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Jul.2024

User manual

HDRX

Thermal overload relay

Complied Standard: IEC/EN 60947-4-1

☐Please carefully read the User Manual before the installation and use of the products, keep it properly as backup.

HDRX User manual

Safety notification

Please read this manual carefully before installation, operation, maintenance, inspection. Install and use the product accurately according to the contents of the manual.

⚠ Danger:

- Do not operate the relay with water on your hands.
- Do not touch the conductive part while in use.
- During maintenance and care, ensure that the product is electrically neutral.

⚠ Attention:

- Installation, maintenance should be operated by professionally qualified personnel.
- Make sure that the rated operational current value of the motor before installation is within the setting current adjustment range of the thermal relay.
- Not suitable for frequent reversible operation or on-off motor overload protection, for heavy load starting motor (starting time greater than 2s) should make the thermal relay to avoid the starting current measures.
- None of the fasteners except the wiring screws can be rotated.
- Regularly tighten the terminal wiring.
- Do not allow anything else to fall into the product.
- If the product is damaged or has abnormal sound when unpacking, please refuse to use and contact our company.
- Please dispose of end-of-life products in the correct way.

Product specification

HDRX series thermal overload relay is mainly used in AC 50/60Hz, rated opreational voltage 690V, rated opreational current 0.1A ~ 93A circuit. The product is reliable, in line with IEC60947-4-1 standards.

Product features and references

- Product features
  - a) Overload and phase failure protection.
  - b) Continuously adjustable setting current.
  - c) Temperature compensation.
  - d) With action indication.
  - e) With test mechanism and stop button.
  - f) Automatic and manual reset.
  - g) Top wiring of the product.
- Product references

HD R X - ☐

- Shell frame current
- Product series
- Thermal overload relay
- Enterprise code

Conditions of use and installation

a) The ambient air temperature ranges between -5°C and +40°C with average value in 24h not exceeding +35°C.

b) Altitude: ≤2000m

c) The atmosphere relative humidity shall not exceed 50% at the maximum temperature of +40°C. Higher relative humidity is possible at lower temperatures, e.g., 90% humidity at 20°C. Protective measures should be taken against occasional condensation due to temperature changes.

d) The installation position should be vertical, and the inclination of each direction should not exceed ±30°.

e) Installed in a place without shock vibration and without rain and snow attack.

f) Pollution degree: 3

g) Overvoltage category: III

h) Rated impulse withstand voltage Uimp: 6kV

i) IP degree of protection: IP20 (except terminal)

Conditions of storage and transport

a) Temperature: -25°C~ +55°C.

b) Relative humidity: ≤95%

c) The product should be transported gently, without inversion and strong impact.

d) The product must not be exposed to rain or snow during transport and storage.

Technical characteristics

●Main circuit technical parameters

Rated insulation voltage Ui（V）	690V
Rated operational voltage Ue（V）	690V
Rated impulse withstand voltage Uimp（V）	6kV

●Auxiliary circuit technical parameters

Rated insulation voltage Ui（V）	500		
Rated impulse withstand voltage Uimp（V）	4		
Conventional free air thermal current Ith（A）	5		
Utilization category	AC-15		DC-13
Rated operational voltage Ue（V）	220	380	220
Rated operational current Ie（A）	1.64	0.95	0.15
Auxiliary contact type	1NO+1NC		

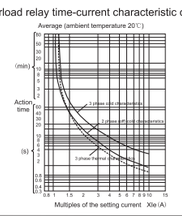
●Combination of contactors, fuses and thermal relays

Reference	Rated operational current Ie	Setting current adjustment range	Applicable contactor reference	Fuse rated current Imax	Cross-sectional area of wires mm²
	A	A		A	
HDRX-38	0.16	0. 1~0.16	HDCX-09~38	4	1
	0.25	0.16~0.25		4	1
	0.4	0.25~0.4		4	1
	0.63	0.4~0.63		4	1
	1	0.63~1		4	1
	1.6	1~1.6		4	1
	2.5	1.6~2.5		6	1
	4	2.5~4		10	1
	6	4~6		16	1
	8	5.5~8		20	1
	10	7~10		20	1. 5
	13	9~13	HDCX-12~38	25	2. 5
	18	12~18	HDCX-18~38	35	2. 5
	25	17~25	HDCX-25~38	50	4
	32	23~32		63	6
	38	30~38	HDCX-38	80	10
HDRX-65	25	17~25	HDCX-40~65	50	4
	32	23~32		63	6
	40	30~40		80	10
	50	37~50		100	10
	65	48~65		100	16

