



# HGL-DSU

## UL DC Switch Disconnecter

(PV/BPS Molded Case Switch)



# 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

INTEGRICT

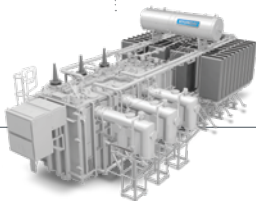
**Energy Solution** Energy solution business refers to the business of designing, procuring and establishing a system that enables the efficient use of power energy through integrated management of the production, consumption, sales and operation.

**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.

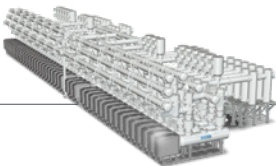
Generation(step-up)

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

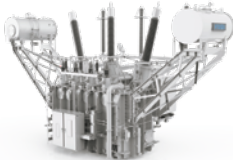


**Power Transformer**  
· up to 800 kV, 1,500 MVA



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

- Can be installed in spaces smaller than the open type of substation by using SF<sub>6</sub> 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



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

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

Transmission

Primary Substation/Secondary Substation



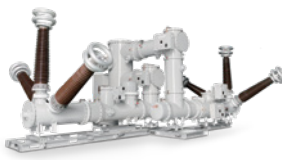
**Gas Insulated Switchgear**  
· up to 800 kV



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



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



**SF<sub>6</sub> 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<sub>6</sub> gas

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

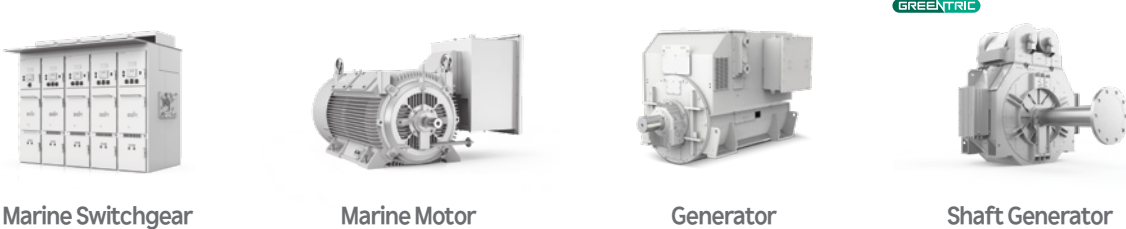


**Synchronous Generator**  
· Rated Output: < 50 MVA  
· Rated Voltage: < 15 kV  
· Ploes: > 2P

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



**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 C37.13/15/17/50, CSA C22.2 no. 31)  
· DC : up to 60 kA, 4,000 A

**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

**VC**  
· up to 12 kV, 400 A

**Switch-Disconnecter**  
· DC : up to 100 kA/1.0 s, 4,000 A  
· DC : up to 150 kA/0.6 s, 4,000 A  
(UL 489, UL489B)

**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**

**SPD**  
· up to 200 kA  
· AC, DC

**HGMAP**  
· HGMAP Series

**HGCAM**  
· HGCAM Series

**Installation Contactor**  
· up to 63 A

**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.)



# HGL – DC

## Switch Disconnecter

|                       |                        |    |
|-----------------------|------------------------|----|
| Model Selection Table |                        | 2  |
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|                       | Accessories(Other)     | 10 |
|                       | Technical Data         | 33 |
|                       | Dimensions             | 36 |
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|                       | Order Code             | 50 |

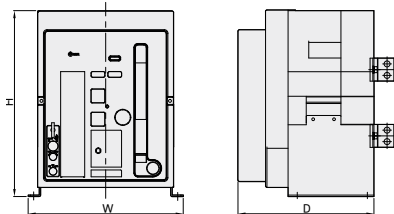
## Model Selection Table

### PV/BPS Molded Case Switch (HGL)

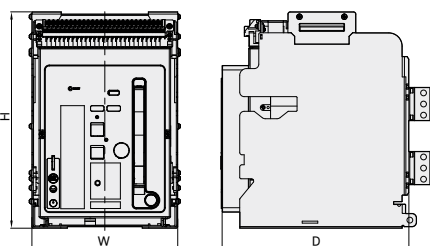
| Model Name                      |                |            | HGL DC                                   |       |       |       |       |                                          |       |       |       |       |          |
|---------------------------------|----------------|------------|------------------------------------------|-------|-------|-------|-------|------------------------------------------|-------|-------|-------|-------|----------|
| Item                            |                |            | K Frame                                  |       |       |       |       | H Frame                                  |       |       |       |       |          |
| AF                              |                |            | 08                                       | 10    | 12    | 16    | 20    | 08                                       | 16    | 20    | 25    | 32    | 40       |
| Rated Current<br>[In max]       | Based on 40 °C | A          | 800                                      | 1,000 | 1,250 | 1,600 | 2,000 | 800                                      | 1,600 | 2,000 | 2,500 | 3,200 | 4,000    |
| Rated Nominal Voltage           |                | Vdc        | 1,250(4P) / 800(3P)                      |       |       |       |       |                                          |       |       |       |       |          |
| Rated Maximum Voltage           |                | Vdc        | 1,500(4P) / 1,000(3P)                    |       |       |       |       |                                          |       |       |       |       |          |
| No. of Poles                    |                | P          | 3, 4                                     |       |       |       |       |                                          |       |       |       |       |          |
| Operation Temperature           |                |            | -4 °F ~ +140 °F (-20 °C ~ +60 °C)        |       |       |       |       |                                          |       |       |       |       |          |
| Certified Standards             |                |            | UL489, UL489B                            |       |       |       |       |                                          |       |       |       |       |          |
| Short Circuit Withstand Current |                |            |                                          |       |       |       |       |                                          |       |       |       |       |          |
| 1 s                             | kA             |            | 85                                       |       |       |       |       | 100                                      |       |       |       |       |          |
| 0.6 s                           |                |            | -                                        |       |       |       |       | 150                                      |       |       |       |       |          |
| Closing Operational Time        |                |            |                                          |       |       |       |       |                                          |       |       |       |       |          |
| Motor Charging Time (sec) max.  |                |            | 10                                       |       |       |       |       |                                          |       |       |       |       |          |
| Closing Time (ms) max.          |                |            | 80                                       |       |       |       |       |                                          |       |       |       |       |          |
| Lifecycle (Cycles)              |                |            |                                          |       |       |       |       |                                          |       |       |       |       |          |
| Mechanical                      |                |            | 12,500                                   |       |       |       |       |                                          |       |       |       |       |          |
| Electrical                      |                |            | 3,500                                    | 2,500 | 1,500 | 1,000 | 600   | 10,000                                   | 8,000 | 5000  | 3000  | 2000  |          |
| Weight                          |                |            |                                          |       |       |       |       |                                          |       |       |       |       |          |
| 3 Pole                          | Draw-Out Type  | lb<br>(kg) | 161(73)                                  |       |       |       |       | 220(100)                                 |       |       |       |       | 355(161) |
|                                 | Fixed Type     |            | 88(40)                                   |       |       |       |       | 117(53)                                  |       |       |       |       | 126(57)  |
| 4 Pole                          | Draw-Out Type  |            | 185(84)                                  |       |       |       |       | 282(128)                                 |       |       |       |       | 450(204) |
|                                 | Fixed Type     |            | 106(48)                                  |       |       |       |       | 148(67)                                  |       |       |       |       | 159(72)  |
| External Dimensions (W×H×D)     |                |            |                                          |       |       |       |       |                                          |       |       |       |       |          |
| 3 Pole                          | Draw-Out Type  | in<br>(mm) | 12.91×19.17×16.54<br>(328×487×420.2)     |       |       |       |       | 15.71×19.17×16.54<br>(399×487×420.2)     |       |       |       |       |          |
|                                 | Fixed Type     |            | 13.91×15.92×11.65<br>(353.4×404.4×295.8) |       |       |       |       | 16.71×15.92×11.65<br>(424.4×404.4×295.8) |       |       |       |       |          |
| 4 Pole                          | Draw-Out Type  |            | 16.26×19.17×16.54<br>(413×487×420.2)     |       |       |       |       | 20.24×19.17×16.54<br>(514×487×420.2)     |       |       |       |       |          |
|                                 | Fixed Type     |            | 17.26×15.92×11.65<br>(438.4×404.4×295.8) |       |       |       |       | 21.24×15.92×11.65<br>(539.4×404.4×295.8) |       |       |       |       |          |

※ Life time is the limit lifespan and is not the guaranteed lifespan. In case of maintenance, it is charged. In the event of abnormalities in accessories during use, it can be replaced.  
Quality Assurance : Based on UL489's number of opening/closing within the warranty period.

Fixed  
Type



Draw-Out  
Type



HGL

PV/BPS MOLDED CASE SWITCH

HGL25H4B M2C2S2000

Rated Current

2500 A

4 POLES

UL 489B (50°C) / UL 489 (40°C)

For

1250 Vdc nominal

1500 Vdc maximum rating

the molded case switch is suitable only for use with BPS

LOCK

UNLOCK

Rated Nominal Voltage[Vdc]

1250

Rated Maximum Voltage[Vdc]

1500

Short Circuit Rating[kA]

150

C

UL

US

LISTED

File E548604

File E548605

For ungrounded system only

SERIAL NO.

A026-00000

DATE

2026.05

MADE IN KOREA

HD

HYUNDAI ELECTRIC

Common Busbar Specification

| Frame | AF    | Type       | Order Code  | Quantity               | Configuration | Description                                                                                                           |
|-------|-------|------------|-------------|------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------|
| K     | 08~20 | Horizontal | HGLSDCSB20H | 3P : 1 ea<br>4P : 2 ea |               | Short busbar : 135 mm×20 T×1 ea<br>Bolt : M12×55, 4 ea<br>Nut : M12, 4 ea<br>Spring washer, Plain washer, Heat sink   |
|       |       | Vertical   | HGLSDCSB20V | 3P : 1 ea<br>4P : 2 ea |               | Short busbar : 50 mm×10 T×2 ea<br>Bolt : M12×55, 4 ea<br>Nut : M12, 4 ea<br>Spring washer, Plain washer, Heat sink    |
| H     | 08~32 | Horizontal | HGLSDCSB32H | 3P : 1 ea<br>4P : 2 ea |               | Short busbar : 205 mm×20 T×1 ea<br>Bolt : M12×60, 6 ea<br>Nut : M12, 6 ea<br>Spring washer, Plain washer, Heat sink   |
|       |       | Vertical   | HGLSDCSB32V | 3P : 1 ea<br>4P : 2 ea |               | Short busbar : 90 mm×10 T×2 ea<br>Bolt : M12×60, 6 ea<br>Nut : M12, 6 ea<br>Spring washer, Plain washer, Heat sink    |
|       | 40    | Vertical   | HGLSDCSB40V | 3P : 1 ea<br>4P : 2 ea |               | Short busbar : 145 mm×10 T×3 ea<br>Bolt : M12×80, 12 ea<br>Nut : M12, 12 ea<br>Spring washer, Plain washer, Heat sink |

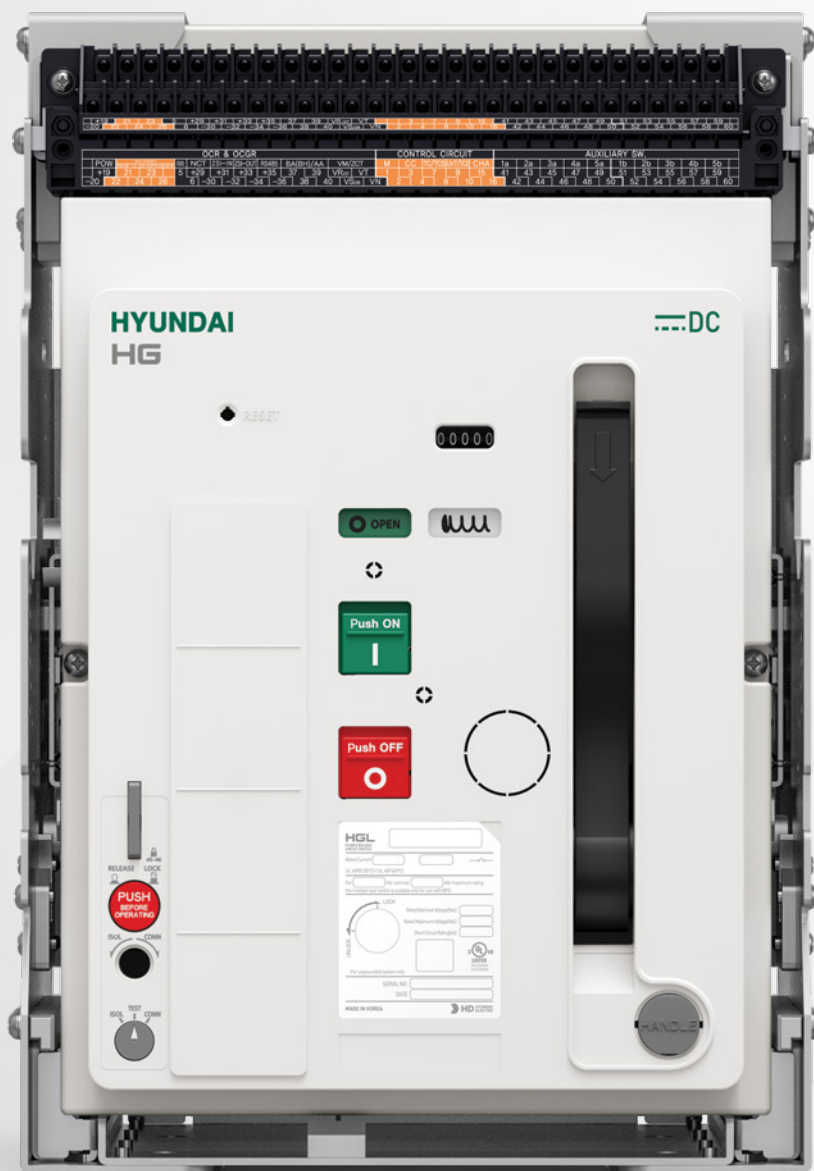
Connection Type

|  | 500 Vdc | 1,000 Vdc | 1,500 Vdc |
|--|---------|-----------|-----------|
|  |         |           |           |
|  |         |           |           |

## HGL Series

# UL DC Switch Disconnect

This product is suitable for protecting DC power/loads such as solar power, ESS, data centers, and wind power generators with a maximum operating voltage of DC 1,500 V (4P).



## Characteristics

### Rated Nominal Voltage

1,250 Vdc (4P) / 800 Vdc (3P)

### Rated Maximum Voltage

1,500 Vdc (4P) / 1,000 Vdc (3P)

### Rated Current

2,000 A / 4,000 A

### Short Circuit Rating

85 kA (1 s) / 100 kA (1 s) / 150 kA (0.6 s)

## Certifications



## Specifications and Certifications

### UL489

Molded-Case Circuit Breakers, Molded-Case Switches and Circuit-Breaker Enclosures

### UL489B

Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit-Breaker Enclosures  
for Use with Photovoltaic (PV) Systems



Switch-Disconnecter (K Frame)

lcw 85 kA/1 s



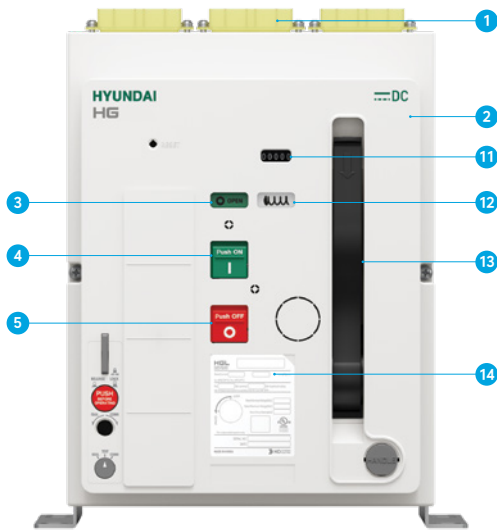
Switch-Disconnecter (H Frame)

lcw 100 kA/1 s

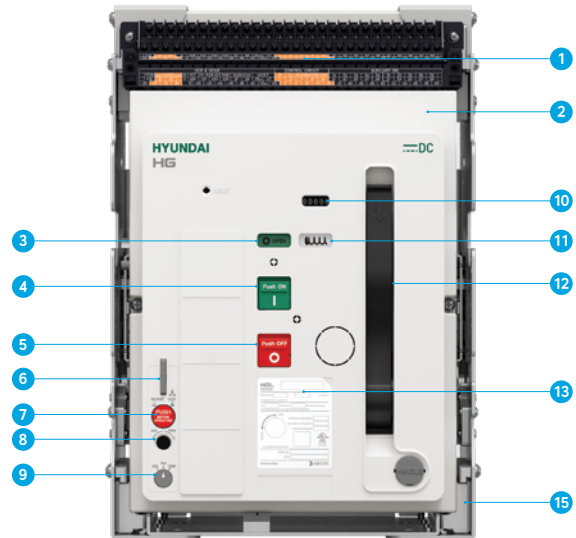
lcw 150 kA/0.6 s

## External·Internal Structure

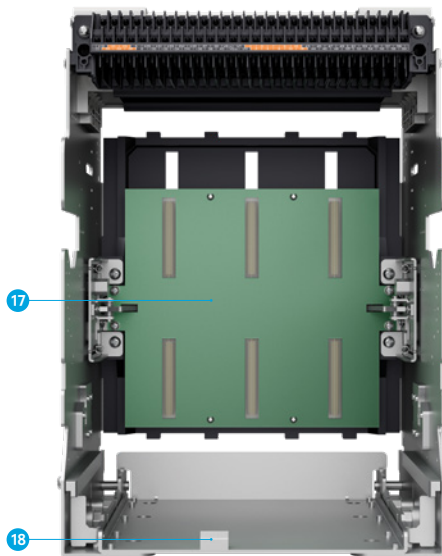
### DC Disconnect Switch (HGL)



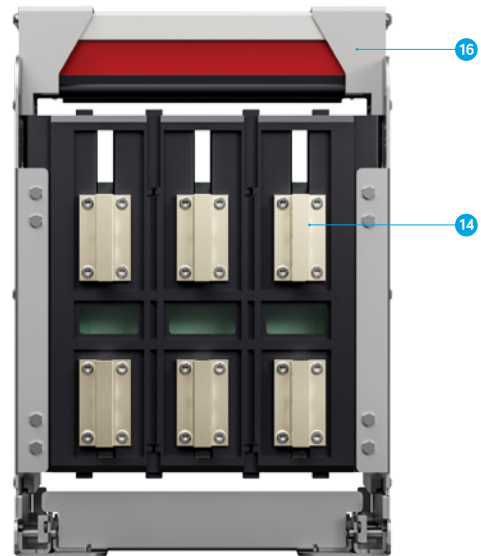
Fixed Type (ACB Body)



Draw-In/Out Type (Including Cradle)



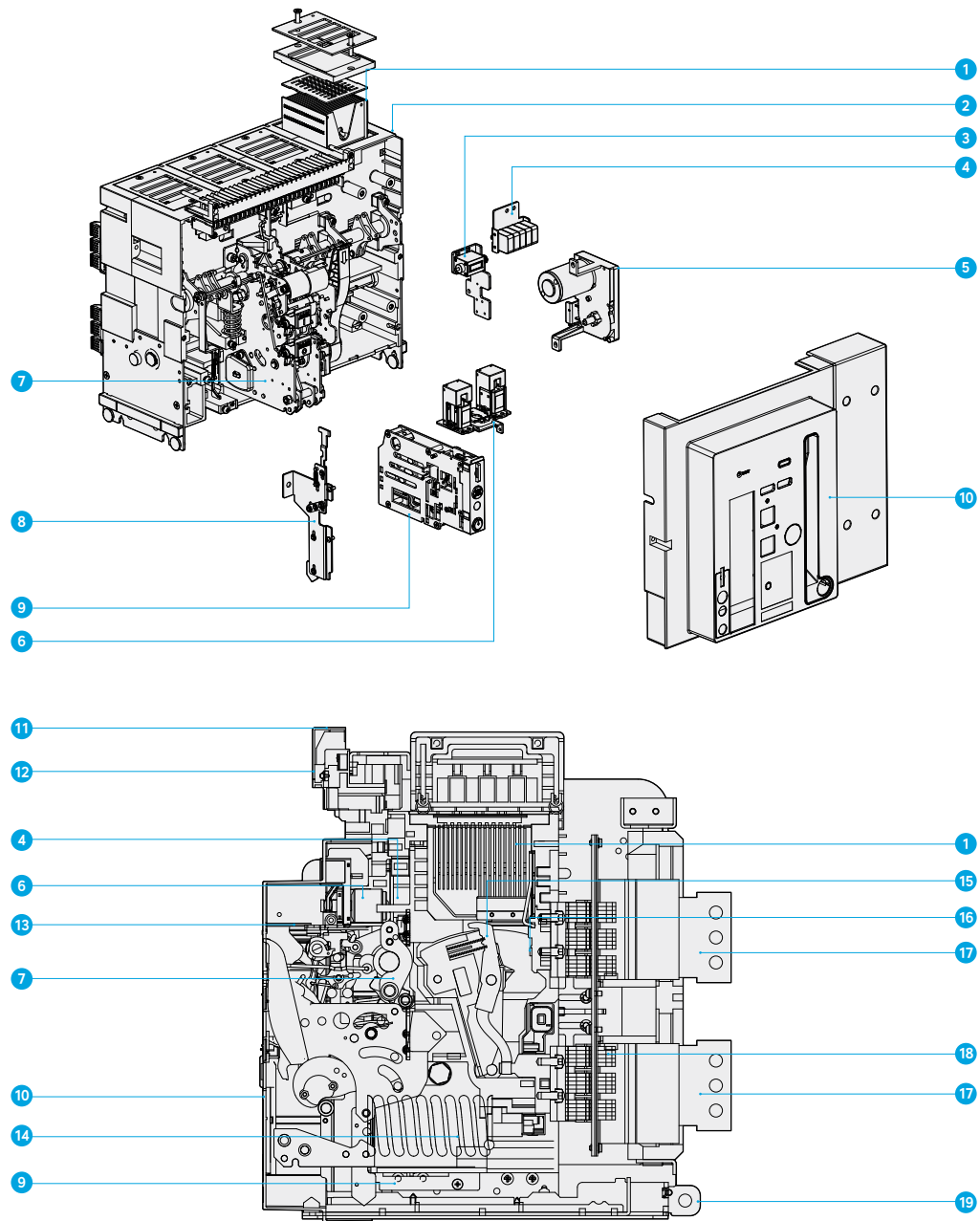
Cradle Front



Cradle Rear

#### DC Disconnect Switch (HGL)

- |                            |                                     |                                |                        |
|----------------------------|-------------------------------------|--------------------------------|------------------------|
| ① Control Circuit Terminal | ⑦ Position Lock Release Button      | ⑪ Charged/Discharged Indicator | ⑯ Arc Shield           |
| ② Front-Cover              | ⑧ Draw-In/Out Handle Insertion Hole | ⑫ Manual Charging Handle       | ⑰ Safety Shutter       |
| ③ Close/Open Indicator     | ⑨ Position Indicator                | ⑬ Rating Nameplate             | ⑱ Auto Discharge Block |
| ④ Close Button             | ⑩ Counter                           | ⑭ Terminal Busbar              |                        |
| ⑤ Open Button              |                                     | ⑮ Draw-In/Out Guide Rail       |                        |
| ⑥ Position Padlock         |                                     |                                |                        |

