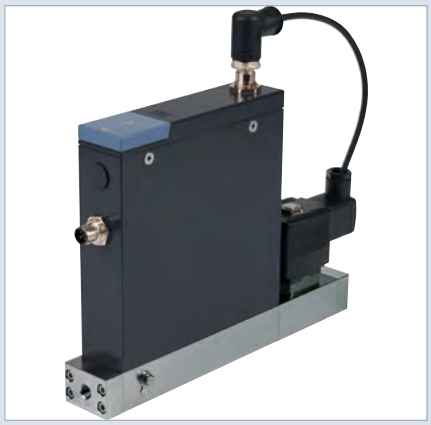

Mass Dosing Controller (MDC) for liquids

- Dosing quantities 0.05 g...1000 g
- Highest dosing accuracy
- High long-term stability, no zero-point adjustment necessary
- Highly resistant wetted materials
- Suitable for a wide variety of liquids

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

Can be combined with

Type ME63
Industrial Ethernet gateway, IP65/ IP67/ IP69k

Type ME43
Fieldbus gateway

Type 6013
Plunger valve 2/2-way direct-acting

Type 6724
2/2 or 3/2-way whisper valve with media separation

Type 6757
2/2 or 3/2-way whisper valve with media separation

Type description

The mass dosing controller (MDC) Type 8756 is especially suitable for dosing small quantities of liquids with maximum accuracy. The measurement principle is based on the Coriolis effect and is completely independent of the medium. Pressure and temperature deviations have no influence on the dosing accuracy.

In addition to the flow rate, the density and temperature of the liquid are also measured. The device design enables a stable batch dosing which is robust against external influences does not require a zero-point adjustment when the process conditions change. All wetted materials are highly resistant and allow use for a wide range of liquids, whether aggressive or neutral media.

Type 8756 Batch is available in the following variants
- MDC with integrated solenoid valve Type 6013
- MDC with integrated solenoid valve Type 6724
- MDC with integrated solenoid valve Type 6757
- MDC with interface for a modular actuator.

The Bürkert Communicator software is available for easy parameterisation of the batch controller.

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Visit product website

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1. General Technical Data

Product properties		
Dimensions	Further information can be found in chapter "4. Dimensions" on page 7.	
Material [1.]		
Housing	Aluminium	
Base block (wetted)	Stainless steel 1.4404/316L (optionally with inspection certificate 3.1 according to EN 10204)	
Sensor (wetted)	Stainless steel 1.4404/316L (optionally with inspection certificate 3.1 according to EN 10204)	
Actuator (wetted)	Further information can be found in the table section Actuator (see below).	
Seal (wetted)	FFKM or PCTFE, metal is possible in the modular variant Further information on the seal materials can be found in the table section Actuator (see below).	
Configuration management	Further information can be found in chapter "8.3. Configuration management for easy device replacement" on page 21.	
Total weight	> 2 kg	
LED display [2.]	RGB-LED according to NAMUR NE107	
Performance data	**Size 1** [3.]	**Size 2** [3.]
Nominal flow rate	≤ 30 kg/h	≤ 150 kg/h
Dosing characteristics		
Dosing range	0.05...100 g	0.5...1000 g
Dosing time	0.05...7 s	0.05...7 s
Dosing precision	0.2 % [4.] MV for dosing quantity ≥ 0.2 g (under calibration conditions and after 1 min warm-up time to achieve the best measuring conditions)	0.2 % MV for dosing quantity ≥ 5 g
Temperature		
Measuring accuracy	± 1.0 K at flow rate > 1.5 kg/h	± 1.0 K at flow rate > 5.7 kg/h
Repeatability	± 0.5 K at flow rate > 1.5 kg/h	± 0.5 K at flow rate > 5.7 kg/h
Tightness to the outside (helium)	< 10^{-6} mbar*l/s (depending on seal material)	< 10^{-6} mbar*l/s (depending on seal material)
Actuator	**Size 1** [3.]	**Size 2** [3.]
Valve Type 6724		
Dosing amount	≥ 50 mg	–
Pressure	≤ 5 bar	–
Viscosity (dynamic)	≤ 40 m·Pas	–
Wetted materials	EPDM, PEEK	–
Degree of protection	IP10 (IP65 on request)	–
Valve Type 6013		
Dosing amount	≥ 50 mg	≥ 500 mg
Pressure	≤ 16 bar (higher pressure on request)	
Viscosity (dynamic)	≤ 350 m·Pas (higher viscosity on request)	
Wetted materials	EPDM, stainless steel 1.4305/303, 1.4113/434, 1.4310/301, 1.4303/305L	
Degree of protection	IP65	
Valve Type 6757		
Dosing amount	–	≥ 100 mg
Pressure	–	≤ 10 bar
Viscosity (dynamic)	–	≤ 40 m·Pas
Wetted materials	–	FFKM, PEEK
Degree of protection	–	IP30

Further actuators

In the modular variant, further actuators can be connected. The internal dosing algorithm is capable of dosing with different actuators.

Electrical data	
Operating voltage	24 V DC
Power consumption	< 3 W + < 30 W (as MDC with modular actuator) < 4 W (as MDC with actuator Type 6724/ < 17 W (as MDC with actuator Type 6013/) < 7.5 W (as MDC with actuator Type 6757)
Voltage tolerance	± 10 %

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Medium data	
Operating medium	Further information can be found in chapter "3.1. Bürkert resistApp" on page 6.
Calibration medium	Water
Medium temperature	0 °C...+ 50 °C (higher on request)
Viscosity (dynamic)	0.3...350 m·Pas (higher on request)
Product connections	
Process connection	G ⅛, NPT ⅛, VCR® ⅛, VCR® ¼, double compression fitting ⅛", ¼", 4 mm, 6 mm, clamp connection
Electrical connection	
büS/CANopen variant	1x M12 plug, 5-pin
Industrial Ethernet variant	1x M12 plug, 5-pin, 2x M8 sockets, 4-pin
Approvals and conformities	
Certificate	Material certificate 3.1 (optional)
North America (USA/Canada)	Further information can be found in chapter "2.4. North America (USA/Canada)" on page 5.
Food and beverage/hygiene	Further information can be found in chapter "2.5. Food and beverage/hygiene" on page 6.
Environment and installation	
Installation position	Any, to prevent the accumulation of gas bubbles in the medium: horizontal upright/horizontal overhead
Ambient temperature	0 °C...+ 50 °C (deviating temperature ranges on request)
Storage temperature	-10 °C...+ 70 °C
Degree of protection	Further information can be found in the table section Actuator (see above).
Relative air humidity	Max. 95 % at + 55 °C, non-condensing
Accessories	
Software	Bürkert Communicator Further information can be found in chapter "8.1. Bürkert Communicator software" on page 20.

1.) The wetted components do not contain any type of silicone.
2.) For a detailed description of LED colours, see **operating instructions for Type 8756** ▸
3.) For highly viscous media, this value may not be achieved.
3.) Of measured value

2. Approvals and conformities

2.1. General notes

- The approvals and conformities listed below must be stated when making enquiries. This is the only way to ensure that the product complies with all required specifications.
- Not all available variants can be supplied with the approvals or conformities indicated below.

2.2. Conformity

In accordance with the EU Declaration of Conformity, the product is compliant with the EU directives.

2.3. Standards

The applied standards which are used to demonstrate compliance with the EU directives are listed in the EU-Type Examination Certificate and/or the EU Declaration of Conformity.

2.4. North America (USA/Canada)

Approval	Description
c UL us LISTED	**Optional: UL listed for the USA and Canada** The products are UL listed for the USA and Canada according to: • UL 61010-1 (ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE – Part 1: General Requirements) • CAN/CSA-C22.2 No. 61010-1

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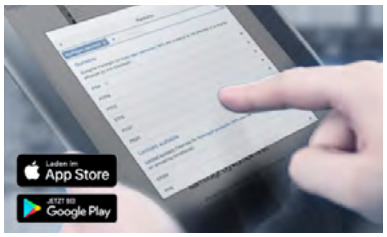
2.5. Food and beverage/hygiene

Conformity	Description
FDA	**FDA – Code of Federal Regulations (valid for variable code PL02, P03)** All wetted materials are compliant with the Code of Federal Regulations published by the FDA (Food and Drug Administration, USA) according to the manufacturer's declaration.
USP	**United States Pharmacopeial Convention (USP) (valid for variable code PL04)** All wetted materials are biocompatible according to the manufacturer's declaration.
	EC Regulation 1935/2004 of the European Parliament and of the Council (valid for variable code PL01, P02) All wetted materials are compliant with EC Regulation 1935/2004/EC according to the manufacturer's declaration.

