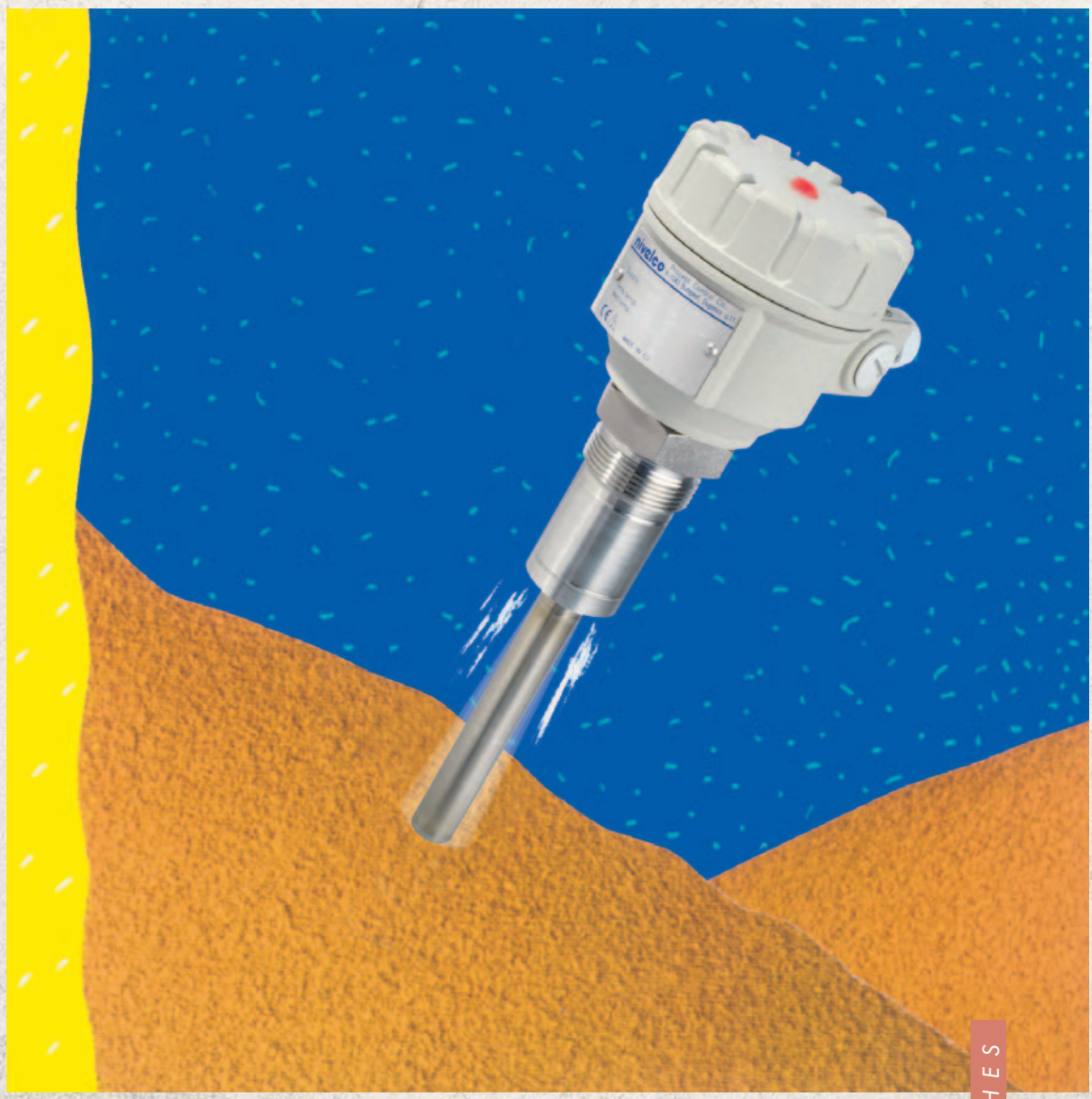
For solids

NIVOCONT R

VIBRATING ROD LEVEL SWITCHES



3 YEARS WARRANTY

OUR PROFESSION IS YOUR LEVEL

LEVEL SWITCHES

NIVOCONT R VIBRATING ROD LEVEL SWITCHES

MAIN FEATURES

- *Extension up to 20 m*
- *Adjustable sensitivity*
- *Max. medium temperature 160°C*
- *Universal supply voltage*
- *Dust explosion protection*
- *Fine polished probe*

