

# Level instruments

## Continuous level measurement - Ultrasonic transmitters

### The Probe

#### Overview



The Probe is a short-range integrated ultrasonic level transmitter, ideal for liquids and slurries in open or closed vessels.

#### Benefits

- Easy to install, program and maintain
- Accurate and reliable
- Sanitary models available
- Patented Sonic Intelligence® echo processing
- Integral temperature compensation

#### Application

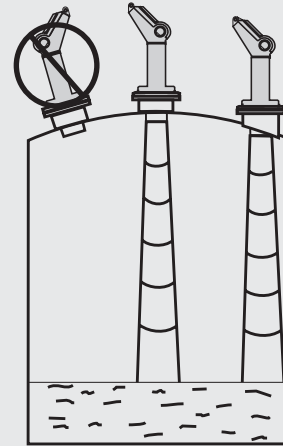
The transducer is available in PVDF copolymer, making the device suitable for use in a wide variety of applications. The Probe is easy to install and maintain, and can be quickly removed for cleaning as required by the food, beverage and pharmaceutical industries.

The reliability of the level data is based on the Sonic Intelligence echo processing algorithms. A filter discriminates between the true echo and false echoes from acoustic or electrical noises and agitator blades in motion. The ultrasonic pulse propagation time to the material and back is temperature-compensated and converted into distance for display, analog output and relay actuation.

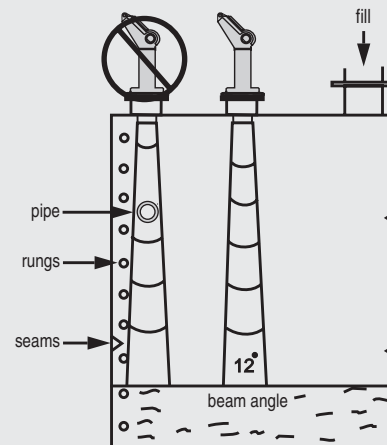
- Key Applications: chemical storage vessels, filter beds, mud pits, liquid storage vessels, food applications

#### Configuration

##### Parabolic Mounting



##### Flat Mounting and Beam Angle



The Probe mounting

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### Technical specifications

|                                   | Three-wire version   | Two-wire version (standard)          |
|-----------------------------------|--|--------------------------------------|
| <b>Mode of operation</b>          |  |                                      |
| Measuring principle               | Ultrasonic level measurement   | Ultrasonic level measurement         |
| <b>Input</b>                      |  |                                      |
| Measuring range                   | 0.25 to 5 m (0.8 to 16.4 ft)   | 0.25 to 5 m (0.8 to 16.4 ft)         |
| <b>Output</b>                     |  |                                      |
| • mA                              | 4 to 20 mA   | 4 to 20 mA                           |
| - Span                            | Proportional/ inversely proportional   | Proportional/ inversely proportional |
| - Max. load                       | 750 Ω at 24 V DC   | 600 Ω in the loop at 24 V DC         |
| • Relay                           | For level alarm or fault   | No                                   |
| <b>Power supply</b>               |  |                                      |
| • Supply voltage                  | 18 to 30 V DC, max. 0.2 A  | 12 to 28 V DC, 0.1 A surge           |
| • Max. power consumption          | 5 W (200 mA at 24 V DC)  | 0.75 W (25 mA at 24 V DC)            |
| <b>Certificates and approvals</b> |  |                                      |
|                                   | CE, C-TICK, CSA <sub>US/C</sub> , FM   | CE, C-TICK, CSA <sub>US/C</sub>      |
| <b>Accuracy</b>                   |  |                                      |
| • Error in measurement            | 0.25 % of measuring range (in air)   |                                      |
| • Resolution                      | 3 mm (0.125")  |                                      |
| • Temperature compensation        | Built in   |                                      |
| • Echo processing                 | Sonic Intelligence   |                                      |
| <b>Rated operation conditions</b> |  |                                      |
| • Beam angle                      | 12°  |                                      |
| • Ambient temperature             |  |                                      |
| - Standard                        | -40 to +60 °C (-40 to +140 °F)   |                                      |
| - Metallic mounting               | -20 to +60 °C (-4 to +140 °F)  |                                      |
| • Max. static operating pressure  | Normal atmospheric pressure  |                                      |
| • Degree of protection            | IP65   |                                      |
| <b>Design</b>                     |  |                                      |
| • Weight                          |  |                                      |
| - Without flange adapter          | 1.5 kg (3.3 lbs)   |                                      |
| - With flange adapter             | 1.7 kg (3.7 lbs)   |                                      |
| • Material                        |  |                                      |
| - Electronics enclosure           | PVC  |                                      |
| - Transducer                      | PVDF copolymer   |                                      |
| • Degree of protection            | IP65   |                                      |
| • Process connection              | 2" NPT [(Taper), ANSI/ASME B1.20.1]<br>R 2" [(BSPT), EN 10226] or<br>G 2" [(BSPP), EN ISO 228-1] |                                      |
| • Flange adapter                  | 3" Universal, (fits DN 65, PN 10 and 3" ASME)<br>4" sanitary                                     |                                      |
| • Cable inlet                     | 2 inlets for PG 13.5 or ½" NPT cable glands  |                                      |

