

# ISOMAG ™

## *The friendly magmeter*

### MS 600

**POLYPROPYLENE SENSOR**



**LIGHT "WEIGHT" SENSOR COMPLETELY IN  
POLYPROPYLENE**

The manufacturer guarantees only English text.  
Available on our web site: [www.isomag.eu](http://www.isomag.eu)

**ISOIL**   
INDUSTRIA  
*The solutions that count*

**INDEX**

TECHNICAL DATA .....	3
OVERALL FEATURES.....	3
STANDARD FEATURES.....	3
OPTIONAL FEATURES.....	3
OVERALL DIMENSIONS.....	4
INSTALLATION RECOMMENDATIONS .....	5
SENSOR GROUNDING.....	6
SEPARATE VERSION.....	7
PRESSURE LOSS CALCULATION .....	8
(CONES 8° ANGLES).....	8
HOW TO ORDER .....	9

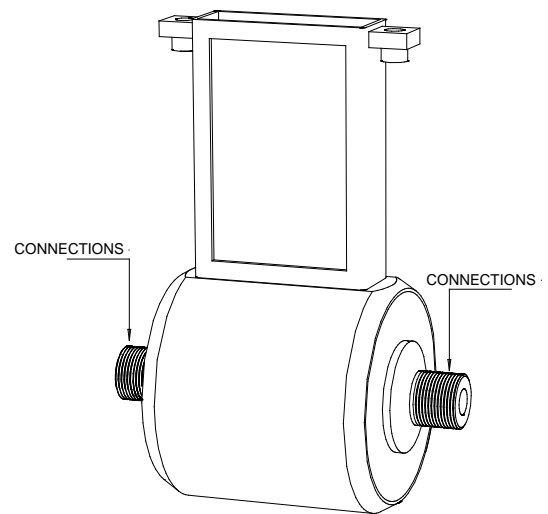
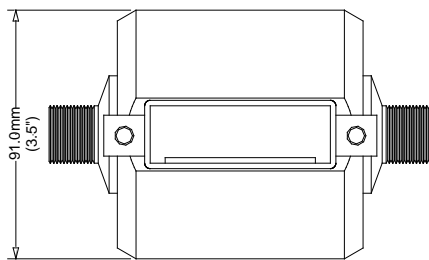
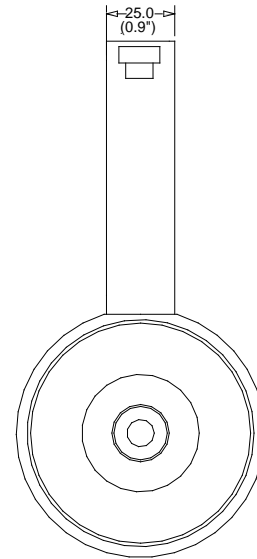
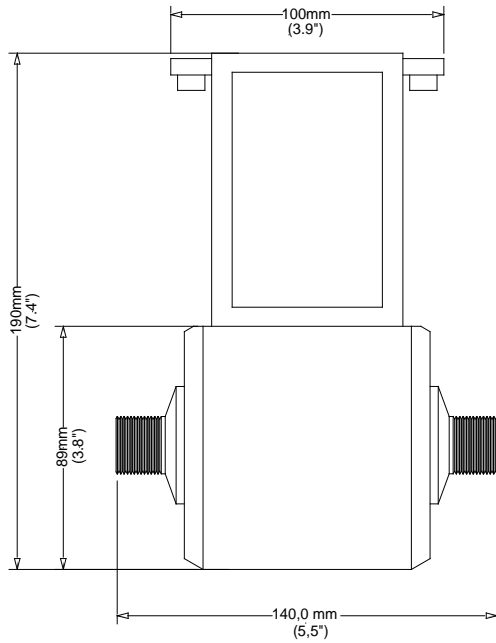
## TECHNICAL DATA

