

Vibro level indicator
Level limit switches for bulk goods

VF6.

Appliance information

Mini vibration rod
real 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

ATEX option

B11 **Gas+**  **Dust**  II 1/2G Ex ia IIB T4 Ga/Gb
and
II 1/2D Ex ia IIIC TX Da/Db

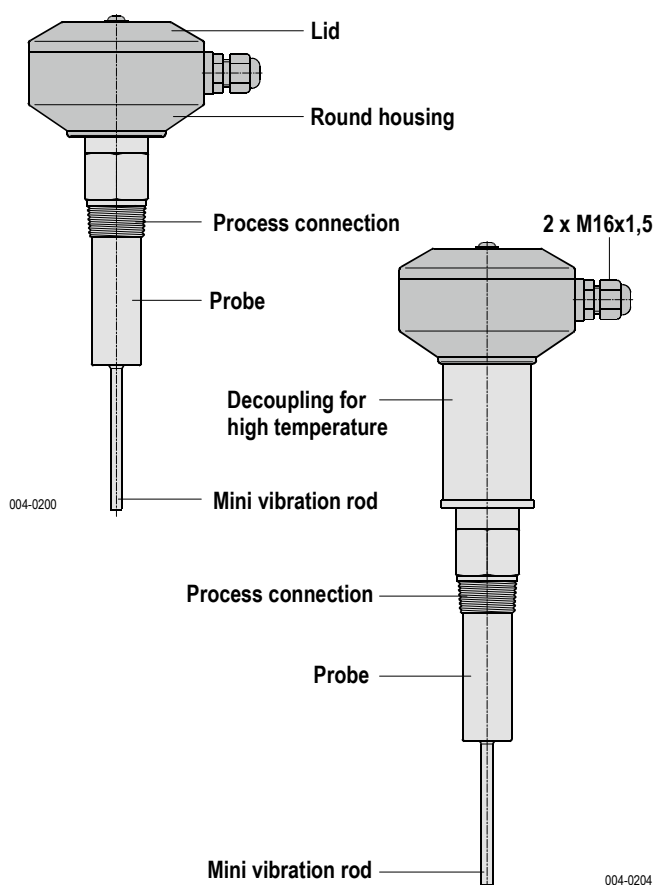
Application (intended use)

The **MOLOSvibro** of the **VF6.** series is intended for the use as **level limit switch** in **silos and vessels.**

For all bulk solids with a minimum density of **0,02 t/m³.**

For application in **all industry sectors.**

Construction



Function

- Oscillation of the Mini vibration rod with a resonance frequency of approx. 460 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 coated, RAL7001	
	Process connection and probe	Stainless steel 1.4301 / 304	
	Mini vibration rod	Stainless steel 1.4301 / 304	
	Suspension cable sheath	Polyurethane	
Process connection	R1	R1 EN 10226 or N1 1" NPT	
Ambient temperature		-20 °C ... +60 °C	T_a
with separate round-housing		-20 °C ... +80 °C / +60 °C	
Process temperature			T_(Process)
VF62 and VF63		-20 °C ... +80 °C	
VF65		-20 °C ... +70 °C	
High temperature E1		-20 °C ... +150 °C	p_(Process)
Process pressure		-0.95 bar ... 10 bar	
Minimum density of bulk solids		0.02 kg/l (t/m ³)	
Response delay			IP
	for damping	1 second	
	for start oscillation	2 to 5 seconds	
Cable entry		Gland 2 x M16x1,5	
Type of protection		IP66/IP67 acc. DIN EN 60529	
with separate rectangular-housing		IP65 acc. DIN EN 60529	
Maintenance		none	
Maximum load for the end of the vibration rod		80 N	
Maximum tensile force at suspension cable of type VF65		2000 N	
Installation position	VF62, VF63	any	
	VF65	vertical	

Characteristics

- Innovative single rod construction
- High sensitivity due to low oscillating weight
- Compact construction
- Low installation depth
- 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

