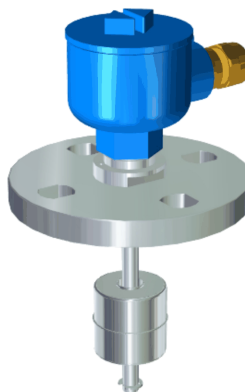


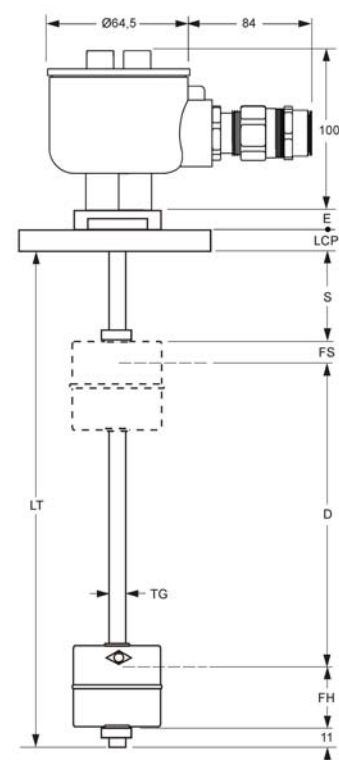
## TMN DBEx INOX

### LEVEL MAGNETIC TRANSDUCERS



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 to generate an output proportional to the height of the level.
ATEX certificate		The complete set of TMN DBEx INOX transmitter is not certified. The certified elements are: the drive (DEMKO 99 ATEX 127088), connection housing (CESI 00 ATEX 008 U) and cable gland (LCIE 97 ATEX 6006 X)
Body	Process connection	DIN flange. DN100. SS AISI316 (1.4401) See other options on Table 1, page 2
	Guided tube length (TG)	150..2500 mm (Ø12 mm)
	Standard dimensions	E = 15 mm / S = 0 mm.
	Tube and stops	SS AISI316 (1.4401)
	Temperature	-20..+100 °C
	Protection	IP 67
Float	Model	Cylindrical Ø52x52 mm. SS AISI316L (FCI604B13) See other options on Table 2, page 2
	Pressure	15 K/cm <sup>2</sup>
	Density	e < 0,6 g/cm <sup>3</sup>
	Temperature	-40..+125 °C
	Dry/wet (FS/FH)	20,8 / 31,2 mm (For density of 1 g/cm <sup>3</sup> )
Housing	Electrical connection	Aluminium housinh connection . Ø64,5 x 100 mm
	Housing certificate	Ex II 2 G Ex d IIC
	Housing protection	IP66
	Temperature (Ta)	Air: -20..+85°C Liquid: -20..+100°C
	Cable gland	Type ADL (IP68) 10 bars max.
	Cable gland certificate	Ex II 2 G-D EExelI/EEExdIIC
Repeatability		± 1%
Step between reads		10 mm. Optional 5 mm
Supply voltage		2 wires: 10..28 VCC

### Dimensions



### Legend

E	- Separation process
S	- Zone without measurement
LT	- Total length
D	- Measurement distance
TG	- Guided tube
FS	- Dry zone of float
FH	- Wet zone of float
LCP	- Process connection height

Output	Converter	Signal range	4..20 mA	CENELEC Certificate	DEMKO 99	ATEX 127088
		Min. Signal range	16 mA		ATEX	0539 Ex II 1 G-EEExialIIC T1..T6
		Update time	135 ms		Max. temp.amb. T1..T4	85 °C
		Load resistance	< (Vsup. - 8) / 0.023 [Ω]		Max. temp.amb. T5,T6	60 °C
		Load stability	≤ ±0,01% to span / 100Ω		Aplicable en zonas	0,1 or 2
	Error detect.	Programmable	3,5..23 mA	Legal legislation	EMC 89/336/EEC	
		A max./min. of scale	23 mA/3,5 mA (NAMUR NE43)		Emission	EN 50 081-1, EN 50 081-2
		Off	Not defined		Immunity	EN 50 082-2, EN 50 082-1
	Ex Data	U <sub>i</sub> - I <sub>i</sub>	28 VDC - 120 mADC		ATEX 94/9/EC	EN 50014-1 and EN 50020.
		P <sub>i</sub>	0,84 W			
		L <sub>i</sub> - C <sub>i</sub>	≤ 10 μH - ≤ 1 nF			

