Magnetostrictive sensor
For bypass level indicators
Model BLM

for further approvals
see page 2 and 3

Applications

- Sensor for the continuous level measurement of liquids in bypass level indicators
- Chemical and petrochemical industries, offshore
- Shipbuilding, machine building
- Power generating equipment, power plants
- Pharmaceutical, food, water treatment, environmental engineering industries

Special features

- Continuous level measurement on the outside of the bypass
- 2-wire technology 4 ... 20 mA
- Measured value output via digital interface and a selectable measured value as analogue signal
- Case from stainless steel (display from glass)
- Magnetostrictive level measuring instrument with high resolution

Magnetostrictive sensor, model BLM

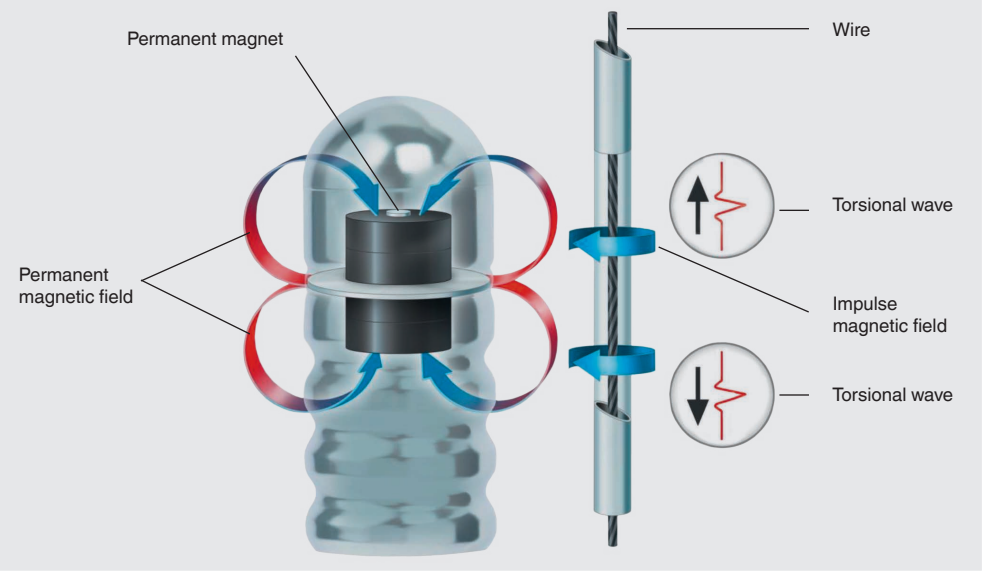
Description

Level sensors with a magnetostrictive, high-resolution measuring principle are used for continuous level measurement of liquids and are based on determining the position of a magnetic float following the magnetostrictive principle. The level sensors are mounted on the outside of a bypass level indicator.

The measuring process is triggered by a current impulse. This current produces a circular magnetic field along a wire made of magnetostrictive material, which is held under tension inside the sensor tube. At the point being measured (liquid level) there is a cylindrical float with permanent magnets acting as a position transducer, whose field lines run at right angles to the impulse magnetic field. This magnetic field of the float tensions the wire. The superposition of these two magnetic fields triggers a mechanical wave in the wire. This is converted into an electrical signal at the end of the wire in the sensor housing by a piezoceramic pick-up.

The measured propagation delay enables the origination point of the mechanical torsional wave, and thus the float position, to be determined with high accuracy.