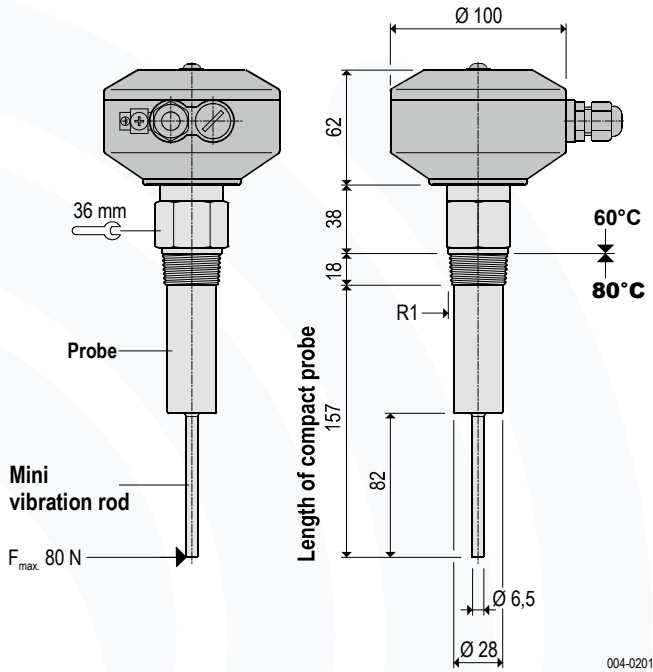
Electrical data

Wide range electronic C8	not available with GasEx option B11
Supply	
Supply voltage	20 ... 250 V AC / DC
Power consumption	≤ 3 VA / 3 W
Signal relay (potential free)	change-over contact (SPDT)
Capacity of contact	5 A / 250 V AC or 150 W at DC
Two wire electronic C5i	only available with GasEx option B11
Supply	
U_i	23.7 V DC from VF-VEC8-B22
I_i	167 mA
P_i	985 mW

