

Rotonivo[®]

Level limit switch

Information RN 4000

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Subject to technical change and price change.

All dimensions in mm.

All units of this pricelist are -certificated.

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

introduction

■ The **ROTONIVO RN 4000** is a low-cost electromechanical level-limit-switch and is used for level monitoring of bulk goods. It is used wherever

- dustlike
- powdery
- granulated
- granular

media are handled.

Mainly it is used in easy applications with little mechanical loads.

■ Designed to the modular system, **ROTONIVO** level limit switches are used as

- full detector
- demand detector
- empty detector

at

- silos
- hoppers
- storage containers
- small containers
- bunkers
- weigher containers
- discharge pipes

■ **ROTONIVO RN 4000** level limit switches are

- compact
- robust
- no maintenance
- simple
- reliable
- insensitive to environmental influences

They can be equipped for over- and underpressure and also for very high or low temperatures.

■ Thousands of **ROTONIVO** level limit switches have stood the test in several applications like

- chemical industry
- wood industry
- building materials industry
- food processing industry
- mechanical engineering
- plastics industry

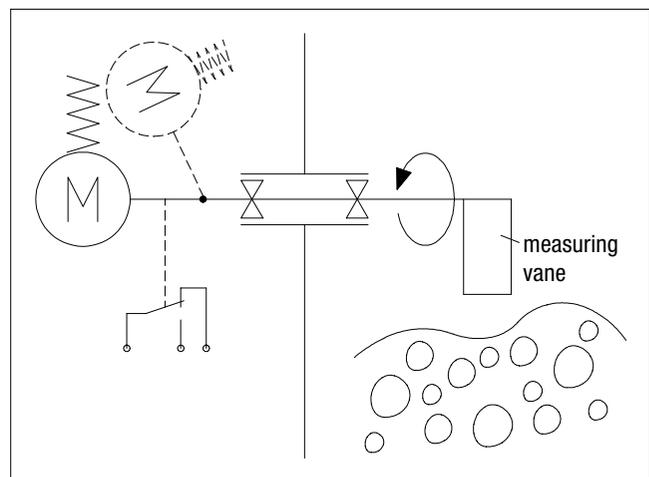
mode of operation

A low revolution synchronous induction gearing motor drives a rotating measuring vane, which is for example mounted at a container.

As soon as the material level, which is to be checked, reaches the measuring vane, it is handicapped in his rotation.

The synchronous induction motor is freely suspended within the housing. The caused reaction torque is used to operate a micro switch giving a suitable electrical signal and to stop the motor.

When the vane becomes free again due to the drop in material level, a spring draws the motor back into his operating position, the micro switch returns to his initial position and the motor is switched on. The electrical output signal is then switched over.



approvals

For the **ROTONIVO** types **RN 4001** the approval for the dust explosion zone 10/11 is available.

technical data

dimensions

For detailed dimensions of the types RN 4001 see pricelist (page P1).

mechanical data

| | |
|-----------------------------|--|
| housing | die-casted housing plastic PA6 with fiberglass; RAL 5012 blue |
| enclosure | IP 65 to EN 60529 |
| process connection | thread according to selection; flanges on request; |
| material process-connection | plastic PA6 with fiberglass, black; For zone 10/11units: aluminium |
| material vane shaft | stainless steel |
| material measuring vane | plastic PP, black |
| tolerance length "L" | ±10mm (pendulum shaft or rope extension) |
| bearing | slide bearing, high-grade |
| sealing | radial rotary shaft sealing DIN 3760 |
| friction clutch | protection of the gearing of impacts of the measuring vane |
| pickup delay | approx. 1.3 sec |
| sensitivity | adjustable via reset force of spring or geometry of measuring vane |
| speed of measuring vane | 1 1/min |

electrical data

| | | |
|----------------|--------------------------|----------------------------|
| mains voltage | 230V..240V | 50-60Hz |
| | (changable to 110..120V) | |
| | 110..120V | 50-60Hz |
| | (changable to 230..240V) | |
| | 48V | 50-60Hz (changable to 24V) |
| | 24V | 50-60Hz (changable to 48V) |
| installed load | 24V | DC |
| | all voltages +10% / -15% | |
| | 3VA (3W) | |

