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

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 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.

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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) Flanged: 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)	XPS-15F: -20 ... +95 °C (-4 ... +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 Milltronics 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[1], CSA, FM, ATEX II 2GD	Standard: CE[1], CSA, FM, ATEX II 2GD 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[1], CSA, FM, ATEX II 2G 1D

[1] EMC certificate available on request.

Selection and Ordering data		Article No.
EchoMax XPS-10 ultrasonic transducer		7ML1115-
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		■■■■ 0
Mounting thread and facing		
1" NPT [(Taper), ANSI/ASME B1.20.1]	⬠	0
1" NPT [(Taper), ANSI/ASME B1.20.1] with foam facing[1]		1
1" NPT [(Taper), ANSI/ASME B1.20.1] with PTFE facing[2]		2
R 1" [(BSPT), EN 10226]	⬠	3
R 1" [(BSPT), EN 10226] with foam facing[1]		4
R 1" [(BSPT), EN 10226] with PTFE facing[2]		5
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
3" ASME, 150 lb, flat faced		C
4" ASME, 150 lb, flat faced		D
6" ASME, 150 lb, flat faced		E
8" ASME, 150 lb, flat faced		F
DN 80, PN 10/16, Type A, flat faced		G
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 (Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.)		R
Approvals		
ATEX II 2 GD, FM Class I Div. 2, SAA Class I Zone 1	⬠	3
CSA Class I Div. 1[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.

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	Article No.
Quick Start guide, multi-language	**A5E32282889**
Applications Guidelines, multi-language Note: The Applications Guidelines should be ordered as a separate line item on the order.	**7ML1998-5HV61**
This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and Operating Instructions library.	
Accessories	
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	**7ML1830-1BH**
Easy Aimer 2, with ¾" x 1" NPT PVC coupling	**7ML1830-1AQ**
Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings	**7ML1830-1AX**
Easy Aimer 304, with stainless steel coupling	**7ML1830-1AU**
Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 stainless steel couplings	**7ML1830-1GN**
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 4/188 for more information)	**7ML1830-1BQ**
1" NPT locknut, plastic	**7ML1830-1DS**
1" BSPT locknut, plastic	**7ML1830-1DR**

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Level Measurement
Continuous level measurement – Ultrasonic transducers

EchoMax XPS

Selection and Ordering data		Article No.
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-** ▪▪▪▪0
Mounting thread and facing		
1" NPT [(Taper), ANSI/ASME B1.20.1]	⬟	0
1" NPT [(Taper), ANSI/ASME B1.20.1] with foam facing[1]		1
1" NPT [(Taper), ANSI/ASME B1.20.1] with PTFE facing[2]		2
R 1" [(BSPT), EN 10226]	⬟	3
R 1" [(BSPT), EN 10226] with foam facing[1]		4
R 1" [(BSPT), EN 10226] with PTFE facing[2]		5
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		
ATEX II 2GD, FM Class I Div. 2, SAA Class I	⬟	3
CSA Class I Div. 1[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.

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	Article No.
Quick Start guide, multi-language	**A5E32282889**
Applications Guidelines, multi-language Note: The Applications Guidelines should be ordered as a separate line item on the order.	**7ML1998-5HV61**
This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and Operating Instructions library.	
Accessories	
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 4/188 for more information)	**7ML1830-1BQ**
1" NPT locknut, plastic	**7ML1830-1DS**
1" BSPT locknut, plastic	**7ML1830-1DR**
Easy Aimer 2, with ¾" x 1" NPT PVC coupling	**7ML1830-1AQ**
Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings	**7ML1830-1AX**
Easy Aimer 304 with stainless steel coupling	**7ML1830-1AU**
Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 stainless steel couplings	**7ML1830-1GN**
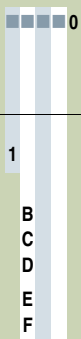
⬟ We can offer shorter delivery times for configurations designated with the Quick Ship Symbol ⬟. For details see page 9/5 in the appendix.

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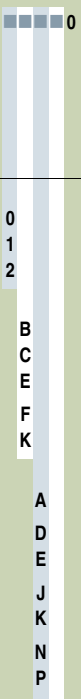
Selection and Ordering data	Article No.
EchoMax XPS-15F ultrasonic transducer High-frequency ultrasonic transducer designed for a wide variety of liquid and solid applications, for use with approved controllers. Includes integral temperature sensor. Measuring range: min. 0.3 m, max. 15 m	**7ML1171-** ■■■■0
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	C
(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	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	Article No.
Quick Start guide, multi-language	**7ML1998-1DU01**
Applications Guidelines, multi-language Note: The Applications Guidelines should be ordered as a separate line item on the order.	**7ML1998-5HV61**
This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and Operating Instructions library.	
Accessories	
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 for more information)	**7ML1830-1BQ**
1" NPT locknut, plastic	**7ML1830-1DS**
Easy Aimer 2, with ¾" x 1" NPT PVC coupling	**7ML1830-1AQ**
Easy Aimer 304 with stainless steel coupling	**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)	**7ML1123 -** ■■■■0
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	
ATEX II 2G 1D, FM Class I Div 2, SAA	5

