NIVOCONT R

VIBRATING ROD LEVEL SWITCHES
FOR SOLIDS

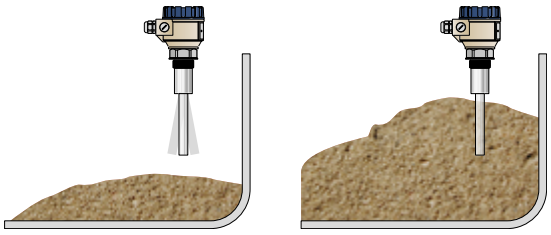
5 YEARS WARRANTY

NIVELCO

LEVEL SWITCHES

The robust **NIVOCONT R** series vibrating rod level switches are designed for low and high level indication of granules and powders with a minimum density of 0.05 kg/dm^3. When mounted on tanks, silos, or hopper bins, they control filling and dumping and send alarm signals when necessary.

The circuit induces 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, the vibration resumes. The electronics sense this change and send an output signal after a predetermined delay.



FEATURES

- Probe length up to 20 m *(66 ft)*
- Adjustable sensitivity
- Highest process temperature: +160 °C *(+320 °F)*
- Universal supply voltage
- Dust explosion protection
- Fine-polished probe
- IP67 *(NEMA 6 equivalent)*
- 5 years warranty

RKH / RKN–500

RKR–500 / 600

RKK–500 / 600

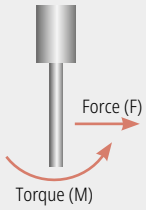
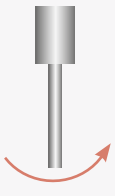
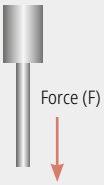
APPLICATIONS

- 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)
- KCs Ex (Ex ta/tb D)

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[1]	Vertical mounting from the top	
Low level switching	Side-mounted[1]			

[1] *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.*

RKH–502–5 Ex

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 (8.15")	0.3…3 m (1…9.84 ft)	1…20 m (3.28…65.5 ft)	0.2…2 m (0.65…6.5 ft)
Material of wetted parts		1.4571 (316Ti)		Vibrating part: 1.4571 (316Ti), Cable: PE cover	1.4571 (316Ti)
Housing material		Painted aluminum (R–500 series); or plastic (PBT) (R–600 series)			
Process connection		R□H, R□R, R□K, R□E: 1½" BSP; R□N, R□L, R□C, R□F: 1½" NPT			
Process temperature		–30…+110 °C (–22…+230 °F); high-temperature version[2]: –30…+160 °C (–22…+320 °F)		–30…+80 °C (–22…+176 °F)	–30…+110 °C (–22…+230 °F); high-temp. version[2]: –30…+160 °C (–22…+320 °F)
Ambient temperature		–30…+60 °C (–22…+140 °F)			
Process pressure		up to 25 bar (363 psi)		up to 6 bar (88 psi)[3]	
Medium density[1]		min. 0.05 kg/dm³ (grain size max. 10 mm (0.4"))			
Response time (selectable)	Getting immersed	<1.8 s / 5 ±1.5 s			
	Getting free	<2 s / 5 ±1.5 s			
Supply voltage (universal)		Standard type: 20…255 V AC/DC			
Power consumption		≤2.5 VA / 2 W			
Electrical connections		2× M20×1.5 cable glands for Ø6…12 mm (Ø0.25"…0.5") cable; 2× terminal blocks for max. 1.5 mm² (16AWG) wire cross section; 2× internally threaded 1½" NPT connection for protective pipes.			
Ingress protection		Housing: IP67 (NEMA 6 equivalent)[3]			
Electrical protection		Class I (grounding required!)[3]			
Weight	plastic housing	1.5 kg (4.2 lb)	1.5 kg (4.2 lb) (+1.4 kg/m (1 lb/ft))	1.5 kg (4.2 lb) (+0.6 kg/m (0.4 lb/ft))	1.5 kg (4.2 lb)
	aluminum housing	1.88 kg (3.3 lb)	1.88 kg (3.3 lb) (+1.4 kg/m (1 lb/ft))	1.88 kg (3.3 lb) (+0.6 kg/m (0.4 lb/ft))	1.88 kg (3.3 lb)

[1] Depend on friction and grain size of the medium. [2] Only with metal housing. [3] Devices with custom extension must be installed and mounted appropriately, which is the responsibility of the customer. Only the appropriate mounting ensures IP67 protection, up to 6 bar (87 psi) 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□□–5 Ex		
Protection		Dust Ex
Ex marking[2]	ATEX	⟨Ex⟩ II1/2 D Ex ta/tb IIIC T90°C…T170°C Da/Db
	IEC Ex	Ex t IIIC T* Da/Db IP67 *(see Temperature limit values table)
	KCs Ex	Ex t IIIC T*
Electrical connection		2× M20×1.5 cable glands with Ex ta IIIC protection for Ø7…Ø12 mm (0.28…0.47") cable, 2× plug-in terminal blocks for max. 1.5 mm² (AWG16) wire cross section, 2× internally threaded ½" NPT connection for protective pipes.
Supply voltage (universal)		20…250 V AC (50/60Hz) / 20…50 V DC

[2] Only with metal housing.

