

Level Measurement

Continuous level measurement
Ultrasonic transducers

EchoMax XPS

Overview



EchoMax XPS 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

XPS 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 30 m (100 ft) and up to a max. temperature of 95 °C (203 °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.

Technical specifications

Input	XPS-10	XPS-15 (standard and F models)	XPS-30
Measuring range	0.3 ... 10 m (1 ... 33 ft)	<u>Standard:</u> 0.3 ... 15 m (1 ... 50 ft) <u>XPS-15F:</u> 0.45 ... 15 m (1.5 ... 50 ft)	0.6 ... 30 m (2 ... 100 ft)
Output			
Frequency	44 kHz	44 kHz	30 kHz
Beam angle	12°	6°	6°
Environmental			
Location	Indoors/outdoors		
Ambient temperature	-40 ... +95 °C (-40 ... +203 °F)	<u>Standard:</u> -40 ... +95 °C (-40 ... +203 °F) <u>XPS-15F:</u> -20 ... +95 °C (-4 ... +203 °F)	-40 ... +95 °C (-40 ... +203 °F)
Pollution degree	4		
Pressure	8 bar g (120 psi g) <u>Flanged:</u> 0.5 bar g (7.25 psi g)	8 bar g (120 psi g) <u>Flanged:</u> 0.5 bar g (7.25 psi g)	0.5 bar g (7.25 psi g) <u>Flanged:</u> 0.5 bar g (7.25 psi g)
Design			
Weight	0.8 kg (1.8 lb)	1.3 kg (2.8 lb) <u>Flanged:</u> 2 kg (4.4 lb)	4.3 kg (9.5 lb)
Power supply	Operation of transducer only with approved Siemens controllers		
Material	<u>Standard:</u> PVDF <u>Flanged:</u> PVDF with CPVC flange <u>Option:</u> PTFE face with CPVC flange	<u>Standard:</u> PVDF <u>Flanged:</u> PVDF with CPVC flange <u>Option:</u> PTFE face with CPVC flange	<u>Standard:</u> PVDF <u>Flanged:</u> PVDF with CPVC flange <u>Option:</u> PTFE face with CPVC flange
Color	Blue	<u>Standard:</u> Blue <u>XPS-15F:</u> Gray	Blue
Process connection	1" NPT or 1" BSPT	<u>Standard:</u> 1" NPT or 1" BSPT <u>XPS-15F:</u> 1" NPT	1.5" universal thread (NPT or BSPT)
Degree of protection	IP66/68	IP66/68	IP66/68
Cable	2-wire twisted pair/braided and foil shielded 0.5 mm ² (20 AWG) PVC jacket		
Separation	Max. 365 m (1 200 ft)		
Certificates and approvals	<u>Standard:</u> CE, CSA, FM, ATEX, IECEx	<u>Standard:</u> CE, CSA, FM, ATEX, IECEx <u>XPS-15F:</u> FM Class I, Div. 1, Groups A, B, C, and D, Class II Div. 1, Groups E, F, and G, Class III	CE, CSA, FM, ATEX, IECEx

¹⁾ EMC certificate available on request.

Level Measurement

Continuous level measurement
Ultrasonic transducers

EchoMax XPS

4

Selection and Ordering data	Article No.	Selection and Ordering data	Order code
EchoMax XPS-10 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 ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	↗ 7ML1115- 0	Further designs Please add "-Z" to Article No. and specify Order code(s). Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring point number/ identification (max. 27 characters) specify in plain text	Y15
Mounting thread and facing 1" NPT [(Taper), ANSI/ASME B1.20.1] 1" NPT [(Taper), ANSI/ASME B1.20.1] with foam facing ¹⁾ 1" NPT [(Taper), ANSI/ASME B1.20.1] with PTFE facing ²⁾ R 1" [(BSPT), EN 10226] R 1" [(BSPT), EN 10226] with foam facing ¹⁾ R 1" [(BSPT), EN 10226] with PTFE facing ²⁾	0 1 2 3 4 5	Operating Instructions Multi-language Note: The Operating Instructions should be ordered as a separate line item on the order. All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	Article No. A5E43390688
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)	B C E F K	Accessories Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77 inch), one text line for fastening on sensors Submergence shield kit Easy Aimer 2, aluminum, NPT with ¾" x 1" PVC coupling Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings Easy Aimer 304, NPT with 1" stainless steel coupling Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 stainless steel couplings 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 4/193 for more information) 1" NPT locknut, plastic 1" BSPT locknut, plastic Plastic adapter 1" BSP - 20 mm Plastic adapter 1" NPT Plastic adapter 1" NPT/M20	7ML1930-1BJ 7ML1830-1BH 7ML1830-1AQ 7ML1830-1AX 7ML1830-1AU 7ML1830-1GN 7ML1830-1BK 7ML1830-1BL 7ML1830-1BM 7ML1830-1BN 7ML1830-1BP 7ML1830-1BQ 7ML1830-1DS 7ML1830-1DR 7ML1830-1EA 7ML1930-1FX 7ML1830-1EF
Mounting flange 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 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 JIS10K3B Style JIS10K4B Style JIS10K6B Style (Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.)	A C D E F G J L M P R		
Approvals ATEX 2GD Ex mb IIC T4 Gb, Ex tb IIIC T135 °C Db; IECEx SIR 13.0009X Ex mb IIC T4 Gb, Ex tb IIIC T135 °C Db; FM Class I, Div. 2, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III CSA Class I, Div. 1, Groups A, B, C, D, Class II, Div. 1, Groups E, F, G, Class III ³⁾	3 4		

