

# Level Measurement

## Point level measurement - Ultrasonic switch

Pointek ULS200

### Overview



The Pointek ULS200 is an ultrasonic non-contacting switch with two switch points for level detection of bulk solids, liquids and slurries in a wide variety of industries; ideal for sticky materials.

### Benefits

- 2 switch outputs for high-high, high, low and low-low level alarms or pump up/pump down control
- Integral temperature compensation
- AC or DC power supply
- Electronics provided with fail-safe function
- Threaded and sanitary fitting clamp process connections
- Polycarbonate or aluminum enclosures, Type 6/NEMA 6/IP67
- Easy, two-button programming

### Application

The measuring range for bulk solids is max. 3 m (9.8 ft) and 5 m (16.4 ft) for liquids and slurries. Unlike invasive contacting devices, there is no material buildup on the sensor.

The level switch has a rugged design, combining the transducer and electronics in one durable device. It has no moving parts and is virtually maintenance-free.

The transducer, available in ETFE or PVDF copolymer, is inert to most chemicals. This means the device can be used in the chemical, petrochemical, water, and wastewater industries. A sanitary version of the ULS200, with an industry standard flange option, is easy to remove from the application for cleaning. It thus satisfies the prerequisites for use in the food, beverage and pharmaceutical industries. The Pointek ULS200 delivers superior performance while reducing maintenance, downtime and equipment replacement costs.

- Key Applications: liquids, slurries, fluid materials, plugged chute detection, chemical industry

### Design

#### Installation

The Pointek ULS200 should be mounted in an area that is within the temperature range specified and that is suitable to the enclosure rating and materials of construction. The cover should be accessible to allow programming, wiring and display viewing.

It is advisable to keep the Pointek ULS200 away from high voltage or current runs, contactors and SCR control drives

Locate the Pointek ULS200 so that it has a clear sound path perpendicular to the material surface. The sound path should not intersect the fill path, rough walls, seams, rungs etc.

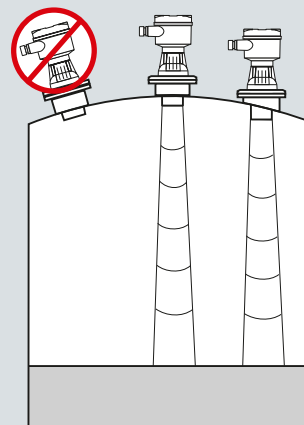
#### Mounting and Interconnection

The Pointek ULS200 is available in three thread types: 2" NPT, R 2" (BSPT), EN 10226 or PF2 and can be fitted with the optional 75 mm (3") flange adapter for mating to 3" ASME, DN 65, PN 10 and JIS 10K 3B sized flanges.

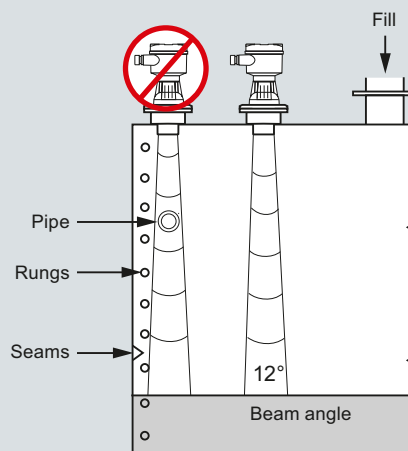
Separate cables and conduit may be required to conform to standard instrumentation wiring or electrical codes.

### Configuration

#### Parabolic Mounting



#### Flat Mounting and Beam Angle



Pointek ULS200 Mounting

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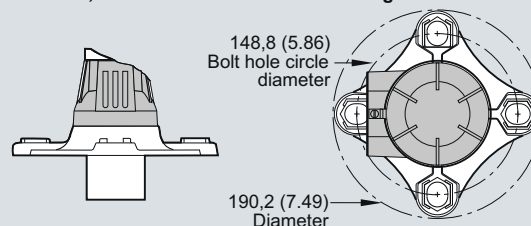
#### Technical specifications