Illustration of the principle



Model overview

- Model BLM-S: Standard version
- Model BLM-SI (FFG-BP): Intrinsically safe (Ex i)
- Model BLM-SD (FFG-BP): Flameproof enclosure (Ex d)
- Model BLM-T: Compact version
- Model BLM-TAI (FFG-BT): Compact version, intrinsically safe (Ex i)
- Model BLM-SF-FM: FM version

Approvals

- **Model BLM**

Logo	Description	Country
CE	**EU declaration of conformity** ■ EMC directive ■ RoHS directive	European Union
EAC	**EAC (option)** EMC directive No. RU Д-DE.A301.B.00820	Eurasian Economic Community
	GOST (option) Metrology, measurement technology No. 19359	Russia
	KazInMetr (option) Metrology, measurement technology No. 13947	Kazakhstan
	BelGIM (option) Metrology, measurement technology No. 9710	Belarus
	UkrSEPRO (option) Metrology, measurement technology No. UA-MI/2-4988-2015	Ukraine
	Uzstandard (option) Metrology, measurement technology No. 02.6649	Uzbekistan

■ **Models BLM-SI, BLM-SD, BLM-TAI, BLM-SF-FM**

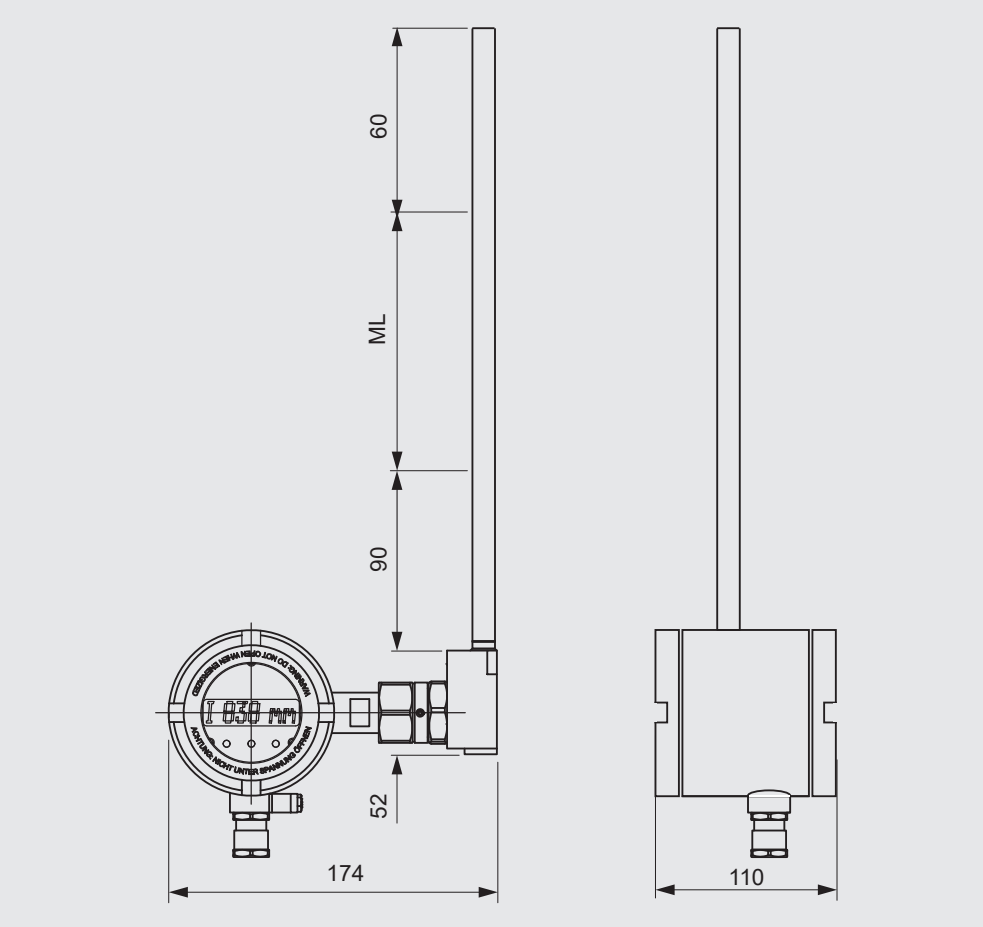
Logo	Description	Country
	ATEX directive (option), models BLM-SI, BLM-SD, BLM-TAI Hazardous areas ■ Models BLM-SI, BLM-SD - Ex i Zone 1 II 2G Ex ia IIB T3 ... T6 No. ZELM 10 ATEX 0439 - Ex d Zone 1 II 2G Ex d IIB T3 ... T6 Gb No. ZELM 13 ATEX 0508 X ■ Model BLM-TAI - Ex i Zone 1 II 2 G Ex ia IIC T6 ... T4 Gb No. TÜV 18 ATEX 225120 X	European Union
	FM (option), model BLM-SF-FM Hazardous areas - XP Class I, division I, groups A, B, C, D No. FM16US0415X - DIP Class II, division I, groups E, F, G No. FM16US0415X	USA
	EAC (option) Hazardous areas No. RU C-DE.ГБ08.B.01489	Eurasian Economic Community
	NEPSI (option), models BLM-SI, BLM-SD Hazardous areas - Ex i [Ex ia IIC T1 ... T6 Ga] No. GYB16.1498 - Ex d [Ex d IIC T1 ... T6 Gb] No. GYB16.1433X	China

