



Level



Pressure



Flow



Temperature



Liquid
Analysis



Registration



Systems
Components



Services



Solutions

Technical Information

Waterpilot FMX167

Hydrostatic level measurement

Reliable and robust level probe with ceramic measuring cell

Compact device for level measurement in fresh water, wastewater and saltwater



Application

The Waterpilot FMX167 is a pressure sensor for hydrostatic level measurement.

Three versions of FMX167 are available at Endress+Hauser:

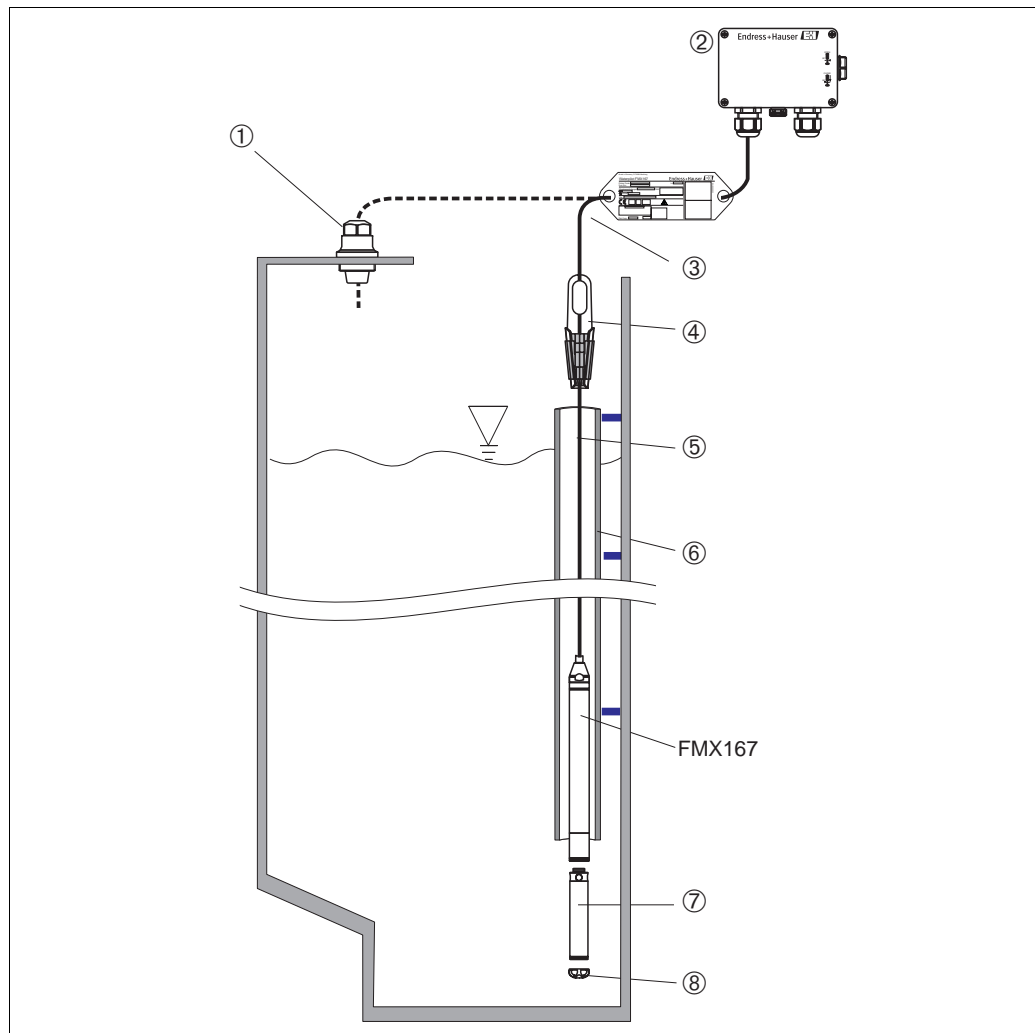
- FMX167 with a stainless steel housing, outer diameter of 22 mm (0.87 inch): Standard version suitable for drinking water applications and for use in bore holes and wells with small diameters
- FMX167 with a stainless steel housing, outer diameter of 42 mm (1.66 inch): Heavy duty version, easy clean flush-mounted process diaphragm. Ideally suited to wastewater and sewage treatment plants
- FMX167 with a coated housing, outer diameter of 29 mm (1.15 inch): Corrosion resistant version generally for use in saltwater, particularly for ship ballast water tanks.

