



Badger Meter Europa

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## Electromagnetic amplifier type ModMAG® M1000 for all detectors



### Features

- Accuracy  $\pm 0,3\%$
- Flow range 0,03 – 12 m/s
- DN 6 – DN 500
- LCD display
- RS232, RS485 and ModBus® RTU
- Power supply 92-275 VAC, 9-36 VDC
- Integrated data logger

### Description

ModMAG® M1000 is best suited for bidirectional flow measurements of fluids  $> 5 \mu\text{S}/\text{cm}$  ( $> 20 \mu\text{S}/\text{cm}$  for demineralized water). Thanks to its excellent price-performance ratio, ModMAG® M1000 can be chosen for a broad spectrum of applications.

All information like flow, total or error messages can be read-out from the backlit LCD display. The standard model is provided with a great number of inputs, outputs and interfaces for lots of applications. ModMAG® M1000 is encased in an aluminium housing with protection class IP67 and therefore also ideal for use in harsh environments.

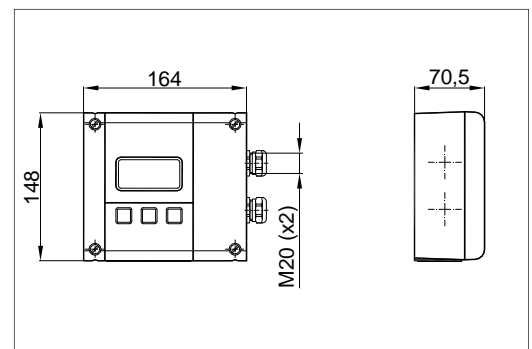
### Measuring principle

The operating principle of the electromagnetic flow meter is based on Faraday's law of magnetic induction: The voltage induced across any conductor, as it moves at right angles through a magnetic field, is proportional to the velocity of that conductor. The voltage induced within the fluid is measured by two diametrically opposed internally mounted electrodes. The induced signal voltage is proportional to the product of the magnetic flux density, the distance between the electrodes and the average flow velocity of the fluid.

### Applications

The ModMAG® M1000 has been designed especially for applications in machinery plants, vehicles and batching processes. The applications range from DN 6 to DN 500 with the most various process connections like DIN flanges, dairy pipe connections, TriClamp®, etc.

### Dimensions



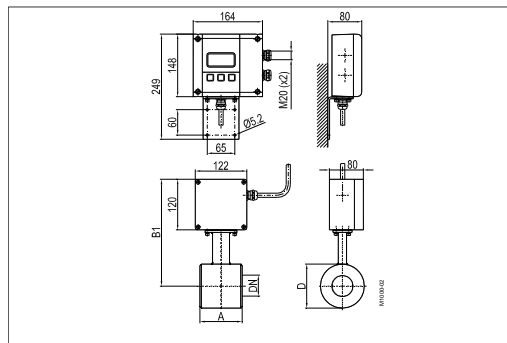
## Technical data

Power supply	92-275 VAC (50 / 60 Hz), 13 VA optional 9-36 VDC, 4 W
Accuracy	±0,3 % of m.v., ±2 mm/s
Repeatability	0,1 %
Flow range	0,03 – 12 m/s
Conductivity	min. 5 $\mu\text{S}/\text{cm}$ (20 $\mu\text{S}/\text{cm}$ for demineralized water)
Flow direction	bi-directional
Programming	3 buttons optional RS232
Interface	RS232, RS485, ModBus® RTU optional Ethernet ModBus® TCP/IP, M-Bus oder HART®
Analog output	0/4 - 20 mA / 0-10 mA, flow direction is displayed upon a separate status output
Pulse output	2 open collectors, passive 32 VDC, 0-100 Hz 100 mA, 100-10.000 Hz 20 mA, optional active
Frequency output	max. 10 kHz (open collector)
Status output	min/max. alarm, preselection, flow direction, error message, free configurable
Empty pipe detection	separate electrode
Low flow cut off	0-10 %
Data logging	Totalizer, status, events / 30.000 records
Housing	Powder coated aluminium die cast
Protection class	IP67
Cable insertion	2 x M 20
Ambient temperature	-20 °C up to +60 °C

