

ISOMAG ™

The friendly magmeter

MS 2410

SANITARY SENSOR



CERTIFIED SENSOR "SANITARY". SPECIFIC FOR THE USE IN ALIMENTARY AND PHARMACEUTICAL APPLICATIONS

Warranty conditions are available on this website:
www.isomag.eu only in English version

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The solutions that count

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TECHNICAL DATA

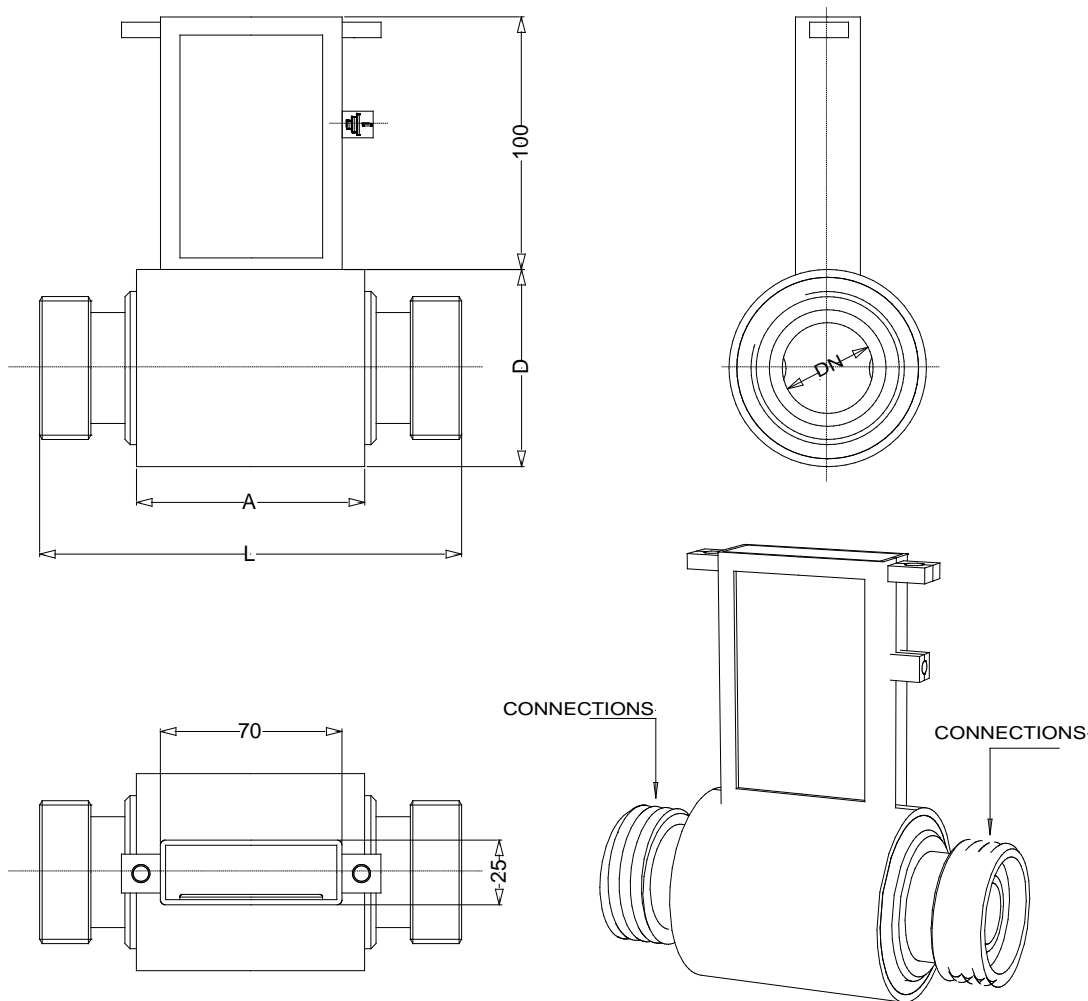
<i>OVERALL FEATURES</i>	
Nominal diameter	<input type="checkbox"/> DN 3 ÷ 100
Minimum conductivity	<input type="checkbox"/> 5 µS/cm
Humidity Range	<input type="checkbox"/> 0÷100% (IP 67)
Accuracy	<input type="checkbox"/> See relevant converter data sheet
CE Certification	<input type="checkbox"/> Yes

