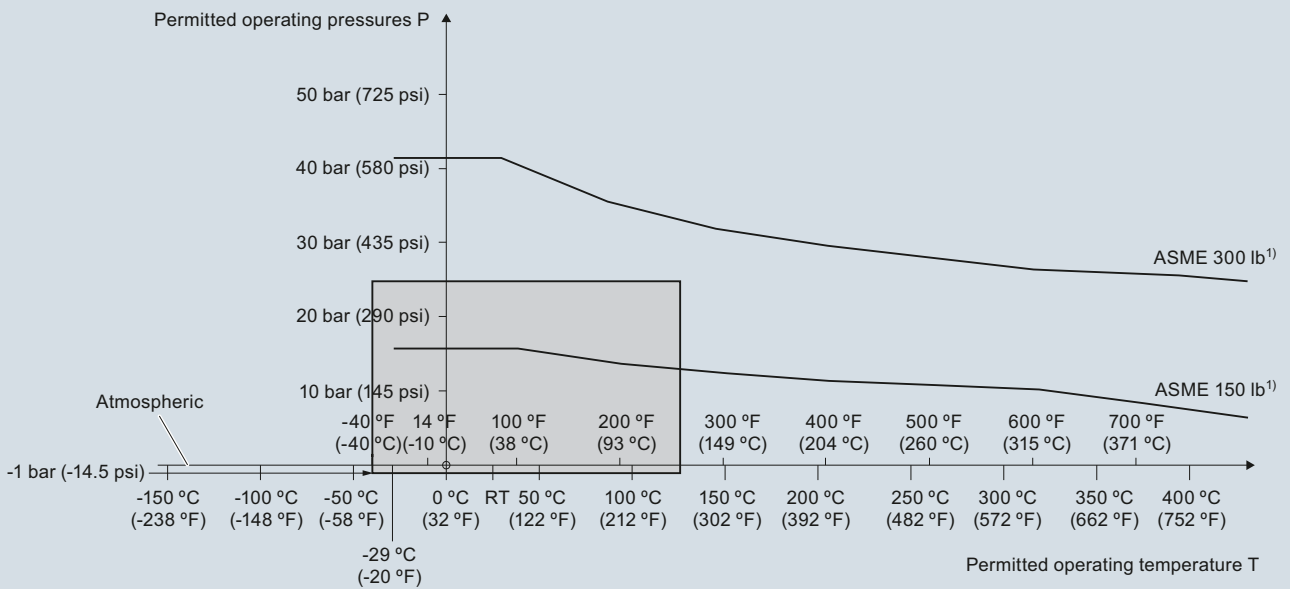
**Pressure/temperature curve
CLS200, cable
ASME flanged process connections
(7ML5631 and 7ML5641)**



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

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

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



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

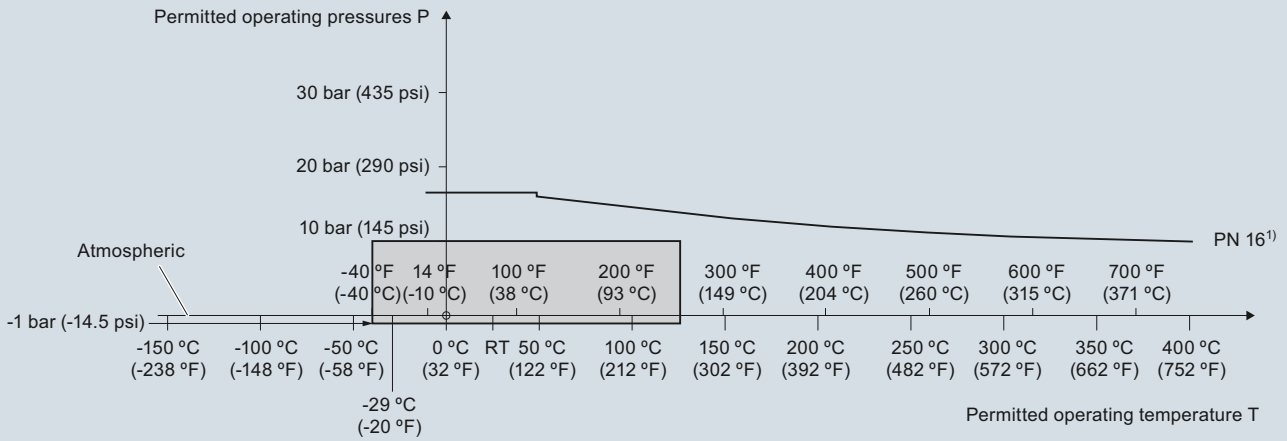
Pointek CLS200 process pressure/temperature derating curves (7ML5630 and 7ML5640)

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS200 Standard and Digital

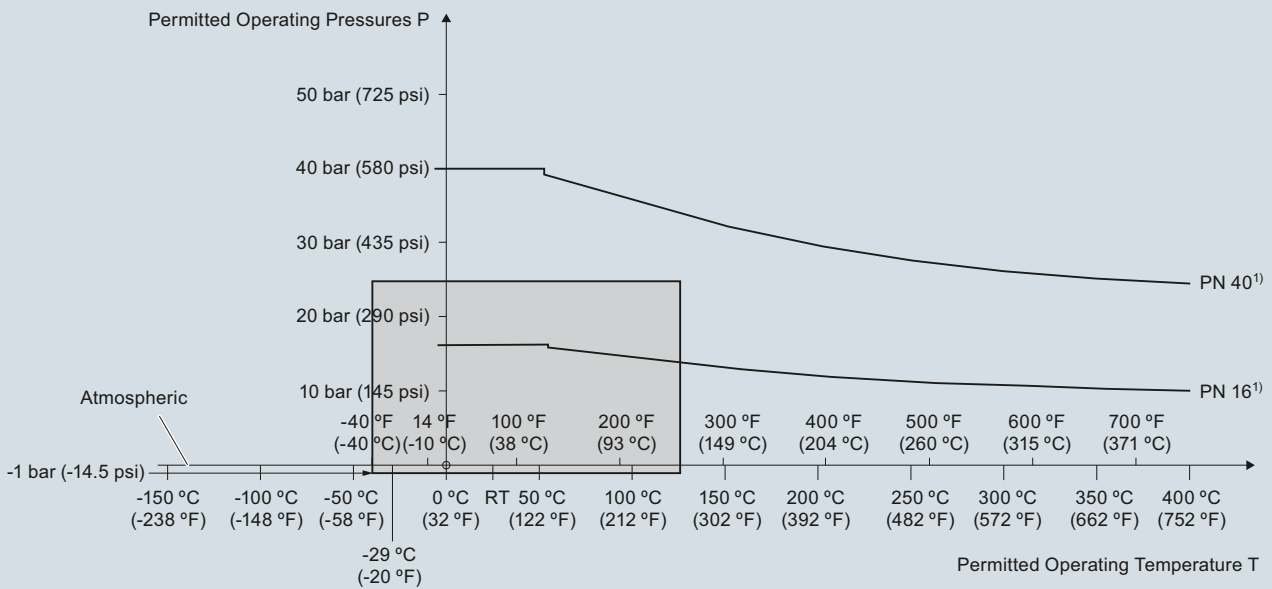
Pressure/temperature curve
CLS200 cable
EN flanged process connections
(7ML5631 and 7ML5641)



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

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

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



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

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

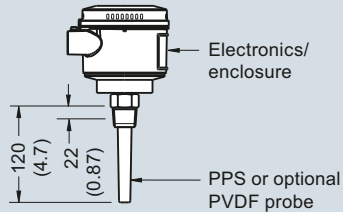
Level Measurement

Point level measurement - RF Capacitance switches

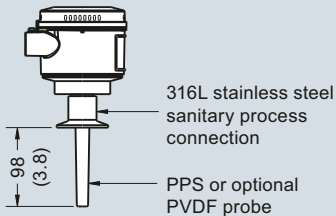
Pointek CLS200 Standard and Digital

Dimensional drawings

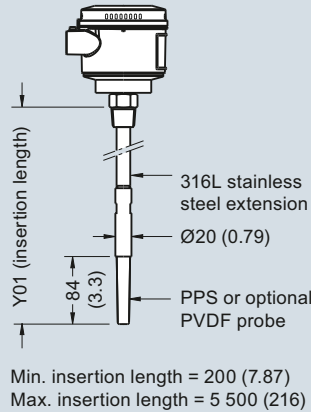
Compact version Threaded (7ML5630 and 7ML5640)



