



By use in explosive hazardous areas read and follow the

## special conditions and instructions for safe application

of the attached

## explosive protection information

# B3 / B1 / B5



first and take notice of the operating instructions.

## Operating instructions

### 1. Description

#### 1.1 Intended use

The level indicator observes the filling level as a limit switch in silos and vessels. It can be used as full, demand and empty indicator for dusty and powdery, granulated and grainy bulk goods with a max. grain size up to 30 mm and with a bulk density of 0.3 t/m<sup>3</sup> ... 2.5 t/m<sup>3</sup>.

#### 1.2 Function

The bulk goods presses with its weight against the membrane. A tappet directly transfers the pressure from the membrane to the switch. When the bulk goods are decreasing, pressure is taken off the membrane and the switch will be interconnected.

#### 1.3 Technical data

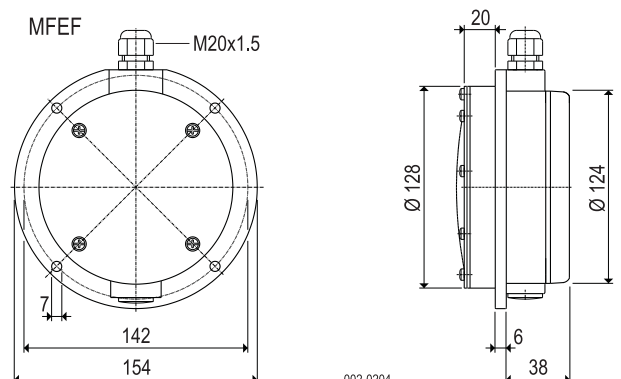
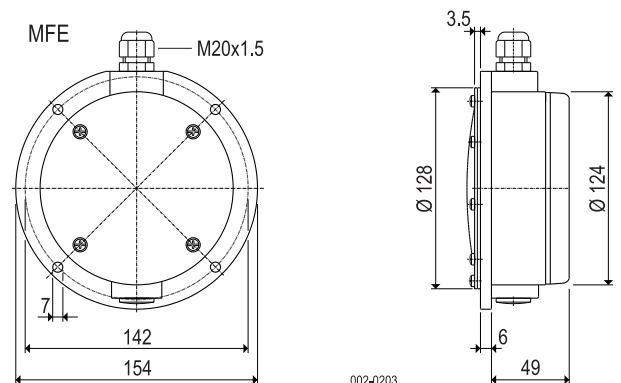
<b>Manufacturer</b>	<b>MOLLET</b>	
	<b>Füllstandtechnik GmbH</b>	
<b>Address</b>	Industriepark RIO 103 74706 Osterburken	
<b>Name</b>	Membrane level indicator	
<b>Type</b>	<b>MFE</b> (GFK) and <b>MFE-A</b> (Alu) <b>MFEF</b> (GFK) and <b>MFEF-A</b> (Alu)	
<b>Temperature range</b>	GFK	Aluminium
	<b>Ta</b> -20 °C ... +60 °C	-25 °C ... +80 °C
<b>Signal contact</b>	change-over contact, potentialfree	
<b>max. Switching voltage</b>	see Type plate	
<b>max. Braking capacity</b>	see Type plate	
<b>Response delay</b>	none	
<b>Cable connection</b>	Screw M4	
<b>Cable entry</b>	Cable gland M20x1.5	
<b>Type of protection</b>	<b>IP40</b>	
acc. to DIN EN 60529	<b>IP53</b> if cable gland is upwards	
	<b>IP65</b> with stainless steel membrane	
	<b>IP66</b> with aluminium housing	
<b>Overpressure safety</b>	up to 1 bar	
<b>Weight</b>	<b>MFE</b> 0.48 kg	<b>MFE-A</b> 0.95 kg
	<b>MFEF</b> 0.49 kg	<b>MFEF-A</b> 1.00 kg
<b>Maintenance</b>	none	
<b>Mounting position</b>	any position	

#### 1.4 Materials

Type	Housing
<b>MFE(F)- . .</b>	= GFK (glass-fibre reinforced plastics)
<b>MFE(F)-A . .</b>	= Aluminium

Type	Membrane	Mounting ring
<b>MFE(F)- . NN</b>	= NBR	Steel, galvanized
<b>MFE(F)- . VN</b>	= VITON	Steel, galvanized
<b>MFE(F)- . NE</b>	= NBR	Stainless steel 1.4301 / 304
<b>MFE(F)- . VE</b>	= VITON	Stainless steel 1.4301 / 304
<b>MFE(F)- . EE</b>	= 304	Stainless steel 1.4301 / 304

