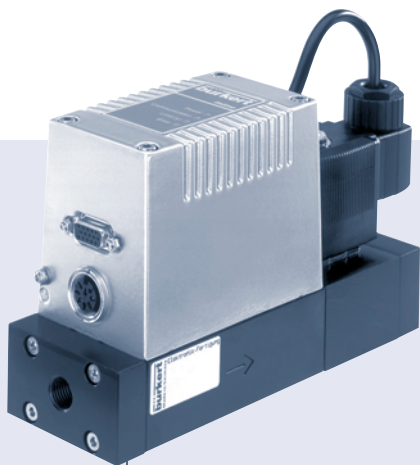


Mass Flow Controller (MFC) for gases



- Inline MFC for nominal flow rates from 25 I_N/min to 1,500 I_N/min; 1/4" to 3/4"
- High accuracy
- Fast settling time
- Fieldbus option
- Special version for ammonia gas

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
Configuration 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 proportional solenoid 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, so that no additional shut-off valves are required. 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.

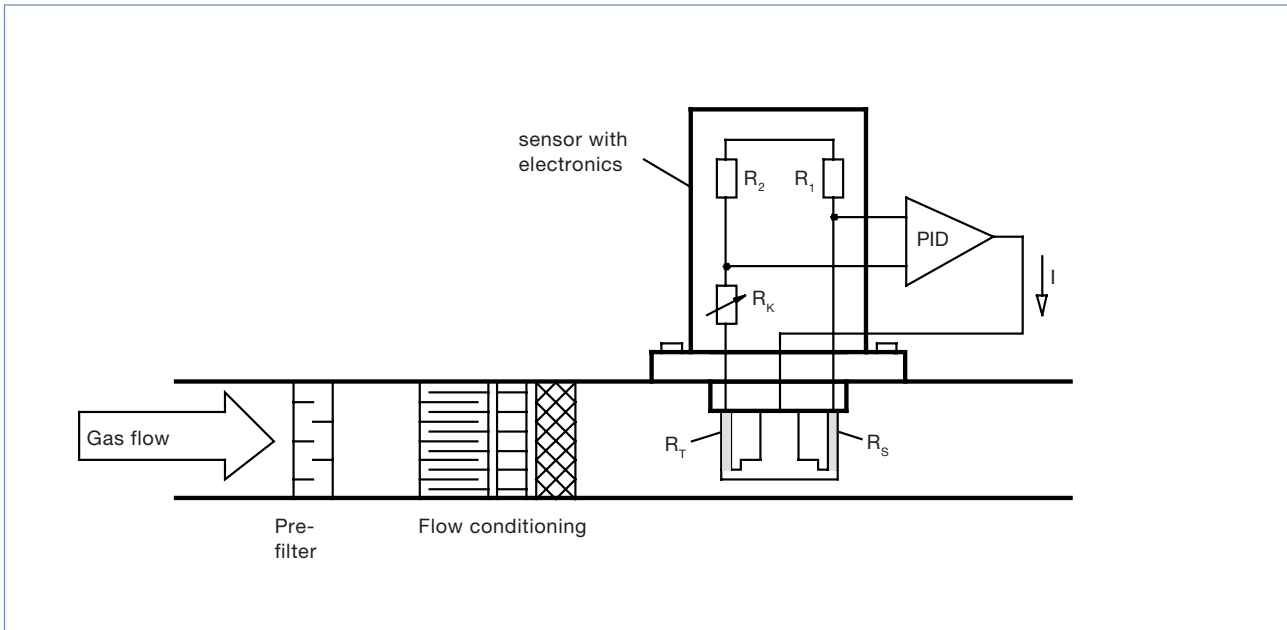
Typical application areas are gas dosing or rather the production of gas mixtures in:

- Process technology
- Packaging and foodstuff industry
- Environmental technology
- Surface treatment
- Material coating
- Burner controllers
- Fuel cell technology

