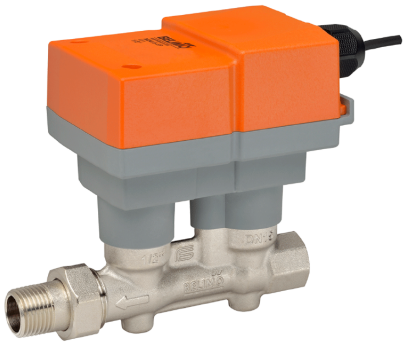
Flow sensor

For closed cold and warm water systems
Robust against dirt and magnetite
Low pressure drop across the sensor
Calibrated ultrasonic flow sensor, temperature and glycol compensated



5 YEAR WARRANTY

Type Overview

Type	DN	DN	FS	Δp	Output voltage
FM050	15	1/2"	6.6 GPM	1.75 psi	0.5...10 V
FM075	20	3/4"	12.4 GPM	1.89 psi	0.5...10 V
FM100	25	1"	21.8 GPM	1.18 psi	0.5...10 V
FM125	32	1 1/4"	34.2 GPM	0.9 psi	0.5...10 V
FM150	40	1 1/2"	47.5 GPM	1.02 psi	0.5...10 V
FM200	50	2"	91.2 GPM	2.16 psi	0.5...10 V

FS [gpm]= Max Flow: Maximum measurable flow

Δp: Pressure drop at max flow

Technical Data

Electrical Data	Power supply DC	24 V, -10% / +20%, 0.5 W
	Power supply AC	24 V, 50/60 Hz, ±20%, 1 VA
	Connection supply	cable 1 m, 3 x 0.75 mm²
Functional Data	Sensor Technology	ultrasonic (transit time) with glycol and temperature compensation
	Application	water
	Output voltage range	0.5...10 V
	Output voltage note	0 V = sensor has no power supply 0.3 V = sensor error 0.5 V = 0% of Max Flow 10 V = 100% of Max Flow max. load 1 mA
	Body Pressure Rating	360 psi
	Installation position	upright to horizontal
	Servicing	maintenance-free
Measuring Data	Measuring values	volume flow
	Measuring fluid	Water and water glycol mixtures
	Measuring principle	Ultrasonic volumetric flow measurement
	Measuring accuracy flow	±2%*
	Min. flow measurement	1% of Max Flow
Materials	Fluid wetted parts	Brass nickel-plated
	Flow measuring pipe	brass body nickel-plated

Safety Data		
	Ambient humidity	max. 95% r.H., non-condensing
	Ambient temperature	30...120°F [0...50°C]
	Fluid temperature	-5...250°F [-20...120°C]
	Storage temperature	-40...176°F [-40...80°C]
	Protection class IEC/EN	III safety extra-low voltage (selv)
	Protection class UL	UL Class 2 Supply
	Certification IEC/EN	IEC/EN 60730-1
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2
	Enclosure	UL Enclosure Type 2
	Quality Standard	ISO 9001
	Mode of operation	Type 1
	Rated impulse voltage supply	0.8 kV

Safety Notes

This device has been designed for use in stationary heating, ventilation and air-conditioning systems and must not be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.

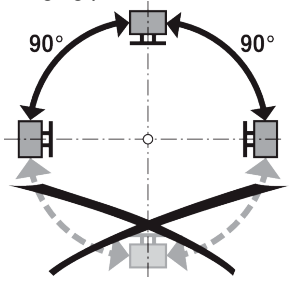
Outdoor applications: Only possible where (sea) water, snow, ice, sunlight or aggressive gases cannot interfere directly with the sensor and it can be guaranteed that the ambient conditions remain at all times within the thresholds according to the data sheet.

Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.

The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

Remarks

Recommended installation positions
The sensor can be installed upright to horizontal. The sensor may not be installed in a hanging position.



Mounting position in the return
Installation in the return is recommended.

Water quality requirements
The water quality requirements specified in VDI 2035 must be adhered to.

Servicing
Sensors are maintenance-free.

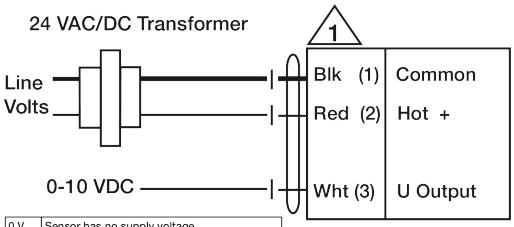
Before any service work on the sensor is carried out, it is essential to isolate the sensor from the power supply (by unplugging the electrical cables if necessary). Any pumps in the part of the piping system concerned must also be switched off and the appropriate slide valves closed (allow all components to cool down first if necessary and always reduce the system pressure to ambient pressure level).

The system must not be returned to service until the sensor has been correctly reassembled in accordance with the instructions and the pipeline has been refilled by professionally trained personnel.

Flow direction
The direction of flow is specified by an arrow on the flow pipe and should be installed accordingly to maintain flow accuracy.

Inlet section
In order to achieve the specified measuring accuracy, a flow-calming section or inflow section in the direction of the flow is to be provided upstream from the flow sensor. Its dimensions should be at least 5x DN.

Wiring Diagram



0 V	Sensor has no supply voltage
0.3 V	Sensor has supply voltage but is in error state
0.5 V	Zero flow
10 V	Maximum flow

Notes Wiring RS485
Connection via safety isolating transformer.

Dimensions

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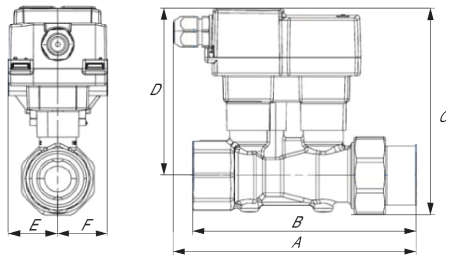

Type	DN	DN	A_1	B_1	C_1	D_1	E_1	F_1	Weight
FM050	15	1/2"	4.5" [114]	4.3" [108]	4.9" [124]	4.3" [110]	1.5" [39]	1.5" [39]	1.7 lb [0.750 kg]
FM075	20	3/4"	5.1" [129]	4.6" [118]	5.1" [129]	4.4" [113]	1.5" [39]	1.5" [39]	1.9 lb [0.870 kg]
FM100	25	1"	5.4" [136]	4.9" [125]	5.2" [132]	4.5" [115]	1.5" [39]	1.5" [39]	2.4 lb [1.1 kg]
FM125	32	1 1/4"	5.5" [140]	5.0" [127]	5.6" [141]	4.6" [117]	1.5" [39]	1.5" [39]	2.8 lb [1.3 kg]
FM150	40	1 1/2"	5.6" [143]	5.2" [131]	6.1" [154]	4.8" [122]	1.5" [39]	1.5" [39]	3.7 lb [1.7 kg]
FM200	50	2"	5.9" [149]	5.4" [137]	6.5" [165]	5.0" [127]	1.5" [39]	1.5" [39]	4.6 lb [2.1 kg]