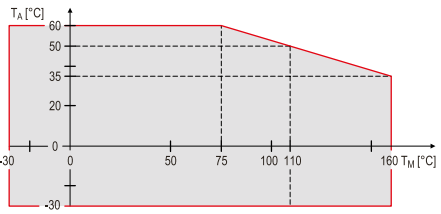
THERMAL LIMITS OF Ex COMPLIANT VERSIONS

Temperature limit values for Ex versions

Temperature data	Cable extended			Standard, rod extended				High temp. version
Process temp. (Tm)[4] Min.: –30 °C (–22 °F)	+60 °C (+140 °F)	+70 °C (+158 °F)	+80 °C [5] (+176 °F)	+60 °C (+140 °F)	+70 °C (+158 °F)	+95 °C (+203 °F)	+110 °C (+230 °F)	+160 °C (+320 °F)
Ambient temp. (Ta)[4] Min.: –30 °C	+60 °C (+140 °F)	+50 °C (+122 °F)	+60 °C (+140 °F)	+60 °C (+140 °F)	+50 °C (+122 °F)	+60 °C (+140 °F)	+50 °C (+122 °F)	+35 °C (+203 °F)
Max. surface temp. of process connection	+85 °C (+185 °F)		+95 °C (+203 °F)	+85 °C (+185 °F)		+95 °C (+203 °F)		+135 °C (+275 °F)
Max. surface temp.						+95 °C (+203 °F)	+110 °C (+230 °F)	+160 °C (+320 °F)
Temperature class	**T90°C**		**T100°C**	**T90°C**		**T100°C**	**T115°C**	**T170°C**

[4] To operate the level switch with the maximum values of the related temperature data the applied cable should permanently withstand up to +90 °C (+194 °F) temperature.
[5] Process temperature for max. 1 hour: +95 °C (+203 °F).

TEMPERATURE DIAGRAM

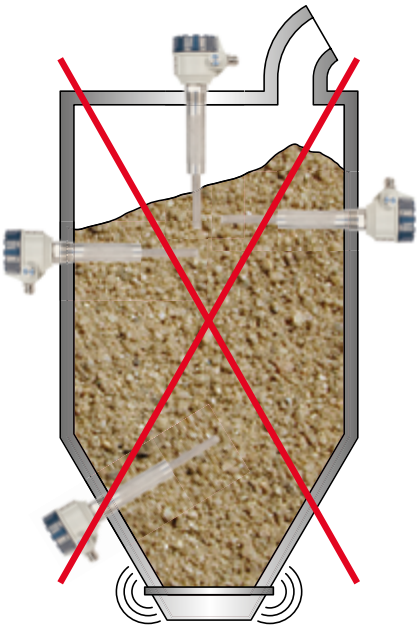


Ambient temperature (T_A) vs. process temperature (T_P)

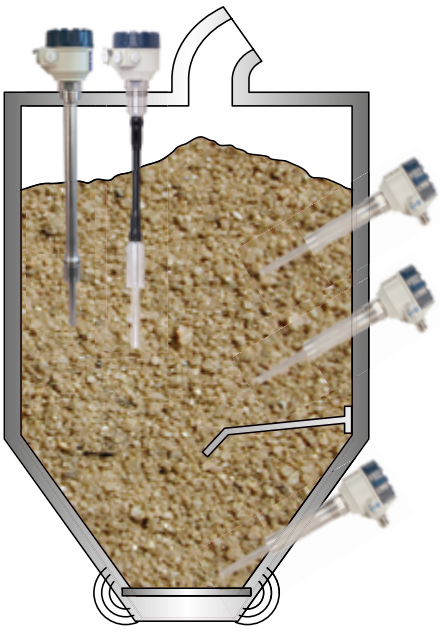
INSTALLATION

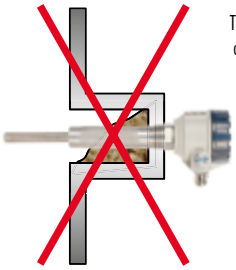
Protect the probe against strong material inflow by selecting an appropriate mounting position or using an overhead protective shield. If the instrument is mounted on the side of the tank, consider the possibility of coning or arching of the material. In dusty environments, the inclination of the side-mounted probe should exceed the angle of repose to ensure self-cleaning and prevent material buildup on the vibration rod switches. Avoid mounting the unit close to the filling entry or near medium accumulation.

Incorrect

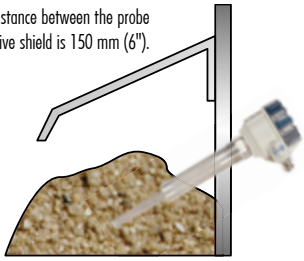


Correct





The minimum distance between the probe and the protective shield is 150 mm (6").

