Magnetostrictive level transmitter
For bypass level indicators
Model BLM

for further approvals
see page 2 and 3

Applications

- Transmitters 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 level transmitter, model BLM

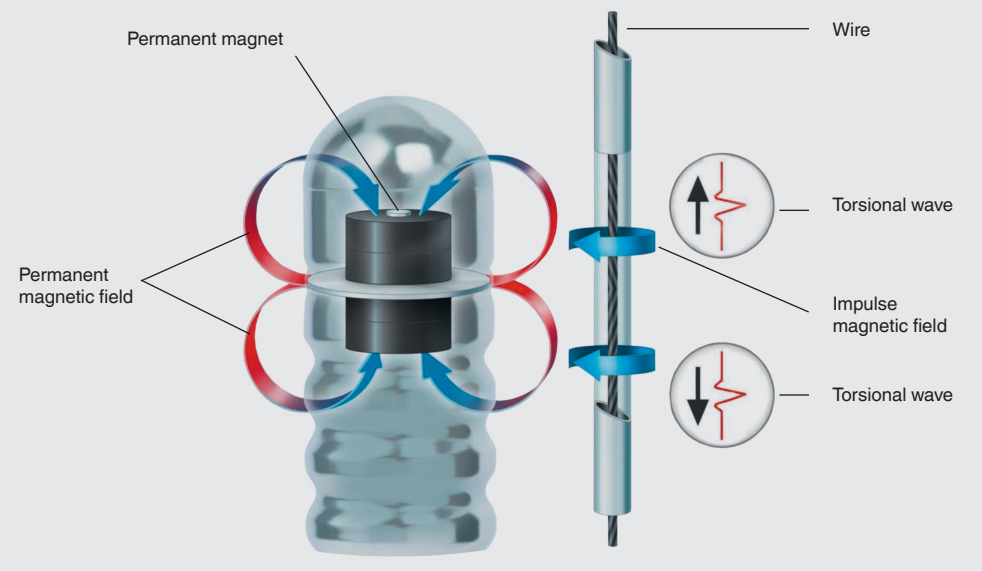
Description

Level transmitters 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 transmitters 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-SxI (FFG-BP): Intrinsically safe (Ex i)
- Model BLM-SxD (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-SxI, BLM-SxD, BLM-TAI, BLM-SF-FM**