<i>OVERALL FEATURES</i>	
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

<i>STANDARD FEATURES</i>	
Body material	<input type="checkbox"/> Polypropylene
Nominal pressure	<input type="checkbox"/> 1600 kPa
Process connection	<input type="checkbox"/> Threaded UNI 338 <input type="checkbox"/> Threaded NTP
<i>Version – protection rating</i>	<input type="checkbox"/> Compact IP67
Connections material	<input type="checkbox"/> Polypropylene
Lining material	<input type="checkbox"/> Polypropylene
Gasket material	<input type="checkbox"/> FPM
Liquid temperature	<input type="checkbox"/> - 0°C ÷ 60°C
Vacuum resistance	<input type="checkbox"/> 10 Kpa absolute at 60 °C
Electrodes material	<input type="checkbox"/> Stainless steel AISI 316 <input type="checkbox"/> Hastelloy C <input type="checkbox"/> Platinum-rhodium <input type="checkbox"/> Titanium <input type="checkbox"/> Tantalum

<i>OPTIONAL FEATURES</i> (CHECK FOR MORE DETAILS 'HOW TO ORDER' ON LAST PAGE)	
Gasket material	<input type="checkbox"/> EPDM
Process connection	<input type="checkbox"/> Other on request
Electrodes material	<input type="checkbox"/> 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

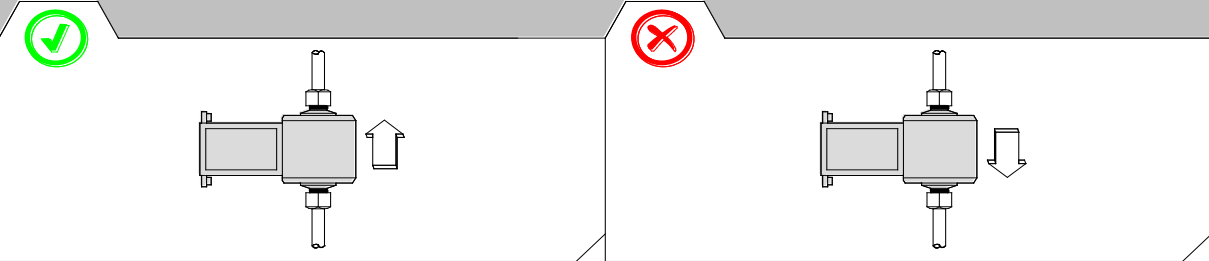


### CONNECTIONS GAS/NPT

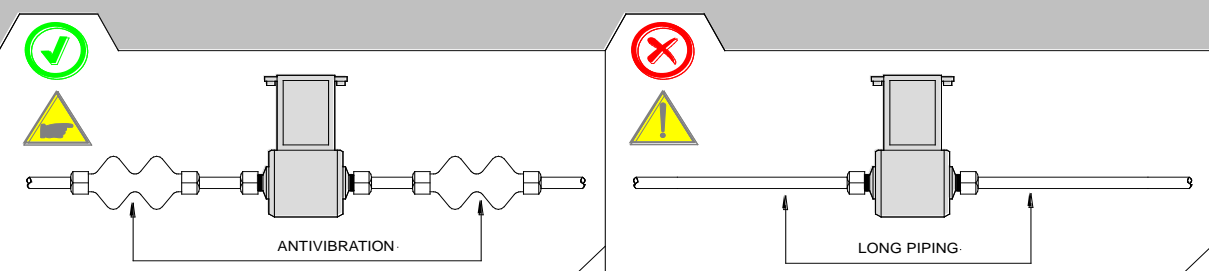
DIMENSIONS mm (inches)	DN				
	3 (1/8")	6 (1/4)	10 (3/8)	15 (1/2")	20 (3/4")
<b>CONNECTIONS</b>	1/4"	3/8"	1/2"	3/4"	1"

