

Level Measurement

Continuous level measurement - Ultrasonic transmitters

The Probe

Overview



The Probe is a short-range integrated ultrasonic level transmitter, ideal for liquids and slurries in open or closed vessels.

Benefits

- Easy to install, program, and maintain
- Accurate and reliable
- Sanitary models available
- Sonic Intelligence echo processing
- Integral temperature compensation

Application

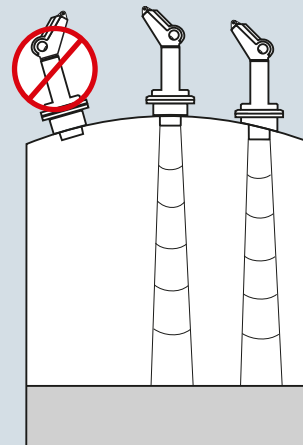
The transducer is available in PVDF copolymer, making the device suitable for use in a wide variety of applications. The Probe is easy to install and maintain, and can be quickly removed for cleaning as required by the food, beverage and pharmaceutical industries.

The reliability of the level data is based on the Sonic Intelligence echo processing algorithms. A filter discriminates between the true echo and false echoes from acoustic or electrical noises and agitator blades in motion. The ultrasonic pulse propagation time to the material and back is temperature-compensated and converted into distance for display, analog output and relay actuation.

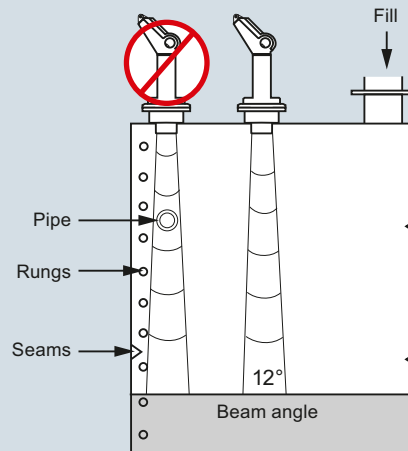
- Key Applications: chemical storage vessels, filter beds, mud pits, liquid storage vessels, food applications

Configuration

Parabolic mounting



Flat mounting and beam angle




The Probe mounting


Technical specifications

3-wire version	
Mode of operation	
Measuring principle	Ultrasonic level measurement
Input	
Measuring range	0.25 ... 5 m (0.8 ... 16.4 ft)
Frequency	54 kHz
Output	
mA	4 ... 20 mA
• Span	Proportional/inversely proportional
• Max. load	750 Ω at 24 V DC
Relay	For level alarm or fault
Power supply	
Supply voltage	18 ... 30 V DC, max. 0.2 A
Max. power consumption	5 W (200 mA at 24 V DC)
Certificates and approvals	
CE, RCM, CSA _{US/IC} , FM	
Accuracy	
Error in measurement	0.25 % of measuring range (in air)
Resolution	3 mm (0.125 inch)
Temperature compensation	Built in
Echo processing	Sonic Intelligence
Rated operation conditions	
Beam angle	12°
Ambient temperature	
• Standard	-40 ... +60 °C (-40 ... +140 °F)
• Metallic mounting	-20 ... +60 °C (-4 ... +140 °F)
Max. static operating pressure	Normal atmospheric pressure
Degree of protection	IP65
Design	
Weight	
• Without flange adapter	1.5 kg (3.3 lb)
• With flange adapter	1.7 kg (3.7 lb)
Material	
• Electronics enclosure	PVC
• Transducer	PVDF copolymer
Degree of protection	IP65
Process connection	<ul style="list-style-type: none"> • 2" NPT [(Taper), ANSI/ASME B1.20.1] • R 2" [(BSPT), EN 10226] • G 2" [(BSPP), EN ISO 228-1] • 4" sanitary
Flange adapter	3" Universal (fits DN 65, PN 10 and 3"ASME)
Cable inlet	2 inlets for PG 16 or ½" NPT cable glands

Selection and Ordering data

The Probe		Article No.
Short-range integrated ultrasonic level transmitter, ideal for liquids and slurries in open or closed vessels		7ML1201- 00
Click on the Article No. for the online configuration in the PIA Life Cycle Portal.		
Measuring range		
5 m (16.40 ft)		1
Transducer/Process connection		
PVDF copolymer, 2" NPT [(Taper), ANSI/ASME B1.20.1]		E
PVDF copolymer, R 2" [(BSPT), EN 10226]		F
PVDF copolymer, G 2" [(BSPP), EN ISO 228-1]		G
PVDF copolymer, 4" Sanitary mounting		J
Model/Approval		
3-wire, 24 V DC, CE, RCM, CSA, FM		E
<ul style="list-style-type: none"> • We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 10/1110/11 in the appendix. 		

