



# Level instruments

## Point level measurement - Capacitance switches

### Pointek CLS100

#### Technical specifications

	Stainless steel process connection (integral cable or enclosure version) (7ML5501)	Synthetic process connection (fully synthetic enclosure version only) (7ML5610)
<b>Mode of operation</b>		
Measuring principle	Inverse frequency shift capacitive level detection	Inverse frequency shift capacitive level detection
<b>Input</b>		
Measured variable	Change in picoFarad (pF)	Change in picoFarad (pF)
<b>Output</b>		
Output signal		
• Alarm output	4 or 20/20 or 4 mA 2-wire loop	4 or 20/20 or 4 mA 2-wire loop
• Switch output	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.
<b>Accuracy</b>		
Repeatability	2 mm (0.08")	2 mm (0.08")
<b>Rated operating conditions<sup>1)</sup></b>		
<u>Installation conditions</u>		
• Location	Indoor/outdoor	Indoor/outdoor
<u>Ambient conditions</u>		
• Ambient temperature	-30 to +85 °C (-22 to +185 °F)	-10 to +85 °C (+14 to +185 °F)
• Installation category	I	I
• Pollution degree	4	4
<u>Medium conditions</u>		
• Relative dielectric constant $\epsilon_r$	Min. 1.5	Min. 1.5
• Temperature	-30 to +100 °C (-22 to +212 °F)	-10 to +100 °C (+14 to +212 °F)
• Pressure (vessel)	-1 to +10 bar g (-14.6 to +146 psi g), nominal <sup>2)</sup>	-1 to +10 bar g (-14.6 to +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 (M20x1.5 optional)	½" NPT (M20x1.5 optional)
<b>Design</b>		
	<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
• Sensor length (nominal)	100 mm (4")	100 mm (4")
• Process connection material of probe/wetted parts	Connection: 316L stainless steel; Process seal: FKM (optional FFKM); Sensor: PPS (optional PVDF) <sup>2)</sup>	PPS process connection and PPS sensor (Uni-Construction)
• Connection (Enclosure version)	Internal 5-point terminal block, ½" NPT wiring entrance, M20x1.5 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 <sup>2</sup> (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]
<b>Power supply</b>		
• Standard	12 to 33 V DC	12 to 33 V DC
• Intrinsically Safe	10 to 30 V DC (Intrinsically Safe barrier required)	Not applicable

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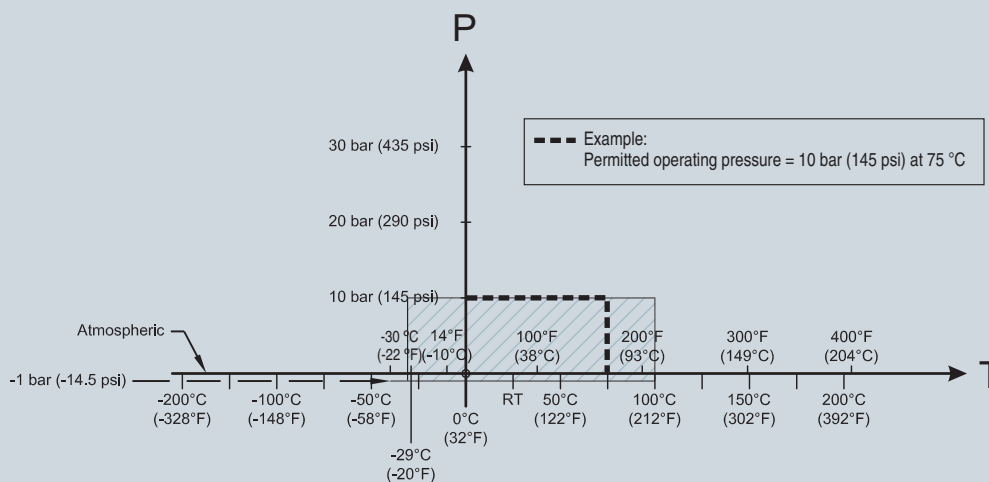
	<b>Stainless steel process connection (integral cable or enclosure version) (7ML5501)</b>	<b>Synthetic process connection (fully synthetic enclosure version only) (7ML5610)</b>
<b>Certificates and approvals</b>	<ul style="list-style-type: none"> <li>• General: CE</li> <li>• Marine: Lloyds Register of Shipping, categories ENV1, ENV2, and ENV5</li> <li>• Dust Ignition Proof (barrier required): CSA/FM Class II and III, Div. 1, Groups E, F, G T4</li> <li>• Intrinsically Safe (barrier required): CSA/FM Class I, II and III, Div. 1, Groups A, B, C, D, E, F, G T4</li> <li>• ATEX II 1 GD 1/2GD EEx ia IIC T4 to T6 T107 °C</li> <li>• Overfill protection: WHG (Germany)</li> <li>• C-TICK (Australia)</li> </ul>	<ul style="list-style-type: none"> <li>• General: CE</li> <li>• Marine: Lloyds Register of Shipping, categories ENV1, ENV2, and ENV5</li> <li>• Dust Ignition Proof: ATEX II 1D 1/3D T107 °C</li> <li>• Overfill protection: WHG (Germany)</li> <li>• C-TICK (Australia)</li> </ul>

