

По вопросам продаж и поддержки обращайтесь:

Архангельск (8182)63-90-72	Краснодар (861)203-40-90	Рязань (4912)46-61-64
Астана (7172)727-132	Красноярск (391)204-63-61	Самара (846)206-03-16
Белгород (4722)40-23-64	Курск (4712)77-13-04	Санкт-Петербург (812)309-46-40
Брянск (4832)59-03-52	Липецк (4742)52-20-81	Саратов (845)249-38-78
Владивосток (423)249-28-31	Магнитогорск (3519)55-03-13	Смоленск (4812)29-41-54
Волгоград (844)278-03-48	Москва (495)268-04-70	Сочи (862)225-72-31
Вологда (8172)26-41-59	Мурманск (8152)59-64-93	Ставрополь (8652)20-65-13
Воронеж (473)204-51-73	Набережные Челны (8552)20-53-41	Тверь (4822)63-31-35
Екатеринбург (343)384-55-89	Нижний Новгород (831)429-08-12	Томск (3822)98-41-53
Иваново (4932)77-34-06	Новокузнецк (3843)20-46-81	Тула (4872)74-02-29
Ижевск (3412)26-03-58	Новосибирск (383)227-86-73	Тюмень (3452)66-21-18
Казань (843)206-01-48	Орел (4862)44-53-42	Ульяновск (8422)24-23-59
Калининград (4012)72-03-81	Оренбург (3532)37-68-04	Уфа (347)229-48-12
Калуга (4842)92-23-67	Пенза (8412)22-31-16	Челябинск (351)202-03-61
Кемерово (3842)65-04-62	Пермь (342)205-81-47	Череповец (8202)49-02-64
Киров (8332)68-02-04	Ростов-на-Дону (863)308-18-15	Ярославль (4852)69-52-93

Единый адрес: btk@nt-rt.ru **Веб-сайт:** www.burkert.nt-rt.ru

РАСХОДОМЕРЫ ЖИДКОСТИ И ГАЗА







Mass flow controller (MFC)/ Mass flow meter (MFM) for liquids

- Flow measurement / control up to 25 kg/h
- Very high accuracy and measuring range
- High long-term stability, no zero-point adjustment necessary
- Highly resistant materials in contact with the medium
- Suitable for numerous liquids

Product variants described in the data sheet may differ from the product presentation and description.

Can be combined with

	Type KF01 ▶
	Type ME63 ▶ Industrial Ethernet gateway, IP65/ IP67/ IP69k
	Type ME43 ▶ Fieldbus gateway
	Type 2871 ▶ Direct-acting 2-way standard solenoid control valve
	Type 2873 ▶ Direct-acting 2-way standard solenoid control valve

Type description

The mass flow controller (MFC) / mass flow meter (MFM) Type 8756 is particularly suitable for the very precise measurement or control of small quantities of liquid that also require a medium-separated sensor.

The measuring principle of the sensor is based on the Coriolis effect and is completely independent of the medium. Pressure and temperature deviations have no impact on the measuring accuracy.

In addition to the flow rate, the density and temperature of the liquid are measured. The device design enables a stable flow measurement that is immune to external impacts and does not require a zero-point adjustment when the process conditions change. All materials that come into contact with the medium are highly resistant and enable use with a variety of liquids, whether aggressive or neutral media.

Type 8756 is available in the variants

- MFM
- MFC with an interface for a modular actuator
- MFC with integrated proportional valve
- MFC with integrated micro annular gear pump.

The high-precision pump is self-priming and the space in contact with the medium is sealed hermetically.

It offers a very large control range and generates extremely low pulsations. This variant is used as a control or dosing system for liquids which have to be conveyed from an unpressurised container.

1. General Technical Data






Product properties	
Dimensions	Detailed information can be found in chapter "4. Dimensions" on page 5.
Material¹⁾	
Housing	Aluminium
Body (wetted)	Stainless steel 1.4404 / 316L (optionally with inspection certificate 3.1 according to EN 10204)
Sensor (wetted)	Stainless steel 1.4404 / 316L
Actuator (wetted)	Detailed information can be found in the section actuator.
Seals (wetted)	FFKM, Metal or PCTFE
Cleaning / Sterilisation (MFM version only) ²⁾	With seal material FFKM or metal: Hot water (up to 90°C) With seal material FFKM: hot water (up to 90°C) and steam (up to 130°C)
Configuration memory	Industrial µSIM card for easy device replacement
Total mass	> 2 kg
LED display ³⁾	RGB-LED based on NAMUR NE107
Software	Bürkert Communicator (details see "8.2. Software Bürkert Communicator" on page 16)
Performance data	
Maximum flow rate	25 kg/h ⁴⁾
Nominal flow rate Q_{Nom}⁵⁾	
MFM	Factory setting: 25 kg/h (can be reduced to a minimum of $Q_{Nom} = 1$ kg/h)
MFC with modular actuator interface	Factory setting: 25 kg/h (can be reduced to a minimum of $Q_{Nom} = 1$ kg/h)
MFC with proportional valve Type 2873	Factory setting: 25 kg/h (can be reduced to a minimum of $Q_{Nom} = 4$ kg/h)
MFC with pump	Factory setting: 8 kg/h (higher Q_{Nom} on request; can be reduced to a minimum of $Q_{Nom} = 2$ kg/h)
Minimum measurable flow rate	Factory setting: 0.05 kg/h (can be reduced to a minimum of 0,01 kg/h)
Maximum measuring range	1:500; measuring range depends on the set nominal flow rate Q_{Nom} , see "6. Performance specifications" on page 12.
Maximum operating pressure (MFM)	100 bar(g) (for MFM with FFKM or PCTFE seals and port connection with G/NPT thread / otherwise 50 bar)
Accuracy (flow)	±0.2 % o.R. ±0.0014 kg/h
Repeatability (flow)	±0.1 % o.R. ±0.0007 kg/h
Accuracy (density)	±0.01 kg/l (with flow > 1.5 kg/h)
Repeatability (density)	±0.005 kg/l (with flow > 1.5 kg/h)
Accuracy (temperature)	±1.0 K (with flow > 1.5 kg/h)
Repeatability (temperature)	±0.5 K (with flow > 1.5 kg/h)
Response time (MFM) ($t_{95\%}$)	< 750 ms
Settling time (MFC) ($t_{95\%}$)	< 1 s (depending on version)
Leak integrity to the outside	< 10 ⁻⁶ mbar * l/s He (depending on seal material)
Actuator	
Micro annular gear pump Type 7620	
Smallest flow rate of the pump	50 µl
Differential pressure of the pump	0...10 bar (Inlet pressure should be ≤ 5 bar(g), to avoid high leakage via the pump)
Wetted parts	Stainless steel 1.4404 / 316L and 1.4462 / 318LN, Carbide (Ni based), Epoxy resin
Proportional valve Type 2873	
Nominal diameter	0.8 mm
Pressure range	Inlet pressure ≤ 5 bar(g)
Wetted parts	Stainless steel 1.4404 / 316L, 1.4305 / 303, 1.4310 / 301 und 1.4303 / 305L, FFKM
Further control valves	
In the modular version, any control valve can be controlled via the additional actuator output using a PWM signal (e.g. proportional valve Type 2871 or Type 2873). The integrated PI controller must be parameterised accordingly before commissioning (e.g. using Bürkert Communicator).	
Electrical data	
Operating voltage	24 V DC
Voltage tolerance	± 10 %
Power consumption	< 5 W (as MFM) < 14 W (as MFC with proportional valve Type 2873) < 50 W (as MFC with pump)

