Zertifiziertes QM-System
DIN EN ISO 9001
Zertifikat-Nr. 01017

Magnetostrictive Level Transmitters

Expert Line

measuring • monitoring • analysing

NMB

NMB-TF/-BF

NMB-C NMB-T NMB-G

NRM-300P

- 0.1 mm (0.004") or 1 mm (0.04") resolution
- Insertion length up to 15 m (50 ft)
- Rigid or flexible guide tube
- Plastic-coated version for chemicals
- 4…20 mA and HART® output
- Graphic display
- 99 point linearisation table
- Volume measurement
- Interface measurement
- ATEX certified variants
- IP67 (IP68)

N2

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KOBOLD Messring GmbH
Nordring 22-24
D-65719 Hofheim/Ts.
Head Office:
+49(0)6192 299-0
+49(0)6192 23398
info.de@kobold.com
www.kobold.com

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Description

NMB magnetostrictive level transmitters are an ideal solution for accurately measuring clean liquids. Their accuracy makes them an excellent choice for custody transfer measurement of liquids such as fuels, solvents, and alcohol derivatives.

Flexible tube units allow accurate measurements in tanks as high as 15 meters (50 ft). Plastic-coated models can be used with aggressive materials. Integrating the transmitter into a process control system is easy with intelligent signal processing, communication software, and a wide range of accessories.

Operating Principle

A float containing a magnetic disc moves along a guide tube with the specific magnetostrictive wire in it. A pulse generated by the electronics travels along the magnetostrictive wire.

At the point the pulse reaches the float's magnetic field, a torsion develops. Reflected from the torsion point, the pulse creates an acoustic wave that travels back along the wire.

The 4 ... 20 mA output of the transmitter is proportional to the elapsed time between the excitation and detection.

Applications

- Oil, gas and chemical industry
- Fuels and gasoline products
- Pharmaceutical industry
- Alcohols and beverages, food industry
- Installation in bypass tubes possible
- Supplementary level transmitter for NBK bypass level indicator

Certificates

- II 1 G Ex ia IIB T6...T5 Ga
- II 2 G Ex db IIB T6...T5 Gb
- II 1/2 G Ex db ia IIB T6...T5 Ga/Gb

Technical Details

		Rigid probe	Flexible probe	Plastic coated rigid probe	Mini version with rigid probe
Measured process value		Liquid level, distance, volume			
Nominal length (L)		0.5...4.5 m (1.5...14.5 ft)	2...15 m (6.5...50 ft)	0.5...3 m (1.5...10 ft)	0.5...1.5 m (1.5...4.5 ft)
Material of the tube		1.4571 (316Ti) stainless steel		PFA-coated stainless steel	1.4571 stainless steel
Highest process pressure [1]		25 bar (2.5 MPa, 363 psi)	16 bar (1.6 MPa, 232 psi)	3 bar (0.3 MPa, 43.5 psi)	10 bar (1 MPa, 145 psi)
Process temperature		–40...+90 °C (–40...+194 °F), see temperature diagram			
Standard float diameter / material [2]		Ø53.5 x 60 mm (Ø2 x 2.35") cylindrical / 1.4404 (316L)	Ø96 mm (Ø4") ball / 1.4435 (316L)	Ø76 x 87 mm (Ø3 x 3.45") cylindrical / PVDF / PP	Ø28 x 28 mm (Ø1 x 1.15") cylindrical 1.4404 (316L)
Medium density		See "Floats"			
Material of wetted parts		Titanium, Stainless Steel		PFA, PVDF, PP	Titanium, Stainless Steel
Ambient temperature		–40...+70 °C (–40...+158 °F), plastic housing: –25...+70 °C (–13...+158 °F), with display: –25...+70 °C (–13...+158 °F), Ex variant: see temperature diagram in the user's manual			
Output	Analogue	4...20 mA (limit values: 3.9...20.5 mA)			
	Digital	HART® (lowest loop resistance: 250 Ω)			
	Display	Graphic display NRM-300P			
Damping time		Adjustable 0...99 s			
Error indication		22 mA or 3.8 mA or holding			
Output load		$R_L = (U_s - 12.5\ V)/0.02\ A$, U_s = supply voltage			
Supply voltage		12.5...36 V_{DC}			
Electrical protection		Class III			
Ingress protection		IP67, IP68 for output code "9" (4 m water column for 4 hours)			
Process connection		As per order code			
Electric connection		2x M20x1.5 plastic cable glands for Ø6...Ø12 mm (Ø0.23...0.47") cable, + 2x internally threaded ½" NPT connection for protective pipes for 0.5...1.5 mm² (AWG20...15) wire cross section, IP68 protection: up to 20 m (65 ft), LiY-CY 6x0.5 mm (0.24 x 0.02"), fitted with 500 V cable			
Housing		Plastic (PBT) or painted aluminium or stainless steel			
Weight		1.7 kg (3.75 lb) + m. probe: 0.6 kg/m (0.4 lb/ft)	2.9 kg (6.4 lb) + m. probe: 0.3 kg/m (0.2 lb/ft) + counterweight 3.5 kg (7.7 lb)	1.7 kg (3.75 lb) + m. probe: 0.7 kg/m (0.45 lb/ft)	1.7 kg (3.75 lb) + m. probe: 0.6 kg/m (0.4 lb/ft)