3. Materials

3.1. 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

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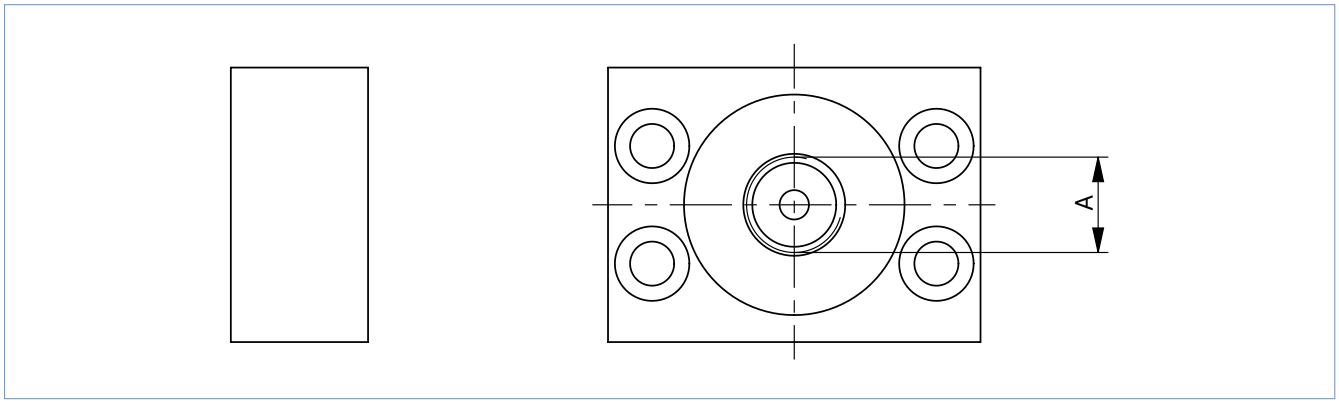
4. Dimensions

4.1. Flange plates

Internal-threaded connection

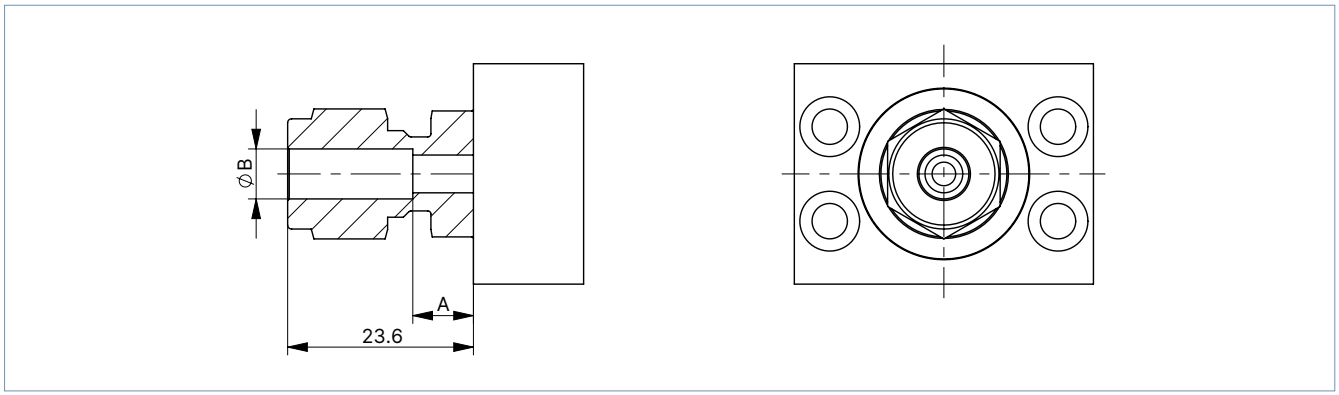
Note:

- Dimensions in mm
- A corresponds to G ⅛ and NPT ⅛.



Double compression fitting

Note:
Dimensions in mm



Variant	Size A	Size B
Double compression fitting 4 mm	8.6 mm	4 mm
Double compression fitting 6 mm	7.7 mm	6 mm
Double compression fitting ⅛"	8.6 mm	⅛"
Double compression fitting ¼"	7.7 mm	¼"

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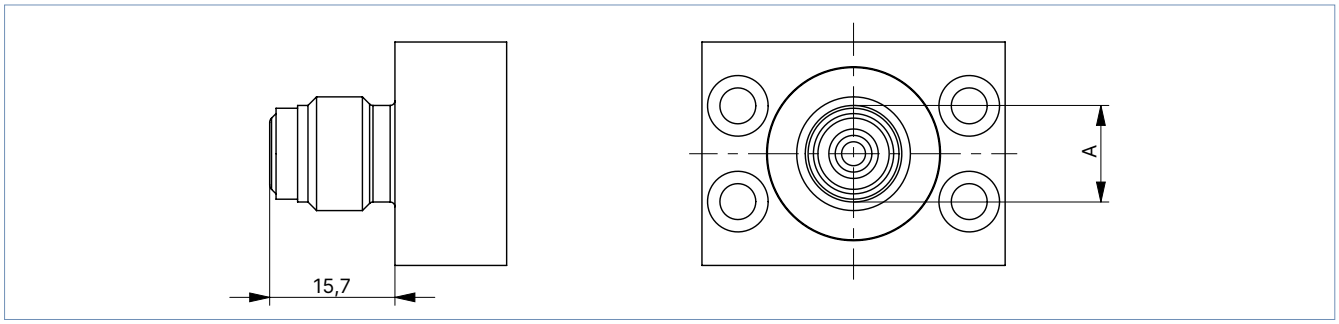
Fitting with metal flat seal

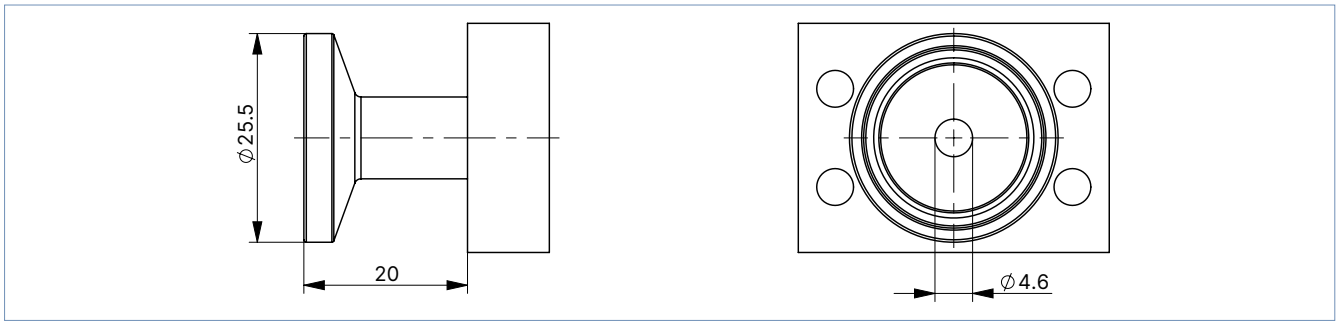
Note:

- Dimensions in mm
- A corresponds to G ⅛ and NPT ⅛.



