ELKO HRN-31 Multi Function Voltage Monitoring Relays Instruction Manual

ELKO EP, s.r.o.
Palackého 493
769 01 Holešov, Všetuly
Czech Republic
Tel.: +420 573 514 211
e-mail: elko@elkoep.com
www.elkoep.com

Made in Czech Republic

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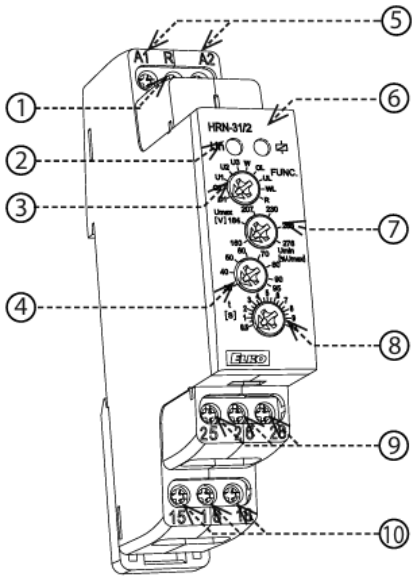
Multifunction voltage monitoring relays in 1P – AC/DC

Characteristics

- It is used to monitor the value of alternating or direct voltage in 1-phase circuits.
- Supply voltage from monitored voltage.
- Monitors voltage exceeding the upper voltage level (Umax) and falling below the lower voltage level (Umin) – according to the selected function.
- Smooth adjustment of both voltage levels – the lower level Umin is set in % of the upper level Umax.
- Adjustable time delay (to eliminate short-term voltage drops and spikes).
- Option to select functions with fault state memory (Latch).
- The fault state memory can be reseted by the control input (R).
- Measures true root mean square value of the voltage – TRUE RMS.
- Type HRN-32/2 has an independent output contact for each voltage level.

Description

HRN-31/2

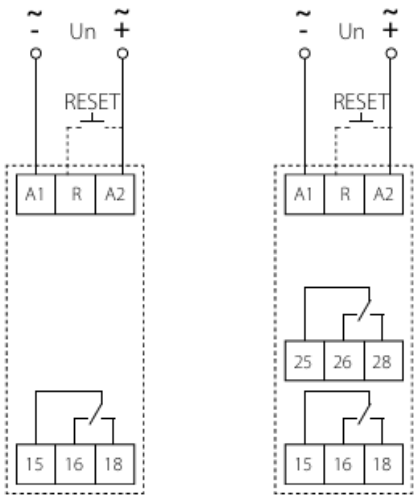


1. Control input terminal (R)
2. Indication of supply/monitored voltage
3. Function settings
4. Lower level setting (Umin)
5. Supply/monitored voltage terminals (A1-A2)
6. Indication of operating states
7. Upper level setting (Umax)
8. Time delay setting
9. Output contact 2 (25-26-28), only HRN-3x/2

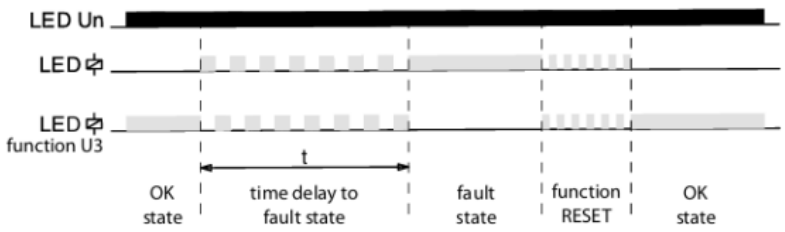
10. Output contact 1 (15-16-18)

Connection

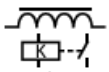
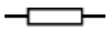
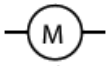
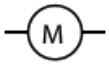
HRN-3x HRN-3x/2



Indication of operating states



Type of load	Contact material AgNi, 16A
cos φ ≥ 0.95 AC1	250V / 16A
M AC2	250V / 5A
M AC3	250V / 3A

 AC5a uncompensated	230V / 3A (690VA)
 AC5a compensated	x
 AC5b	800W
 AC6a	x
 AC7b	250V / 3A
 AC12	250V / 10A
 AC13	250V / 6A
 AC14	250V / 6A
 AC15	250V / 6A
 DC1	24V / 16A
 DC3	24V / 6A
 DC5	24V / 4A

