



**Operating Instructions  
for  
Membrane Level Monitor  
for Bulk Goods**

**Model: NMF**



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## **2. Note**

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Please read these operating instructions before unpacking and putting the unit into operation. Follow the instructions precisely as described herein.

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the measuring unit should be used only when the machines fulfil the EC-machine guidelines.

## **3. Instrument Inspection**

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Instruments are inspected before shipping and sent out in perfect condition.

Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

### **Scope of delivery:**

The standard delivery includes:

- Membrane Level Monitor                      model: NMF
- Operating Instructions

## **4. Regulation Use**

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Any use of the Membrane Level Monitor, model: NMF, which exceeds the manufacturer's specifications, may invalidate its warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

## 5. Operating Principle

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Membrane level monitors allow economic level monitoring of bulk goods in storage vessels. They may be used to indicate full and empty states and load demand for dusty, powdery, granulated and grainy bulk goods. They are suitable for use with bulk materials (0.3 to 2.5 t/m<sup>3</sup>) and particle sizes up to 30 mm. The devices will operate faultlessly provided the bulk goods flow easily at not too small an angle. Only such materials exert sufficient operating pressure on the detector fitted in the wall of the silo.

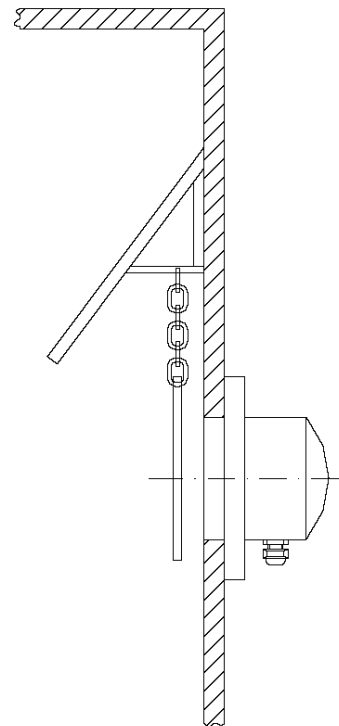
The housing made of cast aluminium or glass-fibre reinforced plastic carries the membrane retained by a screwed-on ring. With its own weight the bulk material presses against the membrane which is prestressed with a spring through to the support. A plunger fixed to the membrane transfers the pressure directly to a microswitch with changeover contact. If the bulk material subsides, the membrane is relieved and the contact is switched back. The sensitivity can be adjusted with a spring. The monitor can thus be optimised for the type of fill and the installation conditions.

## 6. Mechanical Connection

### 6.1 Installation with very coarse-grained and sharp-edged bulk goods

The installation of guards is recommended for very large grained and sharp-edged materials with high specific weight.

A proposal for such a guard is shown in the sketch. The guard mounted over the level monitor protects sensor and membrane against damage from dropping bulk material. The curtain (made of rubber or plastic, for instance) protects the membrane from excessive wear by hanging against the membrane as the amount of bulk material increases. Make sure that the monitor is not in the path of the inflowing material, as otherwise monitor and membrane would be destroyed very quickly.



## 7. Electrical Connection

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### 7.1 Connection diagram

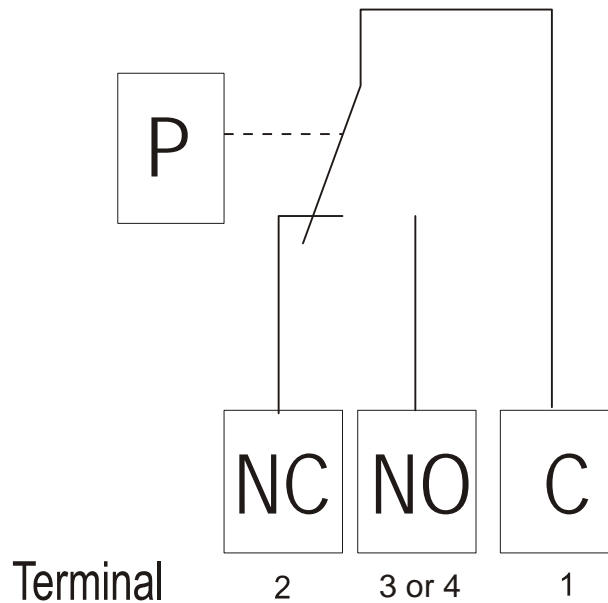


**Attention! Make sure that the voltage values of your system correspond with the voltage values of the measuring unit.**

- Make sure that the supply wires are de-energised.
- Plug in the system according to the connecting diagrams.



