



## Mass Flow Controller (MFC) for Gases

- Inline MFC for full scale rates from 25  $I_N$ /min to 1.500  $I_N$ /min; 1/4" to 3/4"
- High accuracy
- Short settling time
- Fieldbus option

Type 8626 can be combined with...



### Type 1150

Multi-channel program controller



### Type 0330

3/2- or 2/2-way valve



### Type 6013

2/2-way valve



### MFC

Communications Software

The Type 8626 mass flow controller forms an integrated system, consisting of the flow sensor, control electronics and control valve. Using this controller, mass flows of gases can be kept constant or can follow a predefined set-point profile regardless of interfering influences (such as pressure or temperature variations). The sensor works according to the thermal principle (constant-temperature anemometer). The measurement is made in the main channel and provides the mass flow directly without any corrections (see description on page 2). In the digital flow controller the set point and the actual value are compared, and the control signal for the proportional valve is calculated. The direct-acting solenoid control valve works according to the well-tried plunger-type principle, and is driven by a PWM voltage signal.

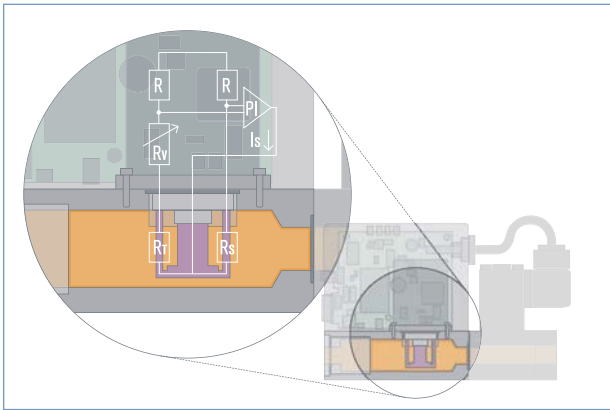
In addition to its control function, the valve also provides a close-tight function. Due to making the measurement in the main flow, the MFC Type 8626 is characterized by excellent dynamics and a low sensitivity to contamination. Type 8626 can optionally be calibrated for two different gases, the user is able to switch between these two gases. Typical application areas are gas dosing or rather the production of gas mixtures in:

- Process technology
- Heat treatment
- Environmental technology
- Material coating
- Burner controls
- Fuel cell technology

Technical data	
<b>Full scale range <sup>1)</sup> (<math>Q_{nom}</math>)</b>	25 to 1500 $I_N$ /min $N_2$ equivalent
<b>Operating medium</b>	Neutral, non-contaminated gases (others on request)
<b>Max. operating pressure (at inlet)</b>	Up to max. 10 bar, independent of valve orifices
<b>Calibration medium</b>	Operating gas or air with correction factors
<b>Medium temperature</b>	-10 to +70°C
<b>Ambient temperature</b>	-10 to +45°C
<b>Accuracy (after 15 min warm up time)</b>	±1.5% o.R. ±0.3 % F.S. (o.R. : of reading; F.S. : of full scale)
<b>Linearity</b>	±0.25 % F.S.
<b>Repeatability</b>	±0.1 % F.S.
<b>Turn-down ratio</b>	1:50
<b>Settling time (<math>t_{95\%}</math>)</b>	< 500 ms
<b>Body material</b>	Aluminium (anodized) or stainless steel
<b>Housing</b>	Aluminium (coated)
<b>Seal material</b>	FKM, EPDM (others on request)
<b>Port connection</b>	G 1/4, 3/8, 1/2, 3/4, NPT 1/4, 3/8, 1/2, 3/4
<b>Control valve</b>	Valve is closed when power is off
Valve orifice	0.8 to 12 mm
$k_v$ value	0.02 to 2.8 m <sup>3</sup> /h
<b>Electrical Connection</b>	Round socket 8-pin, Socket Sub-HD 15-pin Additionally with fieldbus socket Sub-D 9-pin
<b>Operating voltage</b>	24 V DC

