

Flowmeter

Magnetically inductive

AT 7185

Internet_Variants

Dimension range	PN	Temperature range	Material
DN 15-1200	16/10	-10°C to 70 °C (short term 90 °C)	Carbon steel, Lining: NBR alt. EPDM

Range application

For measuring flows on conductive fluid in closed pipe systems. Suitable for most media like cold water, hot water, sewage water and other types of corrosive fluids with different viscosity. Used for process control and distribution facilities.

Program text

UGE.35 Meter for flow, pipe mounted with digital display accumulated value

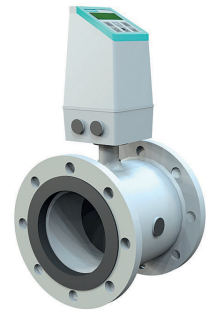
Flow meter, magnetically inductive, AT 7185, DN PN... Internal lining of..... Signal converter compact (alternatively wall mounted) type AT 7185 alt. MAG6.

Quality assurance

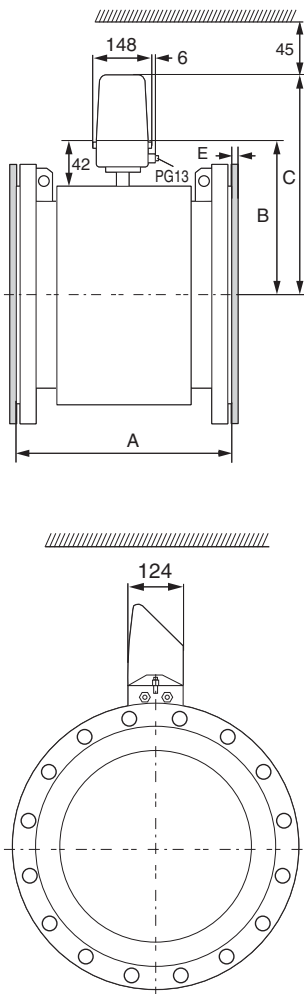
EMC 2004/1087EG, LVD 2006/95/EG, MID 2004/22/EG, PED AFS 1994:4. Certified according to FM class 1 div 2. Drinking water approval is available for EPDM-lining.

Material specification

1	Body and flanges	Carbon steel ST 37.2, two-component epoxy coating (Corrosivity category C4)
2	Lining	NBR hard rubber (standard) alt. EPDM
3	Electrodes	Hastelloy C276
4	Signal converter	Fiberglass reinforced polyamide



AT 7185



Dimensions and weight

DN	EN 1092-1 PN 16	Excluding signal converter	Including signal converter	Vikt (**)
	A *)	B	C	
50	200	188	341	9
65	200	194	347	11
80	200	200	353	12
100	250	207	360	15
125	250	217	370	20
150	300	232	385	26
200	350	257	410	48
250	450	284	437	69
300	500	310	463	86
350	550	382	535	115
400	600	407	560	125
500	600	463	616	189
600	600	514	667	301
700	700	564	717	320
800	800	616	769	428
900	900	663	816	619
1000	1000	714	867	636
1200	1200	820	973	813

Dimensions in mm, weight in kg

All flange dimensions according to EN 1092-1 (or ANSI B 16.5 on request)

*) If grounding flanges are mounted as an option, these and the strainer need to be added to the height.

**) With mounted signal converter MAG6000/5000 increases the weight with roughly 1 kg.

Function and design

The meter principle based on Faraday's induction law that says that when a conductor(fluid) moves through a magnetic field(meter pipe) it creates an induced current. This current is directly proportional to the flow. The meter readings is handled by the signal converter which gives the desired output signal. A prerequisite is that the conductive ability of the fluid is over 5 mikroS/cm.

The flow meter consists of a meter pipe, completely without movable parts and a signal converter that is mounted directly on the meter pipe or separately on a wall. The meter pipe is provided with a lining to decrease the risk for internal build up. The lining is selected based on the area of use, temperature etc. grounding electrodes are integrated in the meter pipe.

Signal converter MAG 5000

Wide meter area with high accuracy ($\pm 0,4\%$ of measured value). LCD-indicator for reading. Doesn't need calibration. Equipped with self diagnosis, automatic zero point adjustment and indicated an empty meter pipe and flow direction signal. Is available with type approval for cold water.

Signal converter MAG 6000

Very high accuracy ($\pm 0,2\%$ of measured value). Dosing function. Limit alarm. In other aspects similar to MAG 5000.

