



ISOMAG

The friendly magmeter

DATA SHEET

MS2420



CE



ISOIL 
INDUSTRIA



INDEX

| | |
|---|----|
| TECHNICAL DATA | 2 |
| OVERALL DIMENSIONS | 3 |
| GENERAL INFORMATIONS ON THE SENSOR INSTALLATION | 6 |
| GROUNDING CONNECTIONS | 7 |
| SEPARATE VERSION | 8 |
| PRESSURE LOSS CALCULATION (CONES 8° ANGLES) | 9 |
| NOTES FOR PED DIRECTIVE FOR SENSOR | 10 |
| HOW TO ORDER | 11 |

TECHNICAL DATA

OVERALL FEATURES

| | | |
|-----------------------------|--------------------------|-----------------------------------|
| Nominal diameter | <input type="checkbox"/> | DN 25 ÷ 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 |

STANDARD FEATURES

| | | |
|---------------------------------------|--------------------------|--------------------------------|
| Body material | <input type="checkbox"/> | AISI 304 |
| Nominal pressure | <input type="checkbox"/> | 1600 kPa |
| Process connections | <input type="checkbox"/> | Sanitary DIN 11851 |
| | <input type="checkbox"/> | SMS 1146 (C.O.P. for 3A) |
| | <input type="checkbox"/> | Clamp ISO 2852 |
| | <input type="checkbox"/> | Clamp BS 4825 |
| Version – protection rating | <input type="checkbox"/> | Compact IP67 |
| Connections material | <input type="checkbox"/> | AISI 316 |
| Lining material | <input type="checkbox"/> | PTFE |
| Gasket material | <input type="checkbox"/> | FPM |
| Liquid temperature | <input type="checkbox"/> | -20 ÷ 110°C - Compact Version |
| | <input type="checkbox"/> | -20 ÷ 150°C - Separate Version |
| Ambient Temperature resistance | <input type="checkbox"/> | -20 ÷ 60°C |
| Vacuum | <input type="checkbox"/> | 20 Kpa absolute at 100 °C |
| Electrodes material | <input type="checkbox"/> | AISI 316L |

