

Datasheet

ECHOMAX XPS-10 ULTRASONIC TRANSDUCER



Supplied by

247cable.com

Call us on +44 (0)118 916 9420 | Email info@247able.com

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.

Level Measurement

Continuous level measurement - Ultrasonic transducers

EchoMax XPS

Technical specifications



Input	XPS-10	XPS-15 (standard and F models)	XPS-30
Measuring range	0.3 ... 10 m (1 ... 33 ft)	Standard: 0.3 ... 15 m (1 ... 50 ft) XPS-15F: 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)	Standard: -40 ... +95 °C (-40 ... +203 °F) XPS-15F: -20 ... +95 °C (-4 ... +203 °F)	-40 ... +95 °C (-40 ... +203 °F)
Pollution degree	4		
Pressure	8 bar g (120 psi g) Flanged: 0.5 bar g (7.25 psi g)	8 bar g (120 psi g) Flanged: 0.5 bar g (7.25 psi g)	0.5 bar g (7.25 psi g) Flanged: 0.5 bar g (7.25 psi g)
Design			
Weight	0.8 kg (1.8 lb)	1.3 kg (2.8 lb) Flanged: 2 kg (4.4 lb)	4.3 kg (9.5 lb)
Power supply	Operation of transducer only with approved Siemens controllers		
Material	Standard: PVDF Flanged: PVDF with CPVC flange Option: PTFE face with CPVC flange	Standard: PVDF Flanged: PVDF with CPVC flange Option: PTFE face with CPVC flange	Standard: PVDF Flanged: PVDF with CPVC flange Option: PTFE face with CPVC flange
Color	Blue	Standard: Blue XPS-15F: Gray	Blue
Process connection	1" NPT or 1" BSPT	Standard: 1" NPT or 1" BSPT XPS-15F: 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 mm² (20 AWG) PVC jacket		
Separation	Max. 365 m (1 200 ft)		
Certificates and approvals	Standard: CE, CSA, FM, ATEX, IECEx	Standard: CE, CSA, FM, ATEX, IECEx XPS-15F: 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

Selection and Ordering data		Article No.	Selection and Ordering data		Order code
EchoMax XPS-10 ultrasonic transducer		7ML115-	Further designs		
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			Please add "-Z" to Article No. and specify Order code(s).		
↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.			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			Operating Instructions		Article No.
1" NPT [(Taper), ANSI/ASME B1.20.1]		0	Quick Start guide, multi-language		A5E32282889
1" NPT [(Taper), ANSI/ASME B1.20.1] with foam facing ¹⁾		1	Applications Guidelines, multi-language		7ML1998-5HV61
1" NPT [(Taper), ANSI/ASME B1.20.1] with PTFE facing ²⁾		2	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		
R 1" [(BSPT), EN 10226]		3	This device is shipped with the Siemens Level and Weighing manual DVD containing the ATEX Quick Start and Operating Instructions library.		
R 1" [(BSPT), EN 10226] with foam facing ¹⁾		4	Accessories		
R 1" [(BSPT), EN 10226] with PTFE facing ²⁾		5	Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77 inch), one text line for fastening on sensors		7ML1930-1BJ
Cable length			Submergence shield kit		7ML1830-1BH
5 m (16.40 ft)		B	Easy Aimer 2, aluminum, NPT with ¾" x 1" PVC coupling		7ML1830-1AQ
10 m (32.81 ft)		C	Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings		7ML1830-1AX
30 m (98.43 ft)		E	Easy Aimer 304, NPT with 1" stainless steel coupling		7ML1830-1AU
50 m (164.04 ft)		F	Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 stainless steel couplings		7ML1830-1GN
100 m (328.08 ft)		K	Universal box bracket, mounting kit		7ML1830-1BK
Mounting flange			Channel bracket, wall mount		7ML1830-1BL
None		A	Extended channel bracket, wall mount		7ML1830-1BM
3" ASME, 150 lb, flat faced		C	Channel bracket, floor mount		7ML1830-1BN
4" ASME, 150 lb, flat faced		D	Extended channel bracket, floor mount		7ML1830-1BP
6" ASME, 150 lb, flat faced		E	Bridge channel bracket, floor mount (see Mounting Brackets on page 4/190 for more information)		7ML1830-1BQ
8" ASME, 150 lb, flat faced		F	1" NPT locknut, plastic		7ML1830-1DS
DN 80, PN 10/16, Type A, flat faced		G	1" BSPT locknut, plastic		7ML1830-1DR
DN 100, PN 10/16, Type A, flat faced		J			
DN 150, PN 10/16, Type A, flat faced		L			
JIS10K3B Style		M			
JIS10K4B Style		P			
JIS10K6B Style		R			
(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.)					
Approvals					
ATEX 2GD Ex mb IIC T4 Gb, Ex tb IIIC T135 °C Db; 		3			
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⁾		4			