# INSTALLATION RECOMMENDATIONS

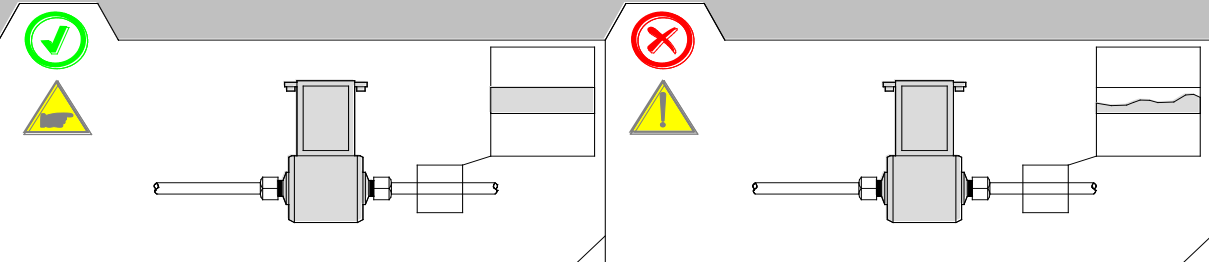
**In vertical installations an ascending flow is preferable. For vertical installations with descending flow direction contact the manufacturer**



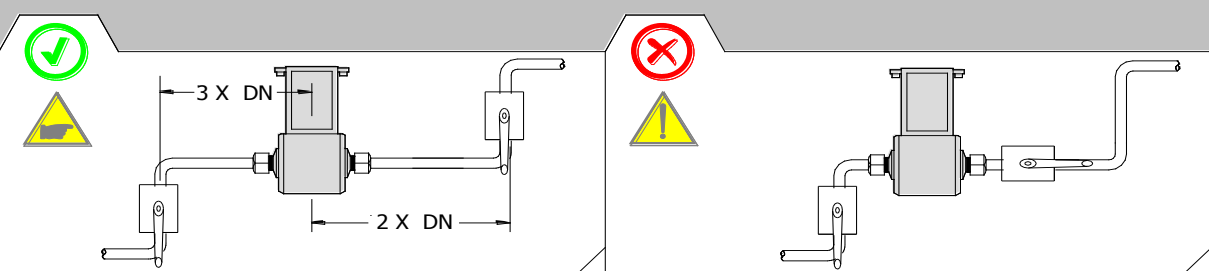
**For installations in long pipe lines, please use anti vibration joints**



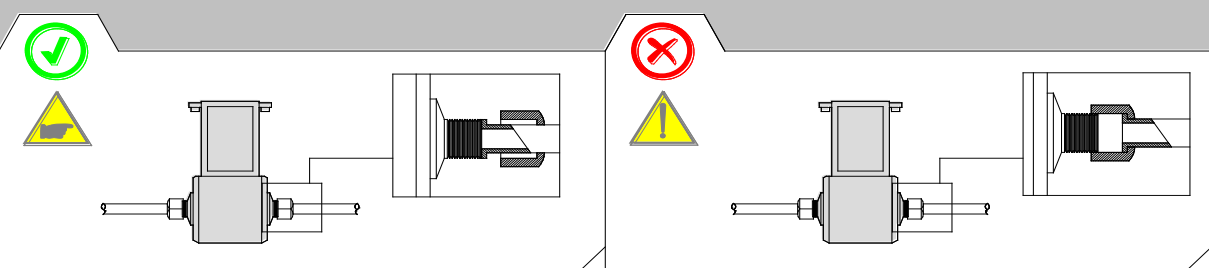
**Avoid a partially empty pipe, during operation the pipe must be either completely full of liquid or completely empty**