Residual ripple	± 10 % (for version with connected proportional valve ± 2 %)
Media data	
Operating medium	Any neutral and aggressive liquids (chemical resistance of wetted parts assumed)
Calibration medium	Water
Medium temperature	- 10 °C...70 °C (as MFC: max. 60°C)
Viscosity (dynamic)	> 0.3 mPas (for version with pump: max. 200 mPas; for version with proportional valve: max. 40 mPas)
Process/Port connection & communication	
Process connection	G 1/8, NPT 1/8, VCR 1/8, VCR 1/4, compression fitting (1/8, 1/4, 4 mm, 6 mm)
Electrical connection (options)	
CANopen or CANopen-based bus	1x M12 plug, 5 pin
Analogue	0...20 mA, 4...20 mA 0...5 V, 0...10 V: 1x M12 plug, 5 pin, 1x M12 socket, 5 pin
Industrial Ethernet	Planned, information on request
Environment and installation	
Ambient temperature	0...50 °C (deviating temperature ranges on request)
Installation position	Any (optimum installation position to avoid trapped gas bubbles is horizontally overhead or vertically with flow upwards)
Protection class	IP65 and IP67; for MFC with pump: IP40
1.) The formulations of the components in contact with the medium do not contain any silicone components 2.) For 30 min. with the appliance unpowered, followed by a cooling time of 2 hours 3.) Exact description of the LED colours: see operating instructions 4.) For highly viscous media this value may not be achieved 5.) For MFC: To use the Autotune function Q_{Nom} must be adjusted to the real achievable flow rate value	

2. Approvals

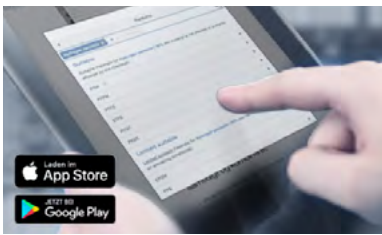
Note:

- Approvals and conformities listed below must be stated when making enquiries. This is the only way to ensure that the product complies with all prescribed properties.
- Not all available instrument versions can be supplied with the below approvals or conformities.

Approvals	Description
	Conformity of all wetted materials USP Class VI chapter „87 in vitro“ and „88 in vivo, Implantation“
	Conformity of all wetted materials FDA – Code of Federal Regulations Title 21 Paragraph 177 (CFR 21 177.2600)
	Conformity of all wetted materials Regulation (EG) No. 1935/2004 about materials and articles intended to come into contact with foodstuffs
	Planned: Explosion protection ATEX/ IECEx: Zone 2, Cat. 3 G/D
	

3. Materials

3.1. Chemical Resistance Chart – Bürkert resistApp



Bürkert resistApp – Chemical Resistance Chart

You want to ensure the reliability and durability of the materials in your individual application case? Verify your combination of media and materials on our website or in our resistApp.

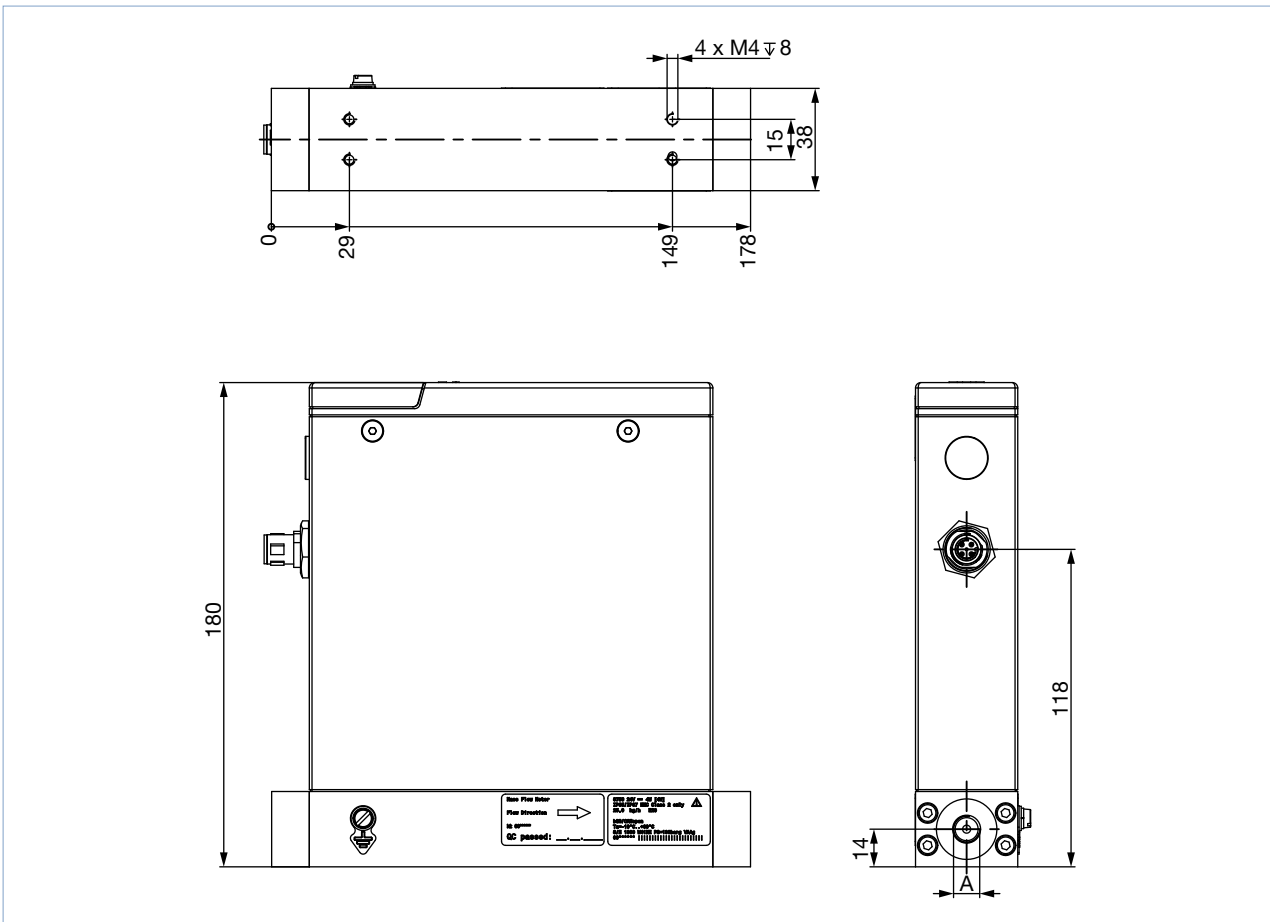
Start Chemical Resistance Check

4. Dimensions

4.1. MFM version (büS)

Note:

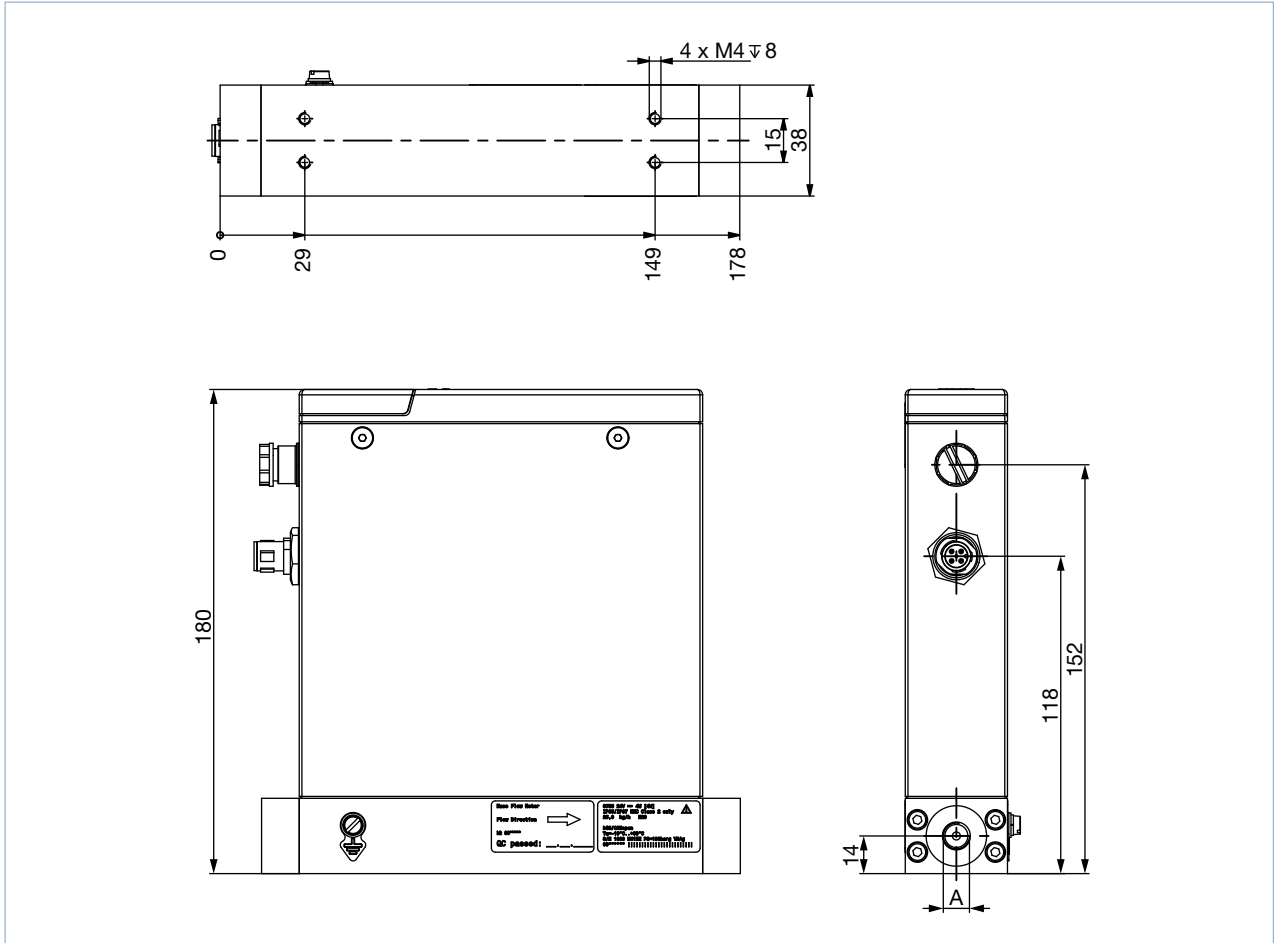
- Dimensions in mm
- Shown connection: G $\frac{1}{8}$ (A)



4.2. MFM version (analogue)

Note:

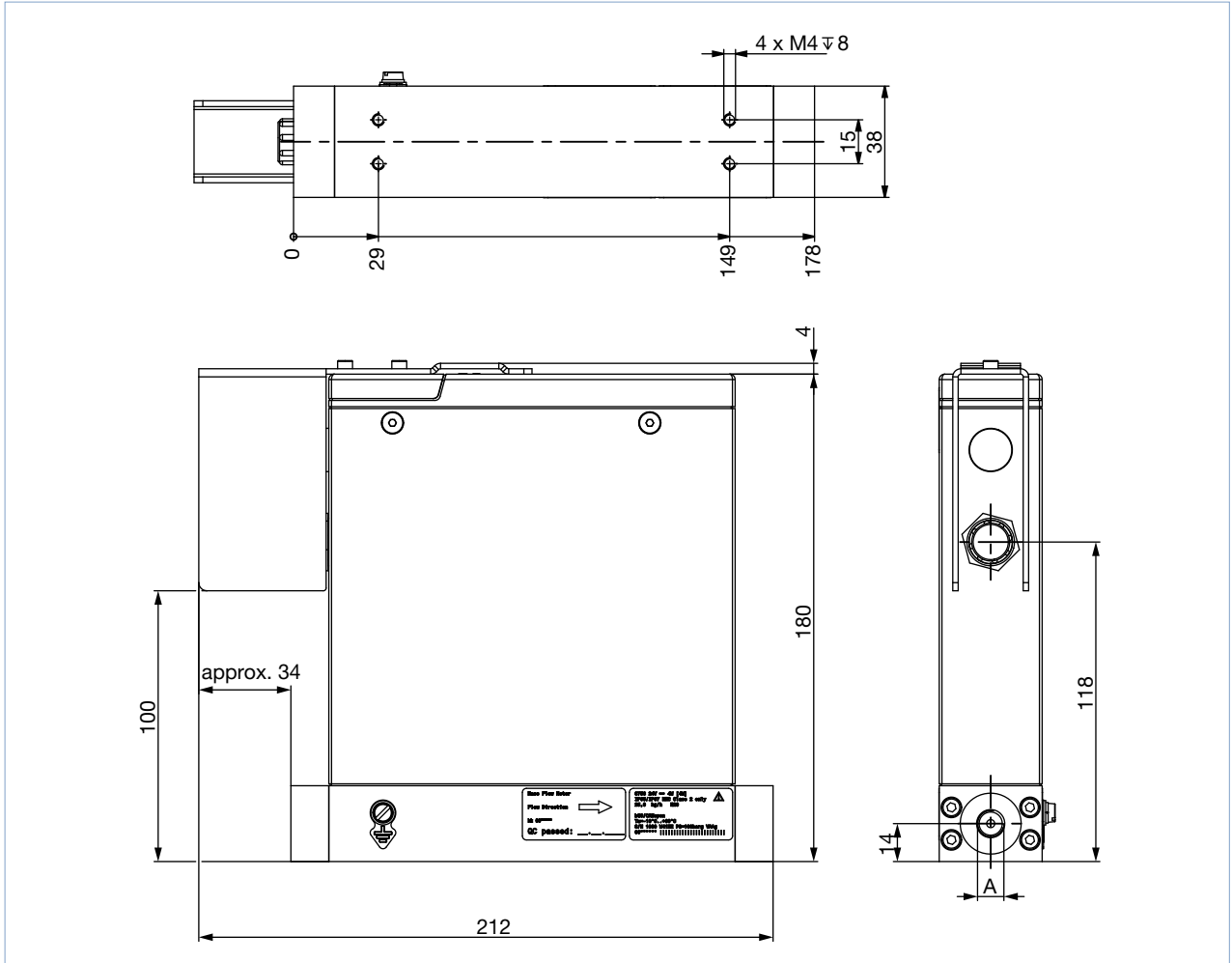
- Dimensions in mm
- Shown connection: G $\frac{1}{8}$ (A)



