



EAN code
 HRN-33: 8595188115636
 HRN-34: 8595188115643
 HRN-35: 8595188115650
 HRN-37: 8595188130615
 HRN-63: 8595188130622
 HRN-64: 8595188130639
 HRN-67: 8595188130646

Technical parameters	HRN-33 / HRN-63	HRN-34 / HRN-64	HRN-35	HRN-37 / HRN-67
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Supply and measuring				
Terminals:	A1 - A2	A1 - A2	A1 - A2	A1 - A2
Voltage range:	AC 48 - 276 V / 50-60Hz	DC 6 - 30 V	AC 48 - 276 V / 50-60Hz	AC 24-150 V / 50-60Hz
Burden:	AC max. 1.2 VA/ 0.5 W	DC max. 1.2 VA/ 0.5 W	AC max. 1.2 VA/ 0.5 W	AC max. 1.2 VA/ 0.5 W
Max. dissipated power (Un + terminals):	4 W	4 W	6 W	4 W
Upper level (Umax):	AC 160 - 276 V	DC 18 - 30 V	AC 160 - 276 V	AC 80-150 V
Bottom level (Umin):	30-95 % Umax	35-95 % Umax	30-95 % Umax	30-95 % Umax
Max. permanent:	AC 276 V	DC 36 V	AC 276 V	AC 276 V
Peak overload < 1 ms:	AC 290 V	DC 50 V	AC 290 V	AC 290 V
Time delay:	adjustable 0 - 10 s			

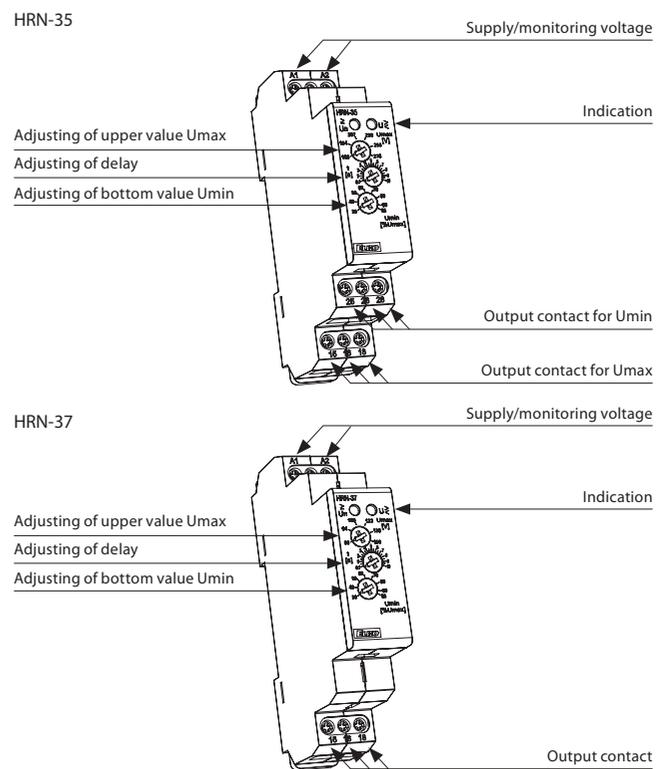
Accuracy	
Setting accuracy (mechanical):	5 %
Repeat accuracy:	<1 %
Dependence on temperature:	< 0.1 % / °C (°F)
Tolerance of limit values:	5 %
Hysteresis (from fault to normal):	2 - 6 % of adjusted value (only HRN-33, HRN-34, HRN-35, HRN-37)

Output	
Number of contacts:	1x changeover/ SPDT (AgNi / Silver Alloy)
Current rating:	16 A / AC1
Breaking capacity:	4000 VA / AC1, 384 W / DC
Inrush current:	30 A / < 3 s
Switching voltage:	250 V AC1 / 24 V DC
Output indication:	red / green LED
Mechanical life:	3x10 ⁷
Electrical life (AC1):	0.7x10 ⁵

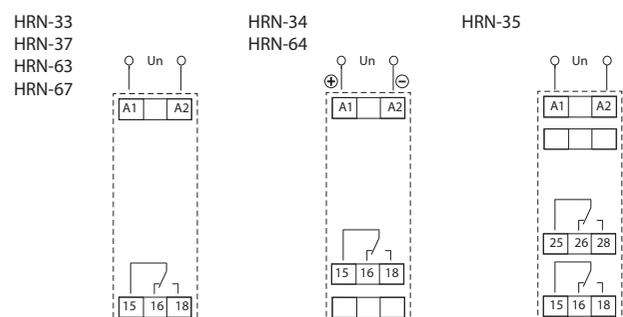
Other information	
Operating temperature:	-20 °C to 55 °C (-4 °F to 131 °F)
Storage temperature:	-30 °C to 70 °C (-22 °F to 158 °F)
Electrical strength:	4 kV (supply - output)
Operating position:	any
Mounting:	DIN rail EN 60715
Protection degree:	IP40 from front panel, IP20 terminals
Overvoltage category:	III.
Pollution degree:	2
Max. cable size (mm ²):	solid wire max. 1x 2.5 or 2x 1.5, with sleeve max. 1x 2.5 (AWG 12)
Dimensions:	90 x 17.6 x 64 mm (3.5" x 0.7" x 2.5")
Weight:	62 g (2.2 oz.) 75 g (2.6 oz.) 86 g (3 oz.) 61 g (2.2 oz.)
Standards:	EN 60255-6, EN 61010-1

- It serves to control supply voltage for appliances sensitive to supply tolerance, protection of the device against under/over voltage.
- HRN-3x is band voltage relay, HRN-6x is over/under voltage relay. For difference - see graph of function.
- **HRN-33, HRN-63**
 - monitors voltage in range AC 48 - 276 V
 - Umax and Umin can be monitored independently
- **HRN-34, HRN-64**
 - like HRN-33, but voltage range is DC 6 - 30 V
 - monitoring of battery circuits (24 V)
- **HRN-35**
 - like HRN-33, but independent output relays for each voltage level
 - switching of other loads possible
- **HRN-37, HRN-67**
 - like HRN-33, monitors voltage in range AC 24 - 150 V
 - it is possible to monitor level of overvoltage and undervoltage independently
- Adjustable time delay for all types is 0 - 10 s (to eliminate short voltage drops or peaks).
- Voltage Umin adjusted as % of Umax.
- 3-state indication - LEDs indicating normal state and 2 fault states.
- Supply from monitored voltage (monitors level of its own supply).
- 1-MODULE, DIN rail mounting.

Description



Connection

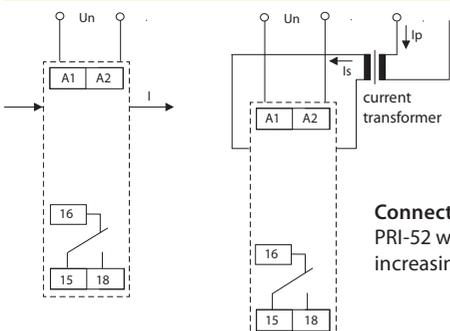




EAN code
PRI-52: 8595188136556

Technical parameters	PRI-52
Supply	
Supply terminals:	A1 - A2
Voltage range:	AC 230 V / 50 - 60 Hz
Power input (apparent / loss):	max. 5 VA / 1.4 W
Max. dissipated power:	2.5 W (Un + terminals)
Supply voltage tolerance:	-15 %; +10 %
Measuring circuit	
Current range:	AC 0.5.. 25 A / 50 Hz
Maximal permanent current:	25 A
Inrush overload < 1s:	100 A
Current adjustment:	potentiometer
Time delay:	adjustable 0.5.. 10 s
Accuracy	
Setting accuracy (mechanical):	10 %
Repeat accuracy:	< 1 %
Temperature dependence:	< 0.2 % / °C (°F)
Limit values tolerance:	10 %
Hysteresis:	0.25 A
Output	
Number of contacts:	1x changeover / SPDT (AgNi / Silver Alloy)
Current rating:	8 A / AC1
Breaking capacity:	2000 VA / AC1, 240 W / DC
Output indication:	red LED
Other information	
Operating temperature:	-20.. 55 °C (-4 °F.. 131 °F)
Storage temperature:	-30.. 70 °C (-22 °F.. 158 °F)
Electrical strength:	4 kV (supply - output)
Operating position:	any
Mounting:	DIN rail EN 60715
Protection degree:	IP40 from front panel / IP10 terminals
Oversvoltage category:	III.
Pollution degree:	2
Max. cable size (mm ²):	max. 2x 2.5, max. 1x 4 / with sleeve max. 1x 2.5, max. 2x 1.5 (AWG 12)
Dimensions:	90 x 17.6 x 64 mm (3.5" x 0.7" x 2.5")
Weight:	65 g (2.3 oz.)
Standards:	EN 60255-6, EN 61010-1