¹⁾ Not available with flanged versions

²⁾ Available with flanged versions only

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

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

Level Measurement

Continuous level measurement - Ultrasonic transducers

EchoMax XPS

Selection and Ordering data		Article No.	Selection and Ordering data		Order code
EchoMax XPS-15 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. 15 m		7ML1118-	Further designs Please add "-Z" to Article No. and specify Order code(s).		
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		0	Stainless steel tag [69 x 50 mm (2.71 x 1.97 inch)]:		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 Quick Start guide, multi-language Applications Guidelines, 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 This device is shipped with the Siemens Level and Weighing manual DVD containing the ATEX Quick Start and Operating Instructions library.		Article No. A5E32282889 7ML1998-5HV61
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 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 4/190 for more information) 1" NPT locknut, plastic 1" BSPT locknut, plastic 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		7ML1930-1BJ 7ML1830-1BJ 7ML1830-1BK 7ML1830-1BL 7ML1830-1BM 7ML1830-1BN 7ML1830-1BP 7ML1830-1BQ 7ML1830-1DS 7ML1830-1DR 7ML1830-1AQ 7ML1830-1AX 7ML1830-1AU 7ML1830-1GN
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 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) Available with mounting options 0 ... 2 only					
We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 9/5 in the appendix.			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	Article No.
EchoMax XPS-15F 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. 15 m Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	7ML1171-
Mounting thread and facing	
1" NPT [(Taper), ANSI/ASME B1.20.1]	1
Cable length	
5 m (16.40 ft)	B
10 m (32.81 ft)	C
30 m (98.43 ft)	D
50 m (164.04 ft)	E
100 m (328.08 ft)	F
Mounting flange, flush mount	
None	A
6" ASME, 150 lb, flat faced	B
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.)	C
Approvals	1
FM Class I, Div. 1, Groups A, B, C, and D, Class II Div. 1, Groups E, F, and G, Class III	


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 English Applications Guidelines, 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 This device is shipped with the Siemens Level and Weighing manual DVD containing the ATEX Quick Start and Operating Instructions library.	Article No. A5E32725813 7ML1998-5HV61
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 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 4/190 for more information) 1" NPT locknut, plastic Easy Aimer 2, aluminum, NPT with 3/4" x 1" PVC coupling Easy Aimer 304, NPT with 1" stainless steel coupling	7ML1930-1BJ 7ML1830-1BJ 7ML1830-1BK 7ML1830-1BL 7ML1830-1BM 7ML1830-1BN 7ML1830-1BP 7ML1830-1BQ 7ML1830-1DS 7ML1830-1AQ 7ML1830-1AU

Selection and Ordering data	Article No.
EchoMax XPS-30 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. 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.	7ML1123-
Mounting thread and facing	
1½" universal thread	0
1½" universal thread, foam facing ¹⁾	1
1½" universal thread, PTFE facing ²⁾	2
Cable length	
5 m (16.40 ft)	B
10 m (32.81 ft)	C
30 m (98.43 ft)	E
50 m (164.04 ft)	F
100 m (328.08 ft)	K
Mounting flange	
None	A
6" ASME, 150 lb, flat faced	D
8" ASME, 150 lb, flat faced	E
DN 150, PN 10/16, Type A, flat faced	J
DN 200, PN 10, Type A, flat faced	K
JIS10K 6B	N
JIS10K 8B	P
(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.)	
Approvals	5
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	
¹⁾ Not available with flanged versions	
²⁾ Available with flanged versions only	

Level Measurement

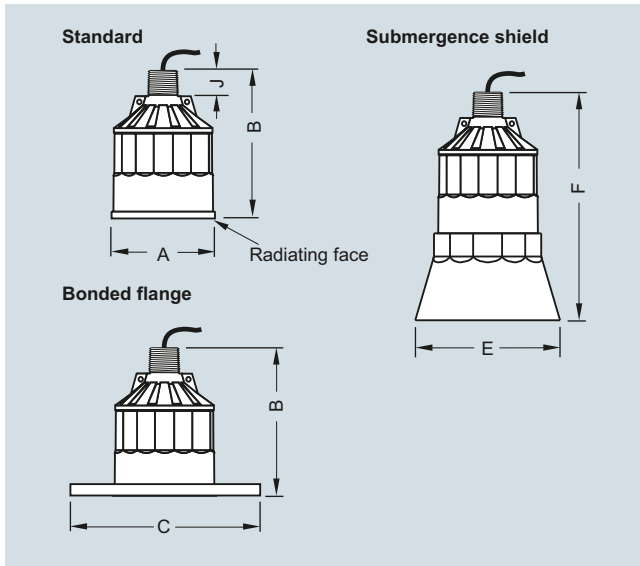
Continuous level measurement - Ultrasonic transducers