4.3. MFM version (ATEX conformity)

Note:

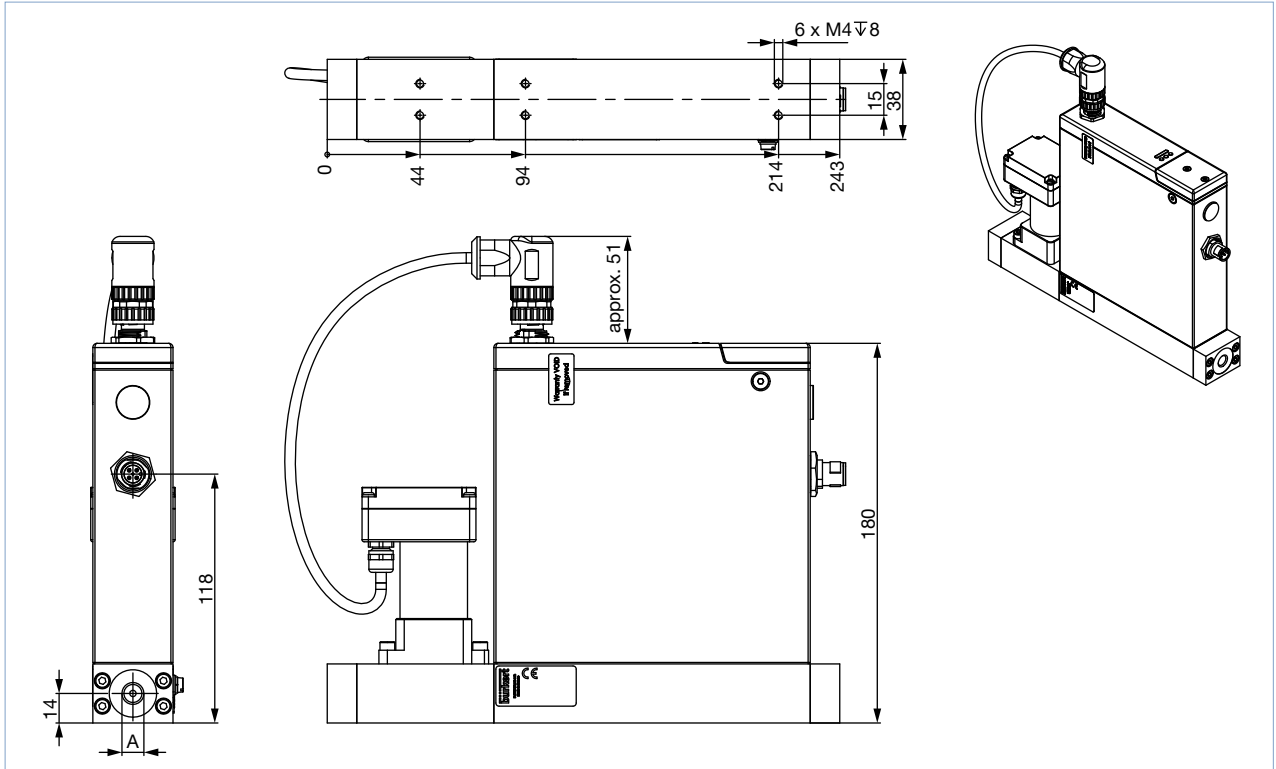
- Dimensions in mm
- Shown connection: G $\frac{1}{8}$ (A)



4.4. MFC with micro annular gear pump Type 7620

Note:

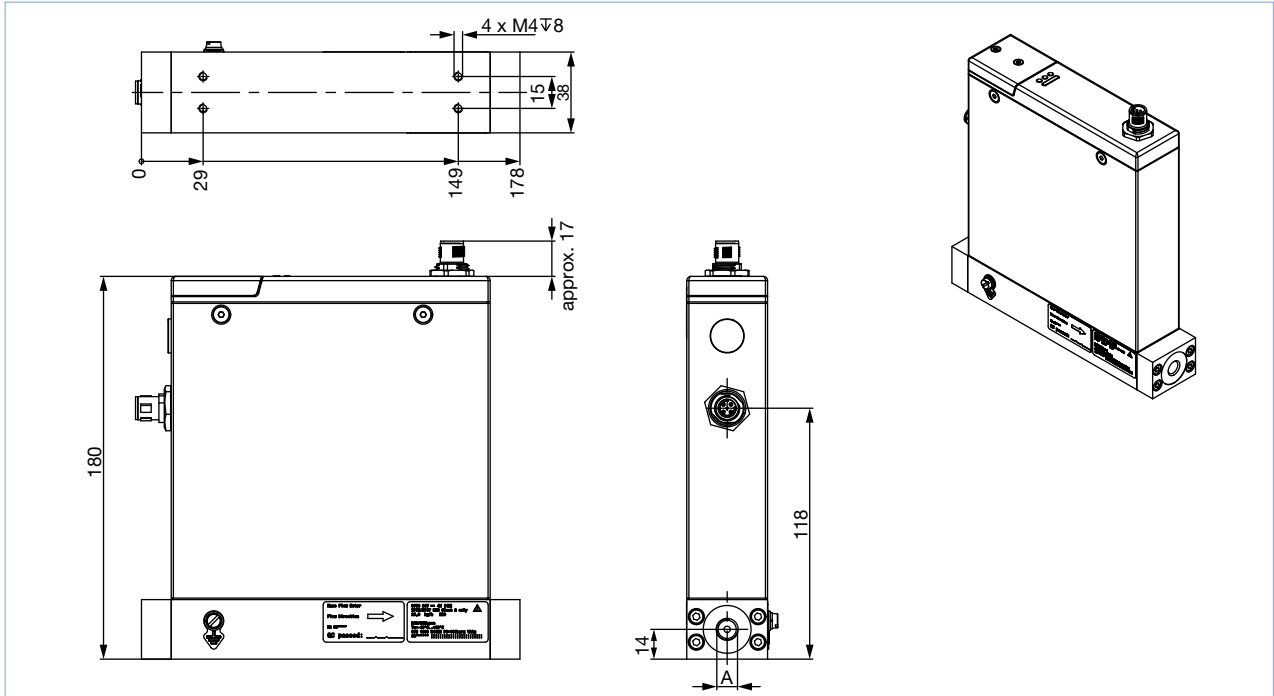
- Dimensions in mm
- Shown connection: G $\frac{1}{8}$ (A)



4.5. MFC with modular actuator interface

Note:

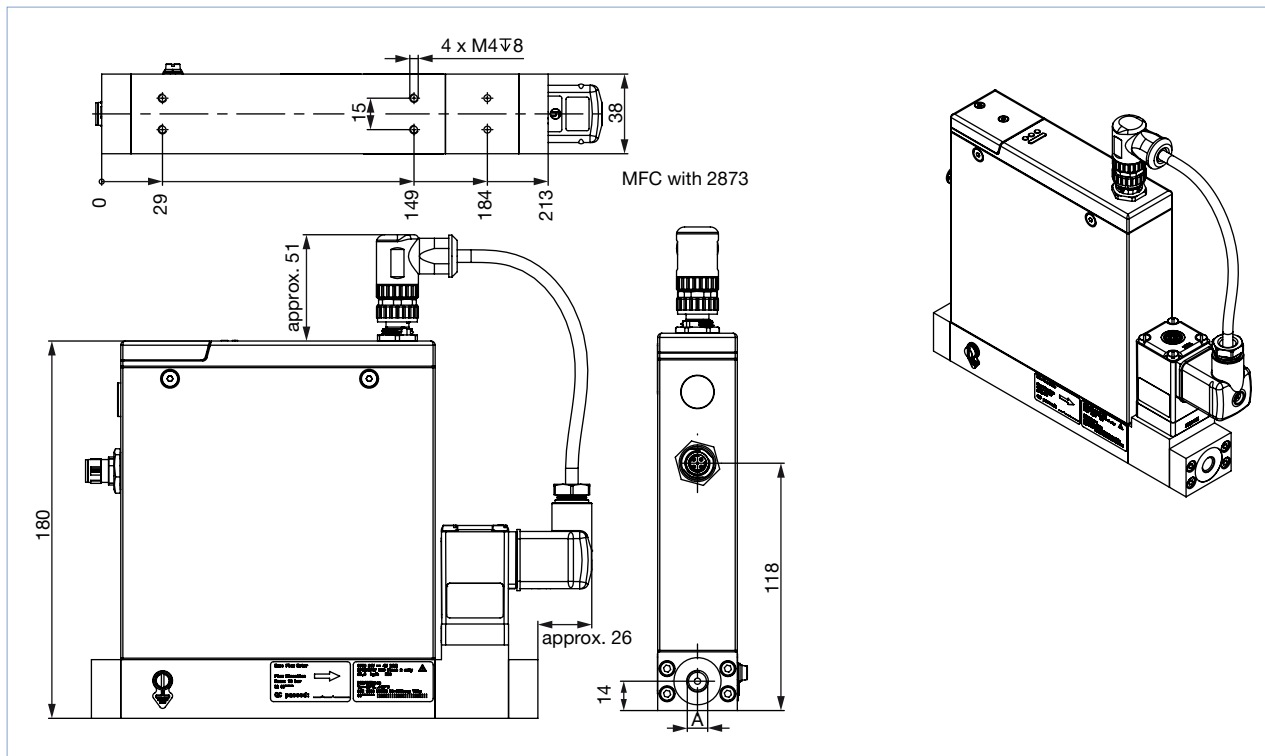
- Dimensions in mm
- Shown connection: G $\frac{1}{8}$ (A)



4.6. MFC with integrated proportional valve Type 2873 DN0.8

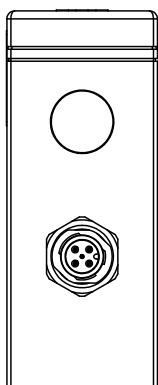
Note:

- Dimensions in mm
- Shown connection: G $\frac{1}{8}$ (A)



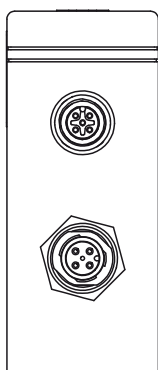
5. Device/Process connections

5.1. CANopen or CANopen-based büS



M12 plug, 5 pin (A-coded)	Pin	Assignment
	1	SHIELD
	2	24 V
	3	DGND
	4	CAN_H
	5	CAN_L

5.2. Analogue



M12 socket, 5 pin (A-coded)	Pin	Assignment
	1	Digital input GND
	2	Digital input +
	3	Relay, Reference contact
	4	Relay, normally closed contact (Break contact)
	5	Relay normally open contact (Make contact)

M12 plug, 5 pin (A-coded)	Pin	Assignment
	1	Set value input GND (not connected for MFM)
	2	24 V
	3	GND
	4	Set value input (not connected for MFM)
	5	Analogue output for the measured value

For MFC with modular actuator interface additionally:

Note:

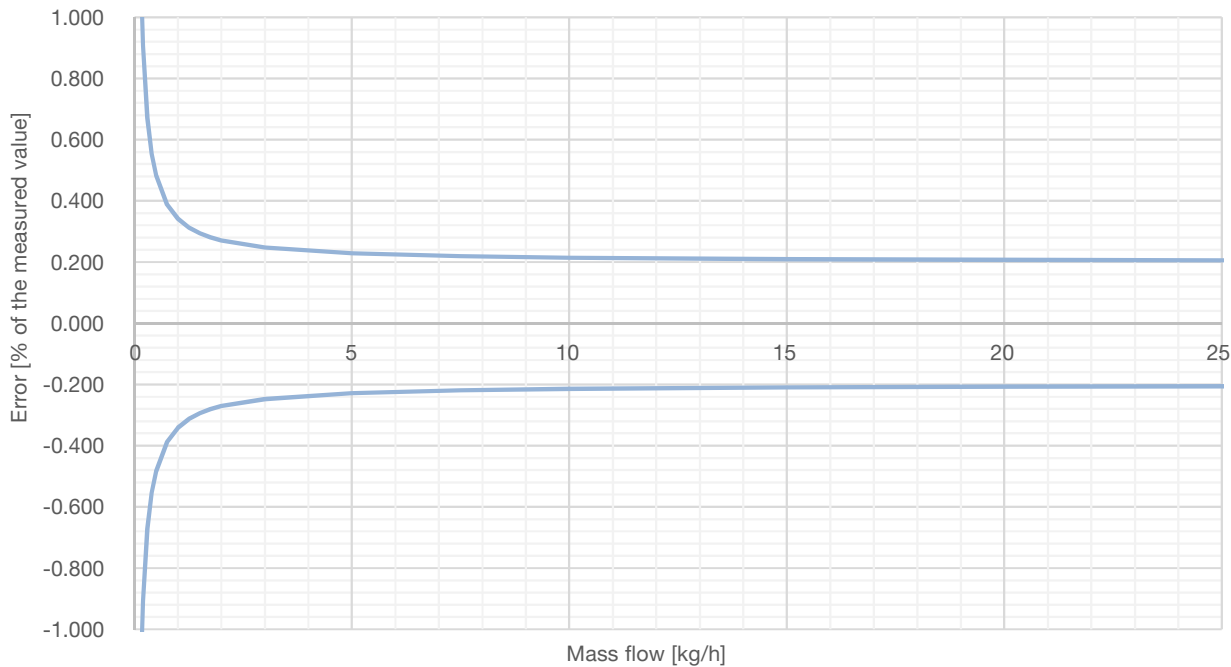
External actuators (e.g. proportional valves) can be connected directly to Type 8756 via the modular actuator interface. Thus, a closed control loop with sensor, actuator and integrated PI controller can be realised in a modular way. Before initial commissioning, the PI controller must be parameterised accordingly. The Bürkert Communicator with its simple commissioning script can be used for this purpose.