Technical data	
Full scale ranges¹⁾ (Q _{nom})	25 to 1,500 I _N /min Reference medium N ₂
Operating media	neutral, non-contaminated gases, other gases on request
Max. operating pressure (Inlet pressure)	up to max. 10 bar, depending on the orifice of the valve
Calibration medium	operating gas or air with conversion factor
Medium temperature	-10 to +70°C
Ambient temperature	-10 to +45°C
Accuracy (after 15 min. warm up time)	±1.5% of rate ±0.3% F.S.
Linearity	±0.25% F.S.
Repeatability	±0.1% F.S.
Control range	1:50
Settling time (t_{95%})	<500 ms
Body material	Aluminium (anodised) or stainless steel 1.4305
Electronics housing material	Aluminium (coated)
Sealing material	FKM, EPDM (others on request)
Port connection	G 1/4, 3/8, 1/2, 3/4, NPT 1/4, 3/8, 1/2, 3/4
Control valve (proportional valve) valve orifice k _{vs} -value	valve is closed when power is off 0.8 to 12 mm 0.02 to 2.8 m ³ /h
Electr. connection round socket sub-HD socket Fieldbus comm.	8-pin 15-pin 9-pin sub-D socket
Power supply	24V DC
Voltage tolerance	±10%
Residual ripple	<5%
Power consumption	20 W – max. 50 W (depending on model)
Set point Feed impedance	0–5V, 0–10V, 0–20 mA or 4–20 mA >20 kΩ (voltage) <300 Ω (current)
Output signal Max. current, volt. output Max. load, current output	0–5 V, 0–10 V, 0–20 mA or 4–20 mA 10 mA 600 Ω
Fieldbus communication	Profibus-DP, DeviceNet, others on request
Protection class	IP65
Dimensions [mm]	See drawings p. 3-5
Total weight (Examples)	1.8 kg (Al, 10 W valve) 4.0 kg (SS, 14 W valve)
Mounting position	horizontal or vertical
Light emitting diodes (Default, other allocations possible)	Indication for power, communication, limit, error
Binary input (Default, other functions possible)	three 1 start autotune 2 not assigned 3 not assigned
Binary output (Default, other functions possible)	two relay outputs for 1. limit (set-point could not be reached) 2. error (e.g. sensor fault) max. load 30VDC, 1A/30VAC, 0,5A
Certification (see operating instructions)	various environmental tests, electromagnetic compatibility

¹⁾ at reference conditions 1,013 bar(a) and 0°C

Functional principle of the registration of the measured values



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 temperature. 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. 8) to indicate the pressures *directly* before and after the MFC. If these should

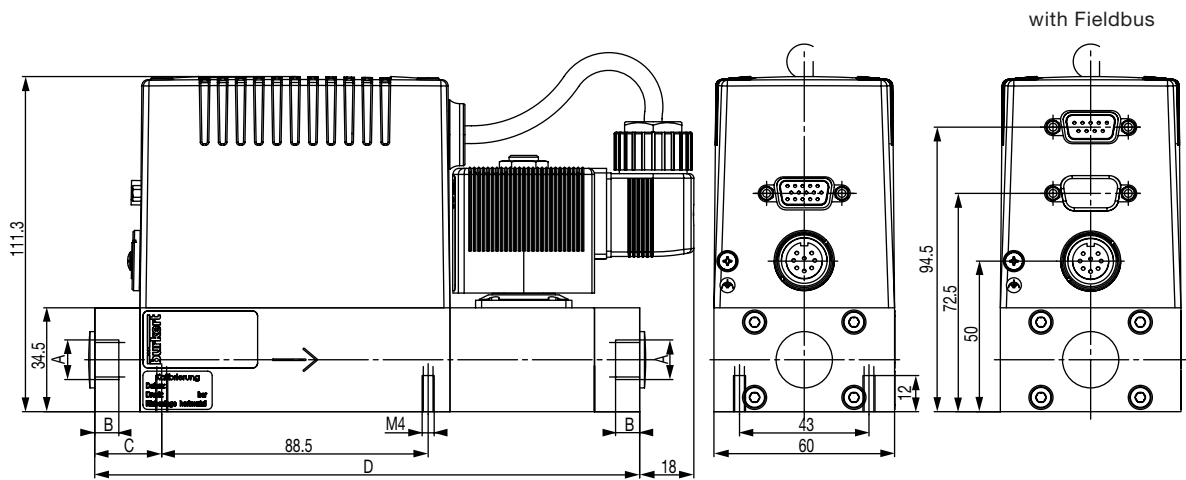
be unknown or not accessible to a measurement, estimates are to be made by taking into account the approximate pressure drops over the flow resistors before and after the MFC, respectively, at a flow rate of Q_{nom} .