### Selection and Ordering data

|  | Order No.               |
|--|-------------------------|
| <b>The Probe</b>   | C) <b>7ML1201-000</b>   |
| Short-range integrated ultrasonic level transmitter, ideal for liquids and slurries in open or closed vessels                                    |                         |
| <b>Measuring range</b>   | 1                       |
| 5 m (16.40 ft)   |                         |
| <b>Transducer/Process connection</b>   | E<br>F<br>G<br>J        |
| PVDF copolymer, 2" NPT [(Taper), ANSI/ASME B1.20.1]  |                         |
| PVDF copolymer, R 2" [(BSPT), EN 10226]  |                         |
| PVDF copolymer, G 2" [(BSPP), EN ISO 228-1]  |                         |
| PVDF copolymer, 4" Sanitary mounting   |                         |
| <b>Model/Approval</b>  | E<br>F                  |
| 3 Wire, 24 V DC, CE, C-TICK, CSA, FM   |                         |
| 2 Wire, 24 V DC, CE, C-TICK, CSA   |                         |
| <b>Further designs</b>   | Order code              |
| Please add "-Z" to Order No. and specify Order code(s).  |                         |
| Acrylic coated, stainless steel tag [13 x 45 mm (0.5 x 1.75")]: Measuring-point number/identification (max. 20 characters) specify in plain text | Y17                     |
| <b>Additional Operating Instructions</b>   |                         |
| 3 Wire, 24 V model, Multi-language manual  | C) <b>7ML1998-5GD62</b> |
| 2 Wire model, Multi-language manual  | C) <b>7ML1998-5GC63</b> |
| This device is shipped with the Siemens Milltronics manual CD containing Quick Starts and Operating Instructions.                                |                         |
| <b>Accessories</b>   |                         |
| Universal Box Bracket Mounting kit   | <b>7ML1830-1BK</b>      |
| Sanitary 4" mounting clamp   | <b>7ML1830-1BR</b>      |
| Power Supply, 24 V DC, 200 mA for 2 probes (105 to 125 V AC input)   | C) <b>7ML1930-1AA</b>   |
| Power Supply, 24 V DC, 100 mA for 1 probe (105 to 125 V AC input)  | C) <b>7ML1930-1AB</b>   |
| 3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" NPT  | <b>7ML1830-1BT</b>      |
| 3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" BSPT   | <b>7ML1830-1BU</b>      |
| 2" NPT locknut, plastic  | <b>7ML1830-1DT</b>      |
| 2" BSPT locknut, plastic   | <b>7ML1830-1DQ</b>      |
| Plastic M20 cable gland with metal locknut   | <b>7ML1930-1DB</b>      |
| SITRANS RD100 Remote display - see RD100 on page 5/305   |                         |
| SITRANS RD200 Remote display - see RD200 on page 5/307   |                         |
| SITRANS RD500 Remote display - see RD500 on page 5/311   |                         |