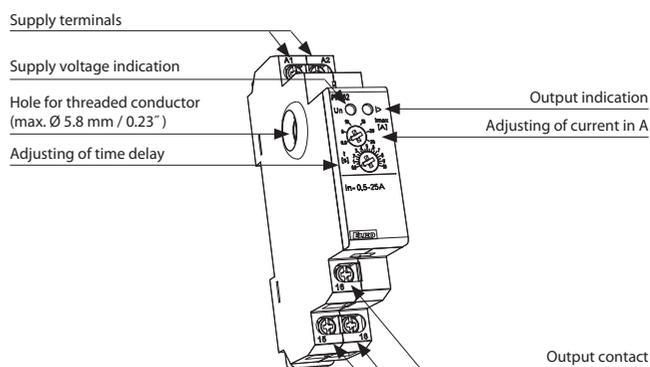
Connection



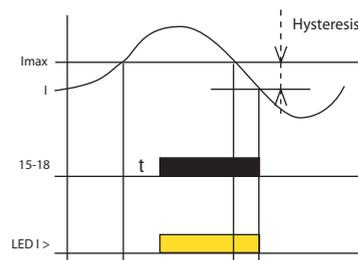
Connection example:
PRI-52 with current transformer for increasing of current range.

- relay is designated for:
 - distant device diagnostic (short circuit, take-off increasing)
 - preferred (priority) relay - two appliances (boiler and floor heating) operating on one phase, but never run together - prevention against current overload and circuit breaker tripping. Enables to save your main breaker expenses.
 - current transit indicator - informs about heating activation, ceramic hob, ventilator...
 - changing over of appliances according to inverter's (converter) output by photocell applications
- NEW - hole for threaded conductor passes through the body of device
- part of device is current transformer, which is sensing size of current in threaded conductor
- possible to use also for sensing of current up to 600 A from external current transformer
- slight setting (by potentiometer) of tripping current - range AC 0.5.. 25 A
- slight setting (by potentiometer) of delay - adjustable in range 0.5.. 10 s
- supply voltage AC 230 V
- output contact 1x switching 8 A (AC1)
- 1-phase version, 1-MODULE, mounting onto DIN rail, saddle terminals

Description



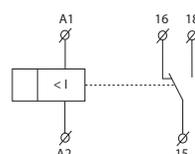
Functions



Monitoring relay PRI-52 serves for monitoring of current level in 1-phase AC circuits. Slight setting of release current level designates this relay for many various applications. Output relay is in normal status switched off. When set current level is overrun, relay get closed after preset delay. By return from error to normal status is used hysteresis.

PRI-52 range is possible to increase with external current transformer. Advantage of PRI-52 is that the hole for threaded conductor is located under the level of covering in the switchboard - thanks that, threaded conductor is not accessible for unwanted manipulation.

Symbol



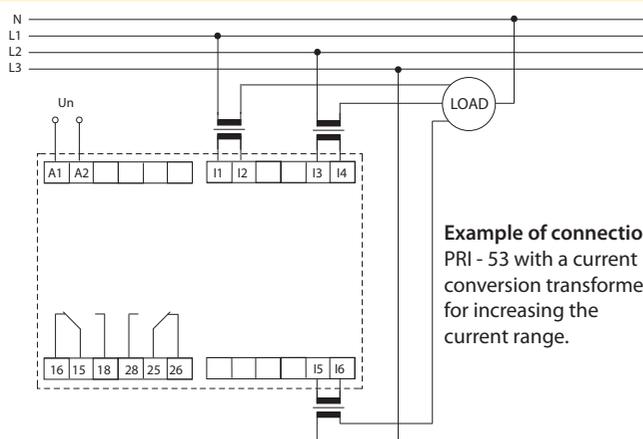


EAN code
 PRI-53/1: 8595188142137
 PRI-53/5: 8595188142144

Technical parameters	PRI-53/1	PRI-53/5
Supply terminals:	A1, A2	
Current monitoring terminals		
1st phase:	I1, I2	
2nd phase:	I3, I4	
3rd phase:	I5, I6	
Supply voltage:	24 - 240 V AC/DC	
Tolerance of voltage range:	± 10 %	
Operating AC frequency:	45 - 65 Hz	
Burden: (max):	3 VA / 1.2 W	
Max. dissipated power (Un + terminals):	2.5 W	
Rated current In:	AC 1 A	AC 5 A
Current level - I:	adjustable 40 - 120 % In	
Overload capacity		
- continuous:	2 A	10 A
- max. 3s:	20 A	50 A
Difference:	fix 1 % In	
Delay (until failure):	adjustable 0.5 - 10s	
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)
Storing temperature:	-30 °C to 70 °C (-22 °F to 158 °F)
Electrical strength (power supply - relay contact):	4 kV / 1 min.
Overvoltage category:	III.
Pollution level:	2
Protection degree:	IP40 from front panel / IP20 terminal
Max. cable size (mm ²):	max. 2x 1.5 / 1x 2.5 (AWG 12)
Dimensions:	90 x 105 x 64 mm (3.5 x 4.1 x 2.5")
Weight:	213 g (7.5 oz.)
Standards:	EN 60255-6, EN 60255-27, EN 61000-6-2, EN 61000-6-4

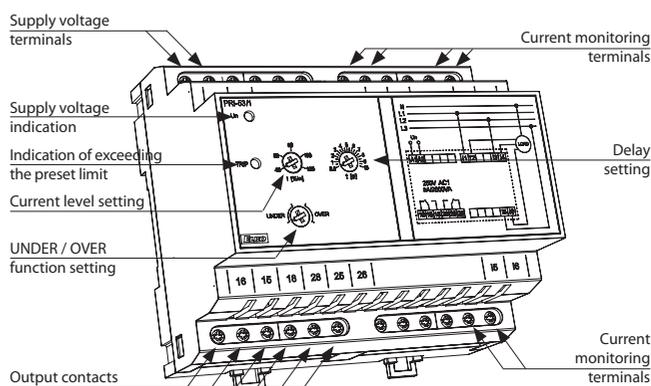
Connection



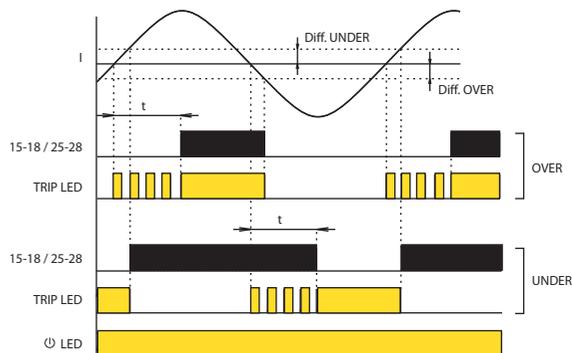
Example of connection:
 PRI - 53 with a current conversion transformer for increasing the current range.

- It is intended for monitoring the current in three-phase devices (e.g. cranes, motors, etc.).
- 24 - 240 V AC/DC power supply galvanically separated from the circuit of the monitored current.
- Adjustable current level in % of In.
- Fixed difference level.
- Adjustable delay level (when exceeding the preset limit).
- Adjustable function:
 - UNDER - monitors the drop in the strength of current below the preset value (I).
 - OVER - exceeding the preset value (I).
- 2 types depending on the strength of rated current In (1 A, 5 A).
- 6-MODULE, DIN rail mounting.
- Output relay with 2 changeover contacts.
- Option of connecting via the current transformers to increase the value of the monitored current by up to 600 A.

Description



Functions



After the supply voltage is connected the green LED is on.

UNDER function:

If the strength of the monitored current in all phases exceeds the preset level I, the relay is triggered and the red LED is off. If the strength of the monitored current drops in any phase below the level I, the relay is disconnected after the preset delay timing elapses and the red LED goes on. The red LED flashes during the delay.

If the strength of the monitored current returns above the level I + difference, the relay is triggered without delay and the red LED goes off.

OVER function:

If the strength of the monitored current is lower in all phases than the preset level I, the relay is disconnected and the red LED is off.

If the strength of the monitored current exceeds in any phase the level I, the relay is triggered after the preset delay timing elapses and the red LED goes on. The red LED flashes during the delay.

If the strength of the monitored current again drops below the level I - difference, the relay is disconnected without delay and the red LED goes off.