[1] Depends on selected float, with sliding sleeve connection the highest process pressure is 3 bar (0.3 MPa)
[2] Requested float version must be specified in the order

No responsibility taken for errors;
subject to change without prior notice.

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Measurement Details

	1 mm resolution	0.1 mm resolution
Resolution [3]	1 mm (0.04")	0.1 mm (0.004")
Nonlinearity [3] [4] (up to 10 m [32.8 ft] order length)	±2 mm (±0.08") or ±0.02% F.S. whichever is greater	±1 mm (0.04") or ±0.01% F.S. whichever is greater
Nonlinearity [3] [4] (above 10 m [32.8 ft] order length)	±3 mm (±0.12") or ±0.02% F.S. whichever is greater	
Hysteresis [5]	±1 mm (±0.04")	±0.25 mm (±0.01") (up to 10 m [32.8 ft] length)
		±1 mm (±0.04") (above 10 m [32.8 ft] length)
Zero span (in LEVEL mode)	Anywhere within the active range	
Measuring Range (reducing)	Minimum distance: 200 mm (7.87"); maximum distance: as per probe length	
Temperature error	0.04 mm / 10 °C (0.0015" / 50 °F) between (–25…+50 °C [–13…+122 °F])	
Current Output Properties	Resolution: 2 µA, accuracy: 10 µA, temperature error: 200 ppm/ °C	

[3] For displayed and HART® transmitted values
[4] Under reference conditions, accuracy data only valid in case of factory setting. When used with a bypass float, the values given are not valid. With factory-calibrated float for NBK, accuracy 5 mm.
[5] In case of a different factory setting the accuracy data is not valid!

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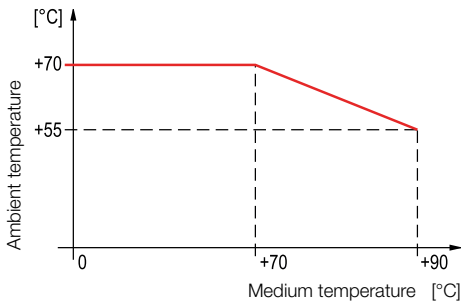
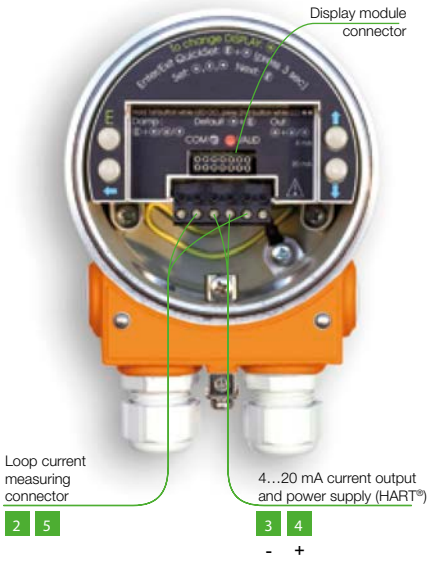
Technical Description concerning explosion safety