Manufacturer's information and certificates

Logo	Description
	SIL 2 Functional safety
-	**China RoHS directive**

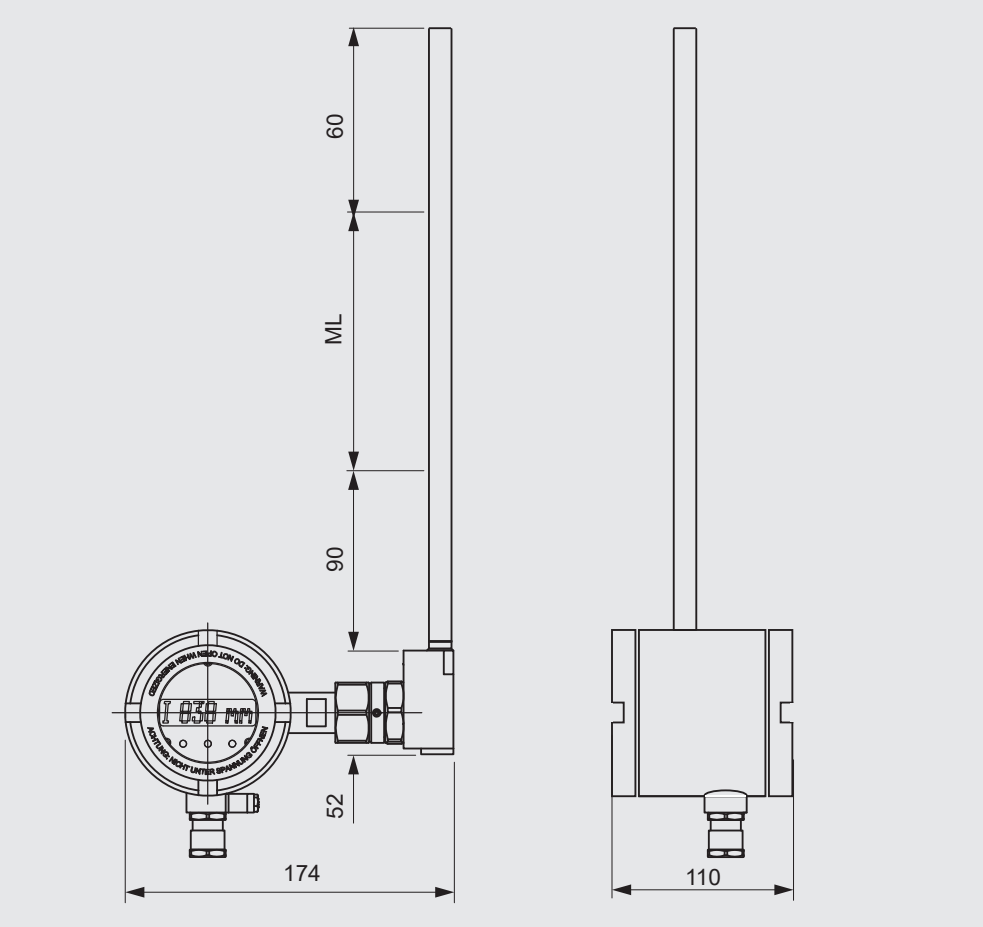
Approvals and certificates, see website

Magnetostrictive sensor, standard version
Model BLM-S



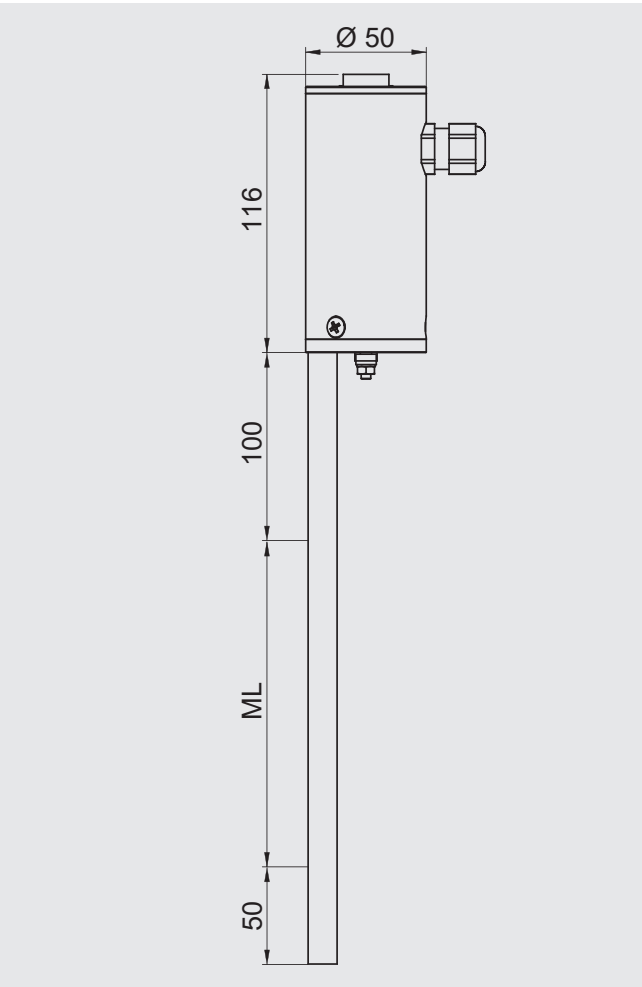
Specifications	
Connection housing (sensor housing)	Stainless steel 1.4404 Version with or without display, with window
Sensor tube	Stainless steel 1.4571, tube Ø 12 mm, tube length L max. 5,800 mm
Medium temperature	-60 ... +185 °C
Ambient temperature ■ Version without display ■ Version with display	 -40 ... +85 °C -20 ... +70 °C
Output signal	4 ... 20 mA, HART®
Power supply	DC 15 ... 30 V
Measurement accuracy	< ±0.5 mm
Resolution	< 0.1 mm
Load	max. 900 Ω at 30 V
Mounting position	Vertical ±30°
Ingress protection	IP67