**Attention! Incorrect wiring will lead to damage of the unit's electronics.**



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## **8. Technical Information / Configuration**

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### **8.1 Model NMF-E... configuration standard**

Materials:	Membrane made of nitrile or FPM retaining ring in galvanised steel or stainless steel 1.4324 housing in glass-fibre-reinforced plastic GRP
Weight:	480 g
Sensitivity:	adjustable between 60 g and 200 g
Protection:	IP 40 screwed fitting bottom IP 53 screwed fitting top
Contact loading:	max. 4 A at 250 V <sub>AC</sub>
Temperature range:	-20 ... +60 °C
Max. pressure:	depressurised, overpressure max. 1 bar
Cable entry fitting:	M20 x 1.5
Switch-in delay:	0 s
Installation position:	any

### **8.2 Model NMF-F...configuration for greater wall thicknesses**

Materials:	Membrane made of nitrile or FPM retaining ring made of galvanised steel or stainless steel 1.4324 housing in glass-fibre-reinforced plastic GRP
Weight:	530 g
Sensitivity:	adjustable between 60 g and 200 g
Protection:	IP 40 screwed fitting bottom IP 53 screwed fitting top
Contact loading:	max. 4 A at 250 V <sub>AC</sub>
Temperature range:	-20 ... +60 °C
Max. pressure:	depressurised, overpressure max. 1 bar
Cable entry fitting:	M20 x 1.5
Switch-in delay:	0 s
Installation position:	any

## 8.3 Model NMF-D...configuration with double-membrane

Materials:	Membrane in nitrile or FPM retaining ring made of galvanised steel or stainless steel 1.4324 housing in glass-fibre-reinforced plastic GRP
Weight:	750 g
Sensitivity:	adjustable between 60 g and 200 g
Protection:	IP 65
Contact loading: max.	4 A at 250 V <sub>AC</sub>
Temperature range:	-20 ... +70 °C
Max. pressure:	depressurised, overpressure max. 1 bar
Cable entry fitting:	M20 x 1.5
Switch-in delay:	0 s
Installation position:	any

## 8.4 Model NMF-B...configuration for higher temperatures

Materials:	Membrane made of NBR, FPM or stainless steel 1.4301 retaining ring in cast aluminium housing in cast aluminium
Weight:	1700 g
Sensitivity:	adjustable between 100 g and 200 g (NMF-BNA, NMF-BVA) adjustable between 200 g and 500 g (NMF-BEA)
Protection:	P 40 screwed fitting top IP 53 screwed fitting bottom
Contact loading:	max. 4 A at 250 V <sub>AC</sub>
Temperature range:	Membrane      NBR                    -20 ... +80 °C FPM                    -20 ...+150 °C st. steel                -20 ... +200 °C
Max. pressure:	depressurised, overpressure max. 1 bar
Cable entry fitting:	M20 x 1.5
Switch-in delay:	0 s
Installation position:	any



## 9. Order Codes

### 9.1 NMF-E

Order Details (Example: **NMF-ENN**)

Membrane	Retaining ring	Order no.
Nitrile	Galvanised steel	<b>NMF-ENN</b>
	St. steel 1.4324	<b>NMF-ENE</b>
FPM	Galvanised steel	<b>NMF-EVN</b>
	St. steel 1.4324	<b>NMF-EVE</b>

### 9.2 NMF-F

Order Details (Example: **NMF-FNN**)

Membrane	Retaining ring	Order no.
Nitrile	Galvanised steel	<b>NMF-FNN</b>
	St. steel 1.4324	<b>NMF-FNE</b>
FPM	Galvanised steel	<b>NMF-FVN</b>
	St. steel 1.4324	<b>NMF-FVE</b>

### 9.3 NMF-D

Order Details (Example: **NMF-DNN**)

Membrane	Retaining ring	Order no.
Nitrile	Galvanised steel	<b>NMF-DNN</b>
	St. steel 1.4324	<b>NMF-DNE</b>
FPM	Galvanised steel	<b>NMF-DVN</b>
	St. steel 1.4324	<b>NMF-DVE</b>

