



HRN3-80 HRN3-81

Voltage monitoring relays in 3P - selectable range/fixed range

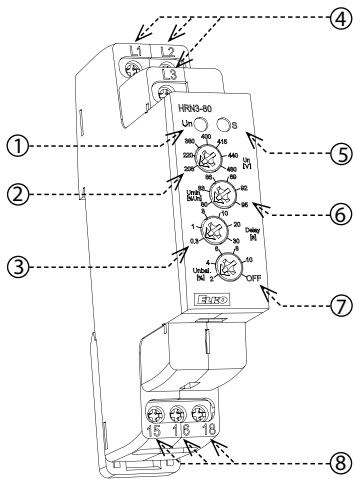


Characteristics

- The relay is designed to monitor undervoltage (HRN3-80), phase loss, sequence and asymmetry in 3-phase network.
- Power supply from monitored circuit.
- HRN3-80:** Monitors the drop below the lower voltage level (Umin).
- HRN3-80:** The lower level of Umin is set in % of the selected range.
- Wide range of monitored voltage 208 – 480 V.
- Adjustable time delay (to eliminate short-term voltage drops).
- Measures true root mean square value of the voltage - TRUE RMS.
- Adjustable level of asymmetry with the option to turn it off.

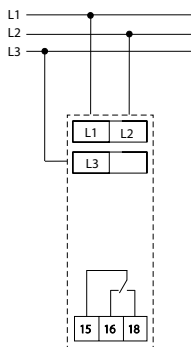
Description

HRN3-80

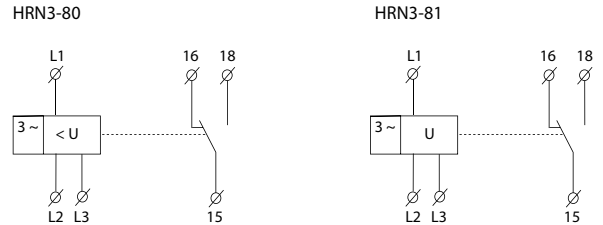


1. Supply voltage/time delay (t1) indication
2. HRN3-80: Range setting
3. Time delay (t2)
4. Supply/monitored voltage terminals (L1-L2-L3)
5. Indication of operating states
6. HRN3-80: Lower level setting (Umin)
7. Asymmetry setting
8. Output contact (15-16-18)

Connection



Symbol



Technical parameters

	HRN3-80	HRN3-81
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Supply and measuring

Supply/monitored terminals:	L1-L2-L3	
Supply/monitored voltage:	AC 3x 208 – 480 V (50-60 Hz)	
Consumption (max.):	2 VA/1 W	
Range setting:	adjustable	fixed
Lower level setting (Umin):	80 – 95 %Un	x
Asymmetry setting:	adjustable, 2 – 10 %Un + OFF	
Max. permanent voltage:	AC 3x 550 V	
Peak overload (1 s):	AC 3x 600 V	
Time delay (t1):	2 s	
Time delay (t2):	adjustable, 0.3 – 30 s	

Accuracy

Setting accuracy (mech.):	5 %
Repeat accuracy:	< 1 %
Temperature dependency:	< 0.1 %/°C (°F)
Hysteresis (fault to OK):	5 %

Output

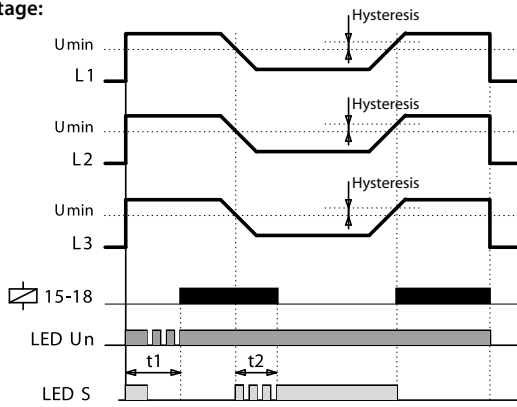
Contact type:	1x changeover/SPDT (AgNi)
Current rating:	16 A/AC1
Breaking capacity:	4000 A/AC1, 384 W/DC1
Switching voltage:	250 V AC/24 V DC
Power dissipation (max.):	1.2 W
Mechanical life:	10.000.000 ops.
Electrical life (AC1):	100.000 ops.