Type	NMB-xxxxxxxx5x NMB-xxxxxxxx6x NMB-xxxxxxxx7x NMB-xxxxxxxx8x	NMB-xxxxxxxxCx NMB-xxxxxxxxDx	NMB-xxxxxxxxAx NMB-xxxxxxxxBx	NMB-xxxxxxxx9x
Ex marking (ATEX)	Ⓔx II 1 G Ex ia IIB T6...T5 Ga 0 ... 18 m	Ⓔx II 1/2 G Ex db ia IIB T6...T5 Ga/Gb 0 ... 10 m	Ⓔx II 2 G Ex db IIB T6...T5 Gb 0 ... 10 m	Ⓔx II 1 G Ex ia IIB T6...T5 Ga 0 ... 18 m
Ex marking (IECEx)	Ex ia IIB T6...T5 Ga 0 ... 18 m	Ex db ia IIB T6...T5 Ga/Gb 0 ... 10 m	Ex db IIB T6...T5 Gb 0 ... 10 m	-
Cable entry	M20×1.5 cable gland	M20×1.5 Certified "Ex d" metal cable gland		-
Cable outer diameter	Ø 7 ... 13 mm	Ø 9 ... 11 mm		
Ex power supply, Intrinsically safety data	U_i = 30 V, I_i = 140 mA, P_i = 1 W, C_i ≤ 15 nF, L_i ≤ 200 µH		U_i: 12.5 ... 36 V_{DC}	U_i = 30 V, I_i = 140 mA, P_i = 1 W, C_i ≤ 25 nF, L_i ≤ 210 µH
Comment	The NMB-xxxxx5xx9x type instrument is IP68-rated. The cover, cable gland, cable, and the plug are glued and cannot be opened!			

Temperature limits

Device measuring tube version	Temperature class	Ambient temperature*	Medium temperature
Rigid probe	T6	-40 ... +70 °C	+80 °C
Flexible probe			+70 °C
Rigid probe	T5	-40 ... +55 °C	+90 °C
Comment	*In the case of models equipped with a display, the lower ambient temperature is limited to -25 °C.		
			

Wiring



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Order Details NMB (Example: **NMB-T RR25 A 05 1 S**)

Model	Design	Probe Type / Process connection	Housing	Probe length
NMB-	**T** = Transmitter **B**[1] = Transmitter + Display **E** = Transmitter with PFA-coated probe **G**[1] = Transmitter with PFA-coated probe + display **M**[2] = Transmitter mini **C**[2] = Transmitter mini + display	<u>For NMB-T/-B</u> **RR25** = rigid / G 1 **RR50** = rigid / G 2 **RN25** = rigid / 1" NPT **RN50** = rigid / 2" NPT **RT65** = rigid / 2½" TriClamp **RT80** = rigid / 3" TriClamp **RT1H** = rigid / 4" TriClamp **R00U**[3] = rigid / without (for sliding sleeve) **FR50**[4] = flexible / G 2 **FN50**[4] = flexible / 2" NPT <u>For NMB-E/-G</u> **R00U**[3] = rigid / without (for sliding sleeve) <u>For NMB-M/-C</u> **RR25** = rigid / G 1 **RN25** = rigid / 1" NPT **RT40** = rigid / 1½" TriClamp **RT50** = rigid / 2" TriClamp **RT65** = rigid / 2½" TriClamp **RT80** = rigid / 3" TriClamp **RT1H** = rigid / 4" TriClamp	**A** = Aluminium, housing position "A" **L** = Aluminium, housing position "B" **P** = Plastic, housing position "A" (not for Ex) **F** = Plastic, housing position "B" (not for Ex) **E** = St. Steel, housing position "A" **G** = St. Steel, housing position "B"	**05** = 0.5 m **06** = 0.6 m … **15** = 1.5 m (max. length with rigid probe, mini version) … **17** = 1.7 m … **21** = 2.1 m … **30** = 3.0 m (max. length with PFA-coated rigid probe) … **45** = 4.5 m (max. length with probe type "rigid") … **A0** = 10 m **A1** = 10.1 m … **A9** = 10.9 m **B0** = 11.0 m … **C0** = 12.0 m … **D0** = 13.0 m … **E0** = 14.0 m … **F0** = 15.0 m (max. length with probe type "flexible")

