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**Temperature:** Temperature Probes & Thermowells, Temperature transmitters, Temperature Regulators & Temperature Displays

**Level:** Level Transmitters & Switches

**Pressure:** Pressure Gauges & Transmitters, Precision & High Pressure Regulators & I-P Converters, Volume boosters.

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**Valves:** Solenoid & Pneumatic Valves, Control Valves & Positioners, Actuated Ball, Globe or Diaphragm Valves & Isolation Valves

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# Level Measurement

## Continuous level measurement - Ultrasonic transducers

Echomax XPS and XCT

### Overview



Echomax® XPS/XCT transducers use ultrasonic technology to measure level in a wide range of liquids and solids.

### Benefits

- Integral temperature compensation
- Low ringing effect reduces blanking distance
- Optional foam facing for dusty applications
- Self-cleaning and low-maintenance
- Chemically resistant
- Hermetically sealed

### Application

The transducers can be fully immersed, are resistant to steam and corrosive chemicals, and can be installed without flanges.

The XPS series offers versions for various measuring ranges up to 40 m (130 ft) and up to a max. temperature of +95 °C (+203 °F).

The XCT series can be used in applications at higher temperatures to measure level up to a distance of 12 m (40 ft) and at a max. temperature of +145 °C (+293 °F).

During operation, the Echomax transducers emit acoustic pulses in a narrow beam. The level monitor measures the propagation time between pulse emission and its reflection (echo) to calculate the distance.

# Level Measurement

## Continuous level measurement - Ultrasonic transducers

### Echomax XPS and XCT

#### Technical specifications

| Input                             | XPS-10 (standard and F models)  | XPS-15 (standard and F models)  | XPS-30   | XPS-40                                       | XCT-8 (standard and sanitary models)   | XCT-12                                    |
|-----------------------------------|---|---|--|--|--|---|
| Measuring range                   | 0.3 ... 10 m<br>(1 ... 33 ft)   | Standard:<br>0.3 ... 15 m<br>(1 ... 50 ft)<br><br>Flanged:<br>0.45 ... 15 m<br>(1.5 ... 50 ft)  | 0.6 ... 30 m<br>(2 ... 100 ft)   | 0.9 ... 40 m<br>(3 ... 130 ft)               | 0.6 ... 8 m<br>(2 ... 26 ft)   | 0.6 ... 12 m<br>(2 ... 40 ft)             |
| <b>Output</b>                     |   |   |  |  |  |   |
| Frequency                         | 44 kHz  | 44 kHz  | 30 kHz   | 22 kHz                                       | 44 kHz   | 44 kHz                                    |
| Beam angle                        | 12°   | 6°  | 6°   | 6°   | 12°  | 6°  |
| <b>Environmental</b>              |   |   |  |  |  |   |
| Location                          | Indoors/outdoors  |   |  |  |  |   |
| Ambient temperature               | -40 ... +95 °C (-40 ... +203 °F)  |   |  |  | Standard:<br>-40 ... +145 °C<br>(-40 ... +293 °F)<br><br>Sanitary:<br>-40 ... +125 °C<br>(-40 ... +260 °F)   | -40 ... +145 °C<br>(-40 ... +293 °F)      |
| Pollution degree                  | 4   |   |  |  |  |   |
| Pressure                          | 8 bar g (120 psi g)<br><br>Flanged:<br>0.5 bar g<br>(7.25 psi g)  | 8 bar g (120 psi g)<br><br>Flanged: 0.5 bar g<br>(7.25 psi g)   | 0.5 bar g<br>(7.25 psi g)<br><br>Flanged: 0.5 bar g<br>(7.25 psi g)                            | 0.5 bar g<br>(7.25 psi g)                    | Standard: 4 bar g (60 psi g):<br>-40 ... +138 °C (-40 ... +280 °F)<br><br>Standard: 8 bar g (120 psi g):<br>-40 ... +95 °C (-40 ... +203 °F)<br><br>Flanged: 0.5 bar g (7.25 psi g)<br><br>Sanitary: XCT-8: 0.5 bar g (7.25 psi g) |   |
| <b>Design</b>                     |   |   |  |  |  |   |
| Weight                            | 0.8 kg<br>(1.8 lbs)   | 1.3 kg (2.8 lbs)<br><br>Flanged: 2 kg<br>(4.4 lbs)  | 4.3 kg<br>(9.5 lbs)  | 8 kg<br>(18 lbs)                             | 0.8 kg<br>(1.7 lbs)  | 1.3 kg<br>(2.8 lbs)                       |
| Power supply                      | Operation of transducer only with approved Siemens Milltronics controllers  |   |  |  |  |   |
| Material                          | Standard: PVDF<br><br>Flanged: PVDF with CPVC flange<br><br>Option: PTFE face with CPVC flange  | Standard: PVDF<br><br>Flanged: PVDF with CPVC flange<br><br>Option: PTFE face with CPVC flange  | Standard: PVDF<br><br>Flanged: PVDF with CPVC flange<br><br>Option: PTFE face with CPVC flange | PVDF   | Standard: PVDF<br><br>Options: DERAKANE® flange; PTFE face with universal PVDF flange  |   |
| Color                             | Standard: blue<br><br>F: gray   | Standard: blue<br><br>F: gray   | blue   | blue   | white  |   |
| Process connection                | Standard: 1" NPT or 1" BSPT<br><br>F: 1" NPT  | Standard: 1" NPT or 1" BSPT<br><br>F: 1" NPT  | 1.5" universal thread (NPT or BSPT)  |  | 1" NPT or R 1" (BSPT), EN 10226  |   |
| Degree of protection              | IP66/68   | IP66/68   | IP66/68  | IP66/68                                      | IP66/68  | IP66/68                                   |
| Cable                             | 2 wire twisted pair/braided and foil shielded 0.5 mm <sup>2</sup> (20 AWG) PVC jacket   |   |  |  | 2 wire twisted pair/braided and foil shielded 0.5 mm <sup>2</sup> (20 AWG) silicone jacket   |   |
| Separation                        | Max. 365 m (1200 ft)  |   |  |  |  |   |
| <b>Certificates and approvals</b> | Standard:<br>CE <sup>1)</sup> , CSA, FM,<br>ATEX II 2GD<br><br>F: FM Class I, Div 1,<br>Groups A, B, C and<br>D, Class II Div 1,<br>Groups E, F and G,<br>Class III | Standard:<br>CE <sup>1)</sup> , CSA, FM,<br>ATEX II 2GD<br><br>F: FM Class I, Div 1,<br>Groups A, B, C and<br>D, Class II Div 1,<br>Groups E, F and G,<br>Class III | CE <sup>1)</sup> , CSA, FM,<br>ATEX II 2G 1D   | CE <sup>1)</sup> , CSA, FM,<br>ATEX II 2G 1D | Standard:<br>CE <sup>1)</sup> , CSA, FM,<br>ATEX II 2G<br><br>Sanitary: CE,<br>C-TICK, CSA <sub>US/C</sub>   | CE <sup>1)</sup> , CSA, FM,<br>ATEX II 2G |

