ELECTROMAGNETIC FLOW METER SERIES MID/MDS ECO

1. IDENTIFICATION

Manufacturer Bopp & Reuther Messtechnik
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Product type Elecrtomagnetic flow meter

Product name Series MID/MDS ECO

2. RANGE OF APPLICATION

The field of application for all electromagnetic flowmeters of the MID series is the measurement of conductive liquids (>5 µS/cm) in dosing and filling systems. These systems are mainly used in the food and beverage, pharmaceutical and fine chemical industries. Milk and dairy products (also with fruit pieces), ketchup, mustard, sauces, dressings, cleaning and washing agents, sterile injection products and cosmetic products are measured.
It is also approved for aseptic applications (3-A).

The range includes nominal sizes DN10 - DN40 and meets the PN10/16 pressure rating. The maximum temperature is 140°C. Different connections are available on request.

3. MEASURING PRINCIPLE AND SYSTEM CONFIGURATION

3.1 Measuring principle

Electromagnetic flowmeters belong to the group of indirect volume meters. They operate with a switched DC field. A magnetic field is generated by coils. A voltage is generated at the measuring electrodes arranged perpendicular to the magnetic field when a conductive liquid flows through the measuring device. The level of the measured voltage is proportional to the flow velocity.

3.2 Specialities

- Compact design
- Small dimensions of the sensor
- Large ranges of filling quantities with different diameters
- Direct output of volume-proportional pulses
- CIP / SIP Cleaning

For the use in filling machines

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4. Input

4.1 Measured value

Volume and volume flow rate

4.2 Measuring range

The speed v = 1 m/s should be aimed at, as this provides optimum product protection and accuracy. If the speed is higher, the pressure surges increase when the valve is closed. If it is lower, deposits can form on some products.

DN	Flow rate Qmax 6,5m/s [ml/s]	v=0,5 m/s	v=1,0 m/s	v=2,5 m/s		v=10 m/s	K-factor
		[ml/s]	[ml/s]	[ml/s]		[ml/s]	[p/l]
10	510	40	80	200	•••	800	20 000
15	1148	88	176	440		1760	10 000
25	3190	245	490	1225		4900	5 000
40	8168	628	1256	3140		12560	2 000

5 CHARACTERISTIC PARAMETER

5.1 Reference conditions

Pressure: approx. 1 bar
Temperature: 25°C ±2K
Medium: Water

5.3 Repeatability

Filling time 1,5...3s ±0.3%;
Filling time 3...5s ±0.15%;
Filling time >5s ±0.1%;

5.2 Accuracy

Maximum measurement error ±0.5%;

However, the reproducibility of dosing / filling in the system also depends on other factors (e.g. dosing valve, valve outlet, density of the liquid, temperature changes, mechanical design of the system, etc...).

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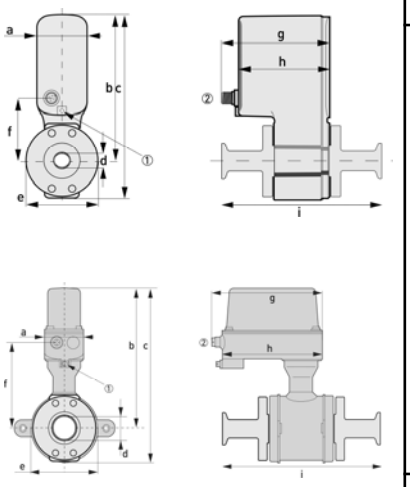
6 CONSTRUCTIO=N DETAILS

6.1 Design / Dimensions / Weights



Type: TRI-Clamp Nominal size		DIN 32676		DIN 2852	
		DN 10	DN 15	DN 25	DN 40
Dimensions (mm)	**a**	50	50	50	50
	b	170	170	170	170
	c	204	204	204	219
	d	15 -12	15-12	25-20	39-30
	e	46	46	68	68
	f	44,5	44,5	102	117
	g	60	60	141	141
	h	88	88	128	128
	i	150	150	180	180
Weight (kg)		2,0	2,0	2,2	2,9

Other connections upon request (e.g. Sanitary connection, Tri-Clover...)

	DN 10	DN 15	DN 25	DN 40
Process connection	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Lining	zirconium oxide	zirconium oxide	zirconium oxide	zirconium oxide
Electrodes	Platinum	Platinum	Platinum	Platinum
Housing	Stainless steel	Stainless steel	Stainless steel	Stainless steel

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7. OPERATING CONDITIONS

7.1 Degree of protection

IP67
Degree for housing: IP acc. IEC 529 / EN 60529

7.2 Ambient temperature

Ambient temperature:	-40 to + 60°C
Storage temperature:	-50 to + 70°C

7.3 Medium temperature

For measuring: 0 to +140°C

7.4 Process pressure process connection

Tri-Clamp:	PN 16
Others upon reques	

7.5 Cable connection

Connector	1x M12, 5-polig

7.6 Conductivity

Minimum conductivity:	5 µS/cm

7.7 Pressure loss

Pressure loss:	negligible

7.8 Installation

Inlet section:	5 DN
Outlet section	2DN

8. Certificates and approvals

3-A Sanitary Standards for Flowmeters
(in preparation)

Directive 2014/30/EU (EMC Directive)
FDA-approved materials

Directive 2014/68/EU (Pressure Equipment Directive)
- DIN EN 023