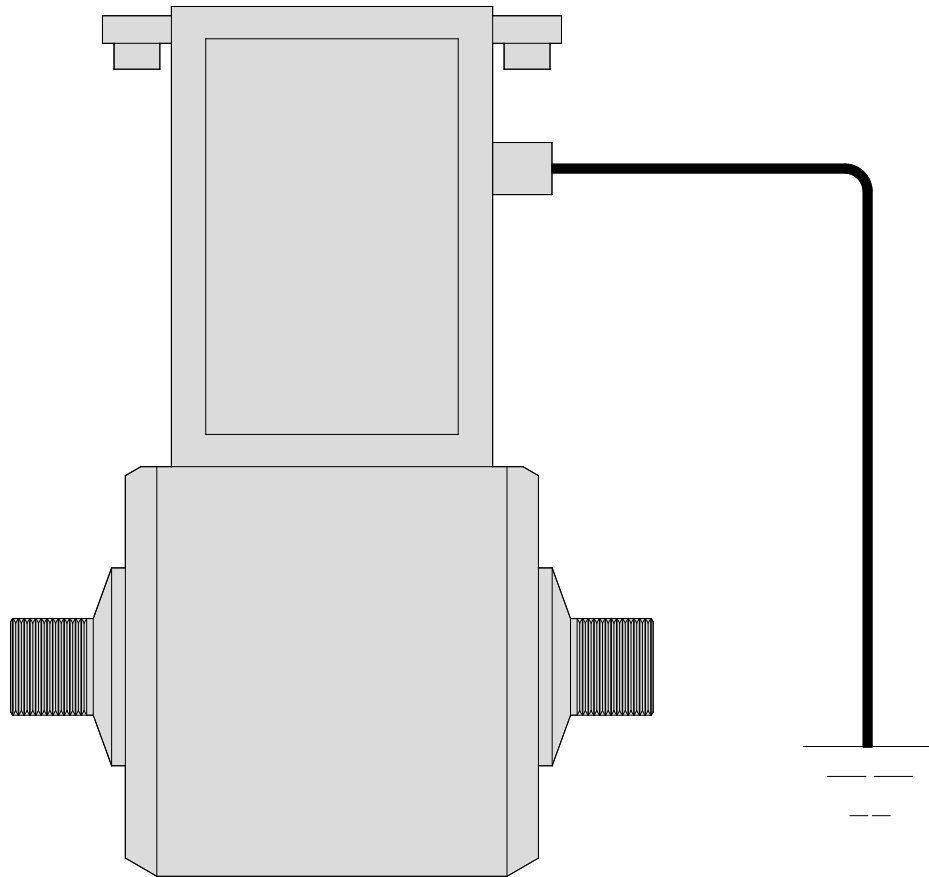
**Install the sensor away from bends and hydraulic accessories and hydraulic accessories**