Electrical output / Resolution	Float options
1 = 4 ... 20 mA / 0,1 mm **2** = 4 ... 20 mA / 1 mm **3** = 4 ... 20 mA + HART® / 0.1 mm **4** = 4 ... 20 mA + HART® / 1 mm **5** = 4 ... 20 mA / 0.1 mm / Ex ia **6** = 4 ... 20 mA / 1 mm / Ex ia **7** = 4 ... 20 mA + HART® / 0.1 mm / Ex ia **8** = 4 ... 20 mA + HART® / 1 mm / Ex ia **A**[6] = 4 ... 20 mA / 0.1 mm / Ex d **B**[6] = 4 ... 20 mA + HART® / 0.1 mm / Ex d **C**[6] = 4 ... 20 mA / 0.1 mm / Ex d + Ex ia **D**[6] = 4 ... 20 mA + HART® / 0.1 mm / Ex d + Ex ia	<u>For NMB-TR/BR</u> **S** = Standard float (see table for "floats") **2** = Float Ø124 mm stainless steel (1.4401) ball float (for min. 0.4 kg/dm³ liquids) **3** = Float Ø54 mm titanium float (for min. 0.55 kg/dm³ liquids) **4** = Float Ø50x100 mm titanium float (min. 0.45 kg/dm³) **6** = Float Ø54 mm st. st. 1.4404, min. 0.8 kg/dm³ **0**[5] = no float (only for assembly with NBK, includes 2 x mounting brackets) <u>For NMB-TF/BF</u> **2** = Float Ø124 mm stainless steel (1.4401) ball float (for min. 0.4 kg/dm³ liquids) **4** = Float Ø50x100 mm titanium float (min. 0.45 kg/dm³) <u>For NMB-E/G</u> **S** = Standard float (see table for "floats") **5** = Float made of PP <u>For NMB-M/C</u> **S** = Standard float (see table for "floats")

[1] Standard display in Position "A" [2] Insertion length max. 1500 mm [3] If not used with NBK, optional threaded sliding sleeve should be ordered separately
[4] Insertion length max. 10 000 mm. Not for NMB-M/-C [5] Probe length NMB = (150 + ML + B) mm, see sketch on following page and data sheet NBK for details of dimensions. [6] Not for NMB-M/-C

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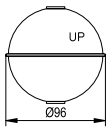
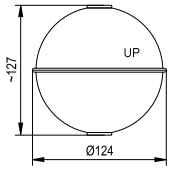
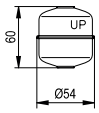
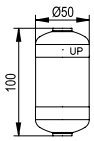
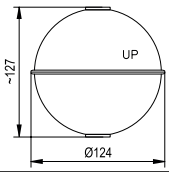
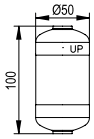
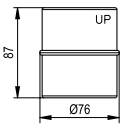
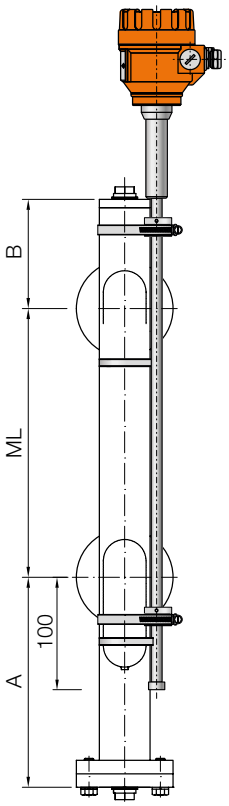
Float selection

	for NMB-TR/BR				
Type	**Standard**	**Code "2"**	**Code "3" [1]**	**Code "6" [1]**	**Code "4" [1]**
Dimensions [mm]					
Medium Density (min.)	0.55 kg/dm³	0.4 kg/dm³	0.55 kg/dm³	0.8 kg/dm³	0.45 kg/dm³
Material	1.4435	1.4401	Titan	1.4404	Titan
Medium pressure	16 bar	25 bar			16 bar

[1] Designed for min. 2" process connection.

	for NMB-TF/BF		for NMB-E/G		for NMB-M
Type	**Code "2"**	**Code "4" [1]**	**Standard**	**Code "5"**	**Standard**
Dimensions [mm]					
Medium Density (min.)	0.4 kg/dm³	0.45 kg/dm³	0.7 kg/dm³	0.4 kg/dm³	0.8 kg/dm³
Material	1.4401	Titan	PVDF	PP	1.4404
Medium pressure	25 bar	16 bar	3 bar		10 bar