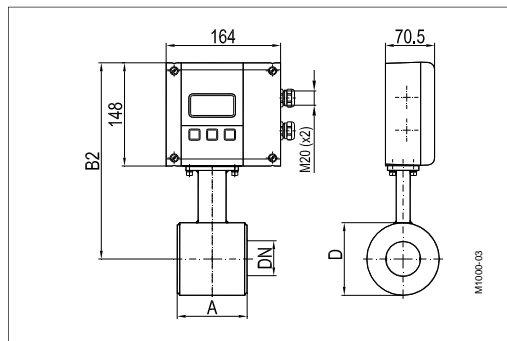
## Detector type III

### Wafer connection

#### Remote version



#### Mounted version



Thanks to its very short lay length, the detector type III is often the right alternative to a lot of applications. Delivered with a PTFE liner, the detector type III has a standard nominal pressure of PN 40.

## Technical data

Size	DN 25 – DN 100 (1" to 4")	
Process connection	Wafer connection (in-between flange mounting)	
Nominal pressure	PN 40	
Protection class	IP67, optional IP68	
Min. conductivity	5 $\mu\text{S}/\text{cm}$ (20 $\mu\text{S}/\text{cm}$ for demineralized water)	
Liner materials	PTFE	-40 °C to +150 °C
Electrodes material	Hastelloy C (Standard) Tantal Platinum / Gold plated Platinum / Rhodium	
Housing	Carbon steel / optional stainless steel	
Lay length	DN 25 – DN 50	DN 25 – DN 50
	DN 65 – DN 100	DN 65 – DN 100

## Dimensions (mm)

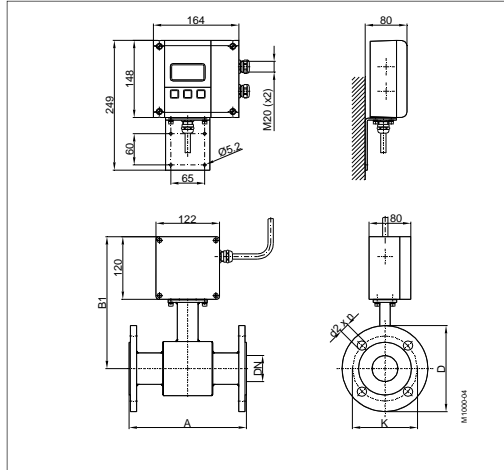
DN		A	B1	B2	D
25	1"	100	238	266	74
32	1 ¼"	100	243	271	84
40	1 ½"	100	248	276	94
50	2"	100	253	281	104
65	2 ½"	150	266	294	129
80	3"	150	271	299	140
100	4"	150	279	307	156

Pressure PN 40

## Detector type II

### Flange process connection

#### Remote version



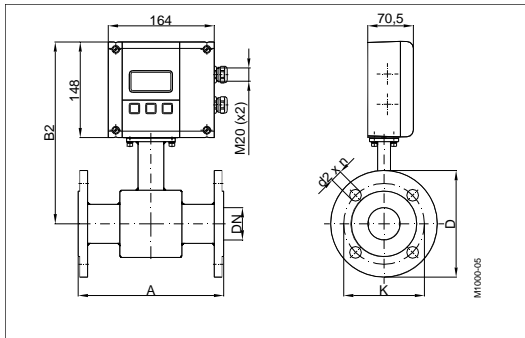
The electromagnetic detector type II is not only available in a number of different flange process connections (DIN, ANSI, JIS, AWWA, etc.) but also in a number of liners like hard rubber, soft rubber, PTFE, PFA or Halar. Available in sizes from DN 6 to DN 500 and nominal pressures up to PN 100, the detector type II is best suited for a variety of applications in the industry and the water/waste water industry.

Lined measuring pipes with materials approved for drinking water: KTW/DVGW, NSF-61, WRAS, ACS.

