

Vibro level indicator

Level limit switches for bulk goods

VF1.A3

Appliance information

Rhombus vibration rod
robust single rod - compact and versatile

Index	Page
Application Construction Characteristics Function	02
Technical data Electrical data	02
Versions / Dimensions	03
Dimensions - separate round-housing Electrical connection	04
High alarm sensor Low alarm sensor	05
Possibilities for installation Protection against heavy load	06
Maximum load for vibration rod Protection against bulk solids crashing down upon the rod .	06

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

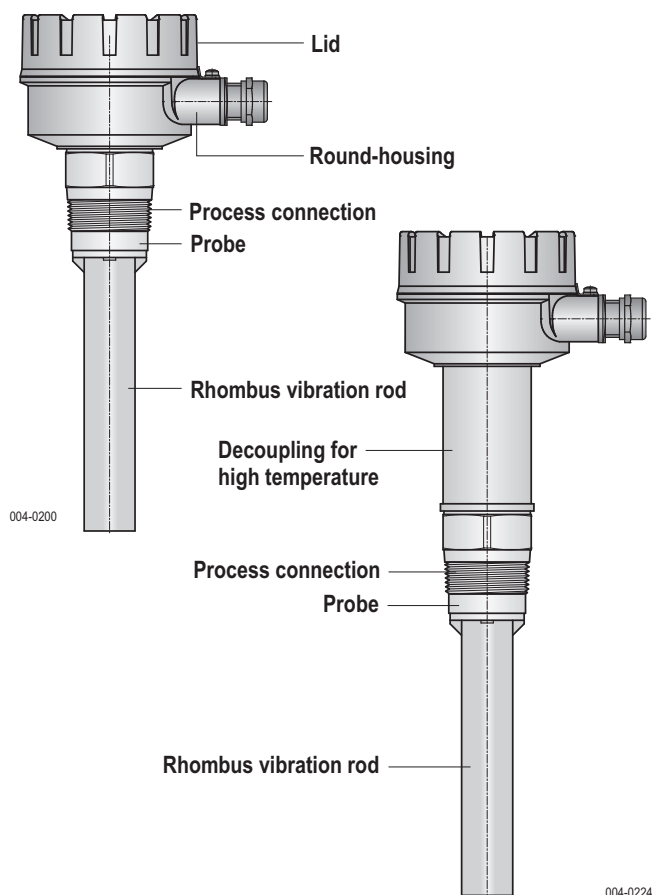
Application (intended use)

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/m³**.

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

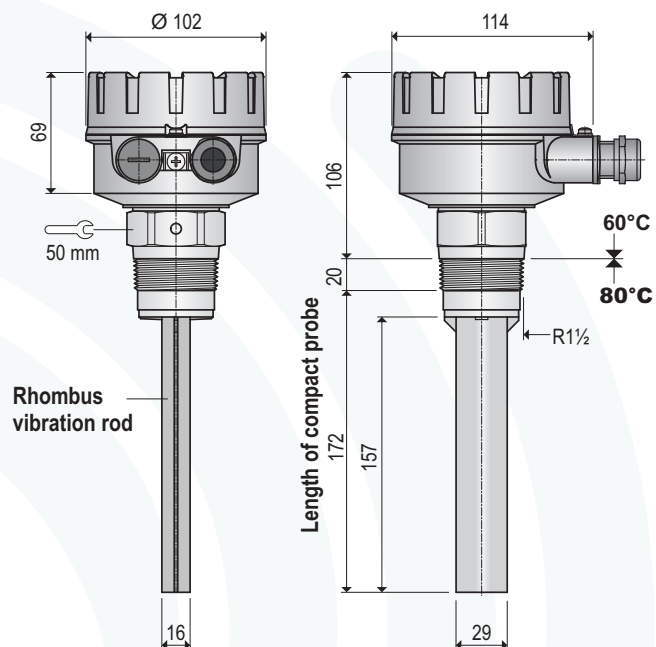
Material	Round-housing	Aluminium, RAL7001	
	Process connection and probe	Stainless steel 1.4301 / 304	
	Rhombus vibration rod	Stainless steel 1.4301 / 304	
	Suspension cable sheath	Polyurethane	
Process connection	R3	R1½ EN 10226 or N3 1½" NPT	
Ambient temperature		-40 °C ... +60 °C	T_a
	with separate housing	-40 °C ... +80 °C	
Process temperature	VF12, VF13	-40 °C ... +80 °C	T_(Process)
	VF15	-40 °C ... +70 °C	
VF12, VF13	high temperature	-15 °C ... +150 °C	
	E1	-20 °C ... +200 °C	
	E2	-20 °C ... +250 °C	
	E3	-20 °C ... +250 °C	
Process pressure		-0.95 bar ... 10 bar	p_(Process)
Minimum density of bulk solids		0.02 kg/l (t/m³)	
	possible in special design	0.01 kg/l (t/m³)	
Response delay		for damping	1 second
		for start oscillation	2 to 5 seconds
Cable entry		Gland 2xM20x1,5	
Type of protection		IP67/IP66 acc. DIN EN 60529	IP
	with separate round-housing	IP65 acc. DIN EN 60529	
Maintenance		none	
Maximum load for the end of the vibration rod		1000 N vertical (V)	
		250 N horizontal (H)	
Maximum tensile force at suspension cable of type VF15		2000 N	
Installation position	VF12, VF13	any	
	VF15	vertical	