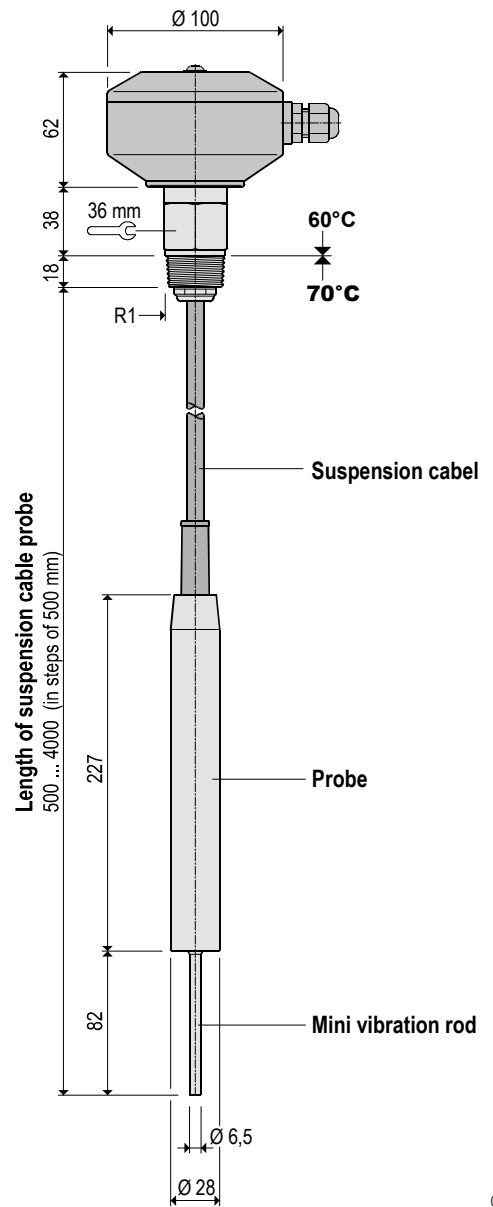
Subject to modification

Versions / Dimensions

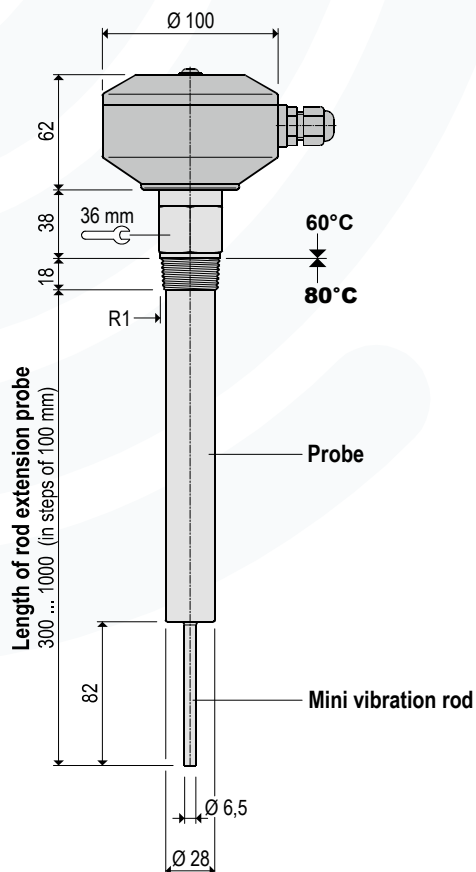
VF62 Compact sensor



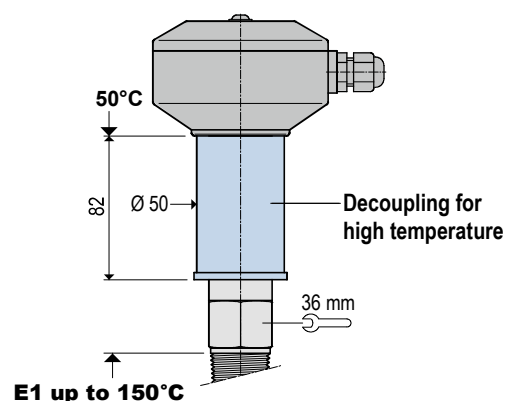
VF65 Suspension cable sensor



VF63 Rod extension sensor



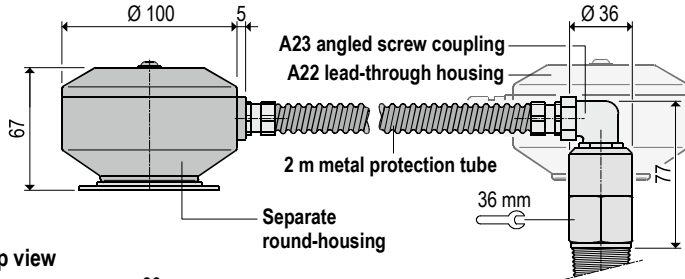
E1 High temperature



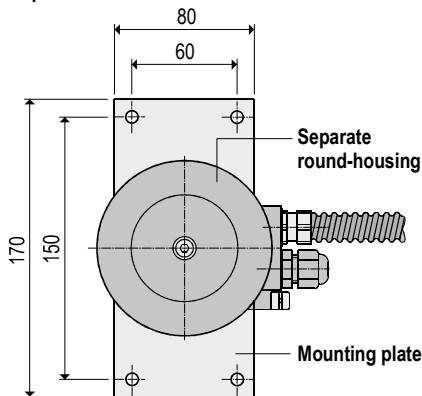
Dimensions

A22 / A23 separate round-housing

Front and side views

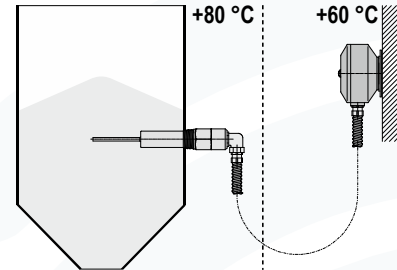


Top view



004-0208

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



004-0209.CDR

Application

- In vessels with heavy vibrations
- Process temperatures up to 150 °C only in combination with round lead-through housing in high-temperature design E1
- Ambient temperatures up to +80 °C in close proximity to the container wall.