Reference	Rated operational currentle	Setting current adjustment range	Applicable contactor reference	Fuse rated current Imax	Cross-sectional area of wires mm²
	A	A		A	
HDRX-93	32	23~32	HDCX-80~95	63	6
	40	30~40		80	10
	50	37~50		100	10
	65	48~65		100	16
	70	55~70		125	25
	80	63~80		125	25
	93	80~93		160	35

Note:The recommended fuse reference for this thermal relay are HRT16 and HNT00.

●Thermal overload relay time-current characteristic curve

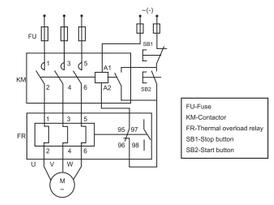


Thermal overload relay time-current characteristic curve (+20°C)

Inverse time breaking action characteristics

No.	Multiples of the setting current	Action time: Tripping class 10A	Action time: Tripping class 10	Initial conditions	Ambient temperature
Operational characteristics when the load of each phase is balanced.					
1	1. 05	No action within 2 hours		Cold	+20℃
2	1. 25	Action within 2 hours		Thermal (After test No. 1)	
3	1. 5	<2minutes	<4minutes	Thermal (After test No. 1)	
4	7. 2	2s≤Tp≤10s	4s≤Tp≤10s	Cold	+20℃
Operating characteristics in case of load imbalance (phase break) in each phase.					
	Any two -phase	The third phase			+20℃
1	1. 0	0. 9	No action within 2 hours	Cold	
2	1. 15	0	Action within 2 hours	Thermal (After test No. 1)	

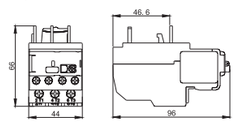
●Wiring schematic



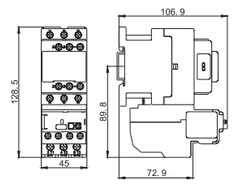
Shape and installation dimensions

●HDRX-38 shape and installation dimensions

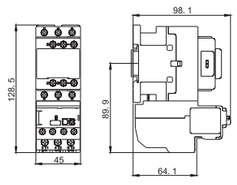
Unit: mm



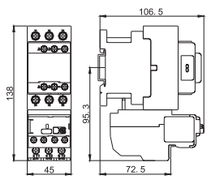
HDRX-38



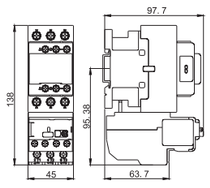
HDRX-38 + HDCX-09DC/12DC/18DC



HDRX-38 + HDCX-09/12/18

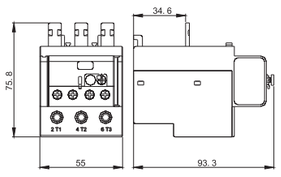


HDRX-38 + HDCX-25DC/32DC/38DC

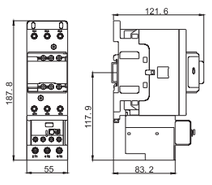


HDRX-38 + HDCX-25/32/38

●HDRX-65 shape and installation dimensions

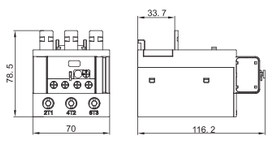


HDRX-65

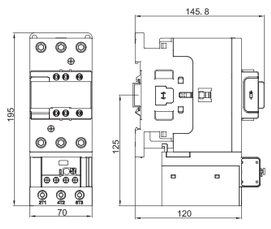


HDRX-65 + HDCX-40(DC)/50(DC)/65(DC)

●HDRX-93 shape and installation dimensions



HDRX-93



HDRX-93 + HDCX-80(DC)/95(DC)

Installation and utilization

●Debugging and Operation

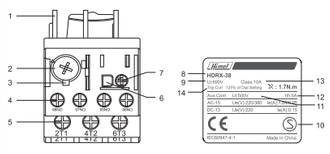
a) Before installation, check whether the technical parameters on the label of the product are consistent with the conditions of use.

b) Correctly connect the inlet and outlet terminals wiring according to the product identification (The load current should be less than the rated current value of the product).

c) All screws in the thermal relay, except the wiring screws, are not allowed to be rotated to prevent changes in the operating characteristics.

d) Thermal relays should be tested regularly to ensure that their mechanism is reliable, and the contacts are in good contact with each other.

e) Panel presentation.

