

**Vibro level indicator**  
Level limit switches for bulk goods

**VF1.A3**

**Appliance information**

**Rhombus vibration rod**  
robust single rod - compact and versatile

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**MOLLET** accurate point level

ATEX option

B1 **Dust**  II 1/2D Ex ta/tb IIIC T95 °C Da/Db

ATEX option

B3 **Dust**  II 1/3D Ex ta/tc IIIC T95 °C Da/Dc

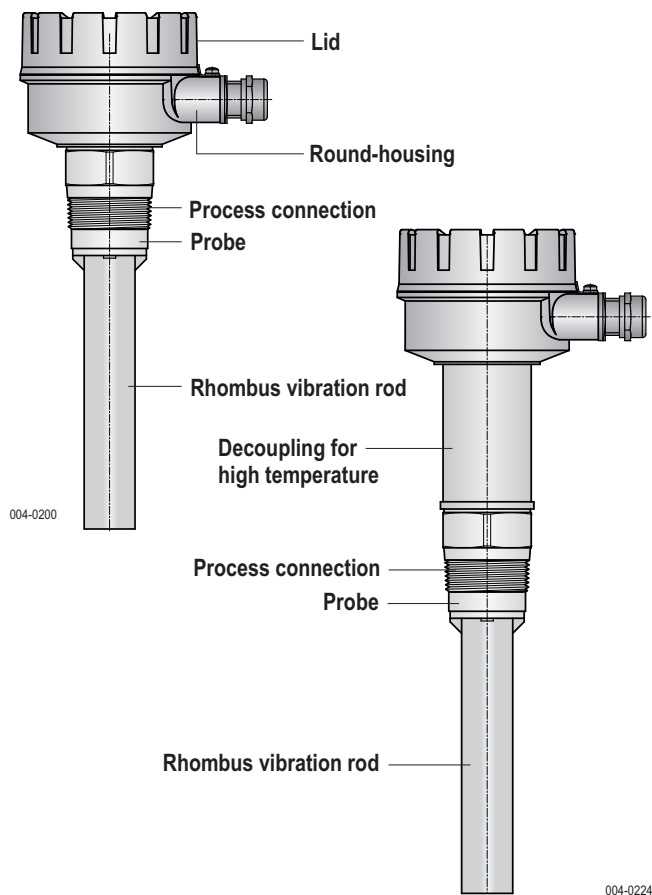
## Application (intended use)

The **MOLOSvibro** of the **VF1.A3** series is intended for the use as  
**level limit switch**  
in **silos and vessels**.

For all bulk solids with a minimum density of  
**0.01 t/m<sup>3</sup>**.

For application in **all industry sectors**.

## Construction



## Characteristics

- Very robust vibration rod in Rhombus shape
- High sensitivity for bulk solids with a minimum density of 10 g/l
- Interface measurement possible
- Patented, braced membrane
- No digging free within the bulk solids due to small vibration amplitude
- Adjustable sensitivity in three setting adjustments:  
A for light, B for normal and C for sticking bulk solids
- High level and low level alarm selectable

## Function

- Oscillation of the Rhombus vibration rod with a resonance frequency of approx. 285 Hz is stimulated by the electronic.
- As soon as the vibration rod has been covered by bulk solids, the oscillation will be damped.
- The electronic detects the damping and switches the relay signal.
- If the filling level sinks below the vibration rod, the rod starts vibrating with its resonance frequency again and the relay switches back.