Separate round-housing combinable with two versions:

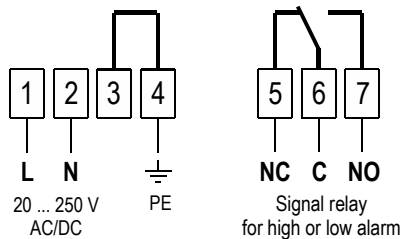
A22 round lead-through housing at the probe

A23 angled screw coupling at the probe

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

Electrical connection

Wide range electronic C8 (not available with GasEx option B11)

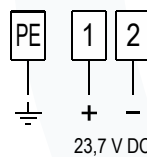


004-0210.CDR

Electrical connection

Two wire electronic C5i (only available with GasEx option B11)

Supply only with supply and evaluation device
VF-VEC8-B22 for GasEx.



Current consumption

Alarm Type	Vibration rod status	Current
High alarm FH	Vibration rod oscillates freely	8 mA
	Vibration rod covered	16 mA
Low alarm FL	Vibration rod covered	8 mA
	Vibration rod oscillates freely	16 mA

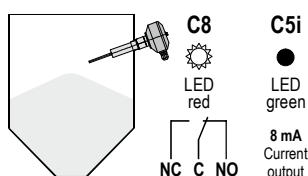
High alarm and low alarm sensor

MOLOSvibro level indicator of the VF6. series can be used for **high level and low level alarm**. The function can be adjusted with a jumper on the electronic board. The switching status is indicated by a red/green LED on the electronic board, like it is explained below.

High alarm sensor H / FH (factory setting)

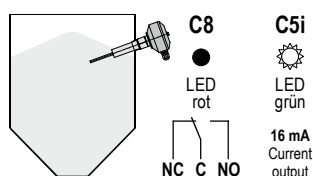
Free status

vibration rod oscillates freely
C8 relay energized / red LED on
C5i 8 mA / green LED off



High alarm (covered status)

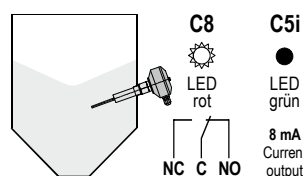
vibration rod covered with bulk solids
C8 relay de-energized / red LED off
C5i 16 mA / green LED on



Low alarm sensor L / FL (jumper repositioned)

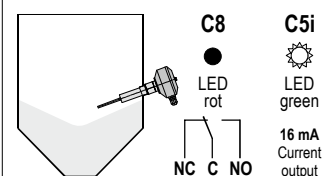
Covered status

vibration rod covered with bulk solids
C8 relay energized / red LED on
C5i 8 mA / green LED off

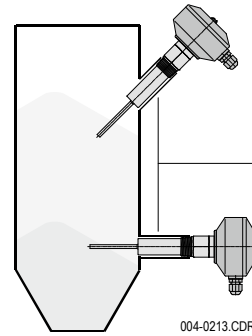
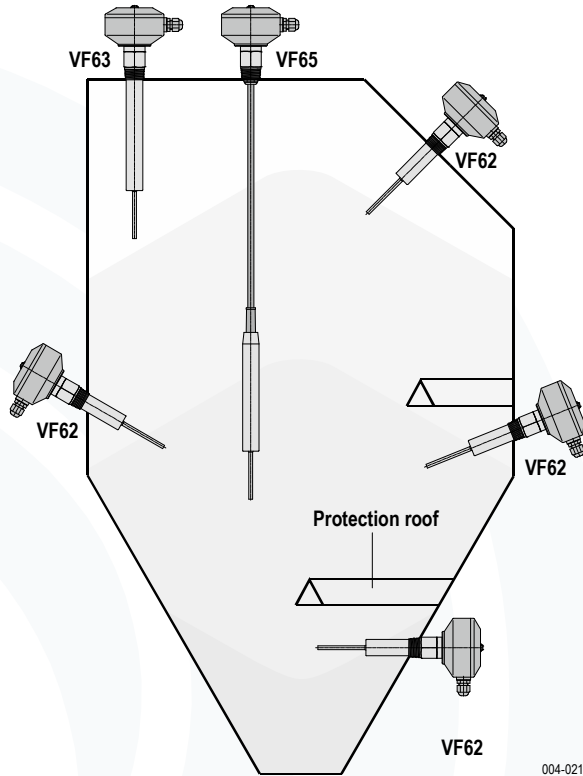


