

Vibranivo[®]

Level limit switch



Information VN 2000 list of contents

	page
introduction	G1

technical data	G2 - G3

options	G3

mounting	G4 - G5

electrical connection	G5 - G6

switching logic	G7

adjustment / maintenance	G8

error searching	G9

price list	P0 - P17

Subject to technical change and price change.

All dimensions in mm.

All units of this pricelist are
CE-certificated.

Of course there are other unit variations than
specified possible.
Please speak with our consulting technicians.

Information VN 2000
introduction

introduction

fields of application

The device is used for level monitoring in all types of containers and silos.

It can be used with all powdery and granulated bulk materials that do not show a strong propensity to form crusts or deposits. A wide range of application is also found in foodstuff manufacturing.

For areas susceptible to dust explosion, the model Z10 of the device is available (approved by the BVS).

A selection of fields of application

- industry of building materials
 - for lime, styrofoam, moulding sand, etc.
- foodstuff industry
 - for milk powder, flour, salt, etc.
- plastics industry
 - for plastics granules etc.
- timber industry
- chemical industry
- mechanical engineering etc.

function

The piezo electrically stimulated oscillating probe vibrates at its mechanical frequency of resonance of 125 Hz. If the probe is covered by the bulk material, the damping thus generated is registered electronically and a corresponding signal output is actuated. The oscillation of the device ensures that it features certain self-cleaning properties.

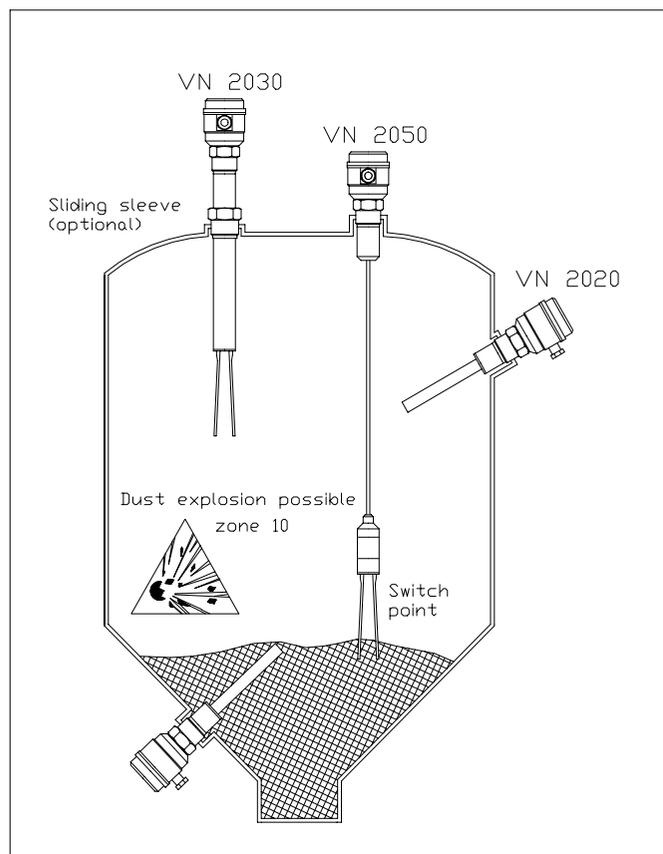
range of application

The VIBRANIVO oscillating probe is normally screwed into the lateral container wall so that it is level with the filling height to be registered and monitored.

The device can also be mounted onto the top side of the container and in this case an extension piece is used to mount the probe level with the height to be registered.

The length of the probe can be up to 4 m with an extension tube (VN2030) or up to 20m with an extension rope (VN2050).

The use of a sliding sleeve is recommended so that the switch point can be changed continuously during operation of the device.



Vibranivo[®]

Level limit switch



Information VN 2000
technical data

technical data

dimensions

For detailed dimensions see pricelist.

mechanical data

housing:	aluminium diecast housing RAL 5010 gentian blue
enclosure:	IP 65 to EN 60529
screwed piece: material:	stainless steel 1.4301 / 1.4571
width across:	50mm
thread :	R 1 1/2" tapered DIN 2999 or NPT 1 1/2" tapered ANSI B 1.20.1 (any thread angle is possible)
oscillator: material:	stainless steel 1.4301 / 1.4581 or 1.4571 / 1.4581
surface treatment of vibrating rods (optional)	-polished -halar coat (E-CTFE, high chemical resistance) -teflon
overall weight:	
VN2020:	approx. 1,6kg
VN2030:	approx. 1,6kg + about 2,5kg/m extension tube
VN2050:	approx. 4kg + about 0,5kg/m extension rope
options: sliding sleeve:	G2" ISO 228
	material: 1.4301 / 1.4571
	sealing material to the extension tube: viton
weather-protection cover hexagon nut mounting set	

