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HRH-5

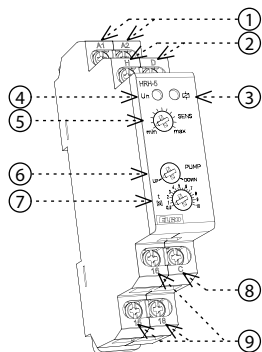
Level switch

02-72/2016 Rev.: 1

Characteristics

- to control levels in wells, basins, reservoirs, tankers...
- in one device you can choose the following configurations:
 - single switch with single-state monitoring
 - single switch with double-state monitoring
- one-stated monitors one level, two-stated monitors two levels (switches on one level and breaks on another)
- selection function of: pump up (filling) or pump down (emptying)
- adjustable time delay of output (0.5 - 10 s)
- adjustable hysteresis (5 - 100 kΩ)
- measuring frequency 10 Hz prevents polarization of liquid and raising oxidation of measuring probes
- galvanically separated supply voltage UNI 24 .. 240 V AC/DC
- output kontakt 1x changeover 8 A / 250 V AC1
- 1-MODULE, DIN rail mounting

Description



1. Supply voltage terminals
2. Terminals for connection of probes H, D
3. Output indication
4. Indication of supply voltage
5. Adjustment of probe sensitivity
6. Choice of function
7. Adjustment of delay on output
8. Terminal for connection of probe C
9. Output contact

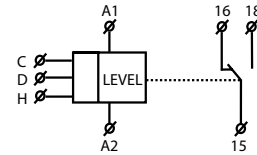
Notice

The device provides basic isolation between the power terminals A1, A2 and measuring terminals D, H, C, which is rated according to over-voltage category II. Accordingly, the input measurement circuit is electrically isolated from the power supply terminals.

In installations where there is a risk of contact with the conductive parts of the measuring circuit, it is necessary use an appropriate source of safe low voltage in accordance with current applicable regulations related to the installation.

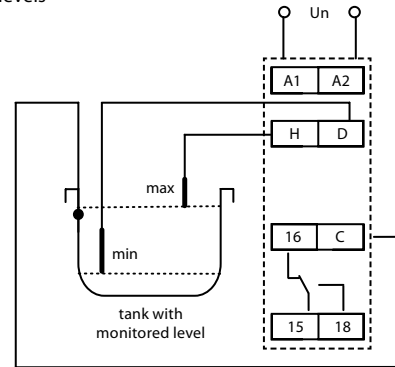
For any terminal, do not connect the PE wire.

Symbol

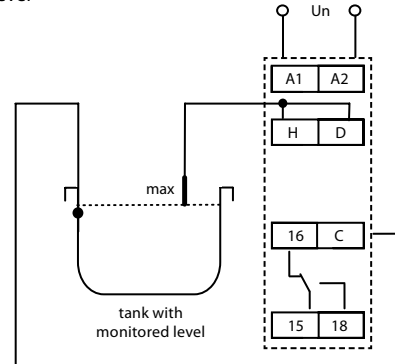


Connection

Monitoring of two levels



Monitoring of one level



Type of load	$\cos \varphi \geq 0.95$								
Mat. contacts AgNi, contact 8A	AC1 250V / 8A	AC2 250V / 3A	AC3 250V / 2A	AC5a uncompensated 230V / 1.5A (345VA)	AC5a compensated x	AC5b 300W	AC6a x	AC7b 250V / 1A	AC12 250V / 1A
Type of load									
Mat. contacts AgNi, contact 8A	AC13 x	AC14 250V / 3A	AC15 250V / 3A	DC1 24V / 8A	DC3 24V / 3A	DC5 24V / 2A	DC12 24V / 8A	DC13 24V / 2A	DC14 x

HRH-5

Function:	2
Supply terminals:	A1 - A2
Supply voltage:	24 .. 240 V AC / DC (AC 50 - 60 Hz)
Consumption:	max. 2 VA
Supply voltage tolerance:	-15 %; +10 %

Measuring circuit

Sensitivity (input - opening):	adjustable in range 5 kΩ- 100 kΩ
Voltage on electrode:	max. AC 3.5 V
Current in probes:	AC < 0.1 mA
Time reaction:	max. 400 ms
Max. cable capacity: *	800 nF (sensitivity 5 kΩ), 100 nF (sensitivity 100 kΩ)
Time delay (t):	adjustable, 0.5 - 10 sec
Time del. after switching on (t1):	1.5 sec

Accuracy

Setting accuracy (mech.):	± 5 %
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Output

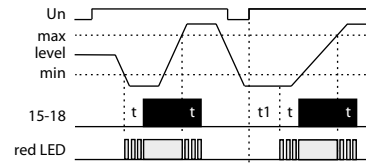
Number of contacts:	1x changeover / SPDT (AgNi / Silver Alloy)
Rated current:	8 A / AC1
Switching capacity:	2000 VA / AC1, 240 W / DC
Switching voltage:	250V AC1 / 24V DC
Mechanical life (AC1):	1x10 ⁷
Electrical life:	1x10 ⁵

Other information

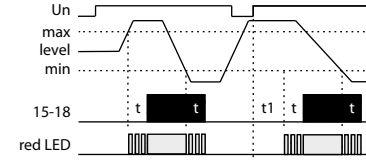
Operating temperature:	-20 °C to +55 °C (-4 °F to 131 °F)
Storage temperature:	-30 °C to +70 °C (-22 °F to 158 °F)
Electrical strength:	3.75 kV (supply - sensors)
Operating position:	any
Mounting:	DIN rail EN 60715
Protection degree:	IP40 from front panel / IP10 terminals
Overvoltage category:	II.
Pollution degree:	2
Max. cable size (mm ²):	max. 1x 4, max. 2x 2.5 / with sleeve max. 1x 2.5, 2x 1.5 (AWG 12)
Dimensions:	90 x 17.6 x 64 mm (3.5" x 0.7" x 2.5")
Weight:	72 g (2.5 oz.)
Standards:	EN 60255-6, EN 61010-1

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

Function PUMP UP



Function PUMP DOWN



Relay is designed for monitoring of levels of conductive liquids with possibility of functions: PUMP UP or PUMP DOWN. To prevent polarization and liquid electrolysis of liquid, and undesirable oxidation of measuring probes, alternating current is used. For measuring use three measuring probes: H- upper level, D- lower level, C - common probe. In case you use a tank made of a conductive material, you can use it as probe C. In case you require monitoring of one level only, it is necessary to connect inputs H and D and connect them to one probe - in this case sensitivity is lowered by half (2.5... 50 kΩ). Probe C can be connected with a protective wire of supply system (PE). To prevent undesirable switching out output contacts by various influences (sediment on probes, humidity...) it is possible to set sensitivity of the device according to conductivity of monitored liquid (corresponding to "resistance" of liquid) range 5 up to 100 kΩ. To reduce influences of undesirable switching of output contacts by liquid gorgle in tanks, it is possible to set delay of output reaction 0.5 - 10 s.

Level switches accessories

It is possible to use any probe (any conductive contact, it is recommended to use brass or stainless-steel material).

- **Manufacturer's recommended probes:** SHR-1-N - stainless steel sensor, SHR-1-M - brass sensor, SHR-2 - stainless steel mounted in PVC cover, SHR-3 - stainless 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, cable D05V-K 0.75/3.2.

Warning

Device is constructed for connection in 1-phase main alternating current and must be installed according to norms valid in the state of application. Installation, connection and setting can be done only by a person with an adequate electro-technical qualification which has read and understood this instruction manual and product functions. The device contains protections against over-voltage peaks and disturbing elements in the supply main. To 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.