 DC12	24V / 16A
 DC13	24V / 2A
 DC14	24V / 2A

Technical parameters

	HRN-31 HRN-31/2	**– HRN-32/2**	**HRN-36 HRN-36/2**	**HRN-39 HRN-39/2**
Supply and measuring				
Supply/monitored terminals:	A1-A2			
Supply/monitored voltage:	AC/DC 48 – 276 V (AC 50-60 Hz)	AC/DC 48 – 276 V (AC 50-60 Hz)	DC 6 – 30 V –	AC/DC 24 – 150 V (AC 50-60 Hz)
Consumption (max.):	2.5 VA/0.55 W 2.7 VA/0.65 W	– 2.7 VA/0.65 W	0.35 W 0.5 W	2.5 VA/0.55 W 2.7 VA/0.65 W
Upper level setting (Umax):	AC/DC 160 – 276 V	AC/DC 160 – 276 V	DC 12 – 30 V	AC/DC 80 – 150 V
Lower level setting (Umin):	30 – 95 % U max	30 – 95 % Umax	50 – 95 % U max	30 – 95 % U max
Max. permanent voltage:	AC/DC 276 V	AC/DC 276 V	DC 36 V	AC/DC 276 V
Peak overload (1 s):	AC/DC 290 V	AC/DC 290 V	DC 48 V	AC/DC 290 V

Time delay (d):	300 ms			
Time delay (t):	adjustable, 0.5 – 10 s			
Accuracy				
Setting accuracy (mech.):	5 % – mechanical setting			
Repeat accuracy:	< 1 %			
Temperature dependency:	< 0.1 %/°C (°F)			
Hysteresis (fault to OK):	5 % (functions O1, U1, W) Umax – Umin (functions O2, U2, U3)			
Output				
Contact type:	1× changeover 2× changeover	1× changeover for each level	1× changeover 2× changeover	1× changeover 2× changeover
Contact material:	AgNi			
Current rating:	16 A/AC1			
Breaking capacity:	4000 VA/AC1, 384 W/DC1			
Switching voltage:	250 V AC/24 V DC			
Power dissipation (max.):	1.2 W			
Mechanical life:	10.000.000 ops.			
Electrical life (AC1):	100.000 ops.			
Other information				
Operating temperature:	-20 .. +55 °C (-4 .. 131 °F)			

Storage temperature:	-30 .. +70 °C (-22 .. 158 °F)			
Dielectric strength:	AC 4 kV (supply – output)			
Operating position:	any			
Mounting:	DIN rail EN 60715			
Protection degree:	IP40 front panel / IP20 terminals			
Overvoltage category:	III.			
Pollution degree:	2			
Cross-wire section – solid/stranded with ferrule (mm²):	max. 1× 2.5, 2× 1.5/ max. 1× 2.5 (AWG 14)			
Dimensions:	90 × 17.6 × 64 mm (3.5″ × 0.7″ × 2.5″)			
Weight:	60 g (2.11 oz) 77 g (2.72 oz)	– 77 g (2.72 oz)	60 g (2.11 oz) 77 g (2.72 oz)	60 g (2.11 oz) 77 g (2.72 oz)
Standards:	EN 60255-1, EN 60255-26, EN 60255-27			