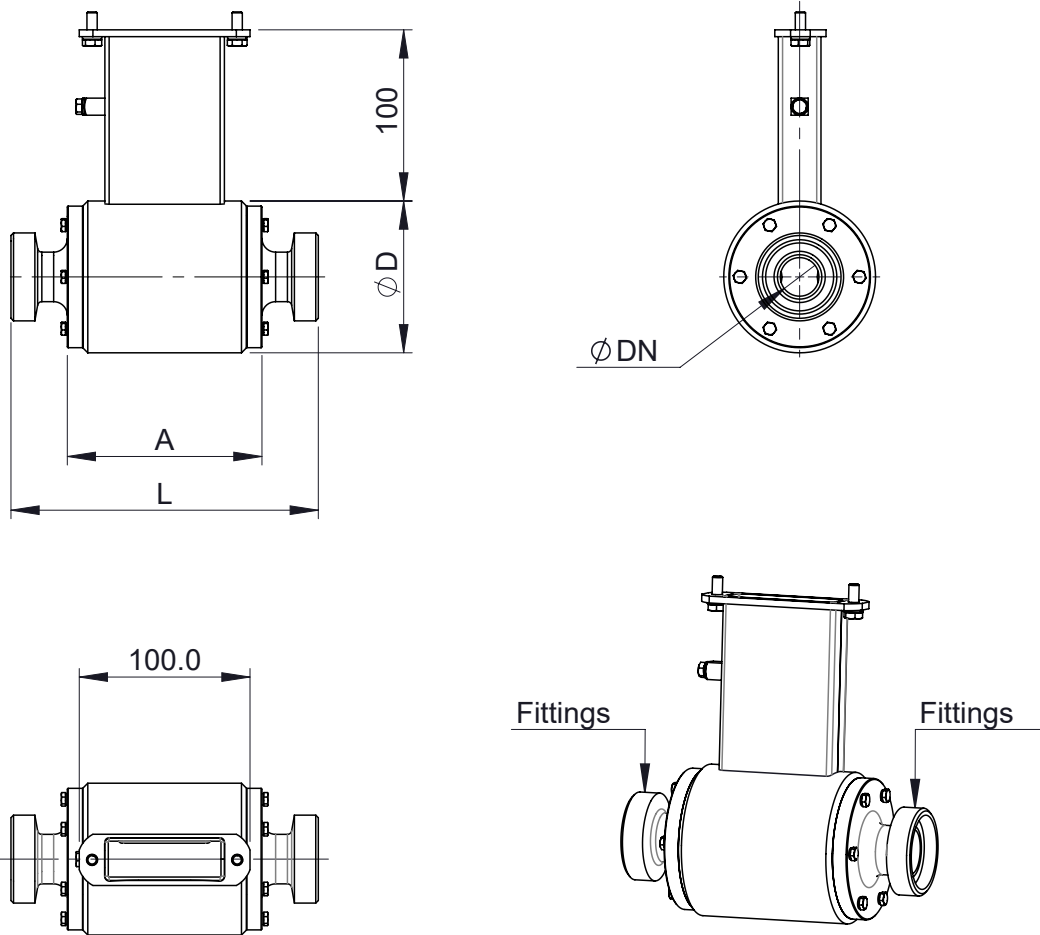
OPTIONAL FEATURES

(CHECK FOR MORE DETAILS 'HOW TO ORDER' ON LAST PAGE)

| | | |
|------------------------------------|--------------------------|---|
| Body material | <input type="checkbox"/> | Stainless steel 316 |
| Gasket material | <input type="checkbox"/> | EPDM |
| Process connection | <input type="checkbox"/> | Others on request |
| Electrodes material | <input type="checkbox"/> | Others On request |
| Version – protection rating | <input type="checkbox"/> | Separate (max 20m) – IP 68 |
| | <input type="checkbox"/> | Separate (max 500m) with pre-amp IP 67 (IP 68 optional) |

