

The Indicator **DIL** shows on its *Display* the level of a liquid contained in a vessel, thanks to the following principle. Within the body of the instrument there is a float including special magnets; during the vertical float movement, the magnets make small rollers rotate within the nearby display; these rollers are two-coloured face : they show their *red side* when float goes up to their height, and show their *white side* when goes down.

In this way the instrument assures a clear and easy indication of the inside liquid, with many advantages : **clearness** (the display is always limpid and visible, even oily and dirty liquids), **legibility** (it is 100% legible, even from far and under wide angles), **safety** (the instrument needs no periodic servicing/cleaning and no kind of energy from outside : it is a passive safety instrument).

In addition to the local indication, you can have also a remote indication of the level, thanks to **Level Sensor** that may be placed on a side of the same display; it generates an electric signal (4÷20mA) directly proportional to the level of liquid.

Furthermore it is possible to complete the display with one or more **Alarms**, electric or pneumatic, able to trip when level reaches their heights; the heights can be decided and changed by final user also in a second time; so the instrument performs a double function, as **Level Indicator** and as **Level Switch**, with an increased safety and circuit simplicity.

They meet the PED and ATEX standards (as per page 37).

APPLICATIONS. Indication and operation at Max, Min or any intermediate level on vessels containing watery or chemical, corrosive, toxic, etc. liquids; for normal-high-low temperatures, and for pressures being very high too.

Body. Cylindrical, stainless steel AISI 304, with diameter and thickness corresponding to the different application needs, such as pressures and temperatures of fluid.

With liquids like water, stainless steel AISI 304 is able to operate with the pressures/temperatures listed in ASME standards; with other more corrosive liquids it performs good resistance, but it is necessary to evaluate each time the specific operating conditions.

Top and bottom ends of body may have accessories too.

Connections to vessel.

- Flanges, stainless steel AISI 304, size 1÷2", ratings ANSI 150÷1500 psi.
- Sleeves, stainless steel AISI 304, size ½"÷1½" with possible mountings as per page 5.

The most popular connection-to-connection distances are 178÷6000mm.

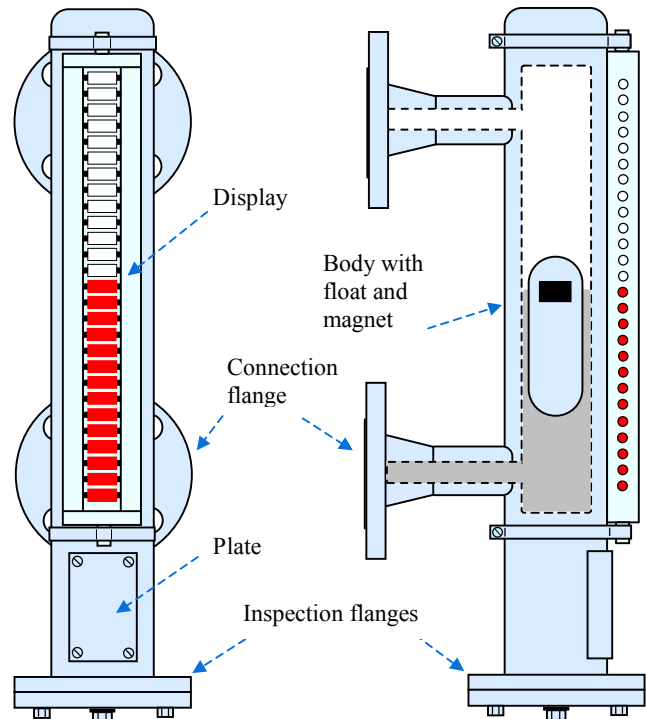
Display. It is as high as the distance between connections, and is placed in parallel to the body. In it there is a series of small rollers : while level rises, rollers hide their *white side* and show their *red one*. The contrary happens when level goes down.

Display is anodized Aluminium and is protected by a transparent cover; it needs no kind of supply.