## Technical data

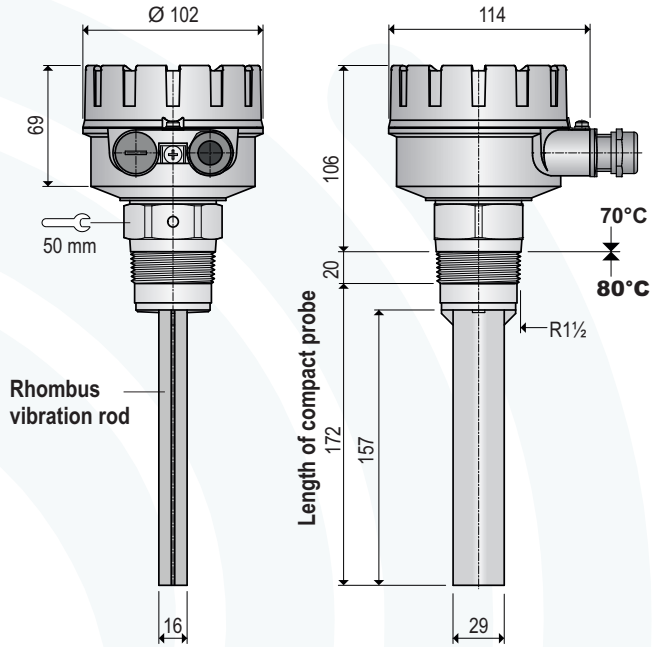
<b>Material</b>	Round-housing	Aluminium, RAL7001	
	Process connection and probe	Stainless steel 1.4301 / 304	
	Rhombus vibration rod	Stainless steel 1.4301 / 304	
	Suspension cable sheath	Polyurethane	
<b>Process connection</b>	<b>R3</b>	R1½ EN 10226 or N3 1½" NPT	
<b>Ambient temperature</b>		-40 °C ... +70 °C	<b>T<sub>a</sub></b>
	with separate housing	-40 °C ... +80 °C	
<b>Process temperature</b>	<b>VF12, VF13</b>	-40 °C ... +80 °C	<b>T<sub>(Process)</sub></b>
	<b>VF15</b>	-40 °C ... +70 °C	
<b>VF12, VF13 high temperature</b>	<b>E1</b>	-15 °C ... +150 °C	
	<b>E2</b>	-20 °C ... +200 °C	<b>p<sub>(Process)</sub></b>
	<b>E3</b>	-20 °C ... +250 °C	
<b>Process pressure</b>		-0.95 bar ... 10 bar	
<b>Minimum density of bulk solids</b>		0.01 kg/l (t/m <sup>3</sup> )	
<b>Response delay</b>		1 second	
	for damping	2 to 5 seconds	
<b>Cable entry</b>		Gland 2xM20x1,5	
<b>Type of protection</b>		<b>IP66/IP67</b> acc. DIN EN 60529	<b>IP</b>
with separate round-housing		<b>IP65</b> acc. DIN EN 60529	
<b>Maintenance</b>		none	
<b>Maximum load for the end of the vibration rod</b>		1000 N vertical (V) 250 N horizontal (H)	
<b>Maximum tensile force at suspension cable of type VF15</b>		2000 N	
<b>Installation position</b>	<b>VF12, VF13</b>	any	
	<b>VF15</b>	vertical	

## Electrical data

<b>Supply voltage</b>	<b>C8</b>	20 ... 250 V AC / DC	<b>Supply</b>
<b>Power consumption</b>		≤ 3 VA / 3 W	
<b>Signal relay</b>		two potential free change-over contacts	
<b>Capacity of contact</b>		8 A / 250 V AC 192 / 72 W at 24 / 48 V DC	
<b>Supply voltage</b>	<b>C5</b>	24 V DC ±10%	<b>Supply</b>
<b>Power consumption</b>		≤ 1 W (without load)	
<b>Signal output</b>		potential free NPN / PNP	
<b>Capacity of contact</b>		maximum 20 W switching capacity maximum 350 mA constant current	

