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

NIVOTRACK
MAGNETOSTRICTIVE TRANSMITTERS

USER'S MANUAL

1. APPLICATION

NIVOTRACK MT□-2 series float type magnetosrictive level transmitter is a two-wire precision measuring instrument for clean liquids both in normal and hazardous location. These instruments re quire minimum maintenance since the float is the only moving part.

Manufacturer:
Nivelco Process Control Co.
H - 1043 Budapest, Dugonics u. 11.
Telephone: (36-1) 369-7575 Fax: (36-1) 369-8585
E-mail: sales@nivelco.com http://www.nivelco.com

2. TECHNICAL DATA

Insertion length L	0.5 m … 3.7 m according to the Order Codes
Range	maximum: up to the bumping point of the float minimum: 0,6 x Insertion length
Zero offset	maximum: 0,4 x Insertion length
Process pressure (maximum)	2,5 MPa (25 bar) for steel floats ; 0,3 MPa (3 bar) (20°C) for plastic floats
Medium density	min. 0.7 g/cm³ with float 52 mm ; min. 0.5 g/cm³ 95 mm
Medium temperature	- 40 °C…+130 °C * PP: - 20 °C…+80 °C * PVDF: - 20 °C…+130 °C * Ex : - 40 °C… +70 °C
Ambient temperature	- 40 °C … +70 °C *
Float size / material	52x59 mm / 1.4571 95 mm / 1.4571 76x87 mm / PP or PVDF
Material of wetted parts	Stainless steel : 1.4571(DIN) PP or PVDF float: see Order Codes
Output	Normal operation 4 mA bottom… 20 mA top Reverse operation 20 mA bottom… 4 mA top (on special request)
Accuracy	±0.04% or 1 mm
Linearity	0.035% or 0.8 mm
Repeatability	0,01% or 0,4 mm
Maximum load resistance	$R_t = (U_t - 10.5 V) / 0.02 A$ U_t = power supply voltage
Maximum output / Fault indication value	24mA
Damping	1 sec, 5 sec adjustable
Supply voltage	10.5 … 36 V DC
Ex protection Ex power supply	EEx ia IIB T5 U_{max} = 28.4 V DC I_{max} = 99 mA P_{max} = 0.67 Watt
Electric protection	III. Protection Class
Ingress Protection	IP 67
Process connection	According to the order codes
Electric connection	2 x Pg 16 and 2 x ½" NPT thread, shielded cable: 0,75 ... 1.5 mm²
Enclosure	Powder paint coated aluminium
Mass	2.2 kg + guiding tube 0.35 kg/m

* *See derating diagram under 3.!*

2.1 ACCESSORIES

User's Manual
Warranty sheet
2 x Pg 16 cable gland,
Sealing ring for connection with BSP thread only (klingerit oilit)

2.2 ORDER CODES

NIVOTRACK M □ □ - 2 □ □ - □

Model	Code
Transmit	**T**

Process connection	Code
1" BSP 1.4571(DIN)	**A**
1 ½" BSP 1.4571	**B**
2" BSP 1.4571	**C**
1" NPT 1.4571	**D**
1 ½" NPT 1.4571	**E**
2" NPT 1.4571	**G**
1" BSP sliding sleev	**H**
1 ½" BSP sleeve	**J**
2" BSP sleeve	**K**
1" NPT sleeve	**L**
1 ½" NPT sleeve	**M**
2" NPT sleeve	**N**
DN 80	**P**
DN 100	**R**
DN 125	**S**

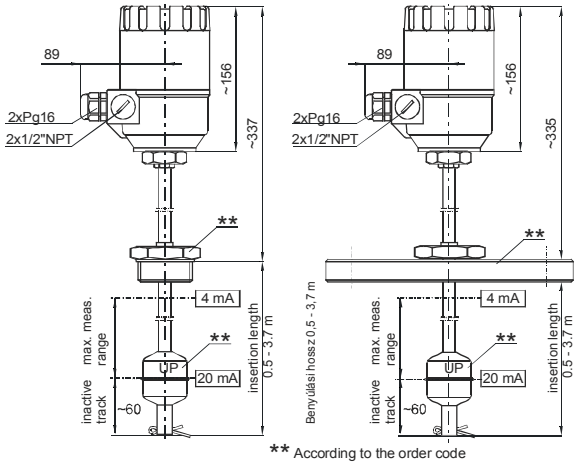
Insertion lenrth	Code
0 m	**0**
1 m	**1**
2 m	**2**
3 m	**3**