OVERALL DIMENSIONS

Threaded connections



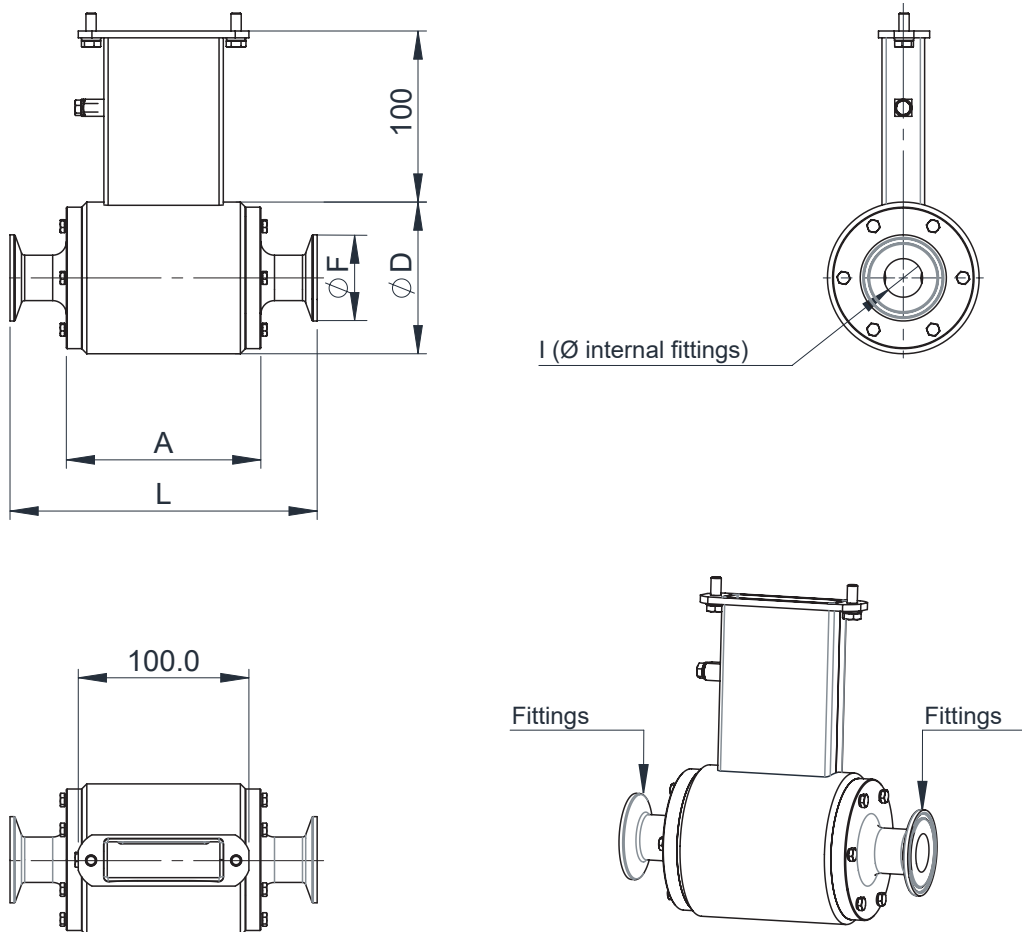
DIN 1851

| DIMENSIONS mm (inches) | DN | | | | | | |
|------------------------------|------------|-----------------|-----------------|------------|-----------------|------------|-------------|
| | 25 (1") | 32 (1" 1/4") | 40 (1" 1/2") | 50 (2") | 65 (2" 1/2") | 80 (3") | 100 (4") |
| A | 115 | | 121 | | | | |
| L | 180 | | | | 200 | | |
| D | 89 | 108 | 129 | 140 | 156 | 168 | |
| CONNECTIONS | 25 | 32 | 40 | 50 | 65 | 80 | 100 |

SMS-1146

| DIMENSIONS mm (inches) | DN | | | | | |
|------------------------------|------------|-----------------|------------|-----------------|------------|-------------|
| | 25 (1") | 40 (1" 1/2") | 50 (2") | 65 (2" 1/2") | 80 (3") | 100 (4") |
| A | 115 | 121 | | | | |
| L | 180 | | | | 200 | |
| D | 89 | 108 | 129 | 140 | 156 | 168 |
| CONNECTIONS | 25 | 38 | 51 | 63 | 76 | 104 |

Clamp connections



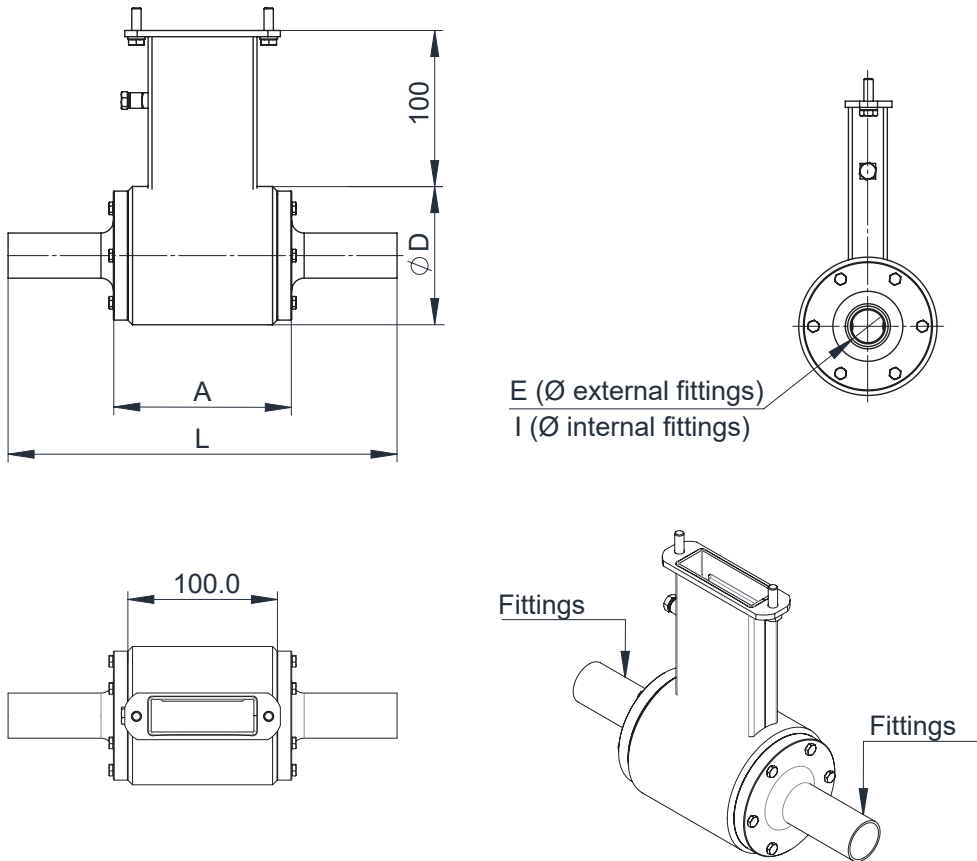
CLAMP ISO2852

| DIMENSIONS mm (inches) | DN | | | | | |
|------------------------------|------------|-----------------|------------|-----------------|------------|-------------|
| | 25 (1") | 40 (1" 1/2") | 50 (2") | 65 (2" 1/2") | 80 (3") | 100 (4") |
| A | 115 | 121 | | | | |
| L | 180 | | | 200 | | |
| D | 89 | 108 | 129 | 140 | 156 | 168 |
| I | 22.6 | 35.6 | 48.6 | 60.3 | 72.9 | 97.6 |
| F | 50.5 | | 64 | 77.5 | 91 | 119 |

