

ConductiSwitch™

Conductive Liquid Point Level Switch



Model KRK-301
Model KRK-302

HiTECH Technologies, Inc.

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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 is comprised of a NIVOCONT KRK-302 processor and a NIVOCONT KS□-20□ probe properly selected in accordance with the application. The length of the probe penetrating into the tank is to be cut based on 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), a 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

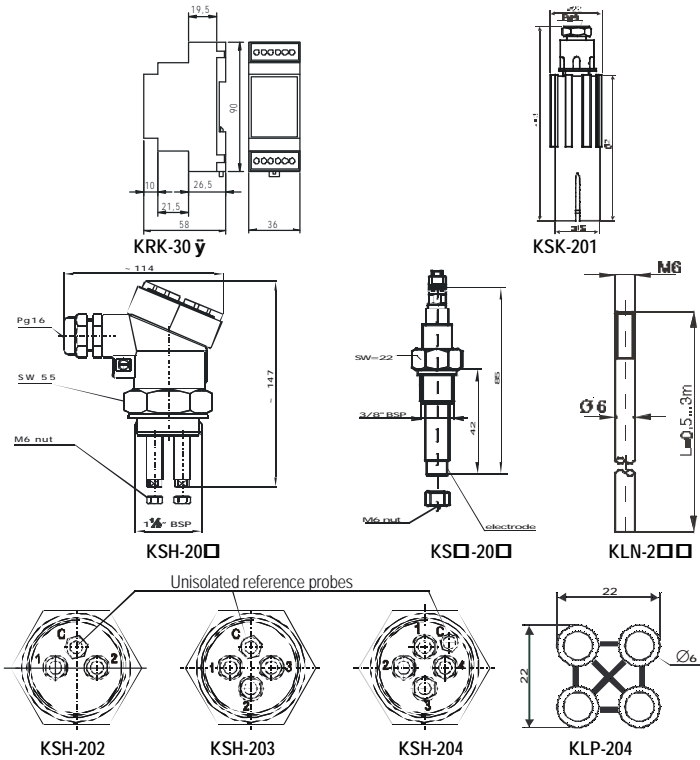
2.1 TECHNICAL DATA OF THE RELAY UNIT

Type	KRK-301	KRK-302
Supply voltage, nominal	24, 110, 230VAC, 50...60Hz	
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	

2.2 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 rubber cap			Pg 16			—
Process connection	—	3/8" BSP			1½BSP			M6
Material	—	PP	A 44 mild steel	KO 35 stainless steel (1.4571)				
Enclosure	—				Aluminum casting			—
Medium temperature	—	-4...176°F -20...80°C	See de-rating 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

2.3 DIMENSIONS



3. INSTALLATION

KRK-30 y relay unit is DIN (EN 50022-35) rail mounted. The length of the **KLN-200 probe** that is to be screwed into the enclosure **KSQ-200** 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 secured 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.

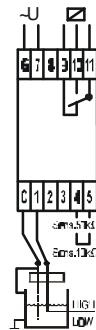
4. WIRING

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

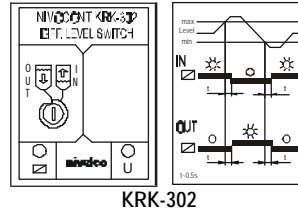
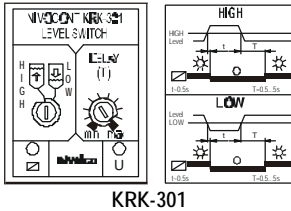


UNICONT KRK-302



5. INSTALLATION, ADJUSTMENT

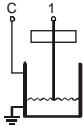
The green LED indicates the power up of the switch. The yellow LED indicates the energized state of the relay. The switch on the front panel can select the desired operation of the unit. Delay in energizing the relay can be selected with the potentiometer DELAY on the unit KRK-302.



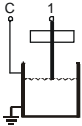
5.1. LEVEL DETECTION

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.

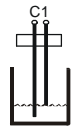
Level detection in metal tank Level detection in non-metal tank



Low level alarm



High level alarm



Low level alarm

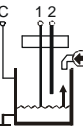


High level alarm

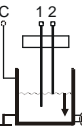
5.2. LEVEL CONTROL

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 overfilling or complete emptying.

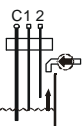
Level control in metal tank Level control in non-metal tank



Filling



Emptying



Filling



Emptying

6. MAINTENANCE

The device does not require maintenance on a regular basis. In some instances, however, the device may need a cleaning from deposited material.

7. STORAGE CONDITIONS

Environmental temperature range: -30°C to +60°C
Relative humidity: max. 98 %

8. PERFORMANCE GUARANTEE

Since 1986, every instrument sold by **HiTECH** has been guaranteed to perform in the application it originally was engineered and recommended for. Our company policy remains the same; every product sold comes with a **written performance guarantee**.

Should the equipment be unable to perform satisfactorily in your application and we are not able to correct the problem, we will accept the instrument in return and issue full credit. This performance guarantee is valid for 60 days. Thereafter, our standard limited two years factory warranty goes into effect.

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