Technical data	
<b>Voltage tolerance</b>	±10%
<b>Residual ripple</b>	< 2 %
<b>Power consumption</b>	20 W – max. 50 W (depending on version)
<b>Input signal (set point)</b>	0–5V, 0–10V, 0–20 mA or 4–20 mA
Input impedance	>20 k $\Omega$ (voltage) <300 $\Omega$ (current)
<b>Output signal (actual value)</b>	0–5 V, 0–10 V, 0–20 mA or 4–20 mA
Max. current (voltage output)	10 mA
Max. load (current output)	600 $\Omega$
<b>Digital communication</b>	PROFIBUS-DP, DeviceNet, CANopen, RS232, RS485
<b>Type of protection</b>	IP65
<b>Dimensions [mm]</b>	See drawing p. 4-6
<b>Total weight (example)</b>	1.8 kg (Al, 9 W valve) 4.0 kg (Stainless steel, 16 W valve)
<b>Installation</b>	Horizontal or vertical (with vertical, flow downwards, only a limited turn-down ratio possible)
<b>Light emitting diodes (Default, other functions possible)</b>	Indication for 1. Power, 3. Limit 2. Communication 4. Error
<b>Binary inputs (Default, other functions possible)</b>	Three 1. Start Autotune 2. not assigned 3. not assigned
<b>Binary outputs (Default, other functions possible)</b>	Two relay outputs 1. Limit (desired value can not be achieved) 2. Error (e.g. sensor failure) Capacity: max. 60 V, 1 A, 60 VA

## Measurement principle



This sensor works as a hot-film anemometer in the so-called CTA operational mode (Constant Temperature Anemometer). To do this, two resistors with precisely specified temperature coefficients located directly in the media flow and three resistors located outside the flow are connected together to form a bridge.

The first resistor in the medium flow ( $R_T$ ) measures the fluid temperature, while the second, low-value resistor ( $R_S$ ) is heated so that it is maintained at a fixed, predefined over-temperature with respect to the fluid tempera-

ture. The heating current required to maintain this is a measure of the heat being removed by the flowing gas, and represents the primary measurement.

An adequate flow conditioning within the MFC and the calibration with high-quality flow standards ensure that the mass of gas flowing per time unit can be derived from the primary signal with great accuracy.

## Notes regarding the selection of the unit

For the proper choice of the actuator orifice within the MFC, not only the required maximum flow rate  $Q_{nom}$ , but also the pressure values directly before and after the MFC ( $p_1$ ,  $p_2$ ) at this flow rate  $Q_{nom}$  should be known. In general, these pressures are not the same as the overall inlet and outlet pressures of the whole plant, because there are usually additional flow resistors (tubing, additional shut-off valves, nozzles etc.) present both before and after the controller.

Please use the specification sheet (p. 7) to indicate the pressures directly before and after the MFC. If these should be unknown or not accessible

to a measurement, estimates are to be made by taking into account the approximate pressure drops over the flow resistors before and after the MFC, respectively, at a flow rate of  $Q_{nom}$ .

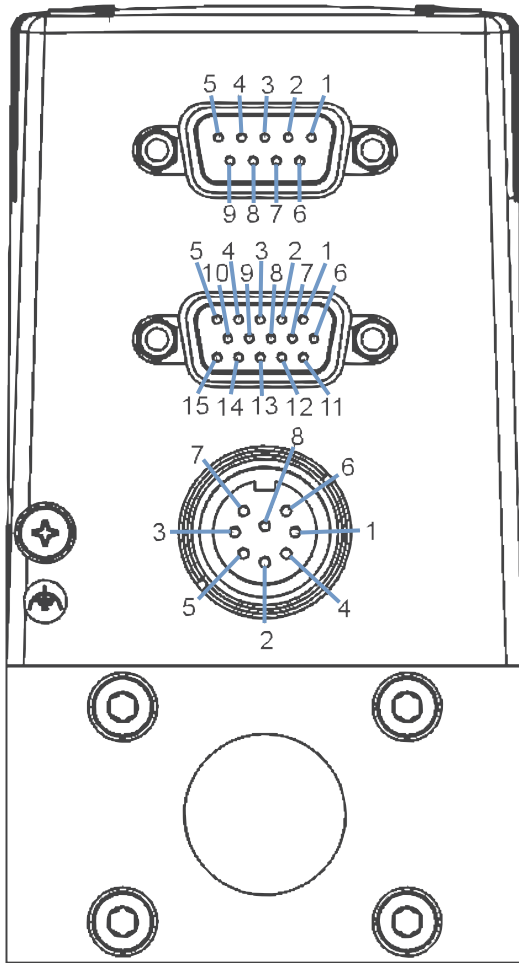
In addition, please quote the maximum inlet pressure  $p_{1,max}$  to be encountered. This data is needed to make sure the actuator is able to provide a close-tight function within all the specified modes of operation.