In addition, please quote the maximum inlet pressure p_{1max} 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.

► The questionnaire on page 8 includes the specification of the relevant fluid. Please make use of this to profit from the experience of Burkert engineers as early as the design phase. Simply send us a copy of the questionnaire including the data for your application together with your inquiry or order.

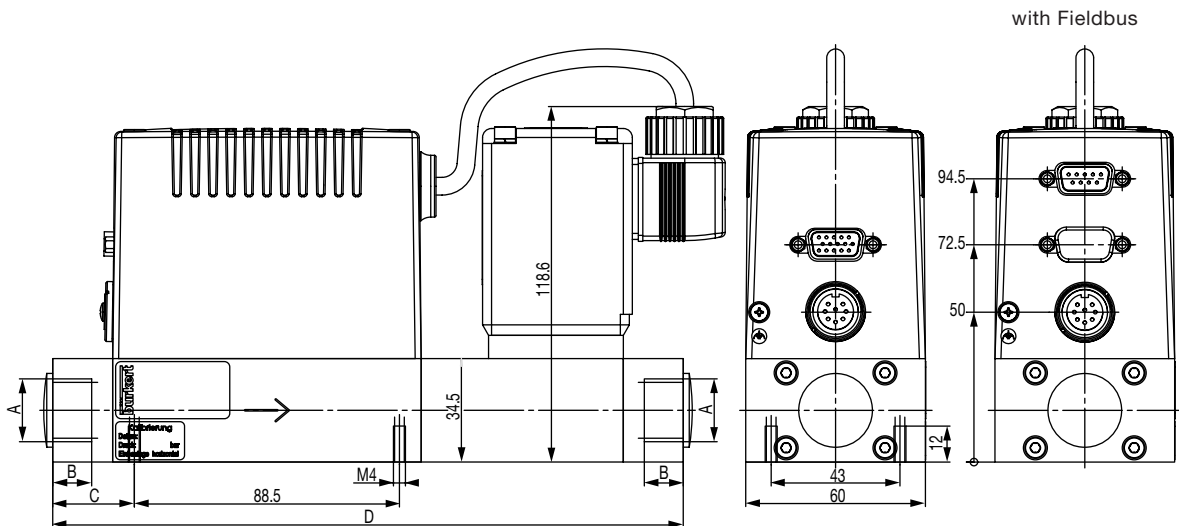
Dimensions [mm]

MFC 8626 with valve Type 6022 (10 W coil)



A	B	C	D
G 1/4; NPT 1/4	10	22.25	181.0
G 3/8; NPT 3/8	10	22.25	181.0
G 1/2; NPT 1/2	13	27.25	191.0
G 3/4; NPT 3/4	14	27.25	191.0

