

TGCH1N Series Modular Contactors



1 Product overview

TGCH1N series modular contactors (hereinafter referred to as contactors) are mainly used in AC 50Hz (or 60Hz) power circuit with a rated working voltage up to 400V, rated working current up to 63A under use category AC-7a, and rated working current up to 20A under use category AC-7b to control the household appliances and low-inductance micro-inductance loads with similar purposes, and also can be used to control the household motor loads, and in this case the control power should be reduced accordingly.

The contactor is not used to break short-circuit current, so appropriate short-circuit protective device should be selected during operation.

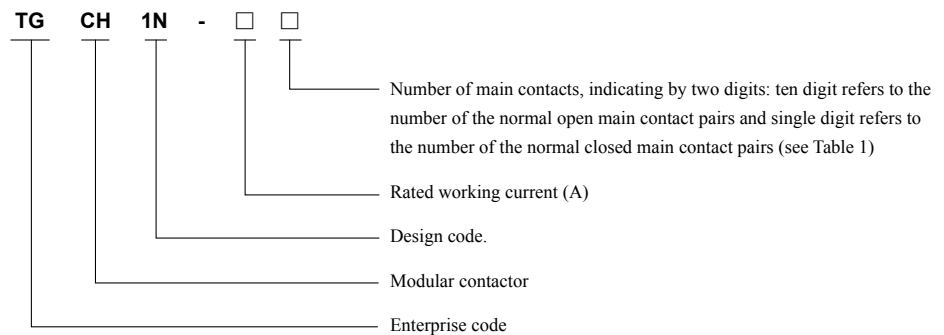
The products are used in power distribution places such as homes, hotels, apartments, shopping malls and urban lighting systems to realize automatic control functions.

Available standards: IEC/EN 61095.

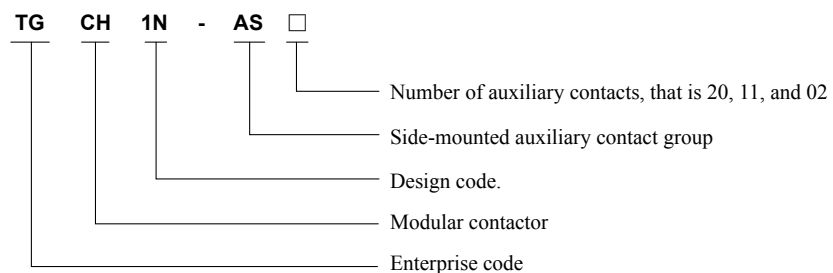


2 Type designation

2.1 Contactor model and meaning



2.2 Accessories model and meaning



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3 Main technical parameters

3.1 Classified according to the number of poles: contactors are divided into 1P, 2P, 3P, 4P.

3.2 The basic parameters of the contactor are listed in Table 1.

Table 1

| Parameter | | | Product model | | | | | | | | | | | |
|---|-------|-------|---------------------------|--|--------|--|--------|--|--------|--|--------|--|--------|--|
| | | | 16A | | 20A | | 25A | | 32A | | 40A | | 63A | |
| Rated working current Ie(A) | | AC-7a | 16 | | 20 | | 25 | | 32 | | 40 | | 63 | |
| | | AC-7b | 6 | | 7 | | 9 | | 12 | | 15 | | 20 | |
| Resistive current Ith(A) | | | 25 | | 25 | | 25 | | 63 | | 63 | | 63 | |
| Rated impulse withstand voltage Uimp(kV) | | | 4 | | | | | | | | | | | |
| Rated insulation voltage Ui(V) | | | 500 | | | | | | | | | | | |
| Rated working voltage Ue(V) | | | 250V(1P、2P)、400V(3P、4P) | | | | | | | | | | | |
| Number of main contacts | | 1P | 10、01 | | | | | | | | | | | |
| | | 2P | 20、11、02 | | | | | | | | | | | |
| | | 3P | 30 | | | | | | | | | | | |
| | | 4P | 40、22、31 | | | | | | | | | | | |
| Control power Pe(kW) | AC-7a | 230V | 3.5 | | 4.5 | | 5.5 | | 7.2 | | 9 | | 14 | |
| | | 400V | 6.5 | | 10 | | 16 | | 21 | | 26 | | 40 | |
| | AC-7b | 230V | 1.4 | | 1.6 | | 2 | | 2.8 | | 3.7 | | 5 | |
| | | 400V | 2.4 | | 2.8 | | 4 | | 8.5 | | 11 | | 15 | |
| Wiring screw specifications | | | M3.5 | | | | | | M5 | | | | | |
| Tightening torque (N.m) | | | 0.8 | | | | | | 3.5 | | | | | |
| Connecting wire (mm²) | | | 1.5 ~ 4 | | | | | | 6 ~ 16 | | | | | |
| Mechanical life (10,000 times) | | | 600 | | | | | | | | | | | |
| Electrical life (10,000 times) | | | 10 | | | | | | | | | | | |
| Rated control power voltage Us(V) | | | AC(50/60Hz):24、48、110、230 | | | | | | | | | | | |
| Rated limited short-circuit current Iq(kA) | | | 3 | | | | | | | | | | | |
| Recommended SCPD model | | | TGB1N-63 | | | | | | | | | | | |
| | | | 1P C16 | | 1P C20 | | 1P C25 | | 1P C32 | | 1P C40 | | 1P C63 | |