¹⁾ Not available with flanged versions

²⁾ Available with flanged versions only

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

Level Measurement
Continuous level measurement
Ultrasonic transducers

EchoMax XPS

Selection and Ordering data	Article No.	Selection and Ordering data	Order code
<p>EchoMax XPS-15 ultrasonic transducer</p> <p>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. 15 m</p> <p>Click on the Article No. for the online configuration in the PIA Life Cycle Portal.</p>	<p>7ML1118-0</p>	<p>Further designs</p> <p>Please add "-Z" to Article No. and specify Order code(s).</p> <p>Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: Measuring point number/ identification (max. 27 characters) specify in plain text</p> <p>Operating Instructions</p> <p>Multi-language</p> <p>Note: The Operating Instructions should be ordered as a separate line item on the order.</p> <p>All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation</p> <p>Accessories</p> <p>Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77 inch), one text line for fastening on sensors</p> <p>Submergence shield kit</p> <p>Universal box bracket, mounting kit</p> <p>Channel bracket, wall mount</p> <p>Extended channel bracket, wall mount</p> <p>Channel bracket, floor mount</p> <p>Extended channel bracket, floor mount</p> <p>Bridge channel bracket, floor mount (see Mounting Brackets on page 4/193 for more information)</p> <p>1" NPT locknut, plastic</p> <p>1" BSPT locknut, plastic</p> <p>Easy Aimer 2, aluminum, NPT with 3/4" x 1" PVC coupling</p> <p>Easy Aimer 2, aluminum with M20 adapter and 1" and 1 1/2" BSPT aluminum couplings</p> <p>Easy Aimer 304, NPT with 1" stainless steel coupling</p> <p>Easy Aimer 304, with M20 adapter and 1" and 1 1/2" BSPT 304 stainless steel couplings</p> <p>Plastic adapter 1" BSP - 20 mm</p> <p>Plastic adapter 1" NPT</p> <p>Plastic adapter 1" NPT/M20</p>	<p>Y15</p> <p>Article No. A5E43390688</p> <p>7ML1930-1BJ</p> <p>7ML1830-1BJ</p> <p>7ML1830-1BK</p> <p>7ML1830-1BL</p> <p>7ML1830-1BM</p> <p>7ML1830-1BN</p> <p>7ML1830-1BP</p> <p>7ML1830-1BQ</p> <p>7ML1830-1DS</p> <p>7ML1830-1DR</p> <p>7ML1830-1AQ</p> <p>7ML1830-1AX</p> <p>7ML1830-1AU</p> <p>7ML1830-1GN</p> <p>7ML1830-1EA</p> <p>7ML1930-1FX</p> <p>7ML1830-1EF</p>
<p>Mounting thread and facing</p> <p>1" NPT [(Taper), ANSI/ASME B1.20.1]</p> <p>1" NPT [(Taper), ANSI/ASME B1.20.1] with foam facing¹⁾</p> <p>1" NPT [(Taper), ANSI/ASME B1.20.1] with PTFE facing²⁾</p> <p>R 1" [(BSPT), EN 10226]</p> <p>R 1" [(BSPT), EN 10226] with foam facing¹⁾</p> <p>R 1" [(BSPT), EN 10226] with PTFE facing²⁾</p>	<p>0</p> <p>1</p> <p>2</p> <p>3</p> <p>4</p> <p>5</p>		
<p>Cable length</p> <p>5 m (16.40 ft)</p> <p>10 m (32.81 ft)</p> <p>30 m (98.43 ft)</p> <p>50 m (164.04 ft)</p> <p>100 m (328.08 ft)</p>	<p>B</p> <p>C</p> <p>E</p> <p>F</p> <p>K</p>		
<p>Mounting flange</p> <p>None</p> <p>6" ASME, 150 lb, flat faced</p> <p>8" ASME, 150 lb, flat faced</p> <p>DN 150, PN 10/16, Type A, flat faced</p> <p>DN 200, PN 10, Type A, flat faced</p> <p>JIS10K 6B</p> <p>JIS10K 8B</p> <p>(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.)</p>	<p>A</p> <p>D</p> <p>E</p> <p>J</p> <p>K</p> <p>N</p> <p>P</p>		
<p>Approvals</p> <p>ATEX 2GD Ex mb IIC T4 Gb, Ex tb IIIC T135 °C Db; IECEx SIR 13.0009X Ex mb IIC T4 Gb, Ex tb IIIC T135 °C Db; FM Class I, Div. 2, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III CSA Class I, Div. 1, Groups A, B, C, D, Class II, Div. 1, Groups E, F, G, Class III³⁾</p>	<p>3</p> <p>4</p>		
<p>¹⁾ Not available with flanged versions</p> <p>²⁾ Available with flanged versions only</p> <p>³⁾ Available with mounting options 0 ... 2 only</p>			