APPLICATIONS

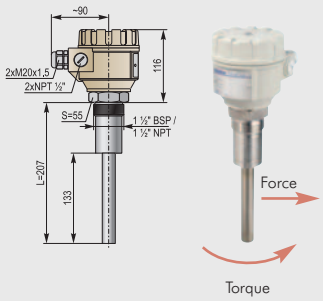
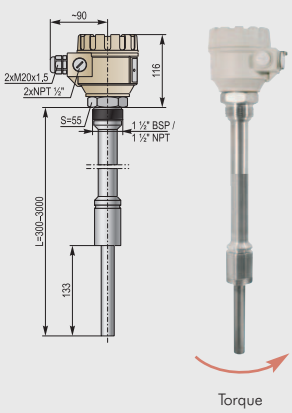
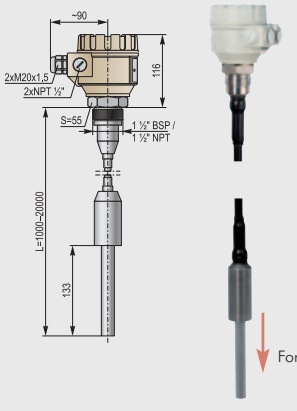
- *Powders, pellets, granulates*
- *Grains*
- *Ground products*
- *Stone-powder, chippings*
- *Cement, sand*
- *Coal, slag*

GENERAL DESCRIPTION

The **NIVOCONT R** series of 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^3 density. Mounted on tanks, silos or hopper bins it can control filling / emptying, or give fail-safe alarm signals. The highly polished version is recommended to use for abrasive mediums. The operation principle is based on that the electronic circuit excites the vibration in the rod probe. When the medium reaches and covers the rod vibration stops, when the medium leaves the rod it returns to vibrate freely. The electronics senses the change of vibration and gives output signal after a selected delay.

TYPE SELECTION

Position of the switching point (high, low) and the mounting (side, bottom, top) determines the selection of the appropriate type.

Type		Standard	Pipe extended	Cable extended
Hihg limit switch		Side mounted	Top mounted	Top mounted
Low limit switch		Side or bottom mounted		
Dimensions				
Maximum load	Force	500 N	–	45 kN
	Torque	100 Nm	100 Nm	–

TECHNICAL DATA

Type		Standard	Pipe extended	Cable extended
Insertion length		207 mm	0.3 … 3 m	1 … 20 m
Material of wetted parts		1.4571		vibrating part: 1.4571 cable: PE cover
Process connection		1 1/2" BSP; 1 1/2" NPT as per order code		
Output		see output data		
Temperature range		see temperature data		
Maximum pressure		max. 25 bar (2.5 MPa)		max. 6 bar (0.6 MPa)
Max. load	Force	500 N	–	45 kN
	Torque	100 Nm	100 Nm	–
Medium density*		min. 0.05 kg/dm^3 (Max. granular size: 10 mm)		
Response time (selectable)		< 2 sec or 5 sec ±1.5 sec		
Power supply		20…255 V AC/DC, Ex: 20…250 V AC, 20…50 V DC		
Power consumption		≤ 2.5 VA / 2 W		
Housing material		Metal: paint coated aluminium Plastic: PBT fibre glass (DuPont®)		
Electrical connection		2 pcs. M20x1.5 plastic cable glands for Ø6 to 12 mm cable For Ex version: 2 pcs. M20x1.5 plastic cable glands, Ⓔx II 2GD Ex e II/Ex tD for Ø10 to 15 mm cable 2 pcs. terminal blocks for max. 1.5 mm^2 wire cross section		
Electrical protection		Class I.		
Ingress protection		IP67		
Certificate for Ex versions**		ATEX Ⓔx II 1/2 D tD A20/A21 IP67 T (see temperature limit values for Ex versions)		
Mass	Metal housing	1.88 kg	1.88 kg +1.4 kg/m	1.88 kg +0.6 kg/m
	Plastic housing	1.5 kg	1.5 kg +1.4 kg/m	1.5 kg +0.6 kg/m