3.3 The basic parameters of accessory auxiliary contacts are listed in Table 2.

Table 2

| Parameter | | Auxiliary contact group |
|---|---------|-------------------------|
| | | TGCH1N-AS20、11、02 |
| Ue/Ie | AC - 12 | AC240V/5A |
| | AC - 15 | AC230V/2A |
| | DC - 13 | DC130V/1A |
| Resistive current Ith(A) | | 10 |
| Rated impulse withstand voltage Uimp(kV) | | 4 |
| Rated insulation voltage Ui(V) | | 500 |
| Mechanical life (10,000 times) | | 600 |
| Electrical life (10,000 times) | | 30 |

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3.4 Rated work system:

3.4.1 Eight-hour working system; this working system is the basic working system, and the free air resistive current I_{th} of contactor is determined by this working system;

3.4.2 Intermittent cycle working system; the rated operating frequency of the contactor under this working system is 30 times/h, and the load factor is 40%.

3.5 Action (operation) conditions

When the ambient air temperature is in the range of $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$, apply the rated control power voltage U_s onto the contactor sucking coil until it heats to a stable state, and the contactor can be reliably closed under any voltage within the range of $(85\% \sim 110\%) U_s$. Its release voltage is $(20\% \sim 75\%) U_s$.

4 Normal operation and installation conditions

4.1 The ambient air temperature is ranged $-5^{\circ}\text{C} \sim +40^{\circ}\text{C}$, and the average value within 24 hours does not exceed $+35^{\circ}\text{C}$.

4.2 Altitude: Not exceed 2000m.

4.3 Atmospheric conditions: The relative humidity of the air at the installation site does not exceed 50% when the maximum temperature is $+40^{\circ}\text{C}$; higher relative humidity is allowed at a lower temperature, for example, up to 90% at $+20^{\circ}\text{C}$. Special measures should be taken for occasionally occurred condensation.

4.4 Pollution level: 2.

4.5 Installation category: Class II.

4.6 Shock and vibration: The installation site shall be free of significant shock and vibration.

4.7 Installation method: 35mm standard rail is used for installation.

4.8 Installation conditions: Vertical installation, the inclination of each direction is not more than $\pm 30^{\circ}$.

4.9 Protection grade: IP20.

5 Product working principle

The working principle of the contactor is as follows: when the coil is energized, the coil current generates a magnetic field to produce enough electromagnetic adhesion to overcome the reaction force, attract the armature, and power on the contact. When the coil voltage disappears or the coil voltage drops to a certain value, that is the voltage is released, as the magnetic flux generated by the end face of the armature decreases, the electromagnetic adhesion will be smaller than the reaction force generated by the reaction spring and contact spring, and the armature is released under the action of this reaction force and leaves the magnet yoke, so the contact is immediately broken.

6 Product structure features

The contactor is a modular control electrical device featuring with novel and compact structure and small volume. The contact system uses a direct-acting inverted structure.

With rail-mounted installation method used, the contact can be installed in the control lighting box together with a miniature circuit breaker.

The use of high-quality insulating and environmentally friendly materials greatly improves safety.

With artistic and elegant appearance, the anti-slip design of the head grip is ergonomic.

The product has a working status indicator window, with clear actions.

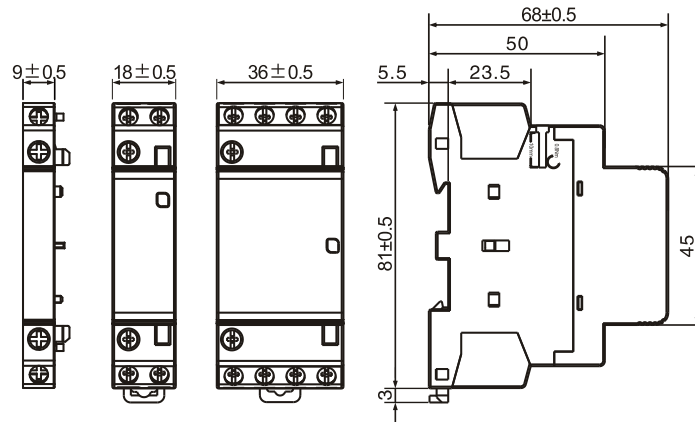
The contact has a large capacity and long service life.

With low power consumption, low noise, and high reliability, suitable for sites such as hotels and hospitals.