Your benefits

- High mechanical resistance to overload and aggressive media
- High-precision, robust ceramic measuring cell with long-term stability
- Climate proofed sensor thanks to completely potted electronics and 2-filter pressure compensation system
- 4 to 20 mA output signal with integrated overvoltage protection
- Simultaneous measurement of level and temperature with optionally integrated Pt100 temperature sensor
- Drinking water approvals: KTW, NSF, ACS
- Approvals: ATEX, FM and CSA
- Marine certificate: GL, ABS
- Extensive range of accessories provides complete measuring point solutions

Installation conditions

Installation instructions



P01-FMX167/xx-11-xx-xx-xx-003

Installation examples, here shown with FMX167 with an outer diameter 22 mm

- 1 Extension cable mounting screw can be ordered via order code or as an accessory, → 21 ff
- 2 Terminal housing can be ordered using the order code or as an accessory → 21
- 3 Extension cable bending radius > 120 mm
- 4 Mounting clamp can be ordered via order code or as an accessory, → 21 ff
- 5 Extension cable, cable length → 18
- 6 Guide pipe
- 7 Additional weight can be ordered as an accessory with an outer diameter of 22 mm and 29 mm, → 22
- 8 Protection cap

Note!

- Sideways movement of the level probe can result in measuring errors. For this reason, install the probe at a point free from flow and turbulence, or use a guide tube. The internal diameter of the guide tube should be at least 1 mm larger than the outer diameter of the selected FMX167.
- The cable must end in a dry room or a suitable terminal box. The terminal box from Endress+Hauser provides optimum humidity and climatic protection and is suitable for outdoor installation.
- Protection cap: The device is provided with a protection cap to prevent mechanical damage to the measuring cell. This cap should not be removed during the transportation and installation process.
- Endress+Hauser recommends using twisted, shielded cables for any further wiring.

Environment

Ambient temperature range	FMX167 + Pt100 (optional) <ul style="list-style-type: none"> ■ FMX167 with outer diameter of 22 mm and 42 mm: -10 to +70 °C (= medium temperature) ■ FMX167 with outer diameter of 29 mm: 0 to +50 °C (= medium temperature) Terminal box -40 to +80 °C	TMT181 temperature head transmitter (optional) -40 to +85 °C
Storage temperature range	FMX167 + Pt100 (optional) -40 to +80 °C Terminal box -40 to +80 °C	TMT181 temperature head transmitter (optional) -40 to +100 °C
Degree of protection	FMX167 + Pt100 (optional) <ul style="list-style-type: none"> ■ IP 68, permanently hermetically sealed ■ Optional terminal box: IP 66/IP 67 	TMT181 temperature head transmitter (optional) <ul style="list-style-type: none"> ■ IP 00, moisture condensation permissible ■ When mounted in the optional terminal boxes: IP 66/IP67
Electromagnetic compatibility (EMC)	FMX167 + Pt100 (optional) <ul style="list-style-type: none"> ■ Interference emission to EN 61326 Class B equipment, interference immunity to EN 61326 Appendix A (Industrial) ■ Maximum deviation < 0.5 % of the span. 	TMT181 temperature head transmitter (optional) <ul style="list-style-type: none"> ■ Interference emission to EN 61326 Class B equipment, interference immunity to EN 61326 Appendix A (Industrial)
Overvoltage protection	FMX167 + Pt100 (optional) Integrated overvoltage protection to EN 61000-4-5 (500 V symmetrical/1000 asymmetrical) Install overvoltage protection ≥ 1.0 kV, external if necessary	TMT181 temperature head transmitter (optional) Install overvoltage protection, external if necessary.