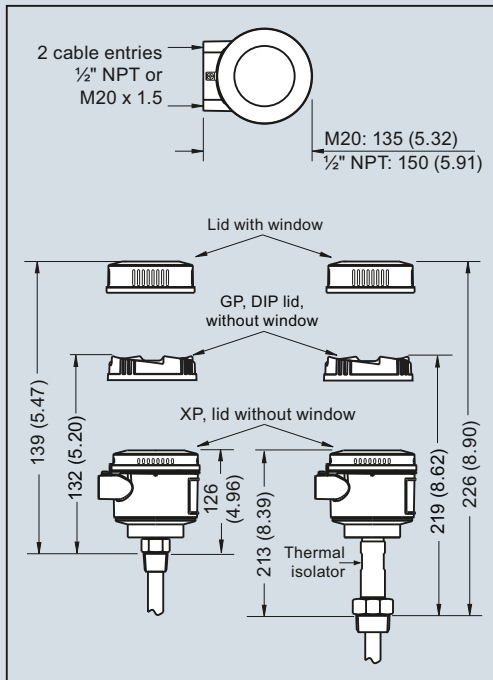
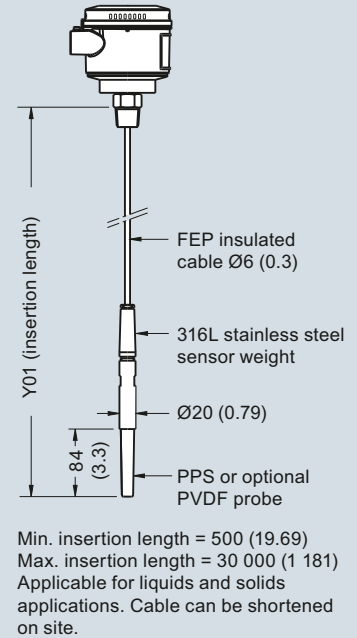
Sanitary compact version Sanitary fitting (7ML5632 and 7ML5642)



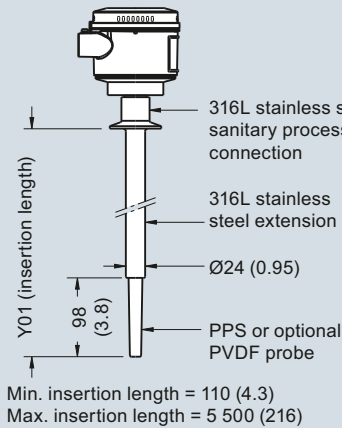
Extended rod version Threaded (7ML5630 and 7ML5640)



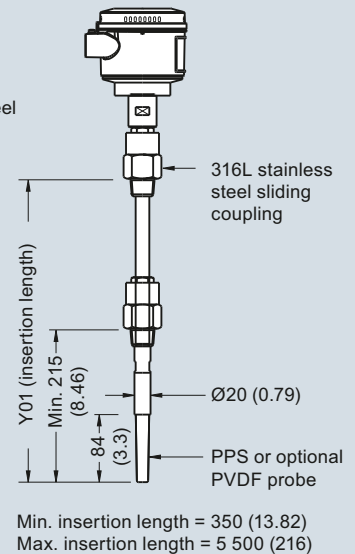
Extended cable version Threaded (7ML5631 and 7ML5641)



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



Sliding coupling version Threaded (7ML5633 and 7ML5643)



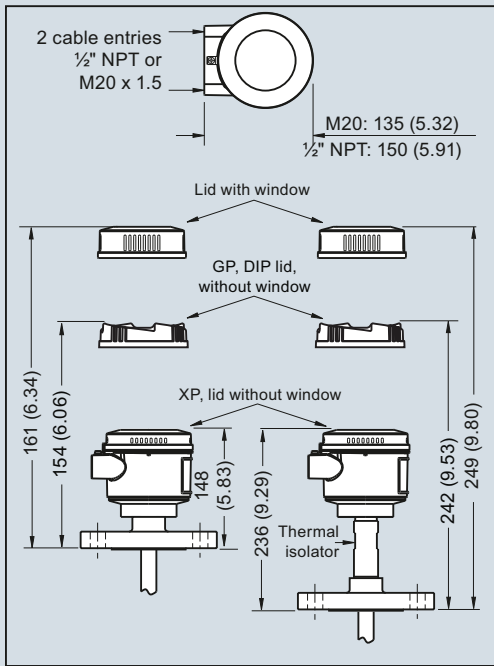
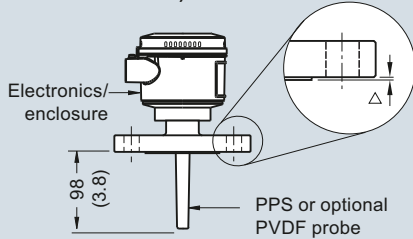
Pointek CLS200 threaded/sanitary process connections, dimensions in mm (inch)

Level Measurement

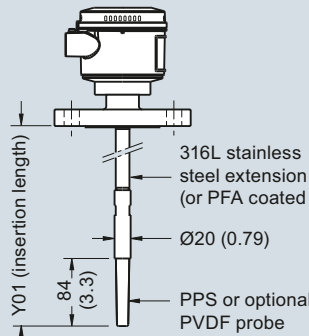
Point level measurement - RF Capacitance switches

Pointek CLS200 Standard and Digital

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

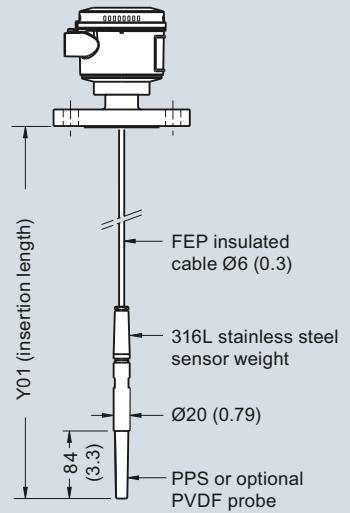


Extended rod version
Welded Flange (7ML5630 and 7ML5640)
Welded Flange, PFA coated
(7ML5634 and 7ML5644)



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

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



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

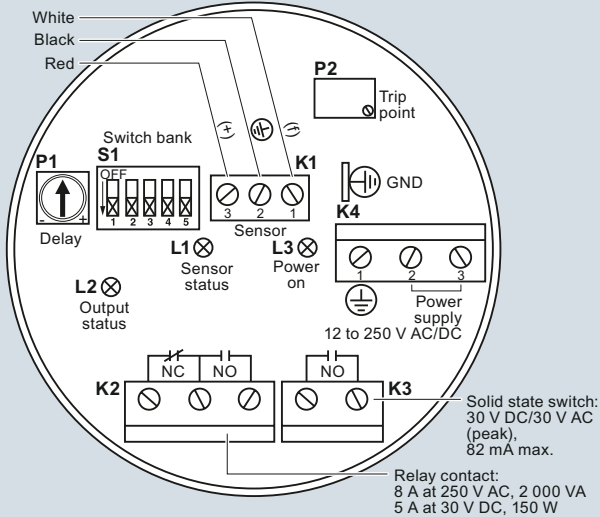
Flange Facing (raised face)	
Flange Class	Facing thickness
△ ASME 150/300	2 (0.08)
△ ASME 600/900	7 (0.28)
△ PN16/40	2 (0.08)

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

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

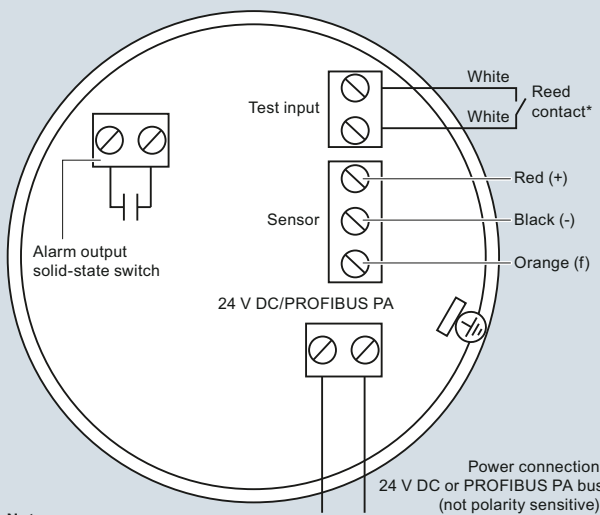
Schematics

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

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS300 - Standard

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.