Clamp connection

Note:
Dimensions in mm



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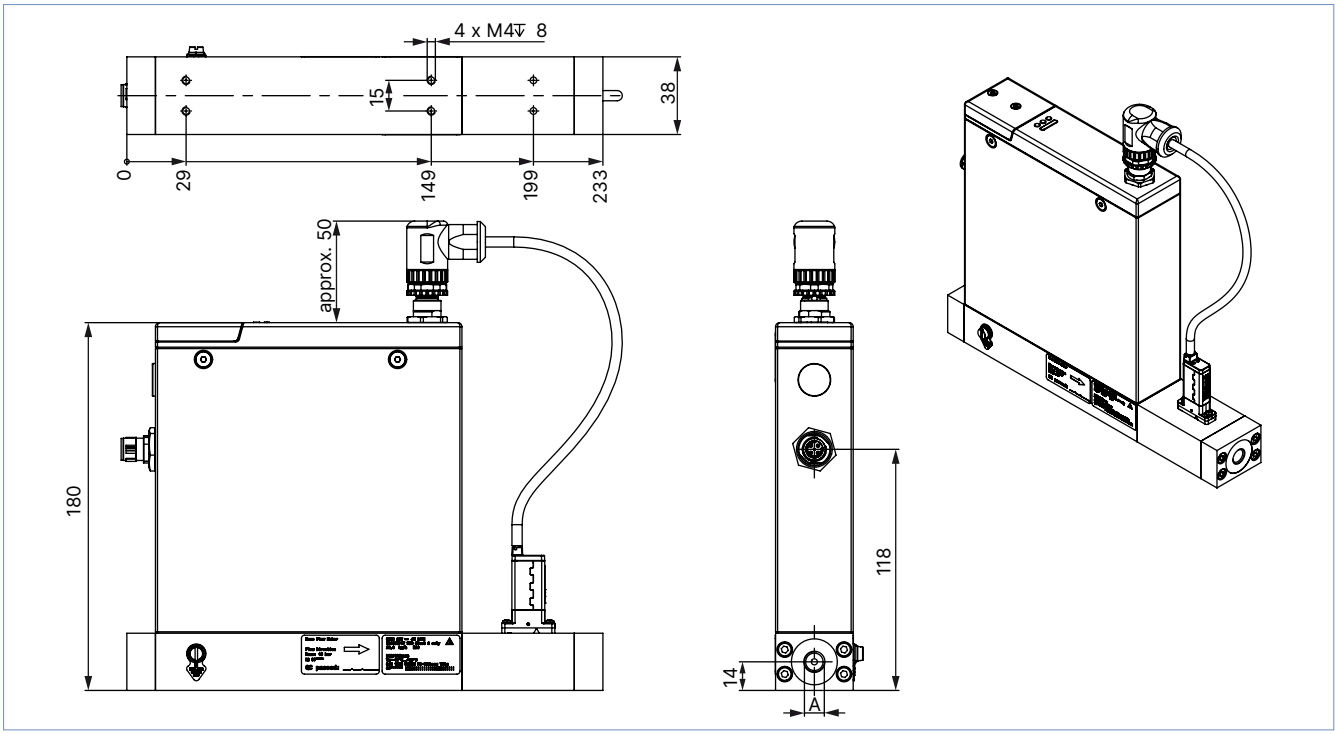
4.2. MDC variant with valve Type 6724 (size 1)

Note:

- Dimensions in mm
- Connection shown: G ⅛ (A)



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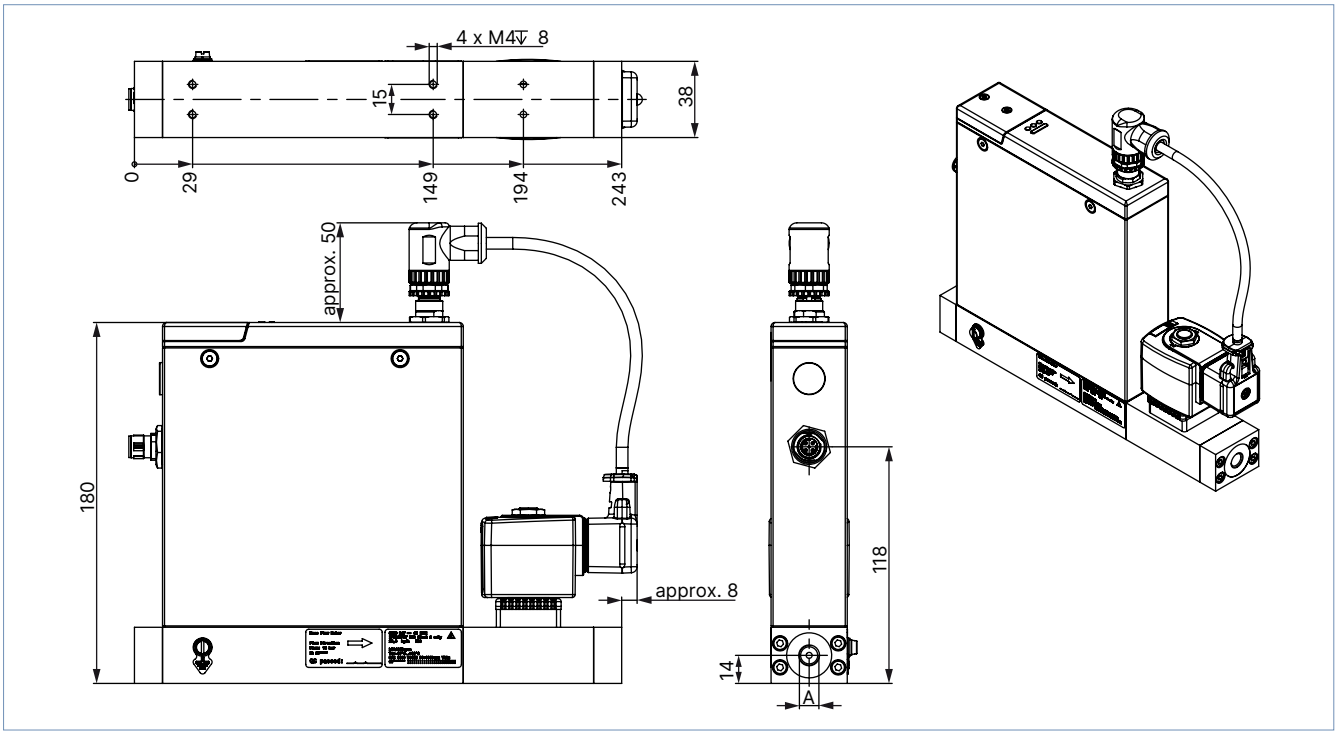
4.3. MDC variant with valve Type 6013

Size 1

Note:

- Dimensions in mm
- Connection shown: G ⅛ (A)



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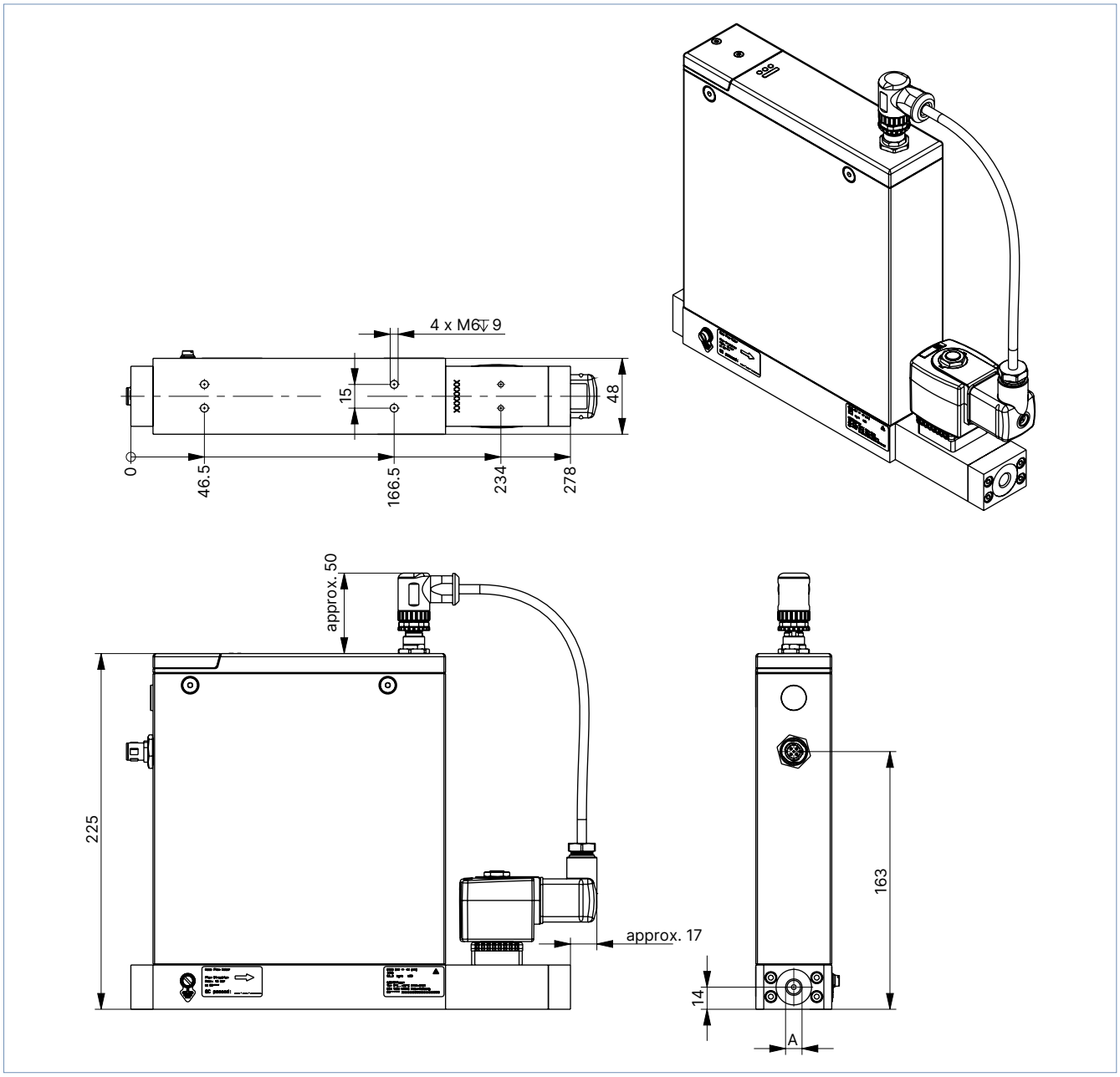
Size 2