CLAMP BS4825 PART3

| DIMENSIONS mm (inches) | DN | | | | | |
|------------------------------|------------|-----------------|------------|-----------------|------------|-------------|
| | 25 (1") | 40 (1" 1/2") | 50 (2") | 65 (2" 1/2") | 80 (3") | 100 (4") |
| A | 115 | 121 | | | | |
| L | 180 | | | 200 | | |
| D | 89 | 108 | 129 | 140 | 156 | 168 |
| I | 22.2 | 34.9 | 47.6 | 60.3 | 73 | 97.6 |
| F | 50.5 | | 64 | 77.5 | 91 | 119 |

Welded connections



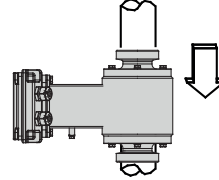
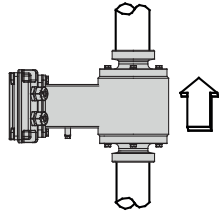
DIN11850 RANGE 2

| DIMENSIONS mm (inches) | DN | | | | | | |
|------------------------------|------------|-----------------|-----------------|------------|-----------------|------------|-------------|
| | 25 (1") | 32 (1" 1/4") | 40 (1" 1/2") | 50 (2") | 65 (2" 1/2") | 80 (3") | 100 (4") |
| A | 115 | | 121 | | | | |
| L | 250 | | | | | 258 | |
| D | 89 | | 108 | 129 | 140 | 156 | 168 |
| E | 29.0 | 35.0 | 41.0 | 53.0 | 70.0 | 85.0 | 104.0 |
| I | 26.0 | 32.0 | 38.0 | 50.0 | 66.0 | 81.0 | 100.0 |

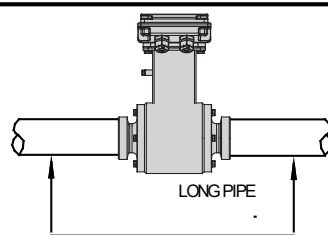
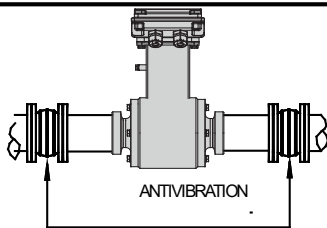
The manufacturer guarantees only English text available on our web site www.isoil.com

GENERAL INFORMATIONS ON THE SENSOR INSTALLATION

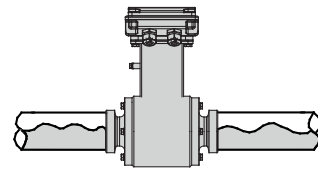
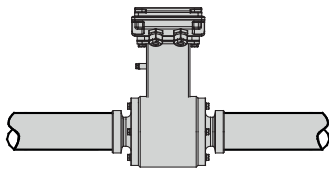
In vertical installations an ascending flow is preferable.
For vertical installations with descending flow direction contact the manufacturer



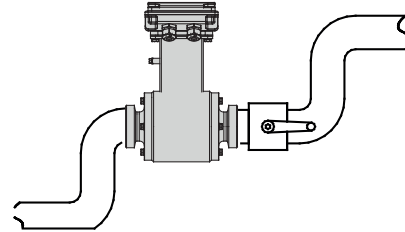
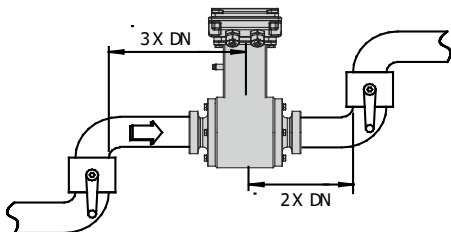
For installations in long pipe lines, please use anti vibration joints



