
# HG-MS

## Magnetic Contactors & Overload Relays

HD HYUNDAI ELECTRIC

# Essential for Today, Potential for Tomorrow

HD Hyundai Electric solely pursues the growth of our customers' business. From power generation to power distribution, we focus on developing and commercializing products and solutions aimed at increasing the efficiency of energy equipment as well as at proactively monitoring and controlling assets in an integrated manner to improve our customers' productivity and management efficiency. We are well aware that our efforts add to the driving force behind our customers' growth and contribute to the creation and maintenance of a more dynamic world. We focus on achieving innovation and strive to evolve continuously to shape a better tomorrow based on today's technological advancement

# Solution

## INTEGRICT

**Energy Solution**

Energy solution business refers to the business of designing, procuring and establishing a system that enables the efficient use of power energy through integrated management of the production, consumption, sales and operation.

**Asset Management Solution**

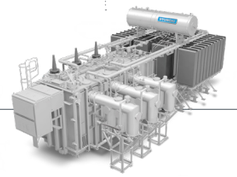
Asset management solution is a business that maximizes the overall business efficiency by systematically managing the performance, risk, maintenance cost and others as well as by providing an asset management solution suitable to the customer's circumstance depending on the product lifecycle (PLC) of various products.

# Utility

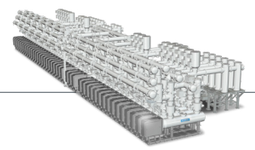
## Generation(step-up)

### Power Plants

- Supplied to more than 70 countries around the world for the past 45 over years since 1978
- Satisfies the various demands of customers through the acquisition of quality certifications from international accredited institute
- Participates in the world's key technical committee such as GIGRE and others, pioneering the establishment of technology standard related to power network



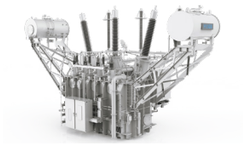
**Power Transformer**
· up to 800 kV, 1,500 MVA



**Gas Insulated Switchgear**
· up to 800 kV

- Can be installed in spaces smaller than the open type of substation by using $SF_6$ gas with outstanding insulation and arc extinguishing characteristics
- Manufacturing advanced products that are resistant to external environment and climate effects through the sealing at the charge part
- Extensive project experiences around the world
- Reduces installation period and cost due to simple installation and transportation, convenient maintenance
- Design considering the safety of the workers as priority

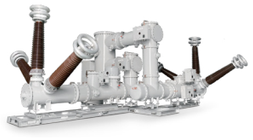
GREENTRIC



**ECO Transformer**
· up to 500 kV, 1,000 MVA

- Eco-friendly oil (Natural/Synthetic)
- Dynamic Pressure Resistant System(DPRS)
- Guarantees excellence in safety

GREENTRIC



**$SF_6$ Free Gas Insulated Switchgear**
· GIS for 170 kV 50 kA 60 Hz
· ECO GIS for 72.5 kV, 145 kV

- Korea's first solely developed technology
- Eco-friendly Novec mixture gas instead of $SF_6$ gas

## Transmission

### Primary Substation/Secondary Substation

**Gas Insulated Switchgear**
· up to 800 kV

**Power Transformer**
· up to 800 kV, 1,500 MVA

**Shunt Reactor**
· up to 765 kV, 300 Mvar

## Distribution

**Cubicle GIS**
· up to 40.5 kV
· IEC, ANSI, GOST, UL

- Produces high quality products using angle-less type
- Multi-functional digital protection relay (HiMAP) applied
- High reliability secured, provides various operation information such as protection, measurement and control
- Firm external box, size and compact, making it safe
- Maintains high quality through stringent quality control system and continuous research and development

## Motor & Generator

**Synchronous Generator**
· Rated Output: < 50 MVA
· Rated Voltage: < 15 kV
· Ploes: > 2P

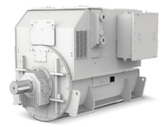
# Marine

## Marine Solution

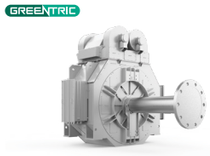
- Production of high quality marine devices satisfying the regulations and standards of key marine associations (LRS, ABS, DNV, GL, BV, NK etc.) and world's renowned institutes
- High quality safety secured through the latest equipment and stringent quality control system
- Realization of optimal high efficiency by converging SWGR, Generator, Motor, Telecom, Automation, Intelligent Motor Control Unit and others

Marine Switchgear

Marine Motor



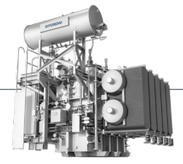
Generator



Shaft Generator

**Metal Clad Switchgear**
· up to 38 kV
· IEC, ANSI, UL

**Low Voltage Switchgear & Motor Control Center**
· H8PU : 480 V, 3,200 A, 65 kA
· H5600 : 480 V, 1,200 A, 65 kA
· HiMCC : 480 V, 5,000 A, 100 kA



**Distribution Transformer**
· up to 36 kV, 50 MVA

**Cast Resin Transformer**
· up to 36 kV, 20 MVA

**Synchronous Motor**
· Rated Output: < 40 MW
· Rated Voltage: < 15 kV
· Ploes: > 2P

**MV&HV Induction Motor**
· Rated Output: < 35 MW
· Rated Voltage: < 15 kV
· Poles: 2P-30P

**VCB**
· IEC, ANSI, UL
· up to 36/38 kV, 50 kA, 4,000 A

**ACB**
· AC : up to 150 kA, 6,300 A
up to 130 kA, 6,000 A
(UL1066, ANSI C37.13/16/17/50, CSA C22.2 no. 31)
· DC : up to 60 kA, 4,000 A

**VC**
· up to 12 kV, 400 A

**Switch-Disconnector**
· DC : up to 100 kA/1 s, 4,000 A

**HGMAP**
· HGMAP Series

**HGCAM**
· HGCAM Series

**MCCB**
· AC : up to 150 kA, 1,600 A
· DC : up to 100 kA, 800 A

**ELCB**
· up to 85 kA, 800 A, 1,000 mA

**MCCB / ELCB**
· up to 10 kA, 100 A, 100 mA

**MS / MC**
· up to 800 A

**Distribution Box**
· Up to 36 ways
· Surface/Flush type

**MCB**
· up to 15 kA, 125 A

**RCCB / RCBO**
· up to 100 A, 500 mA

**Isolator**
· up to 125 A

**Electronic Circuit Breaker**
· up to 20 A

**MMS**
· up to 100 kA, 80 A

**Fuse Links & Switches**
· up to 1,250 A

- Can be applied to various places of demand due to various domestic and international certifications and marine certifications
- Full HG-Series line-up established
- High standard of breaking capacity and various product line offers production in any load environments
- Increased reliability with reinforced breaking performance of high-breaking MCCB
- Reinforced usage stability through internal reliability verification

**Installation Contactor**
· up to 63 A

**SPD**
· up to 200 kA
· AC, DC

**HGDM**

**EOCR**
· up to 60 A

**LV Motor**
· Rated Output: < 750 kW
· Rated Voltage: < 690 V
· Poles: 2P-12P

- Enhanced reliability and secured safety with production of products based on the world's best equipment and stringent quality system
- Realized high efficiency by selecting slot based on FEM
- Realized small and lightweight with optimal design based on FEM analysis method
- Satisfies the quality standards of international accredited institutes (IEC, IEEE, CSA, NEMA, API etc.)

# HG
# MAGNETIC CONTACTORS & OVERLOAD RELAYS



MS

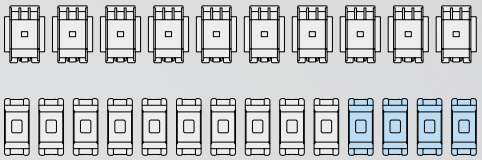
HG Series

# Magnetic Contactors & Overload Relays

Motor protection control solution that can be applied to various industrial equipment with strong durability and enhanced insulation performance!

## Reduced Installation Area with upper Auxiliary Contact Structure

**In the installation area for 10 units previously, 4 additional units can be installed with HG MC!**



## Various Product Ranges

18 AF ~ 800 AF (8 Frames)

## Rated Insulation Voltage (Ui)

HGC 50 A ~ 800 A

## Direct Connection with Overload Relay

HGT 18 AF ~ 800 AF

## Auxiliary Relay – Power Consumption Power Saving Type

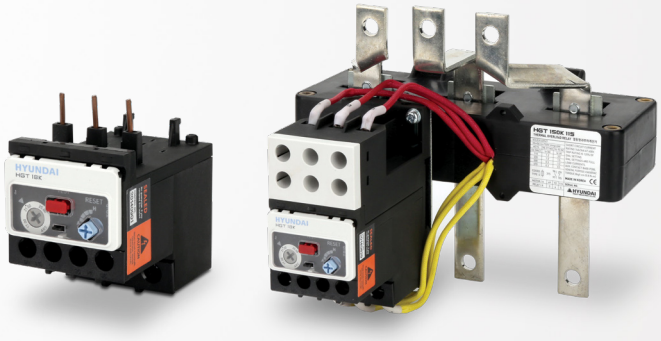
HGC DC : Permanent Magnet Applied

## TOR Safety Protection Cover and Separated Test, Reset Buttons

Removable cover has been applied for safety.

## AC/DC Free Voltage

HGC 115 A ~ 800 A




# Overview and Characteristics

## Product Characteristics

- Magnetic contactor is usually used for motor and equipment operation control and is applied to MCC and Thermal and Hydro power Panel.
- HD Hyundai provides a wide range of 9 A ~ 800 A of magnetic contactors and thermal/magnetic overload relays.

### User Convenience

- User-Centered Design
- Compact Product and Convenient Wiring/ Compatibility

### Product Design

- Modular, Compact Design
- 30 % Compact Compared to the Previous Model


### Technical Characteristics

- Optimized Structure
- IEC Standard

### Product Reliability

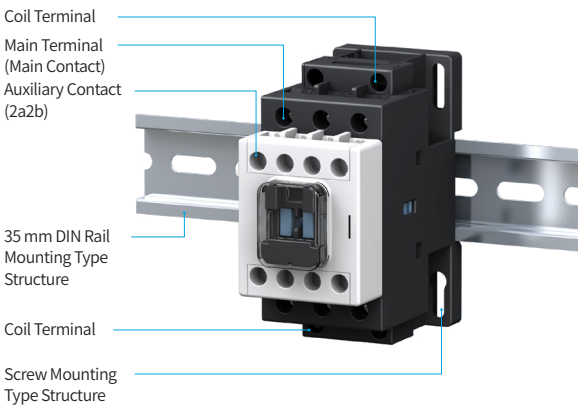
- Quality Stabilization
- Specialized Design and Product Structure

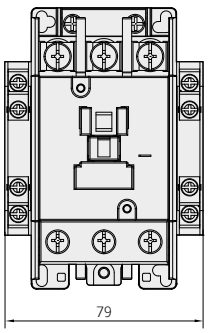
## User Convenience

- Up/down allocation of coil terminal
- Built-in auxiliary contact
  - HGC9 ~ HGC40 : 1a1b or 2a2b
  - HGC50 ~ HGC100 : 2a2b

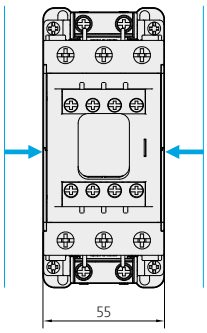
## Product Design

- Reduced installation area with upper auxiliary contact structure
  - Space for 10 units of UMC65 (Based on 2a2b)
    → 14 units of HGC65 can be mounted




UMC65AF



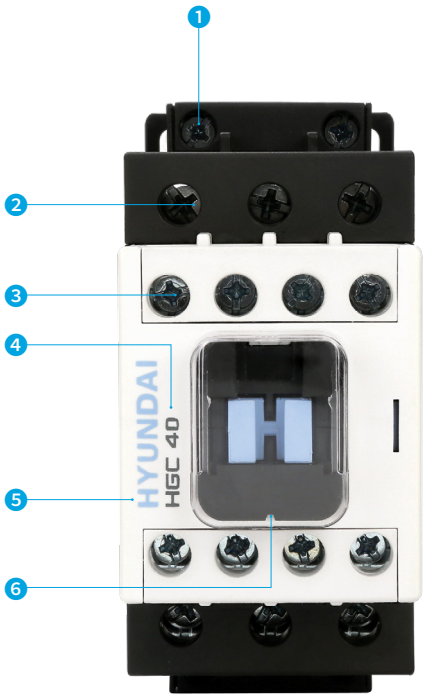

HGC65AF

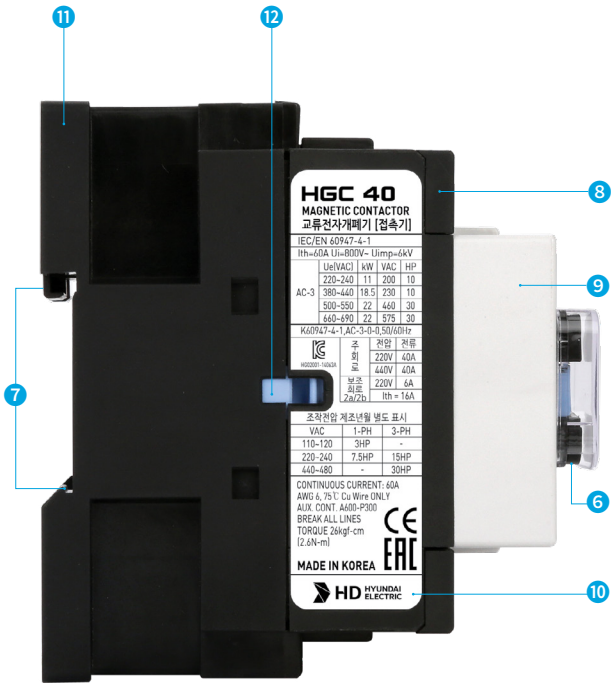
## Technical Characteristics

- IEC60947-4-1 (2012) applied
- CB/CCC/Classification Certificate (7) acquired

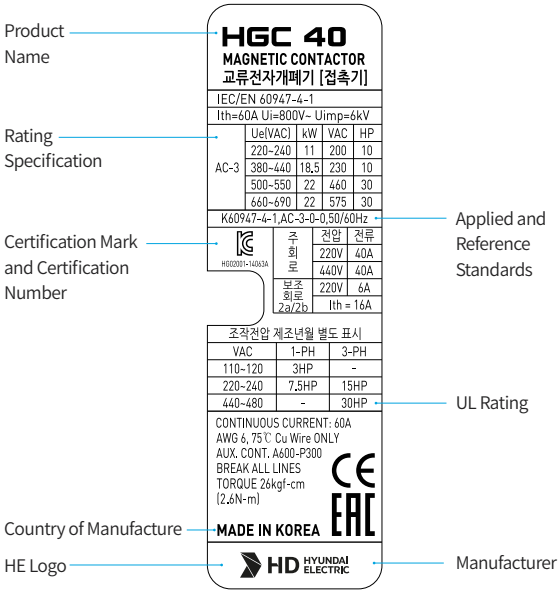
# Technical Data

## External Structure (Magnetic Contactor)




1. Control Power Terminal
2. Main Terminal
3. Auxiliary Terminal
4. Product Name
5. Manufacturer
6. Safety Cover
7. Din-Rail Mounting Part
8. Upper Frame
9. Upper Cover
10. Nameplate
11. Screw Mounting Hole
12. Mounting Hole for Auxiliary Devices



# External Structure (Thermal Overload Relay)

### Protection Cover

- The front of the operating mechanism is protected by a transparent cover so that the set current value and the reset operation method cannot be manipulated by object.
- To change the setting, lift the transparent cover.

### Test Button

- Pressing the test button during emergency stop during motor operation will open the contact with the magnetic contactor and stop the motor.
- When testing the contact operation of the thermal overload relay, if the test button is pulled up, the contact switching is made so that rapid test is possible.

### Current Setting Knob

The rated current setting can be set in 3 stages by using the +/-screw driver.

### Reset Button

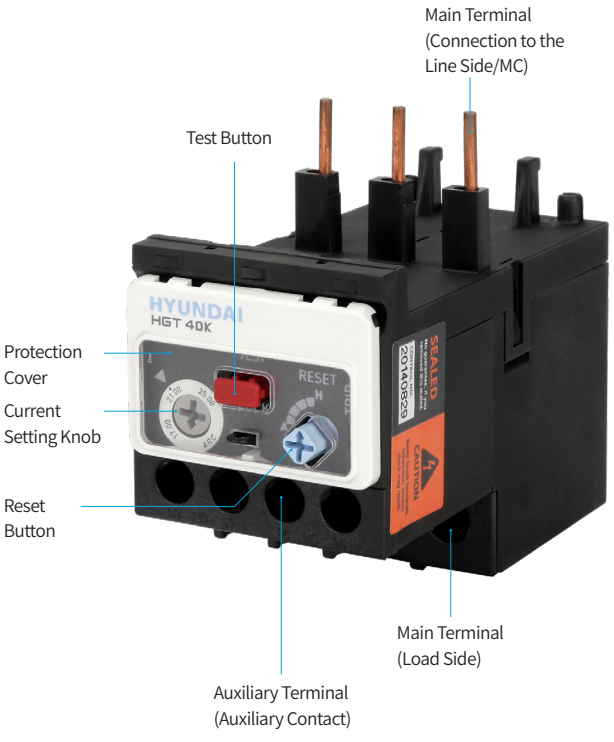
- A (Auto) Mode : Auto Reset
- H (Manual) Mode : Manual Reset

### Main Circuit Terminal

Screw type of terminal is the standard model.

### Safety Reinforcement of TOR

- Attachment of protection cover
  - Prevents operation by user negligence
  - Prevents test function during operation
- Separation of reset button and test button
  - Prevents malfunction



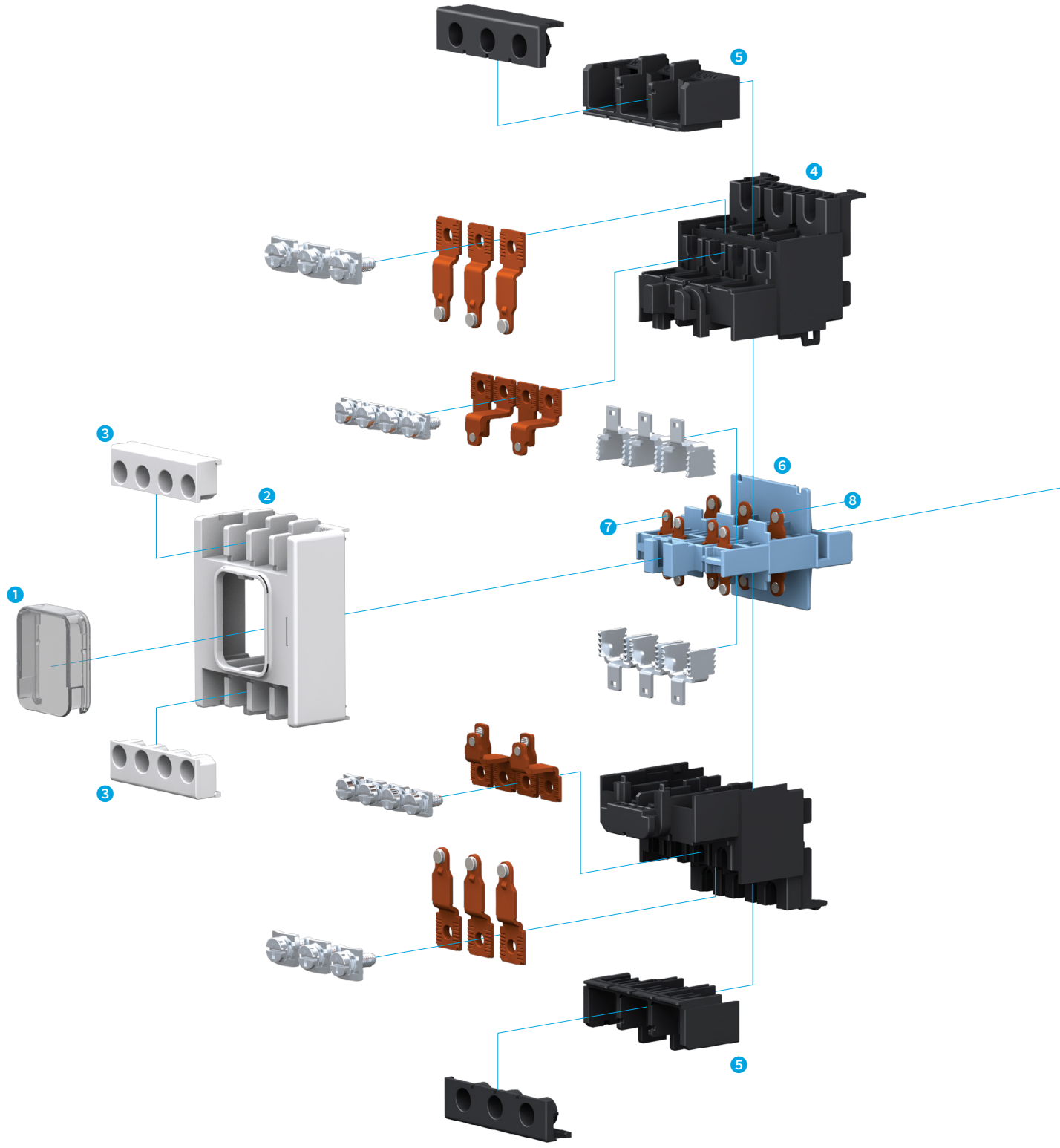

MC

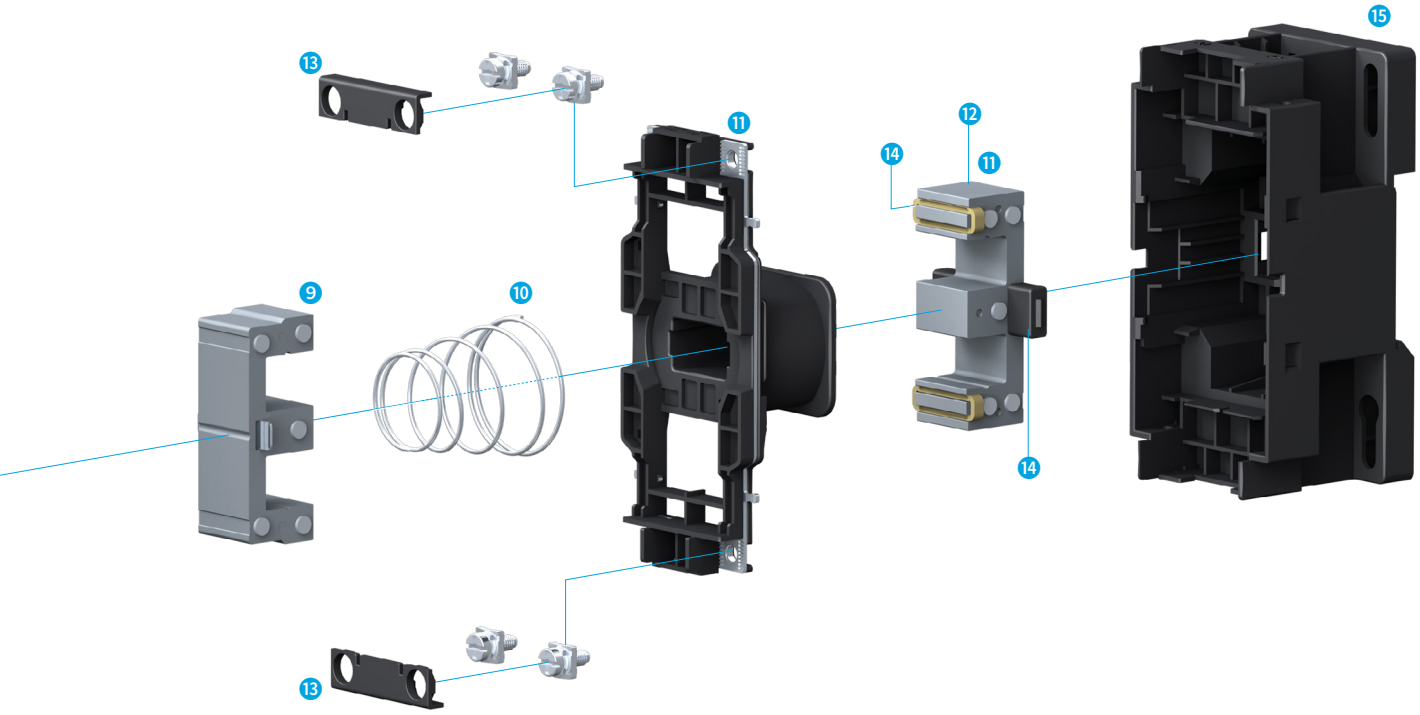
TOR

# Technical Data

## Internal Structure

**Magnetic Contactor [9 ~ 100 AF]**






1. Safety Cover : Safety cover that prevents the contact bridge from being pressed arbitrarily
2. Top Cover : Assembles arc chamber, auxiliary contact part is built in
3. Aux. Protection Cover : Safety cover to protect the user from auxiliary contact parts
4. Arc Chamber : Arc extinguishing device to prevent On/Off Arc
5. Screw Terminal : Device for mounting terminals
6. Contact Bridge : Assembled to a moving core and moving contact, it engages in on/off operation and the accessory mounting hole is built in
7. Aux. Contact : Operational part of the auxiliary contact terminal
8. Moving Contact : Operational part of the main contact terminal
9. Moving Core : When power is supplied to the coil, the moving core slides into the fixed core and the magnetic contact is closed
10. Return Spring : When the coil is de-energized, it separates the moving core from the fixed core
11. Coil Ass'y : The current flowing part to make the fixed core magnetized by supplying power
12. Fixed Core : The component that becomes magnetized when the power is supplied to the coil
13. Coil Protection Cover : Safety cover to protect the user from the current flowing part of the coil terminal
14. Rubber Damper : Device that absorbs the On/Off impact of the magnetic contact
15. Frame : Lower part of the magnetic contact built with the coil and fixed core

# Technical Data

## Magnetic Contactor [9 ~ 100 AF]

### Enhanced Safety

#### Front Protection Cover

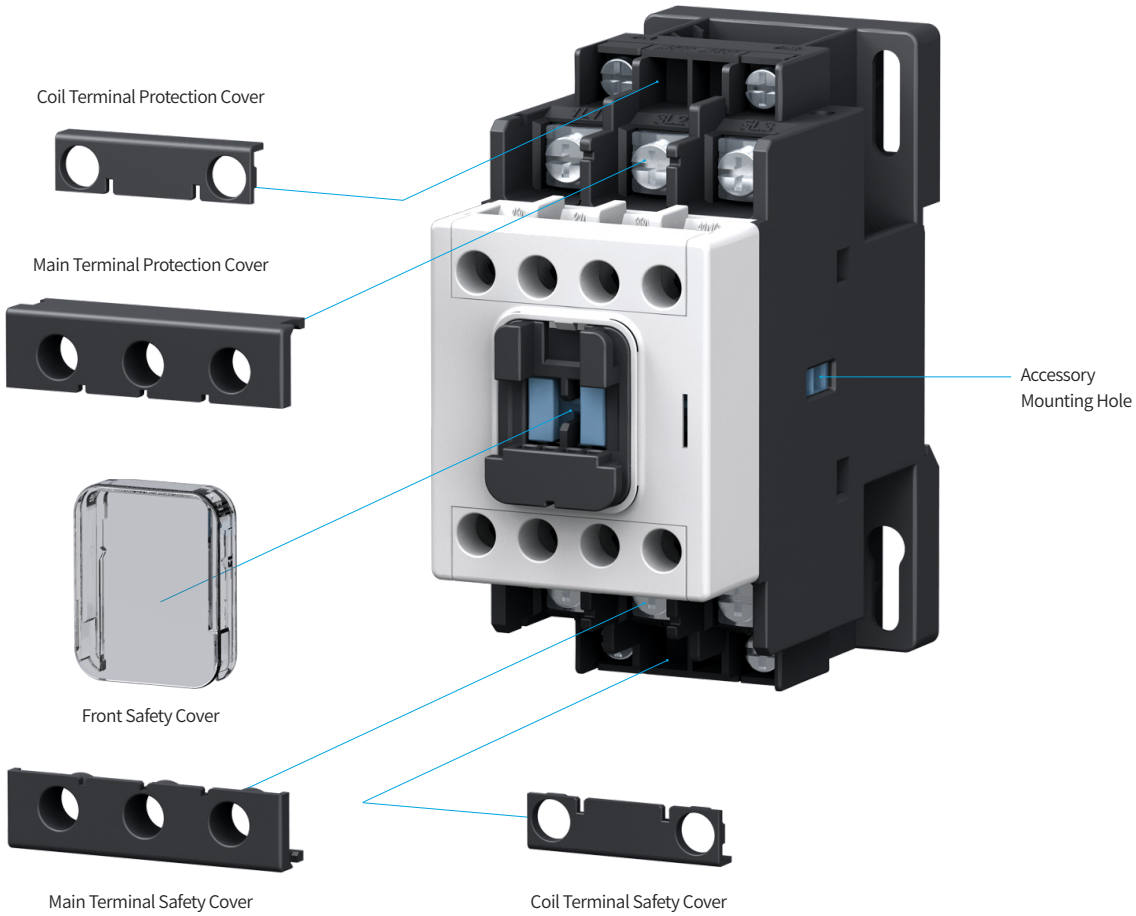
- Minimize the input of foreign substance
- Prevent malfunction caused by user's mistake

#### Enclosed Structure of Mounting Hole for Accessories

- Contact bridge creates sealed structure when MC is on/off

#### Removable Protection Cover

- For main terminal, auxiliary terminal, coil terminal
- Protection degree, IP20



## Improved Customer Convenience

### Built-In Upper Arrayed Auxiliary Contact

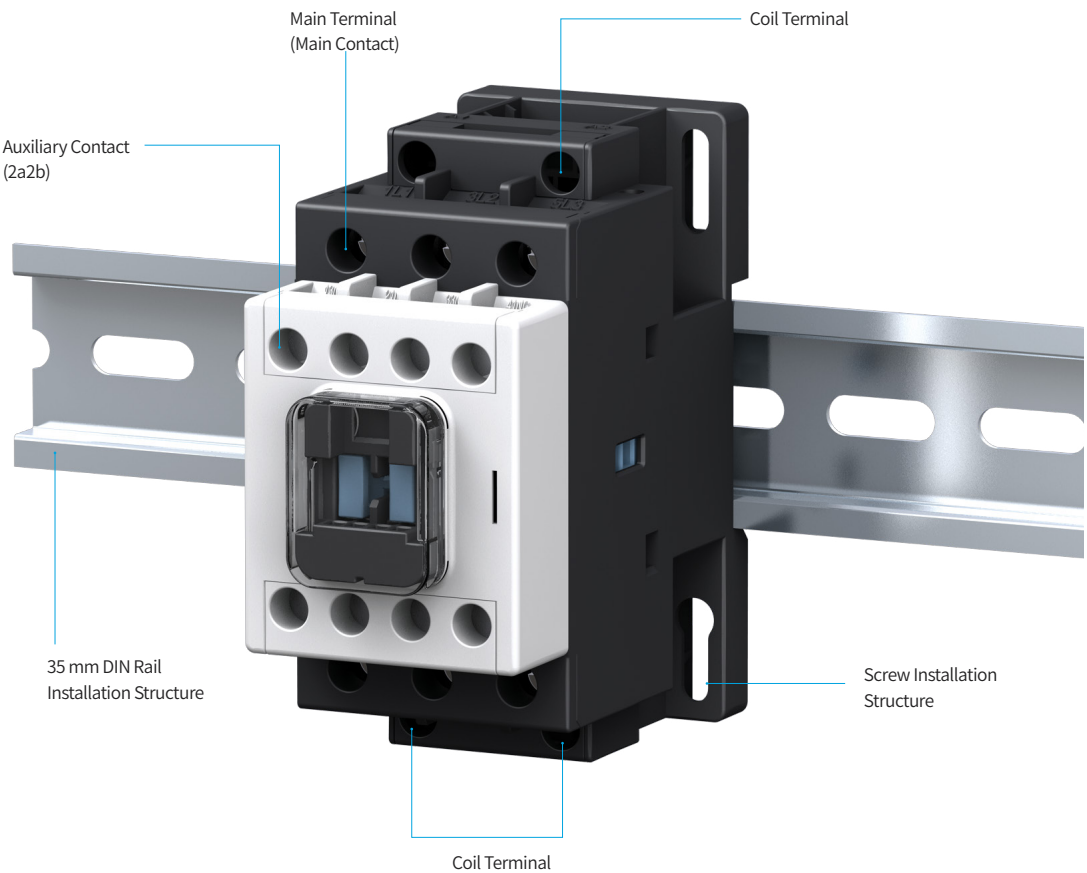
・2a2b standard built-in type easy wiring control circuit

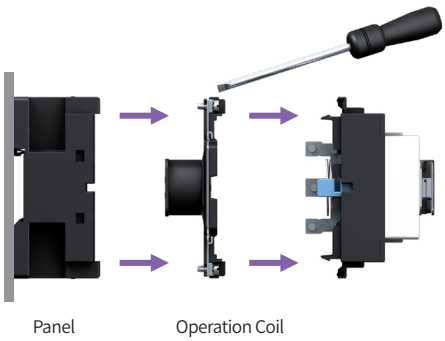
### Easy Coil Replacement Structure

・Easy separation and replacement when it is attached to the panel

### Various Mounting Methods

・Can be installed in Din Rail and Screw



# Technical Data

## Magnetic Contactor [115 ~ 800 AF]

### Convenient Replacement of Operational Coil

- Easy separation and replacement of operational coil when it is attached to the panel
- The method of fixing the coil unit using a plastic case
  - Minimize the movement of the coil unit

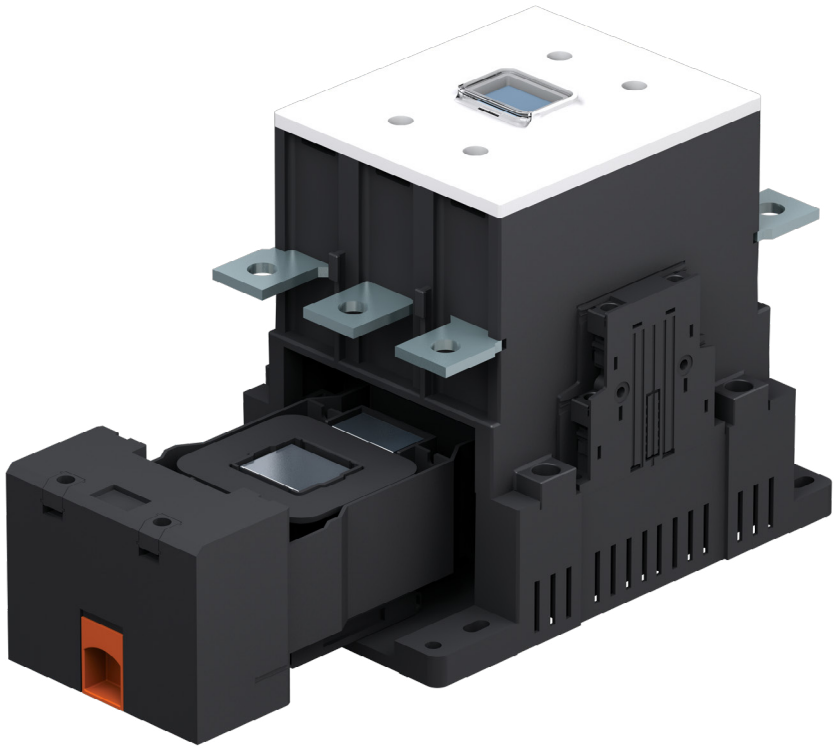
### Designed to Reduce Noise

- DC excitation method using magnetic circuit

### Free Voltage of Coil Operation Power

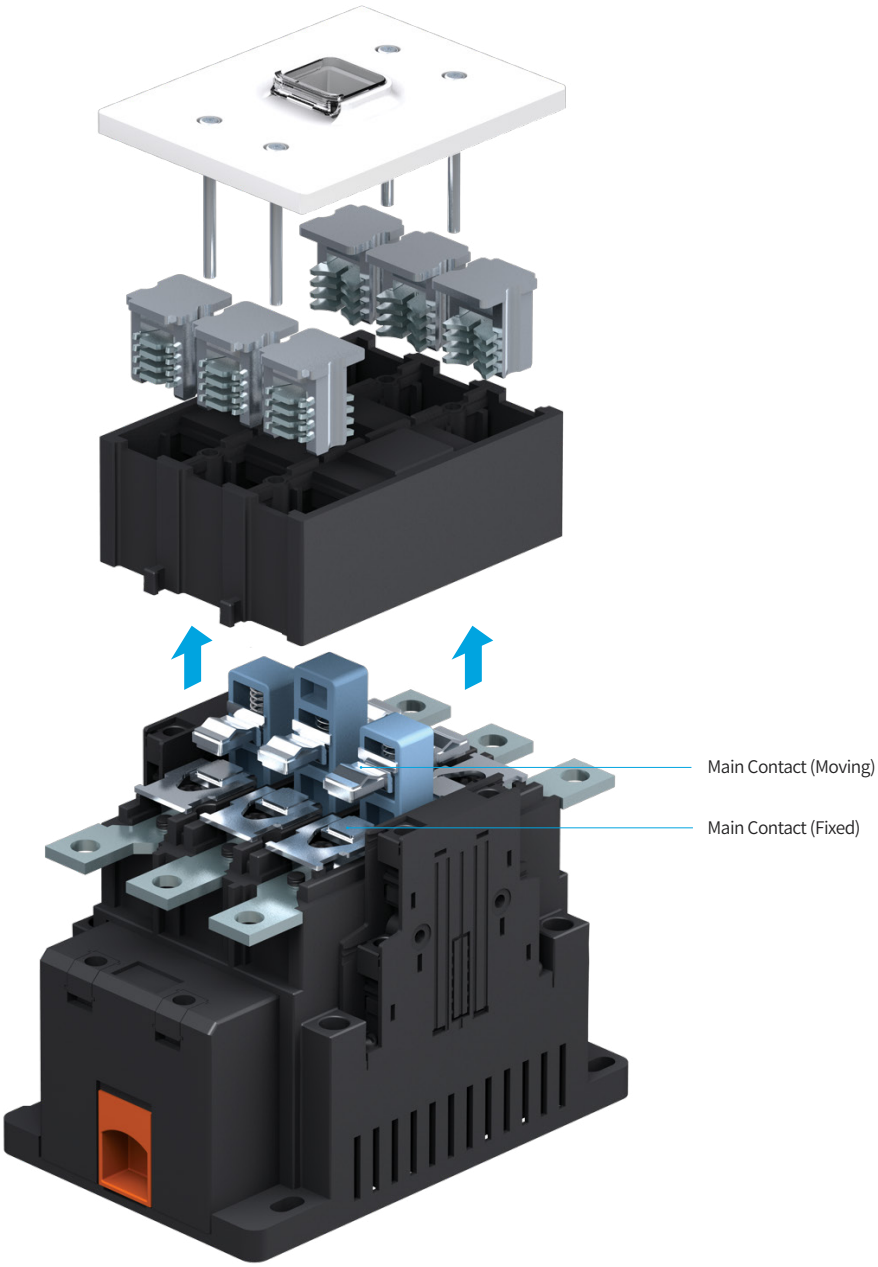
| Nominal Voltage | Rated Voltage (AC/DC) |
|---|---|
| 24 V | AC : 24 ~ 26 V, DC : 24 V |
| 48 V | AC : 44 ~ 52 V, DC : 48 V |
| 220 V | AC : 100 ~ 240 V, DC : 110 ~ 220 V |
| 440 V | AC : 380 ~ 450 V |

※ Based on HGC115 ~ 265



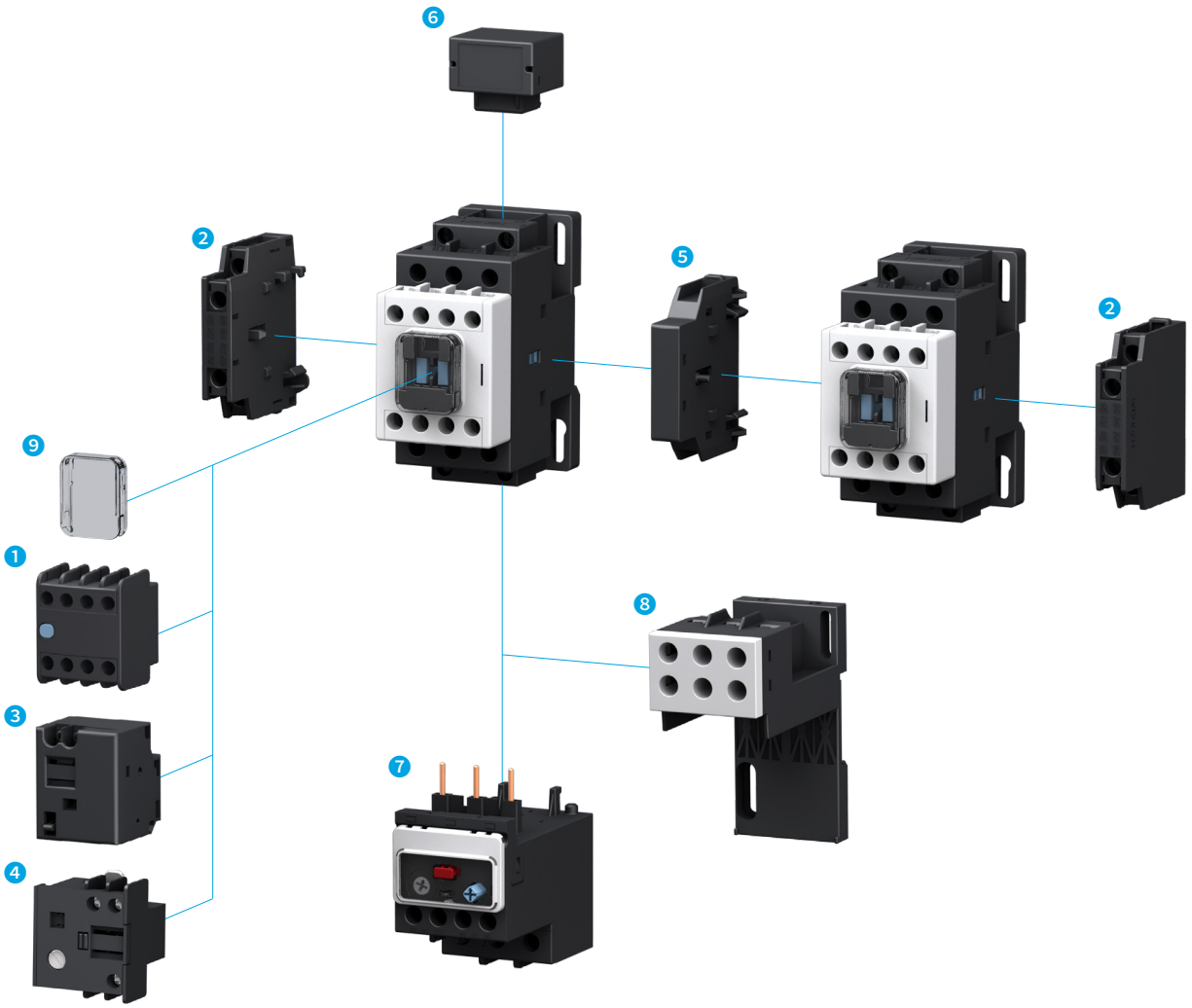
**Easy Maintenance and Replacement for Main Contacts**

- When the upper cover is removed, the main contact parts are revealed, enabling easy inspection and replacement of them from outside.