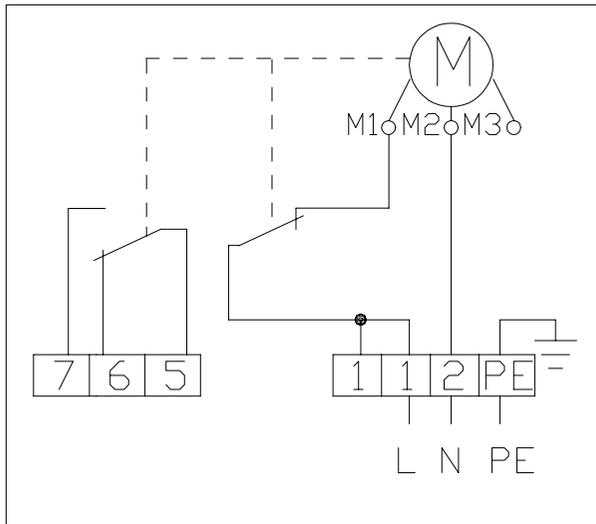
| | |
|---------------------|--|
| connection terminal | 1x max. 1.5mm ² |
| screwed cable gland | 1x M20x1.5 (option 2x M20x1.5) |
| signal output | floating microswitch AC max. 250V, 2A, 500W (cosφ=1) DC max. 300V, 2A, 60W |
| connection diagram | inside of cover, datasheet |
| protection class | I |

operating conditions

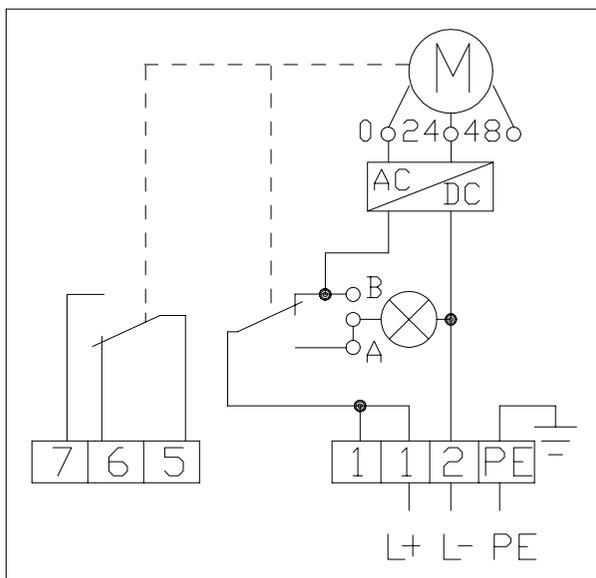
| | |
|------------------------------------|---|
| container over-pressure | -0.5bar .. +0.8 bar |
| powderdensity | min. 60g/l |
| feature of bulk material | dustlike, powdery, granulated, granular |
| maintenance | not required |
| temperature inside container | -20°C upto +80°C |
| ambient temperature of the housing | -20°C upto +60°C |