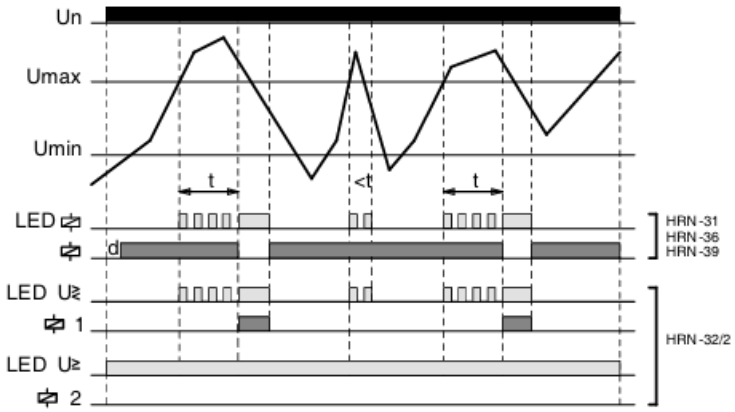
Warning

This device is constructed for connection in 1-phase network or direct circuit (according to the type, voltage ranges must be respected) and must be installed according to norms valid in the state of an application. Installation, connection, setting and servicing must be carried out by qualified electrician sta only, which have perfectly understood the instructions and functions. This device contains protection against overvoltage peaks and disturbing impulses in the power supply network. For the correct function of the protection of this device, there must be suitable protections of higher degrees (A,B,C) installed in front of them and according to the standards, interference of switching devices must be securely eliminated (contactors, motors, inductive loads, etc.). Before installation, make sure that the device is de-energized and the main switch is in the “OFF” position. Don`t install the device to sources of excessive electromagnetic interference. Ensure correct installation by perfect air circulation so that during continuous operation and a higher ambient temperature, the device does not exceed the maximum allowed operating temperature. For installation and setting use a screwdriver with a width of approx. 2 mm. Keep in mind that this is a fully electronic device and approach accordingly with the installation. Non-

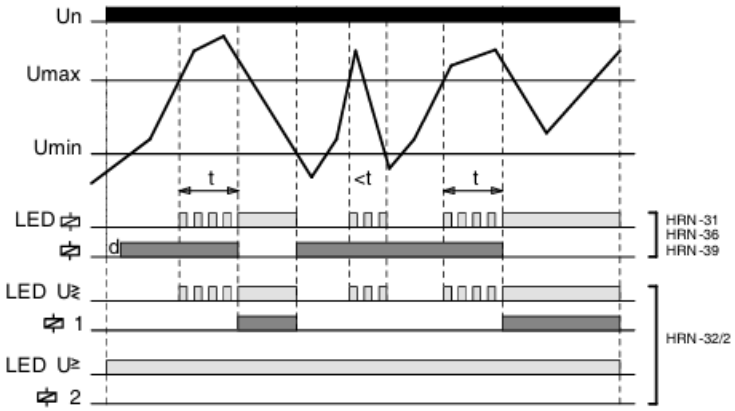
problematic function of the device is also dependent on the previous method of transportation, storage, and handling. In case of any signs of damage, deformation, malfunction, or missing parts, don`t install this device and claim it at the dealer. The product must be treated as electronic waste at the end of its life.

Functions

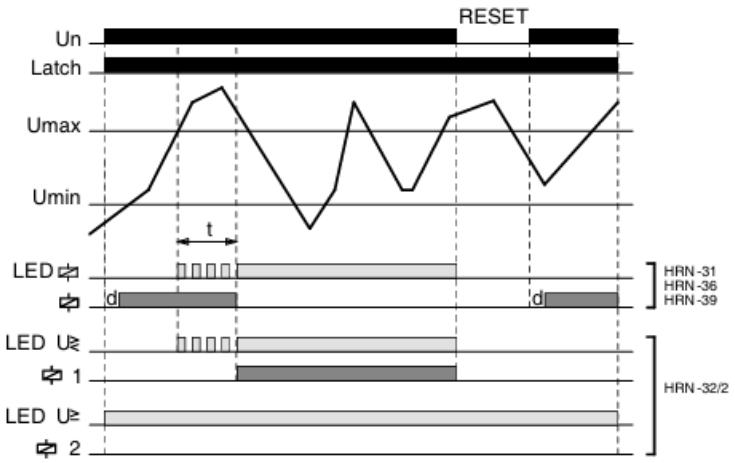
(O1) OVER (hysteresis 5%)



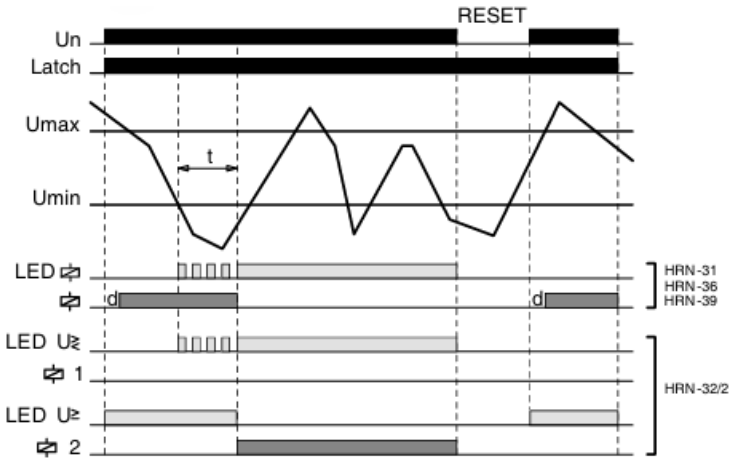
(O2) OVER (hysteresis to Umin)



