Level Measurement
Continuous level measurement – Ultrasonic transducers

EchoMax XRS-5

Overview

EchoMax XRS-5 ultrasonic transducer provides reliable, continuous level monitoring of liquids and slurries in narrow lift stations/wet wells, flumes, weirs and filter beds using a beam angle of just 10° and a CSM rubber face.

Benefits

- Narrow beam angle of only 10°
- Chemically resistant PVDF copolymer enclosure and CSM rubber face
- Measuring range: 8 m (26 ft) for measurement of liquids and slurries
- Fully submersible: IP68 degree of protection
- Easy installation with 1" NPT or R 1" BSPT connection

Application

The XRS-5 is non-contacting with a measuring range from 0.3 ... 8 m (1 ... 26 ft). Advanced echo processing ensures reliable data even in conditions with obstructions, turbulence and foam.

The hermetically sealed CSM rubber face and the PVDF copolymer enclosure are designed for maximum resistance to methane, salt water, caustics and harsh chemicals common to wastewater installations. With an IP68 degree of protection, this rugged sensor is fully submersible in the event of flood conditions. Use a submergence shield if full submergence is possible in the application. A submergence shield will maintain a high level reading output during submerged conditions.

The low-cost XRS-5 transducer is compatible with a full range of Siemens controllers, from a basic system for high/low alarm or simple pump control, up to advanced control systems with communications, telemetry and SCADA integration capabilities.

- Key Applications: wet wells, flumes, weirs, filter beds

Technical specifications

Mode of operation	
Measuring principle	Ultrasonic transducer
Input	
Measuring range	0.3 ... 8 m (1 ... 26 ft), dependent on application
Output	
Frequency	44 kHz
Beam angle	10°
Accuracy	
Temperature error	Compensated by integral temperature sensor
Rated operating conditions	
Vessel pressure	Normal atmospheric pressure
Ambient conditions	
• Ambient temperature	-20 ... +65 °C (-4 ... +149 °F)
Design	
Weight (approximate shipping weight of sensor with standard cable length)	1.2 kg (2.6 lb)
Material (enclosure)	PVDF copolymer enclosure and CSM face
Process connection	1" NPT [(Taper), ANSI/ASME B1.20.1] or R 1" [(BSPT), EN 10226]
Degree of protection	IP65/IP68
Cable connection	2-core shielded/twisted, 0.5 mm^2 (20 AWG), PVC sheath
Cable (max. length)	• 365 m (1 200 ft) with RG 62 A/U coaxial cable • 365 m (1 200 ft) with 2-core twisted pair, foil shield, 0.5 mm^2 (20 AWG), PVC sheath, only for MultiRanger 100/200
Options	
Flange version	Factory flange with PTFE face for ASME, EN or JIS configuration
Submergence shield	For applications with flooding possible
Certificates and approvals	CE, CSA Class I Div. 2, FM Class I, ATEX II 2G, SAA Ex s Class I

Selection and Ordering data		Article No.
EchoMax XRS-5 transducer		**7ML1106-**
With a beam angle of 10°, the XRS-5 provides reliable, continuous level monitoring of liquids and slurries in narrow lift stations/wet wells, flumes, weirs and filter beds. Measuring range: min. 0.3 m (1 ft), max. 8 m (26 ft)		■■■■■0 - 0■
Process connection		
1" NPT [(Taper), ANSI/ASME B1.20.1]	⬠	1
R 1" [(BSPT), EN 10226]	⬠	2
Cable length		
5 m (16.40 ft)	⬠	A
10 m (32.81 ft)	⬠	B
30 m (98.43 ft)		C
Facing		
Standard (CSM rubber)	⬠	A
PTFE (flange versions)		B
Approvals		
CE, FM Class I, ATEX II 2G, CSA Class I Div. 2, SAA Class I	⬠	2
Mounting flange (flush mount)		
None	⬠	A
3" ASME, 150 lb, flat faced		B
4" ASME, 150 lb, flat faced		C
6" ASME, 150 lb, flat faced		D
DN 80, PN 10/16, Type A, flat faced		J
DN 100, PN 10/16, Type A, flat faced		K
DN 150, PN 10/16, Type A, flat faced		L
JIS10K 3B style		Q
JIS10K 4B style		R
JIS10K 6B style		S
Note: Flange bolting patterns and facings dimensionally correspond to the applicable ASME B16.5 or EN 1092-1, or JIS B 2220 standard.		