Level Measurement

Continuous level measurement
Ultrasonic transducers

EchoMax XPS


Selection and Ordering data	Article No.
EchoMax XPS-15F ultrasonic transducer 7ML1171- 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. 0.45 m, max. 15 m Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Mounting thread and facing 1" NPT [(Taper), ANSI/ASME B1.20.1]	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)	B C D E F
Mounting flange, flush mount None 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.)	A B C
Approvals FM Class I, Div. 1, Groups A, B, C, and D, Class II Div. 1, Groups E, F, and G, Class III	1

Selection and Ordering data	Order code
Further designs Please add "-Z" to Article No. and specify Order code(s).	
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]; Measuring point number/ identification (max. 27 characters) specify in plain text	Y15
Operating Instructions All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation	
Accessories	Article No.
Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77 inch), one text line for fastening on sensors	7ML1930-1BJ
Submergence shield kit	7ML1830-1BJ
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 4/193 for more information)	7ML1830-1BQ
1" NPT locknut, plastic	7ML1830-1DS
Easy Aimer 2, aluminum, NPT with 3/4" x 1" PVC coupling	7ML1830-1AQ
Easy Aimer 304, NPT with 1" stainless steel coupling	7ML1830-1AU

Selection and Ordering data	Article No.
EchoMax XPS-30 ultrasonic transducer 7ML1123- High-frequency ultrasonic transducer designed for a wide variety of liquid and solid applications, for use with approved controllers. Includes integral temperature sensor. 1½" universal thread compatible with 1½" NPT and R 1½" [(BSPT), EN 10226] Measuring range: min. 0.6 m (1.97 ft), max. 30 m (98.43 ft) Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	
Mounting thread and facing 1½" universal thread 1½" universal thread, foam facing ¹⁾ 1½" universal thread, PTFE facing ²⁾	0 1 2
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)	B C E F K
Mounting flange None 6" ASME, 150 lb, flat faced 8" ASME, 150 lb, flat faced DN 150, PN 10/16, Type A, flat faced DN 200, PN 10, Type A, flat faced JIS10K 6B JIS10K 8B (Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.)	A D E J K N P
Approvals ATEX 2G 1D Ex mb IIC T4 Gb, Ex ta IIIC T135 °C Da; IECEx SIR 13.0009X Ex mb IIC T4 Gb, Ex ta IIIC T135 °C Da	5
¹⁾ Not available with flanged versions ²⁾ Available with flanged versions only	