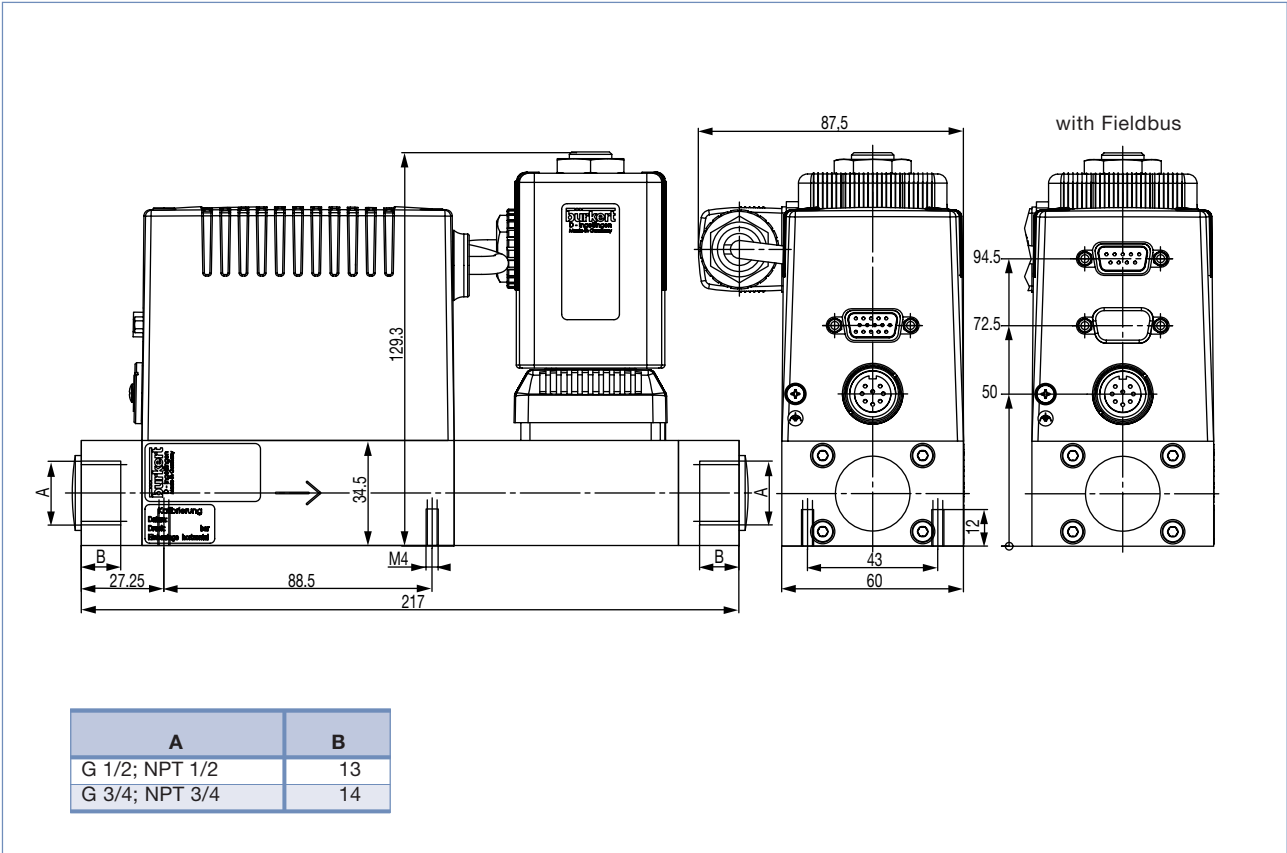
MFC 8626 with valve Type 2834 (14 W coil)