electrical connection

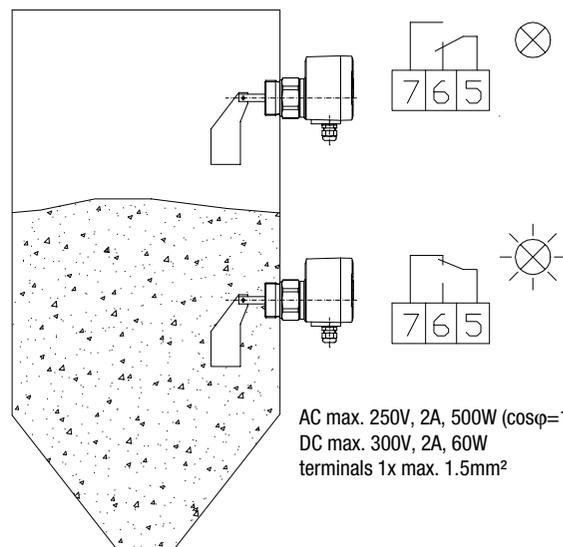
AC design



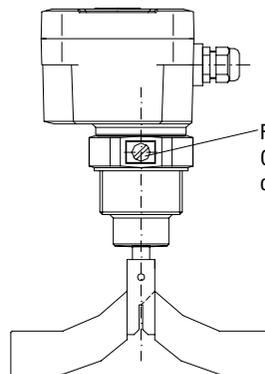
DC design



switching logic



AC max. 250V, 2A, 500W (cosφ=1)
DC max. 300V, 2A, 60W
terminals 1x max. 1.5mm²



For Zone 10/11 units:
Connect the terminal with the earth of the container.

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safety items - mounting

safety items



- Switch off the mains voltage before opening the housing.
Dangerous voltage!
Set into operation only with closed lid of the housing.
- Use a fuse for the mains voltage (max. 4A) and the signal output (max. 4A).
- A voltage disconnecting switch must be provided near the switch. A FI protective switch is necessary.
- Compare the mains voltage applied with the specifications given on the label before switching the device on.
- For terminal connection of the device, the local regulations or VDE 0100 (regulations of German electrotechnical engineers) must be observed.

- In the case of inexpert handling or handling malpractice, the electric safety of the device cannot be guaranteed.
- When the device is mounted in areas in which there is danger of dust explosion zone 10, the pertinent rules and regulations must be observed.
- Isolating signal output - mains voltage: 3kV~
- Provide protection for relay contacts to protect the device against spikes, if inductive loads are connected.

mounting

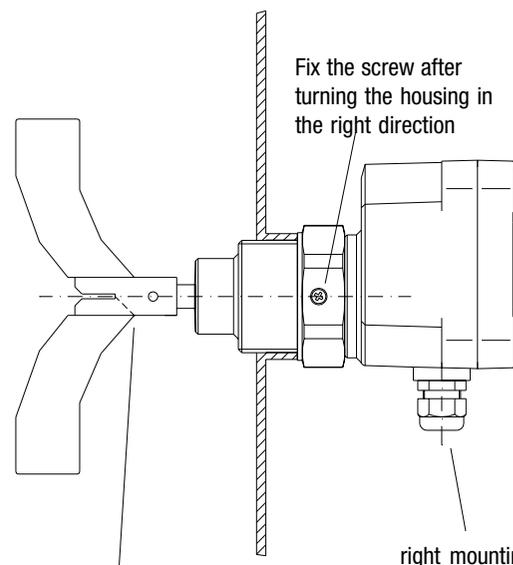
The unit must be mounted with the thread or the flange on the container. Mounting may be vertical, oblique or horizontal. For the individual mounting of the several ROTONIVO-types see pricelist.

The electrical connections are made in accordance with the connection diagram. Make sure, that the cable in the screwed cable gland is seated tightly without fail.

After mounting, turn the housing in the right direction. The screwed cable gland must show downwards (see drawing right hand). This makes sure, that the unit works fine and protects, that water enters into the housing through the screwed cable gland.

When the unit is used in the open, we recommend to use the weather-protection-cover. It protects the unit against moisture, heat, cold and prevents the formation of condensation water in the interior of the housing.

Adjusting the unit at site is not required.



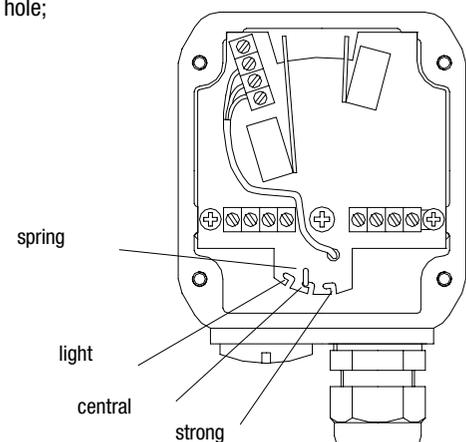
- cut one side of the measuring vane:
- In case of empty or demand detector at any rate;
 - to lead the vane through the mounting hole;

adjustment of the spring

The spring is adjustable in 3 positions. It should be changed only if necessary.