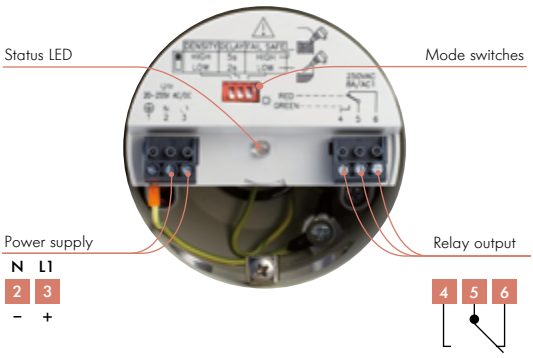


Incorrect

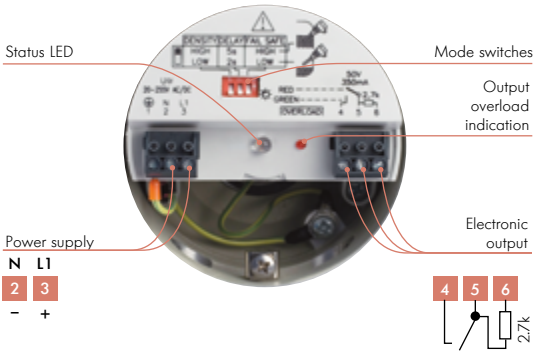
Correct

WIRING

Relay output



Electronic output



MODE SWITCHES

Density	
Selection is dependent on the density of the measured medium.	
High	process density is >0.1 kg/dm^3 or abrasive materials
Low	medium density is <0.1 kg/dm^3

Delay	
Response time delay to be selected	
5 sec	The output does not change if the rod is blocked for a moment *(e.g., by falling material).*
2 sec	Fast switching

Fail-safe		
High	High fail-safe	A fail-safe alarm is indicated by a de-energized relay or an open solid-state output.
Low	Low fail-safe	

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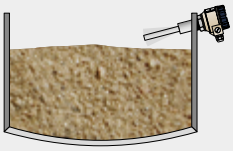
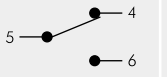
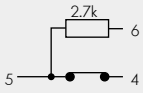
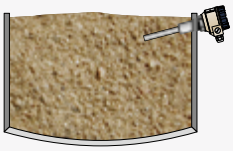
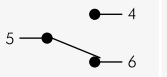
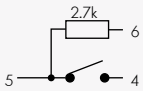
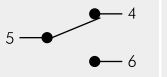
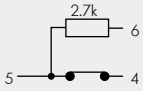
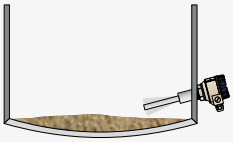
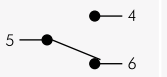
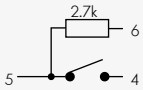
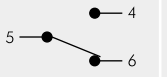
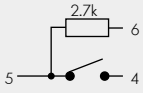
OPERATION

Power supply	Switching		Fail-safe switch	Status LED	Output	
					Relay	Electronic
ON	High level		High		 Energized	 ON
			High		 De-energized	 OFF
	Low level		Low		 Energized	 ON
			Low		 De-energized	 OFF
OFF	–	–	High / Low		 De-energized	 OFF

ORDER CODES *(NOT ALL COMBINATIONS AVAILABLE)*

NIVOCONT R ■■–■■■–■ [1]

Version	Code
Standard version	K
High-temperature version	H[2]
Standard version with fine-polished probe	S
High-temperature version with fine-polished probe	T[2]

Housing	Code
Aluminum	5
Plastic (PBT)	6[3]

Insertion length		Code
Standard	207 mm (8.14")	02
Pipe extension	300 mm (1 ft)	03
	400 mm (1.3 ft)	04
	•	•
	•	•
	•	•
	1000 mm (3.28 ft)	10
	1100 mm (3.6 ft)	11
	•	•
	•	•
	•	•
	3000 mm (9.8 ft)	30
Cable extension	1 m (3.28 ft)	01
	2 m (6.56 ft)	02
	•	•
	•	•
	•	•
	20 m (65.6 ft)	20

Output / Certificates	Code
SPDT, relay; 250 V AC, 8 A	1
SPST, solid-state output	3
SPDT, relay; 250 V AC, 8 A / Ex ta/tb D	5

Process connection / Extension		Code
1½" BSP	Standard version	H
	Pipe extended	R
	Cable extended	K
1½" NPT	Standard version	N
	Pipe extended	L
	Cable extended	C

[1] For explosion-proof devices, the article number on the data plate is followed by "Ex."
[2] Only for Standard and Pipe extended versions.
[3] Not available in Ex version.

NIVOCONT R
– CONFIGURATION & REQUEST FOR QUOTE

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