<i>STANDARD FEATURES</i>	
Body material	<input type="checkbox"/> Stainless steel AISI 304
Nominal pressure	<input type="checkbox"/> 1600 kPa
Process connection	<input type="checkbox"/> Sanitary DIN 11851 <input type="checkbox"/> Tri-clamp ® <input type="checkbox"/> Tri-clover® <input type="checkbox"/> SMS-1146 <input type="checkbox"/> Other on request
<i>Version – protection rating</i>	<input type="checkbox"/> Compact IP67
Connection material	<input type="checkbox"/> Stainless steel AISI 316
Lining material	<input type="checkbox"/> PTFE
Gasket material	<input type="checkbox"/> FPM
Liquid temperature	<input type="checkbox"/> -20 °C ÷ +100 °C comp. version. (130 °C only with ML4F-1) <input type="checkbox"/> -20 °C ÷ + 150 °C separate version.
Vacuum resistance	<input type="checkbox"/> 20 Kpa at 100 °C
Electrodes material	<input type="checkbox"/> Stainless steel AISI 316L

<i>OPTIONAL FEATURES</i> (CHECK FOR MORE DETAILS 'HOW TO ORDER' ON LAST PAGE)	
Body material	<input type="checkbox"/> Stainless steel AISI 316
Gasket material	<input type="checkbox"/> EPDM
Process connection	<input type="checkbox"/> Others on request
Electrodes material	<input type="checkbox"/> On request
Version – protection rating	<input type="checkbox"/> Separate version (max 20m) – IP 68 <input type="checkbox"/> Separate version (max 500 m), with preamplifier – IP 67 (OPT. IP 68)

