

## Electromagnetic flow Sensor *mag-flux S*



Fig. 1 Electromagnetic flow Sensor *mag-flux S*

### Application

These electromagnetic flow sensors (MID) are suitable for measuring standard applications.

A prerequisite is that the medium must have a certain minimum conductivity in dependence on the used sensor. The temperature, pressure, density and viscosity have no influence on the result.

The special design of this electromagnetic flowmeter (MID) is in particular of his extremely robust and compact but light-weight construction used to built-in plastic pipes without reinforcement. Integrated earthing rings guarantee best measuring results and ensure also a safe connection built-in in steel pipes.

The main applications of the flow sensor *mag-flux S* can be found in the following fields:

- Water and waste water
- Food- and beverage industry
- Steel industry
- Power generation and distribution.

The flow sensors are combined with the transmitter InterMag 2 and are only available as remote version.

### Special features

- Extremely compact and light weighted design
- Suitable for installation in plastic or steel pipes
- Sensor firmly connected to stainless steel rings
- No other earthing required
- No additional pressure loss
- No movable parts

### Connection and mode of operation

The flange-less sensor is firmly screwed between flange connections. The following table shows the suitable installations for the respective nominal diameters.

#### DIN 2501 (BS 4504)

PN	15	20	25	32	40	50	65	80	100
6	-	-	x	x	x	x	x	x	x
10	x	x	x	x	x	x	x	x	x
16	x	x	x	x	x	x	x	x	x
25	x	x	x	x	x	x	x	x	x
40	x	x	x	x	x	x	x	x	x

#### ANSI B16.5

	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
150	-	-	x	x	x	x	x	x	x
300	x	x	x	x	x	x	x	x	x

#### Sensor cable

The measuring sensor 711/S is fitted with a factory-installed, permanently attached cable, 5 m (16.4 ft) long. This cable may be extended via a proper junction box. If an extension is used, it is imperative to employ 2 separate and shielded cables for the electrode circuit and the magnetic circuit. We recommend cable type 2 x LiYCY 2 x 1.0 mm<sup>2</sup> (2 x 0.0016 in<sup>2</sup>).

The max. cable length between sensor and transducer must not exceed 50 m (165 ft) and depends on the conductivity of the material which is being measured. Furthermore, particular attention should be given to the cable run. All signal lines must be protected against vibration and the effects of magnetic and leakage fields. If in doubt, the sensor cable should be run inside an earthed conduit.

### Note of application

- The operator of these measuring sensors is responsible for suitability, proper use and corrosion resistance of the used materials with regard to the measuring material. It must be ensured that the materials selected for the meter parts in contact with the medium are suitable for the used process media.
- Before replacing the measuring tubes, check that the meter is free of hazardous media and pressure.
- The unit may only be used within the pressure and voltage limits specified in the operating instructions.
- The flowmeter complies with the requirements of the Pressure Equipment Directive 97/23/EC, article 3, paragraph 3. The most hazardous permissible media are the fluids defined in group 1.
- Provide a touch guard for surface temperatures of > 70°C. This touch guard must be designed in a way that the max. allowable ambient temperature on the unit is not exceeded.
- The sensor must not be affected by external loads
- The units are designed for predominantly recumbent load.

# Electromagnetic flow Sensor *mag-flux S*

## Technical Data

Application field	see page 1		
Mode of operation	see page 1		
Measuring principle	Pulsed constant field (DC)		
<b>Inlet</b>			
Nominal diameters	DN 15 - DN 100		
<b>Measuring accuracy</b>			
Error of measurement	± 0,5 % of measured value 0,25 m/s to 10 m/s		
Repeat accuracy	± 0,15 % of measured value 0,25 m/s to 10 m/s		
<b>Operational conditions</b>			
Mounting position	vertical or horizontal		
permissible ambient temperature	-15°C - 50°C / 5 - 122 °F		
permissible operating temperature	-15°C - 60°C / 5 - 140°F		
Pressure/temperature limits with PVC- connection (DIN 8062)	Temperature	Max. pressure	
	°C	°F	Bar    Psi
	10	50	18    261
	20	68	16    232
	30	86	13    189
	40	104	10    145
	50	122	6    87
60	140	4    58	
Pressure/temperature limits with PVDF- connection (DIN 8062)	Temperature	max. pressure	
	°C	°F	Bar    Psi
	10	50	18    261
	20	68	16    232
	30	86	13    189
	40	104	11    160
	50	122	9    80
60	140	8    65	
Protection class	IP 67 (NEMA 4x) / optionally IP 68 (NEMA 6)		
<b>Medium conditions</b>			
Minimum conductivity	> 20 µS/cm with 5m sensor cable length		
Flow rate	0,25 - 12 m/s		
<b>Specifications</b>			
Design	Outer casing steel, nickel-plated		
Connection	Flange-less connection (sandwich)		
Weight	See table of dimensions		
Cable inlet	Firmly installed, length 5m		
<b>Material</b>			
• Metering tube	PVC or PVDF		
• Sensor housing	Steel, nickel-plated		
• Process connection	Stainless steel mat. No. 1.4305, Special materials		
• Gasket metering tube	Viton		
• Gasket outer casing	Buna N		
<b>Electrodes</b>			
• Material	Stainless steel mat. No. 1.4571, Special materials		
• Design	Flat electrode		
• Gasket	Viton, Special materials		