Table 1: Process connexion

Flange	DN25	DN32	DN40	DN50	DN100
t (mm)	14	18	18	18	18
Ø d (mm)	85	100	110	125	180
D (mm)	115	140	150	165	220
Thickness (LCP) (mm)	18	18	18	18	20

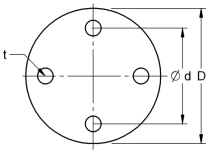



Table 2: Floats

Model	FCI602B13	FCI604B13
Material	SS AISI316 (1.4401)	
Dimension (mm)	Ø 44x63	Ø 52x52
Pressure (kg/cm <sup>2</sup> )	15	
Density (g/cm <sup>3</sup> )	e > 0,72	e > 0,6
FS / FH (mm)	17 / 46	20,8 / 31,2



### Installation conditions

#### Manipulation

Do not use the junction box to transport or to install the sensor in the tank. Ensure that the body is at ground potential.

#### Mounting position

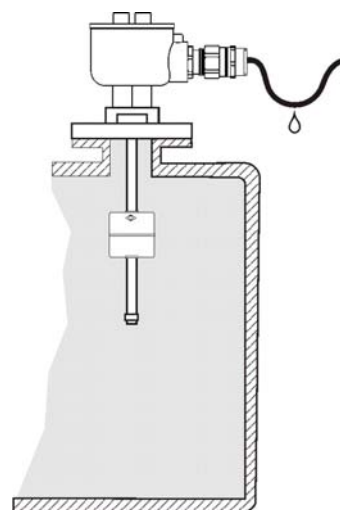
The sensor must be mounted vertically. It is advisable to leave enough space on the vessel wall to prevent the float from touching, and avoid the proximity of ferrous or magnetic materials. We recommend installing the sensor away from the stirring elements, if any.

#### Electric wire

Use an appropriate cable to the electrical conditions of the installation. It is desirable that the entire gland seal on the cable and is essential in the case of humidity exist or be installed outdoors. In these cases, make a loop in the wire which facilitates the removal of accumulated drops (see figure).

#### Maintenance

In some cases, depending on the medium to control the residence time and can be deposited into the guide tube a layer of material will be removed so as not to obstruct the displacement of the float. To do this, proceed to clean and/or disassembly. Do not open the cover under tension.



### Accessories

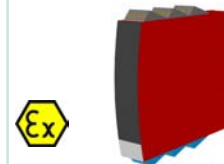
#### IPD



#### IPDS

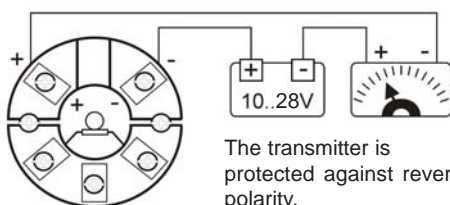


#### AG-5104-B



Function	Instrument of digital display. 3 setpoint. Different magnitudes.	Instrument of digital display. ATEX Certificate.	Galvanic isolation for analogue signals. 4-20mA. ATEX.
Installation	Secure Zone	Classified Zone	Secure Zone
Mounting dimensions (mm)	96 x 50 x 70 (panel)	96 x 48 x 120 (panel)	109 x 23,5 x 130 (rail DIN)
Approval Ex/ I.S.	-	Ex II 1 G [EEx ia] IIC T6	Ex II (1) G D [EEx ia] IIC
Applicable to zones	-	0, 1 or 2	0, 1, 2, 20, 21 or 22
Range	4-20 mA	3,6-23 mA	0-20 mA
Output	IPD-V: Only visualization. IPD-VR: Visualization and 3 SPST, 2A/250VAC	Visualization by LCD display of 4 digits.	0-20 mA
Supply	· 60..260 VAC ±10%, 50/60 Hz · 22..60 VDC ±20%	Is supplied from the voltage of the current loop.	· 24..230 VAC ±10%, 50/60 Hz · 24..250 VDC ±20%
Loop supply	16..25 VDC / 0..20 mA	16..25 VDC / 0..20 mA	16..25 VDC / 0..20 mA