# Technical Data

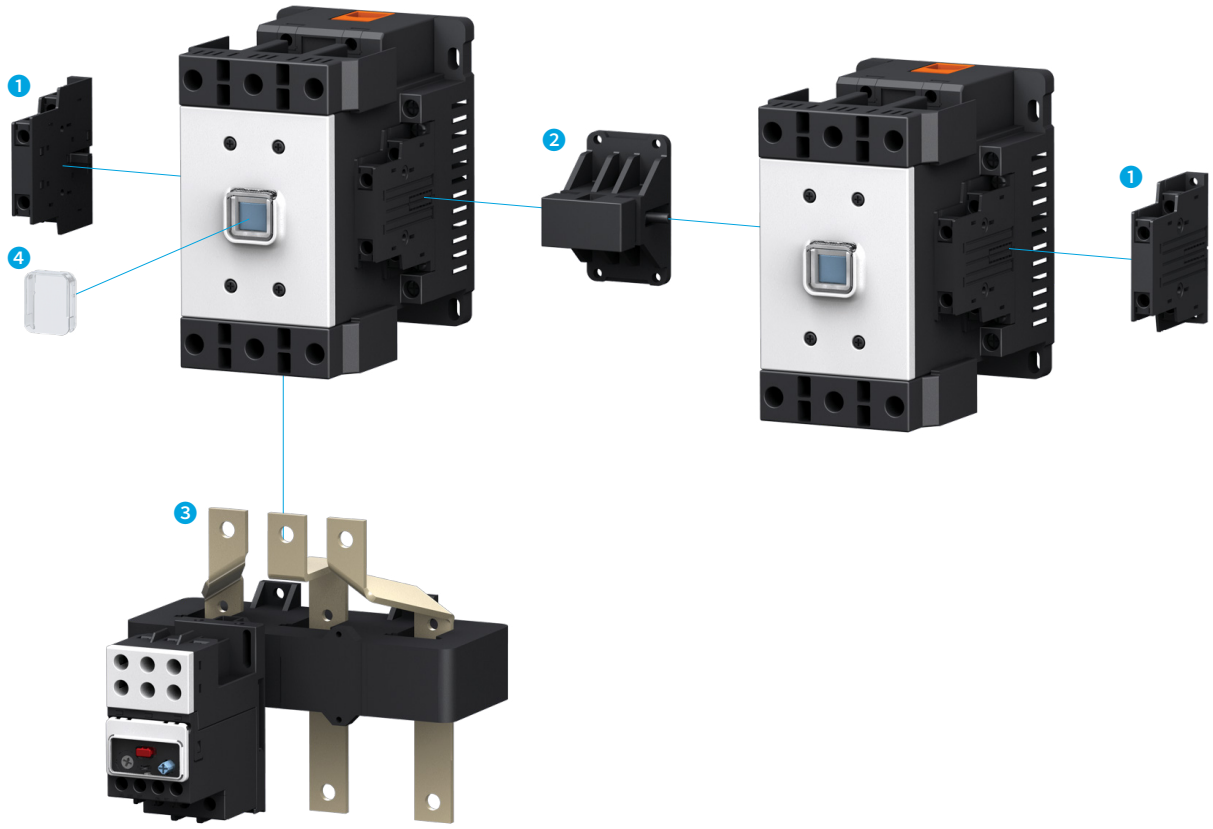
## Accessories of Magnetic Contactor [9 ~ 100 AF]




**9 ~ 100 AF Accessories**

1. Auxiliary Contact Block (Front) HGC TB
2. Auxiliary Contact Block (Side) HGC SB
3. Mechanical Latching Block HGC LB 100
4. Timer HGC ET
5. Interlock Unit HGC IU
6. Surge Absorber HGC RC/CD
7. Thermal Overload Relay HGT
8. Installation Unit HGTMB
9. Front Protection Cover HGCFC 100

## Accessories of Magnetic Contactor [115 ~ 800 AF]




**115 ~ 800 AF Accessories**

1. Auxiliary Contact Block HGC SB
2. Interlock Unit HGC IU
3. Thermal Overload Relay HGT
4. Front Protection Cover HGCFC

# Technical Data

## Operational Coil Ratings

### HGC

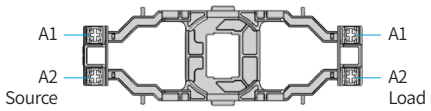
| Magnetic Contactor Model Name | | | | HGC9 | HGC12 | HGC18 | HGC25 | HGC32 | HGC40 | HGC50 | HGC65 | HGC75 | HGC85 | HGC100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Power Consumption** | | | | | | | | | | | | | | |
| AC, DC | AC Operation (220 V/60 Hz) | Closed | VA | 80 | 80 | 80 | 80 | 80 | 80 | 200 | 200 | 300 | 300 | 300 |
| | | Maintained | VA/W | 11/2.75 | 11/2.75 | 11/2.75 | 11/2.75 | 11/2.75 | 11/2.75 | 16/5.3 | 16/5.3 | 25/10 | 25/10 | 25/10 |
| | DC Operation | Closed | W | 10 | 10 | 10 | 10 | 10 | 10 | 200 | 200 | 350 | 350 | 350 |
| | | Maintained | W | 10 | 10 | 10 | 10 | 10 | 10 | 5 | 5 | 8 | 8 | 8 |
| Both AC·DC | AC Operation (220 V/60 Hz) | Closed | VA | - | - | - | - | - | - | - | - | - | - | - |
| | | Maintained | VA/W | - | - | - | - | - | - | - | - | - | - | - |
| | AC Operation (110 V/60 Hz) | Closed | VA | - | - | - | - | - | - | - | - | - | - | - |
| | | Maintained | VA/W | - | - | - | - | - | - | - | - | - | - | - |
| | DC Operation | Closed | W | - | - | - | - | - | - | - | - | - | - | - |
| | | Maintained | W | - | - | - | - | - | - | - | - | - | - | - |
| **Operating Time** | | | | | | | | | | | | | | |
| AC, DC | When Closed, Coil On → Main Contact On | AC | msec | 12 ~ 30 | 12 ~ 30 | 12 ~ 30 | 12 ~ 30 | 12 ~ 30 | 12 ~ 30 | 9 ~ 18 | 9 ~ 18 | 15 ~ 30 | 15 ~ 30 | 15 ~ 30 |
| | | DC | | 45 ~ 55 | 45 ~ 55 | 45 ~ 55 | 45 ~ 55 | 45 ~ 55 | 45 ~ 55 | 10 ~ 18 | 10 ~ 18 | 15 ~ 30 | 15 ~ 30 | 15 ~ 30 |
| Both DC·AC | | AC | | - | - | - | - | - | - | - | - | - | - | - |
| | | DC | | - | - | - | - | - | - | - | - | - | - | - |
| AC, DC | When Blocked, Coil Off → Main Contact Off | AC | | 8 ~ 15 | 8 ~ 15 | 8 ~ 15 | 8 ~ 15 | 8 ~ 15 | 8 ~ 15 | 13 ~ 20 | 13 ~ 20 | 13 ~ 20 | 13 ~ 20 | 13 ~ 20 |
| | | DC | | 6 ~ 18 | 6 ~ 18 | 6 ~ 18 | 6 ~ 18 | 6 ~ 18 | 6 ~ 18 | 13 ~ 20 | 13 ~ 20 | 13 ~ 20 | 13 ~ 20 | 13 ~ 20 |
| Both DC·AC | | AC | | - | - | - | - | - | - | - | - | - | - | - |
| | | DC | | - | - | - | - | - | - | - | - | - | - | - |

**Type of Operation Coil Voltage**

1. Voltage : 85 ~ 110 %
   (Drop-out Voltage : 20 ~ 60%)
2. Exceeding the rated voltage causes damage in coil and electronic parts, ultimately reducing the product performance.
3. If operational voltage other than the rated voltage is required, it can be customized. Contact our company upon order.

| Item | Operational Voltage |
|---|---|
| AC 50 Hz | 24, 48, 110, 120, 220, 240, 380, 440 V |
| AC 60 Hz | 24, 48, 110, 120, 220, 240, 380, 440 V |
| DC | 24, 48, 110, 125, 220 V |

※ The operating time of the product for both DC/AC is the average data based on AC 220 V 60 Hz, DC 110 V. As for HGC9-100, the A1 and A2 terminal at the live and load side is not separately respectively and as it is common (connected), ensure that short-circuit does not occur during wiring.




## Auxiliary Contact Ratings

**IEC 60947**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Rated Insulation Voltage (Ui) | AC 750 V | | | | | | | |
| Rated Operational Current (Ith) | 16 A | | | | | | | |
| Minimum load | 10 mA at 24 V DC | | | | | | | |
| Rated Current | AC12 (Resistive Load) | | AC15 (Coil Load) | | DC12 (Resistive Load) | | DC13 (Coil Load) | |
| | 110 V | 10 A | 110 V | 6 A | 24 V | 4 A | 24 V | 4 A |
| | 220 V | 8 A | 220 V | 4 A | 48 V | 2.5 A | 48 V | 2.5 A |
| | 440 V | 6 A | 440 V | 3 A | 125 V | 1.1 A | 125 V | 1.1 A |
| | 690 V | 2 A | 690 V | 2 A | 220 V | 0.3 A | 250 V | 0.3 A |

| HGC115 | HGC130 | HGC150 | HGC185 | HGC225 | HGC265 | HGC300 | HGC400 | HGC500 | HGC630 | HGC800 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - |
| 530 | 530 | 530 | 360 | 360 | 360 | 390 | 390 | 390 | 1,700 | 1,700 |
| 14/7.2 | 14/7.2 | 14/7.2 | 15/9.4 | 15/9.4 | 15/9.4 | 18/11.2 | 18/11.2 | 18/11.2 | 54/33.5 | 54/33.5 |
| 240 | 240 | 240 | 250 | 250 | 250 | 250 | 250 | 250 | 850 | 850 |
| 3.3/2.1 | 3.3/2.1 | 3.3/2.1 | 6.4/4.4 | 6.4/4.4 | 6.4/4.4 | 6.4/4.4 | 6.4/4.4 | 6.4/4.4 | 10.5/8 | 10.5/8 |
| 193 | 193 | 193 | 420 | 420 | 420 | 420 | 420 | 420 | 850 | 850 |
| 2.6 | 2.6 | 2.6 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 3.4 | 9.5 | 9.5 |
| | | | | | | | | | | |
| - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - |
| 40 ~ 80 | 40 ~ 80 | 40 ~ 80 | 40 ~ 80 | 40 ~ 80 | 40 ~ 80 | 40 ~ 80 | 40 ~ 80 | 40 ~ 80 | 45 ~ 150 | 45 ~ 150 |
| 70 ~ 80 | 70 ~ 80 | 70 ~ 80 | 35 ~ 45 | 35 ~ 70 | 35 ~ 70 | 35 ~ 70 | 35 ~ 70 | 35 ~ 70 | 45 ~ 150 | 45 ~ 150 |
| - | - | - | - | - | - | - | - | - | - | - |
| - | - | - | - | - | - | - | - | - | - | - |
| 18 ~ 25 | 18 ~ 25 | 18 ~ 25 | 40 ~ 50 | 40 ~ 50 | 40 ~ 50 | 35 ~ 50 | 35 ~ 50 | 35 ~ 50 | 45 ~ 150 | 45 ~ 150 |
| 15 ~ 20 | 15 ~ 20 | 15 ~ 20 | 35 ~ 45 | 35 ~ 45 | 35 ~ 45 | 35 ~ 45 | 35 ~ 45 | 35 ~ 45 | 45 ~ 150 | 45 ~ 150 |

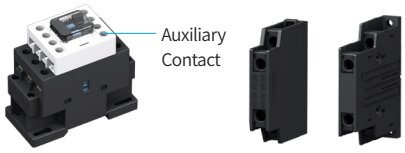
AC/DC

| Nominal Voltage | AC | DC |
|---|---|---|
| 220 V | 100 ~ 240 V | 110 ~ 220 V |
| 440 V | 380 ~ 450 V | - |

AC/DC

| Nominal Voltage | AC | DC |
|---|---|---|
| 110 V | 100 ~ 127 V | 100 ~ 110 V |
| 220 V | 200 ~ 240 V | 200 ~ 220 V |
| 440 V | 380 ~ 450 V | - |

## UL and CSA

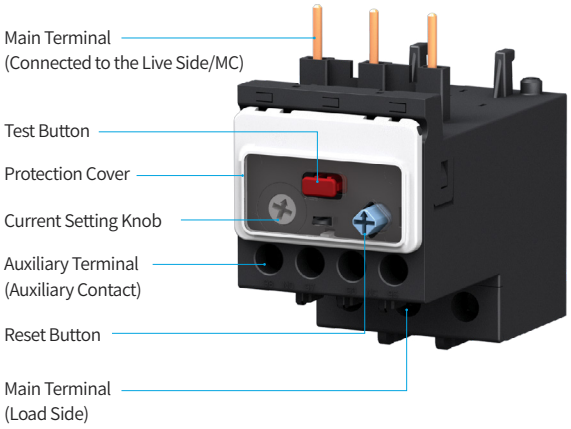


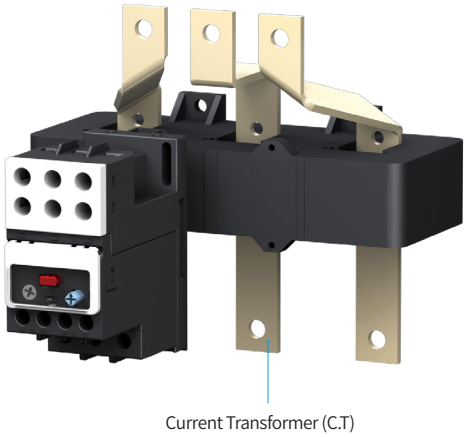

| Current | 16 A | | | |
|---|---|---|---|---|
| Minimum load | 10 mA at 24 V DC | | | |
| | AC | | DC | |
| Rated Current | 120 V | 6 A | 125 V | 1.1 A |
| | 240 V | 3 A | 250 V | 0.3 A |
| | 480 V | 1.5 A | 440 V | 0.2 A |
| | 600 V | 1.2 A | 600 V | 0.2 A |

※ Contact Rating Code : A600 ~ P150

# Technical Data

## Structure and Characteristics of Thermal Overload Relay




### Test Button

- Pressing the test button for emergency stop during motor operation will open the magnetic contact and stop operation.
- To test the contact operation of the thermal overload relay, the test button can be pulled up to change the contact status for prompt testing. The voltage supplied for the power consumption of the coil, capacitance of control circuit and others need to be reviewed to apply an appropriate conductor length within the limit.

### Reset Button

- A (Auto) Mode : Auto Reset
- H (Manual) Mode : Manual Reset


### Protection Cover

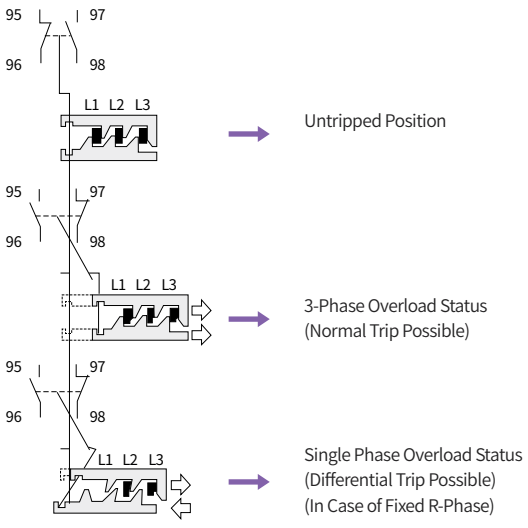
- The front of the operating side is covered with a transparent protection cover so that the current value setting and reset operating method cannot be changed arbitrarily.
- To change the setting, lift the transparent cover up.

### Current Setting Knob

The rated current setting can be set in 3 stages by using the +/-screw driver.

### Wiring Protection : Differential Trip Device

As seen in the figure, if only the S, T-phase bimetal are curved because R phase is in open position, the lower slide is moved by the S, T phase bimetal. As for the trip lever, only the end part moves as much as the transfer ratio of upper and lower slide and it can be contacted with trip device. This is tripped at shorter period compared with the 3-phase overload state. This is equivalent for the wiring of S, T-phase.



## Selection

### In Case the Starting Time is Short

- In case of squirrel-cage type of motor with starting time within a few seconds, the selection of overload relay can be selected by referring to the selection table and ratings of the overload relay. I such a case, the rated current of the motor must be selected within the current scale scope of the overload relay. The starting time of the rotating device with big inertia is an important factor in selecting the nominal rating of the overload relay.
- In case the starting time of the motor is 6~7 times the rated current, the trip time of the overload relay can be realized in the characteristic curve and this trip time must be selected as approximately 125 % of the start-up time.

### In Case the Starting Time is Long

- In case the starting time is longer than the trip time of the HGT18, the HGT Type with the current converter (C.T) must be used.
- The current converter is included in the arrangement of the rated current flowing to the first converter so the overload relay is not tripped during the starting time of the motor and in the lower rated current range, the live wire at the primary current converter has to be wired several times to obtain the time delay characteristics.

**Current Setting Ratio Following the Number of Wirings (Ex.：130 A)**

| No. of Wirings | Current Range | 1st, 2nd Current Ratio |
|---|---|---|
| 1 | 78 ~ 130 | 130/5 |
| 2 | 39 ~ 65 | 65/5 |
| 3 | 26 ~ 26.7 | 26.7/5 |
| 4 | 19.5 ~ 43.3 | 43.3/5 |
| 5 | 15.6 ~ 26 | 26/5 |
| 6 | 13 ~ 21.7 | 21.7/5 |
| 7 | 11.14 ~ 18.5 | 18.5/5 |
| 8 | 9.75 ~ 16.25 | 16.25/5 |

$$\text{Setting Current (A)} = \frac{\text{Motor's Rated Current}}{\text{Current Converter's Current}}$$

The secondary rated current of the current converter is 5 A and as for the overload relay, it can be adjusted up to 3 ~ 5 A.
The setting current value of this range can be calculated as below.

**Auxiliary Contact's Closed Circuit and Short-Circuit Current**

| Item per Category | AC15 1) | |
|---|---|---|
| Voltage (V) | Auxiliary Contact 95 ~ 96 | Auxiliary Contact 97 ~ 98 |
| | Ie (A) | Ie (A) |
| 110 | 2 | 1.2 |
| 220 | 1.5 | 1 |
| 500 | 1 | 0.5 |
| 660 | 0.5 | 0.3 |

| Item per Category | DC13 2) | |
|---|---|---|
| Voltage (V) | Auxiliary Contact 95 ~ 96 | Auxiliary Contact 97 ~ 98 |
| | Ie (A) | Ie (A) |
| 24 | 1 | 1 |
| 110 | 0.4 | 0.4 |
| 220 | 0.15 | 0.15 |
| 440 | 0.07 | 0.07 |

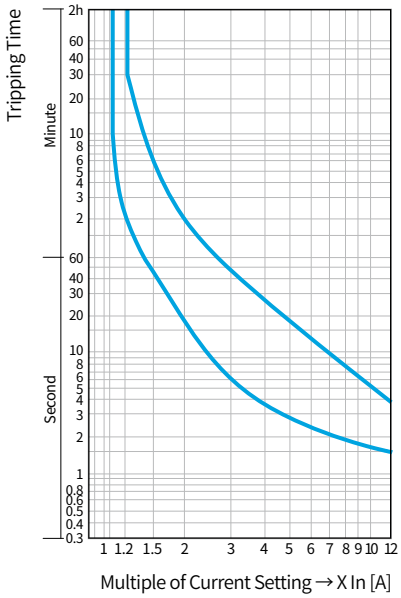
※ 1) AC15：Closed circuit and short-circuit current = Ie×10
2) DC13：Closed circuit and short-circuit current = Ie×1.1

# Technical Data

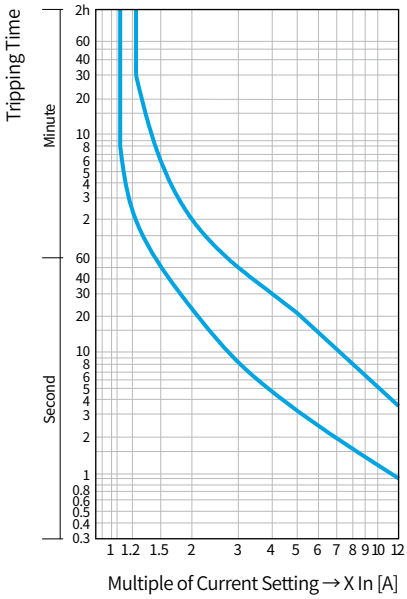
## Characteristic Curve of Thermal Overload Relay

- The trip curve at 3-phase overload indicates the average trip time based on the ambient temperature of 20 °C Cold Start. (Hot Start : 20 ~ 40 % of Cold Start).
- The trip curve at wiring overload has the trip time of about 40 ~ 60 % of the 3-phase overload trip time.

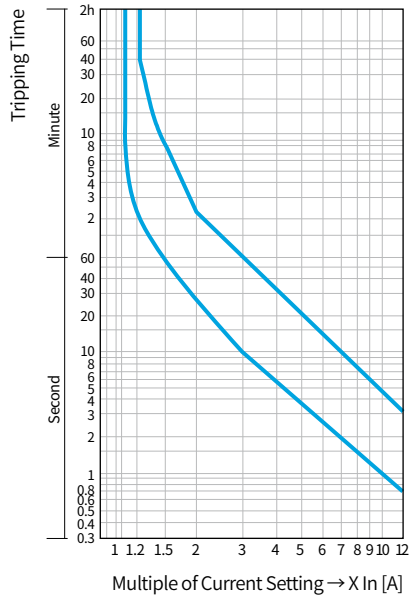
### HGT18K



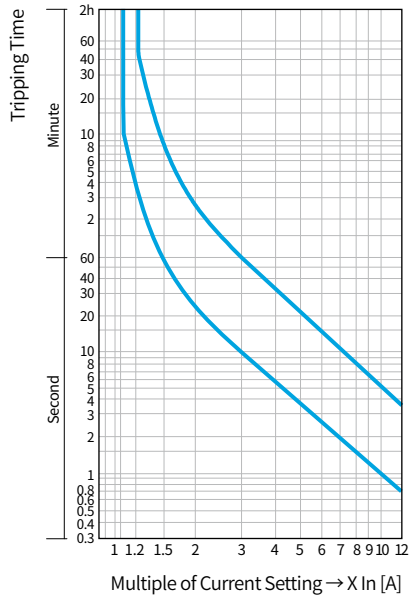

### HGT40K



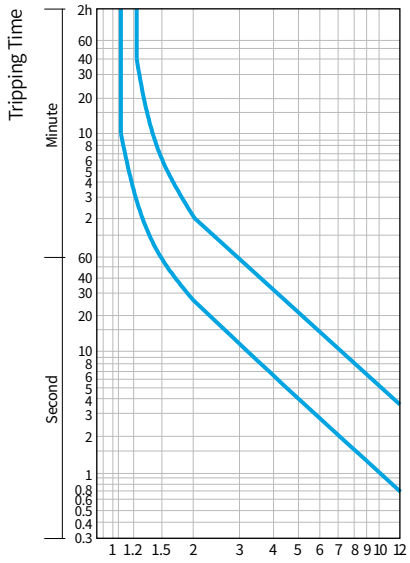

### HGT65K



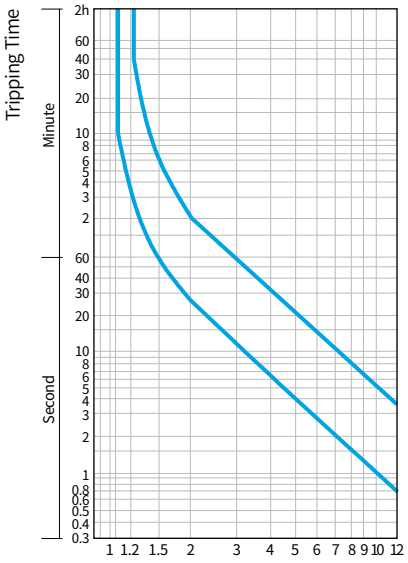

### HGT100K



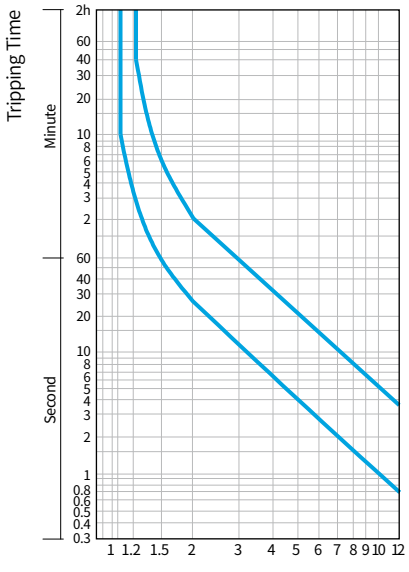
## HGT150K



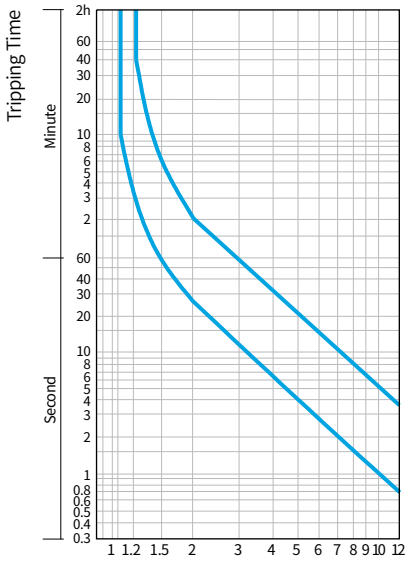

## HGT265K




## HGT400K




## HGT800K



# Technical Data

## Connectable Wire and Fastening Torque

### Main Circuit

| Type | Size of Main Terminal | Stranded + Pin Terminal ($mm^2$) | | Single Wire ($mm^2$) | Stranded Wire ($mm^2$) | Max. Terminal Width (mm) | Fastening Torque [kgf.cm] |
|---|---|---|---|---|---|---|---|
| HGC9/12/18 | M4 | 1…10 | 1…6 | 1…10 | 1…10 | 10 | 15 |
| HGC25/32/40 | M5 | 1…10 | 1…6 | 2.5…16 | 2.5…16 | 12 | 26 |
| HGC50/65 | M6 | N/A | | 6…25 | 6…25 | 13 | 40 |
| HGC75/85/100 | M8 | N/A | | 10…50 | 10…50 | 17 | 60 |
| HGC115/130/150 | | N/A | | 35…95 | 35…95 | 25 | |
| HGC185/225/265 | M10 | N/A | | 50…185 | 50…185 | 25 | 100 |
| HGC300 | M12 | N/A | | 95…240 | 95…240 | 30 | 140 |
| HGC400 | | N/A | | 185 ~ 185×2 | 185 ~ 185×2 | 30 | |
| HGC500 | | N/A | | 185 ~ 240×2 | 185 ~ 240×2 | 30 | |
| HGC630 | | N/A | | 240 ~ 240×2 | N/A | 40 | |
| HGC800 | | N/A | | 2×busbar (60×5) | N/A | 40 | |
| HGC9 ~ 800Aux/Coil | M3.5 | 0.5…5.5 | | 0.75…5.5 | 0.75…5.5 | 7.5 | 12 |

## Characteristics and Applications

The ratings of magnetic contactor is determined by the rated thermal current (Ith), rated operating (Ie), rated making and breaking capacity, electrical and mechanical lifespan and application category.

| | | |
|---|---|---|
| IEC 60947 | AC1 | Non-inductive or slightly inductive loads, resistance furnaces |
| | AC2 | Slip-ring motor : starting, switching off |
| | AC3 | Squirrel cage motor : Starting, switching |
| | AC4 | Squirrel cage motor : Starting, reverse-phase plugging and inching |
| | AC12 | Control of resistive load |
| | AC15 | Control of coil load |
| | DC1 | Non-inductive or slightly inductive load, resistance furnaces |
| | DC3 | Shunt motor : Starting, reverse-phase plugging and inching |
| | DC5 | Series motor : Starting, reverse-phase plugging and inching |
| | DC12 | Control of resistive load |
| | DC13 | Control of coil load |

### Rating Classification per Category based on Closing and Short-Circuit Current

| Category | Closing | | | | Closing and Short-Circuit | | | |
|---|---|---|---|---|---|---|---|---|
| | Current | Voltage | Power Factor | Cycle | Current | Voltage | Power Factor | Cycle |
| AC1 | - | - | - | - | 1.5 Ie | 1.05 Ue | 0.8 | 50 |
| AC2 | - | - | - | - | 4.0 Ie | 1.05 Ue | 0.65 | 50 |
| AC3 | 10.0 Ie | Ue | 0.45 (≤100 A) | 50 | 8.0 Ie | 1.05 Ue | 0.45 (≤100 A) | 50 |
| AC4 | 12.0 Ie | Ue | 0.35 (>100 A) | 50 | 10.0 Ie | 1.05 Ue | 0.35 (>100 A) | 50 |
| AC15 | - | - | - | - | 10.0 Ie | 1.10 Ue | 0.3 | 10 |
| DC1 | - | - | - | - | 1.5 Ie | 1.05 Ue | 1 | 50 |
| DC3 | - | - | - | - | 4.0 Ie | 1.05 Ue | 2.5 | 50 |
| DC5 | - | - | - | - | 4.0 Ie | 1.05 Ue | 15 | 50 |
| DC13 | - | - | - | - | 1.1 Ie | 1.10 Ue | 6P | 10 |

### Rating Classification per Category based on Operating Test

| Category | Closing and Short-Circuit | | | | |
|---|---|---|---|---|---|
| | Current | Voltage | Power Factor | On-Time | Cycle |
| AC1 | 1.0 Ie | 1.05 Ue | 0.8 | 0.05 secs | 6,000 |
| AC2 | 2.0 Ie | 1.05 Ue | 0.65 | 0.05 secs | 6,000 |
| AC3 | 2.0 Ie | 1.05 Ue | 0.45 (Ie≤100 A) | 0.05 secs | 6,000 |
| AC4 | 6.0 Ie | 1.05 Ue | 0.35 (Ie>100 A) | 0.05 secs | 6,000 |
| AC15 | 10.0 Ie | 1.10 Ue | 0.3 | 0.05 secs | 6,000 |
| DC1 | 1.0 Ie | 1.05 Ue | 1 | 0.05 secs | 6,000 |
| DC3 | 2.5 Ie | 1.05 Ue | 2 | 0.05 secs | 6,000 |
| DC5 | 2.5 Ie | 1.05 Ue | 7.5 | 0.05 secs | 6,000 |
| DC13 | 1.1 Ie | 1.10 Ue | 6P | 0.05 secs | 6,000 |

### Rating Classification per Category based on Electrical Lifespan

| Category | Closing | | | Breaking | | |
|---|---|---|---|---|---|---|
| | Current | Voltage | Power Factor | Current | Voltage | Power Factor |
| AC1 | 1.0 Ie | 1 Ue | 0.95 | 1 Ie | 1 Ue | 0.95 |
| AC2 | 2.5 Ie | 1 Ue | 0.65 | 2.5 Ie | 1 Ue | 0.65 |
| AC3 | 6.0 Ie | 1 Ue | 0.65 (Ie≤17 A) | 6 Ie | 0.17 Ue | 0.65 (Ie≤17 A) |
| AC4 | 6.0 Ie | 1 Ue | 0.35 (Ie>17 A) | 6 Ie | 1 Ue | 0.35 (Ie>17 A) |
| DC1 | 1.0 Ie | 1 Ue | 1 | 1 Ie | 1 Ue | 1 |
| DC3 | 2.5 Ie | 1 Ue | 2 | 2.5 Ie | 1 Ue | 2 |
| DC5 | 2.5 Ie | 1 Ue | 7.5 | 2.5 Ie | 1 Ue | 7.5 |

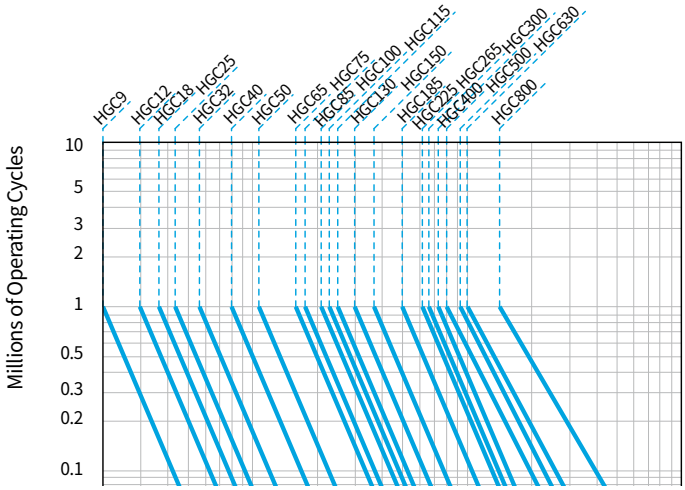
※ Ie : Rated current, Ue : Rated voltage

# Technical Data

## Selections of AC3 and AC4 Grade Magnetic Contactor for Load

- In case of load operation with low switching frequency, the rated capacity of the magnetic contactor applied may increase and the increased rated capacity should not exceed the closing and short-circuit capacity of the magnetic contactor. In case a thermal overload relay is used, the short-circuit protection should carefully be considered within the range that does not exceed the maximum capacity of the fuse
- The magnetic contactor must be selected by considering the electrical lifespan curve.

### Life Curve of AC3 Category (380 ~ 440 VAC)

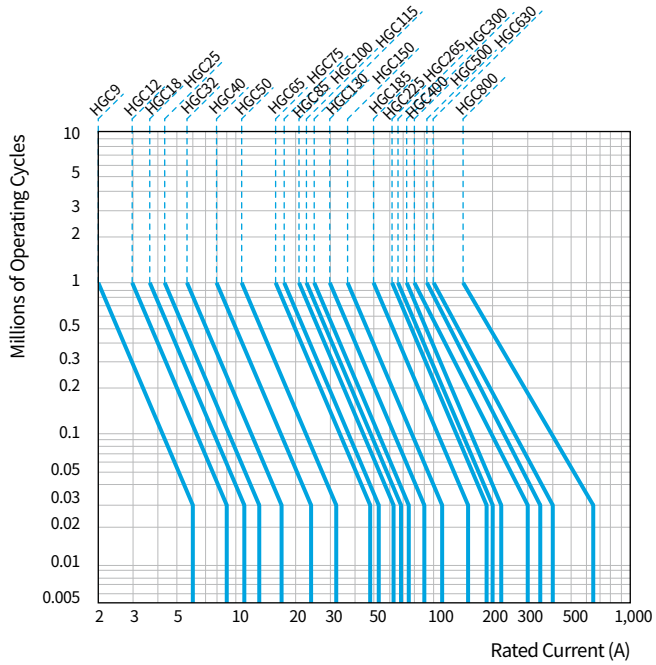



In case of load comprised of AC3 and AC4 category, the electrical lifespan of the magnetic contactor can be calculated using the following formula

$$L = \frac{1}{P1/L1 + P2/L2 + \ldots + Pn/Ln}$$

- L : Electrical Lifespan of Contactor
- L 1 : Electrical Lifespan of AC3 Category
- L 2 : Electrical Lifespan of AC4 Category
- P1 : Coefficient Rate in AC3 Category
- P2 : Coefficient Rate in AC4 Category
- P1 + P2 + … + Pn = 1

### Life Curve of AC4 Category (380 ~ 440 VAC)




※ Example)
80 A/440 VAC. What is the electrical lifespan when UMC100 is applied in case of a motor with 480 A operational current of 95 % coefficient rate, operational current of 70 A in AC3 category, 5 % coefficient rate and operational current of 400 A in AC4 category?

$$L = \frac{10^6}{0.95/2.0 + 0.05/0.03} = 0.47 \times 10^6$$

- Lifespan of UMC100 in AC3 category life curve is $2.0 \times 10^6$ (In case the operational current is 70 A)
- Lifespan of UMC100 in AC4 category is $0.03 \times 10^6$ (In case the operational current is 400 A)

## Rated Operational Current with DC Load

| Connection | Application | Operational Voltage | HGC9 | HGC12 | HGC18 | HGC25 | HGC32 | HGC40 | HGC50 | HGC65 | HGC75 | HGC85 | HGC100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 Poles in Series | DC1 Resistive Load (L/R≤1 ms) | 24 V | 10 | 12 | 18 | 20 | 25 | 35 | 50 | 65 | 65 | 75 | 80 |
| | | 48 V | 10 | 12 | 18 | 20 | 25 | 35 | 40 | 65 | 65 | 65 | 65 |
| | | 110 V | 6 | 10 | 13 | 15 | 25 | 25 | 35 | 45 | 45 | 50 | 50 |
| | | 220 V | 3 | 7 | 8 | 10 | 12 | 12 | 15 | 15 | 15 | 20 | 20 |
| | DC3, 5 DC Motor Load (L/R≤15 ms) | 24 V | 8 | 12 | 12 | 20 | 25 | 35 | 45 | 45 | 45 | 65 | 65 |
| | | 48 V | 4 | 6 | 6 | 15 | 20 | 20 | 25 | 25 | 25 | 40 | 40 |
| | | 110 V | 2.5 | 4 | 4 | 8 | 10 | 10 | 15 | 15 | 15 | 20 | 20 |
| | | 220 V | 0.8 | 1.2 | 1.2 | 2 | 3 | 3 | 3.5 | 3.5 | 3.5 | 5 | 5 |
| | DC13 Coil Load (L/R≤40 ms) | 24 V | 8 | 12 | 12 | 20 | 25 | 35 | - | - | - | - | - |
| | | 48 V | 4 | 6 | 6 | 12 | 15 | 15 | - | - | - | - | - |
| | | 110 V | 2 | 3 | 3 | 3 | 4 | 4 | - | - | - | - | - |
| | | 220 V | 0.3 | 0.5 | 0.5 | 1.2 | 1.2 | 1.2 | - | - | - | - | - |
| 3 Poles in Series | DC1 Resistive Load (L/R≤1 ms) | 24 V | 10 | 12 | 18 | 20 | 25 | 35 | 50 | 65 | 65 | 75 | 80 |
| | | 48 V | 10 | 12 | 18 | 20 | 25 | 35 | 50 | 65 | 65 | 75 | 80 |
| | | 110 V | 8 | 12 | 18 | 20 | 25 | 35 | 50 | 65 | 65 | 75 | 80 |
| | | 220 V | 8 | 12 | 18 | 20 | 25 | 30 | 40 | 50 | 50 | 55 | 60 |
| | DC3, 5 DC Motor Load (L/R≤15 ms) | 24 V | 8 | 12 | 12 | 20 | 25 | 35 | 50 | 50 | 50 | 80 | 80 |
| | | 48 V | 6 | 10 | 10 | 20 | 25 | 30 | 35 | 35 | 35 | 60 | 60 |
| | | 110 V | 4 | 8 | 8 | 15 | 20 | 20 | 30 | 30 | 30 | 50 | 50 |
| | | 220 V | 2 | 4 | 4 | 8 | 10 | 10 | 12 | 12 | 12 | 20 | 20 |
| | DC13 Coil Load (L/R≤40 ms) | 24 V | 8 | 12 | 12 | 20 | 25 | 35 | - | - | - | - | - |
| | | 48 V | 6 | 10 | 10 | 15 | 25 | 35 | - | - | - | - | - |
| | | 110 V | 3 | 5 | 5 | 10 | 12 | 12 | - | - | - | - | - |
| | | 220 V | 0.8 | 2 | 2 | 4 | 4 | 4 | - | - | - | - | - |

| Connection | Application | Operational Voltage | HGC115 | HGC130 | HGC150 | HGC185 | HGC225 | HGC265 | HGC300 | HGC400 | HGC500 | HGC630 | HGC800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 Poles in Series | DC1 Resistive Load (L/R≤1 ms) | 24 V | 100 | 120 | 150 | 180 | 220 | 260 | 300 | 400 | 500 | 630 | 800 |
| | | 48 V | 100 | 100 | 120 | 180 | 180 | 220 | 240 | 240 | 300 | 630 | 800 |
| | | 110 V | 80 | 80 | 100 | 150 | 150 | 180 | 200 | 200 | 220 | 630 | 630 |
| | | 220 V | 50 | 50 | 100 | 150 | 150 | 180 | 200 | 200 | 220 | 630 | 630 |
| | DC3, 5 DC Motor Load (L/R≤15 ms) | 24 V | 100 | 120 | 150 | 180 | 220 | 260 | 300 | 400 | 500 | 630 | 800 |
| | | 48 V | 60 | 60 | 100 | 150 | 150 | 180 | 200 | 200 | 260 | 630 | 800 |
| | | 110 V | 40 | 40 | 80 | 120 | 120 | 130 | 150 | 150 | 180 | 630 | 630 |
| | | 220 V | 30 | 30 | 60 | 80 | 80 | 80 | 90 | 90 | 130 | 210 | 210 |
| | DC13 Coil Load (L/R≤40 ms) | 24 V | - | - | - | - | - | - | - | - | - | - | - |
| | | 48 V | - | - | - | - | - | - | - | - | - | - | - |
| | | 110 V | - | - | - | - | - | - | - | - | - | - | - |
| | | 220 V | - | - | - | - | - | - | - | - | - | - | - |
| 3 Poles in Series | DC1 Resistive Load (L/R≤1 ms) | 24 V | 100 | 120 | 150 | 180 | 220 | 260 | 300 | 400 | 500 | 630 | 800 |
| | | 48 V | 100 | 120 | 150 | 180 | 220 | 260 | 300 | 400 | 500 | 630 | 800 |
| | | 110 V | 100 | 100 | 150 | 180 | 220 | 260 | 300 | 400 | 500 | 630 | 630 |
| | | 220 V | 80 | 80 | 150 | 180 | 220 | 260 | 300 | 300 | 400 | 630 | 630 |
| | DC3, 5 DC Motor Load (L/R≤15 ms) | 24 V | 100 | 120 | 150 | 180 | 220 | 260 | 300 | 400 | 500 | 630 | 800 |
| | | 48 V | 90 | 90 | 130 | 180 | 220 | 260 | 280 | 280 | 400 | 630 | 800 |
| | | 110 V | 80 | 80 | 120 | 150 | 150 | 180 | 200 | 200 | 260 | 630 | 630 |
| | | 220 V | 50 | 50 | 80 | 100 | 100 | 130 | 150 | 150 | 180 | 310 | 310 |
| | DC13 Coil Load (L/R≤40 ms) | 24 V | - | - | - | - | - | - | - | - | - | - | - |
| | | 48 V | - | - | - | - | - | - | - | - | - | - | - |
| | | 110 V | - | - | - | - | - | - | - | - | - | - | - |
| | | 220 V | - | - | - | - | - | - | - | - | - | - | - |

# Technical Data

## Ratings for Transformer and Condenser Load

| Connection | Operational Voltage | | HGC9 | HGC12 | HGC18 | HGC25 | HGC32 | HGC40 | HGC50 | HGC65 | HGC75 | HGC85 | HGC100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Transformer (kVA) | Single Phase | AC 220 V | 1 | 1.5 | 2 | 2.5 | 3 | 4 | 5 | 7 | 8 | 9 | 10 |
| | | AC 440 V | 1.5 | 2 | 3 | 4 | 5 | 7.5 | 10 | 15 | 17 | 18 | 20 |
| | 3 Phase | AC 220 V | 2 | 3 | 3.5 | 4 | 5 | 6.5 | 10 | 12 | 13 | 15 | 18 |
| | | AC 440 V | 2.5 | 4 | 5 | 7.5 | 10 | 12 | 18 | 25 | 27 | 30 | 35 |
| Condenser (kVAR) | 3 Phase | AC 220 V | 2 | 3 | 4 | 5 | 9 | 11 | 13 | 17 | 20 | 22 | 24 |
| | | AC 440 V | 3 | 4 | 6 | 10 | 16 | 20 | 24 | 34 | 40 | 45 | 48 |

| Connection | Operational Voltage | | HGC115 | HGC130 | HGC150 | HGC185 | HGC225 | HGC265 | HGC300 | HGC400 | HGC500 | HGC630 | HGC800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Transformer (kVA) | Single Phase | AC 220 V | - | 15 | 17 | 20 | 25 | 30 | 33 | 44 | 55 | 65 | 90 |
| | | AC 440 V | - | 25 | 33 | 40 | 50 | 57 | 66 | 90 | 110 | 130 | 175 |
| | 3 Phase | AC 220 V | - | 25 | 30 | 35 | 42 | 48 | 57 | 75 | 90 | 110 | 150 |
| | | AC 440 V | - | 42 | 60 | 70 | 85 | 95 | 100 | 150 | 180 | 220 | 300 |
| Condenser (kVAR) | 3 Phase | AC 220 V | - | 29 | 35 | 42 | 58 | 63 | 69 | 92 | 115 | 145 | 185 |
| | | AC 440 V | - | 58 | 70 | 84 | 115 | 125 | 139 | 185 | 230 | 291 | 369 |

※ The abovementioned table is applicable in case the inrush current of the transformer is less than 30 times the rated current (RMS).
Electrical lifespan : 100,000 times (Based on IEC 60947-4-1, AC6a, 6b)

## Light Load – Number of Incandescent Lamp that can be Switched

### Application of Lighting Load

Other than special cases, the lighting load has relatively low electrical lifespan or switching frequency. In case of selecting magnetic contactor, the total input current of the load cannot exceed the rated current and the inrush current caused by lighting cannot exceed the breaking current capacity of the magnetic contactor.