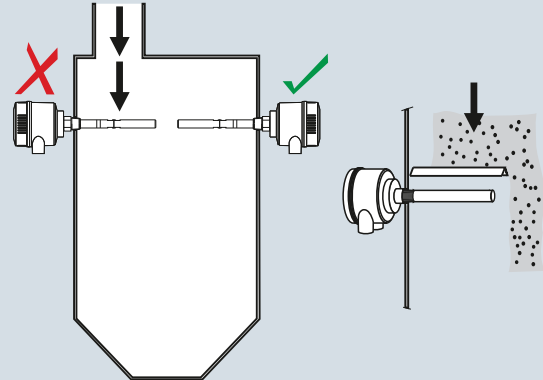
Wetted parts are made of stainless steel with a PFA shield for high chemical resistance, and of ceramic and stainless steel for high temperature version. Materials with low or high dielectric constants can be accurately detected. The unique Active Shield suppresses interference from material buildup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

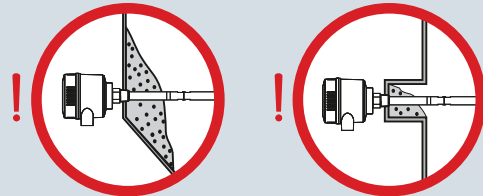
- Key Applications: liquids, slurries, bulk solids, relatively high pressure and temperature, hazardous areas, milling and mining applications

Configuration

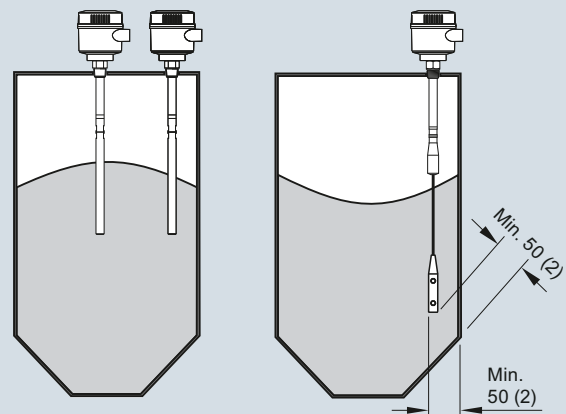
Installation



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 4/56. ²⁾ Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F). ³⁾ Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves starting on page 4/56.	
Resolution			
• Min. sensitivity (pF)	1 % change in actual capacitance		
• Max. temperature error	0.2 % of actual capacitance value		
Rated operating conditions¹⁾			
Installation conditions			
• Location	Indoor/outdoor		
Ambient conditions			
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) ²⁾		
Medium conditions			
	Liquids, bulk solids, slurries and interfaces, and applications with viscous materials		
• Relative dielectric constant ϵ_r	Min. 1.5		
• Process temperature			
- Rod/Cable version	-40 ... +200 °C (-40 ... +392 °F) ²⁾		
- High-temperature version	-40 ... +400 °C (-40 ... +752 °F)		
• Process 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.

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS300 - Standard

4

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Pointek CLS300 - Standard - Rod Version with Threaded or Flanged process connection 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. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	↗ 7ML5650- 	Pointek CLS300 - Standard - Rod Version with Threaded or Flanged process connection 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. Add Order code Y01 and plain text: "Insertion length ... mm"	7ML5650-
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		Extended rod, factory adjusted length 250 ... 499 mm (9.8 ... 19.65 inch) ● E Extended rod, factory adjusted length 500 ... 749 mm (19.69 ... 29.49 inch) ● F Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch) ● G Thermal isolator Without thermal isolator ● 0 With thermal isolator [for process connection temperatures over 85 °C (185 °F)] ● 1 Wetted seals FKM ● 0 FFKM [for process temperatures above -20 °C (-4 °F)] ● 1 Probe material 316L stainless steel with PFA lining and PEEK isolators ● 0	
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		Approvals Dust Ignition Proof with IS Probe: CE, RCM, ATEX II 1/2 D T100 °C ● C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T1, ATEX II 1/2 D T100 °C ● D Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T1, ATEX II 1/2 D T100 °C ● E Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 ● F Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 ● G General Purpose (CSA, FM) ● H General Purpose (CE, RCM) ● J General Purpose with WHG approval (CSA, FM, CE, RCM) ● K	
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.)		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	
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		Active shield length Standard length - (125 mm threaded, 105 mm flanged) ● 0 Extended shield - (250 mm threaded, 230 mm flanged) ¹⁾ ● 1 Extended shield - (400 mm threaded, 380 mm flanged) ²⁾ ● 2	
		¹⁾ Available with Probe version options B ... D, F, G only [≥ 500 mm (19.69 inch)] ²⁾ Available with Probe version options C, D, and G only [≥ 750 mm (29.53 inch)] ● We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ●. For details see page 10/11 in the appendix.	

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS300 - Standard

Selection and Ordering data	Order code	Selection and Ordering data	Article No.
Further designs		Pointek CLS300 - Standard - Cable Version with Threaded or Flanged process connection	7ML5651-
Please add *-Z to Article No. and specify Order code(s).		Inverse frequency shift capacitance level 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.	
Total insertion length: enter the total insertion length in plain text description	Y01	Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	Y15	Process connection Threaded, 316L stainless steel	
Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000	C11	1¼" NPT [(Taper), ANSI/ASME B1.20.1]	0 C
Material Inspection Certificate Type 3.1 per EN 10204	C12	1½" NPT [(Taper), ANSI/ASME B1.20.1]	0 D
Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation		R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203]	1 D
Accessories	See page 4/55	G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	3 D
We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆ . For details see page 10/11 in the appendix.		Welded flange, 316L stainless steel, raised face	
1½" ASME, 150 lb		1½" ASME, 300 lb	5 D
1½" ASME, 300 lb		1½" ASME, 600 lb	5 E
2" ASME, 150 lb		2" ASME, 300 lb	5 G
2" ASME, 300 lb		2" ASME, 600 lb	5 H
3" ASME, 150 lb		3" ASME, 300 lb	5 K
3" ASME, 300 lb		3" ASME, 600 lb	5 L
4" ASME, 150 lb		4" ASME, 300 lb	5 N
4" ASME, 300 lb		4" ASME, 600 lb	5 P
Welded flange, 316L stainless steel, Type A flat faced		DN 40, PN 16	6 C
DN 40, PN 40		DN 50, PN 16	6 D
DN 50, PN 40		DN 80, PN 16	6 E
DN 80, PN 40		DN 100, PN 16	6 F
(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 standard.)		DN 100, PN 40	6 G
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	A
Add Order code Y01 and plain text: "Insertion length ... mm"		Extended cable, 500 ... 1 000 mm (19.69 ... 39.37 inch)	B
Extended cable, 1 001 ... 5 000 mm (39.41 ... 196.85 inch)		Extended cable, 5 001 ... 10 000 mm (196.89 ... 393.70 inch)	E
Extended cable, 10 001 ... 15 000 mm (393.74 ... 590.55 inch)		Extended cable, 15 001 ... 20 000 mm (590.59 ... 787.40 inch)	F
Extended cable, 20 001 ... 25 000 mm (787.44 ... 984.25 inch)			G
			H
			J
			K

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS300 - Standard

Selection and Ordering data	Article No.	Selection and Ordering data	Order code
Pointek CLS300 - Standard - Cable Version with Threaded or Flanged process connection 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.	7ML5651- 	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
Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]	0 1	Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]; Measuring-point number/identification (max. 27 characters) specify in plain text Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000 Material Inspection Certificate Type 3.1 per EN 10204	Y15 C11 C12
Wetted seals FKM FFKM [for process temperatures above -20 °C (-4 °F)]	0 1	Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Probe material Bare 316L stainless steel cable, PEEK isolators and 316L stainless steel cable weight PFA coated cable, PEEK isolators and 316L stainless steel cable weight	0 1	Accessories We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 10/11 in the appendix.	See page 4/55
Approvals Dust Ignition Proof with IS Probe: CE, RCM, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T1, ATEX II 1/2 D T100 °C Flameproof Enclosure with IS Probe, with WHG approval: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T1, ATEX II 1/2 D T100 °C Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 General Purpose (CSA, FM) General Purpose (CE, RCM) General Purpose with WHG approval (CSA, FM, CE, RCM)			C D E F G H J K
Enclosure and lid <u>Aluminum epoxy coated</u> 2 x 1/2" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet, IP65 2 x 1/2" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet, IP68			A B C D
Active shield length Standard length - (125 mm threaded, 105 mm flanged) Extended shield - (250 mm threaded, 230 mm flanged) ¹⁾ Extended shield - (400 mm threaded, 380 mm flanged) ¹⁾	0 1 2		

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

We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 10/11 in the appendix.