#### Technical data

Size	DN 6 – DN 500 (1/4" ... 20")		
Process connections	Flange: DIN, ANSI, JIS, AWWA, etc		
Nominal pressure	up to PN 100 (PED)		
Protection class	IP67, optional IP68		
Min. conductivity	5 $\mu\text{S}/\text{cm}$ (20 $\mu\text{S}/\text{cm}$ for demineralized water)		
Liner materials	Hard/soft rubber	from DN 25	0°C up to +80°C
	PFA	DN 6 – 10	-40°C up to +150°C
	PTFE	DN 15 – 500	-40°C up to +150°C
Electrodes materials	Hastelloy C (standard), Tantal Platinum / Gold plated, Platinum / Rhodium		
Housing	Steel / Optional stainless steel		

#### Mounted version



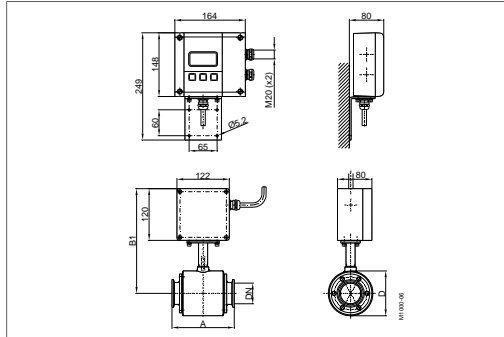
#### Dimensions (mm)

DN		A Std*	A ISO**	B1	B2	with ANSI-flanges			with DIN-flanges		
						$\varnothing$ D	$\varnothing$ K	$\varnothing$ d2xn	$\varnothing$ D	$\varnothing$ K	$\varnothing$ d2xn
6	1/4"	170	---	228	256	88,9	60,3	15,9 x 4	90	60	14 x 4
8	5/16"	170	---	228	256	88,9	60,3	15,9 x 4	90	60	14 x 4
10	3/8"	170	---	228	256	88,9	60,3	15,9 x 4	90	60	14 x 4
15	1/2"	170	200	238	266	88,9	60,3	15,9 x 4	95	65	14 x 4
20	3/4"	170	200	238	266	98,4	69,8	15,9 x 4	105	75	14 x 4
25	1"	225	200	238	266	107,9	79,4	15,9 x 4	115	85	14 x 4
32	1 1/4"	225	200	253	281	117,5	88,9	15,9 x 4	140	100	18 x 4
40	1 1/2"	225	200	253	281	127	98,4	15,9 x 4	150	110	18 x 4
50	2"	225	200	253	281	152,4	120,6	19 x 4	165	125	18 x 4
65	2 1/2"	280	200	271	299	177,8	139,7	19 x 4	185	145	18 x 4
80	3"	280	200	271	299	190,5	152,4	19 x 4	200	160	18 x 8
100	4"	280	250	278	306	228,6	190,5	19 x 8	220	180	18 x 8
125	5"	400	250	298	326	254	215,9	22,2 x 8	250	210	18 x 8
150	6"	400	300	310	338	279,4	241,3	22,2 x 8	285	240	22 x 8
200	8"	400	350	338	366	342,9	298,4	22,2 x 8	340	295	22 x 12
250	10"	500	450	362	390	406,4	361,9	25,4 x 12	395	350	22 x 12
300	12"	500	500	425	453	482,6	431,8	25,4 x 12	445	400	22 x 12
350	14"	500	550	450	478	533,4	476,2	28,6 x 12	505	460	22 x 16
400	16"	600	600	475	503	596,9	539,7	28,6 x 16	565	515	26 x 16
450	18"	600	---	500	528	635,0	577,8	31,7 x 16	615	656	26 x 20
500	20"	600	---	525	554	698,5	635,0	31,7 x 20	670	620	26 x 20
Standard											
with ANSI-flanges						from DN 6 - DN 200			pressure 150 lbs		
with DIN flanges						from DN 6 - DN 200			pressure PN 16		
						from DN 250 - DN 500			pressure PN 10		
* Standard		**ISO 13359									

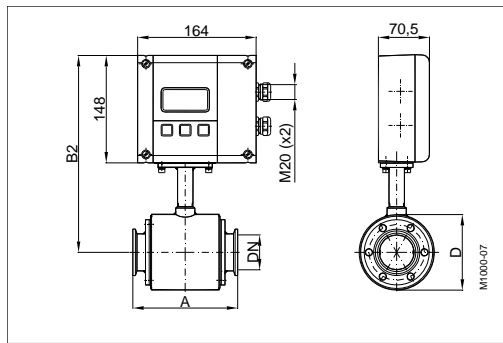
## Sanitary detector for food

Process connections Tri-Clamp®, DIN 11851, ISO 2852, etc.