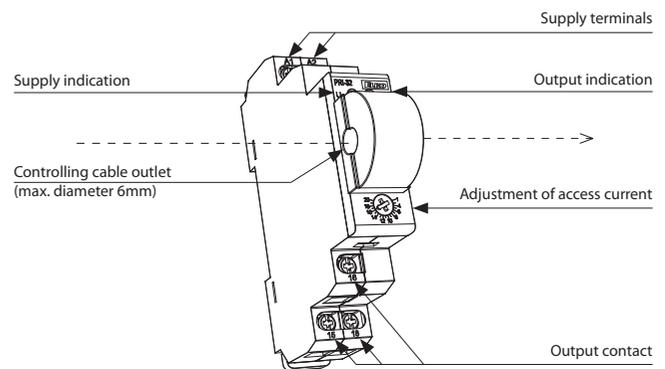


EAN code
PRI-32: 8595188121965

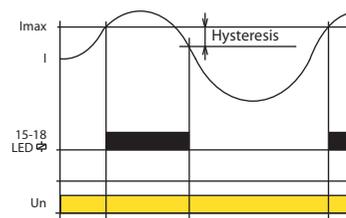
Technical parameters		PRI-32
Supply circuit		
Supply terminals:	A1 - A2	
Voltage range:	AC 24 - 240 V, DC 24 V (AC 50 - 60 Hz)	
Burden:	max. 1.5 VA / 1 W	
Max. dissipated power (Un + terminals):	2 W	
Operating range:	-15 %; +10 %	
Measuring circuit		
Current range:	1 - 20 A (AC 50 Hz)	
Current adjustment:	potentiometer	
Accuracy		
Setting accuracy (mech.):	5 %	
Repeat accuracy:	< 1 %	
Temperature dependency:	< 0.1 % / °C (°F)	
Limit values tolerance:	5 %	
Overload capacity:	max. 100 A / 10 s	
Output		
Number of contacts:	1x changeover / SPDT (AgNi / Silver Alloy)	
Current rating:	8 A / AC1	
Breaking capacity:	2000 VA / AC1, 240 W / DC	
Output indication:	red LED	
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 strength:	4 kV (supply - output)	
Operating position:	any	
Mounting:	DIN rail EN 60715	
Protection degree:	IP40 from front panel / IP10 terminals	
Overvoltage category:	III.	
Pollution degree:	2	
Max. cable size (mm ²):	solid wire max. 2x 2.5 or 1x 4, with sleeve max. 1x 2.5 or 2x 1.5 (AWG 12)	
Dimensions:	90 x 17.6 x 80.5 mm (3.5" x 0.7" x 3.2")	
Weight:	75 g (2.6 oz.)	
Standards:	EN 60255-6, EN 61010-1	

- Current transformer is a part of the product. Inside this transformer there is a wire which senses the volume of flowing current.
- This construction reduces thermal stress of product when compared with conventional solutions with inbuilt shunt, and increases current range up to 20 Amps, and galvanically separates monitored circuit.
- For heating bars in sliding rails, heating cables, indication of current flow, controlling of 1-phase motor consumption...
- Universal supply AC 24 - 240 V and DC 24 V.
- Supply is galvanically separated from measuring current.
- Current exceeding - current flowing through monitored wire must not exceed 100 A.
- Output contact: 1x changeover / SPDT 8 A.
- Clamp terminals.
- 1-phase, 1-MODULE, DIN rail mounting.

Description

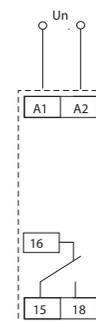


Function

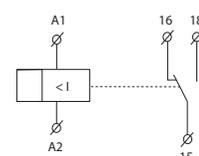


Monitoring relay PRI-32 serves to monitor current level in single phase AC circuits. Due to its fluent adjustment of release current, it is predestined for applications with necessity of current flow indication, and can be used as precedence relay. Output relay is off in normal state. In case the set current level is exceeded, it switches. Multivoltage supply is an advantage.

Connection



Symbol





EAN code
 PRI-51/0.5A: 8595188142885
 PRI-51 /1A: 8595188124904
 PRI-51/2A: 8595188124911
 PRI-51/5A: 8595188124928
 PRI-51/8A: 8595188124935
 PRI-51/0.1-10A: 8595188155717
 PRI-51/10A: 8595188148917
 PRI-51/16A: 8595188124942

Technical parameters PRI-51

Supply circuit

Supply terminals:	A1 - A2
Voltage range:	AC 24 - 240 V and DC 24 V (AC 50 - 60 Hz)
Burden:	max. 25 VA / 1.6 W
Max. dissipated power (Un + terminals):	2.5 W
Supply voltage tolerance:	-15 %; +10 %

Measuring circuit

Load:	between B1 - B2
Current range:	PRI-51/0.5A: AC 0.05-0.5A PRI-51/10A: AC 1-10A PRI-51/1A: AC 0.1-1A PRI-51/0.1-10A: AC 0.1-10 A PRI-51/2A: AC 0.2-2A PRI-51/16A: AC 1.6-16A PRI-51/5A*: AC 0.5-5A (AC 50 Hz) PRI-51/8A: AC 0.8-8A
Max. permanent current:	PRI-51/0.5A: 2 A PRI-51/1A: 4 A PRI-51/2A: 8 A PRI-51/0.1-10A: 10A PRI-51/5A, PRI-51/8A, PRI-51/10A, PRI-51/16A: 17 A
Inrush overload <1ms:	100 A
Current adjustment:	potentiometer
Time delay:	adjustable 0.5 - 10 s

Accuracy

Setting accuracy (mechanical):	5 %
Repeat accuracy:	< 1 %
Temperature dependency:	< 0.1 % / °C (°F)
Limit values tolerance:	5 % (10 % for 0.05 - 0.5 A and 0.1 - 10 A range)
Hysteresis (fault to OK):	5 %

Output

Number of contacts:	1x changeover / SPDT (AgNi / Silver Alloy)
Current rating:	8 A / AC1
Breaking capacity:	2000 VA / AC1, 240 W / DC
Output indication:	green / red LED

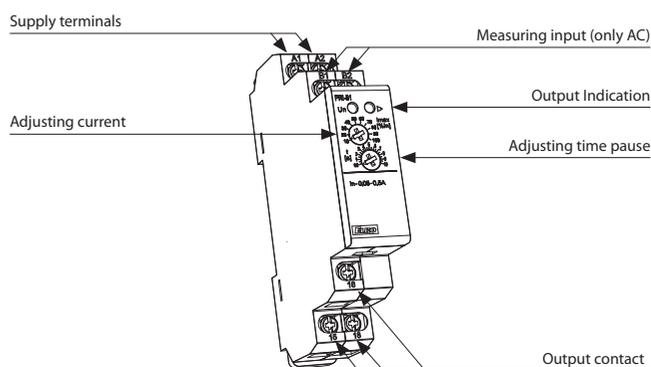
Other information

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 strength:	4 kV (supply - output)
Operating position:	any
Mounting:	DIN rail EN 60715
Protection degree:	IP40 from front panel / IP10 terminals
Overvoltage category:	III.
Pollution degree:	2
Max. cable size (mm ²):	solid wire max. 2x 2.5 or 1x 4, with sleeve max. 1x 2.5 or 2x 1.5 (AWG 12)
Dimensions:	90 x 17.6 x 64 mm (3.5" x 0.7" x 2.5")
Weight:	72 g (2.5 oz.)
Standards:	EN 60255-6, EN 61010-1

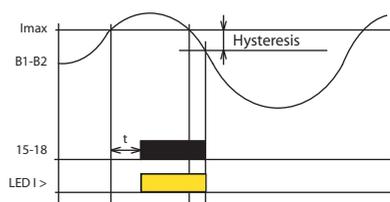
* applicable also for current transformer

- It serves for monitoring of heating in rail-switches, heating cables, consumption of one-phase motors, indicates current flow
- Flexible adjustment by potentiometer, choice of 8 ranges: AC 0.05 - 0.5 A; AC 0.1 - 1 A; AC 0.2 - 2 A; AC 0.5 - 5 A; AC 0.8 - 8 A; AC 0.1 - 10 A; AC 1 - 10 A; AC 1.6 - 16 A
- Adjustable delay 0.5 - 10 s to eliminate short current peaks
- It is possible to use for current scanning from current transformer - up to 600 A!
- Universal supply AC 24 - 240 V and DC 24 V
- Supply is galvanically separated from measured current, it must be in the same phase
- Output contact: 1x changeover / SPDT 8 A
- 1-phase, 1-MODULE, DIN rail mounting

Description



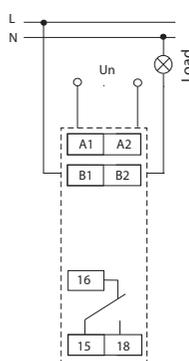
Function



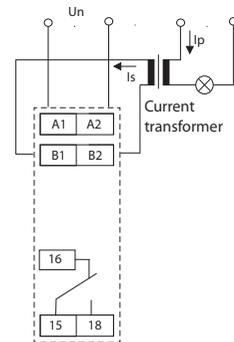
Monitoring relay PRI-51 serves to monitor current level in one-phase AC circuits. Gradual setting of actuating current of monitoring relay enables many different applications. Output relay is in normal state opened. After the set current level is reached, relay closes after the set delay (0.5 - 10s). When returning from faulty to normal state there is a hysteresis (5 %). Multi-voltage of this relay is an advantage. It is possible to monitor load which doesn't have the same supply as monitoring relay PRI-51.