[1] Not available with flanged versions

[2] Available with flanged versions only

EchoMax XPS

| Selection and Ordering data	Order code
Further designs	
Please add "**-Z**" to Article 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 inch)]: measuring-point number/identification (max. 27 characters) specify in plain text	**Y15**
Operating Instructions	Article No.
Quick Start guide, multi-language	**A5E32282889**
Applications Guidelines, multi-language Note: The Applications Guidelines should be ordered as a separate line item on the order.	**7ML1998-5HV61**
This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and Operating Instructions library.	
Accessories	
Tag, stainless steel with hole, 12 x 45 mm (0.47 x 1.77 inch), one text line for fastening on sensors	**7ML1930-1BJ**
1½" BSPT locknut, plastic	**7ML1830-1DP**
Easy Aimer 2, 1½" NPT galvanized coupling	**7ML1830-1AN**
Easy Aimer 304, NPT with 1½" coupling	**7ML1830-1AT**
Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings	**7ML1830-1AX**
Easy Aimer 304, with M20 adapter and 1" and 1½" BSPT 304 stainless steel couplings	**7ML1830-1GN**

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■ Dimensional drawings

Standard

Bonded flange

Submergence shield

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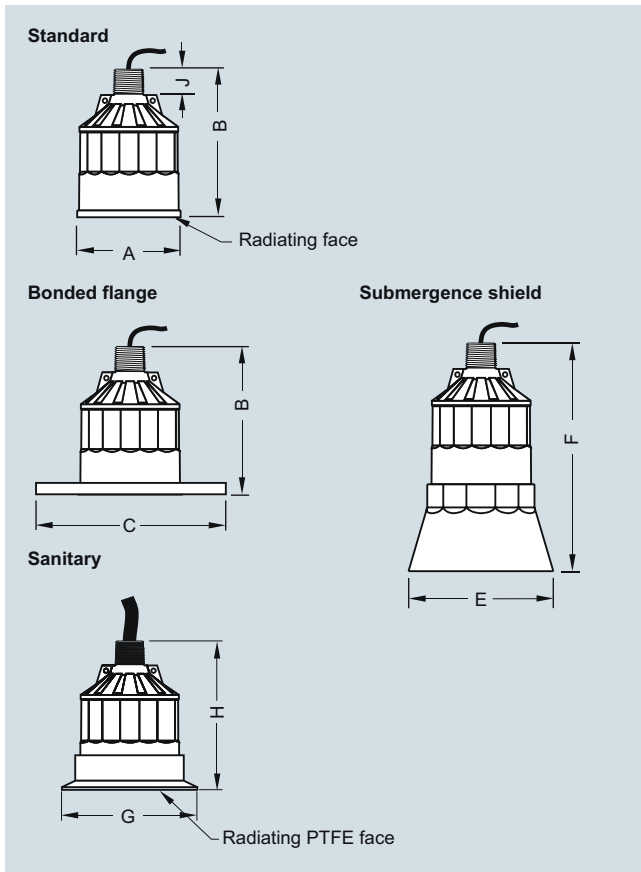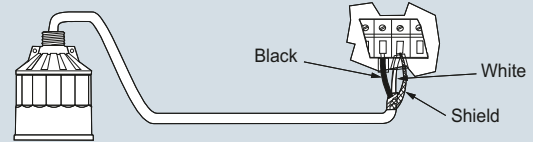
XPS ultrasonic transducer, dimensions in mm (inch)
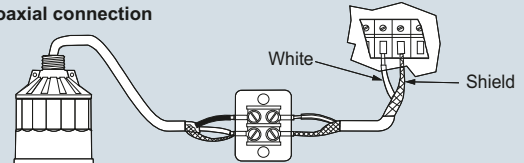
Version			
Dimension	**XPS-10**	**XPS-15**	**XPS-30**
A	88 mm (3.464 inch)	121 mm (4.764 inch)	175 mm (6.890 inch)
B	122 mm (4.803 inch)	132 mm (5.197 inch)	198 mm (7.795 inch)
C	According to ASME, DIN and JIS		
E	124 mm (4.882 inch)	158 mm (6.220 inch)	n/a
F	152 mm (5.984 inch)	198 mm (7.795 inch)	n/a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

■ Schematics

Direct connection

Black · White · Shield

Coaxial connection

White · Shield

3 terminal direct*

Black · Shield · White
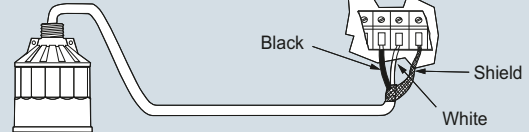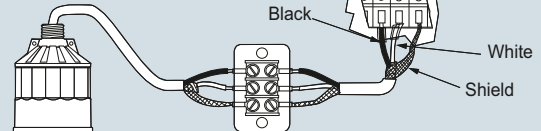
3 terminal extension*

Black · White · Shield

* 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 alications, 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 ultrasonic transducer connections

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