

GENERAL DESCRIPTION

NIVOTRACK magnetostrictive level transmitters are an ideal solution for high accuracy measurement of clean fluids. Its high precision renders the **NIVOTRACK** suitable for custody transfer measurement of liquids such as fuels, solvents, alcohol derivatives etc. Units with flexible tube do not only make this accurate measurement for higher tanks possible, but offer a more convenient way for shipment and installation. Plastic coated versions of the **NIVOTRACK** substantially expand the field of application by a wide range of aggressive materials. Integrating the transmitter into a process control system is easy thanks to the intelligent signal processing and communication software as well as the wide of range of accessories offered.

MAIN FEATURES

- 0.004" (0.1 mm) or 0.04" (1 mm) resolution
- Insertion length maximum 50 feet
- OIML R85 international certification
- Compact type
- Rigid or flexible guide tube
- Plastic coated version for chemicals
- 4-20 mA and HART output
- Graphic display
- 99 point linearization table
- Measurement optimisation
- Volume measurement
- ATEX certified versions
- IP67 protection

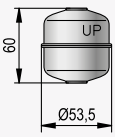
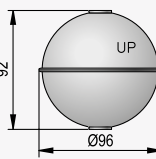
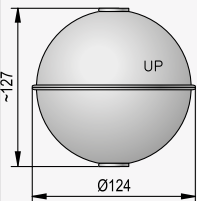
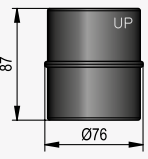
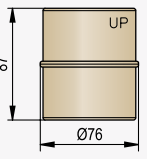
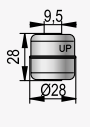
APPLICATIONS

- Custody transfer measurement
- Oil and gas industry
- Fuels and gasoline products
- Pharmaceutical industry
- Chemical industry
- Food industry
- Alcohols and beverages
- Installation in bypass tubes feasible
- Supplementary level transmitter for NIVOFLIP magnetic flip indicator

CERTIFICATIONS

- ATEX approved (Ex ia)
- ATEX approved (Ex d)
- ATEX approved (Ex d ia)
- OIML R85 international certification
- IEC approved (Ex ia)
- IEC approved (Ex d)
- IEC approved (Ex d ia)
- FM & CSA approved

FLOATS

Type	MBA-505-2M-800-00 ⁽¹⁾	MBA-505-2M-200-00 ⁽¹⁾	MBK-530-2M-400-00 ⁽²⁾	MBA-505-2M-900-00 ⁽²⁾	MGU-505-2M-200-00 ⁽²⁾	MGU-505-1M-200-00 ⁽²⁾	4w34bs-16yyyyy ⁽³⁾
Dimensions							
Specific gravity (min.)	0.55	0.8	0.55	0.4	0.7	0.4	0.8
Material	Titanium	316L (1.4404)	316L (1.4435)	316 (1.4401)	PVDF	PP	316L (1.4404)
Medium pressure	363 psig				87 psig	43.5 psig	145 psig

⁽¹⁾ Designed for min. 2" process connection, only order with rigid probe
⁽²⁾ Flange to be ordered separately

