

## 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 to 8 m (1 to 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

<b>Mode of operation</b>	
Measuring principle	Ultrasonic transducer
<b>Input</b>	
Measuring range	0.3 ... 8 m (1 ... 26 ft), dependent on application
<b>Output</b>	
Frequency	44 kHz
Beam angle	10°
<b>Accuracy</b>	
Temperature error	Compensated by integral temperature sensor
<b>Rated operating conditions</b>	
Vessel pressure	Normal atmospheric pressure
Ambient Conditions	
• Ambient temperature	-20 ... +65 °C (-4 ... +149 ° F)
<b>Design</b>	
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 <sup>2</sup> (20 AWG), PVC sheath
Cable (max. length)	<ul style="list-style-type: none"> <li>• 365 m (1 200 ft) with RG 62 A/U coaxial cable</li> <li>• 365 m (1 200 ft) with 2-core twisted pair, foil shield, 0.5 mm<sup>2</sup> (20 AWG), PVC sheath, only for MultiRanger 100/200</li> </ul>
<b>Options</b>	
Flange version	Factory flange with PTFE face for ASME, EN or JIS configuration
Submergence shield	For applications with flooding possible
<b>Certificates and approvals</b>	
CE, RCM, KCC	
CSA Class I, Div. 2, Groups A, B, C, D, Class II, Div. 1 Groups E, F, G	
FM Class I, Zone 1, AEx m IIC, T6 Class II, III, Div. 1, Groups E, F, G T6	
ATEX II 2GD / IECEx / INMETRO Ex mb IIC T6 Gb, Ex tb IIIC T85 °C Db	

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### Ultrasonic transducers

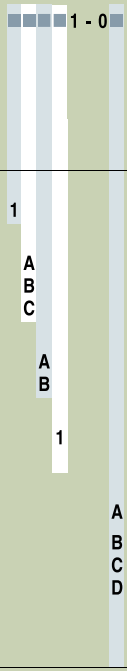
EchoMax XRS-5

Selection and Ordering data	Article No.	Selection and Ordering data	Order code
<b>EchoMax XRS-5 transducer</b> 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) ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	↗ <b>7ML1106-</b> 0 - 0	<b>Further designs</b> 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	<b>Y17</b>
<b>Process connection</b> 1" NPT [(Taper), ANSI/ASME B1.20.1] R 1" [(BSPT), EN 10226]	1 2	<b>Accessories</b> 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  FMS-200 universal box bracket, mounting kit  FMS-210 channel bracket, wall mount  FMS-220 extended channel bracket, wall mount  FMS-310 channel bracket, floor mount  FMS-320 extended channel bracket, floor mount  FMS-350 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	Article No. <b>7ML1930-1BJ</b>  <b>7ML1830-1BH</b> <b>7ML1830-1AQ</b> <b>7ML1830-1AX</b> <b>7ML1830-1AU</b> <b>7ML1830-1GN</b> <b>7ML1830-1BK</b> <b>7ML1830-1BL</b> <b>7ML1830-1BM</b> <b>7ML1830-1BN</b> <b>7ML1830-1BP</b> <b>7ML1830-1BQ</b>  <b>7ML1830-1DS</b> <b>7ML1830-1DR</b> <b>7ML1830-1EA</b> <b>7ML1930-1FX</b> <b>7ML1830-1EF</b>
<b>Cable length</b> 5 m (16.40 ft) 10 m (32.81 ft) 30 m (98.43 ft)	A B C		
<b>Facing</b> Standard (CSM rubber) PTFE (flange versions)	A B		
<b>Approvals</b> CE, RCM, KCC, CSA Class I, Div. 2, Groups A, B, C, D, Class II, Div. 1, Groups E, F, G FM Class I, Zone 1, AEx m IIC, T6 Class II, III, Div. 1, Groups E, F, G T6 ATEX II 2GD / IECEx / INMETRO Ex mb IIC T6 Gb, Ex tb IIIC T85 °C Db	2		
<b>Mounting flange (flush mount)</b> 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 style JIS10K 4B style JIS10K 6B 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 B C D J K L Q R S		
<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>			

