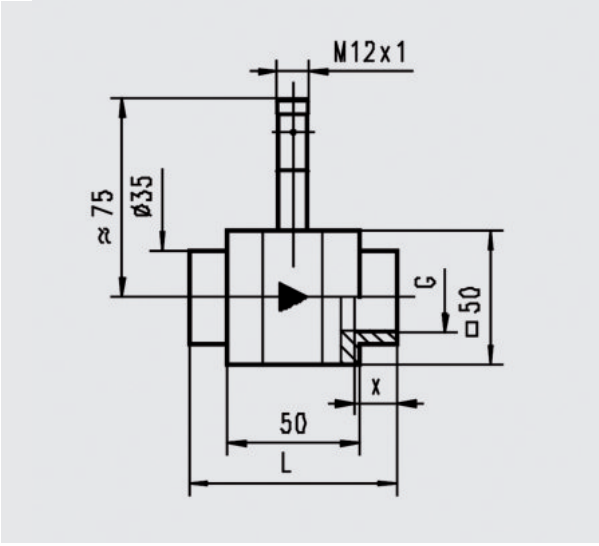
Flow rate sensor TS-FM

Flow rate 1 ... 80 Ltr. / min

Dimensional drawing



Technical data

Diameter G	PN bar	Range Ltr. / min H_2O	L mm	X mm	Weight (kg)
G 1/4"	16	1 ... 15 Ltr. / min	74	12	0,6
G 3/8"	16	1 ... 25 Ltr. / min	74	12	0,6
G 1/2"	16	1 ... 50 Ltr. / min	78	14	0,6
G 3/4"	16	1 ... 80 Ltr. / min	82	16	0,65
G 1"	16	1 ... 80 Ltr. / min	82	18	0,7

Weight applies to plastic housing with metal connectors

Description

- Very fast response time
- Large overload security
- Measurement range 1:80
- Low pressure loss
- Compact dimensions
- High-temperature-type available
- Also available for small quantities measurement

A thin elastic diaphragm made of stainless steel, covering the entire flow cross-section, is deflected by the flowing fluid, and thereby pushes against an arched end stop.
A plastic-coated magnet is mounted on the diaphragm. When displaced by flow it will change its magnetic field which is detected by an analogue hall-sensor outside of the flow chamber
The Integrated evaluation electronics provides analog norm signals (4 … 20 mA, 0 … 10 V DC). The almost complete covering of the flow cross-section in the neutral position produces very high start-up sensitivity. As soon as the slightest flow exists, the diaphragm is necessarily deflected. The evaluation of the entire flow cross-section has the benefits of unproblematic pipework routing. No Run-in and run-out sections are necessary.
Due to the spring properties of the shutter and a molded stop, even strong media impacts are being withstood. The low number of parts coming into contact with media guarantees low soiling properties and reliable operation.

Full metal type
The standard type is manufactured with a plastic body with a compressive resistance of 16 bar. A full metal body (brass, nickel-plated) with a compressive resistance of 100 bar is available as an option. The use of metal fittings and connection hardware is mandatory due to the increased higher pressure strength. Measurements or switching value adjustments can be done in the range of 1… 80 Ltr. / min.

High temperature
If the full metal type is equipped with high-temperature sensors, a media temperature of up to 150˚ C can be performed and monitored. The primary sensor element is then placed in the measuring unit, while the evaluation unit is located at the end of a 0,5 m heat resistant cable.

Type designation: Example

TS-FM… -50-…-G1/2”I-RF

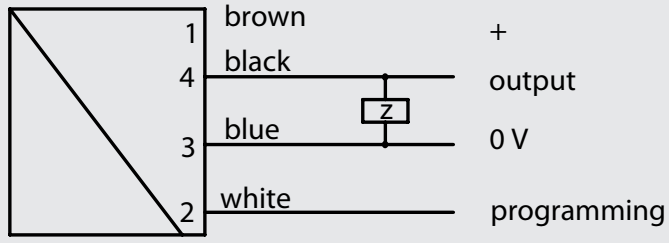
Please state:
Type of electrical output, temperature range