### Incandescent Lamp

The filament of the incandescent lamp has lower resistance in ordinary temperature so when the voltage is applied, the current that is 13~16 times the rated current flows but in room temperature, the impedance of the circuit causes the excessive current to be suppressed to about 7~10 times the rated current due to self-heating. Magnetic contact with incandescent lamp has to consider this excessive current and the rating current of the incandescent lamp shall be selected within the rated operational current of AC3 category.

| Power Voltage | | 110 V | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Power Consumption | | 100 W | 150 W | 200 W | 250 W | 300 W | 500 W | 1,000 W | 1,500 W |
| Magnetic Contactor | HGC9 | 11 | 7 | 5 | 4 | 2 | 2 | 1 | - |
| | HGC12 | 14 | 8 | 6 | 5 | 4 | 2 | 1 | - |
| | HGC18 | 19 | 13 | 10 | 7 | 6 | 3 | 1 | 1 |
| | HGC25 | 20 | 13 | 10 | 8 | 6 | 3 | 1 | 1 |
| | HGC32 | 28 | 18 | 14 | 11 | 9 | 5 | 2 | 1 |
| | HGC40 | 38 | 25 | 19 | 15 | 12 | 7 | 3 | 2 |
| | HGC50 | 55 | 35 | 27 | 22 | 16 | 10 | 5 | 3 |

| Power Voltage | | 220 V | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Power Consumption | | 100 W | 150 W | 200 W | 250 W | 300 W | 500 W | 1,000 W | 1,500 W |
| Magnetic Contactor | HGC9 | 22 | 14 | 11 | 8 | 7 | 4 | 2 | 1 |
| | HGC12 | 26 | 18 | 14 | 10 | 8 | 5 | 2 | 1 |
| | HGC18 | 38 | 25 | 20 | 15 | 13 | 7 | 3 | 2 |
| | HGC25 | 40 | 27 | 20 | 16 | 13 | 8 | 3 | 2 |
| | HGC32 | 55 | 36 | 28 | 22 | 18 | 11 | 5 | 3 |
| | HGC40 | 75 | 50 | 38 | 30 | 25 | 15 | 7 | 4 |
| | HGC50 | 105 | 70 | 54 | 43 | 35 | 22 | 10 | 6 |

# Application of Star-Delta Starting

## Voltage, Current, Torque for Start-Delta Starting

| Starting (Start Type Magnetic Contactor / C3) | | | | | Operating (Delta Type Magnetic Contactor / C2) | | |
|---|---|---|---|---|---|---|---|
| Starting Method | Starting Current | Torque | Full Load Current | Contact Voltage | Full Load Current | Contact Current | Contact Voltage |
| Direct | 6 Im | 1.5 T | 6 Im | Em/√3 | Im | Im | Em/√3 |
| Star - Delta | 2 Im | 0.5 T | 2 Im | Em/√3 | Im | Im/√3 | Em |

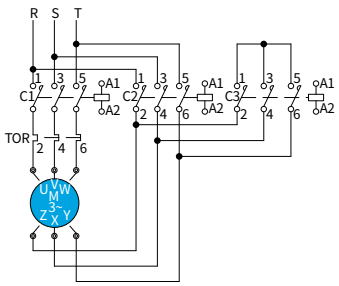
※ Im : Load current in case the motor is connected to delta Em : Line voltage T : Rated torque (Estimated torque fluctuation)

## Application of Magnetic Contactor for Star – Delta Starting

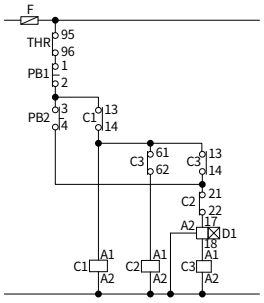
| 200 ~ 240 V AC, 3 Ø, 60 Hz | | | | | | | 380 ~ 440 V AC, 3 Ø, 60 Hz | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Motor Capacity | | | Main Circuit | Δ Circuit | Y Circuit | TOR | Motor Capacity | | | Main Circuit | Δ Circuit | Y Circuit | TOR |
| kW | Hp | FLC | (C1) | (C2) | (C3) | | kW | Hp | FLC | (C1) | (C2) | (C3) | |
| 5.5 | 7.5 | 22 | HGC25 | HGC25 | HGC18 | HGT40K | 5.5 | 7.5 | 12 | HGC25 | HGC25 | HGC25 | HGT40K |
| 7.5 | 10 | 32 | HGC32 | HGC32 | HGC25 | HGT40K | 7.5 | 10 | 18 | HGC25 | HGC25 | HGC25 | HGT40K |
| 11 | 15 | 40 | HGC40 | HGC40 | HGC32 | HGT40K | 11 | 15 | 22 | HGC25 | HGC25 | HGC25 | HGT40K |
| 15 | 20 | 50 | HGC50 | HGC50 | HGC32 | HGT65K | 15 | 20 | 32 | HGC32 | HGC32 | HGC25 | HGT40K |
| 18.5 | 25 | 70 | HGC50 | HGC50 | HGC40 | HGT65K | 18.5 | 25 | 40 | HGC40 | HGC40 | HGC25 | HGT40K |
| 22 | 30 | 80 | HGC75 | HGC75 | HGC40 | HGT100K | 22 | 30 | 50 | HGC40 | HGC40 | HGC32 | HGT40K |
| 30 | 40 | 110 | HGC100 | HGC100 | HGC50 | HGT100K | 30 | 40 | 65 | HGC50 | HGC50 | HGC40 | HGT65K |
| 37 | 50 | 130 | HGC115 | HGC115 | HGC65 | HGT150K | 37 | 50 | 80 | HGC75 | HGC75 | HGC40 | HGT100K |
| 45 | 60 | 150 | HGC130 | HGC130 | HGC65 | HGT150K | 45 | 60 | 90 | HGC75 | HGC75 | HGC40 | HGT100K |
| 55 | 75 | 180 | HGC150 | HGC150 | HGC100 | HGT150K | 55 | 75 | 110 | HGC100 | HGC100 | HGC50 | HGT100K |
| 75 | 100 | 260 | HGC185 | HGC185 | HGC115 | HGT265K | 75 | 100 | 150 | HGC115 | HGC115 | HGC65 | HGT150K |
| 90 | 125 | 300 | HGC225 | HGC225 | HGC130 | HGT265K | 90 | 125 | 180 | HGC130 | HGC130 | HGC100 | HGT150K |
| 110 | 150 | 367 | HGC300 | HGC300 | HGC150 | HGT500K | 110 | 150 | 220 | HGC150 | HGC150 | HGC115 | HGT150K |
| 132 | 180 | 434 | HGC400 | HGC400 | HGC225 | HGT500K | 132 | 180 | 260 | HGC185 | HGC185 | HGC115 | HGT265K |
| 160 | 220 | 519 | HGC400 | HGC400 | HGC225 | HGT500K | 160 | 220 | 300 | HGC225 | HGC225 | HGC130 | HGT265K |
| 250 | 350 | 810 | HGC630 | HGC630 | HGC400 | HGT800K | 250 | 350 | 500 | HGC400 | HGC400 | HGC225 | HGT500K |
| 300 | - | - | - | - | - | | 300 | 402 | 560 | HGC400 | HGC400 | HGC300 | HGT500K |

※ The data of this table is subject to change depending on the grade and manufacturer of the motor and is a reference for using AC3 category squirrel cage motor or AC2 category slip-ring motor. The starting time of the motor is based on less than 10 seconds. Select separately in case the starting time has a long load (Ex : Fan. Blower. Compressor).
As for the load applied with phase advance condenser, consider the inrush current for selection. As for the transfer time of the timer contact for transfer, 30 ~ 80 ms is appropriate.
As for the current setting of the overload relay (UTH), set the current of motor full load at 58 %.

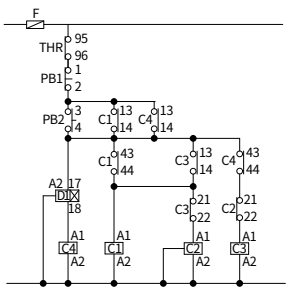
### Main Circuit




### Control Circuit




Connection Diagram 1 (HGC9 ~ 100)




Connection Diagram 2 (HGC115 ~ 800)

C1 : Main MC C2 : Delta MC C3 : Star MC D1 : Timer C4 : Auxiliary relay

# Technical Data

## Ratings of Inching and Plugging

• AC rating category (Rated capacity in case of inching and plugging)

| Category | Voltage | Ratio | Electrical Lifespan | | HGC9 | HGC12 | HGC18 | HGC25 | HGC32 | HGC40 | HGC50 | HGC65 | HGC75 | HGC85 | HGC100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inching | 220 V | 10 % | 100,000 | kW | 2.2 | 2.7 | 3.7 | 4 | 5.5 | 7.5 | 11 | 15 | 18.5 | 19 | 25 |
| | | | 500,000 | | 1 | 1.5 | 2.7 | 3.7 | 4.5 | 5.5 | 7.5 | 11 | 15 | 15 | 15 |
| | | 50 % | 100,000 | | 1 | 1.5 | 2.7 | 3.7 | 4.5 | 5.5 | 7.5 | 11 | 15 | 15 | 19 |
| | | | 500,000 | | 0.5 | 0.75 | 1.1 | 1.5 | 2.2 | 3.7 | 3.7 | 5.5 | 7.5 | 7.5 | 9 |
| | | 100 % | 100,000 | | 0.75 | 1.1 | 1.5 | 2.5 | 4.5 | 4.5 | 5.5 | 7.5 | 9 | 11 | 11 |
| | | | 500,000 | | 0.3 | 0.5 | 0.75 | 1.1 | 1.8 | 2.7 | 3.7 | 4 | 4 | 5.5 | 5.5 |
| | 440 V | 10 % | 100,000 | | 2.7 | 4 | 4 | 7.5 | 11 | 15 | 22 | 30 | 37 | 37 | 50 |
| | | | 500,000 | | 1.5 | 2.2 | 3.7 | 7.5 | 9 | 11 | 15 | 22 | 30 | 30 | 37 |
| | | 50 % | 100,000 | | 1.5 | 3.7 | 4 | 7.5 | 9 | 11 | 15 | 22 | 30 | 30 | 37 |
| | | | 500,000 | | 0.75 | 1.5 | 2.2 | 3.7 | 4.5 | 5.5 | 7.5 | 11 | 15 | 15 | 18.5 |
| | | 100 % | 100,000 | | 1.1 | 2.2 | 3.7 | 5.5 | 7.5 | 11 | 15 | 15 | 15 | 22 | 25 |
| | | | 500,000 | | 0.5 | 1.1 | 1.5 | 2.2 | 3.7 | 3.7 | 5.5 | 7.5 | 7.5 | 11 | 13 |
| Plugging | 220 V | Plugging Brake 100 % | 100,000 | kW | 0.75 | 0.75 | 1.5 | 2.2 | 2.5 | 3.7 | 5.5 | 7.5 | 9 | 9 | 11 |
| | | | 500,000 | | 0.2 | 0.4 | 0.5 | 0.75 | 1.1 | 1.5 | 22 | 3 | 3.7 | 3.7 | 4.5 |
| | 440 V | | 100,000 | | 0.75 | 1 | 2.2 | 3.7 | 4.5 | 4.5 | 7.5 | 11 | 18.5 | 18.5 | 22 |
| | | | 500,000 | | 0.2 | 0.4 | 0.75 | 1.5 | 2.2 | 2.2 | 3.7 | 5.5 | 7.5 | 7.5 | 11 |

| Category | Voltage | Ratio | Electrical Lifespan | | HGC115 | HGC130 | HGC150 | HGC185 | HGC225 | HGC265 | HGC300 | HGC400 | HGC500 | HGC630 | HGC800 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Inching | 220 V | 10 % | 100,000 | kW | 30 | 30 | 37 | 45 | 55 | 65 | 75 | 110 | 132 | 160 | 200 |
| | | | 500,000 | | 15 | 22 | 25 | 30 | 37 | 45 | 50 | 65 | 70 | 75 | 132 |
| | | 50 % | 100,000 | | 22 | 22 | 30 | 37 | 45 | 50 | 55 | 75 | 80 | 90 | 150 |
| | | | 500,000 | | 9 | 9 | 11 | 15 | 19 | 22 | 25 | 30 | 32 | 37 | 45 |
| | | 100 % | 100,000 | | 11 | 15 | 19 | 25 | 30 | 32 | 37 | 45 | 50 | 55 | 75 |
| | | | 500,000 | | 5.5 | 7.5 | 9 | 11 | 15 | 17 | 22 | 25 | 30 | 37 | 45 |
| | 440 V | 10 % | 100,000 | | 50 | 60 | 75 | 90 | 110 | 132 | 150 | 200 | 250 | 300 | 400 |
| | | | 500,000 | | 37 | 45 | 55 | 75 | 90 | 110 | 125 | 132 | 140 | 150 | 190 |
| | | 50 % | 100,000 | | 37 | 45 | 55 | 75 | 90 | 110 | 132 | 150 | 167 | 190 | 220 |
| | | | 500,000 | | 18.5 | 22 | 30 | 37 | 37 | 42 | 50 | 75 | 80 | 90 | 110 |
| | | 100 % | 100,000 | | 25 | 30 | 45 | 55 | 60 | 65 | 75 | 110 | 120 | 132 | 160 |
| | | | 500,000 | | 13 | 15 | 22 | 25 | 30 | 32 | 37 | 55 | 63 | 75 | 90 |
| Plugging | 220 V | Plugging Brake 100 % | 100,000 | kW | 11 | 15 | 19 | 22 | 25 | 30 | 37 | 45 | 50 | 55 | 75 |
| | | | 500,000 | | 4.5 | 5.5 | 7.5 | 11 | 13 | 15 | 18.5 | 22 | 25 | 30 | 37 |
| | 440 V | | 100,000 | | 22 | 30 | 37 | 45 | 45 | 49 | 55 | 75 | 90 | 110 | 150 |
| | | | 500,000 | | 11 | 15 | 19 | 22 | 25 | 26 | 30 | 37 | 40 | 45 | 75 |

※ The inching limit of switching frequency is below 10 continuous operations.

※ The dwell time after inching operation is at least 10 minutes.

$$\text{Inching (\%)} = \frac{\text{No. of Inching Operations}}{\text{No. of Standard Operations + No. of Inching Operations}} \times 100$$

# Effect on Magnetic Contactor Depending on the Cable Length of Control Circuit

**Input Defect caused by Voltage Drop Following Inrush Current and Resistive (AC/DC)**

Voltage drop occurs on the control circuit cable due to inrush current that is generated when the operational coil power of the contact is supplied. Due to such, the input into the magnetic contactor may fail. Therefore, the length of the conductor has to be reviewed within the appropriate limit by reviewing the input power consumption, supply voltage and the cross sectional area of the circuit conductor and others.

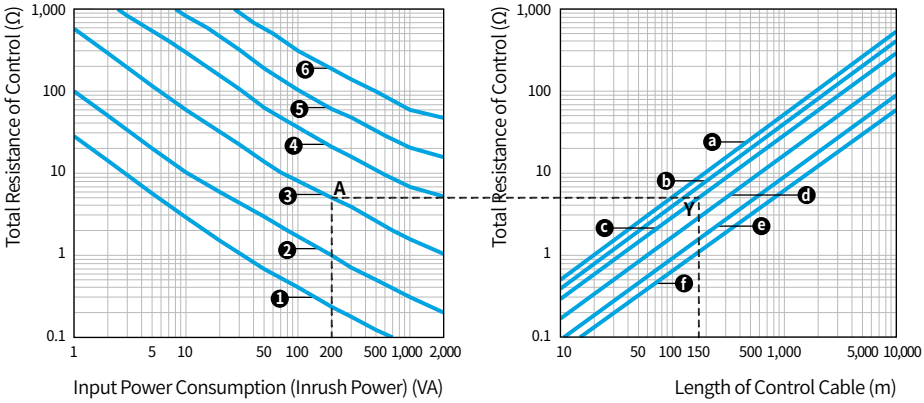
## Calculation of the Allowable Conductor Length Following Inrush Power

This graph indicates the maximum 5 % line voltage drop.

### AC Circuit

Supply Voltage
- ❶ AC 24 V
- ❷ AC 48 V
- ❸ AC 115 V
- ❹ AC 230 V
- ❺ AC 400 V
- ❻ AC 690 V

C.S.A of Cu Cable
- ⓐ 0.75 mm$^2$
- ⓑ 1 mm$^2$
- ⓒ 1.5 mm$^2$
- ⓓ 2.5 mm$^2$
- ⓔ 4 mm$^2$
- ⓕ 6 mm$^2$

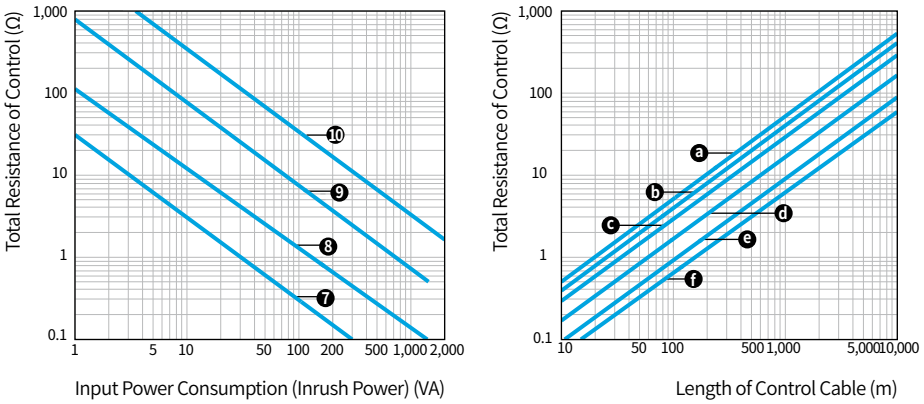



※ Ex.) The maximum length of conductor when using HGC50 magnetic contactor in a 1.5 mm$^2$ Cu cable at supply voltage of AC 115 V and input power consumption of 200 VA is 150 m.

### DC Circuit

Supply Voltage
- ❼ DC 24 V
- ❽ DC 48 V
- ❾ DC 125 V
- ❿ DC 250 V

C.S.A of Cu Cable
- ⓐ 0.75 mm$^2$
- ⓑ 1 mm$^2$
- ⓒ 1.5 mm$^2$
- ⓓ 2.5 mm$^2$
- ⓔ 4 mm$^2$
- ⓕ 6 mm$^2$



# Technical Data

## Calculation of the Maximum Cable Distance Following Voltage

$$L = \frac{U^2}{SA} .s.K$$

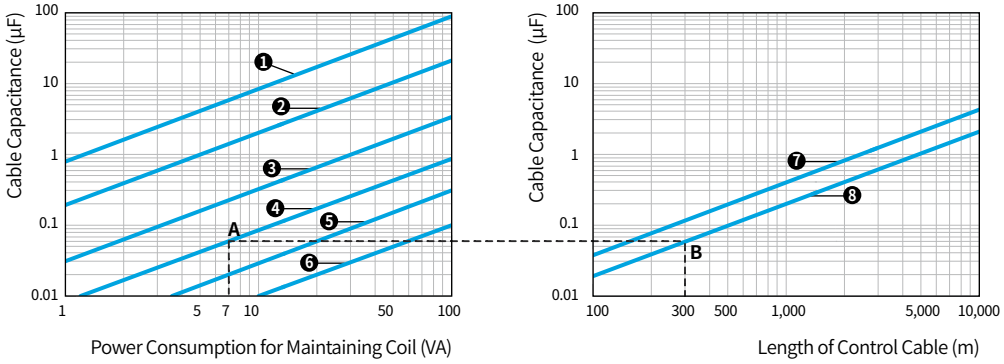
L : Distance between the conductor and control device, m (Length of cable)
U : Supply voltage, V
SA : Input power consumption (Inrush power), VA
s : C.S.A of conductor, $mm^2$
K : Factors in the following table

| | | | | | | |
|---|---|---|---|---|---|---|
| AC Supply | SA (VA) | 20 | 40 | 100 | 150 | 200 |
| | K | 1.38 | 1.5 | 1.8 | 2 | 2.15 |
| DC Supply | Consistent, regardless of the inrush power's SA value (W) | | | | | |
| | k = 1.38 | | | | | |

### Trip Failure caused by Cable Capacitance (AC)

When the connection with the contact is opened, trip failure may occur due to the capacitance between the control device and the magnetic contactor coil.
This phenomenon may get worsened by the length of cable between the control device and the contactor, high control circuit voltage, low coil power consumption, low drop-out value and others. So, an appropriate conductor length within the limit is required by reviewing the supply voltage of power consumption for maintaining coil, capacitance of control circuit and others.

❶ AC 24 V
❷ AC 48 V
❸ AC 115 V
❹ AC 230 V
❺ AC 400 V
❻ AC 690 V
❼ 3-Wire Control
❽ 2-Wire Control




※ Ex.) The maximum length of conductor for stable trip when supply voltage of AC 230 V, power consumption for maintaining coil of 7 VA, w-wire control method are applied to HGC12 magnetic contactor is 300 m.

## Calculation of Maximum Cable Distance Following Cable Capacitance

$$L = 455. \frac{S}{U^2.Co}$$

L : Distance between contact and control device, m (Length of cable)
S : Power consumption for maintaining coil, VA
U : Supply voltage, V
Co : Line capacity of cable

# Model Selection Table

## Magnetic Contactor : 9 ~ 800 AF

### 9 ~ 18 AF

| Model Name | | | HGC9B | HGC12B | HGC18B | HGC22B | HGC9 | HGC12 | HGC18 |
|---|---|---|---|---|---|---|---|---|---|
| UL60947-4-1 | | | | | | | | | |
| Pole | | | 3 | | | | 3 | | |
| Rated frequency | | | 50/60Hz | | | | 50/60Hz | | |
| Continuous Current (Ambient Temperature 40 °C) | | A | 25 | 25 | 40 | 40 | 25 | 25 | 40 |
| Single Phase | 1P/110~120V | HP | 0.5 | 1 | 2 | 2 | 0.5 | 1 | 2 |
| | 1P/220~240V | | 1.5 | 2 | 3 | 3 | 1.5 | 2 | 3 |
| Three Phase | 3P/200~208V | | 2 | 3 | 7.5 | 7.5 | 2 | 3 | 7.5 |
| | 3P/220~240V | | 3 | 5 | 7.5 | 10 | 3 | 5 | 7.5 |
| | 3P/440~480V | | 5 | 7.5 | 10 | 15 | 5 | 7.5 | 10 |
| | 3P/600V | | 7.5 | 10 | 15 | 20 | 7.5 | 10 | 15 |
| NEMA Size | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mounting Method | | | Screw & Rail Mounting | | | | Screw & Rail Mounting | | |
| Terminals | | | Screw clamp terminals | | | | Screw clamp terminals | | |
| Auxiliary Contacts | | | | | | | | | |
| Standard (*B type : side) | AC | | 1NO | | | | 1NO 1NC 2NO 2NC | | |
| | DC | | - | | | | | | |
| Additional (front or side mount) | AC | | 2NO 2NC | | | | 2NO 2NC | | |
| | DC | | - | | | | | | |
| Dimensions | | | | | | | | | |
| AC | W×H×D | mm | 45×75×86 | | | | 45×94.2×91.1 | | |
| DC | | | - | | | | 45×94.2×124 | | |
| AC | Weight | kg | 0.4 | | | | 0.4 | | |
| DC | | | - | | | | 0.6 | | |

### 25 ~ 65 AF

| Model Name | | | HGC25 | HGC32 | HGC40 | HGC50/50B | HGC65/65B |
|---|---|---|---|---|---|---|---|
| UL60947-4-1 | | | | | | | |
| Pole | | | 3 | | | 3 | |
| Rated frequency | | | 50/60Hz | | | 50/60Hz | |
| Continuous Current (Ambient Temperature 40 °C) | | A | 45 | 55 | 60 | 70 | 85 |
| Single Phase | 1P/110~120V | HP | 2 | 3 | 3 | 3 | 5 |
| | 1P/220~240V | | 5 | 5 | 7.5 | 10 | 15 |
| Three Phase | 3P/200~208V | | 7.5 | 7.5 | 15 | 20 | 25 |
| | 3P/220~240V | | 10 | 10 | 15 | 25 | 30 |
| | 3P/440~480V | | 15 | 20 | 30 | 40 | 50 |
| | 3P/600V | | 20 | 25 | 30 | 50 | 60 |
| NEMA Size | | | 0 | 1 | 1 | 2 | 2 |
| Mounting Method | | | Screw & Rail Mounting | | | Screw & Rail Mounting | |
| Terminals | | | Screw clamp terminals | | | Screw clamp terminals or Lug clamp terminals | |
| Auxiliary Contacts | | | | | | | |
| Standard (*B type : side) | AC | | 1NO 1NC 2NO 2NC | | | 2NO 2NC | |
| | DC | | | | | 2NO 1NC | |
| Additional (front or side mount) | AC | | 2NO 2NC | | | 2NO 2NC | |
| | DC | | | | | 1NO 1NC | |
| Dimensions | | | | | | | |
| AC | W×H×D | mm | 45×99.6×96.6 | | | 55×123.6×126 B type : 80×123.6×107 | |
| DC | | | 45×99.6×129.5 | | | | |
| AC | Weight | kg | 0.5 | | | 0.8 | |
| DC | | | 0.65 | | | 0.8 | |

## 75 ~ 150 AF

| Model Name | | | HGC75/75B | HGC85/85B | HGC100/100B | HGC115 | HGC130 | HGC150 |
|---|---|---|---|---|---|---|---|---|
| UL60947-4-1 | | | | | | | | |
| Pole | | | 3 | | | 3 | | |
| Rated frequency | | | 50/60Hz | | | 50/60Hz | | |
| Continuous Current (Ambient Temperature 40 °C) | | A | 115 | 125 | 145 | 160 | 180 | 210 |
| Single Phase | 1P/110~120V | HP | 7.5 | 7.5 | 10 | 10 | 10 | 15 |
| | 1P/220~240V | | 15 | 15 | 20 | 20 | 20 | 25 |
| Three Phase | 3P/200~208V | | 25 | 30 | 30 | 30 | 40 | 40 |
| | 3P/220~240V | | 30 | 40 | 40 | 40 | 40 | 50 |
| | 3P/440~480V | | 50 | 60 | 75 | 75 | 75 | 100 |
| | 3P/600V | | 60 | 75 | 75 | 75 | 75 | 100 |
| NEMA Size | | | 2 | 3 | 3 | 3 | 3 | 4 |
| Mounting Method | | | Screw & Rail Mounting | | | Screw Mounting | | |
| Terminals | | | Screw clamp terminals or Lug clamp terminals | | | Screw clamp terminals | | |
| Auxiliary Contacts | | | | | | | | |
| Standard (*B type : side) | AC | | 2NO 2NC | | | 2NO 2NC | | |
| | DC | | 2NO 1NC | | | | | |
| Additional (front or side mount) | AC | | 2NO 2NC | | | 2NO 2NC | | |
| | DC | | 1NO 1NC | | | | | |
| Dimensions | | | | | | | | |
| AC | W×H×D | mm | 70×146×153<br>B type : 95×146×130.6 | | | 103×155×145.1 | | |
| DC | | | | | | | | |
| AC | Weight | kg | 1.3 | | | 2.7 | | |
| DC | | | 1.3 | | | | | |

## 185 ~ 800 AF

| Model Name | | | HGC185 | HGC225 | HGC265 | HGC300 | HGC400 | HGC500 | HGC630 | HGC800 |
|---|---|---|---|---|---|---|---|---|---|---|
| UL60947-4-1 | | | | | | | | | | |
| Pole | | | 3 | | | 3 | | | 3 | |
| Rated frequency | | | 50/60Hz | | | 50/60Hz | | | 50/60Hz | |
| Continuous Current (Ambient Temperature 40 °C) | | A | 275 | 315 | 350 | 400 | 500 | 550 | 750 | 900 |
| Single Phase | 1P/110~120V | HP | 15 | 15 | - | - | - | - | - | - |
| | 1P/220~240V | | 30 | 40 | - | - | - | - | - | - |
| Three Phase | 3P/200~208V | | 60 | 60 | 75 | 100 | 125 | 150 | 200 | 300 |
| | 3P/220~240V | | 60 | 75 | 100 | 100 | 150 | 200 | 250 | 350 |
| | 3P/440~480V | | 125 | 150 | 200 | 250 | 300 | 400 | 500 | 600 |
| | 3P/600V | | 125 | 150 | 200 | 200 | 300 | 400 | 500 | 600 |
| NEMA Size | | | 4 | 4 | 4 | 5 | 5 | 5 | 6 | 7 |
| Mounting Method | | | Screw Mounting | | | Screw Mounting | | | Screw Mounting | |
| Terminals | | | Screw clamp terminals | | | Screw clamp terminals | | | Screw clamp terminals | |
| Auxiliary Contacts | | | | | | | | | | |
| Standard | AC & DC | | 2NO 2NC | | | 2NO 2NC | | | 2NO 2NC | |
| Additional (side mount) | AC & DC | | 2NO 2NC | | | 2NO 2NC | | | 2NO 2NC | |
| Dimensions | | | | | | | | | | |
| AC & DC | W×H×D | mm | 138×204×174.2 | | | 163×243×203 | | | 276×314×255.3 | |
| | Weight | kg | 4.8 | | | 9.2 | | | 25 | |

# Model Selection Table

## Magnetic Contactor : 9 ~ 800 AF

### 9 ~ 40 AF

| Model Name | | | | HGC9 | HGC12 | HGC18 | HGC25 | HGC32 | HGC40 |
|---|---|---|---|---|---|---|---|---|---|
| IEC 60947-4-1 | | | | | | | | | |
| Rated Insulation Voltage [Ui] | | | V | 800 | 800 | 800 | 800 | 800 | 800 |
| Rated Operational Voltage [Ue] | | | V | 690 | 690 | 690 | 690 | 690 | 690 |
| Rated Impulse Withstand Voltage [Uimp] | | | kV | 6 | 6 | 6 | 6 | 6 | 6 |
| Rated Thermal Current [Ith] (AC1) | | | A | 25 | 25 | 40 | 45 | 55 | 60 |
| Rated frequency | | | Hz | 50/60 | 50/60 | 50/60 | 50/60 | 50/60 | 50/60 |
| AC3 | 200 ~ 240 V | | kW/A | 2.5/9 | 3.5/12 | 4.5/18 | 5.5/25 | 7.5/32 | 11/40 |
| | 380 ~ 440 V | | | 4/9 | 5.5/12 | 7.5/18 | 11/25 | 15/32 | 18.5/40 |
| | 500 ~ 550 V | | | 4/7 | 7.5/12 | 8.5/13 | 15/22 | 18.5/28 | 22/32 |
| | 660 ~ 690 V | | | 4/6 | 7.5/9 | 7.5/9 | 15/17 | 18.5/20 | 22/23 |
| | 1,000 V | | | - | - | - | - | - | - |
| | Lifespan | Electrical | 10,000 times | 250 | 250 | 250 | 250 | 200 | 200 |
| | | Mechanical | | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 | 1,500 |
| AC4 | 200 ~ 240 V | | kW/A | 1.5/8 | 2.2/11 | 3.7/16 | 3.7/18 | 4.5/22 | 5.5/25 |
| | 380 ~ 440 V | | | 2.2/6 | 4/9 | 4/11 | 5.5/13 | 7.5/17 | 11/24 |
| | Electrical Lifespan | | 10,000 times | 3 | 3 | 3 | 3 | 3 | 3 |
| Mounting Method | | | | Screw & Rail Mounting | | | Screw & Rail Mounting | | |
| Auxiliary Contact | | | | | | | | | |
| Standard | AC | | | 1NO1NC or 2NO2NC | | | 1NO1NC or 2NO2NC | | |
| | DC | | | 1NO1NC or 2NO2NC | | | 1NO1NC or 2NO2NC | | |
| Additional | AC | | | 2NO2NC | | | 2NO2NC | | |
| | DC | | | 2NO2NC | | | 2NO2NC | | |
| Dimensions | | | | | | | | | |
| AC | W×H×D | | mm | 45×94.2×91.1 | | | 45×99.6×96.6 | | |
| DC | | | | 45×94.2×124 | | | 45×99.6×129.5 | | |

### 50 ~ 100 AF

| Model Name | | | | HGC50 | HGC65 | HGC75 | HGC85 | HGC100 |
|---|---|---|---|---|---|---|---|---|
| IEC 60947-4-1 | | | | | | | | |
| Rated Insulation Voltage [Ui] | | | V | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Rated Operational Voltage [Ue] | | | V | 690 | 690 | 690 | 690 | 690 |
| Rated Impulse Withstand Voltage [Uimp] | | | kV | 8 | 8 | 8 | 8 | 8 |
| Rated Thermal Current [Ith] (AC1) | | | A | 70 | 85 | 115 | 125 | 145 |
| Rated frequency | | | Hz | 50/60 | 50/60 | 50/60 | 50/60 | 50/60 |
| AC3 | 200 ~ 240 V | | kW/A | 15/50 | 18.5/65 | 22/75 | 25/85 | 30/100 |
| | 380 ~ 440 V | | | 22/50 | 30/65 | 37/75 | 45/85 | 55/100 |
| | 500 ~ 550 V | | | 30/43 | 33/60 | 37/64 | 50/75 | 55/85 |
| | 660 ~ 690 V | | | 30/28 | 33/35 | 37/42 | 45/45 | 50/65 |
| | 1,000 V | | | - | - | - | - | - |
| | Lifespan | Electrical | 10,000 times | 200 | 200 | 200 | 200 | 200 |
| | | Mechanical | | 1,500 | 1,500 | 1,000 | 1,000 | 1,000 |
| AC4 | 200 ~ 240 V | | kW/A | 7.5/35 | 11/50 | 13/55 | 15/65 | 17/72 |
| | 380 ~ 440 V | | | 15/32 | 22/47 | 25/52 | 30/62 | 33/68 |
| | Electrical Lifespan | | 10,000 times | 3 | 3 | 3 | 3 | 3 |
| Mounting Method | | | | Screw & Rail Mounting | | Screw & Rail Mounting | | |
| Auxiliary Contact | | | | | | | | |
| Standard | AC | | | 2NO2NC | | 2NO2NC | | |
| | DC | | | 2NO1NC | | 2NO1NC | | |
| Additional | AC | | | 2NO2NC | | 2NO2NC | | |
| | DC | | | 1NO1NC | | 1NO1NC | | |
| Dimensions | | | | | | | | |
| AC | W×H×D | | mm | 55×123.6×129 | | 70×146×153 | | |
| DC | | | | 55×123.6×129 | | 70×146×153 | | |