Magnetostrictive sensor, intrinsically safe (Ex i)
Models BLM-SI, BLM-SD



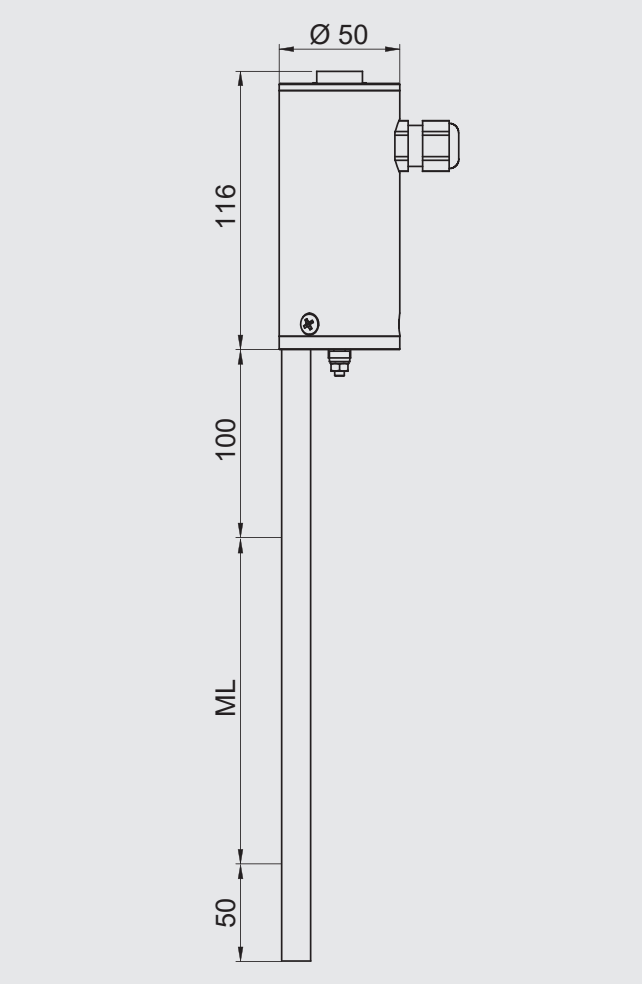
Specifications	
Connection housing (sensor housing)	Stainless steel 1.4404 Version with or without display, with window
Sensor tube	Stainless steel 1.4571, tube Ø 12 mm, tube length L max. 5,800 mm
Medium temperature	-60 ... +185 °C
Ambient temperature ■ Ex i version ■ Ex d version without display ■ Ex d version with display	 T3/T4/T5/T6: -20 ... +70/+70/+70/+60 °C T3/T4/T5/T6: -40 ... +70/+70/+70/+60 °C T3/T4/T5/T6: -20 ... +70/+70/+70/+60 °C
Output signal	4 ... 20 mA, HART®
Power supply	DC 15 ... 30 V
Measurement accuracy	< ±0.5 mm
Resolution	< 0.1 mm
Load	max. 900 Ω at 30 V
Mounting position	Vertical ±30°
Ingress protection	IP67