<sup>1)</sup> EMC certificate available on request.

® DERAKANE is a registered trademark of Ashland Inc.

# Level Measurement

## Continuous level measurement - Ultrasonic transducers

Echomax XPS and XCT

| Selection and Ordering data  | Order No.   | Selection and Ordering data   | Order code   |
|--|---|---|--|
| <b>Echomax® XPS-10 ultrasonic transducer</b><br>High-frequency ultrasonic transducer designed for a wide variety of liquid and solid applications, for use with approved controllers. Includes integral temperature sensor.<br>Measuring range: min. 0.3 m, max. 10 m  | C) 7ML1115-0  | <b>Further designs</b><br>Please add "-Z" to Order No. and specify Order code(s).<br><br>Acrylic coated, stainless steel tag [13 x 45 mm<br>Stainless steel tag [69 x 50 mm (2.71 x 1.97")]:<br>Measuring-point number/identification<br>(max. 16 characters) specify in plain text   | Y15  |
| <b>Mounting thread and facing</b><br>1" NPT [(Taper), ANSI/ASME B1.20.1]<br>1" NPT [(Taper), ANSI/ASME B1.20.1] with foam facing <sup>1)</sup><br>1" NPT [(Taper), ANSI/ASME B1.20.1] with PTFE facing <sup>2)</sup><br><br>R 1" [(BSPT), EN 10226]<br>R 1" [(BSPT), EN 10226] with foam facing <sup>1)</sup><br>R 1" [(BSPT), EN 10226] with PTFE facing <sup>2)</sup>  | 0<br>1<br>2<br>3<br>4<br>5                          | <b>Operating Instructions</b><br>Quick Start guide, multi-language<br>Applications Guidelines, multi-language<br>Note: The Applications Guidelines should be ordered as a separate line item on the order.<br><br>This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.  | Order No.<br>C) 7ML1998-5QM82<br>C) 7ML1998-5HV61  |
| <b>Cable length</b><br>5 m (16.40 ft)<br>10 m (32.81 ft)<br>30 m (98.43 ft)<br>50 m (164.04 ft)<br>100 m (328.08 ft)   | B<br>C<br>E<br>F<br>K                               | <b>Accessories</b><br>Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77"), one text line for fastening on sensors<br>Submergence shield kit<br>Easy Aimer 2, with ¾" x 1" NPT PVC coupling<br><br>Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings<br>Easy Aimer 304, with stainless steel coupling<br>Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 SS couplings<br><br>Universal box bracket, mounting kit<br>Channel bracket, wall mount<br>Extended channel bracket, wall mount<br><br>Channel bracket, floor mount<br>Extended channel bracket, floor mount<br>Bridge channel bracket, floor mount<br>(see Mounting Brackets on page 5/190 for more information)<br><br>1" NPT locknut, plastic<br>1" BSPT locknut, plastic | 7ML1930-1BJ<br><br>7ML1830-1BH<br>7ML1830-1AQ<br>7ML1830-1AX<br>7ML1830-1AU<br>7ML1830-1GN<br><br>7ML1830-1BK<br>7ML1830-1BL<br>7ML1830-1BM<br><br>7ML1830-1BN<br>7ML1830-1BP<br>7ML1830-1BQ<br><br>7ML1830-1DS<br>7ML1830-1DR |
| <b>Mounting flange</b><br>None<br>3" ASME, 150 lb, flat faced<br>4" ASME, 150 lb, flat faced<br>6" ASME, 150 lb, flat faced<br>8" ASME, 150 lb, flat faced<br><br>DN 80, PN 10/16, Type A, flat faced<br>DN 100, PN 10/16, Type A, flat faced<br>DN 150, PN 10/16, Type A, flat faced<br><br>JIS10K3B Style<br>JIS10K4B Style<br>JIS10K6B Style<br>(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.) | A<br>C<br>D<br>E<br>F<br>G<br>J<br>L<br>M<br>P<br>R | 1" NPT locknut, plastic<br>1" BSPT locknut, plastic<br><br>C) Subject to export regulations AL: N, ECCN: EAR99  |  |
| <b>Approvals</b><br>ATEX II 2 GD, FM Class I Div. 2, SAA Class I<br>CSA Class I Div. 1 <sup>3)</sup>   | 3<br>4  |   |  |

