DISIBEINT

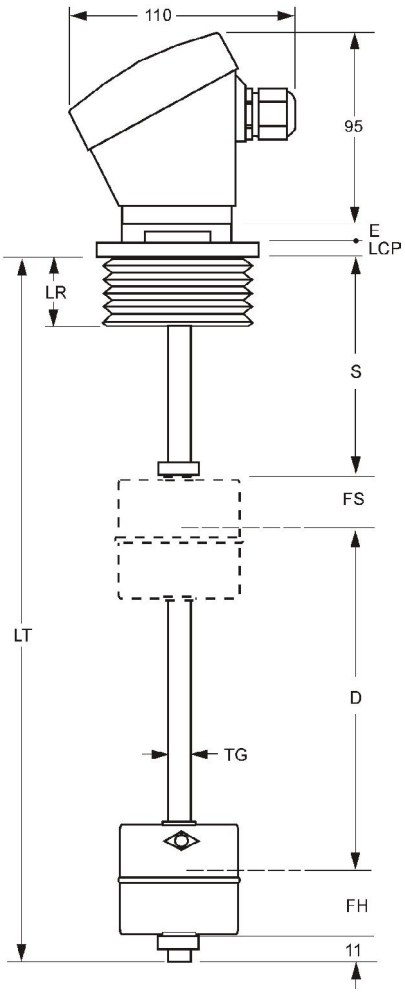
TMN 300 TB INOX

LEVEL MAGNETIC TRANSDUCERS

	Operating principle	When the float rises or falls by the guide tube due to the action of liquid, a succession of reed contacts is turned on or off generating an output proportional to the height of the level.
	Difference	A single model allows connection systems of 2, 3 or 4 wires.
Body	Process connection	Top screw 2" G. SS AISI316 (1.4401) See other options in Table 1, page 2
	Guide tube length (TG)	150..1000 mm (Ø12 mm) 1010..2500 mm (Ø13 mm)
	Standard heights	E = 15 mm / S = LR / LCP = See Table 1, page 2
	Tube and stoppers	SS AISI316 (1.4401)
	Temperature	-20..+100 ºC
	Protection	IP67
Float	Model	Cilyndrical, Ø52x52 mm. SS AISI316L (FCI604B13) See other options in Table 2, page 2
	Pressure	15 K/cm^2
	Density	e < 0,6 g/cm^3
	Temperature	-40..+125 ºC
	Dry zone (FS)	20,8 mm
	Wet zone (FH)	31,2 mm
		Dimensions valid for a fluid density of 1 g/cm^3
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 level	4..20 mA
	Measurement voltage	10..35 VDC
	Repeatibility	± 1%
	Step between readings	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 Process
S - Zone without measurement
LR - Thread length
TL - Total length
D - Measurement distance
TG - Guide tube
FS - Dry Float Zone
FH - Wet Float Zone
LCP - Connection process height

Table 1: Process connection

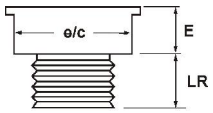
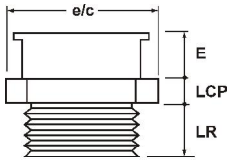
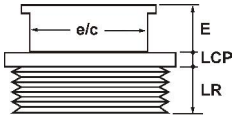
Thread (Gas)	1”	1"1/2	2”
e/c (mm)	39,8	50	39,8
E (mm)	15	15	15
LR (mm)	20	20	20
LCP (mm)	0	11	4
			

Table 2: Floats

Model	FCPA07B14	FCI602B13	FCI604B13
Material	PA	SS AISI316L	SS AISI316L
Dimension (mm)	Ø 29x50	Ø 44x63	Ø 52x52
Pressure (kg/cm^2)	3	15	15
Density (g/cm^3)	e > 0,6	e > 0,72	e > 0,6
FS / FH (mm)	24,5 / 24,5	17 / 46	20,8 / 31,2
			

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 so that the sensor can be installed without disassembling. The columns of the two tables show the consistent combinations.

The FCPA07B14 float, 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 INOX ☐ **P** ☐ **F** ☐ **R** ☐ **LT** ☐ **E** ☐ **S** ☐

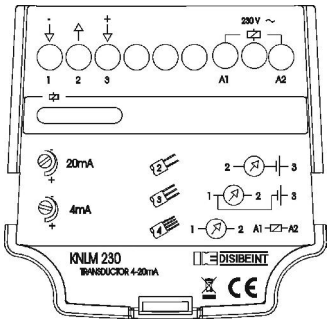
Supply voltage	2/3 wires	10..35 VDC	735	
	4 wires	24 VAC	024	
		48 VAC	048	
		110..125 VAC	110	
		220..240 VAC	230	*
Process connection		1" G	06	
		1"1/2 G	08	
		2” G	10	*
Float		FCPA607B14	56	
		FCI602B13	15	
		FCI604B13	20	*
		Step 5 mm	05	
		Step10 mm	10	*
		Total length (LT)	(mm)	
		Distance (E)	(mm)	
		Distance (S)	(mm)	

* Standard values

Dimensions E and S: If not specified, will be taken as null.