Note:

- Dimensions in mm
- Connection shown: G ⅛ (A)



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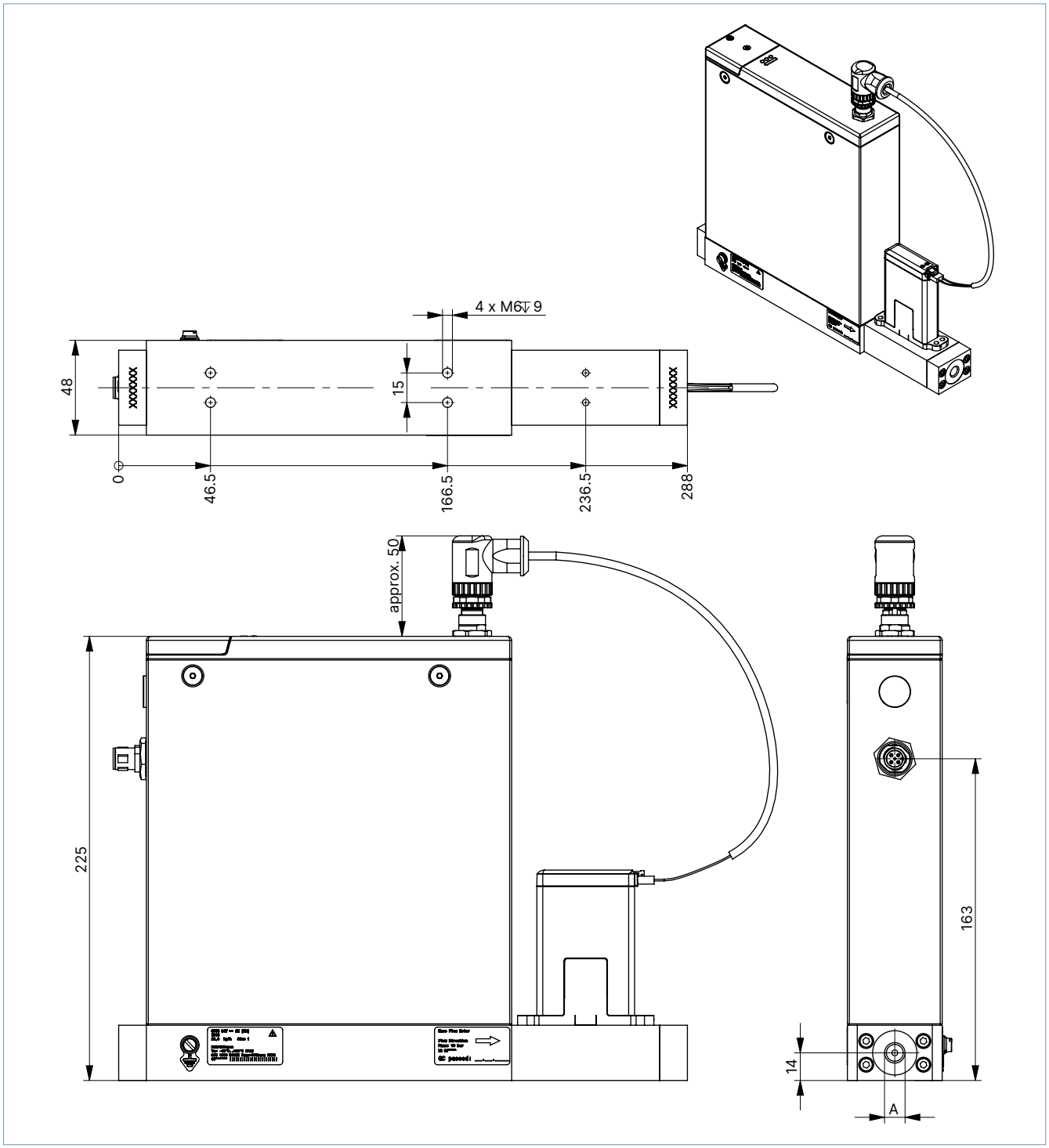
4.4. MDC variant with valve Type 6757 (size 2)

- Dimensions in mm
- Connection shown: G ⅛ (A)



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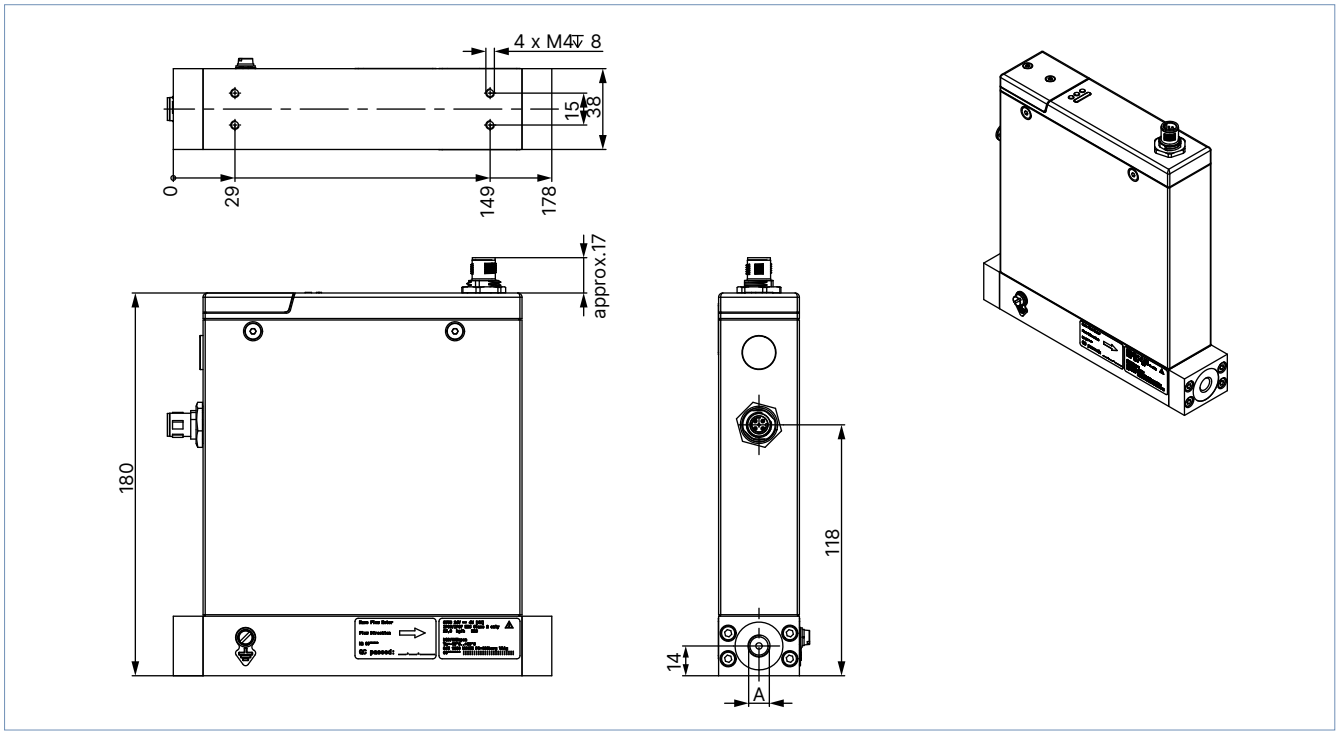
4.5. MDC variant with modular actuator interface

