

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



USER'S MANUAL



APPLICATION

The NIVOTRACK MT-100 series units are two-wire level transmitters. The level is sensed via a magnetic float moving alongside the protection probe that is submerged in the liquid.

The magnetic float tracks the level, magnetically activating an array of cascaded reed switches. The reed switches act as the wiper of a potentiometer made up by a chain of resistors. The electronics in the probe housing converts the voltage supplied via the potentiometer into a 4-20 mA signal.

TECHNICAL DATA

Model type		Transmitter	Transmitter with local indicator	Local indicator
		MT- 100	MB-100	MD-100
Measuring range		0.5 to 3m		
All wetted parts		SS316Ti		
Process connection		See type designation		
Temperature ranges	Process	-40 to +130 °C		
	Ambient	-25 to +80°C		
Maximum pressure		25 bar		
Medium density (minimum)		Ø95 float: 0.5 gr/cm ³ ; Ø52 x 58: 0.7 gr/cm ³		
Output current		4 to 20 mA		-
ZERO adjustment (4 mA)		0 to 80% of measuring range		-
SPAN adjustment (20 mA)		20 to 100% of measuring range		-
Output thermal error		0.003 mA/°C		
Display		-	3 1/2 digits; 18 mm LCD	
Display zero-point adjustment		-	0 to 20 % of measuring range	
Resolution		5 mm		-
Display resolution		-	up to 2 m: 5 mm; above 2 m: 1 cm	
Supply voltage		U _S = 12...30V DC, max. 25 mA		
Load resistance		$R_L = \frac{U_S - 12V}{0.02A}$		
Electrical connection		Pg11 for Ø7 to 12 mm cables; 0.75 to 2.5 mm ² wire cross		
Enclosure		IP 65		
Electrical protection	normal version	Class III.		
	Ex version	Intrinsically safe		
Explosion proof protection mark		EEx ia IIC T4...T6		
Weight		0.6 kg + 0.3 kg/m		

TYPE DESIGNATION

NIVOTRACK [M] [] [] - [1] [] [] - []

Model	Code	Length	Code	Float / Ex	Code
Transmitter	T	0 m	0	Ø95 Ball	1
Local indicator	D	1 m	1	Ø52x58 Cylinder	2
Transmitter & display	B	2 m	2	Ø95 Ball/Ex	5
		3 m	3	Ø52x58 Cylinder/Ex	6

Process connection	Code	Length	Code
1" BSP	A	0 dm	0
2" BSP	C	1 dm	1
1" NPT	D	2 dm	2
2" NPT	G	3 dm	3
1" BSP Comp. fitting	H	4 dm	4
2" BSP Comp. fitting	K	5 dm	5
1" NPT Comp. fitting	L	6 dm	6
2" NPT Comp. fitting	N	7 dm	7
		8 dm	8
		9 dm	9

ACCESSORIES

- User's Manual
- 1pc. Plug-in type screw terminal

OPERATION

The probe incorporates a potentiometer established from discrete resistance, and its slider is formed by reed-switches activated by the magnet within the float.

The voltage derived from the probe is proportional to the changes of the liquid level to be measured. This voltage will be transformed into an output current of 4 to 20 mA by the electronics.

The instruments equipped with a display show the actual level in meters.

INSTALLATION

The device is fixed by its process connection; if supplied with compression fitting, a mechanical alignment is possible by adjusting the position of the probe. The probe must be handled by care as any damage or bend may impair the function of the unit.

To adjust the display (housing) to a required position, do as follows:

- Remove back cover.
- Loosen the nut found below the housing that fixes the probe.
- Gently turn the housing to the required position and take care not to stretch the wires of the probe that are connected to the electronics block; if necessary, disconnect the wires during adjustment; when re-connecting the wires, remember not to change their assignment.
- Tighten nut and replace rear cover.

DIMENSIONS

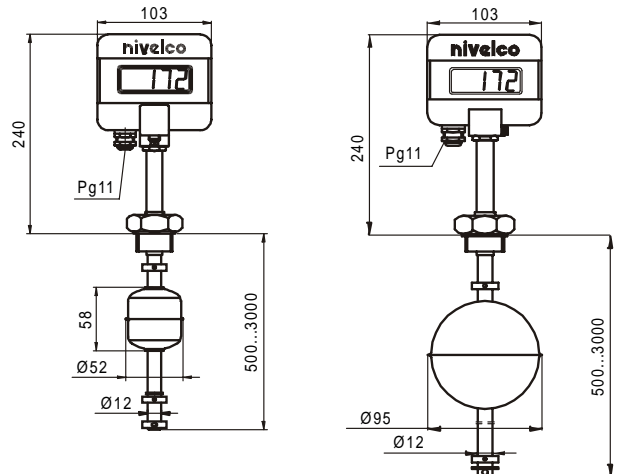


Figure 1.
Mechanical dimensions

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WIRING

Remove the cover and connect the supply voltage wires by passing them through the stuffing gland. After replacing and fixing the cover, ground the housing by the ground screw located on the outside of the housing.