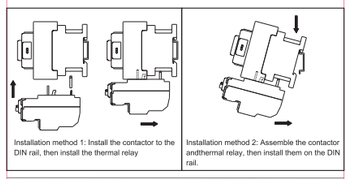


No:

1、Power supply terminal
2、Current setting
3、Test button
4、Auxiliary contact
5、Load terminal
6、Stop button
7、Manual reset button, manual/automatic adjusting button
8、Reference
9、Rated insulation voltage of main circuit
10、Certification mark
11、Rated insulation voltage of auxiliary circuit
12、Conventional free air thermal current of auxiliary circuit
13、Tripping class: HDRX-38、65 is 10A； HDRX-93 is 10
14、Tripping current: 125% setting current

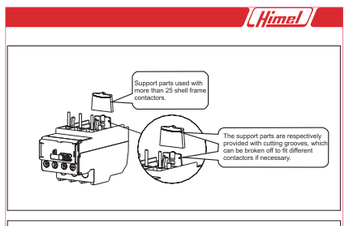
●Installation

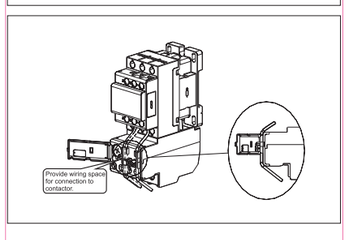
a）HDRX-38



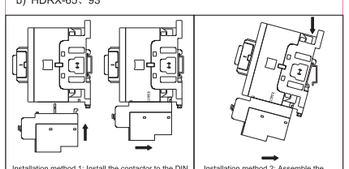
Installation method 1: Install the contactor to the DIN rail, then install the thermal relay

Installation method 2: Assemble the contactor andthermal relay, then install them on the DIN rail.





b）HDRX-65、93



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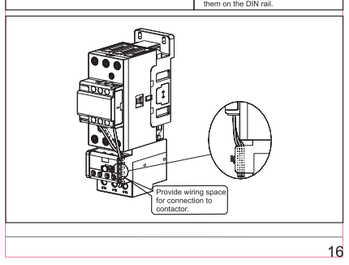

c）Wiring capacity

Wiring capacity		Main circuit (min…max.)				Control circui (min…max.)
Reference		HDRX-38 0.1~32A	HDRX-38 38A	HDRX-65	HDRX-93	HDRX-38~93
Rigid wire	1 wire/mm²	1…6	-	2.5…16	10…35	1…2.5
	2 wires/mm²		-			
Flexible wire	1 wire/mm²		10			
	2 wires/mm²		-			
Terminal wire	1 wire/mm²		10			
	2 wires/mm²		-			
	1 wire/mm²	a＜1.6 ＞4		a＜9.2	a＜12.2	a＜1.6 b＞3.5
Torque	N・m	1. 7 M4		6 M8	10 M10	1.2 M3. 5

Maintenance and care

a) During maintenance must be ensured that the product is electrically free and operated by professionally qualified personnel.

b) Maintenance once a year under normal operating conditions, as shown in the following table.

Item			Content
Appearance			No dust or condensation. No damage to the product. No discolouration of the housing and connection terminals.
Wiring terminal torque	Main circuit	HDRX-38	Tighten to the rated torque: 1.7N·m without loosening.
		HDRX-65	Tighten to the rated torque: 6N·m without loosening.
		HDRX-93	Tighten to the rated torque:10N·m without loosening.
	Control circuit		Tighten to the rated torque: 1.2N·m without loosening.
Switch on-off reliability			Connection and disconnection before and after operation.