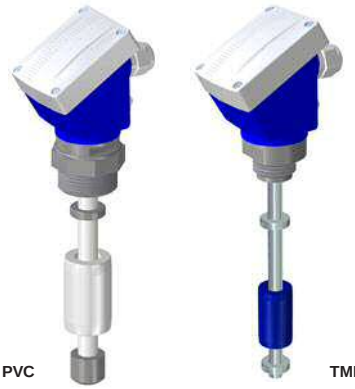
DISIBEINT

TMN 300 TB PVC

Microlectra bv.
www.microlectra.nl
info@microlectra.nl

LEVEL
MAGNETIC
TRANSDUCERS



TMN 300 TB PVC

TMN 300 TB PVC / INOX

Operating principle	When the float rises or falls by the guide tube due to the action of liquid, is turned on or off a succession of reed contacts which generate an output proportional to the height of the level.	
Character differential	A single model allows connection systems 2, 3 or 4 wires.	

Body	Process connection (Table 1, page 2)	Top screw. PVC 1"1/4, 1"1/2, 2" G	1" G
	Tube and stoppers	PVC	SS AISI316 (1.4401)
	Guide tube length (TG)	200..2500mm (Ø16mm)	150..2500mm (Ø12mm)
	Temperature	-10..+60 ºC	
	Standard height	E = 15 mm S = LR PF = 20 mm LCP = See Table 1 (page 2)	PF = 11 mm
	Protection	IP68	

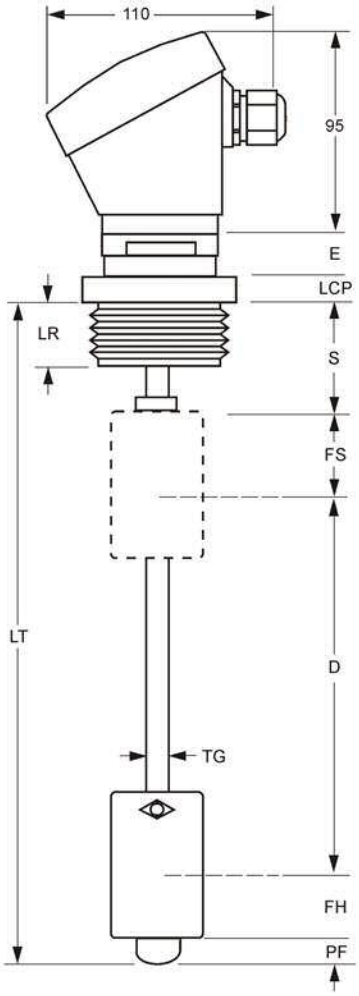
Float	Model (Table 2, page 2)	Cylindrical Ø38x61 mm PP (FCPP05B18)		Cylindrical Ø29x50 mm PA (FCPA07B14)
	Pressure	3 K/cm²		
	Density	e < 0,4 g/cm³		e < 0,6 g/cm³
	Temperature	-10..+80 ºC		-30..+65 ºC
	Dry zone (FS)	36 mm	Dimensions valid for a fluid density of 1 g/cm³	24,5 mm
	Wet zone (FH)	24 mm		24,5 mm

Housing	Electrical connection	Connection housing PBT. 64 x 95 x 110 mm
	Protection	IP67
	Temperature (Ta)	-20..+80 ºC
	Cable gland	M20 x 1,5 (IP68)
	Ø Electric hose	6..12 mm

Output	Measurement range	4..20 mA
	Measurement voltage	10..35 VDC
	Repeatibility	± 1%
	Step between two reads	10 mm. Optional 5 mm

Supply	Supply voltage	2 wires	10..35 VDC / Terminal 3
		3 wires	735 - 10..35 VDC / Terminals 1-3
		4 wires	024 - 24 VAC 048 - 48 VAC 110 - 110..125 VAC 230 - 220..240 VAC Terminals A1-A2

Dimensions



Legend
E - Separation from the process
S - Non measured zone
LR - Thread length
LT - Total length
D - Measurement distance
TG - Guide tube
FS - Dry Float Zone
FH - Wet Float Zone
LCP - Connection process height
PF - End stopper

Table 1: Process connection

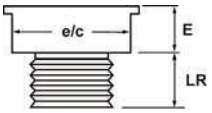
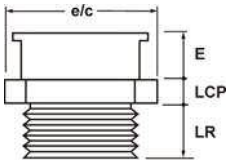
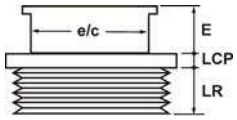
Thread (Gas)	1”	1"1/4	1"1/2	2”
e/c (mm)	39,8	46	50	39,8
E (mm)	15	15	15	15
LR (mm)	20	20	20	20
LCP (mm)	0	16	11	4
				