Technical data

Meter pipe MAG 5100W	
Flow range	See connection in table
Meter accuracy	$\pm 0,5\%$, see chart
Pressure loss at 3 m/sec.	DN 50-300 (down coned 1 DN): max. 25 mbar DN 350-1200: as straight pipe
Lowest conduction ability of media	5 mikroS/cm
Protection class	IP 67 enl. EN 60529, 1 mvp under 30 min.
Flanges	According to EN 1092-1 (ANSI B16.5 as option)

Pressure and temperature

Pressure and temperature		
Pressure	DN15...DN40	PN 40
	DN 50... DN 150	PN 16
	DN 200... DN 1200	PN 10 (DN 200..DN1200 option PN16)
Media temperature	DN 15... DN 1200	-10...70 °C

m/s. E: ±0,5% av aktuellt flöde			
m/s. E: ± 0,25 v[m/s] [%] av aktuellt flöde			
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.5

5

des hastighet (m/s), E: Fel i % av al

Technical information signal booster

Signal converter

	MAG500	
Accuracy	0	±0,4%
	MAG600	
	0	±0,2%
Operational current	115/230 V AC (alternatively 24 V AC/DC, 11...30 V) IP 67 according to IEC 529 and DIN 40050, 1 mvp under 30 min.	
Protection class		
Surrounding temperature	During operation	-20 till +50°C
	Storage	-40 till +70°C
Signal output	Analog	0-20 mA eller 4-20 mA
	Resistance	<800 ohm
	Tidskonstant	0,1-30 s. adjustable
Digital output	Frequency	0-10 kHz 50% cycle
	Time constant	0,1-30 s. adjustable
	Active	24 V DC, 30 mA, 1 K Ω ≤ R _{load} ≤ 10 K Ω
	Passive	3-30 V DC max. 110 mA, 200 Ω ≤ R _{load} ≤ 10 K Ω
Relay	Change-over relay	
Digital input	Current	42 V AC/2 A, 24 V DC/1A
	activation time	11-30 V DC, R _i =4,4 k Ω
	Current	50 ms
		I ₁₁ V DC = 2,5 mA, I ₃₀ V DC = 7 mA
Functions	instantaneous and total flow, stop function by low flow or empty pipe, Indication of flow direction, error messages, run time, limit switch, uni/bidirectional flow, pulse output, control of cleaning and dosing 1)	
Galvanically isolated	All in- and outputs are galvanically isolated	
Stop function	Low flow	0-9,9% of max flow
	Empty pipe	Detection of empty meter pipe
Counter	Two eight figure counters for front, net and back flow	
Display	LCD-display with back lighting with alpha numerical text, 3 x 20 characters for indication of flow, total readings, settings and error messages Back flows are indicated with negative characters.	
	Time constant	Time constant as actual output
Zero point adjustment	Automatic	
Electrode input impedance	> 1 x 10 ¹⁴ Ω	
Communication	Standard	Prepared for additional client mounted modules

1) Only MAG 6000

Rätten till ändringar utan föregående meddelande förbehålls.
Armatec ansvarar inte för eventuella tryckfel eller missförstånd.
Dokumentet får kopieras endast i sin helhet.

Sizing

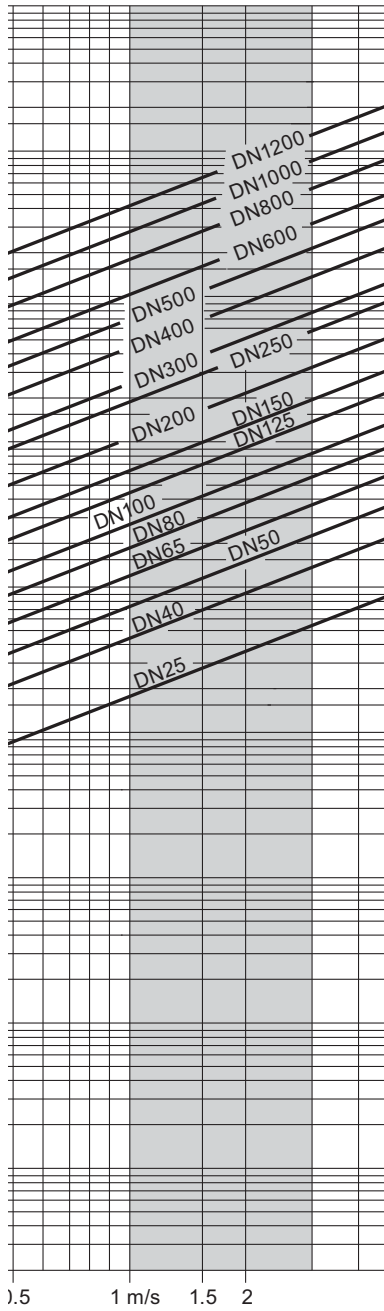
The graph below shows the relation between flow speed, V , flow quantity, Q and the flow meter dimension DN.

