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HRH-6

Level switch

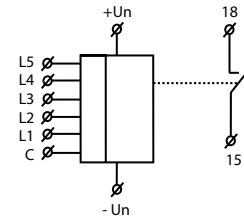
02-19/2017 Rev.: 2

Characteristics

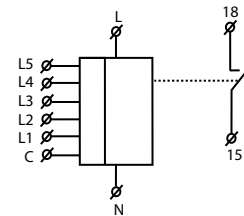
- function 1 monitors minimal and maximal level depth, for example in fire engine cars, tanks etc.
- function 2 monitors level depth in water collectors, basins, pools etc.
- selection of particular function is made by jumper on the front panel
- level depth is indicated on the panel of device by LED
- device monitors 5 levels by using six probes (one probe is common)
- common probe can be replaced by a metal (conductive) tank
- level indication by six LED's on the front panel of the device
- it is possible to connect another indication module (e.g. in fire-engine cabin)
- adjustable sensitivity according to liquid conductivity
- adjustable time delay - elimination of level movement, e.g. while a tank is being filled up
- measuring frequency 10 Hz to prevent polarization of liquid
- supply voltage 12.. 24 V DC (to be used in fire-engines) or galvanically separated 230 V AC for general use
- contact relay 10 A for signalization of full / empty tank (according to a chosen function)
- choice of functions PUMP UP / OFF / PUMP DOWN by a switch located on the front panel of the device
- protection degree IP65

Symbol

HRH-6/DC

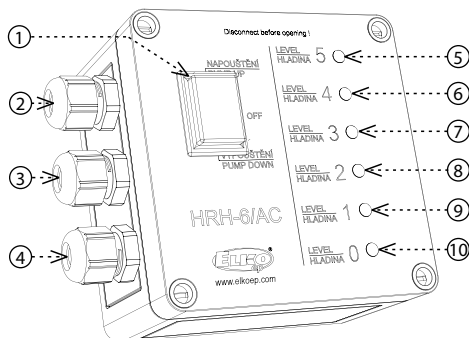


HRH-6/AC

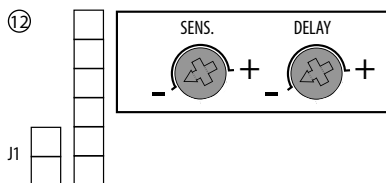
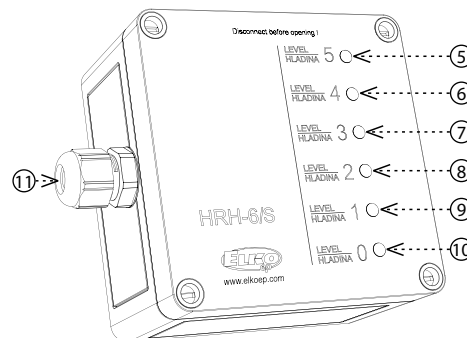


Description

HRH-6/AC, HRH-6/DC - Basic unit

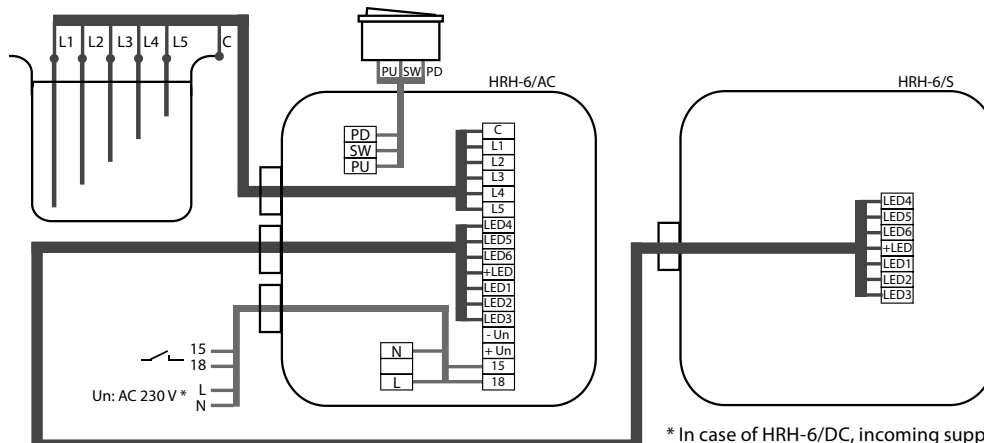


HRH-6/S - Auxiliary signalling



1. Function switch
2. Opening for: cable for connecting probes
3. Opening for: cable for connecting auxiliary signalling
4. Opening for: supply cable / relay contact
5. LED6 - level L5 indication
6. LED5 - level L4 indication
7. LED4 - level L3 indication
8. LED3 - level L2 indication
9. LED2 - level L1 indication
10. LED1 - supply voltage indication
11. Opening for: connection of basic unit
12. Setup elements (inside basic unit):
 J1 - Jumper - function selection
 SENS. - Sensitivity setup
 DELAY - Delay setup

HRH-6 block connecting



* In case of HRH-6/DC, incoming supply is connected on terminals +Un and - Un.