Table 2: Floats

Model	FCPA07B14	FCPP05B18
Material	PA	PP
Colour	Blue	Grey
Dimension (mm)	Ø 29x50	Ø 38x61
Pressure (kg/cm2)	3	3
Density (g/cm³)	e > 0,6	e > 0,4
FS / FH (mm)	24,5 / 24,5	36 / 24
		

Although you can combine any float with any type of thread, it is desirable that the float be narrower than the width of the thread. In this way, the sensor can be installed without disassembly. The columns of the two tables show the consistent combinations.

Float FCPA07B14, made of polyamide, is recommended for oil. As a bonus, fits tight 1" G, size very common in the oil tanks, diesel, generator housings, etc.

Reference Composition

TMN 300 TB PVC ☐ ☐ **P** ☐ **F** ☐ **R** ☐ **LT** ☐ **E** ☐ **S** ☐

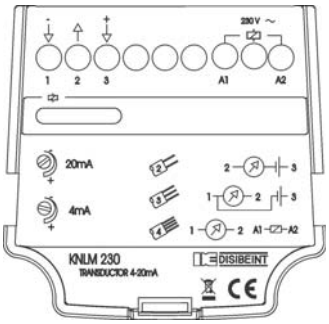
Tube material		PVC	(empty)	*
		INOX	/ INOX	
Supply voltage	2/3 wires	10..35 VDC	735	
	4 wires	24 VAC	024	
		48 VAC	048	
		110..125 VAC	110	
		220..240 VAC	230	*
Process connection		1" G	06	
		1"1/4 G	07	
		1"1/2 G	08	
		2" G	10	*
Float		FCPA07B14	56	
		FCPP05B18	53	*
		Step 5 mm	05	
		Step 10 mm	10	*
		Total length (LT)	(mm)	
		Distance (E)	(mm)	
		Distance (S)	(mm)	

* Standard values

Dimensions E and S: If not specified, they are taken as null.

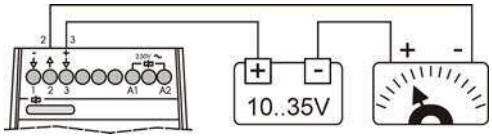
To compose a reference, select an option from each of the columns.
Exemple: **TMN 300 TB PVC 230 P10 F53 R10 LT1500 E15 S75**

Connection and adjustment

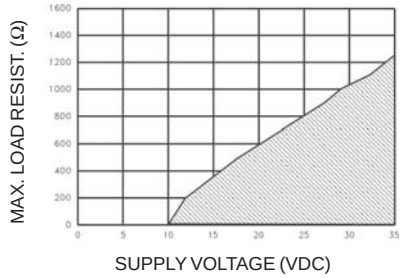


The sensor is factory preset for a reading of 4-20 mA between the margins (D). If you want to calibrate again, connect it as shown in the diagram. Place the float on the bottom and set 4 mA in the instrument by the multiturn potentiometer [4mA]. Do the same with the potentiometer [20mA] placing the float on top.

Negative	1
Output mA	2
Positive	3
Supply AC	A1-A2



Load resistance in the loop (Converter)

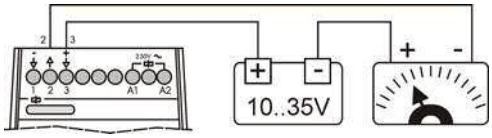


Supply in AC: The electronic circuit provides a voltage of 24 VDC to power the loop. The load resistor should not exceed 800 ohms.

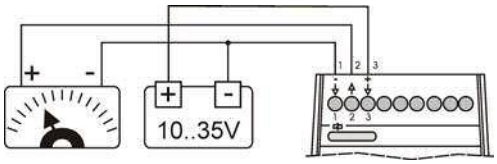
Supply in DC: The maximum load resistance that can withstand the current loop is a function of supply voltage and not exceed the values shown in the accompanying graph.

Connexion examples

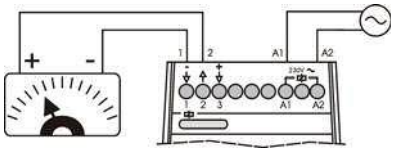
2 wires: Connect them to terminals 2 and 3 taking into account the polarity. A voltage source is required for supplying voltage to the current loop.