## 115 ~ 265 AF

| Model Name | | | | HGC115 | HGC130 | HGC150 | HGC185 | HGC225 | HGC265 |
|---|---|---|---|---|---|---|---|---|---|
| IEC 60947-4-1 | | | | | | | | | |
| Rated Insulation Voltage [Ui] | | | V | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Rated Operational Voltage [Ue] | | | V | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Rated Impulse Withstand Voltage [Uimp] | | | kV | 8 | 8 | 8 | 8 | 8 | 8 |
| Rated Thermal Current [Ith] (AC1) | | | A | 160 | 180 | 210 | 275 | 315 | 350 |
| Rated frequency | | | Hz | 50/60 | 50/60 | 50/60 | 50/60 | 50/60 | 50/60 |
| AC3 | 200 ~ 240 V | | kW/A | 37/115 | 40/130 | 45/150 | 55/185 | 75/225 | 80/265 |
| | 380 ~ 440 V | | | 60/115 | 65/130 | 75/150 | 90/185 | 132/225 | 147/265 |
| | 500 ~ 550 V | | | 59/100 | 70/120 | 90/140 | 110/180 | 132/200 | 150/225 |
| | 660 ~ 690 V | | | 55/65 | 75/82 | 90/120 | 110/120 | 132/150 | 160/173 |
| | 1,000 V | | | 65/50 | 75/54 | 90/66 | 110/78 | 132/96 | 160/113 |
| | Lifespan | Electrical | 10,000 times | 100 | 100 | 100 | 100 | 100 | 100 |
| | | Mechanical | | 500 | 500 | 500 | 500 | 500 | 500 |
| AC4 | 200 ~ 240 V | | kW/A | 19/80 | 22/93 | 30/125 | 37/150 | 45/185 | 50/200 |
| | 380 ~ 440 V | | | 37/75 | 45/90 | 55/110 | 75/150 | 90/185 | 102/200 |
| | Electrical Lifespan | | 10,000 times | 3 | 3 | 3 | 3 | 3 | 3 |
| Mounting Method | | | | Screw Mounting | | | Screw Mounting | | |
| Auxiliary Contact | | | | | | | | | |
| Standard | | | | 2NO2NC | | | 2NO2NC | | |
| Additional | | | | 2NO2NC | | | 2NO2NC | | |
| Dimensions | W×H×D | | mm | 103×155×145.1 | | | 138×204×174.2 | | |

## 300 ~ 800 AF

| Model Name | | | | HGC300 | HGC400 | HGC500 | HGC630 | HGC800 |
|---|---|---|---|---|---|---|---|---|
| IEC 60947-4-1 | | | | | | | | |
| Rated Insulation Voltage [Ui] | | | V | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Rated Operational Voltage [Ue] | | | V | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Rated Impulse Withstand Voltage [Uimp] | | | kV | 8 | 8 | 8 | 8 | 8 |
| Rated Thermal Current [Ith] (AC1) | | | A | 400 | 500 | 550 | 750 | 900 |
| Rated frequency | | | Hz | 50/60 | 50/60 | 50/60 | 50/60 | 50/60 |
| AC3 | 200 ~ 240 V | | kW/A | 90/300 | 125/400 | 140/500 | 190/630 | 220/800 |
| | 380 ~ 440 V | | | 160/300 | 220/400 | 250/500 | 330/630 | 440/800 |
| | 500 ~ 550 V | | | 200/273 | 250/300 | 300/426 | 330/500 | 500/720 |
| | 660 ~ 690 V | | | 200/220 | 250/300 | 335/360 | 400/412 | 500/630 |
| | 1,000 V | | | 200/141 | 250/178 | 275/192 | 300/213 | 400/284 |
| | Lifespan | Electrical | 10,000 times | 100 | 100 | 50 | 50 | 50 |
| | | Mechanical | | 500 | 500 | 500 | 500 | 500 |
| AC4 | 200 ~ 240 V | | kW/A | 55/220 | 75/300 | 90/350 | 110/400 | 160/630 |
| | 380 ~ 440 V | | | 110/220 | 150/300 | 175/350 | 200/400 | 300/630 |
| | Electrical Lifespan | | 10,000 times | 3 | 3 | 3 | 3 | 3 |
| Mounting Method | | | | Screw Mounting | | | Screw Mounting | |
| Auxiliary Contact | | | | | | | | |
| Standard | | | | 2NO2NC | | | 2NO2NC | |
| Additional | | | | 2NO2NC | | | 2NO2NC | |
| Dimensions | W×H×D | | mm | 163×243×203 | | | 276×314×255.3 | |

# Model Selection Table

## Thermal Overload Relay : 18 ~ 800 AF

### 18 ~ 100 AF

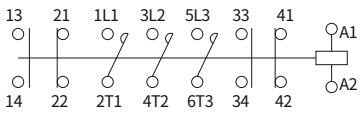
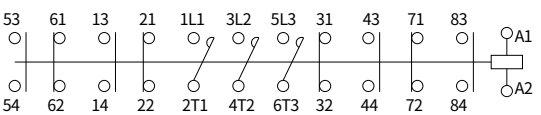
| Model Name (Basic) | | | HGT18 | | HGT40 | | HGT65 | | HGT100 | |
|---|---|---|---|---|---|---|---|---|---|---|
| 3- Pole, 2 Element | | | HGT18H | | HGT40H | | HGT65H | | HGT100H | |
| 3- Pole, 3 Element (Loss Phase Protection) | | | HGT18K | | HGT40K | | HGT65K | | HGT100K | |
| Current | | A | Nominal Rating | 0.12 ~ 18 | Nominal Rating | 7 ~ 40 | Nominal Rating | 7 ~ 65 | Nominal Rating | 17 ~ 100 |
| Setting Current (Min. ~ Max.) | | A | 0.18 | 0.12 ~ 0.18 | 10 | 7 ~ 10 | 10 | 7 ~ 10 | 25 | 17 ~ 25 |
| | | | 0.26 | 0.18 ~ 0.26 | 12 | 8 ~ 12 | 12 | 8 ~ 12 | 32 | 22 ~ 32 |
| | | | 0.35 | 0.25 ~ 0.35 | 18 | 12 ~ 18 | 18 | 12 ~ 18 | 40 | 28 ~ 40 |
| | | | 0.5 | 0.34 ~ 0.5 | 22 | 15 ~ 22 | 22 | 15 ~ 22 | 50 | 34 ~ 50 |
| | | | 0.7 | 0.5 ~ 0.7 | 25 | 17 ~ 25 | 25 | 17 ~ 25 | 65 | 45 ~ 65 |
| | | | 0.9 | 0.6 ~ 0.9 | 32 | 22 ~ 32 | 32 | 22 ~ 32 | 75 | 52 ~ 75 |
| | | | 1.2 | 0.8 ~ 1.2 | 40 | 28 ~ 40 | 40 | 28 ~ 40 | 85 | 59 ~ 85 |
| | | | 1.6 | 1.1 ~ 1.6 | | | 50 | 34 ~ 50 | 100 | 70 ~ 100 |
| | | | 2.1 | 1.5 ~ 2.1 | | | 65 | 45 ~ 65 | | |
| | | | 3 | 2 ~ 3 | | | | | | |
| | | | 4.2 | 2.8 ~ 4.2 | | | | | | |
| | | | 5 | 3 ~ 5 | | | | | | |
| | | | 6 | 4 ~ 6 | | | | | | |
| | | | 8 | 5.6 ~ 8 | | | | | | |
| | | | 9 | 6 ~ 9 | | | | | | |
| | | | 12 | 8 ~ 12 | | | | | | |
| Auxiliary Contact | | | 1NO1NC | | 1NO1NC | | 1NO1NC | | 1NO1NC | |
| Reset Method | | | Manual/Auto | | Manual/Auto | | Manual/Auto | | Manual/Auto | |
| Dimensions | W×H×D | mm | 45×78.2×82.7 | | 45×80.7×95.5 | | 55×89.3×110.7 | | 70×105×128.1 | |

## 150 ~ 800 AF

| Model Name (Basic) | | | HGT150 | | HGT265 | | HGT500 | | HGT800 | |
|---|---|---|---|---|---|---|---|---|---|---|
| 3- Pole, 2 Element | | | HGT150H | | HGT265H | | HGT500H | | HGT800H | |
| 3- Pole, 3 Element (Loss Phase Protection) | | | HGT150K | | HGT265K | | HGT500K | | HGT800K | |
| Current | | A | Nominal Rating | 48 ~ 150 | Nominal Rating | 48 ~ 265 | Nominal Rating | 90 ~ 500 | Nominal Rating | 378 ~ 800 |
| Setting Current (Min. ~ Max.) | | A | 80 | 48 ~ 80 | 80 | 48 ~ 80 | 150 | 90 ~ 150 | 630 | 378 ~ 630 |
| | | | 115 | 69 ~ 115 | 115 | 69 ~ 115 | 185 | 111 ~ 185 | 800 | 480 ~ 800 |
| | | | 130 | 78 ~ 130 | 130 | 78 ~ 130 | 225 | 135 ~ 225 | | |
| | | | 150 | 90 ~ 150 | 150 | 90 ~ 150 | 265 | 159 ~ 265 | | |
| | | | | | 185 | 111 ~ 185 | 300 | 180 ~ 300 | | |
| | | | | | 225 | 135 ~ 225 | 400 | 240 ~ 400 | | |
| | | | | | 265 | 159 ~ 265 | 500 | 300 ~ 500 | | |
| Auxiliary Contact | | | 1NO1NC | | 1NO1NC | | 1NO1NC | | 1NO1NC | |
| Reset Method | | | Manual/Auto | | Manual/Auto | | Manual/Auto | | Manual/Auto | |
| Dimensions | W×H×D | mm | 180×159×179.3 | | 180×185×179.3 | | 180×205.2×179.3 | | 245×197×209.9 | |

# Ratings and Order Code

## Magnetic Contactor : HGC 9 ~ 18 A

| Rating | | | | HGC | | |
|---|---|---|---|---|---|---|
| **Model Name** | | | | **HGC9** | **HGC12** | **HGC18** |
| IEC 60947-4 | | | | | | |
| Rated Insulation Voltage [Ui] | | | V | 800 | 800 | 800 |
| Rated Operational Voltage [Ue] | | | V | 690 | 690 | 690 |
| Rated Impulse Withstand Voltage [Uimp] | | | kV | 6 | 6 | 6 |
| Rated Thermal Current Ith (AC1) | | | A | 25 | 25 | 40 |
| AC3 | 200 ~ 240 V | | kW/A | 2.5/9 | 3.5/12 | 4.5/18 |
| | 380 ~ 440 V | | | 4/9 | 5.5/12 | 7.5/18 |
| | 500 ~ 550 V | | | 4/7 | 7.5/12 | 8.5/13 |
| | 660 ~ 690 V | | | 4/6 | 7.5/9 | 7.5/9 |
| | 1,000 V | | | - | - | - |
| | Lifespan | Electrical | 10,000 times | 250 | 250 | 250 |
| | | Mechanical | | 1,500 | 1,500 | 1,500 |
| AC4 | 200 ~ 240 V | | kW/A | 1.5/8 | 2.2/11 | 3.7/16 |
| | 380 ~ 440 V | | | 2.2/6 | 4/9 | 4/11 |
| | Electrical Lifespan | | 10,000 times | 3 | 3 | 3 |
| AC1, 2, 3 Load Permitted Operating Frequency/Time | 100 % Load | | Frequency | 1,000 | 1,000 | 1,000 |
| | 50 % Load (DC) | | | 2,000 | 2,000 | 2,000 |
| | 20 % Load (DC) | | | 3,600 | 3,600 | 3,600 |
| AC4 Load Permitted Operating Frequency/Time | 100 % Load | | Frequency | 300 | 300 | 300 |
| | 50 % Load | | | 600 | 600 | 600 |
| Making Capacity | 220 V | | A | 110 | 130 | 180 |
| | 440 V | | | 90 | 120 | 180 |
| Breaking Capacity | 220 V | | A | 88 | 104 | 144 |
| | 440 V | | | 72 | 96 | 144 |
| Mounting Method | | | | Screw & Rail Mounting | | |
| **Auxiliary Contact** | | | | | | |
| Standard | AC | | | 1NO1NC or 2NO2NC | | |
| | DC | | | 1NO1NC or 2NO2NC | | |
| | AC/DC | | | - | | |
| Additional | AC | | | 2NO2NC | | |
| | DC | | | 2NO2NC | | |
| | AC/DC | | | - | | |
| **Dimensions** | | | | | | |
| AC | W×H×D | | mm | 45×94.2×91.1 | | |
| DC | | | | 45×94.2×124 | | |
| AC/DC | | | | - | | |
| **Weight** | | | | | | |
| AC | | | kg | 0.4 | | |
| DC | | | | 0.6 | | |
| AC/DC | | | | - | | |
| **Contact Arrangement** | | | | | | |
| Main | Main Contact | | 3a |  | | |
| | Auxiliary Contact | | 2a2b | | | |
| Main + Auxiliary Block Added (2a2b) | Main Contact | | 3a |  | | |
| | Auxiliary Contact | | 4a4b | | | |



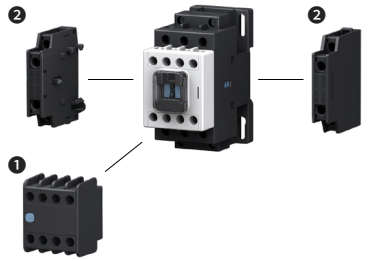


※ For auxiliary contact usage, refer to Page 62 ~ 63. When using auxiliary contact, Up to 6a can be made for A contact and up to 4b for B contact.
When using 4a4b condition by using side auxiliary block, upper auxiliary block cannot be used. In the main 2a2b, upper auxiliary block can be used.

※ When implementing an electrical interlock using the b(NC) contact of a contactor, additional safety measures such as time delays and mechanical interlocks must be applied to prevent short circuit accidents.

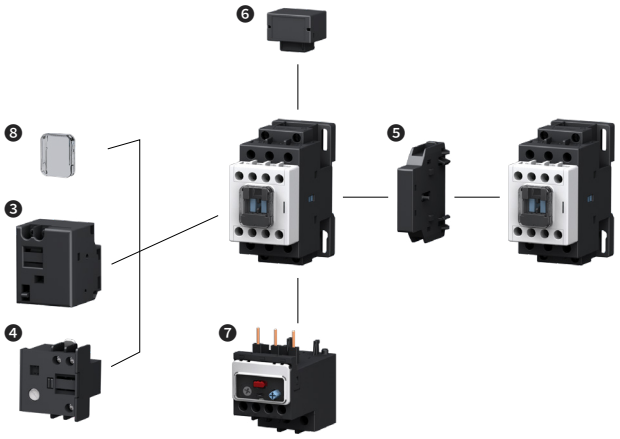
## Accessories

### Auxiliary Contacts




❶ Auxiliary Contact Block (Front Mounting)
HGC TB - 62 page
❷ Auxiliary Contact Block (Side Mounting)
HGC SB 40 - 62 page

### Other Accessories




❸ Mechanical Latching Block
HGC LB 100 - 65 page
❹ Timer
HGC ET - 67 page
❺ Interlock Unit
HGC IU 40 - 64 page
❻ Surge Absorber
HGC RC/CD 40 - 66 page
❼ Thermal Overload Relay
HGT 18 - 52 page
❽ Front Safety Cover
HGCFC 100 - 69 page

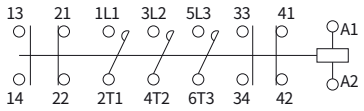
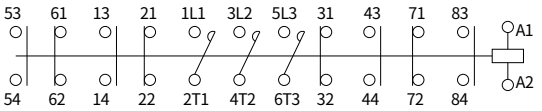
## Order Code

・Based on standard order (General type, with terminal cover), without accessories/
Auxiliary contact：Based on 2NO2NC

| Operational Voltage (V) | | HGC9 | HGC12 | HGC18 |
|---|---|---|---|---|
| AC (60 Hz) | 24 | HGC9 22NS A024 | HGC12 22NS A024 | HGC18 22NS A024 |
| | 48 | HGC9 22NS A048 | HGC12 22NS A048 | HGC18 22NS A048 |
| | 110 | HGC9 22NS A110 | HGC12 22NS A110 | HGC18 22NS A110 |
| | 120 | HGC9 22NS A120 | HGC12 22NS A120 | HGC18 22NS A120 |
| | 220 | HGC9 22NS A220 | HGC12 22NS A220 | HGC18 22NS A220 |
| | 240 | HGC9 22NS A240 | HGC12 22NS A240 | HGC18 22NS A240 |
| | 380 | HGC9 22NS A380 | HGC12 22NS A380 | HGC18 22NS A380 |
| | 440 | HGC9 22NS A440 | HGC12 22NS A440 | HGC18 22NS A440 |
| AC (50 Hz) | 24 | HGC9 22NS X024 | HGC12 22NS X024 | HGC18 22NS X024 |
| | 48 | HGC9 22NS X048 | HGC12 22NS X048 | HGC18 22NS X048 |
| | 110 | HGC9 22NS X110 | HGC12 22NS X110 | HGC18 22NS X110 |
| | 120 | HGC9 22NS X120 | HGC12 22NS X120 | HGC18 22NS X120 |
| | 220 | HGC9 22NS X220 | HGC12 22NS X220 | HGC18 22NS X220 |
| | 240 | HGC9 22NS X240 | HGC12 22NS X240 | HGC18 22NS X240 |
| | 380 | HGC9 22NS X380 | HGC12 22NS X380 | HGC18 22NS X380 |
| | 440 | HGC9 22NS X440 | HGC12 22NS X440 | HGC18 22NS X440 |
| DC | 24 | HGC9 22NS D024 | HGC12 22NS D024 | HGC18 22NS D024 |
| | 48 | HGC9 22NS D048 | HGC12 22NS D048 | HGC18 22NS D048 |
| | 110 | HGC9 22NS D110 | HGC12 22NS D110 | HGC18 22NS D110 |
| | 125 | HGC9 22NS D125 | HGC12 22NS D125 | HGC18 22NS D125 |
| | 220 | HGC9 22NS D220 | HGC12 22NS D220 | HGC18 22NS D220 |

# Ratings and Order Code

## Magnetic Contactor : HGC 25 ~ 40 A

| Rating | | | | HGC | | |
|---|---|---|---|---|---|---|
| **Model Name** | | | | **HGC25** | **HGC32** | **HGC40** |
| IEC 60947 | | | | | | |
| Rated Insulation Voltage [Ui] | | | V | 800 | 800 | 800 |
| Rated Operational Voltage [Ue] | | | V | 690 | 690 | 690 |
| Rated Impulse Withstand Voltage [Uimp] | | | kV | 6 | 6 | 6 |
| Rated Thermal Current Ith (AC1) | | | A | 45 | 55 | 60 |
| AC3 | 200 ~ 240 V | | kW/A | 5.5/25 | 7.5/32 | 11/40 |
| | 380 ~ 440 V | | | 11/25 | 15/32 | 18.5/40 |
| | 500 ~ 550 V | | | 15/22 | 18.5/28 | 22/32 |
| | 660 ~ 690 V | | | 15/17 | 18.5/20 | 22/23 |
| | 1,000 V | | | - | - | - |
| | Lifespan | Electrical | 10,000 times | 250 | 200 | 200 |
| | | Mechanical | | 1,500 | 1,500 | 1,500 |
| AC4 | 200 ~ 240 V | | kW/A | 3.7/18 | 4.5/22 | 5.5/25 |
| | 380 ~ 440 V | | | 5.5/13 | 7.5/17 | 11/24 |
| | Electrical Lifespan | | 10,000 times | 3 | 3 | 3 |
| AC1, 2, 3 Load Permitted Operating Frequency/Time | 100 % Load | | Frequency | 1,000 | 1,000 | 1,000 |
| | 50 % Load (DC) | | | 2,000 | 2,000 | 2,000 |
| | 20 % Load (DC) | | | 3,600 | 3,600 | 3,600 |
| AC4 Load Permitted Operating Frequency/Time | 100 % Load | | Frequency | 300 | 300 | 250 |
| | 50 % Load | | | 600 | 600 | 500 |
| Making Capacity | 220 V | | A | 250 | 320 | 400 |
| | 440 V | | | 250 | 320 | 400 |
| Breaking Capacity | 220 V | | A | 200 | 256 | 320 |
| | 440 V | | | 200 | 256 | 320 |
| Mounting Method | | | | Screw & Rail Mounting | | |
| **Auxiliary Contact** | | | | | | |
| Standard | AC | | | 1NO1NC or 2NO2NC | | |
| | DC | | | 1NO1NC or 2NO2NC | | |
| | AC/DC | | | - | | |
| Additional | AC | | | 2NO2NC | | |
| | DC | | | 2NO2NC | | |
| | AC/DC | | | - | | |
| **Dimensions** | | | | | | |
| AC | W×H×D | | mm | 45×99.6×96.6 | | |
| DC | | | | 45×99.6×129.5 | | |
| AC/DC | | | | - | | |
| **Weight** | | | | | | |
| AC | | | kg | 0.5 | | |
| DC | | | | 0.65 | | |
| AC/DC | | | | - | | |
| **Contact Arrangement** | | | | | | |
| Main | Main Contact | | 3a |  | | |
| | Auxiliary Contact | | 2a2b | | | |
| Main + Auxiliary Block Added (2a2b) | Main Contact | | 3a |  | | |
| | Auxiliary Contact | | 4a4b | | | |



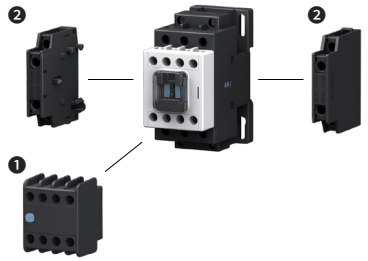


※ For auxiliary contact usage, refer to Page 62 ~ 63. When using auxiliary contact, Up to 6a can be made for A contact and up to 4b for B contact.
When using 4a4b condition by using side auxiliary block, upper auxiliary block cannot be used. In the main 2a2b, upper auxiliary block can be used.

※ When implementing an electrical interlock using the b(NC) contact of a contactor, additional safety measures such as time delays and mechanical interlocks must be applied to prevent short circuit accidents.

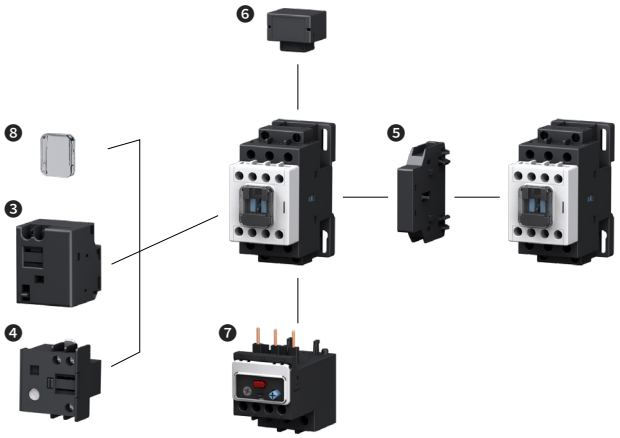
## Accessories

### Auxiliary Contacts




❶ Auxiliary Contact Block (Front Mounting)
HGC TB - 62 page
❷ Auxiliary Contact Block (Side Mounting)
HGC SB 40 - 62 page

### Other Accessories




❸ Mechanical Latching Block
HGC LB 100 - 65 page
❹ Timer
HGC ET - 67 page
❺ Interlock Unit
HGC IU 40 - 64 page
❻ Surge Absorber
HGC RC/CD 40 - 66 page
❼ Thermal Overload Relay
HGT 40 - 54 page
❽ Front Safety Cover
HGCFC 100 - 69 page

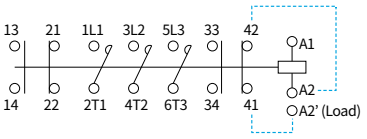
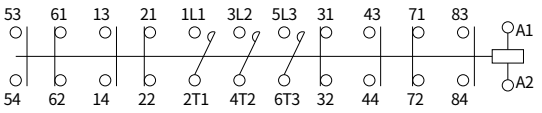
## Order Code

・Based on standard order (General type, with terminal cover), without accessories/
Auxiliary contact：Based on 2NO2NC

| Operational Voltage (V) | | HGC25 | HGC32 | HGC40 |
|---|---|---|---|---|
| AC (60 Hz) | 24 | HGC25 22NS A024 | HGC32 22NS A024 | HGC40 22NS A024 |
| | 48 | HGC25 22NS A048 | HGC32 22NS A048 | HGC40 22NS A048 |
| | 110 | HGC25 22NS A110 | HGC32 22NS A110 | HGC40 22NS A110 |
| | 120 | HGC25 22NS A120 | HGC32 22NS A120 | HGC40 22NS A120 |
| | 220 | HGC25 22NS A220 | HGC32 22NS A220 | HGC40 22NS A220 |
| | 240 | HGC25 22NS A240 | HGC32 22NS A240 | HGC40 22NS A240 |
| | 380 | HGC25 22NS A380 | HGC32 22NS A380 | HGC40 22NS A380 |
| | 440 | HGC25 22NS A440 | HGC32 22NS A440 | HGC40 22NS A440 |
| AC (50 Hz) | 24 | HGC25 22NS X024 | HGC32 22NS X024 | HGC40 22NS X024 |
| | 48 | HGC25 22NS X048 | HGC32 22NS X048 | HGC40 22NS X048 |
| | 110 | HGC25 22NS X110 | HGC32 22NS X110 | HGC40 22NS X110 |
| | 120 | HGC25 22NS X120 | HGC32 22NS X120 | HGC40 22NS X120 |
| | 220 | HGC25 22NS X220 | HGC32 22NS X220 | HGC40 22NS X220 |
| | 240 | HGC25 22NS X240 | HGC32 22NS X240 | HGC40 22NS X240 |
| | 380 | HGC25 22NS X380 | HGC32 22NS X380 | HGC40 22NS X380 |
| | 440 | HGC25 22NS X440 | HGC32 22NS X440 | HGC40 22NS X440 |
| DC | 24 | HGC25 22NS D024 | HGC32 22NS D024 | HGC40 22NS D024 |
| | 48 | HGC25 22NS D048 | HGC32 22NS D048 | HGC40 22NS D048 |
| | 110 | HGC25 22NS D110 | HGC32 22NS D110 | HGC40 22NS D110 |
| | 125 | HGC25 22NS D125 | HGC32 22NS D125 | HGC40 22NS D125 |
| | 220 | HGC25 22NS D220 | HGC32 22NS D220 | HGC40 22NS D220 |

# Ratings and Order Code

## Magnetic Contactor : HGC 50 ~ 65 A

| Rating | | | | HGC | |
|---|---|---|---|---|---|
| **Model Name** | | | | **HGC50** | **HGC65** |
| IEC 60947 | | | | | |
| Rated Insulation Voltage [Ui] | | | V | 1,000 | 1,000 |
| Rated Operational Voltage [Ue] | | | V | 690 | 690 |
| Rated Impulse Withstand Voltage [Uimp] | | | kV | 8 | 8 |
| Rated Thermal Current Ith (AC1) | | | A | 70 | 85 |
| AC3 | 200 ~ 240 V | | kW/A | 15/50 | 18.5/65 |
| | 380 ~ 440 V | | | 22/50 | 30/65 |
| | 500 ~ 550 V | | | 30/43 | 33/60 |
| | 660 ~ 690 V | | | 30/28 | 33/35 |
| | 1,000 V | | | - | - |
| | Lifespan | Electrical | 10,000 times | 200 | 200 |
| | | Mechanical | | 1,500 | 1,500 |
| AC4 | 200 ~ 240 V | | kW/A | 7.5/35 | 11/50 |
| | 380 ~ 440 V | | | 15/32 | 22/47 |
| | Electrical Lifespan | | 10,000 times | 3 | 3 |
| AC1, 2, 3 Load Permitted Operating Frequency/Time | 100 % Load | | Frequency | 750 | 750 |
| | 50 % Load (DC) | | | 1,500 (900) | 1,500 (900) |
| | 20 % Load (DC) | | | 3,000 (1,200) | 3,000 (1,200) |
| AC4 Load Permitted Operating Frequency/Time | 100 % Load | | Frequency | 250 | 250 |
| | 50 % Load | | | 500 | 500 |
| Making Capacity | 220 V | | A | 500 | 650 |
| | 440 V | | | 500 | 650 |
| Breaking Capacity | 220 V | | A | 400 | 520 |
| | 440 V | | | 400 | 520 |
| Mounting Method | | | | Screw & Rail Mounting | |
| **Auxiliary Contact** | | | | | |
| Standard | AC | | | 2NO2NC | |
| | DC | | | 2NO1NC | |
| | AC/DC | | | - | |
| Additional | AC | | | 2NO2NC | |
| | DC | | | 1NO1NC | |
| | AC/DC | | | - | |
| **Dimensions** | | | | | |
| AC | W×H×D | | mm | 55×127.6×129.1 | |
| DC | | | | 55×127.6×129.1 | |
| AC/DC | | | | - | |
| **Weight** | | | | | |
| AC | | | kg | 0.8 | |
| DC | | | | 0.8 | |
| AC/DC | | | | - | |
| **Contact Arrangement** | | | | | |
| Main | Main Contact | | 3a |  | |
| | Auxiliary Contact | | 2a2b | | |
| Main + Auxiliary Block Added (2a2b) | Main Contact | | 3a |  | |
| | Auxiliary Contact | | 4a4b | | |

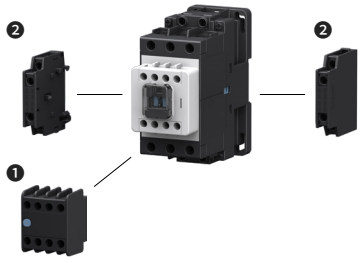
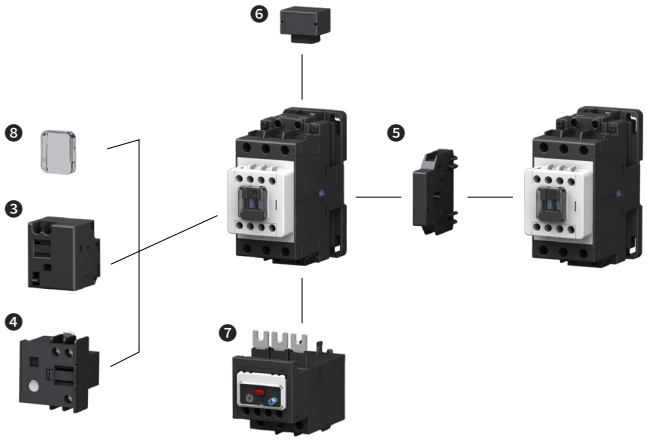




※ For auxiliary contact usage, refer to Page 62 ~ 63. When using auxiliary contact, Up to 6a can be made for A contact and up to 4b for B contact.
When using 4a4b condition by using side auxiliary block, upper auxiliary block cannot be used. In the main 2a2b, upper auxiliary block can be used.

※ When implementing an electrical interlock using the b(NC) contact of a contactor, additional safety measures such as time delays and mechanical interlocks must be applied to prevent short circuit accidents.

## Accessories

| Auxiliary Contacts | Other Accessories |
|---|---|
|  |  |

❶ Auxiliary Contact Block (Front Mounting)
HGC TB - 62 page
❷ Auxiliary Contact Block (Side Mounting)
HGC SB 100 - 62 page

❸ Mechanical Latching Block
HGC LB 100 - 65 page
❹ Timer
HGC ET - 67 page
❺ Interlock Unit
HGC IU 100 - 64 page
❻ Surge Absorber
HGC RC/CD100 - 66 page
❼ Thermal Overload Relay
HGT 65 - 54 page
❽ Front Safety Cover
HGCFC 100 - 69 page

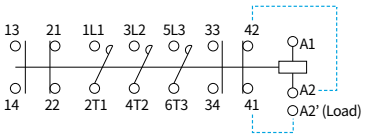
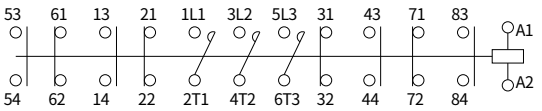
## Order Code

・Based on standard order (General type, with terminal cover), without accessories/ Auxiliary contact：AC based on 2NO2NC, DC based on 2NO1NC

| Operational Voltage (V) | | HGC50 | HGC65 |
|---|---|---|---|
| AC (60 Hz) | 24 | HGC50 22NS A024 | HGC65 22NS A024 |
| | 48 | HGC50 22NS A048 | HGC65 22NS A048 |
| | 110 | HGC50 22NS A110 | HGC65 22NS A110 |
| | 120 | HGC50 22NS A120 | HGC65 22NS A120 |
| | 220 | HGC50 22NS A220 | HGC65 22NS A220 |
| | 240 | HGC50 22NS A240 | HGC65 22NS A240 |
| | 380 | HGC50 22NS A380 | HGC65 22NS A380 |
| | 440 | HGC50 22NS A440 | HGC65 22NS A440 |
| AC (50 Hz) | 24 | HGC50 22NS X024 | HGC65 22NS X024 |
| | 48 | HGC50 22NS X048 | HGC65 22NS X048 |
| | 110 | HGC50 22NS X110 | HGC65 22NS X110 |
| | 120 | HGC50 22NS X120 | HGC65 22NS X120 |
| | 220 | HGC50 22NS X220 | HGC65 22NS X220 |
| | 240 | HGC50 22NS X240 | HGC65 22NS X240 |
| | 380 | HGC50 22NS X380 | HGC65 22NS X380 |
| | 440 | HGC50 22NS X440 | HGC65 22NS X440 |
| DC | 24 | HGC50 21NS D024 | HGC65 21NS D024 |
| | 48 | HGC50 21NS D048 | HGC65 21NS D048 |
| | 110 | HGC50 21NS D110 | HGC65 21NS D110 |
| | 125 | HGC50 21NS D125 | HGC65 21NS D125 |
| | 220 | HGC50 21NS D220 | HGC65 21NS D220 |

# Ratings and Order Code

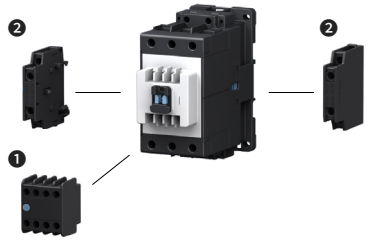
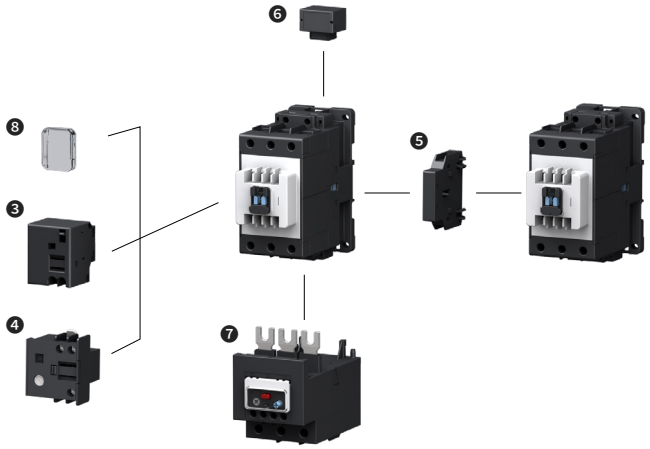
## Magnetic Contactor : HGC 75 ~ 100 A

| Rating | | | | HGC | | |
|---|---|---|---|---|---|---|
| **Model Name** | | | | **HGC75** | **HGC85** | **HGC100** |
| IEC 60947 | | | | | | |
| Rated Insulation Voltage [Ui] | | | V | 1,000 | 1,000 | 1,000 |
| Rated Operational Voltage [Ue] | | | V | 690 | 690 | 690 |
| Rated Impulse Withstand Voltage [Uimp] | | | kV | 8 | 8 | 8 |
| Rated Thermal Current Ith (AC1) | | | A | 115 | 125 | 145 |
| AC3 | 200 ~ 240 V | | kW/A | 22/75 | 25/85 | 30/100 |
| | 380 ~ 440 V | | | 37/75 | 45/85 | 55/100 |
| | 500 ~ 550 V | | | 37/64 | 50/75 | 55/85 |
| | 660 ~ 690 V | | | 37/42 | 45/45 | 50/65 |
| | 1,000 V | | | - | - | - |
| | Lifespan | Electrical | 10,000 times | 200 | 200 | 200 |
| | | Mechanical | | 1,000 | 1,000 | 1,000 |
| AC4 | 200 ~ 240 V | | kW/A | 13/55 | 15/65 | 17/72 |
| | 380 ~ 440 V | | | 25/52 | 30/62 | 33/68 |
| | Electrical Lifespan | | 10,000 times | 3 | 3 | 3 |
| AC1, 2, 3 Load Permitted Operating Frequency/Time | 100 % Load | | Frequency | 450 | 450 | 450 |
| | 50 % Load (DC) | | | 900 | 900 | 900 |
| | 20 % Load (DC) | | | 1,800 | 1,800 | 1,800 |
| AC4 Load Permitted Operating Frequency/Time | 100 % Load | | Frequency | 200 | 200 | 200 |
| | 50 % Load | | | 400 | 400 | 400 |
| Making Capacity | 220 V | | A | 750 | 850 | 1,000 |
| | 440 V | | | 750 | 850 | 1,000 |
| Breaking Capacity | 220 V | | A | 600 | 680 | 800 |
| | 440 V | | | 600 | 680 | 800 |
| Mounting Method | | | | Screw & Rail Mounting | | |
| Auxiliary Contact | | | | | | |
| Standard | AC | | | 2NO2NC | | |
| | DC | | | 2NO1NC | | |
| | AC/DC | | | - | | |
| Additional | AC | | | 2NO2NC | | |
| | DC | | | 1NO1NC | | |
| | AC/DC | | | - | | |
| Dimensions | | | | | | |
| AC | W×H×D | | mm | 70×146×153 | | |
| DC | | | | 70×146×153 | | |
| AC/DC | | | | - | | |
| Weight | | | | | | |
| AC | | | kg | 1.3 | | |
| DC | | | | 1.3 | | |
| AC/DC | | | | - | | |
| Contact Arrangement | | | | | | |
| Main | Main Contact | | 3a |   | | |
| | Auxiliary Contact | | 2a2b | | | |
| Main + Auxiliary Block Added (2a2b) | Main Contact | | 3a |   | | |
| | Auxiliary Contact | | 4a4b | | | |

※ For auxiliary contact usage, refer to Page 62 ~ 63. When using auxiliary contact, Up to 6a can be made for A contact and up to 4b for B contact.
When using 4a4b condition by using side auxiliary block, upper auxiliary block cannot be used. In the main 2a2b, upper auxiliary block can be used.

※ When implementing an electrical interlock using the b(NC) contact of a contactor, additional safety measures such as time delays and mechanical interlocks must be applied to prevent short circuit accidents.

## Accessories

| Auxiliary Contacts | Other Accessories |
|---|---|
|  |  |

❶ Auxiliary Contact Block (Front Mounting)
HGC TB - 62 page
❷ Auxiliary Contact Block (Side Mounting)
HGC SB 100 - 62 page

❸ Mechanical Latching Block
HGC LB 100 - 65 page
❹ Timer
HGC ET - 67 page
❺ Interlock Unit
HGC IU 100 - 64 page
❻ Surge Absorber
HGC RC/CD100 - 66 page
❼ Thermal Overload Relay
HGT 65 - 54 page
❽ Front Safety Cover
HGCFC 100 - 69 page

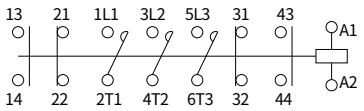
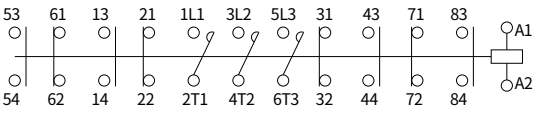
## Order Code

・Based on standard order (General type, with terminal cover), without accessories/
Auxiliary contact：AC based on 2NO2NC, DC based on 2NO1NC

| Operational Voltage(V) | | HGC75 | HGC85 | HG100 |
|---|---|---|---|---|
| AC (60 Hz) | 24 | HGC75 22NS A024 | HGC85 22NS A024 | HGC100 22NS A024 |
| | 48 | HGC75 22NS A048 | HGC85 22NS A048 | HGC100 22NS A048 |
| | 110 | HGC75 22NS A110 | HGC85 22NS A110 | HGC100 22NS A110 |
| | 120 | HGC75 22NS A120 | HGC85 22NS A120 | HGC100 22NS A120 |
| | 220 | HGC75 22NS A220 | HGC85 22NS A220 | HGC100 22NS A220 |
| | 240 | HGC75 22NS A240 | HGC85 22NS A240 | HGC100 22NS A240 |
| | 380 | HGC75 22NS A380 | HGC85 22NS A380 | HGC100 22NS A380 |
| | 440 | HGC75 22NS A440 | HGC85 22NS A440 | HGC100 22NS A440 |
| AC (50 Hz) | 24 | HGC75 22NS X024 | HGC85 22NS X024 | HGC100 22NS X024 |
| | 48 | HGC75 22NS X048 | HGC85 22NS X048 | HGC100 22NS X048 |
| | 110 | HGC75 22NS X110 | HGC85 22NS X110 | HGC100 22NS X110 |
| | 120 | HGC75 22NS X120 | HGC85 22NS X120 | HGC100 22NS X120 |
| | 220 | HGC75 22NS X220 | HGC85 22NS X220 | HGC100 22NS X220 |
| | 240 | HGC75 22NS X240 | HGC85 22NS X240 | HGC100 22NS X240 |
| | 380 | HGC75 22NS X380 | HGC85 22NS X380 | HGC100 22NS X380 |
| | 440 | HGC75 22NS X440 | HGC85 22NS X440 | HGC100 22NS X440 |
| DC | 24 | HGC75 21NS D024 | HGC85 21NS D024 | HGC100 21NS D024 |
| | 48 | HGC75 21NS D048 | HGC85 21NS D048 | HGC100 21NS D048 |
| | 110 | HGC75 21NS D110 | HGC85 21NS D110 | HGC100 21NS D110 |
| | 125 | HGC75 21NS D125 | HGC85 21NS D125 | HGC100 21NS D125 |
| | 220 | HGC75 21NS D220 | HGC85 21NS D220 | HGC100 21NS D220 |

# Ratings and Order Code

## Magnetic Contactor : HGC 115 ~ 150 A

| Rating | | | | HGC | | |
|---|---|---|---|---|---|---|
| **Model Name** | | | | **HGC115** | **HGC130** | **HGC150** |
| IEC 60947-4 | | | | | | |
| Rated Insulation Voltage [Ui] | | | V | 1,000 | 1,000 | 1,000 |
| Rated Operational Voltage [Ue] | | | V | 1,000 | 1,000 | 1,000 |
| Rated Impulse Withstand Voltage [Uimp] | | | kV | 8 | 8 | 8 |
| Rated Thermal Current Ith (AC1) | | | A | 160 | 180 | 210 |
| AC3 | 200 ~ 240 V | | kW/A | 37/115 | 40/130 | 45/150 |
| | 380 ~ 440 V | | | 60/115 | 65/130 | 75/150 |
| | 500 ~ 550 V | | | 59/100 | 70/120 | 90/140 |
| | 660 ~ 690 V | | | 55/65 | 75/82 | 90/120 |
| | 1,000 V | | | 65/50 | 75/54 | 90/66 |
| | Lifespan | Electrical | 10,000 times | 100 | 100 | 100 |
| | | Mechanical | | 500 | 500 | 500 |
| AC4 | 200 ~ 240 V | | kW/A | 19/80 | 22/93 | 30/125 |
| | 380 ~ 440 V | | | 37/75 | 45/90 | 55/110 |
| | Electrical Lifespan | | 10,000 times | 3 | 3 | 3 |
| AC1, 2, 3 Load Permitted Operating Frequency/Time | 100 % Load | | Frequency | 450 | 450 | 450 |
| | 50 % Load (DC) | | | 900 | 900 | 900 |
| | 20 % Load (DC) | | | 1,800 | 1,800 | 1,800 |
| AC4 Load Permitted Operating Frequency/Time | 100 % Load | | Frequency | 200 | 200 | 200 |
| | 50 % Load | | | 400 | 400 | 400 |
| Making Capacity | 220 V | | A | 1,150 | 1,300 | 1,500 |
| | 440 V | | | 1,150 | 1,300 | 1,500 |
| Breaking Capacity | 220 V | | A | 920 | 1,040 | 1,200 |
| | 440 V | | | 920 | 1,040 | 1,200 |
| Mounting Method | | | | Screw Mounting | | |
| Auxiliary Contact | | | | | | |
| Standard | AC/DC | | | 2NO2NC | | |
| Additional [1] | AC/DC | | | 2NO2NC | | |
| Dimensions | AC/DC | W×H×D | mm | 103×155×145.1 | | |
| Weight | AC/DC | | kg | 2.7 | | |
| Contact Arrangement | | | | | | |
| Main | Main Contact | | 3a |  | | |
| | Auxiliary Contact | | 2a2b | | | |
| Main + Auxiliary Block Added (2a2b) | Main Contact | | 3a |  | | |
| | Auxiliary Contact | | 4a4b | | | |

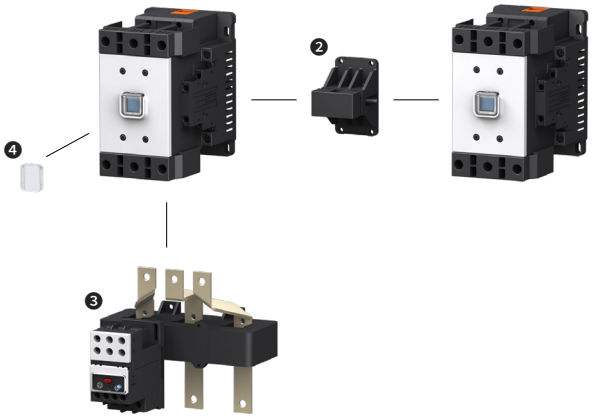




1) Maximum number of auxiliary contact that can be mounted horizontally on the side.
※ For auxiliary contact usage, refer to Page 62 ~ 63.