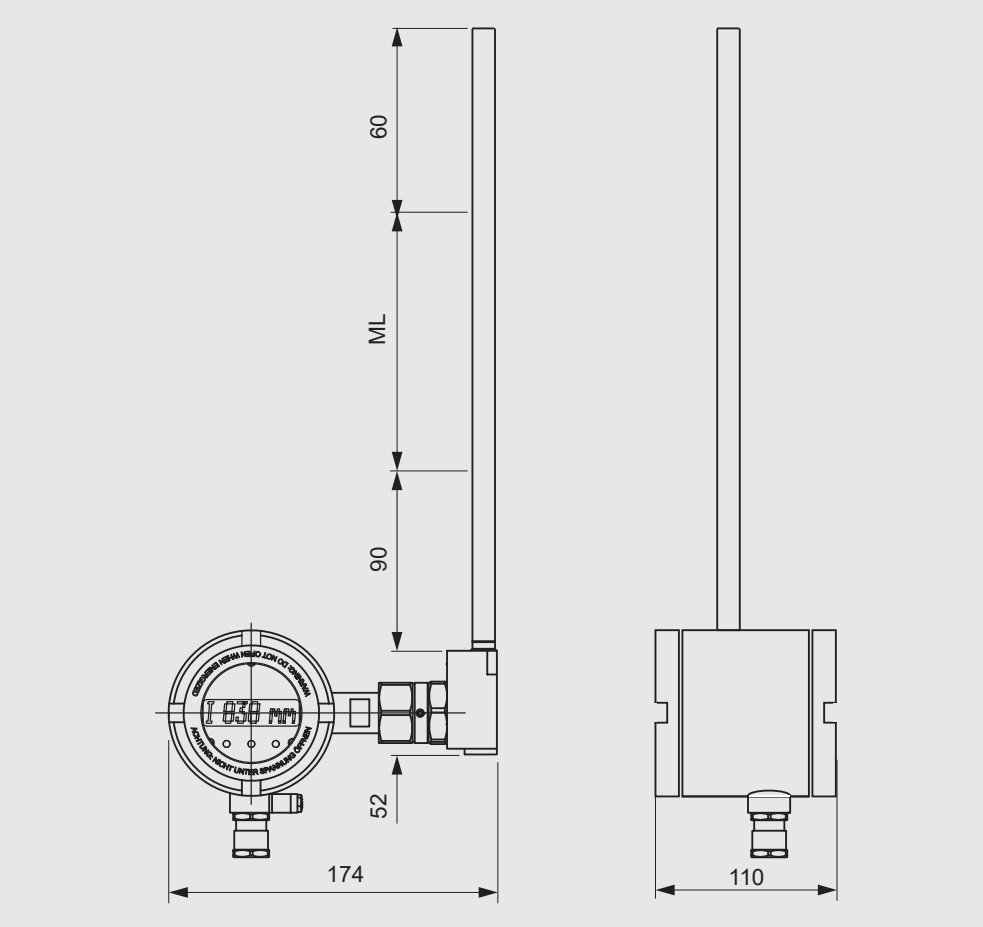
Logo	Description	Country
	ATEX directive (option), models BLM-SxI, BLM-SxD, BLM-TAI Hazardous areas ■ Models BLM-SxI, BLM-SxD - Ex i Zone 1 II 2G Ex ia IIB T3 ... T6 No. ZELM 10 ATEX 0439 - Ex d Zone 1 II 2G Ex d IIB T3 ... T6 Gb No. ZELM 13 ATEX 0508 X ■ Model BLM-TAI - Ex i Zone 1 II 2 G Ex ia IIC T6 ... T4 Gb No. TÜV 18 ATEX 225120 X	European Union
	IECEx (option), model BLM-TAI Hazardous areas - Ex i Ex ia IIC T6 ... T4 Ga No. IECEx TUN 20.0011X Ex ia IIC T6 ... T4 Ga/Gb Ex ia IIC T6 ... T4 Gb Ex ia IIIC T160 °C Da	International
	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**