**Avoid positioning flange and counter flanges by tightening the nuts.**

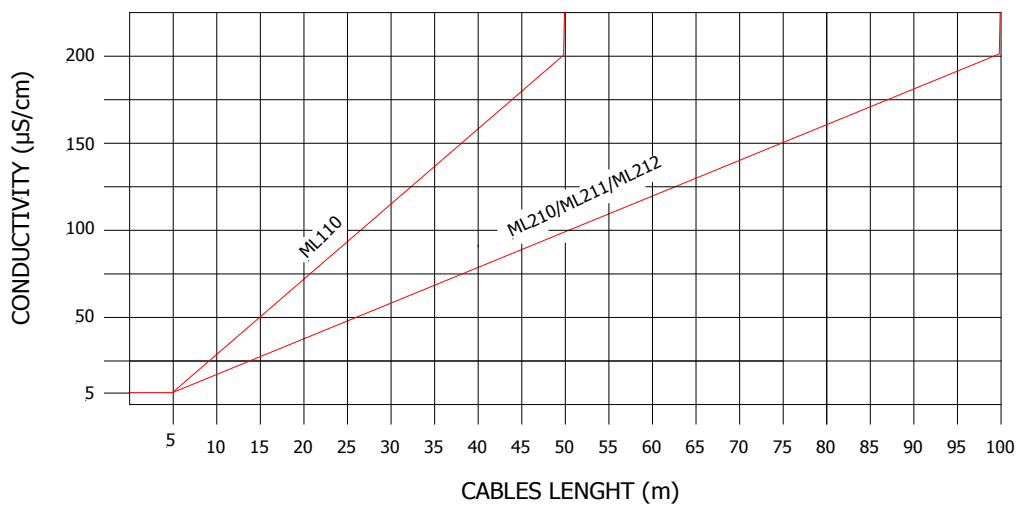
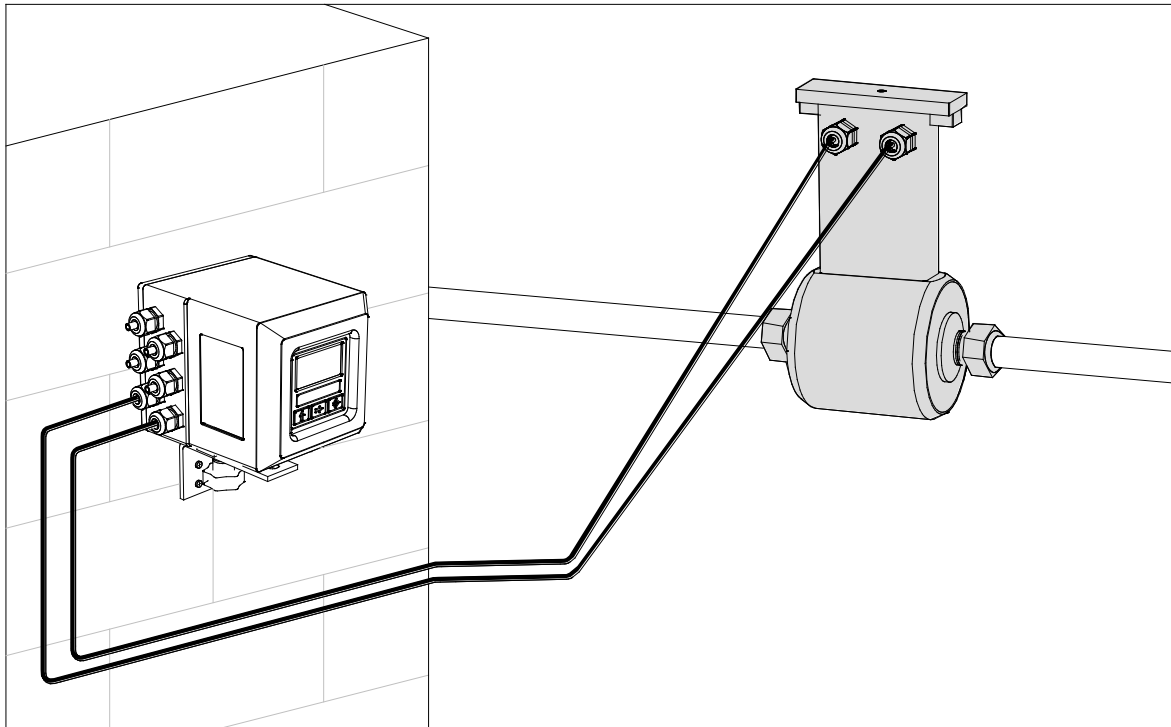