※ When implementing an electrical interlock using the b(NC) contact of a contactor, additional safety measures such as time delays and mechanical interlocks must be applied to prevent short circuit accidents.

## Accessories

| Auxiliary Contacts | Other Accessories |
|---|---|
|  |  |
| ❶ Auxiliary Contact Block (Side Mounting)<br>HGC SB 800 - 62 page | ❷ Interlock Unit<br>HGC IU 265 - 64 page<br>❸ Thermal Overload Relay<br>HGT 150 - 56 page<br>❹ Front Safety Cover<br>HGCFC 150 - 69 page |

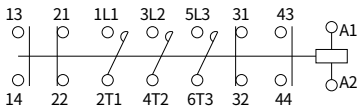
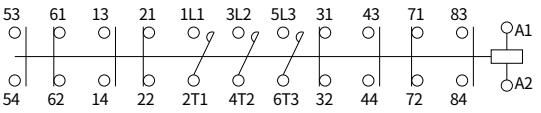
## Order Code

・Based on standard order (General type, with terminal cover), without accessories/
Auxiliary contact：Based on 2NO2NC

| Nominal Voltage (V) | Operational Voltage (V) | HGC115 | HGC130 | HGC150 |
|---|---|---|---|---|
| 220 | AC 100 ~ 240<br>DC 110 ~ 220 | HGC115 22NS F220 | HGC130 22NS F220 | HGC150 22NS F220 |
| | AC 220 ~ 240(50Hz)<br>AC 220 ~ 230(60Hz) | HGC115 22NS Y220 | HGC130 22NS Y220 | HGC150 22NS Y220 |
| 440 | AC 380 ~ 450 | HGC115 22NS F440 | HGC130 22NS F440 | HGC150 22NS F440 |

# Ratings and Order Code

## Magnetic Contactor : HGC 185 ~ 265 A

| Rating | | | | HGC | | |
|---|---|---|---|---|---|---|
| **Model Name** | | | | **HGC185** | **HGC225** | **HGC265** |
| IEC 60947 | | | | | | |
| Rated Insulation Voltage [Ui] | | | V | 1,000 | 1,000 | 1,000 |
| Rated Operational Voltage [Ue] | | | V | 1,000 | 1,000 | 1,000 |
| Rated Impulse Withstand Voltage [Uimp] | | | kV | 8 | 8 | 8 |
| Rated Thermal Current Ith (AC1) | | | A | 275 | 315 | 350 |
| AC3 | 200 ~ 240 V | | kW/A | 55/185 | 75/225 | 80/265 |
| | 380 ~ 440 V | | | 90/185 | 132/225 | 147/265 |
| | 500 ~ 550 V | | | 110/180 | 132/200 | 150/225 |
| | 660 ~ 690 V | | | 110/120 | 132/150 | 160/173 |
| | 1,000 V | | | 110/78 | 132/96 | 160/113 |
| | Lifespan | Electrical | 10,000 times | 100 | 100 | 100 |
| | | Mechanical | | 500 | 500 | 500 |
| AC4 | 200 ~ 240 V | | kW/A | 37/150 | 45/185 | 50/200 |
| | 380 ~ 440 V | | | 75/150 | 90/185 | 102/200 |
| | Electrical Lifespan | | 10,000 times | 3 | 3 | 3 |
| AC1, 2, 3 Load Permitted Operating Frequency/Time | 100 % Load | | Frequency | 300 | 300 | 300 |
| | 50 % Load (DC) | | | 600 | 600 | 600 |
| | 20 % Load (DC) | | | 1,200 | 1,200 | 1,200 |
| AC4 Load Permitted Operating Frequency/Time | 100 % Load | | Frequency | 200 | 200 | 200 |
| | 50 % Load | | | 400 | 400 | 400 |
| Making Capacity | 220 V | | A | 1,850 | 2,250 | 2,650 |
| | 440 V | | | 1,850 | 2,250 | 2,650 |
| Breaking Capacity | 220 V | | A | 1,480 | 1,800 | 2,120 |
| | 440 V | | | 1,480 | 1,800 | 2,120 |
| Mounting Method | | | | Screw Mounting | | |
| Auxiliary Contact | | | | | | |
| Standard | AC/DC | | | 2NO2NC | | |
| Additional [1] | AC/DC | | | 2NO2NC | | |
| Dimensions | AC/DC | W×H×D | mm | 138×204×174.2 | | |
| Weight | AC/DC | | kg | 4.8 | | |
| Contact Arrangement | | | | | | |
| Main | Main Contact | | 3a |  | | |
| | Auxiliary Contact | | 2a2b | | | |
| Main + Auxiliary Block Added (2a2b) | Main Contact | | 3a |  | | |
| | Auxiliary Contact | | 4a4b | | | |

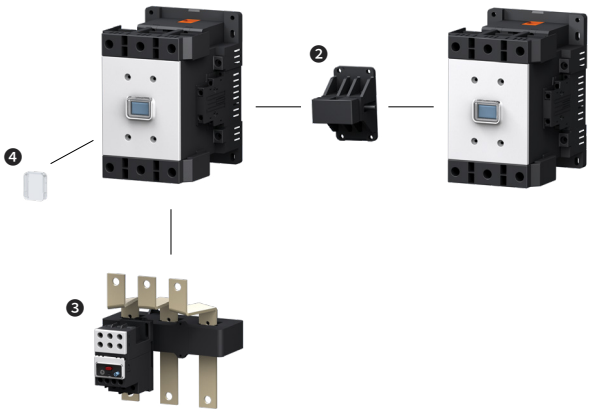




1) Maximum number of auxiliary contact that can be mounted horizontally on the side.
※ For auxiliary contact usage, refer to Page 62 ~ 63.

※ When implementing an electrical interlock using the b(NC) contact of a contactor, additional safety measures such as time delays and mechanical interlocks must be applied to prevent short circuit accidents.

## Accessories

| Auxiliary Contacts | Other Accessories |
|---|---|
|  |  |
| ❶ Auxiliary Contact Block (Side Mounting)<br>HGC SB 800 - 62 page | ❷ Interlock Unit<br>HGC IU 265 - 64 page<br>❸ Thermal Overload Relay<br>HGT 265 - 56 page<br>❹ Front Safety Cover<br>HGCFC 265 - 69 page |

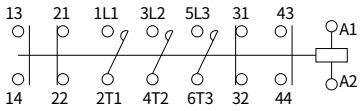
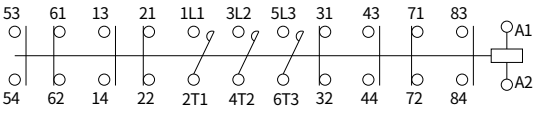
## Order Code

・Based on standard order (General type, with terminal cover), without accessories/
Auxiliary contact：Based on 2NO2NC

| Nominal Voltage (V) | Operational Voltage (V) | HGC185 | HGC225 | HGC265 |
|---|---|---|---|---|
| F220 | AC 100 ~ 240<br>DC 110 ~ 220 | HGC185 22NS F220 | HGC225 22NS F220 | HGC265 22NS F220 |
| F440 | AC 380 ~ 450 | HGC185 22NS F440 | HGC225 22NS F440 | HGC265 22NS F440 |
| Y220 | AC 220 ~ 240 | HGC185 22YS Y220 | HGC225 22YS Y220 | HGC265 22YS Y220 |

# Ratings and Order Code

## Magnetic Contactor : HGC 300 ~ 500 A

| Rating | | | | HGC | | |
|---|---|---|---|---|---|---|
| **Model Name** | | | | **HGC300** | **HGC400** | **HGC500** |
| IEC 60947-4 | | | | | | |
| Rated Insulation Voltage [Ui] | | | V | 1,000 | 1,000 | 1,000 |
| Rated Operational Voltage [Ue] | | | V | 1,000 | 1,000 | 1,000 |
| Rated Impulse Withstand Voltage [Uimp] | | | kV | 8 | 8 | 8 |
| Rated Thermal Current Ith (AC1) | | | A | 400 | 500 | 550 |
| AC3 | 200 ~ 240 V | | kW/A | 90/300 | 125/400 | 140/500 |
| | 380 ~ 440 V | | | 160/300 | 220/400 | 250/500 |
| | 500 ~ 550 V | | | 200/273 | 250/300 | 300/426 |
| | 660 ~ 690 V | | | 200/220 | 250/300 | 335/360 |
| | 1,000 V | | | 200/141 | 250/178 | 275/192 |
| | Lifespan | Electrical | 10,000 times | 100 | 100 | 50 |
| | | Mechanical | | 500 | 500 | 500 |
| AC4 | 200 ~ 240 V | | kW/A | 55/220 | 75/300 | 90/350 |
| | 380 ~ 440 V | | | 110/220 | 150/300 | 175/350 |
| | Electrical Lifespan | | 10,000 times | 3 | 3 | 3 |
| AC1, 2, 3 Load Permitted Operating Frequency/Time | 100 % Load | | Frequency | 300 | 300 | 300 |
| | 50 % Load (DC) | | | 600 | 600 | 600 |
| | 20 % Load (DC) | | | 1,200 | 1,200 | 1,200 |
| AC4 Load Permitted Operating Frequency/Time | 100 % Load | | Frequency | 150 | 150 | 150 |
| | 50 % Load | | | 300 | 300 | 300 |
| Making Capacity | 220 V | | A | 3,000 | 4,000 | 5,000 |
| | 440 V | | | 3,000 | 4,000 | 5,000 |
| Breaking Capacity | 220 V | | A | 2,400 | 3,200 | 4,000 |
| | 440 V | | | 2,400 | 3,200 | 4,000 |
| Mounting Method | | | | Screw Mounting | | |
| Auxiliary Contact | | | | | | |
| Standard | AC/DC | | | 2NO2NC | | |
| Additional [1)] | AC/DC | | | 2NO2NC | | |
| Dimensions | AC/DC | W×H×D | mm | 163×243×203 | | |
| Weight | AC/DC | | kg | 9.2 | | |
| Contact Arrangement | | | | | | |
| Main | Main Contact | | 3a |  | | |
| | Auxiliary Contact | | 2a2b | | | |
| Main + Auxiliary Block Added (2a2b) | Main Contact | | 3a |  | | |
| | Auxiliary Contact | | 4a4b | | | |

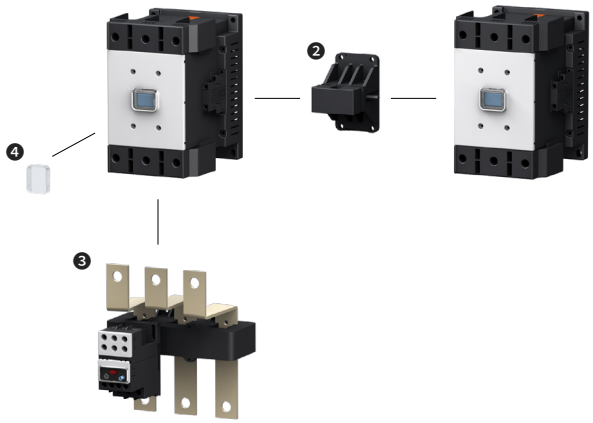




1) Maximum number of auxiliary contact that can be mounted horizontally on the side.
※ For auxiliary contact usage, refer to Page 62 ~ 63.

※ When implementing an electrical interlock using the b(NC) contact of a contactor, additional safety measures such as time delays and mechanical interlocks must be applied to prevent short circuit accidents.

## Accessories

| Auxiliary Contacts | Other Accessories |
|---|---|
|  |  |
| ❶ Auxiliary Contact Block (Side Mounting)<br>HGC SB 800 - 62 page | ❷ Interlock Unit<br>HGC IU 800 - 64 page<br>❸ Thermal Overload Relay<br>HGT 500 - 56 page<br>❹ Front Safety Cover<br>HGCFC 500 - 69 page |

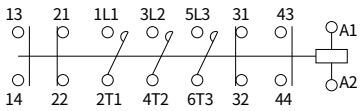
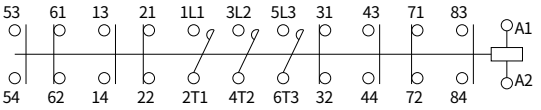
## Order Code

・Based on standard order (General type, with terminal cover), without accessories/
Auxiliary contact : Based on 2NO2NC

| Nominal Voltage (V) | Operational Voltage (V) | HGC300 | HGC400 | HGC500 |
|---|---|---|---|---|
| F220 | AC 100 ~ 240<br>DC 110 ~ 220 | HGC300 22NS F220 | HGC400 22NS F220 | HGC500 22NS F220 |
| F440 | AC 380 ~ 450 | HGC300 22NS F440 | HGC400 22NS F440 | HGC500 22NS F440 |
| Y220 | AC 220 ~ 240 | HGC300 22YS Y220 | HGC400 22YS Y220 | HGC500 22YS Y220 |

# Ratings and Order Code

## Magnetic Contactor : HGC 630 ~ 800 A

| Rating | | | | HGC | |
|---|---|---|---|---|---|
| **Model Name** | | | | **HGC630** | **HGC800** |
| IEC 60947-4 | | | | | |
| Rated Insulation Voltage [Ui] | | | V | 1,000 | 1,000 |
| Rated Operational Voltage [Ue] | | | V | 1,000 | 1,000 |
| Rated Impulse Withstand Voltage [Uimp] | | | kV | 8 | 8 |
| Rated Thermal Current Ith (AC1) | | | A | 750 | 900 |
| AC3 | 200 ~ 240 V | | kW/A | 190/630 | 220/800 |
| | 380 ~ 440 V | | | 330/630 | 440/800 |
| | 500 ~ 550 V | | | 330/500 | 500/720 |
| | 660 ~ 690 V | | | 400/412 | 500/630 |
| | 1,000 V | | | 300/213 | 400/284 |
| | Lifespan | Electrical | 10,000 times | 50 | 50 |
| | | Mechanical | | 500 | 500 |
| AC4 | 200 ~ 240 V | | kW/A | 110/400 | 160/630 |
| | 380 ~ 440 V | | | 200/400 | 300/630 |
| | Electrical Lifespan | | 10,000 times | 3 | 3 |
| AC1, 2, 3 Load Permitted Operating Frequency/Time | 100 % Load | | Frequency | 300 | 300 |
| | 50 % Load (DC) | | | 600 | 600 |
| | 20 % Load (DC) | | | 1,200 | 1,200 |
| AC4 Load Permitted Operating Frequency/Time | 100 % Load | | Frequency | 150 | 150 |
| | 50 % Load | | | 300 | 300 |
| Making Capacity | 220 V | | A | 6,300 | 8,000 |
| | 440 V | | | 6,300 | 8,000 |
| Breaking Capacity | 220 V | | A | 5,040 | 6,400 |
| | 440 V | | | 5,040 | 6,400 |
| Mounting Method | | | | Screw Mounting | |
| Auxiliary Contact | | | | | |
| Standard | AC/DC | | | 2NO2NC | |
| Additional [1)] | AC/DC | | | 2NO2NC | |
| Dimensions | AC/DC | W×H×D | mm | 276×314×255.3 | |
| Weight | AC/DC | | kg | 25 | |
| Contact Arrangement | | | | | |
| Main | Main Contact | | 3a |  | |
| | Auxiliary Contact | | 2a2b | | |
| Main + Auxiliary Block Added (2a2b) | Main Contact | | 3a |  | |
| | Auxiliary Contact | | 4a4b | | |

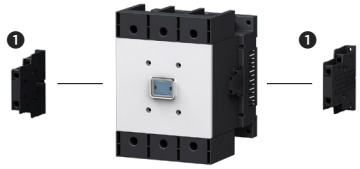
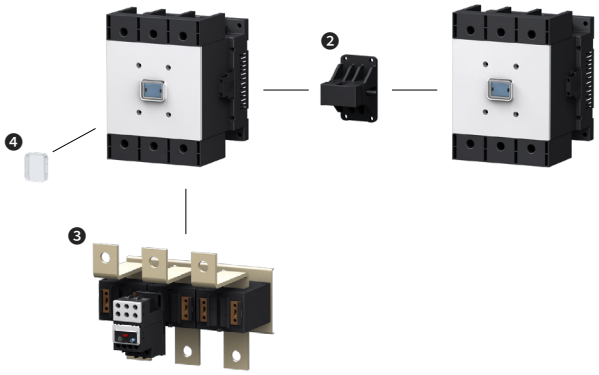




1) Maximum number of auxiliary contact that can be mounted horizontally on the side.
※ For auxiliary contact usage, refer to Page 62 ~ 63.

※ When implementing an electrical interlock using the b(NC) contact of a contactor, additional safety measures such as time delays and mechanical interlocks must be applied to prevent short circuit accidents.

## Accessories

| Auxiliary Contacts | Other Accessories |
|---|---|
|  |  |
| ❶ Auxiliary Contact Block (Side Mounting)<br>HGC SB 800 - 62 page | ❷ Interlock Unit<br>HGC IU 800 - 64 page<br>❸ Thermal Overload Relay<br>HGT 800 - 56 page<br>❹ Front Safety Cover<br>HGCFC 800 - 69 page |

## Order Code

・Based on standard order (General type, with terminal cover), without accessories/
Auxiliary contact：Based on 2NO2NC

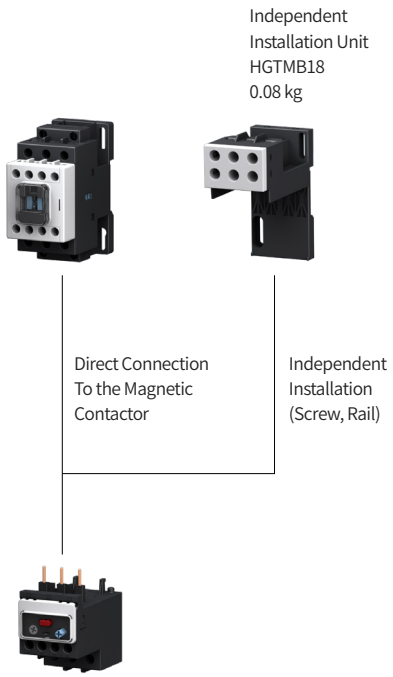
| Nominal Voltage (V) | Operational Voltage (V) | HGC630 | HGC800 |
|---|---|---|---|
| 110 | AC 100 ~ 127<br>DC 100 ~ 110 | HGC630 22NS F110 | HGC800 22NS F110 |
| 220 | AC 200 ~ 240<br>DC 200 ~ 220 | HGC630 22NS F220 | HGC800 22NS F220 |
| 440 | AC 380 ~ 450 | HGC630 22NS F440 | HGC800 22NS F440 |

# Ratings and Order Code

## Thermal Overload Relay (TOR)

| Exterior and Name of Basic Model | | Ratings | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Exterior | Model Name | Current (A) | | | | Applicable Cable ($mm^2$) | | Aux. Contact | Applicable Magnetic Contactor |
| | | Nominal Current | Setting Current | | | Main Circuit | Aux. Circuit | | |
| | | | Min. | Mid. | Max. | | | | |
|  Dimensions (mm)：<br>45 (W)×82.7 (H)×78.2 (D)<br>Weight (kg)：0.12 | HGT18 | 0.18 | 0.12 | 0.15 | 0.18 | 1 ~ 2.5 | 1 ~ 2.5 | 1NO1NC | HGC9<br>HGC12<br>HGC18<br>HGC25<br>HGC32<br>HGC40 |
| | | 0.26 | 0.18 | 0.22 | 0.26 | | | | |
| | | 0.35 | 0.25 | 0.3 | 0.35 | | | | |
| | | 0.5 | 0.34 | 0.42 | 0.5 | | | | |
| | | 0.7 | 0.48 | 0.59 | 0.7 | | | | |
| | | 0.9 | 0.6 | 0.75 | 0.9 | | | | |
| | | 1.2 | 0.8 | 1 | 1.2 | | | | |
| | | 1.6 | 1.1 | 1.35 | 1.6 | | | | |
| | | 2.1 | 1.5 | 1.8 | 2.1 | | | | |
| | | 3 | 2 | 2.5 | 3 | | | | |
| | | 4.2 | 2.8 | 3.5 | 4.2 | | | | |
| | | 5 | 3 | 4 | 5 | | | | |
| | | 6 | 4 | 5 | 6 | | | | |
| | | 8 | 5.6 | 6.8 | 8 | | | | |
| | | 9 | 6 | 7.5 | 9 | | | | |
| | | 12 | 8 | 10 | 12 | | | | |
| | | 18 | 12 | 15 | 18 | | | | |

| Order Code | | | Remark |
|---|---|---|---|
| Thermal Overload Relay (Protection Grade 10 A) | | Accessory Independent Installation Unit | Installation Method |
| Screw Type Terminal (With Terminal Cover) | | | Connect directly to the magnetic contactor or use separate installation panel for independent installation. |
| K-Type (3-Pole, 3 Elements) | H-Type (3-Pole, 2 Elements) | | |
| HGT18K A0P18S | HGT18H A0P18S | | |
| HGT18K A0P26S | HGT18H A0P26S | | |
| HGT18K A0P35S | HGT18H A0P35S | | |
| HGT18K A0P50S | HGT18H A0P50S | | |
| HGT18K A0P70S | HGT18H A0P70S | | |
| HGT18K A0P90S | HGT18H A0P90S | | |
| HGT18K A1P20S | HGT18H A1P20S | | |
| HGT18K A1P60S | HGT18H A1P60S | | |
| HGT18K A2P10S | HGT18H A2P10S | HGTMB18 | |
| HGT18K A0003S | HGT18H A0003S | | |
| HGT18K A4P20S | HGT18H A4P20S | | |
| HGT18K A0005S | HGT18H A0005S | | |
| HGT18K A0006S | HGT18H A0006S | | |
| HGT18K A0008S | HGT18H A0008S | | |
| HGT18K A0009S | HGT18H A0009S | | |
| HGT18K A0012S | HGT18H A0012S | | |
| HGT18K A0018S | HGT18H A0018S | | |

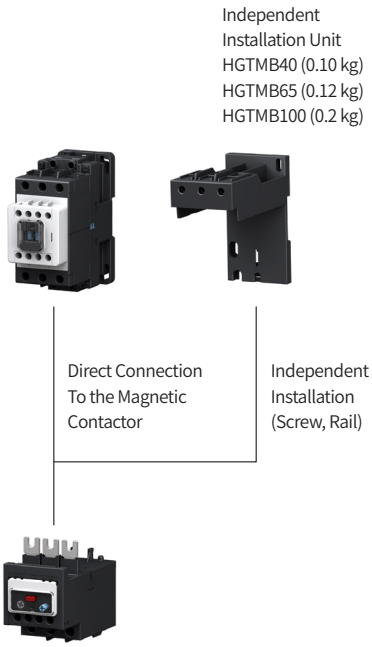


# Ratings and Order Code

## Thermal Overload Relay (TOR)

| Exterior and Name of Basic Model | | Ratings | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Exterior | Model Name | Current (A) | | | | Applicable Cable ($mm^2$) | | Aux. Contact | Applicable Magnetic Contactor |
| | | Nominal Current | Setting Current | | | Main Circuit | Aux. Circuit | | |
| | | | Min. | Mid. | Max. | | | | |
|  Dimensions (mm) : 45 (W)×95.5 (H)×69.4 (D) Weight (kg) : 0.16 | HGT40 | 10 | 7 | 8.5 | 10 | 2 ~ 10 | 1 ~ 2.5 | 1NO1NC | HGC25 HGC32 HGC40 |
| | | 12 | 8 | 10 | 12 | | | | |
| | | 18 | 12 | 15 | 18 | | | | |
| | | 22 | 15 | 18.5 | 22 | | | | |
| | | 25 | 17 | 21 | 25 | | | | |
| | | 32 | 22 | 27 | 32 | | | | |
| | | 40 | 28 | 34 | 40 | | | | |
|  Dimensions (mm) : 55 (W)×110.7 (H)×89.3 (D) Weight (kg) : 0.29 | HGT65 | 10 | 7 | 8.5 | 10 | 2 ~ 25 | 1 ~ 2.5 | 1NO1NC | HGC50 HGC65 |
| | | 12 | 8 | 10 | 12 | | | | |
| | | 18 | 12 | 15 | 18 | | | | |
| | | 22 | 15 | 18.5 | 22 | | | | |
| | | 25 | 17 | 21 | 25 | | | | |
| | | 32 | 22 | 27 | 32 | | | | |
| | | 40 | 28 | 34 | 40 | | | | |
| | | 50 | 34 | 42 | 50 | | | | |
| | | 65 | 45 | 55 | 65 | | | | |
|  Dimensions (mm) : 70 (W)×128.1 (H)×105 (D) Weight (kg) : 0.47 | HGT100 | 25 | 17 | 21 | 25 | 6 ~ 38 | 1 ~ 2.5 | 1NO1NC | HGC75 HGC85 HGC100 |
| | | 32 | 22 | 27 | 32 | | | | |
| | | 40 | 28 | 34 | 40 | | | | |
| | | 50 | 34 | 42 | 50 | | | | |
| | | 65 | 45 | 55 | 65 | | | | |
| | | 75 | 52 | 63 | 75 | | | | |
| | | 85 | 59 | 72 | 85 | | | | |
| | | 100 | 70 | 85 | 100 | | | | |

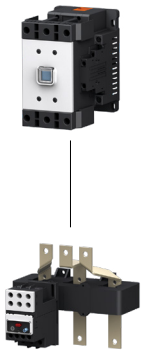
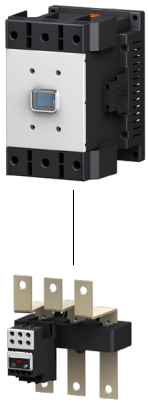
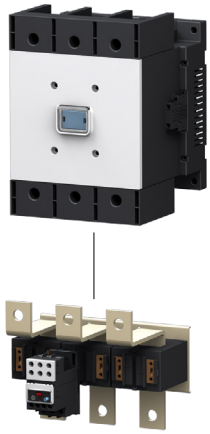
| Order Code | | | Remark |
|---|---|---|---|
| Thermal Overload Relay (Protection Grade 10 A) | | Accessory Independent Installation Unit | Installation Method |
| Screw Type Terminal (With Terminal Cover) | | | Connect directly to the magnetic contactor or use separate installation panel for independent installation. |
| K-Type (3-Pole, 3 Elements) | H-Type (3-Pole, 2 Elements) | | |
| HGT40K A0010S | HGT40H A0010S | HGTMB40 | |
| HGT40K A0012S | HGT40H A0012S | | |
| HGT40K A0018S | HGT40H A0018S | | |
| HGT40K A0022S | HGT40H A0022S | | |
| HGT40K A0025S | HGT40H A0025S | | |
| HGT40K A0032S | HGT40H A0032S | | |
| HGT40K A0040S | HGT40H A0040S | | |
| HGT65K A0010S | HGT65H A0010S | HGTMB65 | |
| HGT65K A0012S | HGT65H A0012S | | |
| HGT65K A0018S | HGT65H A0018S | | |
| HGT65K A0022S | HGT65H A0022S | | |
| HGT65K A0025S | HGT65H A0025S | | |
| HGT65K A0032S | HGT65H A0032S | | |
| HGT65K A0040S | HGT65H A0040S | | |
| HGT65K A0050S | HGT65H A0050S | | |
| HGT65K A0065S | HGT65H A0065S | | |
| HGT100K A0025S | HGT100H A0025S | HGTMB100 | |
| HGT100K A0032S | HGT100H A0032S | | |
| HGT100K A0040S | HGT100H A0040S | | |
| HGT100K A0050S | HGT100H A0050S | | |
| HGT100K A0065S | HGT100H A0065S | | |
| HGT100K A0075S | HGT100H A0075S | | |
| HGT100K A0085S | HGT100H A0085S | | |
| HGT100K A0100S | HGT100H A0100S | | |



# Ratings and Order Code

## Thermal Overload Relay (TOR)

| Exterior and Name of Basic Model | | Ratings | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Exterior | Model Name | Current (A) | | | | | Applicable Cable ($mm^2$) | Aux. Contact | Applicable Magnetic Contactor |
| | | Nominal Current | Setting Current | | | CT Ratio | Aux. Circuit | | |
| | | | Min. | Mid. | Max. | | | | |
|  Dimensions (mm) : 180 (W)×179.3 (H)×159 (D) Weight (kg) : 2.0 | HGT150 | 80 | 48 | 64 | 80 | 80 : 5 | 1 ~ 2.5 | 1NO1NC | HGC115 HGC130 HGC150 |
| | | 115 | 69 | 92 | 115 | 115 : 5 | | | |
| | | 130 | 78 | 104 | 130 | 130 : 5 | | | |
| | | 150 | 90 | 120 | 150 | 150 : 5 | | | |
|  Dimensions (mm) : 180 (W)×179.3 (H)×185 (D) Weight (kg) : 2.2 | HGT265 | 80 | 48 | 64 | 80 | 80 : 5 | 1 ~ 2.5 | 1NO1NC | HGC185 HGC225 HGC265 |
| | | 115 | 69 | 92 | 115 | 115 : 5 | | | |
| | | 130 | 78 | 104 | 130 | 130 : 5 | | | |
| | | 150 | 90 | 120 | 150 | 150 : 5 | | | |
| | | 185 | 111 | 148 | 185 | 185 : 5 | | | |
| | | 225 | 135 | 180 | 225 | 225 : 5 | | | |
| | | 265 | 159 | 212 | 265 | 265 : 5 | | | |
|  Dimensions (mm) : 180 (W)×179.3 (H)×205.2 (D) Weight (kg) : 2.4 | HGT500 | 150 | 90 | 120 | 150 | 150 : 5 | 1 ~ 2.5 | 1NO1NC | HGC300 HGC400 HGC500 |
| | | 185 | 111 | 148 | 185 | 185 : 5 | | | |
| | | 225 | 135 | 180 | 225 | 225 : 5 | | | |
| | | 265 | 159 | 212 | 265 | 265 : 5 | | | |
| | | 300 | 180 | 240 | 300 | 300 : 5 | | | |
| | | 400 | 240 | 320 | 400 | 400 : 5 | | | |
| | | 500 | 300 | 400 | 500 | 500 : 5 | | | |
|  Dimensions (mm) : 245 (W)×209.9 (H)×197 (D) Weight (kg) : 6.2 | HGT800 | 630 | 378 | 504 | 630 | 630 : 5 | 1 ~ 2.5 | 1NO1NC | HGC630 HGC800 |
| | | 800 | 480 | 640 | 800 | 800 : 5 | | | |

| Order Code | | Remark |
|---|---|---|
| Thermal Overload Relay (Protection Grade 10 A) | | Installation Method |
| Screw Type Terminal (With Terminal Cover) | | Direct connection to the magnetic contactor |
| K-Type (3-Pole, 3 Elements) | H-Type (3-Pole, 2 Elements) | |
| HGT150K A0080S | HGT150H A0080S | HGC115<br>HGC130<br>HGC150<br>  <br>HGT150 |
| HGT150K A0115S | HGT150H A0115S | |
| HGT150K A0130S | HGT150H A0130S | |
| HGT150K A0150S | HGT150H A0150S | |
| HGT265K A0080S | HGT265H A0080S | HGC185<br>HGC225<br>HGC265<br>  <br>HGT265 |
| HGT265K A0115S | HGT265H A0115S | |
| HGT265K A0130S | HGT265H A0130S | |
| HGT265K A0150S | HGT265H A0150S | |
| HGT265K A0185S | HGT265H A0185S | |
| HGT265K A0225S | HGT265H A0225S | |
| HGT265K A0265S | HGT265H A0265S | |
| HGT500K A0150S | HGT500H A0150S | HGC300<br>HGC400<br>HGC500<br>  <br>HGT500 |
| HGT500K A0185S | HGT500H A0185S | |
| HGT500K A0225S | HGT500H A0225S | |
| HGT500K A0265S | HGT500H A0265S | |
| HGT500K A0300S | HGT500H A0300S | |
| HGT500K A0400S | HGT500H A0400S | |
| HGT500K A0500S | HGT500H A0500S | |
| HGT800K A0630S | HGT800H A0630S | HGC630<br>HGC800<br>  <br>HGT800 |
| HGT800K A0800S | HGT800H A0800S | |

# Ratings and Order Code

## Control Relay (HGR)

### Rating

### HGR

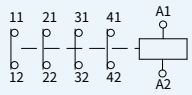
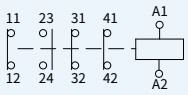
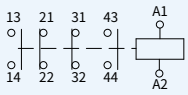
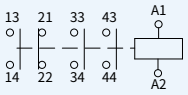
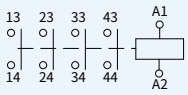
| Model Name | | | HGR-N (AC) | HGR-P (DC) Permanent Magnetic |
|---|---|---|---|---|
| **Rated Insulation Voltage [Ui]** | | | | |
| IEC 60947-5-1 | | V | AC 750 | |
| VDE0660 | | V | AC 1,000 | |
| Rated Thermal Current Ith (AC1) | | A | 16 | |
| Minimum load | | mA | 10 (24 V DC) | |
| **Rating** | | | | |
| AC15 | 220 V | A | 4 | |
| | 380 V | | 3 | |
| | 440 V | | 3 | |
| | 500 V | | 2 | |
| | 690 V | | 2 | |
| DC12 (Resistive Load) | 24 V | | 4 | |
| | 48 V | | 2.5 | |
| | 125 V | | 1.1 | |
| | 250 V | | 0.3 | |
| DC13 (Coil Load) | 24 V | | 4 | |
| | 48 V | | 2.5 | |
| | 125 V | | 1.1 | |
| | 250 V | | 0.3 | |
| UL/CSA [1)] | AC 120 V | | 6 | |
| | AC 240 V | | 3 | |
| | DC 125 V | | 1.1 | |
| | DC 250 V | | 0.3 | |
| Mechanical Lifespan | | 10,000 times | 1,500 | 1,000 |
| Applicable Cable Size for Connection | | $mm^2$ | 2×0.75-2.5 | |
| Operating Frequency | | times/hr | 3,000 | 1,800 |
| **Maximum Fuse Rating** | | | | |
| Plug-Fuse (Fast/Slow) | | A | 35/25 | |
| MCB-C Characteristics | | | 16 | |
| HRC Fuse (DIN/BS88) | | | 25 | |
| Mounting Method | | | Screw & Rail Mounting | |
| Contact | | | 4NC | |
| | | | 1NO + 3NC | |
| | | | 2NO + 2NC | |
| | | | 3NO +1NC | |
| | | | 4NO | |
| **Coil Power Consumption** | | | | |
| AC (60 Hz) | Inrush | VA/W | 80/64 | - |
| | Normal | | 8/2.5 | - |
| DC | Inrush/Normal | W | - | 5 |
| **Dimensions** | | | | |
| A/C | W×H×D | mm | 44×81×76.3 | - |
| D/C | | | - | 44×81×95.5 |
| **Weight** | | | | |
| AC | | kg | 0.3 | - |
| DC | | | - | 0.45 |

※ 1) Contact Rating Code : A300 ~ P150
- As for permanent magnetic type of HGC-P products, attention is required with regards to +, - polarity during the wiring of the coil terminal part.
- The resistance encountered when pressing the actuator of the HGP-P model (permanent magnet type) is a normal characteristic of the product's design and does not indicate any malfunction.