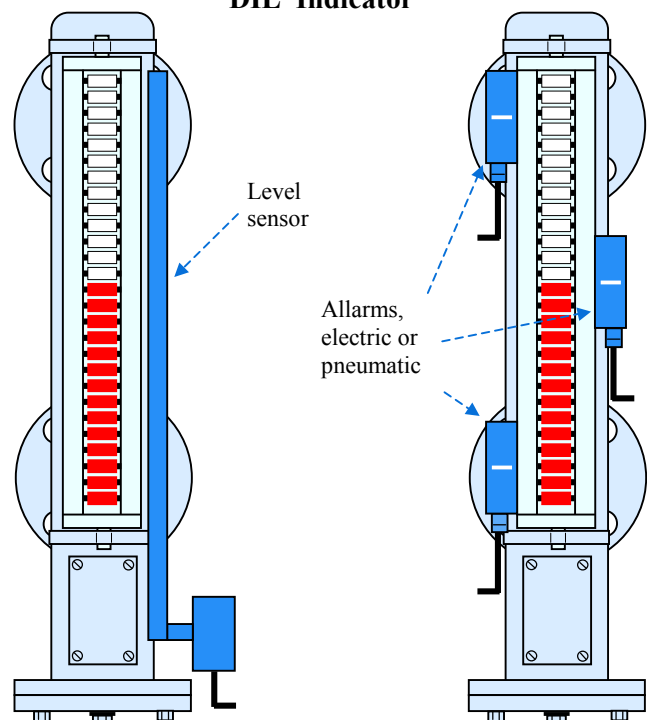
Level Sensor. It can be placed in parallel to the body. In it there is an electric circuit with a series of *reed switches* closing when are invested by the magnetic field of the nearby float. While level is rising, the switches are closed step by step, with a consequent generation of an electric signal being directly proportional to the liiquid level; the signal (4÷20mA) can be remote transmitted by a common copper wire. As per page 6 too.

Alarms. They can be fixed at will along the left or right side of display; they start up a control when liquid reaches the level at which they has been fixed : alarm for Max, Min and/or any intermediate level. As per page 6.

- **Electric.** 1 SPDT, *reed* contact, bistable, water-proof IP65, within aluminium body; flame-proof too.
Load : 2÷250Vac-1A-60VA; 2÷250Vdc-0,5A-30W.
- **Pneumatic.** 1 ON-OFF valve, with usage pressures : 2÷6Bar / 29÷87psi.



DIL Indicator



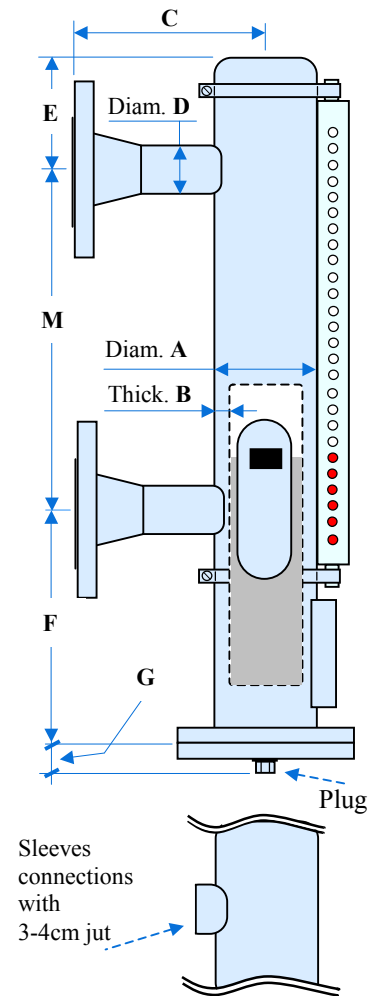
Indicators DIL : Technical Notes

The DIL indicators have cylindrical body with outer diameter **A** and wall thickness **B** changing on basis of pressure and temperatures of inside liquids. The total height of body changes on basis of other factors :