Selection and Ordering data

Further designs		Order code
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. 20 characters) specify in plain text		Y17
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.
Universal Box Bracket Mounting kit		7ML1830-1BK
Sanitary 4" mounting clamp		7ML1830-1BR
3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" NPT		7ML1830-1BT
3" ASME, DN 65 PN 10, JIS 10K 3B ETFE Flange adapter for 2" BSPT		7ML1830-1BU
2" NPT locknut, plastic		7ML1830-1DT
2" BSPT locknut, plastic		7ML1830-1DQ
Plastic M20 cable gland with metal locknut		7ML1930-1DB
SITRANS RD100, loop powered display - see Chapter 7		7ML5741-...
SITRANS RD200, universal input display with Modbus conversion - see Chapter 7		7ML5740-...
SITRANS RD300, dual line display with totalizer and linearization curve and Modbus conversion - see Chapter 7		7ML5744-...
SITRANS RD500 web, universal remote monitoring solution for instrumentation - see Chapter 7		7ML5750-...
For applicable back up point level switch see point level measurement section.		
<ul style="list-style-type: none"> • We can offer shorter delivery times for configurations designated with the Quick Ship Symbol . For details see page 10/11 in the appendix. 		

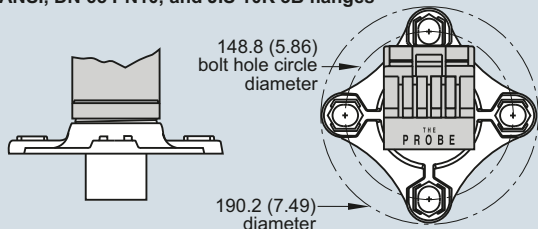
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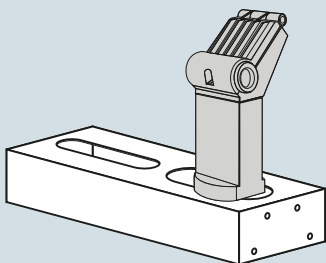
Options

Flange adapter for mating 2" NPT or 2" BSP process connections to 3" ANSI, DN 65 PN10, and JIS 10K 3B flanges



The Probe optional flange adapter, dimensions in mm (inch)

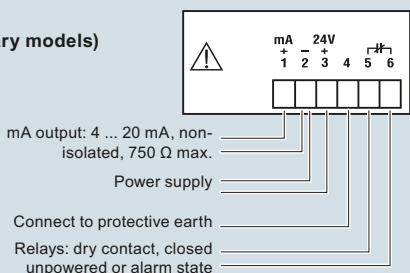
The Probe with FMS 200 mounting bracket



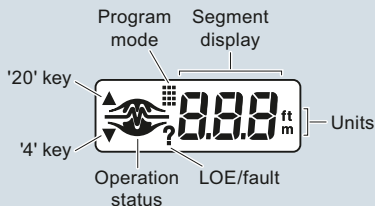
The Probe with optional mounting bracket

Schematics

3 wire model (standard and sanitary models)



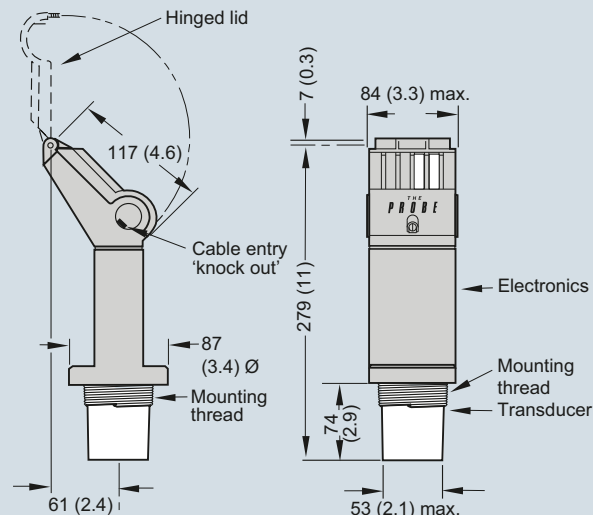
Display



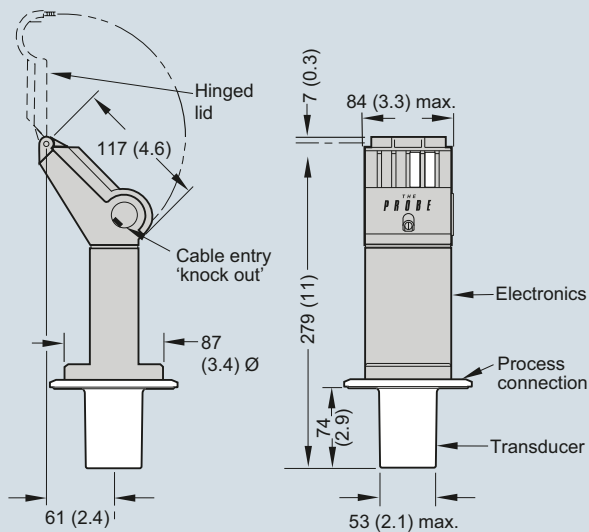
The Probe connections

Dimensional drawings

Standard model



Sanitary model



The Probe, dimensions in mm (inch)