Process conditions

Medium temperature range	FMX167 + Pt100 (optional) <ul style="list-style-type: none">■ FMX167 with outer diameter of 22 mm and 42 mm: -10 to +70 °C■ FMX167 with outer diameter of 29 mm: 0 to +50 °C	TMT181 temperature head transmitter (optional) <p>-40 to +85 °C (-40 to +185°F) (= ambient temperature), install temperature head transmitter outside medium.</p>
Medium temperature limits	FMX167 + Pt100 (optional) <ul style="list-style-type: none">■ FMX167 with outer diameter of 22 mm and 42 mm: -20 to +70 °C■ FMX167 with outer diameter of 29 mm: 0 to +50 °C <p>(You may operate the FMX167 in this temperature range. The specification can then be exceeded, e.g. measuring accuracy).</p>	

Ordering information

FMX167

You can enter the versions for the specific feature in the following table. The versions entered make up the complete order code. Options which are mutually exclusive are not marked.

10	Approval			
	A	Non-hazardous area		
	B	ATEX II 2 G EEx ia IIC T6		
	C	ATEX II 3 G EEx nA II T6		
	D	FM IS, Class I, Division 1, Groups A – D		
	E	CSA IS, Class I, Division 1, Groups A – D		
	F	CSA General Purpose		
20	Connection			
	1	Probe cable		
	2	Mounting clamp, AISI 316L		
	3	Cable mounting screw G1-1/2, AISI 304		
	4	Cable mounting screw NPT 1-1/2, AISI 304		
30	Probe tube:			
	A	Outer diameter d = 22 mm, AISI 316L		
	B	Outer diameter d = 42 mm, flush-mounted, AISI 316L		
	C	Outer diameter d = 29 mm (1.15 in), AISI 316L with heat-shrink sleeve PPS/polyolefin for saltwater applications		
	D	Outer diameter d = 22 mm (0.87 in), AISI 316L + drinking water approval (can only be selected in conjunction with EPDM seal and PE probe cable)		
40	Measuring range:			
		Measuring range	Measuring range	
	BA	0 to 0.1 bar	MA	0 to 1 mH ₂ O
	BB	0 to 0.2 bar	MB	0 to 2 mH ₂ O
	BC	0 to 0.4 bar	MC	0 to 4 mH ₂ O
	BD	0 to 0.6 bar	MD	0 to 6 mH ₂ O
	BE	0 to 1.0 bar	ME	0 to 10 mH ₂ O
	BF	0 to 2.0 bar	MF	0 to 20 mH ₂ O
	BG	0 to 4.0 bar	MG	0 to 40 mH ₂ O
	BH	0 to 10.0 bar	MH	0 to 100 mH ₂ O
	BK	0 to 20.0 bar	MK	0 to 200 mH ₂ O
	PA	0 to 1.5 psi	FA	0 to 3 ftH ₂ O
	PB	0 to 3 psi	FB	0 to 6 ftH ₂ O
	PC	0 to 6 psi	FC	0 to 15 ftH ₂ O
	PD	0 to 10 psi	FD	0 to 20 ftH ₂ O
	PE	0 to 15 psi	FE	0 to 30 ftH ₂ O
	PF	0 to 30 psi	FF	0 to 60 ftH ₂ O
	PG	0 to 60 psi	FG	0 to 150 ftH ₂ O
	PH	0 to 150 psi	FH	0 to 300 ftH ₂ O
	PK	0 to 300 psi	FK	0 to 600 ftH ₂ O
	VV	Adjusted to customer specifications from 0 to ____ (upper range value) in ____ (unit), upper range value: 0.1 bar (1 mH ₂ O, 1.5 psi, 3 ftH ₂ O) to 20 bar (200 m ₂ HO, 300 psi, 600 ft ₂ HO)		
50	Sensor seal:			
	1	FKM Viton		
	2	EPDM		
60	Probe cable:			
	A	... m, shortable, PE		
	B	10 m, shortable, PE		
	C	20 m, shortable, PE		
	E	30 ft, shortable, PE		
	F	60 ft, shortable, PE		
	G	... ft, shortable, PE		
	I	... m, shortable, FEP		
	K	10 m, shortable, FEP		
	L	20 m, shortable, FEP		
	M	30 ft, shortable, FEP		
	N	60 ft, shortable, FEP		
	P	... ft, shortable, FEP		
FMX167				Order code
→ Ordering information for FMX167 continued on next page.				