EchoMax XPS

Selection and Ordering data		Order code	Selection and Ordering data		Article No.
Further designs			EchoMax XPS-30C ultrasonic transducer		7ML1155-
Please add "-Z" to Article No. and specify Order code(s).			High-frequency ultrasonic transducer designed for a wide variety of liquid and solid applications, for use with approved controllers. Includes integral temperature sensor.		 1
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	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		Article No.	➤ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Quick Start guide, multi-language		A5E32282889	Mounting thread and facing		
Applications Guidelines, multi-language		7ML1998-5HV61	1½" universal thread		0
Note: The Operating Instructions should be ordered as a separate line item on the order.			1½" universal thread, foam facing ¹⁾		1
All literature is available to download for free, in a range of languages, at http://www.siemens.com/processinstrumentation/documentation			1½" universal thread, PTFE facing ²⁾		2
This device is shipped with the Siemens Level and Weighing manual DVD containing the ATEX Quick Start and Operating Instructions library.			Cable length		
Accessories			5 m (16.40 ft)		B
Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77 inch), one text line for fastening on sensors		7ML1930-1BJ	10 m (32.81 ft)		C
1½" BSPT locknut, plastic		7ML1830-1DP	30 m (98.43 ft)		E
Easy Aimer 2, aluminum, NPT with 1½" galvanized coupling		7ML1830-1AN	50 m (164.04 ft)		F
Easy Aimer 304, NPT with 1½" stainless steel coupling		7ML1830-1AT	100 m (328.08 ft)		K
Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings		7ML1830-1AX	Mounting flange		
Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 stainless steel couplings		7ML1830-1GN	None		A
			6" ASME, 150 lb, flat faced		D
			8" ASME, 150 lb, flat faced		E
			DN 150, PN 10/16, Type A, flat faced		J
			DN 200, PN 10, Type A, flat faced		K
			JIS10K 6B		N
			JIS10K 8B		P
			(Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.)		
			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).		
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	Operating Instructions		Article No.
Operating Instructions			Quick Start guide, multi-language		A5E32282889
			Applications Guidelines, multi-language		7ML1998-5HV61
			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		
			This device is shipped with the Siemens Level and Weighing manual DVD containing the ATEX Quick Start and Operating Instructions library.		
Accessories			Easy Aimer 2, aluminum, NPT with 1½" galvanized coupling		7ML1830-1AN
			Easy Aimer 304, NPT with 1½" stainless steel coupling		7ML1830-1AT
			1½" BSPT locknut, plastic		7ML1830-1DP

¹⁾ Not available with flanged version
²⁾ Available for flanged versions only

Dimensional drawings

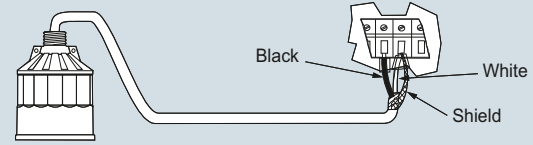


XPS ultrasonic transducer

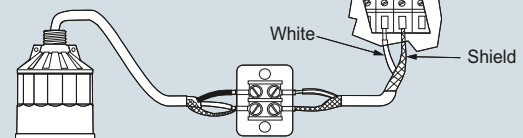
Version			
Dimension	XPS-10	XPS-15	XPS-30
A	88 mm (3.464 inch)	121 mm (4.764 inch)	175 mm (6.890 inch)
B	122 mm (4.803 inch)	132 mm (5.197 inch)	198 mm (7.795 inch)
C	According to ASME, DIN, and JIS		
E	124 mm (4.882 inch)	158 mm (6.220 inch)	n/a
F	152 mm (5.984 inch)	198 mm (7.795 inch)	n/a
J	28 mm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

Schematics

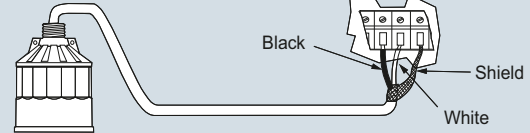
Direct connection



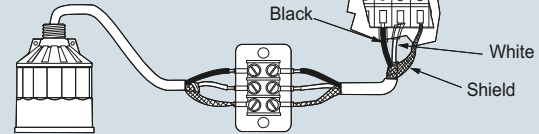
Coaxial connection



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