## Diagram connection



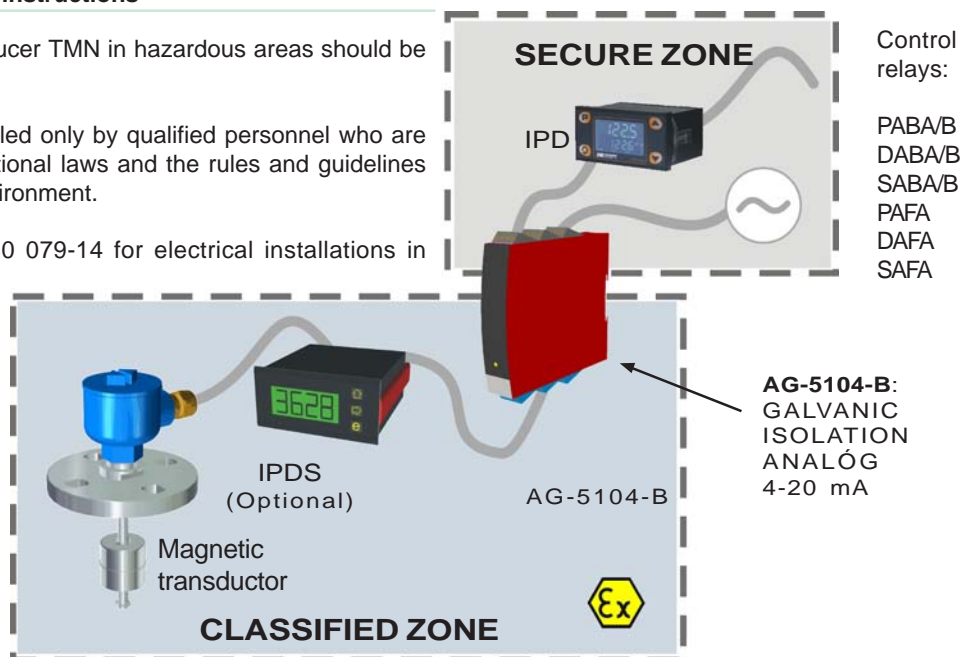
## Mounting intrinsic safety "ia"

### Safety instructions

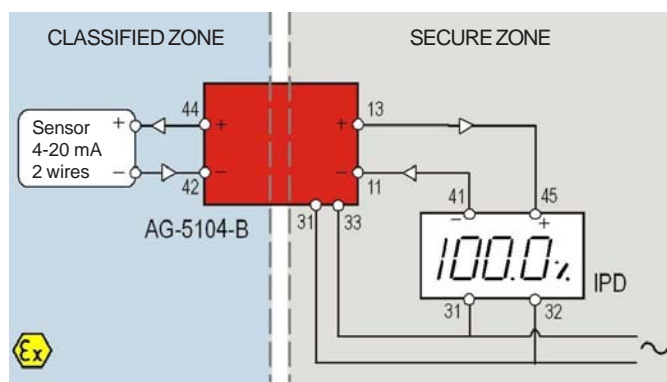
For safe installation of the transducer TMN in hazardous areas should be taken into account:

- The transducer should be installed only by qualified personnel who are familiar with national and international laws and the rules and guidelines for implementing this type of environment.