FMX167 (continued)

60										Probe cable:
										R ... m cable, shortable, PUR
										S 10 m cable, shortable, PUR
										T 20 m cable, shortable, PUR
										U ... m cable, shortable, PUR
										V 30 ft cable, shortable, PUR
										W 60 ft cable, shortable, PUR
70										Additional option:
										7 Basic version
										1 Pt100, 4-wire
										5 Pt100 + temperature head transmitter TMT181, 2-wire, 4 to 20 mA = -20 to +80 °C (-4 to +176°F) ¹⁾
										3 Terminal box IP66/67
										4 Terminal box IP66/67 + Pt, 4-wire
										A m cable marking>installation
										B ft cable marking>installation
										C m cable marking, terminal box, cable marking>installation, terminal box IP66/67
										D ft cable marking, terminal box, cable marking>installation, terminal box IP66/67
										S GL/ABS marine certificate
995										Marking
										1 Measuring point (TAG)
FMX167										Complete order code

¹⁾ incl. terminal box, see feature "3" or "4"

Accessories

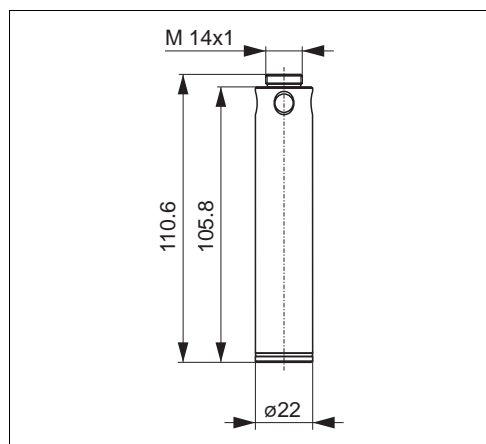
Mounting clamp

- Endress+Hauser offers a mounting clamp for simple FMX167 mounting → [📄 15](#)
 - Material: 1.4404 (AISI 316L) and fiberglass reinforced PA (polyamide)
 - Order number: 52006151
- See also → [📄 21](#), "Ordering information"

Terminal box

- Terminal box IP 66/IP 67 with GORE-TEX[®]-filter incl. 3 installed terminals.
The terminal box is also suitable for installing a temperature head transmitter (Order No. 52008794) or for four additional terminals (Order No. 52008938) → [📄 23](#).
- Order number: 52006152

Additional weight (for FMX167 with an outer diameter of 22 mm and 29 mm)



P01-FMX167xx-06-xx-xx-xx-014

- Endress+Hauser offers additional weights to prevent sideways movement that results in measuring errors, or to make it easier to lower the device in a guide tube.
You can screw several weights together. The weights are then attached directly to the FMX167. For FMX167 with outer diameter 29 mm (1.15 in), a maximum of 5 weights may be screwed on to FMX167.
- Material: 1.4435 (AISI 316L)
- Weight: 300 g
- Order number: 52006153

TMT181 temperature head transmitter

- 2-wire temperature head transmitter, configured for a measuring range from -20 to +80 °C.
This setting offers a temperature range of 100 K which can be easily mapped. Please note that the Pt100 resistance thermometer is designed for a temperature range from -10 to +70 °C → [📄 22](#).
- Order number: 52008794

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