electrical data

mains voltage:	alternatively 19..253V 50-60Hz 19..60V DC (wide range) max. ripple: 7 V _{SS} at DC
	18V - 50V DC (three-wire conductor) max. ripple: 7 V _{SS}
installed load:	max. 1 VA (relay) max.17 mA (DC three-wire)
connection terminal:	max. 2.5mm ²
screwed cable gland:	1 x M20x1.5
signal output:	floating relay output: max. AC 253V, 4A, 500W at cos Phi=1 max. DC 253V, 4A, 60W
	open collector PNP, NPN output: permanent load max. 0,4A short-circuit- and overload proof; turn-on voltage: max. 55 V (reverse protection)
switch status display:	by built-in LED
signal delay:	probe free -> covered approx. 1 sec. probe covered -> free approx. 1..2 sec.
safety operation: (FSL, FSH)	to be switched over for minimum/maximum security
sensitivity:	adjustable to two levels
measuring frequency:	approx. 125Hz
isolating:	mains voltage to signal output 3kV~
protection class:	I

Information VN 2000 technical data

operating conditions

ambient temp. at the housing:	-25°C .. +60°C
internal temperature of the container:	-25°C .. +150°C VN2020 and VN2030, see also right column -25°C .. +80°C (VN2050)
min. powderdensity:	approx. 30 g/l option approx. 8 g/l
features of bulk materials:	no strong propensity to cake or deposit max. grain size 10mm
max. oscillator load:	max. 600N laterally (on oscillating rods)
max. torque:	300 Nm (VN 2030)
max. tensile force:	2 kN (VN 2050)
max. container pressure:	16 bar (VN2020, VN 2030) 12bar (VN 2030 with sliding sleeve) 6 bar (VN 2050)

Protective measures in case of high loading:
mounting of an protective angle above the probe

option

weather-protection-cover

When the measuring device is used in the open, use of the weather-protection-cover is recommended. It protects the device from all atmospheric influences such as:

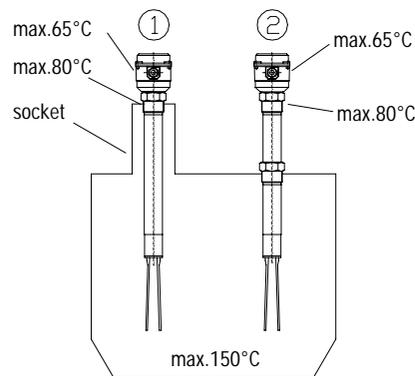
rain water
condensation of water
excessively high temperatures due to insolation
excessively low temperatures in winter

Material: PE
weathering and temperature stable

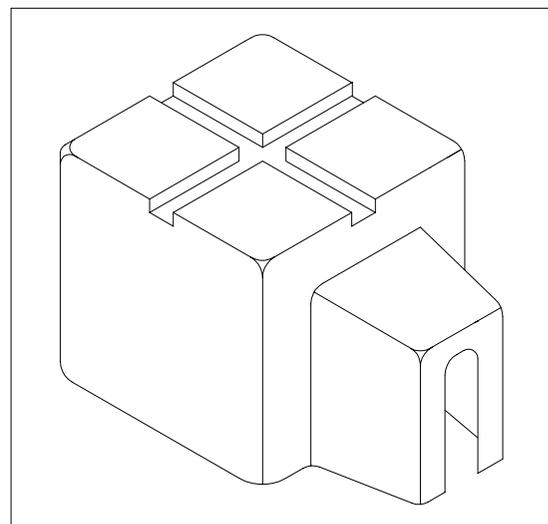
Mounting in container with 150°C:

- 1 version standard. (mounting at socket)
- 2 version desisted housing

max. ambient temp. at the housing -25°C .. 60°C



The max. surface temperature of the housing is 65°C.
The max. surface temperature of the thread part at the housing is 80°C.



Information VN 2000
mounting / electr. connection

tips for the installation

- switch point: heavy bulk material
-> cover of a few mm
light bulk material
-> cover of a few cm
- oscillating rods: do not bend, shorten or extend the oscillating rods since this will destroy the device
- screwing the device in: use a 50mm open-end wrench (do not turn the housing)
- 2" sliding sleeve: tighten the straining screw M8 with 25 Nm to obtain resistance to pressure
- stirring devices, etc : in the case of strong lateral load: check whether the device could be installed laterally instead of mounting from the top with a long extension piece (VN 2030).

instructions for dustEx zone 10

When the device is mounted in areas in which there is danger of dust explosion zone 10, the pertinent rules and regulations have to be adhered to!

