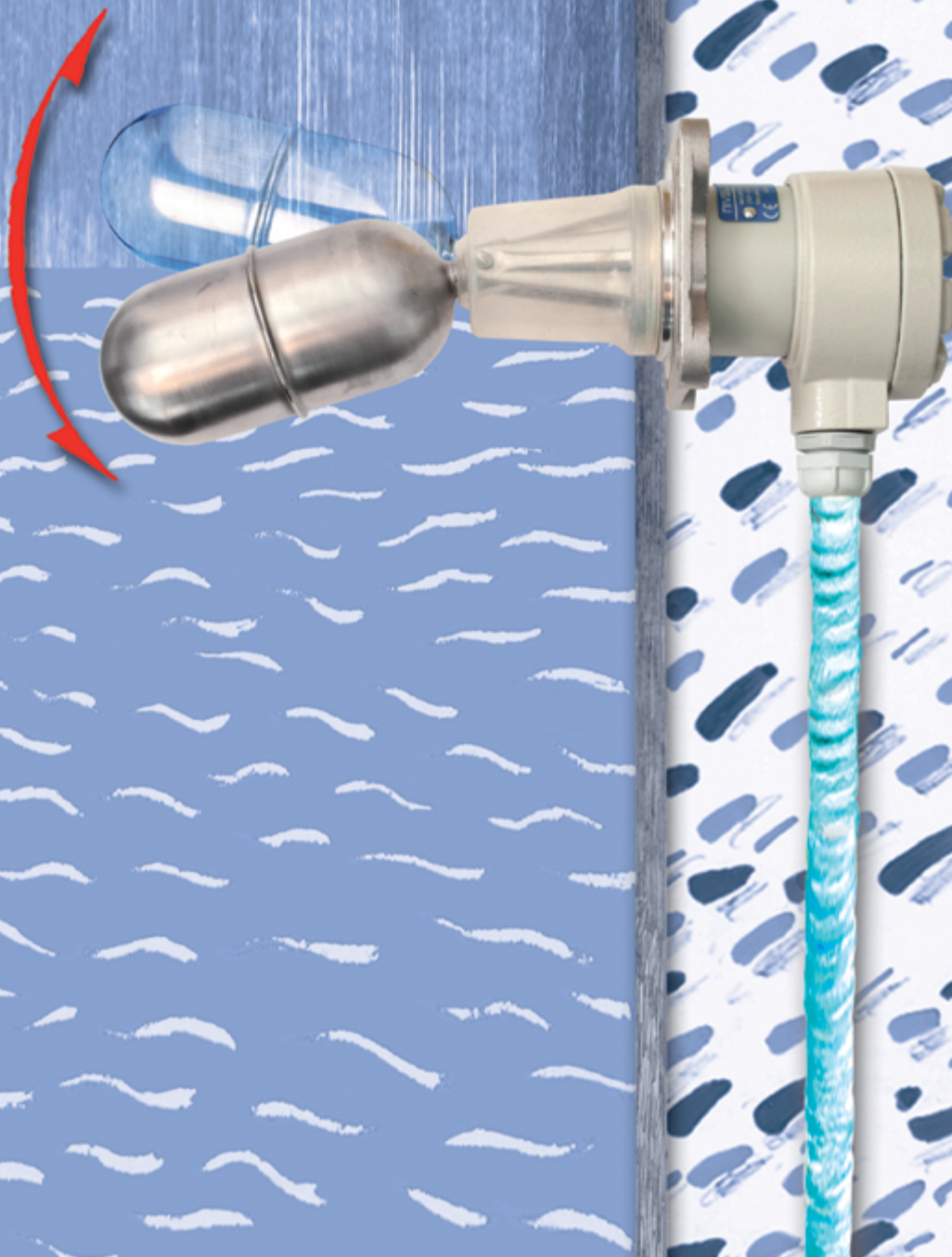


NIVOMAG

MAGNETIC COUPLING LEVEL SWITCHES



НИВЕЛЛО

LEVEL SWITCHES

The NIVOMAG MK magnetic float level switches are used for point-level detection and level control of liquids in all types of containers. Operating principle: the float's magnet activates the output switch via a non-contact coupling system. The device is available in numerous side and top-mounted versions, further widening the applicability of the device. For simpler jobs, fixed hysteresis models offer an affordable solution, while for a more complex level control application, the best choice is the adjustable hysteresis variants. Models with rubber and silicone sleeves can be used with contaminated liquids. The NIVOMAG switch can be fitted with an MMK tester to check functionality even when the liquid levels are not changing.

