

Turbine flow sensor BAMOTUR



USER MANUAL

BAMO INTERNATIONAL

22, Rue de la Voie des Bans · Z.I. de la gare · 95100 ARGENTEUIL

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BAMOTUR

28-03-2022

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DEB

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1. SAFETY INSTRUCTIONS

- The operation of the device must be in accordance with and strictly limited to the applications, as mentioned further on and on data-sheet.
- Installation, commissioning and maintenance must be carried out by qualified technicians.
- Only connect the device to the voltage specified in the technical features and label.
- Disconnect all power sources from the device during interventions or maintenance tasks.

2. APPLICATIONS

- Measurement of low flow rates of neutral or chemicals, particle-free and non-crystallising.

3. DESCRIPTION

A turbine mounted on a stainless steel or ceramic shaft rotates by the flow of the liquid. Magnets encapsulated in the turbine actuate an electronic Hall-effect sensor inserted in the upper part of the device. The sensor generates a pulse signal proportional to the speed of turbine rotation, therefore, proportional to the flow rate.

4. MOUNTING

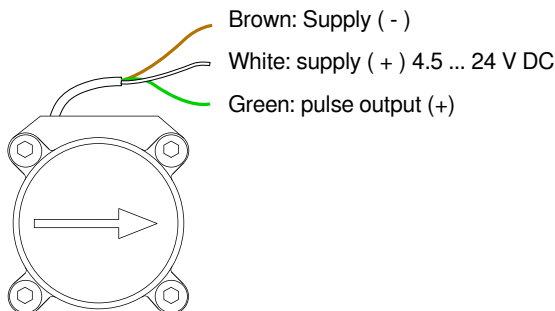
- Vertical with ascending flow (respecting the direction of the arrow)

To eliminate the risk of blocking the turbine (mostly at low flow rates), a filter should be installed upstream of the device to stop particles.

5. ELECTRIC CONNECTIONS

Pulse output signal:

BAMOTUR 7201
BAMOTUR 7241
BAMOTUR 7741
BAMOTUR 7901



6. TECHNICAL FEATURES

Detector	Hall Effect sensor, no wet parts
Power supply according the model	4.5 ... 24 V DC / Max. 11 mA at 24 V or 12 ... 24 V DC / Max. 11 mA at 24 V or 10 ... 30 V DC (4-20 mA output)
Output signal	Square pulses or 4-20 mA (1 model)
Cable output	3 x 0.14 mm ² ; Cable length: 1 m
Accuracy	+/- 2 % F.S.
Repeatability	< 0.8 % F.S.
Viscosity limits	1 ... 10 cSt (Above 10 cSt a calibration on site is necessary)
Operating pressure	According to each model
Temperature limits	-10 ... +55 °C
Body	Or E-CTFE, or PVDF, or POM
Axis	Or Stainless Steel, or Sapphire
Sealing*	FPM as standard (Option: EPDM)
Mass	50 to 350 g

* A coloured ring on the cable identifies the material: Green for FPM and black for EPDM

EC Conformity: The devices meet the legal requirements of the current European Directives.

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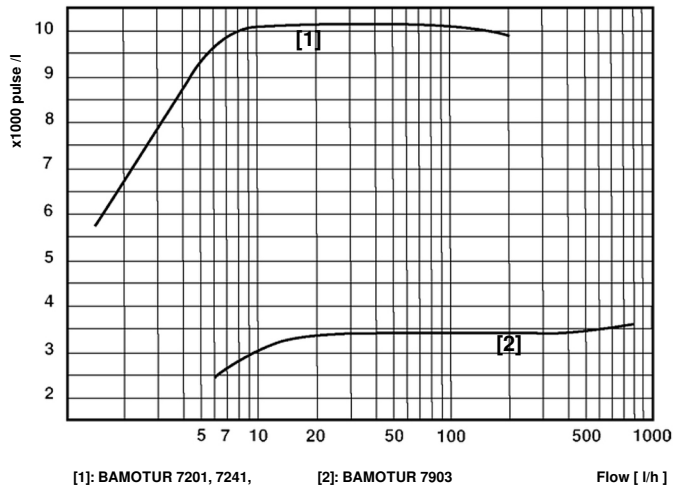
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7. SPECIFIC FEATURES

Reference	Range [l/h]	Material		P. Max.	Supply	Pulse/litre*	Fitting	
		Body	Axis				Both ends	Type
BAMOTUR 7201	1.5 ... 100	POM	AISI	5 bar	4.5 ... 24 V DC	10 200	Smooth 6/8 mm	B
BAMOTUR 7241								C
BAMOTUR 7741	7...150	PVDF	Sapphire	10 bar	12 ... 24 V DC	3 400	1/4"	B
BAMOTUR 7901	1.5 ... 100	E-CTFE						F
BAMOTUR 7903	6...250		POM	AISI	5 bar	4.5 ... 24 V DC	152	3/8"
BAMOTUR 72R4	30 ... 1000							
BAMOTUR 472R4	50 ... 1000				10 ... 30 V DC	output 4-20 mA		

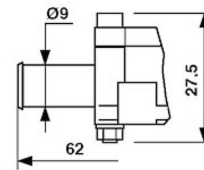
* The signal output is not linear over the entire achievable measuring range.

