MFM 4500/ MFM 4520

Monitor your flow

Optimize process efficiency

Our flow sensor MFM 4500/ MFM 4520 is based on the thermal mass flow principle.

It measures volumetric standard flow over a wide measuring range. The result is pressure and temperature independent.

Mode of Operation

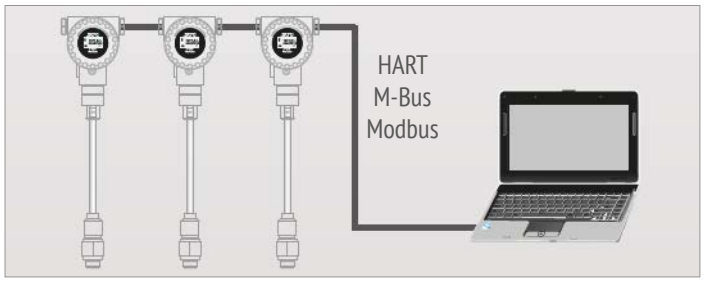
The MFM 4500/ MFM 4520 is designed specifically for harsh environments. The IP67 casing allows all-weather applications.
All parts which come into contact with the measurement medium are made of stainless steel 316L. This allows applications in pharmaceutical and food industry, but also the measurement of corrosive and contaminated gas.

Installations in explosive environments can be done through the optional ATEX approval. Various gases can be measured such as air, oxygen, argon, carbon dioxide, natural gas, hydrogen, methane, etc.. Basically any gas mixture can be measured as long the mixing ratio and its components are known and constant.

Benefits

- Direct measurement of mass flow and standard flow without the need of pressure compensation
- Wide range of tube sizes are supported with insertion type for big pipe diameters and inline types for small pipe diameters
- No moving parts, non clogging
- All parts which come into contact with the measurement medium are made of stainless steel 316L
- Robust metal enclosure suitable for outdoor applications in harsh environment
- Wireless interface for sensor settings on site
- Display showing flow rates, consumption, medium temperature and diagnostic results
- 2 analogue outputs (4 ... 20 mA) and 1 pulse output
- Available options:
  - Fieldbus interface: HART, Modbus
  - Hazardous approval ATEX:: II 2 G Ex d IIC T4
    IECEx
    GB Ex
  - Bi-directional measurement

Communication



Industrial communication through Modbus, M-Bus, HART

Installation

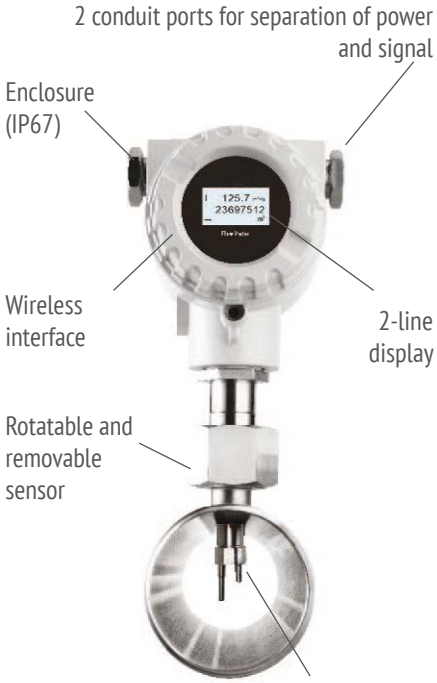
Insertion type installation (MFM 4500) through ball valve

Inline type installation (MFM 4520) through flanges or R thread

MFM 4500/ MFM 4520

At a glance

Benefits of the MFM 4520



All parts in contact with the medium are of stainless steel 316L, no moving parts, low pressure loss.

Technical Data	
Measuring range	0.4 ... 92.7 sm/s (standard range calibration) 0.8 ... 185 sm/s (max range calibration) 1.0 ... 224 sm/s (high speed calibration) (refer to table for flow measurement ranges in different tube diameters) * sm/s: standard meter per second
Accuracy	±(1.5% of reading + 0.3% full scale)
Stated accuracy at	Ambient/process temperature +23°C ±3°C Ambient/process humidity <90%, no condensation Process pressure at 0.6 MPa
Repeatability	0,25% of reading
Response time t95	< 5 seconds
Sampling rate	Display and outputs are refreshed every 200 msec
Tube diameter	Insertion type: DN15 ... DN1500 Inline type: DN15 ... DN80
Process connection	Insertion type: ½" G type thread (ISO 228-1) In-Line-Version: R thread (ISO 7-1), Flange EN 1092-1, ANSI / B16.5, JIS B2220
Medium	Any gases where the components and the mixing ration are constant and known. Standard gases: Air, CO2, O2, N2, Ar, N2O, H2, He
Operating temperature	-40°C ... +150°C (medium temp. insertion type) -40°C ... +100°C (medium temp. inline type) -40°C ... +65°C (ambient temperature)
Operating pressure	MFM 4500: 0... 1.6 MPa / MFM 4520: 0... 4.0 MPa
Analogue output	2 x 4 ... 20 mA, up to 400 R load, active/passive selectable, measurement channel selectable, scaling programmable
Pulse/Alarm output	Either alarm or pulse output. 1 pulse per 1, 10 or 100 consumption units, Alarm programmable
Power supply	16-30 VDC, 5 W
Enclosure	IP67
Sensor material	Stainless steel 1.4404 (SUS 316L)
Approvals	CE, RoHS ATEX : II 2 G Ex d IIC T4 / GB3836 / IECEx(Optional)
Fieldbus (Optional)	Modbus/RTU HART