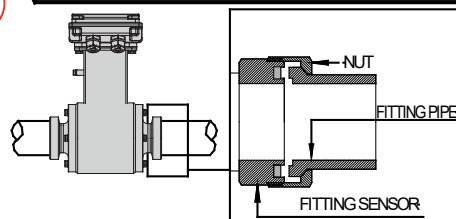
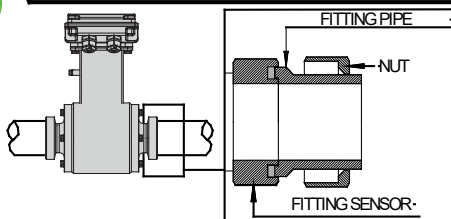
Avoid a partially empty pipe, during operation the pipe must be either completely full of liquid or completely empty



Install the sensor away from bends and hydraulic accessories

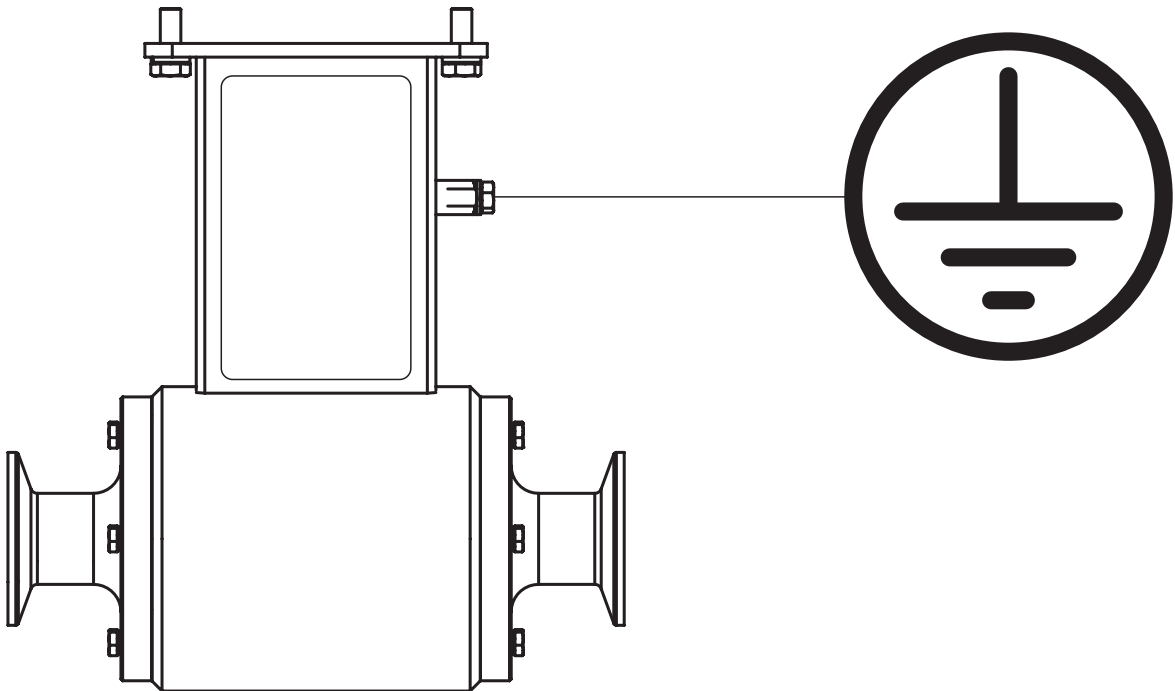


Avoid positioning fittings by tightening the clamps.