OVERALL DIMENSIONS

DIN/SMS CONNECTIONS



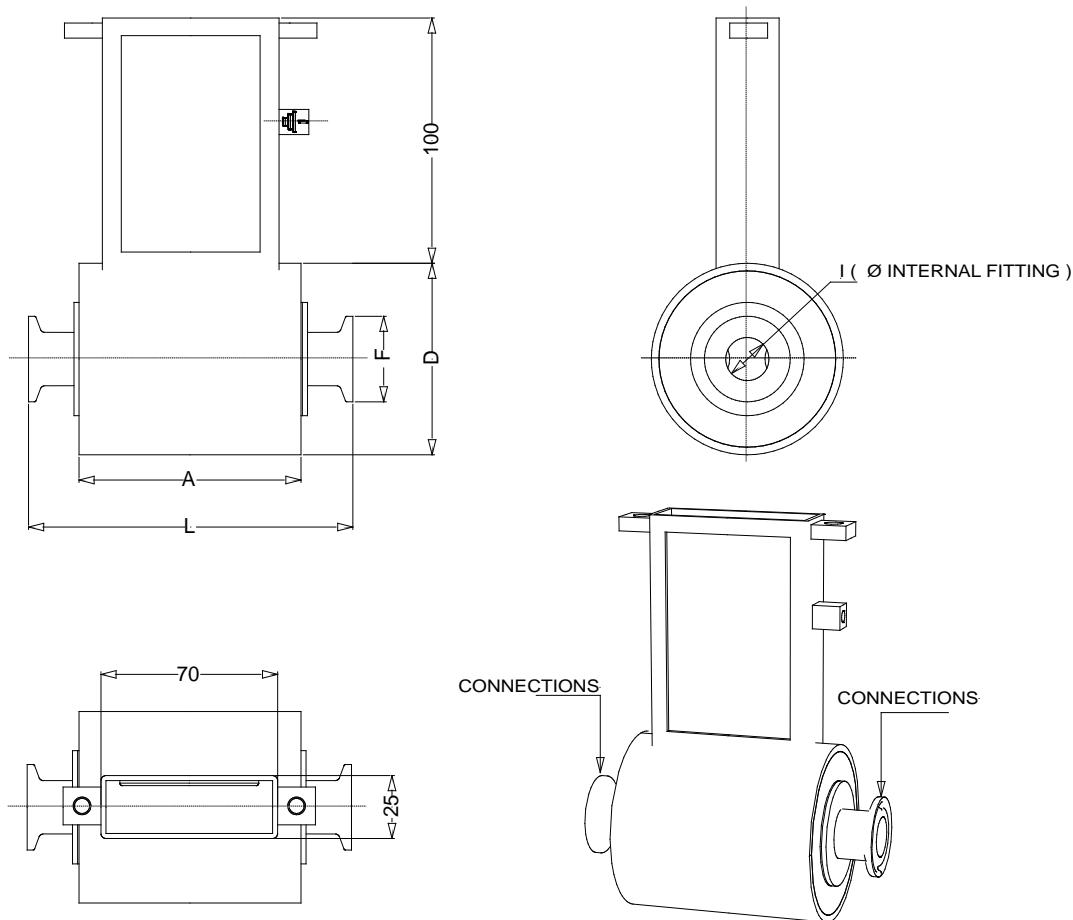
DIN 11851

DIMENSIONS mm (inches)	DN											
	3 (1/8")	6 (1/4)	10 (3/8)	15 (1/2")	20 (3/4")	25 (1")	32 (1 1/4)	40 (1 1/2)	50 (2")	65 (2 1/2)	80 (3")	100 (4")
A	77 (3.03)	77 (3.03)	77 (3.03)	77 (3.03)	77 (3.03)	100 (3.94)	100 (3.94)	100 (3.94)	100 (3.94)	100 (3.94)	100 (3.94)	100 (3.94)
L	128 (5.04)	128 (5.04)	128 (5.04)	128 (5.04)	128 (5.04)	180 (7.09)	180 (7.09)	180 (7.09)	180 (7.09)	180 (7.09)	200 (7.87)	200 (7.87)
D	76 (3)	76 (3)	76 (3)	76 (3)	76 (3)	76 (3)	89 (3.50)	89 (3.50)	114 (4.49)	140 (5.51)	140 (5.51)	168 (6.61)
CONNECTIONS	DN 10	DN 10	DN 10	DN 15	DN 20	DN25	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100

SMS-1146

DIMENSIONS mm (inches)	DN								
	10 (3/8)	15 (1/2")	20 (3/4")	25 (1")	40 (1 1/2)	50 (2")	65 (2 1/2)	80 (3")	100 (4")
A	77 (3.03)	77 (3.03)	77 (3.03)	100 (3.94)	100 (3.94)	100 (3.94)	100 (3.94)	100 (3.94)	100 (3.94)
L	128 (5.04)	128 (5.04)	128 (5.04)	180 (7.09)	180 (7.09)	180 (7.09)	180 (7.09)	200 (7.87)	200 (7.87)
D	76 (3)	76 (3)	76 (3)	76 (3)	89 (3.50)	114 (4.49)	140 (5.51)	140 (5.51)	168 (6.61)
CONNECTIONS	DN 25	DN 25	DN 25	DN25	DN 38	DN 51	DN 63	DN 76	DN 104