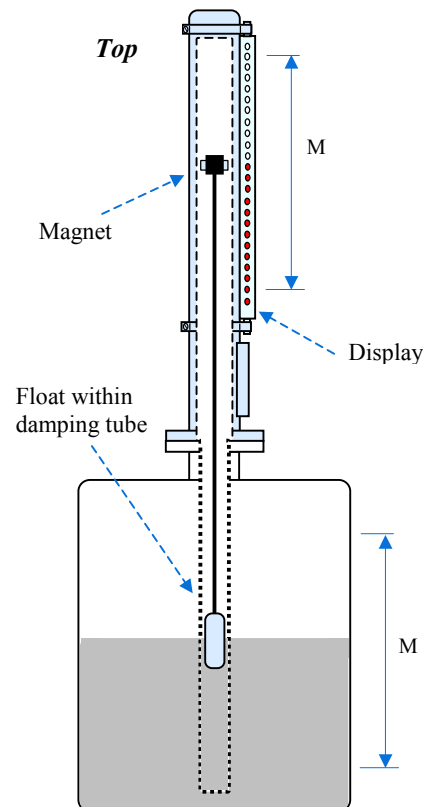
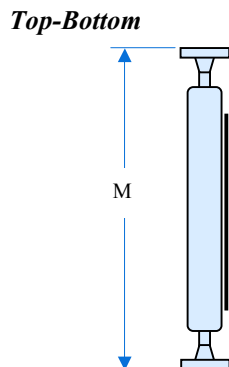
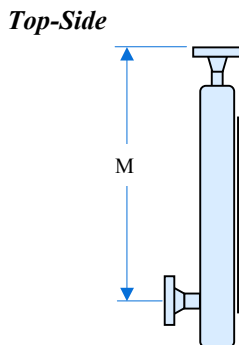
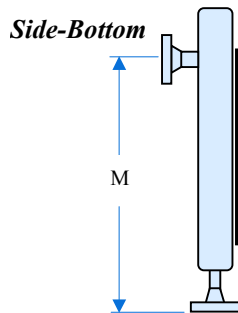
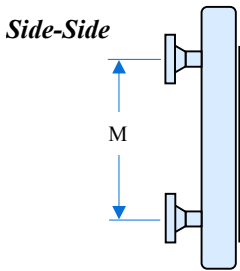
- The distance **M** between the connection centers, and also :
- The height of float, that on its turn changes on basis of the specific gravity and pressure of liquid.

Since it is not practical to show the heights of all the possible combinations of these elements, we report only some informative measures in the Tab. 1.

Tab. 1	ANSI 150	ANSI 300	ANSI 600	ANSI 1500
A (mm)	63,5	63,5	63,5	73,03 (2½")
B (mm)	2,6	2,6	2,6	7,01
C (mm)	150	150	150	180
D (mm)	According to connection flanges (page 25)			
E (mm)	120	120	120	130
M (mm)	Upon request, within 150 ÷ 6000mm			
F (mm)	According to Specific gravity, Pressure, Temperature			
G (mm)	40	45	50	80



MOUNTING ON VESSEL



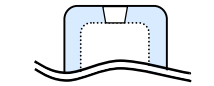
DIL Indicators : Options

ON BODY :

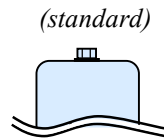
• Top :
(Vent)



Closed

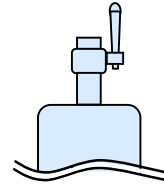


With threaded hole
1/2" NPT-F

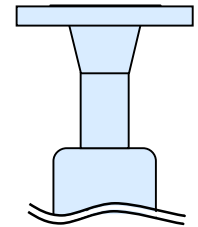


(standard)

With plug
AISI 304

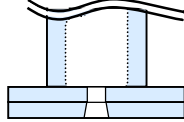
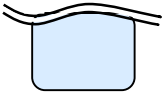


With valve
AISI 304

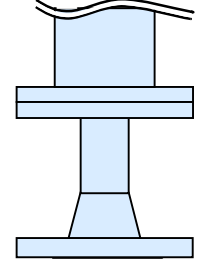
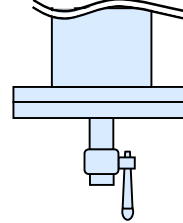


