

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

NIVOCONT

KKH-2□□
COMPACT CONDUCTIVE
LEVEL SWITCH

USER'S MANUAL



1. APPLICATION

The level switch based on the conductive measuring principle can be applied to conductive liquids with a specific conductivity over 10^{-5} S/cm. For level detection probes are immersed into the tank. The **KKH-212** incorporates one, while the **KKH-222** incorporates two independent switching units which realize the level detection or automatic level control (filling-emptying). The transparent plastic cover allows reading the state of the switching unit without disassembling the device.

2. TECHNICAL DATA

2.1 GENERAL DATA

TYPE	KKH - 212	KKH - 222
No. of probes	3	5
Material of wetted parts		
Process connection	PP	
Probe	1.4571	
Separator	PP	
Probe voltage	3.5 V AC	
Probe current	< 0.2 mA AC	
Sensitivity	Adjustable: 5kΩ ... 100kΩ	
Response	max. 400 ms	
Setting accuracy	± 5%	
Delay	Adjustable: 0.5 ... 10 s	
t ₁ (not adjustable) delay	1.5 s	
Relay output	1 x SPDT	2 x SPDT
Switching voltage	250 V AC1, 24 V DC	
Switching current	8 A AC1, 8 A DC	
Switching power	2500 VA AC1, 240 W DC	
Electrical strength	3.75 kV	
Mechanical life-span	3x10 ⁷ switches	
Electrical life-span	0.7x10 ⁹ switches	
Power supply U _n	24 V ... 240V AC/DC	
Voltage range allowed	Nominal voltage: -15% ... +10%	
Power consumption	max. 2.5 VA / W	max. 5 VA / W
Ambient temperature	-20 °C ... +50 °C	
Medium temperature	-20 °C ... +80 °C	
Medium pressure	1 bar	
Electrical connection	Cable gland: 2xM20x1.5 ∅ 8 ... 15 mm cable; terminal: max. 2.5 mm ² / with insulation 1.5mm ²	
Electrical protection	Class II.	
Mechanical connection	1½" BSP	
Ingress protection	IP 67	
Mass	660 g (without probes)	800 g (without probes)

2.3 ORDER CODE

NIVOCONT KKH - 2 □ 2 - □

NIVOCONT KLN - 2 □ □

FUNCTION	CODE
1 x SPDT	1
2 x SPDT	2

POWER SUPPLY	CODE
24...240 V AC/DC	5

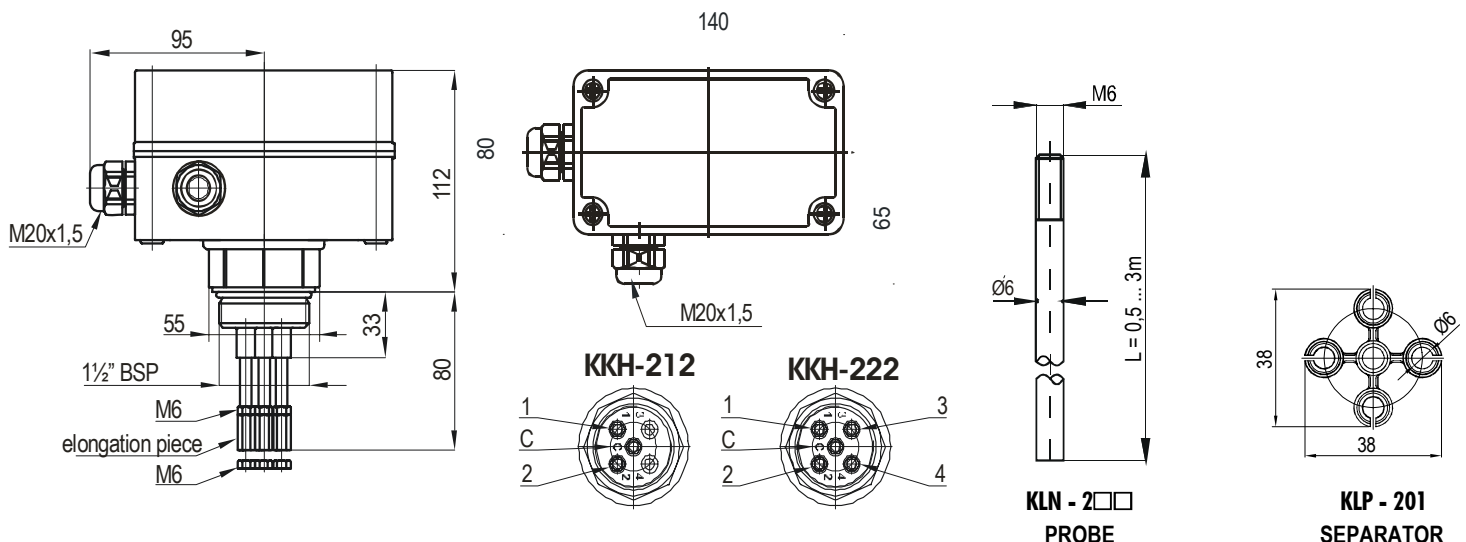
CODE	LENGTH	CODE
0	0 m	0 m
1	1 m	0.5 m
2	2 m	
3	3 m	

