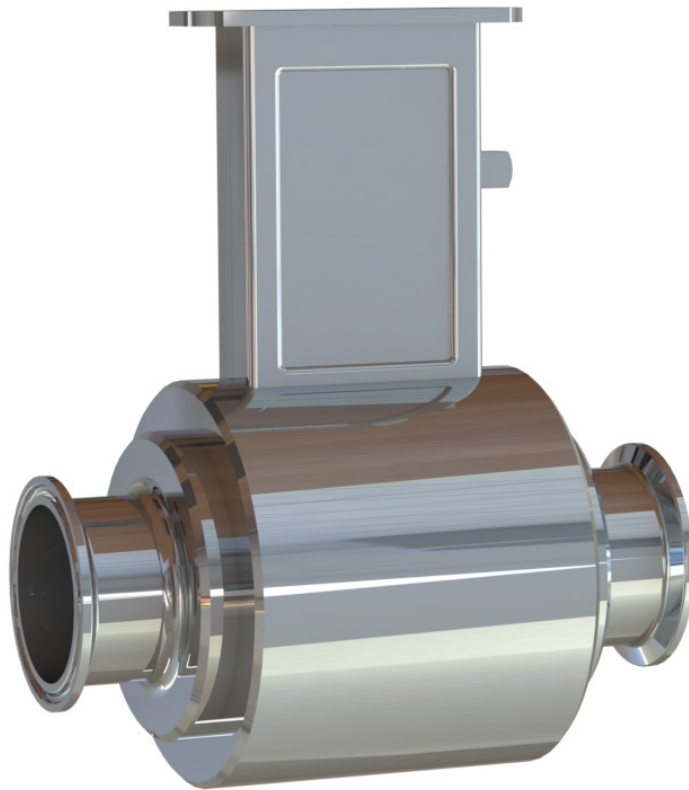


ISOMAG ®
The friendly magmeter

DATASHEET MS2410



CE



ISOIL 
I N D U S T R I A



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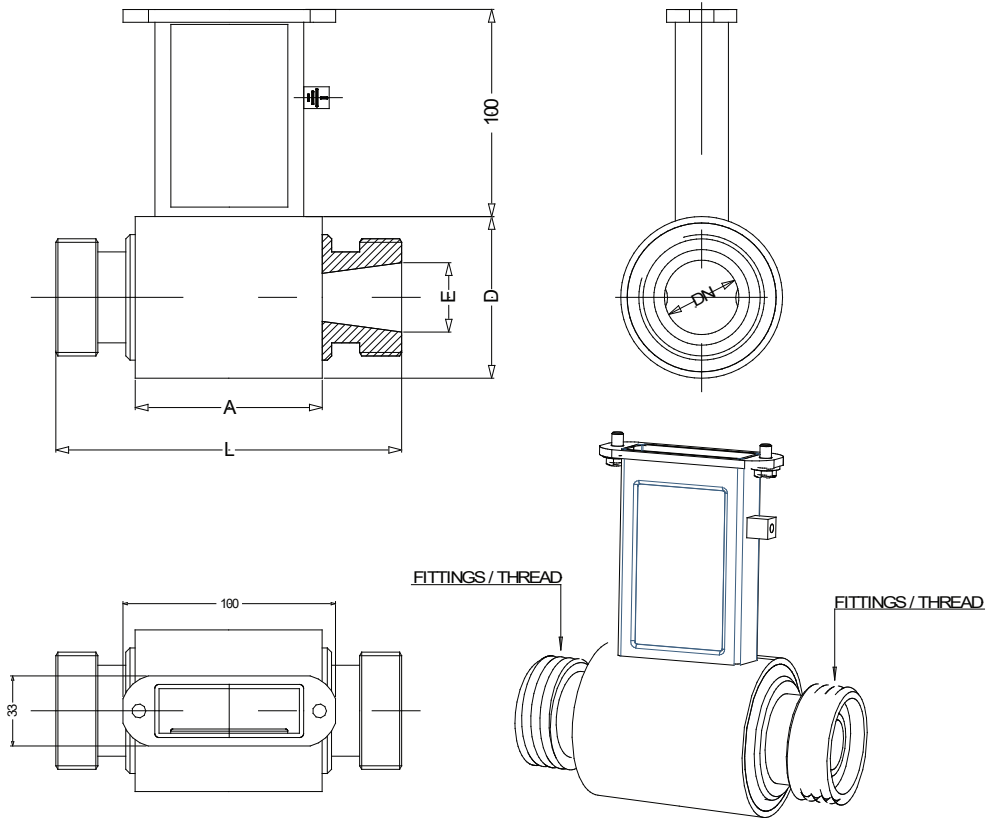
TECHNICAL DATA