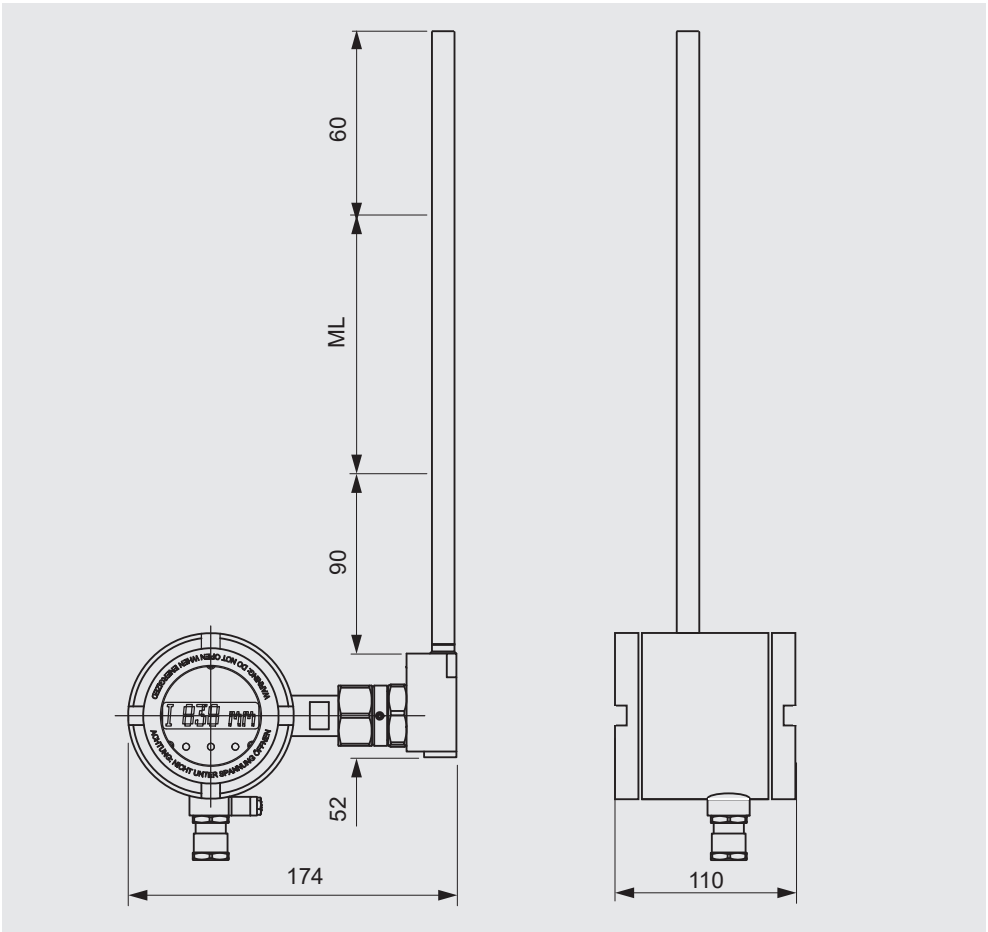
Approvals and certificates, see website

Standard version, model BLM-S...



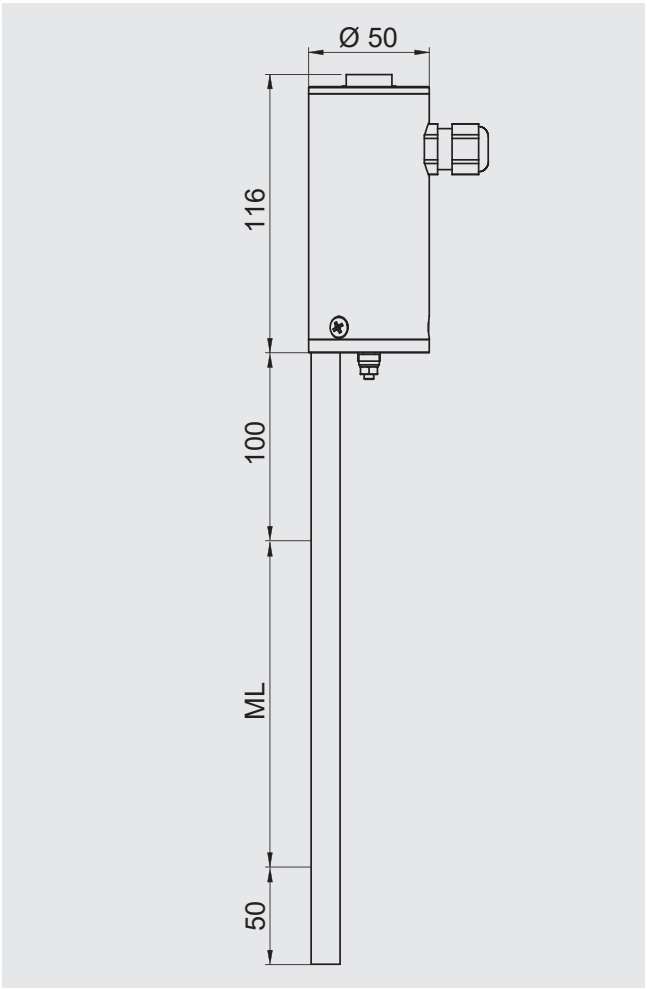
Specifications	
Connection housing (sensor housing)	Stainless steel 1.4404 Version with or without display, with window
Sensor tube	
Material	Stainless steel 1.4571
Tube diameter	12 mm
Tube length L	Max. 5,800 mm
Medium temperature	-60 ... +185 °C
Ambient temperature	
Version without display	-40 ... +85 °C
Version with display	-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