Range of PRI-51 can be increased by an external current transformer.

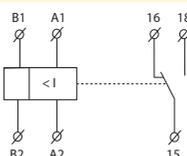
Connection



Example Connection: PRI-51 with current transformer for current range increase.

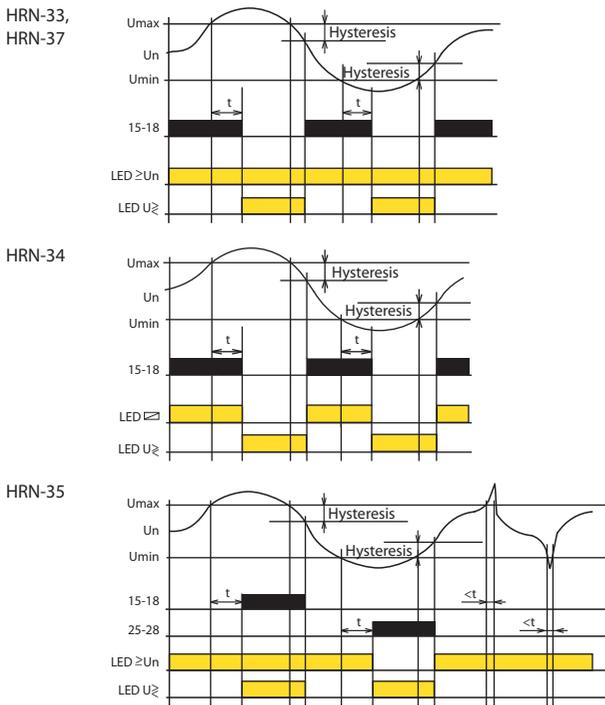


Symbol Example of an order



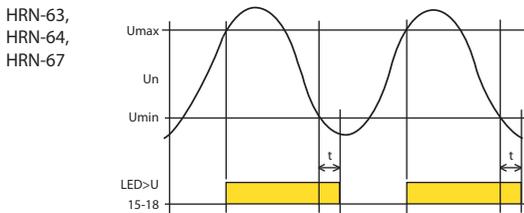
Always specify all reference name of current relay according to required range, for example PRI-51/5.

Function HRN-33, 34, 35, 37 (band voltage relay)



Monitoring relay series HRN-3x monitors level of voltage in single - phase circuits. Monitored voltage serves also as supply voltage. It is possible to set two independent (all occurrences) levels of voltage, when exceeded the output is activated. HRN-33 and HRN-34 - in normal state the output relay is permanently switched. It switches off when there is a limit settings. This combination of linkage of the output relay is advantageous when the full failure of supply (monitored) voltage is considered to be a faulty state in the same way as a decrease of voltage within the set level. Output relay is in both situations always switched off. Differently HRN-35 version uses independent relay for each level, in normal state it is switched off. If the upper level is exceeded (for example overvoltage) 1 relay switches on, when the bottom level (e.g. undervoltage) is exceeded 2 relay switches. It is thus possible to see the particular faulty state. To eliminate short peaks in the main time delay, which is possible to be set in range 0 - 10 s, is used. It functions when changing from normal to faulty state and prevents unavailing pulsation of the output relay caused by parasitic peaks. Time delay doesn't apply when changing from faulty to normal state, but hysteresis (1-6% depends on the voltage setting) apply. Thanks to changeover contacts it is possible to get other configurations and functions according to actual requirements of the application.

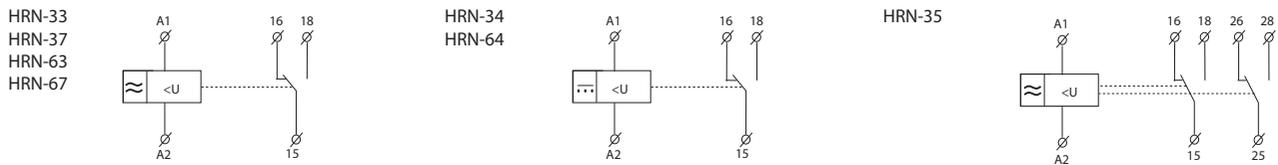
Function HRN-63, 64, 67 (over/under voltage relay)



Monitoring relay line HRN-6x serves to monitor levels of voltage in single-phase or DC circuits. Monitored voltage is in the same time also supply voltage. It is possible to set two independent levels of voltage. When Umax is exceeded, output is activated. In case voltage level falls below Umin, output is deactivated. This combination is advantageous when full absence of supply voltage is understood as faulty state, as well as voltage drop within the set level. To eliminate short voltage peaks in the main there is time delay which can be set in a range of 0-10 sec. Such delay applies in case of going from overvoltage to undervoltage. In case of returning from undervoltage to overvoltage this delay doesn't apply. Thanks to changeover output contacts it is possible to reach various configurations and functions according to requirements or an application.

Legend:
 Umax - upper adjustable level of voltage
 Un - measured voltage
 Umin - bottom adjustable level of voltage
 15-18 - switching contact of output relay No.1
 25-28 - switching contact of output relay No. 2
 LED ≥ Un - green indicator light
 LED U ≥ - red indicator light
 LED U > - red indicator light

Symbol



Indication LED

<p>HRN-33, HRN-37</p>	<p>HRN-34</p>	<p>HRN-63, HRN-67</p>	<p>HRN-64</p>
<p>HRN-35</p>			



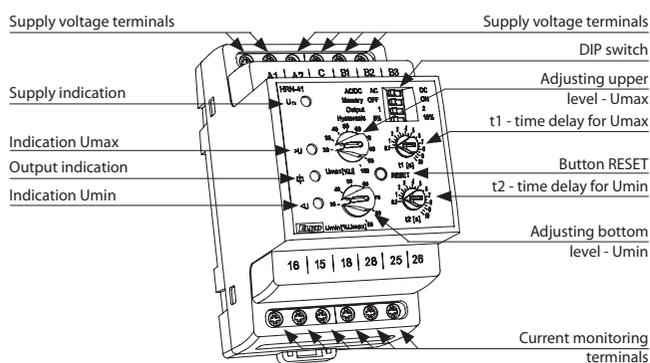
EAN code
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 HRN-41 /230V: 8595188140409
 HRN-41 /400V: 8595188140423
 HRN-41 /24V: 8595188140416
 HRN-42 /110V: 8595188140478
 HRN-42 /230V: 8595188140447
 HRN-42 /400V: 8595188140461
 HRN-42 /24V: 8595188140454

Technical parameters	HRN-41	HRN-42	
Supply			
Supply terminals:	A1 - A2		
Voltage range:	AC 110 V, AC 230 V, AC 400 V or AC/DC 24 V (AC 50-60Hz)		
Burden max.:	5 VA / 2.5 W (AC 110 V, AC 230 V, AC 400 V), 2 VA / 2.5 W (AC/DC 24 V)		
Max. dissipated power (Un + terminals):	7 W (110 V, 230 V, 400 V), 6 W (24 V)		
Supply voltage tolerance:	-15 %; +10 %		
Measuring			
Ranges:*	AC/DC 10 - 50 V (AC 50 - 60 Hz)	AC/DC 32 - 160 V (AC 50 - 60 Hz)	AC/DC 100 - 500 V (AC 50 - 60 Hz)
Terminals:	C - B1	C - B2	C - B3
Input resistance:	212 kΩ	676 kΩ	2.12 MΩ
Max. permanent overload:	100 V	300 V	600 V
Peak overload <1ms:	250 V	700 V	1 kV
Time delay for Umax:	adjustable 0.1 -10 s		
Time delay for Umin:	adjustable 0.1 -10 s		
Accuracy			
Setting accuracy (mechanical):	5 %		
Repeat accuracy:	<1 %		
Dependence on temperature:	< 0.1 % / °C (°F)		
Tolerance of limit values:	5 %		
Hysteresis (from fault to normal):	selectable 5 % / 10 % from range		
Output			
Number of contacts:	2x changeover/ SPDT (AgNi / Silver Alloy)		
Current rating:	16 A / AC1		
Breaking capacity:	4000 VA / AC1, 384 W / DC		
Inrush current:	30 A / < 3 s		
Switching voltage:	250 V AC1 / 24 V DC		
Output indication:	yellow LED		
Mechanical life:	3x10 ⁷		
Electrical life (AC1):	0.7x10 ⁵		
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 strength:	4 kV (supply - output)		
Operating position:	any		
Mounting:	DIN rail EN 60715		
Protection degree:	IP40 from front panel / IP20 terminals		
Oversvoltage category:	III.		
Pollution degree:	2		
Max. cable size (mm ²):	solid wire max. 1x 2.5 or 2x 1.5 / with sleeve max. 1x 1.5 (AWG 12)		
Dimensions:	90 x 52 x 65 mm (3.5" x 2" x 2.6")		
Weight:	249 g (110V, 230 V, 400 V) (8.8 oz.), 146 g (24 V) (5.1 oz.)		
Standards:	EN 60255-6, EN 61010-1		

* Only one of the inputs can be connected.