**Please use the form on page 7 for the information about your specific requirements.**

## Ordering chart for accessories (connectors are not included in the delivery)

Article	Item no.
Circular connector 8-pin binder plug (solder connection)	918 299
Round 8-pin plug with prefabricated 5m cable on one side	787 733
Round 8-pin plug with prefabricated 10m cable on one side	787 734
Sub-D 15-pin plug with prefabricated 5m cable on one side	787 735
Sub-D 15-pin plug with prefabricated 10m cable on one side	787 736
RS232-Adapter with extension cable to connect to PC (Item no. 917039)	654 757
2m extension cable for RS232 9-pin socket/plug	917 039
RS485-Adapter	658 499
USB-Adapter	670 696
Communications software (Mass Flow Communicator)	Info. at www.burkert.com

## Pin Assignment

**PROFIBUS-DP**

Socket, Sub-D 9-pin (only with bus version)

Pin	Connection
1	Shield
2	not configured
3	RxD/ TxD – P (B-circuit)
4	RTS (control signal for repeater)
5	GND
6	VDD
7	not configured
8	RxD/ TxD – N (A-circuit)
9	not configured

**DeviceNet, CANopen**

Pin	Connection
1	Shield
2	CAN_L
3	GND
4	not configured
5	not configured
6	not configured
7	CAN_H
8	not configured
9	not configured

**Sub-HD socket, 15-pin**

Pin	Connection
1	Set value input +
2	Set value input GND
3	Actual value output +
4	Binary input 2
5	12V-output (only for internal company use)
6	RS232 TxD (direct connection to PC)
7	Binary input 1
8	DGND (for binary inputs)
9	only for internal company use (do not connect)
10	12V-output (only for internal company use)
11	12V-output (only for internal company use)
12	Binary input 3
13	Actual value output GND
14	RS232 TxD (direct connection to PC)
15	DGND (for RS232-interface)