With flange
AISI 304

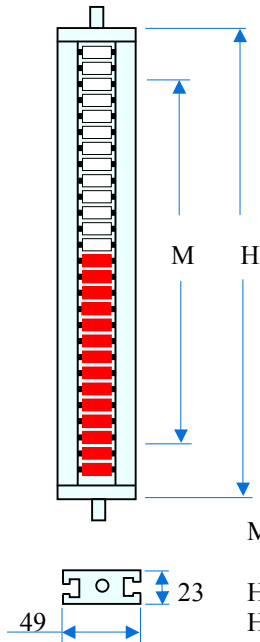
• Bottom :
(drain)



(standard)



DISPLAY (*)



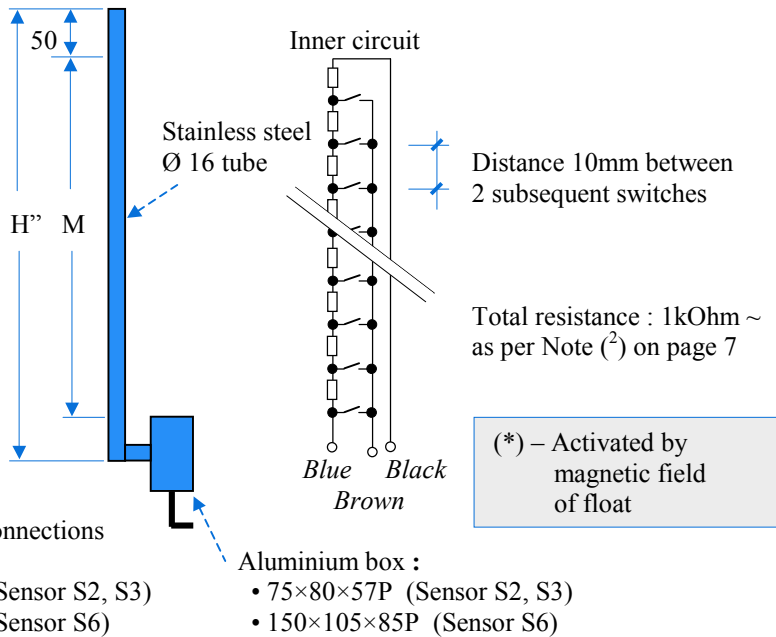
M = Range of measure =
Distance between connections

H = M + 84mm

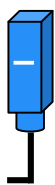
H'' = M + 50 + 120mm (Sensor S2, S3)

M + 50 + 230mm (Sensor S6)

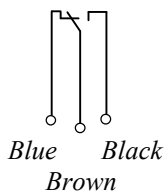
LEVEL SENSOR Code S2 (*)



ELECTRIC SWITCH (*)



1 Contact SPDT, bi-stabile sealed in reed :



Code D2 :

2÷250Vac-1A-60VA
2÷250Vdc-0,5A-30W
+90°C; Cable PVC 1m
Water-proof IP65

Code D3 :

Like D2, but +150°C
Silicon cable

Code D6 :

Like D2, but IP66
Flame-proof EEx d IIC T6/T3

Aluminium body
25×30×100mm
Water-proof IP65

PNEUMATIC SWITCH (*)

Pneumatic valve ON-OFF.
Usage pressures :
2÷6Bar / 29÷87psi

CONNECTIONS to vessel of DIL :

<i>Mounting :</i>	<i>By means of :</i>	<i>Rating :</i>	<i>Diameter :</i>
LL Side-Side ⁽¹⁾	F Flanges ANSI with RF face	15 ANSI 150 psi	<i>Flanges or Sleeves :</i>
LF Side-Bottom	J " " " RJ (Ring Joint)	30 ANSI 300	C 1"
TL Top-Side	N Sleeves, threaded NPT-F ⁽¹⁾	60 ANSI 600	D 1½"
TF Top-Bottom	P " " NPT-M	M5 ANSI 1500	E 2"
TT Top	S " socket welding		

M □ □ □ □ Connection center-to-center distance (mm) = Display height (mm); [standard : 0150÷6000mm]

BODY and CONNECTIONS in :

A4 Stainless steel AISI 304

Flanges are available in UNI/DIN too, as per page 33.
Upon request, body can be in AISI 316, Hastelloy, Teflon, etc.

