

Thank you for choosing a NIVELCO instrument.
We are sure that you will be satisfied throughout its use.

1. APPLICATION

Conductive measuring principle can be applied for liquids with specific conductivity over 2×10^{-5} s/cm.

Conductive switch can only be used for detecting of level i.e. it is suitable to establish the presence of liquid at a given level of the tank.

The level switch comprises NIVOCONT KRK-30□ processor and NIVOCONT KS□-20□ probe duly selected in accordance with the task. The length of the probe, penetrating into the tank, is to be cut according to the level to be detected. If the material of the tank or its inside insulation is not conductive, in addition to the one, two, three or four probe(s) reference probe should be used.

Conductive level switch can provide solution for switching tasks of automatic filling and emptying. The state of the relay, assigned to the level to be detected, can be transferred and transmitted e.g. to a control room for monitoring or triggering alarm signal.

2. TECHNICAL DATA

2.1.1 TECHNICAL DATA OF THE RELAY UNIT

Type	KRK-301	KRK-302
Supply voltage, nominal	24, 110, 230 V AC, 50 ... 60 Hz	
Supply voltage range	nominal - 10% ... +10%	
Power consumption	< 4 VA	
Ambient temperature	-10 °C ... +55 °C	
Damping	adjustable 0.5 s ... 5 s	0.5 s
Sensitivity	changeable: max 50 kΩ / max 10 kΩ	
Probe voltage	20 V AC	
Probe current	Max. 1.2 mA	
Relay contact	1xSPDT	
Rating	250V AC, 8A, AC1	
Insulation voltage	4000 V 50 Hz	
Mechanical life cycle	2x10 ⁶ switching	
Electrical life cycle	10 ⁵ switching	
Electric connection	max. 2.5 mm ² twisted (13AWG) or max. 4 mm ² wire (11AWG).	
Electric shock protection	II. increased insulation	
Mounting	DIN EN 50022-35 rail mounting	
Ingress protection	IP 20	
Mass	≈ 0.21 kg	

2.3 ORDER CODES

NIVOCONT KRK-30□ - □

Operation	Code	Supply	Code
Single point	1	230V AC	1
Hysteresis	2	110V AC	2
		24V AC	3

NIVOCONT KS□ - 20□

Version	Code	Electrode	Code
Single probe, inserted	K	1 pc	1
Single probe, PP enclosure	P	2 pcs + reference probe	2
Single probe, mild steel enclosure	S	3 pcs + reference probe	3
Single probe, KO35 enclosure	N	4 pcs + reference probe	4
Multiple probe, KO35 enclosure	H		

NIVOCONT KLN-2□ □

Probe length*	Code
0.5m ... 3m	05...30

* ordered in steps of 0.5 m

KLP-204 Probe separator

2.2 ACCESSORIES

- User's Manual
- Warranty sheet
- Washer 2 mm strong (KLINGER OILIT):
 - 1 pc 3/8" (for KSP-201, KSS-201, KSN-201)
 - 1 pc 1½" for a KSH-20□
- M6 nut (standard SW):
 - 3 pcs for KSH-202
 - 4 pcs for KSH-203, KSH-204
- M6 nut (non-st. SW):
 - 1pc for KSH-204

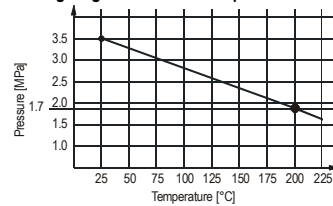


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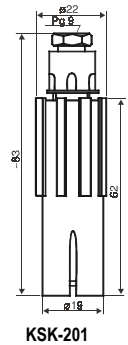
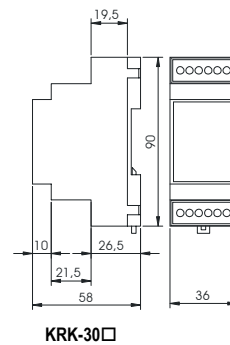
2.1.2 TECHNICAL DATA OF THE PROBE

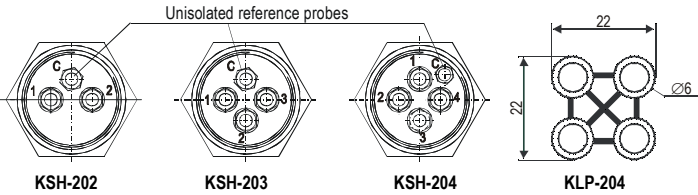
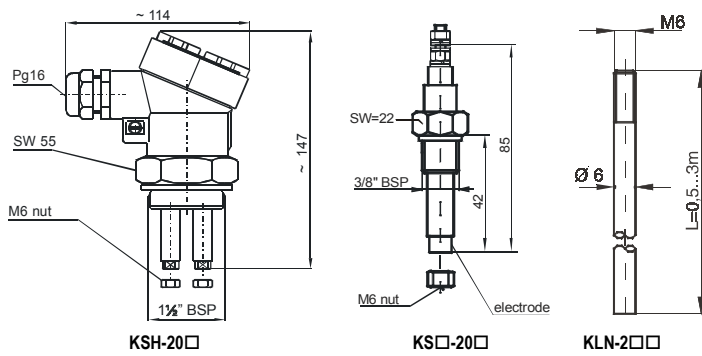
Type	KSK-201	KSP-201	KSS-201	KSN-201	KSH-202	KSH-203	KSH-204	KLN-2□□
Number of probes	1				2+ ref.-probe	3+ ref.-probe	4+ ref.-probe	1
Probe insulation	ABS	PP	PFA					—
Electric connection	Pg 9	M4 nut protected by rubbercap			Pg 16		—	
Process connection	—		3/8" BSP		1½" BSP		M6	
Material	—	PP	A 44 mild steel		KO 35 stainless steel (1.4571)			
Enclosure	—				Aluminium casting			—
Medium temperature	—	-20...80°C	See derating diagram				—	
Maximum pressure	—	0.3 MPa					—	
Ingress pr.	—		IP 20		IP 65		—	
Mass	0.05 kg	0.1 kg		0.4 kg		0.22 kg/m		

Derating diagram for mild steel probe enclosure



2.4 DIMENSIONS





3. INSTALLATION

KRK-30□ relay unit DIN EN 50022-35 rail mounting.