1) Not available with flanged versions

2) Available with flanged versions only

3) Valid with mounting thread and facing options 0 to 2 only

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

# Level Measurement

## Continuous level measurement - Ultrasonic transducers

### Echomax XPS and XCT

#### Selection and Ordering data

**Echomax® XPS-10F ultrasonic transducer**  
High-frequency ultrasonic transducer designed for a wide variety of liquid and solid applications, for use with approved controllers. Includes integral temperature sensor.  
Measuring range: min. 0.3 m, max. 10 m

#### Mounting thread and facing

1" NPT [(Taper), ANSI/ASME B1.20.1]

#### Cable length

5 m (16.40 ft)  
10 m (32.81 ft)  
30 m (98.43 ft)  
50 m (164.04 ft)  
100 m (328.08 ft)

#### Mounting flange, flush mount

None

3" ASME, 150 lb, flat faced

4" ASME, 150 lb, flat faced

6" ASME, 150 lb, flat faced

8" ASME, 150 lb, flat faced

(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5, or EN 1092-1, or JIS B 2220 standard.)

#### Approvals

FM Class I Div. 1

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

Order No.

C) 7ML1170-

0

1

B

C

D

E

F

A

B

C

D

E

1

#### Selection and Ordering data

##### Further designs

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

Acrylic coated, stainless steel tag [13 x 45 mm

Stainless steel tag [69 x 50 mm (2.71 x 1.97")]:

Measuring-point number/identification

(max. 16 characters) specify in plain text

##### Operating Instructions

Quick Start guide, multi-language

Applications Guidelines, multi-language

Note: The Applications Guidelines should be ordered as a separate line item on the order.

This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.

##### Accessories

Tag, stainless steel with hole, 12 x 45 mm

(0.47 x 1.77"), one text line for fastening on sensors

Submergence shield kit

Easy Aimer 2, with 3/4" x 1" NPT PVC coupling

Easy Aimer 304, with stainless steel coupling

Universal box bracket, mounting kit

Channel bracket, wall mount

Extended channel bracket, wall mount

Channel bracket, floor mount

Extended channel bracket, floor mount

Bridge channel bracket, floor mount  
(see Mounting Brackets on page 5/190 for more information)

1" NPT locknut, plastic

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

Order code

Y15

Order No.