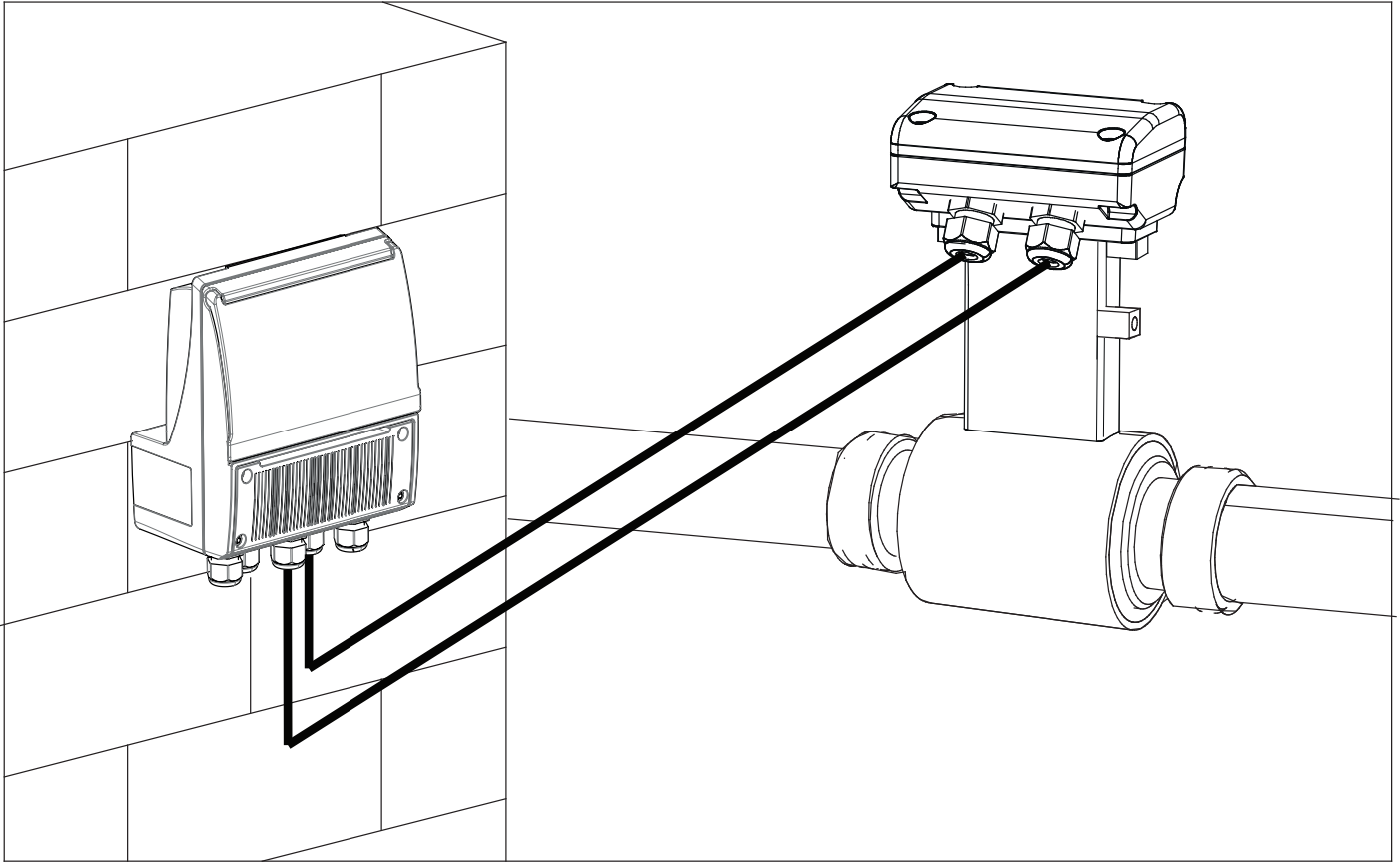


GROUNDING CONNECTIONS

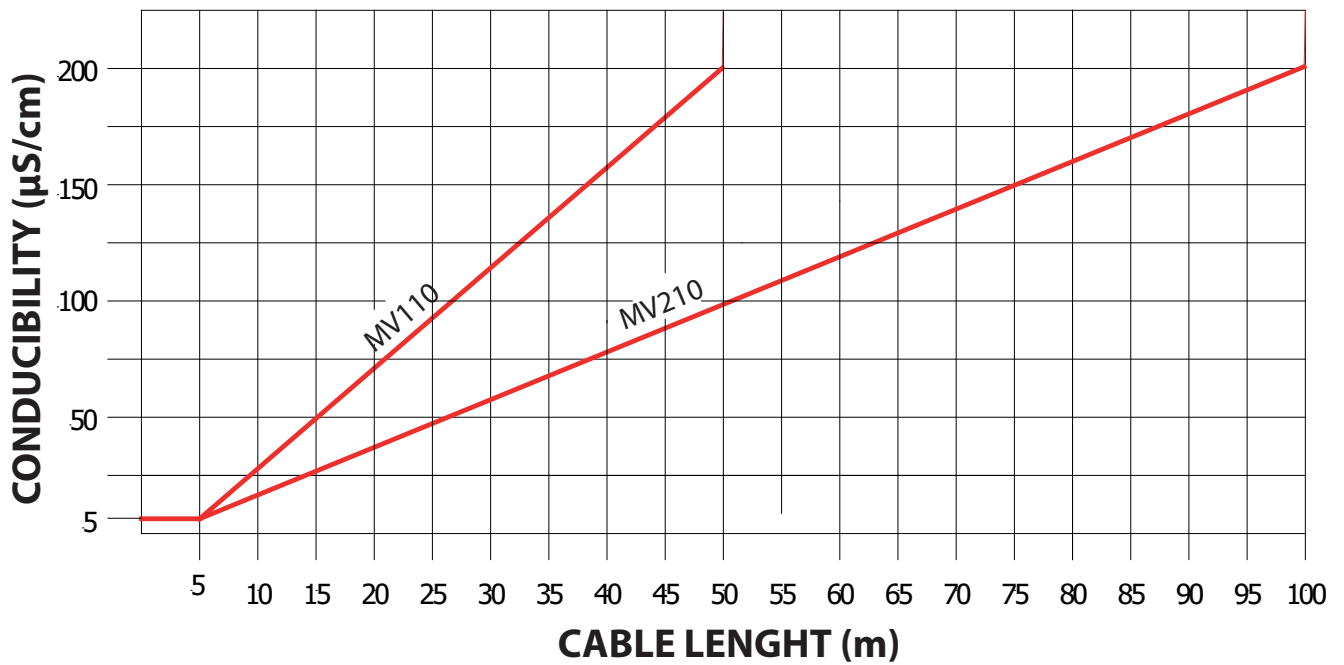
For correct operation of the meter is NECESSARY that the sensor and the liquid are equipotential, so ALWAYS connect the sensor and converter to ground:



SEPARATE VERSION



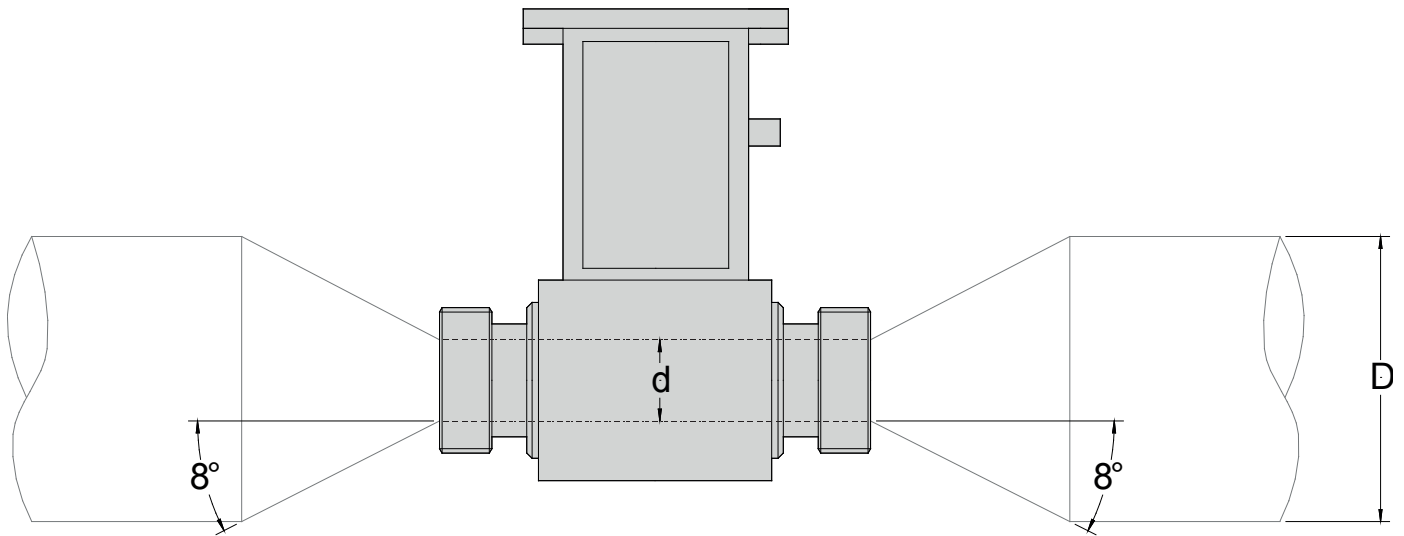
The manufacturer guarantees only English text available on our web site www.isomag.com



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)



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

Dove:

- Dp = Pressure loss in [Pa]
- r = Fluid density [kg/m3] typical value r = 1000 [kg/m3]
- 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 | 26.6 | 38.3 | 52.1 | 68 |
| 0.6 | 0.9 | 3.6 | 8.2 | 14.6 | 22.7 | 32.7 | 44.6 | 58.2 |
| 0.7 | 0.8 | 3 | 6.8 | 12.2 | 19 | 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:

- r = 1000 [kg/m3] 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].