Intrinsically safe (Ex i), model BLM-SxI
Flameproof enclosure (Ex d), model BLM-SxD



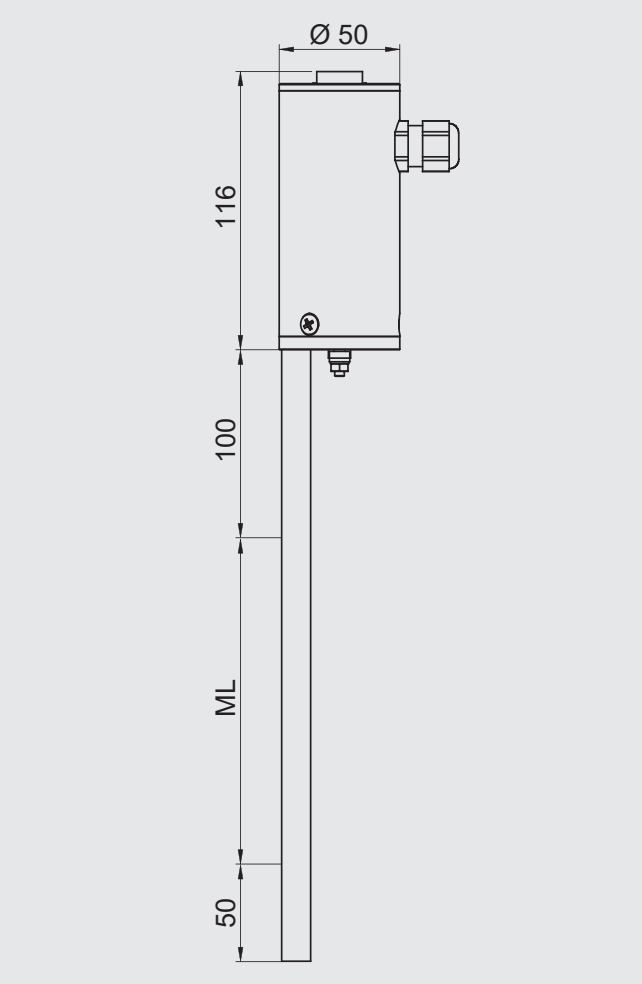
Specifications	
Connection housing (sensor housing)	Stainless steel 1.4404 Version with or without display, with window
Sensor tube	
Material	Stainless steel 1.4571
Tube diameter	12 mm
Tube length L	Max. 5,800 mm
Medium temperature	-60 ... +185 °C
Ambient temperature	
Ex i version	T3/T4/T5/T6: -20 ... +70/+70/+70/+60 °C
Ex d version without display	T3/T4/T5/T6: -40 ... +70/+70/+70/+60 °C
Ex d version with display	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

Compact version, model BLM-T...