C) 7ML1998-1DU01

C) 7ML1998-5HV61

7ML1930-1BJ

7ML1830-1BH

7ML1830-1AQ

7ML1830-1AU

7ML1830-1BK

7ML1830-1BL

7ML1830-1BM

7ML1830-1BN

7ML1830-1BP

7ML1830-1BQ

7ML1830-1DS

# Level Measurement

## Continuous level measurement - Ultrasonic transducers

Echomax XPS and XCT

| Selection and Ordering data   | Order No.  | Selection and Ordering data   | Order code   |
|---|--|---|--|
| <b>Echomax® XPS-15 ultrasonic transducer</b> C)<br>High-frequency ultrasonic transducer designed for a wide variety of liquid and solid applications, for use with approved controllers. Includes integral temperature sensor.<br>Measuring range: min. 0.3 m, max. 15 m  | <b>7ML1118-0</b><br>   | <b>Further designs</b><br>Please add "-Z" to Order No. and specify Order code(s).<br>Acrylic coated, stainless steel tag [13 x 45 mm<br>Stainless steel tag [69 x 50 mm (2.71 x 1.97")]:<br>Measuring-point number/identification<br>(max. 16 characters) specify in plain text   | <b>Y15</b>   |
| <b>Mounting thread and facing</b><br>1" NPT [(Taper), ANSI/ASME B1.20.1]<br>1" NPT [(Taper), ANSI/ASME B1.20.1] with foam facing <sup>1)</sup><br>1" NPT [(Taper), ANSI/ASME B1.20.1] with PTFE facing <sup>2)</sup><br>R 1" [(BSPT), EN 10226]<br>R 1" [(BSPT), EN 10226] with foam facing <sup>1)</sup><br>R 1" [(BSPT), EN 10226] with PTFE facing <sup>2)</sup> | <b>0</b><br><b>1</b><br><b>2</b><br><b>3</b><br><b>4</b><br><b>5</b>             | <b>Operating Instructions</b><br>Quick Start guide, multi-language C)<br>Applications Guidelines, multi-language C)<br>Note: The Applications Guidelines should be ordered as a separate line item on the order.<br>This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.  | Order No.<br><b>7ML1998-5QM82</b><br><b>7ML1998-5HV61</b>  |
| <b>Cable length</b><br>5 m (16.40 ft)<br>10 m (32.81 ft)<br>30 m (98.43 ft)<br>50 m (164.04 ft)<br>100 m (328.08 ft)  | <b>B</b><br><b>C</b><br><b>E</b><br><b>F</b><br><b>K</b>                         | <b>Accessories</b><br>Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77"), one text line for fastening on sensors<br>Submergence shield kit<br>Universal box bracket, mounting kit<br>Channel bracket, wall mount<br>Extended channel bracket, wall mount<br>Channel bracket, floor mount<br>Extended channel bracket, floor mount<br>Bridge channel bracket, floor mount (see Mounting Brackets on page 5/190 for more information)<br>1" NPT locknut, plastic<br>1" BSPT locknut, plastic<br>Easy Aimer 2, with ¾" x 1" NPT PVC coupling<br>Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings<br>Easy Aimer 304 with stainless steel coupling<br>Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 SS couplings | <b>7ML1930-1BJ</b><br><b>7ML1830-1BJ</b><br><b>7ML1830-1BK</b><br><b>7ML1830-1BL</b><br><b>7ML1830-1BM</b><br><b>7ML1830-1BN</b><br><b>7ML1830-1BP</b><br><b>7ML1830-1BQ</b><br><b>7ML1830-1DS</b><br><b>7ML1830-1DR</b><br><b>7ML1830-1AQ</b><br><b>7ML1830-1AX</b><br><b>7ML1830-1AU</b><br><b>7ML1830-1GN</b> |
| <b>Mounting flange</b><br>None<br>6" ASME, 150 lb, flat faced<br>8" ASME, 150 lb, flat faced<br>DN 150, PN 10/16, Type A, flat faced<br>DN 200, PN 10/16, Type A, flat faced<br>JIS10K 6B<br>JIS10K 8B<br>(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.)                   | <b>A</b><br><b>D</b><br><b>E</b><br><b>J</b><br><b>K</b><br><b>N</b><br><b>P</b> | Easy Aimer 304 with stainless steel coupling<br>Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 SS couplings   | <b>7ML1830-1AU</b><br><b>7ML1830-1GN</b>   |
| <b>Approvals</b><br>ATEX II 2GD, FM Class I Div. 2, SAA Class I<br>CSA Class I Div. 1 <sup>3)</sup>   | <b>3</b><br><b>4</b>   |   |  |
| 1) Not available with flanged versions<br>2) Available with flanged versions only<br>3) Available with mounting options 0 to 2 only<br>C) Subject to export regulations AL: N, ECCN: EAR99  |  | C) Subject to export regulations AL: N, ECCN: EAR99   |  |



# Level Measurement

## Continuous level measurement - Ultrasonic transducers

### Echomax XPS and XCT

| Selection and Ordering data   | Order No.             |
|---|-----------------------|
| <b>Echomax® XPS-15F ultrasonic transducer</b> C)<br>High-frequency ultrasonic transducer designed for a wide variety of liquid and solid applications, for use with approved controllers. Includes integral temperature sensor.<br>Measuring range: min. 0.3 m, max. 15 m | 7 ML 1 1 7 1 - 0      |
| <b>Mounting thread and facing</b><br>1" NPT [(Taper), ANSI/ASME B1.20.1]  | 1                     |
| <b>Cable length</b><br>5 m (16.40 ft)<br>10 m (32.81 ft)<br>30 m (98.43 ft)<br>50 m (164.04 ft)<br>100 m (328.08 ft)  | B<br>C<br>D<br>E<br>F |
| <b>Mounting flange, flush mount</b><br>None<br>6" ASME, 150 lb, flat faced<br>8" ASME, 150 lb, flat faced<br>(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5, or EN 1092-1, or JIS B 2220 standard.)                     | A<br>B<br>C           |
| <b>Approvals</b><br>FM Class I Div. 1   | 1                     |
| C) Subject to export regulations AL: N, ECCN: EAR99   |                       |

