



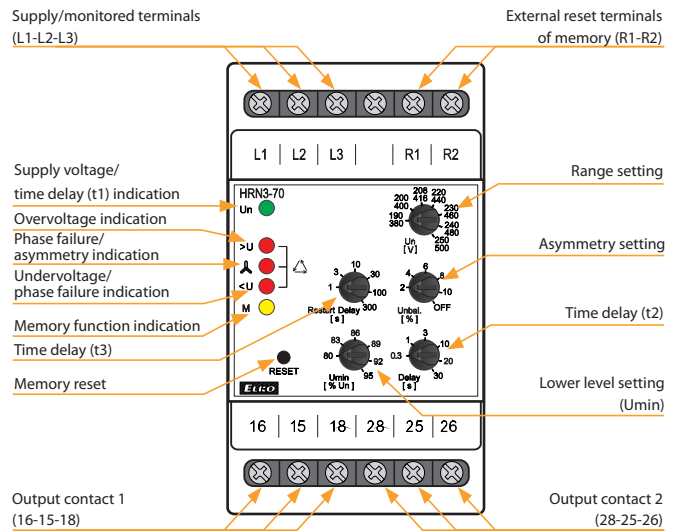
EAN code
 HRN3-70: 8595188188838
 PMR3-70: 8595188185288

- It is used for monitoring of voltage, phase failure, sequence and asymmetry in 3-phase network.
- Wide range of monitored voltage with automatic selection of a low/high range.
- Fixed overvoltage level (U_{max}), adjustable undervoltage level (U_{min}).
- Adjustable time delay t₂ (to eliminate short-term voltage drops and peaks).
- Adjustable time delay t₃ (to eliminate short-term OK state).
- Adjustable asymmetry level with option to turn it OFF.
- Measures true root mean square value of the voltage - TRUE RMS.
- Fault memory reset can be done by RESET button on the panel or by an external opening contact.

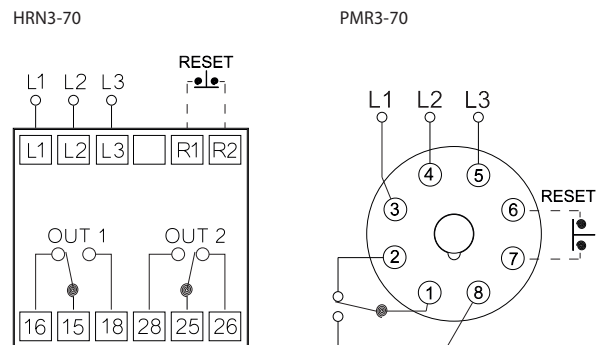
Technical parameters	HRN3-70	PMR3-70
Supply/monitored terminals:	L1-L2-L3	3-4-5
Supply/monitored voltage:	AC 3× 190 – 500 V (50-60 Hz)	
Consumption (max.):	2 VA/1 W	
Upper level (U _{max}):	110 %Un	
Lower level (U _{min}):	80 – 95 %Un	
Asymmetry:	adjustable, 2 – 10 %Un + OFF	
Max. permanent voltage:	AC 3× 550 V	
Peak overload (1 s):	AC 3× 600 V	
Time delay (t ₁):	2 s	
Time delay (t ₂):	adjustable, 0,3 – 30 s	
Time delay (t ₃):	adjustable, 1 – 300 s	
Accuracy:		
Hysteresis (fault to OK):	5 %	
Output		
Contact type:	2× changeover (AgNi)	1× changeover (AgNi)
Current rating:	16 A/AC1; 1 HP 240 Vac, 1/2 HP 120 Vac; PD. B300	
Breaking capacity:	4000 A/AC1, 384 W/DC1	
Switching voltage:	250 V AC/24 V DC	
Power dissipation (max.):	2.4 W	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:		
supply – output 1	AC 4 kV	AC 2.5 kV
supply – output 2	AC 4 kV	-
output 1 – output 2	AC 4 kV	-
Operating position:	any	
Mounting:	DIN rail EN 60715	into socket (8-pin)
Protection degree:	IP40 front panel/IP20 terminals	IP40
Overvoltage category:	III.	
Pollution degree:	2	
Cross-wire section – solid/stranded with ferrule (mm ²):	max. 1× 2.5, 2× 1.5/ max. 1× 2.5 (AWG 14)	max. 1× 4, 2× 2.5/ max. 1× 4 (AWG 12)
Dimensions:	90 × 52 × 66 mm	48 × 48 × 79 mm
Weight:	140 g (4.94 oz)	100 g (3.53 oz)
Standards:	EN 60255-1, EN 60255-26, EN 60255-27	

Description

HRN3-70



Connection



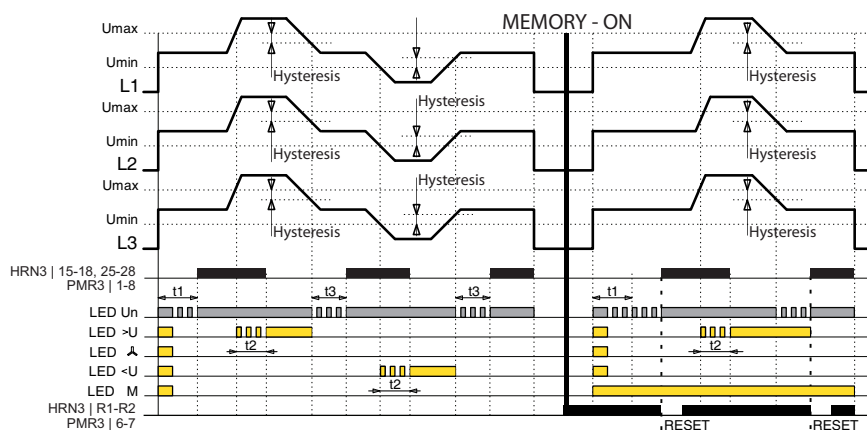
Range switch (Un)

The range switch has two ranges of phase-to-phase voltage values:
 low (190 to 250V) and high (380 to 500V)

After connecting to the supply/monitored voltage, the device evaluates voltage size and selects the corresponding range of values. When switching between individual positions within the selected range, the green „LED Un“ will flash briefly.