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. 1x 2.5, 2x 1.5/ max. 1x 2.5 (AWG 14)
Dimensions:	90 x 17.6 x 64 mm (3.5" x 0.7" x 2.5")
Weight:	66 g (2.32 oz) 64 g (2.26 oz)
Standards:	EN 60255-1, EN 60255-26, EN 60255-27

Function

Undervoltage:



After connecting the device to the supply voltage, both LEDs on the panel will flash briefly. If 3-phase voltage is connected to the monitoring relay and all conditions are met (correct voltage level, phase sequence and asymmetry), the output contact closes after the time delay t_1 elapsed.

During the time delay, the green „LED Un“ flashes, at the end of the delay „LED Un“ lights up continuously (OK state).

When the voltage drops below the lower level „Umin“ (HRN3-80 only), after the time delay t_2 has elapsed the green and red LEDs are lit. The output contact is open (fault state). During the time delay t_2 , the red „LED S“ flashes quickly.

If the phase sequence is incorrect when the power supply is connected, after the time delay t_1 has elapsed the green and red LED flashes quickly. The output contact is open (fault state).

During the time delay t_1 , the green „LED Un“ flashes.

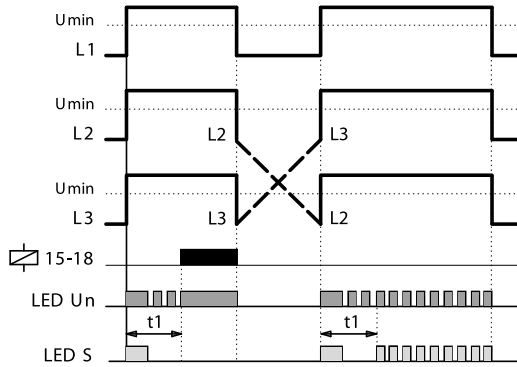
When the set phase asymmetry is exceeded, after the time delay t_2 has elapsed the green LED is lit and the red LED flashes briefly. The output contact is open (fault state).

During the time delay t_2 , the red „LED S“ flashes quickly.

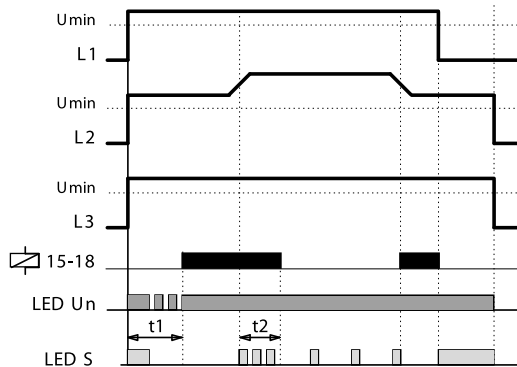
In the event of phase failure, the output contact opens without a time delay t_2 (fault state), the green and red LEDs are lit.

The return from the fault state to the OK state occurs without a time delay.

Phase sequence:



Phase asymmetry, failure:



Graphs legend:

L1, L2, L3 = 3-phase voltage
 t_1 = time delay, after connecting to voltage
 t_2 = time delay into fault state
 15-18 = output contact
 LED S = indication of operating states
 LED Un = supply voltage, time delay t_1 indication

Warning

This device is constructed for connection in 3-phase network AC 3× 208–480 V 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 of the device. 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.

Type of load	$\cos \varphi \approx 0.95$ AC1	AC2	AC3	AC5a uncompensated	AC5a compensated	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	DCS	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