Size 1

Note:

- Dimensions in mm
- Connection shown: G ⅛ (A)



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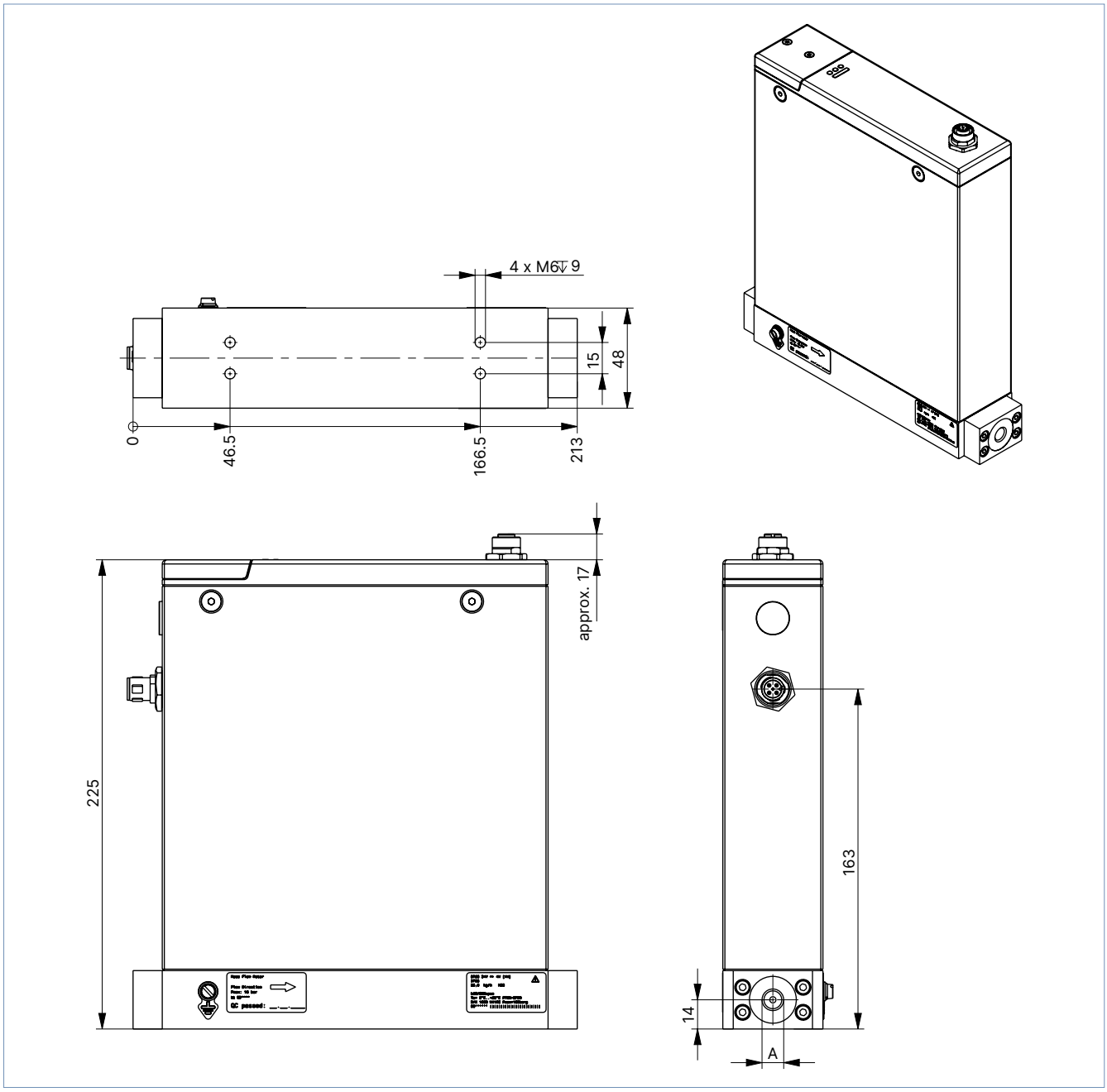
Size 2

Note:

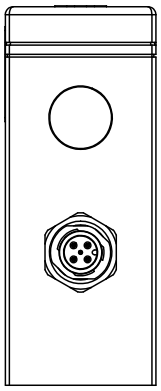
- Dimensions in mm
- Connection shown: G ⅛ (A)

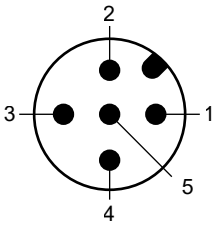


5. Product connections

5.1. Communication

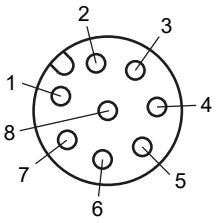
büS/CANopen



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

5.2. MDC with modular actuator interface

External actuators (e.g. solenoid valves) can be connected directly to Type 8756 Batch via the modular actuator interface. This allows a closed control loop with sensor, actuator and integrated batch controller to be implemented in a modular way. Before initial commissioning, the batch controller must be parameterised accordingly. The Bürkert Communicator software with its simple start-up script is ideal for this purpose, see"8.1. Bürkert Communicator software" on page 20.

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

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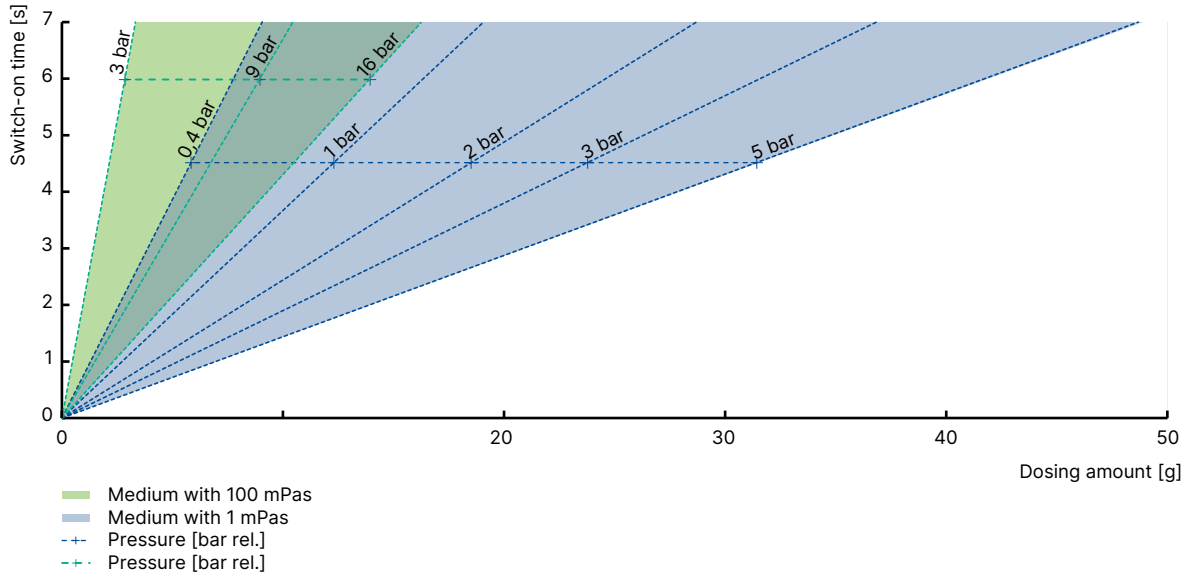
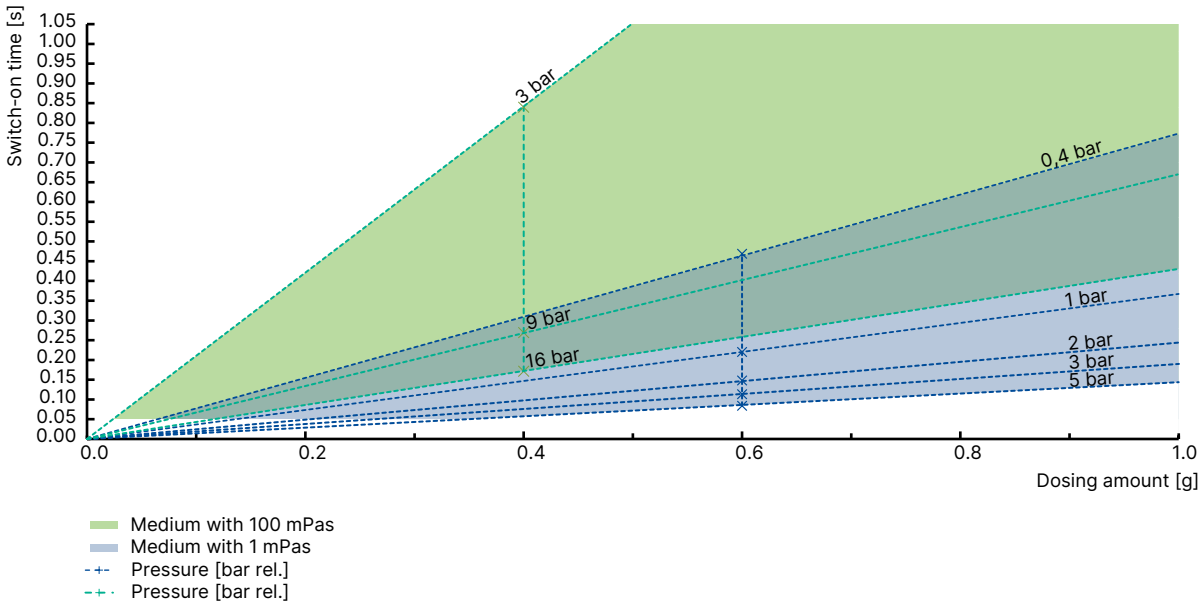
6. Performance specifications