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS300 - Standard

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Pointek CLS300 - Standard - High Temperature Rod Version with Threaded or Flanged process connection Inverse frequency shift capacitance level 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. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5652- 0 -	Pointek CLS300 - Standard - High Temperature Rod Version with Threaded or Flanged process connection 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. 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	7ML5652- 0 -
Process connection <u>Threaded, 316L stainless steel</u> ¾" NPT [(Taper), ANSI/ASME B1.20.1] 0 A 1" NPT [(Taper), ANSI/ASME B1.20.1] 0 B 1¼" NPT [(Taper), ANSI/ASME B1.20.1] 0 C 1½" NPT [(Taper), ANSI/ASME B1.20.1] 0 D R ¾" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] 1 A R 1" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] 1 B R 1½" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] 1 D G ¾" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 3 A G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 3 B G 1½" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] 3 D		Wetted seals Graphite 0	
<u>Welded flange, 316L stainless steel, raised face</u> 1" ASME, 150 lb 5 A 1" ASME, 300 lb 5 B 1" ASME, 600 lb 5 C 1½" ASME, 150 lb 5 D 1½" ASME, 300 lb 5 E 1½" ASME, 600 lb 5 F 2" ASME, 150 lb 5 G 2" ASME, 300 lb 5 H 2" ASME, 600 lb 5 J 3" ASME, 150 lb 5 K 3" ASME, 300 lb 5 L 3" ASME, 600 lb 5 M 4" ASME, 150 lb 5 N 4" ASME, 300 lb 5 P 4" ASME, 600 lb 5 Q		Probe material 316L stainless steel with ceramic (ZrO ₂) isolators 0	
<u>Welded flange, 316L stainless steel, Type A flat faced</u> DN 25, PN 16 6 A DN 25, PN 40 6 B DN 40, PN 16 6 C DN 40, PN 40 6 D DN 50, PN 16 6 E DN 50, PN 40 6 F DN 80, PN 16 6 G DN 80, PN 40 6 H DN 100, PN 16 6 J DN 100, PN 40 6 K		Approvals Dust Ignition Proof with IS Probe: CE, RCM, ATEX II 1/2 D T100 °C C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T1, ATEXII 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 ... T1, ATEX II 1/2 D T100 °C E Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 F Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 G General Purpose (CSA, FM) H General Purpose (CE, RCM) J General Purpose with WHG approval (CSA, FM, CE, RCM) K	
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		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 - (125 mm threaded, 105 mm flanged) 0 Extended shield - (250 mm threaded, 230 mm flanged) ¹⁾ 1 Extended shield - (400 mm threaded, 380 mm flanged) ²⁾ 2	
		¹⁾ Available with Probe version options B ... D, F, G only [≥ 500 mm (19.69 inch)] ²⁾ Available with Probe version options C, D, and G only [≥ 750 mm (29.53 inch)]	
		• We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 10/11 in the appendix.	

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS300 - Standard

Selection and Ordering data	Order code
Further designs	
Please add *-Z* to Article No. and specify Order code(s).	
Total insertion length: enter the total insertion length in plain text description	◆ Y01
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	◆ Y15
Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000	◆ C11
Material Inspection Certificate Type 3.1 per EN 10204	◆ C12
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 4/55

- ◆ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆. For details see page 10/11 in the appendix.

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.

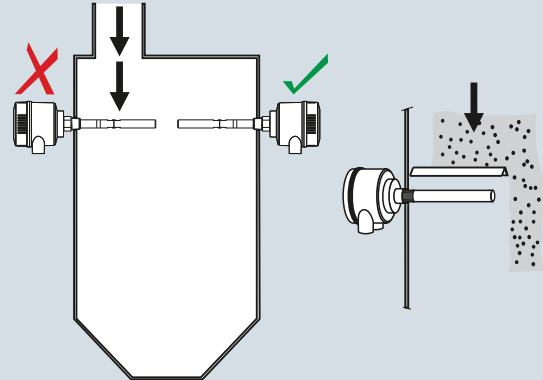
Wetted parts are made of stainless steel with a PFA shield for high chemical resistance, and of ceramic and stainless steel for high temperature version. Materials with low or high dielectric constants can be accurately detected. The unique Active Shield suppresses interference from material buildup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

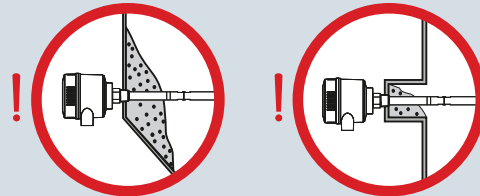
- Key Applications: liquids, slurries, bulk solids, relatively high pressure and temperature, hazardous areas, milling and mining applications

Configuration

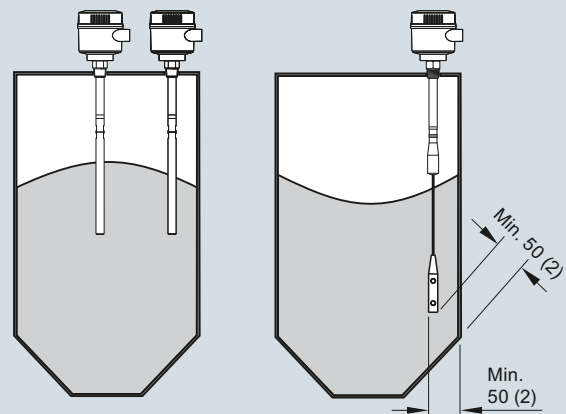
Installation



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
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Input

Measured variable	Change in picoFarad (pF)
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Output

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)	Programmable by user (0 ... 100 s)
Fail-safe mode	Min. or max.
Connection	Removable terminal block

Accuracy

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

Rated operating conditions¹⁾

Installation conditions	
• Location	Indoor/outdoor
Ambient conditions	
• Ambient temperature	-40 ... +85 °C (-40 ... +185 °F) ²⁾
Medium conditions	Liquids, bulk solids, slurries, 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

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

Power supply

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

Certificates and approvals

General Purpose	CSA, FM, CE, 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

- 1) When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves starting on page 4/56.
- 2) Thermal isolator is used if process connection temperature exceeds 85 °C (185 °F)
- 3) Pressure rating of process seal is temperature dependent. See Pressure/Temperature curves starting on page 4/56.
- 4) Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection

Design: Probe

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

¹⁾ Zirconium Oxide

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

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS300 - Digital

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Pointek CLS300 - Digital - Rod with Threaded or Flanged process connection 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. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	↗ 7ML5660- 	Pointek CLS300 - Digital - Rod with Threaded or Flanged process connection 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. Add Order code Y01 and plain text: "Insertion length ... mm"	7ML5660-
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 ISO 228-1/PF (JIS-P), JIS B 0202] ● 3 A G 1" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] ● 3 B G 1 1/2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202] ● 3 D		Extended rod, factory adjusted length 250 ... 499 mm (9.8 ... 19.65 inch) ● E Extended rod, factory adjusted length 500 ... 749 mm (19.69 ... 29.49 inch) ● F Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch) ● G Thermal isolator Without thermal isolator ● 0 With thermal isolator [for process connection temperatures over 85 °C (185 °F)] ● 1 Wetted seals FKM ● 0 FFKM [for process temperatures above -20 °C (-4 °F)] ● 1 Probe material 316L stainless steel with PFA lining and PEEK isolators ● 0	
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		Approvals Dust Ignition Proof: CE, RCM, ATEX II 1/2 D, 2 D IP6X T100 °C ● B Intrinsically Safe ¹⁾ CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D, 2 D IP6X T100 °C ● C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C ● D Dust Ignition Proof with IS Probe: CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 ● E Intrinsically Safe ¹⁾ CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 ● F Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 ● G General Purpose (CSA, FM) ● H General Purpose (CSA, FM, CE, RCM) ● J	
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.)		● We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ●. For details see page 10/11 in the appendix.	
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			

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS300 - Digital

4

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Pointek CLS300 - Digital - Rod with Threaded or Flanged process connection 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.	7ML5660- 	Pointek CLS300 - Digital - Cable with Threaded or Flanged process connection 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.	7ML5661-
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	A B C D	↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal. Process connection Threaded, 316L stainless steel 1/4" NPT [(Taper), ANSI/ASME B1.20.1] 1/2" NPT [(Taper), ANSI/ASME B1.20.1] R 1 1/2" [(BSPT), EN 10226/PT (JIS-T), JIS B 0203] G 1 1/2" [(BSPP), EN ISO 228-1/PF (JIS-P), JIS B 0202]	0 C 0 D 1 D 3 D
Active shield length Standard length - (125 mm threaded, 105 mm flanged) Extended shield - (250 mm threaded, 230 mm flanged) ²⁾ Extended shield - (400 mm threaded, 380 mm flanged) ³⁾	0 1 2	Welded flange, 316L stainless steel, raised face 1 1/2" ASME, 150 lb 1 1/2" ASME, 300 lb 1 1/2" ASME, 600 lb 2" ASME, 150 lb 2" ASME, 300 lb 2" ASME, 600 lb 3" ASME, 150 lb 3" ASME, 300 lb 3" ASME, 600 lb 4" ASME, 150 lb 4" ASME, 300 lb 4" ASME, 600 lb	5 D 5 E 5 F 5 G 5 H 5 J 5 K 5 L 5 M 5 N 5 P 5 Q
1) Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection 2) Available with Probe version options B ... D, F, G only [≥ 500 mm (19.69 inch)] 3) Available with Probe version options C, D, and G only [≥ 750 mm (29.53 inch)] ● We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ●. For details see page 10/11 in the appendix.		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
Selection and Ordering data Further designs Please add "-Z" to Article No. and specify Order code(s). Total insertion length: enter the total insertion length in plain text description Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000 Material inspection Certificate Type 3.1 per EN 10204	Order code Y01 Y15 C11 C12	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
Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation			
Accessories ● We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ●. For details see page 10/11 in the appendix.	See page 4/55		