| Selection and Ordering data  | Order code  |
|--|---|
| <b>Further designs</b><br>Please add <b>"-Z"</b> to Order No. and specify Order code(s).<br>Acrylic coated, stainless steel tag [13 x 45 mm<br>Stainless steel tag [69 x 50 mm (2.71 x 1.97")]:<br>Measuring-point number/identification<br>(max. 16 characters) specify in plain text   | Y15   |
| <b>Operating Instructions</b><br>Quick Start guide, multi-language C)<br>Applications Guidelines, multi-language C)<br>Note: The Applications Guidelines should be ordered as a separate line item on the order.<br>This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.   | Order No.<br>C) 7ML1998-1DU01<br>C) 7ML1998-5HV61   |
| <b>Accessories</b><br>Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77"), one text line for fastening on sensors<br>Submergence shield kit<br>Universal box bracket, mounting kit<br>Channel bracket, wall mount<br>Extended channel bracket, wall mount<br>Channel bracket, floor mount<br>Extended channel bracket, floor mount<br>Bridge channel bracket, floor mount (see Mounting Brackets on page 5/190 for more information)<br>1" NPT locknut, plastic<br>Easy Aimer 2, with ¾" x 1" NPT PVC coupling<br>Easy Aimer 304 with stainless steel coupling | 7ML1930-1BJ<br>7ML1830-1BJ<br>7ML1830-1BK<br>7ML1830-1BL<br>7ML1830-1BM<br>7ML1830-1BN<br>7ML1830-1BP<br>7ML1830-1BQ<br>7ML1830-1DS<br>7ML1830-1AQ<br>7ML1830-1AU |
| C) Subject to export regulations AL: N, ECCN: EAR99  |   |

| Selection and Ordering data  | Order No.                       |
|--|---------------------------------|
| <b>Echomax® XPS-30 ultrasonic transducer</b> C)<br>High-frequency ultrasonic transducer designed for a wide variety of liquid and solid applications, for use with approved controllers. Includes integral temperature sensor.<br>1½" universal thread compatible with 1½" NPT and R 1½" [(BSPT), EN 10226]<br>Measuring range: min. 0.6 m (1.97 ft), max. 30 m (98.43 ft) | 7 ML 1 1 2 3 - 0                |
| <b>Mounting thread and facing</b><br>1½" universal thread<br>1½" universal thread, foam facing <sup>1)</sup><br>1½" universal thread, PTFE facing <sup>2)</sup>  | 0<br>1<br>2                     |
| <b>Cable length</b><br>5 m (16.40 ft)<br>10 m (32.81 ft)<br>30 m (98.43 ft)<br>50 m (164.04 ft)<br>100 m (328.08 ft)   | B<br>C<br>E<br>F<br>K           |
| <b>Mounting flange</b><br>None<br>6" ASME, 150 lb, flat faced<br>8" ASME, 150 lb, flat faced<br>DN 150, PN 10/16, Type A, flat faced<br>DN 200, PN 10/16, Type A, flat faced<br>JIS10K 6B<br>JIS10K 8B<br>(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.)                          | A<br>D<br>E<br>J<br>K<br>N<br>P |
| <b>Approvals</b><br>ATEX II 2G 1D, FM Class I Div 2, SAA   | 5                               |
| <sup>1)</sup> Not available with flanged versions<br><sup>2)</sup> Available with flanged versions only<br>C) Subject to export regulations AL: N, ECCN: EAR99   |                                 |

| Selection and Ordering data   | Order code   |
|---|--|
| <b>Further designs</b><br>Please add <b>"-Z"</b> to Order No. and specify Order code(s).<br>Acrylic coated, stainless steel tag [13 x 45 mm<br>Stainless steel tag [69 x 50 mm (2.71 x 1.97")]:<br>Measuring-point number/identification<br>(max. 16 characters) specify in plain text  | Y15  |
| <b>Operating Instructions</b><br>Quick Start guide, multi-language C)<br>Applications Guidelines, multi-language C)<br>Note: The Applications Guidelines should be ordered as a separate line item on the order.<br>This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.  | Order No.<br>C) 7ML1998-5QM82<br>C) 7ML1998-5HV61                                      |
| <b>Accessories</b><br>Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77"), one text line for fastening on sensors<br>1½" BSPT locknut, plastic<br>Easy Aimer 2, 1½" NPT galvanized coupling<br>Easy Aimer 2, 1½" NPT with stainless steel coupling<br>Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings<br>Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 SS couplings | 7ML1930-1BJ<br>7ML1830-1DP<br>7ML1830-1AN<br>7ML1830-1AT<br>7ML1830-1AX<br>7ML1830-1GN |
| C) Subject to export regulations AL: N, ECCN: EAR99   |  |