OVERALL FEATURES	
Nominal diameter	<input type="checkbox"/> DN 3 ÷ 20
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

STANDARD FEATURES	
Body material	<input type="checkbox"/> Stainless steel AISI 304
Nominal pressure	<input type="checkbox"/> 1600 KPa
Process connection	<input type="checkbox"/> DIN 11851 <input type="checkbox"/> Tri-clamp ® <input type="checkbox"/> Tri-clover® <input type="checkbox"/> SMS 1146 <input type="checkbox"/> Other on request
Version – protection rating	<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"/> FKM
Liquid temperature	<input type="checkbox"/> -20 °C ÷ +110 °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

OPTIONAL FEATURES (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)

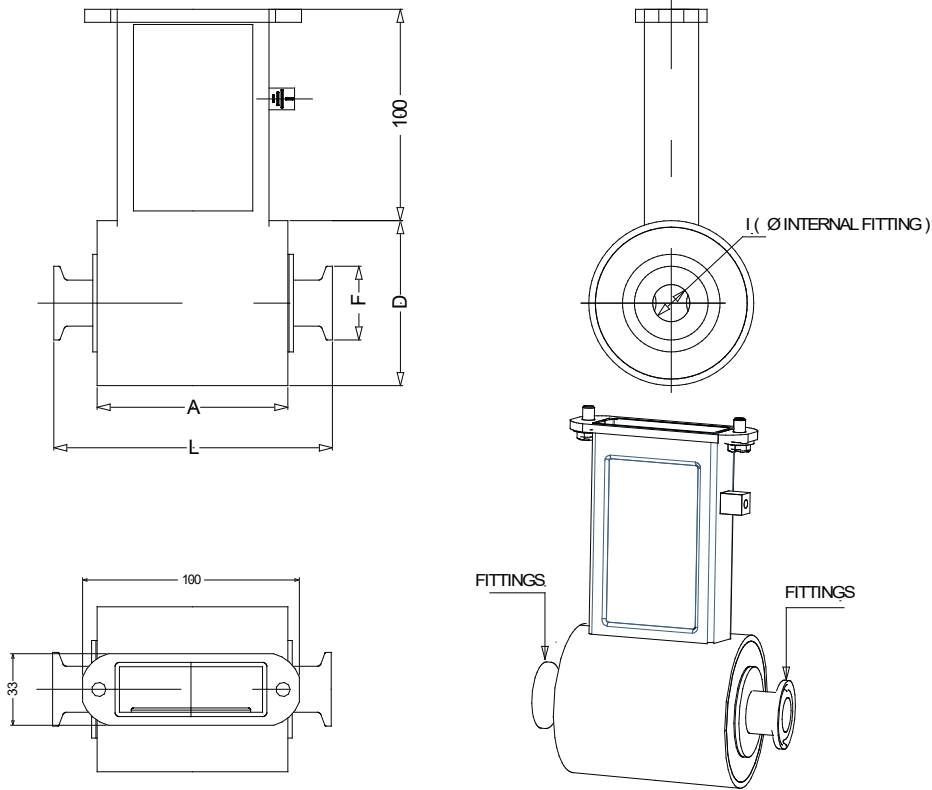
DIN/SMS FITTINGS



DIN 11851					
DIMENSIONS mm (inches)	DN				
	3 (1/8")	6 (1/4)	10 (3/8)	15 (1/2")	20 (3/4")
A	77 (3.03)	77 (3.03)	77 (3.03)	77 (3.03)	77 (3.03)
L	128 (5.04)	128 (5.04)	128 (5.04)	128 (5.04)	128 (5.04)
D	76 (3)	76 (3)	76 (3)	76 (3)	76 (3)
E	10 (0.39)	10 (0.39)	10 (0.39)	16 (0.63)	20 (0.79)
Thread	Rd 28x1/8	Rd 28x1/8	Rd 28x1/8	Rd 34x1/8	Rd 44x1/6
FITTINGS	DN 10	DN 10	DN 10	DN 15	DN 20