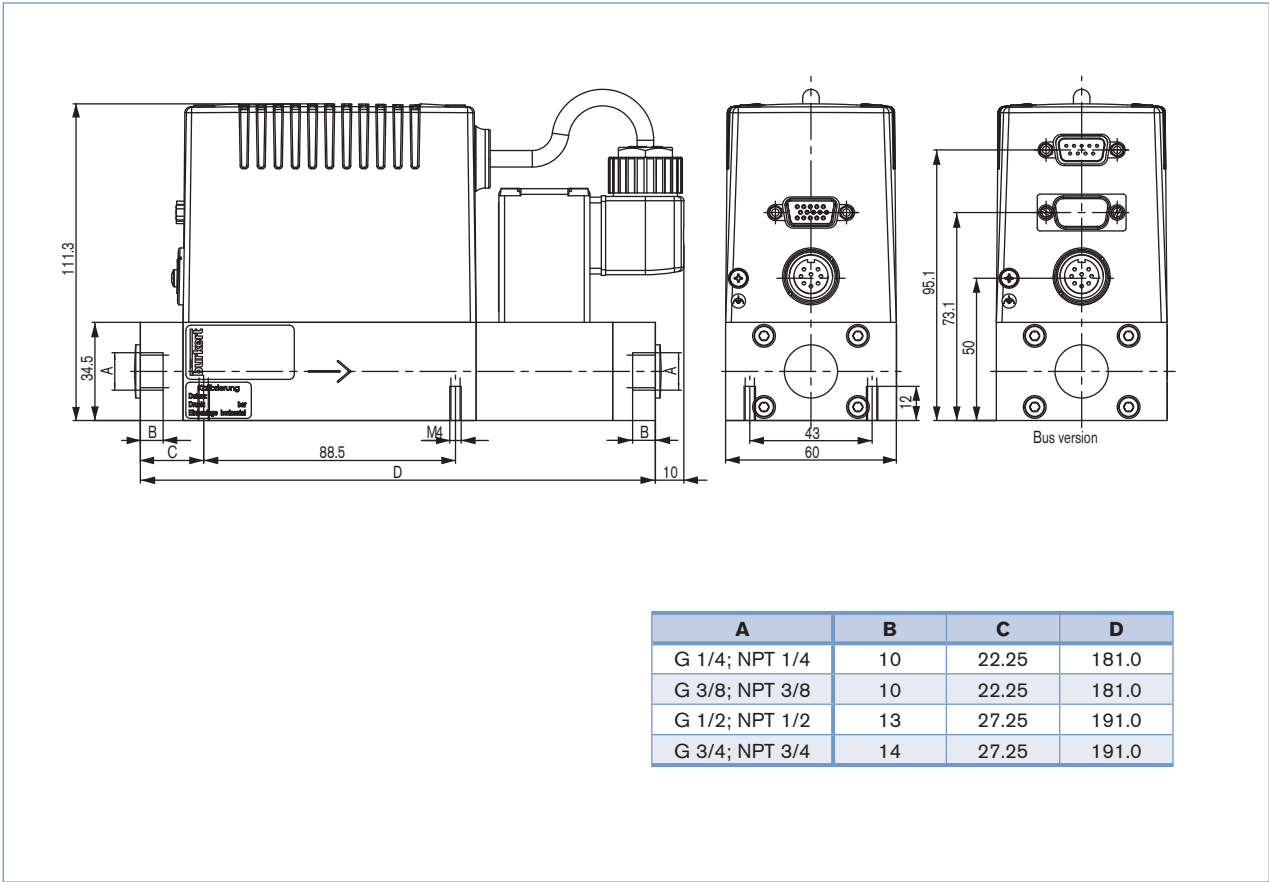
(for bus version 1-3 and 13 not configured)