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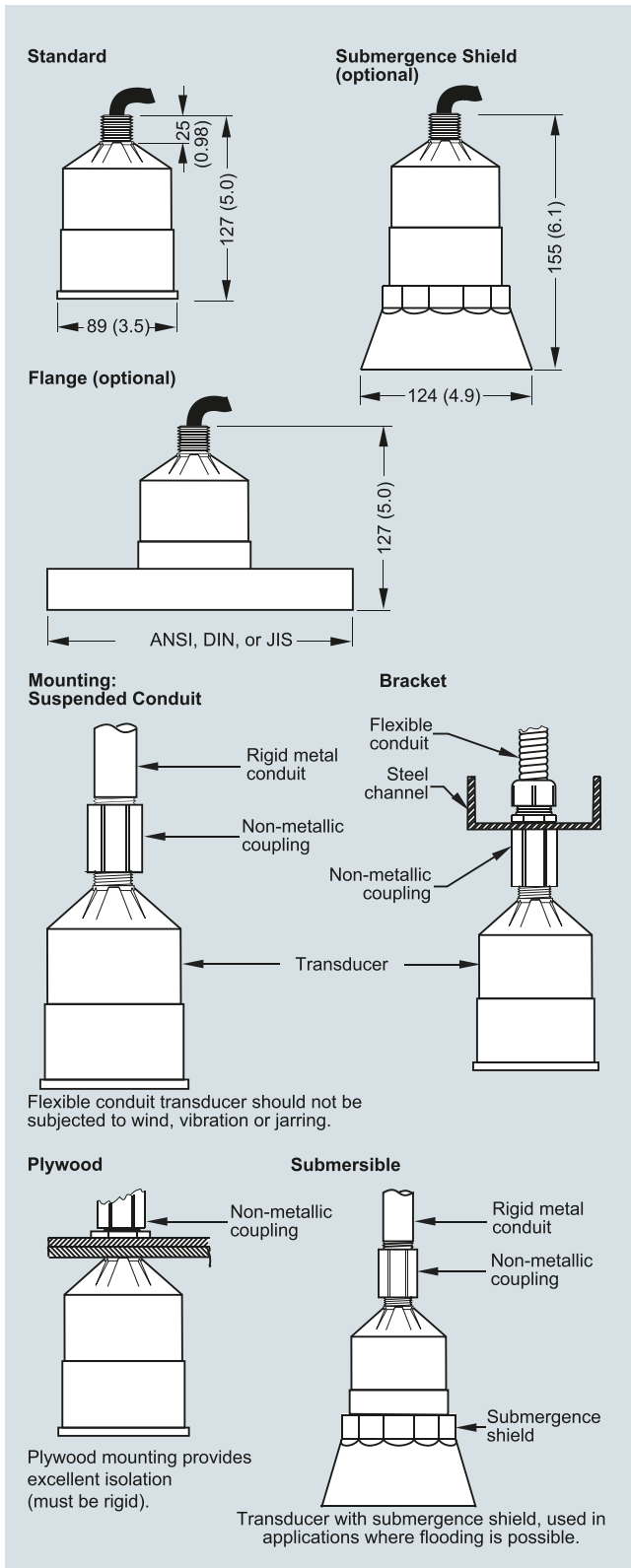
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### EchoMax XRS-5

Selection and Ordering data	Article No.
<b>EchoMax XRS-5C transducer</b> 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) ↗ Click on the Article No. for the online configuration in the PIA Life Cycle Portal.	↗ <b>7ML1105-</b> 
<b>Process connection</b> 1" NPT [(Taper), ANSI/ASME B1.20.1]	1
<b>Cable length</b> 5 m (16.40 ft) 10 m (32.81 ft) 30 m (98.43 ft)	A B C
<b>Facing</b> Standard (CSM rubber) PTFE (flange versions)	A B
<b>Approvals</b> CSA Class I Div. 1, Groups A, B, C, D; Class II Div. 1, Groups E, F, G; Class III	1
<b>Mounting flange (flush mount)</b> None 3" ASME, 150 lb, flat faced 4" ASME, 150 lb, flat faced 6" 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 D
<b>Operating Instructions</b> All literature is available to download for free, in a range of languages, at <a href="http://www.siemens.com/processinstrumentation/documentation">http://www.siemens.com/processinstrumentation/documentation</a>	

