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DS020013

# SENSORS MUT 2400 FOR USE WITH FOODSTUFFS



The **EUROMAG INTERNATIONAL** MUT2400 series are sensors specifically designed for use in the food processing industry. They are made of materials approved for the purpose by international regulations, they are compatible with the temperature and products required for sanitary reasons, and equipped with the attachments used today in the foodstuffs field. They are suitable for the flow rate of electrically conductible liquids with a temperature of more than 140°C. The MUT2400 sensors are manufactured with diameters from DN 25 to DN 100 as indicated in Table 1. The degree of protection is IP 68 for a permanent emersion in water to a depth of 1.5 meters.

## 1. ATTACHMENTS AND INTERNAL LINING

The MUT2400 sensors are constructed completely in stainless steel AISI 304 and are internally lined in PTFE. The attachments can be the DIN 11851 type or CLAMP or others as indicated in Table 2.

## 2. ELECTRODES

The electrodes in the standard version are in AISI 316L, but for particular uses in the chemical field they can be supplied in other materials such as hastelloy or titanium or platinum (Table 3) according to the chemical compatibility of the liquid.

## 3. COUPLING AND CONNECTING TO SENSORS

The sensors of the MUT2400 series are coupled to all converters manufacture by **EUROMAG INTERNATIONAL** indicated in Table 3. In the separate version, the derivation box with the block for connecting the two cables (C012 and C013) from the converter is on the top of the case. In this version the sensor is connected to the converter by means of cables C012 and C013 the length of which depends on the conductivity of the liquid, and the maximum length of which must no exceed 100 meters, as indicated in Diagram 1. The minimum length is 5 meters. In the compact version the converter is on the derivation box.

## 5. CHOICE OF DIAMETRE

As in all **EUROMAG INTERNATIONAL** sensors also MUT2400 is able to measure a wide range of flow rate. As a guide line for the choice of diameter keep in mind that for excellent precision it is necessary that the velocity of the full scale flow rate is at least 2÷3 m/s. The maximum velocity permitted is 10 m/s and the full scale flow rate can be chosen and modified in the field with a simple operation of presetting which is executed on the converter. The full scale flow rate corresponding to the velocity of 2 m/s and of 10m/s for the various diameters is indicated in Table 7.

**6. MAXIMUM TEMPERATURE OF THE LIQUID**

In the separate version the maximum temperature the liquid can reach is +140°C. In the compact version instead, the maximum temperature the liquid can reach can depend on the environmental temperature. This is due to the fact that if the lining of the sensor permits higher temperatures, the limit can be imposed by the necessity the converter does not reach 60°C. It is clear that if the environmental temperature were already 60°C, a liquid with a temperature higher than 60°C would bring the converter - mounted on the sensor - to exceed the threshold permitted.

**7. CALIBRATION AND MAXIMUM ERROR**

MUT2400 sensors belong to the reference Group B1 (ISO 11631). Every sensor is calibrated by an hydraulic bench with a traceable, SIT certified weighting system. Uncertainty of measure is equal to 0.2% of the value of the reading, when the velocity of the liquid is more than 0.2 m/s. The repeatability of the measure is about 0.1%.

**8. REFERENCE STANDARDS**

The EUROMAG INTERNATIONAL magnetic measurers are marked CE and are manufactured according to the following standards:

- CEI EN 61010-1
- UNI EN ISO 6817
- EN 1434
- EN 50081 - 1
- EN 50082 - 1

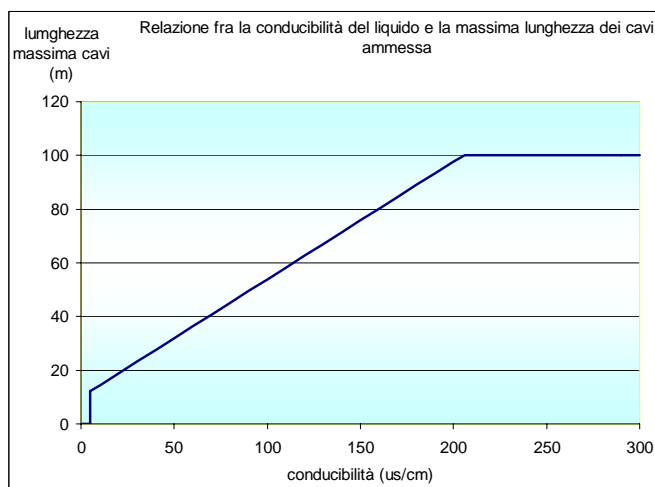


Diagram 1. Maximum length of the cables in relation to conductivity of liquid.

STANDARD DIAMETERS							
[mm]	25	32	40	50	65	80	100
["]	1"	1"1/4	1"1/2	2"	2"1/2	3"	4"

Table 1.

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AVAILABLE ATTACHMENTS			
DIN 11851	SMS	ISO 2852	L14AM7

Table 2.

