

# 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 inch) 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.

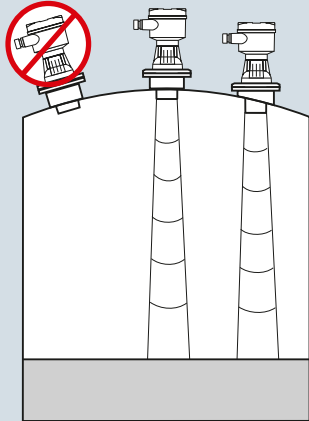
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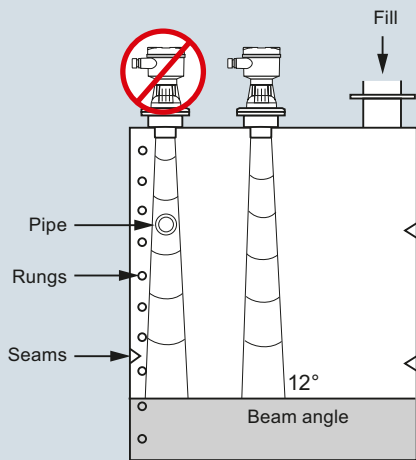
### Pointek ULS200

#### Configuration

##### Parabolic mounting



##### Flat mounting and Beam angle



Pointek ULS200 Mounting

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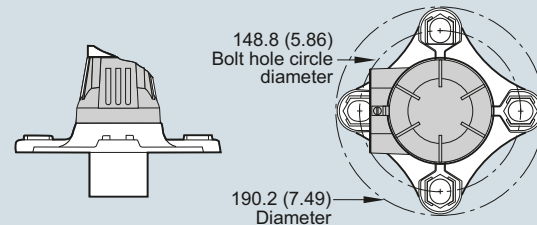
### Technical specifications

|                                   |   |
|-----------------------------------|---|
| <b>Mode of operation</b>          |   |
| Measuring principle               | Ultrasonic level switch   |
| <b>Measuring range</b>            |   |
| 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)   |
| <b>Output</b>                     |   |
| AC Version (relay)                | 2 SPDT Form C contacts, rated 5 A at 250 V AC or 30 V DC, resistive load; rated 1 A at 48 V DC resistive load                                 |
| DC Version (relay)                | 2 SPDT Form C contacts, rated 5 A at 30 V DC, resistive load; rated 1 A at 48 V DC resistive load   |
| DC Version (transistor)           | 2 switches, rated max. 100 mA, 48 V DC  |
| <b>Accuracy</b>                   |   |
| AC/DC version                     | 3 mm (0.1 inch)   |
| • Resolution                      | 3 mm (0.1 inch)   |
| • Repeatability                   | 0.25 % of measuring range   |
| <b>Rated operation conditions</b> |   |
| 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.   |
| <b>Design</b>                     |   |
| Material                          | Polycarbonate or epoxy-coated aluminum with gasket  |
| Weight                            | Approx. 1.5 kg (3.3 lb)   |
| Transducer material               | PVDF or ETFE copolymer  |
| Threaded mounting                 | 2" NPT [(Taper), ANSI/ASME B1.20.1]<br>R 2" [(BSPT), EN 10226]<br>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   |
| <b>Power supply</b>               |   |
| AC version                        | 100 ... 230 V AC, ± 15 %, 50/60 Hz, max. 12 VA, 5 W   |
| DC version                        | 18 ... 30 V DC, 3 W   |
| <b>Displays and controls</b>      |   |
| Display                           | LCD, three digits, 9 mm (0.35 inch) high, for display of distance between sensor face and material, multi segment 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 ½" 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/CA</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 Ex d mb IIC T5 Gb</li> <li>• C-TICK, ANZEx Ex ds IIC T5, DIP A21 T5, IP65/IP67</li> <li>• INMETRO Ex d mb IIC T5 Gb</li> </ul> |

### Options

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



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

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### Pointek ULS200

| Selection and Ordering data  | Article No.                     |
|--|---------------------------------|
| <b>Pointek ULS200</b><br>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  | <b>7ML1510-</b><br>0            |
| <b>Power supply</b><br>24 V DC, relay output<br>24 V DC, transistor output<br>100 ... 230 V AC, relay output   | 1<br>2<br>3                     |
| <b>Approvals</b><br>CE, C-TICK, CSA Class I Div. 1, Class II Div. 1, Class III <sup>1)</sup><br>CE, C-TICK, FM Class I Div. 1, Class II Div. 1, Class III <sup>1)5)</sup><br>CE, C-TICK, CSA Class I, II, Div. 2 <sup>2)</sup><br>CE, C-TICK, CSA <sub>US/C</sub> , FM<br>CE, C-TICK, ATEX II 2G EEx dmb IIC T5 Gb <sup>3)6)</sup><br>INMETRO Ex d mb IIC T5 Gb <sup>3)6)</sup><br>C-TICK, ANZEx Ex ds IIC T5, DIP A21 T5, IP65/IP67 Class I, Zone 1 <sup>3)6)</sup> | F<br>G<br>J<br>K<br>L<br>M<br>N |
| <b>Transducer/Process connection</b><br>ETFE, 2" NPT [(Taper), ANSI/ASME B1.20.1]<br>EFTE, R 2" [(BSPT), EN 10226]<br>EFTE, G 2" [(BSPP), EN ISO 228-1]<br>PVDF copolymer, 2" NPT [(Taper), ANSI/ASME B1.20.1]<br>PVDF copolymer, R 2" [(BSPT), EN 10226]<br>PVDF copolymer, G [(BSPP), EN ISO 228-1]<br>PVDF copolymer, 4" sanitary mounting <sup>4)</sup>  | A<br>B<br>C<br>E<br>F<br>G<br>J |
| <b>Enclosure/cable inlet</b><br><u>Polycarbonate</u><br>• Cable inlet PG 13.5<br>• Cable inlet ½" NPT<br><u>Aluminum</u><br>• Cable inlet PG 13.5<br>• Cable inlet ½" NPT  | 1<br>2<br>3<br>4                |