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS300 - Digital

Selection and Ordering data	Article No.	Selection and Ordering data	Order code
Pointek CLS300 - Digital - Cable with Threaded or Flanged process connection 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.		Further designs Please add "-Z" to Article No. and specify Order code(s).	
Thermal isolator Without thermal isolator With thermal isolator [for process connection temperatures over 85 °C (185 °F)]		Total insertion length: enter the total insertion length in plain text description Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000 Material inspection Certificate Type 3.1 per EN 10204	
Wetted seals FKM FFKM [for process temperatures above -20 °C (-4 °F)]		Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
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		Accessories We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 10/11 in the appendix.	
Approvals Dust Ignition Proof: CE, RCM, ATEX II 1/2 D, 2 D IP6X T100 °C Intrinsically Safe ¹⁾ CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D, 2 D IP6X T100 °C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 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)		See page 4/55	
Enclosure and Lid <u>Aluminum epoxy coated</u> 2 x 1/2" NPT via adapter - cable inlet, IP65 2 x M20 x 1.5 cable inlet, IP65 2 x 1/2" NPT via adapter - cable inlet, IP68 2 x M20 x 1.5 cable inlet, IP68			
Active shield length Standard length - (125 mm threaded, 105 mm flanged) Extended shield - (250 mm threaded, 230 mm flanged) ²⁾ Extended shield - (400 mm threaded, 380 mm flanged) ²⁾			

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

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

We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 10/11 in the appendix.

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS300 - Digital

4

Selection and Ordering data	Article No.	Selection and Ordering data	Article No.
Pointek CLS300 - Digital - High Temperature Rod version with Threaded or Flanged process connection 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. ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML5662-0000	Pointek CLS300 - Digital - High Temperature Rod version with Threaded or Flanged process connection 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. Add Order code Y01 and plain text: "Insertion length ... mm"	7ML5662-0000
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		Extended rod, factory adjusted length 250 ... 499 mm (9.8 ... 19.65 inch) ● E Extended rod, factory adjusted length 500 ... 749 mm (19.69 ... 29.49 inch) ● F Extended rod, factory adjusted length 750 ... 999 mm (29.53 ... 39.3 inch) ● G Wetted seals Graphite ● 0 Probe material 316L stainless steel with ceramic (ZrO ₂) isolators ● 0 Approvals Dust Ignition Proof: CE, RCM, ATEX II 1/2 D, 2 D IP6X T100 °C ● B Intrinsically Safe ¹⁾ CE, RCM, ATEX II 1 G EEx ia IIC T6 ... T4, ATEX II 1/2 D, 2 D IP6X T100 °C ● C Flameproof Enclosure with IS Probe: CE, RCM, ATEX II 1/2 G EEx d[ia] IIC T6 ... T4, ATEX II 1/2 D T100 °C ● D Intrinsically Safe ¹⁾ CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 ● F Explosion Proof Enclosure with IS Probe: CSA/FM Class I, Div. 1, Groups A, B, C, D CSA/FM Class II, Div. 1, Groups E, F, G CSA/FM Class III T4 ● G General Purpose (CSA, FM) ● H General Purpose (CSA, FM, CE, RCM) ● J	
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		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	
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		Active shield length Standard length - (125 mm threaded, 105 mm flanged) ● 0 Extended shield - (250 mm threaded, 230 mm flanged) ²⁾ ● 1 Extended shield - (400 mm threaded, 380 mm flanged) ³⁾ ● 2	
(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		1) Barrier or Intrinsically Safe power supply required for Intrinsically Safe protection 2) Available with Probe version options B ... D, F, G only [≥ 500 mm (19.69 inch)] 3) Available with Probe version options C, D, and G only [≥ 750 mm (29.53 inch)] ● We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ●. For details see page 10/11 in the appendix.	
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			

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS 300 - Standard and Digital

Selection and Ordering data	Order code	Selection and Ordering data	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	Accessories One metallic cable gland M20 x 1.5, -40 ... +80 °C (-40 ... +176 °F) with integrated shield connection (available for PROFIBUS PA)	7ML1930-1AQ
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring-point number/identification (max. 27 characters) specify in plain text	◆ Y15	<u>General Purpose</u> 1/2" NPT General Purpose Cable Entry IP68/IP69K NEMA6, -40 ... +100 °C (-40 ... +212 °F), cable size 6 ... 12 mm (0.236 ... 0.472 inch)	7ML1830-1JA
Manufacturer's test certificate: M to DIN 55350, Part 18 and to ISO 9000	◆ C11	M20 x 1.5 General Purpose Cable Entry IP68/IP69K NEMA6, -40 ... +100 °C (-40 ... +212 °F), cable size 7 ... 12 mm (0.275 ... 0.472 inch)	7ML1830-1JC
Material Inspection Certificate Type 3.1 per EN 10204	◆ C12	<u>Hazardous Locations</u> 1/2" NPT EMC rated Cable Gland: Dust Ignition Proof, Flameproof Exd, and Increased Safety ATEX II 2 GD ExtD A21 (Zone 1, Zone 2, Zone 21, Zone 22, and in Gas Groups IIA, IIB and IIC) -60 ... +80 °C IP66, IP67, IP68, NEMA4X, cable sizes 5.5 ... 12 mm (0.216 ... 0.472 inch)	7ML1830-1JB
Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation		M20 EMC rated Cable Gland: Dust Ignition Proof, Flameproof Exd, and Increased Safety ATEX II 2 GD ExtD A21 (Zone 1, Zone 2, Zone 21, Zone 22, and in Gas Groups IIA, IIB and IIC) -60 ... +80 °C IP66, IP67, IP68, NEMA4X, cable sizes 5.5 ... 12 mm (0.216 ... 0.472 inch)	7ML1830-1JD
Accessories ◆ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆. For details see page 10/11 in the appendix.	See page 4/55	Blind threaded flanges are available. Customers interested in a custom designed device should consult a local sales person. For more information, please visit http://www.automation.siemens.com/aspa_app .	
		Pointek Specials	See page 4/62

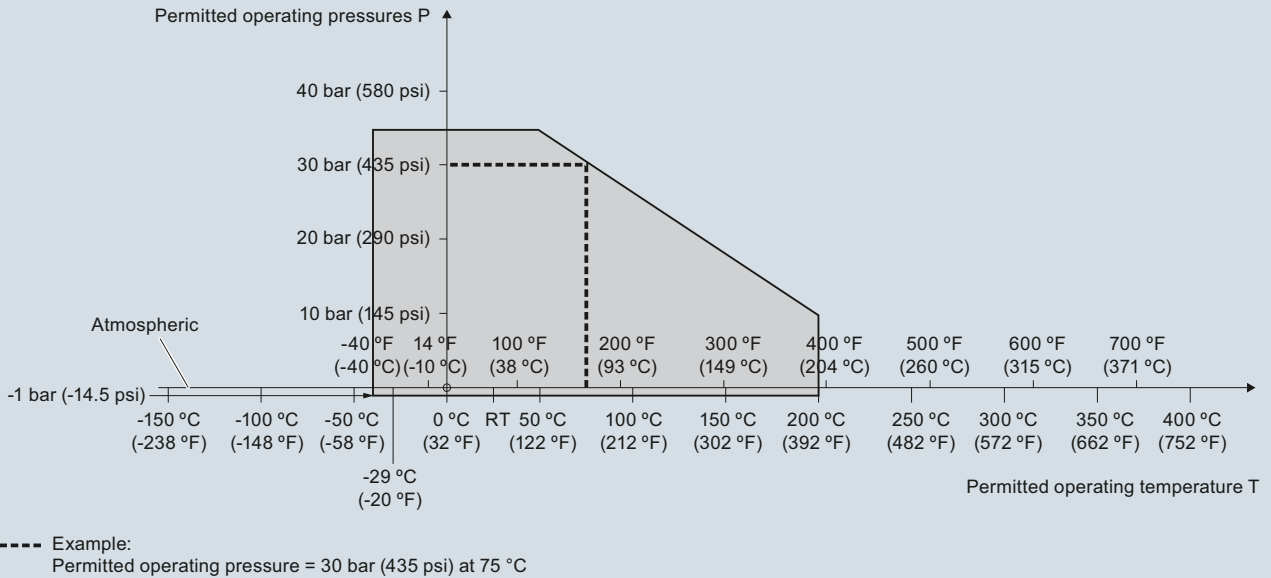
Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS 300 - Standard and Digital