PULSE output vs. FLOW

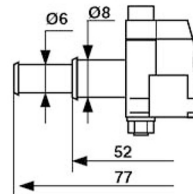


[1]: BAMOTUR 7201, 7241, (BAMOTUR 72R4 and 472R4 are not represented)
[2]: BAMOTUR 7903

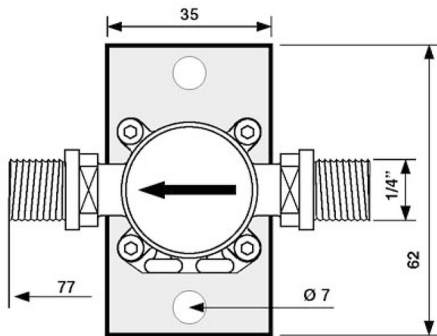
Type A



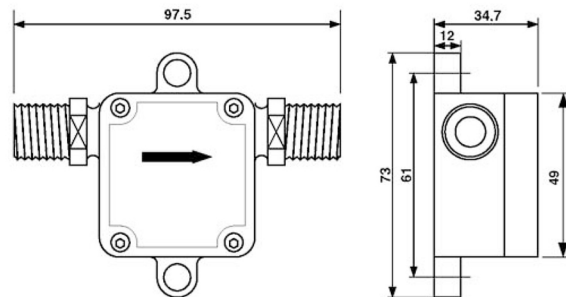
Type B



Type C or F



Type D



Unlike type C models, the type F, E-CTFE models, have a 35x62 mm mounting plate (10 mm thick, with 2 holes Ø 7 mm).

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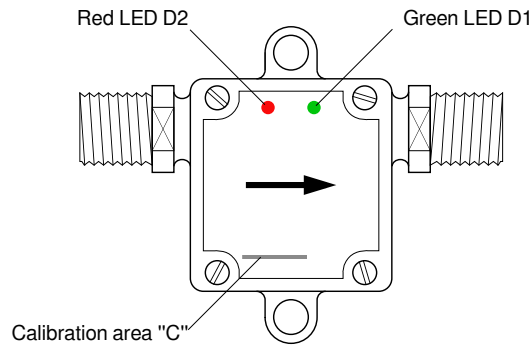
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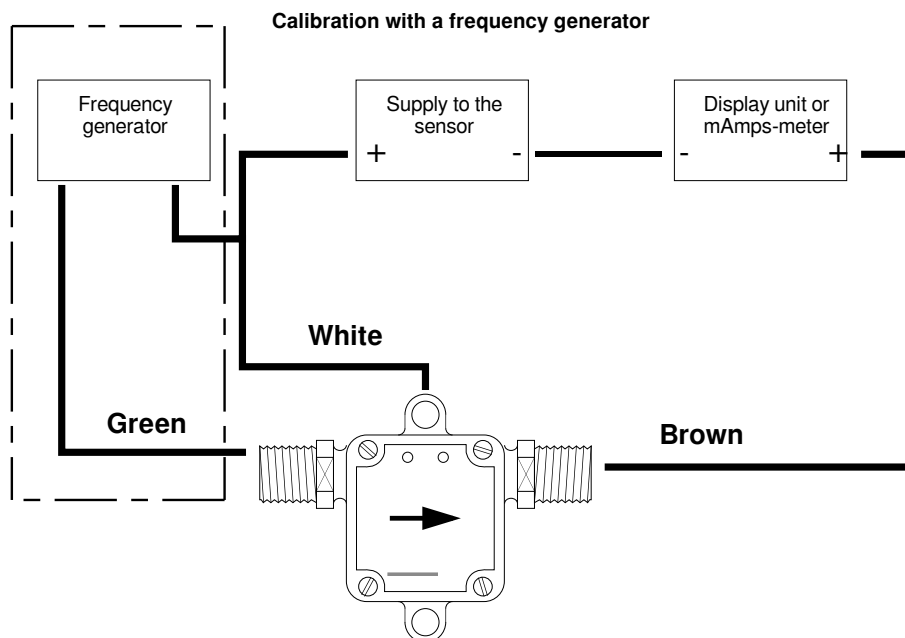
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8. CALIBRATION on BAMOTUR 472R4



- 1) Check the power supply, which should be 12 to 24 V DC.
- 2) The green LED D1 lights up.
- 3) 4 mA calibration: Beginning of scale; If the device is to provide a 4 mA signal for zero flow, ensure that there is no flow (otherwise simulate the flow requested at 4 mA). This simulation can be carried out either by passing the fluid through the device, or with the help of a frequency generator:



- 4) Once the flow rate for 4 mA has been set, place the magnetic key on area "C".
- 5) The red LED D2 lights up.
- 6) Once the red LED flashes, simulate the maximum flow rate for 20 mA output.
- 7) Place the magnetic key in area "C".
- 8) The red LED D2 stops flashing - Wait for it to switch OFF.
- 9) Calibration is now complete.

8.1 Formula for calibration with a frequency generator

Reminder: This flow meter delivers an average signal of 152 pulse/litre.

Example: 4 mA signal for zero flow and 20 mA signal for 600 l/h

Here is the frequency to be generated to simulate the flow rate with a display in l/h

$$(152 \times 600) \div 3,600 = 25.33 \text{ (25.33 pulse/s)}$$

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