<sup>1)</sup> When operation is in areas classified as hazardous, observe restrictions according to relevant certificate. See also Pressure/Temperature curves on page 5/13.

<sup>2)</sup> When FFKM O-ring (Option A22) is selected, process temperature is restricted to -20 °C (-4 °F)



### Characteristic curves



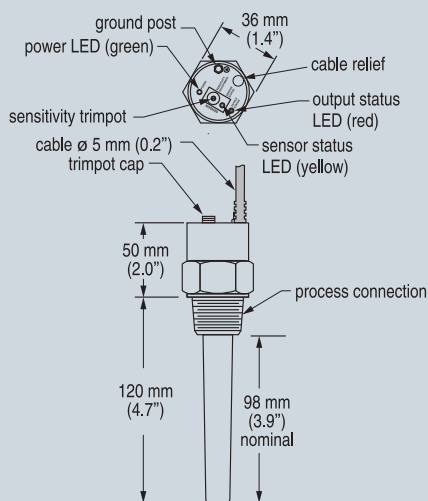
### Pressure/Temperature Curve CLS100 (7ML5501) Threaded Process Connections

P = Permitted Operating Pressures  
T = Permitted Operating Temperature

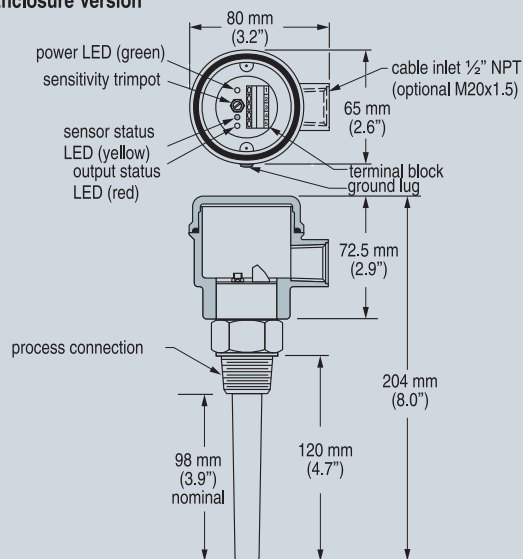
Pointek CLS100 Process Pressure/Temperature derating curves

### Dimensional drawings

#### Integral Cable Version



#### Enclosure Version



Pointek CLS100 dimensions

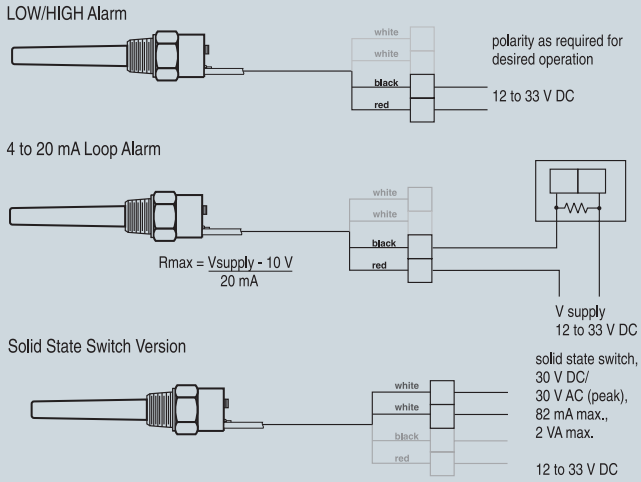
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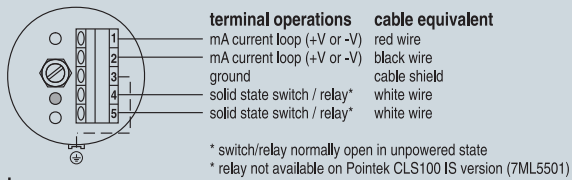
### Pointek CLS100

#### Schematics

##### Integral Cable Version - Non Intrinsically Safe only



##### Enclosure and Fully Synthetic Version



**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

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