CLAMP CONNECTIONS



CLAMP ISO 2852

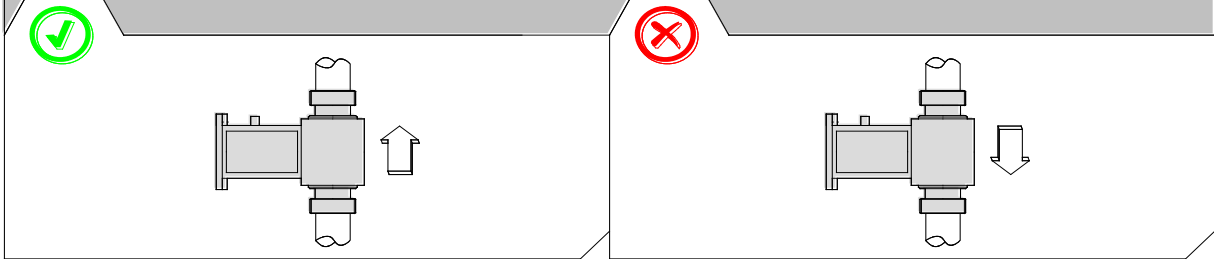
DIMENSIONS mm (inches)	DN										
	3 (1/8")	6 (1/4)	10 (3/8)	15 (1/2")	20 (3/4")	25 (1")	40 (1 1/2)	50 (2")	65 (2 1/2)	80 (3")	100 (4")
A	77 (3.03)	77 (3.03)	77 (3.03)	77 (3.03)	77 (3.03)	100 (3.94)	100 (3.94)	100 (3.94)	100 (3.94)	100 (3.94)	100 (3.94)
L	128 (5.04)	128 (5.04)	128 (5.04)	128 (5.04)	128 (5.04)	180 (7.09)	180 (7.09)	180 (7.09)	180 (7.09)	200 (7.87)	200 (7.87)
D	76 (3)	76 (3)	76 (3)	76 (3)	76 (3)	76 (3)	89 (3.50)	114 (4.49)	140 (5.51)	140 (5.51)	168 (6.61)
I	12.7 (0.5)	12.7 (0.5)	12.7 (0.5)	17.2 (0.68)	21.3 (0.84)	22.6 (0.89)	35.6 (1.40)	48.6 (1.91)	60.3 (2.37)	72.9 (2.87)	97.6 (3.84)
F	34 (1.34)	34 (1.34)	34 (1.34)	34 (1.34)	34 (1.34)	50.5 (1.99)	50.5 (1.99)	64 (2.52)	77.5 (3.05)	91 (3.58)	119 (4.69)

CLAMP BS 4825

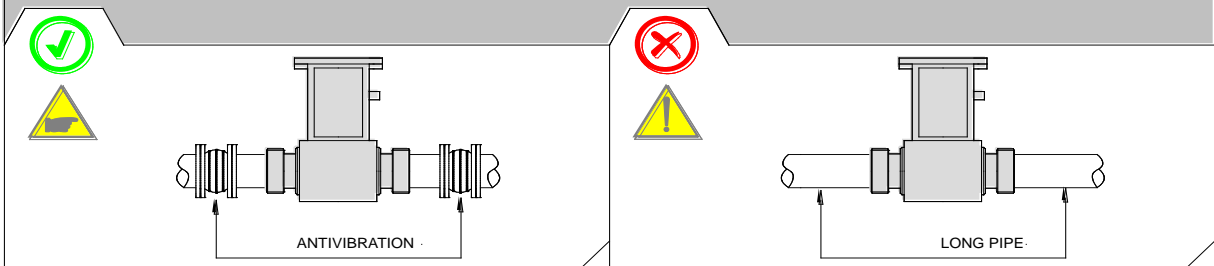
DIMENSIONS mm (inches)	DN										
	3 (1/8")	6 (1/4)	10 (3/8)	15 (1/2")	20 (3/4")	25 (1")	40 (1 1/2)	50 (2")	65 (2 1/2)	80 (3")	100 (4")
A	77 (3.03)	77 (3.03)	77 (3.03)	77 (3.03)	77 (3.03)	100 (3.94)	100 (3.94)	100 (3.94)	100 (3.94)	100 (3.94)	100 (3.94)
L	128 (5.04)	128 (5.04)	128 (5.04)	128 (5.04)	128 (5.04)	180 (7.09)	180 (7.09)	180 (7.09)	180 (7.09)	200 (7.87)	200 (7.87)
D	76 (3)	76 (3)	76 (3)	76 (3)	76 (3)	76 (3)	89 (3.50)	114 (4.49)	140 (5.51)	140 (5.51)	168 (6.61)
I	9.5 (0.37)	9.5 (0.37)	9.5 (0.37)	15.85 (0.62)	22.2 (0.87)	22.2 (0.87)	34.9 (1.37)	47.6 (1.87)	60.3 (2.37)	73 (2.87)	97.6 (3.84)
F	25.4 (1)	25.4 (1)	25.4 (1)	25.4 (1)	50.5 (1.99)	50.5 (1.99)	50.5 (1.99)	64 (2.52)	77.5 (3.05)	91 (3.58)	119 (4.69)