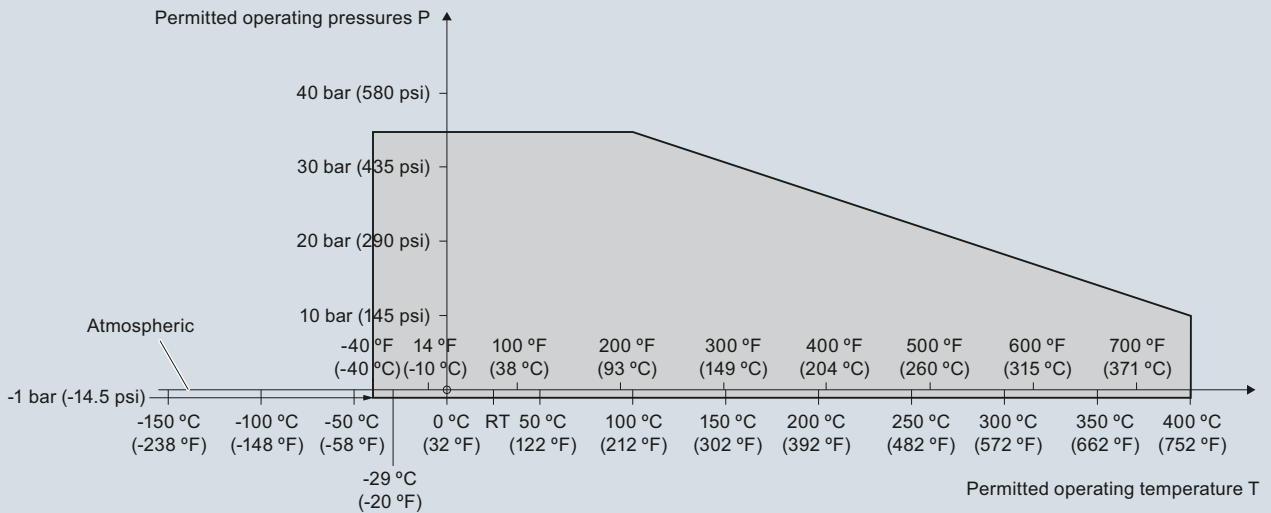
Characteristic curves

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



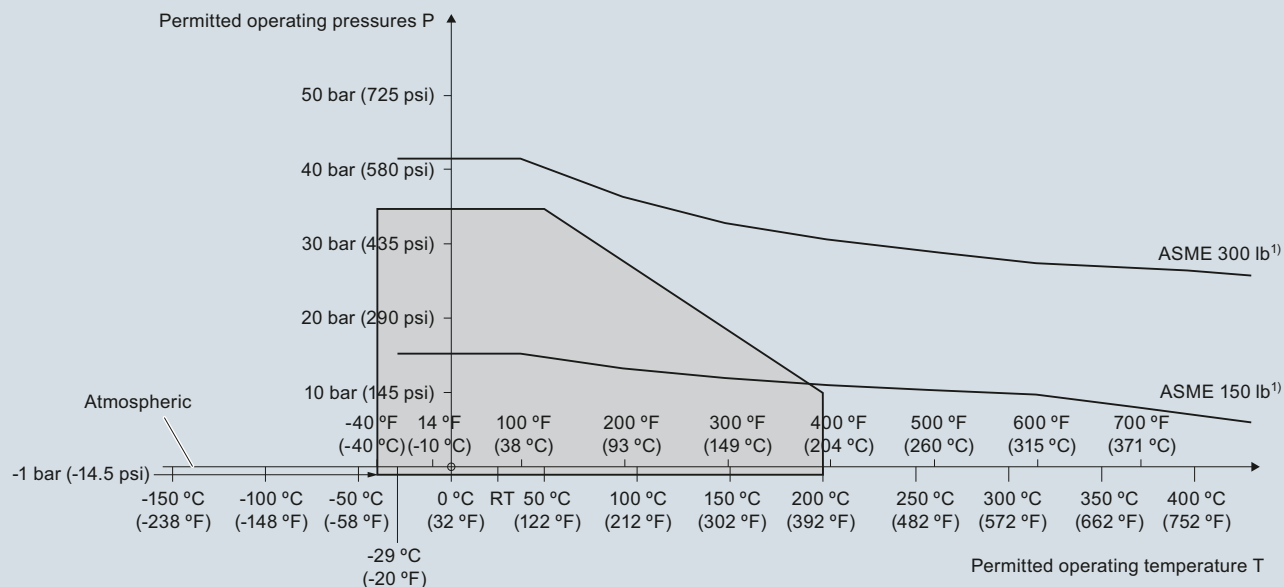
Pointek CLS300 process pressure/temperature derating curves (7ML5650, 7ML5651, 7ML5660 and 7ML5661)

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



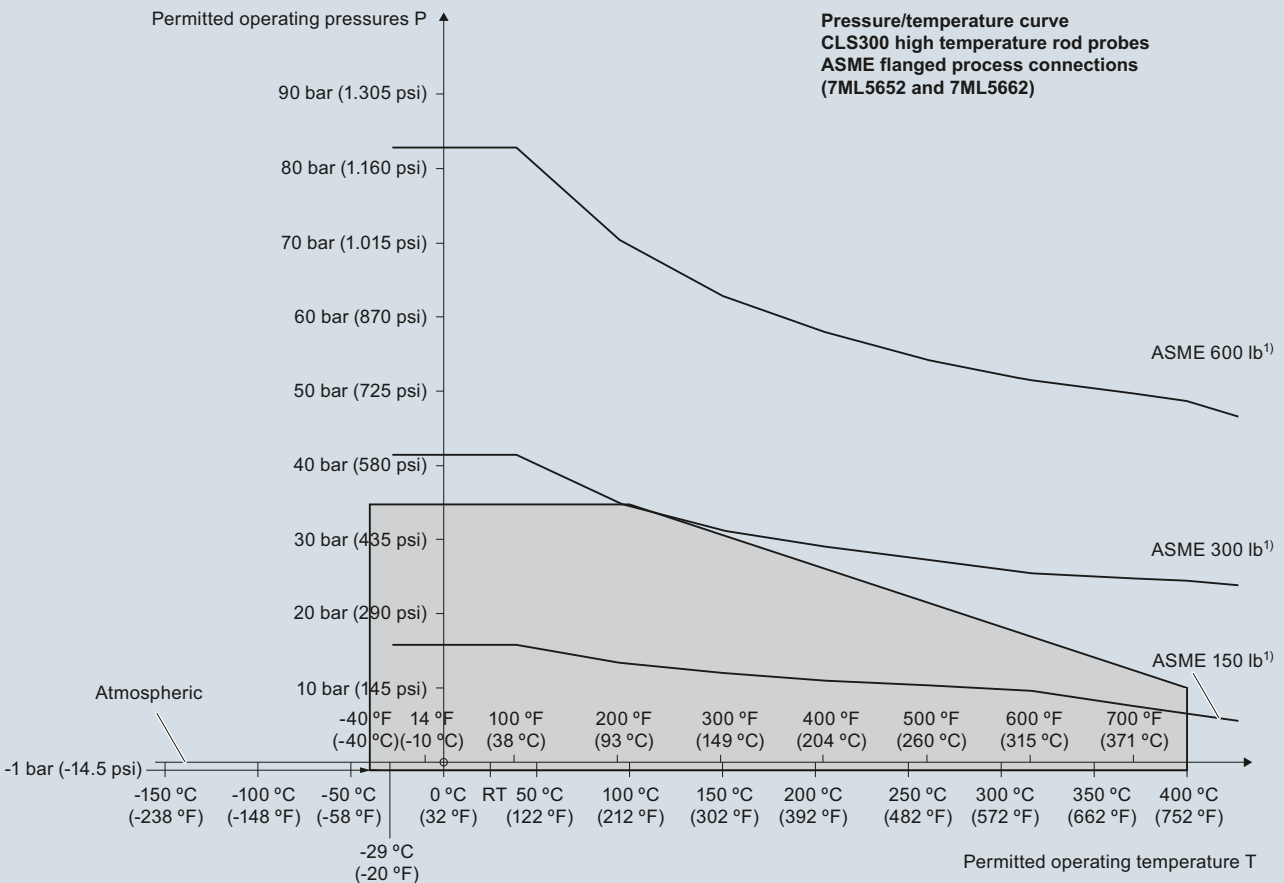
Pointek CLS300 process pressure/temperature derating curves (7ML5652 and 7ML5662)

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)