Technical parameters

	HRH-6/DC	HRH-6/AC
Function:	2	
Voltage range:	12.. 24 V DC	230 V AC / 50 - 60 Hz
Power input:	max. 1.8 W	max. 3.8 VA
Supply voltage tolerance:	± 20 %	-20.. +10 %

Measuring circuit

Sensitivity adjustable in the range**:	min. 10 kΩ max. 200 kΩ
Voltage on probes:	max. 3 V AC
Probe cable maximum capacity:	500 nF (for min. sensitivity), 50 nF (for maximum sensitivity)
Time delay:	adjustable 1.. 10s

Output

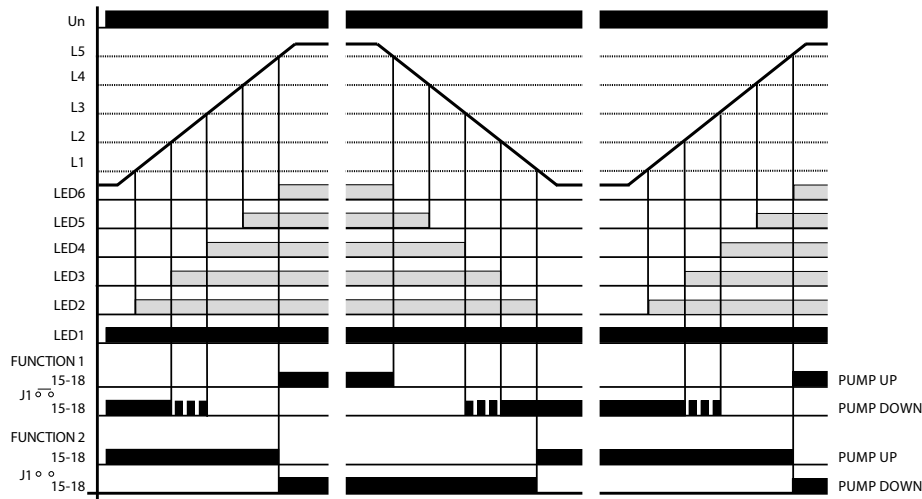
Number of contacts:	6x LED (1x red, 1x yellow, 4x green)
Current rating:	1x NO-SPST (AgNi / Silver Alloy)
Current rating:	10 A / AC1
Breaking capacity:	2500 VA / AC1, 200 W / DC
Inrush current:	16 A / < 3 s
Switching voltage:	250 V AC1 / 24 V DC
Mechanical life:	3x10 ⁷
Electrical life (AC1):	0.7x10 ⁵

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)	
El. strength (supply - probes):	x	3.75 kV
Operating position:	any	
Protection degree:	IP65	
Overvoltage category:	x	III.
Pollution degree:	2	
Dimensions:	110 x 135 x 72 mm (4.3" x 5.3" x 2.8")	
Weight:	391 g (13.8 oz.)	288 g (10.16 oz.)
Standards:	EN 60255-6, EN 61010-1	

** sensitivity is higher at both ends of a range of values

Function



This device monitors level of a conductive liquid in a tank by using six single probes or one 6-fold probe. In case you use a tank made of a conductive material, it is possible to use it as a common probe C.

This common probe is connected to a pole of supply (for fire-engines it means its body) in case of supply voltage 12.. 24 V DC.

In case of supply voltage 230 V AC, the circuits are galvanically separated from the main.

The device is controlled by a three-position switch PUMP UP / OFF / PUMP DOWN. After switching into a position PUMP UP or PUMP DOWN, red LED1 shines and then also LED2.. LED6 according to liquid level.

Output relay has 2 selectable functions. Function setting is done by a jumper on basic board of HRH-6. Function 1: (for use in fire-engines) - jumper is applied. In case of function PUMP UP and level reaching L5, the relay controlling e.g. acoustic signalization, permanently closes and indicated full tank. In case of PUMP DOWN function and level drop under level L3, relay periodically switches and under L2 it switches permanently (indicates almost empty tank).

Function 2: (for keeping liquid level) - jumper is not applied. In case of PUMP UP, sensor is switched until liquid reaches level L5. Then relay opens and switches again in case the liquid level falls under level L1. In case of PUMP DOWN - relay is switched until liquid falls under level L1. Then relay opens and switches again on level L5.

To eliminate LED flashing while level gurgles it is possible to delay reaction of probes (set delay 1.. 10 s). According to conductivity of liquid it is possible to set sensitivity of probes (corresponding to "resistance" of liquid).

Measuring probes

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.

Type of load	cos φ ≥ 0.95	M	M	AC5a uncompensated	AC5a compensated	HAL 230V	AC6a	AC7b	AC12
Mat. contacts AgNi, contact 10A	250V / 10A	250V / 3A	250V / 2A	230V / 2A (460VA)	x	500W	x	250V / 2A	250V / 6A
Type of load	AC13	AC14	AC15	DC1	DC3	DC5	DC12	DC13	DC14
Mat. contacts AgNi, contact 10A	250V / 3.8A	250V / 3.8A	250V / 3.8A	24V / 10A	24V / 3.8A	24V / 2.5A	24V / 10A	24V / 1.3A	24V / 1.3A