**Round socket, 8-pin,**

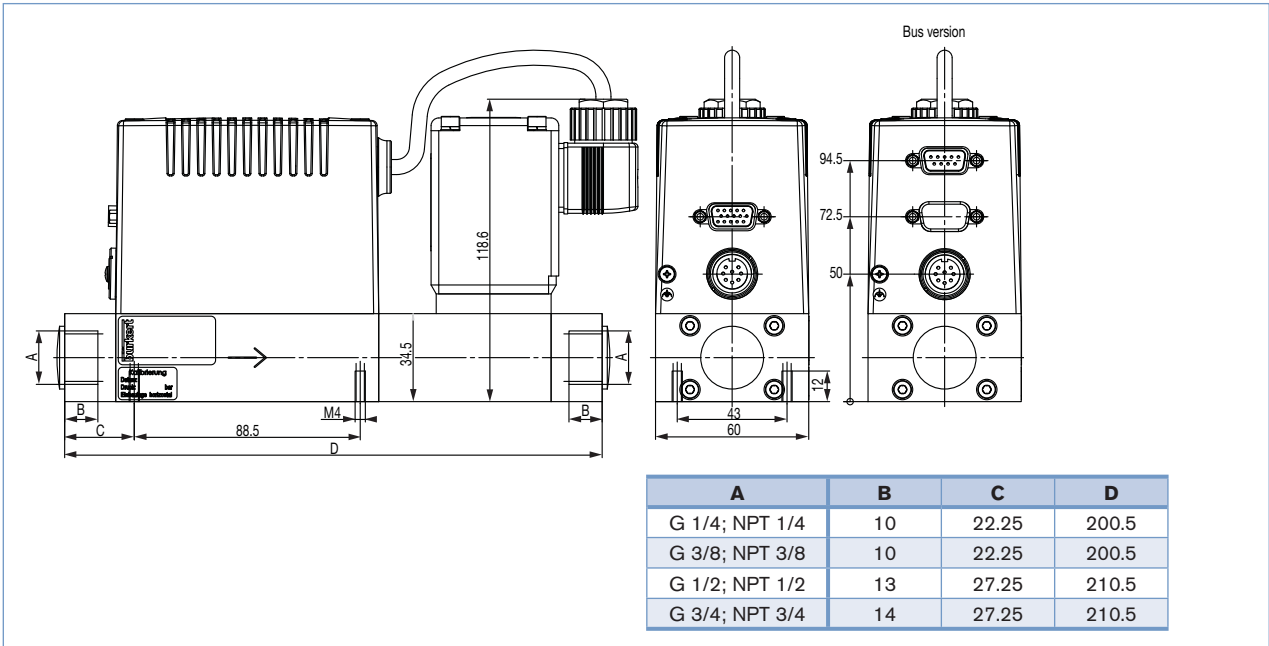
Pin	Connection
1	24V Supply +
2	Relay 1 - middle contact
3	Relay 2 - middle contact
4	Relay 1 - NC contact
5	Relay 1 - NO contact
6	24V-Supply GND
7	Relay 2 - NO contact
8	Relay 2 - NC contact

Dimensions [mm]

MFC 8626 with valve type 2833 (9W coil)

