

## Type 8741, 8742 bÜS / CANopen

Mass Flow Meter (MFM) / Mass Flow Controller (MFC)

Massendurchflussmesser (MFM) / Massendurchflussregler (MFC)

Débitmètre massique (MFM) / Régulateur de débit massique (MFC)



## Operating Instructions

Bedienungsanleitung

Manuel d'utilisation

We reserve the right to make technical changes without notice.  
Technische Änderungen vorbehalten.  
Sous réserve de modifications techniques.

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# 1 OPERATING INSTRUCTIONS

The Operating Instructions describe the entire life cycle of the device. Please keep the Operating Instructions in a safe place, accessible to all users and any new owners.

## Important safety information!

Please read the manual carefully. Pay particular attention to the sections [3 Basic safety information](#) and [2 Intended use](#).

- ▶ The Operating Instructions must be read and understood.

## 1.1 Definition of terms

The term "device" as used within the Operating Instructions, always refers to the MFM/MFC type 8741 / 8472 with bus / CANopen digital communication.

## 1.2 Symbols used

The following symbols are used in these instructions.



### **DANGER!**

**Warns of immediate danger!**

- ▶ If ignored, death or serious injury will result.



### **WARNING!**

**Warns of a situation which is possibly dangerous!**

- ▶ If ignored, serious injury or death may result.



### **CAUTION!**

**Warns of possible danger!**

- ▶ Failure to observe this warning can result in substantial or minor injuries.

### **NOTE!**

**Warns of damage to property!**



Important advice and recommendations.



Refers to information in this operating manual, or in other documents.

- ▶ Indicates a risk prevention statement.

→ Indicates a procedure that must be carried out.



Indicates a result.

**Menu** Identifies a text of a user interface.

## 2 INTENDED USE

Improper use of the device may be a hazard to people, nearby equipment and the environment.

MFM type 8741 / 8742 is used exclusively to measure the mass flow of clean dry gases.

MFC type 8741 / 8742 is used exclusively to control the mass flow of clean dry gases.

- ▶ Observe the additional data, operating and service conditions specified in the contract documents, the Operating Instructions and on the name plate and calibration plate.

### The device

- ▶ Use only for the media indicated on the name plate and in the calibration protocol.
- ▶ only use indoors.
- ▶ only use up to an altitude of 2000 m.
- ▶ Use only in conjunction with external instruments and components recommended by Bürkert.
- ▶ Operate carefully and ensure regular, professional maintenance.
- ▶ Operate only in perfect working order and ensure appropriate storage, transport, installation and control.
- ▶ Use only for its intended purpose.

## 2.1 Versions with explosion protection



### DANGER!

Danger of explosion in the event of improper use in potentially explosive areas!

- ▶ Observe the specifications of the conformity certificate.
- ▶ For Ex. certified versions, the specifications in the ATEX supplement for type 8742 available at [country.burkert.com](https://country.burkert.com) must be observed.

### 2.1.1 Ex. certification

The Ex. certification is only valid if the Bürkert device is used as described in the ATEX supplement.

If unauthorized changes are made to the device, the Ex. certification becomes invalid.

### 3 BASIC SAFETY INFORMATION

These safety instructions do not take the following into account:

- any contingencies or occurrences that may arise during installation, use and maintenance.
- Location-specific safety regulations, adherence to which, also on the part of the mounting personnel, is the responsibility of the operator.



#### **Danger due to high pressure in the installation/device.**

- ▶ Before working on the installation or device, cut the pressure and vent and drain the pipes.

#### **Risk of injury from electric shocks.**

- ▶ Before working on the installation or device, switch off the power and ensure that it cannot be reactivated.
- ▶ Observe the applicable accident protection and safety regulations for electrical equipment!

#### **Burns/fire hazard due to hot surface of the device!**

- ▶ Keep the device away from any highly flammable materials or media and avoid any contact with bare hands.

#### **Danger due to escape of the medium.**

- ▶ Observe the applicable accident protection and safety regulations relating to the operating medium used.

#### **Various dangerous situations.**

To avoid personal injury, take care:

- ▶ Not to operate the device without the factory installed input filters.
- ▶ Only to operate the device in the installation position given on the calibration plate.
- ▶ That the operating pressure of the device is not higher than the maximum calibration pressure (MFM) specified on the calibration plate or the tightness pressure of the proportional valve (MFC).
- ▶ To only use the device for the medium specified as the operating medium in the calibration protocol.
- ▶ Only to use agents that are stable with the device materials for cleaning and decontamination  
The compatibility chart can be found on our homepage: [country.burkert.com](https://www.country.burkert.com).  
In the event of any ambiguity please contact your local sales office.
- ▶ Do not make any modifications to the device and do not subject the device to mechanical loads.
- ▶ Protect the installation/device from accidental actuation.
- ▶ Only trained personnel may perform installation and maintenance work.
- ▶ After an interruption in the electrical and media supply, ensure a controlled restart of the process.
- ▶ Observe best industry practice.

## NOTE!

### Components / assemblies at risk from electrostatic charges!

The device contains electronic components which are susceptible to electrostatic discharge (ESD). Contact with electrostatically charged persons or objects endangers these components. In the worst case, they will become defective immediately or will fail when energized.

- To minimise or even avoid all damage due to an electrostatic discharge, take all the precautions described in the EN 61340-5-1.
- Do not touch any of the live electrical components.

## 4 GENERAL INFORMATION

### 4.1 Manufacturer's name, manufacturer's address and international contacts

The name of the manufacturer is displayed as inset writing on the cover and the housing of the device.

