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EN

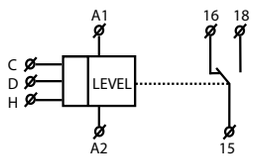
HRH-5

Level switch for monitoring 1 or 2 levels

Characteristics

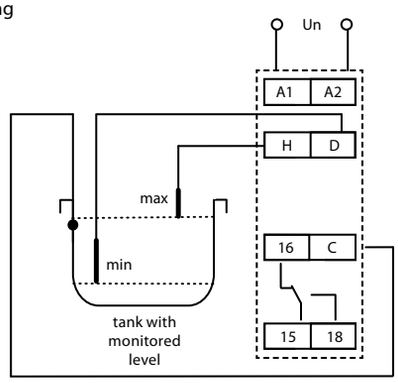
- Relay is designed for monitoring levels in wells, sumps, reservoirs or storage tanks.
- In one device you can choose the following configurations:
  - one-level switch of conductive liquids (formed by connecting H and D)
  - two-level switch of conductive liquids
- One-state connection monitors one level, two-state connection monitors two levels (CLOSES at one level and OPENS at another level)
- Adjustable time delay (0.5 – 10s)
- Adjustable probe sensitivity (5 – 100 kΩ)
- Measuring frequency 10 Hz prevents polarization of liquid and raising oxidation of measuring probes
- Galvanically isolated supply voltage AC/DC 24 – 240 V.

Symbol

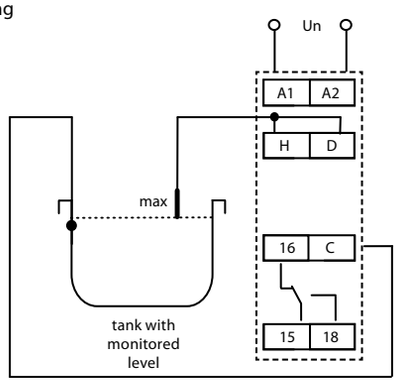


Connection

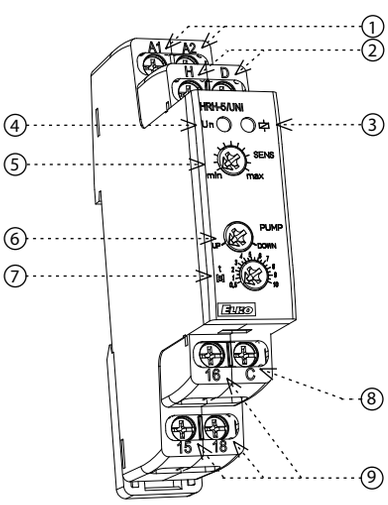
Two level monitoring



One level monitoring



Device description



1. Supply voltage terminals (A1-A2)
2. Terminals for connection of probes (H- D)
3. Indication of operating states
4. Supply voltage indication
5. Probe sensitivity setting
6. Function selection
7. Time delay setting
8. Terminal for connection of probe (C)
9. Output contact (15-16-18)

Important notice

The device provides basic insulation between the supply terminals A1, A2 and the measuring terminals D, H, C, designed in accordance with overvoltage category II. In this sense, the input measuring circuit is galvanically isolated from the supply terminals.
In installations where there is a risk of contact with conductive parts of the measuring circuit, a suitable source of safety extra-low voltage must be used in accordance with the applicable regulations for the given installation.
A protective earth (PE) conductor may be connected to any terminal of the device.

Type of load	cos φ ≥ 0.95 AC1	AC2	AC3	AC5a uncompensated	AC5a compensated	HAL.230V AC5b	AC6a	AC7b	AC12
Contact material AgNi, 8A	250V / 8A	250V / 3A	250V / 2A	230V / 1.5A (345VA)	x	300W	x	250V / 1A	250V / 1A
Type of load	AC13	AC14	AC15	DC1	DC3	DC5	DC12	DC13	DC14
Contact material AgNi, 8A	x	250V / 3A	250V / 3A	24V / 8A	24V / 3A	24V / 2A	24V / 8A	24V / 2A	x

