

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

1. APPLICATION

The conductive measuring principle can be applied to liquids with specific conductivity over 10 µS/cm. The switching unit can sense the resistance between probes. Conductivity measurement is suitable only for detecting the presence of liquid at a given level of the tank. This level is represented by the length of the probe.

The level switch consists of a **NIVOCONT KRK-512-5** type switching unit and the **KLN-2□□** type probes selected according to the task. Probes are to be connected to the **NIVOCONT KS□-□□□** type probe socket head that can be screwed into the tank. If the material of the tank or its internal insulation is not conductive then a reference probe should be used in addition to the one, two, three or four probe(s), if the material of the tank is conductive, the tank can be used as a reference probe.

The conductive switch is suitable for filling / emptying control or level limit.

2. TECHNICAL DATA

2.1 GENERAL DATA

2.1.1 TECHNICAL DATA OF THE SWITCHING UNIT

| Type | KRK-512-5 |
|-----------------------------|--|
| Probe voltage | 3.5 V AC |
| Probe current | < 0.2 mA AC |
| Sensitivity | Adjustable: 5 kΩ ... 100 kΩ |
| Max. cable capacity | 800 nF |
| Response | max. 400 ms |
| Setting accuracy (mech.) | ± 5 % |
| Delay | Adjustable: 0.5 ... 10 s |
| t _r delay | 1.5 s |
| Relay output | 1x SPDT |
| Switching voltage | 250 V AC1, 24 V DC |
| Switching current | 8 A AC1 |
| Switching power | 2500 VA AC1, 240 W DC |
| Electrical strength | 3.75 kV |
| Mechanical life-span | 3 x 10 ⁷ switches |
| Electrical life-span | 0.7 x 10 ⁶ switches |
| Power supply U _n | 24 V ... 240 V AC / DC |
| Voltage range allowed | nominal voltage - 15% ... +10% |
| Power consumption | max 2.5 VA / W |
| Ambient temperature | -20 °C ... +55 °C |
| Electrical connection | max. 2.5 mm ² / with insulation 1.5 mm ² |
| Electrical protection | Class II. |
| Ingress protection | IP 20 |
| Mechanical connection | DIN EN 60715 rail |
| Mass | 72 g |

2.1.2 TECHNICAL DATA OF PROBE SOCKETS

| Type | KSK-201 | KSP-201 | KSS-201 | KSN-201 | KSH-202 | KSH-203 | KSH-204 | KSH-301 | KSH-302 | KSH-303 | KSH-304 | KLN-2□□ | KLP-201 | KLP-204 | | |
|----------------------|----------|------------------------------|--------------|-------------------------------|-----------------------------|------------------------------------|---------|---------|----------|-----------|---------|-------------|---------|----------|-----------|---|
| Nr. of probes | 1 | | | | 2+r | 3+r | 4+r | 1+r | 2+r | 3+r | 4+r | 1 | — | — | | |
| Insulation of socket | ABS | PP | PFA | | | | — | | | | — | — | — | | | |
| Cable gland | Pg 9 | M4 nut, rubber cap protected | | | | M20x1.5 cable diameter 6 ... 12 mm | | | | — | — | — | | | | |
| Process connection | — | 3/8" BSP | | | | 1 1/2" BSP | | | | M6 | — | — | | | | |
| Socket material | — | PP | A44 c. steel | KO35 stainless steel (1.4571) | | | | PP | | | | KO35 1.4571 | — | — | | |
| Housing material | — | | | | Paint coated aluminium cast | | | | PBT | | | | — | PP | PVDF | |
| Medium temperature | max 80°C | | | | max 200 °C | | | | max 80°C | | | | — | max 80°C | max 130°C | |
| Max. pressure | — | 0.3MPa | | | | 1.6 MPa | | | | 0.3 MPa | | | | — | — | — |
| Ingress protection | — | IP 20 | | | | IP 65 | | | | — | | | | — | — | — |
| Mass | 0.05 kg | 0.1 kg | | | | 0.4 kg | | | | 0.22 kg/m | | | | — | — | — |

r = reference probe

2.2 ORDER CODES

NIVOCONT KRK - 512 - □

| Power supply | CODE |
|----------------|------|
| 24-240 V AC/DC | 5 |

NIVOCONT KLN - 2 □ □

| Probe length* | CODE |
|---------------|----------|
| 0.5 m ... 3 m | 05... 30 |