⁽³⁾ Designed for min. 1" process connection, only order with mini type



TECHNICAL DATA

Type	Rigid probe version	Flexible probe version	Plastic coated rigid probe version	Mini version with rigid probe
Measured process value	Liquid level, distance, volume			
Nominal length (L)	1.5 to 14.5 ft (0.5 to 4.5 m)	6.5 to 50 ft (2 to 15 m)	1.5 to 10 ft (0.5 m to 3 m)	1.5 to 4.5 ft (0.5 m to 1.5 m)
Material of the tube	316 Ti (1.4571) stainless steel		PFA coated stainless steel	316 Ti stainless steel
Max. process pressure ⁽¹⁾	363 psig	232 psig	43.5 psig	145 psig
Medium temperature	-40 °F to 194 °F, see: temperature diagram			
Standard float diameter / material ⁽²⁾	Ø 2 x 2.35" (53.5 x 60 mm) cylindrical / 316L (1.4404)	Ø 4" (96 mm) ball / 316L (1.4435)	Ø 3 x 3.45" (76 x 87 mm) cylindrical / PVDF / PP	Ø 1 x 1.15" (28 x 28 mm) cylindrical 316L (1.4404)
Medium density	Depends on the applied float			
Material of wetted parts	Stainless steel: 316 Ti, 316 L (1.4571, 1.4404)		PFA, PVDF, PP	St. steel: 316 Ti, 316 L
Ambient temperature	-40 °F to +158 °F, plastic housing: -13 °F to +158 °F, with display: -13 °F to +158 °F, Ex type: see temperature diagram in the user's manual			
Output	Analogue	4-20 mA (limit values: 3.9 ... 20.5 mA)		
	Digital	4-20 mA + HART		
	Display	SAP-300 graphic display		
Damping time	Adjustable 0 s ... 99 s			
Error indication	22 mA or 3.8 mA or holding			
Output load	$R_t = (U_t - 12.5V) / 0.02 A$, $U_t =$ power supply voltage			
Power supply	12.5 V – 36 V DC			
Electrical protection	Class III.			
Ingress protection	IP67			
Process connection	as per order code			
Electric connection	internal thread for 2x NPT ½" cable protective pipe + 2x M20x1.5 plastic cable glands for Ø 0.25 ... 0.5 inch cable; terminal block for AWG20 ... AWG15 wire cross section Ex type: see „Special data for Ex certified models" table			
Housing	Plastic (PBT) or paint coated aluminum or stainless steel			
Mass	3.75 lb + m. probe: 0.4 lb/ft	6.4 lb + m. probe: 0.2 lb/ft + counter weight 7.7 lb	3.75 lb + m. probe: 0.45 lb/ft	3.75 lb + m. probe: 0.4 lb/ft

⁽¹⁾ Depends on selected float, with sliding sleeve connection the max. process pressure is 43.5 psig

⁽²⁾ Requested float type should be specified when placing an order

MEASUREMENT DATA

Type	0.04" (1 mm) resolution	0.004" (0.1 mm) resolution
Nonlinearity (of the displayed and the transmitted value on the HART line) ⁽³⁾	± 0.08" (2 mm) or ± 0.02% F.S. whichever is greater	± 0.04" (1 mm) or ± 0.01% F.S. whichever is greater
Hysteresis ⁽³⁾	< ± 0.04 inch (1 mm)	< ± 0.01 inch (0.25 mm)
Zero span (in LEVEL measurement mode)	Anywhere within the active range	
Measurement range (reducing)	Min. range: 8 inch; Max. range: as per probe length	
Temperature error	0.0015 inch / 50 °F (0.04 mm / 10 °C) between -13 °F to +122 °F	
Current output data	Resolution: 2 µA, Accuracy: 10 µA, Temperature error: 200 ppm/ °C	

⁽³⁾ Under reference conditions

SPECIAL DATA FOR Ex CERTIFIED MODELS

Type	M□□-5□□-□ Ex M□□-7□□-□ Ex	M□□-5□□-E Ex M□□-5□□-F Ex	
Housing	Construction	Single compartment	Dual compartment
	Material	Paint coated aluminium or stainless steel	
Protection type	Intrinsically safe	Flameproof enclosure	Intrinsically safe with flameproof enclosure
Ex marking	ATEX and IEC Ex		FM & CSA
	see: www.nivelco.com		
Cable gland	Brass Nickel plated M 20 x 1.5 cable gland	Brass Nickel plated M 20 x 1.5 Ex d approved cable gland	NPT ½" conduit entry
Cable outer diameter	Ø 0.275 ... 0.55 inch	Ø 0.35 ... 0.45 inch	

NIVOTRACK M-500/M-600 with rigid probe

2-wire compact magnetostrictive level transmitter for liquids with stainless steel rod probe with 0.1 mm or 1 mm resolution

Version

M	□ □ - □ □ □ □ - □
T	Transmitter
B	Transmitter with local LCD indicator

Process connection

M	□ □ - □ □ □ □ - □
A	1" BSP
C	2" BSP
D	1" NPT
G	2" NPT
U	Without process connection for sliding sleeve
L	* Without float, for NIVOFLIP

* Probe length = center to center of NIVOFLIP + 300 mm or 400 mm as per the float type

Housing

M	□ □ - □ □ □ □ - □
5	Aluminium (paint coated)
6	Plastic, PBT, glass fibre reinforced (Ex version not available)
7	Stainless steel

Probe length**

M	□ □ □ - □ □ □ □ - □
nn	0.5-1 m
oo	1.1-3 m; each started 100 mm

nn = 05-10 : 0.5-1 m

oo = 11-30 : 1.1-3 m, ** 3-4.5 m as per special offer

Output / Resolution / Approval / EI. connection

M	□ □ □ - □ □ □ □ □ - □
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	4-20 mA / 0.1 mm / Ex d
B	4-20 mA + HART / 0.1 mm / Ex d
C	4-20 mA / 0.1 mm / Ex d + Ex ia
D	4-20 mA + HART / 0.1 mm / Ex d + Ex ia
E	4-20 mA + HART / 0.1 mm / FM XP Zone 1 / NPT 1/2" / Dual Compartment
F	4-20 mA / 0.1 mm / FM XP Zone 1 / NPT 1/2" / Dual Compartment

For certified level measurement for custody transfer only the HART output with 0.1 mm resolution version including local display unit can be ordered.

Need of IEC is to be specified with order.

Available on request (should be given in the text of the order)

Ø 96 mm ball float (for min. 0.55 kg/dm³ liquids)

Ø 124 mm ball float (for min. 0.4 kg/dm³ liquids)

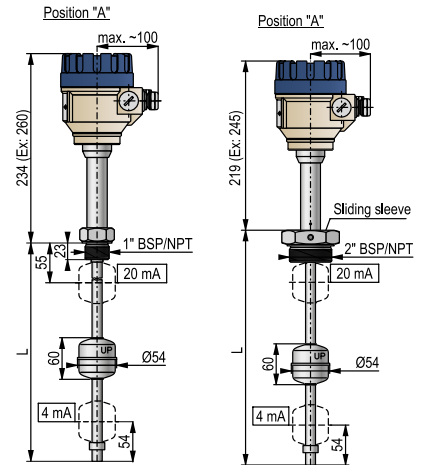
Ø 53.5 mm titan float (for min. 0.55 kg/dm³ liquids)

Side viewed "B" head position model

Only devices with 2" process connection and Ø 53.5 mm floats can be installed without previous disassembly.

Accessories to order (see relevant page for details)

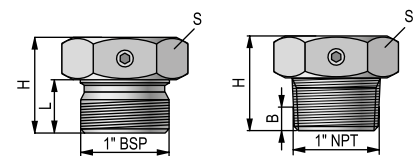
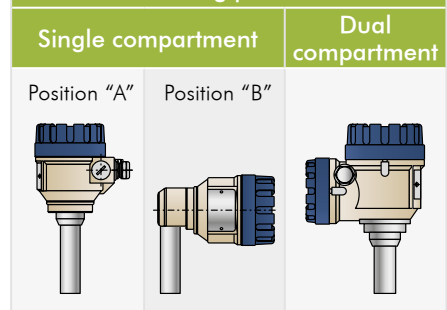
MBH-105-2M-300-00	Sliding sleeve: 1" BSP
MBK-105-2M-300-00	Sliding sleeve: 2" BSP
MBL-105-2M-300-00	Sliding sleeve: 1" NPT
MBN-105-2M-300-00	Sliding sleeve: 2" NPT
S A P - 3 0 0 - 0	Graphic plug-in display module
S A T - 3 0 4 - 0	HART-USB modem
S A K - 3 0 5 - 2	HART-USB/RS485 modem
S A K - 3 0 5 - 6	HART-USB/RS485 modem / Ex ia



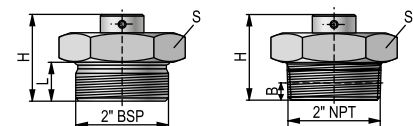
MTA / MTD-500/600

MTU-500/600

Housing position



MBH / MBL-105-2M-300-000



MBK / MBN-105-2M-300-000

Type	Material	P. conn.	Dimensions			
			S (mm)	H (mm)	L (mm)	B (mm)
MBH-105-2M-300-00	1.4571	1" BSP	41	36	20	-
MBK-105-2M-300-00	1.4571	2" BSP	60	55	24	-
MBL-105-2M-300-00	1.4571	1" NPT	41	37	-	10
MBN-105-2M-300-00	1.4571	2" NPT	60	44.5	-	11