M12 socket, 8 pin (A-coded)	Pin	Assignment
	1	24V
	2	GND
	6	PWM (open collector)
	7	Do not connect (internal use)
	3, 4, 5, 8	Not used

6. Performance specifications

6.1. Flow accuracy diagram of the MFM

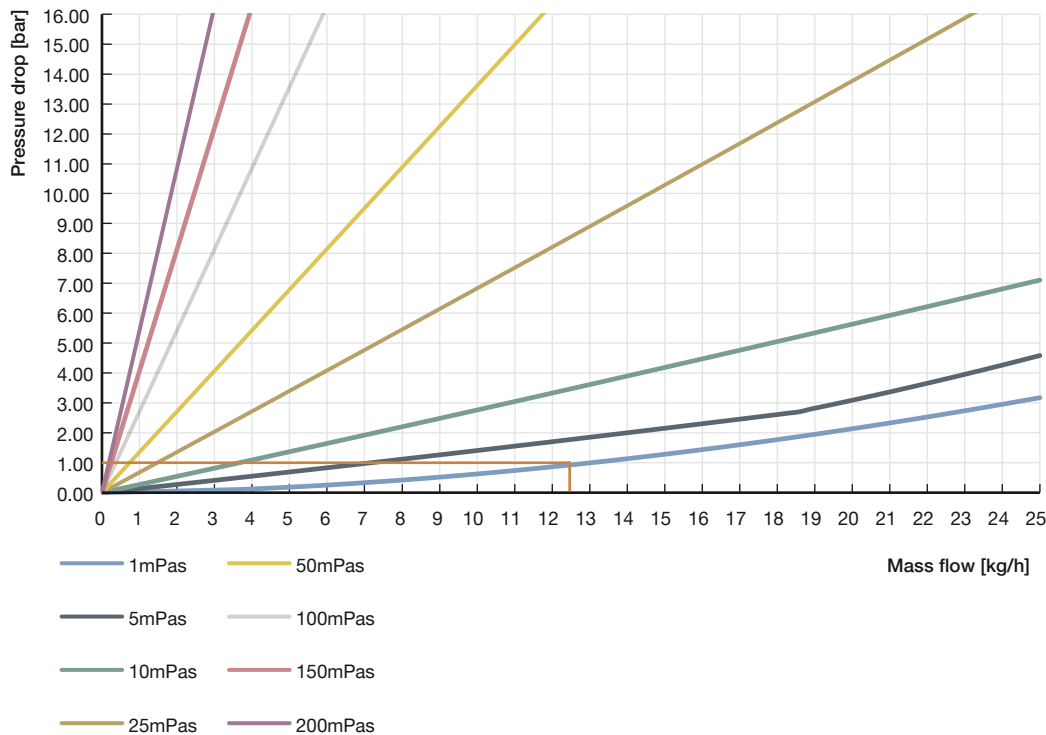
The permissible measuring error is $\pm 0.2\%$ of the measured value ± 0.0014 kg/h.
For the permissible error in % of the measured value this results in:



6.2. Pressure loss diagram of the MFM

The diagram shows pressure loss curves across the sensor at different viscosities. As an example, the pressure loss when flowing through with 12.5 kg/h water at 20°C (dyn. viscosity 1 mPas) is approx. 1 bar.

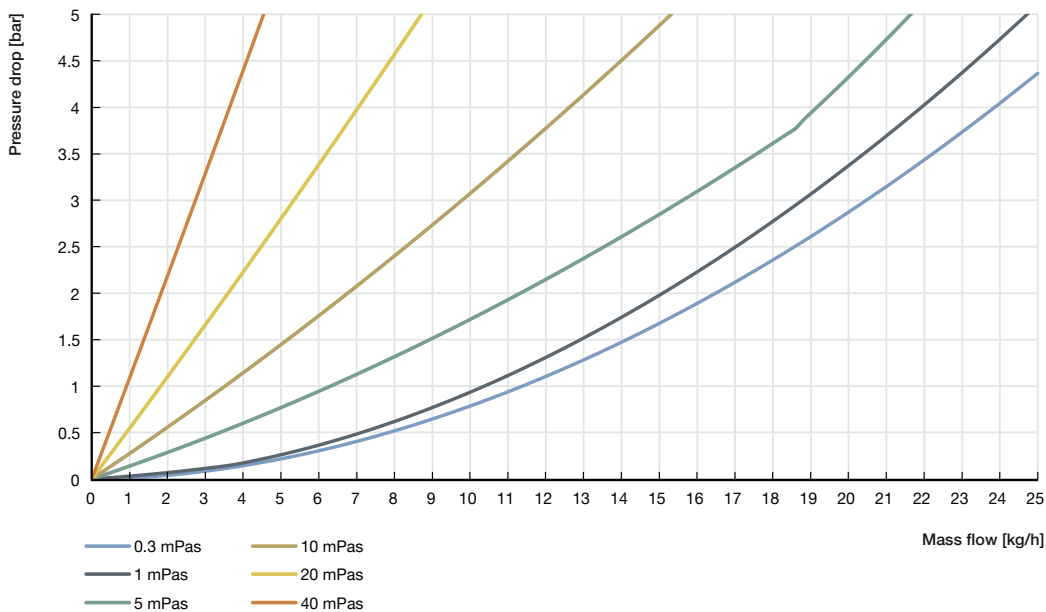
Pressure drop as a function of the dyn. viscosity



6.3. Pressure loss of the MFC with integrated proportional valve

The diagram shows pressure loss curves over the sensor and the proportional valve Type 2873 DN0.8 at different viscosities.

Pressure drop as a function of the dyn. viscosity

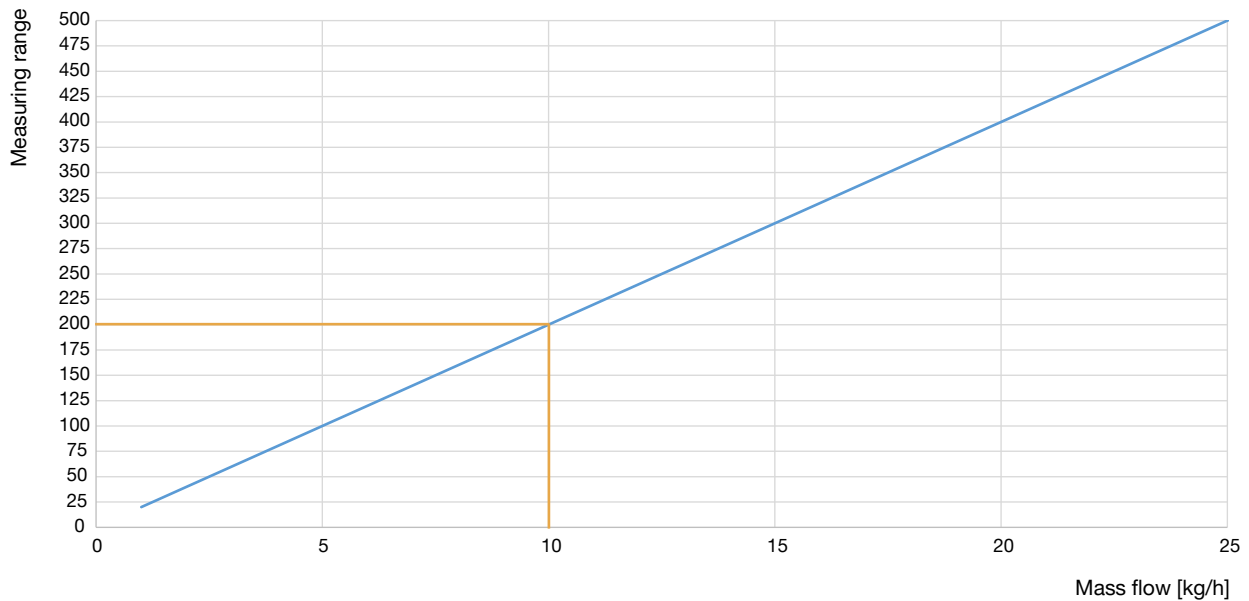


DTS 1000437263 EN Version: H Status: RL (released | freigegeben | validé) printed: 07.05.2021