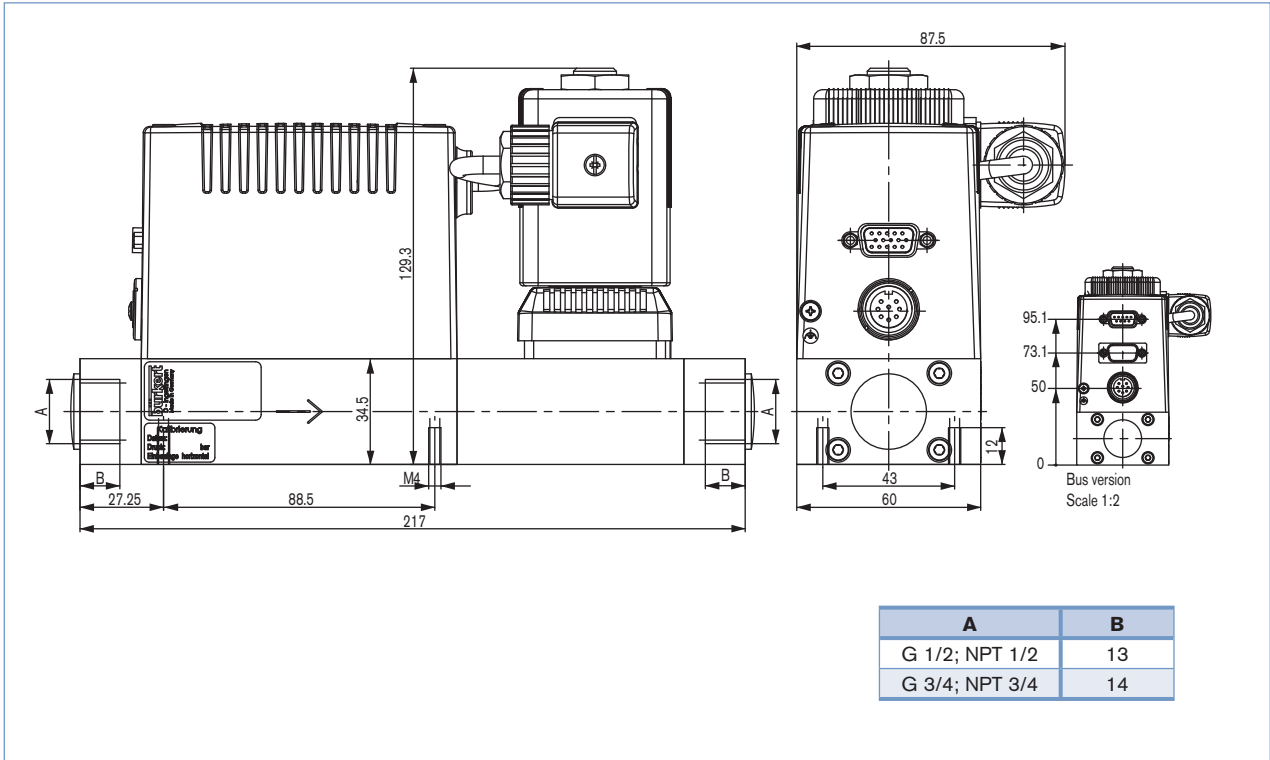


MFC 8626 with valve type 2835 (16W coil)

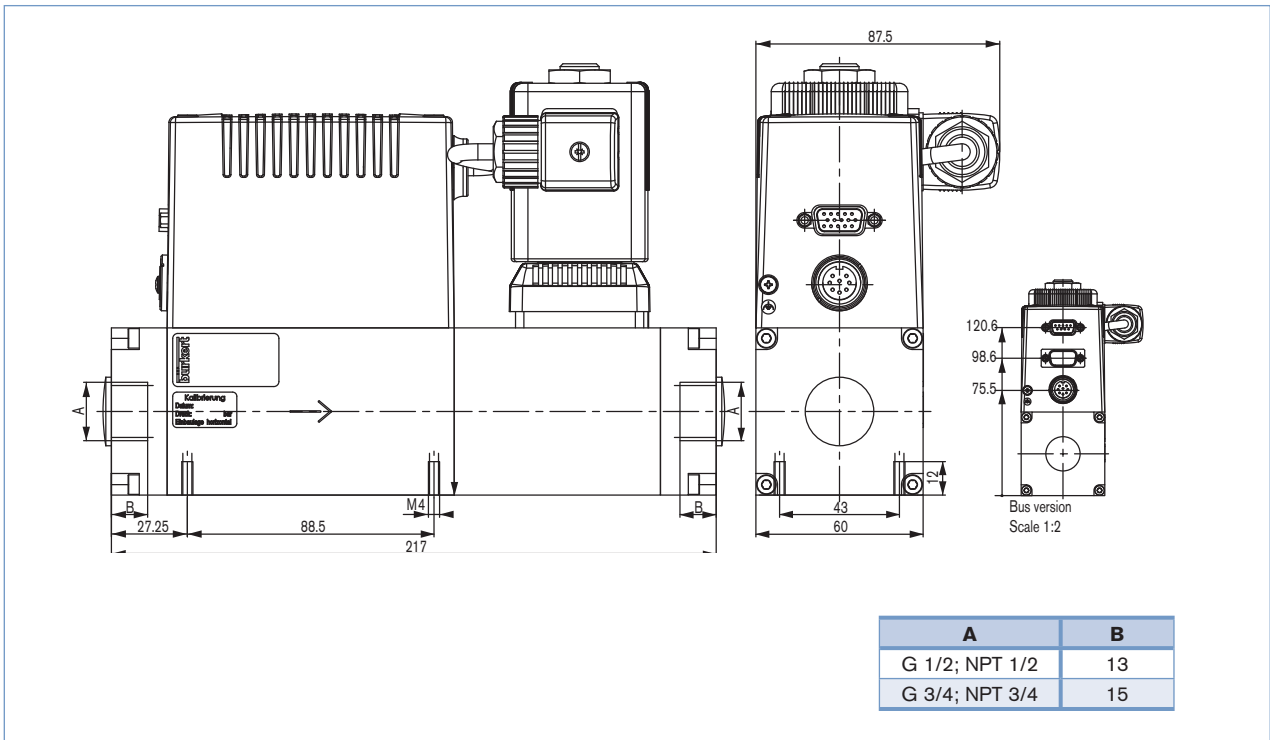


Dimensions [mm]