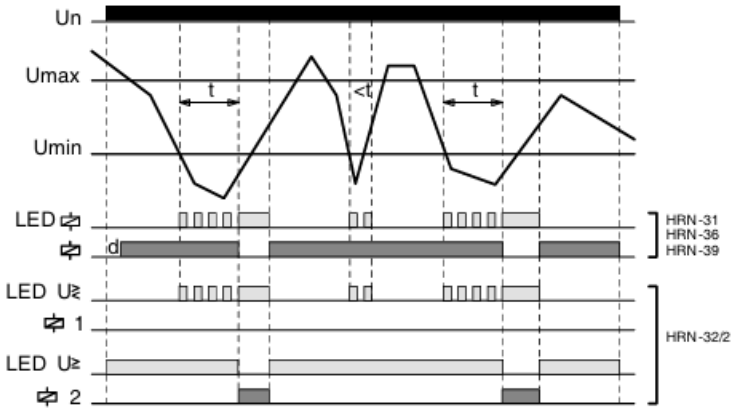
(OL) OVER + Latch



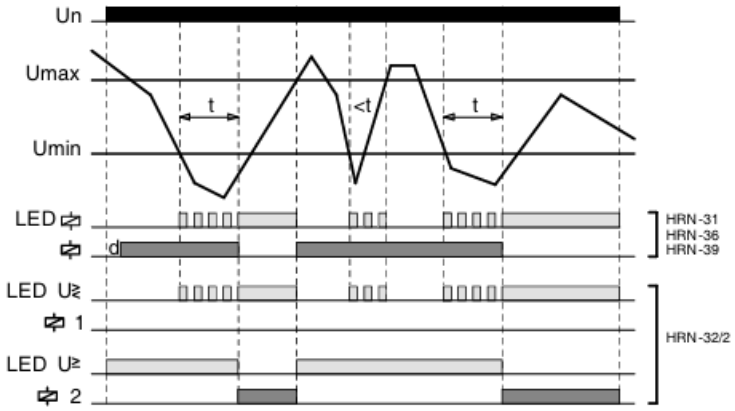
(UL) UNDER + Latch



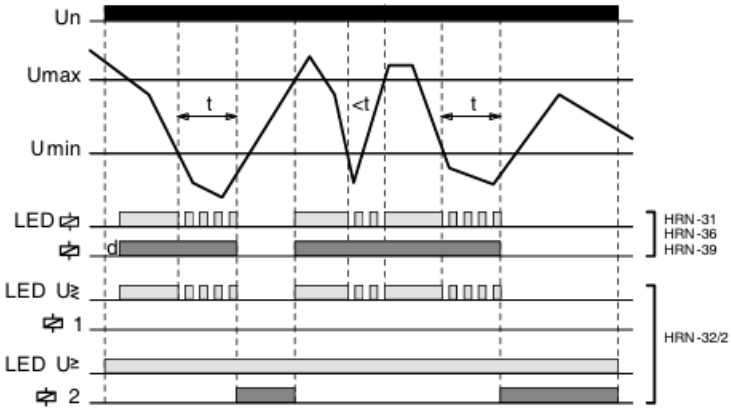
(U1) UNDER (hysteresis 5%)



(U2) UNDER (hysteresis to Umax)



(U3) UNDER (hysteresis to Umax)



OVER:

If the value of the monitored voltage is lower than the set upper level “Umax”, the output contact is closed. If the “Umax” is exceeded, the output contact will opens after the set delay (fault state).

If the voltage falls below the fixed hysteresis (O1 function) or the set lower level “Umin” (O2 function), the output contact will closes again.

If the OL function (OVER + Latch) is selected, when the upper voltage level “Umax” is exceeded, the output contact remains open even when the voltage returns from the fault state.