FEATURES

- Magnetic coupling between switch and float
- Operation w/o external power supply
- Side and top mounted versions
- Submersible version
- Fixed or variable hysteresis
- NIFLANGE weldable stainless steel flange variants
- Max. +250 °C process temperature
- Flame-proof version
- Aluminum or stainless steel housing
- Variants with 2x microswitches
- IP65 / IP68
- 5 years warranty

APPLICATIONS

- Overflow protection
- Level controls
- Supplementary fail-safe switch if combined with other devices
- Water tanks, feedwater tanks
- Fuel tanks
- Power plants

CERTIFICATES

- ATEX (Ex db eb mb G)
- IEC Ex (Ex db eb mb G)
- INMETRO (Ex db eb mb G)
- DNV
- Bureau Veritas (BV)
- SIL 1 (Safety Integrity Level)

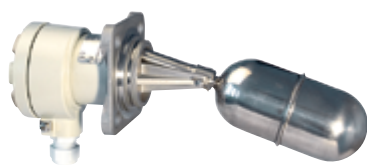
VARIANTS

The following tables and diagrams help select the appropriate model for the job. When selecting a model, liquid density, mounting position, process connection, and the need for adjustable or fixed hysteresis or a rubber sleeve must be considered.

Additional technical data				
Lever length (mm)	0...100	200	300	1000...3000
Maximum float Ø (mm)	Minimum liquid density (kg/dm ³)			
52	0.7	0.8	0.85	-
64			0.8	-
124	-	-	-	0.7

	MK□-		
	-□1□	-□2□	-□3□
Fixed switching differential	■	-	-
Adjustable switching differential	-	■	■
Straight lever	■	■	■
"L" or "Z" lever	■	■	-
Side mounted	■	■	-
Top mounted	■ ⁽¹⁾	■ ⁽¹⁾	■
Submersible	■	■	■
Protective Rubber Sleeve	■	-	-
Flanged process connection	■	■	■ ⁽²⁾
Threaded process connection	■	-	-
Ex variant	■	■	■
Tester	■	■ ⁽³⁾	-
Stainless steel housing	■	■	■
2x microswitches	■	■	■

⁽¹⁾ With "L" lever. ⁽²⁾ Only with 92 x 92 flange. ⁽³⁾ Only with special counter flange.