MFC 8626 with valve type 6024 (18W coil)



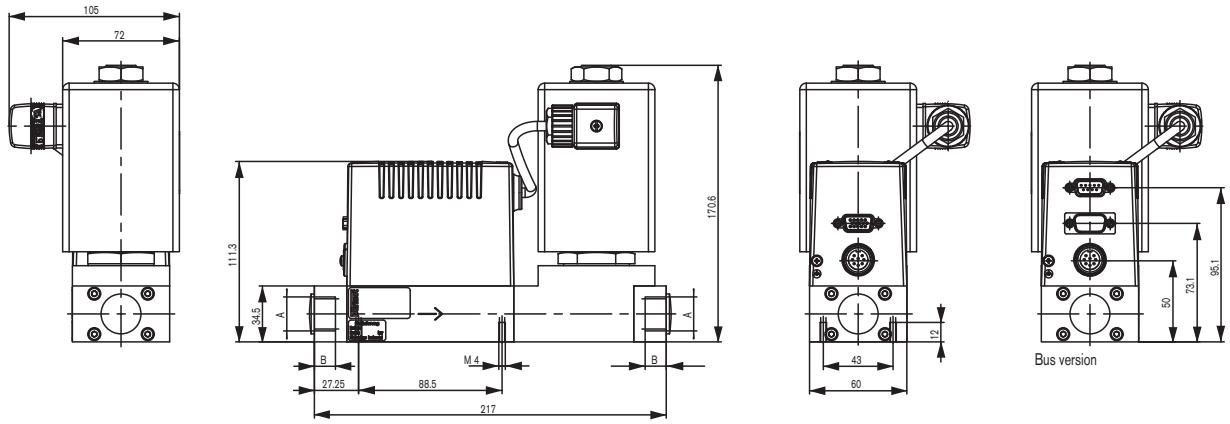
MFC 8626 with valve Type 6024 (18W coil) and base block for high flows  
(also possible in combination with other valves)



Dimensions [mm]

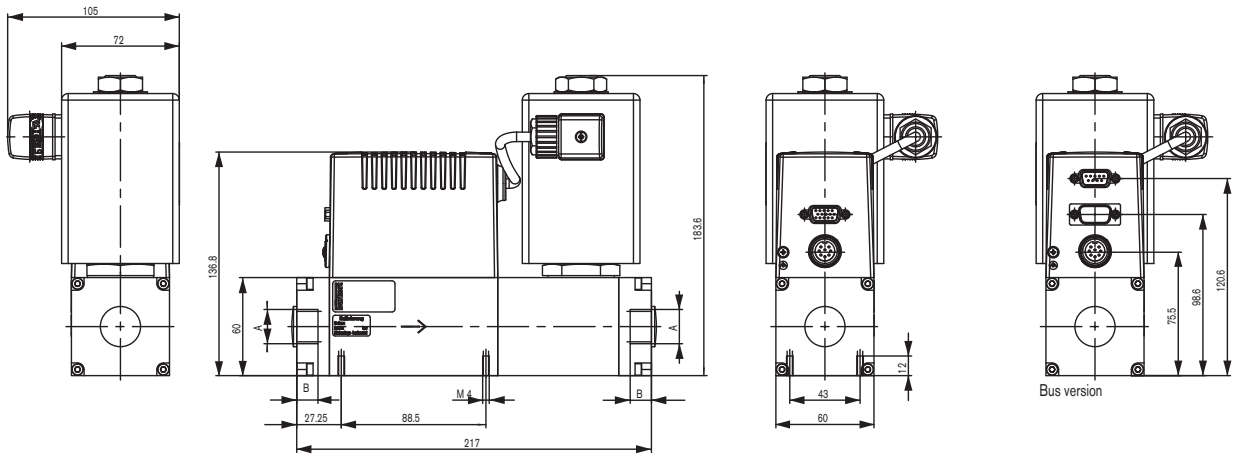
MFC 8626 with valve type 2836 (24W coil)