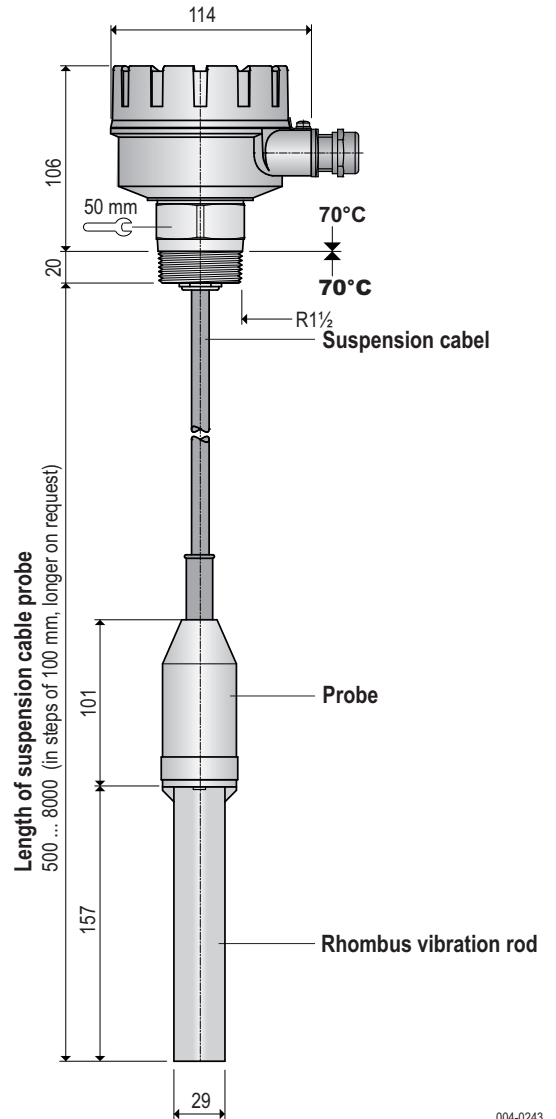
**Versions / Dimensions**

**VF12 Compact sensor**



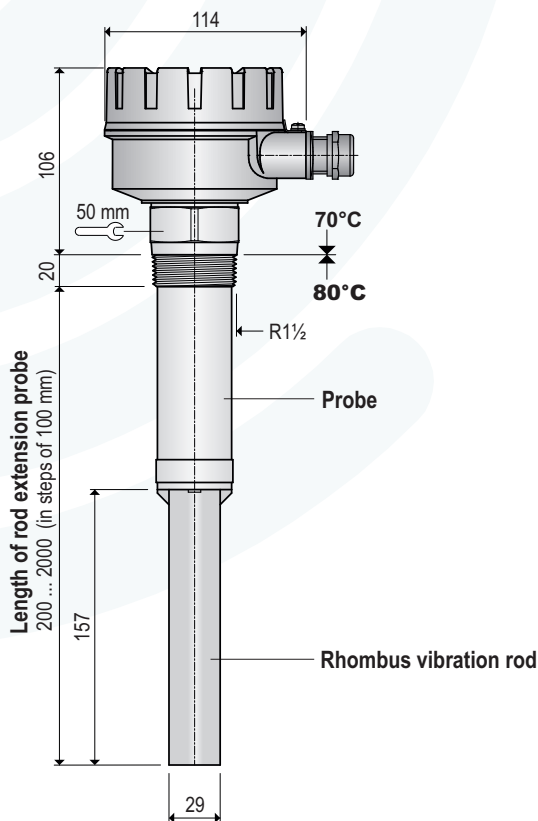
004-0221

**VF15 Suspension cable sensor**



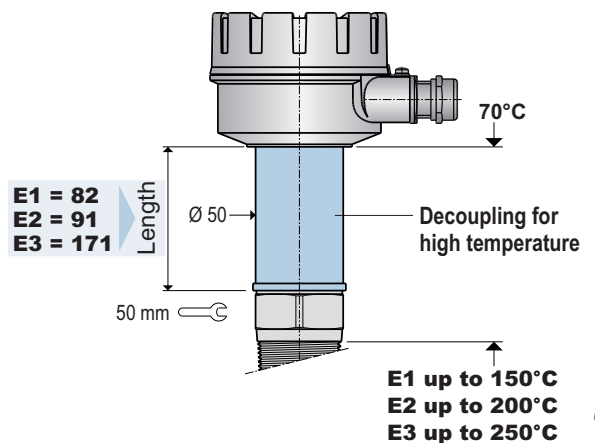
004-0243

**VF13 Rod extension sensor**



004-0242

**E1 ... E3 High temperature**

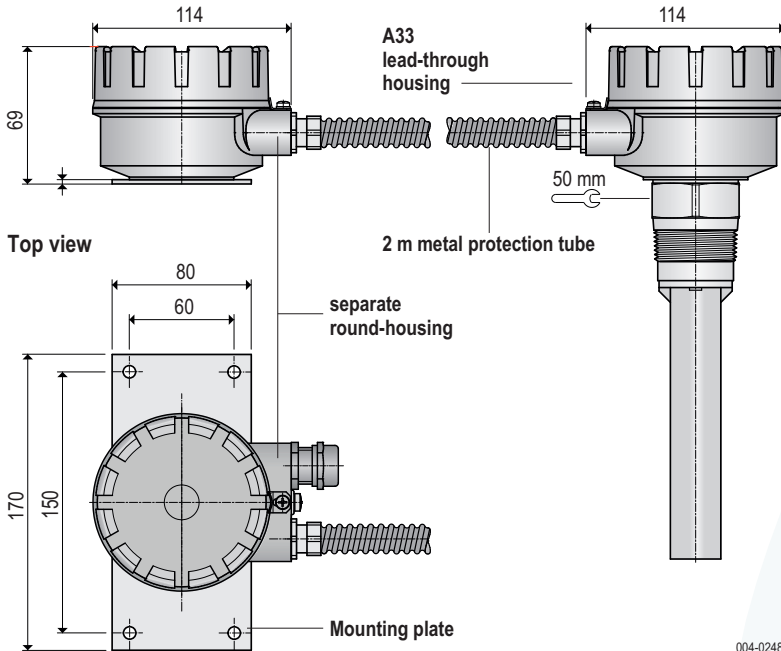


004-0224

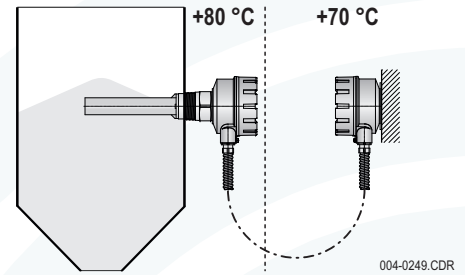
**Dimensions**

**A33 Separate round-housing**

Front and side views



With the separate round-housing the electronic will be mounted remote from the probe.



**Application**

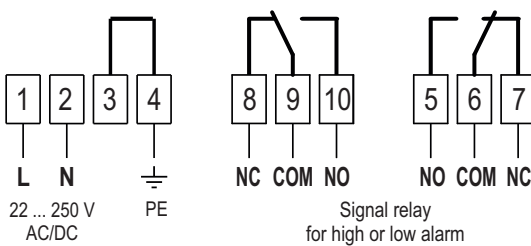
- In vessels with heavy vibrations
- Process temperatures of 150 °C to 250 °C only in combination with lead-through housing in high-temperature design