* Depends on the internal friction and the granular size of the medium ** Only with metal housing

OUTPUT DATA

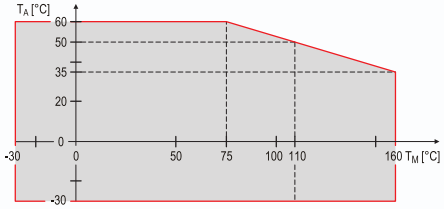
Type	Reley	Electronic
Output type and rating	SPDT 250 V AC, 8 A, AC1	SPST 50 V, 350 mA
Output protection	–	Overvoltage, overcurrent and overload
Voltage drop (switched on)	–	< 2,7 V @ 350 mA
Residual current (switched off)	–	< 10 μA

TEMPERATURE DATA

Temperature limit values for Ex versions:

Temperature data	Cable extended			Standard and pipe extended				High temp.
Medium temp. (T_M) Min.: –30°C	+60°C	+70°C	+95°C	+60°C	+70°C	+95°C	+110°C	+160°C
Ambient temp. (T_A) Min.: –30°C	+60°C	+50°C	+60°C	+60°C	+50°C	+60°C	+50°C	+35°C
Max. surface temp. of process conn.	+85°C	+85°C	+95°C	+85°C	+85°C	+95°C	+95°C	+135°C
Max. surface temp.	+85°C	+85°C	+95°C	+85°C	+85°C	+95°C	+110°C	+160°C
Temp. classes	T90°C		T100°C	T90°C		T100°C	T115°C	T170°C

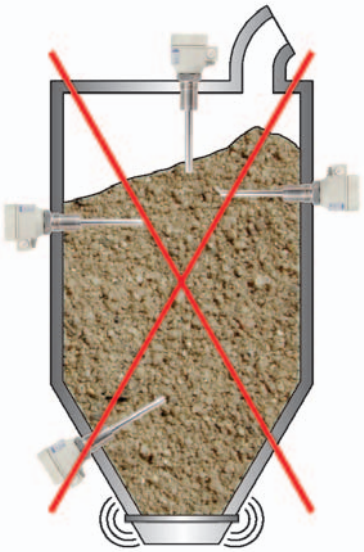
Temperature diagram



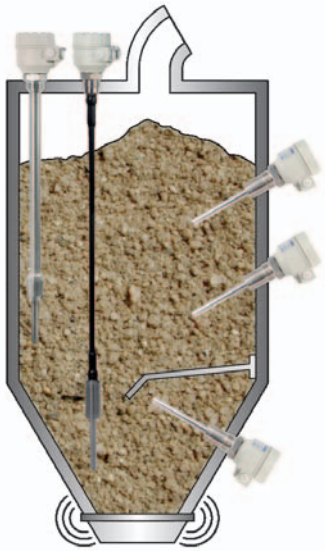
INSTALLATION

The probe should be protected against strong material inflow by appropriate selection of the mounting position or by using an overhead protective shield. When the instrument is mounted on the side of the tank, coning or arching of the material should be taken into consideration. In dusty mediums the inclination of the side mounted probe should be greater than the angle of repose to ensure self cleaning and avoid deposition of material on the vibration rod switches. Avoid mounting the unit close to the filling entry or near to medium accumulation.

Incorrect

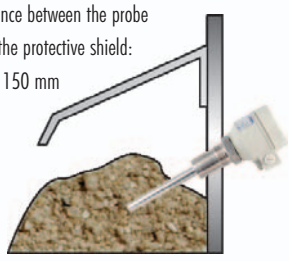


Correct



Incorrect

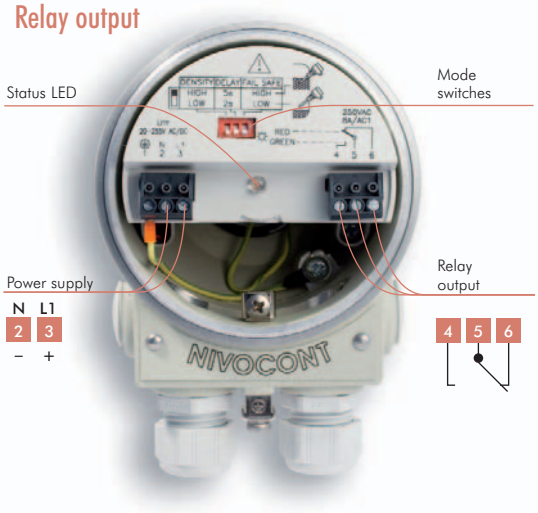
Distance between the probe and the protective shield: min. 150 mm