INSTALLATION RECOMMENDATIONS

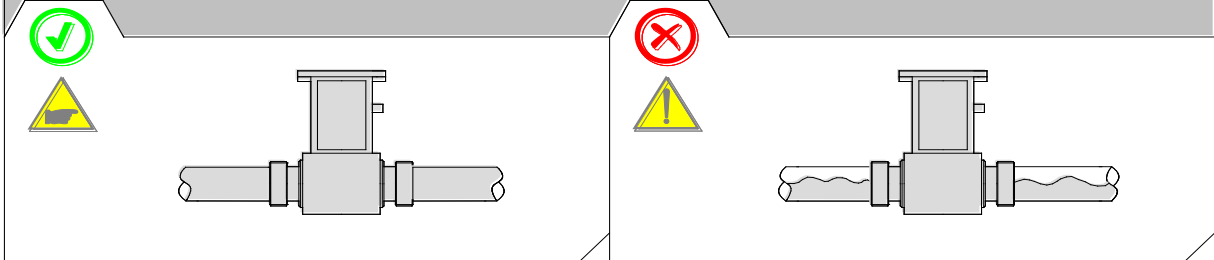
In vertical installations an ascending flow is preferable. For vertical installations with descending flow direction contact the manufacturer



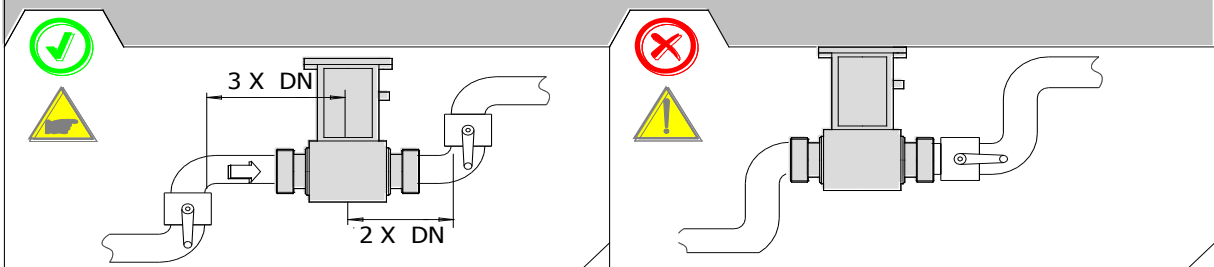
For installations in long pipe lines, please use anti vibration joints



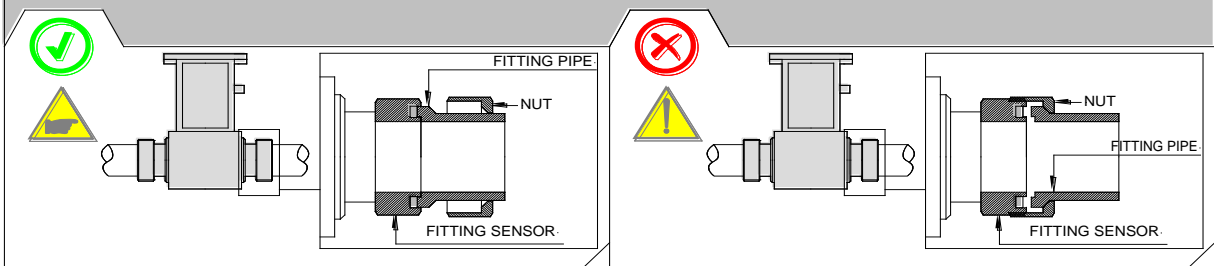
Avoid a partially empty pipe, during operation the pipe must be either completely full of liquid or completely empty