### Operation Features

| Model Name | | HGR-N (220 Vac, 60 Hz) | | | | HGR-P (110 Vdc) | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 22 | 40 | 44 | 80 | 22 | 40 | 44 | 80 |
| Operational Voltage (V) | Intake | 120 ~ 170 | 120 ~ 170 | 120 ~ 170 | 120 ~ 170 | 65 ~ 70 | 70 ~ 75 | 65 ~ 70 | 75 ~ 80 |
| | Release | 70 ~ 110 | 70 ~ 110 | 70 ~ 110 | 70 ~ 110 | 12 ~ 15 | 15 ~ 18 | 12 ~ 15 | 15 ~ 20 |
| Operation Time (ms) | Coil On → NO Contact On | 15 ~ 25 | 15 ~ 25 | 15 ~ 25 | 15 ~ 25 | 45 ~ 55 | 65 ~ 75 | 50 ~ 60 | 65 ~ 75 |
| | Coil On → NC Contact Off | 10 ~ 25 | | 10 ~ 25 | | 40 ~ 50 | | 40 ~ 50 | |
| | Coil Off → NO Contact Off | 5 ~ 25 | 5 ~ 25 | 5 ~ 25 | 5 ~ 25 | 20 ~ 30 | 10 ~ 20 | 20 ~ 30 | 10 ~ 20 |
| | Coil Off → NC Contact On | 10 ~ 25 | | 10 ~ 25 | | 25 ~ 35 | | 25 ~ 35 | |

## Order Code

| Model Name | | Contact Arrangement | | | | |
|---|---|---|---|---|---|---|
| | | 4NC | 1NO + 3NC | 2NO + 2NC | 3NO + 1NC | 4NO |
| AC 60 Hz | 24 | HGR 04NS A024 | HGR 13NS A024 | HGR 22NS A024 | HGR 31NS A024 | HGR 40NS A024 |
| | 48 | HGR 04NS A048 | HGR 13NS A048 | HGR 22NS A048 | HGR 31NS A048 | HGR 40NS A048 |
| | 110 | HGR 04NS A110 | HGR 13NS A110 | HGR 22NS A110 | HGR 31NS A110 | HGR 40NS A110 |
| | 120 | HGR 04NS A120 | HGR 13NS A120 | HGR 22NS A120 | HGR 31NS A120 | HGR 40NS A120 |
| | 220 | HGR 04NS A220 | HGR 13NS A220 | HGR 22NS A220 | HGR 31NS A220 | HGR 40NS A220 |
| | 230 | HGR 04NS A230 | HGR 13NS A230 | HGR 22NS A230 | HGR 31NS A230 | HGR 40NS A230 |
| | 240 | HGR 04NS A240 | HGR 13NS A240 | HGR 22NS A240 | HGR 31NS A240 | HGR 40NS A240 |
| | 380 | HGR 04NS A380 | HGR 13NS A380 | HGR 22NS A380 | HGR 31NS A380 | HGR 40NS A380 |
| | 440 | HGR 04NS A440 | HGR 13NS A440 | HGR 22NS A440 | HGR 31NS A440 | HGR 40NS A440 |
| | 480 | HGR 04NS A480 | HGR 13NS A480 | HGR 22NS A480 | HGR 31NS A480 | HGR 40NS A480 |
| AC 50 Hz | 24 | HGR 04NS X024 | HGR 13NS X024 | HGR 22NS X024 | HGR 31NS X024 | HGR 40NS X024 |
| | 48 | HGR 04NS X048 | HGR 13NS X048 | HGR 22NS X048 | HGR 31NS X048 | HGR 40NS X048 |
| | 110 | HGR 04NS X110 | HGR 13NS X110 | HGR 22NS X110 | HGR 31NS X110 | HGR 40NS X110 |
| | 220 | HGR 04NS X220 | HGR 13NS X220 | HGR 22NS X220 | HGR 31NS X220 | HGR 40NS X220 |
| | 240 | HGR 04NS X240 | HGR 13NS X240 | HGR 22NS X240 | HGR 31NS X240 | HGR 40NS X240 |
| | 380 | HGR 04NS X380 | HGR 13NS X380 | HGR 22NS X380 | HGR 31NS X380 | HGR 40NS X380 |
| | 400 | HGR 04NS X400 | HGR 13NS X400 | HGR 22NS X400 | HGR 31NS X400 | HGR 40NS X400 |
| | 440 | HGR 04NS X440 | HGR 13NS X440 | HGR 22NS X440 | HGR 31NS X440 | HGR 40NS X440 |
| DC Permanent Magnetic | 24 | HGR 04PS D024 | HGR 13PS D024 | HGR 22PS D024 | HGR 31PS D024 | HGR 40PS D024 |
| | 48 | HGR 04PS D048 | HGR 13PS D048 | HGR 22PS D048 | HGR 31PS D048 | HGR 40PS D048 |
| | 110 | HGR 04PS D110 | HGR 13PS D110 | HGR 22PS D110 | HGR 31PS D110 | HGR 40PS D110 |
| | 125 | HGR 04PS D125 | HGR 13PS D125 | HGR 22PS D125 | HGR 31PS D125 | HGR 40PS D125 |
| | 220 | HGR 04PS D220 | HGR 13PS D220 | HGR 22PS D220 | HGR 31PS D220 | HGR 40PS D220 |
| Contact Arrangement | |  |  |  |  |  |

## Accessories and Others

- It is categorized into AC and DC type with 5 types of contact configurations.
- It has been designed to comply with the IEC 60947 and the protection grade of the product is IP 20
- Permitted range of usable temperature : -25 ~ 40 °C
- It is optimal for control circuit with fast response speed or plant automation.
- Applicable standard and specification :
  IEC 60947-5-1, VDE0660, CENELEC-EN50011

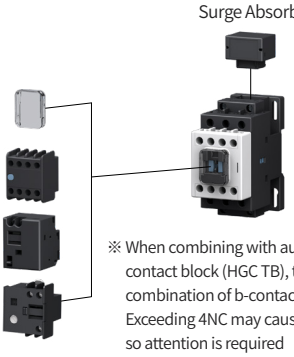
### Accessories

Front Safety Cover

Auxiliary Contact Block (Front Mounting)

Mechanical Latching Block

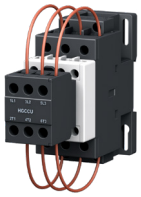
Timer



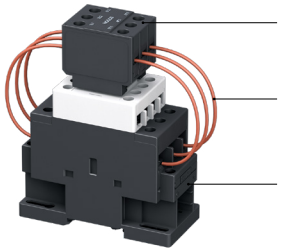

※ When combining with auxiliary contact block (HGC TB), the maximum combination of b-contact is 4NC. Exceeding 4NC may cause malfunction so attention is required

# Ratings and Order Code

## Magnetic Contactor for Capacitor

| Product | | Rating | | | | | | Components | |
|---|---|---|---|---|---|---|---|---|---|
| Exterior | Model Name | KVAR (Ambient Temperature of 55 °C, 50/60 Hz) | | | | | | Magnetic Contactors | |
| | | 220 V | 230/240 V | 400/415 V | 440 V | 500/550 V | 690 V | Model Name | Auxiliary Contact |
|  | HGC9C | 5 | 5 | 9.7 | 9.7 | 14 | 14 | HGC9 | 2NO + 2NC |
| | HGC12C | 6.7 | 6.7 | 12 | 12 | 15 | 15 | HGC12 | 2NO + 2NC |
| | HGC18C | 8.5 | 8.5 | 16.7 | 16.7 | 24 | 24 | HGC18 | 2NO + 2NC |
|  | HGC25C | 10 | 10 | 20 | 20 | 26 | 26 | HGC25 | 2NO + 2NC |
| | HGC32C | 13 | 13 | 25 | 25 | 30 | 30 | HGC32 | 2NO + 2NC |
|  | HGC40C | 15 | 15 | 29 | 29 | 35 | 35 | HGC40 | 2NO + 2NC |
| | HGC50C | 19 | 19 | 40 | 40 | 45 | 45 | HGC50 | 2NO + 2NC |
| | HGC65C | 23.5 | 23.5 | 43.5 | 43.5 | 54 | 54 | HGC65 | 2NO + 2NC |
|  | HGC75C | 28 | 28 | 52 | 52 | 60 | 60 | HGC75 | 2NO + 2NC |
| | HGC85C | 32 | 32 | 56 | 56 | 70 | 70 | HGC85 | 2NO + 2NC |
| | HGC100C | 35 | 35 | 62 | 62 | 80 | 80 | HGC100 | 2NO + 2NC |

| Components | | Order Code | | Remark |
|---|---|---|---|---|
| Capacitor Unit | | AC [1] | | Composition of Capacitor Switching Contactor |
| Model Name | Auxiliary Contact | 220 V, 60 Hz | 220 V, 50 Hz | |
| HGC CU40 | NONE | HGC9C 22NS A220 | HGC9C 22NS X220 | |
| | | HGC9C 22NS A220 | HGC9C 22NS X220 | |
| HGC CU40 | | HGC12C 22NS A220 | HGC12C 22NS X220 | |
| | | HGC12C 22NS A220 | HGC12C 22NS X220 | |
| HGC CU40 | | HGC18C 22NS A220 | HGC18C 22NS X220 | |
| | | HGC18C 22NS A220 | HGC18C 22NS X220 | |
| HGC CU40 | | HGC25C 22NS A220 | HGC25C 22NS X220 | |
| | | HGC25C 22NS A220 | HGC25C 22NS X220 | |
| HGC CU40 | | HGC32C 22NS A220 | HGC32C 22NS X220 | |
| | | HGC32C 22NS A220 | HGC32C 22NS X220 | |
| HGC CU40 | | HGC40C 22NS A220 | HGC40C 22NS X220 | |
| | | HGC40C 22NS A220 | HGC40C 22NS X220 | |
| HGC CU65 | | HGC50C 22NS A220 | HGC50C 22NS X220 | |
| | | HGC50C 22NS A220 | HGC50C 22NS X220 | |
| HGC CU65 | | HGC65C 22NS A220 | HGC65C 22NS X220 | |
| | | HGC65C 22NS A220 | HGC65C 22NS X220 | |
| HGC CU100 | | HGC75C 22NS A220 | HGC75C 22NS X220 | |
| | | HGC75C 22NS A220 | HGC75C 22NS X220 | |
| HGC CU100 | | HGC85C 22NS A220 | HGC85C 22NS X220 | |
| | | HGC85C 22NS A220 | HGC85C 22NS X220 | |
| HGC CU100 | | HGC100C 22NS A220 | HGC100C 22NS X220 | |
| | | HGC100C 22NS A220 | HGC100C 22NS X220 | |




- Capacitor switching unit is used together with the general magnetic contactor.
- When the capacitor is switched on, the contact of the capacity switching unit attached to the magnetic contactor is closed first so after the capacitor load is pre-charged through the resistance cable, the main contact of the magnetic contactor is closed.
  This prevents the main contact of the magnetic contactor from being fused by restricting the inrush current of the capacitor.
- The capacitor creates a oscillation frequency of 1 to 15 kHz when supplying into the power source. It generates high transient current (Over 200 In).
  The capacitor switching unit plays the role of protecting the main contact of the magnetic contactor by restricting such transient current.
- When voltage is applied to the general magnetic contactor, the maximum current is reduced in the following cases.
  - In case the inductance of the main power is extremely high
  - In case the rating of the line transformer is low
  - In case the short circuit voltage of the transformer is high

## Switching Frequency and Lifespan

| | | |
|---|---|---|
| Permitted Switching Frequency | | 240 times/h |
| Electrical Lifespan (AC-6b) | Ue ≤ 440 Vac | 100,000 times |
| | 500 Vac ≤ Ue ≤ 690 Vac | 100,000 times |

## When Only the Capacitor Unit is Ordered

| Model Name | Aux. Contact | Order Code | Remark |
|---|---|---|---|
| HGC CU40 | NONE | HGC CU40 00NS | Quantity of Resistance Cable : 6 |
| HGC CU65 | | HGC CU65 00NS | |
| HGC CU100 | | HGC CU100 00NS | |

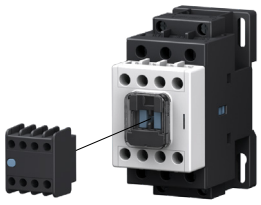
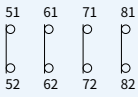
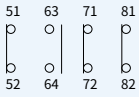
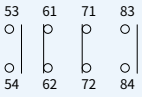
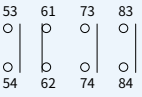
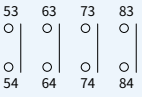
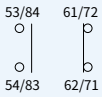
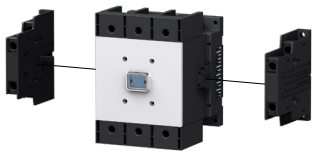
※ 1) Operational Voltage
50 Hz : 24, 48, 110, 120, 220, 240, 380, 440 V
60 Hz : 24, 48, 110, 120, 220, 240, 380, 440 V

# Accessories

## Auxiliary Contact Block

| Exterior and Name | | Rating | | |
|---|---|---|---|---|
| Exterior | Model Name | Rating of Contact | | |
| Front Mounting  | HGC TB | Rated Insulation Current (Ui) | IEC | AC 690 V |
| | | | UL | AC 600 V |
| | | Rated Thermal Current (Ith) | | 16 A |
| | | Minimum load | | 10 mA at 24 V DC |
| | | Rated Operational Current AC15 (Coil Load) | 120 V | 6 A |
| | | | 240 V | 4 A |
| | | | 380 V | 3 A |
| | | | 440 V | 3 A |
| | | | 500 V | 2 A |
| | | | 690 V | 2 A |
| | | Rated Operational Current DC13 (Coil Load) | 24 V | 4 A |
| | | | 48 V | 2.5 A |
| | | | 125 V | 1.1 A |
| | | | 250 V | 0.3 A |
| | | | 480 V | 0.2 A |
| | | | 600 V | 0.2 A |

| Exterior | Model Name | Based on ZEC60947-4 | | Based on UL and CSA | | |
|---|---|---|---|---|---|---|
| Side Mounting  | HGC SB | Rated Insulation Voltage (Ui) | AC 750 V | Thermal Current | | 16 A |
| | | Rated Thermal Current (Ith) | 16 A | Rated Operational Current (AC) | 120 V | 6 A |
| | | Minimum load | 10 mA at 24 V DC | | | |
| | | Rated Operational Current AC12 (Resistive Load) | 110 V | 10 A | 240 V | 3 A |
| | | | 220 V | 8 A | 480 V | 1.5 A |
| | | | 440 V | 6 A | 600 V | 1.2 A |
| | | | 690 V | 2 A | Rated Operational Current (DC) | 125 V |
| | | Rated Operational Current AC15 (Coil Load) | 110 V | 6 A | 250 V | 0.55 A |
| | | | 220 V | 4 A | 440 V | 0.2 A |
| | | | 440 V | 3 A | 600 V | 0.2 A |
| | | | 690 V | 2 A | ※ Contact Rating Code : A600 ~ P300 | |
| | | Rated Operational Current DC12 (Resistive Load) | 24 V | 4 A | | |
| | | | 48 V | 2.5 A | | |
| | | | 125 V | 1.1 A | | |
| | | | 250 V | 0.3 A | | |
| | | Rated Operational Current DC13 (Coil Load) | 24 V | 4 A | | |
| | | | 48 V | 2.5 A | | |
| | | | 125 V | 1.1 A | | |
| | | | 250 V | 0.3 A | | |

| Contact Arrangement | | Order Code | Others | | |
|---|---|---|---|---|---|
| Combination | Arrangement | With Terminal Cover | Weight | Applicable Magnetic Contactor | Installation Method |
| 2NC |  | HGC TB02NS | 0.031 | HGC9 ~ 100<br>HGR | Front Mounting<br>  <br>※ Maximum number of b contacts that can be combined is 4NC. |
| 1NO + 1NC |  | HGC TB11NS | | | |
| 2NO |  | HGC TB20NS | | | |
| 4NC |  | HGC TB04NS | | | |
| 1NO + 3NC |  | HGC TB13NS | 0.053 | | |
| 2NO + 2NC |  | HGC TB22NS | | | |
| 3NO + 1NC |  | HGC TB31NS | | | |
| 4NO |  | HGC TB40NS | | | |
| 1NO + 1NC |  | HGC SB40 11NS | 0.028 | HGC9 ~ 40 | Side Installation<br>  <br>  <br>※ Maximum number of b contacts that can be combined is 4NC. |
| | | HGC SB100 11NS | 0.053 | HGC50 ~ 100 | |
| | | HGC SB800 11NS | 0.042 | HGC115 ~ 800 | |

# Accessories

## Interlock Unit

The interlock unit is an accessory that provides interlock function for reversion operation of the magnetic contactors. Also, the mechanical interlock function can be configured. The reverse operation type of magnetic contactors configured with mechanical interlocks is not closed simultaneously so it is more reliable than the electrical interlocks.

### Selection and Order

| Order Code | Applicable Magnetic Contactor | Weight (kg) |
|---|---|---|
| HGC IU40 | HGC9 ~ 40 | 0.03 |
| HGC IU100 | HGC50 ~ 100 | 0.03 |
| HGC IU265 | HGC115 ~ 265 | 0.081 |
| HGC IU800 | HGC300 ~ 800 | 0.101 |

## Wire kit

Set of cable for connecting the main circuit of the reverse operation type of magnetic contactor.

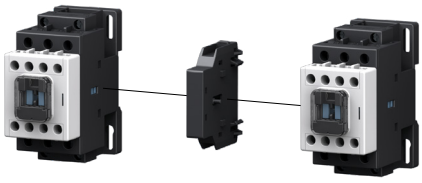
### Selection and Order

| Order Code | Applicable Magnetic Contactor | Weight (kg) |
|---|---|---|
| HGC RB18 | HGC9 ~ 18 | 0.2 |
| HGC RB40 | HGC25 ~ 32 | 0.2 |
| HGC RB65 | HGC40 ~ 65 | 0.3 |
| HGC RB100 | HGC75 ~ 100 | 0.5 |

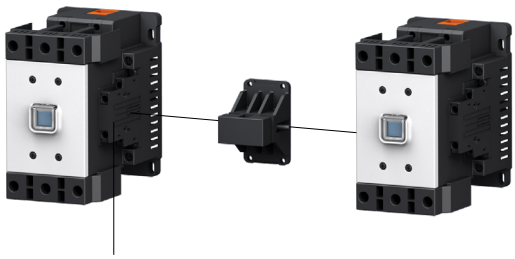
### Handling

- Electrical interlock must be used together by using the NC contact of the magnetic contactor.
- When mounting the product, do not install vertically.
- In case of HGC115 ~ 800, the auxiliary contact block installed between the reverse operation type of magnetic contactor must be removed before installation.
- Do not apply excessive force when checking the simultaneously input by moving it left and right manually. It may cause damage.
- It is not applicable to DC type of HGC40 ~ 100.

### HGC9 ~ 100

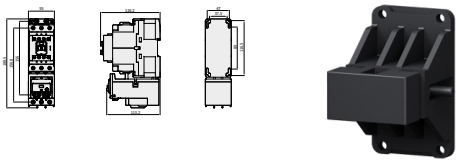


### HGC115 ~ 800



Install after removing the auxiliary contact block installed between the magnetic contactor.

Interlock Unit



Wire Kit

# Mechanical Latching Block

The mechanical latching block maintains the mechanical closed state even if the excitation state of the coil has become loosen due to a drop in operational voltage below the rated voltage that is supplied to the coil of the magnetic contactor and the control relay. The mechanical latching block manufactured in a module method can be installed using a One-Touch method at the magnetic contactor and the control relay.

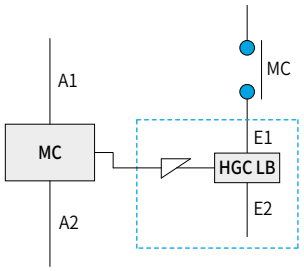
## Selection and Order

| Model Name | Order Code | Current | Operational Voltage | Applicable Magnetic Contactor |
|---|---|---|---|---|
| HGC LB100 | HGC LB100 F024 | AC/DC | 24 V | HGC9 ~ 100 HGR |
| | HGC LB100 F048 | | 48 V | |
| | HGC LB100 F110 | | 100 ~ 125 V | |
| | HGC LB100 F220 | | 200 ~ 240 V | |
| | HGC LB100 A440 | AC | 440 V | |

## Ratings and Characteristics

| | | |
|---|---|---|
| Coil Power Consumption | VA | 25 |
| | W | 20 |
| Voltage | V | (0.85 ~ 1.1)×Uc |
| Operation Frequency | Cycle/h | 1,200 |
| Operational Voltage | AC | 24, 48, 100 ~ 125, 200 ~ 240 V 440 V |
| | DC | 24, 48, 100 ~ 125, 200 ~ 240 V |
| Mechanical Lifespan | 10,000 times | 50 |
| Weight | kg | 0.1 |

## Circuit Diagram




※ A1/A2 : Coil terminal, E1/E2 : Latching block terminal

## Handling

- The latching block functions after receiving the mechanical closing signal from the magnetic contactor or the control relay and the closing state of the main contact is maintained even if the excitation state of the magnetic contactor or the control relay's coil has become loose due to momentary black-out of the cable.
- How to turn the magnetic contactor or the control relay off
  - Manual : Set the button on the latching block to "O" position.
  - Electrical : Apply de-energized voltage to the coil in the latching block. The power of the magnetic contactor (Control relay) assembled must be Off before supplying power to the coil of the latching block.
- How to open the magnetic contactor or the control relay
  - If the button located at the "I" part of the latching block is pressed, it can be opened without exciting the coil of the magnetic contactor or the control relay.
- Caution
  - Do not excite the magnetic contactor or the control relay with the latching block simultaneously.
  - **The latching block functions instantaneously so do not apply power of more than 1 sec at the power part (E1, E2).**
  - As for the circuit diagram of the latching block, please refer to the diagram on the right.

# Accessories

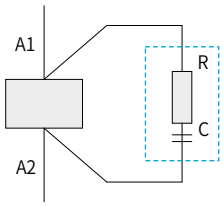
## Surge Absorber

### Surge Absorber (RC-Unit)

- The surge voltage occurs during the operation of the magnetic contactor or the control relay and the surge voltage is normally 10 ~ 20 times higher than the rated voltage so the surge absorber drops the surge voltage to approximately 3 times less.
- It is optimal for the switching circuit that uses PLC.
- It prevents damage in the electronic parts caused by high surge voltage.
- It is applicable to both 50/60 Hz. (In case of RC-Unit)
- If noise components exceeding 400Hz or more than 5% noise, internal device degradation may occur.

#### Selection and Order

| Product | Order Code | Operational Voltage | Magnetic Contactor | Weight (kg) |
|---|---|---|---|---|
| RC-Unit | HGC RC40 Y048 | AC 24 ~ 48 V | HGC9 ~ 40, HGR | 0.029 |
| | HGC RC40 Y220 | AC 110 ~ 220 V | | |
| | HGC RC40 Y380 | AC 240 ~ 380 V | | |
| | HGC RC100 Y048 | AC 24 ~ 48 V | HGC50 ~ 100, HGC50B ~ 100B | |
| | HGC RC100 Y220 | AC 110 ~ 220 V | | |
| | HGC RC100 Y380 | AC 240 ~ 380 V | | |
| | HGC RC800 Y220 | AC 110~240V | HGC115~ HGC800 | |

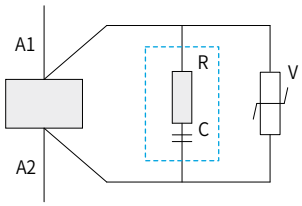



### Surge Absorber (Varistor + RC-Unit)

- HGC RC100 F110/F220 products are available for AC/DC using varistors.
- When surge voltage comes in, it discharges the voltage through the varister to prevent sudden high voltage from entering.

#### Selection and Order

| Product | Order Code | Operational Voltage | Magnetic Contactor | Weight (kg) |
|---|---|---|---|---|
| RC-Unit with Varistor | HGC RC100 F110 | AC 48 ~ 110 V | HGC9 ~ 100, HGR | 0.029 |
| | | DC 48 ~ 110 V | | |
| | HGC RC100 F220 | AC 110 ~ 220 V | | |
| | | DC 110 ~ 220 V | | |

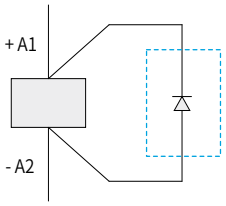



### Clamping Diode

- It is used for the purpose of preventing counter electromotive force on the DC power supply.
- It must be installed when the coil is connected in parallel.
- It prevents damage in the electronic parts by preventing counter electromotive power.

#### Selection and Order

| Product | Order Code | Operational Voltage | Magnetic Contactor | Weight (kg) |
|---|---|---|---|---|
| Clamping Diode | HGC CD100 | DC 24 ~ 220 V | HGC9 ~ 100, HGR | 0.029 |




# Electronic Timer Block

- As it has been manufactured in a module method, it enables One-Touch mounting on the electronic contactor and control relay, saving space.
- It has been designed for AC/DC with comprehensive operational voltage.
- On-Delay and Interval timer functions can be realized using one timer and it is optimal as a Y-△ starter.

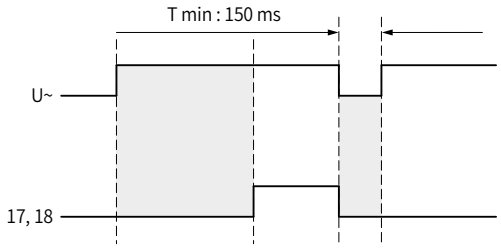
## Selection and Order

| Order Code | Magnetic Contactor | Operational Voltage |
|---|---|---|
| HGC ET1 | HGC9 ~ 100, HGR | AC/DC 90 ~ 240 V |
| HGC ET2 | | AC/DC 24 ~ 60 V |

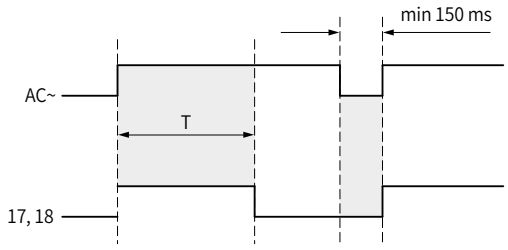
## Ratings and Selection

| Model Name | Order Code | HGC ET1 | HGC ET2 |
|---|---|---|---|
| Rated Voltage | AC/DC V | 90 ~ 240 | 24 ~ 60 |
| Permitted Voltage | V | (0.8 ~ 1.1)×Rated Voltage | |
| Breaking Capacity | VA | 90 | |
| Maximum Load | VA | 15 | |
| Delay Time | Position A | 10 ~ 220 | |
| | Position B | 0.15 ~ 15 | |
| Precision | % | ±5 | |
| Repetition Margin of Error | % | 0.1 | |
| | secs | 50 ms | |
| Weight | kg | 0.053 | |

## Operation Concept Map

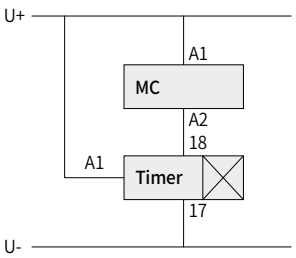



・Position 1 : On-Delay / t : Control time 0.15....220 sec




・Position 2 : Interval Timer

※ After the power has been turned off, resting time of 150 ms is required for re-operation.




※ A1/A2 : Coil terminal, 17/18 : Timer terminal

# Accessories

## Control Coil

| Product | Operational Voltage | | Order Code | | | |
|---|---|---|---|---|---|---|
| | Frequency | V | Applicable Magnetic Contactor | | | |
| | | | HGC9 ~ 18 | HGC25 ~ 40 | HGC50 ~ 65 | HGC75 ~ 100 |
|   | AC 60 Hz | 24 | HGCOLPKG18 A024 | HGCOLPKG40 A024 | HGCOLPKG65 A024 | HGCOLPKG100 A024 |
| | | 48 | HGCOLPKG18 A048 | HGCOLPKG40 A048 | HGCOLPKG65 A048 | HGCOLPKG100 A048 |
| | | 110 | HGCOLPKG18 A110 | HGCOLPKG40 A110 | HGCOLPKG65 A110 | HGCOLPKG100 A110 |
| | | 120 | HGCOLPKG18 A120 | HGCOLPKG40 A120 | HGCOLPKG65 A120 | HGCOLPKG100 A120 |
| | | 220 | HGCOLPKG18 A220 | HGCOLPKG40 A220 | HGCOLPKG65 A220 | HGCOLPKG100 A220 |
| | | 240 | HGCOLPKG18 A240 | HGCOLPKG40 A240 | HGCOLPKG65 A240 | HGCOLPKG100 A240 |
| | | 380 | HGCOLPKG18 A380 | HGCOLPKG40 A380 | HGCOLPKG65 A380 | HGCOLPKG100 A380 |
| | | 440 | HGCOLPKG18 A440 | HGCOLPKG40 A440 | HGCOLPKG65 A440 | HGCOLPKG100 A440 |
| | AC 50 Hz | 24 | HGCOLPKG18 X024 | HGCOLPKG40 X024 | HGCOLPKG65 X024 | HGCOLPKG100 X024 |
| | | 48 | HGCOLPKG18 X048 | HGCOLPKG40 X048 | HGCOLPKG65 X048 | HGCOLPKG100 X048 |
| | | 110 | HGCOLPKG18 X110 | HGCOLPKG40 X110 | HGCOLPKG65 X110 | HGCOLPKG100 X110 |
| | | 120 | HGCOLPKG18 X120 | HGCOLPKG40 X120 | HGCOLPKG65 X120 | HGCOLPKG100 X120 |
| | | 220 | HGCOLPKG18 X220 | HGCOLPKG40 X220 | HGCOLPKG65 X220 | HGCOLPKG100 X220 |
| | | 240 | HGCOLPKG18 X240 | HGCOLPKG40 X240 | HGCOLPKG65 X240 | HGCOLPKG100 X240 |
| | | 380 | HGCOLPKG18 X380 | HGCOLPKG40 X380 | HGCOLPKG65 X380 | HGCOLPKG100 X380 |
| | | 440 | HGCOLPKG18 X440 | HGCOLPKG40 X440 | HGCOLPKG65 X440 | HGCOLPKG100 X440 |
| | DC | 24 | HGCOLPKG18 D024 | HGCOLPKG40 D024 | HGCOLPKG65 D024 | HGCOLPKG100 D024 |
| | | 48 | HGCOLPKG18 D048 | HGCOLPKG40 D048 | HGCOLPKG65 D048 | HGCOLPKG100 D048 |
| | | 110 | HGCOLPKG18 D110 | HGCOLPKG40 D110 | HGCOLPKG65 D110 | HGCOLPKG100D110 |
| | | 125 | HGCOLPKG18 D125 | HGCOLPKG40 D125 | HGCOLPKG65 D125 | HGCOLPKG100D125 |
| | | 220 | HGCOLPKG18 D220 | HGCOLPKG40 D220 | HGCOLPKG65 D220 | HGCOLPKG100D220 |
|  ※ When ordering HGC115 ~ 800, it is provided in Ass'y including the AD converter is provided | Nominal Voltage | V | Applicable Magnetic Contactor | | | |
| | | | HGC115 ~ 150 | HGC185 ~ 265 | HGC300 ~ 500 | HGC630 ~ 800 |
| | 24 | AC 24 ~ 26 DC 24 | It will be Available after 2025. | | - | - |
| | 110 | AC 100 ~ 127 DC 100 ~ 110 | - | - | - | HGCOL800 F110 |
| | 220 | AC 100 ~ 240 DC 100 ~ 220 | HGCOL150 F220 | HGCOL265 F220 | HGCOL500 F220 | - |
| | 220 | AC 200 ~ 240 DC 200 ~ 220 | - | - | - | HGCOL800 F220 |
| | 440 | AC 380 ~ 450 | HGCOL150 F440 | HGCOL265 F440 | HGCOL500 F440 | HGCOL800 F440 |

※ Relay coils are marked as HGRCOL A220, D110 and others and P type is not sold separately.

## Contacts and Covers

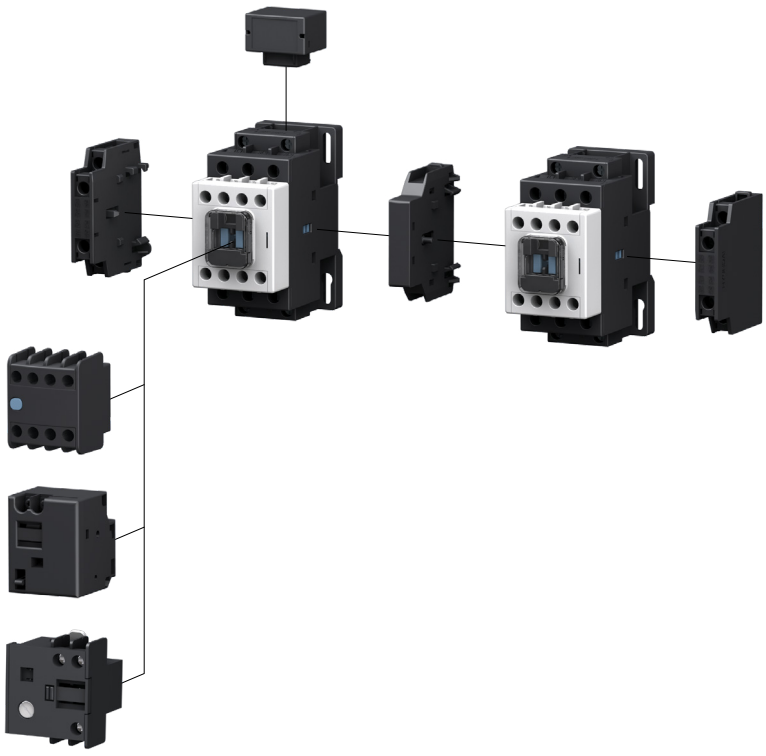
| Product | Model Name | Applicable Product | Order Code | Components | |
|---|---|---|---|---|---|
| Main Contact | | Magnetic contactor for use | | 1 SET | 1 Order standard(set) |
|  Moving Contact  Fixed Contact | HGCTIP | HGC9 | HGCTIP9 | Moving Contact : 3 EA<br>Fixed contact : 6 EA | 1 |
| | | HGC12 | HGCTIP12 | | |
| | | HGC18 | HGCTIP18 | | |
| | | HGC25 | HGCTIP25 | | |
| | | HGC32 | HGCTIP32 | | |
| | | HGC40 | HGCTIP40 | | |
| | | HGC50 | HGCTIP50 | | |
| | | HGC65 | HGCTIP65 | | |
| | | HGC75 | HGCTIP75 | | |
| | | HGC85 | HGCTIP85 | | |
| | | HGC100 | HGCTIP100 | | |
| | | HGC115 | HGCTIP115 | | |
| | | HGC130 | HGCTIP130 | | |
| | | HGC150 | HGCTIP150 | | |
| | | HGC185 | HGCTIP185 | | |
| | | HGC225 | HGCTIP225 | | |
| | | HGC265 | HGCTIP265 | | |
| | | HGC300 | HGCTIP300 | | |
| | | HGC400 | HGCTIP400 | | |
| | | HGC500 | HGCTIP500 | | |
| | | HGC630 | HGCTIP630 | | |
| | | HGC800 | HGCTIP800 | | |
| Protection Cover | | Magnetic contactor for use | | 1 SET | 1 Order standard(set) |
|  Main Terminal Cover  Coil Terminal Cover | HGCPC | HGC9 ~ 18 | HGCPC1811NS | Main Terminal Cover : 2 EA<br>Coil Terminal Cover : 2 EA<br>Auxiliary Terminal Cover : 2 EA | 5 |
| | | | HGCPC1822NS | | |
| | | HGC25 ~ 40 | HGCPC4011NS | | |
| | | | HGCPC4022NS | | |
| | | HGC50 ~ 65 | HGCPC65 | | |
| | | HGC75 ~ 100 | HGCPC100 | | |
| | | HGC115 ~ 150 | HGCPC150 | Main Terminal Cover : 2 EA<br>Coil Terminal Cover : 2 EA<br>Auxiliary Terminal Cover : 8 EA | 2 |
| | | HGC185 ~ 265 | HGCPC265 | | 3 |
| | | HGC300 ~ 500 | HGCPC500 | | 2 |
| | | HGC630 ~ 800 | HGCPC800 | | 2 |
| | | HGR | HGRPC | Main Terminal Cover : 2 EA<br>Coil Terminal Cover : 2 EA | 5 |
| | | HGCTB | HGCTBPC11NS<br>HGCTBPC22NS | Auxiliary Terminal Cover : 10EA | 5 |
| Front Cover | | Magnetic contactor for use | | 1 SET | 1 Order standard(set) |
|  | HGCFC | HGC9 ~ 100 | HGCFC100 | Front Cover : 1 EA | 4 |
| | | HGC115 ~ 150 | HGCFC150 | | |
| | | HGC185 ~ 265 | HGCFC265 | | |
| | | HGC300 ~ 500 | HGCFC400 | | |
| | | HGC630 ~ 800 | HGCFC800 | | |

※ The order code of HGC18 and 40 varies depending on the number of auxiliary contacts, so please pay attention to the order.

# Accessories

## Order Code

| HGC | TB | | 22NS | | N | |
|---|---|---|---|---|---|---|
| Model Name | Accessories | | Detailed Ratings | | Purpose | |
| HGC | | | Refer to the Relevant Page per Accessory | | | |
| | | | Nuclear | | | |
| | **TB** | Auxiliary Contact (Front Mounting) | **04Q** | 0NO + 4NC | **N** | Non 1E Class |
| | **SB** | Auxiliary Contact (Side Mounting) | **13Q** | 1NO + 3NC | | |
| | **IU** | Interlock Unit | **22Q** | 2NO + 2NC | | |
| | **LB** | Mechanical Latching Block | **31Q** | 3NO + 1NC | | |
| | **RC** | Surge Absorber | **40Q** | 4NO + 0NC | | |
| | **CD** | Clamping Diode | | | | |
| | **ET** | Electronic Timer | | | | |
| | **CU** | Capacitor Switching Unit | | | | |



※ The order format above is to explain the order code. For detailed specification per type, refer to the relevant page upon placing the order.

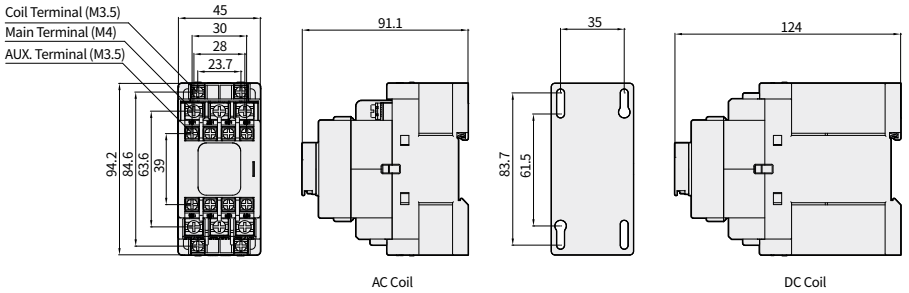
# Dimensions

## Magnetic Contactor

Unit : mm

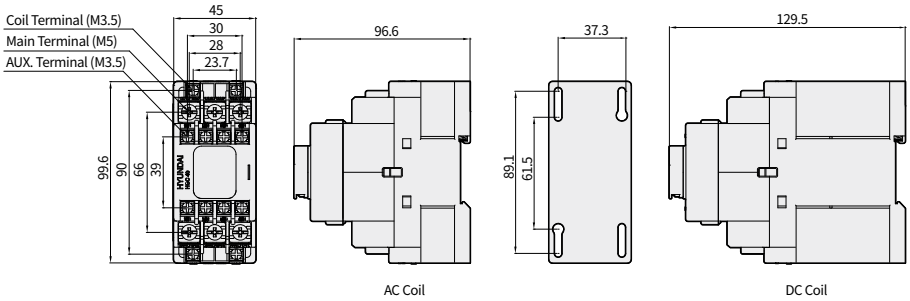
HGC9
HGC12
HGC18

| Accessories | A (mm) |
|---|---|
| Auxiliary Contact HGCTB | 35 |
| Latching Block HGCLB | 42.5 |
| Timer HGCET | 39 |



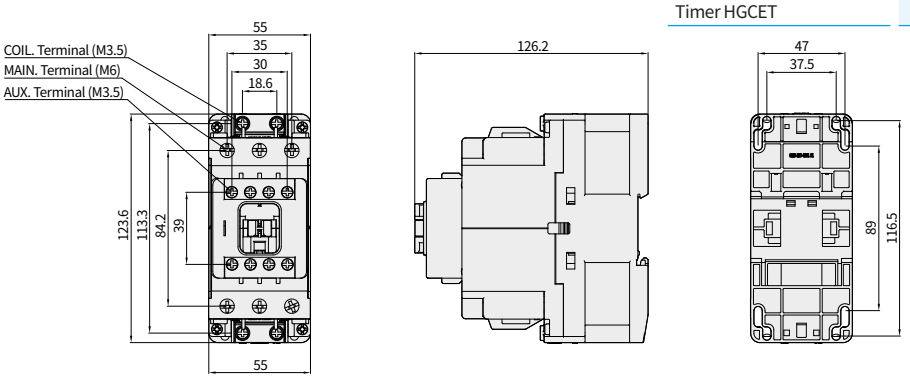

HGC25
HGC32
HGC40

| Accessories | A (mm) |
|---|---|
| Auxiliary Contact HGCTB | 35 |
| Latching Block HGCLB | 42.5 |
| Timer HGCET | 39 |




HGC50
HGC65
(AC/DC)

| Accessories | A (mm) |
|---|---|
| Auxiliary Contact HGCTB | 35 |
| Latching Block HGCLB | 42.5 |
| Timer HGCET | 39 |




※ The dimensions of the drawing on this page may be subject to change without notice.
( ) Refers to the DC type.

