

Electromagnetic flow-meter BAMOMATIC



1. PRECAUTIONS

- The operation of the device must be in accordance with and strictly limited to the applications as described further on.
- Installation, commissioning and maintenance must be carried out by qualified personnel.
- The power supply must comply with the values specified in the technical features.
- Disconnect all power sources from the device during commissioning or maintenance tasks.

2. DESCRIPTION

In an electromagnetic flow-meter, the liquid section is in a magnetic field created by solenoid coils. Electrode sensors are located on a plane, perpendicular to the magnetic field, in contact with the (conductive) liquid, allowing measurement of the generated voltage. This voltage is directly proportional to the fluid velocity and therefore to the flow-rate for a constant flow section (according to Faraday's law).

3. TECHNICAL FEATURES

Electrical connections	Built-in 4-pin plug M12x1 (male thread)
Power supply	12 ... 24 V DC ± 10 %
Consumption	Max. 3.6 W
Accuracy	± 0.7 % of reading; ± 0.3 % of measuring range (Factory tests with water at 23 °C)
Repeatability	± 1 %
Response time	< 100 ms
Electrical protection	Short-circuit proof; Protection against reverse polarity
Signal outputs	Push-pull square wave and 4-20 mA
Status display	Green LED: Flashing proportionally to the flow-rate
Nominal diameter	DN 3, DN 6, DN 8, DN 15, DN 20, DN 25
Fittings	BSP-M: $\frac{3}{8}$ "; $\frac{1}{2}$ "; $\frac{3}{4}$ "; 1"; 1 $\frac{1}{4}$ "
Materials	Housing: ABS Fittings and measuring tube: PVDF Option: POM (type Delrin®) Sealing: EPDM seals Electrodes: Stainless steel 316 L (1.4404) Option : Hastelloy C electrodes and FPM seals
Minimum conductivity	20 μ S/cm
Pressure limits	10 bar at 20 °C ; 8 bar at 40 °C ; 6 bar at 60 °C
Operating temperature	Liquid: -10 ... +60 °C Ambient: +5 ... +60 °C; Storage: -15 ... +60 °C
Protection	IP 65 (cable connected) according EN 60529

EC Conformity: The instrument meets the legal requirements of the current European Directives.

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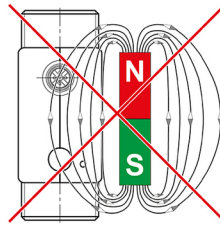
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4. INSTALLATION

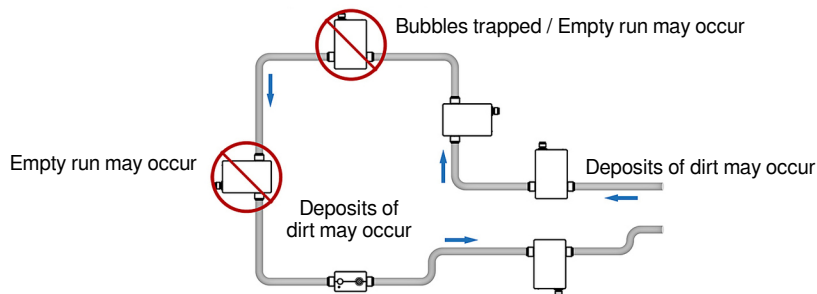
Caution

- Risk of malfunction due to external magnetic fields.
- External magnetic fields in the immediate vicinity of the device may cause incorrect operation and must be avoided.
- Make sure that no external magnetic field is present at the place of installation.

Pic. 1



- Mostly, the BAMOMATIC can be installed at any location in the pipeline. It is imperative that the 2 electrodes of the flowmeter remain in permanent contact with the liquid.
- According to the drawing (Pic. 2), the device needs straight sections upstream and downstream.
- Avoid elbows, valves and obstructions near the device.
- Failure to comply with these conditions results in degradation of measurement quality.
- it is absolutely not recommended to install the flow-meter near a source of significant heat or a strong magnetic field.

