

Thank you for choosing a NIVELCO instrument.

## 1. GENERAL INTRODUCTION, OPERATION



NIVOFLIP MAK-100-□ type magnetic level switches are suitable for level switching of various liquids. MAK-100 type magnetic level switches are used for magnetic-lamella bypass level indicator (named NIVOFLIP) as an optional level switch.

### OPERATION PRINCIPLE:

Mounted on suitable connection flanges on the side of the tank the liquid level in the bypass tube and the tank is equal. In the stainless-steel bypass tube a magnetic float tracks the level of the liquid. In the float a permanent magnet is incorporated, which operates the MAK-100 type adjustable positioned magnetic level switch through the stainless-steel side of the tube, and provides non-contact signal transfer to the microswitch.

Electronic connection is performed with cable gland, wired with a maximal 2.5 mm<sup>2</sup> cross sectioned cable. Installation of the level switch is made by 2 pieces of hose clamps. Position of the switch can be changed to adjust the needed switching level. The level switches are available in normal and Ex versions.

## 2. TECHNICAL DATA

Type	MAK-100-0	MAK-100-6	MAK-100-7
Medium temperature	max. +130 °C (+266 °F)	See: Temperature classes table	
Ambient temperature	-20...+80 °C (-4...+176 °F)		
Material of the switch-housing	Paint coated aluminium cast		
Switch	1 microswitch, with NO / NC contacts		
Switch rating	250 V AC12 2.5 A 220 V DC13 0.3 A	Only Ex ia certified and approved contact isolator should be used for supply!	250 V AC12 2.5 A 220 V DC13 0.3 A
Electrical connections	cable gland: M20x1.5 terminal for max. 2.5 mm <sup>2</sup> (AWG14) wire cross section		
Mechanical protection	IP65		
Electrical protection	Class I		
Ex marking	–	 II 1G	 II 2G Ex db eb mb IIC T6...T4
Mass	1.5 kg (3.3 lbs)		

\* The Ex d and Ex m protection mode apply to the built-in microswitch!

### 2.1 GENERAL DATA

Class	Temperature classes		
	T6	T5	T4
Max. medium temperature	+80 °C (+176 °F)	+95 °C (+203 °F)	+130 °C (+266 °F)
Ambient temperature	-20...+60 °C (-4...+140 °F)	-20...+70 °C (-4...+158 °F)	-20...+80 °C (-4...+176 °F)

### 2.2 ACCESSORIES

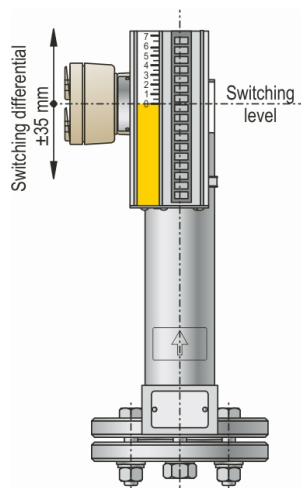
- User's manual
- Warranty card
- EU Declaration of Conformity
- 2 pcs. Hose clamps

### 2.3 ORDER CODE

NIVOFLIP MAK - 100 - □

Type	Code
Normal	0
Ex II 1G (ATEX)	6
II 2G Ex db eb mb IIC T6...T4 (ATEX)	7

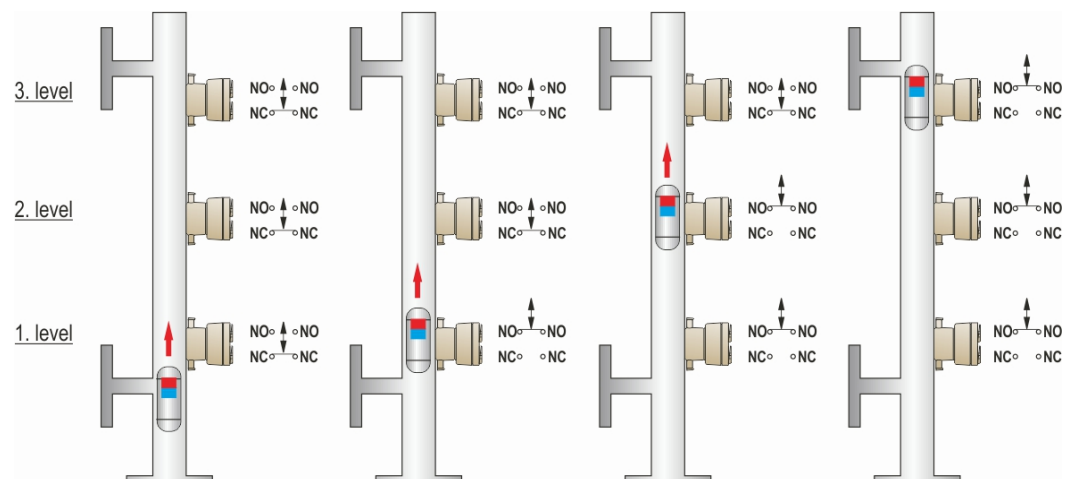
### 2.5 MOUNTING



### 2.6 MOUNTING RECOMMENDATION

#### Default start-up:

Before start-up move the float to the top end, and all the way back to the bottom point.



**NIVOFLIP**  
MAGNETIC LEVEL SWITCH

USER'S MANUAL  
FOR MAK - 100 - □



NIVELCO



Manufacturer

NIVELCO Process Control Co.

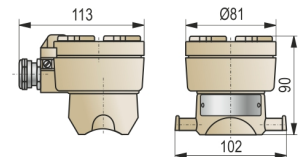
H-1043 Budapest, Dugonics u. 11.