Electrical data

Supply voltage	C8	20 ... 250 V AC / DC	supply
Power consumption		≤ 3 VA / 3 W	
Signal relay		two potential free change-over contacts	
Capacity of contact		5 A / 250 V AC	
		192 / 72 W at 24 / 48 V DC	
Supply voltage	C5	24 V DC ±10%	supply
Power consumption		≤ 1 W (without load)	
Signal output		potential free NPN / PNP	
Capacity of contact		maximum 20 W switching capacity	
		maximum 350 mA constant current	

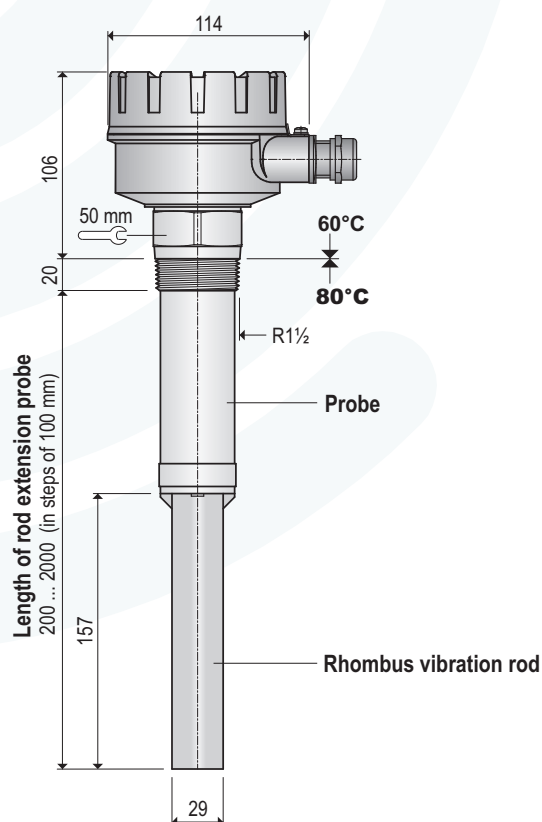