Function

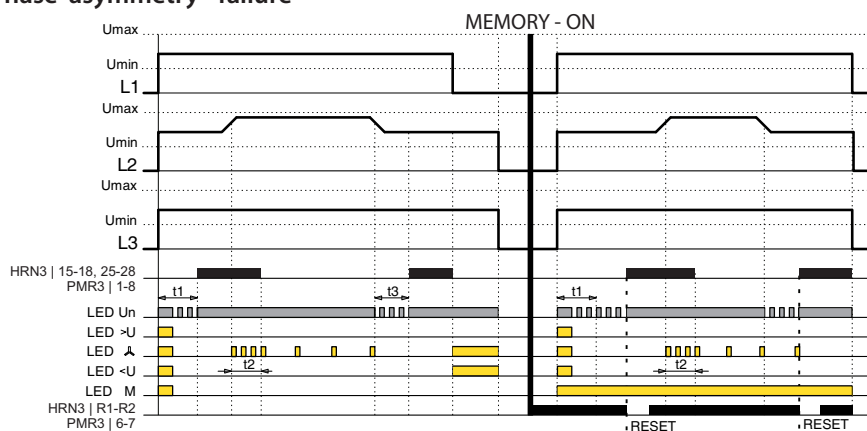
Overvoltage - undervoltage



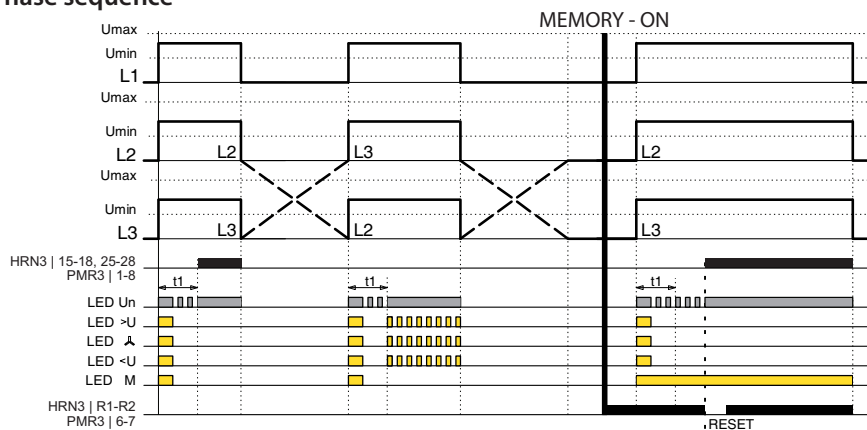
Graphs legend:

L1, L2, L3 = 3-phase voltage
 RESET = memory reset
 t1 = time delay, after connecting to voltage
 t2 = time delay into fault state
 t3 = time delay to OK state
 15-18 = output contact 1 (HRN3)
 25-28 = output contact 2 (HRN3)
 1-8 = output contact (PMR3)
 LED >U = overvoltage indication
 LED <U = undervoltage/phase failure indication
 LED Δ = phase failure/asymmetry indication
 LED M = memory function indication
 LED Un = supply/monitored voltage, time delay t1 and t2 indication

Phase asymmetry - failure



Phase sequence



After connecting the device to the supply voltage, all the LEDs on the panel will flash briefly.

If a 3-phase voltage is connected to the monitoring relay and all conditions are met (correct voltage magnitude, sequence and phase asymmetry), the output contacts close after the time delay t1 has elapsed. During the time delay, the green „LED Un“ flashes, after the end of the delay it lights up permanently (OK state).

- When the voltage exceeds or falls outside the „Umin“ and „Umax“ levels, after the time delay t2 the green and the corresponding red „LED“ light up.

The output contacts are open (fault state). During the time delay, the red LED flashes.

- If the phase sequence is incorrect when the power is connected, after the time delay t1 the green „LED Un“ lights up + all 3 red „LEDs“ flash simultaneously.

The output contact is open (fault state). During the time delay, the green LED flashes.

- When the set phase asymmetry is exceeded, after the time delay t2 the green „LED Un“ lights up and the red „LED“ flashes briefly.

The output contact is open (fault state). During the time delay, the red LED flashes rapidly.

- In the event of a phase failure, the output contacts open without a time delay t2 (fault state), the green „LED Un“ and the corresponding red „LED“ light up.

- To return from the fault state to the OK state, the time delay t3 is always applied. During this time delay, the green „LED Un“ flashes.

Reset and fault state memory activation:

By connecting terminals R1-R2 or pins 6-7 in the PLUG-IN version via an external push button with a break contact (RESET), the fault state memory is activated.

After turning on the power, the yellow „LED M“ on the device panel lights up. If a fault condition occurs, it is stored in memory. The red LED signalize fault just like in mode with fault state memory turned off. If the voltage values return to the set levels, the corresponding red LED will be permanently lit and at the same time the green „LED Un“ will start flashing. It is now possible to reset fault memory state, this closes the output contact and the red LED goes out (OK state). Fault memory reset (RESET) is performed either with an external pushbutton or with the pushbutton on device panel.