Low alarm (free status)

vibration rod oscillates freely
C8 relay de-energized / red LED off
C5i 16 mA / green LED on



Possibilities for installation

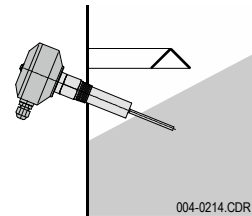


Due to the low installation depth the **VF62** is although suitable for the use in small bins.

long screw-in pipe collar

By the use of a socket with approx. 85 mm length the probe protrudes only with approx. 80 mm into the bin.

Protection against heavy load

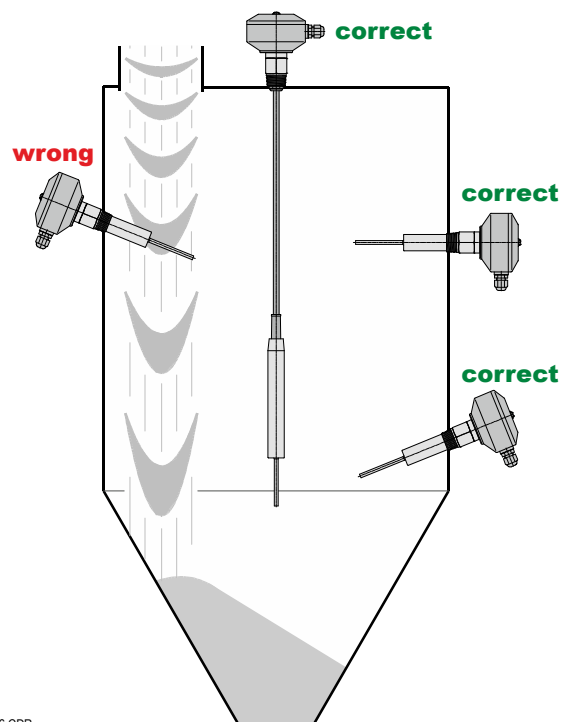
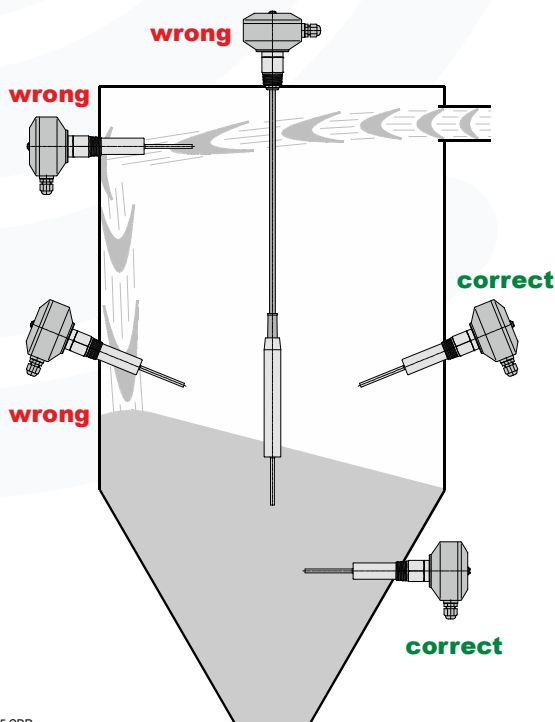


If needed, a protection roof or a stable deflector has to be installed inside the container, in order to protect the probe and the rod against impinging bulk solids.

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

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.