# Level Measurement

## Continuous level measurement - Ultrasonic transducers

Echomax XPS and XCT

| Selection and Ordering data  | Order No.             | Selection and Ordering data   | Order code   |
|--|-----------------------|---|--|
| <b>Echomax® XPS-40 ultrasonic transducer</b><br>High-frequency ultrasonic transducer designed for a wide variety of liquid and solid applications, for use with approved controllers. Includes integral temperature sensor.<br>1½" universal thread compatible with 1½" NPT and R 1½" [(BSPT), EN 10226]<br>Measuring range: min. 0.9 m (2.95 ft), max. 40 m (131.23 ft) | C) 7ML1127-0          | <b>Further designs</b><br>Please add "-Z" to Order No. and specify Order code(s).<br>Acrylic coated, stainless steel tag [13 x 45 mm<br>Stainless steel tag [69 x 50 mm (2.71 x 1.97")]:<br>Measuring-point number/identification (max. 16 characters) specify in plain text  | Y15  |
| <b>Mounting thread and facing</b><br>1½" universal thread<br>1½" universal thread, foam facing   | 0<br>1                | <b>Operating Instructions</b><br>Quick Start guide, multi-language<br>Applications Guidelines, multi-language<br>Note: The Applications Guidelines should be ordered as a separate line item on the order.<br>This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.  | Order No.<br>C) 7ML1998-5QM82<br>C) 7ML1998-5HV61                                      |
| <b>Cable length</b><br>5 m (16.40 ft)<br>10 m (32.81 ft)<br>30 m (98.43 ft)<br>50 m (164.04 ft)<br>100 m (328.08 ft)   | B<br>C<br>E<br>F<br>K | <b>Accessories</b><br>Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77"), one text line for fastening on sensors<br>1½" BSPT locknut, plastic<br>Easy Aimer 2, 1½" NPT galvanized coupling<br>Easy Aimer 2, 1½" NPT with stainless steel coupling<br>Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings<br>Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 SS couplings | 7ML1930-1BJ<br>7ML1830-1DP<br>7ML1830-1AN<br>7ML1830-1AT<br>7ML1830-1AX<br>7ML1830-1GN |
| <b>Mounting flange</b><br>None   | A                     |   |  |
| <b>Approvals</b><br>ATEX II 2G 1D, FM Class I Div 2, SAA<br>C) Subject to export regulations AL: N, ECCN: EAR99  | 5                     | C) Subject to export regulations AL: N, ECCN: EAR99   |  |



# Level Measurement

## Continuous level measurement - Ultrasonic transducers

### Echomax XPS and XCT

#### Selection and Ordering data

Order No.

**Echomax® XCT-8 ultrasonic transducer**  
High-frequency ultrasonic transducer designed for a wide variety of liquid and solid applications, for use with approved controllers. Includes integral temperature sensor.  
Ambient temperatures up to +145 °C (+293 °F)  
Measuring range: min. 0.6 m (2 ft), max. 8 m (26 ft)

C) 7ML1132-0

#### Mounting thread and facing

1" NPT [(Taper), ANSI/ASME B1.20.1]  
1" NPT [(Taper), ANSI/ASME B1.20.1], PTFE facing<sup>1)</sup>  
R 1" [(BSPT), EN 10226]  
R 1" [(BSPT), EN 10226], PTFE facing<sup>1)</sup>

0  
1  
2  
3

#### Cable length

1 m (3.28 ft)  
5 m (16.40 ft)  
10 m (32.81 ft)  
30 m (98.43 ft)  
50 m (164.04 ft)  
100 m (328.08 ft)

A  
B  
C  
E  
F  
K

#### Mounting flange

None  
3" ASME, 150 lb, flat faced  
4" ASME, 150 lb, flat faced  
6" ASME, 150 lb, flat faced  
DN 80, PN 10/16, Type A, flat faced  
DN 100, PN 10/16, Type A, flat faced  
DN 150, PN 10/16, Type A, flat faced  
JIS10K 3B  
JIS10K 4B  
JIS10K 6B  
(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 or JIS B 2220 standard.)  
3" universal<sup>2)</sup>  
4" universal<sup>3)</sup>  
6" universal<sup>4)</sup>  
4" sanitary flange<sup>5)</sup>

A  
C  
D  
E  
G  
J  
L  
M  
P  
R  
S  
T  
U  
V

#### Approvals

ATEX II 2G, FM Class I, Div. 2, SAA  
CSA Class I Div. 1, available with mounting thread and facing option 0  
CE, C-TICK, CSA<sub>US/C</sub>

4  
5  
7

- 1) Available with flange versions S to V only  
2) Universal fits 3" ASME, DN 80, JIS 10K3B style  
3) Universal fits 4" ASME, DN 100, JIS 10K4B style  
4) Universal fits 6" ASME, DN 150, JIS 10K6B style  
5) Available with Mounting thread and facing options 1 and 3, and approval option 7 only

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

#### Selection and Ordering data

Order code

#### Further designs

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

Acrylic coated, stainless steel tag [13 x 45 mm  
Stainless steel tag [69 x 50 mm (2.71 x 1.97")]:  
Measuring-point number/identification (max. 16 characters) specify in plain text

Y15

#### Operating Instructions

Quick start manual, multi-language

C) 7ML1998-5QM82

XCT-8 with Sanitary Flange, multi-language  
Note: This manual should be ordered as a separate line item with Mounting Option V.

C) 7ML1998-5HX62

Applications Guidelines, multi-language  
Note: The Applications Guidelines should be ordered as a separate line item on the order.

C) 7ML1998-5HV61

This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.