- Relay designed for monitoring DC and AC voltage in three ranges.
- The relay controls the size of the voltage in two independent levels (Umin, Umax).
- Setting the monitored level Umax (in % of range.)
- Setting the monitored level Umin (in % of range - for HRN-42 -function WINDOW), (in % of the set upper limit - for HRN-41 - function HYSTERESIS).
- Adjustable function "MEMORY".
- Function of second relay (independently / in parallel).
- Adjustable delay for eliminating short-term outages and surges for every level independently.
- Galvanically separated power supply from monitoring inputs.
- Output contact 2x switching 16 A / 250 V AC1 for each monitored voltage level.
- In 3-MODULE design, fixing to DIN rail.

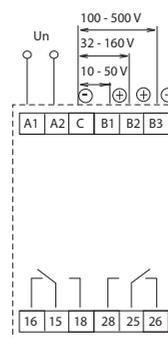
Description



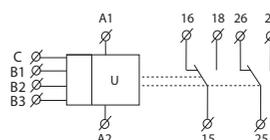
Description and importance of DIP switches

AC/DC AC	<input type="checkbox"/>	DC	← Measured AC / DC voltage
Memory OFF	<input type="checkbox"/>	ON	← MEMORY function
Output 1	<input type="checkbox"/>	2	← Relay function setting
Hysteresis 5%	<input type="checkbox"/>	10%	← Hysteresis setting

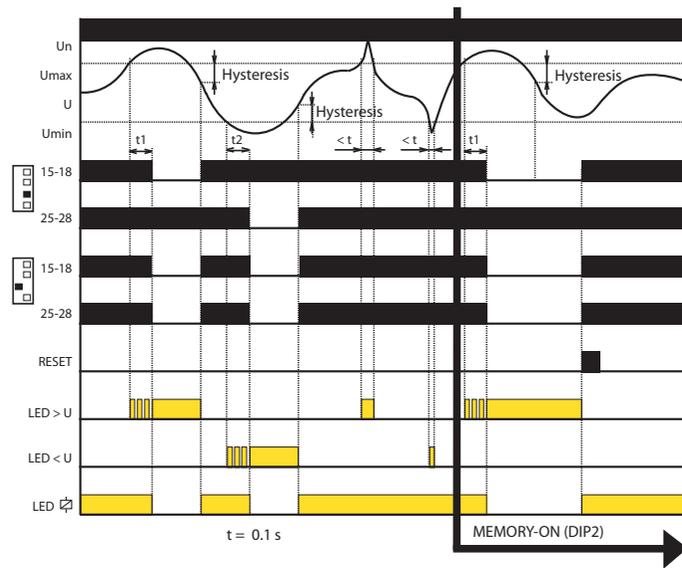
Connection



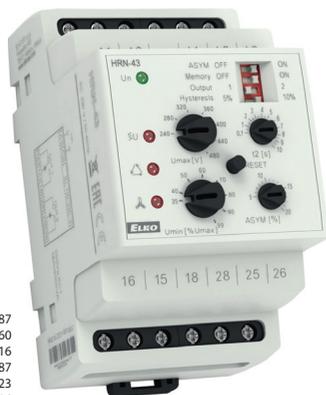
Symbol



Function



- if the value of the monitored voltage is in the zone between the set upper and lower levels, the status OK occurs - both relays are closed and the yellow LED illuminates. If the value of the monitored voltage is outside the set limits ($> U_{max}$ or $< U_{min}$), an error state occurs.
- when moving to an error state $U > U_{max}$, it times the delay t_1 and a red LED $> U$ simultaneously flashes. After the t_1 time elapses, the red LED $> U$ illuminates and the relevant relay opens.
- when moving to an error state $U < U_{min}$, it times the delay t_2 and a red LED $< U$ simultaneously flashes. After the time t_2 elapses, the red LED $< U$ illuminates and the relevant relay opens.
- when moving from the error status to the OK status, the relevant red LED immediately goes out, and the corresponding relay closes.

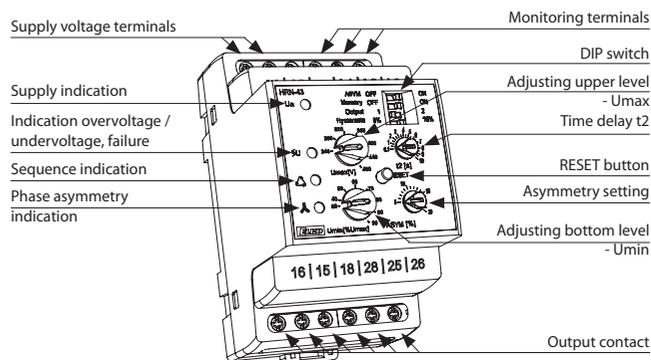


EAN code
 HRN-43 /110V: 8595188130387
 HRN-43 /230V: 8594030337660
 HRN-43 /400V: 8595188121316
 HRN-43 /24V: 8594030338087
 HRN-43N /110V: 8595188121323
 HRN-43N /230V: 8594030338216
 HRN-43N /400V: 8595188120258
 HRN-43N /24V: 8594030338094

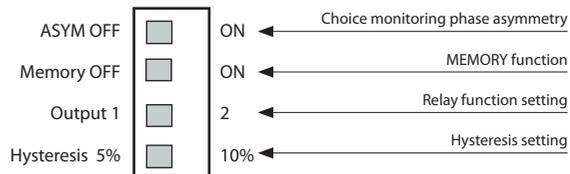
Technical parameters	HRN-43	HRN-43N
Supply		
Supply terminals:	A1 - A2	
Supply voltage:	AC 110 V, AC 230 V, AC 400 V, AC/DC 24 V / (AC 50 - 60 Hz)	
Consumption max.:	5 VA / 2.5 W (AC 110 V, AC 230 V, AC 400 V), 2 VA / 1.4 W (AC/DC 24 V)	
Max. dissipated power (Un + terminals):	6.5 W (110 V, 230 V, 400 V), 5.5 W (24 V)	
Supply voltage tolerance:	-15 %; +10 %	
Measuring circuit		
Voltage set:	3x 400 V / 50 Hz	3x 400 V / 230 V / 50 Hz
Monitored terminals:	L1, L2, L3	L1, L2, L3, N
Upper voltage level:	240 - 480 V	138 - 276 V
Bottom voltage level:	35 - 99 % Umax	
Max. permanent overload:	3x 480 V	
Hysteresis:	adjustable 5 % or 10 % of set value	
Asymmetry:	5 - 20 %	
Peak overload < 1 ms:	600 V < 1 ms	350 V < 1 ms
Time delay t1:	fixed, max. 200 ms	
Time delay t2:	adjustable 0.1-10 s	
Accuracy		
Set. accuracy (mechanical):	5 %	
Repeat accuracy:	< 1 %	
Temperature dependance:	< 0.1 % / °C (°F)	
Limit values tolerance:	5 %	
Output		
Number of contacts:	2x changeover / SPDT (AgNi / Silver Alloy)	
Rated current:	16 A / AC1	
Switching capacity:	4000 VA / AC1, 384 W / DC	
Inrush current:	30 A / < 3 s	
Switching voltage:	250 V AC1 / 24 V DC	
Mechanical life:	3x10 ⁷	
Electrical life (AC1):	0.7x10 ⁵	
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 strength:	4 kV (supply - output)	
Operating position:	any	
Mounting:	DIN rail EN 60715	
Protection degree:	IP40 from front panel / IP20 terminals	
Overtoltage category:	III.	
Pollution degree:	2	
Max. cable size (mm ²):	solid wire max. 1x 2.5 or 2x 1.5 / with sleeve max. 1x 1.5 (AWG 12)	
Dimensions:	90 x 52 x 65 mm (3.5 x 2 x 2.6")	
Weight:	248 g (110V, 230 V, 400 V) (8.7 oz.), 146 g (24 V) (5.1 oz.)	
Standards:	EN 60255-6, EN 61010-1	