## SENSOR GROUNDING



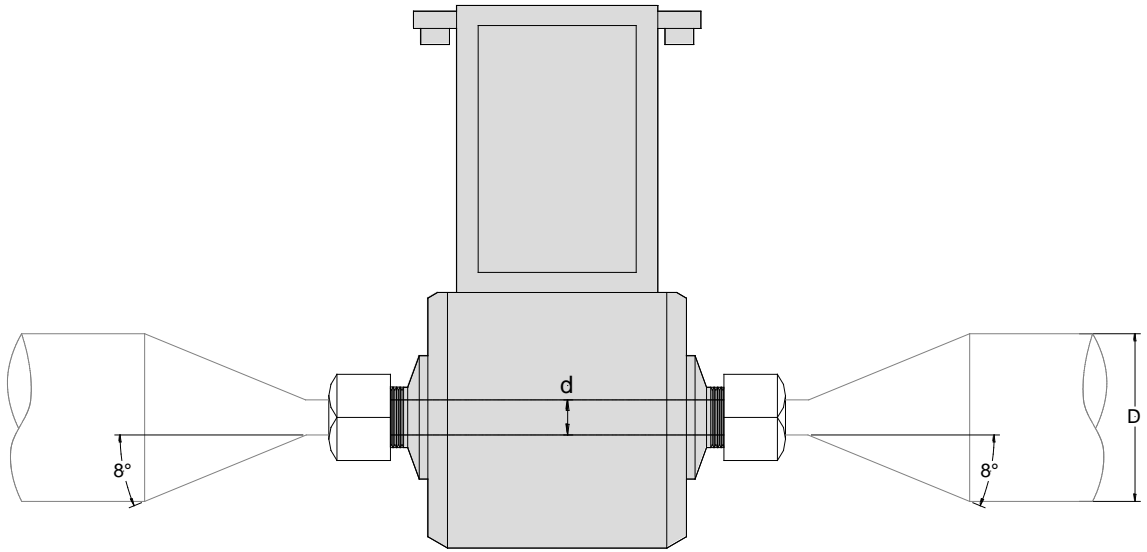
**For the correct operation of the meter the sensor and liquid must be equipotential. ALWAYS connect sensor and converter to the ground.**

## 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  $\mu\text{S}/\text{cm}$

## 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:

$\Delta p$  = Pressure loss in [Pa]

$\rho$  = Fluid density [kg/m<sup>3</sup>] typical value  $\rho = 1000$ [kg/m<sup>3</sup>]

$d$  = sensor diameter [m]

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

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

Calculation examples $\Delta p$ [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 :

- $\rho = 1000$ [kg/m<sup>3</sup>] 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 600		
EXAMPLE CODE	<i>Nominal Diameter / Lining / Maximum temperature / Measuring range</i>	
P03	P03	DN3 ( 1/8 " ), PP lining, measuring range 0.. 10,3 / 0...259 l/h
	P06	DN6 ( 1/4 " ), PP lining, measuring range 0...41,4/0...1036 l/h
	P10	DN10 (3/8 " ), PP lining, measuring range 0..115,2/0...2880 l/h
	P15	DN15 (1/2 " ), PP lining, measuring range 0.. 259,2/0...6480 l/h
	P20	DN20 (3/4 " ), PP lining, measuring range 0.. 460,8/0...11520 l/h
<i>Gasket material ( internal tightness )</i>		
1	1	O-Ring : FKM
	2	O-Ring : Epdm
	4	O-Ring : FFKM
	9	O-Ring : da specificare
<i>Process connection type</i>		
A	A	Male threaded UNI338 ( FOR THE DIMENSIONS CONSULT THE OVERALL DIMENSIONS DRAWING)
	B	Male threaded NPT( FOR THE DIMENSIONS CONSULT THE OVERALL DIMENSION DRAWING)
	Z	Gasket material: to be specified
<i>Number and electrodes material</i>		
2	2	n. 4 (2 measure + 2 for ground) electrodes in AISI 316
	4	n. 4 (2 measure + 2 for ground) electrodes in Hastelloy C
	5	n. 4 (2 measure + 2 for ground) electrodes in Titanium
	6	n. 4 (2 measure + 2 for ground) electrodes in Tantalum
	7	n. 4 (2 measure +21 for ground) electrodes in Platinum
	0	Electrode material: to be specified
<i>Execution / Protection rate</i>		
A	A	Compact execution, IP67 protection rate
	B	Separate execution , maximum length 20m, remember to <b>added the cables cost</b> , protection rate IP68 (standing immersion with 1,5 m of head water)
	F	Execution separate with N° 2 connectors IP 68 suitable for <b>C015/16 for fast cable connections (max 20 m-ADD THE COST)</b>
	G	Execution separate with N° 1 connectors IP 68 suitable for <b>C018 for fast cable connections (max 20 m-ADD THE COST)</b>
	M	Compact execution, IP67 protection rate , <b>with the possibility to turn the converter of 90°</b>



MS600-P03-1A2A (Complete code example for order)

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