Standard unit



A	B
G 1/2; NPT 1/2	13
G 3/4; NPT 3/4	14

Base unit for large nominal flow rates



A	B
G 1/2; NPT 1/2	13
G 3/4; NPT 3/4	15

## MFC/MFM application - Request form

▶ Please fill out and send to your nearest Bürkert facility with your inquiry or order

Company	Contact person
Customer no.	Department
Street	Tel./Fax
Postcode/Town	E-Mail

MFC application     MFM application     Quantity     Required delivery date

## Medium data

Type of gas (or gas proportion in mixtures)

Density [kg/m<sup>3</sup>]<sup>1)</sup>

Medium temperature [°C or °F]  °C     °F

Moisture content [g/m<sup>3</sup>]

Abrasive components/solid particles  no     yes, as follows:

## Fluidic data

Maximum flow Q<sub>nom</sub>  l<sub>N</sub>/min<sup>1)</sup>     cm<sub>N</sub><sup>3</sup>/min<sup>1)</sup>  
 m<sub>N</sub><sup>3</sup>/h<sup>1)</sup>     cm<sub>S</sub><sup>3</sup>/min (sccm)<sup>2)</sup>  
 kg/h     l<sub>S</sub>/min (slpm)<sup>2)</sup>

Minimum flow Q<sub>min</sub>  l<sub>N</sub>/min<sup>1)</sup>     cm<sub>N</sub><sup>3</sup>/min<sup>1)</sup>  
 m<sub>N</sub><sup>3</sup>/h<sup>1)</sup>     cm<sub>S</sub><sup>3</sup>/min (sccm)<sup>2)</sup>  
 kg/h     l<sub>S</sub>/min (slpm)<sup>2)</sup>

Inlet pressure at Q<sub>nom</sub>    p<sub>1</sub> =  barg ■

Outlet pressure at Q<sub>nom</sub>    p<sub>2</sub> =  barg ■

Max. inlet pressure p<sub>1max</sub>  barg ■

Pipeline (external-Ø)  metric, mm     imperial, inch

MFC/MFM Port connection  without screw-in fitting  
 1/4" G-thread (DIN ISO 228/1)     1/4" NPT-thread (ANSI B1.2)  
 with screw-in fitting

Installation  horizontal, valve upright (standard)     horizontal, valve to the side  
 vertical, Flow upwards     vertical, Flow downwards

Ambient temperature  °C

## Material data

Body material  Aluminium (anodized)     Stainless steel

Seal material  FKM     EPDM     Other:

## Electrical data

Output/Input Signal

<b>with standard signal</b>		<b>with fieldbus</b>
<b>Output</b>	<b>Input</b>	
<input type="checkbox"/> 0-5 V	<input type="checkbox"/> 0-5 V	<input type="checkbox"/> PROFIBUS DP
<input type="checkbox"/> 0-10 V	<input type="checkbox"/> 0-10 V	<input type="checkbox"/> DeviceNet
<input type="checkbox"/> 0-20 mA	<input type="checkbox"/> 0-20 mA	<input type="checkbox"/> CANopen
<input type="checkbox"/> 4-20 mA	<input type="checkbox"/> 4-20 mA	

■ Please quote all pressure values as overpressure with respect to atmospheric pressure [barg]

<sup>1)</sup> at: 1.013 bar(a) and 0°C

<sup>2)</sup> at: 1.013 bar(a) and 20°C

zurücksetzen

To find your nearest Bürkert facility, click on the orange box →

[www.burkert.com](http://www.burkert.com)

In case of special application conditions, please consult for advice.

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