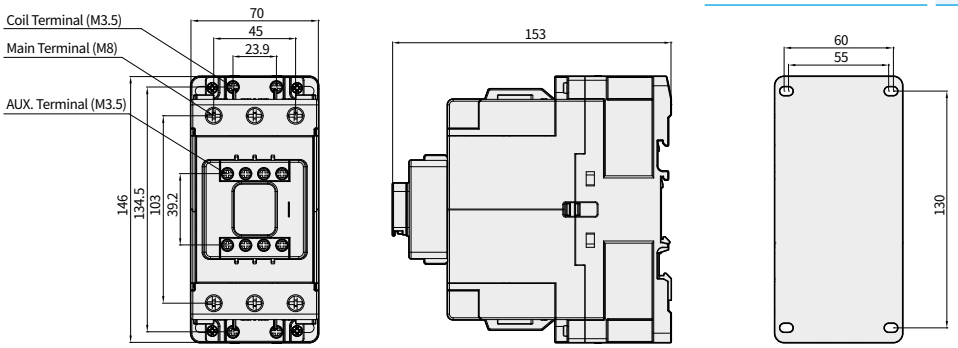
# Dimensions

## Electronic Contactor

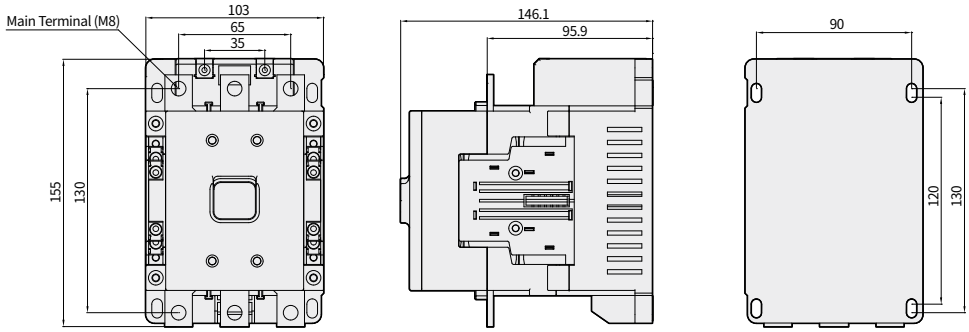
Unit : mm

HGC75
HGC85
HGC100
(AC/DC)

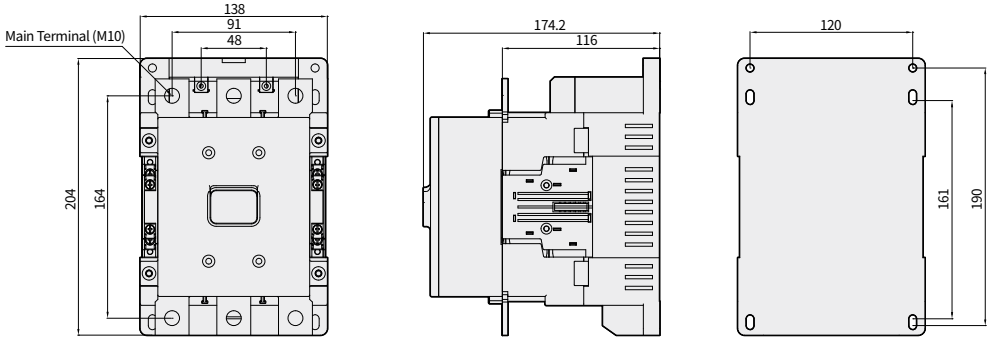
| Accessories | A (mm) |
|---|---|
| Auxiliary Contact HGCTB | 35 |
| Latching Block HGCLB | 42.5 |
| Timer HGCET | 39 |




HGC115
HGC130
HGC150



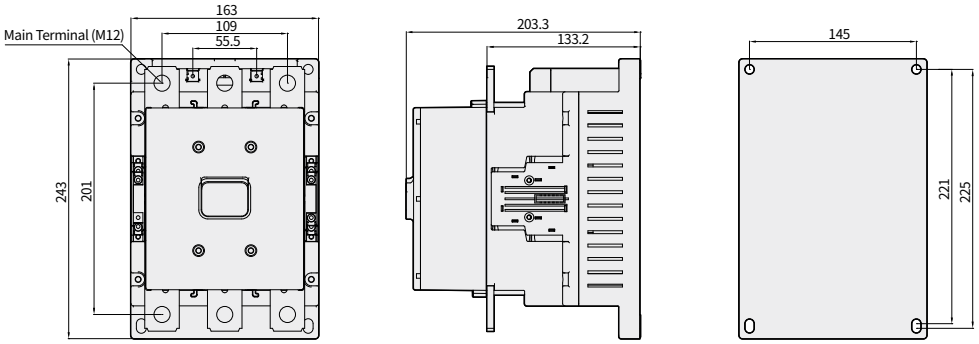

HGC185
HGC225
HGC265



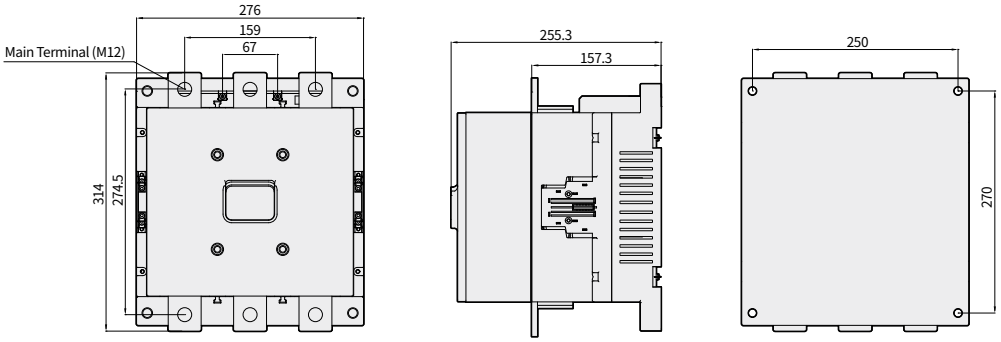

※ The dimensions of the drawing on this page may be subject to change without notice.
( ) Refers to the DC type.

Unit : mm

## HGC300
## HGC400
## HGC500




## HGC630
## HGC800




※ The dimensions of the drawing on this page may be subject to change without notice.
( ) Refers to the DC type.

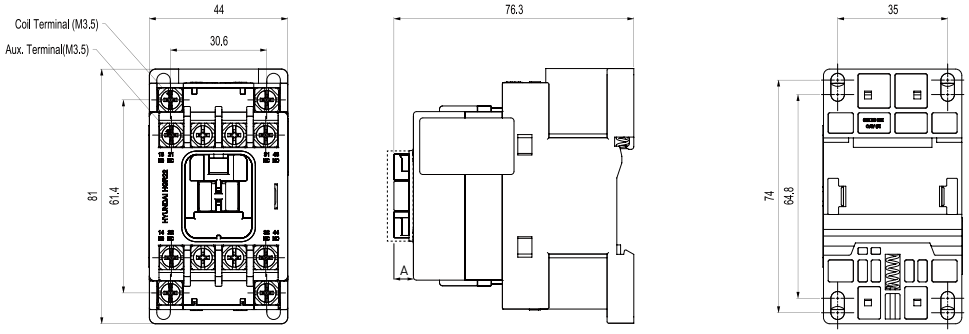
# Dimensions

## Control Relay

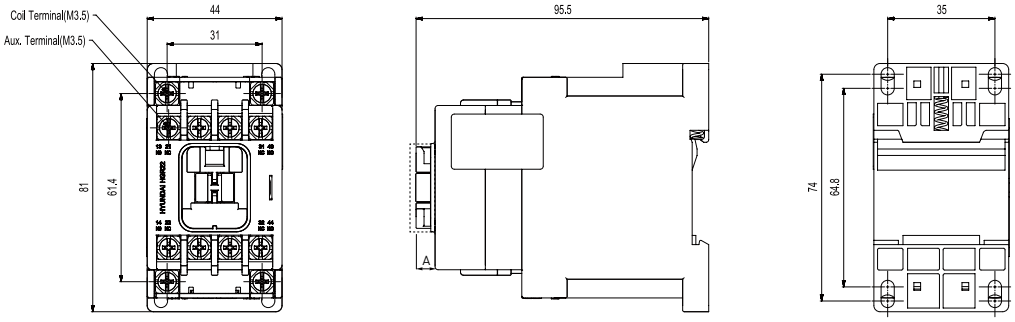
Unit : mm

### HGR (AC)

| Accessories | A (mm) |
|---|---|
| Auxiliary Contact HGCTB | 35 |
| Latching Block HGCLB | 42.5 |
| Timer HGCET | 39 |




### HGR-P (Magnetic Type) (DC)

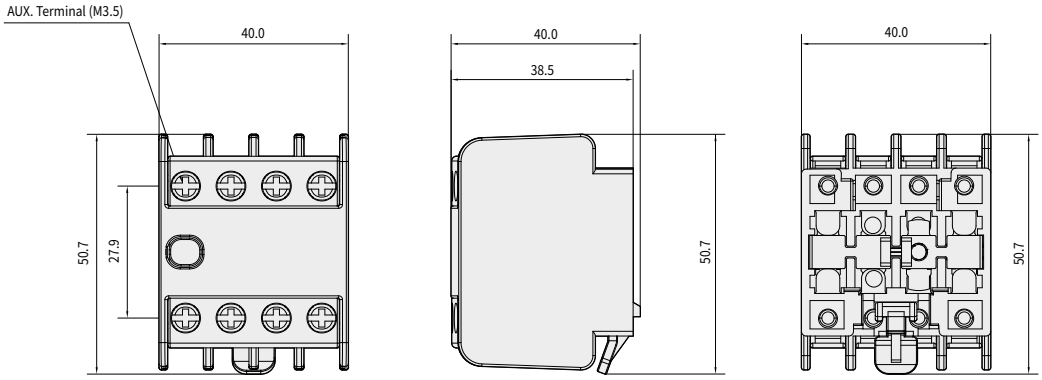



※ The dimensions of the drawing on this page may be subject to change without notice.
( ) Refers to the DC type.

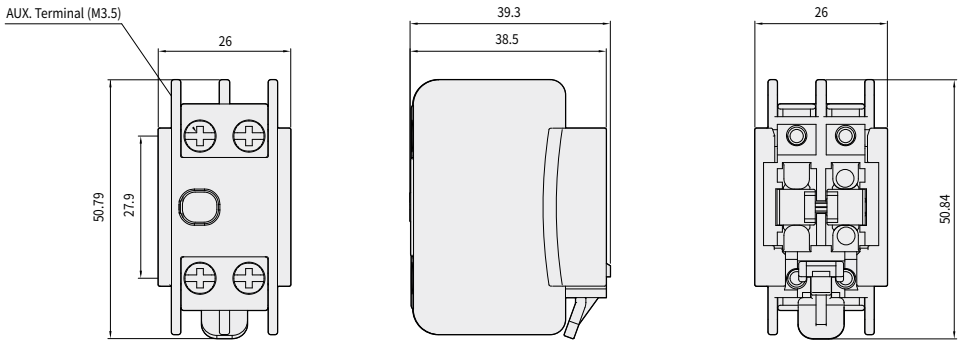
## Auxiliary Contact Block (Front Mounting)

Unit : mm

### HGCTB4P




### HGCTB2P



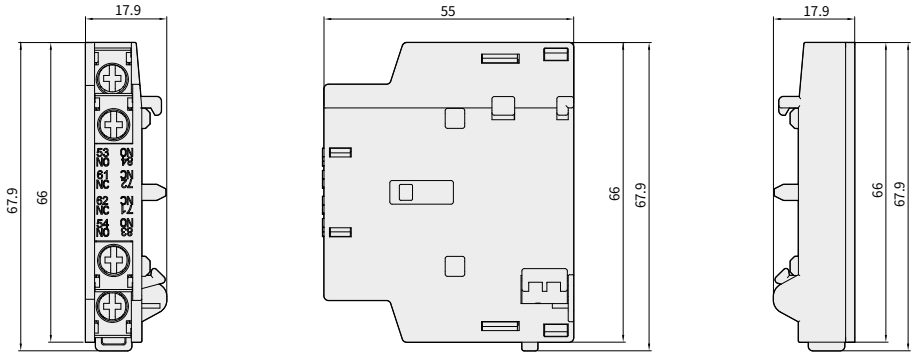

※ The dimensions of the drawing on this page may be subject to change without notice.

# Dimensions

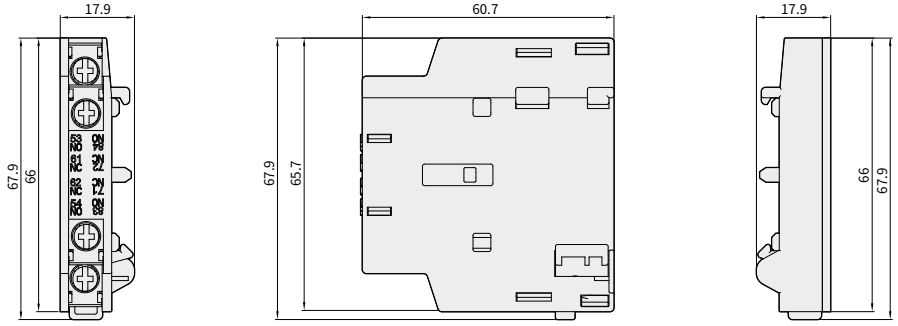
## Auxiliary Control Block (Side Mounting)

Unit : mm

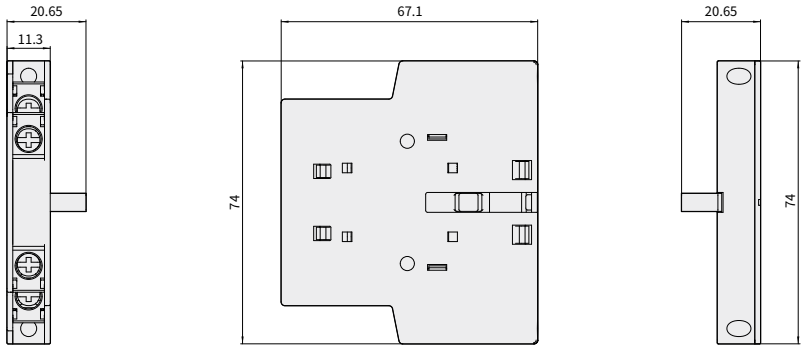
### HGCSB40




### HGCSB100




### HGCSB800

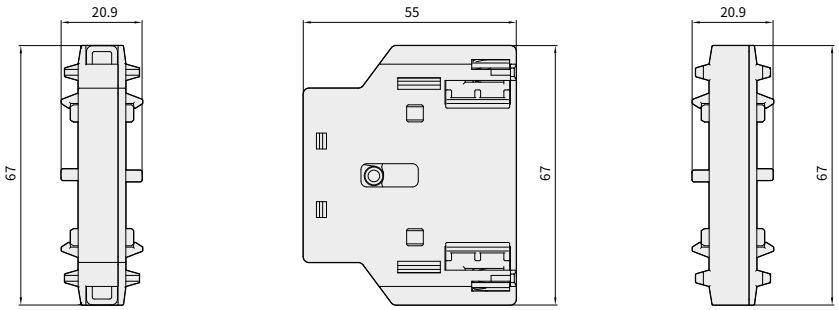



※ The dimensions of the drawing on this page may be subject to change without notice.

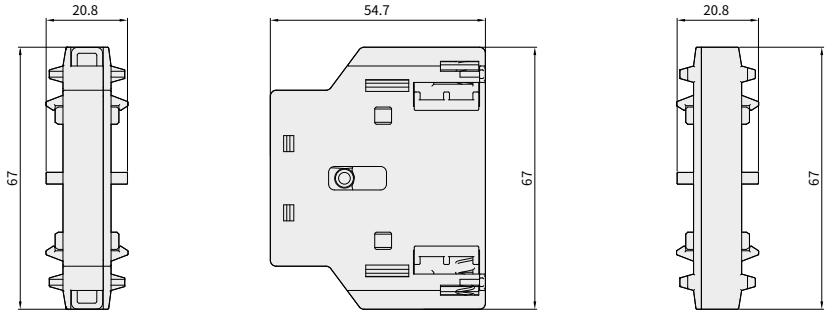
## Interlock Unit

Unit : mm

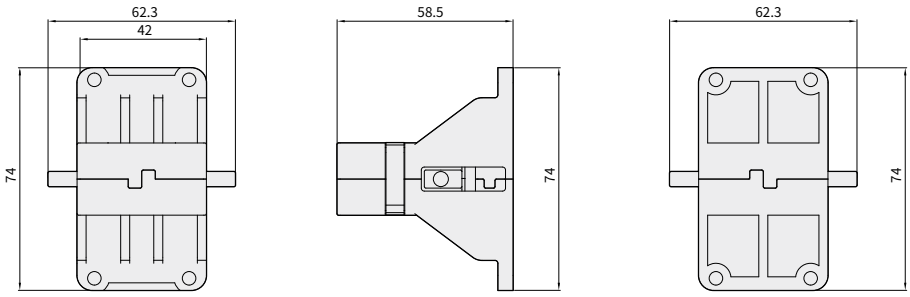
### HGCIU40



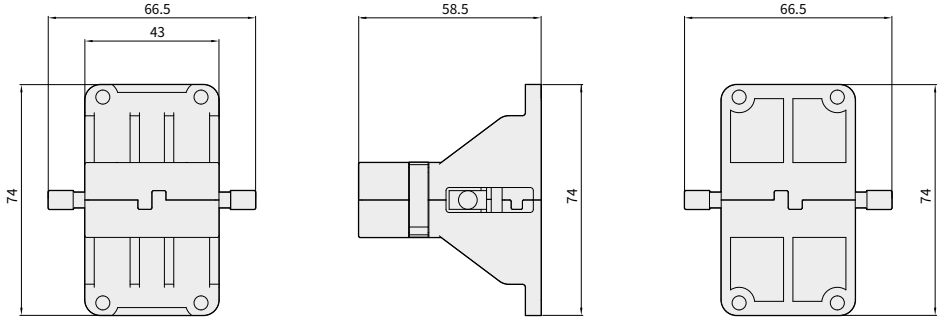

### HGCIU100




### HGCIU265




### HGCIU800



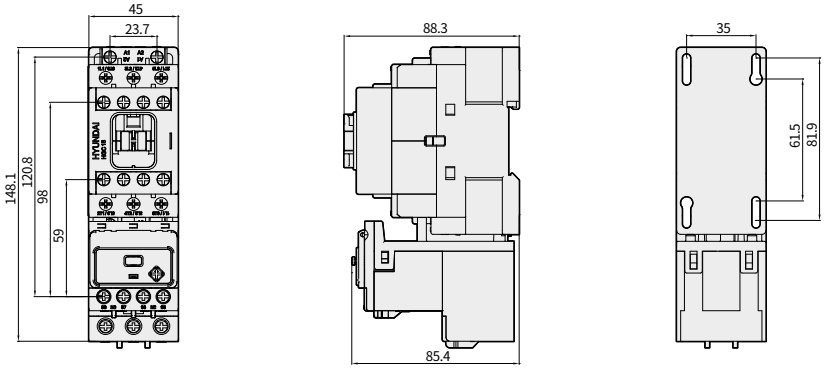

※ The dimensions of the drawing on this page may be subject to change without notice.

# Dimensions

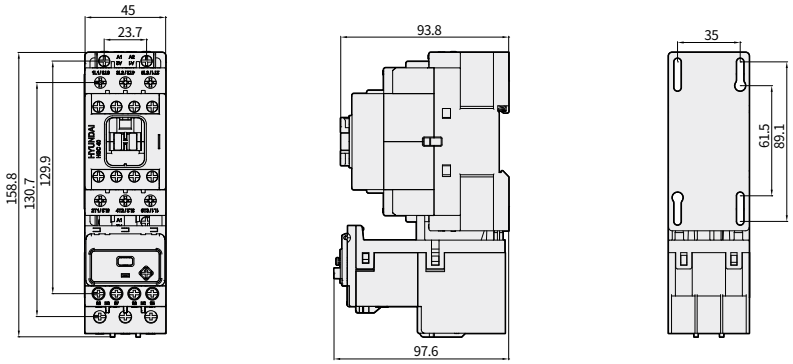
## Magnetic Contactor + Thermal Overload Relay

Unit : mm

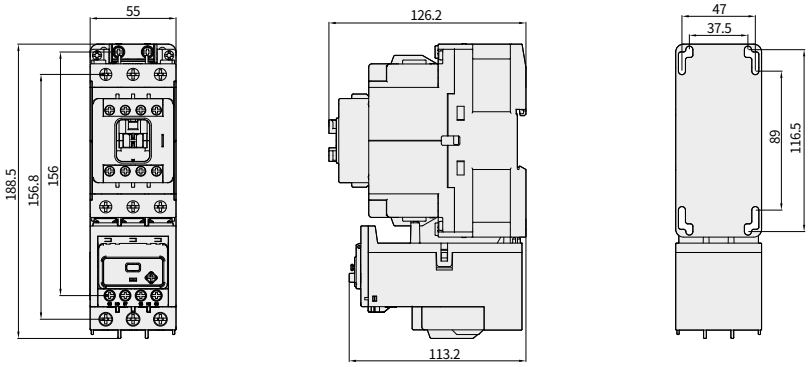
HGC9
HGC12
HGC18 +
HGT18



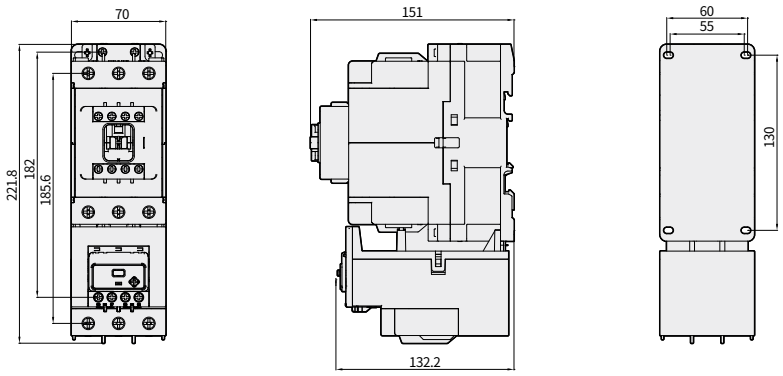

HGC25
HGC32
HGC40 +
HGT40




HGC50
HGC65 +
HGT65



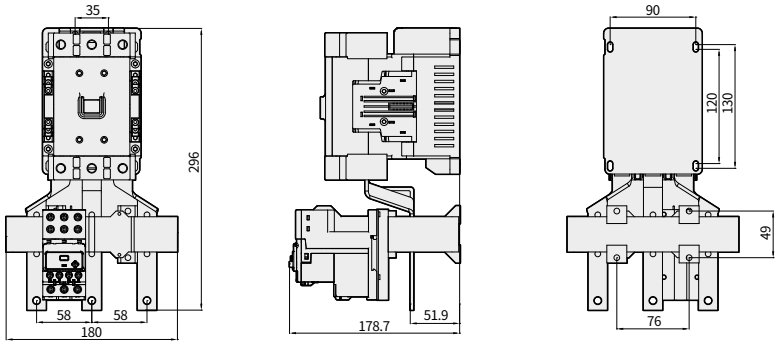

HGC75
HGC85
HGC100 +
HGT100



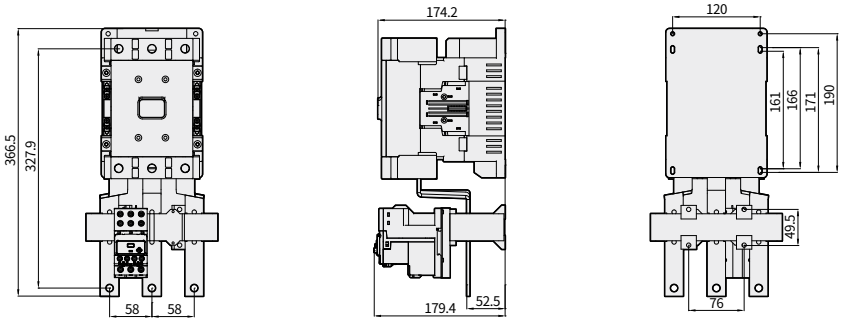

※ The dimensions of the drawing on this page may be subject to change without notice.

Unit : mm

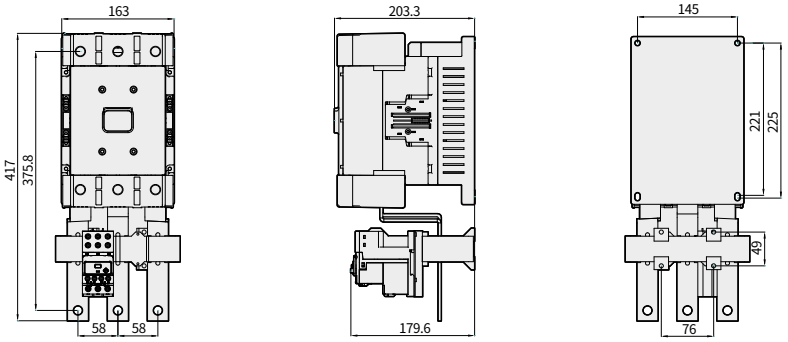
**HGC115**
**HGC130**
**HGC150 +**
**HGT150**



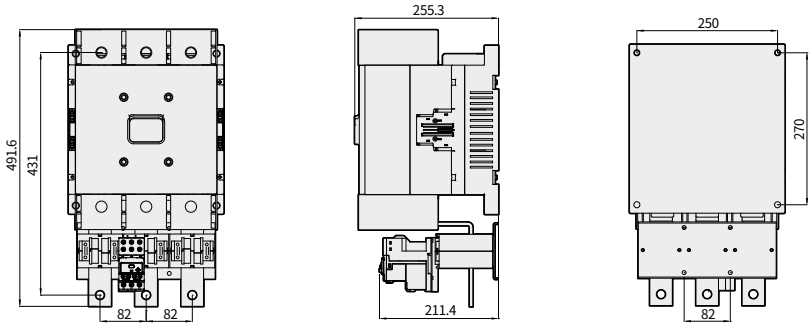

**HGC185**
**HGC225**
**HGC265 +**
**HGT265**




**HGC300**
**HGC400**
**HGC500 +**
**HGT500**




**HGC630**
**HGC800 +**
**HGT800**
**(630, 800A)**

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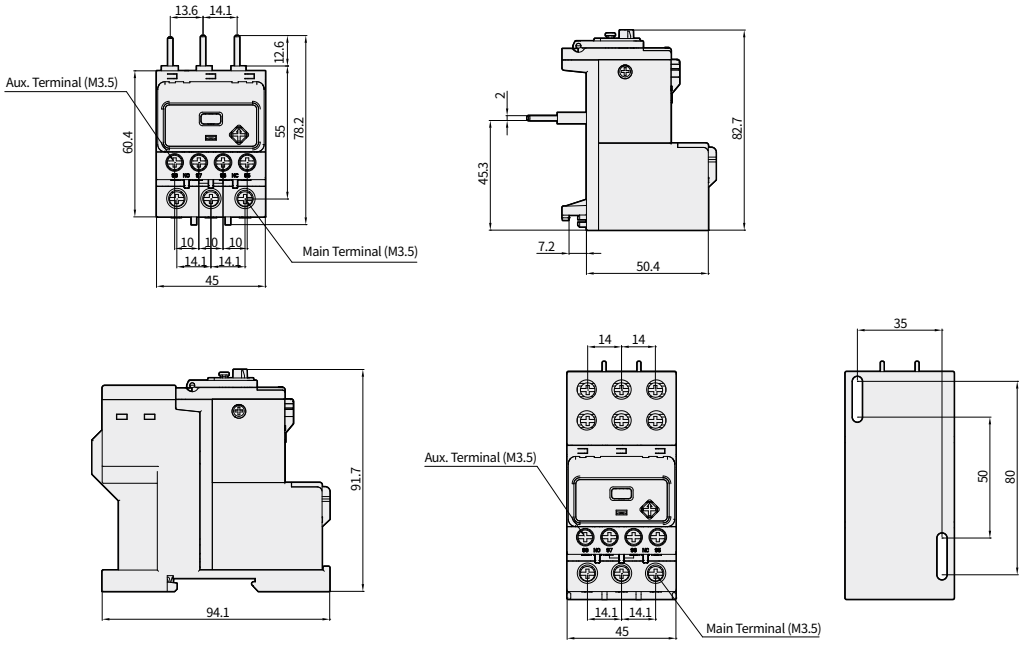
# Dimensions

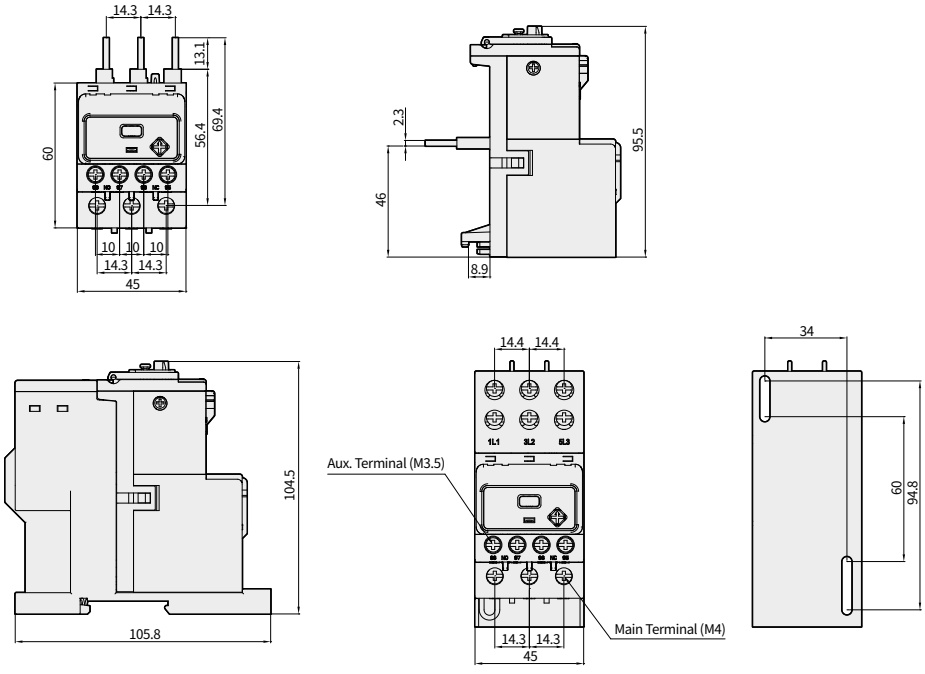
## Thermal Overload Relay

Unit : mm

### HGT18



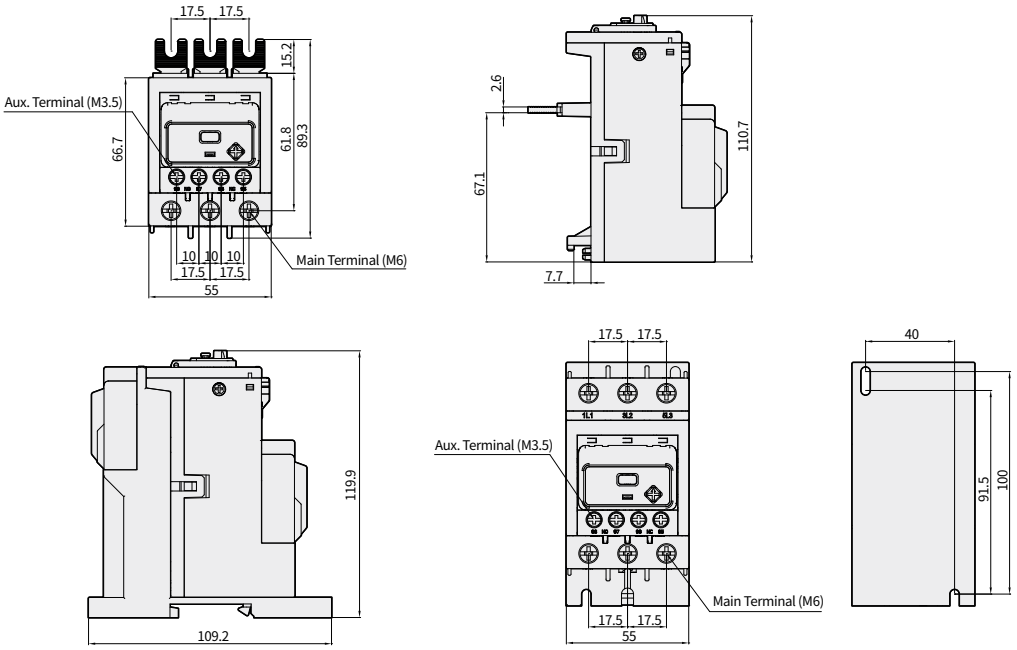

### HGT40



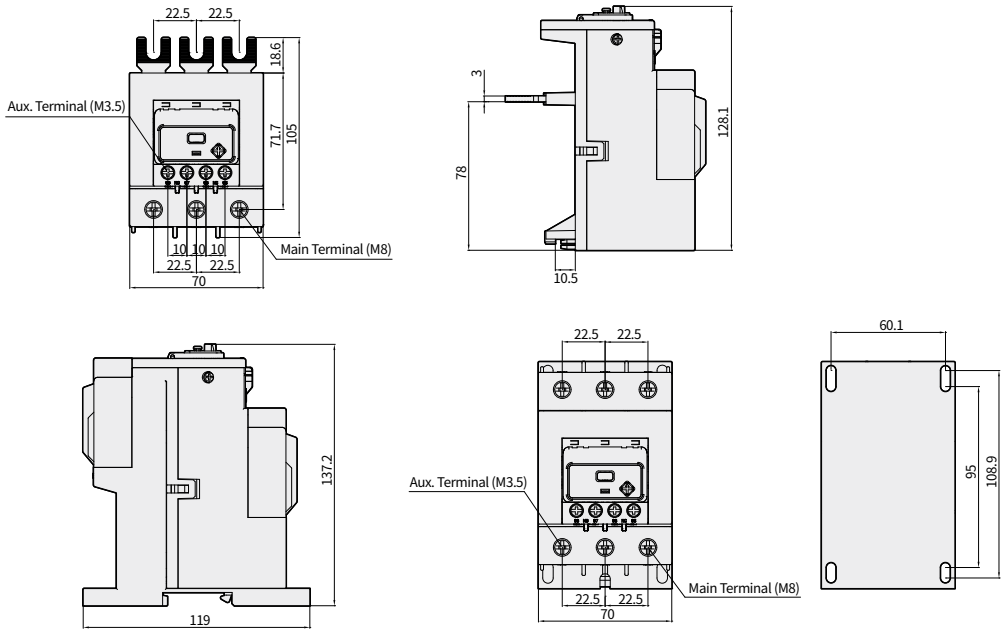

※ The dimensions of the drawing on this page may be subject to change without notice.

Unit : mm

## HGT65




## HGT100



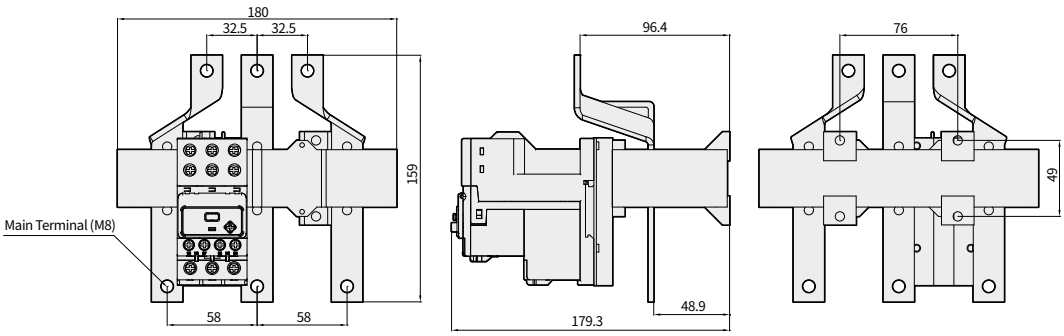

※ The dimensions of the drawing on this page may be subject to change without notice.

# Dimensions

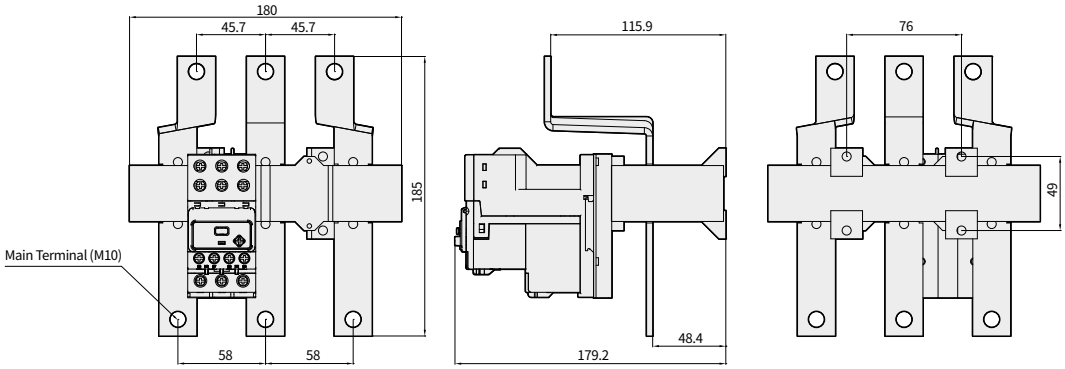
## Thermal Overload Relay

Unit : mm

### HGT150



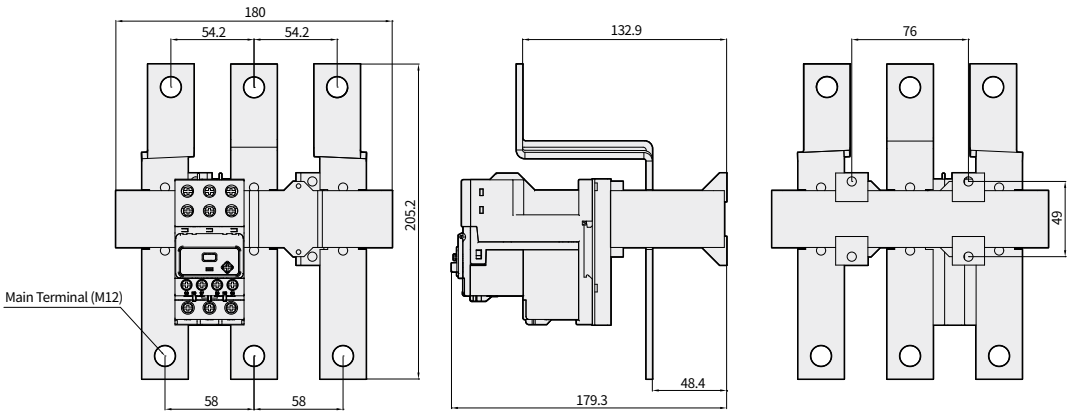

### HGT265



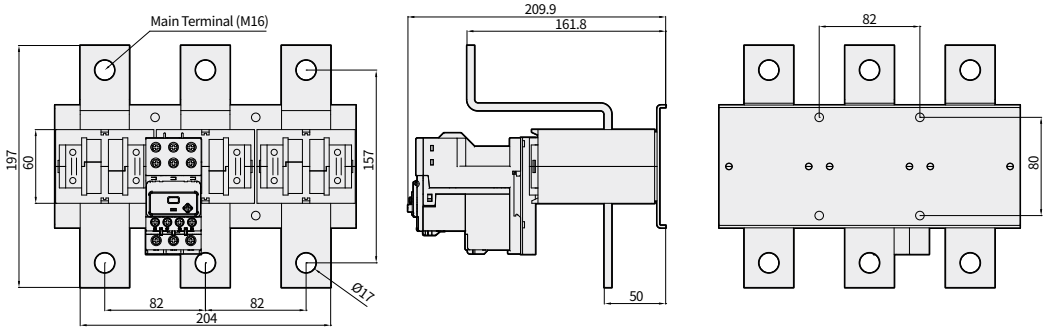

※ The dimensions of the drawing on this page may be subject to change without notice.

Unit : mm

## HGT500




## HGT800




※ The dimensions of the drawing on this page may be subject to change without notice.

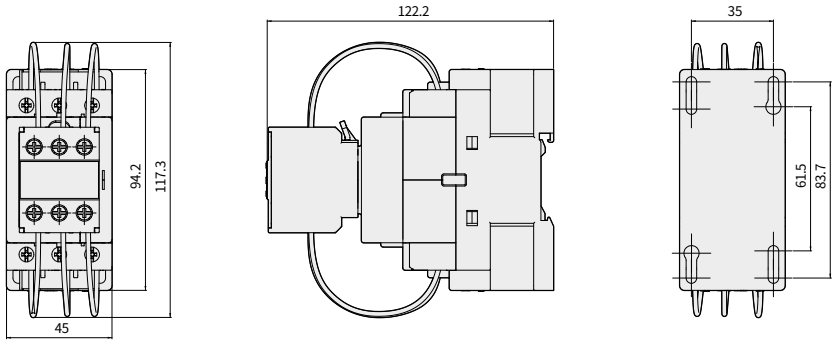
# Dimensions

## Magnetic Contactor + Capacitor Switching Unit

Unit : mm

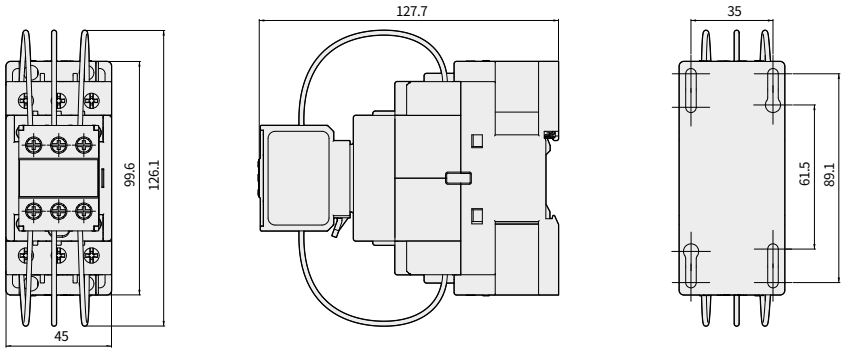
### HGC18C

When connecting the resistance cable, 1.5 times the 94.2 space is required



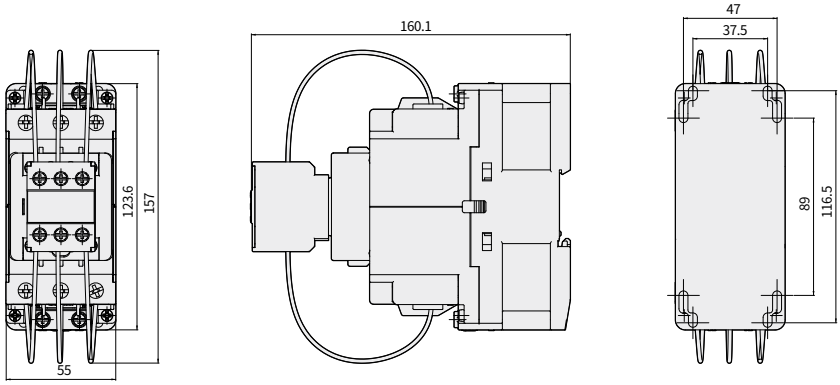

### HGC40C

When connecting the resistance cable, 1.5 times the 99.6 space is required



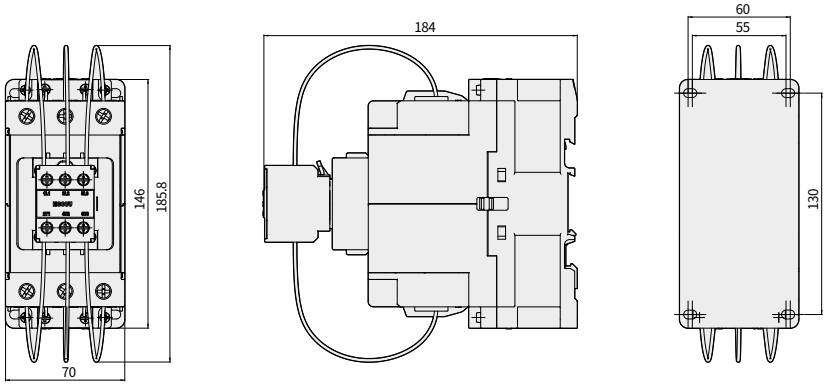

### HGC65C

When connecting the resistance cable, 1.5 times the 123.6 space is required




### HGC100C

When connecting the resistance cable, 1.5 times the 146 space is required

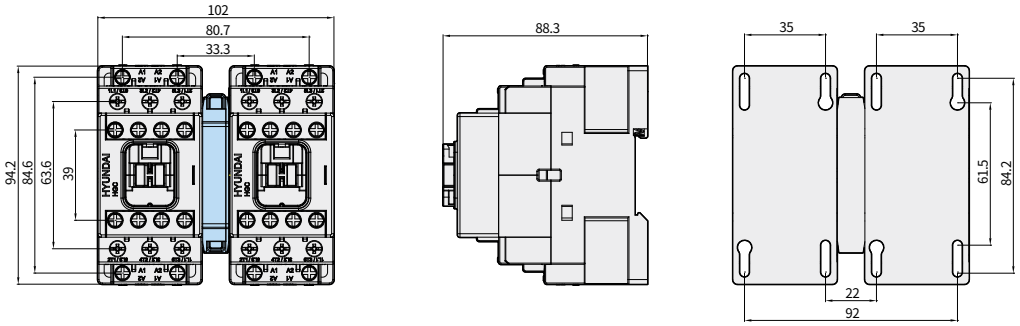



※ The dimensions of the drawing on this page may be subject to change without notice.