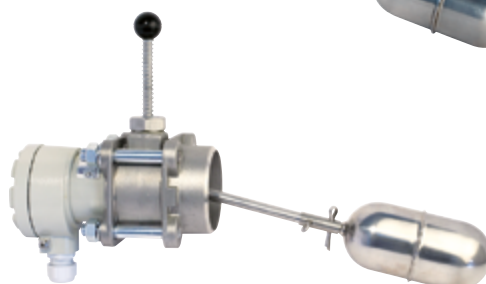
MKA-210-□



MKA-220-□



MKZ-210-0



MKA-210-□ + MMK-1□0 tester + MFF-1□1 counter flange



MKA-230-□

TECHNICAL DATA

	Cylindrical float (side and top mounting)			Ball float (top mounting)
	MKA-□1□-□	MKA-□2□-□	MKU/MKV/MKZ-□1□-□	MKS / MKG-□1□-□
Nominal pressure	25 bar [MKU, MKV, MKZ: 2/25 bar]			16 bar
Process temperature	-40...+250 °C		0...+80 °C	MKS: 0...+200 °C MKG: 0...+100 °C
	Ex variant: see Temperature specification table			
Ambient temperature	-20...+80 °C, Ex variant: see temperature specification for Ex version table			
Liquid density	Minimum 0.7...0.85 kg/dm ³ , see "Additional technical data" table			
Switching differential	Fixed	Adjustable	Fixed ⁽¹⁾	Adjustable
Insertion length	202...521 mm	254...573 mm	202...521 mm ⁽¹⁾	1265...3265 mm
Material of wetted parts	Stainless steel (1.4571, 1.3960, 1.4404); MKG, MKV: rubber (NBR); MKS, MKZ: silicone			
Housing material	Painted aluminum or stainless steel			
Microswitch	1 or 2 microswitch with closing and opening contact (NO and NC) ⁽²⁾			
Switch rating	Standard	250 V 10 A AC12; 220 V 0.6 A DC13		
	Ex variant	250 V 2.5 A AC12; 220 V 0.3 A DC13		
Electrical connection	M20×1.5 cable gland, cable diameter: Ø6...12 mm (Ex version: Ø10...14 mm), wire cross section: 5× 0.75...2.5 mm ² (MKU, MKV, MKZ: integrated cable NSSHöu-J 5× 1.5 mm ² , Ø14mm) ⁽³⁾			
Ingress protection	IP65 (MKU, MKV, MKZ: IP68, up to 20 m water column)			
Electrical protection	Class I			
Safety integrity level	SIL 1			
Ex marking	ATEX	Ⓔ II 1/2 G Ex db eb mb IIC T6...T2 Ga/Gb		
	IEC Ex	Ex db eb mb IIC T6...T2 Ga/Gb		
	INMETRO	Ex db eb mb IIC T6...T2 Ga/Gb		
Weight	~1.8...3.5 kg			

⁽¹⁾ MKU type is also available with adjustable switching differential. In this case, the extension length is 254...573 mm.

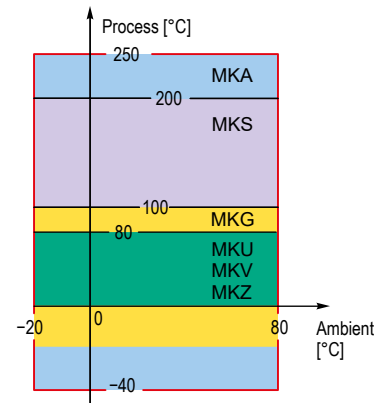
⁽²⁾ NO and NC terminals must be connected to an equipotential circuit.

⁽³⁾ Cable length must be specified when ordered.

Ex INFORMATION

Temperature specification for Ex variants

Temperature classes	T6	T5	T4	T3	T2	
Ambient temperature range	-20...+70 °C				-20...+80 °C	
Process temperature range	MKA	-40...+80 °C	-40...+95 °C	-40...+130 °C	-40...+200 °C	-40...+250 °C
	MKG	-20...+80 °C				-20...+95 °C
	MKS	-40...+80 °C	-40...+95 °C	-40...+130 °C		-40...+200 °C
	MKU, MKV, MKZ	-20...+70 °C				-20...+80 °C



NIVOMAG MK-21 with fixed switch differential

5 years

Side / top-mounted magnetic coupling float level switch with fixed switch differential with SIL 1 and marine (DNV, BV) certificates

Version

M K <input type="checkbox"/> - <input type="checkbox"/> 1 <input type="checkbox"/> - <input type="checkbox"/>	
A	Standard
G	With rubber protective sleeve
S	With silicone protective sleeve
U	Submersible (IP68) (cable length must be specified in text of the order)
V	Submersible (IP68), with rubber protective sleeve (cable length should be given in text of the order)
Z	Submersible (IP68), with silicone protective sleeve (cable length must be specified in text of the order)

Housing / Output

M K <input type="checkbox"/> - <input type="checkbox"/> 1 <input type="checkbox"/> - <input type="checkbox"/>	
2	Aluminum / 1 x SPDT
5	* Aluminum / 2 x SPDT
4	Stainless steel / 1 x SPDT
6	* Stainless steel / 2 x SPDT

* Ex version under licence.