Note:
The following diagrams show the dosing range of the MDC. The dosing quantity can be freely selected from 0.05 g to 1000 g. Depending on the application, different pressures and viscosities result in different switch-on times for the actuator, see "6.5. Reading sample" on page 18.

6.1. Dosing quantity depending on pressure and valve opening time < 50 g (size 1)



6.2. Dosing quantity depending on pressure and valve opening time < 1 g (size 1)



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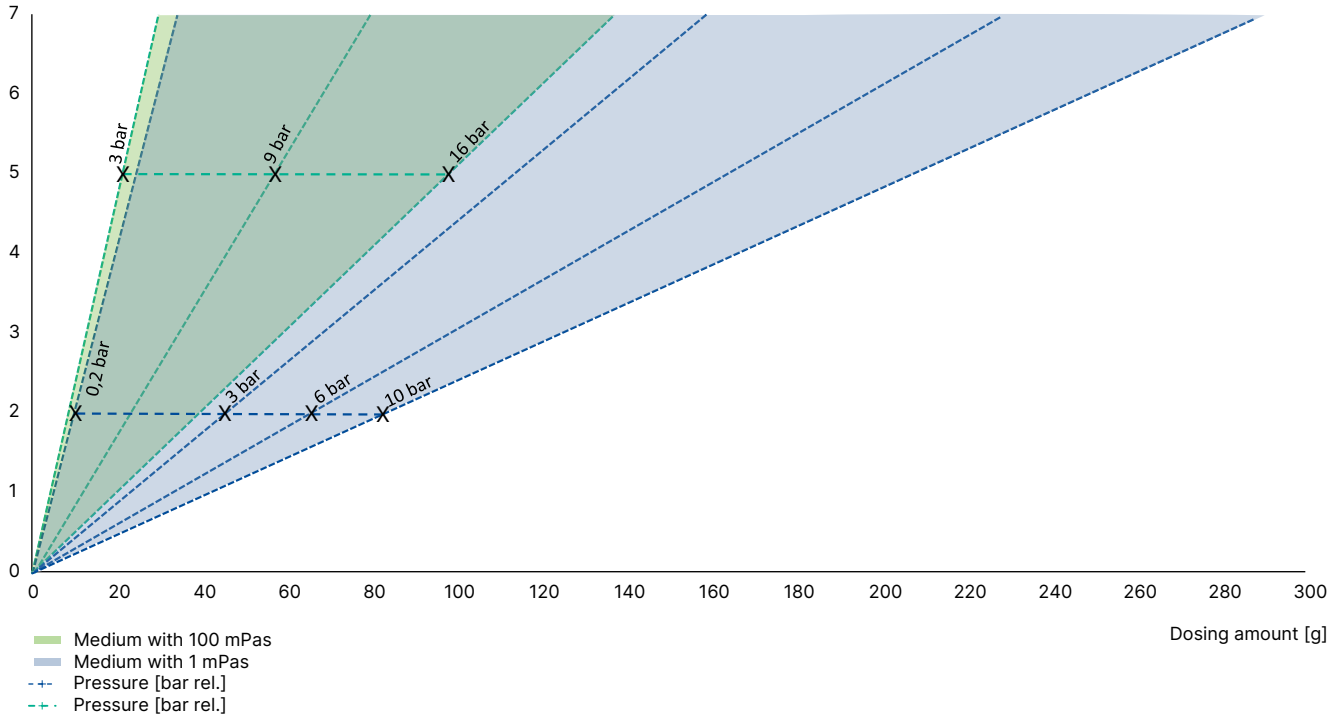
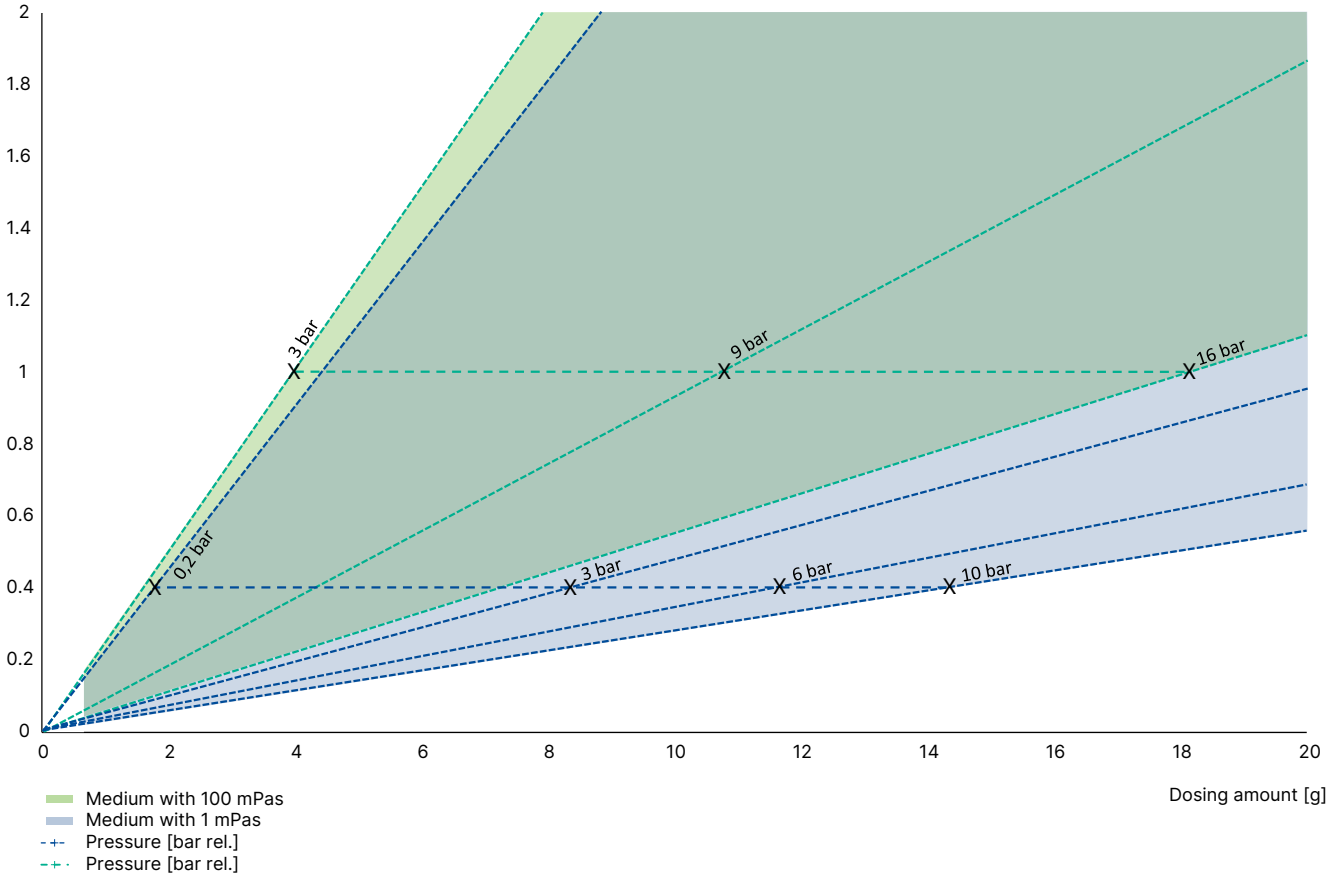
6.3. Dosing quantity depending on pressure and valve opening time < 300 g (size 2)