Mode of operation	
Measuring principle	Ultrasonic level switch
Measuring range	
Measuring range in liquids	0.25 ... 5 m (0.8 ... 16.4 ft)
Measuring range in bulk solids	0.25 ... 3 m (0.8 ... 9.8 ft)
Output	
AC Version (relay)	2 SPDT Form C contacts rated 5 A at 250 V AC, resistive load
DC Version (relay)	2 SPDT Form C contacts rated 5 A at 48 V DC
DC Version (transistor)	2 switches, rated max. 100 mA, 48 V DC
Accuracy	
AC/DC version	
• Resolution	3 mm (0.1")
• Repeatability	0.25 % of measuring range
Rated operation conditions	
Installation conditions	
• Location	Indoors/outdoors
• Beam angle	12°
Ambient conditions	
• Ambient temperature	-40 ... +60 °C (-40 ... +140 °F)
• If mounted in metal threads	-20 ... +60 °C (-5 ... +140 °F)
Medium conditions	
• Process pressure	0.5 bar (7.25 psi) max.
Design	
Material	Polycarbonate or epoxy-coated aluminum with gasket
Weight	Approx. 1.5 kg (3.3 lbs)
Transducer material	PVDF copolymer
Threaded mounting	2" NPT [(Taper), ANSI/ASME B1.20.1] R 2" [(BSP), EN 10226] or G 2" [(BSPP), EN ISO 228-1]
• Optional flange adapter	For 3" ASME, DN 65, PN 10 and JIS 10 K3B
Sanitary mounting	4" sanitary fitting clamp
Power supply	
AC version	100 ... 230 V AC, ±15 %, 50/60 Hz, max. 12 VA, 5 W
DC version	18 ... 30 V DC, 3 W
Displays and controls	
Display	LCD, three digits, 9 mm (0.35") high, for display of distance between sensor face and material, multisegment graphic for operating state
Memory	EEPROM, non-volatile
Programming	2 keys

<b>Electronics/enclosure</b>	Connection: terminal block, max. 2.5 mm <sup>2</sup> (14 AWG) solid/1.5 mm <sup>2</sup> (16 AWG) stranded
Degree of protection	IP67/Type 6/NEMA 6
Cable inlet	2 x 1/2" NPT or 2 x PG 13.5
<b>Certificates and approvals</b>	<ul style="list-style-type: none"> <li>• CE (EMC certificate available on request), CSA<sub>US/C</sub>, FM</li> <li>• CSA/FM Class I, II, III, Div. 1, Gr A, B, C, D, E, F, G T4</li> <li>• ATEX II 2G EEx md IIC T5</li> <li>• C-TICK</li> <li>• INMETRO: Br-EEx md IIC T5</li> </ul>

#### Options

##### Flange adapter for mating 2" NPT or 2" BSP process connections to 3" ASME, DN 65 PN10 and JIS 10K 3B flanges



Pointek ULS200 Optional Flange Adapter, dimensions in mm (inch)

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Selection and Ordering data	Order No.	Selection and Ordering data	Order code
<b>Pointek ULS200</b> Ultrasonic non-contacting switch with two switch points for level detection of bulk solids, liquids and slurries in a wide variety of industries; ideal for sticky materials	C) <b>7ML1510-</b>	<b>Further designs</b> Please add "-Z" to Order No. and specify Order code(s)	
<b>Power supply</b> 24 V DC, relay output 24 V DC, transistor output 100 ... 230 V AC, relay output	<b>1</b> <b>2</b> <b>3</b>	<b>Operating Instructions</b> Additional Multi-language Quick Start manual	C) <b>7ML1998-1XB63</b>
<b>Approvals</b> CE, C-TICK, INMETRO, ATEX II 2G EEx md IIC T5 <sup>1)</sup> CE, C-TICK, CSA Class I, II, III, Div. 1 <sup>2)</sup> CE, C-TICK, FM Class I, II, III, Div. 1 <sup>2)</sup> CE, C-TICK, CSA Class I, II, Div. 2 <sup>3)</sup> CE, C-TICK, CSAus/c, FM	<b>C</b> <b>F</b> <b>G</b> <b>J</b> <b>K</b>	<b>Accessories</b> Tag, stainless steel, 12 x 45 mm (0.47 x 1.77"), one text line, suitable for enclosures Universal Box Bracket Mounting Kit 3" ASME, DN 65, PN 10, JIS 10K 3B ETFE Flange adapter for 2" BSPT 3" ASME, DN 65, PN 10, JIS 10K 3B ETFE Flange adapter for 2" BSPT 2" BSPT Locknut, plastic 2" NPT Locknut 4" sanitary mounting clamp	<b>7ML1930-1AC</b> <b>7ML1830-1BK</b> <b>7ML1830-1BT</b> <b>7ML1830-1BU</b> <b>7ML1830-1DQ</b> <b>7ML1830-1DT</b> <b>7ML1830-1BR</b>
<b>Transducer/Process connection</b> ETFE, 2" NPT [(Taper), ANSI/ASME B1.20.1] EFTE, R 2" [(BSPT), EN 10226] EFTE, G 2" [(BSPP), EN ISO 228-1] PVDF copolymer, 2" NPT [(Taper), ANSI/ASME B1.20.1] PVDF copolymer, R 2" [(BSPT), EN 10226] PVDF copolymer, G [(BSPP), EN ISO 228-1] PVDF copolymer, 4" sanitary mounting <sup>4)</sup>	<b>A</b> <b>B</b> <b>C</b> <b>E</b> <b>F</b> <b>G</b> <b>J</b>	<b>Spare Parts</b> Polycarbonate Lid Aluminum Lid	<b>7ML1830-1LG</b> <b>7ML1830-1LH</b>
<b>Enclosure/cable inlet</b> <u>Polycarbonate</u> • Cable inlet PG 13.5 • Cable inlet ½" NPT <u>Aluminum</u> • Cable inlet PG 13.5 • Cable inlet ½" NPT	<b>1</b> <b>2</b> <b>3</b> <b>4</b>	C) Subject to export regulations AL: N, ECCN: EAR99	