Process connection

M K <input type="checkbox"/> - <input type="checkbox"/> 1 <input type="checkbox"/> - <input type="checkbox"/>	
0	92 x 92 mm, PN square flange
B	** 2" BSP
N	** 2" NPT
1	** DIN DN80, PN40 / 25 / 16 / 10 steel
2	** DIN DN100, PN40 / 25 steel
5	** DIN DN80, PN40 / 25 / 16 / 10, 1.4571 stainless steel
6	** DIN DN100, PN40 / 25, 1.4571 stainless steel

* Not available with protection sleeve

Protrusion / Lever length / Ex Certificate

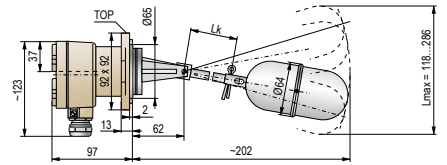
M K <input type="checkbox"/> - <input type="checkbox"/> 1 <input type="checkbox"/> - <input type="checkbox"/>	
0	202 mm (189 mm for MKA-21B, 178 mm for MKA-21N)
1	321 / 100 mm
2	421 / 200 mm
3	521 / 300 mm
4	*** "L" or "Z" lever
9	202 mm (189 mm for MKA-21B, 178 mm for MKA-21N) / Ex db eb mb G
5	321 / 100 mm / Ex db eb mb G
6	421 / 200 mm / Ex db eb mb G
7	521 / 300 mm / Ex db eb mb G
8	*** "L" or "Z" lever / Ex db eb mb G

*** The type of the lever profile ("L" or "Z") and the upper (Lsh) or the lower (Lsl) switching point must be specified in text of the order.

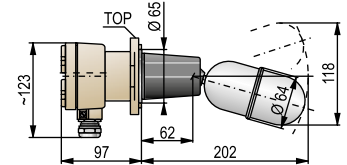
Need of IEC Ex is to be specified in the text part of the order

Cable for MKU/MKV/MKZ submersible version

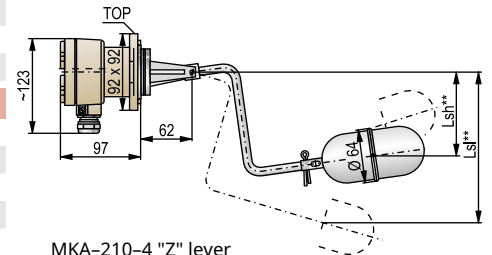
To be specified in the order; sold by the meter



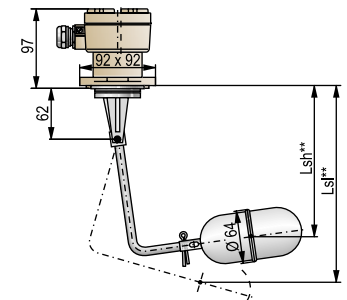
MKA-210-0



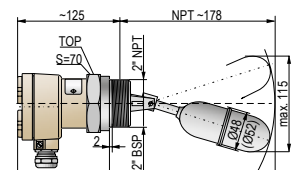
MKG-210-0



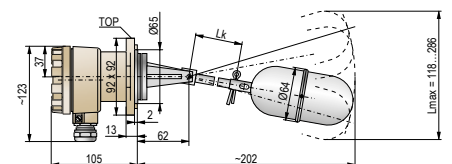
MKA-210-4 "Z" lever



MKA-210-4 "L" lever



MKA-21B / 21N



MKA-510-0

NIV24

MKA-210-0

NIVOMAG MK-22 with adjustable switch differential

5 years

Magnetic coupling float level switch with adjustable switch differential with SIL 1 and marine (DNV, BV) certificates

Version

M K <input type="checkbox"/> - <input type="checkbox"/> 2 <input type="checkbox"/> - <input type="checkbox"/>	
A	Standard
U	Submersible (IP68) (cable length must be specified in text of the order)

Housing / Output

M K <input type="checkbox"/> - <input type="checkbox"/> 2 <input type="checkbox"/> - <input type="checkbox"/>	
2	Aluminum / 1x SPDT
5 *	Aluminum / 2x SPDT
4	Stainless steel / 1x SPDT
6 *	Stainless steel / 2x SPDT

* Ex version under licence.