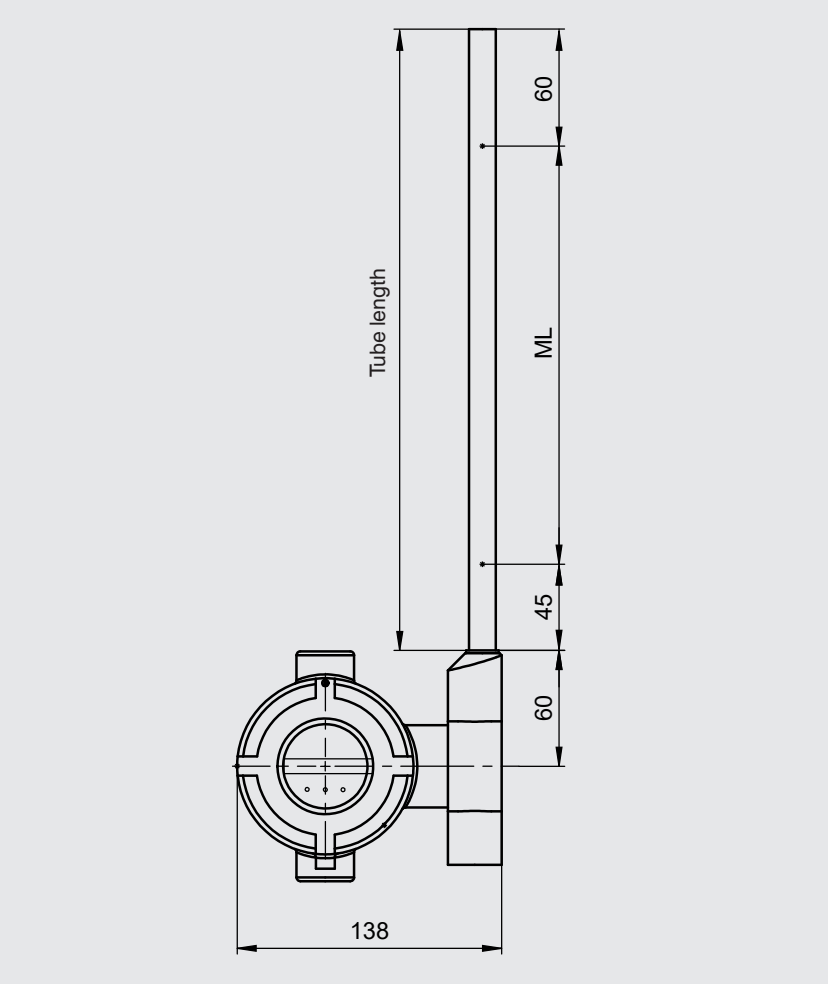
Specifications	
Connection housing (sensor housing)	■ Stainless steel 1.4305 ■ Stainless steel 1.4404
Sensor tube	
Material	■ Stainless steel 1.4571 ■ Stainless steel 1.4404
Tube diameter	12 mm
Tube length L	Max. 6,000 mm
Medium temperature	
Standard	-40 ... +150 °C
Low-temperature version	-90 ... +125 °C
High-temperature version	-45 ... +250 °C -45 ... +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

Compact version, intrinsically safe (Ex i), model BLM-TAI



Specifications	
Connection housing (sensor housing)	■ Stainless steel 1.4305 ■ Stainless steel 1.4404
Sensor tube	
Material	■ Stainless steel 1.4571 ■ Stainless steel 1.4404
Tube diameter	12 mm
Tube length L	Max. 6,000 mm
Medium temperature	
Standard	-40 ... +150 °C
High-temperature version	-45 ... +250 °C -45 ... +450 °C
Ambient temperature	Category 2G or equipment protection level Gb (complete level transmitter installed in zone 1) T6: $I_i \leq 100$ mA: -40 … +40 °C $I_i \leq 200$ mA: -40 … +25 °C T5: $I_i \leq 100$ mA: -40 … +55 °C $I_i \leq 200$ mA: -40 … +40 °C T4 ... T1: $I_i \leq 100$ mA: -40 … +85 °C $I_i \leq 200$ mA: -40 … +70 °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