AVAILABLE ELECTRODES				
AISI 316 L	Hastelloy B	Hastelloy C	Titanio	Platino

Table 3.

Versions of MUT2400	COUPLING CONVERTERS						
	MC106			MC306 [3]	MC308 [3][4]	MC108 [4]	MC108/ET [4]
	MC106A [3]	MC106B [3]	MC106C [5]				
MUT2400 [1]	•	•		•	•	•	•
MUT2400 [2]	•		•	•	•		
[1] SP: SEPARATE							
[2] CP: COMPACT							
[3] CASE IN ABS							
[4] CASE IN ALLUMINIUM							
[5] CASE IN STAINLESS STEEL							

Table 4.

INTERNAL TUBE	LIQUID TEMPERATURE
PTFE	- 40 °C ÷ +140 °C

Table 5.

BODY MATERIAL	
MUT 2400	AISI 304 (Inox)

Table 6.

Q <sub>MAX</sub>	DN [mm]		25	32	40	50	65	80	100
	V <sub>MAX</sub> =2 [m/s]	[m <sup>3</sup> /h]	3,6	6	9	15	24	36	60
	V <sub>MAX</sub> =10 [m/s]	[m <sup>3</sup> /h]	18	30	45	75	120	180	300

Table 7.

MUT2400 SENSORS							
Available diameters [mm]	25	32	40	50	65	80	100
Available diameters ["]	1	1" ¼	1" ½	2"	2 ½"	3"	4"
Available electrodes [*]	AISI 316L	Hastelloy B	Hastelloy C	Titanium	Tantalum	Platinum	
Available attachments	DIN 11851		SMS		ISO 2852		L14AM7
Standard operational pressure[1]	16 bar						
Liquid temperature	Con Lining in PTFE			-40 °C ÷ +140 °C			
Pressure	PN25 per DN25 DN32 DN40 DN50			PN16 per DN65 DN80 DN100			
Degree of protection	IP68 continuous emersion to 1,5 m (IEC 529)						
Converter compatibility [2]	MC106A	MC106B	MC106C	MC306	MC308	MC108	MC108ET
Parts in contact with liquid	Passage tube			Electrodes			
	PTFE			[*]			
Electric connections	Cable gland PG 11 + Terminal block + sealing resin						
[1] On request up to 64 bar							
[2] Available in both separate and compact versions							

Table 8.

OVERALL DIMENSIONS.

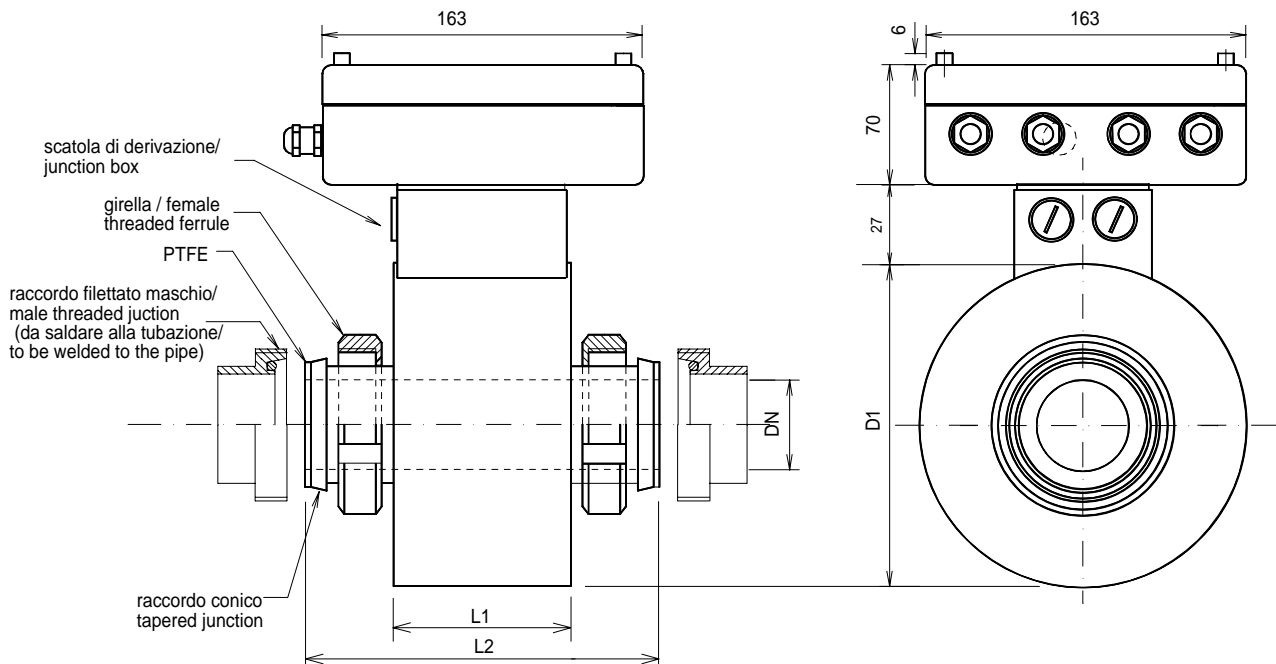


Diagram 2. The dimensions are expressed in [mm] for the version with DIN attachments.