6.4. Dosing quantity depending on pressure and valve opening time < 20 g (size 2)



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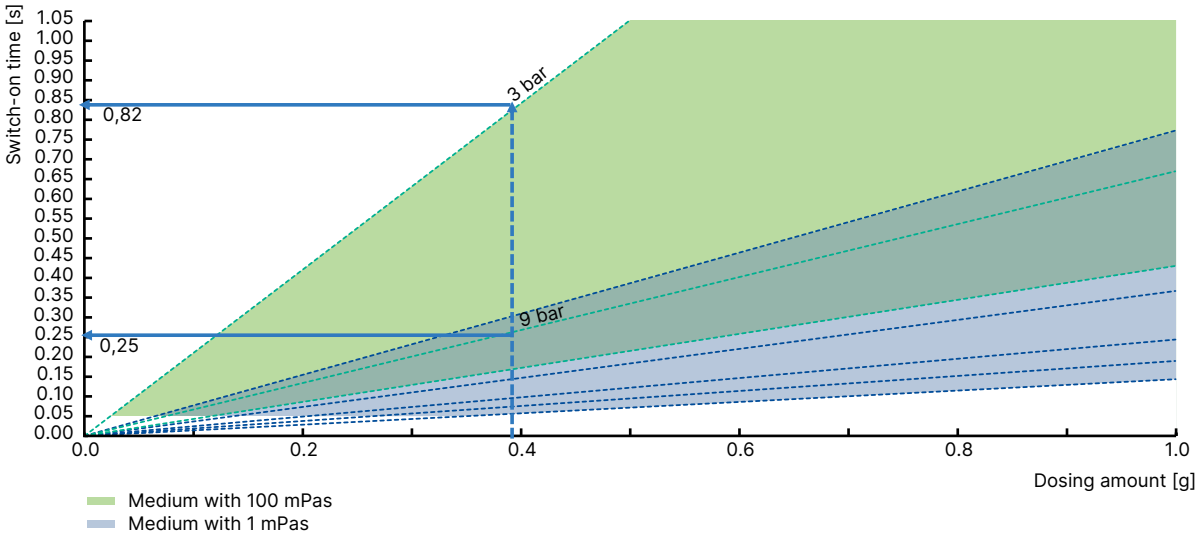
6.5. Reading sample



The diagram serves as an exemple of the dosing quantities to be achieved. Reference set-ups were defined which correspond to the typical use of this device.

For example, you want to dose 0.39 g in your application. The diagram above shows that with a pre-pressure of 3 bar, you need an switch-on time of 0.82 s. However, if you have a pre-pressure of 9 bar in the medium supply of your system, this time is reduced to 0.25 seconds. Depending on the application and requirements, different cycle times can be realised. The accuracy of the dosing quantity is 0.2%, and is therefore independent of the selected dosing weight.
The switch-on time of the actuator is the opening time of the valve required to dose the desired dosing quantity.

6.6. Reference setup

The reference setup is a defined measurement setup under which the graphs in "6. Performance specifications" on page 16 were recorded. The medium was pre-pressurised using an air cushion. A scale was used as a reference for checking the set-point value.

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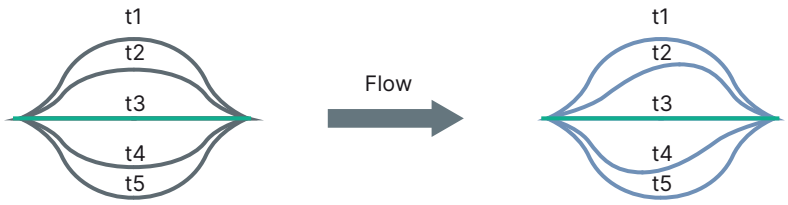
7. Product operation

7.1. Measurement principle

The measurement principle of this flow sensor is based on the Coriolis effect. The core of the measuring system is a thin S-shaped measurement tube, which is set into high-frequency vibrations by an external excitation coil and can vibrate freely between two fixed points. When a liquid flows through the measurement tube, the Coriolis force acts on the medium and causes a change in the tube vibration (see figure). [1)] This phase shift is dependent on the mass flow of the medium and is directly proportional to it. Sensors continuously record the pipe vibrations and evaluate them electronically. In addition to the flow rate, the Bürkert Communicator software also provides information on the density and temperature of the medium.



Pipe vibrations without medium

Pipe vibrations at fluid flow

[1)] t1...t5: Deflections of the measurement tube at the respective time

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8. Product accessories

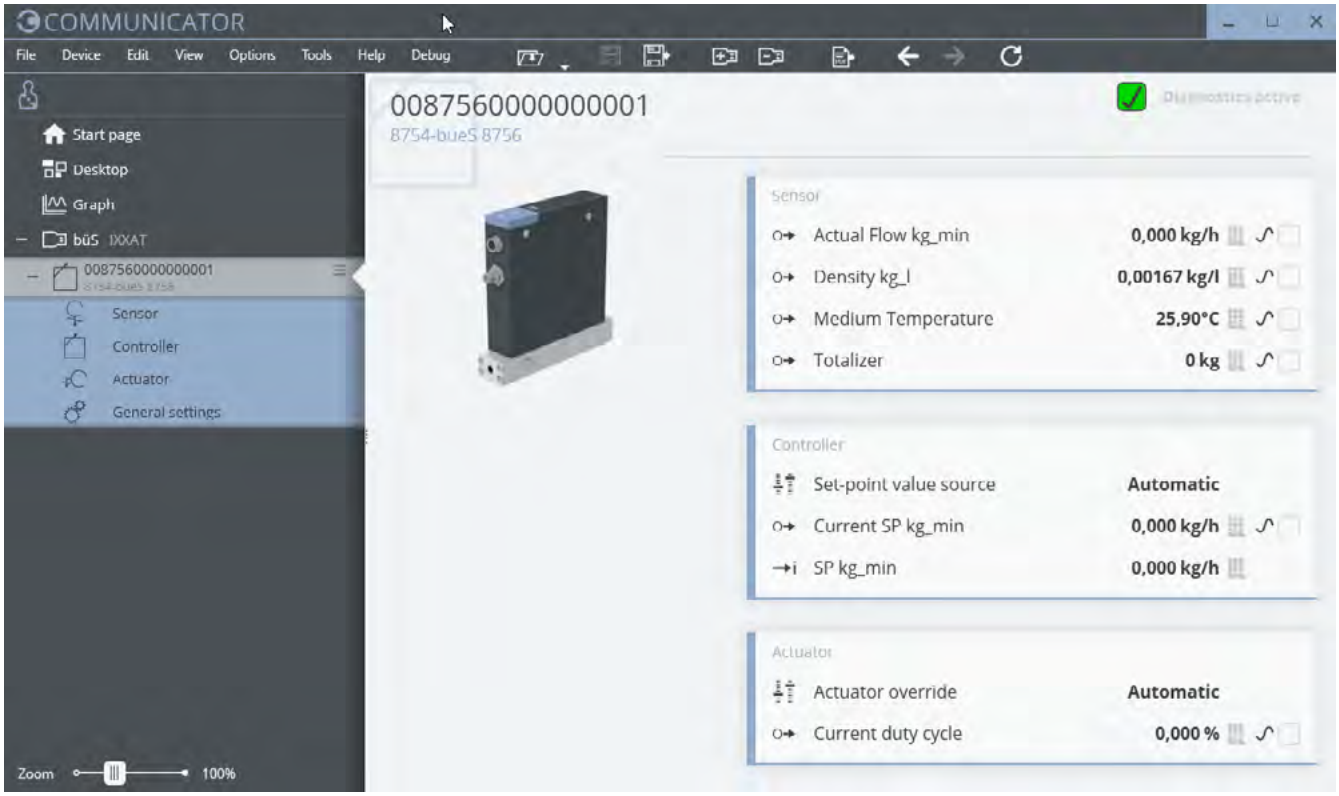
8.1. Bürkert Communicator software

Note:
The corresponding communication software can be downloaded from the website under **Type 8920** ▶.