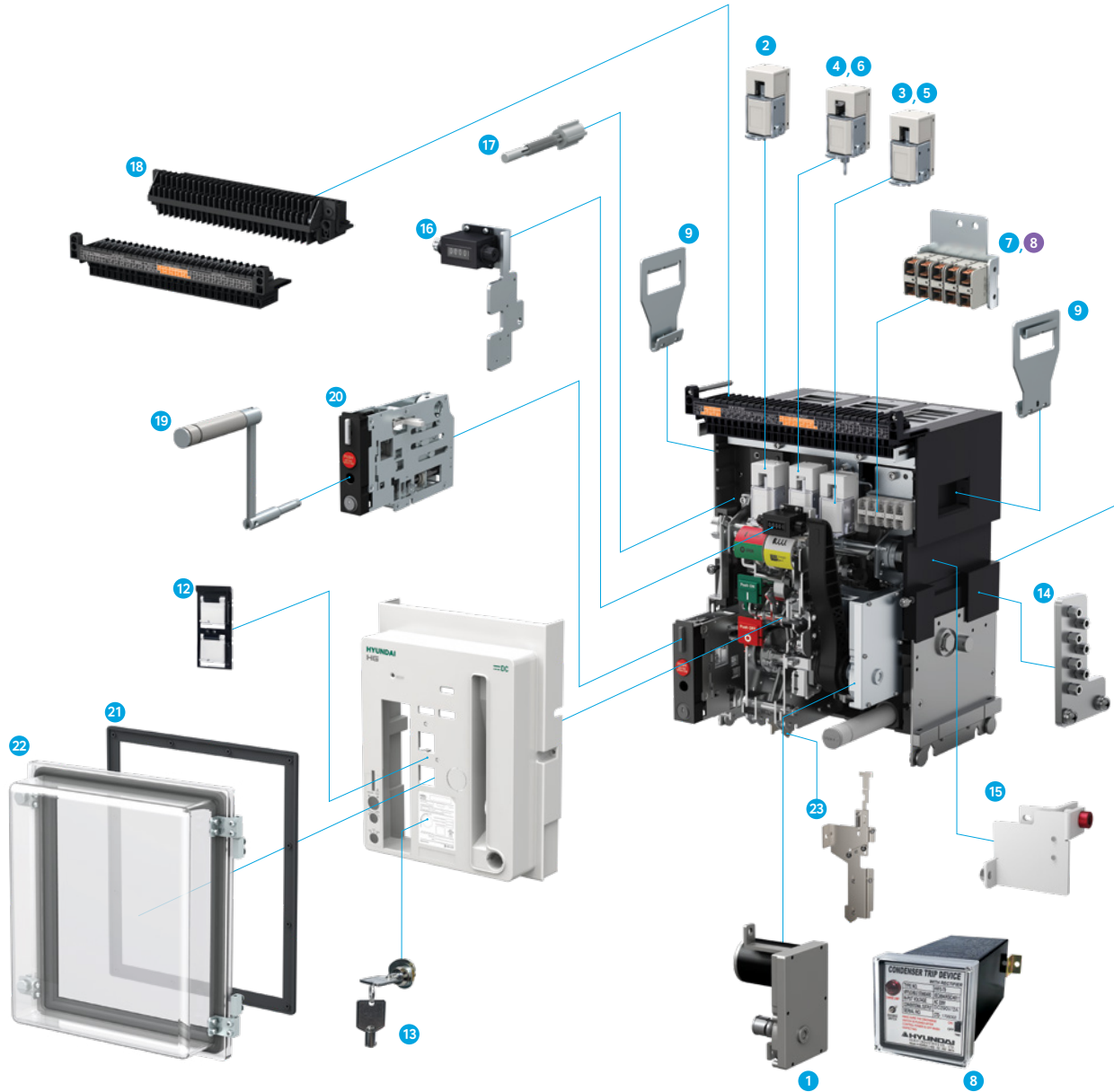


### DC Disconnect Switch (HGL)

- |              |                         |                                      |                  |
|--------------|-------------------------|--------------------------------------|------------------|
| 1 DI Grid    | 6 Closing/Trip/UVT Coil | 11 Control Terminal Protection Cover | 16 Fixed Contact |
| 2 CO Unit    | 7 Mechanism             | 12 Control Terminal                  | 17 Terminal      |
| 3 Counter    | 8 Auto Discharge        | 13 Manual Charging Handle            | 18 Terminal Clip |
| 4 AUX Switch | 9 DR Device             | 14 Closing Spring                    | 19 Cradle        |
| 5 Motor      | 10 Cover                | 15 Moving Contact                    |                  |

## Accessories

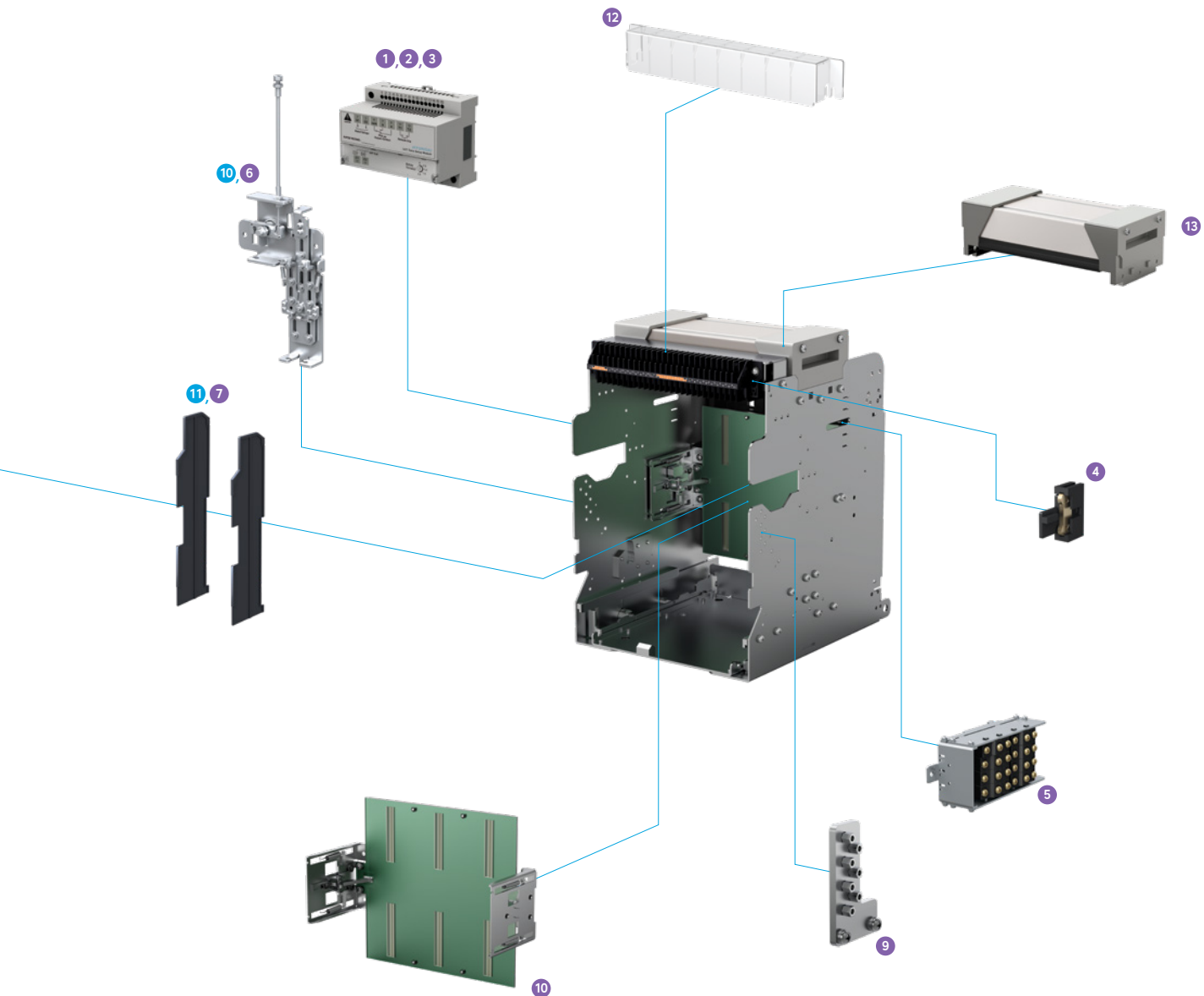
### Main Unit



#### Accessories for Disconnecter Switch

- |                               |                             |                                 |
|-------------------------------|-----------------------------|---------------------------------|
| 1 Spring Charge Geared Motor  | 9 Lifting Lug               | 17 OCR & Alarm S/W Reset Button |
| 2 Closing Coil                | 10 Mechanical Interlock     | 18 Test Jumper                  |
| 3 Trip Coil                   | 11 Phase Insulation Barrier | 19 Draw-In/Out Handle           |
| 4 Secondary Trip Coil         | 12 On/Off Button Lock       | 20 Position Pad Lock            |
| 5 Trip Coil Supervision       | 13 Key Lock                 | 21 Door Flange                  |
| 6 UVT Coil                    | 14 Miss-Insertion Preventer | 22 Dust Cover                   |
| 7 AUX Switch                  | 15 Fixing Block             | 23 Auto Discharge               |
| 8 Condenser Trip Device (CTD) | 16 Counter                  |                                 |

## Cradle



## Accessories for Cradle

- |                                        |                                   |                                  |
|----------------------------------------|-----------------------------------|----------------------------------|
| ① UVT Time Delay Controller            | ⑥ Mechanical Interlock            | ⑩ Safety Shutter                 |
| ② Remote Closing Prevention Module     | ⑦ Phase Insulation Barrier        | ⑪ Arc Shield                     |
| ③ Temperature Monitoring Device Module | ⑧ Mechanical Operated Cell Switch | ⑫ Control Block Protection Cover |
| ④ Short "b" Contact                    | ⑨ Miss-Insertion Preventer        | ⑬ Arc Shield                     |
| ⑤ Position Switch                      |                                   |                                  |

## Accessories

### Spring Charging Geared Motor

- Manual charging method and geared motor charging method using external power source for charging the spring in the disconnect switch.
- As for the geared motor charging method, if power is applied to the control power terminal number (1), (2), spring charge is possible at 85 ~ 110 % power of the operating voltage range.
- Add M1 ~ M9 in the order form.
- It can be purchased separately.

#### Ordering Method

| Name of Accessory            | Order Name Placed upon Outgoing | Detailed Specification |
|------------------------------|---------------------------------|------------------------|
| Spring Charging Geared Motor | M1                              | AC/DC 100 ~ 125 V      |
|                              | M2                              | AC/DC 200 ~ 250 V      |
|                              | M7                              | DC 24 V                |
|                              | M8                              | DC 48 V                |

#### Ratings

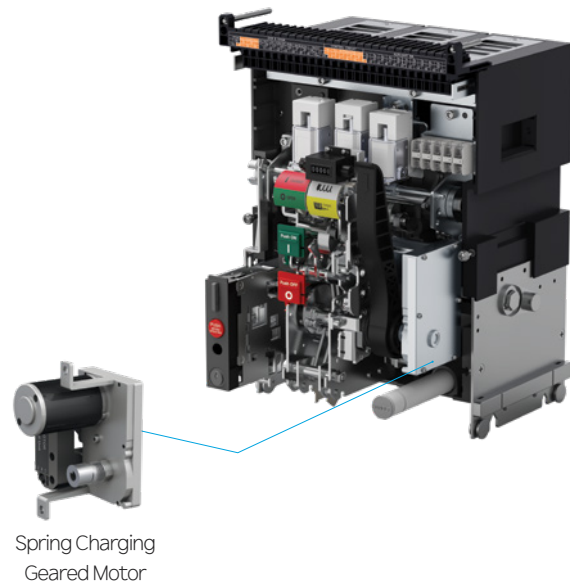
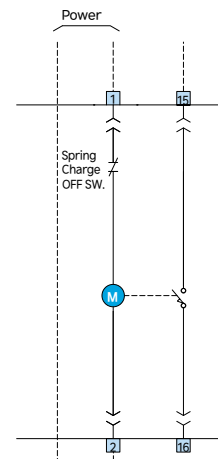
| Item                        | DC 110                         | DC 220 |
|-----------------------------|--------------------------------|--------|
| Rated Current (A)           | 1.2                            | 0.5    |
| Starting Pick-Up (A)        | 5 ~ 6 times the rated current  |        |
| Final Rated rpm             | 16 ± 3                         |        |
| Charging Time (sec)         | Within 5 seconds <sup>1)</sup> |        |
| Rated Torque (kgf)          | 300 kgf×cm                     |        |
| Rated Watt (W)              | 100                            | 100    |
| Dielectric Strength (V/min) | 2,000                          |        |
| Insulation Resistance (MΩ)  | 100                            |        |
| Workable Temperature (°C)   | -15 ~ 60                       |        |

※ 1) Charging time is within 10 sec of rated, in case of DC 24/48 V.

#### Wire Ratings

| Rated Voltage | DC 24, 48              |                      | DC 110, 220            |                      |
|---------------|------------------------|----------------------|------------------------|----------------------|
|               | AWG (mm <sup>2</sup> ) | Insulation Level (V) | AWG (mm <sup>2</sup> ) | Insulation Level (V) |
| Specification | 18                     | 600                  | 18                     | 600                  |

#### Connection Diagram



### Spring Charging Switch or Ready to Close Switch

- Spring charging switch delivers (15, 16) the charged status when mechanism spring charge is complete.
- Read to close switch delivers (15, 16) only when the circuit breaker is open and simultaneously only when the mechanism spring charge is complete.
- Order name of spring charging switch : B6, Order name of ready to close switch : BT
- Two accessories cannot be ordered simultaneously.

## Closing Coil (CC)

- A control device which closes a circuit breaker remotely from outside.
- The disconnecter switch is closed by applying power of at least more than 150 ms within the range of 85 ~ 110 % of the rated control voltage to the control power terminal number (3) and (4).
- Add C1 ~ C9 in the order form when ordering the main unit.
- It can be purchased separately.
- Use a separate switch externally to apply power to the closing coil.

### Ordering Method

| Name of Accessory | Order Name Placed upon Outgoing | Detailed Specification |
|-------------------|---------------------------------|------------------------|
| Closing Coil      | C1                              | AC/DC 100 ~ 125 V      |
|                   | C2                              | AC/DC 200 ~ 250 V      |
|                   | C3                              | AC 380 V               |
|                   | C4                              | AC 440 V               |
|                   | C7                              | DC 24 V                |
|                   | C8                              | DC 48 V                |

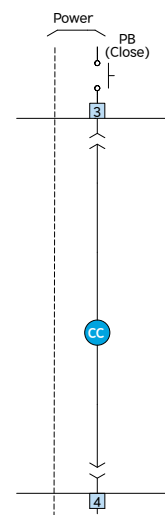
### Ratings

| Item                   | DC (V)                          | AC (V)                      |
|------------------------|---------------------------------|-----------------------------|
| Rated Voltage (Vn)     | 24~48                           | -                           |
|                        | 100 ~ 130                       | 100 ~ 130                   |
|                        | 200 ~ 250                       | 200 ~ 250                   |
| Operating Limits (Vn)  | 0.85 ~ 1.1                      |                             |
| Power Consumption (VA) | Inrush (300), Steady-State (10) |                             |
| Trip Time (ms)         | 80                              |                             |
| Pick up current        | 24 ~ 48 V : 3.0 A(±10 %)        | -                           |
|                        | 100 ~ 130 V : 2.0 A(±10 %)      | 100 ~ 130 V : 2.0 A(±10 %)  |
|                        | 200 ~ 250 V : 1.4 A(±10 %)      | 200 ~ 250 V : 1.4 A(±10 %)  |
| Holding current        | 24 ~ 48 V : 330 mA(±10 %)       | -                           |
|                        | 100 ~ 130 V : 150 mA(±10 %)     | 100 ~ 130 V : 150 mA(±10 %) |
|                        | 200 ~ 250 V : 120 mA(±10 %)     | 200 ~ 250 V : 120 mA(±10 %) |



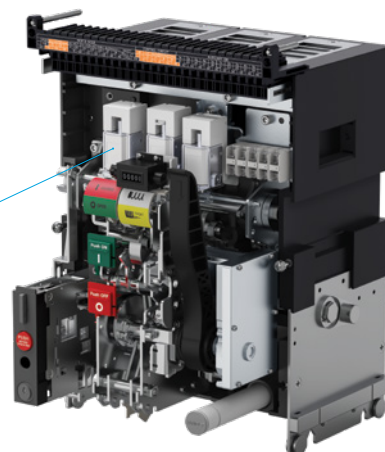
Closing Coil

### Connection Diagram



### Wire Ratings

| Rated Voltage | DC 24                  |                      | AC/DC 110, 220         |                      |
|---------------|------------------------|----------------------|------------------------|----------------------|
|               | AWG (mm <sup>2</sup> ) | Insulation Level (V) | AWG (mm <sup>2</sup> ) | Insulation Level (V) |
| Specification | 20                     | 600                  | 20                     | 600                  |



## Accessories

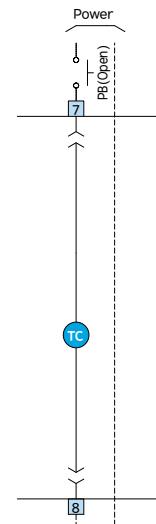
### Trip Coil (TC)

- A control device which trips a disconnecter switch remotely.
- The disconnecter switch is tripped by applying power of at least more than 150 ms within the range of 70 ~ 110 % of the rated control voltage to the control power terminal number (7) and (8).
- Add S1 ~ S9 in the order form when ordering the main unit.
- It can be purchased separately.
- Use a separate switch externally to apply power to the closing coil.

#### Ordering Method

| Name of Accessory | Order Name Placed upon Outgoing | Detailed Specification |
|-------------------|---------------------------------|------------------------|
| Trip Coil         | S1                              | AC/DC 100 ~ 125 V      |
|                   | S2                              | AC/DC 200 ~ 250 V      |
|                   | S3                              | AC 380 V               |
|                   | S4                              | AC 440 V               |
|                   | S7                              | DC 24 V                |
|                   | S8                              | DC 48 V                |

#### Connection Diagram



#### Ratings

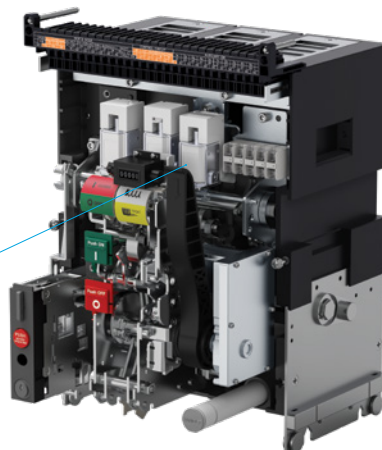
| Item                   | DC (V)                          | AC (V)                      |
|------------------------|---------------------------------|-----------------------------|
| Rated Voltage (Vn)     | 24~48                           | -                           |
|                        | 100 ~ 130                       | 100 ~ 130                   |
|                        | 200 ~ 250                       | 200 ~ 250                   |
| Operating Limits (Vn)  | 0.7 ~ 1.1                       |                             |
| Power Consumption (VA) | Inrush (300), Steady-State (10) |                             |
| Trip Time (ms)         | 40                              |                             |
| Pick up current        | 24 ~ 48 V : 2.0 A(±10 %)        | -                           |
|                        | 100 ~ 130 V : 2.0 A(±10 %)      | 100 ~ 130 V : 2.0 A(±10 %)  |
|                        | 200 ~ 250 V : 1.4 A(±10 %)      | 200 ~ 250 V : 1.4 A(±10 %)  |
| Holding current        | 24 ~ 48 V : 330 mA(±10 %)       | -                           |
|                        | 100 ~ 130 V : 120 mA(±10 %)     | 100 ~ 130 V : 120 mA(±10 %) |
|                        | 200 ~ 250 V : 100 mA(±10 %)     | 200 ~ 250 V : 100 mA(±10 %) |



Trip Coil

#### Wire Ratings

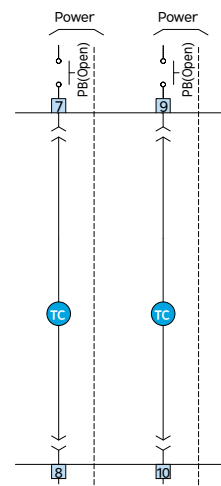
| Rated Voltage | DC 24                  |                      | AC/DC 110, 220         |                      |
|---------------|------------------------|----------------------|------------------------|----------------------|
|               | AWG (mm <sup>2</sup> ) | Insulation Level (V) | AWG (mm <sup>2</sup> ) | Insulation Level (V) |
| Specification | 20                     | 600                  | 20                     | 600                  |



## Secondary Trip Coil

- It is a control device which trips a circuit breaker remotely from outside and dual remote trip is possible with an additional installation of trip coil.
- The disconnecter switch is tripped by applying power of at least more than 150 ms within the range of 70 ~ 110 % of the rated control voltage by applying power to the control power terminal number (9) and (10).
- When dual trip coil is used, it cannot be used together with UVT coil.
- Add S1 ~ S9 in the order form when ordering the main unit and under the option, add S1 ~ S9 once again.
- It can be purchased separately.
- Use a separate switch externally to apply power to the dual trip coil.