DN	25	32	40	50	65	80	100
D1	140	168	168	168	219	219	219
L	180	180	180	180	200	200	200

Table 9. Dimensions MUT2400 sensors with DIN 11851 attachments.

DIAGRAM FOR THE CHOICE OF DIAMETER

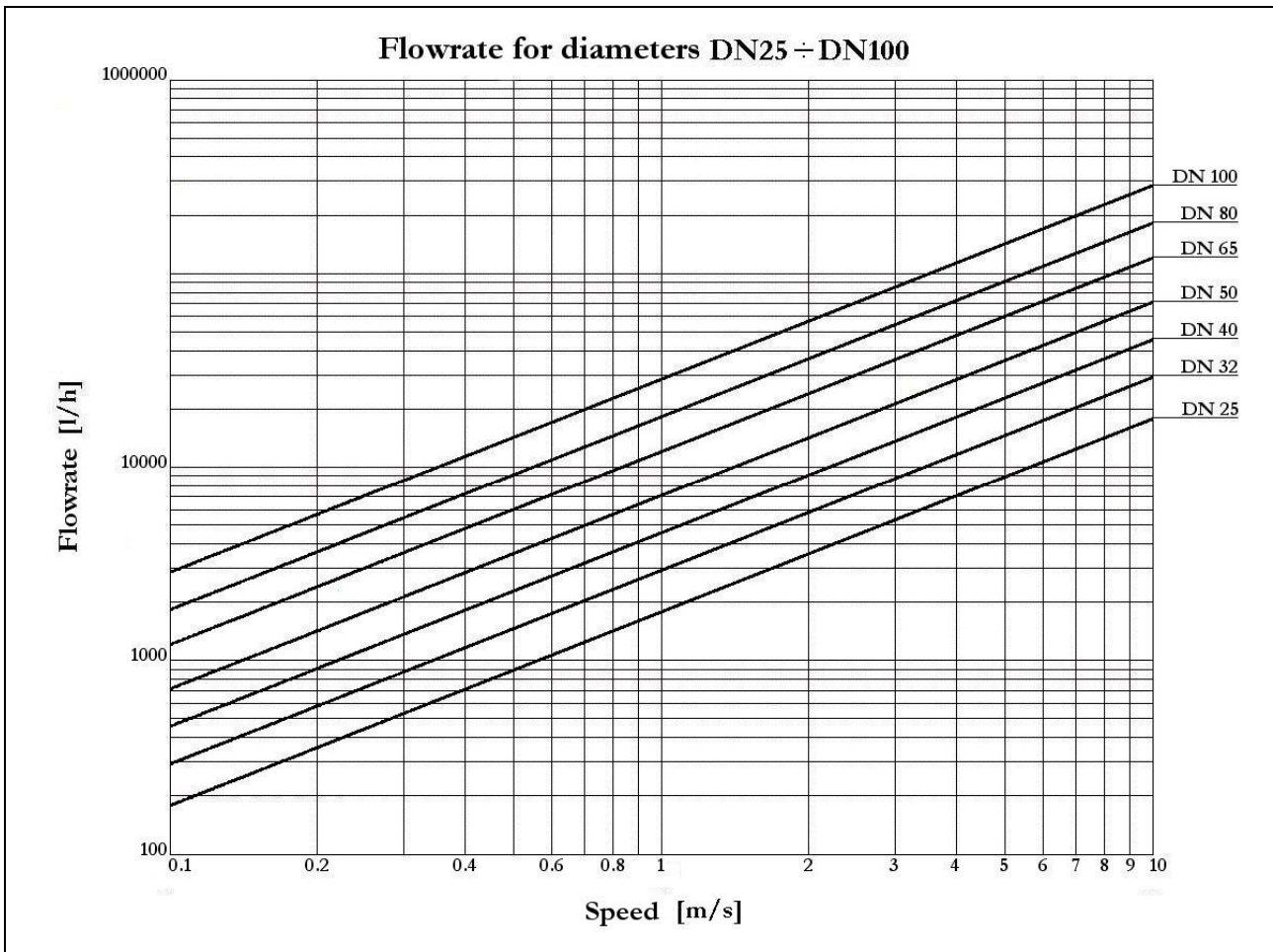


Diagram 3. Flow rate expressed in Litres/h, in relation to the velocity of the liquid for all diameters available for MUT2400 sensors.

The data shown in this manual are subject to modification without prior notice.