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
02-15/2017 Rev.: 0

EN

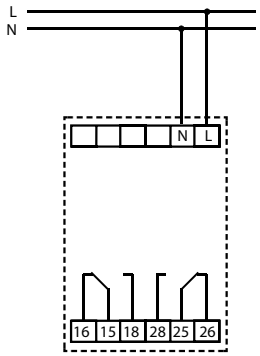
HRF-10

Frequency monitoring relay

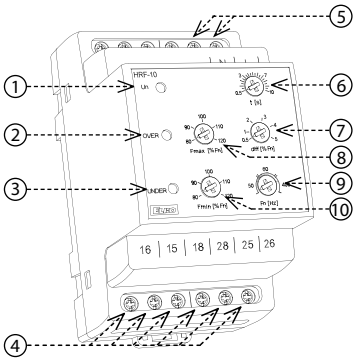
Characteristics

- the relay serves to monitor frequency of AC voltage, e.g. in photovoltaic power stations, generators
- the monitored frequency 50 / 60 / 400 Hz is selected by a switch
- supplied from monitored voltage
- two adjustable levels of frequency (Fmin, Fmax) in the range of 80 - 120 % Fn
- adjustable difference level
- adjustable delay level
- switchable ranges of rated frequency Fn
- 3-MODULE design, DIN rail mounting

Connection



Description



1. Supply voltage indication
2. Indication F > Fmax
3. Indication F < Fmin
4. Output contact
5. Supply / monitored voltage terminals
6. Delay setting
7. Difference setting
8. Fmax setting
9. Fn setting
10. Fmin setting

Type of load	cos φ ≥ 0.95 AC1	AC2	AC3	AC5a uncompensated	AC5a compensated	HAL.230V AC5b	AC6a	AC7b	AC12
Mat. contacts AgNi, contact 8A	250V / 8A	250V / 3A	250V / 2A	230V/1.5A (345VA)	x	300W	x	250V / 1A	250V / 1A
Type of load	AC13	AC14	AC15	DC1	DC3	DC5	DC12	DC13	DC14
Mat. contacts AgNi, contact 8A	x	250V / 3A	250V / 3A	24V / 8A	24V / 3A	24V / 2A	24V / 8A	24V / 2A	x

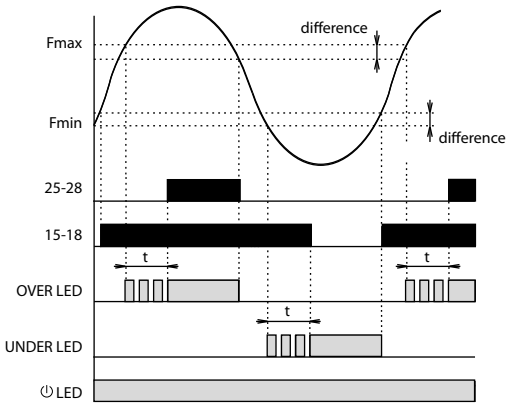
Technical parameters

HRF-10	
Supply and monitoring terminals:	L, N
Supply voltage:	161 - 346 V
Rated frequency Fn:	50 / 60 / 400 Hz
Burden (max):	1.7 VA / 1.1 W
Overload capacity	
- continuous:	346 V
- max. 10 s:	416 V
Frequency Fmax:	adjustable 80 - 120 % Fn
Frequency Fmin:	adjustable 80 - 120 % Fn
Difference:	adjustable 0.5 - 5 % Fn
Delay (until failure):	adjustable 0.5 - 10 s
Opening level (Uopen):	161 V
Output relay - contact:	2x changeover / SPDT (AgNi) gilded
AC contact capacity:	250 V / 8 A, max. 2000 VA
DC contact capacity:	30 V / 8 A
Mechanical life:	$3x10^6$ at rated load

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)
Electrical strenght (supply - relay contact):	4 kV / 1 min.
Protection degree:	III.
Pollution degree:	2
Protection degree:	IP40 from font panel / IP20 terminals
Max. cable size (mm^2):	max. 2x 1.5 / 1x 2.5 (AWG 12)
Dimensions:	90 x 52 x 64 mm (3.5 x 2 x 2.6″)
Weight:	125 g (4.4 oz.)
Standards:	EN 60255-6, EN 60255-27, EN 61000-6-2, EN 61000-6-4

Function



After the supply (monitored) voltage is connected, the green LED is on.

If the value of the monitored frequency falls within the range between the two set levels Fmin - Fmax no red LED is on. The relay UNDER is triggered (contacts 15-16-18) and the relay OVER is disconnected (contacts 25-26-28).

If the monitored frequency exceeds the set level Fmax, the relay OVER is triggered after the set delay timing elapses and the red LED OVER goes on. The red LED flashes during the timing.

If the monitored frequency drops below Fmax - difference, the relay is activated without delay and the red LED OVER goes off.

If the monitored frequency drops below the set level Fmin, the relay UNDER is disconnected after the set delay timing elapses and the red LED UNDER goes on. The red LED flashes during the timing. If the monitored frequency exceeds the level Fmin + the difference, the relay is triggered without delay and the red LED UNDER goes off.

If the monitored voltage is lower than the opening level Uopen both the relays are disconnected and both the red LED (UNDER and OVER) start flashing slowly - indicating insufficient supply voltage.

Warning

Device is constructed for connection in 1-phase main alternating current voltage and must be installed according to norms valid in the state of application. Connection according to the details in this direction. Installation, connection, setting and servicing should be installed by qualified electrician staff only, who has learnt these instruction and functions of the device. This device contains protection against overvoltage peaks and disturbancies in supply. For correct function of the protection of this device there must be suitable protections of higher degree (A, B, C) installed in front of them. According to standards elimination of disturbancies must be ensured. Before installation the main switch must be in position "OFF" and the device should be de-energized. Don´t install the device to sources of excessive electro-magnetic interference. By correct installation ensure ideal air circulation so in case of permanent operation and higher ambient temperature the maximal operating temperature of the device is not exceeded. For installation and setting use screw-driver cca 2 mm. The device is fully-electronic - installation should be carried out according to this fact. Non-problematic function depends also on the way of transportation, storing and handling. In case of any signs of destruction, deformation, nonfunction or missing part, don´t install and claim at your seller.