### Connection Diagram



### Ordering Method

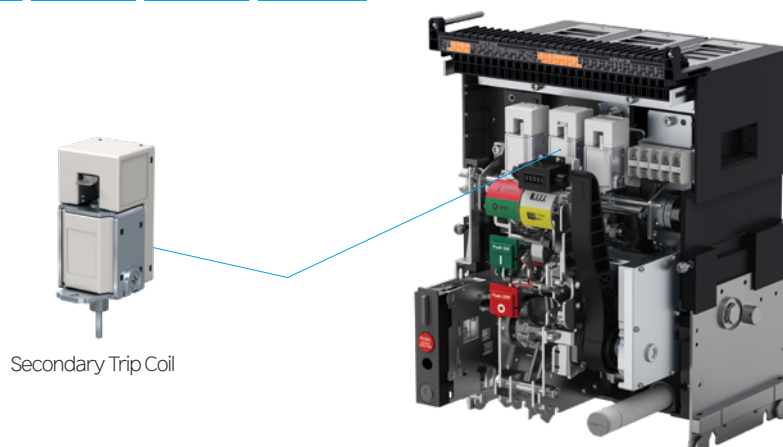
| Name of Accessory   | Order Name Placed upon Outgoing | Detailed Specification |
|---------------------|---------------------------------|------------------------|
| Secondary Trip Coil | S1                              | AC/DC 100 ~ 125 V      |
|                     | S2                              | AC/DC 200 ~ 250 V      |
|                     | S3                              | AC 380 V               |
|                     | S4                              | AC 440 V               |
|                     | S7                              | DC 24 V                |
|                     | S8                              | DC 48 V                |

### Wire Ratings

| Rated Voltage | DC 24                  |                      | AC/DC 110, 220         |                      |
|---------------|------------------------|----------------------|------------------------|----------------------|
|               | AWG (mm <sup>2</sup> ) | Insulation Level (V) | AWG (mm <sup>2</sup> ) | Insulation Level (V) |
| Specification | 20                     | 600                  | 20                     | 600                  |

### Ratings

| Item                   | DC (V)                          | AC (V)                   |
|------------------------|---------------------------------|--------------------------|
| Rated Voltage (Vn)     | 24~48                           | -                        |
|                        | 100 ~ 130                       | 100 ~ 130                |
|                        | 200 ~ 250                       | 200 ~ 250                |
| Operating Limits (Vn)  | 0.7 ~ 1.1                       |                          |
| Power Consumption (VA) | Inrush (300), Steady-State (10) |                          |
| Trip Time (ms)         | 40                              |                          |
| Pick up current        | 24 ~ 48V : 2.0A(±10%)           | -                        |
|                        | 100 ~ 130V : 2.0A(±10%)         | 100 ~ 130V : 2.0A(±10%)  |
|                        | 200 ~ 250V : 1.4A(±10%)         | 200 ~ 250V : 1.4A(±10%)  |
| Holding current        | 24 ~ 48V : 330mA(±10%)          | -                        |
|                        | 100 ~ 130V : 120mA(±10%)        | 100 ~ 130V : 120mA(±10%) |
|                        | 200 ~ 250V : 100mA(±10%)        | 200 ~ 250V : 100mA(±10%) |



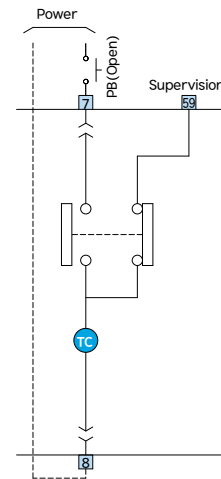
Secondary Trip Coil

## Accessories

### Trip Coil Supervision

- A control device which trips a circuit breaker remotely from outside.
- The circuit breaker is tripped by applying power of at least more than 150 ms within the range of 70 ~ 110 % of the rated control voltage by applying power to the control power terminal number (7) and (8).
- When using trip coil supervision, auxiliary contact is 4a3b and when 1a1b is added, it becomes 5a4b. (AUX S/W 43/44, 53/54 cannot be used.)
- In order to monitor the permanent normal status when TCS is closed and tripped, the circuit sequence cannot be created by using the additional 1a1b (Order code AA). (Possibility of contact damage) However, if it is compulsory, select 1a contact within 4a3b for use.
- The trip coil's monitoring output contact No. 59.
- Coil supervision checks not only the circuit's mechanical contact but also the condition of the coil.
- Add T1 ~ T9 in the order form when ordering the main unit.
- It can be purchased separately.

#### Connection Diagram



#### Ordering Method

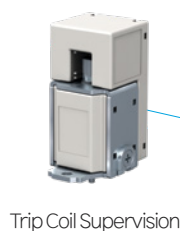
| Name of Accessory     | Order Name Placed upon Outgoing | Detailed Specification |
|-----------------------|---------------------------------|------------------------|
| Trip Coil Supervision | T1                              | AC/DC 100 ~ 125 V      |
|                       | T2                              | AC/DC 200 ~ 250 V      |
|                       | T3                              | AC 380 V               |
|                       | T4                              | AC 440 V               |
|                       | T7                              | DC 24 V                |
|                       | T8                              | DC 48 V                |

#### Ratings

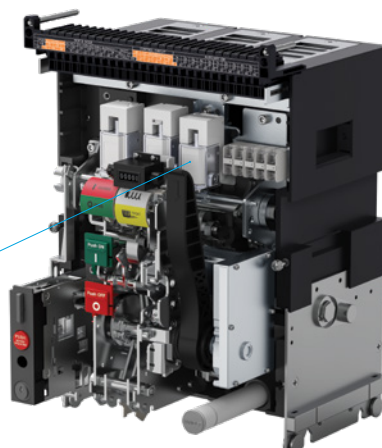
| Item                   | DC (V)                          | AC (V)    |
|------------------------|---------------------------------|-----------|
| Rated Voltage (Vn)     | 24                              | -         |
|                        | 100 ~ 130                       | 100 ~ 130 |
|                        | 200 ~ 250                       | 200 ~ 250 |
| Operating Limits (Vn)  | 0.7 ~ 1.1                       |           |
| Power Consumption (VA) | Inrush (300), Steady-State (10) |           |
| Trip Time (ms)         | 40                              |           |

#### Wire Ratings

| Rated Voltage | DC 24                  |                      | AC/DC 110, 220         |                      |
|---------------|------------------------|----------------------|------------------------|----------------------|
|               | AWG (mm <sup>2</sup> ) | Insulation Level (V) | AWG (mm <sup>2</sup> ) | Insulation Level (V) |
| Specification | 20                     | 600                  | 20                     | 600                  |



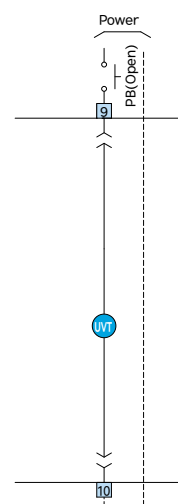
Trip Coil Supervision



## UVT Coil

- Under-voltage trip device is a device that automatically trips the circuit breaker if the load voltage drops to below the standard or to prevent accidents at the load part during a black out.
- Under-voltage trip device is classified into instantaneous and time delay type for use. As for instantaneous type, directly connect to control power terminal number (9), (10) for use and as for time delay type, the Time Delay Controller can be used.
- When instantaneous type of UVT is used, dual trip coil cannot be used.
- When instantaneous type of UVT is used, add U1 ~ U9 in the order form when ordering the main unit.
- It can be purchased separately.

## Connection Diagram



## Ordering Method

| Name of Accessory | Order Name Placed upon Outgoing | Detailed Specification |
|-------------------|---------------------------------|------------------------|
| UVT Coil          | U1                              | AC/DC 100 ~ 125 V      |
|                   | U2                              | AC/DC 200 ~ 250 V      |
|                   | U3                              | AC 380 V               |
|                   | U4                              | AC 440 V               |
|                   | U7                              | DC 24 V                |
|                   | U8                              | DC 48 V                |

## Ratings

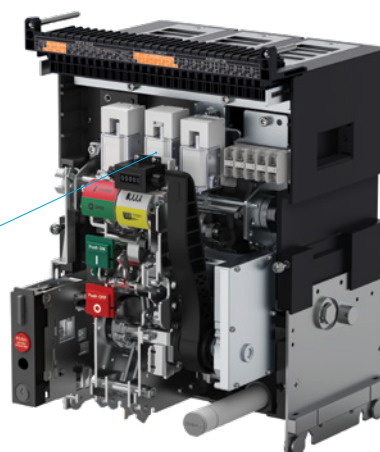
| Item                   | DC (V)                          | AC (V)          |
|------------------------|---------------------------------|-----------------|
| Rated Voltage (Vn)     | 24                              | -               |
|                        | 110 (100 ~ 130)                 | 110 (100 ~ 130) |
|                        | 220 (200 ~ 250)                 | 220 (200 ~ 250) |
|                        | -                               | 380             |
|                        | -                               | 440             |
| Pickup                 | Above 0.85 Vn                   |                 |
| Drop                   | Below 0.35 Vn                   |                 |
| Power Consumption (VA) | Inrush (300), Steady-State (10) |                 |
| Trip Time (ms)         | 50                              |                 |

## Wire Ratings

| Rated Voltage | DC 24                  |                      | AC/DC 110, 220         |                      | AC 380, 440            |                      |
|---------------|------------------------|----------------------|------------------------|----------------------|------------------------|----------------------|
|               | AWG (mm <sup>2</sup> ) | Insulation Level (V) | AWG (mm <sup>2</sup> ) | Insulation Level (V) | AWG (mm <sup>2</sup> ) | Insulation Level (V) |
| Specification | 20                     | 600                  | 20                     | 600                  | 20                     | 600                  |



UVT Coil



## Accessories

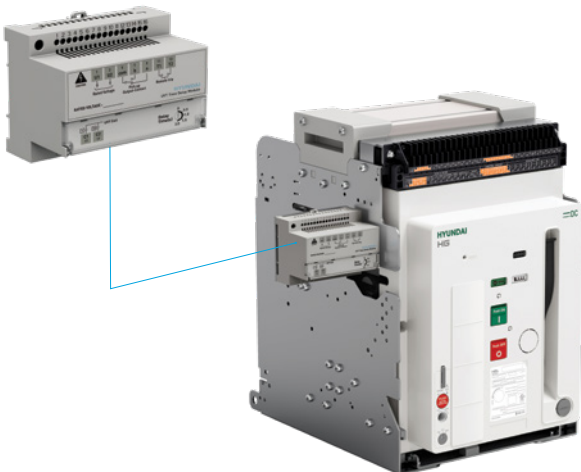
### UVT Time Delay Controller

- Under-voltage trip device is a device that automatically trips the disconnect switch if the load voltage drops to below operating voltage or to prevent accidents at the load part during a black out.
- This device is capable of delaying (0.5, 1.0, 1.5, 3 sec).
- UVT Time Delay Controller can be mounted at the left side of the cradle and the external rail and it can also be mounted at the position desired by the customer.
- Add V1 ~ V9 in the order form when ordering the main unit. Time Delay Controller will be included in the package.
- When purchasing the UVT time delay controller only, place the order for the separate product, HGNS UT1 ~ UT9.
- DC 24 V and DC 48 V are only available in instantaneous type.
- In the event the UVT Time Delay Controller and RCTU are purchased simultaneously, the front mounting can be installed in the front for 1 option designated by the customer. The remaining 1 shall be installed by designating a position in the DIN RAIL inside the panel.

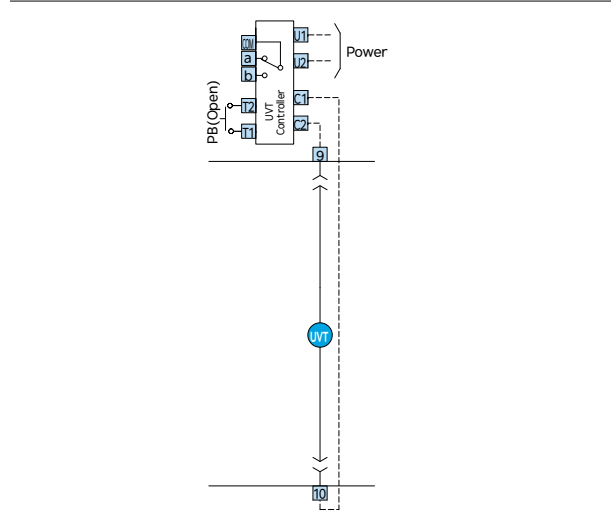
#### Ordering Method

| Name of Accessory                    | Order Name Placed upon Outgoing | Order Name for Separate Sales (HGNS-) | Detailed Specification |
|--------------------------------------|---------------------------------|---------------------------------------|------------------------|
|                                      | -                               | HGNS UT1                              | AC/DC 100 ~ 125 V      |
| UVT Time Delay Controller            | -                               | HGNS UT2                              | AC/DC 200 ~ 250 V      |
|                                      | -                               | HGNS UT3                              | AC 380 V               |
|                                      | -                               | HGNS UT4                              | AC 440 V               |
| UVT Time Delay Controller + UVT Coil | V1                              | HGNS V1                               | AC/DC 100 ~ 125 V      |
|                                      | V2                              | HGNS V2                               | AC/DC 200 ~ 250 V      |
|                                      | V3                              | HGNS V3                               | AC 380 V               |
|                                      | V4                              | HGNS V4                               | AC 440 V               |

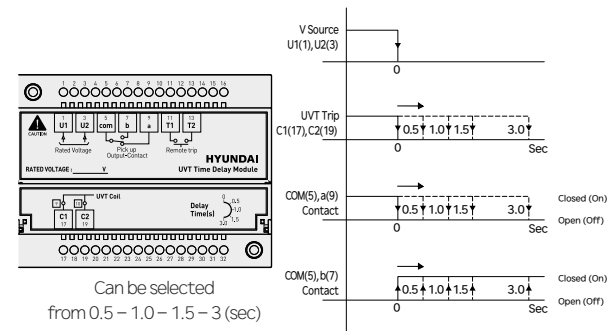
UVT Time Delay Controller



#### Connection Diagram

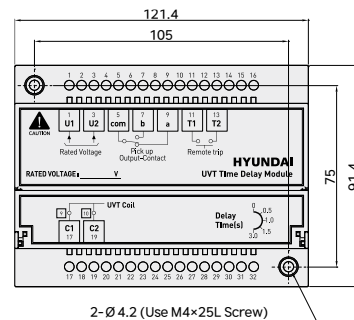


#### Wiring and Operating Time



#### Dimension

Unit : mm

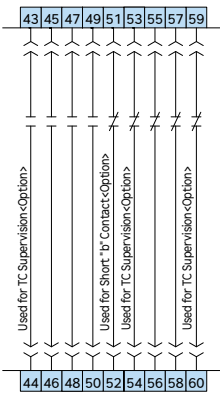


※ 5, 7, 9 switch status is the status when UVT is functioning.

### AUX Switch

- It is an output contact to remotely monitor the On/Off state of the DSU.
- As for HGL Type, 4a5b is provided as standard without separate indication in the order form.
- AUX switch can be expanded up to 5a6b maximum.
  - How to order HGL 5a6b : Add AA in the order form.
- When using the monitoring contact for trip coil, 3a3b can be used for the AUX switch.
- When short "b" is added, it will be attached to 'b' contacts 51, 52 for outgoing and upon additional mounting, the short "b" sealed and released can be mounted additionally depending on the number of b contacts.

### Connection

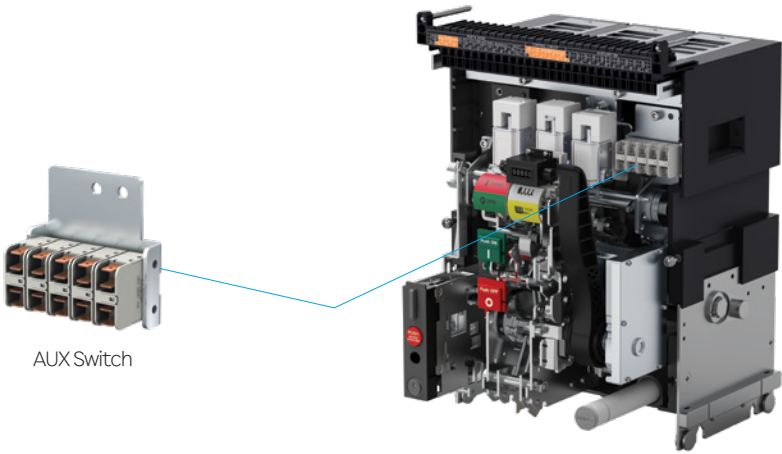


### AUX Switch Ratings

| Applicable Load | Resistance | Lamp  | Inductor | Motor |
|-----------------|------------|-------|----------|-------|
| AC 125 V        | 5 A        | 0.7 A | 4 A      | 1.3 A |
| AC 250 V        | 5 A        | 0.5 A | 4 A      | 0.8 A |
| DC 125V         | ≤ 2 A      | -     | ≤ 1.0 A  | -     |
| DC 250V         | ≤ 1 A      | -     | ≤ 0.5 A  | -     |

### Wire Specification

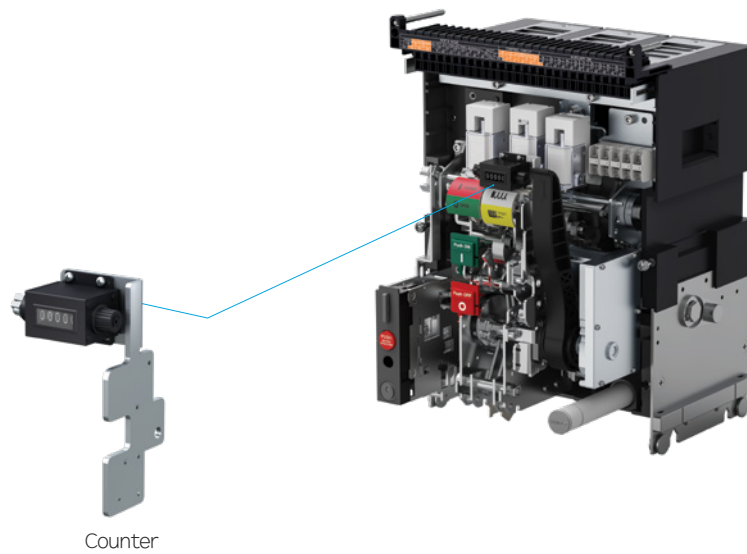
| Wire Specification | AWG | Insulation Level (V) |
|--------------------|-----|----------------------|
| Specification      | 20  | 300                  |



## Accessories

### Counter

- It is a device that displays the number of operations, indicating On/Off operation of the disconnect switch in 1 cycle.
- It is a primary component so separate order is unnecessary.



## Position Switch

- This switch, mounted at the side of the cradle, displays the position of DSU during draw-out.
- The position of Inserted/Isolated/Test/Connected can be displayed.
- Only one switch is applicable and it can only be mounted at the right side of the cradle.
- It can be purchased separately.

### AUX Switch Ratings

| Applicable Load | Resistance | Lamp   | Inductor | Motor  |
|-----------------|------------|--------|----------|--------|
| AC 125 V        | 10 A       | 1.5 A  | 6 A      | 2 A    |
| DC 30 V         | 6 A        | 3 A    | 6 A      | 3 A    |
| DC 125 V        | 0.6 A      | 0.1 A  | 0.6 A    | 0.1 A  |
| DC 250 V        | 0.3 A      | 0.05 A | 0.3 A    | 0.05 A |



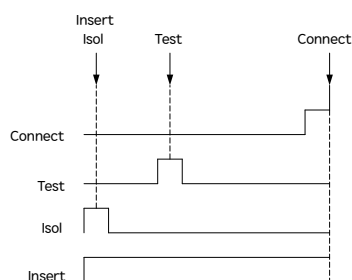
### Ordering Method

| Order Name |         | Specification of Switch Output       |        |        |        |         | Mounting Position    |
|------------|---------|--------------------------------------|--------|--------|--------|---------|----------------------|
|            |         | Composition                          | Insert | Isol   | Test   | Connect |                      |
| AQ         | HGNS AQ | Test 1C/Connect 1C                   | ×      | ×      | ● (1C) | ● (1C)  | Right Side of Cradle |
| AR         | HGNS AR | Connect 2C                           | ×      | ×      | ×      | ● (2C)  |                      |
| AS         | HGNS AS | Test 2C                              | ×      | ×      | ● (2C) | ×       |                      |
| AT         | HGNS AT | Isol 1C/Insert 1C                    | ● (1C) | ● (1C) | ×      | ×       |                      |
| AU         | HGNS AU | Insert 2C                            | ● (2C) | ×      | ×      | ×       |                      |
| AV         | HGNS AV | Isol 2C                              | ×      | ● (2C) | ×      | ×       |                      |
| PQ         | HGNS PQ | Isol 1C/Insert 1C/Test 1C/Connect 1C | ● (1C) | ● (1C) | ● (1C) | ● (1C)  |                      |
| PS         | HGNS PS | Isol 1C/Test 1C/Connect 2C           | ×      | ● (1C) | ● (1C) | ● (2C)  |                      |
| P4         | HGNS P4 | Test 2C/Connect 2C                   | ×      | ×      | ● (2C) | ● (2C)  |                      |
| PT         | HGNS PT | Test 4C                              | ×      | ×      | ● (4C) | ×       |                      |
| PR         | HGNS PR | Insert 1C/Isol 1C/Test 3C/Connect 3C | ● (1C) | ● (1C) | ● (3C) | ● (3C)  |                      |
| P8         | HGNS P8 | Insert 2C/Isol 2C/Test 2C/Connect 2C | ● (2C) | ● (2C) | ● (2C) | ● (2C)  |                      |
| PU         | HGNS PU | Test 4C/Connect 4C                   | ×      | ×      | ● (4C) | ● (4C)  |                      |

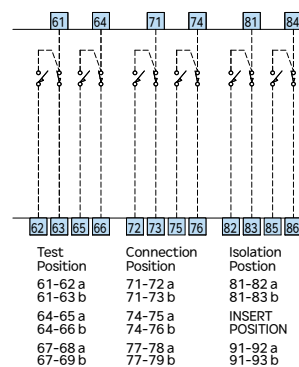
※ For position switches, because they are common parts with the U-Series product, the position switch may be marked "UANS".

### Operating Sequence of

#### Position Switch Operation Circuit



#### Connection Diagram



#### Dimension

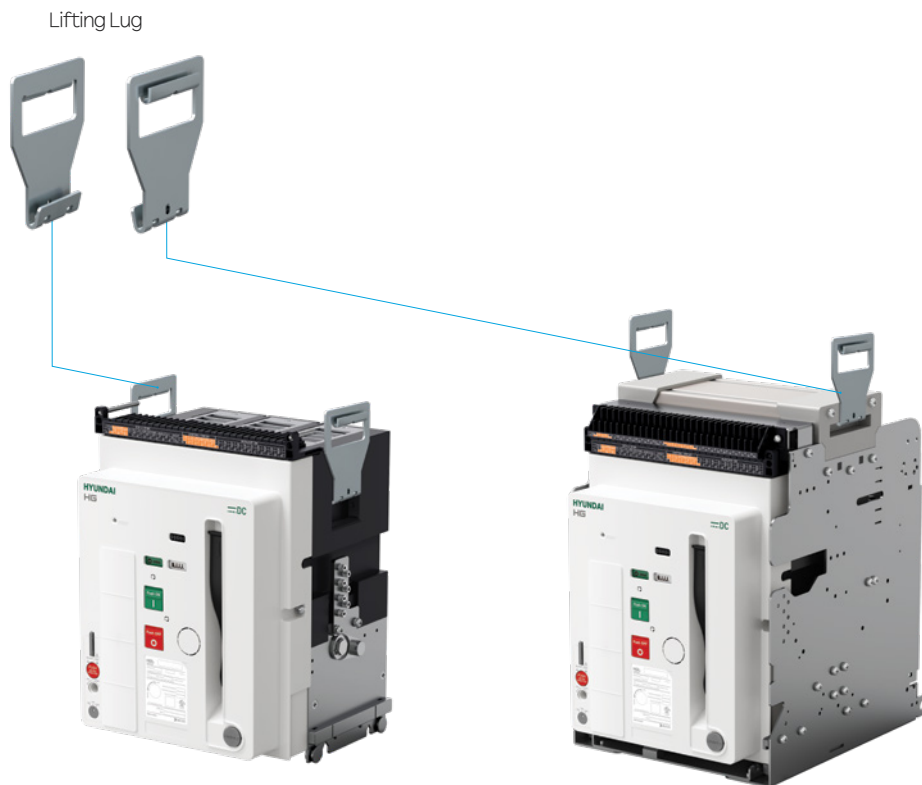
Unit : inch (mm)



## Accessories

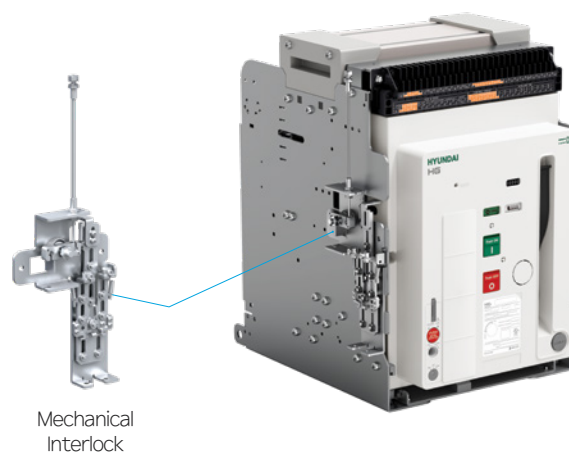
### Lifting Lug

- It is a component that is used for transporting the circuit breaker.
- It can be hung to the handle at the side of the cradle, side of the arc shield and the main unit and the product can be moved by a crane or a person.
- When handling all the products, use the crane and in case of transporting independently using only the crane in case of products below 2,500 A, the products must be transported in accordance with the safety regulations.
- As a product sold separately, place an order for HGNS AL.