SMS 1146			
DIMENSIONS mm (inches)	DN		
	10 (3/8)	15 (1/2")	20 (3/4")
A	77 (3.03)	77 (3.03)	77 (3.03)
L	128 (5.04)	128 (5.04)	128 (5.04)
D	76 (3)	76 (3)	76 (3)
E	22.6 (0.89)		
Thread	Rd 40-6		
FITTINGS	DN 25	DN 25	DN 25

CLAMP FITTINGS



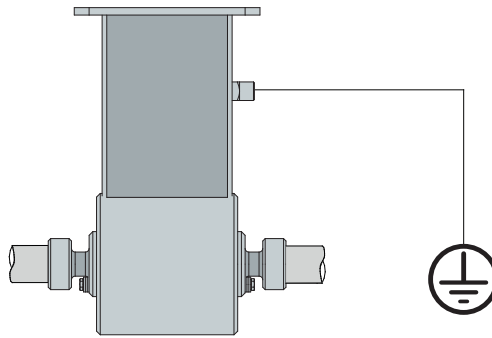
CLAMP ISO 2852					
DIMENSIONS mm (inches)	DN				
	3 (1/8")	6 (1/4)	10 (3/8)	15 (1/2")	20 (3/4")
A	77 (3.03)	77 (3.03)	77 (3.03)	77 (3.03)	77 (3.03)
L	128 (5.04)	128 (5.04)	128 (5.04)	128 (5.04)	128 (5.04)
D	76 (3)	76 (3)	76 (3)	76 (3)	76 (3)
I	12.7 (0.5)	12.7 (0.5)	12.7 (0.5)	17.2 (0.68)	21.3 (0.84)
F	34 (1.34)	34 (1.34)	34 (1.34)	34 (1.34)	34 (1.34)

CLAMP BS 4825 Part 3					
DIMENSIONS mm (inches)	DN				
	3 (1/8")	6 (1/4)	10 (3/8)	15 (1/2")	20 (3/4")
A	77 (3.03)	77 (3.03)	77 (3.03)	77 (3.03)	77 (3.03)
L	128 (5.04)	128 (5.04)	128 (5.04)	128 (5.04)	128 (5.04)
D	76 (3)	76 (3)	76 (3)	76 (3)	76 (3)
I	9.5 (0.37)	9.5 (0.37)	9.5 (0.37)	15.85 (0.62)	22.2 (0.87)
F	25.4 (1)	25.4 (1)	25.4 (1)	25.4 (1)	50.5 (1.99)

INSTALLATION RECOMMENDATIONS

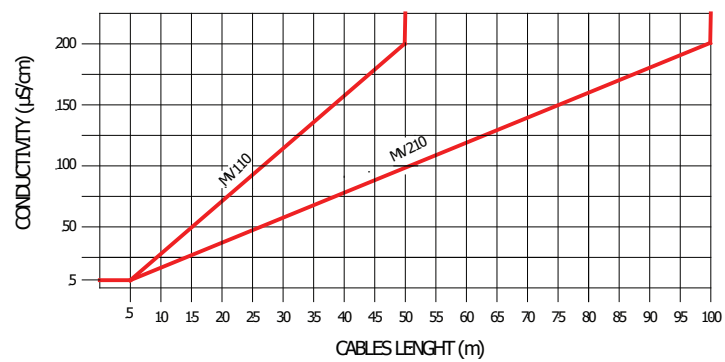
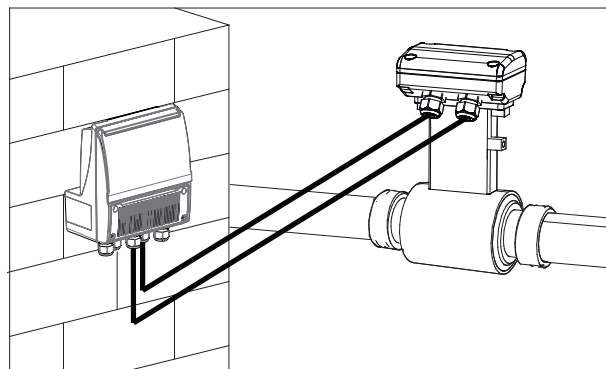
<p>In vertical installations an ascending flow is preferable. For vertical installations with descending flow direction contact the manufacturer</p>	
<p>✓</p>	<p>✗</p>
<p>For installations in long pipe lines, please use anti vibration joints</p>	
<p>✓</p>	<p>✗</p>
<p>Avoid a partially empty pipe, during operation the pipe must be either completely full of liquid or completely empty</p>	
<p>✓</p>	<p>✗</p>
<p>Install the sensor away from bends and hydraulic accessories</p>	
<p>✓</p>	<p>✗</p>
<p>Avoid positioning fittings by tightening the clamps.</p>	
<p>✓</p>	<p>✗</p>