The Bürkert Communicator is the most important software component of the EDIP (Efficient Device Integration Platform). Various features of this universal tool simplify the configuration and parameterisation of devices equipped with a digital CANopen-based interface. With this tool, the user has a complete overview of cyclic process values as well as acyclic diagnostic data. The integrated graphical programming environment enables the creation of decentralised sub-system control functions. The connection to the PC is established with a USB-büS interface set. The set is available as an accessory (see "9.6. Ordering chart accessories" on page 22).

The Bürkert Communicator enables:

- Configuration, parameterisation and diagnostics of EDIP devices / networks
- Switching between defined gases
- Easy and comfortable mapping of cyclic values
- Graphic display, monitoring and storage of process values
- Firmware update of the connected EDIP devices
- Saving and restoring device configurations
- Zero-point adjustment in case of changed ambient conditions
- Guided recalibration routine



8.2. Connecting Type 8756 Batch with the Bürkert Communicator software

The Bürkert Communicator interface is based on CANopen. An appropriate bus termination is mandatory. Activate the switchable terminating resistor on the büS stick.
The device is connected via the micro USB socket (USB-büS interface set 2 contains the necessary accessories).
Note: No external power supply may be connected to the micro USB socket. The device must be provided with power as described in chapter "5. Product connections" on page 15.

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8.3. Configuration management for easy device replacement

If a device needs to be replaced, the memory card can be removed from the defective device and can be inserted into the new device. This transfers all data from the device to be replaced to the new device. The memory card is available as an accessory and must be ordered separately (see "9.6. Ordering chart accessories" on page 22).
In order to successfully replace the device, it is necessary that both the new device and the device to be replaced have the same article number.

9. Ordering information

9.1. Bürkert eShop

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:
Use the Product Enquiry Form (see "9.4. Bürkert Product Enquiry Form" on page 22) to enter the device details and send it to us once completed.

For the proper choice of the actuator orifice within the MDC, you need to know not only the required maximum flow rate Q_N, but also the pressure values directly upstream and downstream of the MDC (p_1, p_2) at Q_N. These are often not identical to the inlet and outlet pressure of the entire system, because there are usually additional flow resistances (pipework, additional shut-off valves, nozzles, etc.) both upstream and downstream of the MDC.
Use the Product Enquiry Form to indicate the pressures directly upstream and downstream of the MDC. If the pressure values are unknown or not accessible for measurement, estimates are to be made by taking into account the approximate pressure drops over the flow resistors upstream and downstream of the MDC at Q_N. The maximum expected inlet pressure $p_{1\,max}$ must be specified to ensure the sealing function of the proportional valve in all operating states.

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

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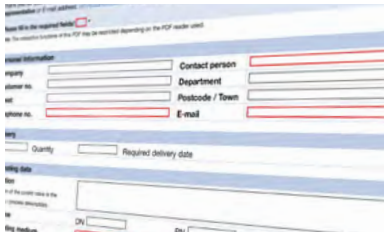
9.4. Bürkert Product Enquiry Form



Bürkert Product Enquiry Form – Your enquiry quickly and compactly

Would you like to make a specific product enquiry based on your technical requirements? Use our Product Enquiry Form for this purpose. There you will find all the relevant information for your Bürkert contact. This will enable us to provide you with the best possible advice.

Fill out the form now

9.5. Ordering chart

Note:
Other variants on request

Variant	Size	Seal material	Port connection	Article number.
				büS/CANopen
Mass Dosing Controller with valve Type 6724	Size 1	FFKM, EPDM	G ⅛	20009219
Mass Dosing Controller with valve Type 6724	Size 1	FFKM, EPDM	Swagelok VCR ¼, male	572124
Mass Dosing Controller with valve Type 6724	Size 1	FFKM, EPDM	VCR ⅛, male, compatible to Swagelok	572125
Mass Dosing Controller with valve Type 6013	Size 1	FFKM, EPDM	G ⅛	572137
Mass Dosing Controller with valve Type 6013	Size 1	FFKM, EPDM	Swagelok VCR ¼, male	572138
Mass Dosing Controller with valve Type 6013	Size 1	FFKM, EPDM	VCR ⅛, male, compatible to Swagelok	572139
Mass Dosing Controller, modular	Size 1	PCTFE	G ⅛	572130
Mass Dosing Controller, modular	Size 1	FFKM	Swagelok VCR ¼, male	572131
Mass Dosing Controller, modular	Size 1	FFKM	VCR ⅛, male, compatible to Swagelok	572132
Mass Dosing Controller, modular	Size 2	FFKM	G ⅛	575252
Mass Dosing Controller, modular	Size 2	FFKM	Swagelok VCR ¼, male	575254
Mass Dosing Controller, modular	Size 2	FFKM	VCR ⅛, male, compatible to Swagelok	575255
Mass Dosing Controller with valve Type 6013	Size 2	PCTFE, EPDM	G ⅛	575300
Mass Dosing Controller with valve Type 6013	Size 2	PCTFE, EPDM	Swagelok VCR ¼, male	575302
Mass Dosing Controller with valve Type 6013	Size 2	PCTFE, EPDM	VCR ⅛, male, compatible to Swagelok	575303

9.6. Ordering chart accessories

Description	Article number.
General accessories	
Power supply unit Phoenix Class2 (Type 1573), 85...240 V AC/24 V DC, 1.25 A, NEC Class 2 (UL 1310)	772438
Power supply for standard rail (Type 1573), 100...240 V AC / 24 V DC, 1 A, NEC Class 2 (UL 1310)	772361
Power supply for standard rail (Type 1573), 100...240 V AC / 24 V DC, 2 A, NEC Class 2 (UL 1310)	772362
Power supply for standard rail (Type 1573), 100...240 V AC / 24 V DC, 4 A	772363
USB-büS interface set 2 (Type 8923) for connection to the Bürkert Communicator software: includes büS stick, connection cable to M12 plug, M12 to micro USB connection cable for the büS service interface and Y-distributor, cable length: 0.7 m	772551
Memory card	On request
Software Bürkert Communicator	Download from **Type 8756** ▶
For Type 8756 Batch büS/CANopen	
büS cable extension, M12, cable length: 0.1 m	772492
büS cable extension, M12, cable length: 0.2 m	772402
büS cable extension, M12, cable length: 0.5 m	772403
büS cable extension, M12, cable length: 1 m	772404
büS cable extension, M12, cable length: 3 m	772405
büS socket, M12, straight, A-coded [1.)]	772416

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Description	Article number.
büS plug, M12, straight, A-coded [1.)]	772417
büS socket, M12, angled, A-coded [1.)]	772418
büS plug, M12, angled, A-coded [1.)]	772419
büS Y-plug	772420
büS Y-plug for networking of 2 separately supplied segments of a büS network	772421
büS terminating resistor, M12 plug, 120 Ω	772424
büS terminating resistor, M12 socket, 120 Ω	772425
LabVIEW device driver	On request
EDS file	Download from **Type 8756** ▶

1.) For space reasons, M12 individual push-in connectors may not be suitable for simultaneous use on the same side as a Y-distributor. Use a commercially available overmoulded cable in this case.

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