## Mechanical Interlock

- MI is a device that mechanically interlocks the closing and tripping of each circuit breaker by connecting 2 or 3 circuit breakers.
- The MI is operated by a combination of the MI unit and the components of the interlock that is installed inside the main unit.
- The MI unit is a separate product and it is a device that is mounted additionally after the DSU has to be installed in the panel.
- When placing the order for the main unit, add B0 in the order from and only the component inside the interlock is mounted inside the main unit for release and as for the external mounting kit, place an additional order as a separate product.
- MI wire should be connected under 2 m between ACBs.
- In order to install, a square hole of 100×200 (mm) is required.



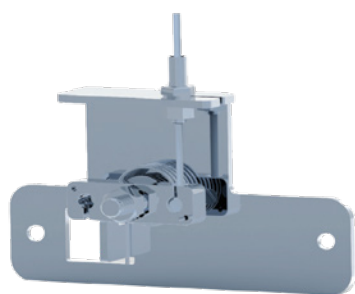
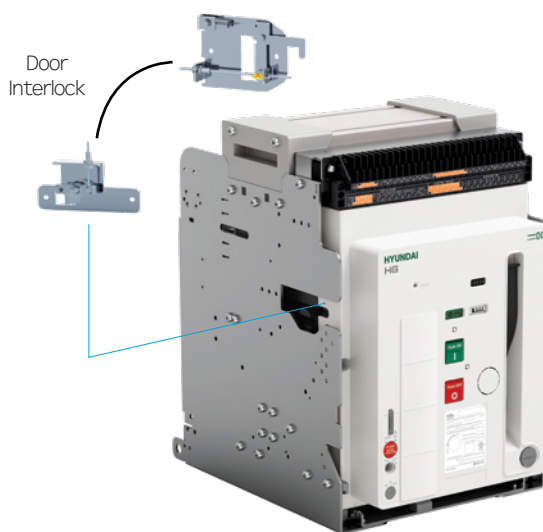
### Ordering Method

| Name of Accessory    | Order Name for Separate Sales (HGNS-) | Accessory Spec.                                                         |
|----------------------|---------------------------------------|-------------------------------------------------------------------------|
| Mechanical Interlock | HGNS DWB1                             | H & K Frame Draw-Out (Fixed) Type 2 Way MI (External Mounting Kit Only) |
|                      | HGNS DWB2                             | H & K Frame Draw-Out (Fixed) Type 3 Way MI (External Mounting Kit Only) |
|                      | HGNS FWB1                             | H & K Frame Fixed Type 2 Way MI (External Mounting Kit Only)            |
|                      | HGNS FWB2                             | H & K Frame Fixed Type 3 Way MI (External Mounting Kit Only)            |
|                      | HGNS B0DA                             | K Frame Interlock Part (B0)                                             |
|                      | HGNS B0DB                             | H Frame Interlock Part (B0)                                             |
|                      | HGNS B0FA                             | K Frame Interlock Part (B0) + Fixed Type of Installation Bracket        |
|                      | HGNS B0FB                             | H Frame Interlock Part (B0) + Fixed Type of Installation Bracket        |
|                      | HGNS DWB1A                            | K Frame Draw-Out Type 2 Way MI + Interlock Part (B0)                    |
|                      | HGNS DWB2A                            | K Frame Draw-Out Type 3 Way MI + Interlock Part (B0)                    |
|                      | HGNS DWB1B                            | H Frame Draw-Out Type 2 Way MI + Interlock Part (B0)                    |
|                      | HGNS DWB2B                            | H Frame Draw-Out Type 3 Way MI + Interlock Part (B0)                    |
|                      | HGNS FWB1A                            | K Frame Fixed Type 2 Way MI + Interlock Part (B0)                       |
|                      | HGNS FWB2A                            | K Frame Fixed Type 3 Way MI + Interlock Part (B0)                       |
|                      | HGNS FWB1B                            | H Frame Fixed Type 2 Way MI + Interlock Part (B0)                       |
|                      | HGNS FWB2B                            | H Frame Fixed Type 3 Way MI + Interlock Part (B0)                       |

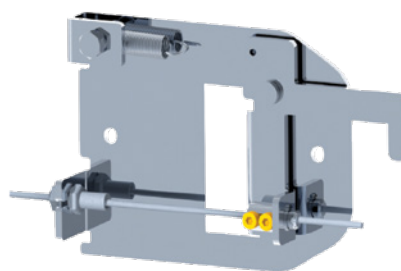
## Accessories

### Door Interlock [DI]

- The device that prevents the switchboard door from opening when the DSU is in the "ON" state at the "Connection" position.
- The DI operates through a combination of the DI Unit and interlock components inside the main body.
- When ordering the main unit with DO, only the interlock internal components will be attached. The external attachment kit must be ordered separately.
- For installation and maintenance, please refer to the installation manual.
- Not UL Certified.



Installation on the left side of the DSU cradle



Installation on the right side of the switchboard.

### Ordering Method

| Name of Accessory | Order Name for Separate Sales (HGNS-) | Detailed Specification                                                            |
|-------------------|---------------------------------------|-----------------------------------------------------------------------------------|
| Door Interlock    | HGNS DDI                              | Draw-out type Door Interlock external attachment Kit only.                        |
|                   | HGNS FDI                              | Fixed type Door Interlock external attachment Kit only.                           |
|                   | HGNS DDIAC                            | Draw-out type external attachment Kit + K Frame internal interlock components(DO) |
|                   | HGNS DDIBD                            | Draw-out type external attachment Kit + H Frame internal interlock components(DO) |
|                   | HGNS FDIAC                            | Fixed type external attachment Kit + K Frame internal interlock components(DO)    |
|                   | HGNS FDIBD                            | Fixed type external attachment Kit + H Frame internal interlock components(DO)    |

## Key Lock

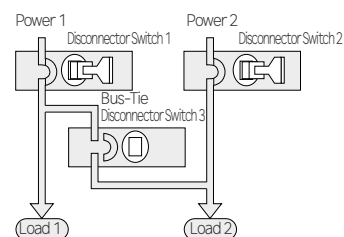
- It is a device that maintains the interlock condition to prevent electric/manual closing when the disconnect switch is open.
- When the key has been used to unlock, the electric/manual On/Off operation is possible. When the key has been removed from the disconnect switch, it becomes interlocked. When the key has been used to lock, the Off button has to be pressed to turn the key to the lock position.
- As a product mounted on the main unit, add AB in the order form when placing an order for the main unit.



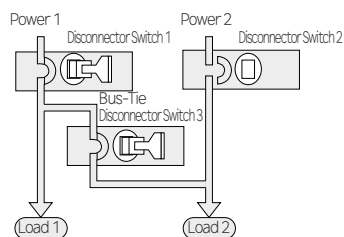
## Key Lock & Key Interlock

- 3 disconnecter switches mounted with the key lock device for preventing On can be used to make up the system. Only 2 disconnecter switches can be allowed to close using 2 keys and the remaining 1 unit can be interlocked to provide stable load.

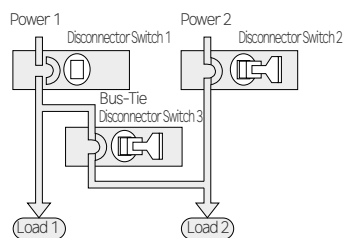
Disconnecter Switch 3 cannot be closed



Disconnecter Switch 2 cannot be closed



Disconnecter Switch 1 cannot be closed



※ Example : Parallel feed at 2 power is prevented in case bus-tie disconnecter switch is used

## Accessories

### On/Off Button Lock

- It is a safety device that prevents manual On/Off operation caused by the user's mistaken. The disconnect switch are covered with a plastic cover to prevent arbitrary operation of manual close/trip button and padlock is used.
- As a product mounted on the main unit, add AM in the order form when placing an order for the main unit.
- Padlock is not provided by our company. (Ø5 ~ Ø8)

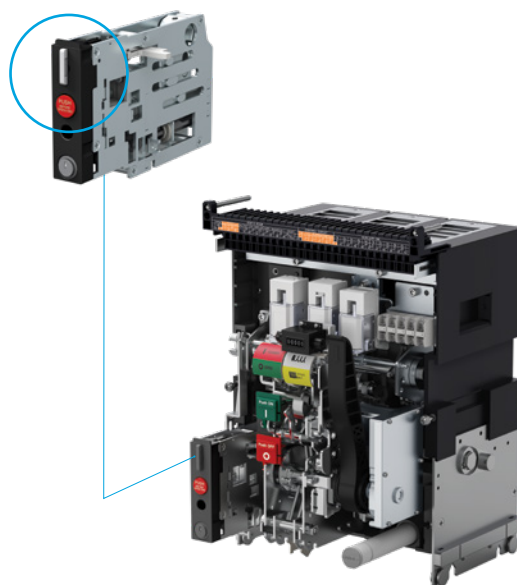
On/Off Button Lock



### DR Device Unit & Position Pad Lock

- As for the draw-out type of disconnect switch, DR device is mounted on the main unit.
- DR device is comprised of a groove for inserting draw-out handle, draw-out push button, position indicator and a padlock device.
- As for the padlock device, it is provided as a standard safety device that prevents arbitrary draw-out by using a padlock in the connection/test/isolated position but the padlock is not provided by our company. (Ø5 ~ Ø8)
- It can be purchased separately.

DR Device Unit &  
Position Pad Lock



## Auto Connection Type & Manual Control Plug Type

- As for the method of connecting the control power, auto connection type in which the control power is automatically connected/isolated when the main unit is drawn out and manual connection type in which the user directly inserts the connector with the control power connected to the main unit are available.
- Fixed type is provided with manual control plug type as standard so that type of connection terminal of the main power can be designated without separate indication.
- When completely removing the manual connection type of product from the cradle, the main unit has to be separated after removing the connector.
- As a product mounted on the cradle, select A for automatic connection type and J for manual connection type.



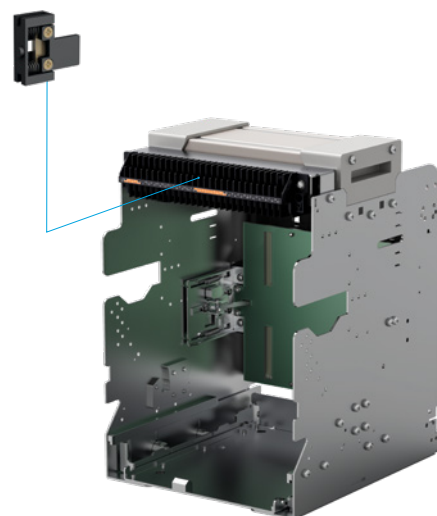
## Short "b" Contact

- When the circuit breaker is moved from the Connected position to the Test position, the auxiliary contact AUX "b" is disconnected to maintain the external control circuit in normal, ultimately maintaining an accurate sequence operation. As for the number of shorting "b" contact, it corresponds to the number of AUX "b" (5b).
- Upon outgoing, only 1b (51, 52) is mounted and as for the remaining 4b, it is sealed together with the manual pack so it can be mounted as much as needed for use.
- As a product mounted on the main unit, add AK in the order form when placing an order for the main unit.

### Indication of Contact Status (When AUX "b" and Short "b" are Connected)

| ACB Position                          | ACB Operating              |                          |
|---------------------------------------|----------------------------|--------------------------|
|                                       | ACB Close<br>(AUX "b" Off) | ACB Open<br>(AUX "b" On) |
| Connected Position<br>(Short "b" Off) |                            |                          |
| Test Position<br>(Short "b" On)       |                            |                          |

Short "b" Contact



# Accessories

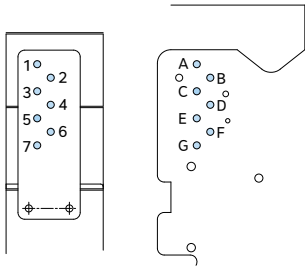
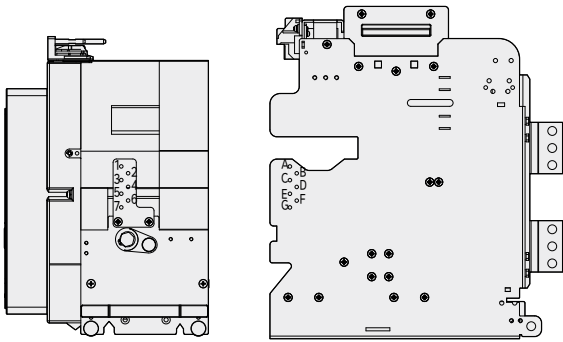
## Miss-Insertion Preventor

- Although the external size is equivalent, in case the rating does not conform when the main unit of the disconnecter switch (DSU) is inserted in the cradle in the composition of another disconnecter switch , this device prevents it from being inserted.
- It is comprised based on the Rating Plug (In).
- Each component is mounted on the main unit and cradle respectively. Add AW in the main unit and cradle's order form respectively when placing the order.

### Ordering Method

| Rating Plug (In)     | Cradle | DSU |
|----------------------|--------|-----|
| 0 = OCR Non Mounting | ADEG   | 236 |

### Part's Mounting Position per Rated Current

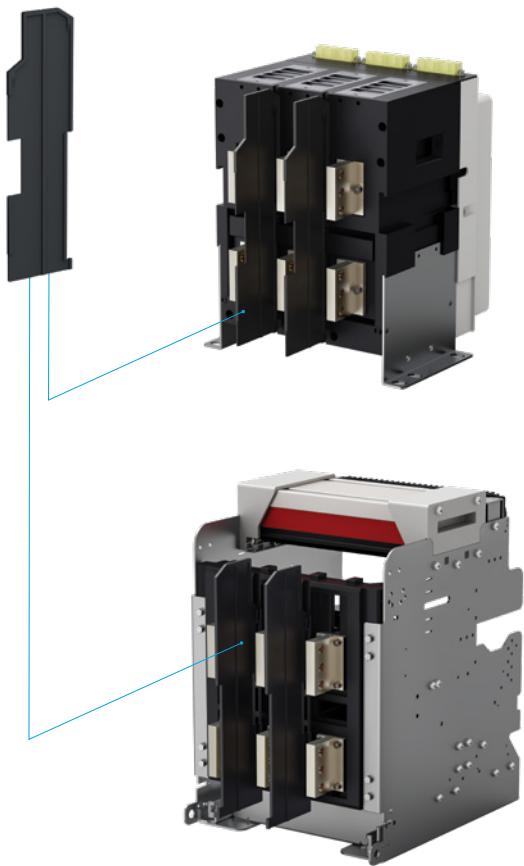


Miss-Insertion Preventer

### Phase Insulation Barrier

- Phase insulation barrier is a part installed between phases that prevents short circuit between phases in advance by closing the arc which may occur between phases.
- 2 ea are mounted for 3P Type and 3 ea are mounted for 4P Type and as they are sold individually, select the required quantity when placing the order.
- As a product sold separately, place an order in HGNS P BAR.

Phase Insulation  
Barrier



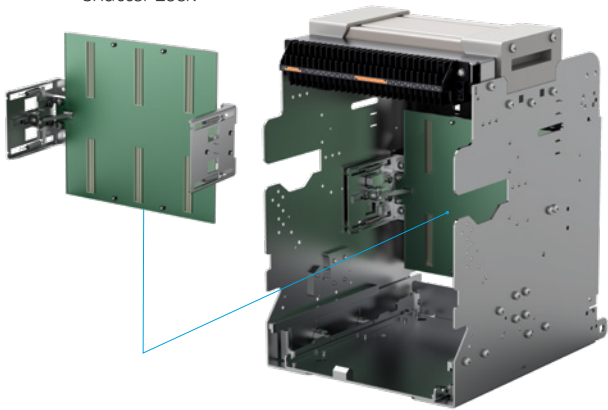
### Safety Shutter & Shutter Lock

- It is a safety device that prevents the contact between the conductor part and the front part when the main unit of the disconnecter switch mounted on the cradle is drawn out.
- The structure automatically opens and closes when the disconnecter switch is drawn out and it comes with a shutter lock device that prevents it from opening when the shutter is closed in the event the main unit is drawn out. The padlock is not provided by our company. (Ø5 ~ Ø8)
- As for the shutter, the power side and load side operates separately, each equipped with an operation device and they can be locked individually.
- As a product mounted on the cradle, add AE in the order form when placing the order for the cradle.

#### Ordering Method

| Name of<br>Accessory | Order Name<br>Placed upon<br>Outgoing | Order Name<br>for Separate<br>Sales<br>(HGLS-) | Detailed Specification     |
|----------------------|---------------------------------------|------------------------------------------------|----------------------------|
| Safety<br>Shutter    | AE                                    | HGNS AEA3                                      | K Frame, 800 ~ 2,000 A, 3P |
|                      |                                       | HGNS AEA4                                      | K Frame, 800 ~ 2,000 A, 4P |
|                      |                                       | HGNS AEB3                                      | H Frame, 800 ~ 4,000 A, 3P |
|                      |                                       | HGNS AEB4                                      | H Frame, 800 ~ 4,000 A, 4P |

Safety Shutter &  
Shutter Lock



## Accessories

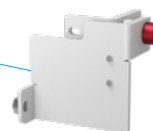
### Fixing Block

- It is a safety device for reinforcement in order to prevent abnormal operation caused by vibration.
- It is capable of simultaneously fixing the main unit and the cradle and reinforcing the cradles and panel supporters.
- Each component is mounted on the main unit and the cradle. Add AF in the respective order form of the main unit and cradle when placing the order.

### Control Terminal Protection Cover

- It is a safety cover that is placed on the connection terminal to prevent contact with external foreign substances or physical contact after the control power has been connected to the automatic connection type of terminal.
- It cannot be applied to fixed type DSU and draw-out type DSU with manual connection terminal.
- As a product mounted on the cradle, add BC when placing an order for the draw-out type with automatic connection type.

Control Terminal Protection Cover



Fixing Block

### Arc Shield

- Arc which occurs while breaking the disconnect switch is extinguished through the arc chamber within the main unit or as the residual arc is discharged to the external upper part, the basic distance required for insulation has to be maintained.
- When mounting the arc shield, the insulation distance can be minimized to "0" due to the residual arc discharged to the upper part.
- When mounting the arc shield, it can be piled in 4 stories.
- As a product mounted on the cradle, add AX in the order form when placing the order for the cradle.

### Ordering Method

| Name of Accessory | Order Name Placed upon Outgoing | Order Name for Separate Sales (HGLS-) | Detailed Specification     |
|-------------------|---------------------------------|---------------------------------------|----------------------------|
| Arc Shield        | AX                              | HGLS AXA3                             | K Frame, 800 ~ 2,000 A, 3P |
|                   |                                 | HGLS AXA4                             | K Frame, 800 ~ 2,000 A, 4P |
|                   |                                 | HGLS AXB3                             | H Frame, 800 ~ 4,000 A, 3P |
|                   |                                 | HGLS AXB4                             | H Frame, 800 ~ 4,000 A, 4P |



## Accessories

### CTD-Condenser Trip Device

- In case of using AC/DC power for trip control of the circuit breaker, it is a device that can electrically trip the circuit breaker once by using the power charged in the CTD when the supply of control voltage has been stopped due to black-out and others.
- It is a product sold separately.
- Not UL Certified.



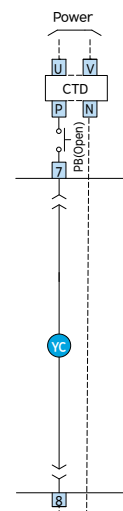
#### Ordering Method

| Name of Accessory | Order Name for Separate Sales (HGNS-) | Detailed Specification |
|-------------------|---------------------------------------|------------------------|
| CTD               | HGNS CTD1                             | AC 110 V               |
|                   | HGNS CTD2                             | AC 220 V               |

#### Ratings

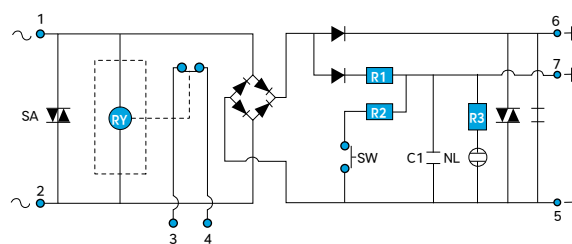
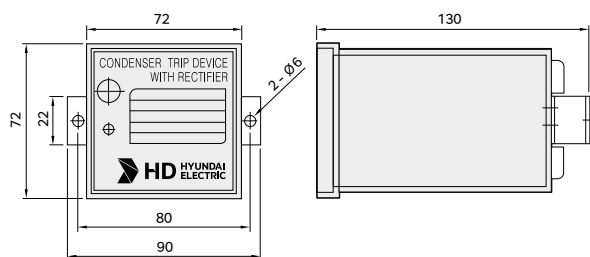
| Item                    | Details            |          |
|-------------------------|--------------------|----------|
| Rated Input Voltage     | AC 110 V           | AC 220 V |
| Normal Charging Voltage | DC 145 V           | DC 290 V |
| Normal Current Capacity | DC 2 A             |          |
| Rated Frequency         | 50/60 Hz           |          |
| Delay Circuit Time      | Within 1.5 sec     |          |
| Applicable Standard     | IEC 60694/KSC 4611 |          |

#### Connection Diagram



#### Operating Sequence of CTD External Operation Circuit

Unit : mm



- AC Input Power NO. 1, 2
- CTD Trip Power NO. 7 (+), 5 (-)
- DC Normal Power NO. 6 (+), 5 (-)
- Delay Contact NO. 3, 4

Test Jumper

- It is a device that enables the main unit to be operated independently by separating the automatic connection type of main unit from the cradle.
- As a product sold separately, place an order for HGNS AJ when ordering.



Draw-In/Out Handle

- The draw-in/out handle for drawing the draw-in type of circuit breaker is provided basically.
- In case the standard handle is uncomfortable when drawing the circuit breaker in and out, Long Type Handle and Universal Joint Handle which are sold separately can be used.
- As a product sold separately, place an order of HGNS LHANDLE or HGNS UHANDLE.
- Not UL Certified.