## Dimensions

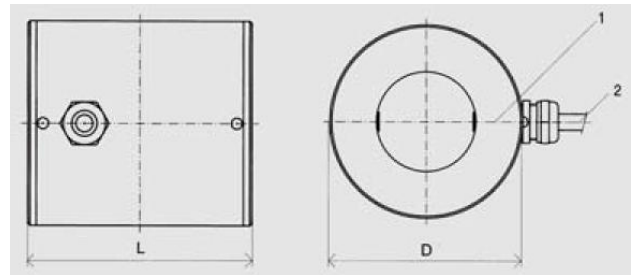


Fig. 2 Sensor *mag-flux S*, dimensions

1. Electrode axis  
2. Sensor cable

Diameter		L		D		Weight	
mm	(inch)	mm	(inch)	mm	(inch)	kg	(lb)
15	(½)	74	2,91	51	2,01	1,4	3,09
20	(¾)	74	2,91	57	2,24	1,4	3,09
25	1	74	2,91	63,5	2,5	1,4	3,09
32	(1¼)	105	4,13	73	2,87	3	6,61
40	(1½)	105	4,13	82,5	3,25	3	6,61
50	2	105	4,13	95	3,74	3	6,61
65	(2½)	150	5,91	114,3	4,5	6,2	13,56
80	3	150	5,91	127	5	6,2	13,56
100	4	150	5,91	146	5,75	6,2	13,56

## Ordering data

### Electromagnetic flow Sensor *mag-flux S*

MAG 5 4 1 0 - A 0 - 0 A 0

#### Metering tube materials and nominal diameters

• Metering tube made of PVC, DN 15	1 D
• Metering tube made of PVC, DN 20	1 E
• Metering tube made of PVC, DN 25 / ANSI 1	1 F
• Metering tube made of PVC, DN 32 / ANSI 1 1/4	1 G
• Metering tube made of PVC, DN 40 / ANSI 1 1/2	1 H
• Metering tube made of PVC, DN 50 / ANSI 2	1 J
• Metering tube made of PVC, DN 65 / ANSI 2 1/2	1 K
• Metering tube made of PVC, DN 80 / ANSI 3	1 L
• Metering tube made of PVC, DN 100 / ANSI 4	1 M
• Metering tube made of PVDF, DN 15	2 D
• Metering tube made of PVDF, DN 20	2 E
• Metering tube made of PVDF, DN 25 / ANSI 1	2 F
• Metering tube made of PVDF, DN 32 / ANSI 1 1/4	2 G
• Metering tube made of PVDF, DN 40 / ANSI 1 1/2	2 H
• Metering tube made of PVDF, DN 50 / ANSI 2	2 J
• Metering tube made of PVDF, DN 65 / ANSI 2 1/2	2 K
• Metering tube made of PVDF, DN 80 / ANSI 3	2 L
• Metering tube made of PVDF, DN 100 / ANSI 4	2 M

#### Materials metering tube connection

• mat.No. 1.4305	1
• other materials	9

#### Degree of protection

• IP 67 / NEMA 5 (cable length 5 m)	B
• IP 68 / NEMA 6 (cable length 5 m)	C

#### Further designs:

• TAG plate inscription in english	B11
• with 3- point calibration certificate	B06
• with 6- point calibration certificate	B07
• Silicone-free materials	Y04
• TAG plate stainless steel	Y17