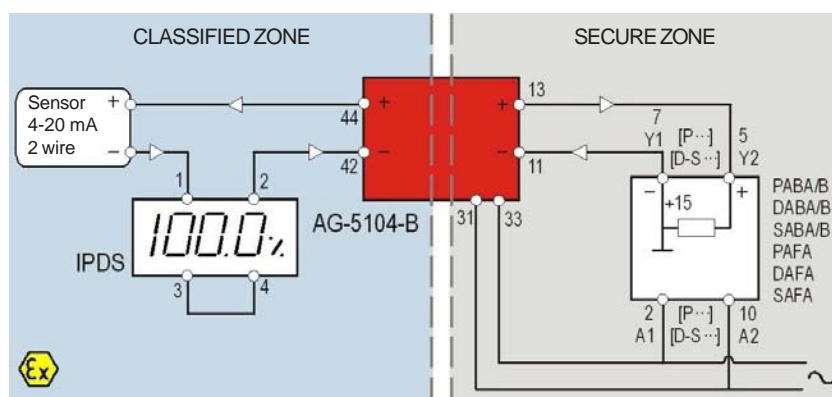
For more information see EN 60 079-14 for electrical installations in hazardous areas.



## Examples of application



Sensor supply, electrically isolated and secure zone display.



Sensor supply, display in classified zone, isolation, and 1 or 2 set points in secure zone.

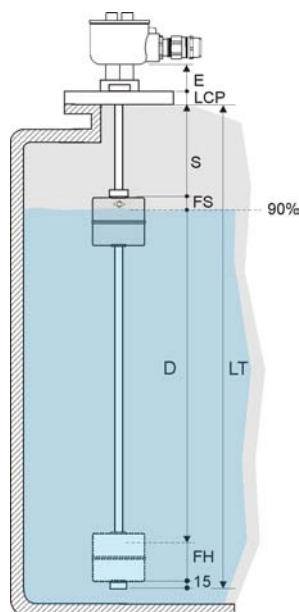
## Recommendations and examples to place an order

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

The resulting actions are a function of the density of the liquid and float. Unless specified otherwise, the calculations are based on the density of water, 1 g/cm<sup>3</sup>.

Note that the measurement can never be done from the bottom of the tank dimensions as there are some unavoidable due to the construction of the sensor itself, corresponding to the end of the guide tube and the height where stands the float level (see dimensional graph on the first page for your understanding).

It is essential that the sensor is manufactured to the maximum internal height of the tank as it can place the measuring distance where it suits you, taking into account the above. In any case, it is recommended that the total length of the sensor is somewhat below the maximum height inside the tank to avoid that the tube is slightly curved and hinders displacement of the float.



You can determine a bound (S) to establish an area where there is no reading at all. In the event that is wanted to separate the head from the process connection (for reasons of high temperature, for example) can enter an elevation (E) higher than the standard.

### To place your order are necessary the following:

- the passage between readings,
- the length of the zone without measurement (S),
- the total length (LT)
- the density of the liquid, if known and different from 1 g/cm<sup>3</sup>

### Example

In a tank working height 1500 mm (LT) containing water to be measured up to 90% capacity. The distance from the bottom of the flange until the maximum filling height is 75 mm (S). You want a reading of 10 mm. Electrically connect to an existing loop 4-20 mA (2 wire).

The data needed for their manufacture are:

Step = 10 mm

S = 75 mm

Total Length LT = 1500 mm

Liquid density, if different from 1 g/cm<sup>3</sup>

## Composition of the reference

### TMN DBEx INOX

T  F  R  LT  E  S

\* Standard values

Dimensions E and S:  
If not specified,  
shall be a zero.

Supply voltage	10...28 VCC	735
Process connection	DN25	31
	DN32	32
	DN40	33
	DN50	34
	DN100	36
Float	FCI602B13	15
	FCI604B13	20
Step	Step 5 mm	05
	Step 10 mm	10
Total length (LT)		(mm)
Distance (E)		(mm)
Distance (S)		(mm)

To compose a reference, select an option from each of the columns.

Example: **TMN DBEx INOX 735 T34 F20 R10 LT1500 S0**