Type

| Long Type Handle | Universal Joint Handle | T-Type Handle |
|------------------|------------------------|---------------|
|                  |                        |               |

Ordering Method

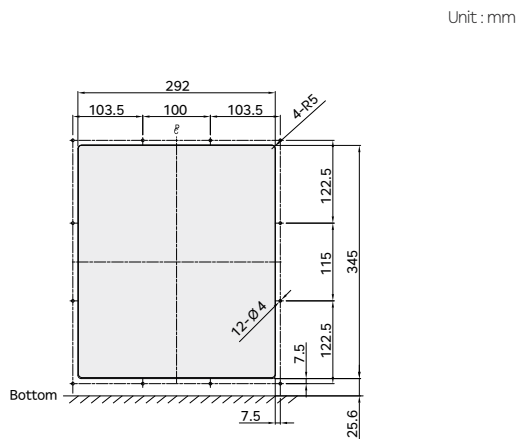
| Name of Accessory  | Order Name Placed upon Outgoing | Order Name for Separate Sales (HGNS-) | Detailed Specification                     |
|--------------------|---------------------------------|---------------------------------------|--------------------------------------------|
| Draw-In/Out Handle | -                               | HGNS HANDLE                           | Standard Handle (Provided as Standard)     |
|                    |                                 | HGNS LHANDLE                          | Long Type of Draw-In/Out Handle (For ACB)  |
|                    |                                 | HGNS UHANDLE                          | Universal Joint Type of Draw-In/Out Handle |
|                    |                                 | HGNS THANDLE                          | T-Type, Long Type Handle                   |

## Accessories

### Door Flange

- It is an auxiliary device mounted on the cutting part of the panel door at the front protrusion mounting type of DSU.
- The door flange of our company is IP30.
- As for the cutting dimension of the panel, refer to the external drawing.
- As for the panel cutting dimension, it is equivalent for both the draw-out and fixed type and it is the same even if the dust cover is installed.
- As a product sold separately, place an order for HGNS AG.

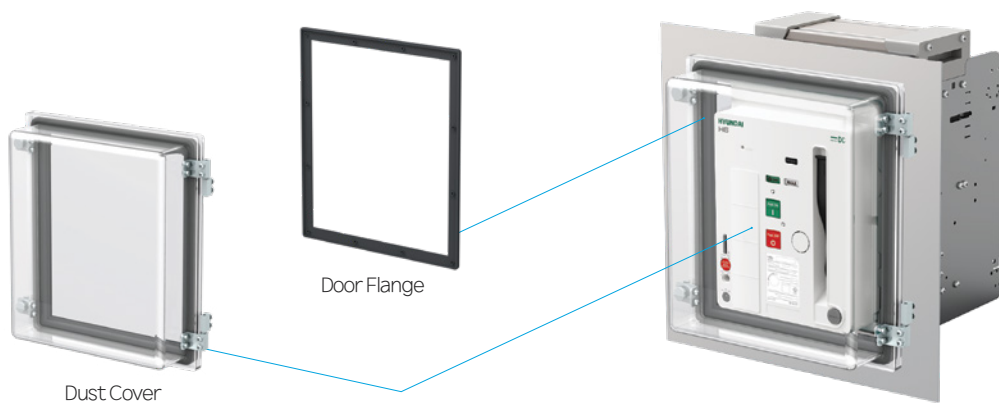
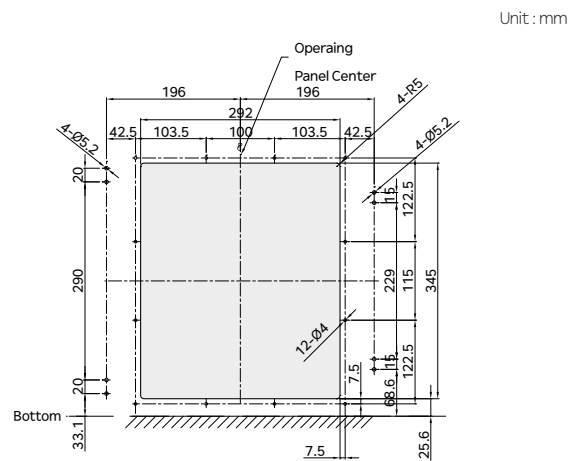
Panel Door Cutting Dimension



### Dust Cover

- It is a device installed to protect against dust and moisture mounted on the cutting part of the panel door at the front protrusion mounting type of DSU.
- The dust cover of our company is IP52.
- The cover can be locked in the test and connected position.
- The cutting dimension of the panel must be referred to.
- As a product sold separately, place an order for HGNS DC.

Panel Door Cutting Dimension



## Technical Data

### Convenient Connection Method

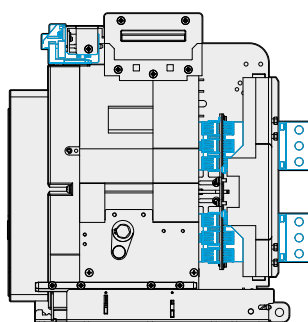
As for HG Series air disconnector switch, 4 types of mounting (Connected, test, isolated, removed) are possible and offer easy maintenance.



Sliding Body Type (In Case of Draw-In/Out Type)

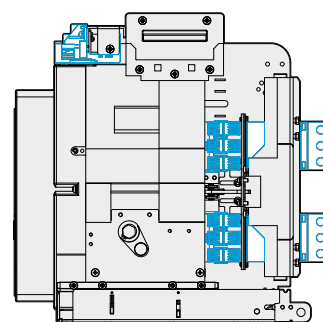
#### Connected Position

As a commonly used status, the main circuit and control circuit are both connected.



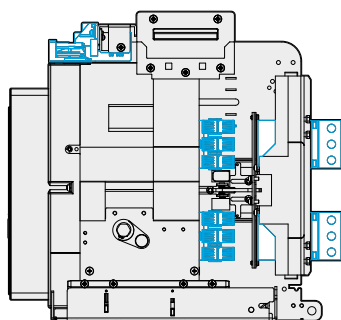
#### Test Position

As a status in which the main circuit is isolated and the control circuit is connected, the disconnector switch can be turned On/Off with the switchgear door closed.



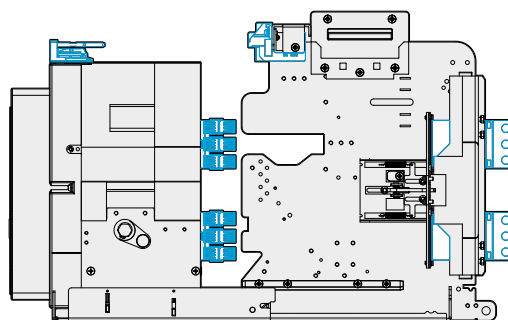
#### Isolated Position

With the main circuit and control circuit both isolated, the disconnector switch cannot be turned On/Off.



#### Removed Position

The disconnector switch has completely been removed from the cradle.



## Technical Data

### Convenient Connection Method

#### Internal Resistance and Power Consumption

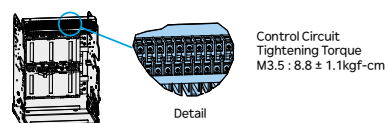
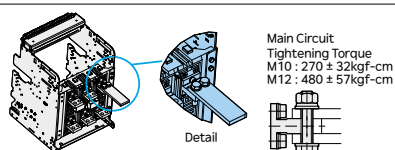
| Model Name | Rated Current (A) | Draw-Out Type                       |                       | Fixed Type                          |                       |
|------------|-------------------|-------------------------------------|-----------------------|-------------------------------------|-----------------------|
|            |                   | Internal Resistance ( $\mu\Omega$ ) | Power Consumption (W) | Internal Resistance ( $\mu\Omega$ ) | Power Consumption (W) |
| K Frame    | 800               | 13                                  | 8                     | 11                                  | 7                     |
|            | 1,000             | 13                                  | 13                    | 11                                  | 11                    |
|            | 1,250             | 13                                  | 20                    | 11                                  | 17                    |
|            | 1,600             | 13                                  | 33                    | 11                                  | 28                    |
|            | 2,000             | 13                                  | 52                    | 11                                  | 44                    |
| H Frame    | 800               | 12                                  | 8                     | 10                                  | 6                     |
|            | 1,600             | 12                                  | 31                    | 10                                  | 26                    |
|            | 2,000             | 12                                  | 48                    | 10                                  | 40                    |
|            | 2,500             | 12                                  | 75                    | 10                                  | 63                    |
|            | 3,200             | 12                                  | 123                   | 10                                  | 102                   |
|            | 3,600             | 12                                  | 156                   | 10                                  | 130                   |
|            | 4,000             | 12                                  | 192                   | 10                                  | 160                   |

※ The above power consumption is the total power consumption of the disconnect switch based on each rated current. The internal resistance is the resistance value per pole.

※ The internal resistance mentioned above is the factory default value. It may slightly increase depending on the operating environment (load conditions, short circuits, load switching, and other ambient conditions) and the duration of use. Regular inspections and maintenance are recommended.

※ Contact resistance may increase after 1-2 years. Wiping the contact surface with an alcohol-dampened towel can reduce contact resistance.

#### Tightening Torque



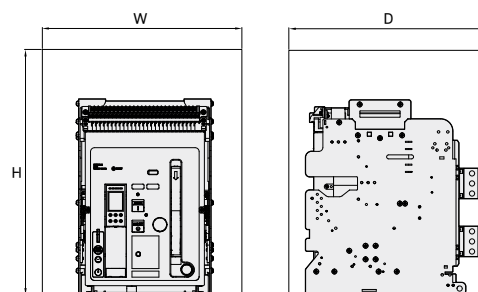
### Insulation Voltage

When designing the switchboard, maintain the insulation distance in accordance with the table below.

#### Insulation Distance from ARC

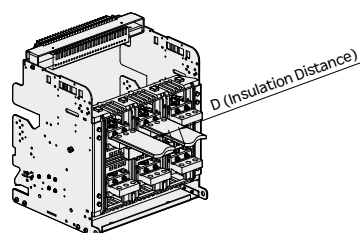
| Enclosure Dimension |    |    | H     | W     | D     |
|---------------------|----|----|-------|-------|-------|
| K Frame             | 3P | In | 19.69 | 21.18 | 15.00 |
|                     |    | mm | 500   | 538   | 381   |
|                     | 4P | In | 19.69 | 24.53 | 15.00 |
|                     |    | mm | 500   | 623   | 381   |
| H Frame             | 3P | In | 19.69 | 24.02 | 15.00 |
|                     |    | mm | 500   | 610   | 381   |
|                     | 4P | In | 19.69 | 28.54 | 15.00 |
|                     |    | mm | 500   | 725   | 381   |

※ 1) Enclosure dimension is followed by UL/ANSI standard.



#### Minimum Insulation Distance at Charging Side

| Insulating Voltage                            |    | Minimum Insulation Distance                |                                          |
|-----------------------------------------------|----|--------------------------------------------|------------------------------------------|
|                                               |    | Between Terminals of Opposite Polarity (X) | Between Terminals and any Grounded Metal |
| Above 131 Vdc, below 300 Vdc                  | in | 0.75                                       | 0.50                                     |
|                                               | mm | 19.1                                       | 12.7                                     |
| Above 301 Vdc, below 1,000 Vdc (or 1,500 Vdc) | in | 1.00                                       | 0.50                                     |
|                                               | mm | 25.4                                       | 12.7                                     |



## Calibration of Rating Current

### Calibration of Rating Current Following Ambient Temperature and Motion Specification

| Product Model         | Rating Current | Applicable Busbar Size (mm)                  | Horizontal Type |         |         |         |         |         |         | Vertical Type |         |         |         |         |         |         |
|-----------------------|----------------|----------------------------------------------|-----------------|---------|---------|---------|---------|---------|---------|---------------|---------|---------|---------|---------|---------|---------|
|                       |                |                                              | 40 °C           | 45 °C   | 50 °C   | 55 °C   | 60 °C   | 65 °C   | 70 °C   | 40 °C         | 45 °C   | 50 °C   | 55 °C   | 60 °C   | 65 °C   | 70 °C   |
|                       |                |                                              |                 |         |         |         |         |         |         |               |         |         |         |         |         |         |
| K Frame<br>HGL08 ~ 20 | 800 A          | 6.35 T×76.2×1 ea<br>(inch : 1/4×3×1 ea)      | 800 A           | 800 A   | 800 A   | 800 A   | 800 A   | 800 A   | 800 A   | 800 A         | 800 A   | 800 A   | 800 A   | 800 A   | 800 A   | 800 A   |
|                       |                | 5 T×100×1 ea                                 |                 |         |         |         |         |         |         |               |         |         |         |         |         |         |
|                       |                | 6 T×80×1 ea                                  |                 |         |         |         |         |         |         |               |         |         |         |         |         |         |
|                       | 1,000 A        | 6.35 T×50.8×2 ea<br>(inch : 1/4×2×2 ea)      | 1,000 A         | 1,000 A | 1,000 A | 1,000 A | 1,000 A | 960 A   | 912 A   | 1,000 A       | 1,000 A | 1,000 A | 1,000 A | 1,000 A | 1,000 A | 1,000 A |
|                       |                | 6 T×50×2 ea                                  |                 |         |         |         |         |         |         |               |         |         |         |         |         |         |
|                       |                | 10 T×60×1 ea                                 |                 |         |         |         |         |         |         |               |         |         |         |         |         |         |
|                       | 1,250 A        | 6.35 T×57.2×2 ea<br>(inch : 1/4×2' 1/4×2 ea) | 1,250 A         | 1,250 A | 1,180 A | 1,165 A | 1,110 A | 1,063 A | 1,013 A | 1,250 A       | 1,250 A | 1,250 A | 1,250 A | 1,250 A | 1,250 A | 1,250 A |
|                       |                | 10 T×100×1 ea                                |                 |         |         |         |         |         |         |               |         |         |         |         |         |         |
|                       |                | 6.35 T×76.2×2 ea<br>(inch : 1/4×3×2 ea)      |                 |         |         |         |         |         |         |               |         |         |         |         |         |         |
|                       | 1,600 A        | 10 T×100×1 ea                                | 1,600 A         | 1,600 A | 1,493 A | 1,432 A | 1,368 A | 1,310 A | 1,250 A | 1,600 A       | 1,600 A | 1,600 A | 1,600 A | 1,552 A | 1,488 A | 1,424 A |
|                       |                | 6 T×80×2 ea                                  |                 |         |         |         |         |         |         |               |         |         |         |         |         |         |
|                       |                | 6.35 T×101.6×2 ea<br>(inch : 1/4×4×2 ea)     |                 |         |         |         |         |         |         |               |         |         |         |         |         |         |
| H Frame<br>HGL08 ~ 32 | 800 A          | 5 T×125×2 ea                                 | 2,000 A         | 2,000 A | 1,866 A | 1,790 A | 1,710 A | 1,638 A | 1,562 A | 2,000 A       | 2,000 A | 1,968 A | 1,904 A | 1,840 A | 1,762 A | 1,680 A |
|                       |                | 8 T×80×2 ea                                  |                 |         |         |         |         |         |         |               |         |         |         |         |         |         |
|                       |                | 6.35 T×76.2×1 ea<br>(inch : 1/4×3×1 ea)      | 800 A           | 800 A   | 800 A   | 800 A   | 800 A   | 800 A   | 800 A   | 800 A         | 800 A   | 800 A   | 800 A   | 800 A   | 800 A   | 800 A   |
|                       | 1,600 A        | 5 T×100×1 ea                                 |                 |         |         |         |         |         |         |               |         |         |         |         |         |         |
|                       |                | 6 T×80×1 ea                                  |                 |         |         |         |         |         |         |               |         |         |         |         |         |         |
|                       |                | 6.35 T×76.2×2 ea<br>(inch : 1/4×3×2 ea)      | 1,600 A         | 1,600 A | 1,600 A | 1,600 A | 1,600 A | 1,600 A | 1,600 A | 1,600 A       | 1,600 A | 1,600 A | 1,600 A | 1,600 A | 1,600 A | 1,600 A |
|                       | 2,000 A        | 10 T×100×1 ea                                |                 |         |         |         |         |         |         |               |         |         |         |         |         |         |
|                       |                | 6 T×80×2 ea                                  | -               | -       | -       | -       | -       | -       | -       |               |         |         |         |         |         |         |
|                       |                | 6.35 T×101.6×2 ea<br>(inch : 1/4×4×2 ea)     | -               | -       | -       | -       | -       | -       | -       | 2,000 A       | 2,000 A | 2,000 A | 2,000 A | 2,000 A | 2,000 A | 1,871 A |
|                       | 2,500 A        | 5 T×125×2 ea                                 | 2,000 A         | 2,000 A | 2,000 A | 2,000 A | 2,000 A | 1,886 A | 1,764 A |               |         |         |         |         |         |         |
|                       |                | 8 T×80×2 ea                                  |                 |         |         |         |         |         |         |               |         |         |         |         |         |         |
|                       |                | 6.35 T×127×2 ea<br>(inch : 1/4×5×2 ea)       | -               | -       | -       | -       | -       | -       | -       |               |         |         |         |         |         |         |
| H Frame<br>HGL40      | 3,200 A        | 8 T×100×2 ea                                 | 2,500 A         | 2,500 A | 2,500 A | 2,400 A | 2,300 A | 2,168 A | 2,028 A | 2,500 A       | 2,500 A | 2,500 A | 2,500 A | 2,400 A | 2,263 A | 2,117 A |
|                       |                | 5 T×100×3 ea                                 |                 |         |         |         |         |         |         |               |         |         |         |         |         |         |
|                       |                | 10 T×80×2 ea                                 |                 |         |         |         |         |         |         |               |         |         |         |         |         |         |
|                       | 3,200 A        | 6.35 T×127×3 ea<br>(inch : 1/4×5×3 ea)       | -               | -       | -       | -       | -       | -       | -       |               |         |         |         |         |         |         |
|                       |                | 10 T×125×2 ea                                | -               | -       | -       | -       | -       | -       | -       | 3,200 A       | 3,200 A | 3,200 A | 3,120 A | 3,050 A | 2,876 A | 2,690 A |
|                       |                | 10 T×80×3 ea                                 | -               | -       | -       | -       | -       | -       | -       |               |         |         |         |         |         |         |
|                       | 4,000 A        | 8 T×100×3 ea                                 | 3,200 A         | 3,200 A | 3,100 A | 3,000 A | 2,900 A | 2,734 A | 2,557 A |               |         |         |         |         |         |         |
|                       |                | 6.35 T×127×4 ea<br>(inch : 1/4×5×4 ea)       | -               | -       | -       | -       | -       | -       | -       | 4,000 A       | 4,000 A | 4,000 A | 3,950 A | 3,800 A | 3,583 A | 3,351 A |
|                       |                | 10 T×125×3 ea                                | -               | -       | -       | -       | -       | -       | -       |               |         |         |         |         |         |         |

※ Ambient temperature is greater than 60 °C, consult us.

※ For conditions exceeding 60 °C, current ratings comply with ANSI standards, and the overall temperature limit is set to 105 °C in accordance with UL standards.

### Calibration of Rating Current Following Altitude

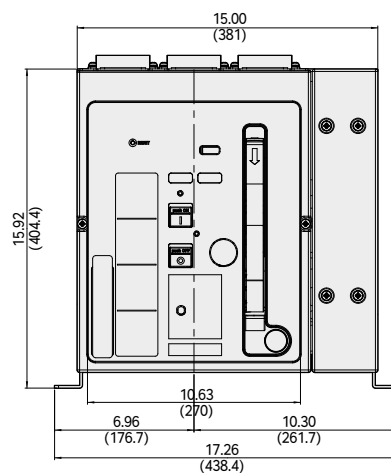
DSU is designed to be used at altitudes below 2,000 m.

When used at above 2,000 m, change the ratings depending on the surrounding environment condition for use.

| Altitude                        | 2,000 m    | 3,000 m    | 4,000 m     | 5,000 m     |
|---------------------------------|------------|------------|-------------|-------------|
| Item                            | (6,560 ft) | (9,842 ft) | (13,123 ft) | (16,404 ft) |
|                                 | 1,500      | 1,400      | 1,200       | 1,050       |
| Max. Operation Voltage (Vdc)    | 1,000      | 900        | 800         | 700         |
|                                 | 750        | 675        | 600         | 525         |
| Current Calibration Coefficient | In         | 0.99×In    | 0.96×In     | 0.94×In     |

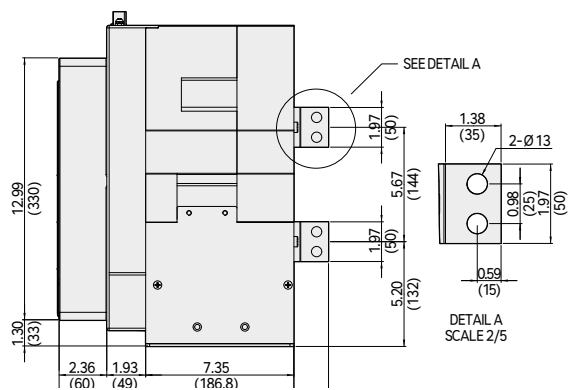
## HGL Fixed Type 800 ~ 2,000 A (HGL08 ~ 20 K Frame)

Front



Technical drawing of a 4-pole circuit breaker assembly. The drawing shows the front view of the unit with four poles. Key dimensions are provided in millimeters (mm) and inches (in):

- Overall width: 15.69 (398.4) mm
- Distance between pole centers: 3.35 (85) mm
- Overall height: 7.35 (186.8) mm
- Distance from top to first terminal: 6.00 (152.5) mm
- Distance between terminal rows: 0.79 (20) mm
- Distance from bottom to first terminal: 4.29 (109) mm
- Terminal diameter: Ø 14 mm
- Terminal spacing: 0.55 (14) mm

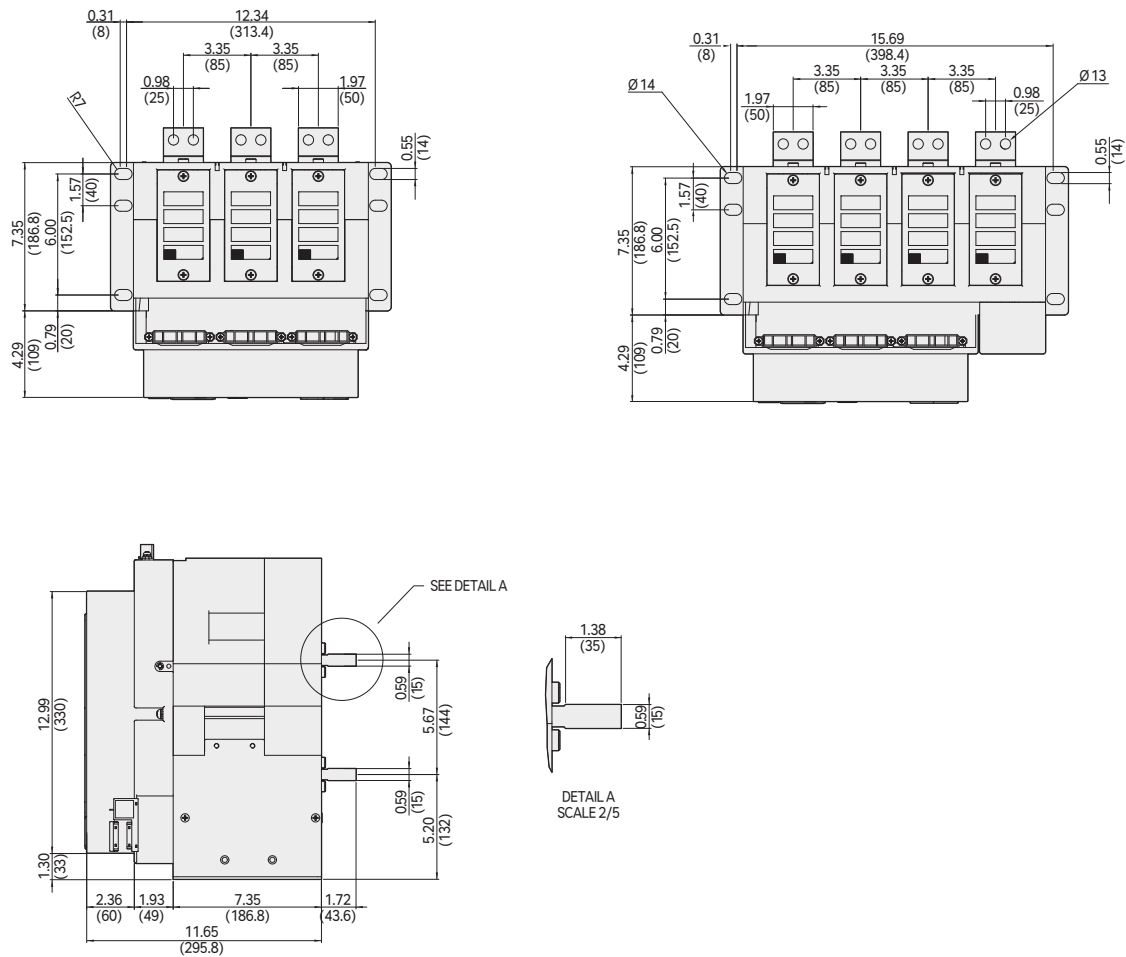


※ The drawing dimension of this page may be subject to change without prior notice.