The manufacturer guarantees only English text available on our web site www.isoil.com

NOTES FOR PED DIRECTIVE FOR SENSOR

Here below the tables of products subject to Directive Pressure Equipment Device 2014/68/UE (PED) implemented by legislative decree February 15, 2016, n. 26

The tables show which category of PED is applicable according to the water operating temperature (TAB A T <110 ° C TAB B T > = 110 ° C), sensor's DN and its nominal pressure.

DN / PN CORRELATION TABLE AND PED DIRECTIVE

ONLY FOR FAMILY MS2410-2420 AND PN MAX 25 Bar
ONLY FOR METER WITH LINING IN PTFE

| ONLY FOR T. > 110°C | | |
|---------------------|------|------|
| DN | PN | |
| | PN16 | PN25 |
| 25 | | |
| 32 | | |
| 40 | | |
| 50 | | |
| 65 | | |
| 80 | | |
| 100 | | |

CONDITIONS TO SATISFY FOR T.> 110 ° C:
VAPOR PRESSURE $p > 1.5 \text{ ATA}$

| | |
|---|--|
| CAT I | |
| $32 > \text{DN} \leq \text{DN}100 + \text{PS} * \text{DN} > 1000 \leq 3500$ | |
| CAT II | |
| $100 > \text{DN} \leq 250 + \text{PS} * \text{DN} > 3500 \leq 5000$ | |
| CATI III | |
| $\text{DN} > 250 + \text{PS} * \text{DN} > 5000$ | |

MEANING OF TABLES CODE

| | |
|--|--------------|
| | = OUT OF PED |
| | = CAT. I |

The products in Category II and III are supplied with a specific declaration of conformity for each instrument

HOW TO ORDER

| CODE EXAMPLE | CODE/DESCRIPTION | |
|---|------------------|---|
| Nominal Diameter / Measuring range | | |
| T25 | T25 | DN25, measuring range 0 ... 0,72 / 0 ... 18 m3/h |
| | T32 | DN32, measuring range 0 ... 1,6 / 0 ... 29 m3/h (only for DIN 11851) |
| | T40 | DN40, measuring range 0 ... 1,8 / 0 ... 45 m3/h |
| | T50 | DN50, measuring range 0 ... 2,88 / 0 ... 72 m3/h |
| | T65 | DN65, measuring range 0 ... 4,8 / 0 ... 120 m3/h |
| | T80 | DN80, measuring range 0 ... 7,2 / 0 ... 180 m3/h |
| | T100 | DN100, measuring range 0 ... 11,2 / 0 ... 280 m3/h |
| Gasket material (internal tightness) | | |
| 2 | 2 | O-Ring : Epdm |
| | 3 | O-Ring : FKM (FDA1770) |
| Process connection type | | |
| A | A | DIN11851-852 sanitary connection (*) |
| | B | Tri-Clamp connection, ISO2852 (not for DN32) |
| | C | SMS connection (not for DN32) (**) |
| | E | BS4825 (not for DN32) |
| Number and electrodes material | | |
| 1 | 1 | n. 2 measure electrodes in AISI316 |
| Version / Protection rate | | |
| A | A | Compact Version, IP67 protection rate |
| | K | Separate version, AISI 304 JB POLISHED, protection rate IP68, standing immersion with 1,5 m of head water - (DEFINE THE CABLE LENGHT - ADD THE COST) |
| Approvals | | |
| 1 | 0 | ANY |
| | 1 | 3A |

The manufacturer guarantees only English text available on our web site www.isoil.com

Complete code
example for
order



MS2420-T25-3A1A1

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

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

ISOIL INDUSTRIA S.p.A.

| HEAD OFFICE | SERVICE |
|--|------------------------|
| Via Fratelli Gracchi, 27 20092 Cinisello Balsamo (MI) Tel +39 02 66027.1 Fax +39 02 6123202 sales@isoil.it | isomagservice@isoil.it |

If you want to find the complete list of our distributors access at the following link:
<http://www.isoil.com/en>



Due to the constant technical development and improvement of its products, the manufacturer reserves the right to make changes and/or modify the information contained in this document without notice.