Selection of flow meter

For sizing pick appropriate meter that gives a flow speed withing 2...3 m/s or more is recommended. This is partly to secure a good gauging accuracy, but also to prevent build up on the electrodes and insulation lining in the meter pipe. This gives in general at least one dimension less on the meter than the pipe line. In that case control that the pressure loss in the down cone doesn't get to large.

For measuring fluids with a high particle content the flow speed should be within 3...5 m/s or more to prevent internal build up.

Accessories and variants



Description	Ar- tikel nr.
Signal converter MAG 5000	Wide range with high accuracy ($\pm 0,4$ % of measured reading). LCD-indicator for reading. Does not need calibration.
Signal converter MAG 6000	Equipped with self diagnosis, automatic zero point adjustment and indicates empty meter pipe and flow direction signal. Very high accuracy ($\pm 0,2$ % of measured reading).
Meter pipe lining	Dosing function. Limit alarm. In other aspects similar to MAG 5000. Alternate material, PTFE-teflon (temp. area-20...130 alt. 180 °C).
Pressure class	Option PN 16 DN 200-1200
Capsule kit	Submersible performance (IP 68, 10 mvp in 10 years) for use with
Grounding/protection flange	standard MAG 5000 signal converter, when the meter pipe is buried or submersed.
Wall mounting kit	Type C. Extra grounding ring (e.g. DN 100)
Standard electrodes and signal cable	To IP 67 version. Including wall mounts and 5 st. Pg13 screwed cable entries.
Special electrodes and signal cable	3 x 1,5 mm ² PVC in the lengths: 10 m, 20 m, 40 m, 60 m and 100 m. (t.ex. 10 m.)
	Double screened PVC (recommended for long distances and when detection of empty pipe is used). Available in the lengths: 10 m, 20 m, 40 m, 60 m and 100 m. (e.g. 10 m.)

Variants

When there is ethanol in the water, use EPDM lining. MAG meter in smaller dimensions, with battery or other lining for higher temperatures etc. on request.

Installation

The flow meter can be installed so that the meter pipe is always filled with liquid, in horizontal mode or vertically. Avoid high points or dropping pipes.

Straight lines of at least 5xD before the meter and 3xD after is required. Eventual down coning can be used on the straight. Choose a position where the flow isn't pulsating and avoid places where the meter is exposed to electromagnetic interference.

With media temperatures > 90°C compact mounting with signal converter on the meter pipe not possible. Use signal cable (e.g. AT 7185-10C) and wall mounting kit (AT 7185WALL).

In other cases, please see the separate instruktion manual.

Maintenance and spare parts

Since the flow meter doesn't have any movable parts, it's basically maintenance free. The only maintenance requirement is cleaning the meter pipe and electrodes. There is also a possibility to replace electrodes, and if these get affected, to alternative materials.

Marking

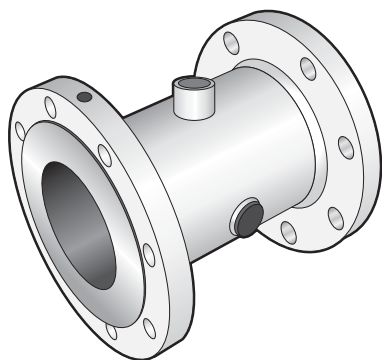
The meter pipe and the signal converter are marked with serial number, size, electric data mm.

How to order

Meter pipe (NOTE! Signal converter are ordered separately, see next How to order)

Example: AT 7185-100P-PN16

AT 7185	-100	P	-PN16
Fig. nr.	DN	Lining (option) NBR hard rubber (standard)	Pressure class (option) PN 16 for DN 200-1200



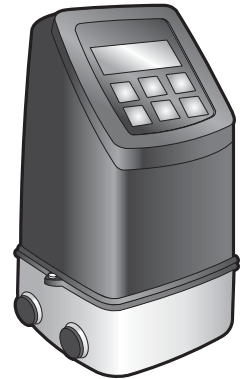
AT 7185-

Flowmeter

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Signal converter		
Example: AT 7185-MAG5		
AT 7185	-MAG5	-24V
Article no.	Type -MAG5 = MAG5000 -MAG6 = MAG6000	Option Power supply 24V DC (11...30 V)



AT 7185-MAG