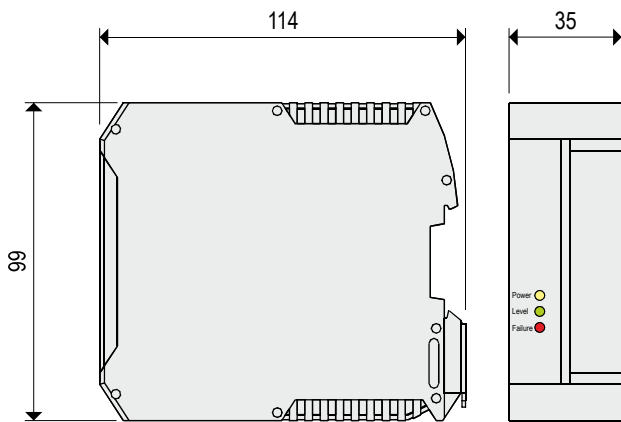


Application (intended use)

The supply and evaluation device type **VF-VEC8-B22** is intended for the use as power supply for **MOLOSvibro** level indicators that are used in potentially explosive gas atmospheres.

It detects and evaluates the damping of the vibration rod, switches the signal relay and diagnoses a short circuit or broken cable at the connection to the probe and switches the failure relay.

Dimensions



004-0240.CDR

Technical data

Material	Housing	Polyamid, light gray	
Ambient temperature		-20 °C ... +60 °C	T_a
Supply voltage		20 ... 250 V AC/DC	Supply
Power consumption		≤ 3 VA	
Connection to sensor	Ex i	Supply voltage ≤ 23,7 V DC Connection cable light grey 2-wire, maximum 35 Ω per wire Switching threshold 13 mA	
Signal relay (potential free)		change-over contact (SPDT)	
Error relay (potential free)		change-over contact	
Capacity of contact	AC	6 A / 250 V	
	DC	≤ 6 A at 24 V / 0,5 A at 48 V	
	DC	minimum 24 V / 100 mA	
Connection clamps		max. 2,5 mm ²	
Type of protection		IP20 acc. DIN EN 60529	IP
Ignition protection type		⊕ II (1) G [Ex ia Ga] IIB ⊕ II (1) D [Ex ia Da] IIIC	
LED display	Power yellow Level green Failure red	Power supply available Filling level (high / low) Error (short circuit / broken cable)	
Maintenance		none	
Installation		Top hat rail assembly (35 mm)	
Installation position		any	

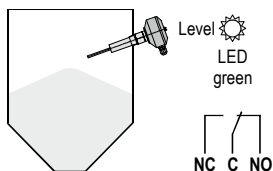
High and low alarm sensor

The signal relay of the supply and evaluation device **VF-VEC8-B22** has a separate switching logic, that is demonstrated below. The function can be changed with a jumper on the two wire electronic board **C5i** installed in the **MOLOSvibro** sensor housing.

High alarm sensor FH (factory setting)

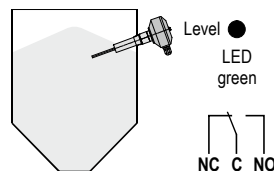
Free status

Vibration rod oscillates freely



High alarm

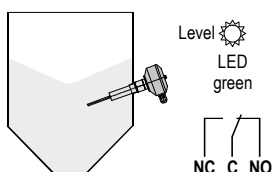
Vibration rod covered with bulk solids



Low alarm sensor FL (jumper repositioned)

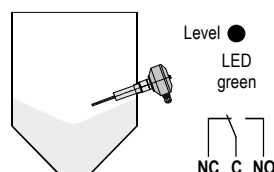
Covered status

Vibration rod covered with bulk solids

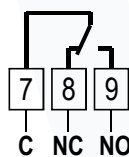


Low alarm

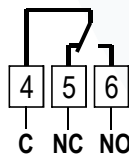
Vibration rod oscillates freely



Electrical connection

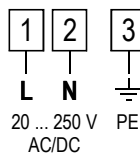


Signal relay for high and low alarm



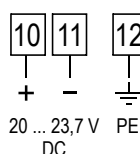
Error relay for short circuit and broken cable

OK = Relay energized Connection **C-NO**
Failure = Relay de-energized Connection **C-NC**



Supply voltage

Wide range electronic **C8**



Connection to sensor **MOLOSvibro Typ C5i**

Two wire electronic **Ex i** (intrinsically safe)
Blue clamps

Subject to modification