1) Available with enclosure/cable inlet option 4 only

2) Available with enclosure/cable inlet option 4 only and process connection options A and E only

3) Available with enclosure/cable inlet options 2 and 4 only

4) Available with approval option K only

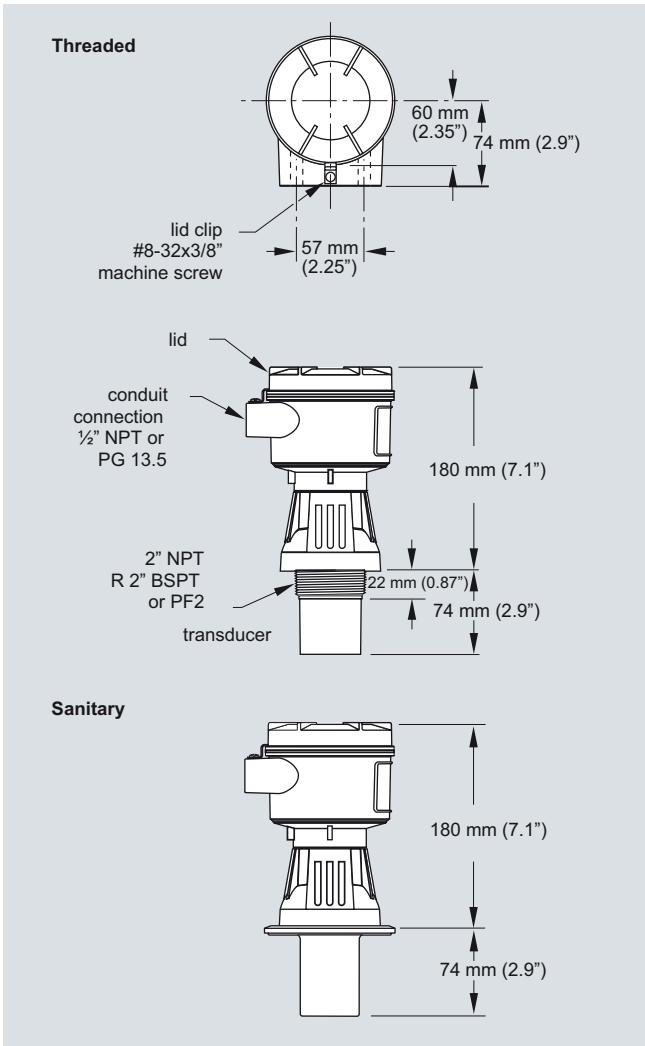
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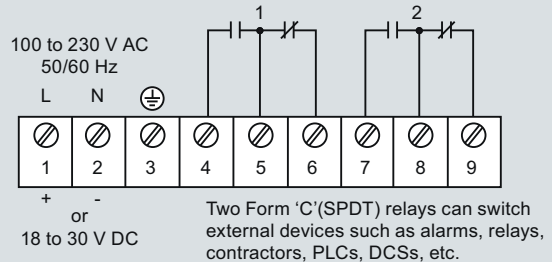
#### Dimensional drawings



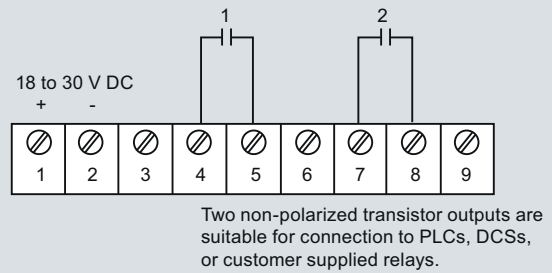
Pointek ULS200, dimensions in mm (inch)

#### Schematics

##### Relay Output



##### Transistor Output: DC version only



Pointek ULS200 connections