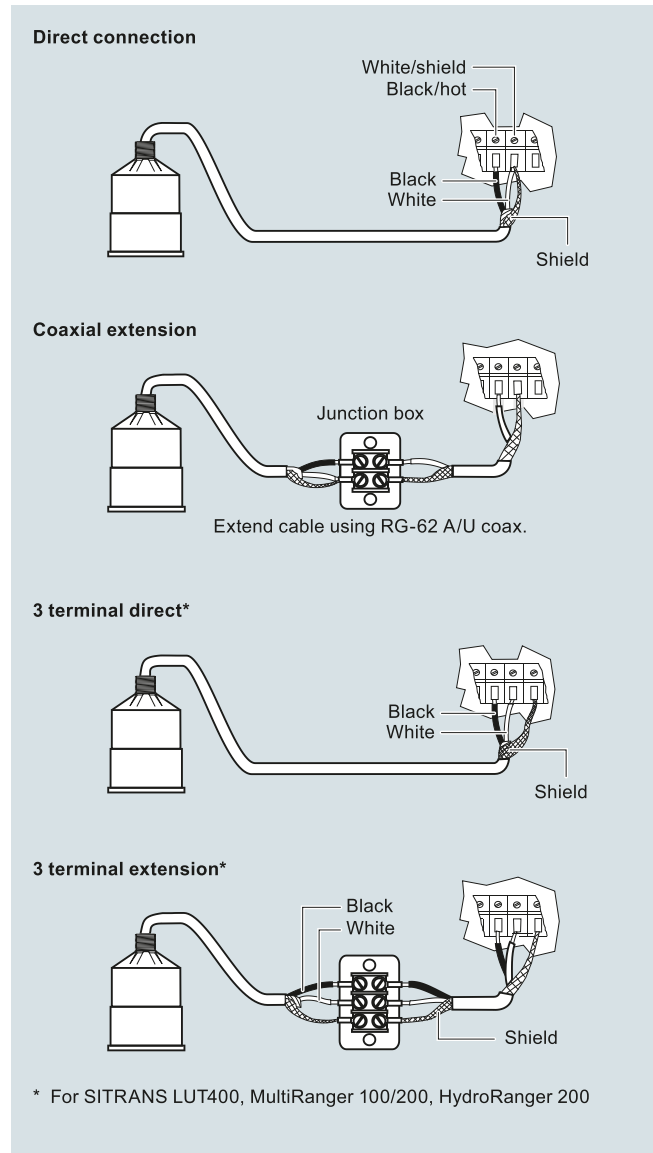
Selection and Ordering data	Order code
<b>Further designs</b> Please add "-Z" to Article No. and specify Order code(s).	
Acrylic coated, stainless steel tag [13 x 45 mm (0.5 x 1.75 inch)]: Measuring-point number/identification (max. 16 characters) specify in plain text	<b>Y17</b>
<b>Accessories</b>	Article No.
Submergence shield kit	<b>7ML1830-1BH</b>
Easy Aimer 2, aluminum, NPT with ¾" x 1" PVC coupling	<b>7ML1830-1AQ</b>
Easy Aimer 304, NPT with 1" stainless steel coupling	<b>7ML1830-1AU</b>
FMS-200 universal box bracket, mounting kit	<b>7ML1830-1BK</b>
FMS-210 channel bracket, wall mount	<b>7ML1830-1BL</b>
FMS-220 extended channel bracket, wall mount	<b>7ML1830-1BM</b>
FMS-310 channel bracket, floor mount	<b>7ML1830-1BN</b>
FMS-320 extended channel bracket, floor mount	<b>7ML1830-1BP</b>
FMS-350 bridge channel bracket, floor mount (see Mounting Brackets on page 4/193 for more information)	<b>7ML1830-1BQ</b>

**Dimensional drawings**



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

**Circuit diagrams**



XRS-5 ultrasonic transducer connections