#### 1.5 Dimensions



## 2. Installation

### 2.1 Preparation

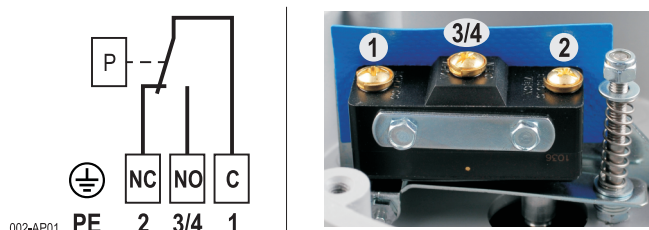
- Check the membrane of visual transport damage.
- Read and follow the safety instructions and the operating instructions, before handling with the device !

### 2.2 Mounting in the vessel

Position the level indicator with the gasket at the provided flange and fix it with 4 washers and screws M6.

### 2.3 Electrical connection

Circuit diagram



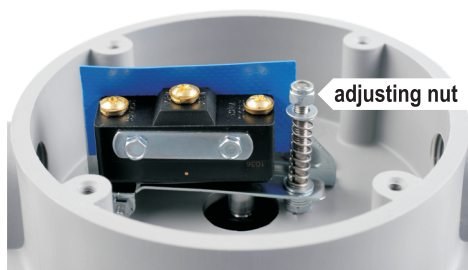
### 2.4 Cable gland

- After electrical connection, tighten the cable gland.
- Screw the cap nut, until the cable entry is closed tightly.

## 3. Commissioning

- Put the level indicator into operation only, if the installation and the electrical connection have been done correctly.
- The level indicator is presetted at sensitive.
- With the adjusting nut the device can be adjustable insensitive. Clockwise insensitive.
- **Sensitivities** with membrane:
 

NBR	60 g ... 1000 g
VITON	60 g ... 1000 g
Stainless steel 1.4301 / 304	150 g ... 2000 g



## 4. Utilization

### 4.1 Normal operation

- Use the level indicator in its intended application only.
- The level indicator is provided for use in silos or vessels with pressureless operation.
- Comply with the specifications on the data plate. Check the membrane of the level indicator, when the permissible temperature of bulk goods was exceeded or was fallen short off.
- Damaged devices have to put out of operation immediately.

### 4.2 Inexpert handling

- Ignoring of the safety instructions and the operating instructions.
- Not intended use.
- Mounting of spare parts which are no original parts.
- Violation against applicable law and standards.

## 5. Maintenance and servicing

### 5.1 General informations

- Do maintenance work only, if the silo or the vessel is empty and if there is no overpressure or vacuum.
- Use original spare parts only.

### 5.2 Maintenance

- Inspect in regular intervals if there is any wear or abrasion at the membrane. Define the control intervals, depending on the characteristics of the bulk goods.
- In case of damage or abrasion, replace the membrane immediately with a new membrane.

### 5.3 Servicing

- Damaged parts have immediately replaced with similar.
- Until the complete reconstruction of the proper function, the level indicator must not be used any more.

## 6. Storage

- Store the level indicator dry and dust-free.
- Protect the membrane against pointed objects and ultraviolet radiation.

## 7. Disposal

- The level indicator can be recycled.
- The disposal applies to the valid environmental guidelines according to the location of the carrier and the local manufacturing conditions.