* to be ordered in 0.5 m units

NIVOCONT KS □ - □ □ □

| TYPE | CODE |
|---------------------|------|
| Cable probe | K |
| SINGLE PROBE | |
| PP socket | P |
| Carbon steel socket | S |
| St. steel socket | N |
| MULTIPLE PROBES | |
| St. steel socket | H |

| HOUSING MAT. | CODE |
|--------------|------|
| Aluminium | 2 |
| Plastic | 3 |

| PROBE NUMBER | CODE |
|-----------------|------|
| 1 + ref. probe* | 1 |
| 2 + ref. probe | 2 |
| 3 + ref. probe | 3 |
| 4 + ref. probe | 4 |

* only plastic version

Separator:

NIVOCONT KLP - 201 for plastic version
NIVOCONT KLP - 204 for aluminium version

2.4 DIMENSIONS

| | | | | |
|--|-------------------------------|--------------------------------|--|-------------------------|
| | | | | |
| SWITCHING UNIT KRK-512-5 | CABLE PROBE KSK-201 | PROBE SOCKET KSH-20□ | PROBE SOCKET KSP-201 / KSS-201 / KSN-201 | PROBE KLN-2□□ |
| | | | | |
| PROBE SOCKET KSH-202 KSH-203 KSH-204 | SEPARATOR KLP-204 | PROBE SOCKET KSH-30□ | SEPARATOR KLP-201 | |

2.3 ACCESSORIES

- User's manual
- Warranty Card
- Declaration of Conformity
- Sealing (2 mm thick) (KLINGER OILIT)
 - 1 pc. 3/8" (for KSP-201, KSS-201, KSN-201)
 - 1 pc. 1 1/2" 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

NIVOCONT
KRK - 512 CONDUCTIVE
LEVEL SWITCH

USER'S MANUAL



CE
0408

RusAutomation

ООО "РусАвтоматизация"
454010 г. Челябинск, ул. Гагарина 5, оф. 507
тел.: 8-800-775-09-57 (звонок бесплатный),
тел.: (351)799-54-26, факс: (351)211-64-57
info@rusautomation.ru; www.rusautomation.ru
rusavtomatizatsiya.ru

3. INSTALLATION

KRK-512-5 switching unit can be mounted on DIN EN 60715 rail.

It is recommended that the KLN-2□□ type probes are cut to the length required for level detection on site. The probes should be screwed into the KSO-20□ type sockets.

ALWAYS REMEMBER TO TIGHTEN THE PROBE WITH AN M6 NUT!

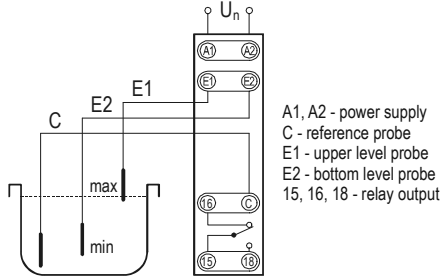
When using KSH-204 type probe sockets the reference probes should be tightened with special SW hexagonal M6 nuts!

It is suggested that KLP-□□□ type separators be used at every 0.5m for multiple probe devices to keep the probes apart.

A KSK-201 single probe, attached to an insulated cable, can be lowered into pits and wells without running the risk of a short circuit. When a measurement is needed in a well or in a plastic pipe 2 of them have to be used.

4. ELECTRICAL CONNECTION

If the wall of the tank is conductive no reference probe is needed. In this case terminal C is to be connected to the tank. On multiple probe units E1 and E2 are marked with 1..4, the reference probe is marked with C. Admissible length of cable between signal processor and probes depends on cable capacity and conductivity.