Process connection

M K <input type="checkbox"/> - <input type="checkbox"/> 2 <input type="checkbox"/> - <input type="checkbox"/>	
0	92 × 92 mm, PN Square flange
1	DIN DN80, PN40/PN25/PN16/PN10 steel
2	DIN DN100, PN40/PN25 steel
5	DIN DN80, PN40/PN25/PN16/PN10, stainless steel
6	DIN DN100, PN40/PN25, 1.4571 stainless steel

Protrusion / Lever length / Ex certificate

M K <input type="checkbox"/> - <input type="checkbox"/> 2 <input type="checkbox"/> - <input type="checkbox"/>	
0	254 mm
1	373 / 100 mm
2	473 / 200 mm
3	573 / 300 mm
4 **	"L" or "Z" lever
9	254 mm / Ex db eb mb G
5	373 / 100 mm / Ex db eb mb G
6	473 / 200 mm / Ex db eb mb G
7	573 / 300 mm / Ex db eb mb G
8 **	"L" or "Z" lever / Ex d e mb G

** The type of the lever profile ("L" or "Z") and the upper (Lsh) or the lower (Lsl) switching point must be specified in text of the order. With the adjustable switch differential option, the switching points can be shifted.

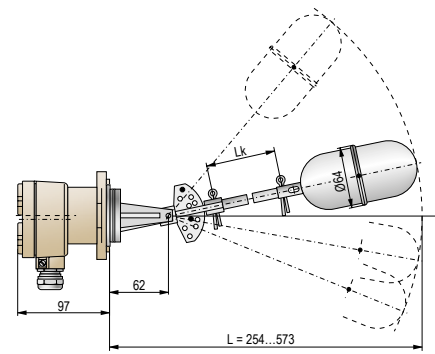
Need of IEC Ex is to be requested in the text part of the order

Cable for MKU submersible version

To be specified in the order; sold by the meter

Accessories sold separately

MKA-210-0M-200-00	Ø64 mm stainless steel (1.4404) ball float (for min. 0.7...0.8 kg/dm ³ liquids)
MKA-21B-0M-000-02	Ø52 mm stainless steel (1.4404) ball float (for min. 0.7...0.85 kg/dm ³ liquids)
MKA-230-0M-100-00	Ø124 mm stainless steel (1.4404) ball float (for min. 0.7 kg/dm ³ liquids)
MKA-210-0M-900-00	Ø50 mm titanium float (for min. 0.4 kg/dm ³ liquids)
MKA-140-0M-000-01	Oil resistant rubber sleeve
MKA-150-0M-000-01	Silicon protection sleeve
4guo74x2epdmy	EPDM O-ring (cover seal)
4gu2x76klinge	REINZ AFM34 flat gasket for 92x92 connection
4gu2colklinge	REINZ AFM34 flat gasket for 2" connection
MKA-110-1M-000-01	100 mm arm extension
MKA-110-2M-000-01	200 mm arm extension
MKA-110-3M-000-01	300 mm arm extension
4cesa5x25koa4	Split pin, 5x25 mm
MKA-110-1M-000-02	Tubular sleeve
MKA-120-0M-000-02	Hysteresis adjusting piece
MKA-120-0M-000-04	Tilting fork
MKA-220-0M-000-07	Tilt pin, long
MKA-120-0M-000-03	Adjuster pin
4cesa2x10koa4	Split pin, 2x10 mm
MKA-210-9M-100-00	Microswitch Ex
4we83140nony	Microswitch non-Ex



MKA-220-0

LEVEL SWITCHES

NIVOMAG MK-23 Top-mounted **5 years**

Top-mounted magnetic coupling float level switch and adjustable switch differential with SIL 1 and marine (DNV, BV) certificates

Version

M K - 3 0 - 	
A	Standard
U	Submersible (IP68) (cable length must be specified in text of the order)

Housing / Output

M K - 3 0 - 	
2	Aluminum / 1x SPDT
5	* Aluminum / 2x SPDT
4	Stainless steel / 1x SPDT
6	* Stainless steel / 2x SPDT

* Ex version under licence.