The length of the **KLN-20□□ probe**, to be screwed into the **enclosure KS□-20□** is suggested to cut to the desired length on site.

The probes should be fixed by the M6-nut!

Due to the small place available the reference probe of the KSH-204 will be fixed by a M6 nut with a smaller SW than standard.

In case of more than one probe and up to 130°C, the KLP-204 separators, made of PVDF should be applied at distances of 0,5 m to prevent accidental getting in touch with each other. The probe KSK-201 connected to an insulated cable can be lowered into a steel pipe or well without the risk of a short circuit. For level switching in a well or plastic tube 2 probes of KSK-201 should be used.

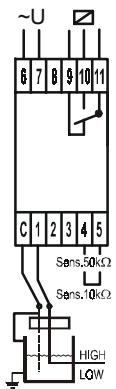
4. WIRING

The sensitivity of the relay unit is maximum 50 kΩ, however it can be decreased to maximum 10 kΩ by connecting terminal points 4 and 5 of the KRK-301 as well as terminal points 3, 4 and 5 of the KRK-302.

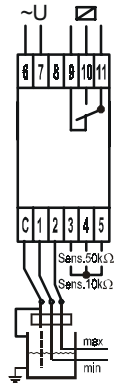
If the wall of the tank is conductive no reference probe is needed. In this case the point "C" should be connected to the wall of the tank.

When connecting wires of the probes to the processor by the fixing M4 nut it must not be tighten stronger than 6 Nm.

UNICONT KRK-301

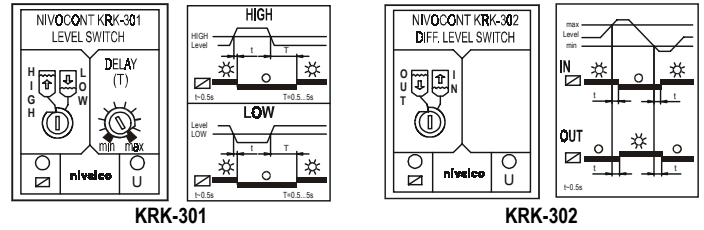


UNICONT KRK-302



5. INSTALLATION, ADJUSTMENT

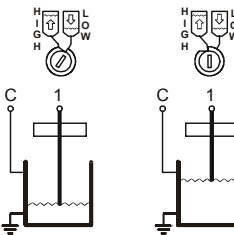
The power up of the switch will be indicated by the green LED, the energised state of the relay by the yellow LED. Desired operation of the unit can be selected by the switch on the front panel. Delay in energising the relay can be selected with the potentiometer DELAY on the unit KRK-302.



5.1. LEVEL DETECTION

NIVOCONT KRK-301 processor can be used for alarm indication. The LOW-HIGH switch on the front panel is to be set to LOW or HIGH position according to the desired alarm indication of low or high level. In case of power cut the de-energised state of the relay can be used for triggering alarm.

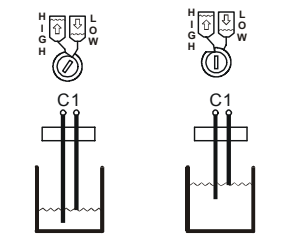
Level detection in metal tank



Low level alarm

High level alarm

Level detection in non-metal tank



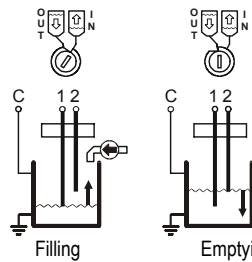
Low level alarm

High level alarm

5.2. LEVEL CONTROL

NIVOCONT KRK-302 is suitable for control of filling or emptying. The IN-OUT switch on the front panel should be set to IN for filling or to OUT for emptying thus the relay will be de-energised during power cut that prevents overflowing or complete emptying.

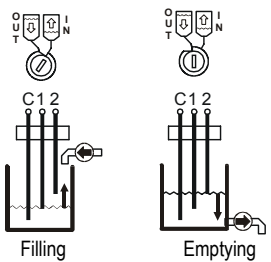
Level control in metal tank



Filling

Emptying

Level control in non-metal tank



Filling

Emptying

6. MAINTENANCE, REPAIR

The instrument does not require regular maintenance.

7. STORAGE CONDITIONS

Environment temperature range: -30 °C to +60 °C

Relative humidity: max. 98 %

8. WARRANTY

Nivelco provides two years warranty from the date of purchase. Warranty claims can only be raised by submitting the factory invoice and warranty sheet. Repairs under warranty are carried out at the Manufacturer's premises.

The Purchaser is liable for costs of dismantling and re-installation as well as transport costs. Models returned to the manufacturer will not be handled unless they are cleaned and disinfected.

Nivelco shall not be liable for misapplication, labour claims, direct or consequential damage or expense arising from the installation or use of equipment.

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Nivelco reserves the right to change technical specifications without notice.