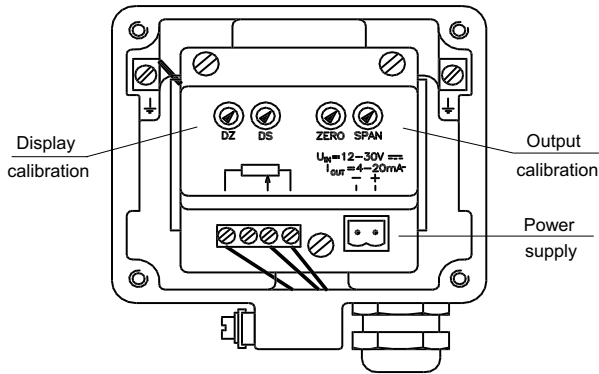


Figure 2
Housing, with removed cover

In Ex applications, either use an intrinsically safe supply unit, or insert a Zener-barrier between an ordinary supply unit and the device. The following Zener-barrier types are recommended for use:

Type	Manufacturer
728	MTL
8901/31-280/075/00	Stahl
Recommended isolated server unit:	
4041	MTL

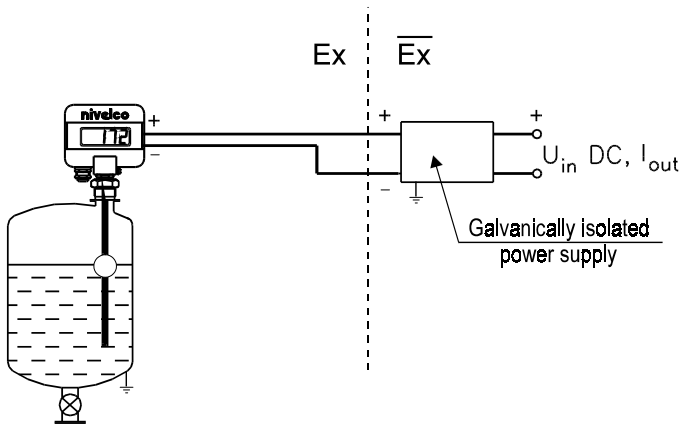


Figure 3.
Application in an Ex environment

CALIBRATION

Calibration is recommended to be made prior to final installation. This procedure is necessary due to the various density of liquids.

Calibrating the current output

1. Bring the multi-turn potentiometer "SPAN" approximately into its middle position.
2. Set the 4 mA value of the output current by the "ZERO" potentiometer with the float in the lower position.
3. Set the 20 mA value of the output current by the "SPAN" potentiometer with the float in the upper position.
4. Check the adjustment through another fill/empty procedure and, if necessary, carry out re-adjustment.

Adjusting the display

The display indication can be set independently from the current output (they are not affected by each other).

1. Adjust the display to the "000" position at the expected zero-position of the float, using the "DZ" (Display Zero) potentiometer
2. Adjust the display to the required maximum-position of the float, using the "DS" (Display Span) potentiometer

Factory settings:

	Float in lower position	Float in higher position
Current output	4.00 mA	20.0 mA
Display	000	Nominal length

MAINTENANCE, REPAIR

The instrument does not require routine maintenance. In some instances, however, the probe may need occasional cleaning to remove surface deposits. Repairs during or beyond the guarantee period are carried out solely by the manufacture. Equipment sent back for repair should be cleaned or sterilised by the User. The User must declare that the above has carried out.

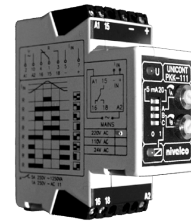
STORAGE CONDITIONS

Environment temperature: -25 to +60°C
Relative moisture content: max. 98 %

WARRANTY

All Nivelco products are warranted free of defects in materials or workmanship for a period of two years from the date of purchase. Repairs under guarantee are carried out at the Manufacturer's premises. The Purchaser is liable for costs of dismantling and re-installation as well as transport costs. Nivelco shall not be liable for misapplication, labour claims, direct or consequential damage or expense arising from the installation or use of equipment.

OPTIONAL ACCESSORIES



UNICONT PKK-111

DIN-rail mount current controlled SPDT switch for limit-, differential- or window switching functions.

NIVELCO Process Control Co. Ltd.
MT10G9A3
Juni/1999