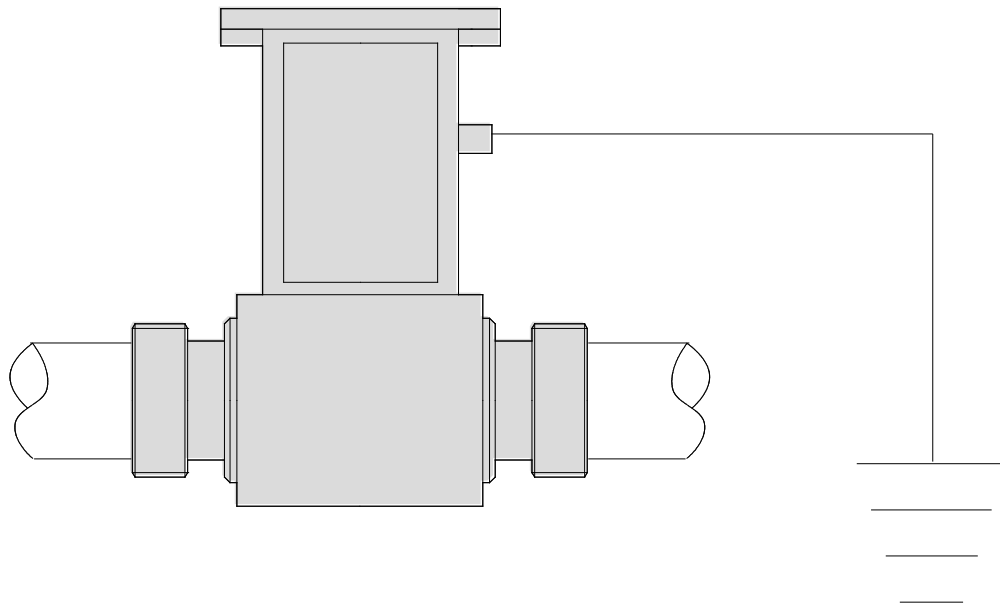
Install the sensor away from bends and hydraulic accessories



Avoid positioning fittings by tightening the clamps.

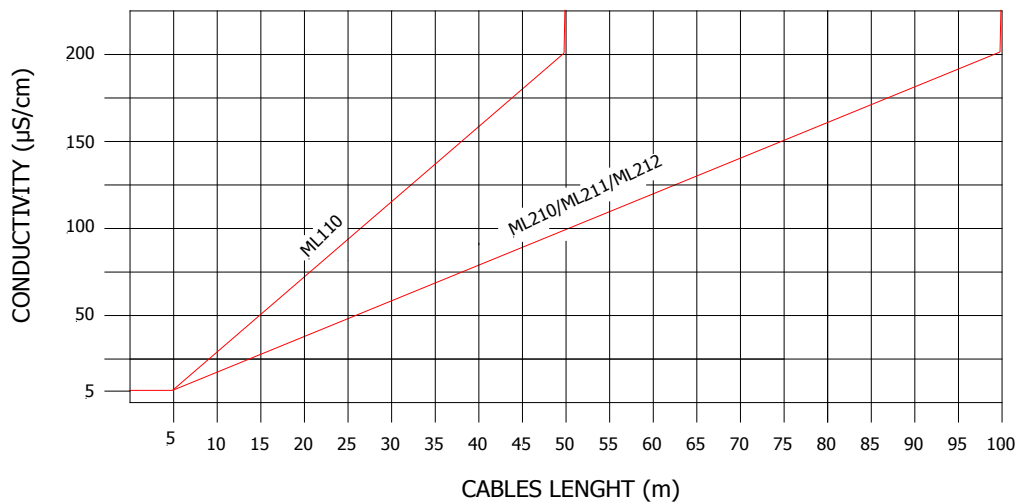
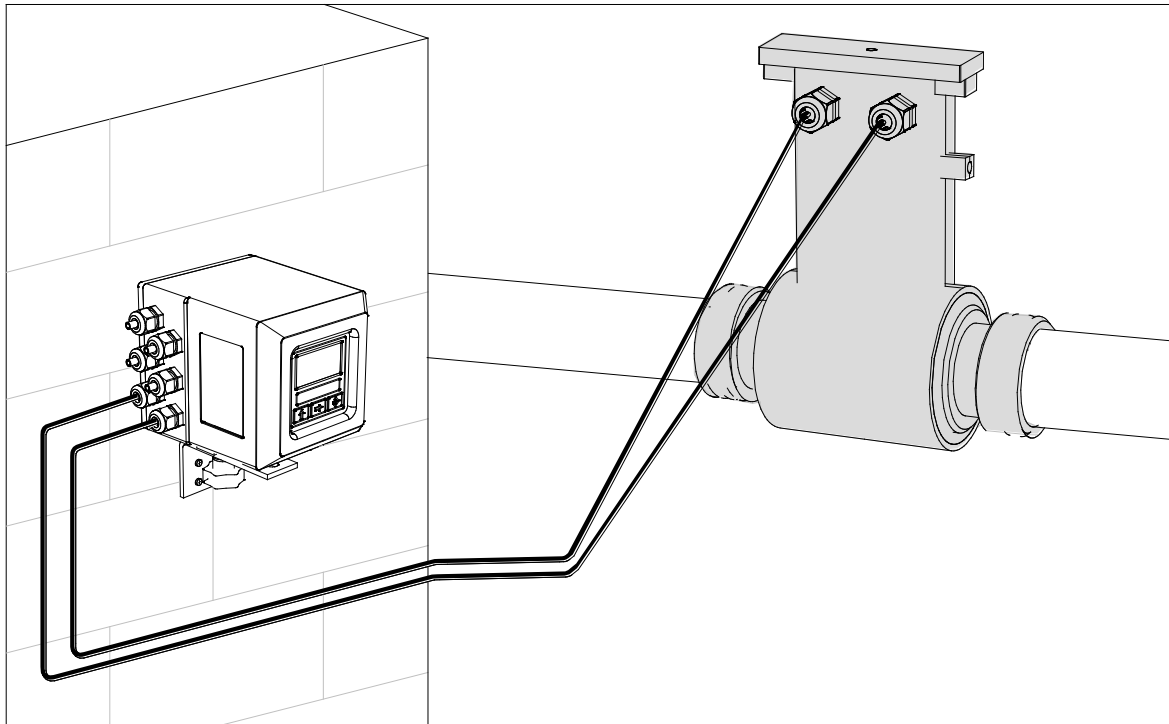