Sketch for mounting with NMB



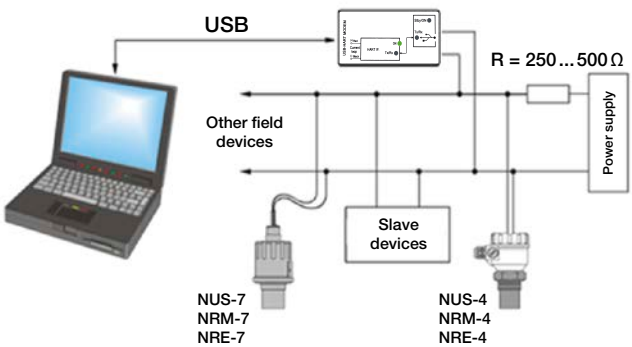
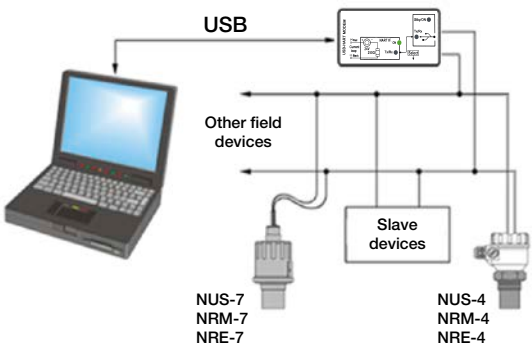
Order Details Connections NMS/NMB (Example: ZUB-NMS/B CER25)

Model	Connection/ Material/ Size
ZUB-NMS/B	<u>For NMS-S/NMB-TR/BR</u> **CER25** = Sliding sleeve, 1.4571, 1" BSP **CER50** = Sliding sleeve, 1.4571, 2" BSP **CEN25** = Sliding sleeve, 1.4571, 1" NPT **CEN50** = Sliding sleeve, 1.4571, 2" NPT <u>For NMS-K/NMB-E/G</u> **CPR25** = Sliding sleeve, PVDF, 1" BSP **CPN25** = Sliding sleeve, PVDF, 1" NPT **F6F80** = PP flange FF DN80, PN16 + 1" BSP sliding sleeve model CPR25 must be ordered **F6F1H** = PP flange FF DN100, PN16 + 1" BSP sliding sleeve model CPR25 must be ordered

Accessories

Code	Description	Image
NRM-300P	Plug-in graphical display module	
NUS-NTB-NRM-SW	Configuration software for remote programming with PC (FREE download)	

Order Details HART® modem

Order no. HART® modem: HARTCOM-0	Order no. HART® modem: HARTCOM-1
with external 24 V_{DC} transmitter supply and 250 Ω resistor	Loop Powered 24 V_{DC} and 250 Ω integrated resistor
Wiring examples	
	

Download of configuration software NUS-NTB-NRM-SW at www.kobold.com

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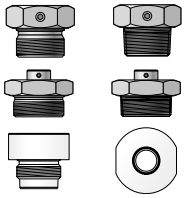
Process Connections*

Code	Description	Image
ZUB-NMS/B...	Sliding sleeve 1.4571 (316Ti) or PVDF: 1", 2" BSP/ NPT process connection	

* The process connections and special seals are ordered separately and must be specified in the text part of the order

Order Details ZGF (Example: ZGF-A1D51)

Model	Version	Standard / Flange Material/ Form
ZGF = Flange as accessory e.g. for NRE	**A** = Flat Face (A) **T** = Raised Face (B1) **C** = Tongue (C) **D** = Groove (D)	**1** = DIN / Carbon steel / EN 1092 B1 **2** = DIN / Stainless steel / EN 1092 B1 **3** = DIN / Polypropylene / EN 1092 A **5** = ANSI / Carbon Steel / ASME B16.5 RF **6** = ANSI / Stainless steel / ASME B16.5 RF **7** = ANSI / PP / ASME B16.5 FF **A** = JIS / Carbon steel / B 2220 RF **B** = JIS / Stainless steel / B 2220 RF **C** = JIS / PP / B 2220 FF