Flow rate sensor TS-FM

Flow rate 1 ... 80 Ltr. / min

Technical data	Type: TS-FM
Measuring range	1 … 80 Ltr. / min in water, basic ranges: please see Type nomenclature, special small amounts ranges 0,4 … 6,0 Ltr. available as option
Accuracy	Basic ranges: +3 % measuring value or 0,25 Ltr. / min. Small quantity range: + 3 % meas.range 0,1 Ltr. / min (the respectively higher value is valid)
Pressure loss	Max. 0,5 bar at measuring area end point
Operating pressure	Plastic body type: 16 bar (70 °C), Full metal type: 100 bar
Media temperature	0 ... +70 °C, high-temperature option 0 … +150 °C
Ambient temperature	0 ... +70 °C
Storage temperature	-20 ... +80 °C
Operating voltage U_B	10 … 30 V DC, voltage output 10 V: 15 … 30 V DC
Electrical connection	Circular plug-in connector M12 x 1, 4-conductor
Output data. Current output Voltage output Switched output Frequency output	 4 ... 20 mA 0 … 10 V DC, output voltage max. 20 mA Push-pull output, output current max. 200 mA Minimum monitoring, maximum switch on request Push-pull output, output current max. 200 mA output frequency depending on measuring range, basic value 500 pulse / Ltr. (complies with 666,7 Hz at 80 Ltr. / min.) Small quantity range: 5000 pulse / Ltr. (complies with 500 Hz at 6 Ltr. / min.) other frequency ranges on request. all outputs are short-circuit proof and protected against polarity reversal.
Protection class	IP 67
CE conformity	Yes
Material specs.: Fluid-wetted Plastic body Full metal body: Connections Gaskets: Bezel: Magnet fixture: Adhesive Not fluid-wetted: Sensor tube Adhesive Flange screws	 PPS Brass, nickel-plated (stainless steel 1.4305 on request) POM or brass, nickel-plated (stainless steel 1.4305 on request) FKM (Viton) others on request Stainless steel 1.4031 K PPS Epoxy resin Brass, nickel-plated Epoxy resin Stainless steel

Terminal assignment



The correct supply voltage value acc. to datasheet values has to be obeyed prior to installation! The use of shielded cable is highly recommended, cable length < 30 m, supply lines < 10 m.

Flow rate sensor TS-FM

Flow rate 1 ... 80 Ltr. / min

Type designation codes

Type **TS-FM**

1 Output signal
- **I** = 4 ... 20 mA
- **U** = 0 ... 10 V DC

2 Measuring range
- **06** = 0,4 ... 6 Ltr. / min.
- **15** = 1 ... 15 Ltr. / min
- **25** = 1 ... 25 Ltr. / min
- **50** = 1 ... 50 Ltr. / min
- **80** = 1 ... 80 Ltr. / min
- **100** = 1 ... 100 Ltr. / min.

3 Housing type
- **S** = standard (brass, plastic, brass)
- **M** = brass, brass, brass
- **ED** = stainless steel, stainless steel, stainless steel

4 Temperature range
- **ST** = standard 0 ... +70 °C
- **HT** = high temperature type 0 ... +150 °C

5 Process connection
- G 1/4", G 3/8", G 1/2", G 3/4", G 1"
- **I** = female thread
- **A** = male thread

6 **RF** = reverse current resistence

7 Sealing material
- **V** = FKM
- **E** = EPDM
- **N** = NBR

	1	2	3	4	5	6	7
Example: TS-FM	I	- 25	- M	- HT	- G 1/4 I	- RF	- V

TS-FMI-25-M-HT-G1/4I-RF-V

Assembled cable and connection accessories




Type	Length	Specification	Part No.: straight	angled
M12x1 (S763) 4- pin	-	connector M12x1 for self-connection	1070039	1070038
	-	connector M12x1 self-connection, shielded	1070030	1070031
	2 m	cable: PUR	1070044	-
	5 m	cable: PUR, halogen-free	1070023	1070025
	5 m	cable: PUR, shielded, halogen-free	1070032	1070033
MVS / C, 3-pin +PE	3 m	cable: PUR, connector MVS / C	-	1070021

Special types upon request.