VN2030:

Maximum length "L" in dependence on the deviation (in degrees) from vertical installation:

max. deviation	max. length "L"
5°	4000 mm
45°	1200 mm
> 45°	600 mm

2" sliding sleeve:

Tighten the straining screw M8 with 25 Nm to obtain resistance to pressure.

flange mounting:

A plastic sealing must be used to tighten the flange.

electrical connection

security items

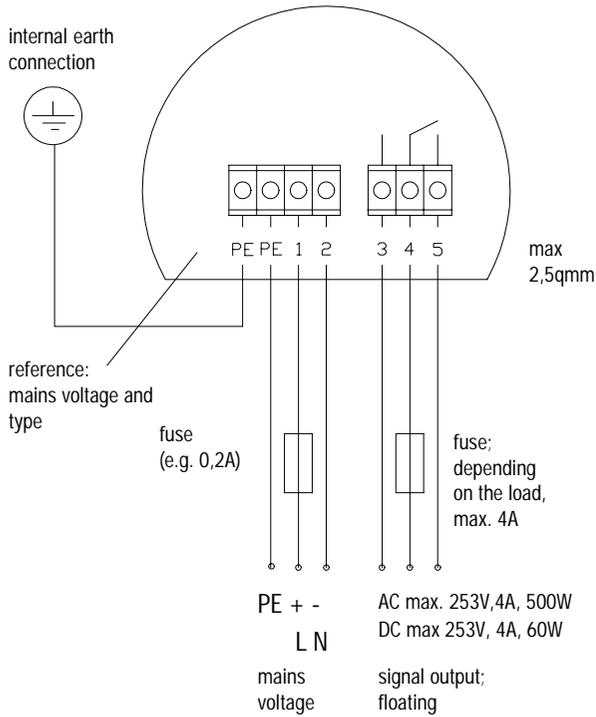
For terminal connection of the device, the local regulations or VDE 0100 (Regulations of German electrotechnical Engineers) must be observed.

For terminal connection of the device in areas in which there is the danger of dust explosion zone 10, the pertinent local regulations for the installation and connection of electrical wires must be observed.

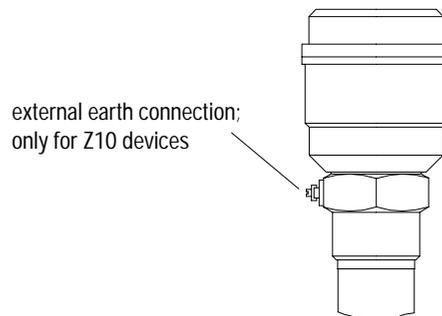
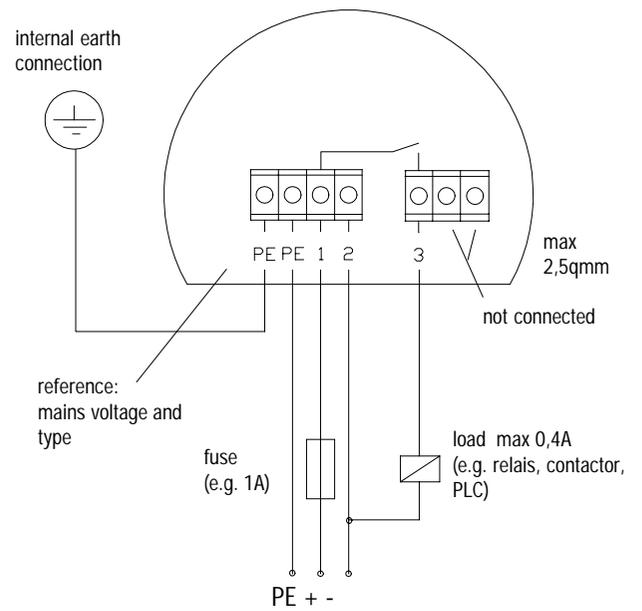
- Provide protection for relay contacts and output transistors to protect the device against spikes with inductive loads.
- Compare the mains voltage applied with the specifications given on the electronic module before switching the device on.
- Make sure that max. 8mm of the pigtails are bared (danger of contact with live parts).
- Make sure that the boots for protecting cable terminations are not longer than 8mm (danger of contact with live parts).
- Make sure that the screwed cable gland safely seals the cable and that it is tight (danger of water intrusion).
- A voltage-disconnecting switch must be provided near the device.
- In the case of inexpert handling or handling malpractice, the electric safety of the device cannot be guaranteed.
- In the case of a defect, the distribution voltage must automatically be cut off by a FI protective switch so as to protect the user of the device from indirect contact with dangerous electric tensions.

