



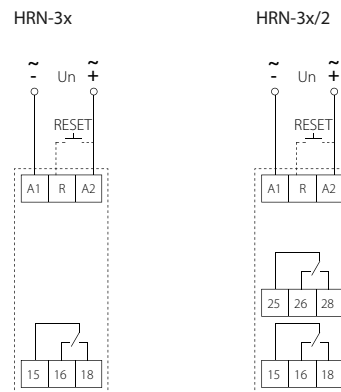
Multifunction voltage monitoring relays in 1P - AC/DC



Characteristics

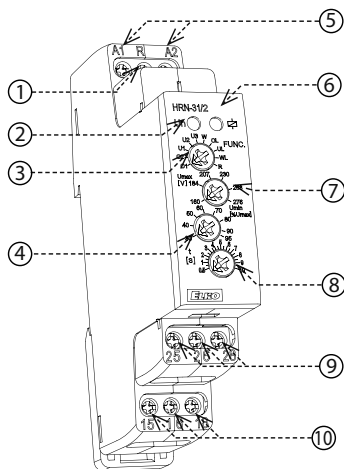
- It is used to monitor the value of alternating or direct voltage in 1-phase circuits.
- Supply voltage from monitored voltage.
- Monitors voltage exceeding the upper voltage level (U_{max}) and falling below the lower voltage level (U_{min}) – according to the selected function.
- Smooth adjustment of both voltage levels – the lower level U_{min} is set in % of the upper level U_{max} .
- 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 reset 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.

Connection



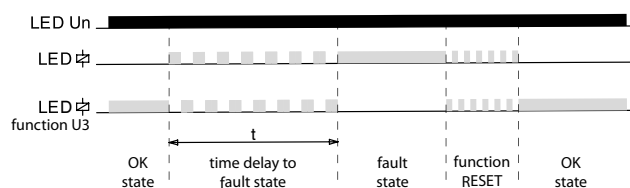
Description

HRN-31/2



- Control input terminal (R)
- Indication of supply/monitored voltage
- Function settings
- Lower level setting (U_{min})
- Supply/monitored voltage terminals (A1-A2)
- Indication of operating states
- Upper level setting (U_{max})
- Time delay setting
- Output contact 2 (25-26-28), only HRN-3x/2
- Output contact 1 (15-16-18)

Indication of operating states



Type of load	$\cos \varphi \geq 0.95$ AC1	AC2	AC3	AC5a uncompensated	AC5a compensated	HAL 230V AC5b	AC6a	AC7b	AC12
Contact material AgNi, 16A	250V / 16A	250V / 5A	250V / 3A	230V / 3A (690VA)	x	800W	x	250V / 3A	250V / 10A
Type of load	AC13	AC14	AC15	DC1	DC3	DC5	DC12	DC13	DC14
Contact material AgNi, 16A	250V / 6A	250V / 6A	250V / 6A	24V / 16A	24V / 6A	24V / 4A	24V / 16A	24V / 2A	24V / 2A

Technical parameters

	HRN-31 HRN-31/2	- HRN-32/2	HRN-36 HRN-36/2	HRN-39 HRN-39/2
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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 %Umax	30 – 95 %Umax	50 – 95 %Umax	30 – 95 %Umax
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	5 % (functions O1, U1, W)
(fault to OK):	Umax – Umin (functions O2, U2, U3)

Output

Contact type:	1x changeover 2x changeover	1x changeover for each level 2x changeover	1x changeover 2x changeover	1x changeover 2x 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.			

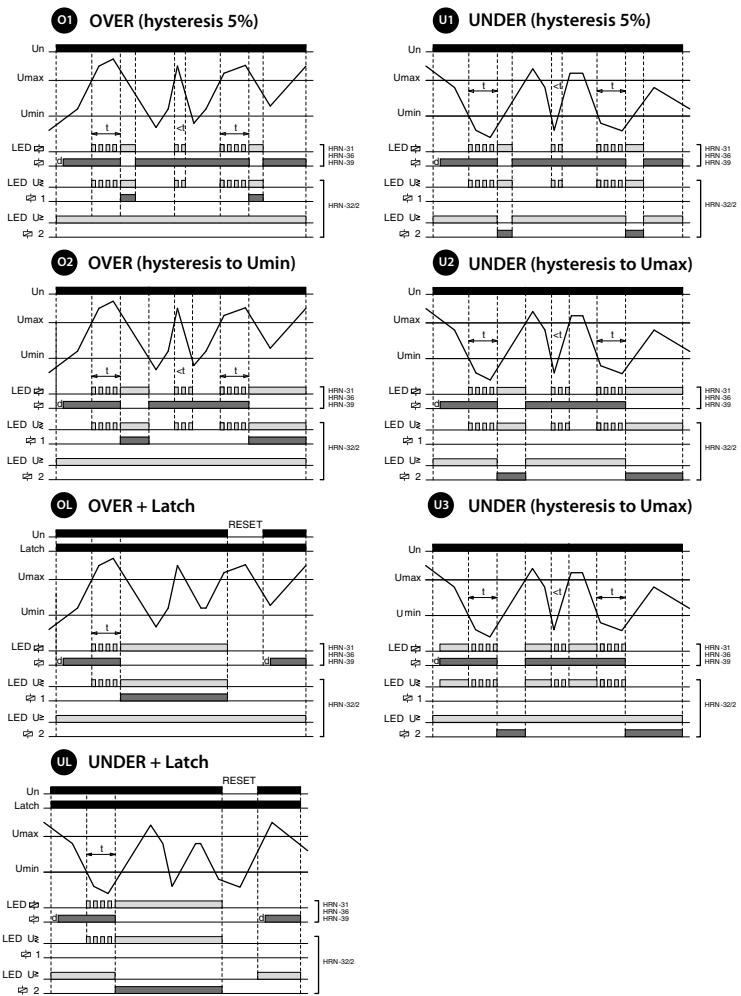
Other information

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 staff 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



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.

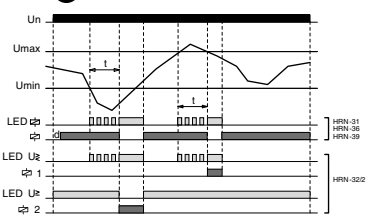
UNDER:

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).

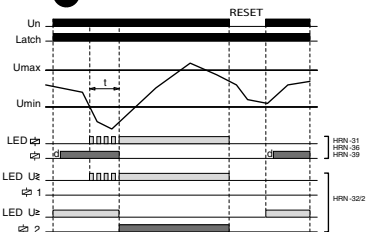
If the voltage exceeds the fixed hysteresis (function U1) or the set upper level „Umax“ (function U2, U3), the output contact closes again.

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.