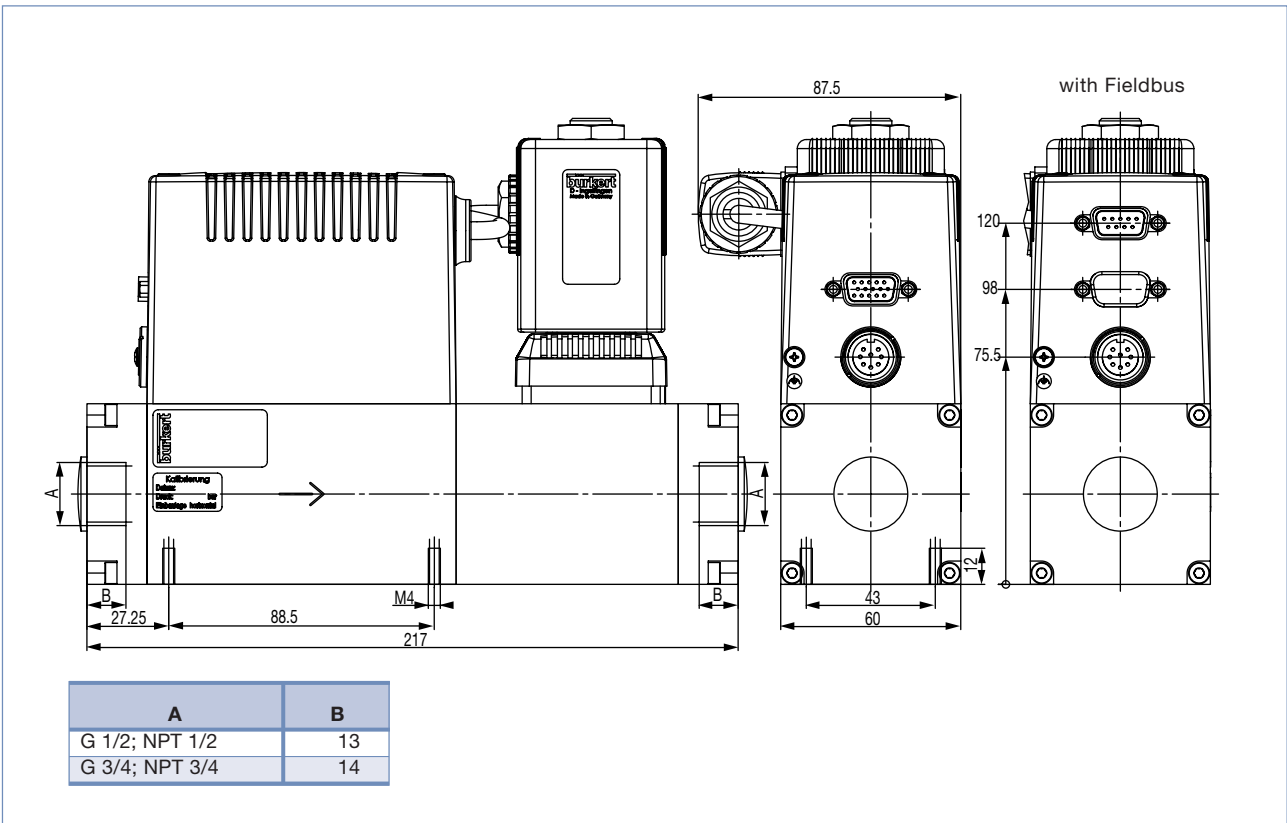
A	B	C	D
G 1/4; NPT 1/4	10	22.25	200.5
G 3/8; NPT 3/8	10	22.25	200.5
G 1/2; NPT 1/2	13	27.25	210.5
G 3/4; NPT 3/4	14	27.25	210.5

Dimensions [mm]

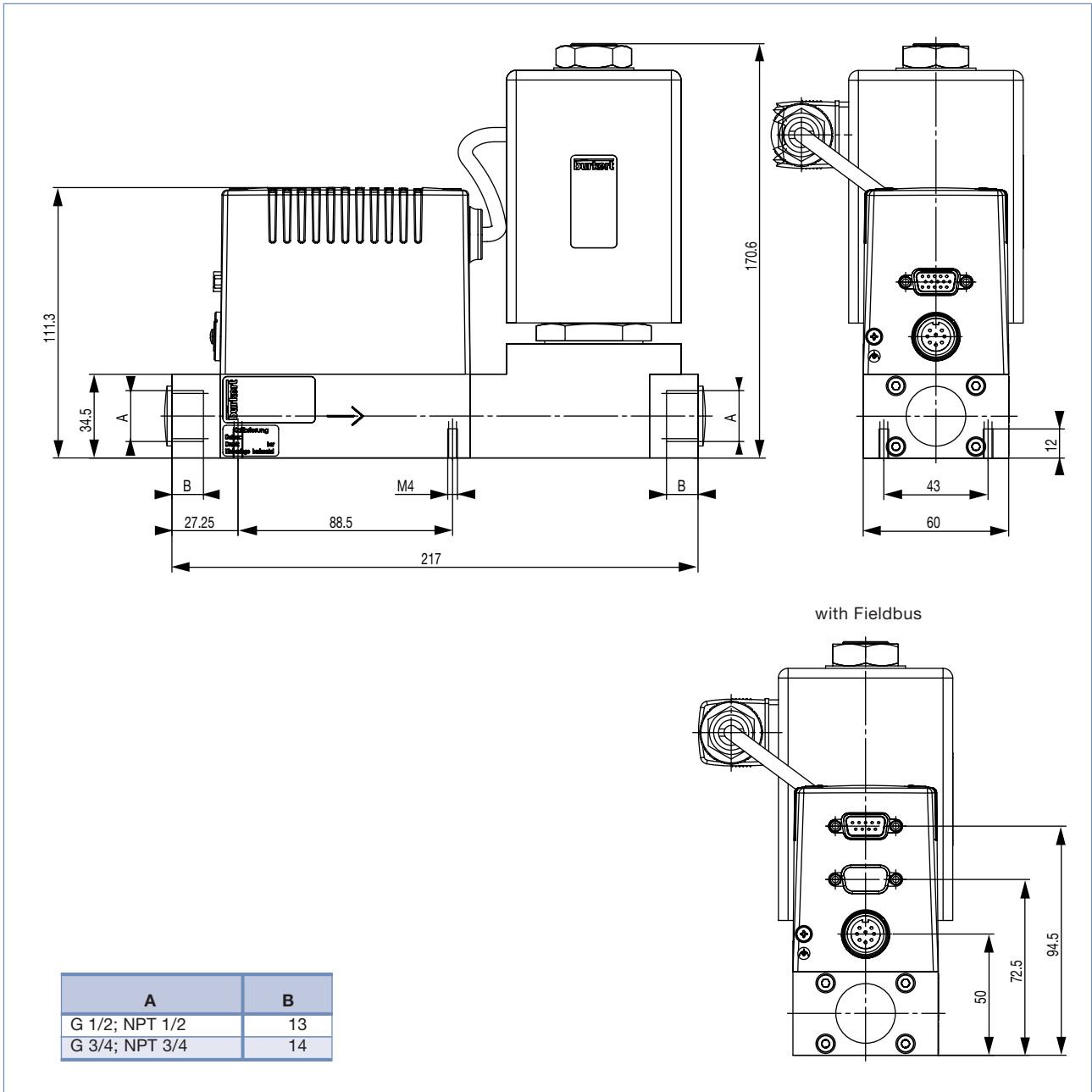
MFC 8626 with valve Type 6024 (18 W coil)



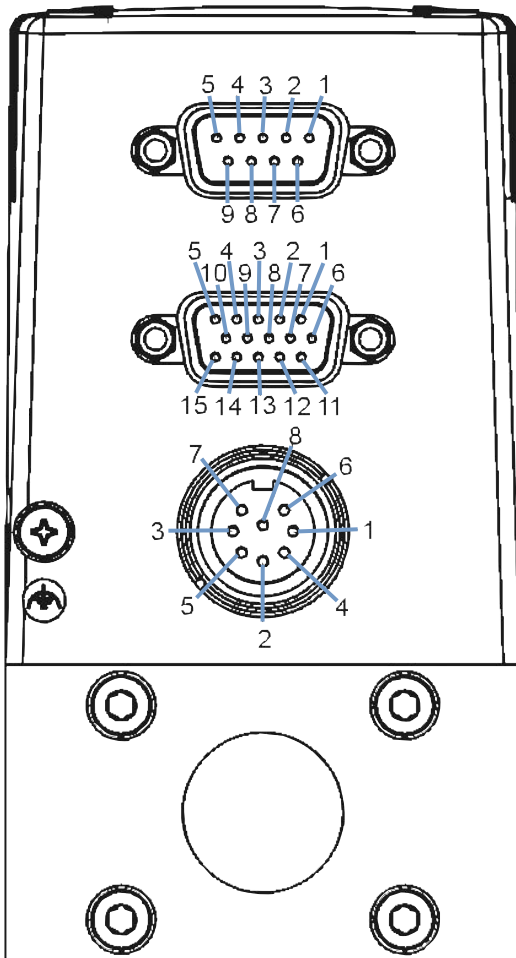
MFC 8626 with valve Type 6024 (18 W coil) and base block for high flows
(also possible in combination with other valves)



MFC 8626 with valve Type 2836 (24 W coil)



DTS 100001124 EN Version: D Status: RL (released | freigegeben | validé) printed: 30.06.2006



9-pin Sub-D socket

with Profibus-DP

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

with DeviceNet

Pin	Connection
1	shield
2	CAN_L
3	GND
4	not used
5	not used
6	not used
7	CAN_H
8	not used
9	not used

15-pin Sub-HD socket

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

(with bus version 1-3 and 13 not used)

8-pin socket round

Pin	Connection
1	supply 24V +
2	relay 1 - middle contact
3	relay 2 - middle contact
4	relay 1 - opener
5	relay 1 - closer
6	supply GND
7	relay 2 - closer
8	relay 2 - opener

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

Article	Item no.
Round plug 8-pin Binder (solder termination)	918 299
Round plug 8-pin with 5m cable, on one side prefabricated	787 733
Round plug 8-pin with 10m cable, on one side prefabricated	787 734
SUB-HD-plug 15-pin with 5m cable, on one side prefabricated	787 735
SUB-HD-plug 15-pin with 10m cable, on one side prefabricated	787 736
RS232-adapter – for connection to a PC	654 757
Cable for RS232 9-pin socket/plug 2m	917 039
Adapter RS485	658 499
Configuration software (Mass Flow Communicator)	Info at www.buerkert.com

Specification sheet for MFC/MFM applications

► Please fill in and send to your local Burkert Sales Centre via e-mail, fax or regular post together with your inquiry or order

<input type="checkbox"/> MFC-application	<input type="checkbox"/> MFM-application	<input type="text"/> Quantity	<input type="text"/> Desired delivery date
Medium data			
Type of gas (or gas proportion in mixtures)	<input type="text"/>		
Density [kg/m ³] ¹⁾	<input type="text"/>		
Medium temperature [°C or °F]	<input type="text"/> °C	<input type="text"/> °F	
Moisture content [g/m ³]	<input type="text"/>		
Abrasive components/solid particles	<input type="checkbox"/> no	<input type="checkbox"/> yes, as follows <input type="text"/>	
Fluidic data			
Maximum flow Q _{nom}	<input type="text"/> l _N /min ¹⁾	<input type="text"/> cm _N ³ /min ¹⁾	
	<input type="text"/> m _N ³ /h ¹⁾	<input type="text"/> cm _s ³ /min (sccm) ²⁾	
	<input type="text"/> kg/h	<input type="text"/> l _s /min (slpm) ²⁾	
Minimum flow Q _{min}	<input type="text"/> l _N /min ¹⁾	<input type="text"/> cm _N ³ /min ¹⁾	
	<input type="text"/> m _N ³ /h ¹⁾	<input type="text"/> cm _s ³ /min (sccm) ²⁾	
	<input type="text"/> kg/h	<input type="text"/> l _s /min (slpm) ²⁾	
Inlet pressure at Q _{nom}	p ₁ = <input type="text"/> barg or <input type="text"/> psig ■		
Outlet pressure at Q _{nom}	p ₂ = <input type="text"/> barg or <input type="text"/> psig ■		
Max. inlet pressure p _{1max}	<input type="text"/> barg or <input type="text"/> psig ■		
Pipe run (external-Ø)	<input type="text"/> metric, mm	<input type="text"/> imperial, inch	
MFC/MFM-port connection (1/4"-3/4" internal thread or screw-in fitting)	<input type="checkbox"/> without screw-in fitting <input type="checkbox"/> G-thread (DIN ISO 228/1) <input type="checkbox"/> NPT-thread (ANSI B1.2)		
MFC/MFM installation	<input type="checkbox"/> with screw-in fitting <input type="checkbox"/> horizontal, standing valve (standard) <input type="checkbox"/> horizontal, laying valve <input type="checkbox"/> vertical, flow upwards <input type="checkbox"/> vertical, flow downwards		
Ambient temperature	<input type="text"/> °C		
Material data			
Body material	<input type="checkbox"/> Aluminium (anodised)	<input type="checkbox"/> Stainless steel 1.4305	
Sealing material	<input type="checkbox"/> FKM	<input type="checkbox"/> EPD	Other: <input type="text"/>
Electrical data			
Output/input signal	<input type="checkbox"/> 0-20 mA/0-20 mA	<input type="checkbox"/> 4-20 mA/4-20 mA	
	<input type="checkbox"/> 0-10 V/0-10 V	<input type="checkbox"/> 0-5 V/0-5 V	
Fieldbus communication	<input type="checkbox"/> Profibus-DP	<input type="checkbox"/> DeviceNet	
■ Please quote all pressure values as overpressures with respect to atmospheric pressure [barg]			

¹⁾ at: 1.013 bar(a) and 0°C²⁾ at: 1.013 bar(a) and 20°C

► Please do not forget to fill in the customer data below

Company	Contact person
Customer no.	Department
Address	Tel./Fax
Postcode/Town/Country	E-mail

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

We reserve the right to make technical changes
without notice.

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