Level Measurement
Continuous level measurement
Ultrasonic transducers

EchoMax XPS

Selection and Ordering data		Order code	Selection and Ordering data		Article No.
Further designs Please add "-Z" to Article No. and specify Order code(s).			EchoMax XPS-30C ultrasonic transducer ↗		7ML1155-
Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]: measuring-point number/identification (max. 27 characters) specify in plain text		Y15	High-frequency ultrasonic transducer designed for a wide variety of liquid and solid applications, for use with approved controllers. Includes integral temperature sensor. 1½" universal thread compatible with 1½" NPT and R 1½" [(BSPT), EN 10226] Measuring range: min. 0.6 m (1.97 ft), max. 30 m (98.43 ft)		
Operating Instructions Multi-language Note: The Operating Instructions should be ordered as a separate line item on the order. All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation		Article No. A5E43390688	↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Accessories Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77 inch), one text line for fastening on sensors 1½" BSPT locknut, plastic Easy Aimer 2, aluminum, NPT with 1½" galvanized coupling Easy Aimer 304, NPT with 1½" stainless steel coupling Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 stainless steel couplings Adapter 1½" BSP		7ML1930-1BJ 7ML1830-1DP 7ML1830-1AN 7ML1830-1AT 7ML1830-1AX 7ML1830-1GN 7ML1830-1EB	Mounting thread and facing 1½" universal thread 1½" universal thread, foam facing ¹⁾ 1½" universal thread, PTFE facing ²⁾		0 1 2 B C E F K
			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 None 6" ASME, 150 lb, flat faced 8" ASME, 150 lb, flat faced DN 150, PN 10/16, Type A, flat faced DN 200, PN 10, Type A, flat faced JIS10K 6B JIS10K 8B (Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.)		A D E J K N P
			Approvals CSA, Class I, Div. 2, Groups A, B, C, D; Class II, Div. 1, Groups E, F, G; Class III		4
Selection and Ordering data		Order code	Selection and Ordering data		Order code
Further designs Please add "-Z" to Article No. and specify Order code(s).			Further designs Please add "-Z" to Article No. and specify Order code(s).		
Stainless steel tag [69 mm x 50 mm (2.71 x 1.97 inch)]: Measuring-point number / identification (max. 27 characters) specify in plain text		Y15	Stainless steel tag [69 mm x 50 mm (2.71 x 1.97 inch)]: Measuring-point number / identification (max. 27 characters) specify in plain text		
Operating Instructions Multi-language Note: The Operating Instructions should be ordered as a separate line item on the order. All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation		Article No. A5E43390688	Operating Instructions Multi-language Note: The Operating Instructions should be ordered as a separate line item on the order. All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation		
Accessories Easy Aimer 2, aluminum, NPT with 1½" galvanized coupling Easy Aimer 304, NPT with 1½" stainless steel coupling 1½" BSPT locknut, plastic Adapter 1½" BSP		7ML1830-1AN 7ML1830-1AT 7ML1830-1DP 7ML1830-1EB	Accessories Easy Aimer 2, aluminum, NPT with 1½" galvanized coupling Easy Aimer 304, NPT with 1½" stainless steel coupling 1½" BSPT locknut, plastic Adapter 1½" BSP		
			¹⁾ Not available with flanged version ²⁾ Available for flanged versions only		

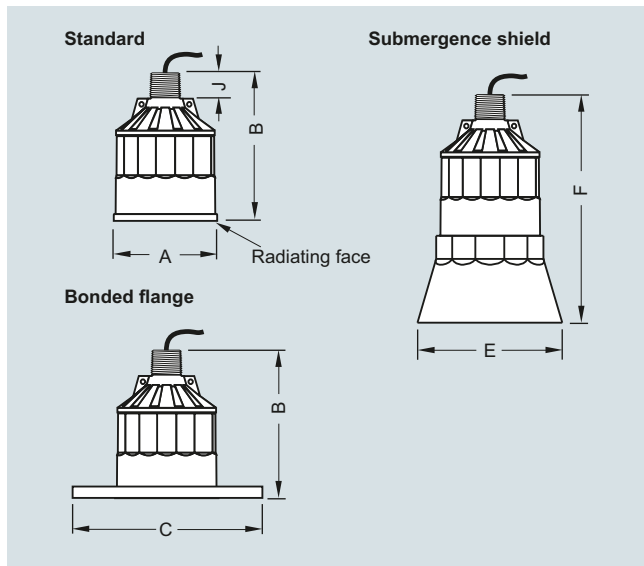


Level Measurement

Continuous level measurement
Ultrasonic transducers

EchoMax XPS

Dimensional drawings

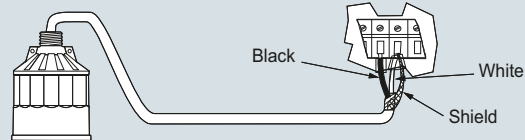


XPS ultrasonic transducer

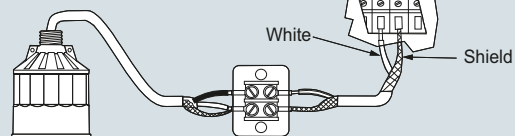
Version			
Dimension	XPS-10	XPS-15	XPS-30
A	88 mm (3.464 inch)	121 mm (4.764 inch)	175 mm (6.890 inch)
B	122 mm (4.803 inch)	132 mm (5.197 inch)	198 mm (7.795 inch)
C	According to ASME, DIN, and JIS		
E	124 mm (4.882 inch)	158 mm (6.220 inch)	n/a
F	152 mm (5.984 inch)	198 mm (7.795 inch)	n/a
J	28 mm (1.1 inch)	28 mm (1.1 inch)	28 mm (1.1 inch)

Circuit diagrams

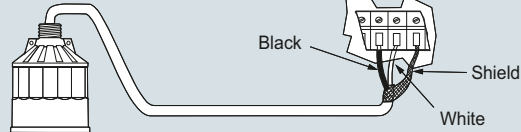
Direct connection



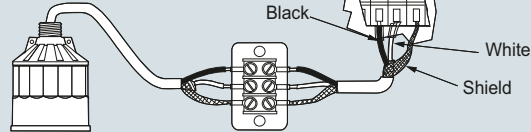
Coaxial connection



3 terminal direct*



3 terminal extension*



* For SITRANS LUT400, 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, an 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 ultrasonic transducer connections