Process connection

M K - 3 - 	
0	92 × 92 mm, PN Square flange

Protrusion / Lever length / Ex certificate

M K - 3 0 - 	
1	1265 mm / 1000 mm
2	2265 mm / 2000 mm
3	3265 mm / 3000 mm
5	1265 mm / 1000 mm / Ex db eb mb G
6	2265 mm / 2000 mm / Ex db eb mb G
7	3265 mm / 3000 mm / Ex db eb mb G

Need of IEC Ex is to be requested in the text part of the order

Cable for MKU submersible version

To be specified in the order; sold by the meter

NIVOMAG MFF Counter flange **5 years**

Counter flange for MK magnetic level switch

Material

M F F - 1 - 0	
1	Steel (1.7218)
2	Stainless steel (1.4409)

Version

M F F - 1 - 0	
0	Standard
1	For units with MMK-1_0 tester

NIVOMAG MMK Tester **5 years**

Tester for MK magnetic level switch

Type

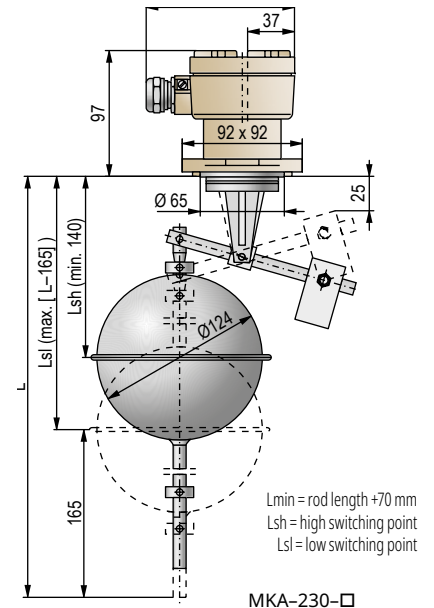
M M K - 1 1 0 - 0	Carbon steel (1.7218)
M M K - 1 2 0 - 0	Stainless steel (1.4409)

NIVOMAG MAY Gland adapter **5 years**

Y-adapter for multiple cable entry with M20x1.5 connector size, for non Ex devices.

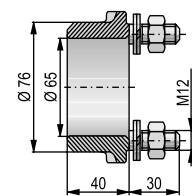
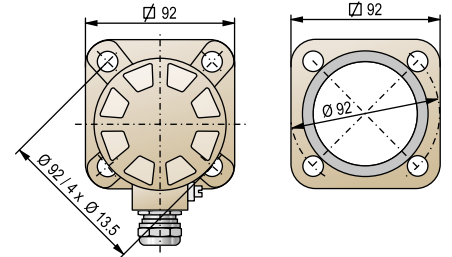
Type

M A Y - 1 2 2 - 	
0	Without gland
1	Plastic glands
2	Metal glands

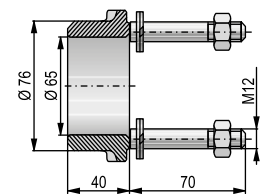


MKA-230-0

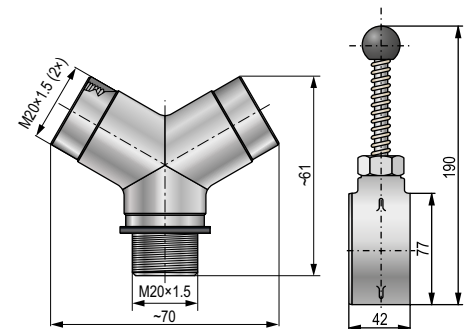
Lmin = rod length + 70 mm
Lsh = high switching point
Lsl = low switching point



MFF-110



MFF-111



MAY-122-0

MMK-110

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