NIVOTRACK M-500/M-600 with flexible probe

2-wire compact magnetostrictive level transmitter for liquids with stainless steel cable probe and weight with 0.1 mm or 1 mm resolution

Version

M	□	□	-	□	□	-	□
T							Transmitter
B							Transmitter with local LCD indicator

Process connection

M	□	□	-	□	□	-	□
K							2" BSP
N							2" NPT

Housing

M	□	□	-	□	□	-	□
5							Aluminium (paint coated)
6							Plastic, PBT, glass fibre reinforced (Ex version not available)
7							Stainless steel

Probe length

M	□	□	-	□	□	-	□
nn							2-3 m
oo							3.1-15 m; each started 100 mm
nn = 20-30							: 2-3 m
oo = 31-F0							: 3.1-15 m

Output / Resolution / Approval

M	□	□	-	□	□	-	□
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							4-20 mA / 0.1 mm / Ex d (up to 10 m)
B							4-20 mA + HART / 0.1 mm / Ex d (up to 10 m)
C							4-20 mA / 0.1 mm / Ex d + Ex ia (up to 10 m)
D							4-20 mA + HART / 0.1 mm / Ex d + Ex ia (up to 10 m)

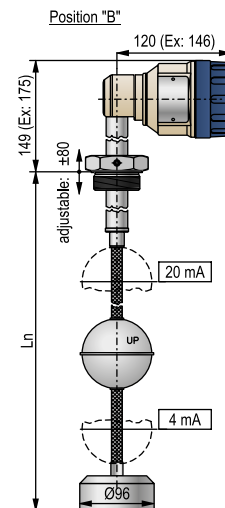
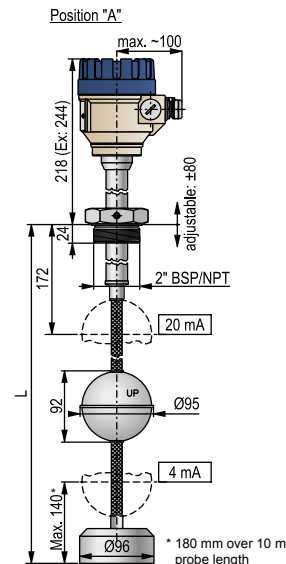
For certified level measurement for custody transfer only the HART output with 0.1 mm resolution version including local display unit can be ordered.
Need of IEC is to be specified with order.

Available on request (should be given in the text of the order)

Ø 124 mm ball float (for min. 0.4 kg/dm³ liquids)
Side viewed "B" head position model

Accessories to order (see relevant page for details)

S A P - 3 0 0 - 0	Graphic plug-in display module
S A T - 3 0 4 - 0	HART-USB modem
S A K - 3 0 5 - 2	HART-USB/RS485 modem
S A K - 3 0 5 - 6	HART-USB/RS485 modem / Ex ia



MTK / MTN-500/600

NIVOTRACK M-500/M-600 with plastic coated rigid probe

2-wire compact magnetostrictive level transmitter for liquids with plastic coated stainless steel rod probe with 0.1 mm or 1 mm resolution

Version

M	U	-	-	-	-	-	-
E	Transmitter						
G	Transmitter with local LCD indicator						

Process connection

M	U	-	-	-	-	-	-
U	Without process connection for sliding sleeve						

Housing

M	U	-	-	-	-	-	-
5	Aluminium (paint coated)						
6	Plastic, PBT, glass fibre reinforced (Ex version not available)						
7	Stainless steel						

Probe length

M	U	-	-	-	-	-	-
nn	0.5-1 m						
oo	1.1-3 m; each started 100 mm						
nn = 05-10 : 0.5-1 m							
oo = 11-30 : 1.1-3 m							

Output / Resolution / Approval

M	U	-	-	-	-	-	-
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	4-20 mA / 0.1 mm / Ex d						
B	4-20 mA + HART / 0.1 mm / Ex d						
C	4-20 mA / 0.1 mm / Ex d + Ex ia						
D	4-20 mA + HART / 0.1 mm / Ex d + Ex ia						

For certified level measurement for custody transfer only the HART output with 0.1 mm resolution version including local display unit can be ordered.