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

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

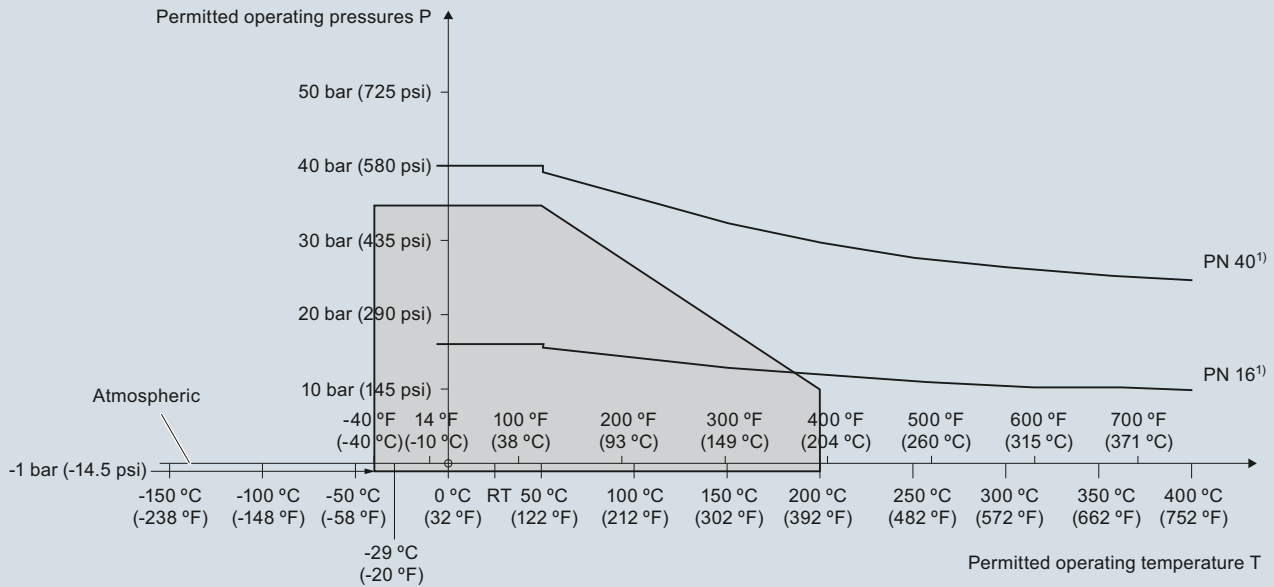
Pointek CLS300 process pressure/temperature derating curves (7ML5652 and 7ML5662)

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS 300 - Standard and Digital

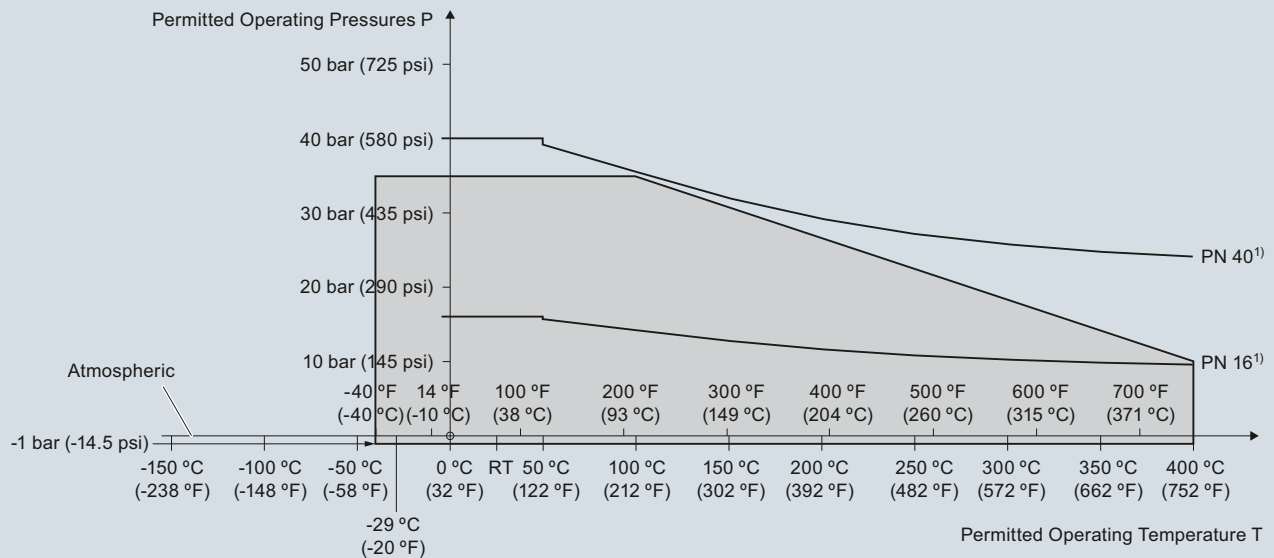
Pressure/temperature curve
CLS300 extended rod and cable probes
EN flanged process connections
(7ML5650, 7ML5651, 7ML5660 and 7ML5661)



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

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

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

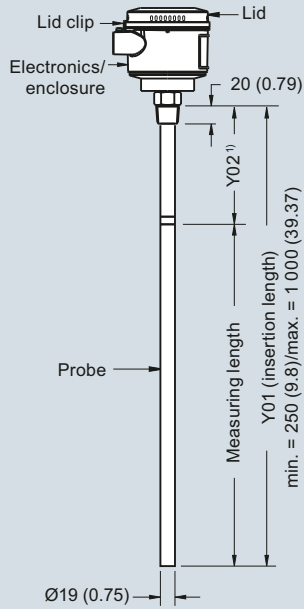


1) The curve denotes the minimum allowable flange class for the shaded area below.

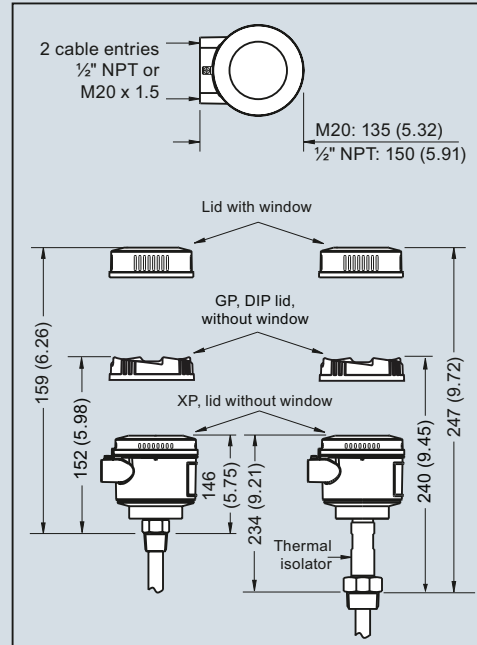
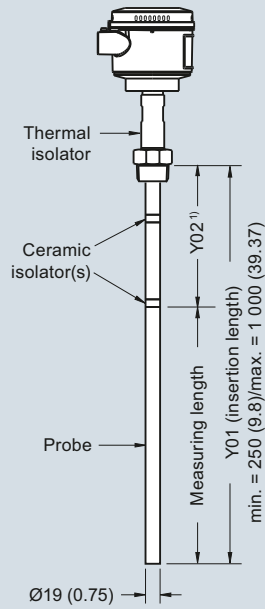
Pointek CLS300 process pressure/temperature derating curves (7ML5652 and 7ML5662)

Dimensional drawings

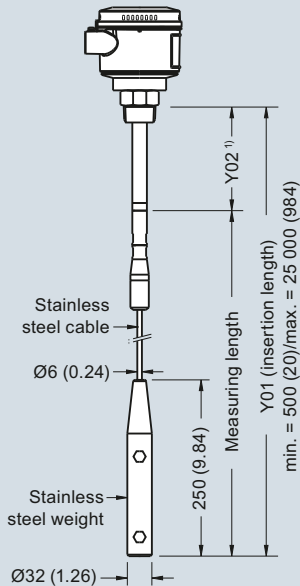
**Rod version
Threaded (7ML5650 and 7ML5660)**



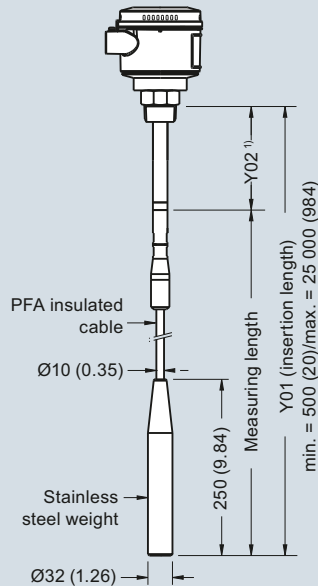
**High temperature rod version
Threaded (7ML5652 and 7ML5662)**



**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

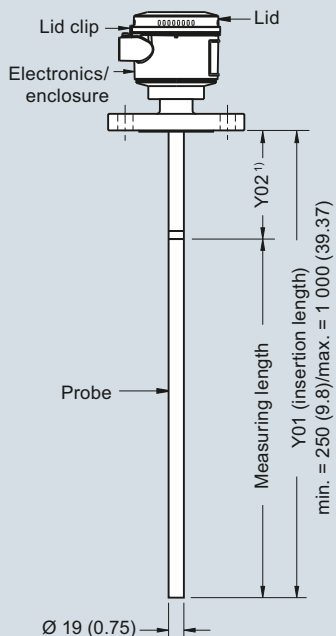
Point level measurement - RF Capacitance switches