Telefon: 889-0100

E-mail: sales@nivelco.com www.nivelco.com



### 2.4 DIMENSIONS

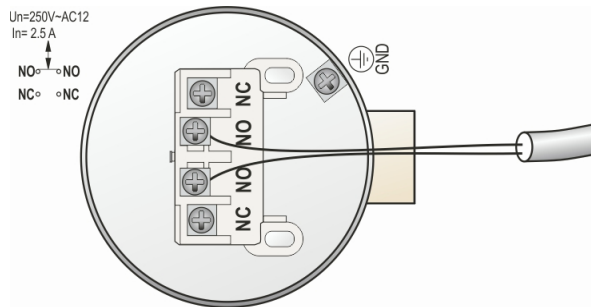


### 3. WIRING

#### 1. level – Low fail safe-

Low fail-safe mode: if the level is lower than the switch points the micro-switch interrupts the signal.

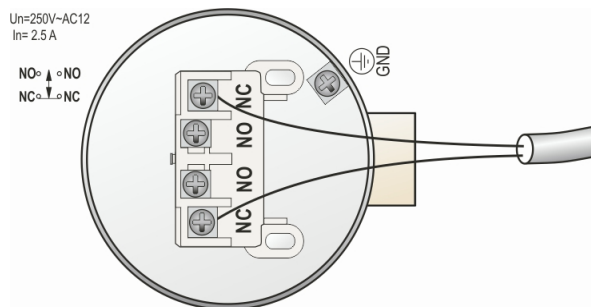
Two-wire signal cable wiring to NO-NO contacts.



#### 3. level – High fail safe-

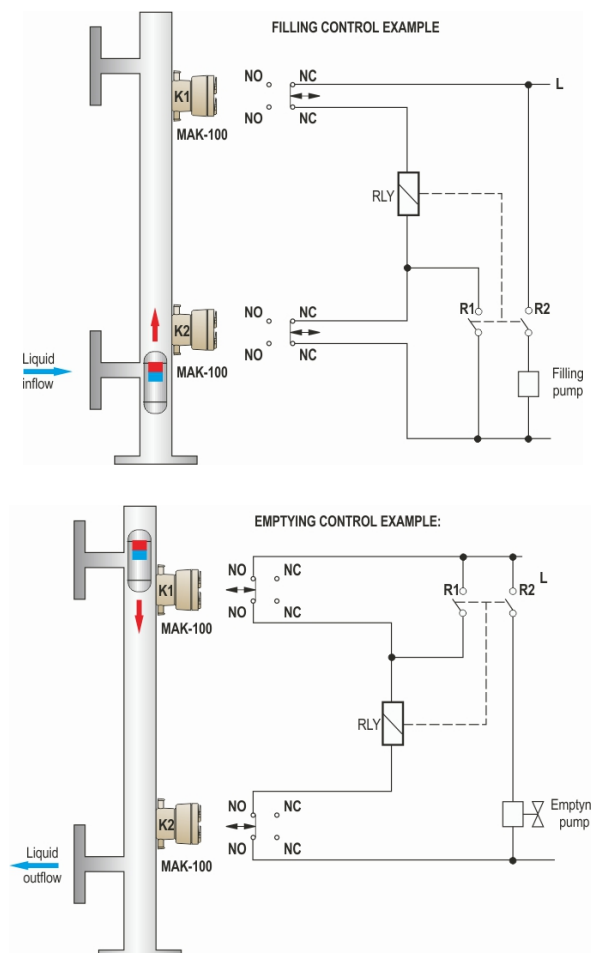
High fail-safe mode: if the level is higher than the switch points the micro-switch interrupts the signal.

Two-wire signal cable wiring to NC-NC contacts.



#### 2. level – user level indicator

Wiring on demand with NO-NO or NC terminals



The self-holding relay circuit and the cabling are not part of the unit!

### 4. SPECIAL CONDITIONS OF SAFE USE

#### 4.1. MAK-100-6 Ex:

The limit switch must be connected to a voltage source of a certified type for use in explosive atmosphere from II (1) G [Ex ia] IIB resp. II (1) G [Ex ia] IIC and its output circuit approved as intrinsically safe.

#### 4.2. MAK-100-6 Ex:

The housing of equipment is made of aluminium alloy. If the equipment is installed in a location where the device must have Ga protection level, it must be installed in order to avoid ignition sources of rare occurrence of shock and friction sparks.

#### 4.3. MAK-100-7 Ex:

The equipment must be protected against overload with a fuse 2.5 A marked "T".

4.4. The housing of equipment must be connected to the EP network.

4.5. The temperature class depends on the ambient temperature resp. medium temperature (See: Temperature classes table).

### 5. MAINTENANCE

The device does not require regular maintenance. The warranty card contains the terms and conditions. Before returning the device for repairs, it must be cleaned thoroughly. The parts in contact with the medium may contain harmful substances; therefore, they must be decontaminated. Our official form ([Returned Equipment Handling Form](#)) must be filled and enclosed in the parcel. Download it from our website [www.nivelco.com](http://www.nivelco.com). The device must be sent back with a declaration of decontamination. A statement must be provided in the declaration that the decontamination process was successfully completed and that the device is clean from any hazardous substances.

### 6. STORAGE CONDITIONS

Ambient temperature: -25...+80 °C (-13...+176 °F)

(see: "Temperature classes table")

Relative humidity: max. 98% non-condensing!

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NIVELCO reserves the right to change technical specifications without notice.