Inch	DN	S-Version (m3/h)	M-Version (m3/h)	HS-Version (m3/h)
½"	DN15	0.2 ... 45.6	0.4 ... 91.0	0.48 ... 110.16
¾"	DN20	0.4 ... 89.1	0.9 ... 177.8	1.09 ... 215.3
1"	DN25	0.6 ... 147.7	1.2 ... 294.7	1.82 ... 356.85
1½"	DN40	1.5 ... 366.7	2.9 ... 731.9	4.36 ... 886.18
2"	DN50	2.4 ... 600	4.8 ... 1198	7.26 ... 1450.04
2½"	DN65	4.1 ... 1027	8.2 ... 2049	12.1 ... 2480.44
3"	DN80	5.7 ... 1424	11.4 ... 2841	16.94 ... 3441.91
4"	DN100	8.7 ... 2183	17.4 ... 4357	24.2 ... 5275.71
5"	DN125	20 ... 3419.6	38 ... 6824.4	45.9 ... 8263.09
6"	DN150	20 ... 4930	39 ... 9839	70.18 ... 11913.10
8"	DN200	35 ... 8786	70 ... 17533	106.48 ... 21229.51
10"	DN250	55 ... 13744	110 ... 27429	165.77 ... 33210.69
12"	DN300	79 ... 19815	158 ... 39544	239.58 ... 47880.39

Stated measuring ranges under following conditions:
- Standard flow in air
- Reference pressure: 1000 hPa
- Reference Temperature: +20°C

At other standard conditions and in other gases flow ranges are different and data are available on request.
In larger pipe diameters flow can also be measured.

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Flexible sensor head

Turnable in 90° steps

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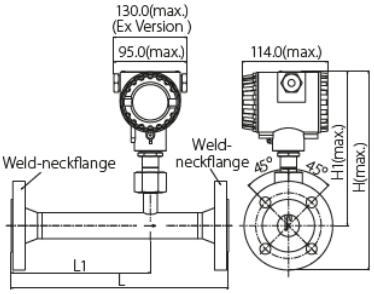
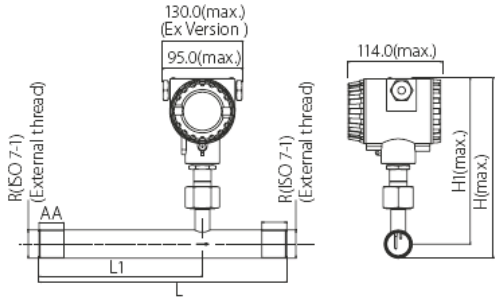
MFM 4520 Flange Type



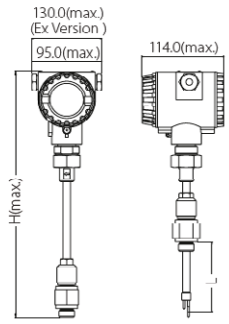
Pipe nominal size Inch / (DN)	L total length (mm)	L1 inlet length (mm)	H total height (mm)	H1 from pipe center to casing top (mm)
½"(DN15)	300	210	247.65	200.15
¾" (DN20)	475	275	252.65	200.15
1"(DN25)	475	275	257.65	200.15
1¼"(DN32)	475	275	270.15	200.15
1½"(DN40)	475	275	275.15	200.15
2"(DN50)	475	275	282.65	200.15
2½"(DN65)	475	275	300.55	208.05
3"(DN80)	475	275	314.45	214.45

MFM 4520 Thread Type



Pipe nominal size inch / (DN)	L total length (mm)	L1 inlet length (mm)	H total height (mm)	H1 from pipe center to casing top (mm)	External Thread
½"(DN15)	300	210	210.8	200.15	1/2"
¾"(DN20)	475	275	213.6	200.15	R3/4"
1"(DN25)	475	275	217.0	200.15	R1"
1¼"(DN32)	475	275	221.35	200.15	R1¼"
1½"(DN40)	475	275	224.3	200.15	R1½"
2"(DN50)	475	275	230.3	200.15	R2"

MFM 4500



Shaft option	L (mm)	H (mm)
A	220	469
B	160	409
C	300	549