- monitoring of 3-phase mains:
 - voltage in 2 levels (undervoltage and overvoltage) in range 138-276 V (3x 400 V / 230 V) or 280-480 V (3x 400 V)
 - phase asymmetry (can be switched off)
 - phase sequence
 - phase failure
- adjustable function „MEMORY“
- function of second relay (independent / parallel)
- adjustable delay for short peaks for each level independently
- **HRN-43:** for circuits 3x 400 V (without neutral)
- **HRN-43N:** for circuits 3x 400 / 230 V (with neutral)
- galvanically separated supply voltage AC 400 V, AC 110 V, AC 230 V, AC / DC 24 V
- output contact: 2x changeover 16 A / 250 V AC1
- 3-MODULE, DIN rail mounting

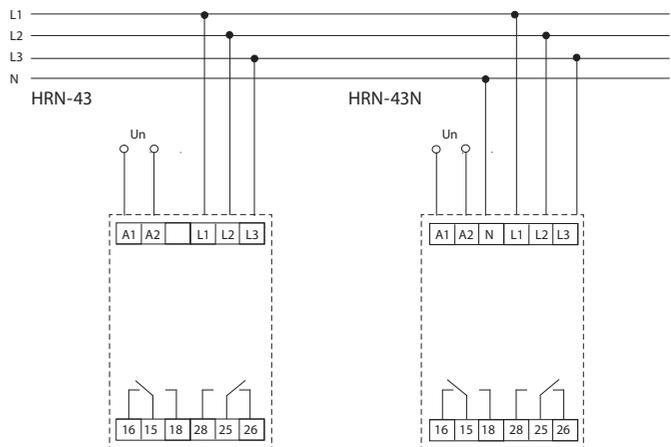
Description



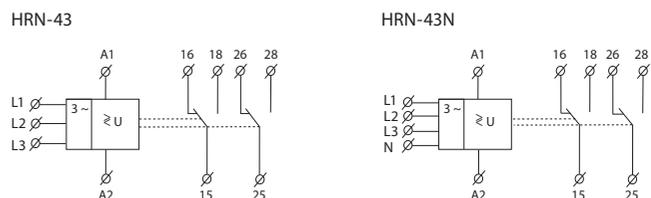
Description and importance of DIP switches



Connection

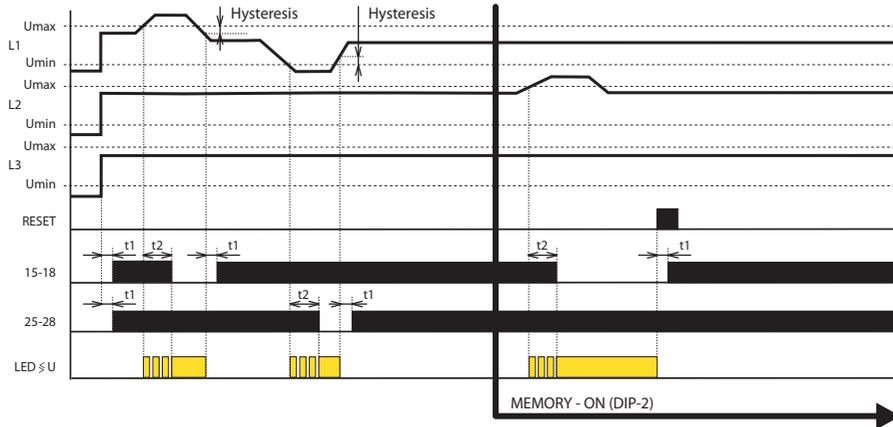


Symbol



Function

Overvoltage - undervoltage

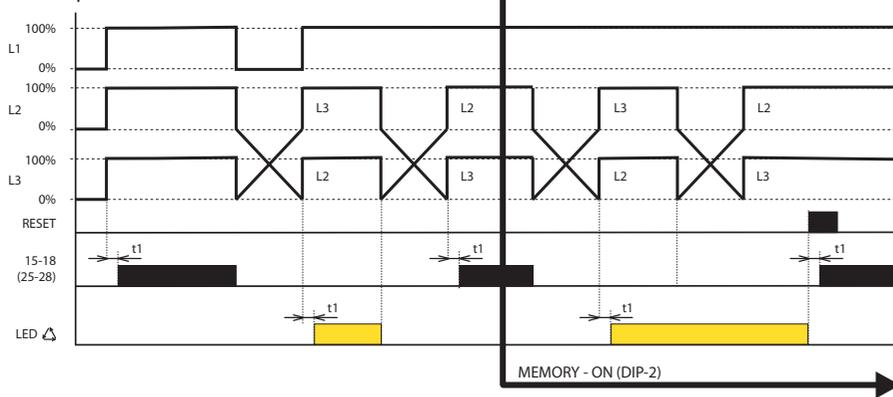


Legend:
 L1, L2, L3 - 3-phase voltage
 RESET - press of the button on frontal panel
 t1 - time delay, fixed
 t2 - time delay, adjustable
 15-18 output relay 1
 25-28 output relay 2
 LED $\leq U$ - indication overvoltage / undervoltage

Selection of 2nd the relay function:

In order to monitor 2 levels of voltage, it is possible to select if output relay will respond to each level individually (see the diagram) or both relays will switch in parallel way (see diagram "phase sequence"). Selection via DIP switch Output.

Phase sequence

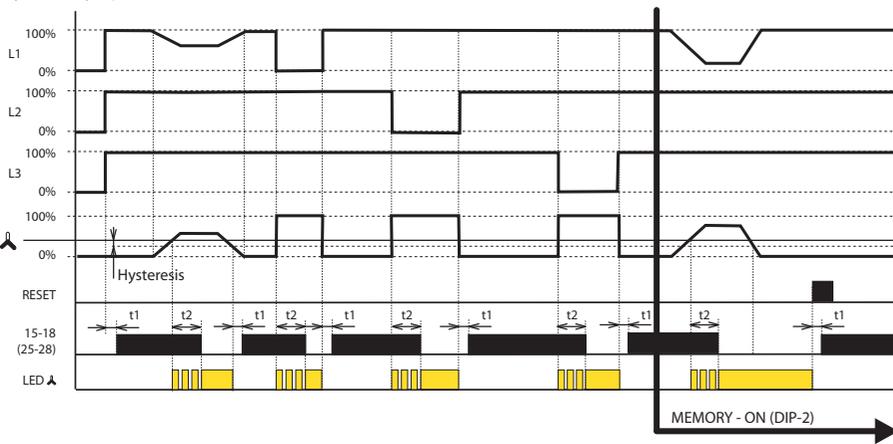


Legend:
 L1, L2, L3 - 3-phase voltage
 RESET - press of the button on frontal panel
 t1 - time delay, fixed
 t2 - time delay, adjustable
 15-18 output relay 1
 25-28 output relay 2
 LED Δ - indication of phase sequence

Selection of 2nd relay function:

The function is not implied in the monitoring phase sequence, the relays are switched in parallel way. DIP switch Output is ignored.

Asymmetry - phase failure



Legend:
 L1, L2, L3 - 3-phase voltage
 RESET - press of the button on frontal panel
 t1 - time pause, fixed
 t2 - time pause, adjustable
 Δ - adjustable asymmetry
 15-18 output contact of relay 1
 25-28 output contact of relay 2
 LED Δ - asymmetry indicator

Selection of 2nd relay function:

The function is not implied in the monitoring phase sequence, the relays are switched in parallel way. DIP switch Output is ignored.

Relay is designated to monitor 3-phase circuits. Type HRN-43N controls voltage towards neutral wire, type HRN-43 controls interphase voltage. Relay can monitor voltage in two levels (overvoltage / undervoltage), phase asymmetry, sequence and failure. Each faulty state is indicated by individual LED. By DIP switch (Output) it is possible to define function of the other relay - independent function (1x for overvoltage, 1x for undervoltage) or in parallel. Time delays t1 (fixed) - when changing from faulty to normal state or when de-energized and t2 (adjustable) when changing from normal to faulty state. These delays prevent incorrect conduct and oscillation of output device during short voltage peaks in the main or during gradual voltage decline into normal.