C) Subject to export regulations AL: N, ECCN: EAR99

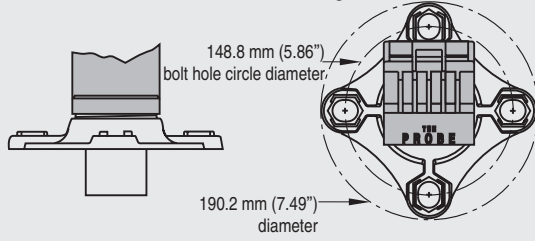
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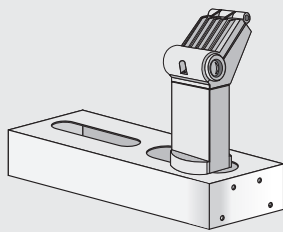
#### Options

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



The Probe Optional Flange Adapter

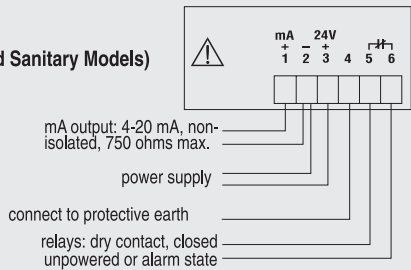
The Probe with FMS 200 Mounting Bracket



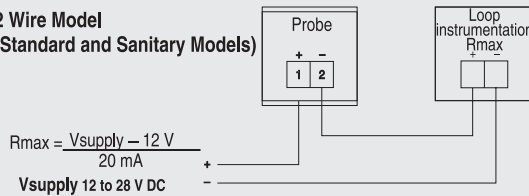
The Probe with Optional Mounting Bracket

#### Schematics

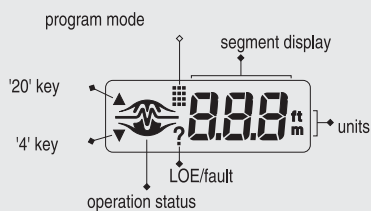
3 Wire Model (Standard and Sanitary Models)



2 Wire Model (Standard and Sanitary Models)



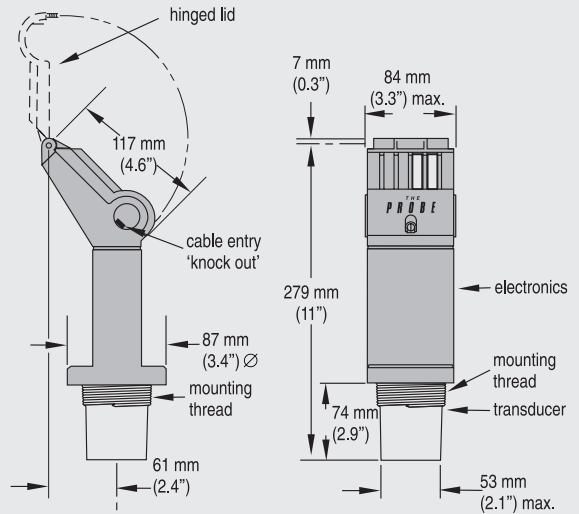
Display



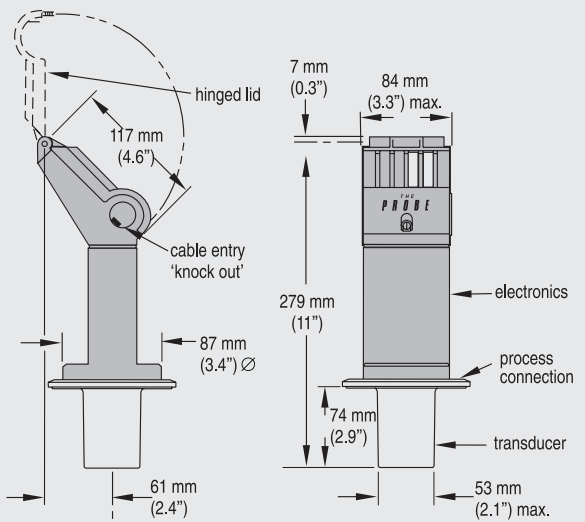
The Probe connections

#### Dimensional drawings

Standard Model



Sanitary Model



The Probe dimensions