Versions / Dimensions

VF12 Compact sensor



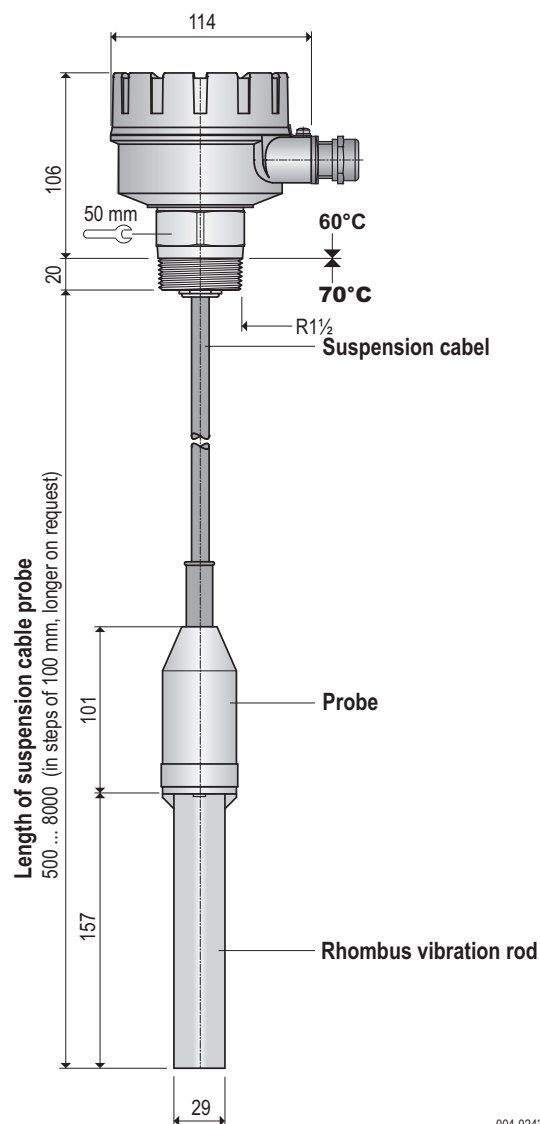
004-0221

VF13 Rod extension sensor



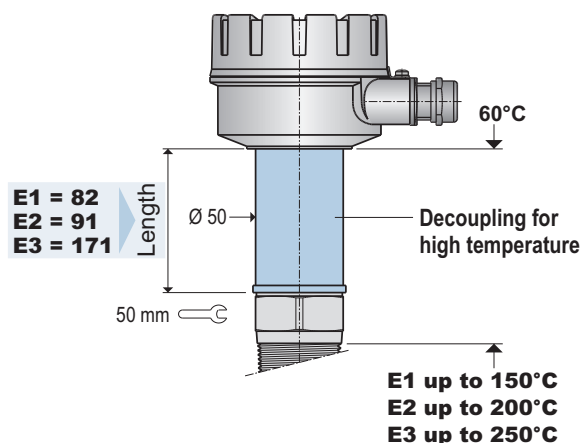
004-0242

VF15 Suspension cable sensor



004-0243

E1 ... E3 High temperature

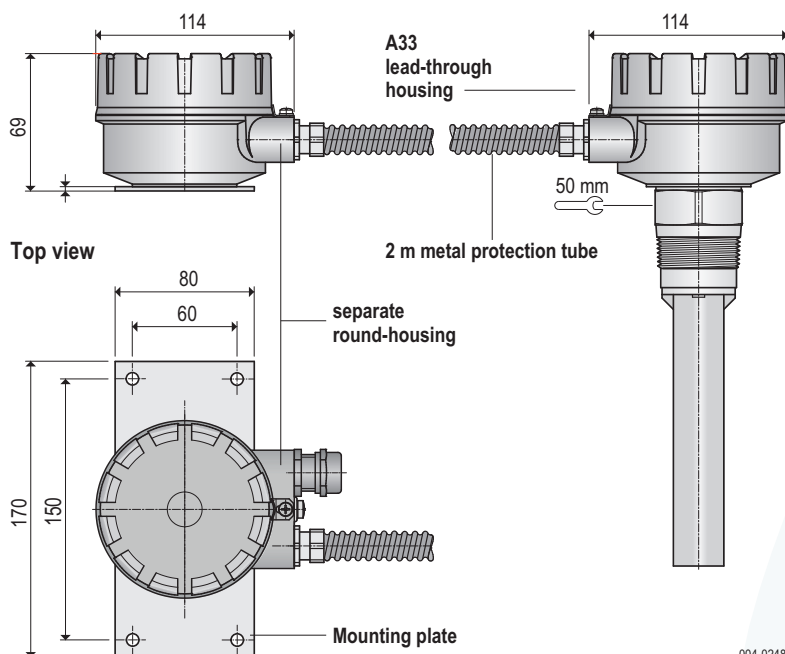


004-0224

Dimensions

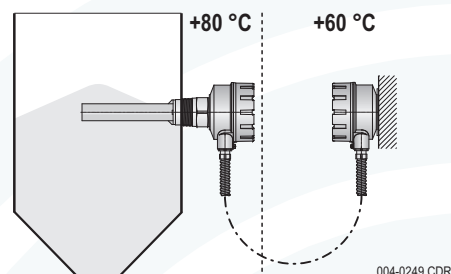
A33 Separate round-housing

Front and side views



004-0248

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.