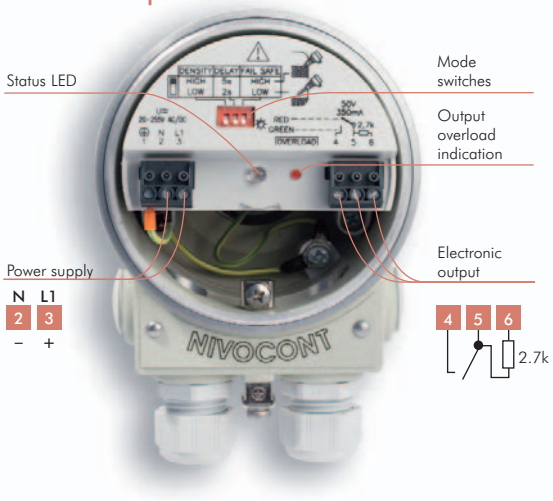
Correct

WIRING

Relay output



Electronic output



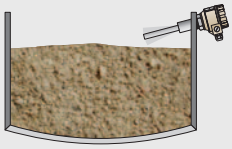
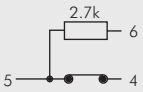
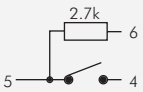
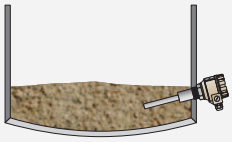
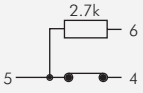
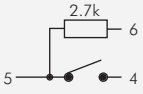
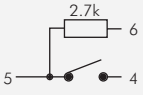
MODE SWITCHES

Density		Delay	
To be selected depending on the density of the measured medium		Response time delay to be selected	
High	medium density is>0.1kg/dm³ or abrasive materials	5 sec	Output does not change if the rod is blocked for a moment (e.g. falling material)
Low	medium density is <0.1 kg/dm³	2 sec	Fast switching

Fail-safe		
High	High Fail-safe	Fail-safe alarm is indicated with de-energised relay or open state of the solid state output.
Low	Low Fail-safe	

rkh5s10a0602b

OPERATION

Power supply	Switching		Fail-Safe Switch	Status LED	Output	
					Relay	Electronic
On	High level		High		 Energised	 On
			High		 De-energised	 Off
	Low level		Low		 Energised	 On
			Low		 De-energised	 Off
Off	–	–	High or Low		 De-energised	 Off

ORDER CODES (NOT ALL CODE VERSIONS ARE AVAILABLE)

NIVOCONT R vibrating rod level switches

NIVOCONT R ■■–■■■–■ [1]

Version	Code
Standard	K
Standard polished	S
High temperature [2]	H
High temperature polished [2]	T

Housing	Code
Metal	5
Plastic [3]	6

Process connection / Extension		Code
1 ½" BSP	Standard version	H
	Pipe extended	R
	Cable extended	K
1 ½" NPT	Standard version	N
	Pipe extended	L
	Cable extended	C

Insertion length		Code
Standard	207 mm	02
Pipe extension	300 mm	03
	400 mm	04
	⋮	⋮
	1000 mm	10
	1100 mm	11
	⋮	⋮
	3000 mm	30
Cable extension	1 m	01
	2 m	02
	⋮	⋮
	20 m	20

Power supply/Output/Ex	Code
20-255 V AC/DC / Relay	1
20-255 V AC/DC / electronic	3
20-250 V AC 20-50 V DC / Relay / Ex	5

[1] *The order code of an Ex version should end in „Ex"*
[2] *Only for Standard and Pipe extended versions*
[3] *Not available in Ex version*

NIVELCO PROCESS CONTROL CO.
H-1043 BUDAPEST, DUGONICS U. 11.
TEL.: (36-1) 889-0100 ◆ FAX: (36-1)889-0200
E-mail: sales@nivelco.com http://www.nivelco.com