6.4. Measuring range diagram of the MFM

Note:

Therefore, at a reduced nominal flow rate $Q_{Nom}=10$ kg/h, the measuring span is 1:200



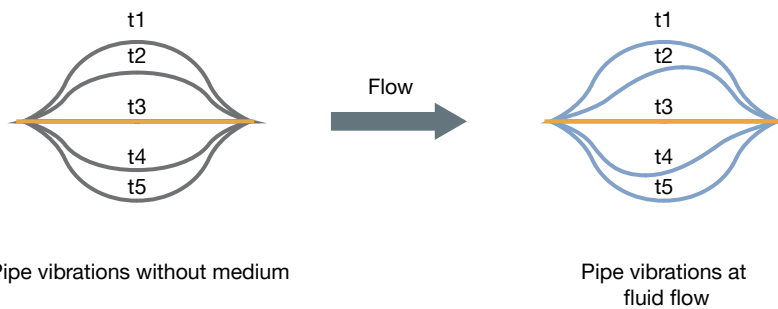
7. Product operation

7.1. Measuring principle

The measuring principle of this flow sensor is based on the unique Coriolis effect.

The core of the measuring system is a thin S-shaped measuring tube, which is set in vibration by an external exciter coil and can vibrate freely between two fixed points. If a liquid flows through the high-frequency vibrating measuring tube, the Coriolis force acts on the medium and leads to a change in the tube vibration (see figure). This change (phase shift) is dependent on the mass flow of the medium and is directly proportional to it. With the help of sensors, the pipe vibrations are continuously recorded and electronically evaluated.

In addition to the flow rate, information on the density and temperature of the medium is also available as further values.



t1...t5 deflections of the measuring tube at the respective point in time

8. Product accessories

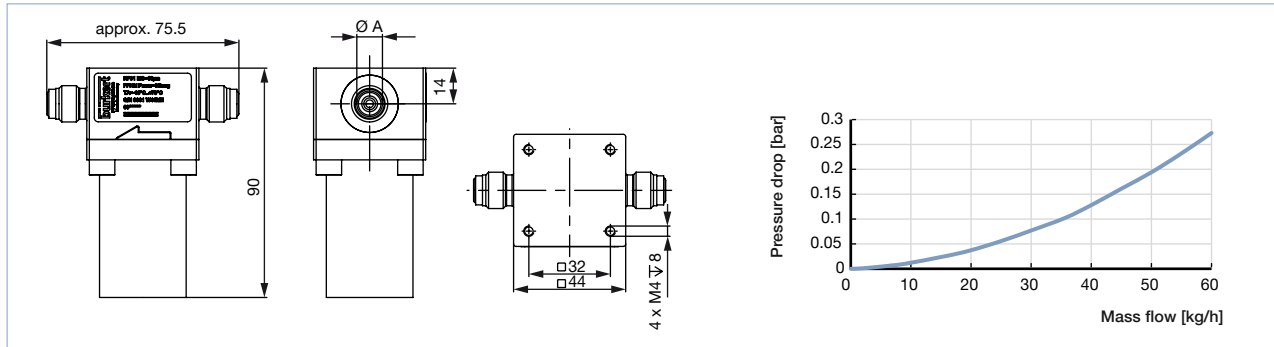
8.1. Accessory

Medium filter

To avoid contamination in narrow areas of the devices, close-meshed filters can be installed in front of them. The design of the filters allows the filter insert to be replaced without having to remove the complete filter from the pipeline.

The mesh size of the standard filter insert is 10 µm, the pressure drop reaches 30 mbar at 20 kg/h (water at 20 °C).

All parts in contact with the medium are made of stainless steel 1.4404 (316L comparable). This filter is available in different versions: soft or hard sealing, different line connections.



Note:

Metal seals cannot be replaced in the field.

Port connections	Seal material	Article no.
VCR 1/8	FFKM	573992
VCR 1/4	FFKM	573993
Compression fitting, for 4 mm tube	FFKM	573996
Compression fitting, for 6 mm tube	FFKM	573997
Compression fitting, for 1/8 inch tube	FFKM	573994
Compression fitting, for 1/4 inch tube	FFKM	573995
VCR 1/8	Metal ring (silver-coated)	573986
VCR 1/4	Metal ring (silver-coated)	573987
Compression fitting, for 4 mm tube	Metal ring (silver-coated)	573990
Compression fitting, for 6 mm tube	Metal ring (silver-coated)	573991
Compression fitting, for 1/8 inch tube	Metal ring (silver-coated)	573988
Compression fitting, for 1/4 inch tube	Metal ring (silver-coated)	573989

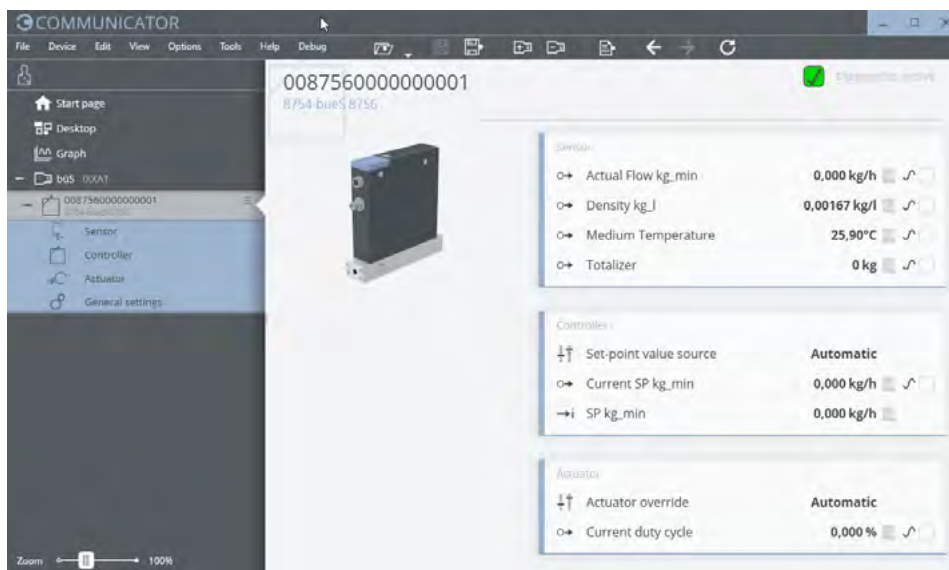
8.2. Software Bürkert Communicator

Note:

To install the software, click [here](#) ►.