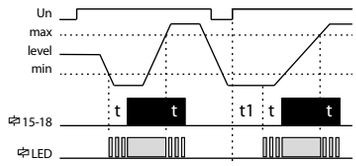
Technical parameters

	HRH-5
Functions:	2
Supply terminals:	A1-A2
Supply voltage:	AC/DC 24 – 240 V (AC 50-60 Hz)
Consumption (max.):	3 VA/1 W
Toleration of voltage range:	–15 %; +10 %
Measuring circuit	
Sensitivity (input resistance):	5 – 100 kΩ
Voltage on electrodes (max.):	AC 3.5 V
Probe current:	AC < 0.1 mA
Response time (max.):	400 ms
Probe cable capacitance*	800 nF (sensitivity 5 kΩ)
(max.):	100 nF (sensitivity 100 kΩ)
Time delay (t):	0.5 – 10 s
Switch-on delay (t1):	1.5 s
Accuracy	
Setting accuracy (mech.):	± 5 %
Output	
Contact type:	1× changeover/SPDT (AgNi)
Current rating:	8 A/AC1; PD. B300
Breaking capacity:	2000 VA/AC1, 240 W/DC1
Switching voltage:	AC 250 V/DC 24 V
Power dissipation (max.):	0.6 W
Mechanical life (AC1):	60.000.000 ops.
Electrical life:	150.000 ops.
Other information	
Operating temperature:	–20 .. +55 °C (–4 .. +131 °F)
Storage temperature:	–30 .. +70 °C (–22 .. +158 °F)
Dielectric strength:	
supply - probes	AC 4 kV
supply - output	AC 4 kV
probes - output	AC 4 kV
Operating position:	any
Mounting:	DIN rail EN 60715
Protection degree:	IP40 font panel/IP20 terminals
Overvoltage category:	II.
Pollution degree:	2
Cross-wire section; solid/	1× 4 mm² (12), 2× 2.5 mm² (14 AWG)/
stranded with ferrule (max.):	1× 4 mm² (12), 2× 1.5 mm² (16 AWG)
Dimensions:	90 × 17.6 × 64 mm (3.5˝ × 0.7˝ × 2.5˝)
Weight:	69 g (2.4 oz)
Standards:	EN 60255-1, EN 60255-26, EN 60255-27

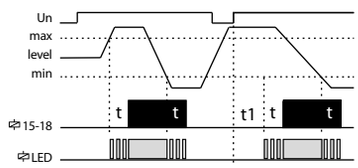
* max. line length is limited by the capacity between the individual cable cores.

Function

Function PUMP UP



Function PUMP UP



The relay is designed for monitoring the level of conductive liquids, with a selectable function: FILLING or DRAINING (PUMP UP or PUMP DOWN). To prevent polarization and electrolysis of the liquid and unwanted oxidation of the measuring probes, an alternating current is used for measurement. Three measuring probes are used: H - upper level, D - lower level, and C - common probe. If a tank made of conductive material is used, the tank itself can serve as the C probe. If monitoring of only one level is required, the H and D inputs must be interconnected and connected to a single probe; in this case, the sensitivity is reduced by half (2.5 – 50 kΩ). The C probe can also be connected to the protective earth conductor (PE) of the supply system. To prevent unwanted switching caused by external influences (such as probe contamination by deposits, humidity, etc.), the device sensitivity can be adjusted according to the conductivity of the monitored liquid (corresponding to the "resistance" of the liquid) within a range of 5 – 100 kΩ. To limit the effect of undesired output contact switching due to turbulence of the liquid level in the tank, an output response delay of 0.5 – 10 s can be set.

Level switches accessories

The measuring probe can be any type (any conductive contact; brass or stainless steel material is recommended).

- Manufacturer's recommended probes: SHR-1-N - stainless steel sensor, SHR-2 - stainless steel mounted in PVC cover, SHR-3 - stainless steel probe intended to be used in harsh industrial environments, FP-1 - flood probe.
- Factory recommended conductor (certified to be used in drinking water): three-wire cable D03VV-F 3x0.75/3.2, wire D05V-K 0.75/3.2.

Warning

Device is designed for connection in 1-phase network AC/DC 24 – 240 V and must be installed in accordance with the regulations and standards applicable in the state of application. Installation, connection, setting and maintenance may only be carried out by a person with appropriate electrical qualifications who is fully familiar with the instructions and the function of the device. The device contains protections against overvoltage peaks and disturbing elements in the supply main. Too ensure correct function of these protection elements it is necessary to front-end other protective elements of higher degree (A, B, C) and screening of disturbances of switched devices (contactors, motors, inductive load etc.) as it is stated in a standard. Before you start with installation, make sure that the device is not energized and that the main switch is OFF. Do not install the device to the sources of excessive electromagnetic disturbances. By correct installation, ensure good air circulation so the maximal allowed operational temperature is not exceeded in case of permanent operation and higher ambient temperature. While installing the device use screwdriver width approx. 2 mm. Keep in mind that this device is fully electronic while installing. Correct function of the device is also depended on transportation, storing and handling. In case you notice any signs of damage, deformation, malfunction or missing piece, do not install this device and claim it at the seller. After operational life treat the product as electronic waste.