Information VN 2000
electrical connection

19..253V 50-60Hz 19..60V DC (wide range)

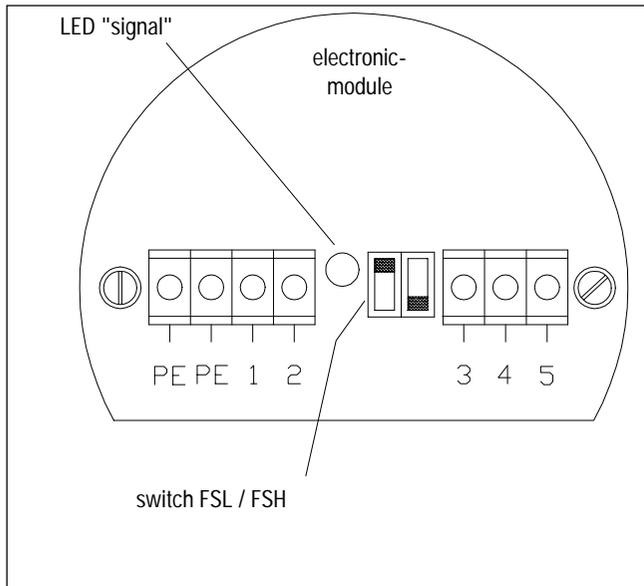


18..50V DC PNP (3-wire)



Information VN 2000
switching logic

switching logic



minimum / maximum security level

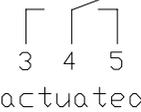
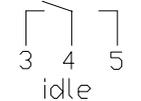
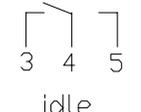
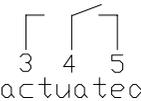
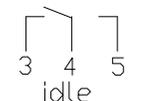
If the probe is used to indicate full load
-> set to maximum security level FSH

Power failure or line break is regarded as "full" signal
(protection against overcharging)

If the probe is used to indicate empty load
-> set to minimum security level FSL

Power failure or line break is regarded as "empty" signal
(protection against running dry)

minimum / maximum security

setting	probe	relay output	transistor out.	LED signal
maximum security FSH	free	 actuated	 closed	○ off
	covered	 idle	 open	☀ on
minimum security FSL	free	 idle	 open	☀ on
	covered	 actuated	 closed	○ off
power failure	either	 idle	 open	○ off

adjustment

adjustment - sensitivity

All probes have been factory pre-adjusted. Therefore, they usually do not have to be re-adjusted.

If the bulk material has a strong propensity to cake or deposit, the adjustment switch can be set to position "A" so as to increase the sensitivity of the probe

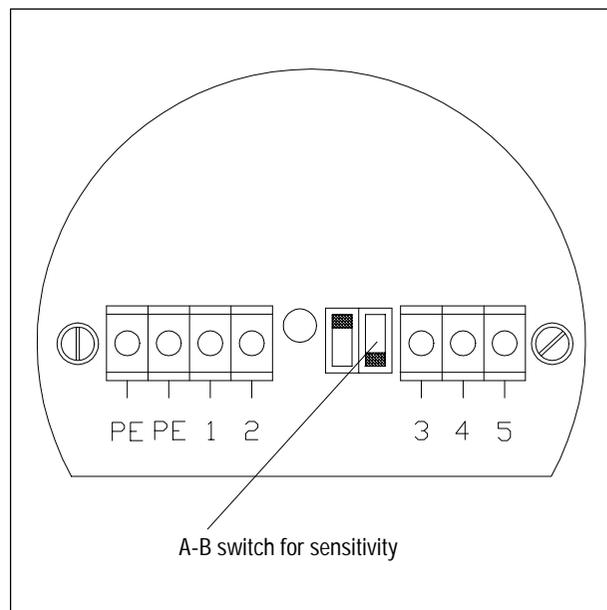
(Factory presetting = position "B").

Please contact manufacturer if you intend to use the device for special purposes.

adjustment - signal delay

No possibility to adjust the present signal delay of the device is provided.

Please contact manufacturer if you intend to use the device for special purposes.



maintenance

Normally, the device requires no maintenance. However, depending on the individual field of application, the following should be observed and inspected:

- mechanically damaged oscillating rods
 - mechanically damaged extension rope (VN 2050)
- coarse cleaning of the oscillating rods

changing the electronic module

1. Open the housing lid, remove the pigtails from the device.
2. Disconnect internal wire for earth connection from terminal PE.
3. Unscrew two fastening screws of the electronic module.
4. Pull out electronic module.
5. Insert new electronic module (until it locks into place).
6. Fix internal wire for earth connection to terminal and screw down the fastening screws.
7. Connect the pigtails to the device.

