

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□ - □□□ Ex
Insertion length	0.25 m ... 3 m		
Material of wetted parts	Stainless steel (DIN 1.4571 / BS 316Ti)	PVDF float / PFA coated guiding tube	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.0.8g/cm <sup>3</sup>   min.0.5g/cm <sup>3</sup>	min.0.6g/cm <sup>3</sup>	min.0.8g/cm <sup>3</sup>
Nominal float dimensions*	∅52x59mm**   ∅ 96 mm**	∅ 76 x 87 mm	∅ 52 x 59 mm
Medium temp. range	-40 °C ... +150 °C	-40 °C ... +80 °C	See table of temperature classes
Ambient temp. range	-40 °C ... +100 °C	-40 °C ... +100 °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	M20x1.5 for cables ∅6 to ∅12 mm		M20x1.5 for cables ∅9.5 to ∅ 10 mm
	terminal, wire cross section: 0.5 to 2.5 mm <sup>2</sup>		
Process connection	1" BSP, 2" BSP 1" NPT, 2" NPT	PP flange DN 80, DN 100	1" BSP, 2" BSP 1" NPT, 2" NPT
Sealing material	Klingerit 400		Klingerit 400
Electrical protection	Class I, Protecting cable 4 mm <sup>2</sup>		
Ingress protection	IP 65		
Certificate for Ex versions	—		Ex II 2 G EEx d IIC T3 ... T6
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

\*\* for the exact size of the float see dimensions

### 2.2 ADDITIONAL DATA FOR EX APPROVED MODELS

CLASS	TEMPERATURE CLASS			
	T6	T5	T4	T3
Max. ambient temperature	80 °C	95 °C	85 °C	70 °C
Max. medium temperature	85 °C	100 °C	135 °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

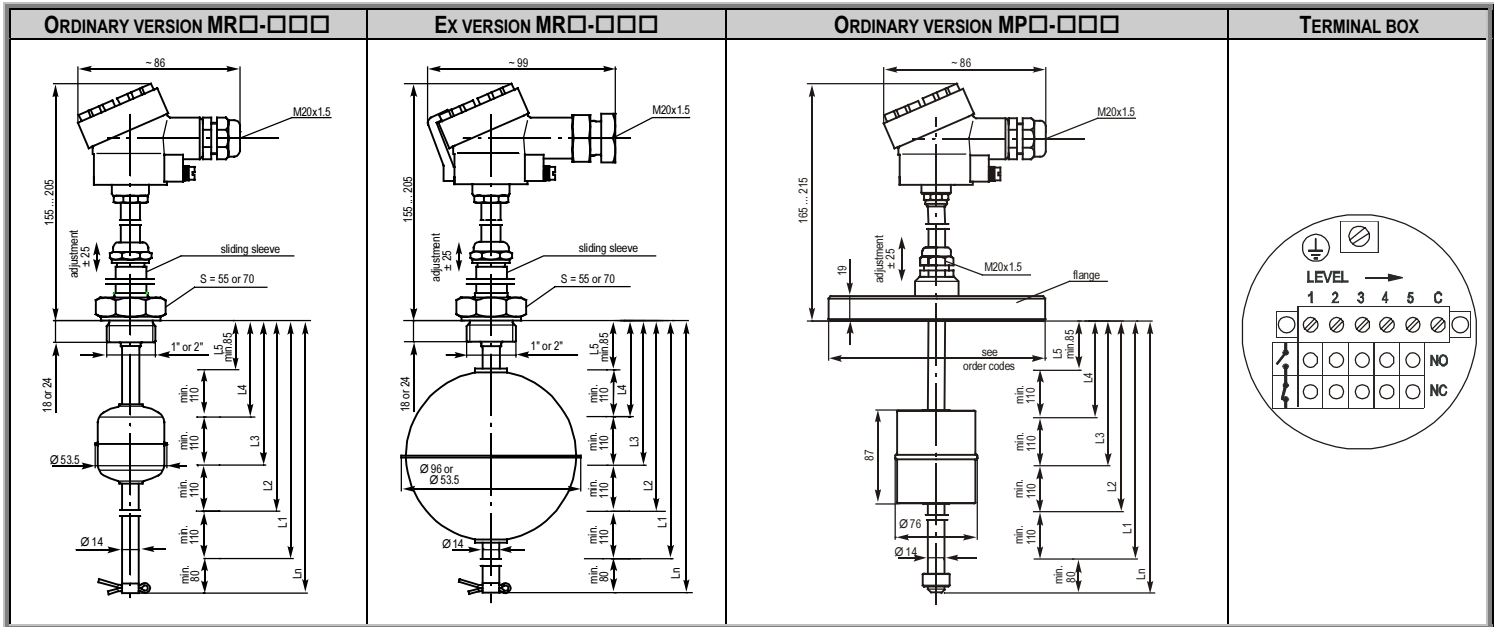
NIVOPOINT M □ □ - □ □ □ - □ □ □ \*\*\*

TYPE	CODE	CONNECTION	CODE	SWITCH POINT	CODE	LENGTH	CODE	LENGTH	CODE	FLOAT / Ex	CODE
Standard	R	1" BSP	A	1 pc. NO/NC	1	0 m	0	0 m	0	**** / normal	3
Standard / plastic coating and float	P	2" BSP	C	2 pcs. NO/NC	2	1 m	1	0,1 m	1	∅ 52 1.4571 / Ex	7
		1" NPT	D	3 pcs. NO/NC	3	2 m	2	:	:		
		2" NPT	G	4 pcs. NO/NC	4	3 m	3	0,8 m	8		
		DN 80 PN 16 PP	P	5 pcs. NO/NC	5			0,9 m	9		
		DN 100 PN 16 PP	R								

Notes:

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

## 2.5 DIMENSIONS



## 3. INSTALLATION

For mechanical installation 1", 2" BSP or NPT threads can be used. Minimal gap diameter for the float is  $\varnothing 55$  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  $\varnothing 75$  mm (for insertion length < 1.5m and  $\varnothing 95$  mm for insertion length > 1.5m). When using a  $\varnothing 90$  mm float the tube diameter should be min.  $\varnothing 130$  mm.

### WARNING!

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 MODEL

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<sup>2</sup>.

### EX VERSION

Remove the retainer 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 retainer 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  $\pm 25$ 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.

## 6. MAINTENANCE, REPAIR

The instrument 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.

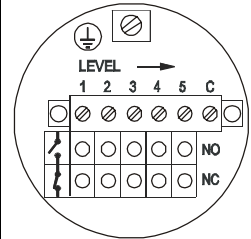
Repairs during or beyond the guarantee period are carried out solely by the manufacturer. Equipments sent back for repair should be cleaned or sterilised by the User. The User must declare that the above has been carried out.

## 7. STORAGE CONDITIONS

Ambient temperature: -25 °C to +60 °C  
Relative humidity: max. 98 %

## 8. WARRANTY

All Nivelco products are warranted free of defects in materials or workmanship for a period of two years from the date of purchase, as indicated in the Certificate of Warranty.



mra1053a0600h\_07  
January, 2007

Nivelco reserves the right to change technical specifications without notice.