Thank you for choosing a NIVELCO instrument.
We are sure that you will be satisfied throughout its use.

NIVOPOINT

MR

MAGNETIC FLOAT LEVEL SWITCH

User's manual

1. APPLICATION

The interaction of the magnetic float and the reed relays (incorporated in the protection tube) is the basis of the NIVOPOINT magnetic float level switch series operation. They are suitable for level indication of normal and explosive liquids, and can be used for level control tasks. The protecting tube contains a max. of 5 relays. Parts of the instrument are: probe tube with magnetic float and housing containing the connection terminal.

The magnetic float moves alongside the protection tube tracking the level of the liquid and activating the reed relays. As the float passes a relay it changes the output state of the relay which retains this state latching until the level decreases and the float moves again along the respective relay to switch its state back.

2. TECHNICAL DATA

2.1. GENERAL DATA

TYPE	MR □– □□□		MP□ – □□□	MR□ – □□□-7 Ex	MR□ – □□□-8 Ex
Insertion length	0.25 m ... 3 m				
Material of wetted parts	Stainless steel (1.4571 / BS 316Ti)		PVDF float / PFA coated probe	Stainless steel (DIN 1.4571 / BS 316Ti)	
Max. process pressure	2.5 MPa (25 bar) at +20 °C		0.3 MPa (3 bar) at +20 °C	2.5 MPa (25 bar) at +20 °C	
Medium density	min. 0.8 kg/dm³	min. 0.5 kg/dm³	min. 0.7 kg/dm³	min. 0.8 kg/dm³	
Nominal float dimensions / shape	∅ 52x59mm* cylinder	∅ 96 mm* ball	∅ 76x87 mm cylinder	∅ 52x59 mm cylinder	
Medium temp. range	-40 °C ... +150 °C		-40 °C ... +80 °C	See temperature classes table	
Ambient temp. range	-40 °C ... +95 °C		-40 °C ... +95 °C		
Output	1 ... 5 pcs reed-switches, connecting one side of each, NO/NC				
Switching rate	120 W / VA, 250 V AC/DC, 3 A /reed relay, max. 9 A				
Switch differential	< 10 mm				
Distance of switches	min. 110 mm				
Electrical connection	M20 x 1.5 for cables ∅ 6 ... ∅12			M20 x 1.5 for cables ∅ 9.5 ... ∅ 10	without cable gland
	terminal, wire cross section: 0.5 ... 2.5 mm²				
Process connection	1", 1½", 2" BSP 1", 1½", 2" NPT		PP flange DN 80, DN 100	1", 1½", 2" BSP 1", 1½", 2" NPT	
Sealing material	Klingerit 400		—	Klingerit 400	
Electrical protection	Class I, Protecting cable 4 mm²				
Ingress protection	IP67 (as per EN 60529:2015)				
Ex marking	—			Ⓔx II 2 G Ex d IIC T6 ... T3 Gb	
Dimension of the hous.	116 x 80 x 65 mm			124 x 80 x 65 mm	
Mass	0.4 kg + 0.3 kg/fm			0.45 kg + 0.3 kg/fm	

** dimensions of the float depend on the order*

Note: the device must be installed with Ex d IIC certified explosion-proof cable gland.

2.2. ADDITIONAL DATA FOR EX APPROVED MODELS

CLASS	T6	T5	T4	T3
Max. ambient temperature from –40 °C	+65 °C	+80°C	+95 °C	+95 °C
Max. medium temperature from –40 °C	+80°C	+95 °C	+130 °C	+150 °C

2.3. ACCESSORIES

- User's Manual
- Certificate of Warranty
- Declaration of Conformity
- 1 pc Gasket (for threaded versions)

2.4. ORDER CODE

NIVOPOINT M □ □ – □ □ □ – □ ***

TYPE	CODE
Standard	R
Standard / plastic coating and float	P

PROCESS CONNECTION	CODE
1" BSP	A
2" BSP	C
1" NPT	D
2" NPT	G
1½" BSP	B
1½" NPT	E

SWITCH POINT	CODE
1 pc. NO/NC	1
2 pcs. NO/NC	2
3 pcs. NO/NC	3
4 pcs. NO/NC	4
5 pcs. NO/NC	5

LENGTH	CODE
0 m	0
1 m	1
2 m	2
3 m	3

LENGTH	CODE
0 m	0
0.1 m	1
:	:
0.8 m	8
0.9 m	9

FLOAT / EX	CODE
*** / normal	3
∅ 52 1.4571 / Ex	7
∅ 52 1.4571 / Ex without cable gland	8

Notes:

*** The order code of an Ex version should end in **'Ex'** *** Depends on the order: ∅ 52 / 1.4571, ∅ 96 /1.4571 **MP** version: ∅ 76 / PVDF*