Process connection DIN / ANSI / JIS	Nominal pressure DIN / ANSI / JIS	Instrument side connection
D = DN15 / ½" / 15A **A** = DN20 / ¾" / 20A **B** = DN25 / 1" / 25A **C** = DN32 / 1¼" / 32A **7** = DN40 / 1½" / 40A **0** = DN50 / 2" / 50A **1** = DN65 / 2½" / 65A **2** = DN80 / 3" / 80A **3** = DN100 / 4" / 100A **4** = DN125 / 5" / 125A **5** = DN150 / 6" / 150A **6** = DN200 / 8" / 200A **8** = DN250 / 10" / 250A **9** = DN300 / 12" / 300A	**5** = PN6 / - / 5K **6** = PN10 / - / 10K **1** = PN16 / 150 psi / 16K **2** = PN25 / 300 psi / 30K **3** = PN40 / 600 psi / 40K **4** = PN63 / 900 psi / 63K	**1** = ¼" BSP **C** = ½" BSP **D** = ½" NPT **E** = ¾" BSP **4** = ¾" NPT **2** = 1" BSP **5** = 1" NPT **7** = 1½" BSP **8** = 1½" NPT **3** = 2" BSP **6** = 2" NPT **9** = M20x1.5 **J** = Weldable to NGS (stainless steel only) **L** = Weldable to NRM-4/ NRE-4 (stainless steel only)

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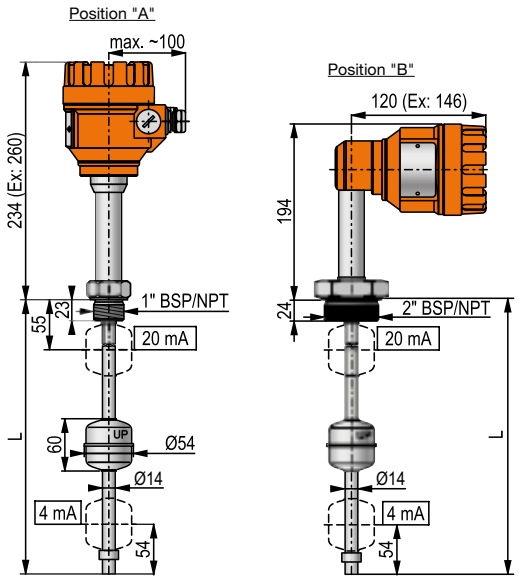
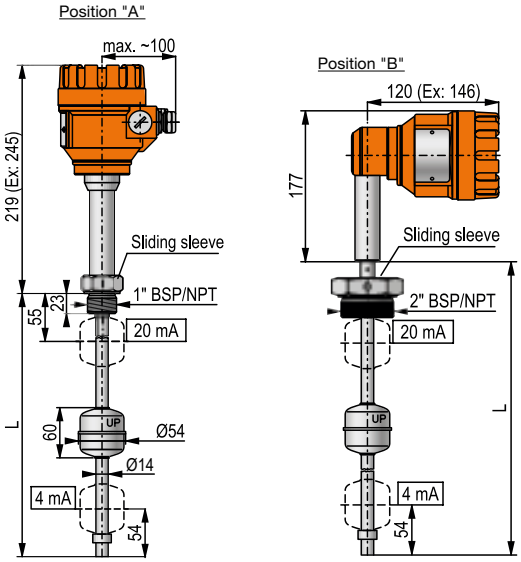
Dimensions [mm]

Rigid probe with threaded process connection

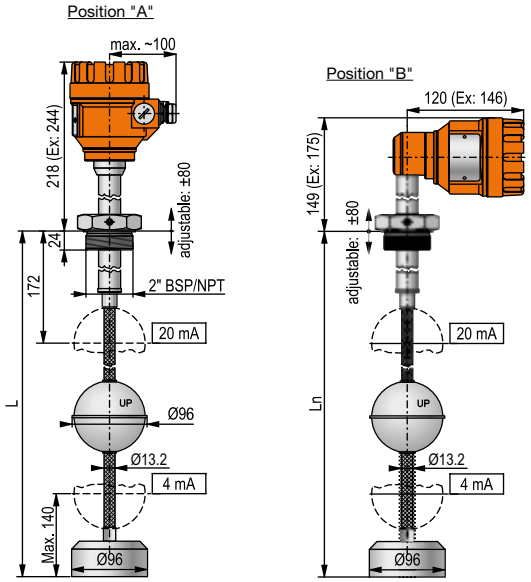


Rigid probe without process connection [1)2)]