#### Accessories

Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77"), one text line for fastening on sensors

7ML1930-1BJ

Submersible hood

7ML1830-1BH

Universal box bracket, mounting kit

7ML1830-1BK

Channel bracket, wall mount

7ML1830-1BL

Extended channel bracket, wall mount

7ML1830-1BM

Channel bracket, floor mount

7ML1830-1BN

Extended channel bracket, floor mount

7ML1830-1BP

Bridge channel bracket, floor mount  
(see Mounting Brackets on page 5/190 for more information)

7ML1830-1BQ

1" NPT locknut, plastic

7ML1830-1DS

1" BSPT locknut, plastic

7ML1830-1DR

Easy Aimer 304 with stainless steel coupling

7ML1830-1AU

Easy Aimer, aluminum, with M20 adapter and ¾ to 1" and 1½" BSPT couplings

7ML1830-1AX

Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 SS couplings

7ML1830-1GN

Sanitary, 4" mounting clamp

7ML1830-1BR

Sanitary, isolating gasket

J) 7ML1830-1KC

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

J) Subject to export regulations AL: 91999, ECCN: EAR99

# Level Measurement

## Continuous level measurement - Ultrasonic transducers

Echomax XPS and XCT

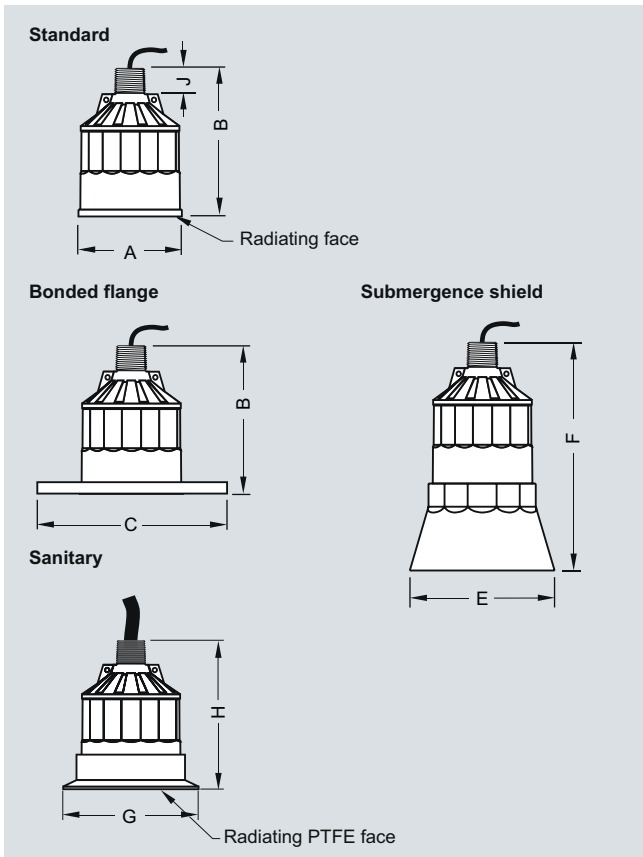
| Selection and Ordering data   | Order No.                            | Selection and Ordering data  | Order code  |
|---|--------------------------------------|--|---|
| <b>Echomax® XCT-12 ultrasonic transducer</b><br>High-frequency ultrasonic transducer designed for a wide variety of liquid and solid applications, for use with approved controllers. Includes integral temperature sensor.<br>Ambient temperatures up to +145 °C (+293 °F)<br>Measuring range: min. 0.6 m (2 ft), max. 12 m (40 ft)  | C) 7ML1136-0                         | <b>Further designs</b><br>Please add "-Z" to Order No. and specify Order code(s).<br>Acrylic coated, stainless steel tag [13 x 45 mm<br>Stainless steel tag [69 x 50 mm (2.71 x 1.97")]:<br>Measuring-point number/identification (max. 16 characters) specify in plain text   | Y15   |
| <b>Mounting thread and facing</b><br>1" NPT [(Taper), ANSI/ASME B1.20.1]<br>1" NPT [(Taper), ANSI/ASME B1.20.1], PTFE facing, available for flange options U only <sup>1)</sup><br>R 1" [(BSPT), EN 10226]<br>R 1" [(BSPT), EN 10226], PTFE facing, available for flange options U only <sup>1)</sup>   | 0<br>1<br>2<br>3                     | <b>Operating Instructions</b><br>Quick start manual, multi-language<br>Applications Guidelines, multi-language<br>Note: The Applications Guidelines should be ordered as a separate line item on the order.<br>This device is shipped with the Siemens Milltronics manual CD containing the complete ATEX Quick Start and Operating Instructions library.  | Order No.<br>C) 7ML1998-5QM82<br>C) 7ML1998-5HV61   |
| <b>Cable length</b><br>1 m (3.28 ft)<br>5 m (16.40 ft)<br>10 m (32.81 ft)<br>30 m (98.43 ft)<br>50 m (164.04 ft)<br>100 m (328.08 ft)   | A<br>B<br>C<br>E<br>F<br>K           | <b>Accessories</b><br>Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77"), one text line for fastening on sensors<br>Submergence shield kit<br>Universal box bracket, mounting kit<br>Channel bracket, wall mount<br>Extended channel bracket, wall mount<br>Channel bracket, floor mount<br>Extended channel bracket, floor mount<br>Bridge channel bracket, floor mount (see Mounting Brackets on page 5/190 for more information)<br>1" NPT locknut, plastic<br>1" BSPT locknut, plastic<br>Easy Aimer 304 with stainless steel coupling<br>Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings<br>Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 SS couplings | 7ML1930-1BJ<br>7ML1830-1BJ<br>7ML1830-1BK<br>7ML1830-1BL<br>7ML1830-1BM<br>7ML1830-1BN<br>7ML1830-1BP<br>7ML1830-1BQ<br>7ML1830-1DS<br>7ML1830-1DR<br>7ML1830-1AU<br>7ML1830-1AX<br>7ML1830-1GN |
| <b>Mounting flange</b><br>None<br>6" ASME, 150 lb, flat faced<br>8" ASME, 150 lb, flat faced<br>DN 150, PN 10/16, Type A, flat faced<br>DN 200, PN 10/16, Type A, flat faced<br>JIS10K 6B<br>JIS10K 8B<br>(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1 or JIS B 2220 standard.)<br>6" universal for 6" ASME, DN 150 or JIS 10K6B style | A<br>D<br>E<br>J<br>K<br>N<br>P<br>U |  |   |
| <b>Approvals</b><br>ATEX II 2G, FM Class I, Div. 2, SAA<br>CSA Class I, Div. 1, available with mounting thread and facing option 0 only   | 3<br>4                               |  |   |
| <sup>1)</sup> Available with universal flanges only<br>C) Subject to export regulations AL: N, ECCN: EAR99  |                                      |  |   |