- Ambient temperatures up to +80 °C in close proximity to the container wall.

**Separate round-housing combinable with:**  
**A33** lead-through housing at the probe

Metal protection tube with 2 m length.  
Different length on request.

**Electrical connection**

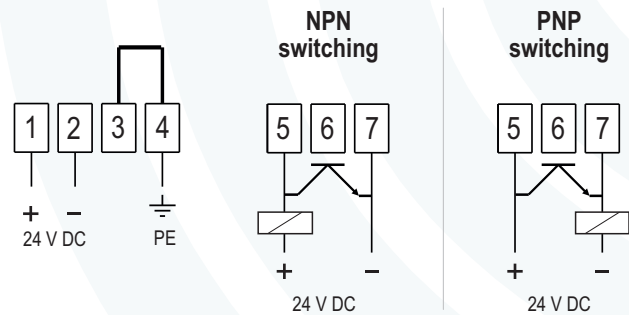
Wide range electronic C8



004-0210.CDR

**Electrical connection**

DC voltage electronic C5

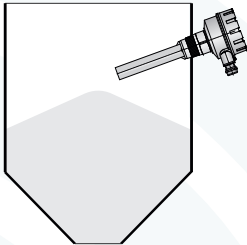


Terminals for signal output (transistor)  
- Terminal 6 not used -

### High alarm sensor FH (factory setting)

MOLOSvibro level indicator of the VF1. series are configured for **high level alarm** in the factory setting. The function can be changed with a jumper on the electronic board. The switching status is indicated by a LED on the electronic board, like it is explained below.