3 wires: Connect them to terminals 1, 2 and 3 taking into account the polarity. A voltage source is required for supplying voltage to the current loop.



4 wires: The loop is connected to terminals 1 and 2 taking into account the polarity. The AC voltage is connected to terminals A1 and A2.



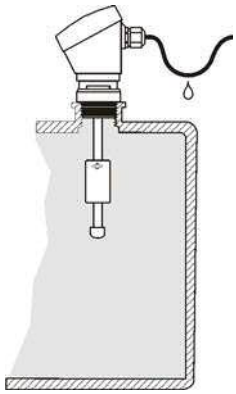
Assembly conditions

Handling
Do not use the housing to transport or to install the sensor in the tank. Once it is properly installed, you can rotate 350 degrees the head with the hand to place it in the adequate position.

Housing box orientable

Mounting position
The sensor must be mounted vertically. It should leave enough space on the vessel wall to prevent the float can touch it and avoid the proximity of magnetic or ferrous materials. We suggest to install the sensor away from the shaking elements, if any.

Electric cable
Use an appropriate cable for the electrical conditions in the facility. It is desirable that the cable gland closes entirely over the wire and it is essential in the course of enviromental humidity or when be installed outdoors. In these cases, make a loop in the cable to facilitate the removal of accumulated drops (see figure).



Maintenance
In some cases, depending on the medium to control and time spent, can be placed in the guide tube a layer of material which must be removed to avoid obstructing the movement of the float. To do this, proceed to clean and/or remove the sensor.

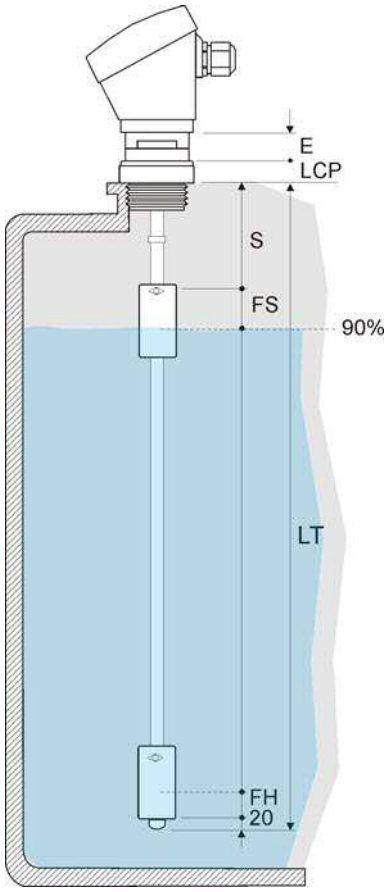
Recommendations and examples to place an order

Determine the resolution you want in your measurement by choosing the appropriate step between readings. A smaller distance between readings, the better resolution you get.

The resulting measures are in function of the density of the liquid and the float. Unless specified otherwise, the calculations are made based on the density of water, 1 g/cm^3.

Note that the measurement can never be done from the bottom of the tank because there are some unavoidable levels resulting from the construction of the sensor itself, corresponding to the end of the guide tube and the height where the floating level is located (see size chart on the first page for your understanding).

It is not imperative that the sensor be manufactured to the maximum internal height of the tank because the measurement distance can be placed where it suits the application, taking into account the above comments. At any case, it is recommended that the total length of the sensor is somewhat lower than the maximum height inside the tank to prevent the tube be slightly curved and avoid the movement of the float.



You can determine a heigth (S) to establish an area where there is no reading at all. In case you want to remove the head of the connection process (for reasons of high temperature, for example) a dimension (E) exceeding the standard can be ordered.

Placing your order is essential the following information:

- Step between two readings,
- The length of the zone without measurement (S),
- The total length (TL)
- The supply voltage, if any
- The density of the liquid, if known and when different from 1 g/cm^3

Example

In a tank of 1500 mm real high (LT) containing water, we want to measure up to 90% capacity. The distance from the bottom of the nipple to the maximum fill elevation is 75 mm (S). You want a reading every 10 mm. Electrically connects to a existing 4-20 mA loop (2 wires).

The data needed for their manufacture are:
Step = 10 mm
S = 75 mm
LT = total length 1500 mm
Without external supply
Liquid density, if other than 1 g/cm^3

Microlectra bv.
Augustapolder 12. 2992 SR Barendrecht. The Netherlands.
www.microlectra.nl info@microlectra.nl