# Level Measurement

## Continuous level measurement - Ultrasonic transducers

### Echomax XPS and XCT

#### Dimensional drawings



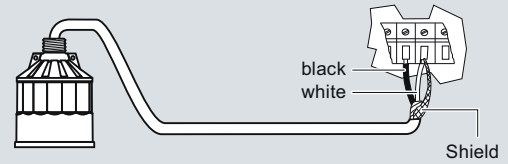
XPS and XCT ultrasonic transducer

| Version          | XPS-10                         | XPS-15             | XPS-30             | XPS-40             |
|------------------|--------------------------------|--------------------|--------------------|--------------------|
| <b>Dimension</b> |                                |                    |                    |                    |
| <b>A</b>         | 88 mm<br>(3.464")              | 121 mm<br>(4.764") | 175 mm<br>(6.890") | 206 mm<br>(8.110") |
| <b>B</b>         | 122 mm<br>(4.803")             | 132 mm<br>(5.197") | 198 mm<br>(7.795") | 229 mm<br>(9.016") |
| <b>C</b>         | According to ASME, DIN and JIS |                    |                    | n/a                |
| <b>E</b>         | 124 mm<br>(4.882")             | 158 mm<br>(6.220") | n/a                | n/a                |
| <b>F</b>         | 152 mm<br>(5.984")             | 198 mm<br>(7.795") | n/a                | n/a                |
| <b>J</b>         | 28 mm (1.1")                   | 28 mm (1.1")       | 28 mm (1.1")       | 28 mm (1.1")       |

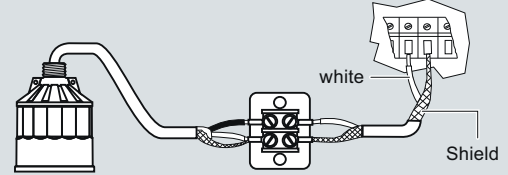
| Version          | XCT-8                               | XCT-12          |
|------------------|-------------------------------------|-----------------|
| <b>Dimension</b> |                                     |                 |
| <b>A</b>         | 88 mm (3.464")                      | 121 mm (4.764") |
| <b>B</b>         | 122 mm (4.803")                     | 132 mm (5.197") |
| <b>C</b>         | According to ASME, DIN and JIS      |                 |
| <b>E</b>         | n/a                                 | n/a             |
| <b>F</b>         | n/a                                 | n/a             |
| <b>G</b>         | Sanitary version:<br>119 mm (4.68") | n/a             |
| <b>H</b>         | Sanitary version:<br>122 mm (4.8")  | n/a             |
| <b>J</b>         | 28 mm (1.1")                        | 28 mm (1.1")    |

#### Schematics

##### Direct Connection



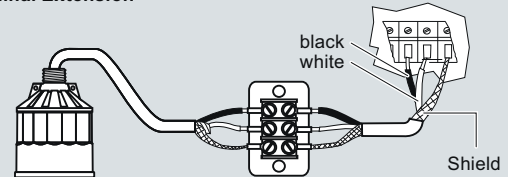
##### Coaxial Connection



##### 3 Terminal Direct\*



##### 3 Terminal Extension\*



\* For SITRANS LUC500, MultiRanger 100/200, HydroRanger 200

##### Mounting

Make particularly sure that the radiating face of the transducer is protected from damage. Mount the transducer so that it is above the maximum material level by at least the blanking value. On liquid applications, the transducer must be mounted so that the axis of transmission is perpendicular to the liquid surface. On solids applications, a Milltronics Easy Aimer should be used to facilitate aiming the transducer. Consider the optional temperature sensor when mounting the transducer.

##### Interconnection

Do not route cable openly or near high voltage or current runs, contactors and SCR control drives. For optimum isolation against electrical noise, run cable separately in a grounded metal conduit. Seal all thread connections to prevent ingress of moisture.

XPS and XCT ultrasonic transducer connections