Separator: NIVOCONT KLP-201

2.2 ACCESSORIES

- User's Manual
- Declaration of Conformity
- Certificate of Warranty
- 1 pc 1½" nut + 1 pc O ring (EPDM)
- **KKH-212**
3 pcs of threaded elongation piece (joined)
6 pcs of M6 special nut (3 pcs joined)
- **KKH-222**
5 pcs of threaded elongation piece (joined)
10 pcs of M6 special nut (5 pcs joined)

2.4 DIMENSIONS



3. INSTALLATION

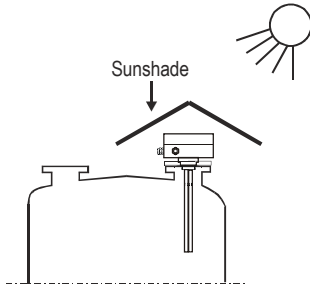
The 1½" BSP process connection on the polipropilene probe head serves for mounting the device in a tank.

ATTENTION!
Don't attempt to tighten the device holding by the plastic housing!

Before mounting the KLN-2□□ probes should be shortened as needed. Each probe should be assembled using 1 elongation piece and 2 special M6 nuts for screw fastening. It is suggested that KLP-201 type PP separators be used at every 0.5m to keep the probes apart.

ATTENTION!
Do not slew the insulated probe parts in the probe head!

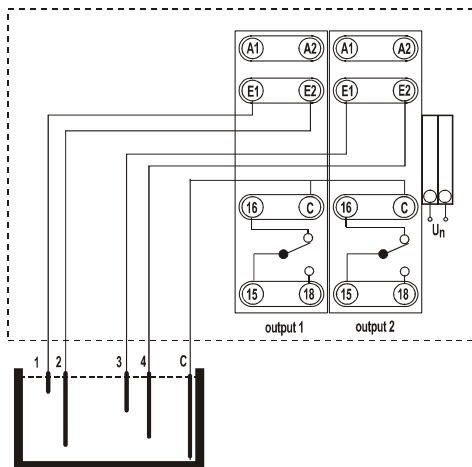
The device must be protected against direct sunlight.



When placing the device take into consideration that in case of agitated liquid medium the bending or twisting forces that affects the probes may damage the unit. In this case the use of a stilling well is recommended.

4. WIRING

Wiring can be done after removing the wiring pane. Only U_n (power supply) and relay output 1 & 2 terminals should be used for wiring. In case of KKH-212 the power supply must be connected directly to the A1-A2 terminals. The figure below shows the connection terminals of the device.

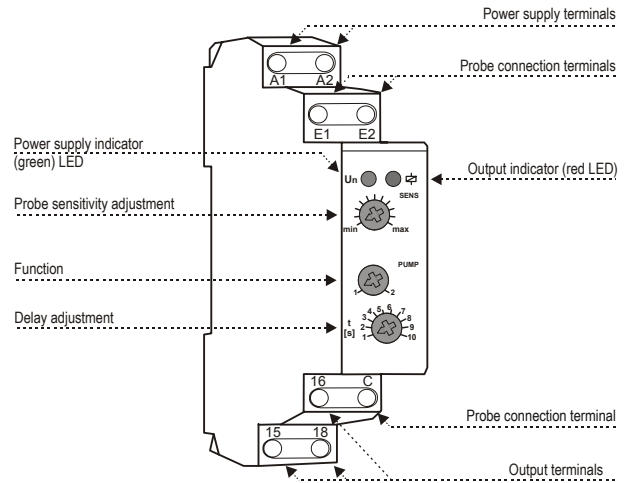


The 'C' reference probe must be the longest!

5. SET UP, ADJUSTMENT

Operating mode and delay time can be set with the rotary selector switch and potentiometer on the front panel. To set sensitivity using SENS potentiometer do the following: submerge all probes into the liquid. 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.

ATTENTION!
Don't set much higher sensitivity than needed!



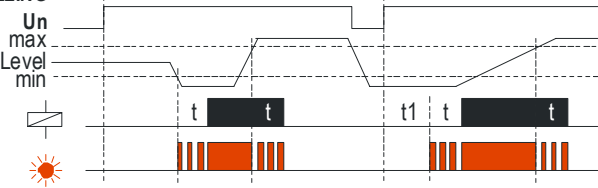
LED INDICATION

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

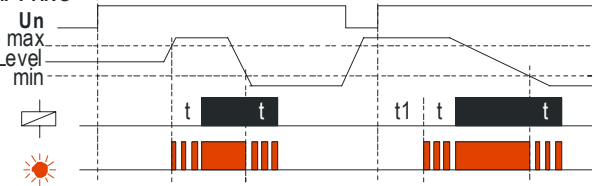
SINGLE LEVEL MONITORING. In this case the probe pairs (1-2 and 3-4) should be cut to the same length. For High Fail-safe alarm indication the 'PUMP' switch should be in UP position and for Low level alarm indication in DOWN position. Level alarm conditions are indicated in the same way (by de-energised relay state) as when a power cut-off occurs.

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

FILLING



EMPTYING



6. MAINTENANCE, REPAIR

The device does not require regular maintenance.

7. STORAGE

Ambient temperature: -30 ... 70 °C
Relative humidity: max. 85%

8. WARRANTY

All NIVELCO products are warranted free of defects in material or workmanship for a period of two years from the date of purchase, as indicated in the Certificate of Warranty.