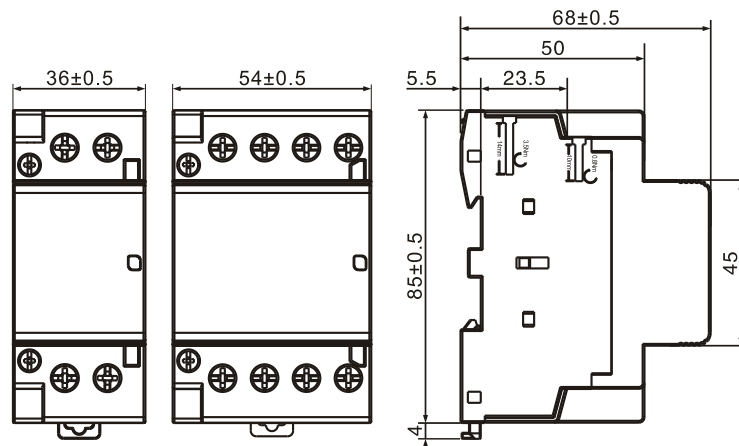
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7 Outline and installation dimensions

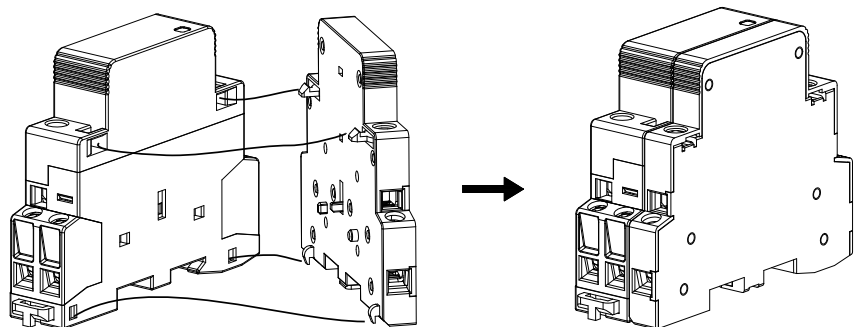
7.1 Outline and installation dimensions for TGCH1N-AS20/11/02, 16/20/25A



7.2 Outline and installation dimensions for TGCH1N-32/40/63A



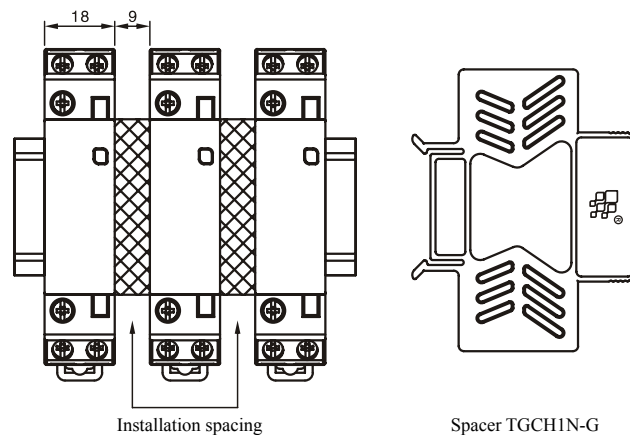
7.3 TGCH1N-AS11 auxiliary contact installation method



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8 Installation, operation and maintenance

- 8.1 Before installation, first check the actual use site satisfies the requirements of the purpose and application scope, technical parameters and normal working conditions and installation conditions of the contactor.
- 8.2 When installing, pull down the stopper of the contactor, put the contactor on the mounting rail, and then push the stopper upwards to fix the contactor onto the mounting rail without loosening or falling off. To remove the contactor, pull down the stopper for easy removal.
- 8.3 When wiring the contactor, extend the wire into the wiring hole, and then tighten the wiring screw allowing that the wire cannot be loosened or pulled out. The bare copper wire end cannot be exposed outside the wiring terminal.
- 8.4 When wiring the contactor, do not squeeze the wiring screws. The screwdriver used for tightening and loosening the screws should be appropriate to avoid to slip the screws by the pneumatic tools.
- 8.5 After checking that the wiring is correct, power on and off the coil several times when the main contact is not live, and check whether the product action is reliable before putting into operation.
- 8.6 For tight installation between the contactors and between the contactor and the circuit breaker, spacers (TGCH1N-G) must be installed for convenient heat dissipation (see Fig. 4); when the temperature in the power distribution box exceeds $+60^{\circ}\text{C}$, a derating of the contactor is required.



- 8.7 During operation of contactor, please check the wiring screw is tightened firmly regularly, and tighten any loose screw firmly; regularly remove dust from the surface of the housing to maintain good insulation of the housing; if found any large noise or failure of housing insulation during operation, please replace the product timely by a new one. The life shall be calculated according to the product working frequency and working time. When the product working times reaches (or is close to) the service life of the product, please place the product timely by a new one.

9 Warranty period

The warranty period of the contactor is 24 months from the date of shipment (refer to product certificate or production batch number). With the storage temperature ranged $-30^{\circ}\text{C} \sim +60^{\circ}\text{C}$, the product cannot be affected by rain, snow and direct sunlight. The product storage place should be ventilated and dry, and those must be re-checked if their storage period expires. The relevant quality regulations are available for any quality problem due to improper storage or no inspection when the storage period expires.

10 Order information

- 10.1 The following items must be specified when ordering: complete model and name of contactor, coil voltage, and order quantity.

- 10.2 Order example:

TGCH1N-2520 household AC contactor, coil voltage 230V 50/60Hz 24 sets, TGCH1N-AS11 10 sets.