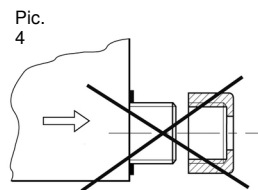
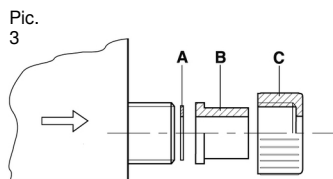


Pic. 2

5. CONNECTION ON THE PIPING

Insure a watertight connection, using accessories A, B, C.
(These accessories are not part of our supply)

Place the gasket A (its material must be compatible with the flowing chemical) between the sealing surface of the threaded fitting and the gasket face of the collar B, screw on the nut C (Pic. 3).



CAUTION:

- Do not under any circumstances seal on the housing wall (Pic. 4).
- In order to avoid the risk of damage to the thread, the tightening of the two nuts must be done only by hand.

Maximum torque 5 Nm

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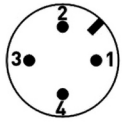
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6. ELECTRICAL CONNECTIONS

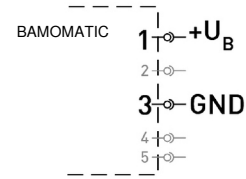
Wiring:



M12x1

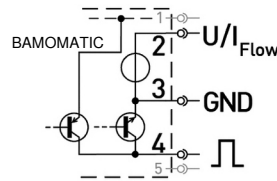
- Pin 1: +U (12 ... 24 V DC)
- Pin 2: Analogue output, current signal 4-20 mA
- Pin 3: GND
- Pin 4: Frequency signal, Push-Pull

Power supply:



Using frequency output and analogue output:

Push-Pull (symmetrical):



Recommendation: Resistance $R_L \sim 2.5 \text{ k}\Omega$ (12 V) or $\sim 5 \text{ k}\Omega$ (24 V) for versions NPN and PNP. Ensure that the maximum signal current of 25 mA is not exceeded.

7. COMMISSIONING

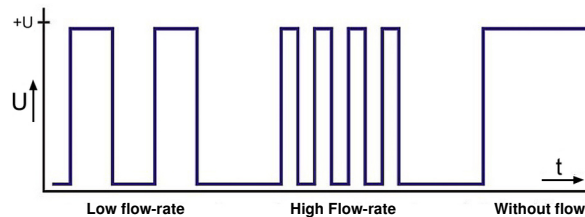
After checking the assembly of the device, the tightness of the connections and the electrical connections, turn on the power. The green LED lights up, the flowmeter is now in operation, in measuring mode.

The LED is flashing proportionally to the flow-rate. Over a frequency of about 30 Hz, the flashing is no longer perceptible for a human; the diode then seems to be continuously lit.

BAMOMATIC with frequency output:

Depending on the BAMOMATIC version, the device delivers a frequency signal type NPN, PNP or Push-Pull, rectangular signal proportional to the flow.

The frequency of the pulse output changes depending on the flow rate (Pic. 5).



Pic. 5

BAMOMATIC with analogue output:

Depending on the version of the BAMOMATIC, the analog output delivers a voltage or current signal proportional to the measured flow.

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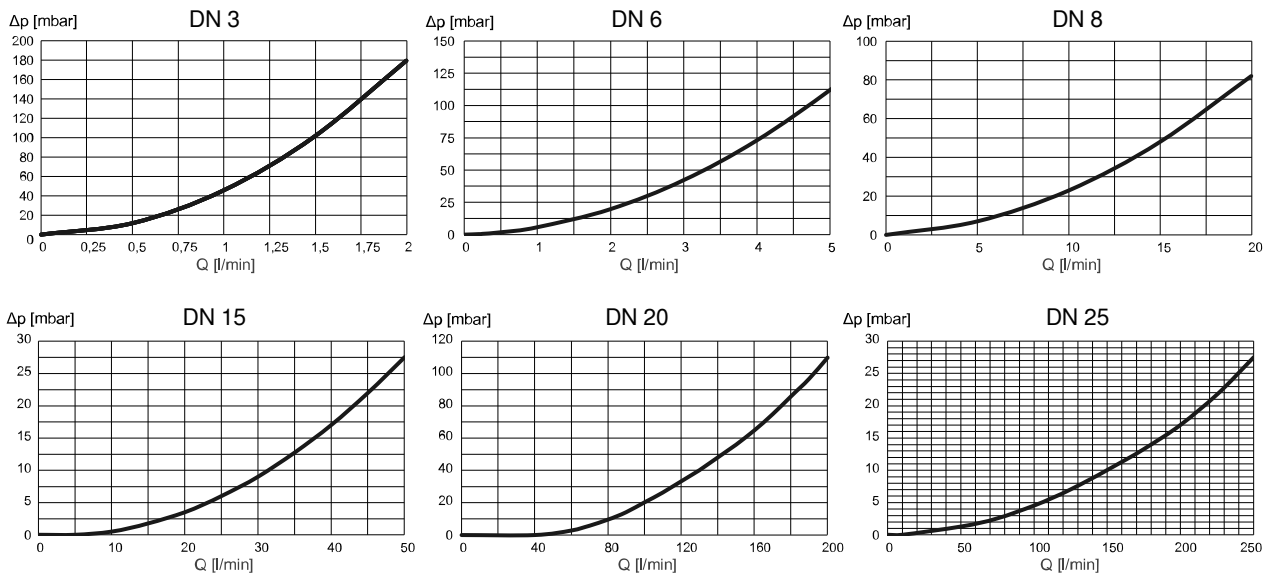
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8. CODE NUMBERS AND REFERENCES