Insertion lenrth	Code
0 m	**0**
0.1 m	**1**
0.2 m	**2**
0.3 m	**3**
0.4 m	**4**
0.5 m	**5**
0.6 m	**6**
0.7 m	**7**
0.8 m	**8**
0.9 m	**9**

Version / Ex	Code
Steel ball float 95 mm	**1**
Steel cylindrical float 52 mm	**2**
Steel ball float 95 mm Ex	**5**
Steel cylindrical float 52 mm Ex	**6**
PP cylindrical float 76mm , flange PP	**A**
PVDF cylindrical float 76mm, flange PP	**B**
PVDF cylindrical float 76mm, fl. A38+PVDF	**C**
PP cylindrical float 76mm , flange PP Ex	**E**
PVDF cylindrical float 76mm, flange PP Ex	**F**
PVDF Cylindr float 76mm, fl. A38+PVDF Ex	**G**

Note: 1. Reverse operation on request (20 ... 4 mA)
2. Not all code variations can be selected

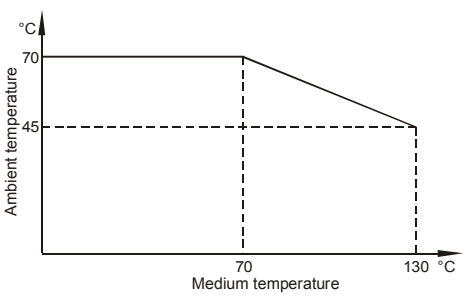
2.3 DIMENSIONS



** According to the order code

3. INSTALLATION

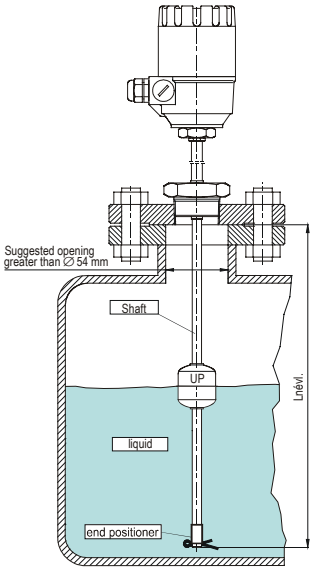
The NIVOTRACK MT□-2 should be located in an area, which allows easy access for service, calibration and monitoring. Accuracy of the measurement will be affected by waves on the surface or excessive vibration. Therefore the instrument should be located away from the inlet and outlet as far as possible. The process fluid should be free of any suspended solids or material that could stick between the float and the guide rod. If used at temperatures in exess of 70 °C the maximum ambient temperature allowed will be in accordance with the derating diagram.



The unit should be protected against heat radiation!

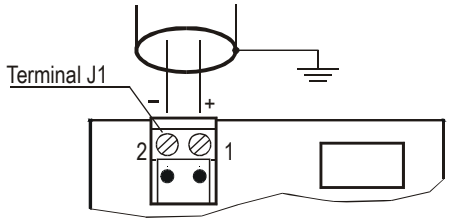
NIVOTRACK MT_-2 series is offered with a variety of process connections. The process connection on the tank and its opening should be arranged so that the float can be inserted. Should it not be possible, the float should be removed from the sensor shaft. After inserting the shaft, the float should be pulled onto the guide tube inside the vessel. The word UP etched on the float is to ensure mounting the float in correct position. To complete procedure, the retaining pin should be inserted into its hole and legs bent.

Note: before installation it is advisable to perform a preliminary operational check similar to the procedure described in the Calibration section.



4. WIRING

After unscrewing and removing the housing cover from the unit the cable should be pulled through the conduit opening. The unit contains CMOS components, which can be damaged by static electricity. Therefore the shielding of the cable should be connected to the ground screw first. After the shield is grounded, the (+) wire and (–) wire of the terminal J1 should be connected. Is the shield also grounded at the power supply an equaliser cable should be applied between the two ground screws.