Voltage control

Set upper level Umax in range 138 - 276 V (or 240 - 480 V for HRN-43) and lower level Umin in range 35-99 % Umax. In case any phase passes this range, after a delay which eliminated short voltage peaks, contact opens. Output contact again switches after returning back into monitored voltage range and exceeding fixed hysteresis (which is adjustable in two values by DIP switch). In case of failure of two or three phases, the relay is deactivated immediately regardless of the set delay t2.

Phase sequence

Monitors correctness of phase sequence. In case of unwanted change output contact breaks. In case of energization of a device with incorrect phase sequence, contact stays opened.

Asymmetry

Rate of asymmetry between individual phases is set in a range of 5-20 %. In case set asymmetry is exceeded, output relay breaks and LED indicating asymmetry shines. Delays t1, t2 and hysteric are applicable when returning to normal state. Monitoring asymmetry can be switched off by DIP switch ASYM.



EAN code
HRN-54: 8595188137201
HRN-54N: 8595188137218

Technical parameters	HRN-54	HRN-54N
Supply and measuring:	L1, L2, L3	L1, L2, L3, N
Supply terminals:	L1, L2, L3	L1, L2, L3, N
Supply / measured voltage:	3x 400 V / 50-60 Hz	3x 400 V / 230 V / 50-60 Hz
Burden:	max. 2 VA / 1 W	
Max. dissipated power (Un + terminals):	1 W	
Level Umax:	105 - 125 % Un	
Level Umin:	75 - 95 % Un	
Hysteresis:	2 %	
Max. permanent overload:	AC 3x 460 V	AC 3x 265 V
Peak overload <1ms:	AC 3x 500 V	AC 3x 288 V
Time delay T1:	max. 500 ms	
Time delay T2:	adjustable 0.1-10 s	
Output		
Number of contacts:	1x changeover / SPDT (AgNi / Silver Alloy)	
Current rating:	8 A / AC1	
Breaking capacity:	2000 VA / AC1, 240 W / DC	
Inrush current:	10 A	
Switching voltage:	250 V AC1 / 24 V DC	
Indication of state:	red LED	
Mechanical life:	1x10 ⁷	
Electrical life (AC1):	1x10 ⁵	
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 strength:	4 kV (supply - output)	
Operating position:	any	
Mounting:	DIN rail EN 60715	
Protection degree:	IP40 from front panel / IP10 terminals	
Overvoltage category:	III.	
Pollution degree:	2	
Max. cable size (mm ²):	solid wire max. 2x 2.5 or 1x 4 / with sleeve max. 1x 2.5 or 2x 1.5 (AWG 12)	
Dimensions:	90 x 17.6 x 64 mm (3.5 x 0.7 x 2.5")	
Weight:	67 g (2.36 oz.)	66 g (2.33 oz.)
Standards:	EN 60255-6, EN 61010-1	

Function description

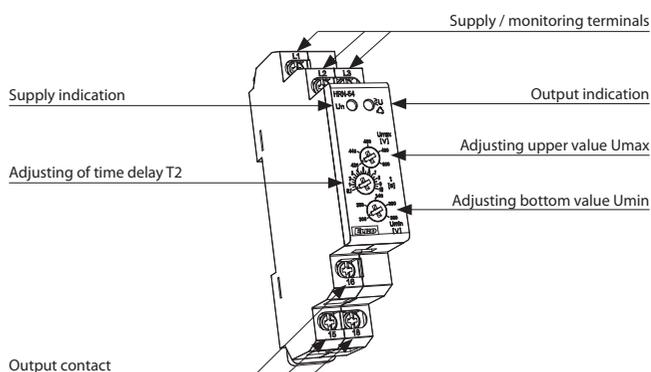
Relay in 3-phase main monitors size of phase voltage. It is possible to set two independent voltage levels and thus it is possible to set two independent voltage levels and monitor e.g. undervoltage and overvoltage independently. In normal state when voltage is within set levels, output relay is closed and red LED shines. In case voltage exceeds or falls below the set levels, output relay opens and red LED shines (LED indicates faulty state - flashes when timing).

In case supply voltage falls below 60 % Un (U_{OFF} lower level) relay immediately opens without delay and faulty state is indicated by red LED.

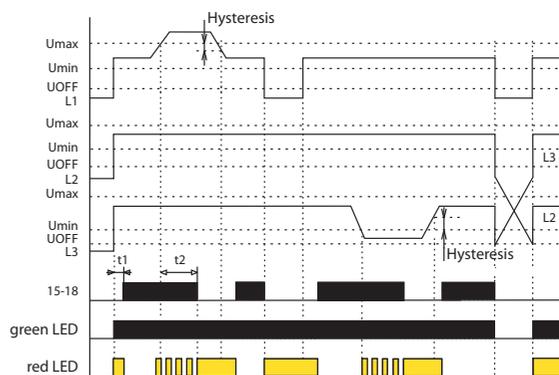
In case timing is in progress and faulty state is indicated, timing is immediately stopped.

- It serves to monitor voltage, phase failure and sequence in switchboards, protection of devices in 3-phase mains.
- It is possible to set upper and lower level of monitoring voltage.
- Adjustable time delay eliminates short voltage peaks and failures in the main.
- Supplied from monitored voltage.
- Faulty state is indicated by red LED and by opening of output relay contact.
- Output contact 1x changeover / SPDT 8 A / 250 V AC1.
- In case supply voltage falls below 60 % Un (U_{OFF} lower level) relay immediately opens without delay.
- **HRN-54:** supply from all phases which means that relay is functional also in case when one phase is faulty.
- **HRN-54N:** supply L1, L2, L3-N, means that relay monitors also failure of neutral wire.
- 1-MODULE, DIN rail mounting.

Description

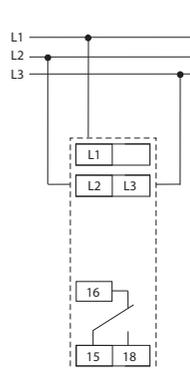


Function

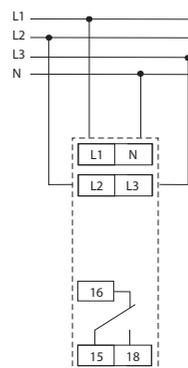


Connection

HRN-54

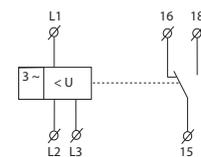


HRN-54N

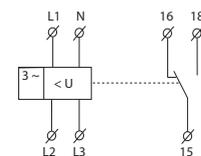


Symbol

HRN-54



HRN-54N





EAN code
 HRN-55: 8595188137225
 HRN-55N: 8595188137232

Technical parameters	HRN-55	HRN-55N
Monitoring terminals:	L1, L2, L3	L1, L2, L3, N
Supply terminals:	L1, L2, L3	L1, L2, L3, N
Voltage:	3x 400 V / 50-60 Hz	3x 400 V / 230 V / 50-60 Hz
Burden:	max. 2 VA / 1 W	
Max. dissipated power (Un + terminals):	1 W	
Level Umax:	125 % Un	
Level Umin:	75 % Un	
Hysteresis:	2 %	
Max. permanent:	AC 3x 460 V	AC 3x 265 V
Peak overload <1ms:	AC 3x 500 V	AC 3x 288 V
Time delay T1:	max. 500 ms	
Time delay T2:	adjustable 0.1 - 10 s	
Output		
Number of contacts:	1x changeover / SPDT (AgNi / Silver Alloy)	
Current rating:	8 A / AC1	
Breaking capacity:	2000 VA / AC1, 240 W / DC	
Inrush current:	10 A	
Switching voltage:	250 V AC1 / 24 V DC	
Output indication:	red LED	
Mechanical life:	1x10 ⁷	
Electrical life (AC1):	1x10 ⁵	
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 strength:	4 kV (supply - output)	
Operating position:	any	
Mounting:	DIN rail EN 60715	
Protection degree:	IP40 from front panel / IP10 terminals	
Overvoltage category:	III.	
Pollution degree:	2	
Max. cable size (mm ²):	solid wire max. 2x 2.5 or 1x 4 with sleeve max. 1x 2.5 or 2x 1.5 (AWG 12)	
Dimensions:	90 x 17.6 x 64 mm (3.5 x 0.7 x 2.5")	
Weight:	67 g (2.36 oz.)	65 g (2.29 oz.)
Standards:	EN 60255-6, EN 61010-1	

Function description

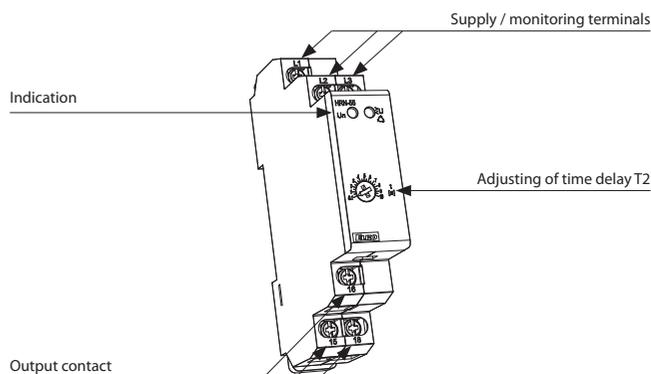
Relay in 3-phase main monitors correct phase sequence and failure of any phase. Green LED is permanently ON and indicates presence of power supply voltage. In case of phase failure or exceeding voltage level red LED flashes and relay breaks. When changing to faulty state, time delay applies. Time delay setting is set by a potentiometer on front panel of the device. In case of incorrect phase sequence red LED shines permanently and relay is open. In case supply voltage falls below 60 % Un (OFF lower level) relay immediately opens with no delay and faulty state is indicated by red LED.