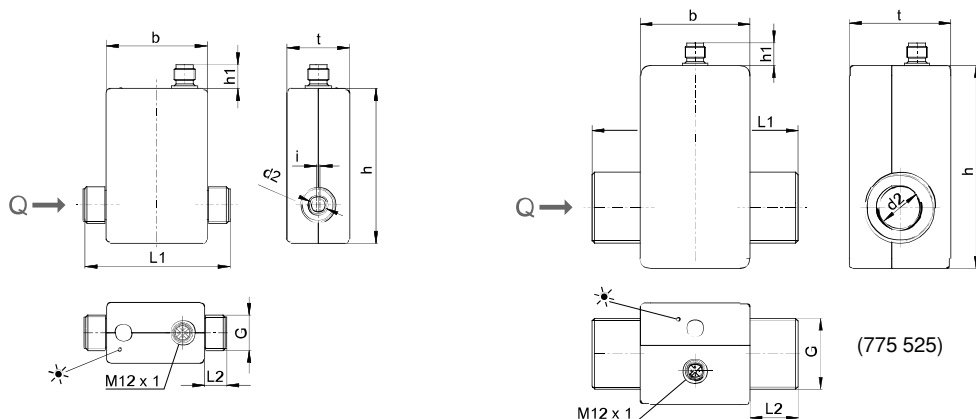
Code	Material	Fittings	ND	Inner Ø [mm]	Range [l/min]	pulse/l	Resolution [ml/pulse]
75 503	PVDF	BSP-M 3/8"	DN 3	3	0.1 ... 2	10,000	0.1
775 506	PVDF	BSP-M 1/2"	DN 8	8x2.5 rectangular section	0.25 ... 5	4,000	0.25
775 508	PVDF	BSP-M 1/2"	DN 8	8	1 ... 20	1,000	1
775 515	PVDF	BSP-M 3/4"	DN 15	14	2.5 ... 50	400	2.5
775 520	PVDF	BSP-M 1"	DN 20	18	5 ... 200	200	5
775 525	PVDF	BSP-M 1 1/4"	DN 25	25	12.5 ... 250	80	12.5

9. PRESSURE DROP vs. FLOW-RATE



10. DIMENSIONS

Code	L1 [mm]	L2 [mm]	G	d2 [mm]	b [mm]	Gz	h [mm]	h1	t [mm]	i [mm]	Mass [g]
775 503	85	13	BSP-M 3/8"	Ø 3	58	M12 x 1	89	13.5	36		
775 506	85	13	BSP-M 1/2"	Ø 8	58	M12x1	89	13.5	36	2.5	
775 508	85	13	BSP-M 1/2"	Ø 8	58	M12x1	89	13.5	36		
775 515	90	16	BSP-M 3/4"	Ø 14	58	M12x1	89	13.5	36		
775 520	90	16	BSP-M 1"	Ø 18	58	M12 x 1	89	13.5	36		
775 525	122	28.5	BSP-M 1 1/4"	Ø 25	65	M12x1	120	13.5	60		



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