The manufacturer of the device can be contacted at the following address:

Bürkert SAS  
Rue du Giessen  
F-67220 TRIEMBACH-AU VAL

The addresses of our international sales offices are available on the internet at: [country.burkert.com](http://country.burkert.com).

### 4.2 Warranty

The warranty is conditional on compliant use of the device in observance of the operating conditions specified in this manual.

### 4.3 Information on the Internet

Operating manuals and data sheets for the type 8741/8742 can be found online at: [country.burkert.com](http://country.burkert.com).



## 5 DESCRIPTION OF THE DEVICE

### 5.1 Design of the device

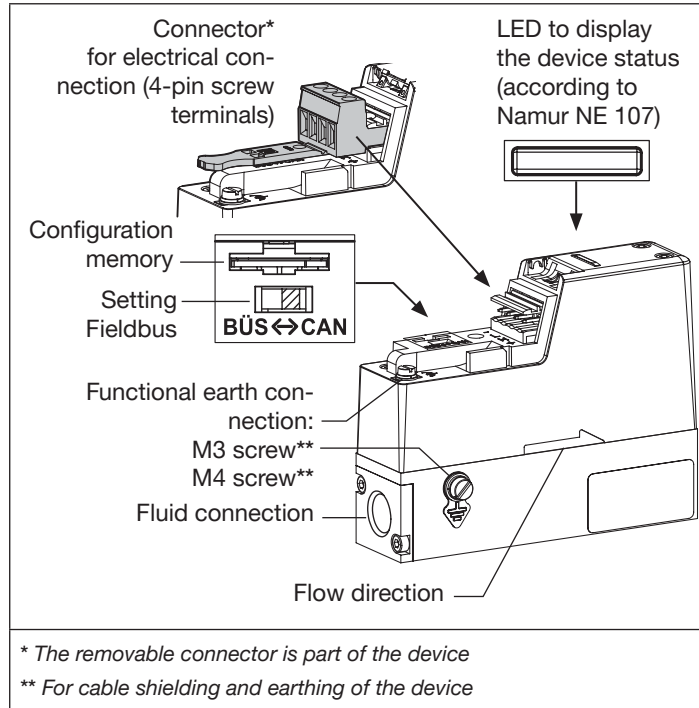
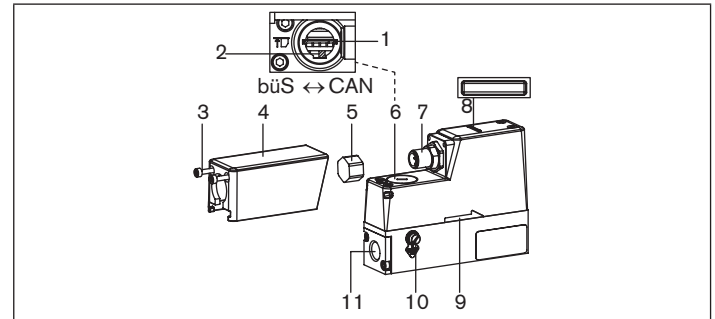


Fig. 1: Design of the device type 8741



1. Configuration memory
2. Setting of the fieldbus
3. Mounting screws
4. Impact protection cover (only necessary on ATEX versions)
5. M12 sealing cap (only ATEX versions)
6. Blind plug (access to the configuration memory and fieldbus switch)
7. Connector (counterpart is not part of the device) for electrical connection (5-pin M12 plug)
8. LED to display the device status (according to NAMUR NE 107)
9. Flow direction
10. Functional earth connection: M4-screw for cable shielding and device earthing
11. Fluid connection

Fig. 2: Design of the device type 8742

## 5.2 General description

The device is available in two basic versions.

- As a Mass Flow Meter (MFM) the device measures the mass flow of the gases for which it has been calibrated.
- As a Mass Flow Controller (MFC) the device measures and controls the mass flow of the gases for which it has been calibrated. In contrast to the MFM, the MFC also contains a regulation valve. The gas must be in a dry and clean state.

Digital communication with the device (for example for transfer of the setpoint or measured value) is achieved via CANopen\*- or bÜS\*\*.



\* CANopen - A fieldbus based on CAN (Controller Area Network) that is used in automation technology for networking of devices.

\*\* BÜS - A CANopen-based fieldbus with additional functionalities.

## 5.3 Operation of the MFM (Mass Flow Meter)

A sensor is integrated into the MFM to measure the mass flow. The measured value is transmitted to an external device via a digital output (fieldbus).

## 5.4 Operation of the MFC (Mass Flow Controller)

**Design:**

- The mass flow is measured by a sensor.
- The MFC is fitted with electronics and a low-friction proportional valve with a high response sensitivity to control the mass flow.

**NOTE!**

**Malfunction due to contamination.**

For problem-free functioning of the MFC, a filter must be installed in front of the device for contaminated operating media.

See chapter [6.4.1 Quality of the operating medium](#).

**Operation:**

The sensor measures the mass flow and relays the measured value to the integrated electronics. The electronics compares the measured current value ( $x$ ) with the desired setpoint value ( $w$ ) and calculates the control value to be transmitted to the proportional valve ( $Y$ ) in order to control its opening.

The mass flow is either kept stable at a constant value or altered according to a predefined profile.

The regulation is performed independent of pressure fluctuations or increased flow resistance, such as might be caused by dirty filters.

The short response time of the proportional valve and the dynamics of the sensor determine the setting time.

以上内容仅为本文档的试下载部分，为可阅读页数的一半内容。如要下载或阅读全文，请访问：<https://d.book118.com/398030047017006036>