"light": for light material;
"central": suitable for nearly every material;
"strong": for strong cacking material;
Factory setting is "central".

The spring can be changed via a small plier.



shaft extensions

There are two different shaft extensions available:

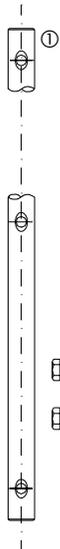
Either

Upto 1m with the kit "pendulum shaft".

or

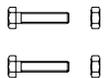
More robust upto 2m with the kit "rope extension". The rope can be cut to the desired length.

kit "pendulum shaft"

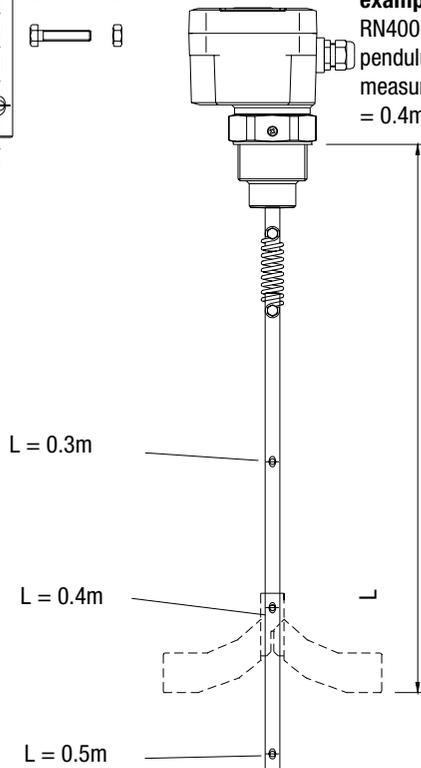


The kit "pendulum shaft" consists of an extension tube (1) to be mounted with a spring (2) on the shaft of the RN4001. Each 100mm there are drilled holes in the tube for mounting the measuring vane. This enables to mount the vane at different extension length 'L'. In case of high material density it is recommended to cut the tube below the vane.

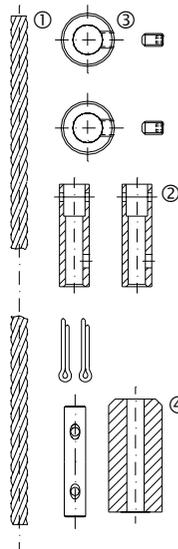
The kit "pendulum shaft" is available for max. L=0.5m or max. L=1.0m. Each kit will be delivered with a mounting instruction in different languages.



example:
RN4001 with
pendulum shaft L = 0.5m;
measuring vane mounted at L
= 0.4m;



kit "rope extension"

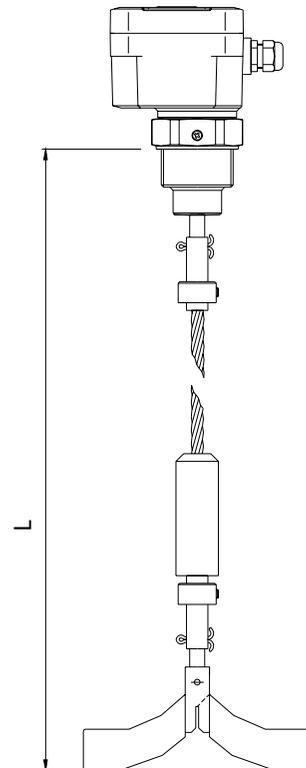


With the kit "rope extension" the shaft of the RN4001 is extended by a 8mm stainless steel rope (1).

The rope is mounted with the shaft and the measuring vane by each a bush (2) and a clamp ring (3). The rope weight (4) is put over the rope to tight it.

The kit is available for L=2m. By cutting of the rope it is possible to realize other extension length.

RN4001 with rope extension



Length of the rope:

