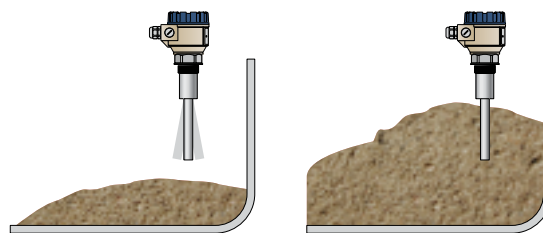


## Vibrating Rod Level Switches

NIVOCONT R

The NIVOCONT R series vibrating rod level switches are robust instruments, designed for low and high level indication of granules and powders with a minimum of 0.05 kg/dm<sup>3</sup> density. Mounted on tanks, silos or hopper bins, it controls filling/dumping, and sends alarm signals when necessary.

The circuit induces a vibration in the rod probe, when the medium touches the rod, the vibration changes, when the level drops and the medium no longer touches the rod, it starts to vibrate freely again. The electronics senses the change of vibration and sends an output signal after a predetermined delay.



### FEATURES

- Length up to 20 m
- Adjustable sensitivity
- Highest medium temperature: +160 °C
- Universal supply voltage
- Dust explosion protection
- Fine-polished probe
- IP67

### APPLICATIONS

- Powders, pellets, granulates
- Grains
- Ground products
- Stone-powder, chippings
- Cement, sand
- Coal, slag

### CERTIFICATES

- ATEX (Ex ta/tb D)
- IEC Ex (Ex ta/tb D)
- UKCA Ex (Ex ta/tb D)



RKH-502-5Ex



RKR-500 / 600



RKK-500 / 600

### LOADABILITY

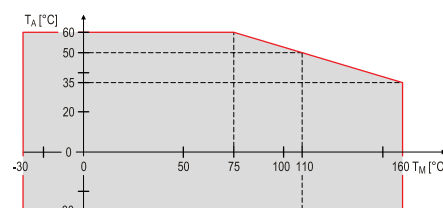
	Standard	With extension pipe	With extension cable
Type of load			
Force	max. 500 N	–	max. 45 kN
Torque	max. 100 Nm	max. 100 Nm	–

### MOUNTING OPTIONS

	Standard version		With extension pipe	With extension cable
High level switching	Top-mounted	Side-mounted <sup>(1)</sup>	Vertical mounting from the top	
Low level switching	Side-mounted <sup>(1)</sup>			

<sup>(1)</sup> Protect the device against falling material by installing a baffle plate. The device must be installed with a slope greater than the slope angle is required for powdery materials.

### TEMPERATURE DIAGRAM



Ambient temperature ( $T_A$ ) versus medium temperature ( $T_M$ )

TECHNICAL DATA

	Standard R□H-□□□-□, R□N-□□□-□	With extension pipe R□R-□□□-□, R□L-□□□-□	With extension cable R□K-□□□-□, R□C-□□□-□	With custom extension R□E-□□□-□, R□F-□□□-□
Insertion length	207 mm	0.3...3 m	1...20 m	0.2...2 m
Material of wetted parts	1.4571		Vibrating part: 1.4571, Cable: PE cover	1.4571
Housing material	Powder-coated aluminum (R-500 series); or plastic (PBT) (R-600 series)			
Process connection	R□H, R□R, R□K, R□E: 1 1/2" BSP; R□N, R□L, R□C, R□F: 1 1/2" NPT			
Temperature range	-30...+110 °C; high-temp. version <sup>(2)</sup> : -30...+160 °C		-30...+80 °C	-30...+110 °C; high-temp. version <sup>(2)</sup> : -30...+160 °C
Medium pressure	max. 25 bar (2.5 MPa)		max. 6 bar (0.6 MPa) <sup>(2)</sup>	
Medium density <sup>(1)</sup>	min. 0.05 kg/dm <sup>3</sup> (grain size max max. 10 mm)			
Response time (selectable)	Getting immersed	< 1.8 sec or 5 ± 1.5 sec		
	Getting free	< 2 sec or 5 ± 1.5 sec		
Power supply (universal)	Standard type: 20...255 V AC/DC			
Power consumption	≤ 2.5 VA / 2 W			
Electrical connections	2× M20x1.5 cable glands for Ø6...12 mm cable; 2× terminal blocks for max. 1.5 mm <sup>2</sup> wire cross section; 2× internally threaded 1 1/2" NPT connection for protective pipes.			
Ingress protection	Housing: IP67 <sup>(3)</sup>			
Electrical protection	Class I (to be grounded!) <sup>(3)</sup>			
Weight	plastic housing	1.5 kg	1.5 kg (+1.4 kg/m)	1.5 kg (+0.6 kg/m)
	aluminum housing	1.88 kg	1.88 kg (+1.4 kg/m)	1.88 kg (+0.6 kg/m)

<sup>(1)</sup> Depend on friction and granular size of the medium.

<sup>(2)</sup> Only with metal housing.

<sup>(3)</sup> Devices with custom extension must be installed and mounted appropriately, which is the responsibility of the customer. Only the appropriate mounting ensures IP67 protection, max. 6 bar (0.6 MPa) maximum tank pressure, and Class I electrical protection.

OUTPUT PROPERTIES

Output	Relay	Electronic
Output type and rating	SPDT 250 V AC, 8 A, AC1	SPST 50 V, 350 mA
Output protection	-	Overvoltage, overcurrent and overload
Voltage drop (switched on)	-	< 2.7 V 350 mA
Residual current (switched off)	-	< 10 µA

Ex INFORMATION

R□□-5□□-5Ex		
Protection	Dust Ex	
Ex marking <sup>(2)</sup>	ATEX	⊕ III/2 D Ex ta/tb IIIC T90°C...T170°C Da/Db
	IEC Ex	Ex t IIIC T* Da/Db IP67 *(see Temperature data table)
Electrical connection	2× M20×1.5 cable glands with Ex ta IIIC protection for Ø7...Ø12 mm cable, 2× plug-in terminal blocks for max. 1.5 mm <sup>2</sup> wire cross section, Two internally threaded 1/2" NPT connection for protective pipes.	
Power supply (universal)	20...255 V AC (50/60Hz) / 20...50 V DC	

<sup>(2)</sup> Only with metal housing

THERMAL LIMITS OF Ex COMPLIANT VERSIONS

Thermal Properties	With extension cable			Standard or with extension pipe				High-temperature
Medium temperature (T <sub>M</sub> ) <sup>(4)</sup> Min.: -30 °C	+60 °C	+70 °C	+80 °C <sup>(5)</sup>	+60 °C	+70 °C	+95 °C	+110 °C	+160 °C
Ambient temperature (T <sub>A</sub> ) <sup>(4)</sup> Min.: -30 °C	+60 °C	+50 °C	+60 °C	+60 °C	+50 °C	+60 °C	+50 °C	+35 °C
Max. surface temp. of process connection	+85 °C		+95 °C	+85 °C		+95 °C		+135 °C
Max. surface temperature	+85 °C		+95 °C	+85 °C		+95 °C	+110 °C	+160 °C
Temperature classes	T90°C		T100°C	T90°C	T100°C	T115°C		T170°C

<sup>(4)</sup> To operate the level switch at the maximum values of the related thermal properties the applied cable must permanently withstand up to +90 °C temperature.

<sup>(5)</sup> Medium temperature for max. 1 hour: +95 °C

**NIVOCONT R-500/R-600 standard version**

**5 years**

Vibrating rod level switch for powders and granular solids  
Standard probe length: 207 mm

**Versions**

R   -  0 2 -

<b>K</b>	Standard version (+110 °C)
<b>H</b>	High-temperature version (+160 °C)
<b>S</b>	Standard version (+110 °C) with fine-polished probe
<b>T</b>	High-temperature version (+160 °C) with fine-polished probe

**Process connection**

R   -  0 2 -

<b>H</b>	1½" BSP
<b>N</b>	1½" NPT

**Housing**

R   -  0 2 -

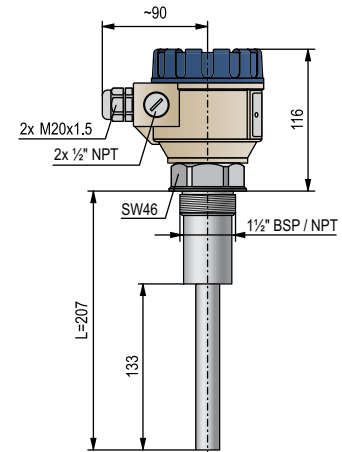
<b>5</b>	Aluminium (powder-coated)
<b>6</b>	Plastic, PBT, fiberglass-reinforced (Ex version is not available)

**Output / Certificates**

R   -  0 2 -

<b>1</b>	SPDT, relay; 250 V AC, 8 A
<b>3</b>	SPST, solid-state output
<b>5</b>	SPDT, relay; 250 V AC, 8 A / Ex ta/tb D

Need of IEC Ex is to be requested in the text part of the order



RKH / RKN-500 / 600

**NIVOCONT R-500/R-600 extension pipe version** 5 years

Vibrating rod level switch for powders and granular solids with stainless steel extension pipe up to 3 m

**Versions**

R	□ □ - □ □ □ - □
<b>K</b>	Standard version (+110 °C)
<b>H</b>	High-temperature version (+160 °C)
<b>S</b>	Standard version (+110 °C) with fine-polished probe
<b>T</b>	High-temperature version (+160 °C) with fine-polished probe

**Process connection**

R	□ □ - □ □ □ □ - □
<b>R</b>	1½" BSP
<b>L</b>	1½" NPT

**Housing**

R	□ □ - □ □ □ □ - □
<b>5</b>	Aluminium (powder-coated)
<b>6</b>	Plastic, PBT, fiberglass-reinforced (not available in Ex version)

**Probe length**

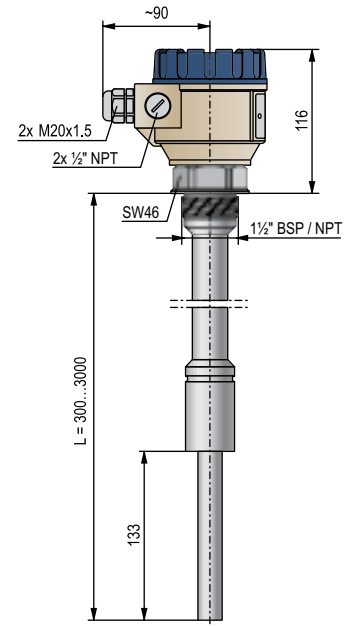
R	□ □ - □ □ □ □ - □
<b>nn</b>	0.3...0.5 m
<b>oo</b>	0.6...3 m; sold by the 0.1 m

nn = 03...05 : 0.3...0.5 m  
oo = 06...30 : 0.6...3 m

**Output / Certificates**

R	□ □ - □ □ □ □ - □
<b>1</b>	SPDT, relay; 250 V AC, 8 A
<b>3</b>	SPST, solid-state output
<b>5</b>	SPDT, relay; 250 V AC, 8 A / Ex ta/tb D

Need of IEC Ex is to be requested in the text part of the order



RKR / RKL-500 / 600

**NIVOCONT R-500/R-600 extension cable version**

**5 years**

Vibrating rod level switch for powders and granular solids with PE-coated stainless steel extension cable up to 20 m

**Process connection**

R K  -    -

<b>K</b>	1½" BSP
<b>C</b>	1½" NPT

**Housing**

R K  -    -

<b>5</b>	Aluminium (powder-coated)
<b>6</b>	Plastic, PBT, fiberglass-reinforced (not available in Ex version)