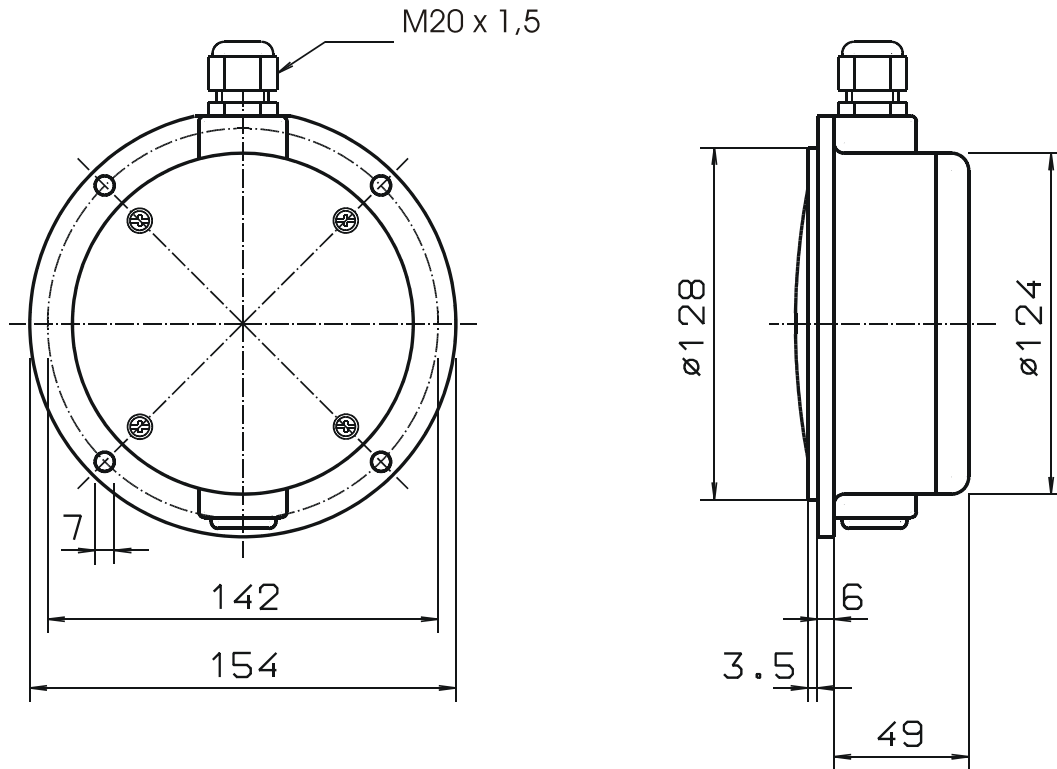
### 9.4 NMF-B

Order Details (Example: **NMF-BNA**)