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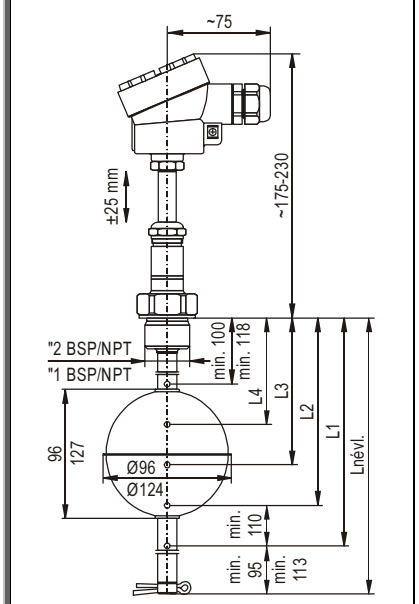
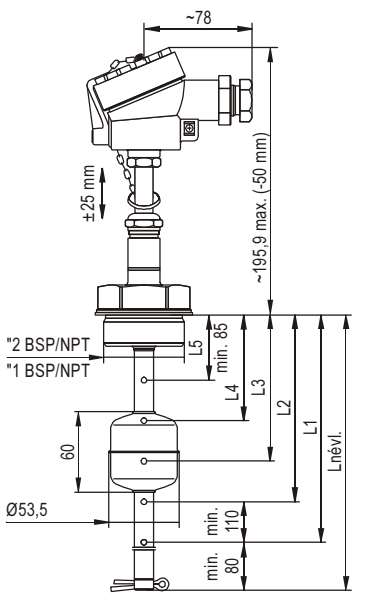
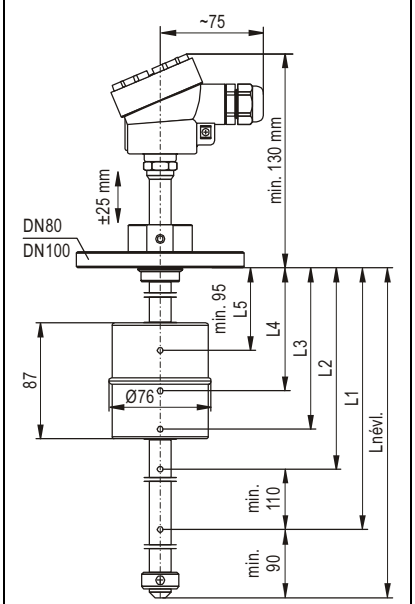
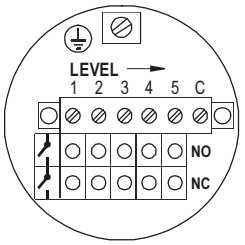
2.5. DIMENSIONS

STANDARD VERSION MR□-□□□	EX VERSION MR□-□□□	STANDARD VERSION MP□-□□□	TERMINAL BOX
			

3. INSTALLATION

For mounting the unit 1", 1½", 2" BSP or NPT threads can be used. Minimal gap diameter for the float is ∅ 55 mm. Use the M20x1.5 cable gland for electrical connection.

The only version that can be installed without removing the float from the shaft and reassembling it from the inside of the tank is the version with 2" (BSP or NPT) process connection. If protection tube is used the minimum tube diameter should be ∅ 75 mm (for insertion lenght < 1.5m and ∅ 95 mm for insertion length > 1.5m). When using a ∅ 90 mm float the tube diameter should be min. ∅ 130 mm.

W A R N I N G !

The sliding sleeve must not be loosened in tanks under pressure.

The unit should be mounted in vertical position via its process connection and handled with care to avoid any damage or bend of the protection tube during transportation or installation.

4. WIRING

Depending on the grounding system either the inner or the outer grounding terminal should be connected to the EP network.

Standard version

Remove the cover. Feed the electrical cables through the cable gland and connect them in accordance with the sketch on the cover where the (NO/NC) states of the relays are marked. The terminal of the lowest switch point has to be number 1.

„C" is common terminal.

The cross section of the connecting cable has to be between 0.5 and 2.5 mm^2.

Ex version

Remove the safety clamp and screw the cover off. Feed the electrical cables through the cable gland and connect them in accordance with the sketch on the cover where the (NO/NC) states of the relays are marked.

Connect the grounding screw to the grounding system. Place the cover back and fasten the safety clamp by setting it into one of the notches of the cover.

5. SET UP, ADJUSTMENT

After screwing in and before tightening the sliding sleeve the direction of the cable gland and the position of the reed-relay set can be adjusted.

An open-end wrench should be used when loosening or screwing tight the sliding sleeve. The position of the reed-relay set can be vertically adjusted by a max. of ± 25 mm.

5.1. SPECIAL CONDITIONS OF THE EX APPLICATION

The apparatus met the requirements specified for mechanical strength with reduced impact energy (4 J = 1 kg; 0.4 m). On the basis of the above the place and way of installation should guarantee the protection of the unit against external mechanical impacts during service.

Before the installation of the device it must be equipped with a certified cable gland with II 2 G Ex d IIC protection type. Prior to installing the Ex d certified cable gland the red protection cap should be removed.

6. MAINTENANCE, REPAIR

The unit does not require regular maintenance. In some instances, however, the probe may need occasional cleaning to remove surface deposits. This must be carried out gently, without harming the probe.

All repairs will be carried out at the manufacturer's premises.

7. STORAGE CONDITIONS

Ambient temperature: -20 °C ... +60 °C

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