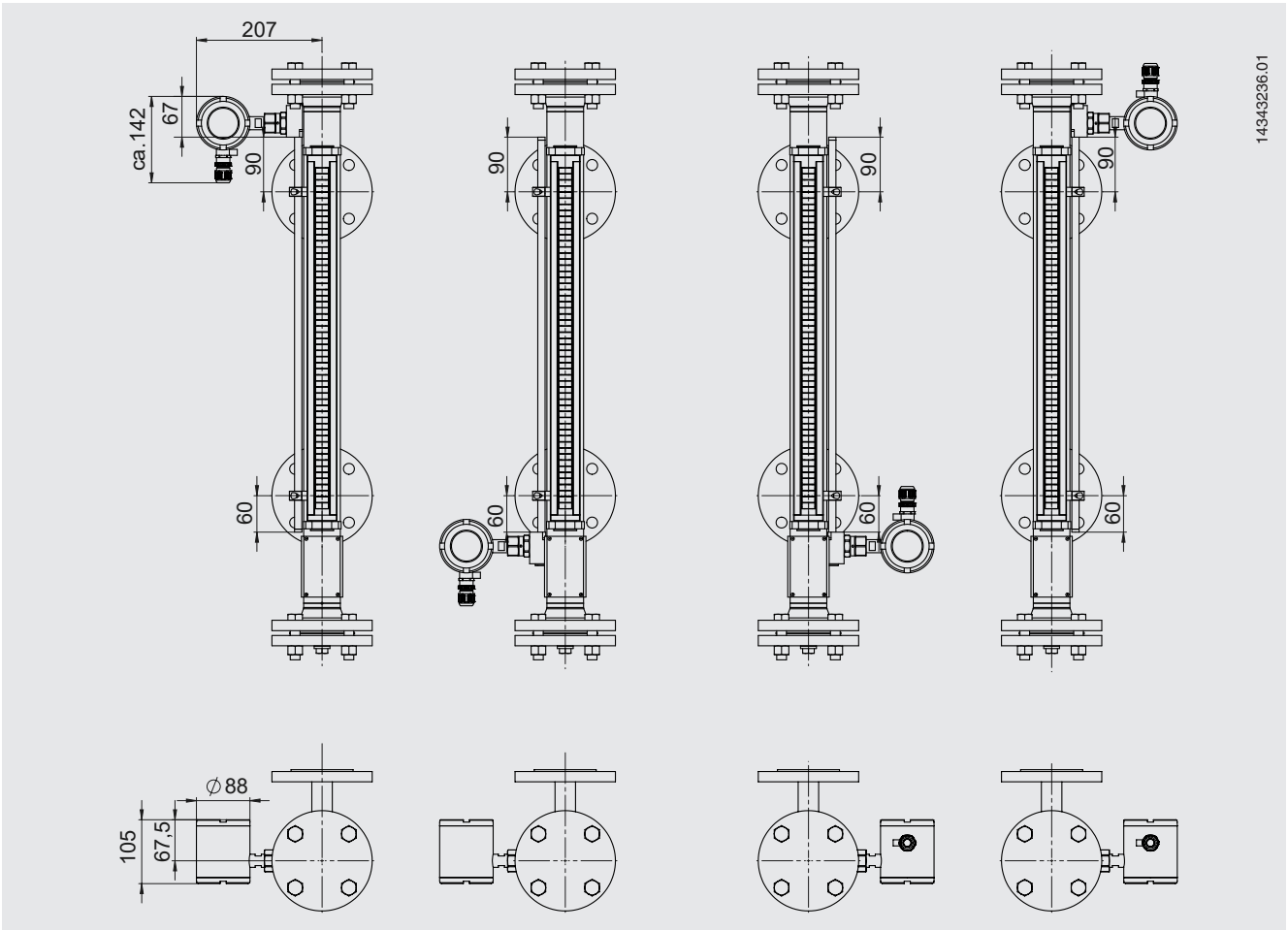
FM version, model BLM-SF-FM



Specifications	
Connection housing (sensor housing)	Stainless steel 316L/316FC Version with or without display, with window
Sensor tube	
Material	Stainless steel 1.4571
Tube diameter	14 mm
Tube length L	Max. 4,000 mm
Medium temperature	-20 ... +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 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-SxI and BLM-SxD



Ordering information

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

Alternatively:
Model / Electrical connection / Sensor tube (material and overall length) / Measuring range / Approval

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