Operating Instructions	Article No.
Quick Start Manual, multi-language	**A5E32299685**
Applications Guidelines, multi-language	**7ML1998-5HV61**
Note: The Applications Guidelines should be ordered as a separate line item on the order.	
This device is shipped with the Siemens Milltronics manual DVD containing the ATEX Quick Start and Operating Instructions library.	

⬠ 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).	
Acrylic coated, stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]: Measuring-point number/identification (max. 16 characters) specify in plain text	⬠ **Y17**

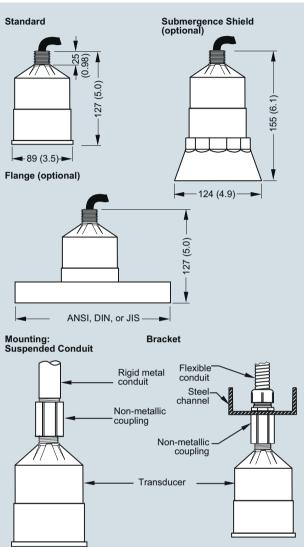| *Accessories*	Article No.
Tag, stainless steel with hole, 12 x 45 mm, for fastening on	**7ML1930-1BJ**
Submergence shield kit	**7ML1830-1BH**
Easy Aimer 2, NPT with ¾" x 1" PVC coupling	**7ML1830-1AQ**
Easy Aimer 2, aluminum with M20 adapter and 1" and 1½" BSPT aluminum couplings	**7ML1830-1AX**
Easy 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**
FMS-200 universal box bracket, mounting kit	**7ML1830-1BK**
FMS-210 channel bracket, wall mount	**7ML1830-1BL**
FMS-220 extended channel bracket, wall mount	**7ML1830-1BM**
FMS-310 channel bracket, floor mount	**7ML1830-1BN**
FMS-320 extended channel bracket, floor mount	**7ML1830-1BP**
FMS-350 bridge channel bracket, floor mount (see Mounting Brackets on page 4/337 for more information)	**7ML1830-1BQ**
1" NPT locknut, plastic	**7ML1830-1DS**
1" BSPT locknut, plastic	**7ML1830-1DR**

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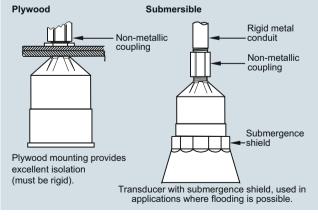
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■ **Dimensional drawings**

Standard

25
(0.98)
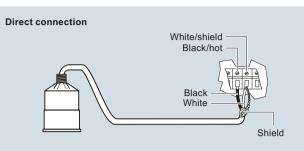
127 (5.0)

◄ 89 (3.5) ►

Flange (optional)

127 (5.0)

◄ ANSI, DIN, or JIS ►

**Submergence Shield
(optional)**

155 (6.1)

◄ 124 (4.9) ►

**Mounting:
Suspended Conduit**

Rigid metal
conduit

Non-metallic
coupling

Transducer

Bracket

Flexible
conduit

Steel
channel

Non-metallic
coupling

Flexible conduit transducer should not be
subjected to wind, vibration or jarring.

Plywood

Non-metallic
coupling

Plywood mounting provides
excellent isolation
(must be rigid).

Submersible

Rigid metal
conduit

Non-metallic
coupling

Submergence
shield

Transducer with submergence shield, used in
applications where flooding is possible.

XRS-5 ultrasonic transducer, dimensions in mm (inch)

■ **Schematics**

Direct connection

White/shield
Black/hot

Black
White

Shield

Coaxial extension

Junction box

Extend cable using RG-62 A/U coax.

3 terminal direct*

Black
White

Shield

3 terminal extension*

Black
White

Shield

* For SITRANS LUT400, MultiRanger 100/200, HydroRanger 200

XRS-5 ultrasonic transducer connections

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