Magnetostrictive sensor, compact version
Model BLM-T



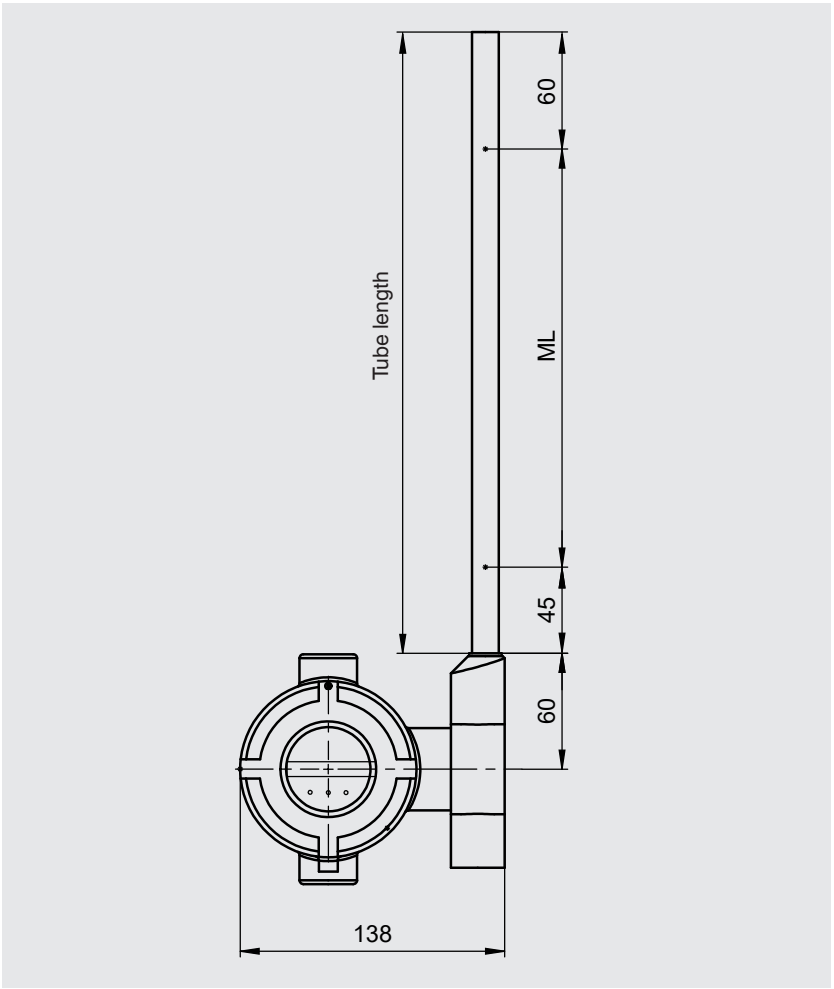
Specifications	
Connection housing (sensor housing)	Stainless steel 1.4305, optionally stainless steel 1.4404
Sensor tube	Stainless steel 1.4571, optionally stainless steel 1.4404 Tube Ø 12 mm, tube length L max. 6,000 mm
Medium temperature	-60 ... +450 °C
Ambient temperature	-40 ... +85 °C
Output signal	4 ... 20 mA, HART®
Power supply	DC 8 ... 30 V
Measurement accuracy	< ±0.5 mm
Resolution	< 0.1 mm
Ingress protection	IPx6, IP68

Magnetostrictive sensor, compact version, intrinsically safe (Ex i)
Model BLM-TAI



Specifications	
Connection housing (sensor housing)	Stainless steel 1.4305, optionally stainless steel 1.4404
Sensor tube	Stainless steel 1.4571, optionally stainless steel 1.4404 Tube Ø 12 mm, tube length L max. 6,000 mm
Medium temperature	-60 ... +450 °C
Ambient temperature	T4/T5/T6: -20 ... +85/+55/+40 °C
Output signal	4 ... 20 mA, HART®
Power supply	DC 10 ... 30 V
Measurement accuracy	< ±0.5 mm
Resolution	< 0.1 mm
Ingress protection	IPx6, IP68