Part of Bürkert's new EDIP program (Efficient Device Integration Platform) is the Bürkert Communicator. This software can be run under MS-Windows and it is available on Bürkert's website for free. The Bürkert Communicator allows convenient system configuration and parametrisation of all connected field devices. An accessory part, the büS stick serves as the interface between computer and process instruments (see "9.5. Ordering chart accessories" on page 18). It transfers "USB data" to "CAN data". The Communicator allows:

- Diagnosis
- Parametrization (e.g. setting the min./max. flow rates or, in case of modular design, setting the valve control)
- Registration and storage of process data
- To watch graph of process
- To update firmware of the devices connected
- Guided commissioning scripts



9. Ordering information

9.1. Bürkert eShop – Easy ordering and quick delivery



Bürkert eShop – Easy ordering and fast delivery

You want to find your desired Bürkert product or spare part quickly and order directly? Our online shop is available for you 24/7. Sign up and enjoy all the benefits.

[Order online now](#)

9.2. Recommendation regarding product selection

Note:

Please use the “**Product Inquiry Form**” at the end of this document for the device design details and send us a copy of the inquiry with information about the application.

For optimum design of the actuator in the MFC (nominal valve size), the pressure values immediately before and after the MFC (p_1 , p_2) at the Q_{Nom} flow rate should be known in addition to the required maximum Q_{Nom} flow rate. These are generally not identical with the inlet and outlet pressure of the entire system, because there are usually additional flow resistances (pipelines, additional shut-off valves, nozzles, etc.) both upstream and downstream of the MFC.

In the “**Product Inquiry Form**” at the end of this document, the pressure values immediately before and after the MFC must always be indicated. If these are not known or accessible by measurement, an estimate must be made taking into account the approximate pressure drops across the flow resistances before and after the MFC at Q_{Nom} . The specification of the maximum expected inlet pressure p_{1max} is necessary to ensure the leak-tight function of the actuator in all operating conditions.

9.3. Bürkert product filter



Bürkert product filter – Get quickly to the right product

You want to select products comfortably based on your technical requirements? Use the Bürkert product filter and find suitable articles for your application quickly and easily.







[Try out our product filter](#)

9.4. Ordering chart

Note:

Other versions on request

























Version	Seal material	Port connection	Article no.	
			büS/CAN-open	4...20 mA
Mass Flow Meter	Stainless steel	G 1/8	371787	374113
Mass Flow Meter	Stainless steel	VCR 1/4	378460	378502
Mass Flow Meter	Stainless steel	Compression fitting for 4 mm pipe	374105	374121
Mass Flow Meter	Stainless steel	Compression fitting for 6 mm pipe	379565	379885
Mass Flow Meter	Stainless steel	Compression fitting for 1/8 inch pipe	379642	379887
Mass Flow Meter	Stainless steel	Compression fitting for 1/4 inch pipe	379773	379946
Mass Flow Meter	FFKM	G 1/8	374108	374122
Mass Flow Meter	FFKM	VCR 1/4	378501	378506
Mass Flow Meter	FFKM	Compression fitting for 4 mm pipe	374112	374128
Mass Flow Meter	FFKM	Compression fitting for 6 mm pipe	379836	379950
Mass Flow Meter	FFKM	Compression fitting for 1/8 inch pipe	379882	379954
Mass Flow Meter	FFKM	Compression fitting for 1/4 inch pipe	379884	379964
Mass Flow Controller with pump	FFKM	G 1/8	376743	378450
Mass Flow Controller with pump	FFKM	VCR 1/4	378427	378452
Mass Flow Controller with pump	FFKM	Compression fitting for 6 mm pipe	378429	378454
Mass Flow Controller modular	FFKM	G 1/8	389134	391155
Mass Flow Controller modular	FFKM	VCR 1/4	389147	391169
Mass Flow Controller modular	FFKM	Compression fitting, for 4 mm tube	389162	391174
Mass Flow Controller modular	FFKM	Compression fitting, for 6 mm tube	389176	391176
Mass Flow Controller modular	FFKM	Compression fitting, for 1/8 inch tube	389177	391178
Mass Flow Controller modular	FFKM	Compression fitting, for 1/4 inch tube	389178	391182
Mass Flow Controller with proportional valve	FFKM	G 1/8	20001921	574077
Mass Flow Controller with proportional valve	FFKM	VCR 1/4	574071	574078
Mass Flow Controller with proportional valve	FFKM	Compression fitting, for 4 mm tube	574073	574080

Mass Flow Controller with proportional valve	FFKM	Compression fitting, for 6 mm tube	574074 	574081 
Mass Flow Controller with proportional valve	FFKM	Compression fitting, for 1/8 inch tube	574075 	574082 
Mass Flow Controller with proportional valve	FFKM	Compression fitting, for 1/4 inch tube	574076 	574083 

9.5. Ordering chart accessories

Note:

- A büS stick is required to connect the MFC / MFM with the “Bürkert Communicator” software tool. It is connected via the micro USB socket on the device (büS stick set 2 contains the necessary accessories).
- Please note: The interface to our software tool “Bürkert Communicator” is based on CANopen. A corresponding bus termination is mandatory. Therefore please activate the switchable terminating resistor on the büS stick.

Description	Article no.
General accessories	
Power supply Type 1573 for rail mounting, 100...240 V AC / 24 V DC, 1.25 A, NEC Class 2 (UL 1310)	772438 
Power supply Type 1573 for rail mounting, 100...240 V AC / 24 V DC, 1 A, NEC Class 2 (UL 1310)	772361 
Power supply Type 1573 for rail mounting, 100...240 V AC / 24 V DC, 2 A, NEC Class 2 (UL 1310)	772362 
Power supply Type 1573 for rail mounting, 100...240 V AC / 24 V DC, 4 A	772363 
büS-Stick Set 1 (incl. cable (M12 and Micro-USB) Stick with integrated terminating resistor, power supply and software)	772426 
büS-Stick Set 2 (incl. cable (M12 and Micro-USB) Stick with integrated terminating resistor)	772551 
Configuration memory (Industrial µSim-Card)	On request
Software Bürkert Communicator	Download from www.burkert.com
CANopen/büS	
büS cable extension M12 0.1 m	772492 
büS cable extension M12 0.2 m	772402 
büS cable extension M12 0.5 m	772403 
büS cable extension M12 1 m	772404 
büS cable extension M12 3 m	772405 
Connector M12, socket, straight (A-coded) ^{1.)}	772416 
Connector M12, plug, straight (A-coded) ^{1.)}	772417 
Connector M12, socket, angled (A-coded) ^{1.)}	772418 
Connector M12, plug, angled (A-coded) ^{1.)}	772419 
Y-junction	772420 
Y-junction for connecting two separately powered segments of a büS network	772421 
Termination resistor 120 Ohm M12 plug	772424 
Termination resistor 120 Ohm M12 socket	772425 
LabVIEW device driver	On request
EDS-File (CANopen)	Download from www.burkert.com
Analogue	
Connection cable M12 plug (A-coded) on open leads, 5 m	566923 
Connection cable M12 plug (A-coded) on open leads, 10 m	571393 
Connection cable M12, socket (A-coded) on open leads, 5 m	560365 
Connection cable M12, socket (A-coded) on open leads, 10 m	563108 
Modular actuator interface	
M12 plug angled, 8 pin (A-coded)	775070 

1.) It is possible that the M12 connectors cannot be used together on the same side of a Y-junction. If that is the case, please use a prefabricated cable which uses typically a thinner connector.