**Probe length**

R K  -    -

<b>0 1</b>	1 m
<b>n n</b>	2...20 m; sold by the meter

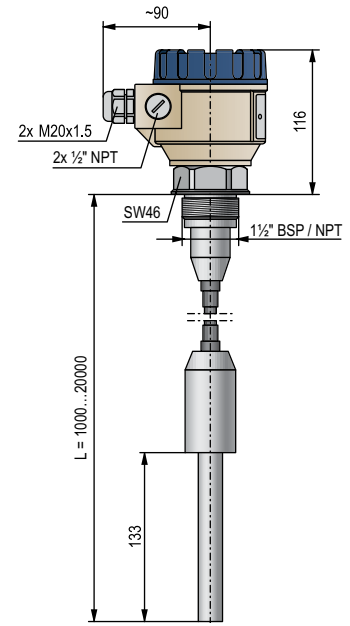
nn = 02...20 : 2...20 m

**Output / Certificates**

R K  -    -

<b>1</b>	SPDT, relay; 250 V AC, 8 A
<b>3</b>	SPST, solid-state output
<b>5</b>	SPDT, relay; 250 V AC, 8 A / Ex ta/tb D

Need of IEC Ex is to be requested in the text part of the order



RKK / RKC-500 / 600

**NIVOCONT R-500/R-600 custom extension version** **5 years**

Vibrating rod level switch for powders and granular solids with custom extension 1" stainless steel (1.4571) pipe cut to desired length, up to 2 m (the extension steel tube is not part of the package).

**Versions**

R	□	□	-	□	0	2	-	□
<b>K</b>	Standard version (+110 °C)							
<b>H</b>	High temperature version (+160 °C)							

**Process connection**

R	□	□	-	□	0	2	-	□
<b>E</b>	1½" BSP							
<b>F</b>	1½" NPT							

**Housing**

R	□	□	-	□	0	2	-	□
<b>5</b>	Aluminium (powder-coated)							
<b>6</b>	Plastic, PBT, fiberglass-reinforced							

**Output**

R	□	□	-	□	0	2	-	□
<b>1</b>	SPDT, relay; 250 V AC, 8 A							
<b>3</b>	SPST, solid-state output							

**NIVOCONT R-500/R-600 with remote-mounted electronics** **5 years**

Vibrating rod level switch with electronics separated from the probe  
Use the order codes below after the standard order code of the device:

**Special versions**

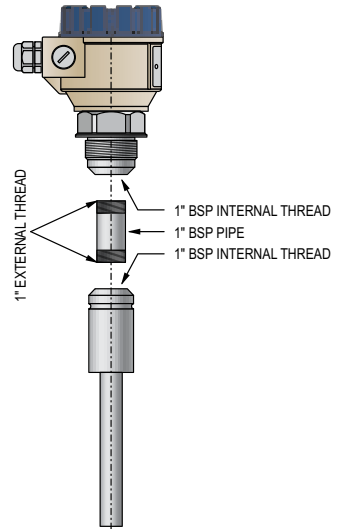
X09

**Extension cable**

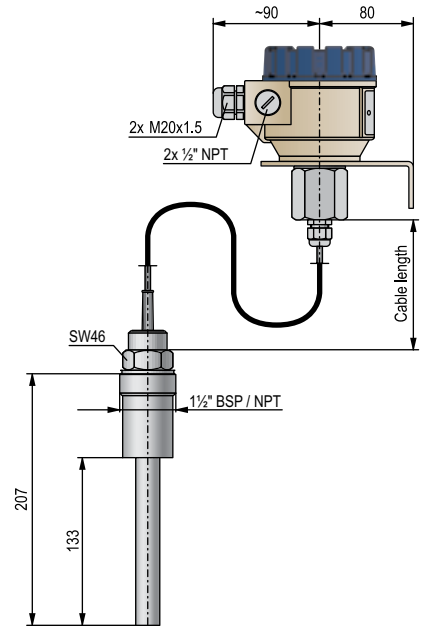
Max. 10 m; sold by the meter

Order example:

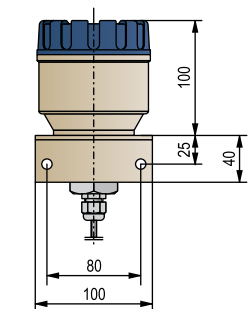
Remotely mounted version with standard probe and 3 m extension cable: RKH-502-1-X09/3 m



RKE / RKF-500 / 600



RKH-500/600-X09



RKH-500/600-X09