

# Mass Flow Controller (MFC)/Mass Flow Meter (MFM) for Gases

8746

## Nominal flow ranges from 20 I<sub>N</sub>/min to 2500 I<sub>N</sub>/min

- High accuracy and repeatability
- Communication via fieldbus based on CANopen
- Optional: ATEX II Cat. 3G/D
- Electromagnetic and motor-driven valve actuation available



For a pure and flawless melt: The MFC 8746 mass flow controller is designed with a motor valve for regulation of pressures up to 20 bar and reliable operation even under the most stringent conditions. To ensure higher process reliability in the gas supply the valve can be regulated at full differential pressure. And the self-locking drive ensures that the motor valve is not affected by pressure fluctuations. In addition, the MFC 8746 features the latest digital technology – with the integrated bus interface, it is ready for Industry 4.0.

### Technical Data

| General data          |   |
|-----------------------|---|
| Operating medium      | Neutral, non-contaminated gases, others on request  |
| Calibration medium    | Operating gas or air with correction function   |
| Medium temperature    | 14°F <sup>1)</sup> to 158°F (-10°C to 70°C)<br>(-10 °C <sup>1)</sup> to +60 °C with oxygen) |
| Ambient temperature   | 14°F to 122°F (-10°C to 50°C)<br>higher temperatures on request                             |
| Materials             |   |
| Body                  | Stainless steel or aluminium  |
| Housing               | Aluminium diecasting (coated)   |
| Seals                 | FKM or EPDM (depending on the gas) <sup>2)</sup>  |
| Port connection       | G or NPT 1/4", 3/8", 1/2", 3/4", 1" Sub-base  |
| Electr. connection    | M12 plug, 5 pin   |
| Operating voltage     | 24 V DC   |
| Voltage tolerance     | ±10%  |
| Digital Comm.         | CANopen or CAN based bus  |
| Input-/Output signals | None, communication via bus   |

<sup>1)</sup> When using a motor valve the minimum medium temperature is 0 °C.

<sup>2)</sup> When using a motor valve additionally:

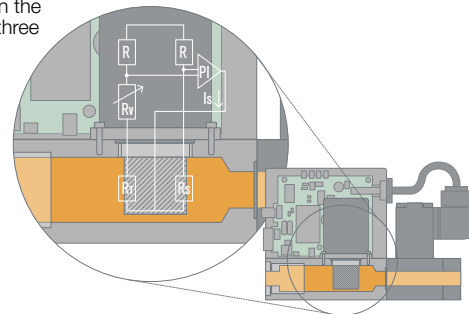
- Type 3280 DN4: Seat seal in PEEK
- Type 3285: Seat seal in Al<sub>2</sub>O<sub>3</sub>

**Type 8746 with electromagnetic proportional valve:** Type 8746 can be configured as MFM or MFC. For MFCs the direct-acting proportional valves of Types 287x are used. These solenoid proportional valves are normally closed and stand for highest accuracy and repeatability with settling/response times of a few hundred milliseconds.

**Type 8746 with motor-driven proportional valve:** The Type 8746 with motor-driven valves is especially designed for applications with high inlet pressures up to 22 bars or high flow rates (at a low pressure drop). The motor's power consumption to hold a specific opening position is nearly zero. This key feature can reduce the energy consumption of a plant dramatically. Without electrical power the valve remains in its current position. The maximum duty cycle of the motor depends on the ambient temperature. The duty cycle does not refer to the duty cycle of the device but to the duty cycle of the motor. The motor is not switched on unless the valve is to move. Frequent set-point value changes will drastically increase the duty cycle of the motor.

### Measuring 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.



### Technical Data Continued (see datasheet for details)

| Type 8746  | With electromagnetic proportional valve  | With motor-driven proportional valve   |
|--|--|--|
| <b>Turndown ratio</b>  |  | 50:1 <sup>1)</sup>   |
| <b>Max. operating pressure</b><br>Data in overpressure to atmospheric pressure | 10 bar (with MFCs the max. pressure depends on the orifice of the valve) optional up to 25 bar for MFM           | 22 bar (with MFCs the max. pressure depends on the orifice of the valve)                                       |
| <b>Accuracy</b> (after 15 min. warm up time)                                   | ±1.5 % o.R. ±0.3 % F.S.  | ±2 % o.R. ±0.5 % F.S.  |
| <b>Repeatability</b>   | ±0.1 % F.S.  | ±0.5 % F.S.  |
| <b>Settling/Response time (t95 %)</b>  | <500 ms  | <5 sec.  |
| <b>Proportional valve</b>  | (electromagnetic) normally closed, valve orifice range: 0.8...12mm, Kvs value range: 0.02...2.5m <sup>3</sup> /h | (motor-driven) normally persisting, valve orifice range: 2...20mm, Kvs value range: 0.5...7.8m <sup>3</sup> /h |

<sup>1)</sup> With vertical installation and flow downwards the turndown ratio is 10:1