Fault memory reset can be done in three ways:

- Short-term interruption of supply voltage
- Using the control input (R)
- By setting the function switch to position R (RESET) or any function without memory fault

The RESET state lasts for 3 s after switching the function switch from the R position to a function with a memory fault (UL, OL, WL).

When moving to any other function from the R position, this delay does not apply.

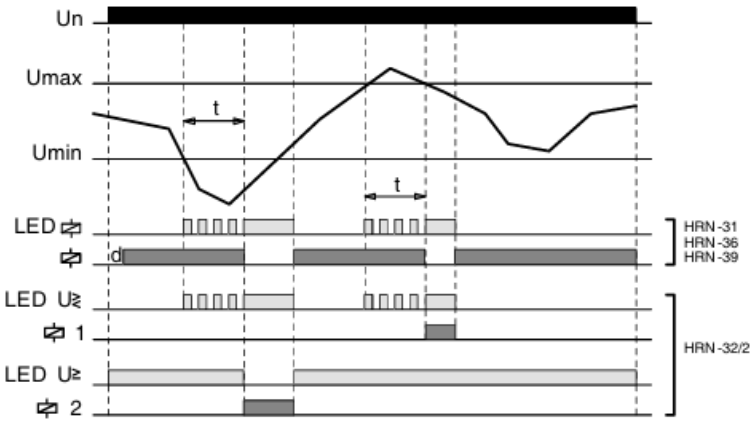
UNDER:

If the value of the monitored voltage is higher than the set lower level “Umin”, the output contact is closed. When the voltage drops below the “Umin”, output contact opens after the set delay (fault state).

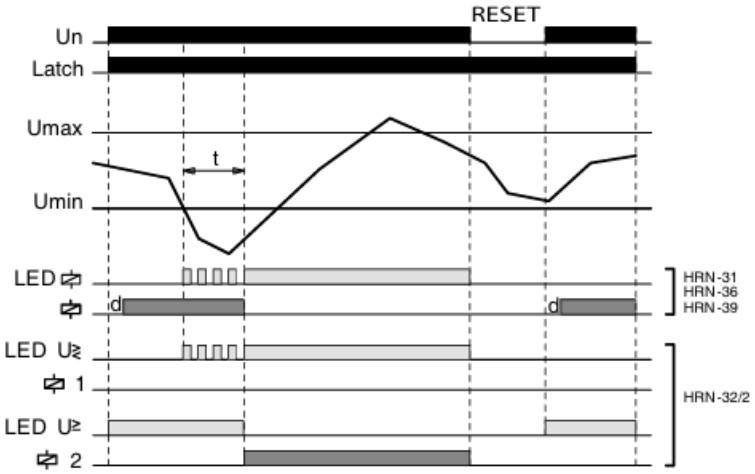
If the voltage exceeds the fixed hysteresis (function U1) or the set upper level “Umax” (function U2, U3), the output contact closes again.

If the UL function (UNDER + Latch) is selected, when the voltage drops below the lower level “Umin”, the output contact remains open even when returning from the fault state. Fault memory reset can be done as in the previous case.

(W) WINDOW (hysteresis 5%)



(WL) WINDOW + Latch



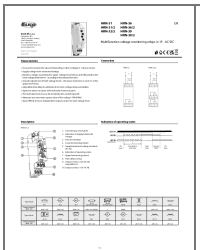
WINDOW:

If the value of the monitored voltage is lower than upper level “Umax” and at the same time higher than lower level “Umin”, the output contact in closed. If the “Umax” is exceeded or drops below the “Umin”, output contact opens after the set delay (fault state).

To return from the fault state, a fixed hysteresis is applied.

If the WL function (WINDOW + Latch) is selected, the fault state is again stored in memory and output contact stays open, even when returning from the fault state. Fault memory reset can be done as in the previous cases.

Documents / Resources

	ELKO HRN-31 Multi Function Voltage Monitoring Relays [pdf] Instruction Manual HRN-31, HRN-36, HRN-31-2, HRN-36-2, HRN-32-2, HRN-39, HRN-39-2, HRN-31 Multi Function Voltage Monitoring Relays, HRN-31, Multi Function Voltage Monitoring Relays, Function Voltage Monitoring Relays, Voltage Monitoring Relays, Monitoring Relays, Relays

References

- User Manual