**Membrane level indicator**  
MFE with plastic housing

**MF**

**Dust**



**Explosion protection information**  
and supplement to the operating instructions

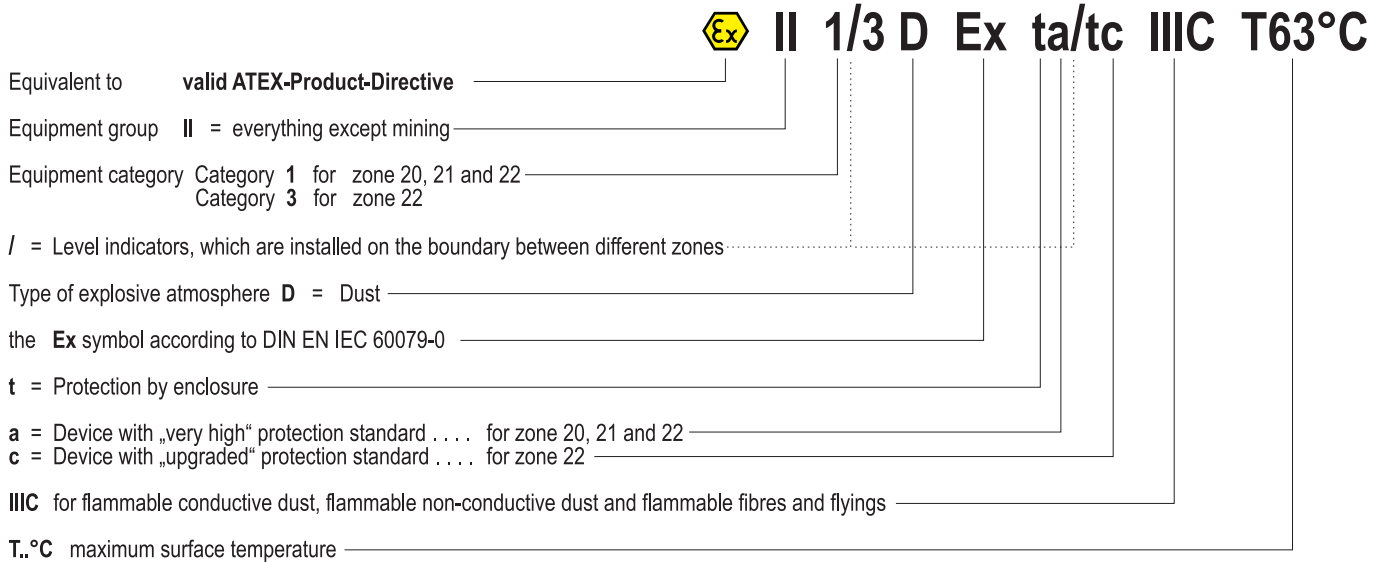
**Type plate details B3**  
Dust

<p>Manufacturer and address</p> <p><b>MOLLET</b> Füllstandtechnik GmbH Industriepark RIO 103 D-74706 Osterburken Tel. +49 62 91 64 400</p>		<p>CE sign with the number of the "Notified Body" which is involved in the production control phase</p> <p><b>CE</b> 0044</p>		<p>Connection diagram</p>	
<p>Model designation</p> <p>Typ <b>MFE-...-B3</b></p>		<p>Details to loadability of the signal contact</p> <p>Contact <b>4 A 240 V~</b></p>			
<p>Unique serial number</p> <p>S# <b>1234567890</b> A.- Nr. <b>1234567890</b></p>		<p>Dust marking</p> <p><b>II 1/3D Ex ta/tc IIIC T 63 °C</b></p> <p><b>-20 °C ≤ Ta ≤ +60 °C</b></p>		<p>Type of protection</p> <p><b>IP65</b></p>	
<p>Number which the order was handled</p> <p><b>03/10</b></p>		<p>Month and year of delivery</p>		<p>EC-type examination certificate number</p> <p><b>IBExU06ATEX1068</b></p>	

**MFE membrane level indicator with plastic housing**

**Marking in accordance with ATEX and DIN EN IEC 60079-0:2019**

Membrane level indicator for use on the boundary from zone 20 to zone 22.



Order code **B3**

Marking: **II 1 / 3 D**



**Equipment category appropriation by zones**

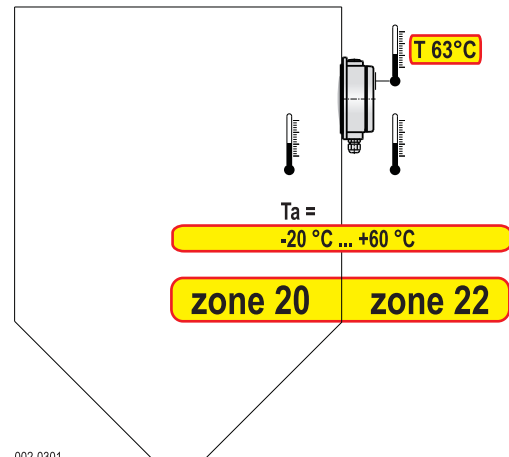
Membrane level indicator for use on the boundary from zone 20 to zone 22.

**Ambient temperatures Ta**

The ambient temperature **Ta** defines the maximum operating temperature of the indicators. Inside the vessel this is process temperature (the air or the bulk goods temperature) nearby the device.

**maximum surface temperature T**

The maximum surface temperature means the hottest point at the equipment.



		Industriepark RIO 103 D-74706 Osterburken Tel. +49 62 91 64 400		0044		C — NO — NC	
Typ <b>MFE-...B3</b>		<b>II 1/3D Ex ta/tc IIIC T 63 °C</b>		Contact 4 A 240 V-			
		<b>-20 °C ≤ Ta ≤ +60 °C</b>					
S# 1234567890 A.-Nr. 1234567890 03/10		<b>IBExU06ATEX1068</b>		IP65			

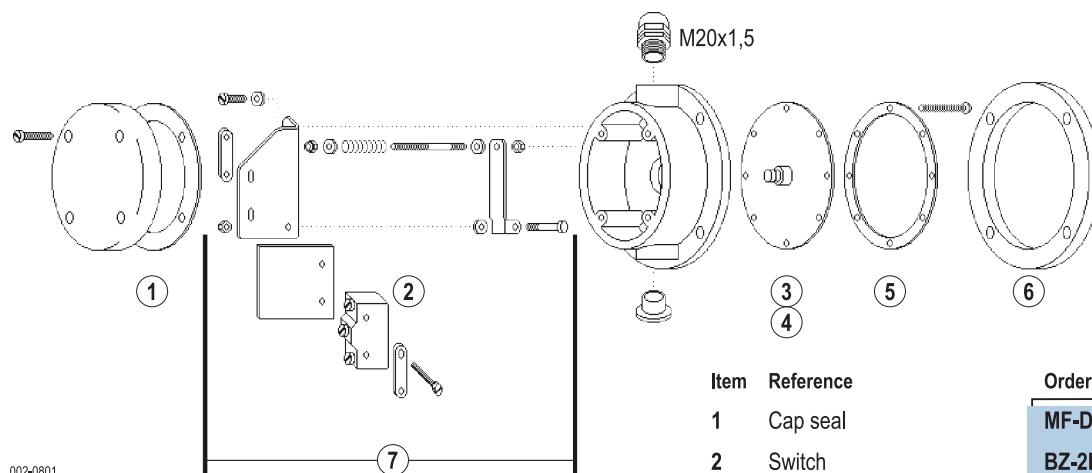


## Special conditions and instructions for safe application

1. The installation, maintenance, initial operation, removal and repair have to be controlled resp. checked by an “authorized person” for explosion protection.
2. For the electrical connection you have to take notice of the local and statutory requirements and/or the VDE 0100.
3. Take notice of the specifications on the data plate.
4. A fuse (with max. 4A) has to be connected in series to the voltage supply.
5. Protect the signal contact from voltage peaks when inductive loads are connected.
6. As soon as the device will be brought into the explosion hazardous area it has to be mounted immediately at the pre-caused place and a cable has to be brought into the cable gland.
7. Please check if the cable gland have loosened during on the mounting or at the transport. When it is loosened, it has to be fitted again with a torsional force of 3.75 Nm.
8. To secure the type of protection, the screw nut of the cable gland has to be fixed at the installation with a torsional force of min. 2.7 Nm.  
**ATTENTION!** If it will be fastened too strong, the IP-protection can be affected.
9. The earth connection of the device has to be installed in such a way that mechanical damage will be excluded.
10. The device may put into operation with built-in cap-sealing and when it is closed, only.
11. Switch off the power supply, before opening the device. (touchdangerous voltage)
12. Depending on the bulk goods characteristics and the wear, the carrier has to define resp. to find out in which intervals the membrane of the level indicator has to be checked for leakage to keep the type of protection (Dust-proof). This inspection has to be repeated regularly. If there is a fault, the membrane has to be replaced with a new membrane.
13. Take notice of the requirements of DIN EN 60079-14, DIN EN 60079-17 and DIN EN 1127-1, especially regarding the dust deposits and temperatures and follow the pertinent rules and regulations.
14. Clean the device with a moist towel only. Don't use any pointed objects or solvents.