5. SETUP PROCEDURE, CALIBRATION

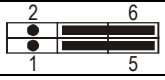
After power up the unit is fully operational.

Factory Setting

Operation mode: in accordance with the order (normal or reverse).
Range: maximum or in accordance with the order.
Damping: 1s

Operating mode selection (Jumper J1)

Direction of the output change assigned to the level change can be the same or reversed. ***Note*: Jumper J1 is factory set. It must not be changed in the field!**

	Normal operation	Reverse operation
JP1 position		
Low level	4 mA	20 mA
High level	20 mA	4 mA

Local current meter (Jumper JP2).

Jumper JP2 allows for the connection of an auxiliary current meter:

- Move Jumper JP2 from pins 1-2 to pins 2-3.

The (yellow) LED will illuminate indicating possibility of the measurement. Connect the meter J4 (positive) and J5 (negative), and the LED will go out.

- Move the Jumper JP2 back to pins 1-2 after measuring the current.

Calibration

Normal operating mode Move the float to the desired top position for the 20 mA output. Adjust SPAN: clockwise to increase and counter-clockwise to decrease the output to 20 mA ±0.01 mA.

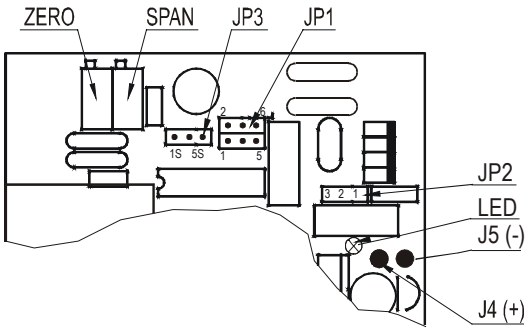
Move the float to the desired bottom position for the 4 mA output. Adjust ZERO: clockwise to increase and counter-clockwise to decrease the output to 4 mA ±0.01 mA. Repeat steps 1 and 2 several times until the outputs at the set points remain ±0.01 mA.

Reverse operating mode: It is the same procedure as with the normal operation. The only difference is that the 4 mA in the top position should be set by the potentiometer SPAN and that the 20 mA in the bottom position should be set by the potentiometer ZERO.

Adjustment of damping (Jumper JP3)

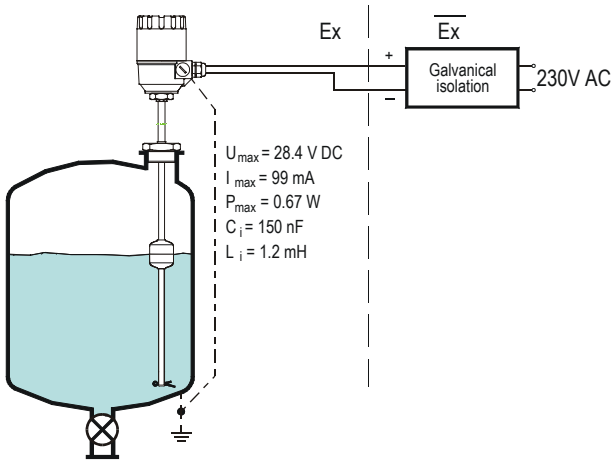
Jumper JP3 allows for the adjustment of the damping time. This jumper is factory set between pins 1 2 for 1 second.

Damping	1s	5s
JP3 position		



5.1. POWER SUPPLY FOR EX PROOF UNITS

The unit can be connected to a current loop with duly certified EEx ia IIB power supply and with technical data according to the Technical Data.



6. MAINTENANCCE AND REPAIR

The unit does not require routine maintenance, however the shaft may need occasional cleaning to remove surface deposits. Repairs will be performed at the manufacturer premises. Units returned for repair should be cleaned or desinfected by the customer.

7. STORAGE CONDITIONS

Ambient temperature: -30°C … +60 °C
Relative humidity: max. 98%

8. WARRANTY

Nivelco provide a warranty for the period of 2 (two) years.
Repairs under warranty are performed at the Manufacturer's premises; costs of dismantling, reinstalling or shipping are borne by the Customer.
Claims for guarantee are not valid in respect of failures due to abnormal usage, breakage, disaster, or incompetent installation or usage.

mtc2092a0601h
2002.01.02