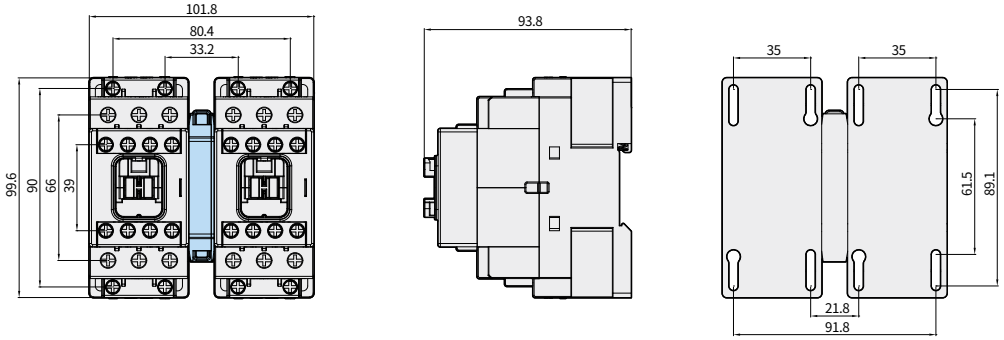
## Reverse Operation Magnetic Contactor (With Interlock Unit)

Unit : mm

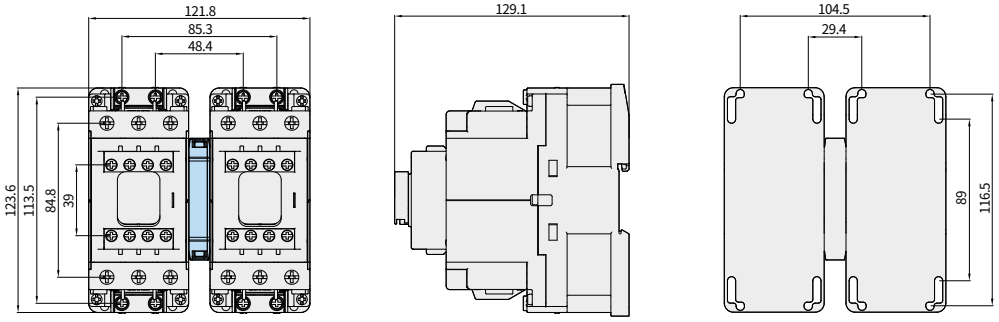
### HGC18R



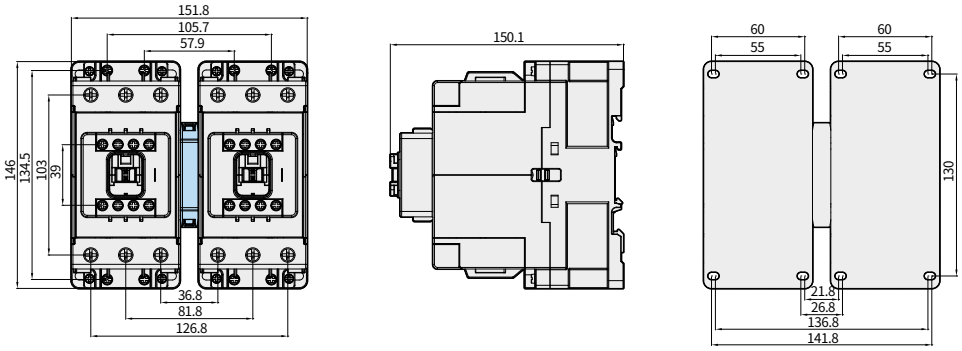

### HGC40R




### HGC65R




### HGC100R



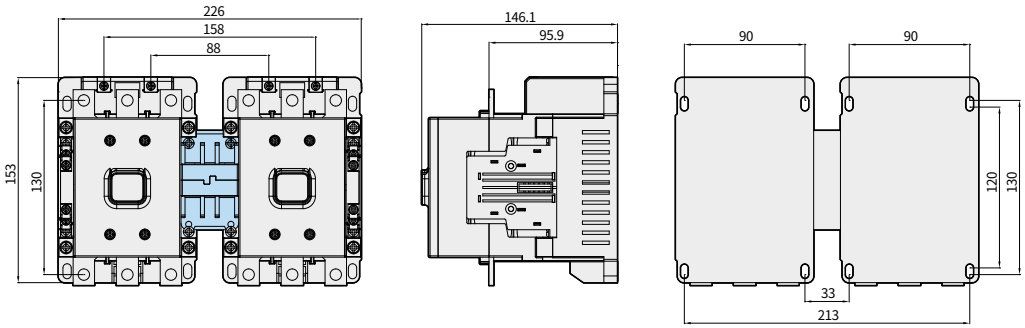

※ The dimensions of the drawing on this page may be subject to change without notice.

# Dimensions

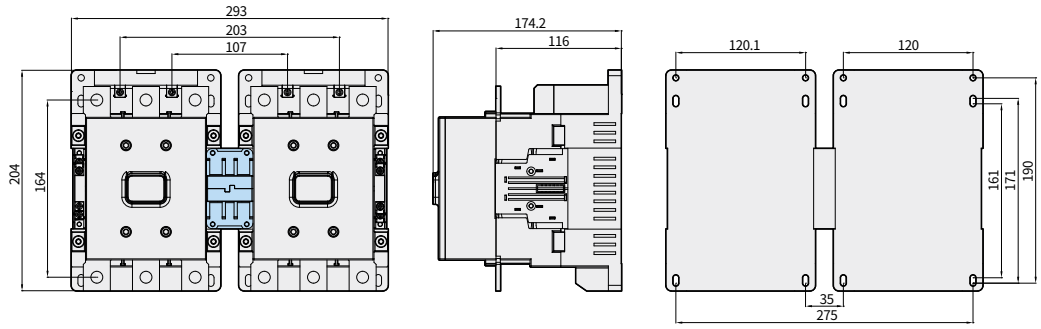
## Reverse Operation Magnetic Contactor (With Interlock Unit)

Unit : mm

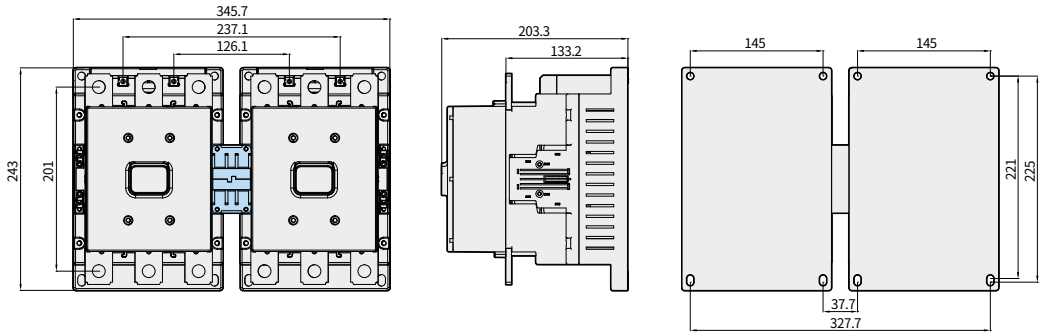
### HGC150R



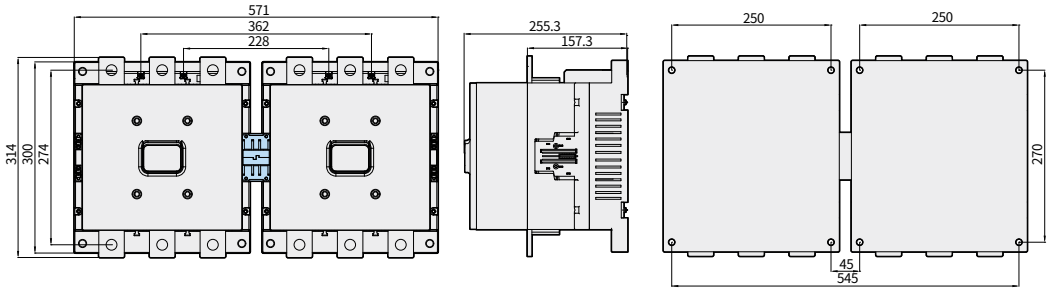

### HGC265R




### HGC500R




### HGC800R

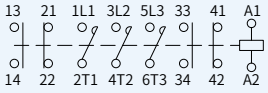
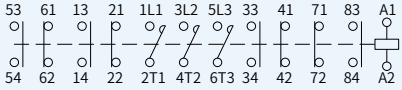
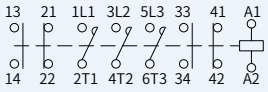
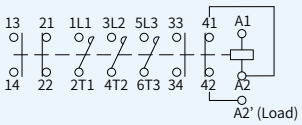
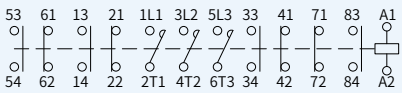
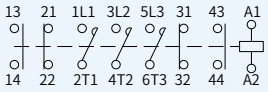
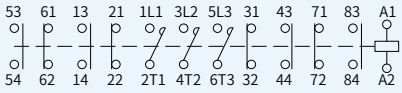



※ The dimensions of the drawing on this page may be subject to change without notice.

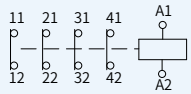
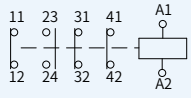
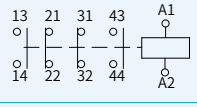
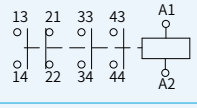
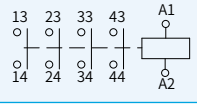
# Circuit Diagram

## Contact Arrangement

### Magnetic Contactor

| Model Name | Auxiliary Contact | | Contact Arrangement Diagram | |
|---|---|---|---|---|
| | Standard | Additional | AC | DC |
| HGC9<br>HGC12<br>HGC18<br>HGC25<br>HGC32<br>HGC40 | 2NO + 2NC | - |  | Same as left |
| | 2NO + 2NC | 2NO + 2NC |  | Same as left |
| HGC50<br>HGC65<br>HGC75<br>HGC85<br>HGC100 | 2NO + 2NC | - |  |  |
| | 2NO + 2NC (AC)<br>2NO + 1NC (DC) | 2NO + 2NC |  | |
| HGC115<br>HGC130<br>HGC150<br>HGC185<br>HGC225<br>HGC265<br>HGC300<br>HGC400<br>HGC500<br>HGC630<br>HGC800 | 2NO + 2NC | - |  | Same as left |
| | 2NO + 2NC | 2NO + 2NC |  | Same as left |

### Control Relay

| Model Name | Inspection Arrangement | Inspection Arrangement Drawing |
|---|---|---|
| HGR04 | 4NC |  |
| HGR13 | 1NO + 3NC |  |
| HGR22 | 2NO + 2NC |  |
| HGR31 | 3NO + 1NC |  |
| HGR40 | 4NO |  |

# Order Code

## Magnetic Contactor

**HGC** | **12** | **22**

### Model Name

| | |
|---|---|
| **HGC** | Magnetic Contactor |

### Type and Capacity

Standard Magnetic Contactor

| Code | Rated Current | Rated Capacity |
|---|---|---|
| | AC3/AC 400 V | |
| **9** | 9 A | 4 kW |
| **12** | 12 A | 5.5 kW |
| **18** | 18 A | 7.5 kW |
| **25** | 25 A | 11 kW |
| **32** | 32 A | 15 kW |
| **40** | 40 A | 18.5 kW |
| **50** | 50 A | 22 kW |
| **65** | 65 A | 30 kW |
| **75** | 75 A | 37 kW |
| **85** | 85 A | 45 kW |
| **100** | 100 A | 55 kW |
| **115** | 115 A | 60 kW |
| **130** | 130 A | 65 kW |
| **150** | 150 A | 75 kW |
| **185** | 185 A | 90 kW |
| **225** | 225 A | 132 kW |
| **265** | 265 A | 147 kW |
| **300** | 300 A | 160 kW |
| **400** | 400 A | 220 kW |
| **500** | 500 A | 250 kW |
| **630** | 630 A | 330 kW |
| **800** | 800 A | 440 kW |
| | For Nuclear | |
| **32Q** | 32 A | |
| **65Q** | 65 A | |
| **100Q** | 100 A | |
| **150Q** | 150 A | |
| **300Q** | 300 A | |

### Type and Capacity

Magnetic Contactor for Capacitor

| Code | Rated Current | Capacitor (AC 440 V) |
|---|---|---|
| **9C** | 9 A | 9.7 kVAR |
| **12C** | 12 A | 12 kVAR |
| **18C** | 18 A | 16.7 kVAR |
| **25C** | 25 A | 20 kVAR |
| **32C** | 32 A | 25 kVAR |
| **40C** | 40 A | 29 kVAR |
| **50C** | 50 A | 40 kVAR |
| **65C** | 65 A | 43.5 kVAR |
| **75C** | 75 A | 52 kVAR |
| **85C** | 85 A | 56 kVAR |
| **100C** | 100 A | 62 kVAR |

### Auxiliary Contact

| Standard Magnetic Contactor | | Applicable Type |
|---|---|---|
| **11** | 1NO + 1NC | HGC9A ~ 40A, AC or DC |
| **21** | 2NO + 1NC | HGC50A ~ 100A, DC |
| **22** | 2NO + 2NC | HGC9A ~ 40A, AC or DC<br>HGC50A ~ 100A, AC<br>HGC115A ~ 800A |

※ The order format above is to explain the order code. For detailed specification per type, refer to the relevant page upon placing the order.

| N |
|---|
| Purpose |
| **N** General |

| S | |
|---|---|
| Terminal Type | |
| Standard Magnetic Contactor | |
| **S** | With Terminal Cover (9 ~ 100A) |
| Magnetic Contactor for Capacitor | |
| **S** | With Terminal Cover |

| A | |
|---|---|
| Category of Operational Coil Voltage | |
| Standard Magnetic Contactor | |
| **X** | AC 50 Hz (9 ~ 100 A) |
| **A** | AC 60 Hz (9 ~ 100 A) |
| **D** | DC (9 ~ 100 A) |
| **F** | AC/DC (115 ~ 500 A) |
| **F** | AC/DC (630 ~ 800 A) |
| Magnetic Contactor for Capacitor | |
| **X** | AC 50 Hz |
| **A** | AC 60 Hz |

| 220 | |
|---|---|
| Operational Coil Voltage | |
| **24** | X, A AC 50/60 Hz |
| **48** | |
| **110** | |
| **120** | |
| **220** | |
| **240** | |
| **380** | |
| **440** | |
| **24** | D DC |
| **48** | |
| **110** | |
| **125** | |
| **220** | |
| **220** | AC 100 ~ 240 DC 110 ~ 220 |
| **440** | AC 380 ~ 450 |
| **110** | AC 100 ~ 127 DC 100 ~ 110 |
| **220** | AC 200 ~ 240 DC 200 ~ 220 |
| **440** | AC 380 ~ 450 |

| N | |
|---|---|
| Purpose | |
| **N** | Non 1E Class |

# Order Code

## Thermal Overload Relay

| HGT | 18 | K | A | 18 | S | N |
|---|---|---|---|---|---|---|
| Model Name | Capacity of Contactor | No. of Terminal | Protection Grade (Characteristics Curve) | Setting Current | Terminal Type | Purpose |

| Model Name | |
|---|---|
| HGT | Thermal Overload Relay |

| Capacity of Contactor | |
|---|---|
| 18 | HGC9 ~ 40 |
| 40 | HGC25 ~ 40 |
| 65 | HGC50, 65 |
| 100 | HGC75 ~ 100 |
| 150 | HGC115 ~ 150 |
| 265 | HGC185 ~ 265 |
| 500 | HGC300 ~ 500 |
| 800 | HGC630 ~ 800 |
| For Nuclear | |
| 40KQ | HGC18Q ~ 40Q |
| 65KQ | HGC50Q ~ 65Q |
| 100KQ | HGC75Q ~ 100Q |
| 150KQ | HGC115Q ~ 150Q |
| 500KQ | HGC300Q ~ 500Q |

| No. of Terminal | |
|---|---|
| K | 3 |
| H | 2 |

| Protection Grade (Characteristics Curve) | |
|---|---|
| A | 10 A |

| Setting Current | |
|---|---|
| 0P18 | 0.12 ~ 0.18 A |
| 0P26 | 0.18 ~ 0.26 A |
| 0P35 | 0.25 ~ 0.35 A |
| 0P50 | 0.34 ~ 0.5 A |
| 0P70 | 0.5 ~ 0.7 A |
| 0P90 | 0.6 ~ 0.9 A |
| 1P20 | 0.8 ~ 1.2 A |
| 1P60 | 1.1 ~ 1.6 A |
| 2P10 | 1.5 ~ 2.1 A |
| 3 | 2 ~ 3 A |
| 4P20 | 2.8 ~ 4.2 A |
| 5 | 3 ~ 5 A |
| 6 | 4 ~ 6 A |
| 8 | 5.6 ~ 8 A |
| 9 | 6 ~ 9 A |
| 10 | 7 ~ 10 A |
| 12 | 8 ~ 12 A |
| 18 | 12 ~ 18 A |
| 22 | 15 ~ 22 A |
| 25 | 17 ~ 25 A |
| 32 | 22 ~ 32 A |
| 40 | 28 ~ 40 A |
| 50 | 34 ~ 50 A |
| 65 | 45 ~ 65 A |
| 75 | 52 ~ 75 A |
| 80 | 48 ~ 80 A |
| 85 | 59 ~ 85 A |
| 100 | 70 ~ 100 A |
| 115 | 69 ~ 115 A |
| 130 | 78 ~ 130 A |
| 150 | 90 ~ 150 A |
| 185 | 111 ~ 185 A |
| 225 | 135 ~ 225 A |
| 265 | 159 ~ 265 A |
| 300 | 180 ~ 300 A |
| 400 | 240 ~ 400 A |
| 500 | 300 ~ 500 A |
| 630 | 378 ~ 630 A |
| 800 | 480 ~ 800 A |

| Terminal Type | |
|---|---|
| S | With Terminal Cover |

| Purpose | |
|---|---|
| N | Non 1E Class |

※ The order format above is to explain the order code. For detailed specification per type, refer to the relevant page upon placing the order.

## Control Relay

| HGR | 22 | N | S | A | 220 | N |
|---|---|---|---|---|---|---|
| Model Name | Auxiliary Contact | Operation Method | Terminal Type | Category of Operational Coil Voltage | Operational Coil Voltage | Purpose |

| HGR | Control Relay |
|---|---|

| | |
|---|---|
| **04** | 4NC |
| **13** | 1NO + 3NC |
| **22** | 2NO + 2NC |
| **31** | 3NO + 1NC |
| **40** | 4NO |
| | Nuclear |
| **04Q** | 0NO + 4NC |
| **13Q** | 1NO + 3NC |
| **22Q** | 2NO + 2NC |
| **31Q** | 3NO + 1NC |
| **40Q** | 4NO + 0NC |

| | |
|---|---|
| **N** | AC |
| **P** | DC (Permanent magnetic) |

| | |
|---|---|
| **S** | With Terminal Cover |

| | |
|---|---|
| **X** | AC 50 Hz |
| **A** | AC 60 Hz |
| **D** | DC |

| |
|---|
| 24 ~ 440 V |

| | |
|---|---|
| **N** | Non 1E Class |

※ The order format above is to explain the order code. For detailed specification per type, refer to the relevant page upon placing the order.

# Handling and Maintenance Inspection

## Storage and Transportation

### Storage Precaution

| Altitude | Below 2,000 m above sea level
| Relative Humidity | Within 45 % ~ 85 %

The surrounding environment may affect the insulation performance and durability of the magnetic contactor so the environment condition for usage must accurately be checked before application.

- **Relative humidity to be within the range of 45% ~ 85%**
  Do not store in places with high humidity for a long period of time.
- **Avoid places with a lot of dust**
  Do not store in exposed places and use cover or packing material to prevent dust from piling up on the circuit breaker.

- **Store in packaged state**
  During storage, store in packaged state. Store in a state using shelf or equivalent devices and do not leave it neglected on the floor. Do not transport heavy products manually. It may cause injury.

- **Do not leave under direct sunlight for a long period of time.**

- **Avoid storage in high or low temperature**
  Storage temperature must be maintained between - 20 °C ~ + 60 °C.

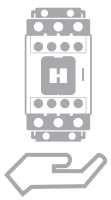
- **Do not store in places with corrosive gas**
  Do not leave it around gas containing sulfurous gas or sulfur or ammonia gas and others.

In case of mountainous region with high altitude, it may drop the insulation durability so check the adjustment coefficient of the insulation performance and use the appropriate ratings of the product.

### Transportation Precautions

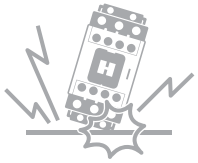
**⚠ Caution**

- Do not apply impact during transportation. Dropping or applying strong impact may cause defect.
- Do not handle while holding the circuit breaker's accessory or external plug-in wire of the accessory. It may cause injury in the handler or a malfunction of the circuit breaker.



- **Hold the main unit of the circuit breaker during transportation**
  Do not handle while holding the external guide line of the accessory or the terminal bar.

- **Pay attention when handling metal accessories**
  Sharp planes or edges in the metal accessory may cause injury.



- **Do not apply impact during transportation**
  Dropping or applying strong impact may cause defect.

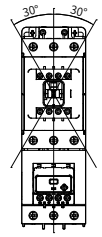
- **Pay attention to the packaging of the circuit breaker before transportation**
  Inappropriate packaging may cause damage in the circuit breaker during transportation.

## Installation

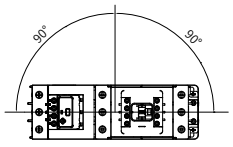
- Mount in dry places with less vibration.
- As for the installation direction, vertical installation is recommended but it can be used in each direction as seen in the figure.
- In case of cross installation and horizontal installation, it may drop the lifespan and various characteristics when compared to the normal installation.
- When using in a space below the insulation distance below, damage may be caused by the switching arc.
- Ambient Temperature : - 5°C ~ + 40°C (HGT, HGC DC Type), - 40°C ~ + 55°C (HGC only)

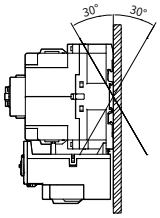
### Installation

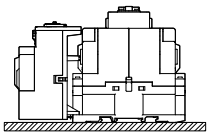
Normal Installation



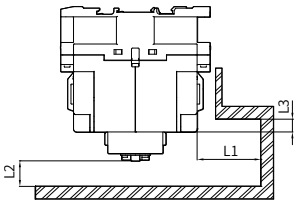

Cross Installation and Horizontal Installation



### Insulation Distance




Unit : mm

| Product / Distance | Above HGC75 | | | | |
|---|---|---|---|---|---|
| | HGC75 ~ 100 | HGC115 ~ 150 | HGC185 ~ 265 | HGC300 ~ 500 | HGC630 ~ 800 |
| L1 | 30 | 30 | 80 | 80 | 80 |
| L2 | 5 | 15 | 15 | 15 | 20 |
| L3 | 6 | 11 | 32 | 32 | 40 |

## Handling Precautions

### Caution

- Do not store and use in abnormal environment such as high temperature, high humidity, dust, corrosive gas, vibration, impact and others It may cause electric shock, fire and malfunction.
- Ensure that rubbish, foreign substances such as concrete powder, metal powder, rainwater and others do not flow in.
- When handling the product, do not use lubricants. It may cause electric shock and fire.
- Electrical works must be conducted by qualified technicians with certifications related to electrical works. It may cause electric shock and fire.

### Inspection Items Before Use

- Ensure that calibration work is not skipped. It may cause malfunction.

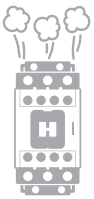
### Installation, Usage and Maintenance Precautions

- Frequently check the fastening state, assembly and combination status of the bolt. It may cause electric shock, fire and malfunction.
- Check whether the rated current, voltage and frequency conform to the intended specification. It may cause electric shock, fire and malfunction.
- As for the wiring work, check whether the upper circuit breaker has been turned off so that electricity does not flow. It may cause electric shock.
- Connect the power that conforms to the ratings of the switch/contactor's main unit. It may cause fire and malfunction.
- As for the wiring and terminal, use the standard product and as for the terminal screw, fasten using the torque indicated in the user manual. It may cause fire.
- Frequently check the wiring state and shape. It may cause electric shock, fire and malfunction.
- Check whether parts have been omitted and replace damaged products and parts. It may cause electric shock, fire and malfunction.
- In case of abnormality in the contact, replace immediately and do not arbitrarily process such as trimming the contact using string or use lubricant. It may cause electric shock, fire and malfunction
- Use the specified tool. It may cause damage and malfunction.

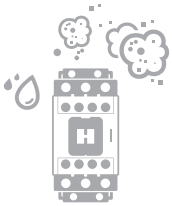
# Handling and Maintenance Inspection

## Storage and Transportation

### Installation Precautions



- **Do not block the arc gas exhaust hole**
  It may drop the breaking capacity.

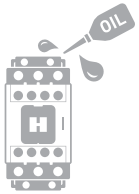


- **Pay attention to dust, metal scraps and others**
  After installation, cover the protection cover while working with the machine

- **Do not remove the insulation plate attached at the bottom of the circuit breaker.**
  It may destroy the insulation and the insulation performance.

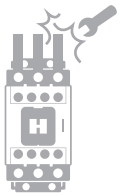
### Connection Precautions

- **When fastening the terminal screw, it should be fastened according to the specified torque.**
  Incomplete fastening of the terminal screw may cause overheating so each terminal screw must be fastened completely according to the specified torque.
  In addition, excessive fastening torque may cause damage in the terminal screw and the circuit breaker case.

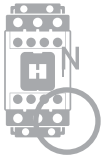



- **Use of lubricant at the terminal screw part is prohibited**
  Lubricant reduces the friction of the screw, causing the screw to loosen, ultimately leading to an increase in temperature.

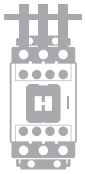
- **Exposed conductor must be insulated**
  Insulating tube or insulating tape must be used to complete insulation between the bare conductors of the MC. In case the terminals are not insulated, it may cause secondary shot-circuit during short-circuit accidents.



- **STUD must not be deformed**
  Excessive force must not be applied to the stud at the conductor connecting part of the rear connection type. In addition, stud must not be deformed during wiring.




- **In case of 4 pole circuit breaker, the neutral wire of 3 phase 4 wire must be connected to the N phase.**
  It may not function in overcurrent which may cause fire.



- **The conductor must be fixed firmly on a flat state**
  As for the connecting conductor, electromagnetic force between conductors is generated by extremely big fault current so it must be fixed firmly.

# Periodic Inspection

**Detailed inspection and management of items when installed and used on a ship**

Magnetic Contactor & Relay

- Special : In case of energization or operation problems
- Usually : Within 2 years of installation
- Precision : More than 3 years after installation

| Inspection part | Inspection Items | Inspection Cycle | | | Inspection details | Note |
|---|---|---|---|---|---|---|
| | | Special | Usually | Thorough | | |
| External appearance | Visual inspection | | 1 month | | 1) Procedure : Check for cracks, damage, deformation, and contamination on the exterior of the product<br>2) Judgment : No cracks, damage, deformation and contanination on the exterior of the product | Non Power-shutdown inspection |
| Cable | | | 1 month | | 1) Procedure : Check damage and overheating in Cable<br>2) Judgment : Nothing wrong | Non Power-shutdown inspection |
| Terminal | | | 1 month | | 1) Procedure : Check for signs of corrosion and overheating on the terminal part of the product and cable<br>2) Judgment : Nothing wrong | Non Power-shutdown inspection |
| Moving unit | | | 1 year | | 1) Procedure : Check for fully closing when operating 5 times on state<br>2) Judgment : Fully closing at 5 times.<br>⚠ **CAUTION**<br>**Heat may occur due to incomplete closing, so replacement is required.** | Power-shutdown inspection |
| | | | 1 year | | 1) Procedure : Check for fully turning off when operating 5 times off<br>2) Judgment : Fully Off at 5 times. | Power-shutdown inspection |
| Moving unit | Noise check | | 1 month | | 1) Procedure : Check for noise while operating<br>2) Judgment : No abnormal noise | Non Power-shutdown inspection |
| | | | 1 year | | 1) Procedure : Check for abnormal noise during 10 ON/OFF operations.<br>2) Judgment : No abnormal noise | Power-shutdown inspection |
| Moving unit | Operation test | | 1 year | | 1) Procedure : Check chattering for 5 ON/OFF operations)<br>2) Judgment : No chattering<br>⚠ **CAUTION**<br>**Heat may occur due to incomplete closing, so replacement is required.** | Power-shutdown inspection |
| Fastening screw | Tightening torque test | | 1 year | | 1) Procedure : Check torque with torque gauge and mark<br>2) Judgment : Over the torque reference value<br>(M3.5 : 12kg·cm, M4 : 15kg·cm, M5 : 26kg·cm, M6 : 40kg·cm, M8 :60kg·cm, M10 : 100kg·cm, M12 : 140kg·cm) | Power-shutdown inspection |
| Main contact | Measuring check | Frequent opening/ closing loads | | 3 year | 1) Procedure : Measure contact resistance at closing after 5 ON/OFF operations.<br>2) Judgment : less than 1Ω<br>⚠ **CAUTION**<br>**High contact resistance may cause poor conduction, so replacement is required.** | Power-shutdown inspection |
| | | | | 3 year | 1) Procedure : Measure contact resistance at OFF after 5 ON/OFF operations<br>2) Judgment : Infinity Ω | Power-shutdown inspection |
| Aux. contact | | Always On Load | | 3 year | 1) Procedure : Measure contact resistance at closing after 5 ON/OFF operations<br>2) Judgment : less than 1Ω<br>⚠ **CAUTION**<br>**High contact resistance may cause poor conduction, so replacement is required.** | Power-shutdown inspection |
| Coil | Visual inspection | | | 3 year | 1) Procedure : Check coil wire's discoloration due to overheating<br>2) Judgment : No discoloration | Power-shutdown inspection (product disassemble inspection) |
| Moving unit | Operation test | | | 3 year | 1) Procedure : Check for fully closing when operating 5 times on at 85% of the coil rated voltage<br>2) Judgment : Fully closing | Power-shutdown inspection |
| | | | | 3 year | 1) Procedure : Check for fully off when operating 5 times off at 10 to 70% of the coil rated voltage<br>2) Judgment : Fully off | Power-shutdown inspection |
| Terminal | Megger test | | | 3 year | 1) Procedure : Measure insulation resistance between phase and phase to earth (Equipment: DC1000V insulation resistance meter)<br>2) Judgment : More than 5MΩ | Power-shutdown inspection |

# Handling and Maintenance Inspection

## Periodic Inspection

**Detailed inspection and management of items when installed and used on a ship**

### Thermal Overload Relay

- Special : When trip/non-trip operation problems occur
- Usually : Within 2 years of installation
- Precision : More than 3 years after installation

| Inspection part | Inspection Items | Inspection cycle | | | Inspection details | Note |
|---|---|---|---|---|---|---|
| | | Special | Usually | Thorough | | |
| External appearance | Visual inspection | | 1 month | | 1) Procedure : Check for cracks, damage, deformation, and contamination on the exterior of the product<br>2) Judgment : No cracks, damage, deformation and contanination on the exterior of the product | Non Power-shutdown inspection |
| Cable | | | 1 month | | 1) Procedure : Check damage and overheating in Cable<br>2) Judgment : Nothing wrong | Non Power-shutdown inspection |
| Terminal | | | 1 month | | 1) Procedure : Check for signs of corrosion and overheating on the terminal part of the product and cable<br>2) Judgment : Nothing wrong | Non Power-shutdown inspection |
| Fastening screw | Tightening torque test | | 1 year | | 1) Procedure : Check torque with torque gauge and mark<br>2) Judgment : Over the torque reference value<br>(M3.5 : 12kg·cm, M4 : 15kg·cm, M5 : 26kg·cm, M6 : 40kg·cm, M8 :60kg·cm, M10 : 100kg·cm, M12 : 140kg·cm) | Power-shutdown inspection |
| Aux. contact | Measuring test | Always On Load | | 3 years | 1) Procedure : Pull and push the test button and measure contact resistance after 5 operations<br>2) Judgment : Less than 1Ω<br>⚠ **CAUTION**<br>**High contact resistance may cause poor conduction, so replacement is required.** | Power-shutdown inspection |
| Aux. contact | Operation test | Always On Load | | 3 years | 1) Procedure : Using the Test button, verify the normal operation of the 98-97 / 96-95 auxiliary contacts)<br>2) Judgment: 98-97 (conducting) and 96-95 (non-conducting) | Power-shutdown inspection |

### Aux.contact block

- Special : In case of energization or operation problems
- Usually : Within 2 years of installation
- Precision : More than 3 years after installation

| Inspection part | Inspection Items | Inspection cycle | | | Inspection details | Note |
|---|---|---|---|---|---|---|
| | | Special | Usually | Thorough | | |
| External appearance | Visual inspection | | 1 month | | 1) Procedure : Check for cracks, damage, deformation, and contamination on the exterior of the product<br>2) Judgment : No cracks, damage, deformation and contanination on the exterior of the product | Non Power-shutdown inspection |
| Cable | | | 1 month | | 1) Procedure : Check damage and overheating in Cable<br>2) Judgment : Nothing wrong | Non Power-shutdown inspection |
| Terminal | | | 1 month | | 1) Procedure : Check for signs of corrosion and overheating on the terminal part of the product and cable<br>2) Judgment : Nothing wrong | Non Power-shutdown inspection |
| Fastening screw | Tightening torque test | | 1 year | | 1) Procedure : Check torque with torque gauge and mark<br>2) Judgment : Over the torque reference value<br>(M3.5 : 12kg·cm, M4 : 15kg·cm, M5 : 26kg·cm, M6 : 40kg·cm, M8 :60kg·cm, M10 : 100kg·cm, M12 : 140kg·cm) | Power-shutdown inspection |
| Aux. contact | Measuring test | Always On Load | | 3 years | 1) Procedure : Measure contact resistance at closing after 5 ON/OFF operations<br>2) Judgment : Less than 1Ω<br>⚠ **CAUTION**<br>**High contact resistance may cause poor conduction, so replacement is required.** | Power-shutdown inspection |

# Current Status of Acquired Standards

## Approvals & Certificates

### MS

● : Acquired
◎ : In Progress (Expected)

| Type of Certification | Approvals | | Certificate | | |
|---|---|---|---|---|---|
| Type of Standard | Safety Certificate | IEC | IEC | | GB |
| Mark | | | | | |
| Testing Institute | KETI | CE | KTC | Nuclear | GB 1984 |
| Certification Country | Korea | Europe | Korea | Korea | China |
| HGC9 | ● | ● | ● | | ● |
| HGC12 | ● | ● | ● | | ● |
| HGC18 | ● | ● | ● | | ● |
| HGC25 | ● | ● | ● | | ● |
| HGC32 | ● | ● | ● | ◎ | ● |
| HGC40 | ● | ● | ● | | ● |
| HGC50 | ● | ● | ● | | ● |
| HGC65 | ● | ● | ● | ◎ | ● |
| HGC75 | ● | ● | ● | | ● |
| HGC85 | ● | ● | ● | | ● |
| HGC100 | ● | ● | ● | ◎ | ● |
| HGC115 | ● | ● | ● | | ● |
| HGC130 | ● | ● | ● | | ● |
| HGC150 | ● | ● | ● | ◎ | ● |
| HGC185 | ● | ● | ● | | ● |
| HGC225 | ● | ● | ● | | ● |
| HGC265 | ● | ● | ● | | ● |
| HGC300 | ● | ● | ● | ◎ | ● |
| HGC400 | | ● | ● | | ● |
| HGC500 | | ● | ● | | ● |
| HGC630 | | ● | ● | | ● |
| HGC800 | | ● | ● | | ● |
| HGR | | ● | | ◎ | ● |
| HGCTB | | ● | | ◎ | ● |
| HGT18 | | ● | ● | | ● |
| HGT40 | | ● | ● | ◎ | ● |
| HGT65 | | ● | ● | ◎ | ● |
| HGT100 | | ● | ● | ◎ | ● |
| HGT150 | | ● | ● | ◎ | ● |
| HGT265 | | ● | ● | | ● |
| HGT500 | | ● | ● | ◎ | ● |
| HGT800 | | ● | ● | | ● |

# Current Status of Acquired Standards

## Approvals & Marine Certificates

### MS

● : Acquired
◎ : In Progress (Expected)

| Type of Certification | Marine | | | |
|---|---|---|---|---|
| Type of Standard | Korea | U.K. | USA | France |
| Mark | KR KOREAN REGISTER | Lloyd's Register | ABS | BUREAU VERITAS |
| Testing Institute | KR | LR | ABS | BV |
| Certification Country | Korea | U.K. | USA | France |
| HGC9 | ● | ● | ● | ● |
| HGC12 | ● | ● | ● | ● |
| HGC18 | ● | ● | ● | ● |
| HGC25 | ● | ● | ● | ● |
| HGC32 | ● | ● | ● | ● |
| HGC40 | ● | ● | ● | ● |
| HGC50 | ● | ● | ● | ● |
| HGC65 | ● | ● | ● | ● |
| HGC75 | ● | ● | ● | ● |
| HGC85 | ● | ● | ● | ● |
| HGC100 | ● | ● | ● | ● |
| HGC115 | ● | ● | ● | ● |
| HGC130 | ● | ● | ● | ● |
| HGC150 | ● | ● | ● | ● |
| HGC185 | ● | ● | ● | ● |
| HGC225 | ● | ● | ● | ● |
| HGC265 | ● | ● | ● | ● |
| HGC300 | ● | ● | ● | ● |
| HGC400 | ● | ● | ● | ● |
| HGC500 | ● | ● | ● | ● |
| HGC630 | ● | ● | ● | ● |
| HGC800 | ● | ● | ● | ● |
| HGR | ● | ● | ● | ● |
| HGCTB | ● | ● | ● | ● |
| HGT18 | ● | ● | ● | ● |
| HGT40 | ● | ● | ● | ● |
| HGT65 | ● | ● | ● | ● |
| HGT100 | ● | ● | ● | ● |
| HGT150 | ● | ● | ● | ● |
| HGT265 | ● | ● | ● | ● |
| HGT500 | ● | ● | ● | ● |
| HGT800 | ● | ● | ● | ● |

●: Acquired
◎: In Progress (Expected)

| Type of Certification | Marine | | |
|---|---|---|---|
| Type of Standard | Japan | Germany | Italy |
| Mark | ClassNK | GL OPERATING 24/7 | RINA 1861 |
| Testing Institute | NK | GL | RINA |
| Certification Country | Japan | Germany | Italy |
| HGC9 | ● | ● | ● |
| HGC12 | ● | ● | ● |
| HGC18 | ● | ● | ● |
| HGC25 | ● | ● | ● |
| HGC32 | ● | ● | ● |
| HGC40 | ● | ● | ● |
| HGC50 | ● | ● | ● |
| HGC65 | ● | ● | ● |
| HGC75 | ● | ● | ● |
| HGC85 | ● | ● | ● |
| HGC100 | ● | ● | ● |
| HGC115 | ● | ● | ● |
| HGC130 | ● | ● | ● |
| HGC150 | ● | ● | ● |
| HGC185 | ● | ● | ● |
| HGC225 | ● | ● | ● |
| HGC265 | ● | ● | ● |
| HGC300 | ● | ● | ● |
| HGC400 | ● | ● | ● |
| HGC500 | ● | ● | ● |
| HGC630 | ● | ● | ● |
| HGC800 | ● | ● | ● |
| HGR | | ● | |
| HGCTB | | ● | |
| HGT18 | | ● | ● |
| HGT40 | | ● | ● |
| HGT65 | | ● | ● |
| HGT100 | | ● | ● |
| HGT150 | | ● | ● |
| HGT265 | | ● | ● |
| HGT500 | | ● | ● |
| HGT800 | | ● | ● |

Essential for Today
Potential for Tomorrow

HD HYUNDAI ELECTRIC

| | | | |
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