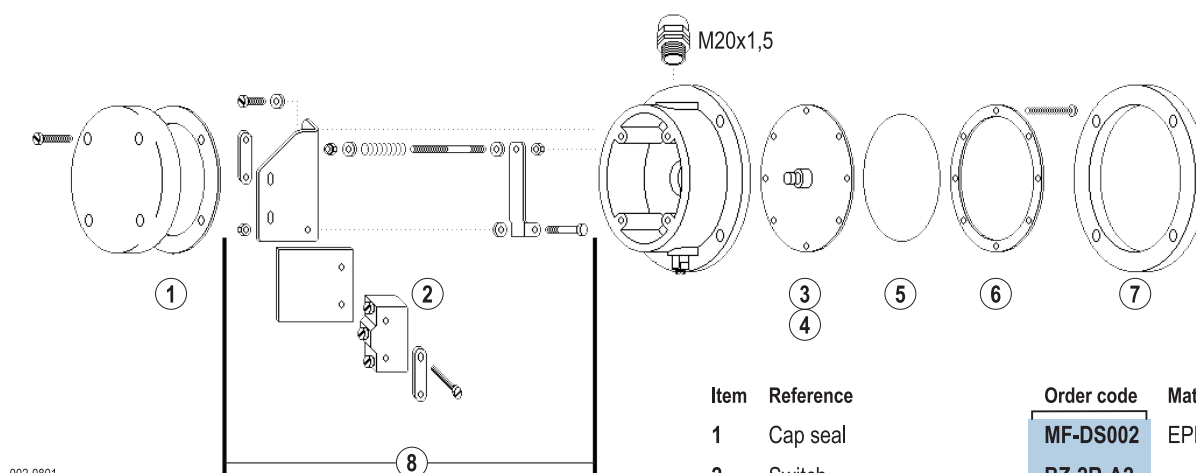
## Single parts

### MFE MFEF



Item	Reference	Order code	Material
1	Cap seal	MF-DS001	NBR
2	Switch	BZ-2R-A2	
3	Tappet	MF-WE001	Aluminium
4	Membrane N . Membrane V .	MF-MB-NR MF-MB-VI	NBR VITON
5	Mounting ring . N Mounting ring . E	MF-HR-ST MF-HR-VA	Steel, galvanized Stainless steel 304
6	Gasket	MF-FD-NR	NBR foam
7	Spare part kit incl. switch	MF-EP001	

### MFE-EE-B3 MFEF-EE-B3 MFE-AEE MFEF-AEE



Item	Reference	Order code	Material
1	Cap seal	MF-DS002	EPDM
2	Switch	BZ-2R-A2	
3	Tappet	MF-WE001	Aluminium
4	Sealing	MF-MB-NR	NBR
5	Membrane E .	MF-MB-VA	Stainless steel 304
6	Mounting ring . E	MF-HR-VA	Stainless steel 304
7	Gasket	MF-FD-NR	NBR foam
8	Spare part kit incl. switch	MF-EP001	

## EU-Konformitätserklärung EU-Declaration of Conformity

Wir/We

**MOLLET Füllstandtechnik GmbH**

Industriepark RIO 103  
D-74706 Osterburken  
Tel. 06291 64400 Fax 06291 9846

erklären in alleiniger Verantwortung, dass das Produkt:  
declares under our sole responsibility, that the product:

**Membran-Füllstand-Grenzscharter / Membrane limit switch**  
Membran-Füllstandanzeiger / Membrane level indicator



Typ/Type **MFE...**

den folgenden Europäischen Richtlinien entspricht:  
conforms with the following European directives:

**Niederspannungsrichtlinie Low voltage directive 2014/35/EU**

Angewandte harmonisierte Normen oder normative Dokumente:  
Applied harmonized standards or normative documents:

**DIN EN 61010-1:2011 DIN EN 60529:2014**

Und die Geräte mit  - Kennzeichnung entsprechen zusätzlich der folgenden Europäischen Richtlinie:  
And the devices with  - marking conform additional with the following European directive:

**ATEX-Richtlinie ATEX directive 2014/34/EU**

Je nach Ausführungsvariante angewandte harmonisierte Normen oder normative Dokumente:  
Depending on the design applied harmonized standards or normative documents:

**DIN EN IEC 60079-0:2019 DIN EN 60079-11:2012 DIN EN 60079-31:2014**

EG-Baumusterprüfbescheinigungsnummer:  
EU-Type Examination Certificate:

**IBExU06ATEX1068**

Ausgestellt von:.  
Issued by:

IBExU Institut für Sicherheitstechnik GmbH, 09599 Freiberg (0637)

Qualitätssicherung:  
Quality assurance:

TÜV NORD CERT GmbH, 30159 Hannover (0044)

Osterburken, den 10.01.2020



Wolfgang Hageleit  
Geschäftsführer / managing director

Diese Erklärung darf nur unverändert weiterverbreitet werden.  
This declaration is only allowed to hand out in unchanged form.