HRN-55 - thanks to supply form all phases, this relay is able to stay operational also if one phase is out.

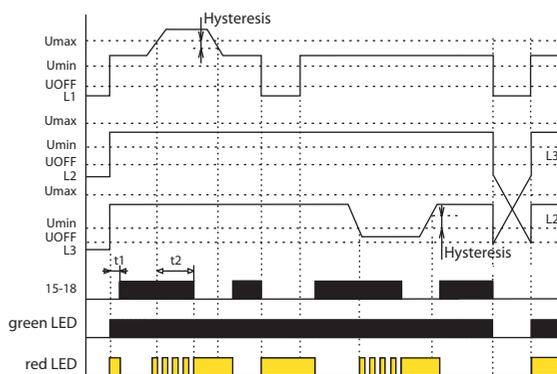
HRN-55N -supply L1, L2, L3-N, means that relay monitor also failure in neutral wire.

- Relay monitors phase sequence and failure, exceeding of monitored voltage in 3 phase main.
- **HRN-55**: supply from all phases, which means that function of relay is applicable also if one phase fails.
- **HRN-55N**: supply L1, L2, L3-N, it means that relay also monitors break of neutral point.
- Fixed delay T1 (500 ms) and adjustable delay T2 (0.1 - 10 s).
- Faulty state is indicated by LED and output contact of relay is OFF.
- Output contact: 1x changeover / SPDT 16 A / 250 V AC1.
- 1-MODULE, DIN rail mounting.

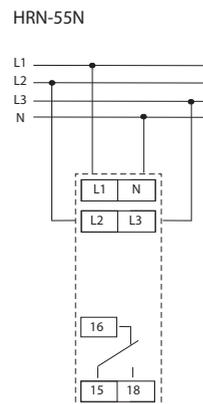
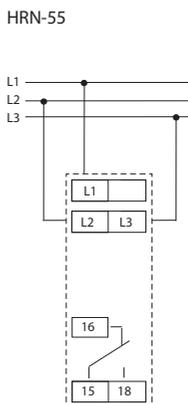
Description



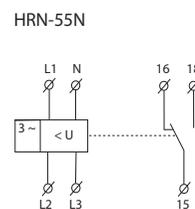
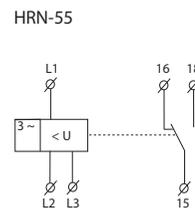
Function



Connection



Symbol



HRN-56 | Relay for monitoring phase sequence and failure



EAN code
 HRN-56 /120V: 8595188130745
 HRN-56 /208V: 8595188130134
 HRN-56 /240V: 8595188137119
 HRN-56 /400V: 8595188137126
 HRN-56 /480V: 8595188130189
 HRN-56 /575V: 8595188130196

- Relay monitors phase sequence and failure (e.g. control of correct motor winding etc.).
- Relay is designated for monitoring of 3-phase networks.
- Supply from all phases which means that relay is functional also in case of one phase failure.
- Supply and monitored supply Un:

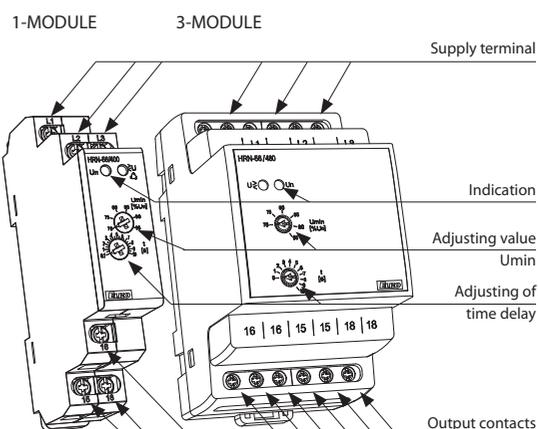
1-MODUL	3-MODUL
HRN-56/120 - 3x 120 V	HRN-56/480 - 3x 480 V
HRN-56/208 - 3x 208 V	HRN-56/575 - 3x 575 V
HRN-56/240 - 3x 240 V	
HRN-56/400 - 3x 400 V	
- Fixed time delay T1 (500 ms) and adjustable time delay T2 (0 - 10s).
- Faulty state is indicated by LED and by opening of output relay contact.
- Output contact 1x changeover / SPDT 8 A / 250V AC1.
- 1-MODULE, 3-MODULE, DIN rail mounting.

Technical parameters

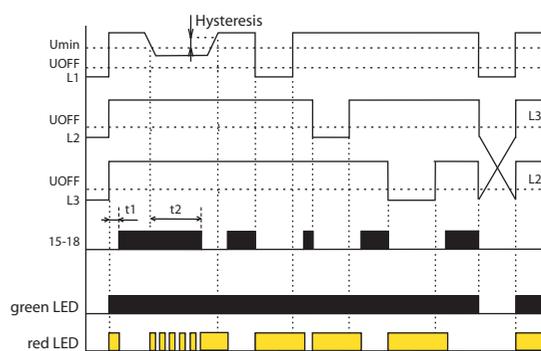
HRN-56

	120	208	240	400	480	575
Monitoring terminals:	L1, L2, L3					
Supply terminals:	L1, L2, L3					
Supply / measured voltage:	3x120 V L-L (3x69.3V L-N) 50-60 Hz	3x 208 V L-L (3x120V L-N) 50-60 Hz	3x 240 V L-L (3x139V L-N) 50-60 Hz	3x 400 V L-L (3x230V L-N) 50-60 Hz	3x 480 V L-L (3x277V L-N) 50-60 Hz	3x 575 V L-L (3x332V L-N) 50-60 Hz
Burden:	max. 2 VA / 1 W					
Max. dissipated power (Un + terminals):	2 W					
Level Umin:	adjustable 70 - 95 % Un					
Level Uoff:	60 % Un					
Hysteresis:	2 %					
Max. permanent overload:	AC 3x 160 V	AC 3x 276 V	AC 3x 460 V	AC 3x 550 V	AC 3x 660 V	AC 3x 700 V
Peak overload <1s:	AC 3x 180 V	AC 3x 300 V	AC 3x 500 V	AC 3x 600 V	AC 3x 700 V	AC 3x 700 V
Time delay T1:	max. 500 ms					
Time delay T2:	adjustable 0 - 10 s					

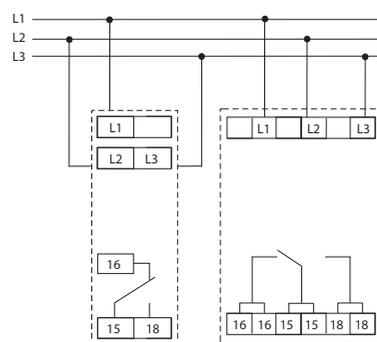
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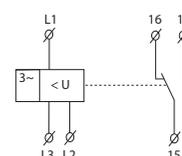
Function



Connection



Symbol



Relay in 3-phase main monitors correct phase sequence and phase failure. Green LED illuminates permanently and indicates energization. In case of phase failure red LED flashes and relay turns off. When changing to faulty state, time delay applies - delay setting is done by potentiometer on the front panel of the device. In case of incorrect phase sequence, red LED shines permanently and relay is open. In case supply voltage falls below 60% Un (Uoff lower level) relay immediately opens with no delay and faulty state is indicated by red LED.

HRN-56: Thanks to supply from all phases, relay is functional also in case of one phase failure.

Function description