# HGL Fixed Type 800 ~ 2,000 A (HGL08 ~ 20 K Frame)

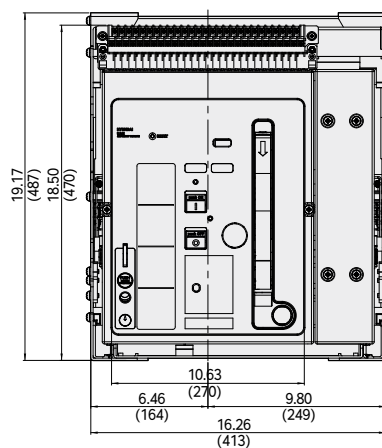
Unit : inch(mm)

## Horizontal Type



## HGL Draw-Out Type 800 ~ 2,000 A (HGL08 ~ 20 K Frame)

Front

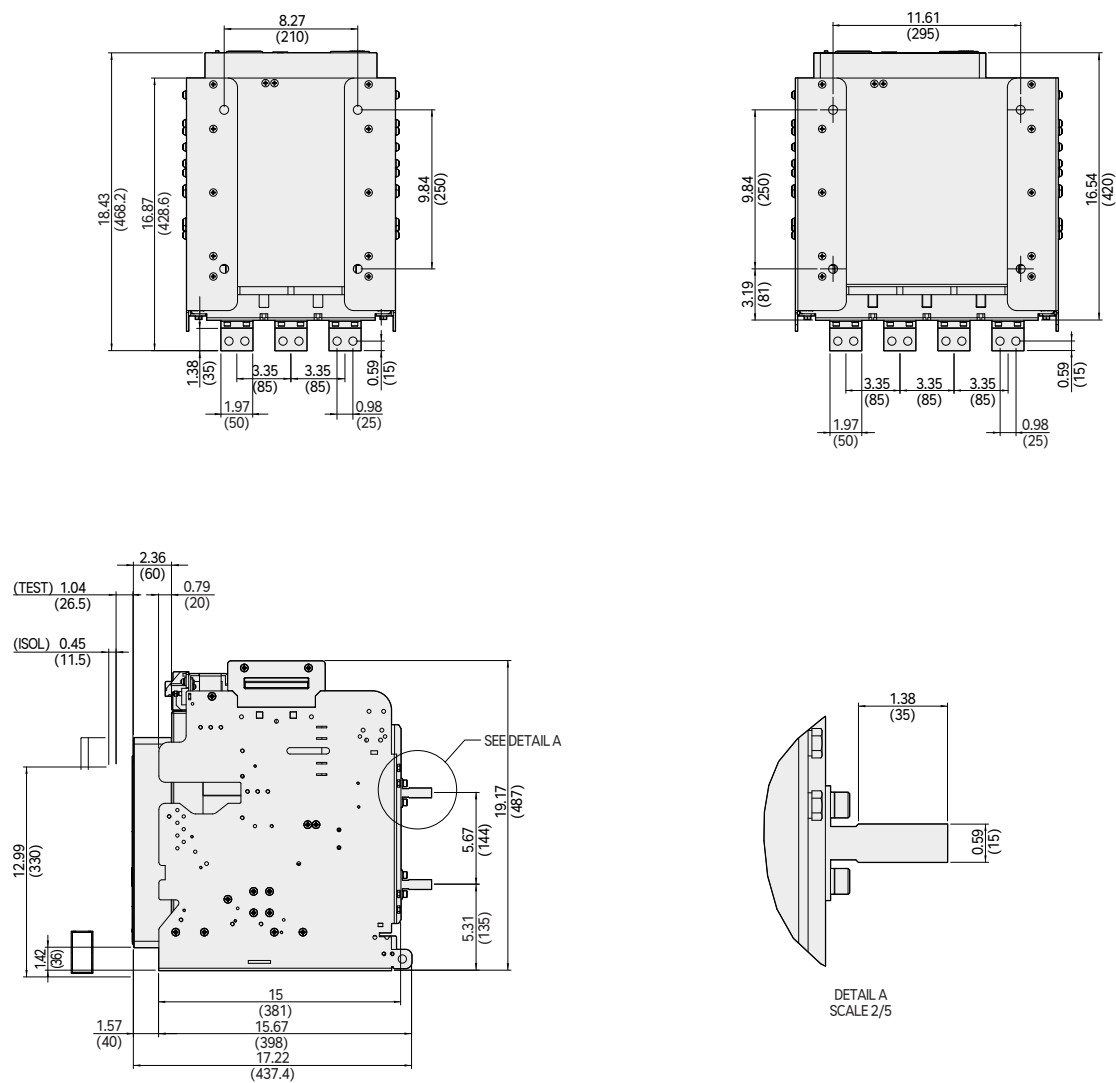
[illegible]

※ The drawing dimension of this page may be subject to change without prior notice.

HGL Draw-Out 800 ~ 2,000 A (HGL08 ~ 20 K Frame)

Unit : inch(mm)

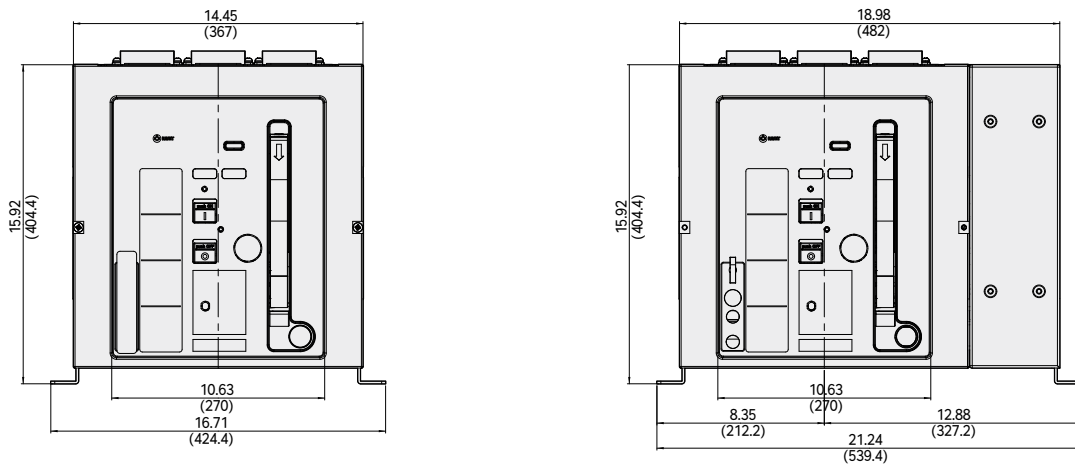
## Horizontal Type



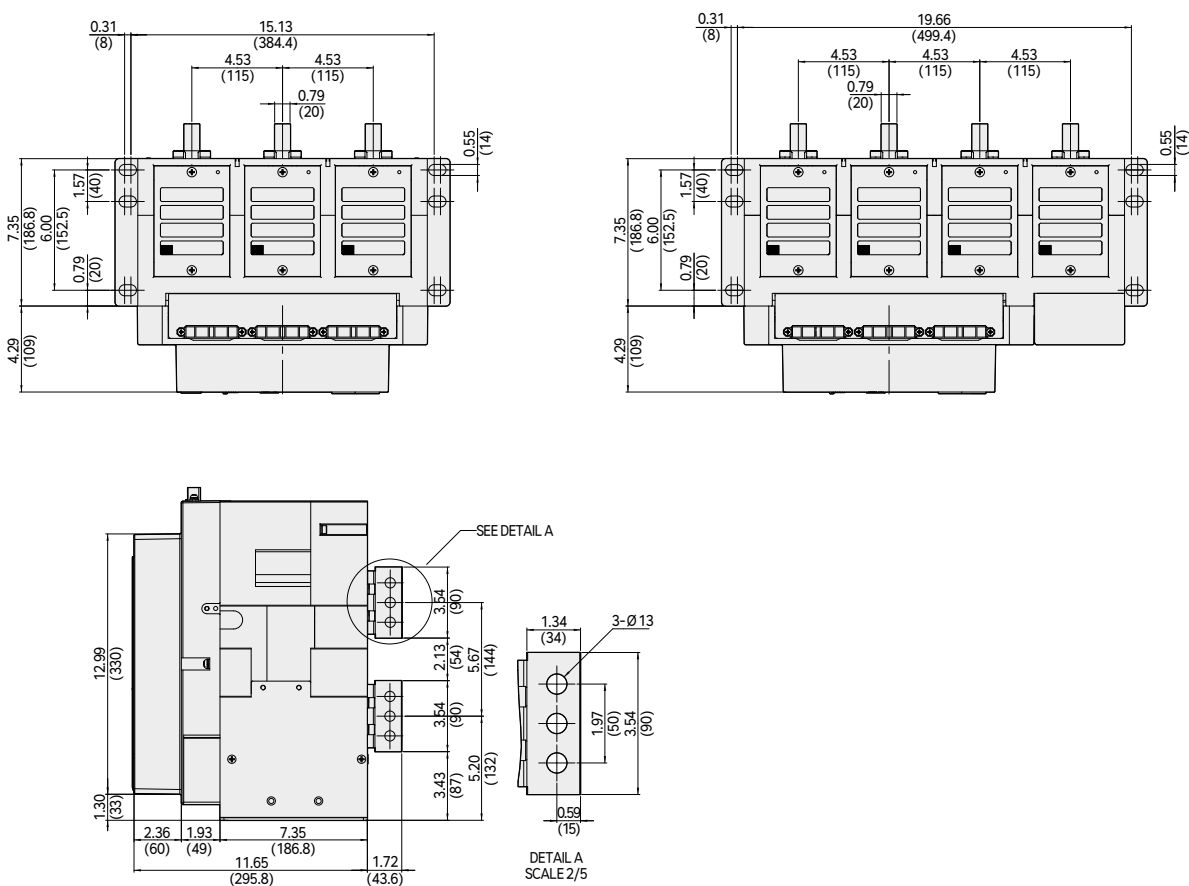
※ The drawing dimension of this page may be subject to change without prior notice.

## HGL Fixed Type 800 ~ 3,200 A (HGL08 ~ 32 H Frame)

Front



## Vertical Type

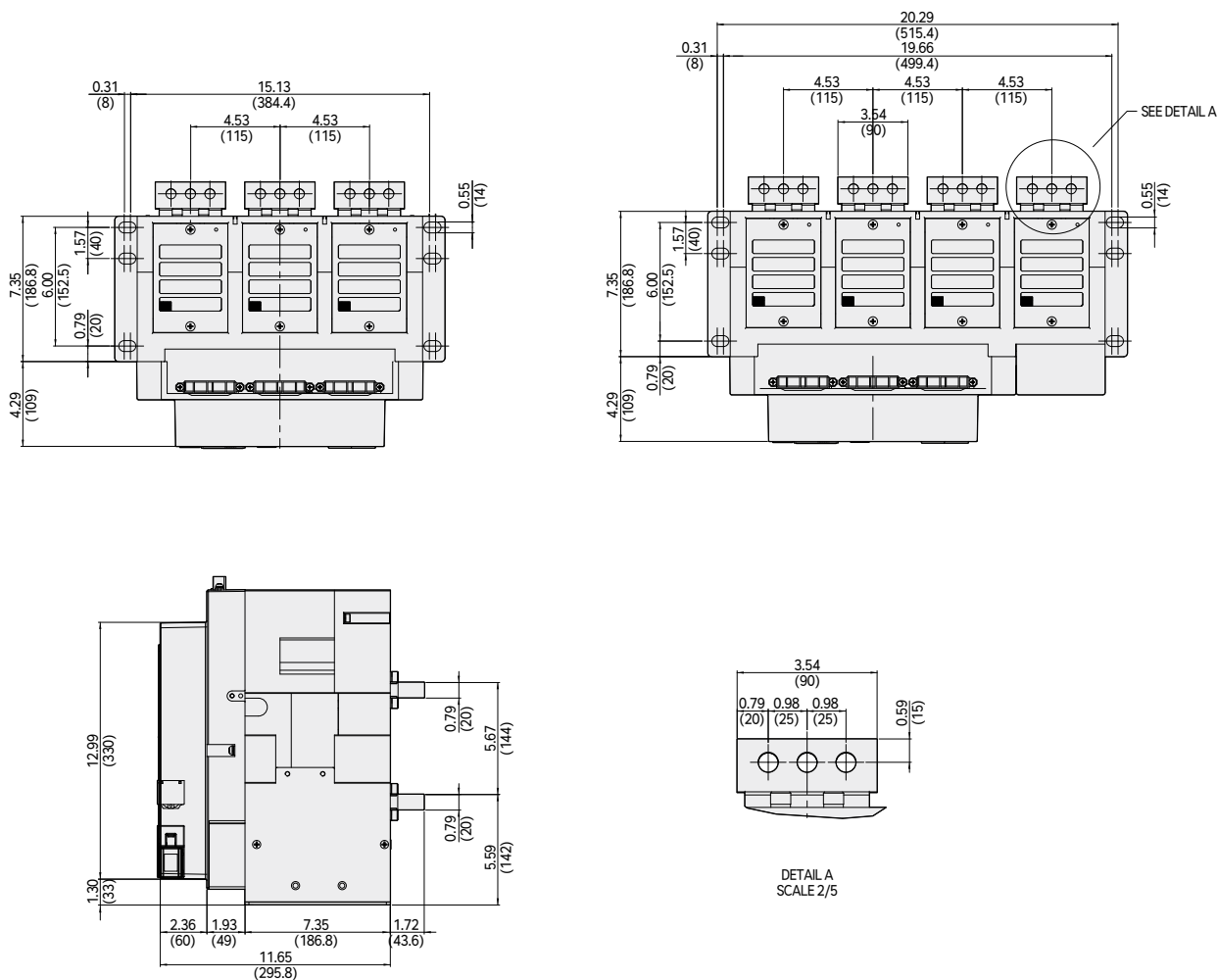


※ The drawing dimension of this page may be subject to change without prior notice.

# HGL Fixed Type 800 ~ 3,200 A (HGL08 ~ 32 H Frame)

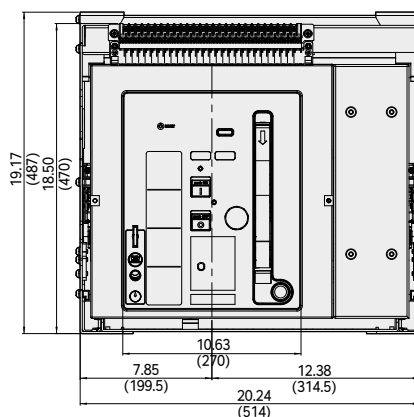
Unit : inch(mm)

## Horizontal Type



## HGL Draw-Out Type 800 ~ 3,200 A (HGL08 ~ 32 H Frame)

Front

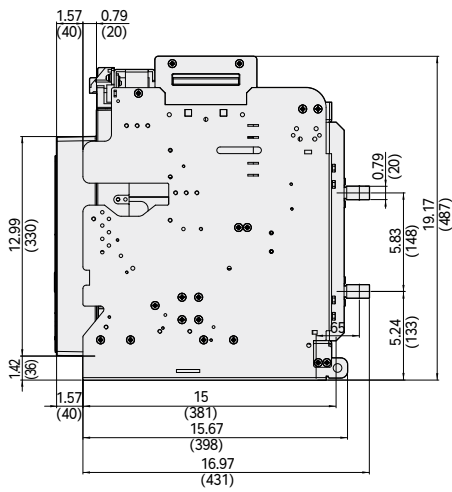
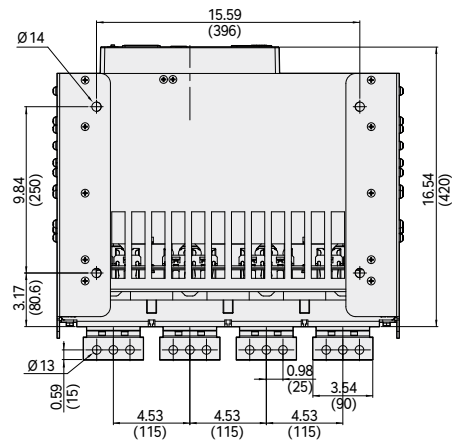
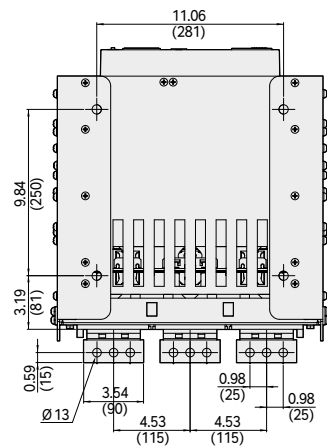
[illegible]

※ The drawing dimension of this page may be subject to change without prior notice.

# HGL Draw-Out 800 ~ 3,200 A (HGL08 ~ 32 H Frame)

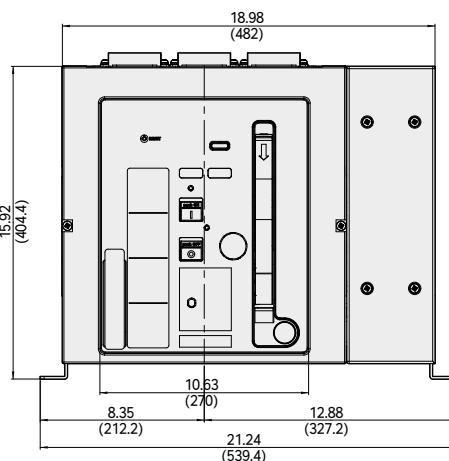
Unit : inch(mm)

## Horizontal Type



## HGL Fixed Type 4,000 A (HGL40 H Frame)

Front



Technical drawing showing the front and side views of a mechanical component with dimensions in inches (in) and millimeters (mm).

**Front View Dimensions:**

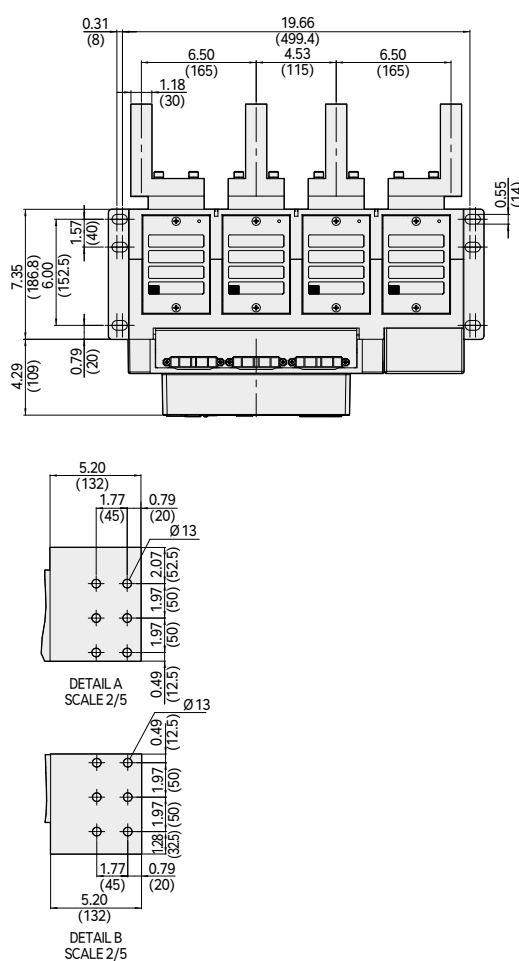
- Overall Width: 15.13 (384.4)
- Top Section Widths: 6.50 (165), 6.50 (165)
- Top Section Height: 0.31 (8)
- Internal Widths: 1.18 (30)
- Overall Height: 7.35 (186.8)
- Section Heights: 6.00 (152.5), 0.79 (20)
- Internal Height: 1.57 (40)
- Bottom Section Width: 4.29 (108)
- Bottom Section Height: 4.29 (108)
- Right Side Flange Width: 0.55 (14)

**Side View Dimensions:**

- Overall Width: 11.65 (295.8)
- Overall Height: 12.99 (330)
- Top Section Width: 2.36 (60)
- Top Section Height: 1.30 (33)
- Internal Width: 1.93 (49)
- Internal Height: 7.35 (186.8)
- Bottom Section Width: 5.93 (150.6)
- Bottom Section Height: 1.46 (37)
- Right Side Flange Width: 4.70 (119.5)
- Right Side Flange Height: 6.77 (172)
- Internal Height: 5.71 (145)
- Internal Width: 1.85 (47)
- Internal Height: 6.50 (165)

**Callouts:**

- SEE DETAIL A (pointing to the top right corner)
- SEE DETAIL B (pointing to the bottom right corner)

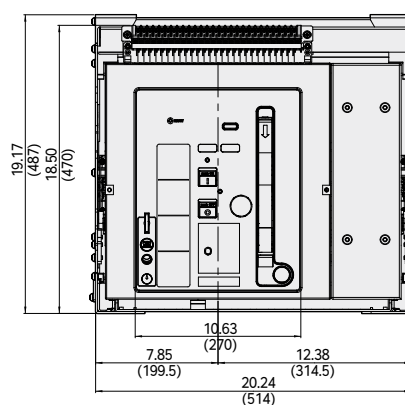
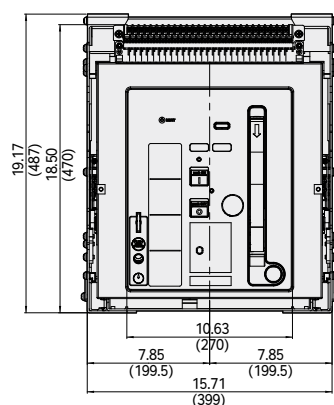


※ The drawing dimension of this page may be subject to change without prior notice.