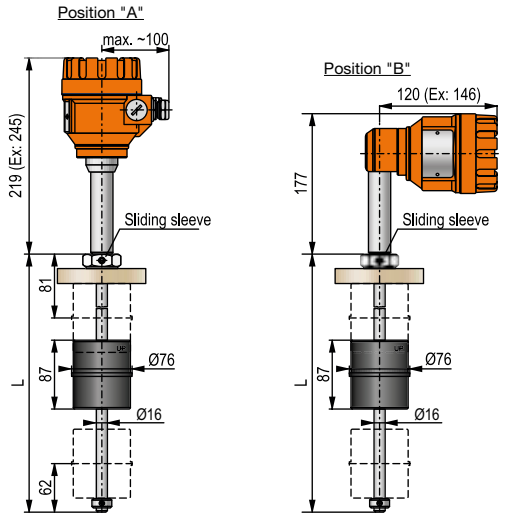


[1)] Sliding sleeve and flange to be ordered separately
[2)] NMB-T(B)R00L is without float and without process connection for NBK

Flexible probe with sliding sleeve and counterweight



Rigid probe with plastic coating without process connection [1)]



[1)] Sliding sleeve and flange to be ordered separately

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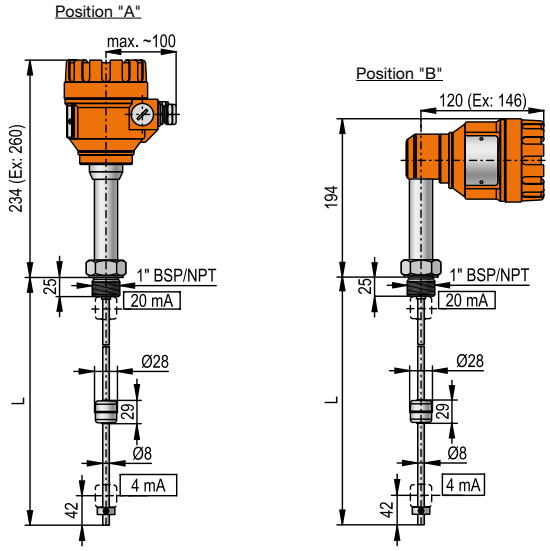
Dimensions [mm] (cont'd)

Mini type rigid probe transmitter with threaded process connection

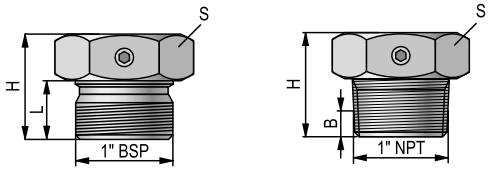


Accessories

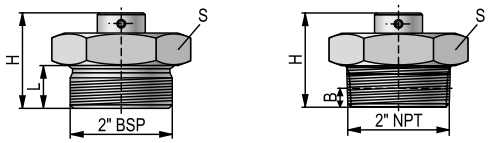
Sliding Sleeve

	Material	Proc. conn.	Dimensions			
			S	H	L	B
ZUB-NMB/S-CER25	1.4571 (316Ti)	1" BSP	41 mm (1.61")	36 mm (1.42")	20 mm (0.79")	-
ZUB-NMB/S-CER50		2" BSP	60 mm (2.36")	55 mm (2.17")	24 mm (0.94")	-
ZUB-NMB/S-CEN25		1" NPT	41 mm (1.61")	37 mm (1.46")	-	10 mm (0.39")
ZUB-NMB/S-CEN50		2" NPT	60 mm (2.36")	44.5 mm (1.75")	-	11 mm (0.43")
ZUB-NMB/S-CPR25	PVDF	1" BSP	46 mm (1.81")	42 mm (1.65")	22 mm (0.87")	-
ZUB-NMB/S-CPN25		1" NPT			25 mm (0.98")	-

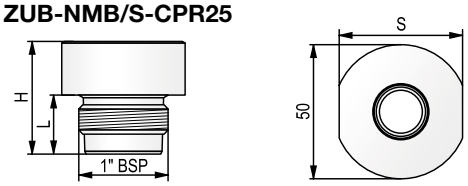
ZUB-NMB/S-CER25/-CEN25



ZUB-NMB/S-CER50/-CEN50



ZUB-NMB/S-CPR25



No responsibility taken for errors;
subject to change without prior notice.

1/05 - 2026