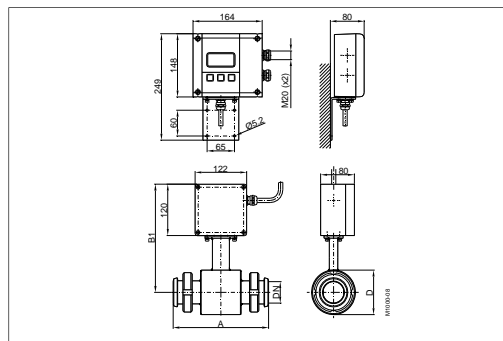
### TriClamp®, remote version



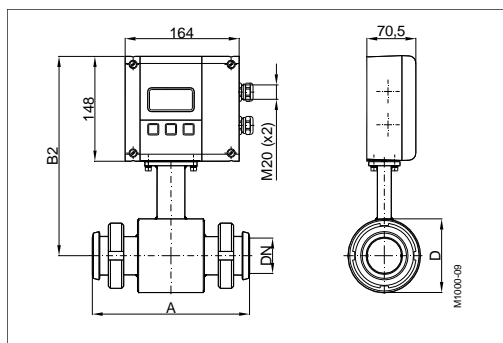
### TriClamp®, mounted version



### DIN11851, remote version



### DIN 11851, mounted version



The sanitary detector was developed for the flow measurement of liquid food. This model is available with Tri-Clamp®, DIN 11851, ISO 2852 process connections and also with any special connections (customer specifications). The sanitary detector is delivered in a stainless steel housing and with PTFE lining.

### Technical data

Size	DN 10 - DN 100 (3/8" to 4")	
Process connections	Tri-Clamp®, DIN 11851, ISO 2852, etc.	
Nominal pressure	PN 10/16	
Protection class	IP67, optional IP68	
Min. conductivity	5 µS/cm (20 µS/cm for demineralized water)	
Liner materials	PTFE / PFA	PTFE / PFA
Electrodes materials	Hastelloy C (Standard) Tantal Platinum / Gold plated Platinum / Rhodium	
Housing	Stainless steel	
Lay length	Tri-Clamp® connection	DN 10 - 50 145 mm DN 65 - 100 200 mm
	DIN 11851 connection	DN 10 - 20 170 mm DN 25 - 50 225 mm DN 65 - 100 280 mm

### Dimensions (mm) type Food Tri-Clamp®

DN		A	B1	B2	D
10	-	145	228	256	74
15	1/2"	145	228	256	74
20	3/4"	145	228	256	74
25	1"	145	228	256	74
40	1 1/2"	145	238	266	94
50	2"	145	243	271	104
65	2 1/2"	200	256	284	129
80	3"	200	261	289	140
100	4"	200	269	297	156
Pressure PN 10					

### Dimensions (mm) type Food milk pipe DIN 11851

DN		A	B1	B2	D
10	3/8"	170	238	266	74
15	1/2"	170	238	266	74
20	3/4"	170	238	266	74
25	1"	225	238	266	74
32	1 1/4"	225	243	271	84
40	1 1/2"	225	248	276	94
50	2"	225	253	281	104
65	2 1/2"	280	266	294	129
80	3"	280	271	299	140
100	4"	280	279	307	156
Pressure PN 16					

## Type Food Tri-Clamp® BS4825/ISO2852

Size	BS4825		DN	ISO2852	
	AD	ID		AD	ID
-	-	-	10	50.5	14.0
1/2"	25.0	9.4	15	50.5	18.1
3/4"	25.0	15.75	20	50.5	22.9
1"	50.5	22.1	25	50.5	28.7
1 1/2"	50.5	34.8	32	64.0	38.4
2"	64.0	47.5	40	64.0	44.3
2 1/2"	77.5	60.2	50	77.5	56.3
3"	91.0	72.9	65	91.0	72.1
3 1/2"	106.0	84.3	80	106.0	84.3
4"	119.0	97.4	100	130.0	109.7
PN 10	dimensions (mm)				