SENSOR GROUNDING



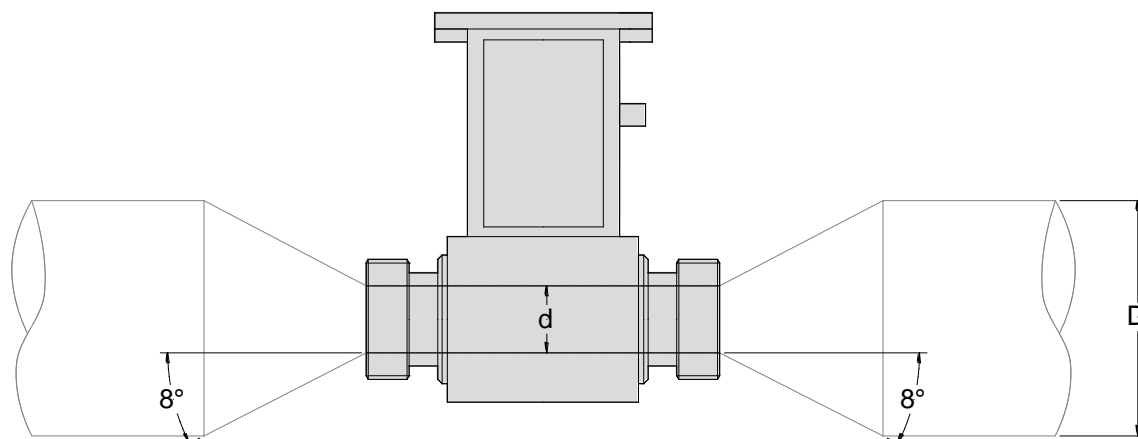
For the correct operation of the meter the sensor and liquid must be equipotential. ALWAYS connect sensor and converter to the ground.

SEPARATE VERSION

**Notes:**

- It is recommended to install the connection cables away from, or protect against sources of electromagnetic noise.
- The minimum conductivity of the liquid medium to ensure correct functionality of the empty pipe detection is 20 µS/cm

PRESSURE LOSS CALCULATION (CONES 8° ANGLES)



$$\Delta p = \left[0.10 + 0.20 \left(\left(\frac{d}{D} \right)^{-2} - 1 \right) \left(\frac{d}{D} \right)^4 \right] \left(\rho \frac{u^2}{2} \right)$$

Where:

Δp = Pressure loss in [Pa]