SENSOR GROUNDING



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

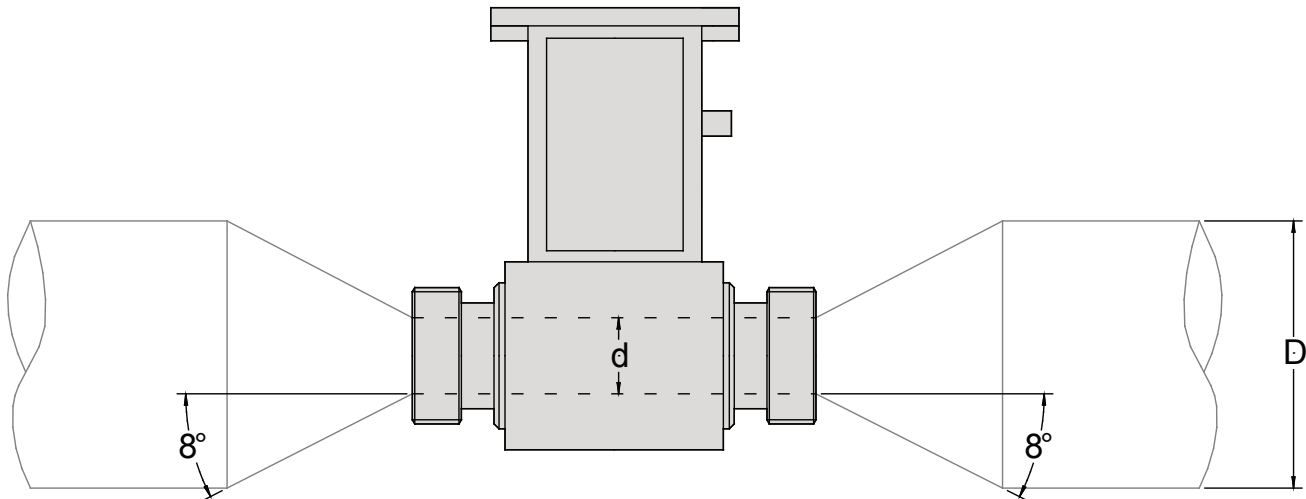
SEPARATE VERSION



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/m³] typical value

$\rho = 1000 \text{ [kg / m}^3\text{]}$

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]									
d/D	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

Notes:

- $\rho = 1000 \text{ [kg / m}^3\text{]}$ 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

CODE EXAMPLE	CODE/DESCRIPTION	
Nominal Diameter / Measuring range		
T03	T03	DN3 (1/8 "), measuring range 0.. 10.3 / 0...259 l/h (not available for connection type C)
	T06	DN6 (1/4 "), measuring range 0...41.4/0...1037 l/h (not available for connection type C)
	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
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	Tri-Clamp connection, BS 4825 – Part 3
	Z	Connection: Others (***)
Number and electrodes material		
1	1	n. 2 measure electrodes in AISI316L
	0	Electrode material: to be specified
Version / Protection rate		
A	A	Compact execution, IP67 protection rate
	K	Separate version, AISI 304 JB POLISCHED, protection rate IP68, standing immersion with 1,5 m of head water - (DEFINE THE LENGHT - ADD THE COST)

Complete code
example for order

MS2410-T03-2A1A

(*) : Use suitable gasket for cleaning in place (CIP) applications

(**): With this option the process connection is only suitable for cleaning out of place (COP)

(***) : Not available with 3-A marking



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<http://www.isoil.com/en>



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