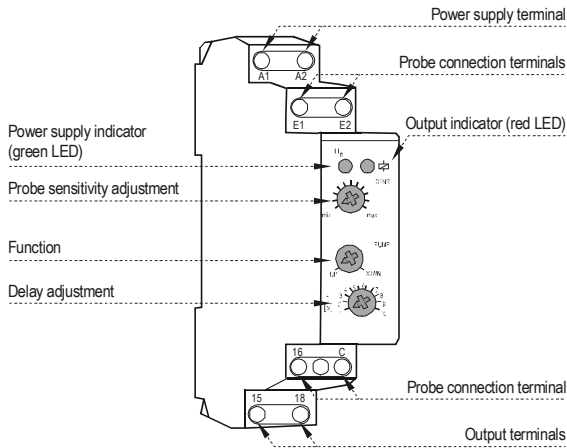
Connections for NIVOCONT KRK-512-5

5. PUTTING INTO OPERATION

5.1. ADJUSTMENT

The green LED (U_n) shows that the unit is on, and the energised state of the relay is indicated by the red LED. Operating mode and delay time (ON and OFF) can be set with the rotary selector switch and potentiometer on the front panel.

To set the sensitivity using SENS potentiometer do the following: submerge all probes into the fluid. Set a minimal delay time (t). Adjust the sensitivity from min. to max. value until the relay becomes energised. Now set the sensitivity a little higher, but don't set a higher sensitivity than needed.



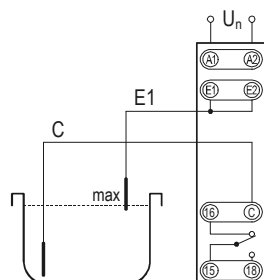
Front panel of NIVOCONT KRK-512-5

5.2. LED INDICATION

- Green LED is on – power supply is on
- Red LED is on – relay is switched on (contacts 15 and 18 are closed)
- Red LED is off – relay is disconnected (contacts 15 and 16 are closed)
- Red LED blinking – output delay indication

5.3. SINGLE-LEVEL MONITORING LIMIT SWITCHING

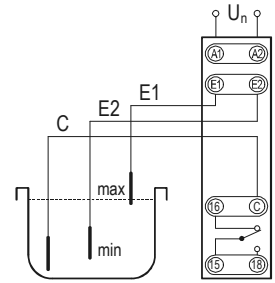
If KRK-512-5 is monitoring only one level, the sensor probe should be connected to both E1 and E2 terminals. For High Fail-safe mode indication the 'PUMP' switch should be in 'UP' position and for Low level alarm indication in 'DOWN' position. Level alarm conditions are indicated in the same way (by de-energised relay state) as when a power cut-off occurs.



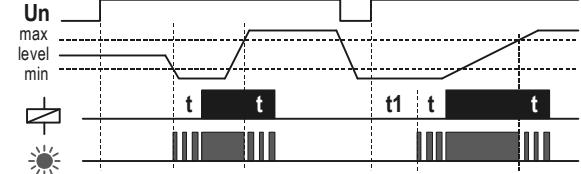
5.4. LEVEL CONTROL

NIVOCONT KRK-512-5 can be used for control of filling or emptying.

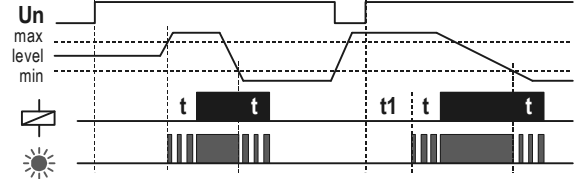
During filling control the 'PUMP' switch should be in position 'UP' and during emptying control in position 'DOWN'. That way in case a power supply outage occurs (energised relay) overflowing or unwanted emptying is prevented.



FILLING



EMPTYING



6. MAINTENANCE, REPAIR

The device does not require regular maintenance.

Repair within and beyond the warranty period is carried out at the Manufacturer's location.

7. STORAGE

Ambient temperature: -30 ... 70 °C

Relative humidity: max. 85%

8. WARRANTY

NIVELCO provides warranty of 3 (three) years in compliance with details described in the Warranty Card.

krk5121a0600h_03

November 2014

NIVELCO reserves the right to change technical data without notice!