OPTIONS on body :

Top (vent) so finished :

- NN** Closed, without vent hole
- A •** With hole, threaded ½" NPT-F ⁽¹⁾
- B •** " " " ¾" NPT-F
- N** Threaded hole, no accessory ⁽¹⁾
- T** " " " with plug in AISI 304 ⁽¹⁾
- R** " " " with valve " "
- S** " " " with valve + plug " "
- LK** Hole conneced to another flange AISI 304, same size as connection flanges

Bottom (drain) so finished :

- NN** Closed, without drain hole
- A •** With hole, threaded ½" NPT-F ⁽¹⁾
- B •** " " " ¾" NPT-F
- N** Threade hole, no accessory
- T** " " " with plug AISI 304 ⁽¹⁾
- R** " " " with valve " "
- S** " " " with valve + plug
- LK** Hole connected to another flange AISI 304, same size as connection flanges

DISPLAY :

- A** Aluminium body, anodized, IP65 water-proof, white/red coloured Crastin PBT rollers, Makrolon cover; up to +150°C max ambient temperature ⁽¹⁾
- C** Aluminium body, anodized, IP65 water-proof; white/blue coloured ceramic rollers, glass cover, up to +450°C max ambient temperature
- Z** Aluminium body, anodized, IP65 water-proof, white/red coloured metallic flags, glass cover, up to +150°C max ambient temperature

LEVEL SENSOR :

- SN** No sensor.
- S2** Sensor with terminal box in Aluminum 80×75×57mm; Ø16mm sensor tube in stainless steel AISI 316; 10mm distance between 2 subsequent contacts, 1 kOhm ~ total resistance, 1m cable in PVC grey 3×0,75mm² (+ ground), EEx ib IIC, -40°C/+120°C operation temperature. ⁽¹⁾ ⁽²⁾
- S3** Sensor like S2, but for -100°C/+250°C operation temperature.
- S6** Sensor like S2, but for EEx d IIC T6/T4 and -40°C/+70°C oper. temperature, terminal box in Alumium 150×105×85mm, IP-66 water-proof.

ALARM switches, ELECTRIC :

- Number of alarm switches : 0, 1, 2, 3, etc.
- D2** Magnetic switch, SPDT, *reed* contact, bistable, IP65 water-proof, 1m cable in PVC grey 3×0,75mm² (+ground) ⁽¹⁾
- D3** Switch like D2, but up to +150°C, silicon sheathed cable.
- D6** Switch like D2, but suitable for EEx d IIC T6/T4, IP66 water-proof.

ALARM switches, PNEUMATIC :

- Number of alarm switches : 0, 1, 2, 3, etc.
- PA** Switch ON-OFF : opens air when level rises ⁽¹⁾
- PC** " " " closes " " " "

DIL - □ □ □ □ □ □ □ □ - **M** □ □ □ □ □ □ □ □ - □ □ □ □ □ □ □ □ - □ □ □ □ □ □ □ □ - □ □ □ □ □ □ □ □ - □ □ □ □ □ □ □ □ - □ □ □ □ □ □ □ □ Short description

In addition to the above Short description, *Domizi Snc* need also the following information, absolutely necessary.

Fluid :	upper :	.....	Specific gravity of fluid :	upper :	.....	kg/m ³
"	lower :	.....	" " " "	lower :	.....	kg/m ³
Temperature :	Minimum	..... °C	Operating	..... °C	Maximum	..... °C
Pressure :	Minimum	..... bar (*)	Operating	..... bar (*)	Maximum	..... bar (*)
Instrument function :					Other :

(*) Simplify : 15bar ~ 15atm ~ 15kg/cm² ~ 15KPa ~ 1,5Mpa

⁽¹⁾ - It is the standard option.

⁽²⁾ - Other distances (8, 15, 20mm) are available on request. The total resistance value changes according to the M sensor height and the desired resolution