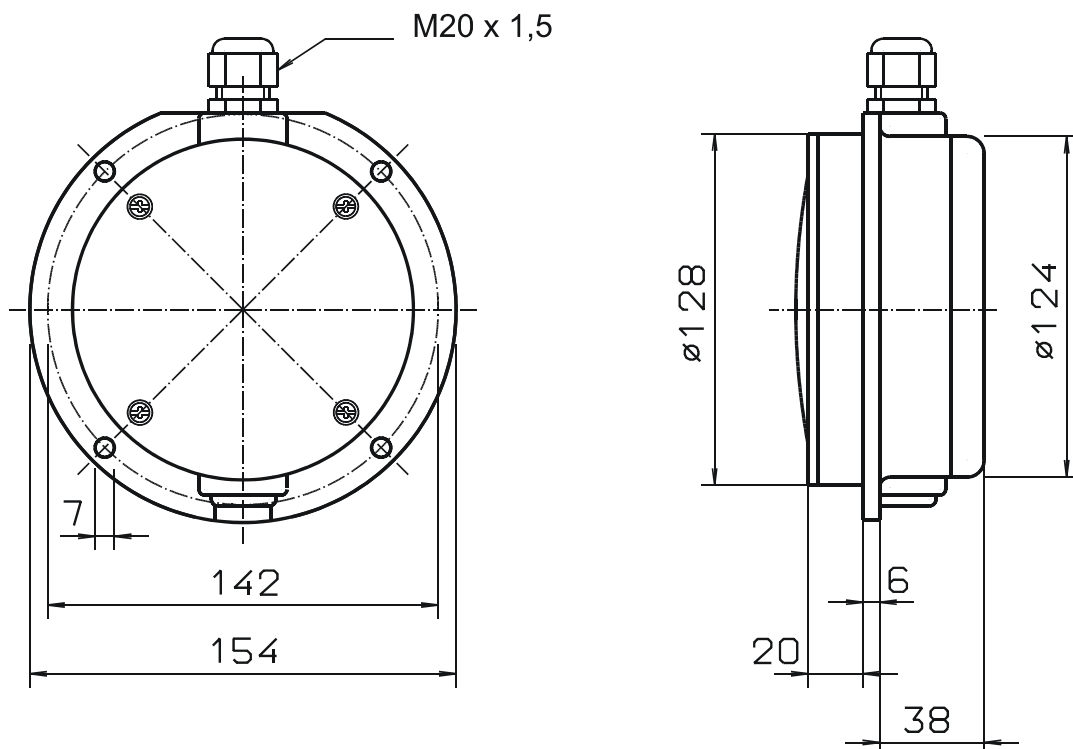
Membrane	Retaining ring	Order no.
NBR	Cast aluminium	<b>NMF-BNA</b>
FPM	Cast aluminium	<b>NMF-BVA</b>
St. steel	Cast aluminium	<b>NMF-BEA</b>

## 10. Dimensions

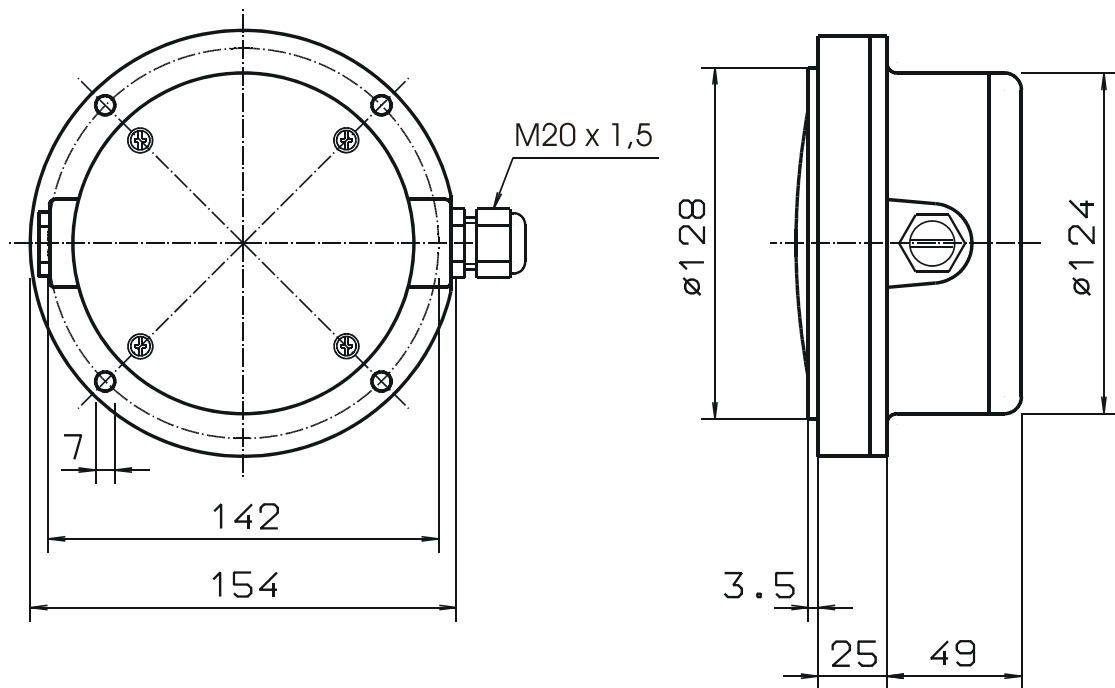
### 10.1 NMF-E...