Pointek CLS 300 - Standard and Digital

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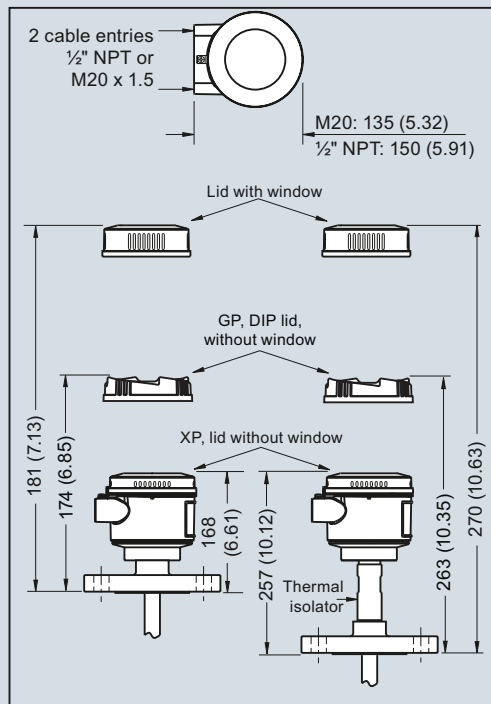
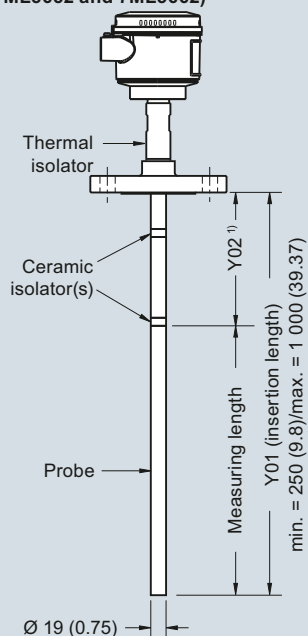
Rod version

Welded flange (7ML5650 and 7ML5660)



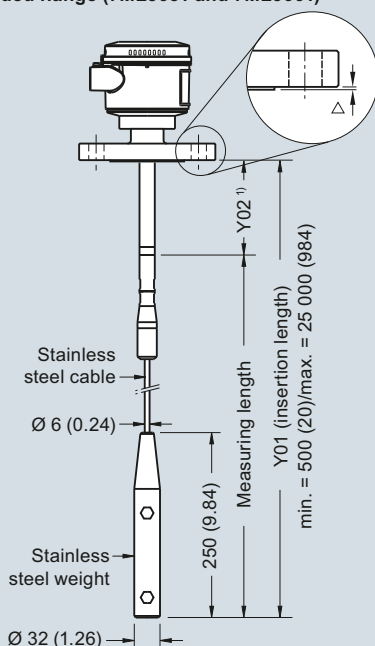
High temperature rod version

Welded flange (7ML5652 and 7ML5662)



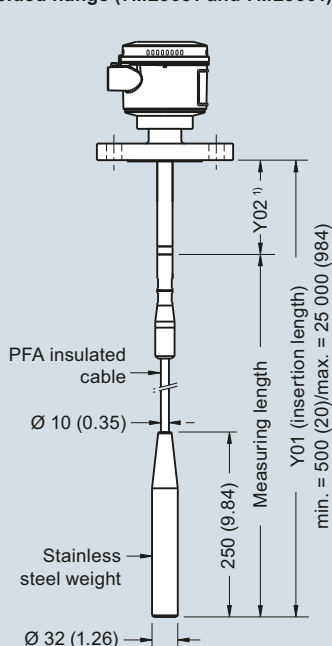
Cable version, non-insulated

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)

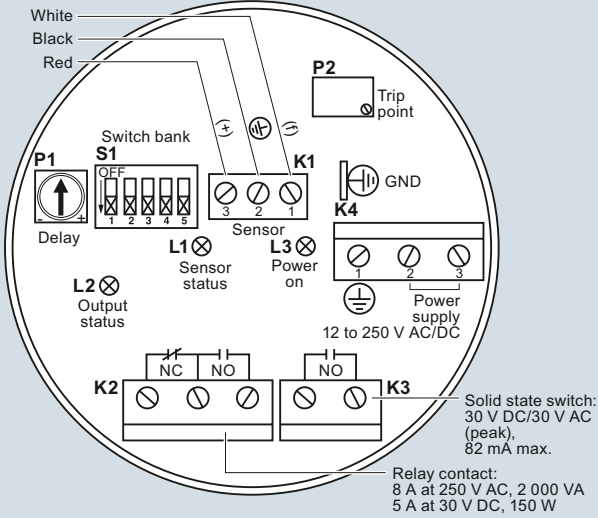
Note:

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)

Schematics

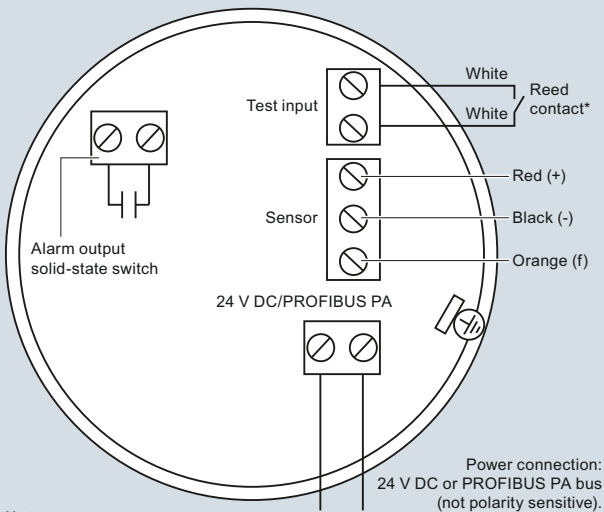
Wiring: Pointek CLS300 standard



Notes:

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

Wiring: Pointek CLS300 digital



Notes:

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

***Magnet activated sensor test**

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



Pointek CLS300 connections

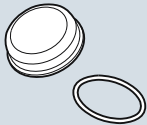
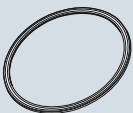
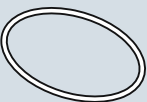
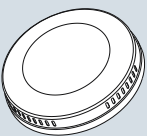
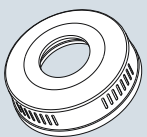

Level Measurement

Point level measurement - RF Capacitance switches

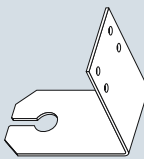


Pointek CLS Specials

Selection and ordering data

Pointek Specials¹⁾

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



Pointek Specials¹⁾


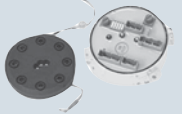
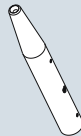
	Article No.
Kit, sensor for cable units, PPS, digital, FKM	A5E01163678
Kit, sensor for cable units, PPS, standard, FFKM	A5E01163679
Kit, sensor for cable units, PPS, digital, FFKM	A5E01163680
Kit, sensor for cable units, PVDF, standard, FKM	A5E01163681
Kit, sensor for cable units, PVDF, digital, FKM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

Level Measurement

Point level measurement - RF Capacitance switches

Pointek CLS Specials

Pointek Specials ¹⁾	
	Article No.
CLS300 Cable Extensions, 316 stainless steel with PFA coating	
Kit, PFA cable extension, 1 m, adjustable by customer	A5E01163697
Kit, PFA cable extension, 3 m, adjustable by customer	A5E01163698
Kit, PFA cable extension, 5 m, adjustable by customer	A5E01163699
Kit, PFA cable extension, 10 m, adjustable by customer	A5E01163700
Kit, PFA cable extension, 15 m, adjustable by customer	A5E01163701
Kit, PFA cable extension, 20 m, adjustable by customer	A5E01163702
CLS300 Rod Kits, 316L stainless steel	
Kit, stainless steel rod 180 mm (7.09 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 350 mm (13.78 inch).	A5E01163719
Kit, stainless steel rod 330 mm (12.99 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 500 mm (19.69 inch).	A5E01163720
Kit, stainless steel rod 580 mm (22.83 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 750 mm (29.53 inch).	A5E01163721
Kit, stainless steel rod 830 mm (32.68 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 1 000 mm (39.37 inch).	A5E01163722
Kit, stainless steel rod 1 330 mm (52.36 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 1 500 mm (59.06 inch). ²⁾	
Kit, stainless steel rod 1 830 mm (72.05 inch) to be used with CLS300 units only (with standard active shield). Insertion length after installation is 2 000 mm (78.74 inch). ²⁾	
Kit, stainless steel rod customized length up to 1 m ²⁾	
Kit, stainless steel rod customized length up to 2 m ²⁾	

Pointek Specials ¹⁾	
	Article No.
CLS300 Electronics Kits with drivers (for rod or cable versions)	
Kit, electronics with driver, standard CLS300. To be used in rod or cable versions with length less than 5 m. ³⁾⁴⁾	A5E01163723
Kit, electronics with driver, digital CLS300. To be used in rod or cable versions with length less than 5 m. ³⁾⁴⁾	A5E01163725
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

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.