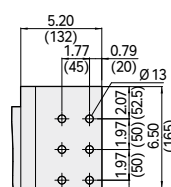
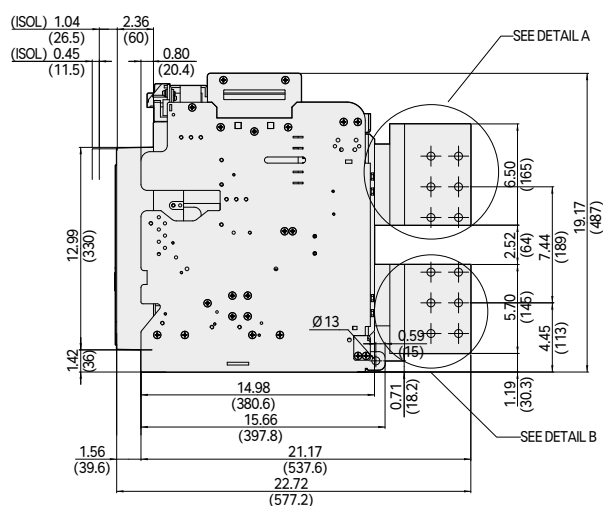
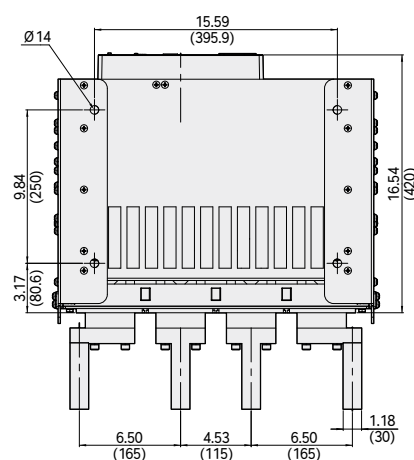
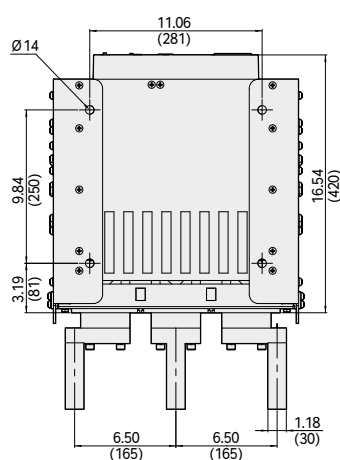
## HGL Draw-Out Type 4,000 A (HGL40 H Frame)

Unit : inch(mm)

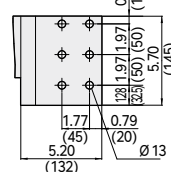
Front



## Vertical Type



DETAIL A  
SCALE 2/5



DETAIL B  
SCALE 2/5

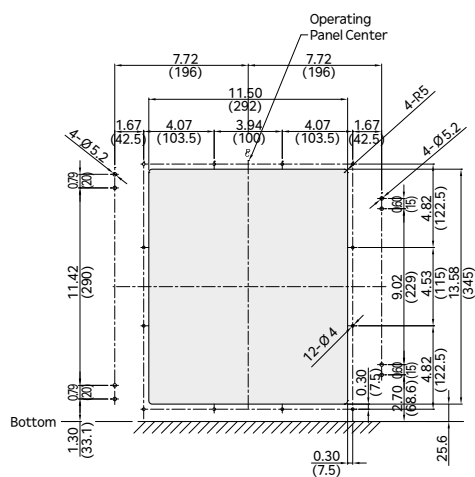
※ The drawing dimension of this page may be subject to change without prior notice.

# Dimensions

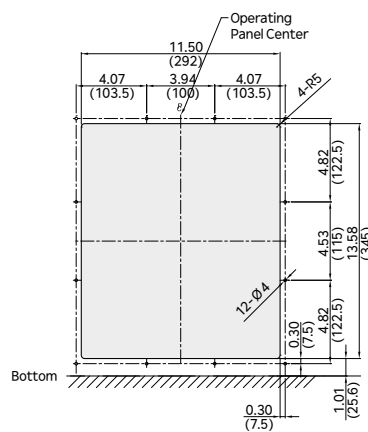
## Panel Cutting Dimension of HGL Fixed Type

Unit : inch(mm)

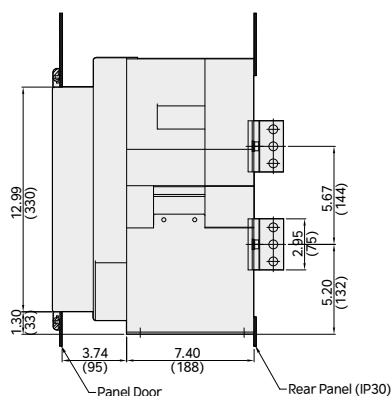
Panel Door Cut-Out (For Dust Cover)



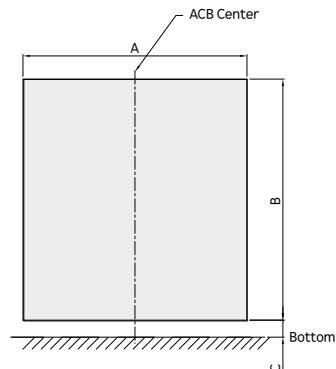
Panel Door Cut-Out (For Door Flange)



Side View



Rear Panel Cutting Size (For IP30)



Detailed Dimensions of Real Panel Cutting

Unit : inch(mm)

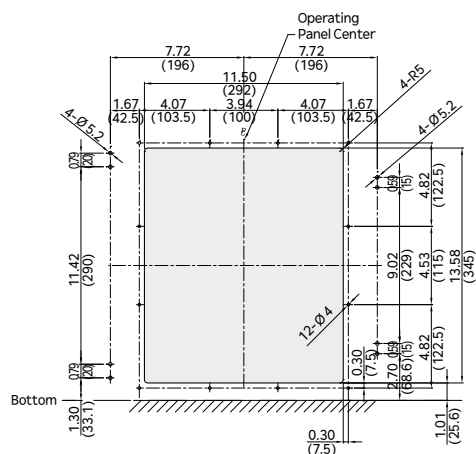
| Model Name      | A          | B          | C        |
|-----------------|------------|------------|----------|
| HGL 08K3 ~ 20K3 | 11.14(283) | 13.98(355) | 0.98(25) |
| HGL 08K4 ~ 20K4 | 14.49(368) | 13.98(355) | 0.98(25) |
| HGL 08H3 ~ 40H3 | 13.94(354) | 13.98(355) | 0.98(25) |
| HGL 08H4 ~ 40H4 | 18.46(469) | 13.98(355) | 0.98(25) |

※ The drawing dimension of this page may be subject to change without prior notice.

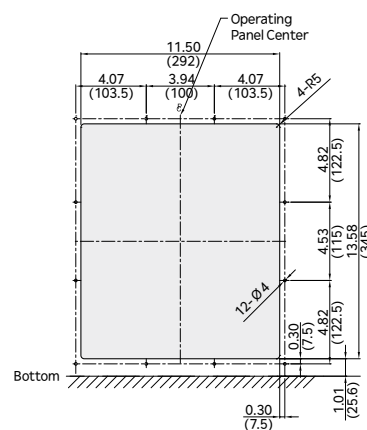
## Panel Cutting Dimension of HGL Draw-Out Type

Unit : inch(mm)

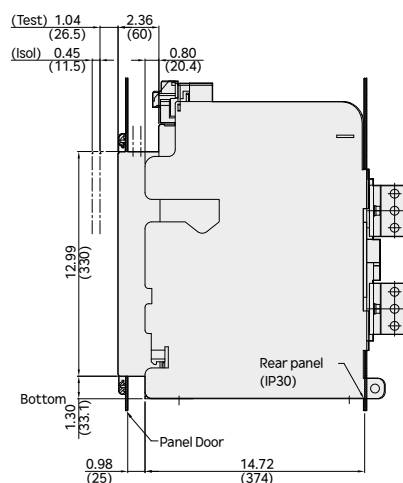
Panel Door Cut-Out (For Dust Cover)



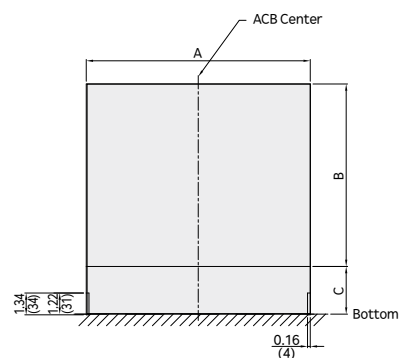
Panel Door Cut-Out (For Door Flange)



Side View



Rear Panel Cutting Size (For IP30)



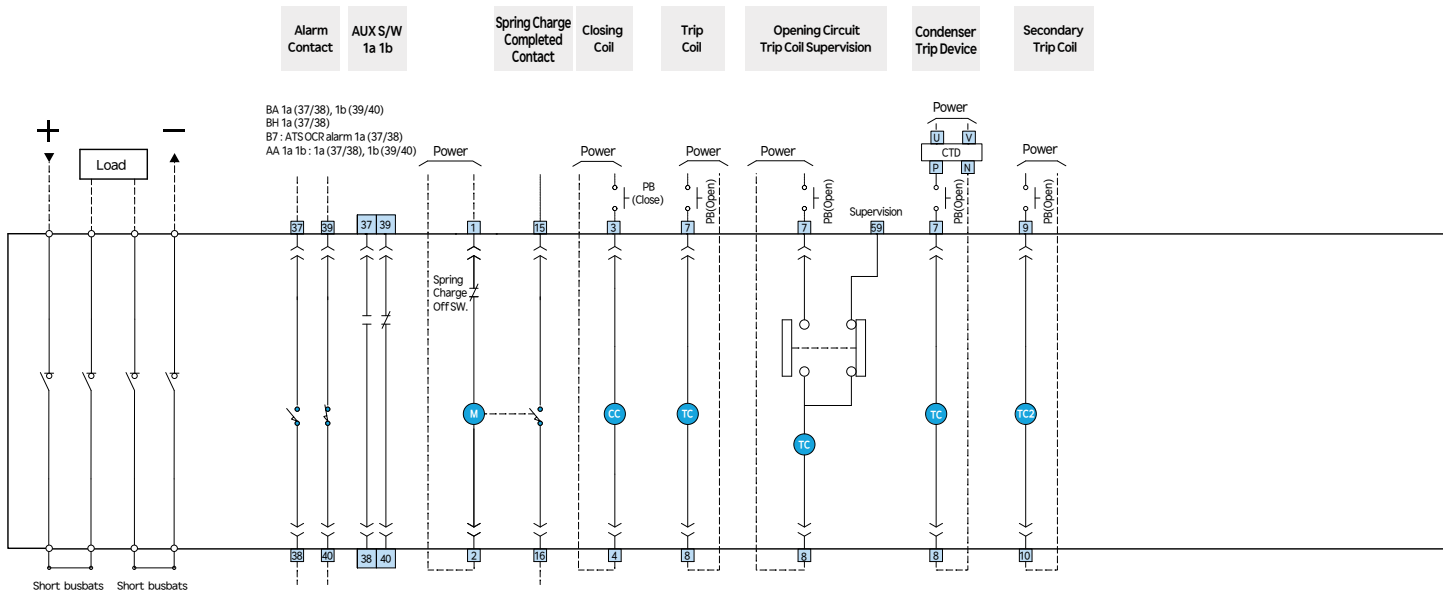
Detailed Dimensions of Real Panel Cutting

Unit : inch(mm)

| Model Name      | A          | B          | C        |
|-----------------|------------|------------|----------|
| HGL 08K3 ~ 20K3 | 12.95(329) | 12.40(315) | 2.87(73) |
| HGL 08K4 ~ 20K4 | 16.30(414) | 12.40(315) | 2.87(73) |
| HGL 08H3 ~ 32H3 | 15.75(400) | 13.03(331) | 2.28(58) |
| HGL 08H4 ~ 32H4 | 20.28(515) | 13.03(331) | 2.28(58) |
| HGL 40H3        | 15.75(400) | 14.84(377) | 1.14(29) |
| HGL 40H4        | 20.28(515) | 14.84(377) | 1.14(29) |

※ The drawing dimension of this page may be subject to change without prior notice.

## Circuit Diagrams



### Symbol Description

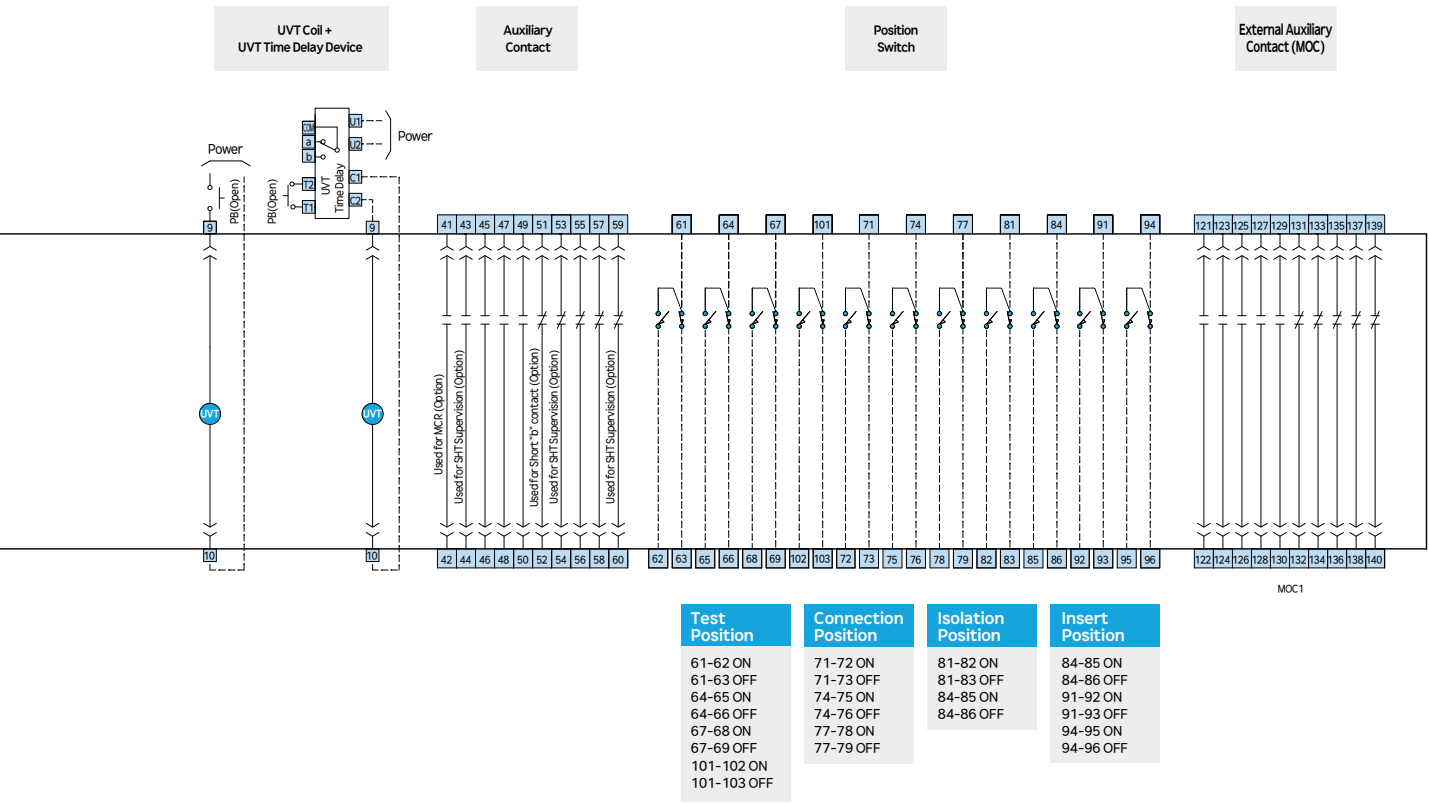
|                |                                 |
|----------------|---------------------------------|
| <b>L</b>       | LTD Terminal                    |
| <b>PT</b>      | Pre-Trip Alarm                  |
| <b>G</b>       | Ground Fault Contact            |
| <b>S / I</b>   | STD/INST Contact                |
| <b>Ac</b>      | Common Contact                  |
| <b>ZI</b>      | Zone Selective Interlock Input  |
| <b>ZO</b>      | Zone Selective Interlock Output |
| <b>MCR +/-</b> | MCR Input Terminal              |
| <b>TP / Tn</b> | MHT Output Terminal             |
| <b>T</b>       | Charging Motor                  |
| <b>CC</b>      | Close Coil                      |
| <b>TC</b>      | Trip Coil                       |
| <b>UVT</b>     | Under-Current Voltage Trip Coil |
| <b>MHT</b>     | Magnetic Hold Trigger           |
| <b>SO / S2</b> | OCR Power (AC, DC 100-250 V)    |
| <b>S1 / S3</b> | OCR Power (DC 24 V)             |

- RR : Remote Reset
- VM : Voltage Module
- VR - VN : Voltage phase input
- R - N : Current input
- Rn - Nn : Current input

### Terminal Description

|                |                                          |
|----------------|------------------------------------------|
| <b>1 - 2</b>   | Charging Motor Power                     |
| <b>3 - 4</b>   | Closing Coil Power                       |
| <b>5 - 6</b>   | Remote Reset                             |
| <b>7 - 8</b>   | Trip Coil Power                          |
| <b>9 - 10</b>  | UVT Coil Power                           |
| <b>15 - 16</b> | Spring Charge Switch                     |
| <b>19 - 20</b> | OCR Power (AC, DC 100-250 V)             |
| <b>27 - 28</b> | OCR Power (DC 24 V)                      |
| <b>22 - 21</b> | LTD Contact                              |
| <b>22 - 23</b> | Pre-Trip Alarm/Temperature Alarm Contact |
| <b>22 - 24</b> | STD/UBST Contact                         |
| <b>22 - 26</b> | GFT Contact                              |
| <b>31 - 34</b> | ZSI (Zone Selective Interlock)           |
| <b>35 - 36</b> | Communication (RS485)                    |
| <b>41 - 60</b> | Auxiliary Contact                        |
| <b>61 - 93</b> | Position Switch                          |

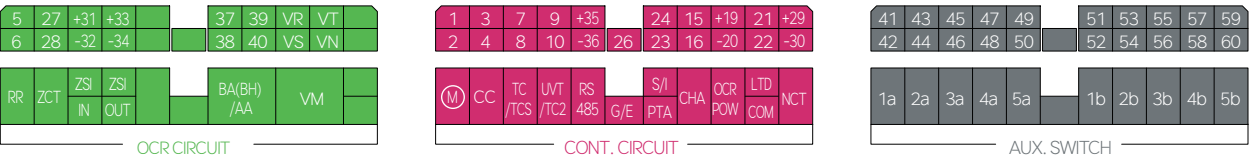
- Manufacture's Wiring
- User's Wiring
- ⌵ Disconnecting Device (Draw-Out Type)



Control Jack Lay-out (Auto Connection Type)

| OCR & OCGR |             |      |       |        |    |     |        |         |       |           |    | CONTROL CIRCUIT  |    |   |    |        | AUXILIARY SW. |     |    |    |    |    |    |    |    |    |    |    |
|------------|-------------|------|-------|--------|----|-----|--------|---------|-------|-----------|----|------------------|----|---|----|--------|---------------|-----|----|----|----|----|----|----|----|----|----|----|
| POW        | OCR CONTACT |      |       |        | RR | NCT | ZSI-IN | ZSI-OUT | RS485 | BA(BH)/AA |    | VM/ZCT           |    | M | CC | TC/TCS | UVT/TC2       | CHA | 1a | 2a | 3a | 4a | 5a | 1b | 2b | 3b | 4b | 5b |
|            | OM12        | L-21 | S1-24 | PTA-23 |    |     |        |         |       |           |    |                  |    |   |    |        |               |     |    |    |    |    |    |    |    |    |    |    |
| +19        | 21          | 23   |       |        | 5  | +29 | +31    | +33     | +35   | 37        | 39 | VR <sub>27</sub> | VT | 1 | 3  | 7      | 9             | 15  | 41 | 43 | 45 | 47 | 49 | 51 | 53 | 55 | 57 | 59 |
| -20        | 22          | 24   | 26    |        | 6  | -30 | -32    | -34     | -36   | 38        | 40 | VS <sub>28</sub> | VN | 2 | 4  | 8      | 10            | 16  | 42 | 44 | 46 | 48 | 50 | 52 | 54 | 56 | 58 | 60 |

Control Jack Lay-out (Manual Connection Type)



## Order Code

## HGL Type

| HGL        |                              | 12                                |         | A                                                                   |               | 3                                                                   |        | J                                                                 |  | M2                                   |  |   |  |               |  |   |  |                                                   |  |   |  |                                                   |  |
|------------|------------------------------|-----------------------------------|---------|---------------------------------------------------------------------|---------------|---------------------------------------------------------------------|--------|-------------------------------------------------------------------|--|--------------------------------------|--|---|--|---------------|--|---|--|---------------------------------------------------|--|---|--|---------------------------------------------------|--|
| Model Name |                              | Rated Frame                       |         | Frame Category & Neutral Pole                                       |               | No. of Poles                                                        |        | Mounting Method                                                   |  | Charging Motor Power                 |  |   |  |               |  |   |  |                                                   |  |   |  |                                                   |  |
| HGL        | PV/BPS Molded Circuit Switch | 08                                | 800 A   | K                                                                   | 800 ~ 2,000 A | 3                                                                   | 3 Pole | Independent Release of Draw-Out Type (Control Power) of Main Unit |  |                                      |  |   |  |               |  |   |  |                                                   |  |   |  |                                                   |  |
|            |                              | 10                                | 1,000 A |                                                                     |               | 4                                                                   | 4 Pole |                                                                   |  |                                      |  |   |  |               |  |   |  |                                                   |  |   |  |                                                   |  |
|            |                              | 12                                | 1,250 A |                                                                     |               | A                                                                   |        | Auto Connection                                                   |  | Fixed Type (Terminal Form)           |  |   |  |               |  |   |  |                                                   |  |   |  |                                                   |  |
|            |                              | 16                                | 1,600 A |                                                                     |               |                                                                     |        |                                                                   |  |                                      |  |   |  |               |  |   |  |                                                   |  |   |  |                                                   |  |
|            |                              | 20                                | 2,000 A |                                                                     |               |                                                                     |        |                                                                   |  |                                      |  |   |  |               |  |   |  |                                                   |  |   |  |                                                   |  |
|            |                              | 08                                | 800 A   | H                                                                   | 800 ~ 4,000 A | H                                                                   |        | Horizontal Type                                                   |  | Draw-Out Type (Combined with Cradle) |  |   |  |               |  |   |  |                                                   |  |   |  |                                                   |  |
|            |                              | 16                                | 1,600 A |                                                                     |               |                                                                     |        |                                                                   |  |                                      |  | V |  | Vertical Type |  |   |  |                                                   |  |   |  |                                                   |  |
|            |                              | 20                                | 2,000 A |                                                                     |               |                                                                     |        |                                                                   |  |                                      |  |   |  |               |  | T |  | Upper Side : Horizontal/<br>Lower Side : Vertical |  |   |  |                                                   |  |
|            |                              | 25                                | 2,500 A |                                                                     |               |                                                                     |        |                                                                   |  |                                      |  |   |  |               |  |   |  |                                                   |  | L |  | Upper Side : Vertical/<br>Lower Side : Horizontal |  |
|            |                              | 32                                | 3,200 A |                                                                     |               |                                                                     |        |                                                                   |  |                                      |  |   |  |               |  |   |  |                                                   |  |   |  |                                                   |  |
|            |                              | 40                                | 4,000 A |                                                                     |               |                                                                     |        |                                                                   |  |                                      |  |   |  |               |  |   |  |                                                   |  |   |  |                                                   |  |
|            |                              | Auto Connection + Horizontal Type |         | Auto Connection + Upper Side : Horizontal/<br>Lower Side : Vertical |               | Auto Connection + Upper Side : Vertical/<br>Lower Side : Horizontal |        | Auto Connection + Horizontal Type                                 |  | Auto Connection + Vertical Type      |  |   |  |               |  |   |  |                                                   |  |   |  |                                                   |  |
|            |                              |                                   |         |                                                                     |               |                                                                     |        |                                                                   |  |                                      |  |   |  |               |  |   |  |                                                   |  |   |  |                                                   |  |
|            |                              |                                   |         |                                                                     |               |                                                                     |        |                                                                   |  |                                      |  |   |  |               |  |   |  |                                                   |  |   |  |                                                   |  |
|            |                              |                                   |         |                                                                     |               |                                                                     |        |                                                                   |  |                                      |  |   |  |               |  |   |  |                                                   |  |   |  |                                                   |  |
|            |                              |                                   |         |                                                                     |               |                                                                     |        |                                                                   |  |                                      |  |   |  |               |  |   |  |                                                   |  |   |  |                                                   |  |