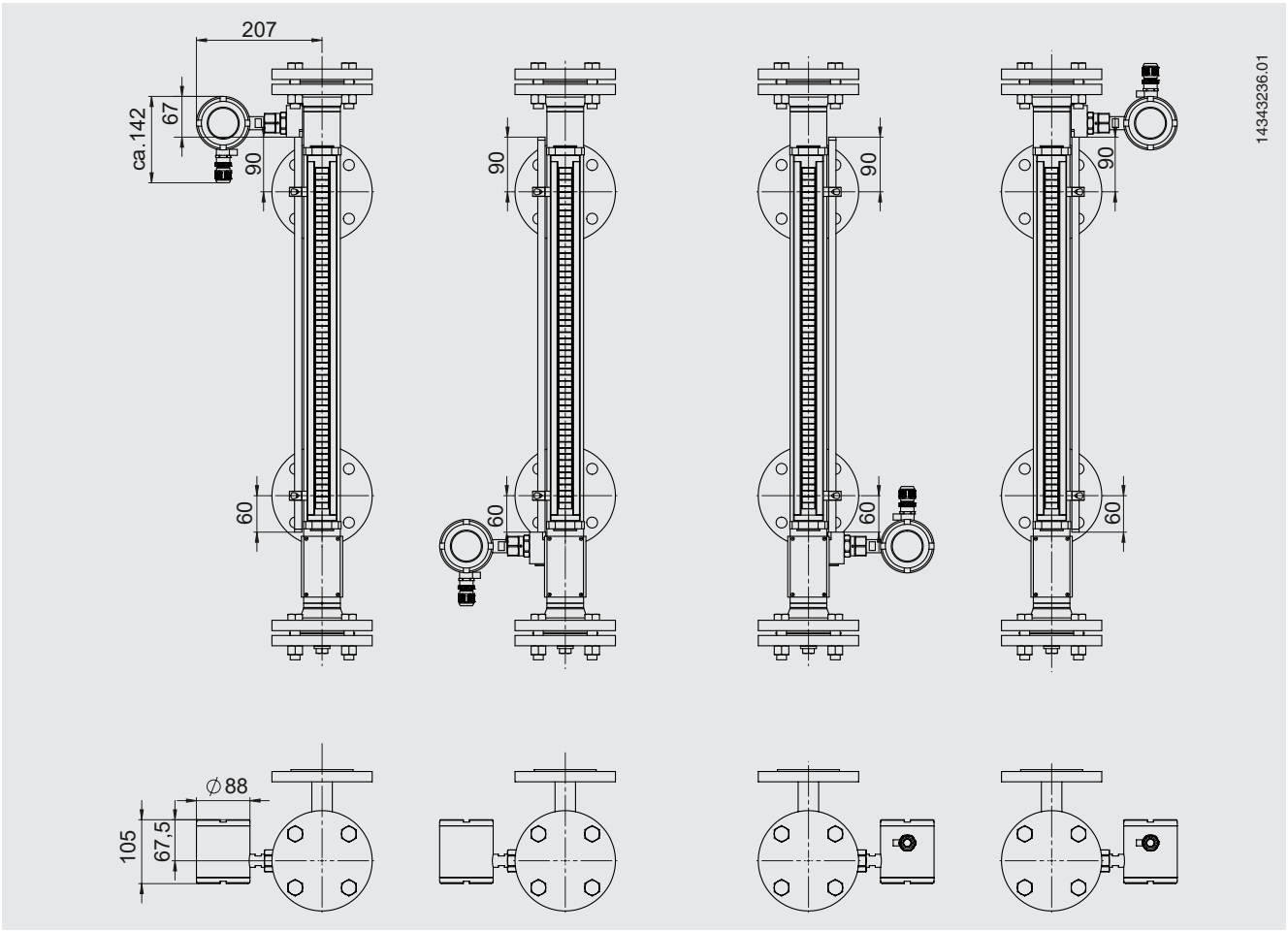
Magnetostrictive sensor, FM version
Model BLM-SF-FM



Specifications	
Connection housing (sensor housing)	Stainless steel 316L/316FC Version with or without display, with window
Sensor tube	Stainless steel 1.4571 Tube Ø 14 mm, tube length L max. 4,000 mm
Medium temperature	-200 ... +180 °C
Ambient temperature	-25 ... +70 °C Class I, division 1, groups A, B, C, D; T6 ... T2 T_a = -25 ... +70 °C Class II, division 1, groups E, F, G and class III, division 1; T6 ... T3 T_a = -25 ... +70 °C
Output signal	4 ... 20 mA, HART® 7
Power supply	DC 16 ... 30 V
Measurement accuracy	±0.5 mm
Resolution	0.1 mm
Ingress protection	IP67

Mounting to bypass level indicator model BNA

Models BLM-S, BLM-SI and BLM-SD



Ordering information

To order the described product the order number (if available) is sufficient.

Alternatively:

Sensor model / Electrical connection / Sensor tube (material and overall length) / Measuring range / Approval

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