1) Available with Enclosure/cable inlet option 4 only and process connection options A and E only

2) Available with Enclosure/cable inlet options 2 and 4 only

3) Available with Enclosure/cable inlet option 4 only

4) Available with Approvals option K only

5) Not suitable in Hexane or Ethyl Acetate atmospheres

6) Lower temperature rating of these approvals options is limited to -20 °C (-5 °F)

◆ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ◆. For details see page 9/5 in the appendix.

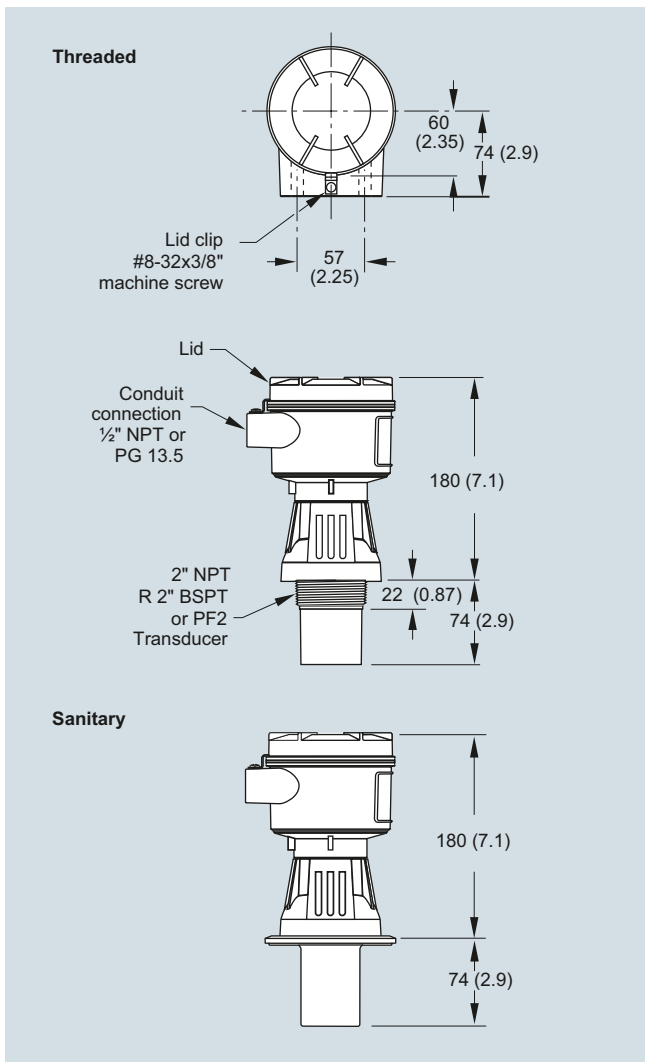
| Selection and Ordering data  | Order code   |
|--|--|
| <b>Further designs</b><br>Please add "-Z" to Article No. and specify Order code(s)   |  |
| Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]:<br>Measuring-point number/identification (max. 27 characters) specify in plain text   | ◆ <b>Y15</b>   |
| <b>Operating Instructions</b><br>Quick Start manual, multi-language  | Article No.<br><b>A5E32268616</b>  |
| This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and Operating Instructions library.   |  |
| <b>Accessories</b><br>Tag, stainless steel, 12 x 45 mm (0.47 x 1.77 inch), one text line, suitable for enclosures<br>Universal Box Bracket Mounting Kit<br>3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" NPT<br>3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" BSPT<br>2" BSPT Locknut, plastic<br>2" NPT Locknut<br>4" sanitary mounting clamp | <b>7ML1930-1AC</b><br><b>7ML1830-1BK</b><br><b>7ML1830-1BT</b><br><b>7ML1830-1BU</b><br><b>7ML1830-1DQ</b><br><b>7ML1830-1DT</b><br><b>7ML1830-1BR</b> |
| <b>Spare Parts</b><br>Polycarbonate Lid<br>Aluminum Lid  | <b>7ML1830-1LG</b><br><b>7ML1830-1LH</b>   |

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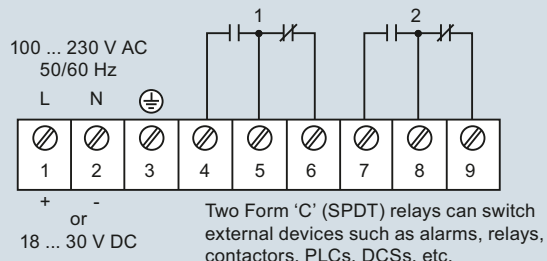
### Dimensional drawings



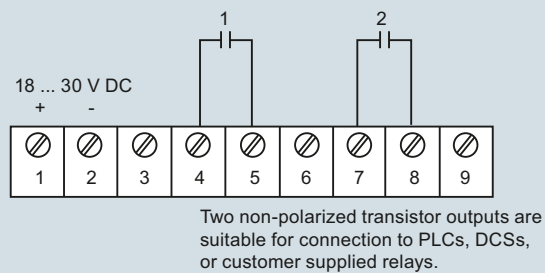
Pointek ULS200, dimensions in mm (inch)

### Schematics

#### Relay output



#### Transistor output: DC version only



Pointek ULS200 connections

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