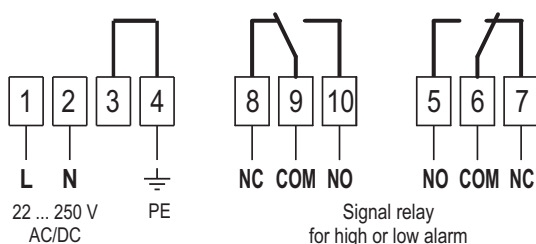
Separate round-housing combinable with:

A33 lead-through housing at the probe

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

Electrical connection

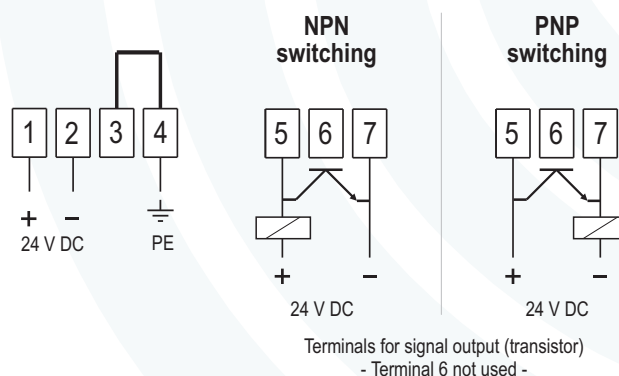
Wide range electronic C8



004-0210.CDR

Electrical connection

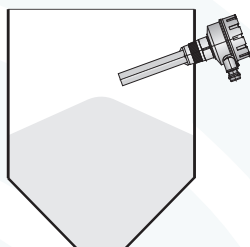
DC voltage electronic C5



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

LED display

C8



LED on

C5



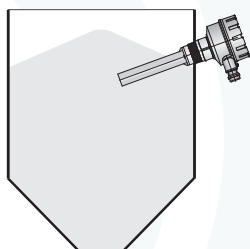
LED on

Switching status



Transistor conductive

High alarm - vibration rod covered with bulk solids



Electronic type

LED display

C8



LED blinking

C5



LED blinking

Switching status

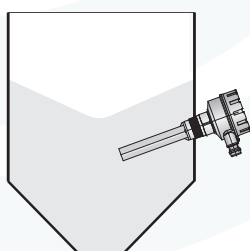


Transistor blocks

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

LED display

C8



LED on

C5



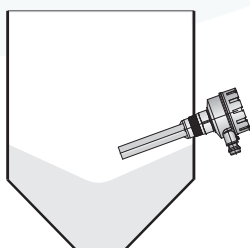
LED on

Switching status



Transistor conductive

Low alarm - Vibration rod oscillates freely



Electronic type

LED display

C8



LED blinking

C5



LED blinking

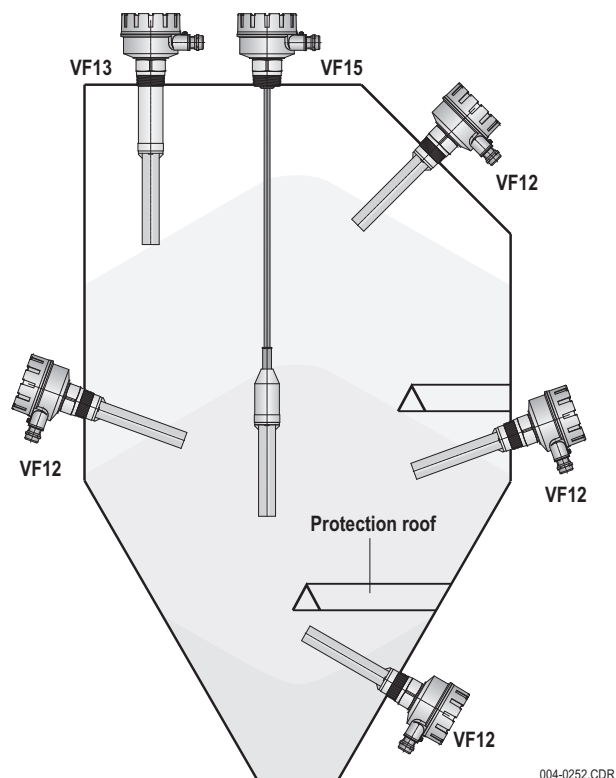
Switching status



Transistor blocks

004-0251

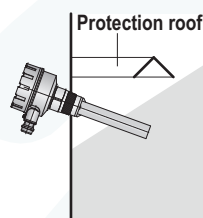
Possibilities for installation



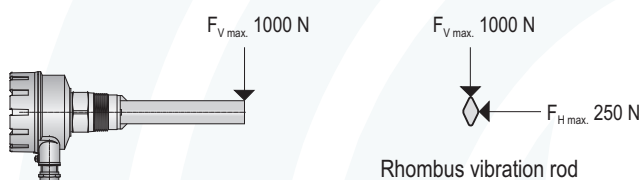
Protection against heavy load

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.