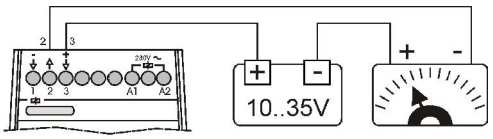
To compose a reference, select an option from each of the columns.
Example: **TMN 300 TB INOX 230 P10 F20 R10 LT1500 E15 S75**

Connection and adjustment

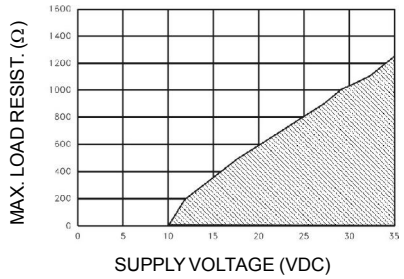


The sensor is preset from factory for a reading of 4-20 mA between the margins (D). If you want to calibrate again, connect it as shown in the diagram. Place the float at the bottom and set 4 mA in the instrument by the multiturn potentiometer [4mA]. Do the same with the potentiometer [20mA] placing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

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



Load resistance in the loop (Converter)

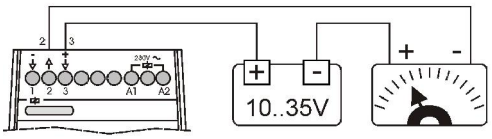


Supply in AC: The electronic circuit provides a voltage of 24 VDC to power the loop. The load resistor should not exceed 800 ohms.

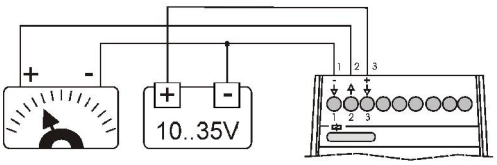
Supply in DC: The maximum load resistance that can withstand the current loop is a function of supply voltage and not exceed the values shown in the accompanying graph.

Connexion examples

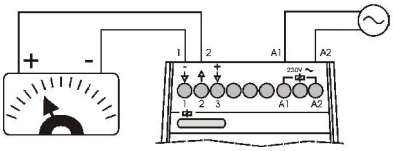
2 wires: Connect them to terminals 2 and 3 taking into account the polarity. A voltage source is required for supplying voltage to the current loop.



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.

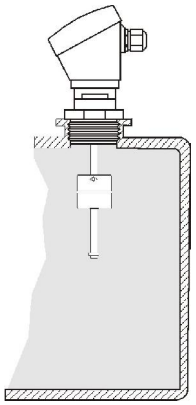
Housing box orientable

Mounting position

The sensor must be mounted vertically. It should leave enough space on the vessel wall to prevent the float to 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 deposited in the guide tube a layer of material which must be removed to avoid the obstruction of the movement of the float. To do this, proceed to clean and/or remove the sensor.

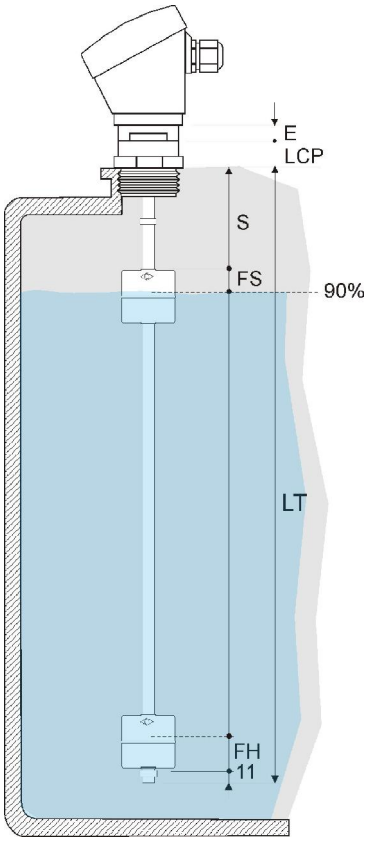
Recommendations and examples to place an order

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 liquid density and of 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 it housed the flotation level (see size chart on the first page to learn more).

It is not imperative that the sensor have the maximum internal height of the tank because the measurement distance can be placed wherever along the tube, taking into account the above. In any case, it is recommended that the total length of the sensor be somewhat lower than the maximum height inside the tank to prevent the tube become slightly curved and prevent the movement of the float.



You can determine a height (S) to set 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) may specify a dimension (E) exceeding the standard.

Placing your order is essential the following information:

- Transition between 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 is different from 1 g/cm^3

Example

In a tank of 1500 mm usable height (LT) containing water, it's required to measure up to 90% capacity. The distance from the bottom of the nipple to the maximum filling height is 75 mm (S). You want a reading every 10 mm. Electrically, it will be iused an 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
No external supply
Liquid density, if other than 1 g/cm^3

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