- H frame, 4,000 A is only available for vertical terminal bus bar arrangement.

| C2           |                 | S2                    |                 | 61                |  | K           |         | AB                  |                                                                                         |
|--------------|-----------------|-----------------------|-----------------|-------------------|--|-------------|---------|---------------------|-----------------------------------------------------------------------------------------|
| Closing Coil |                 | Trip Coil             |                 | Over-Current Trip |  | Rating Plug |         | Parts for Main Unit | Parts Mounted on Cradle<br>(Only Applicable when Placing an Order for Combination Type) |
| C0           | N/A             | S0                    | N/A             | General Feeder    |  | 0           | OCR N/A | INST (UVT Coil)     | Time Delay Type<br>(UVT Coil + UVT Controller)                                          |
| C1           | AC/DC 100~125 V | S1                    | AC/DC 100~125 V | 00                |  |             |         | U1                  | V1                                                                                      |
| C2           | AC/DC 200~250 V | S2                    | AC/DC 200~250 V |                   |  |             |         | U2                  | V2                                                                                      |
| C3           | AC 380 V        | S3                    | AC 380 V        |                   |  |             |         | U3                  | V3                                                                                      |
| C4           | AC 440 V        | S4                    | AC 440 V        |                   |  |             |         | U4                  | V4                                                                                      |
| C7           | DC 24 V         | S7                    | DC 24 V         |                   |  |             |         | U7                  |                                                                                         |
| C8           | DC 48 V         | S8                    | DC 48 V         |                   |  |             |         | U8                  |                                                                                         |
|              |                 |                       |                 |                   |  |             |         | Position S/W        |                                                                                         |
|              |                 | Trip Supervision Coil |                 |                   |  |             |         | AQ                  | Test 1C, Connected 1C                                                                   |
|              |                 | T1                    | AC/DC 100~125 V |                   |  |             |         | AR                  | Connected 2C                                                                            |
|              |                 | T2                    | AC/DC 200~250 V |                   |  |             |         | AS                  | Test 2C                                                                                 |
|              |                 | T3                    | AC 380 V        |                   |  |             |         | AT                  | Isolated 1C, Inserted 1C                                                                |
|              |                 | T4                    | AC 440 V        |                   |  |             |         | AU                  | Inserted 2C                                                                             |
|              |                 | T7                    | DC 24 V         |                   |  |             |         | AV                  | Isolated 2C                                                                             |
|              |                 | T8                    | DC 48 V         |                   |  |             |         | P4                  | Test 2C, Connected 2C                                                                   |
|              |                 |                       |                 |                   |  |             |         | PT                  | Test 4C                                                                                 |
|              |                 |                       |                 |                   |  |             |         | PS                  | Isolated 1C, Test 1C, Connected 2C                                                      |
|              |                 |                       |                 |                   |  |             |         | PQ                  | Inserted 1C, Isolated 1C, Test 1C, Connected 1C                                         |
|              |                 |                       |                 |                   |  |             |         | P8                  | Inserted 2C, Isolated 2C, Test 2C, Connected 2C                                         |
|              |                 |                       |                 |                   |  |             |         | PR                  | Inserted 1C, Isolated 1C, Test 3C, Connected 3C                                         |
|              |                 |                       |                 |                   |  |             |         | BC                  | Auto Connection Control Terminal's Safety Cover                                         |
|              |                 |                       |                 |                   |  |             |         | MC                  | External Auxiliary Contact (MOC) 5a5b                                                   |
|              |                 |                       |                 |                   |  |             |         | AK                  | Short "b" Contact                                                                       |
|              |                 |                       |                 |                   |  |             |         | AE                  | Safety Shutter                                                                          |
|              |                 |                       |                 |                   |  |             |         | AF                  | Fixing Block                                                                            |
|              |                 |                       |                 |                   |  |             |         | AW                  | Miss Insertion Preventer                                                                |

- U□ is only applicable when instantaneous type and only the UVT coil is installed. When using time delay type, place a separate order for the time delay type of controller (HGNS ~) and install externally.
- V□ is only applicable when time delay type is applied and the UVT coil is installed in the main unit while the time delay type of controller is installed at the side of the cradle. In case of dimension issues, place an order for HGNS V□ for separate installation.
- When S□ Secondary trip is applied, UVT coil cannot be applied at the same time.
- When using the monitoring contact for trip coil, 3a3b can be used for the AUX switch.
- In the order code for the main unit only (A/Fixed type), combination with cradle accessories is not possible and the cradle accessory arrangement is only possible when purchased with cradle arrangement. For the independent release of the main unit, place a separate order (HGNS ~) (refer to additional components).
- Position switch cannot be overlapped for use and can only be attached only at the right side of cradle. In case a combination other than the combination indicate is required, make an inquiry separately.
- Mechanical interlock device (B0), external auxiliary contact (MC), fixing block (AF) and Door Interlock (D0) cannot be used together.
- BC : The control terminal's safety cover is only available for the auto connection.
- AK : Short "b" is only available for auto connection and is attached to 51, 52. It can be attached as much as the number of "B" contact so upon additional mounting, place a separate order (HGNS ~).
- AG : Originally, it is attached separately but upon release, the front cover is inserted when shipped.
- AA and BA (BH) cannot be attached at the same time.
- AA and FC cannot be attached at the same time.
- UVT and Secondary Trip Coil cannot be attached at the same time.

Order Code

HGL (When Placing an Order for the Cradle)

| DHL        |                              | 12          |                | A                             |                    | 3            |        | A                           |                 | H                            |                                                   |
|------------|------------------------------|-------------|----------------|-------------------------------|--------------------|--------------|--------|-----------------------------|-----------------|------------------------------|---------------------------------------------------|
| Model Name |                              | Rated Frame |                | Frame Category & Neutral Pole |                    | No. of Poles |        | Control Terminal Connection |                 | Terminal Bus Bar Arrangement |                                                   |
| DHL        | PV/BPS Molded Circuit Switch | 20          | DHL08 ~ 20K(W) | K                             | 800 ~ 2,000 A 3/4P | 3            | 3 Pole | A                           | Auto Connection | H                            | Horizontal Type                                   |
|            |                              | 32          | DHL08 ~ 32H(X) | H                             | 800 ~ 4,000 A 3/4P | 4            | 4 Pole |                             |                 | V                            | Vertical Type                                     |
|            |                              | 40          | DHL40H(X)      |                               |                    |              |        |                             |                 | T                            | Upper Side : Horizontal/<br>Lower Side : Vertical |
|            |                              |             |                |                               |                    |              |        |                             |                 | L                            | Upper Side : Vertical/<br>Lower Side : Horizontal |

※ Marking upon Shipping of Cradle  
·DHL08/10/12/16/20K(W) > DHL08 ~ 20K(W)  
·DHL08/16/20/25/32H(X) > DHL08 ~ 32H(X)  
·DHL40H(X) > DHL040H(X)

## Accessories

| Name of Accessory                                      | Order Form |                 | Detailed Specification                                                                                | Release Form                             | Page |
|--------------------------------------------------------|------------|-----------------|-------------------------------------------------------------------------------------------------------|------------------------------------------|------|
|                                                        | Mounted    | Sold Separately |                                                                                                       |                                          |      |
| Auxiliary Switch <sup>1)</sup>                         | MC         | HGNS MOC        | External Auxiliary Contact 10a10b (Mechanical Operating Cell Switch)                                  | Mounted upon Release and Sold Separately | -    |
| Automatic Connection Control Terminal Protection Cover | BC         | HGNS BC         | Automatic Connection Control Terminal Cover (Cannot be Mounted on Fixed Type, Manual Connection Type) | Mounted upon Release and Sold Separately | -    |
| Manual Connector                                       | J          | HGNS MCJ        | Manual Control Plug                                                                                   | Sold Separately                          | -    |
| Manual Connector Lead Wire                             | J          | HGNS MWIRE      | Manual Connector Lead Wire                                                                            | Mounted upon Release and Sold Separately | -    |
| Condenser Trip Device                                  | -          | HGNS CTD1       | AC 110 V                                                                                              | Sold Separately                          | -    |
|                                                        | -          | HGNS CTD2       | AC 220 V                                                                                              |                                          |      |
| UVT Time Delay Module <sup>2)</sup>                    | -          | HGNS UT1        | AC/DC 100 ~ 125 V                                                                                     | Sold Separately                          | -    |
|                                                        | -          | HGNS UT2        | AC/DC 200 ~ 250 V                                                                                     |                                          |      |
|                                                        | -          | HGNS UT3        | AC 380 V                                                                                              |                                          |      |
|                                                        | -          | HGNS UT4        | AC 440 V                                                                                              |                                          |      |
| UVT Time Delay Module + UVT Coil                       | V1         | HGNS V1         | AC/DC 100 ~ 125 V                                                                                     | Mounted upon Release and Sold Separately | -    |
|                                                        | V2         | HGNS V2         | AC/DC 200 ~ 250 V                                                                                     |                                          |      |
|                                                        | V3         | HGNS V3         | AC 380 V                                                                                              |                                          |      |
|                                                        | V4         | HGNS V4         | AC 440 V                                                                                              |                                          |      |
| Key Lock                                               | AB         | HGNS AB         | Key Lock                                                                                              | Mounted upon Release and Sold Separately | -    |
| Safety Shutter                                         | AE         | HGLS AEA3       | 08K3 ~ 20K3                                                                                           | Mounted upon Release and Sold Separately | -    |
|                                                        |            | HGLS AEA4       | 08K4 ~ 20K4                                                                                           |                                          |      |
|                                                        |            | HGLS AEB3       | 08H3 ~ 40H3                                                                                           |                                          |      |
|                                                        |            | HGLS AEB4       | 08H4 ~ 40H4                                                                                           |                                          |      |
| Fixing Block                                           | AF         | HGLS AF         | For Main Unit + Cradle                                                                                | Mounted upon Release and Sold Separately | -    |
|                                                        |            | HGLS AFB        | For Main Unit + Cradle                                                                                | Sold Separately                          | -    |
|                                                        |            | HGLS AFC        | For Cradle                                                                                            |                                          |      |
| Position Switch <sup>3)</sup>                          | AQ         | HGNS AQ         | Test 1C, Connected 1C                                                                                 | Mounted upon Release and Sold Separately | -    |
|                                                        | AR         | HGNS AR         | Connected 2C                                                                                          |                                          |      |
|                                                        | AS         | HGNS AS         | Test 2C                                                                                               |                                          |      |
|                                                        | AT         | HGNS AT         | Isolated 1C, Inserted 1C                                                                              |                                          |      |
|                                                        | AU         | HGNS AU         | Inserted 2C                                                                                           |                                          |      |
|                                                        | AV         | HGNS AV         | Isolated 2C                                                                                           |                                          |      |
|                                                        | P4         | HGNS P4         | Test 2C, Connected 2C                                                                                 |                                          |      |
|                                                        | PS         | HGNS PS         | Isolated 1C, Test 1C, Connected 2C                                                                    |                                          |      |
|                                                        | PT         | HGNS PT         | Test 4C                                                                                               |                                          |      |
|                                                        | PQ         | HGNS PQ         | Inserted 1C, Isolated 1C, Test 1C, Connected 1C                                                       |                                          |      |
|                                                        | P8         | HGNS P8         | Inserted 2C, Isolated 2C, Test 2C, Connected 2C                                                       |                                          |      |
|                                                        | PR         | HGNS PR         | Inserted 1C, Isolated 1C, Test 3C, Connected 3C                                                       |                                          |      |
|                                                        | PU         | HGNS PU         | Test 4C, Connected 4C                                                                                 |                                          |      |

※ <sup>1)</sup> Contact us when placing an order for set order required for installation.

<sup>2)</sup> UVT time delay type of controller is mounted outside the main unit or the cradle.

<sup>3)</sup> Position switch cannot be used together and can only be mounted at the right side of the cradle.

For position switches, because they are common parts with the U-Series product, the position switch may be marked "UANS".

## Order Code

### Accessories

| Name of Accessory            | Order Form |                 | Detailed Specification                                                                            | Release Form                             | Page |
|------------------------------|------------|-----------------|---------------------------------------------------------------------------------------------------|------------------------------------------|------|
|                              | Mounted    | Sold Separately |                                                                                                   |                                          |      |
| Miss Insertion Preventor     | AW         | HGLS AW         | Add Order Form in the Main Unit + Cradle, Main Unit/Cradle Respectively                           | Mounted upon Release and Sold Separately | -    |
| Arc Shield                   | AX         | HGLS AXA3       | 08K3 ~ 20K3                                                                                       | Mounted upon Release and Sold Separately | -    |
|                              |            | HGLS AXA4       | 08K4 ~ 20K4                                                                                       |                                          |      |
|                              |            | HGLS AXB3       | 08H3 ~ 40H3                                                                                       |                                          |      |
|                              |            | HGLS AXB4       | 08H4 ~ 40H4                                                                                       |                                          |      |
| Mech Interlock <sup>4)</sup> | -          | HGNS DWB1       | Drawout (Fixed)/Wire Type 2 Way MI                                                                | Sold Separately                          | -    |
|                              | -          | HGNS DWB2       | Drawout (Fixed)/Wire Type 3 Way MI                                                                |                                          |      |
|                              | -          | HGNS FWB1       | Fixed/Wire Type 2 Way MI                                                                          |                                          |      |
|                              | -          | HGNS FWB2       | Fixed/Wire Type 3 Way MI                                                                          |                                          |      |
|                              | -          | HGNS DWB1A      | A Frame, Draw-Out Type, Wire Type 2 Way MI + Interlock Parts (B0)                                 |                                          |      |
|                              | -          | HGNS DWB2A      | A Frame, Draw-Out Type, Wire Type 3 Way MI + Interlock Parts (B0)                                 |                                          |      |
|                              | -          | HGNS DWB1B      | B Frame, Draw-Out Type, Wire Type 2 Way MI + Interlock Parts (B0)                                 |                                          |      |
|                              | -          | HGNS DWB2B      | B Frame, Draw-Out Type, Wire Type 3 Way MI + Interlock Parts (B0)                                 |                                          |      |
|                              | -          | HGNS FWB1A      | A Frame, Fixed Type, Wire Type 2way MI + Interlock Parts (B0)                                     | Mounted upon Release and Sold Separately | -    |
|                              | -          | HGNS FWB2A      | A Frame, Fixed Type, Wire Type 3way MI + Interlock Parts (B0)                                     |                                          |      |
|                              | -          | HGNS FWB1B      | B Frame, Fixed Type, Wire Type 2way MI + Interlock Parts (B0)                                     |                                          |      |
|                              | -          | HGNS FWB2B      | B Frame, Fixed Type, Wire Type 3way MI + Interlock Parts (B0)                                     |                                          |      |
|                              | BO         | HGNS B0DA       | A Frame Interlock Parts (B0)                                                                      |                                          |      |
|                              |            | HGNS B0DB       | B Frame Interlock Parts (B0)                                                                      |                                          |      |
|                              |            | HGNS B0FA       | A Frame Interlock Parts (B0) + Fixed Bracket                                                      |                                          |      |
|                              |            | HGNS B0FB       | B Frame Interlock Parts (B0) + Fixed Bracket                                                      |                                          |      |
| Door Flange                  | AG         | HGLS AG         | IP30                                                                                              | Mounted upon Release and Sold Separately | -    |
| Dust Cover                   | -          | HGLS DC         | IP52                                                                                              | Sold Separately                          | -    |
| Test Jumper                  | -          | HGNS AJ         | For Automatic Connection Type of Test                                                             | Sold Separately                          | -    |
| Short "B" Contact            | AK         | HGNS AK         | Short Circuit "B" Contact                                                                         | Mounted upon Release and Sold Separately | -    |
| Lifting LUG                  | -          | HGNS AL         | 2 ea = 1 set, C Frame 5,000 A is Provided as Standard                                             | Sold Separately                          | -    |
| On/Off Button Lock           | AM         | HGNS AM         | On/Off Button Cover Lock                                                                          | Sold Separately                          | -    |
| Insulation Barrier           | -          | HGNS PBAR       | Insulation Barrier                                                                                | Sold Separately                          | -    |
| Draw In-Out Handle           | -          | HGNS LHANDLE    | Long Head Type Draw In-Out Handle                                                                 | Sold Separately                          | -    |
|                              | -          | HGNS UHANDLE    | Universal Join Head Draw In-Out Handle                                                            |                                          |      |
|                              | -          | HGNS THANDLE    | T Grip Long Type Draw In-Out Handle                                                               |                                          |      |
|                              | -          | HGNS HANDLE     | Standard Draw In-Out Handle                                                                       |                                          |      |
| Door Interlock               | -          | HGNS DDI        | Draw-out type Door Interlock external attachment Kit Only                                         | Sold Separately                          | -    |
|                              | -          | HGNS FDI        | Fixed type Door Interlock external attachment Kit Only                                            | Sold Separately                          | -    |
|                              | -          | HGNS DDIAC      | Draw-out type Door Interlock external attachment Kit + K Frame internal interlock components (D0) | Sold Separately                          | -    |
|                              | -          | HGNS DDIBD      | Draw-out type Door Interlock external attachment Kit + H Frame internal interlock components (D0) | Sold Separately                          | -    |
|                              | -          | HGNS FDIAC      | Fixed type Door Interlock external attachment Kit + K Frame internal interlock components (D0)    | Sold Separately                          | -    |
|                              | -          | HGNS FDIBD      | Fixed type Door Interlock external attachment Kit + H Frame internal interlock components (D0)    | Sold Separately                          | -    |
|                              | -          | HGNS FDIAC      | Fixed type Door Interlock external attachment Kit + K Frame internal interlock components (D0)    | Sold Separately                          | -    |

※ 4) Mechanical interlock is a wire type. The MI unit is mounted outside the main unit or on the cradle and the interlock part is mounted inside the main unit.



## Korea

|                              |                                                                                        |                      |                      |
|------------------------------|----------------------------------------------------------------------------------------|----------------------|----------------------|
| Head Office                  | 477, Bundang Suseo-ro, Bundang-gu, Seongnam-si, Korea                                  | Tel: +82-2-479-9180  | Fax: +82-2-500-4958  |
| Ulsan Factory                | 700 Bangeojinsunhwan-doro, Dong-gu, Ulsan, Korea                                       | Tel: +82-52-202-8114 | Fax: +82-52-202-8010 |
| Seonam Factory               | 223, Sapyeong-ro, Nam-gu, Ulsan, Korea                                                 |                      |                      |
| Cheongju Distribution Campus | 20, Guksasandan 1-ro, Oksan-myeon, Heungdeok-gu, Cheongju-si, Chungcheongbuk-do, Korea |                      |                      |
| Reliability Center           | 17-10, Mabuk-ro 240beon-gil, Giheung-gu, Yongin-si, Gyeonggi-do, Korea                 | Tel: +82-31-289-5000 | Fax: +82-31-289-5040 |

## Overseas Subsidiaries

|                    |                                                                                                               |                        |                        |
|--------------------|---------------------------------------------------------------------------------------------------------------|------------------------|------------------------|
| Atlanta(U.S.A)     | 2405 Satellite Blvd, Duluth GA 30096, U.S.A.                                                                  | Tel: +1-770-377-7370   |                        |
| Alabama(U.S.A)     | 215 Folmar Parkway, Montgomery, AL 36105, U.S.A                                                               | Tel: +1-334-481-2000   | Fax: +1-334-604-2498   |
| Texas(U.S.A)       | 14114 Pkwy Ste 350 Dallas, TX 75254                                                                           | Tel: +1-214-502-0221   |                        |
| Frankfurt(Germany) | HD Hyundai Electric Europe GmbH Düsseldorf Str. 40 (Eingang 2, 8G.), 65760, Eschborn, Germany                 | Tel: +49-697-116-3593  |                        |
| Riyadh             | Office No. 529, 5th floor Akaria-3 Building, Olaya Street, PO Box 9187, Riyadh 11413, Kingdom of Saudi Arabia | Tel: +966-11-419-0168  | Fax: +966-11-4190-0220 |
| Yangzhong(China)   | No.9, Xiandai Road, Xinba Scientific and Technologic Zone, Yangzhong, Jiangsu, P.R.C. Zip:212212, China       | Tel: +86-511-8842-0510 | Fax: +86-511-8842-0388 |

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| London(U.K)          | 50-68 High Street, Weybridge, KT13 8BL, United Kingdom                                                                       | Tel: +44-(0)20-8600-7122 |                       |
| Russia(Moscow)       | World Trade Center, Ent.6, #412, Krasnopresnenskaya Nab.12, Moscow, 123610, Russia                                           | Tel: +7-495-258-1381     |                       |
| Riyadh               | Office No. 530A, 5th Floor Akaria-2 Bldg., Olaya St., Short Address RHOB6847, Riyadh 12244, Kingdom of Saudi Arabia          | Tel: +966-11-210-1107    | Fax: +966-11-210-1107 |
| U.A.E(Dubai)         | Unit 205, Emaar Square Building NO.4 Sheikh Zayed Road, Pobox 252458, Dubai, U.A.E                                           | Tel: +971-50-771-0378    | Fax: +971-4-425-7996  |
| Vietnam(Ho Chi Minh) | Room 1405, 14th Floor Centec Tower, 72-74 Nguyen Thi Minh Khai Street Vo Thi Sau Ward, District 3, Ho Chi Minh City, Vietnam | Tel: +84-28-3535-0465    |                       |
| Japan(Osaka)         | 1-Room 5th Floor Nagahori Plaza Bldg. 2-4-8 Minami Senba, chuo-ku, Osaka 542-0081, Japan                                     | Tel: +81-06-6261-5766~7  | Fax: +81-06-6261-5818 |

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| Switzerland(Zurich) | Hardturmstrasse 135, CH-8005, Zurich, Switzerland                              | Tel: +41-44-527-0056       |  |
| Hungary(Budapest)   | H-1145 Bacsikai utca 29/a, Budapest, Hungary                                   | Tel: +36-1-273-3733        |  |
| China(Shanghai)     | Room 10102, Building 10, 498 Guoshoujing Road, Pudong, Shanghai, China(201203) | Tel: +86-21-5013-3393 #139 |  |

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