ρ = Fluid density [kg/m^3] typical value $\rho = 1000[\text{kg}/\text{m}^3]$

d = sensor diameter [m]

D = pipe diameter (greater than sensor diameter) [m]

u = Mean flow velocity in sensor diameter [m/s]

Calculation examples Δp [mbar]								
$\frac{d}{D} \backslash u$	1 [m/s]	2 [m/s]	3 [m/s]	4 [m/s]	5 [m/s]	6 [m/s]	7 [m/s]	8 [m/s]
0.5	1.1	4.3	9.6	17.0	26.6	38.3	52.1	68.0
0.6	0.9	3.6	8.2	14.6	22.7	32.7	44.6	58.2
0.7	0.8	3.0	6.8	12.2	19.0	27.4	37.2	48.6
0.8	0.6	2.5	5.7	10.1	15.7	22.7	30.9	40.3
0.9	0.5	2.1	4.8	8.6	13.4	19.3	26.3	34.3

Note :

- $\rho = 1000[\text{kg}/\text{m}^3]$ as goodness approximation of water density in common use.
- Inner diameter of sensor is used for d , express in meters.
- Indeed pressure loss equation is dimensionally correct in [Pa]. The equation results in table are show in [mbar].

HOW TO ORDER

MS 2410		
EXAMPLE CODE	Nominal Diameter / Measuring range	
T03	T03	DN3 (1/8 "), measuring range 0.. 10.3 / 0...259 l/h
	T06	DN6 (1/4 "), measuring range 0...41.4/0...1037 l/h
	T10	DN10 (3/8 "), measuring range 0..115.2/0...2880 l/h
	T15	DN15 (1/2 "), measuring range 0.. 259.2/0...6480 l/h
	T20	DN20 (3/4 "), measuring range 0.. 460.8/0...11520 l/h
	T25	DN25, measuring range 0 ... 0,7 / 0 ... 18 m ³ /h
	T32	DN32, measuring range 0 ... 1,2 / 0 ... 29 m ³ /h
	T40	DN40, measuring range 0 ... 1,9 / 0 ... 46 m ³ /h
	T50	DN50, measuring range 0 ... 2,9 / 0 ... 72 m ³ /h
	T65	DN65, measuring range 0 ... 4,9 / 0 ... 122 m ³ /h
	T80	DN80, measuring range 0 ... 7,5 / 0 ... 184 m ³ /h
T100	DN100, measuring range 0 ... 11,7 / 0 ... 288 m ³ /h	
Gasket material (internal tightness)		
2	2	O-Ring : Epdm
	3	O-Ring : FKM (FDA1770)
	9	O-Ring : da specificare
Process connection type		
A	A	DIN11851-852 sanitary connection
	B	Tri-Clamp connection, ISO2852
	C	SMS-1146 connection
	D	Attacchi tri-clamp GB special connections
	E	BS 4825
	Z	Connection: other
Number and electrodes material		
1	1	n. 2 measure electrodes in AISI316
	0	Electrode material: to be specified
Execution / Protection rate		
A	A	Compact execution, IP67 protection rate
	B	Separate execution maximum length 10 m (20m, <u>see note 1</u>), remember to added the cables C015+C016 cost , protection rate IP68 (standing immersion with 1,5 m of head water)
	D	Separate execution (in AISI304), with preamplifier (maximum length 500 m.), remember to added the cable C014 cost , protection rate IP67
	E	Execution with length and position of the neck of the Sensor to define according draw. G006 (valid for A-B-C-D versions, add the relative COST)
	F	Execution separate with N° 2 connectors IP 68 suitable for C015/16 for fast cable connections (max 20 m-ADD THE COST)
	G	Execution separate with N° 1 connectors IP 68 suitable for C018 for fast cable connections (max 20 m-ADD THE COST)
	I	Execution sep. with N° 1 connectors IP 68 for C014 fast cable connections TO PRAMPLIFIRE IN AISI 304 VERSION (DEFINE THE CABLE LENGHT MAX 500 m-ADD THE COST)
	M	Compact execution, IP67 protection rate , with the possibility to turn the converter of 90°

MS2410-T03-2A1A (Complete code example for order)

The manufacturer reserves the right to make design improvements without notice.