**Free status** - Vibration rod oscillates freely



Electronic type

C8

C5

LED display



LED on

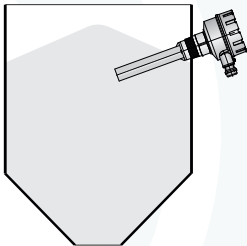
LED on

Switching status



Transistor conductive

**High alarm** - vibration rod covered with bulk solids



Electronic type

C8

C5

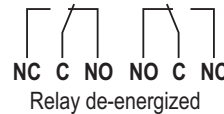
LED display



LED blinking

LED blinking

Switching status

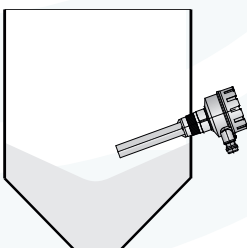


Transistor blocks

### Low alarm sensor FL (jumper repositioned)

MOLOSvibro level indicator of the VF1. series can be used for **low level alarm** with a changed factory setting. The function can be changed with a jumper on the electronic board. The switching status is indicated by a LED on the electronic board, like it is explained below.

**Covered status** - Vibration rod covered with bulk solids



Electronic type

C8

C5

LED display



LED on

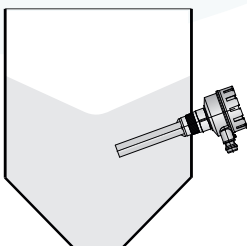
LED on

Switching status



Transistor conductive

**Low alarm** - Vibration rod oscillates freely



Electronic type

C8

C5

LED display



LED blinking

LED blinking

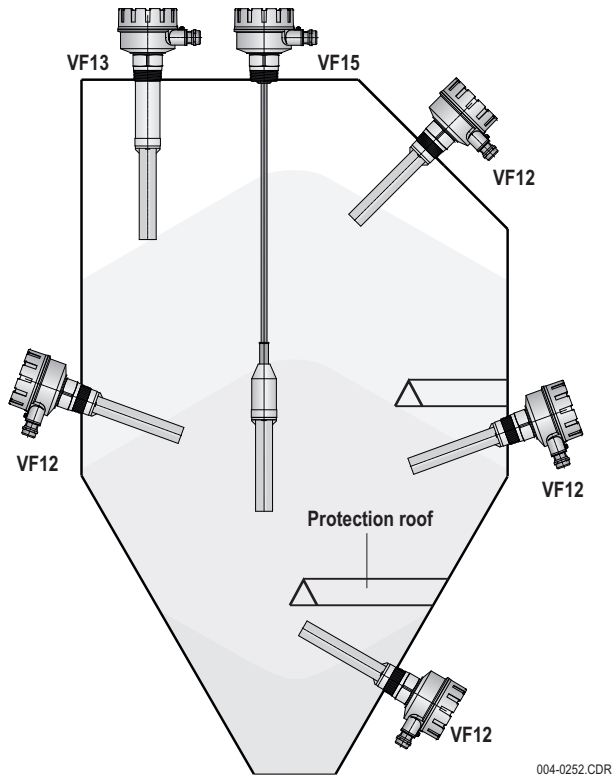
Switching status



Transistor blocks

004-0251

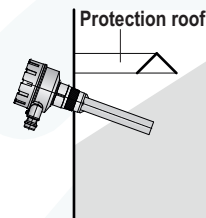
### Possibilities for installation



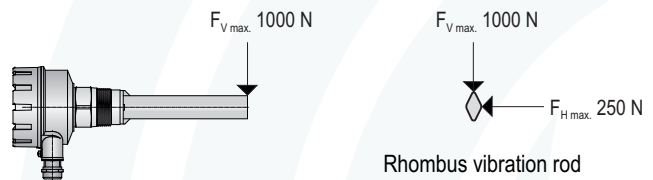
### Protection against heavy load

If needed, a protection roof or a stable deflector has to be installed inside the container, in order to protect the probe and the rod against impinging bulk solids.

Between protection roof and the probe has to be enough space that bulk solids could penetrate but not jam.



### Maximum load for vibration rod



### Protection against bulk solids crashing down upon the rod

Level indicators must not be affected by flying bulk goods particles e.g. from injection pies, filling pipes or down pipes. Therefore the bulk solids stream should be directed or redirected accordingly, or the level indicator should be placed so that bulk solids cannot impact directly onto the probe and vibration rod.