Need of IEC is to be specified with order.

The material of the float (PVDF or PP) should be given in text of the order. The standard float material is PVDF.

Available on request (should be given in the text of the order)

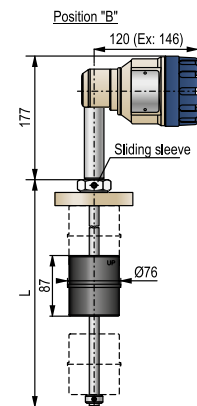
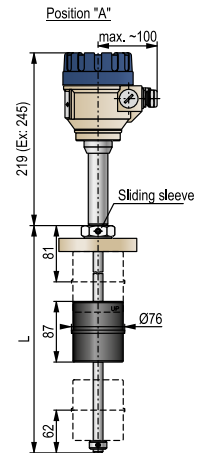
Side viewed "B" head position model

Process connection

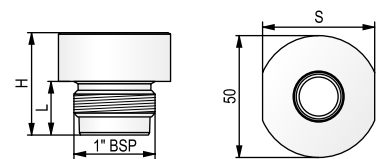
MGH-105-2M-300-00	Sliding sleeve: 1" BSP
MGL-105-2M-300-00	Sliding sleeve: 1" NPT
M F T - 3 2 1 - 2	PP flange drilled like DN80, PN16 + 1" BSP sliding sleeve in should be ordered
M F T - 3 3 1 - 2	PP flange drilled like DN100, PN16 + 1" BSP sliding sleeve should be ordered

Accessories to order (see relevant page for details)

S A P - 3 0 0 - 0	Graphic plug-in display module
S A T - 3 0 4 - 0	HART-USB modem
S A K - 3 0 5 - 2	HART-USB/RS485 modem
S A K - 3 0 5 - 6	HART-USB/RS485 modem / Ex ia



MEU-500/600



MGH-105-2M-300-000

Type	Material	Proc. conn.	Dimensions		
			S (mm)	H (mm)	L (mm)
MGH-105-2M-300-00	PVDF	1" BSP	46	42	22
MGL-105-2M-300-00	PVDF	1" NPT	46	42	25

NIVOTRACK M-500/M-600 mini version with rigid probe

2-wire compact magnetostrictive level transmitter for liquids
mini version with stainless steel rod probe with 0.1 mm or 1 mm resolution

Version

M	□ □ - □ □ □ □ - □
M	Transmitter
C	Transmitter with local LCD indicator

Process connection

M	□ □ - □ □ □ □ - □
A	1" BSP
D	1" NPT

Housing

M	□ □ - □ □ □ □ - □
5	Aluminium (paint coated)
6	Plastic, PBT, glass fibre reinforced (Ex version not available)
7	Stainless steel

Probe length

M	□ □ - □ □ □ □ - □
nn	0.5-1 m
oo	1.1-1.5 m; each started 100 mm
nn = 05-10	: 0.5-1 m
oo = 11-15	: 1.1-1.5 m

Output / Resolution / Approval

M	□ □ - □ □ □ □ - □
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

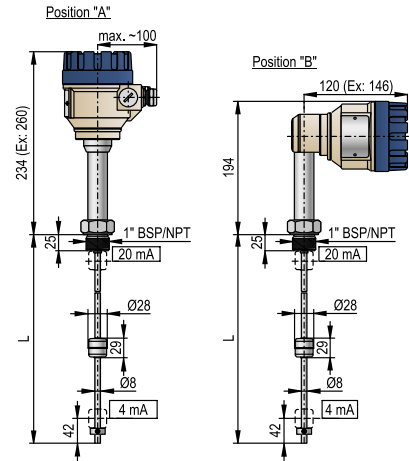
Need of IEC is to be specified with order

Available on request (should be given in the text of the order)

Side viewed "B" head position model

Accessories to order (see relevant page for details)

S A P - 3 0 0 - 0	Graphic plug-in display module
S A T - 3 0 4 - 0	HART-USB modem
S A K - 3 0 5 - 2	HART-USB/RS485 modem
S A K - 3 0 5 - 6	HART-USB/RS485 modem / Ex ia



MMA / MMD-500/600