

Flow sensor

- Nominal voltage AC/DC 24 V
- Output voltage DC 0.5...10 V
- 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



Type overview

Type	DN []	Rp ["]	FS [l/s]	Δp [kPa]	PN []
FM015R-SZ	15	1/2	0.42	13	16
FM020R-SZ	20	3/4	0.78	13	16
FM025R-SZ	25	1	1.38	9	16
FM032R-SZ	32	1 1/4	2.16	7	16
FM040R-SZ	40	1 1/2	3.00	7	16
FM050R-SZ	50	2	5.76	16	16

FS: Full scale, maximum measurable flow
 Δp: Pressure drop at FS

Technical data

Electrical data	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...28.8 V / DC 21.6...28.8 V
	Power consumption in operation	0.5 W
	Power consumption for wire sizing	1 VA
Functional data	Connection supply	Cable 1 m, 3 x 0.75 mm ²
	Output voltage range	DC 0.5...10 V
	Output voltage note	DC 0 V = Sensor has no power supply DC 0.3 V = Sensor error DC 0.5 V = 0% of FS DC 10 V = 100% of FS max. load 1 mA
	Media	Cold and warm water, water with glycol up to max. 50% vol.
	Medium temperature	-20...120 °C
	Permissible pressure ps	1600 kPa
	Pipe connector	Internal thread according to ISO 7-1 External thread according to ISO 228-1
	Installation position	Upright to horizontal (in relation to the stem)
	Maintenance	Maintenance-free
	Flow measurement	Measuring principle
Measuring accuracy		±6% of the measured value (20...100% FS)
Measuring accuracy note		±2% of the measured value (20...100% FS) at 20 °C / glycol 0% vol.
Min. flow measurement		1% of FS
Safety	Protection class IEC/EN	III Safety Extra-Low Voltage (SELV)
	Protection class UL	UL Class 2 Supply
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 1, UL Enclosure Type 1
	EMC	CE according to 2014/30/EU
	Mode of operation	Type 1
	Rated impulse voltage supply	0.8 kV
	Control pollution degree	3
	Ambient temperature	0...50 °C
	Non-operating temperature	-40...80 °C

Technical data

Safety	Ambient humidity	95% r.h., non-condensing
Materials	Measuring pipe	Brass body nickel-plated

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.

Product features

Mode of operation The ultrasonic flow sensor is equipped with a flow tube, two flow transmitters and an electronic circuit. A temperature sensor is mounted in the flow tube to compensate the temperature effects.

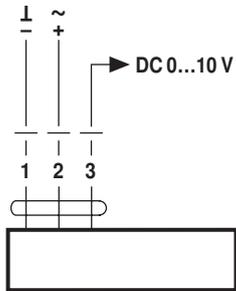
Electrical installation



Notes • Connection via safety isolating transformer.

Wiring diagrams

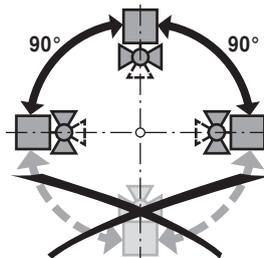
AC/DC 24 V, Output signal



Cable colours:
 1 = black
 2 = red
 3 = white

Installation notes

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

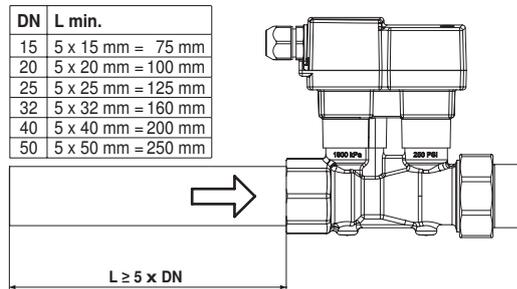


Mounting position in the return Installation in the return is recommended.

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

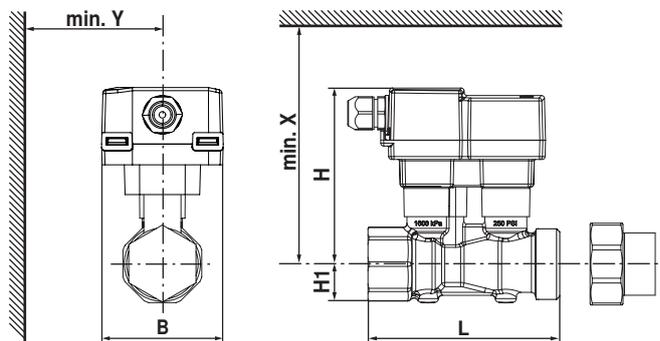
Installation notes

- Maintenance** 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, specified by an arrow on the housing, is to be complied with, since otherwise the flow rate will be measured incorrectly.
- 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.



Dimensions / Weight

Dimensional drawings



Type	DN	Rp	L	B	H	H1	X	Y	Weight
	[]	["]	[mm]	[kg]					
FM015R-SZ	15	1/2	108	75	110	18	77	195	0.5
FM020R-SZ	20	3/4	117	75	112	20	77	195	0.8
FM025R-SZ	25	1	123	75	115	22	77	197	1.0
FM032R-SZ	32	1 1/4	127	75	118	26	77	201	1.8
FM040R-SZ	40	1 1/2	130	75	122	30	77	211	2.3
FM050R-SZ	50	2	136	75	127	35	77	212	3.4