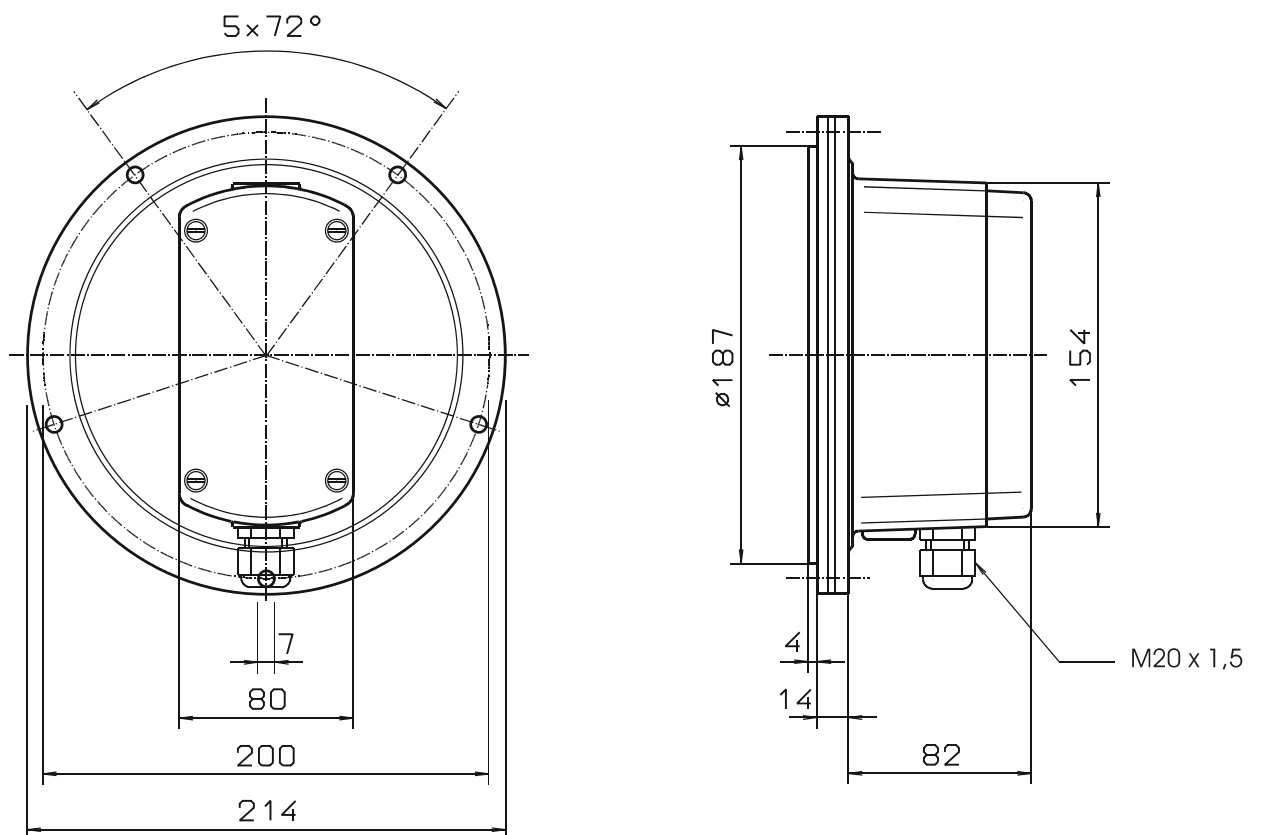
### 10.2 NMF-F...



10.3 NMF-D...



10.4 NMF-B...



## 11. EU Declaration of Conformance

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We, KOBOLD Messring GmbH, Hofheim-Ts, Germany, declare under our sole responsibility that the product:

**Membrane Level Monitor**                      **Model: NMF-...**

to which this declaration relates is in conformity with the standards noted below:

**EN 61010-1:2010**    Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements

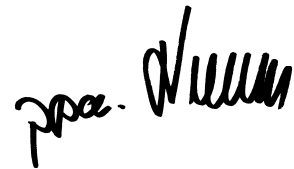
**EN 60529:2013**        Degrees of protection provided by enclosures (IP Code)

Also the following EC guidelines are fulfilled:

**2014/35/EU**              Low Voltage Directive  
**2011/65/EU**              **RoHS** (category 9)



H. Peters  
General Manager



M. Wenzel  
Proxy Holder

Hofheim, 27. Febr. 2018